SIEMENS

SIPMOS

Small Signal Transistors
Power Transistors

Data Book 1985

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Siemens Aktiengesellschaft

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Published by Siemens AG, Bereich Bauelemente, Produkt-Information, Balanstraße 73, D-8000 München 80

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The sign Ø on drawings denotes diameter.
A comma in the outline drawings and tables as well as in the individual data sheets represents the decimal point.

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Alphanumeric summary of types

Small signal transistors

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BSS 89	Q62702-S455	55
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BSS 92	Q62702-S458	65
BSS 95	Q62702-S461	70
BSS 97	Q62702-S463	75
BSS 100	Q62702-S483	80
BSS 101	Q62702-S484	85
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BSS 123	Q62702-S507	95

Power transistors

BUZ 10	C67078-A1300-A2	102
BUZ 10 A	C67078-A1300-A3	108
BUZ 11	C67078-A1301-A2	114
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BUZ 14	C67078-A1000-A2	126
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BUZ 20	C67078-A1302-A2	150
BUZ 21	C67078-A1308-A2	156
BUZ 23	C67078-A1002-A2	162
BUZ 24	C67078-A1003-A2	168
BUZ 25	C67078-A1011-A2	174
BUZ 27	C67078-A1602-A2	180
BUZ 28	C67078-A1608-A2	186
BUZ 31	C67078-A1304-A2	192
BUZ 32	C67078-A1310-A2	198
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BUZ 35	C67078-A1014-A2	210
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BUZ 37	C67078-A1603-A2	222
BUZ 38	C67078-A1611-A2	228
BUZ 41 A	C67078-A1306-A3	234
BUZ 42	C67078-A1311-A2	240
BUZ 44 A	C67078-A1007-A3	246
BUZ 45	C67078-A1008-A2	252
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BUZ 46	C67078-A1015-A2	270
BUZ 48	C67078-A1605-A2	276
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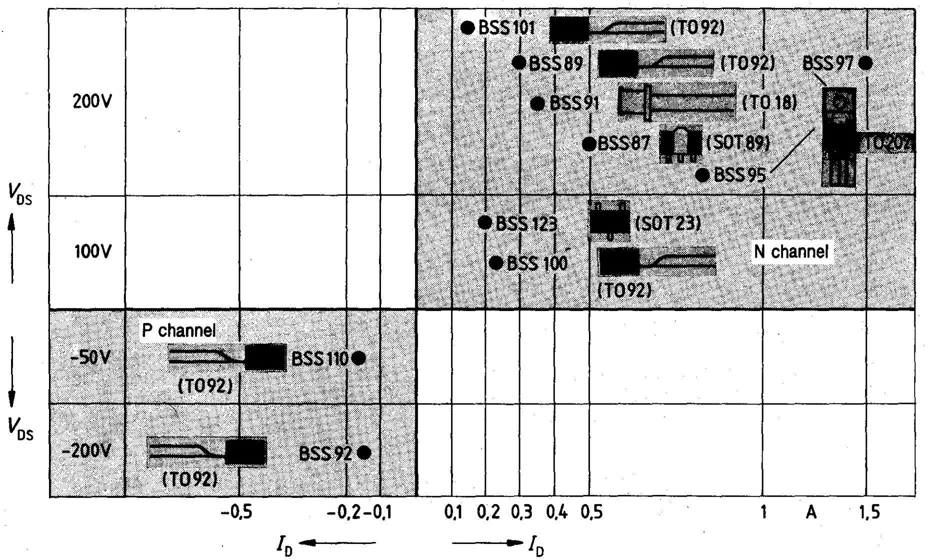
BUZ 50 A	C67078-A1307-A3	288
BUZ 50 B	C67078-A1307-A4	294
BUZ 53 A	C67078-A1009-A3	300
BUZ 54	C67078-A1010-A2	306
BUZ 54 A	C67078-A1010-A3	312
BUZ 57 A	C67078-A1606-A3	318
BUZ 58	C67078-A1607-A2	324
BUZ 58 A	C67078-A1607-A3	330
BUZ 60	C67078-A1312-A2	336
BUZ 60 B	C67078-A1312-A4	342
BUZ 63	C67078-A1016-A2	348
BUZ 63 B	C67078-A1016-A4	354
BUZ 64	C67078-A1017-A2	360
BUZ 67	C67078-A1610-A2	366
BUZ 71	C67078-A1316-A2	372
BUZ 71 A	C67078-A1316-A3	378
BUZ 72	C67078-A1313-A2	384
BUZ 72 A	C67078-A1313-A3	390
BUZ 73	C67078-A1317-A2	396
BUZ 73 A	C67078-A1317-A3	402
BUZ 74	C67078-A1314-A2	408
BUZ 74 A	C67078-A1314-A3	414
BUZ 76	C67078-A1315-A2	420
BUZ 76 A	C67078-A1315-A3	426
BUZ 80	C67078-A1309-A2	432
BUZ 80 A	C67078-A1309-A3	438
BUZ 83	C67078-A1012-A2	444
BUZ 83 A	C67078-A1012-A3	450
BUZ 84	C67078-A1013-A2	456
BUZ 84 A	C67078-A1013-A3	462
BUZ 88	C67078-A1609-A2	468
BUZ 88 A	C67078-A1609-A3	474
BUZ 201	C67078-A1101-A2	480
BUZ 210	C67078-A1102-A2	486
BUZ 211	C67078-A1100-A2	492
BUZ 307	C67078-A3100-A2	498
BUZ 308	C67078-A3109-A2	504
BUZ 351	C67078-A3103-A2	510
BUZ 353	C67078-A3104-A2	516
BUZ 354	C67078-A3106-A2	522
BUZ 382	C67078-A3207-A2	528
BUZ 385	C67078-A3210-A2	534

Small signal transistors – survey of versions



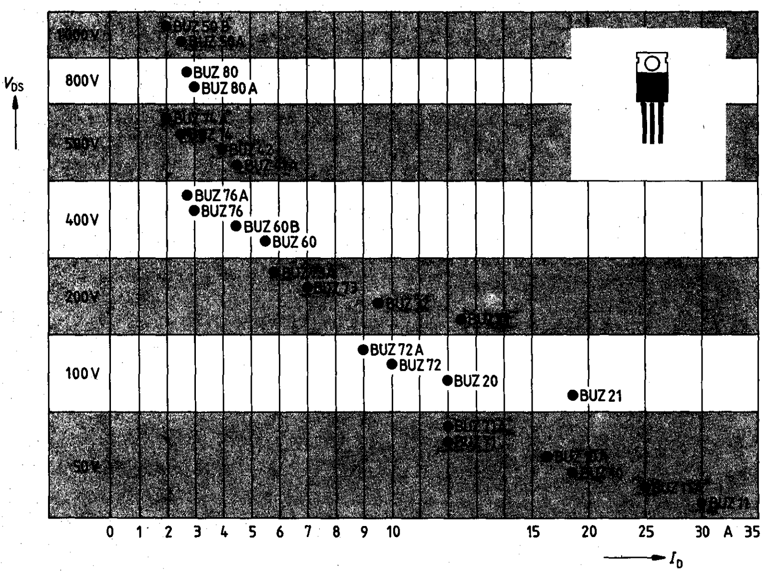
Small signal transistors – brief characteristics (selection guide)

Type	V_{DS} V	I_D A	$R_{DS(on)}$ Ω	Package	Page
P channel					
BBS 110	– 50	–0,17	10	TO 92	90
BSS 92	–200	–0,15	20	TO 92	65
N channel					
BSS 100	100	0,23	6	TO 92	80
BSS 123	100	0,17	6	SOT 23	95
BSS 87	200	0,28	6	SOT 89	50
BSS 89	200	0,30	6	TO 92	55
BSS 91	200	0,35	6	TO 18	60
BSS 95	200	0,80	6	TO 202	70
BSS 97	200	1,50	2	TO 202	75
BSS 101	200	0,16	12	TO 92	85

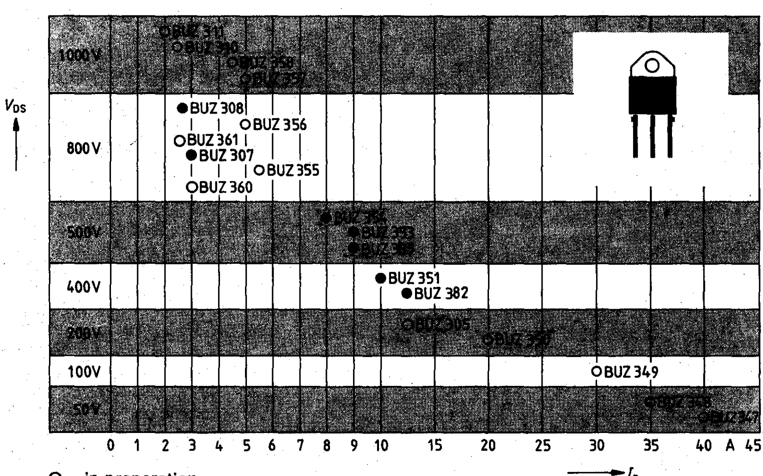
Summary of Types

Power transistors – survey of versions

Power transistors in plastic package
14 A 3 in acc. with DIN 41 869 or TO 220 AB in acc. with JEDEC



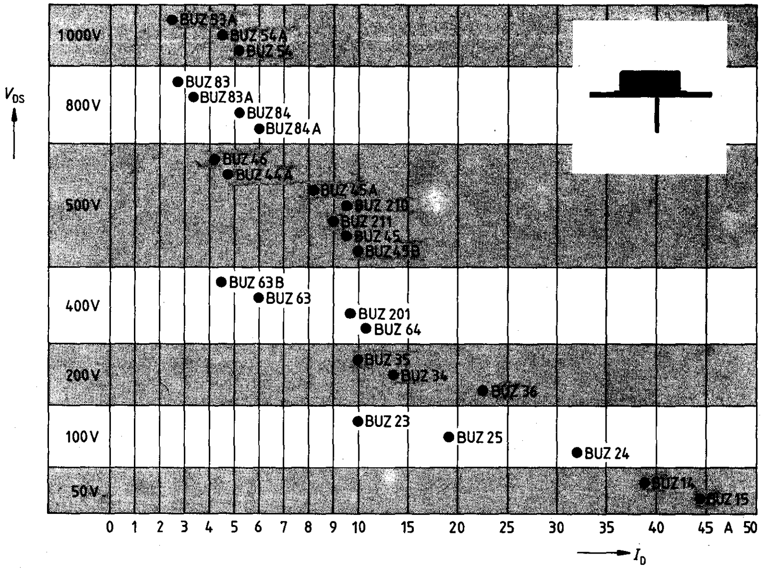
Power transistors in plastic package
15 in acc. with DIN 41 869 or TO 218 AA (TOP 3) in acc. with JEDEC



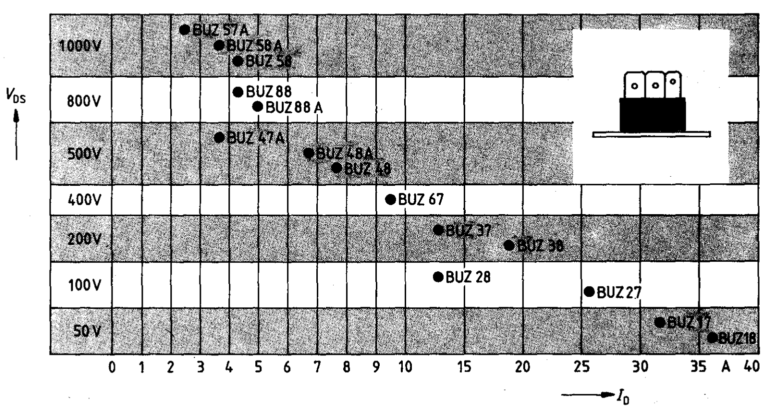
○ = in preparation

Power transistors – survey of versions

Power transistors in metal case
3 A2 in acc. with DIN 41 872 or TO 204 (TO 3) in acc. with JEDEC



Power transistors in plastic package
TO 238 AA in acc. with JEDEC



Power transistors – brief characteristics (selection guide)

Type	I_D A	$R_{DS(on)}$ Ω	Case	Page
V_{DS} = 50 V				
BUZ 10	19	0,10	TO 220	102
BUZ 10A	17	0,12	TO 220	108
BUZ 11	30	0,04	TO 220	114
BUZ 11A	25	0,06	TO 220	120
BUZ 14	39	0,04	TO 3	126
BUZ 15	45	0,03	TO 3	132
BUZ 17	32	0,04	TO 238	138
BUZ 18	37	0,03	TO 238	144
BUZ 71	12	0,10	TO 220	372
BUZ 71A	12	0,12	TO 220	378
V_{DS} = 100 V				
BUZ 20	12	0,20	TO 220	150
BUZ 21	19	0,10	TO 220	156
BUZ 23	10	0,20	TO 3	162
BUZ 24	32	0,06	TO 3	168
BUZ 25	19	0,10	TO 3	174
BUZ 27	26	0,06	TO 238	180
BUZ 28	18	0,10	TO 238	186
BUZ 72	10	0,20	TO 220	384
BUZ 72A	9	0,25	TO 220	390
V_{DS} = 200 V				
BUZ 31	12,5	0,20	TO 220	192
BUZ 32	9,5	0,40	TO 220	198
BUZ 34	14,0	0,20	TO 3	204
BUZ 35	9,9	0,40	TO 3	210
BUZ 36	22,0	0,12	TO 3	216
BUZ 37	13,0	0,20	TO 238	222
BUZ 38	18,0	0,12	TO 238	228
BUZ 73	7,0	0,40	TO 220	396
BUZ 73A	5,8	0,60	TO 220	402
V_{DS} = 400 V				
BUZ 60	5,5	1,0	TO 220	336
BUZ 60B	4,5	1,5	TO 220	342
BUZ 63	5,9	1,0	TO 3	348
BUZ 63B	4,5	1,5	TO 3	354
BUZ 64	11,5	0,4	TO 3	360
BUZ 67	9,6	0,4	TO 238	366
BUZ 76	3,0	1,8	TO 220	420
BUZ 76A	2,6	2,5	TO 220	426
BUZ 201[1])	12,5	0,4	TO 3	480
BUZ 351	11,5	0,4	TO 218	510
BUZ 382[1])	12,5	0,4	TO 218	528

Type	I_D A	$R_{DS(on)}$ Ω	Case	Page
V_{DS} = 500 V				
BUZ 41A	4,5	1,5	TO 220	234
BUZ 42	4,0	2,0	TO 220	240
BUZ 44A	4,8	1,5	TO 3	246
BUZ 45	9,6	0,6	TO 3	252
BUZ 45A	8,3	0,8	TO 3	258
BUZ 45B	10,0	0,5	TO 3	264
BUZ 46	4,2	2,0	TO 3	270
BUZ 48	7,8	0,6	TO 238	276
BUZ 48A	6,8	0,8	TO 238	282
BUZ 74	2,4	3,0	TO 220	408
BUZ 74A	2,0	4,0	TO 220	414
BUZ 210[1])	10,0	0,6	TO 3	486
BUZ 211[1])	9,0	0,8	TO 3	492
BUZ 353	9,6	0,6	TO 218	516
BUZ 354	8,3	0,8	TO 218	522
BUZ 385[1])	9,0	0,8	TO 218	534
V_{DS} = 800 V				
BUZ 80	2,6	4,0	TO 220	432
BUZ 80A	3,0	3,0	TO 220	438
BUZ 83	2,9	4,0	TO 3	444
BUZ 83A	3,4	3,0	TO 3	450
BUZ 84	5,3	2,0	TO 3	456
BUZ 84A	6,0	1,5	TO 3	462
BUZ 88	4,3	2,0	TO 238	468
BUZ 88A	5,0	1,5	TO 238	474
BUZ 307	3,0	3,0	TO 218	498
BUZ 308	2,6	4,0	TO 218	504
V_{DS} = 1000 V				
BUZ 50A	2,5	5,0	TO 220	288
BUZ 50B	2,0	8,0	TO 220	294
BUZ 53A	2,6	5,0	TO 3	300
BUZ 54	5,3	2,0	TO 3	306
BUZ 54A	4,6	2,6	TO 3	312
BUZ 57A	2,5	5,0	TO 238	318
BUZ 58	4,3	2,0	TO 238	324
BUZ 58A	3,7	2,6	TO 238	330

[1]) with fast-recovery reverse diode

Cross reference for power transistors

Competitive type	Comparable SIPMOS type	Page	Competitive type	Comparable SIPMOS type	Page	Competitive type	Comparable SIPMOS type	Page
IRF 120	BUZ 23	162	IRF 430	BUZ 44A	246	IRF 712	BUZ 76A	426
IRF 121	BUZ 23	162	IRF 431	BUZ 44A	246	IRF 713	BUZ 76A	426
IRF 122	BUZ 23	162	IRF 432	BUZ 46	270	IRF 720	BUZ 76	420
IRF 123	BUZ 23	162	IRF 433	BUZ 46	270	IRF 721	BUZ 76	420
IRF 130	BUZ 25	174	IRF 440	BUZ 45A	258	IRF 722	BUZ 76A	426
IRF 131	BUZ 25	174	IRF 441	BUZ 45A	258	IRF 723	BUZ 76A	426
IRF 132	BUZ 23	162	IRF 442	BUZ 45A	258	IRF 730	BUZ 60	336
IRF 133	BUZ 23	162	IRF 443	BUZ 45A	258	IRF 731	BUZ 60	336
IRF 140	BUZ 24	168	IRF 450	BUZ 45B	264	IRF 732	BUZ 60B	342
IFR 141	BUZ 14	126	IRF 451	BUZ 45B	264	IRF 733	BUZ 60B	342
IRF 142	BUZ 25	174	IRF 452	BUZ 45B	264	IRF 740	BUZ 64	360
IRF 143	BUZ 25	174	IRF 453	BUZ 45B	264	IRF 741	BUZ 64	360
IRF 150	BUZ 24	168	IRF 520	BUZ 72A	390	IRF 742	BUZ 60	336
IRF 151	BUZ 14	126	IRF 521	BUZ 72A	390	IRF 743	BUZ 60	336
IRF 152	BUZ 24	168	IRF 522	BUZ 72A	390	IRF 820	BUZ 74	408
IRF 153	BUZ 14	126	IRF 523	BUZ 72A	390	IRF 821	BUZ 74	408
IRF 230	BUZ 35	210	IRF 530	BUZ 21	156	IRF 822	BUZ 74A	414
IRF 231	BUZ 35	210	IRF 531	BUZ 10A	108	IRF 823	BUZ 74A	414
IRF 240	BUZ 36	216	IRF 532	BUZ 20	150	IRF 830	BUZ 41A	234
IRF 241	BUZ 36	216	IRF 533	BUZ 10A	108	IRF 831	BUZ 41A	234
IRF 242	BUZ 34	204	IRF 540	BUZ 21	156	IRF 832	BUZ 42	240
IRF 243	BUZ 34	204	IRF 541	BUZ 21	156	IRF 833	BUZ 42	240
IRF 320	BUZ 63B	354	IRF 542	BUZ 21	156	MTM 474	BUZ 46	270
IRF 321	BUZ 63B	354	IRF 543	BUZ 11A	120	MTM 475	BUZ 46	270
IRF 322	BUZ 63B	354	IRF 620	BUZ 73A	402	MTM 564	BUZ 63B	354
IRF 323	BUZ 63B	354	IRF 621	BUZ 73A	402	MTM 565	BUZ 63B	354
IRF 330	BUZ 63	348	IRF 622	BUZ 73A	402	MTM 814	BUZ 23	162
IRF 331	BUZ 63	348	IRF 623	BUZ 73A	402	MTM 815	BUZ 23	162
IRF 332	BUZ 63B	354	IRF 630	BUZ 32	198	MTM 1224	BUZ 23	162
IRF 333	BUZ 63B	354	IRF 631	BUZ 32	198	MTM 1225	BUZ 23	162
IRF 340	BUZ 64	360	IRF 632	BUZ 32	198	MTM 3N55	BUZ 46	270
IRF 341	BUZ 64	360	IRF 633	BUZ 32	198	MTM 3N60	BUZ 84	456
IRF 350	BUZ 64	360	IRF 640	BUZ 31	192	MTM 5N35	BUZ 63B	354
IRF 351	BUZ 64	360	IRF 641	BUZ 31	192	MTM 5N40	BUZ 63B	354
IRF 352	BUZ 64	360	IRF 642	BUZ 31	192	MTM 7N45	BUZ 45A	258
IRF 353	BUZ 64	360	IRF 643	BUZ 31	192	MTM 7N50	BUZ 45A	258
IRF 420	BUZ 46	270	IRF 710	BUZ 76A	426	MTM 8N35	BUZ 64	360
IRF 421	BUZ 46	270	IRF 711	BUZ 76A	426	MTM 8N40	BUZ 45A	258

Cross reference for power transistors

Competitive type	Comparable SIPMOS type	Page	Competitive type	Comparable SIPMOS type	Page	Competitive type	Comparable SIPMOS type	Page
MTP 474	BUZ 42	240	UFN 130	BUZ 25	174	UFN 432	BUZ 46	270
MTP 475	BUZ 42	240	UFN 131	BUZ 25	174	UFN 433	BUZ 46	270
MTP 564	BUZ 60B	342	UFN 132	BUZ 23	162	UFN 440	BUZ 45A	258
MTP 565	BUZ 60B	342	UFN 133	BUZ 23	162	UFN 441	BUZ 45A	258
MTP 814	BUZ 72A		UFN 140	BUZ 24	168	UFN 442	BUZ 45A	258
MTP 815	BUZ 72A	390	UFN 141	BUZ 14	126	UFN 443	BUZ 45A	258
MTP 1224	BUZ 20	150	UFN 142	BUZ 25	174	UFN 450	BUZ 45B	264
MTP 1225	BUZ 20	150	UFN 143	BUZ 25	174	UFN 451	BUZ 45B	264
MTP 1N95	BUZ 50B	294	UFN 150	BUZ 24	168	UFN 452	BUZ 45B	264
MTP 1N100	BUZ 50B	294	UFN 151	BUZ 14	126	UFN 453	BUZ 45B	264
MTP 2N85	BUZ 50B	294	UFN 152	BUZ 24	168	UFN 520	BUZ 72A	390
MTP 2N90	BUZ 50B	294	UFN 153	BUZ 14	126	UFN 521	BUZ 72A	390
MTP 3N55	BUZ 42	240	UFN 230	BUZ 35	210	UFN 522	BUZ 72A	390
MTP 3N60	BUZ 80A	438	UFN 231	BUZ 35	210	UFN 523	BUZ 72A	390
MTP 5N35	BUZ 60B	342	UFN 240	BUZ 36	216	UFN 530	BUZ 21	156
MTP 5N40	BUZ 60B	342	UFN 241	BUZ 36	216	UFN 531	BUZ 10A	108
RCA 9192A	BUZ 23	162	UFN 242	BUZ 34	204	UFN 532	BUZ 20	150
RCA 9193	BUZ 46	270	UFN 243	BUZ 34	204	UFN 533	BUZ 10A	108
RCA 9195A	BUZ 23	162	UFN 320	BUZ 63B	354	UFN 540	BUZ 21	156
RCA 9195B	BUZ 34	204	UFN 321	BUZ 63B	354	UFN 541	BUZ 21	156
RCA 9213A	BSS 97	77	UFN 322	BUZ 63B	354	UFN 542	BUZ 21	156
RCA 9213B	BSS 97	77	UFN 323	BUZ 63B	354	UFN 543	BUZ 11A	120
RCA 9213C	BSS 97	77	UFN 330	BUZ 63	348	UFN 620	BUZ 73A	402
RCA 9230A	BUZ 21	156	UFN 331	BUZ 63	348	UFN 621	BUZ 73A	402
RCA 9230B	BUZ 31	192	UFN 332	BUZ 63B	354	UFN 622	BUZ 73A	402
RCA 9232	BUZ 74	408	UFN 333	BUZ 63B	354	UFN 623	BUZ 73A	402
IVN 6200CNH	BUZ 20	150	UFN 340	BUZ 64	360	UFN 630	BUZ 32	198
IVN 6200KNH	BUZ 23	162	UFN 341	BUZ 64	360	UFN 631	BUZ 32	198
IVN 6200CNM	BUZ 31	192	UFN 350	BUZ 64	360	UFN 632	BUZ 32	198
IVN 6200KNM	BUZ 34	204	UFN 351	BUZ 64	360	UFN 633	BUZ 32	198
IVN 6200CNU	BUZ 41A	234	UFN 352	BUZ 64	360	UFN 640	BUZ 31	192
IVN 6400KNU	BUZ 45	252	UFN 353	BUZ 64	360	UFN 641	BUZ 31	192
UFN 120	BUZ 23	162	UFN 420	BUZ 46	270	UFN 642	BUZ 31	192
UFN 121	BUZ 23	162	UFN 421	BUZ 46	270	UFN 643	BUZ 31	192
UFN 122	BUZ 23	162	UFN 430	BUZ 44A	246			
UFN 123	BUZ 23	162	UFN 431	BUZ 44A	246			

Cross reference for power transistors

Competitive type	Comparable SIPMOS type	Page	Competitive type	Comparable SIPMOS type	Page	Competitive type	Comparable SIPMOS type	Page
UFN 710	BUZ 76A	426	VN 0401A	BUZ 14	126	VN 5002D	BUZ 42	240
UFN 711	BUZ 76A	426	VN 0600A	BUZ 25	174	VNL 001A	BUZ 64	360
UFN 712	BUZ 76A	426	VN 0601A	BUZ 25	174	VNM 001A	BUZ 64	360
UFN 713	BUZ 76A	426	VN 0800A	BUZ 25	174	VNN 002A	BUZ 45	252
UFN 720	BUZ 76	420	VN 0800D	BUZ 21	156	VNP 002A	BUZ 45	252
UFN 721	BUZ 76	420	VN 0801A	BUZ 25	174	2 SK 294	BUZ 72A	390
UFN 722	BUZ 76A	426	VN 0801D	BUZ 21	156	2 SK 295	BUZ 72A	390
UFN 723	BUZ 76A	426	VN 1000A	BUZ 25	174	2 SK 296	BUZ 76A	426
UFN 730	BUZ 60	336	VN 1000D	BUZ 21	156	2 SK 298	BUZ 64	360
UFN 731	BUZ 60	336	VN 1001A	BUZ 25	174	2 SK 299	BUZ 45A	258
UFN 732	BUZ 60B	342	VN 1001D	BUZ 20	150	2 SK 308	BUZ 34	204
UFN 733	BUZ 60B	342	VN 3500A	BUZ 64	360	2 SK 310	BUZ 76	420
UFN 740	BUZ 64	360	VN 3500D	BUZ 60	336	2 SK 311	BUZ 41A	234
UFN 741	BUZ 64	360	VN 3501A	BUZ 63	348	2 SK 319	BUZ 60	336
UFN 742	BUZ 60	336	VN 3501D	BUZ 60	336	2 SK 320	BUZ 41A	234
UFN 743	BUZ 60	336	VN 4000A	BUZ 64	360	2 SK 345	BUZ 71A	378
UFN 820	BUZ 74	408	VN 4000D	BUZ 60	336	2 SK 346	BUZ 72A	390
UFN 821	BUZ 74	408	VN 4001A	BUZ 63	348	2 SK 351	BUZ 84A	462
UFN 822	BUZ 74A	414	VN 4001D	BUZ 60	336	2 SK 382	BUZ 42	240
UFN 823	BUZ 74A	414	VN 4501A	BUZ 45A	258	2 SK 383	BUZ 72	384
UFN 830	BUZ 41A	234	VN 4501D	BUZ 41A	234	2 SK 398	BUZ 23	162
UFN 831	BUZ 41A	234	VN 4502A	BUZ 44A	246	2 SK 401	BUZ 64	360
UFN 832	BUZ 42	240	VN 4502D	BUZ 42	240	(2 SK 411)	(BUZ 84A)	462
UFN 833	BUZ 42	240	VN 5001A	BUZ 45A	258	2 SK 428	BUZ 72	384
VN 64 GA	BUZ 23	162	VN 5001D	BUZ 41A	234	(2 SK 440)	(BUZ 73)	396
VN 0400A	BUZ 14	126	VN 5002A	BUZ 46	270			

The types in brackets are only similar versions.

1. Type Designation Code for Discrete Semiconductors

This type designation code applies to discrete semiconductor devices – as opposed to integrated circuits –, multiples of such devices, semiconductor chips, and darlington transistors.

A basic type number consists of:

two letters followed by a serial number

1.1 First letter

gives information about the material used for the active part of the device.

A Germanium or other material with an energy band gap of 0.6 to 1.0 eV
B Silicon or other material with an energy band gap of 1.0 to 1.3 eV
C Gallium-arsenide or other material with an energy band gap of 1.3 eV or more
R Compound materials (for instance cadmium-sulphide)

1.2 Second letter

indicates the function for which the device is primarily designed (see note 1).

A Diode: signal, low power
B Diode: variable capacitance
C Transistor: low power, audio frequency
D Transistor: power, audio frequency
E Diode: tunnel
F Transistor: low power, radio frequency
G Multiple of dissimilar devices; miscellaneous devices
H Diode: magnetic sensitive
L Transistor: power, radio frequency
N Photocoupler
P Radiation detector: high sensitivity phototransistor; solar cell.
Q Radiation generator: light emitting diode LED; laser (see note 2)
R Control or switching device: low power: e.g. thyristors; diacs; triacs (see note 2); unijunction transistors UJT; programmable unijunction transistors PUT; silicon bidirectional switch SBS; etc.
S Transistor: low power, switching
T Control or switching device: power, e.g. thyristors, triacs (see note 2)
U Transistor: power, switching
W Surface acoustic wave device
X Diode: multiplier, e.g. varactor, step recovery
Y Diode: rectifying, booster
Z Diode: voltage reference or regulator; transient voltage suppressor diode (see note 2)

Note: (1) Low power type = $R_{th\,JC} > 15\,°C/W$
Power type = $R_{th\,JC} < 15\,°C/W$
(2) With special third letter: see under serial number, next page.

1.3 Serial number

- Three figures, running from 100 to 999, for devices primarily intended for consumer equipment (see note 3).
- One letter (Z, Y, X, etc. . . .) and two figures running from 10 to 99, for devices primarily intended for industrial/professional equipment.

This letter has no fixed meaning, with the following exceptions:

A: for triacs after second letter R or T.
F: for emitters and receivers in fiber-optic communications, after second letter G, P, or Q (see note 4).
L: for lasers in non-fiber-optic applications, after second letter G or Q (see note 4).
T: for tri-state bicolor LEDs after second letter Q.
W: for transient voltage suppressor diodes after second letter Z.

Examples of basic type numbers

BUZ	Silicon, power switching
BSS	Silicon, low-power signal transistor
BF970	Silicon, RF transistor
CQY17	GaAs, light emitting diode, industrial type
RPY84	CdS, photoconductive cell, industrial type

2. Symbols (alphabetical)

C	Capacitance
C_{DS}	Drain-source capacitance
C_{GD}	Gate-drain capacitance
C_{GS}	Gate-source capacitance
C_{iss}	Input capacitance
C_{mi}	Miller capacitance
C_{oss}	Output capacitance
C_{rss}	Reverse transfer capacitance
$D = \frac{t}{T}$	Duty cycle
di/dt	Diode current transconductance
f	Frequency
g_{fs}	Forward transconductance
I_D	Continuous drain current (dc drain current)
$I_{D\,puls}$	Pulsed drain current
I_{DR}	Continuous reverse drain current (dc current, reverse diode)
I_{DRM}	Pulsed reverse drain current (pulsed dc current, reverse diode)
I_{DSS}	Zero gate voltage drain current
I_F	Forward on-current
I_{GSS}	Gate-source leakage current
P_D	Power dissipation
P_{DM}	Maximum power dissipation
Q_{rr}	Reverse recovery charge
R_{ch}	Channel resistance
R_D	N^- epi layer resistance

Note: (3) When the supply of these serial numbers is exhausted, the serial number may be expanded to four figures (consumer types) and three figures (industrial types).
(4) In the case of second letter G, the first letter ought to be defined in accordance with the material of the main optical device.

$R_{DS\ (on)}$	Drain-source on-state resistance
R_G	Gate path resistance
R_{GS}	Gate-source resistance
R_L	Load resistance
$R_{th\ JA}$	Thermal resistance (chip-air)
$R_{th\ JC}$	Thermal resistance (chip-case)
$R_{th\ JSR}$	Thermal resistance (chip-substrate rear side)
$t_{d\ (off)}$	Turn-off delay time
$t_{d\ (on)}$	Turn-on delay time
t_f	Fall time
t_{off}	Turn-off time
t_{on}	Turn-on time
t_p	Pulse time
t_r	Rise time
t_{rr}	Reverse recovery time
T_{amb}, T_A	Ambient temperature
T_{case}, T_C	Case temperature
T_j	Operating temperature, chip temperature
T_{sold}	Soldering temperature (max.)
T_{SR}	Temperature of substrate rear side
T_{stg}	Storage temperature
$V_{(BR)\ DSS}$	Drain-source breakdown voltage
V_{CC}	Supply voltage, switching-time measurement
V_{DGR}	Drain-gate voltage
V_{DS}	Drain-source voltage
V_{GS}	Gate-source voltage
$V_{GS\ (th)}$	Gate threshold voltage
V_I	Input voltage
V_{is}	Isolation test voltage
V_{op}	Operating voltage
V_{SD}	Diode forward on-voltage
Z_i	Internal impedance
$Z_{th\ JC}$	Transient thermal impedance (chip-case)

3. Terms (alphabetical)

Ambient temperature	T_{amb}, T_A
Capacitance	C
Case temperature	T_{case}, T_C
Channel resistance	R_{ch}
Continuous drain current (dc drain current)	I_D
Continuous reverse drain current (dc current, reverse diode)	I_{DR}
Diode current transconductance	di/dt
Diode forward on-voltage	V_{SD}
Drain-gate voltage	V_{DGR}
Drain-source breakdown voltage	$V_{(BR)\ DSS}$
Drain-source capacitance	C_{DS}
Drain-source on-state resistance	$R_{DS\ (on)}$
Drain-source voltage	V_{DS}

Duty cycle	$D = \frac{t}{T}$
Fall time	t_f
Forward on-current	I_F
Forward transconductance	g_{fs}
Frequency	f
Gate-drain capacitance	C_{GD}
Gate path resistance	R_G
Gate-source capacitance	C_{GS}
Gate-source leakage current	I_{GSS}
Gate-source resistance	R_{GS}
Gate-source voltage	V_{GS}
Gate threshold voltage	$V_{GS(th)}$
Input capacitance	C_{iss}
Input voltage	V_I
Internal impedance	Z_i
Isolation test voltage	V_{is}
Load resistance	R_L
Maximum power dissipation	P_{DM}
Miller capacitance	C_{mi}
N^- epi layer resistance	R_D
Operating temperature, chip temperature	T_j
Operating voltage	V_{op}
Output capacitance	C_{oss}
Power dissipation	P_D
Pulsed drain current	$I_{D\,puls}$
Pulsed reverse drain current (pulsed dc current, reverse diode)	I_{DRM}
Pulse time	t_p
Reverse recovery charge	Q_{rr}
Reverse recovery time	t_{rr}
Reverse transfer capacitance	C_{rss}
Rise time	t_r
Soldering temperature (max.)	T_{sold}
Storage temperature	T_{stg}
Supply voltage, switching-time measurement	V_{CC}
Temperature of substrate rear side	T_{SR}
Thermal resistance (chip-air)	$R_{th\,JA}$
Thermal resistance (chip-case)	$R_{th\,JC}$
Thermal resistance (chip-substrate rear side)	$R_{th\,JSR}$
Transient thermal impedance (chip-case)	$Z_{th\,JC}$
Turn-off delay time	$t_{d\,(off)}$
Turn-off time	t_{off}
Turn-on delay time	$t_{d\,(on)}$
Turn-on time	t_{on}
Zero gate voltage drain current	I_{DSS}

4. Standards

IEC Publication 147-OC, part 0; IEC Publication 147-1, part 1; IEC Publication 147-2 G, part 2; DIN 41791, part 9; DIN 41792, part 6; DIN 41858; diode: DIN 41741.

1. Information in brief

SIPMOS® transistors are self-blocking field-effect transistors with the terminals gate, source and drain. Applying a voltage between the gate and the source causes the channel resistance between the drain and the source to be driven. As with bipolar transistors, a distinction is made between N-channel and P-channel transistors. N-channel types are driven with a positive gate-source voltage and block positive drain-source voltages. With P-channel types the voltage polarities are reversed. SIPMOS transistors have an unsymmetrical blocking response, i.e. they can only block in the drain-source direction. In the opposite direction, the reverse diode is conducting.

There is a larger range of N-channel transistors than P-channel transistors. The reason for this is the essentially better conductivity of the N channel. With MOS transistors of the same blocking voltage and chip area, the drain-source on-resistance $R_{DS(on)}$ of a P-channel transistor is more than twice as high as that of an N-channel transistor. Production is also more costly for P-channel models, meaning that the price/performance ratio is distinctly in favor of the N-channel transistor.

Features

- voltage-controlled
- high-power switching capability
- easy to parallel
- extremely fast switching
- adjustable switching time
- no storage time
- high cutoff frequency
- high current handling capability
- high voltage loading
- no second breakdown
- linear characteristics

Applications (a selection)

- power supply units
- motor speed control
- dc converters
- inverters
- proximity switches
- switched-mode power supplies (SMPS)
- broadband amplifiers
- AF amplifiers
- ultrasonic generators
- uninterruptible power supplies
- flickerfree data monitors

Further literature

• Short-form catalog:	SIPMOS transistors	B/3065.101
• Brochures:	Reliability of SIPMOS transistors	B/2910.101
	Protective measures against electrostatic charges	B/2909.101
• Application notes:	Flyback-converter SMPS	B1-B3032-X-X-7600
	Buck converter	B1-B2987-X-X-7600
	SMPS	B1-B3031-X-X-7600
	Feed forward converter SMPS	B1-B3030-X-X-7600
	Converter circuits for three-phase motors	B1-B2906-X-X-7600
	Inductive proximity switch	B1-B3093-X-X-7600

SIPMOS = **S**iemens **P**ower **M**etal-**O**xide **S**emiconductor

1.1 Design

SIPMOS transistors have a vertical design with a double-implanted (DIMOS) channel structure (cf. fig. 1). In an N-channel SIPMOS transistor there is an N^+ substrate with a drain metallization below. Above the N^+ substrate is an N^- epi layer the width of which depends on the drain-source breakdown voltage, and doping concentration. Next comes the gate made of N^+ polysilicon; it is embedded in an isolating silicon dioxide layer and serves as an implantation mask for the P region (barrier region) and the N^+ source region. The source metallization covers the entire structure and thus parallels the individual transistor cells on the chip.

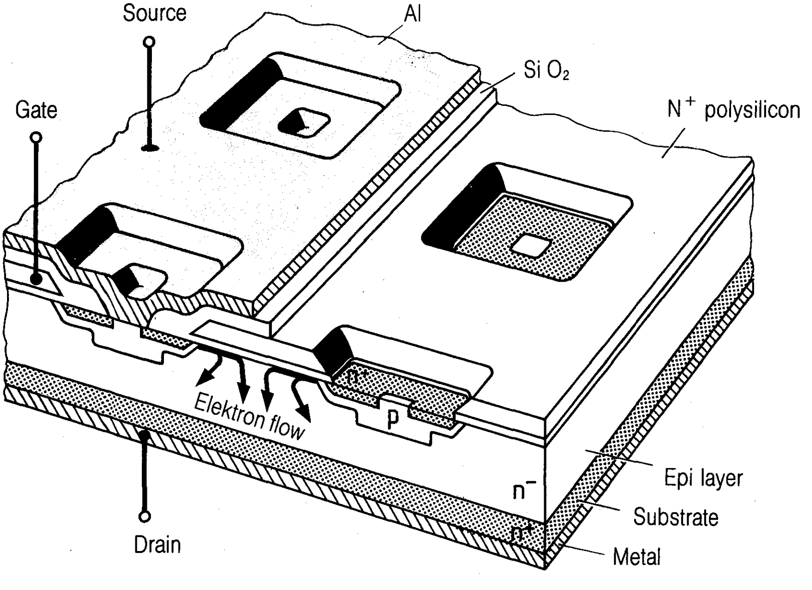


Figure 1 Design of an N-channel SIPMOS FET

The source metallization furthermore provides a secure short circuit between the N^+ and P source regions (cf. fig. 2a). In this way the base-emitter junction of the parasitic, vertical N^+PN^- bipolar transistor is shorted. This is absolutely necessary to prevent it from turning on in a dynamic process. Even in case of high rates of rise of the voltage between drain and source, e.g. of the order of $>2 \times 10^4$ V/µs, the parasitic NPN transistors are not turned on by currents across the drain-source capacitance in pure transistor operation. This effect must be noted, however, for the event of high commutation in the reverse diode. The base-collector diode (PN^- junction) then corresponds to the SIPMOS reverse diode.

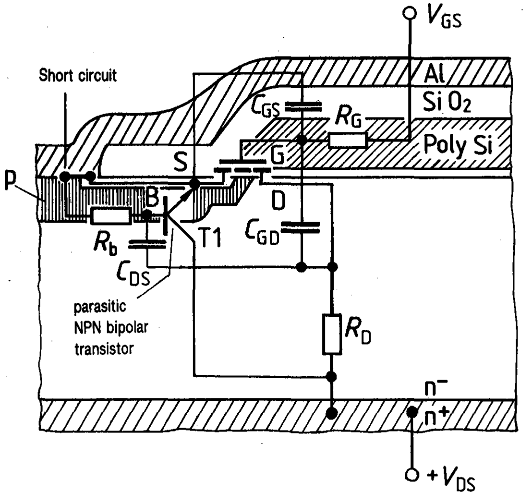


Figure 2a Parasitic bipolar transistor in a cross-section of an N-channel SIPMOS FET

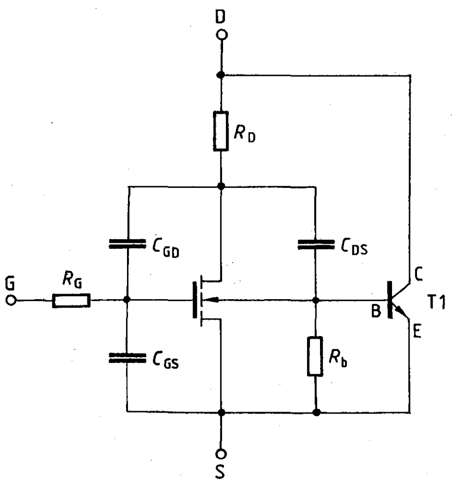


Figure 2b Equivalent circuit diagram with parasitic bipolar transistor

The vertical design of the transistors ensures, i.a. optimal utilization of the chip area, good dissipation of heat, and high drain-source breakdown voltages. The previously mentioned double implantation with its extremely short channel lengths makes very high rates of current rise possible.
The drain side or drain metallization of the SIPMOS chip is attached to the bottom of the package by a conductive epoxy-resin adhesive. For power components, this manner of contacting and attachment has not been usual until now. In this way it is possible to achieve substantially better response of the transistors to changing loads than is the case with conventional, soldered components. The aluminum-wire contacting between the source and the gate on top of the chip is done by ultrasonic bonding.

1.2 Equivalent circuit diagram

It is assumed that various admittances and path resistances appear between the terminals. If you block the transistor, you may learn that the admittances between the terminals are capacitive in nature.
The names of these capacitances are drain-source capacitance C_{DS}, gate-source capacitance C_{GS}, and gate-drain capacitance C_{GD} or Miller capacitance C_{mi}. Furthermore, there is a gate path resistance R_G of the order of approx. 10 ohms which depends, however, to a very large extent on the geometry of the chip. In the drain-source path there is – in turned-on state – a drain-source on-resistance $R_{DS(on)}$, which is essentially composed of the sum of the N^- epi layer resistance R_D and the channel resistance R_{ch} (cf. fig. 3).

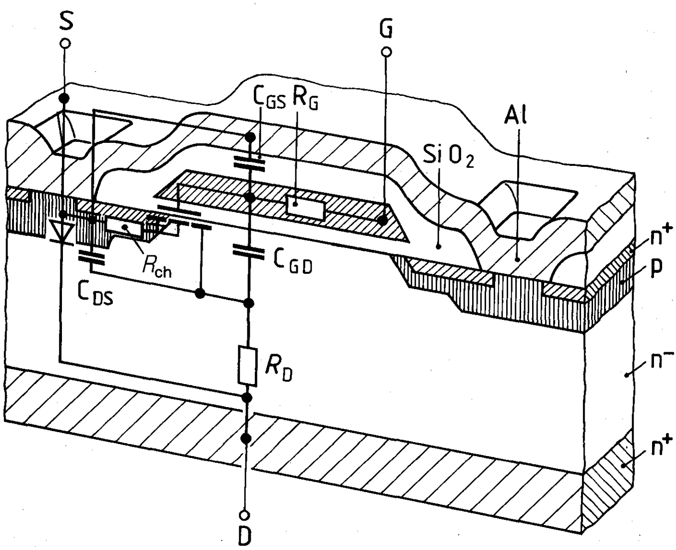


Figure 3 Cross section through an N-channel SIPMOS FET showing the admittances of the equivalent circuit diagram

In the case of low-voltage transistors ($V_{DS} \leq 100$ V) the channel resistance R_{ch} is dominant; with high blocking types ($V_{DS} > 100$ V) it is the epi layer resistance R_D that dominates. This results in the simplified equivalent circuit diagrams of figures 4a and 4b. The equivalent circuit diagrams shown here are only approximations, of course, because there can be as many as 6000 individual transistor cells paralleled on one chip. You are therefore dealing with distributed capacitances and path resistances, which (in large part) alter as a function of the drain-source voltage.

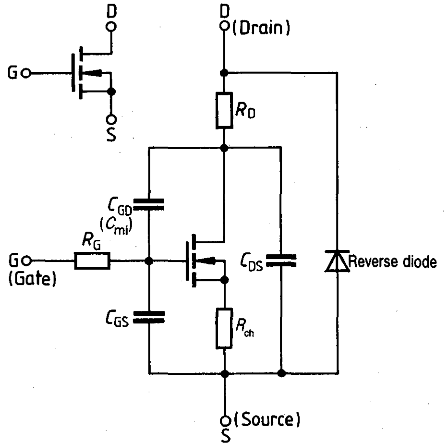


Figure 4a Graphical symbol and equivalent circuit diagram of an N-channel SIPMOS FET

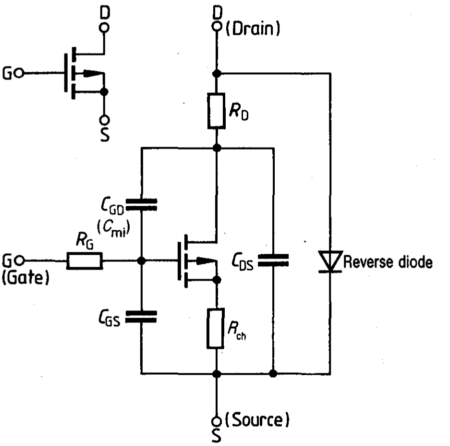


Figure 4b Graphical symbol and equivalent circuit diagram of a P-channel SIPMOS FET

The voltage dependence of the gate-drain or Miller capacitance has serious effects on the switching behavior. In a simplified representation, a sudden rise in Miller capacitance by a factor of about 10 (cf. fig. 5a) can be seen when there are drain-source voltages that are smaller than or equal to the gate-source drive voltage. In fact, this increase in capacitance sets in somewhat earlier and increases exponentially towards the idealized surge point (cf. curves in data sheets).
The capacitances given in the equivalent circuit diagram cannot be measured individually, of course, they are only to be regarded as interrelated quantities (cf. fig. 5b). There is – neglecting the path resistances – the following relationship between them:

input capacitance	$C_{iss} \approx C_{GS} + C_{GD}$
reverse-transfer capacitance	$C_{rss} \approx C_{GD} (C_{GD} \triangleq C_{mi})$
output capacitance	$C_{oss} \approx C_{DS} + C_{mi}$

It should be noted that the specifications in the data book tables refer to a particular operating point.

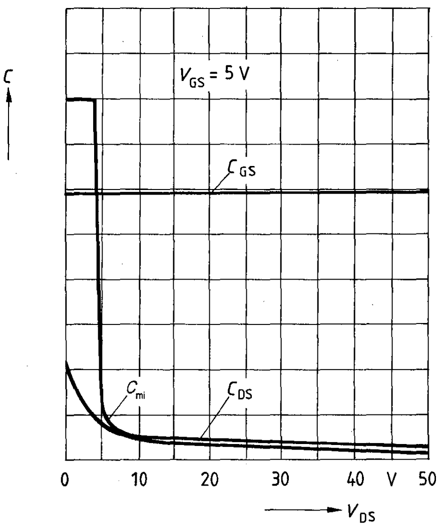


Figure 5a SIPMOS capacitances of equivalent circuit diagram versus drain-source voltage

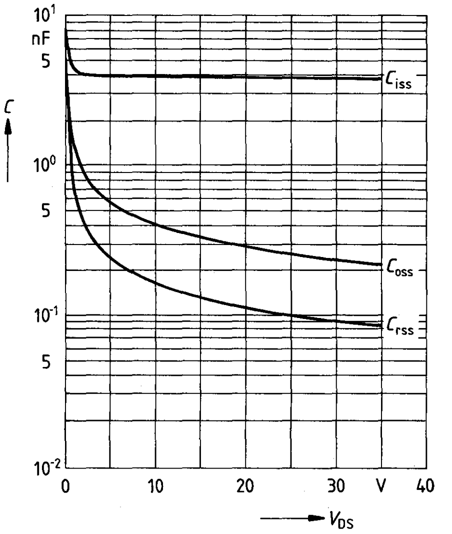


Figure 5b Interrelated capacitances C_{iss}, C_{rss} and C_{oss} versus drain-source voltage, taking the BUZ 45 as an example

1.3 Characteristics

If there is positive drain-source voltage at an N-channel transistor with a drive voltage V_{GS} of 0 V, a temperature and voltage-dependent drain current will flow. This zero gate voltage drain current is specified in the data sheets and amounts to typically a few nA. If the gate-source drive voltage is increased, the transistor remains non-conductive until the gate-source threshold voltage $V_{GS(th)}$ is reached. The typical threshold voltage $V_{GS(th)}$ for power FETs is between 2.1 V and 4.0 V with $I_D = 10$ mA, whereas for small-signal FETs the values specified are $V_{GS(th)} = 0.8$ V to 2.8 V and $I_D = 1$ mA. The threshold voltage is temperature-dependent, the temperature coefficient is -3 mV/°C or -5 mV/°C.
If the gate-source drive voltage is increased to a value higher than the threshold voltage, the drain current increases according to the transfer characteristic ($I_D = f(V_{GS})$, fig. 6). The transconductance is not linear, but depends instead on the type of transistor concerned and lies in the range between 1 and 20 S (cf. data sheet).

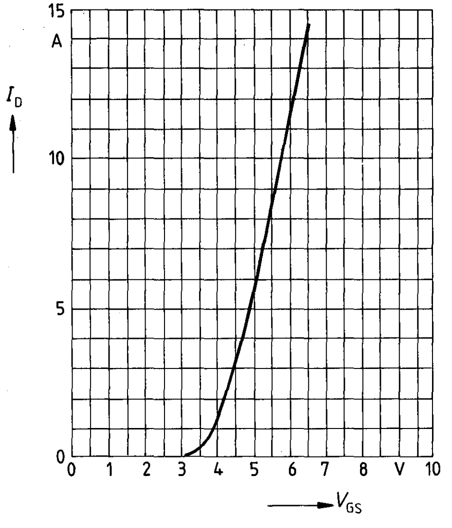


Figure 6 Typical transfer characteristic taking the BUZ 45 as an example

With a gate-source voltage of less than the threshold voltage the transistor is completely blocked. A negative gate-source voltage will not increase the blocking capability, i.e. the entire family of characteristic curves can be passed with drive voltages of one polarity.
The maximum value of the gate-source voltage is ±20 V; it is limited by the thickness of the oxide. This value may not be exceeded, even for a short period, because otherwise a breakdown may occur and destroy the transistor. If the drain current is measured as a function of the drain-source voltage with the gate-source drive voltage as parameter, the output characteristic curves (cf. fig. 7a) are obtained.
In conducting state the transistor behaves like an ohmic resistance, i.e. negative drain currents may also flow. In the III quadrant of the characteristics an ohmic response will, of course, only appear in as much as the threshold voltage of the reverse diode has not yet been exceeded (cf. fig. 7b). This is of special importance when rectifiers with a particularly low forward voltage are to be implemented, or in cases where the recovery time of the reverse diode is to be shortened by increased driving of the transistor.

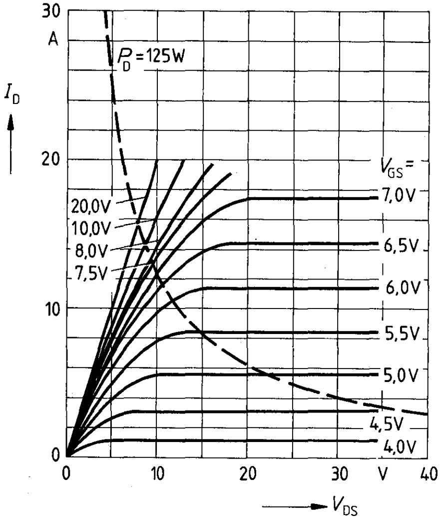


Figure 7a Typical output characteristics taking the BUZ 15 as an example

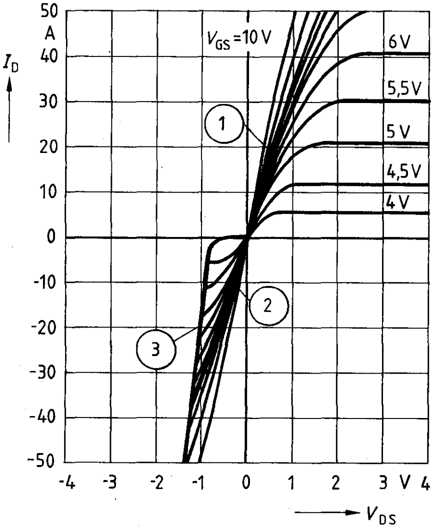


Figure 7b Output characteristics with reverse diode response
(1) transistor output characteristics
(2) reverse diode characteristics; forward
(3) reverse diode characteristics; reverse

1.4 Switching behavior

SIPMOS transistors are voltage-controlled devices and consequently require no drive current in steady state. Each alteration of the operating state causes charge/discharge currents of the input capacitances. Although these charge/discharge currents are of virtually no significance for analog operation in the AF range, they must be considered for RF applications and switching operations. In view of the fact that SIPMOS transistors are primarily used as switches, the following sections deal with details of the switching behavior.

1.4.1 Switching behavior with a resistive load

A driving generator is used that provides a rectangular output voltage and has a defined internal impedance Z_i (cf. test circuit for switching times).

Turn-on procedure

The transistor is driven at time $t = 0$ (cf. fig. 8). The gate-source voltage increases according to the charging process, which results from the input capacitance C_{iss} and the internal impedance Z_i of the drive circuit. The gate path resistance to Z_i is neglected. As soon as the threshold voltage is reached at time t_1, the transistor starts to conduct. The drain-source voltage drops as a function of the increasing voltage drop at the load resistance.
In the period between t_1 and t_2, the drain current increases. The Miller capacitance, which is small at this time, is discharged with the drain-source voltage swing, and at the same time the gate-source voltage increases according to the transfer characteristic (cf. fig. 6).

At time t_2 the drain-source voltage V_{DS} is equal to the gate-source voltage V_{GS}. Then the very much increased Miller capacitance comes into effect. In the period between t_2 and t_3 the transistor operates as a Miller integrator, i.e. the gate-source voltage remains constant, whereas the gate charge current flows across the Miller capacitance and leads to a further decrease in the drain-source voltage. At time t_3 the drain-source voltage has reached the end of the analog region of the output characteristics.
In the period between t_3 and t_4, the input capacitance C_{iss} is charged to the level of the applied drive voltage. The channel resistance is thus further reduced. This can be seen from the shearing of the family of curves in the resistive region of the characteristic. At time t_4 the transistor will have reached its lowest on-resistance $R_{DS(on)}$ (corresponds to the drain-source voltage divided by the drain current).

Turn-off procedure
The turn-off procedure is initiated at the time t_5 by reducing the drive voltage to 0. The input capacitance C_{iss}, which is highest at this time, discharges across the internal impedance Z_i of the driving generator. The gate-source voltage falls to a value at which the instantaneous drain current can still just about be conducted in the resistive region of the characteristics. This is the case at time t_6, with the on-resistance having slightly increased. During the subsequent period between t_6 and t_7, the transistor again acts as a Miller integrator, i.e. the gate-source voltage remains constant, whereas the entire gate drive current flows across the – still increased – Miller capacitance and leads to a rise in the drain-source voltage.

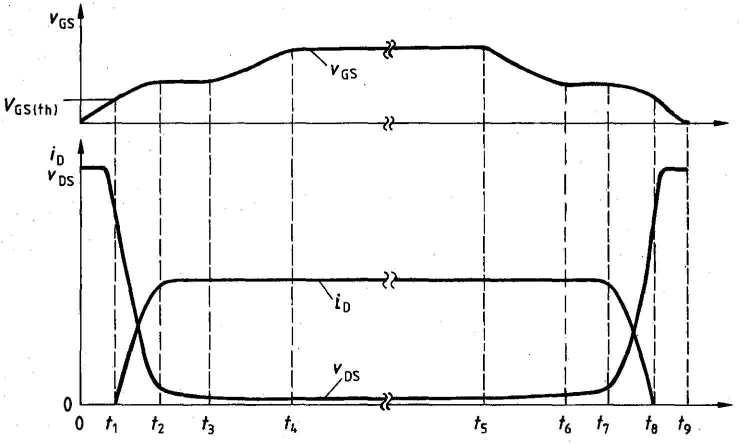
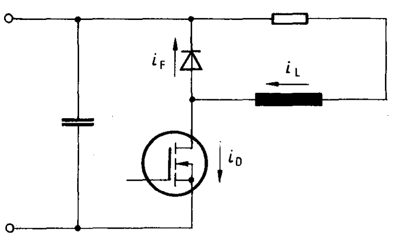
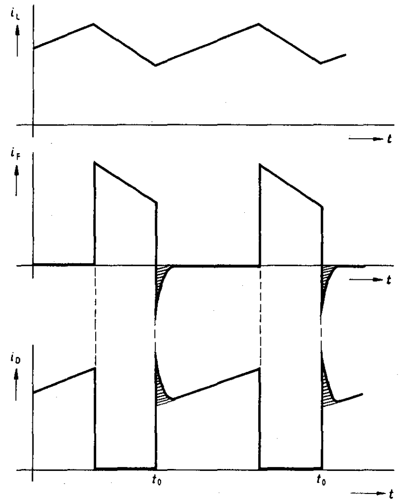


Figure 8 Switching behavior with a resistive load





i_L ≙ load current
i_F = diode current
i_D = transistor current

Figure 9 a Current run when switching an inductive load

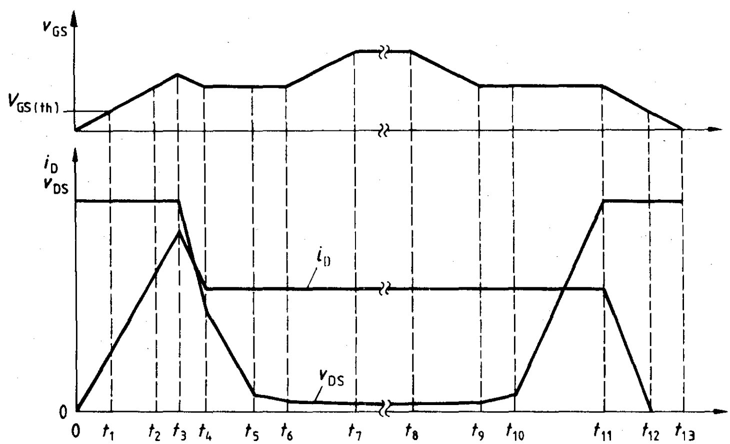


Figure 9 b Switching behavior for a switched inductive load with a free-wheel diode

At the time t_7 the instantaneous gate-source voltage and the drain-source voltage are identical, i. e. the Miller capacitance falls to a low value. In the period between t_7 and t_8, the now smaller Miller capacitance is charged, the drain-source voltage is thus rising quickly. At the same time the drain current drops according to the voltage drop at the load resistance; the gate-source voltage drops as well. At time t_8, the threshold voltage will have been reached and the transistor is completely non-conductive. The input capacitance is subsequently discharged to the level of the drive voltage in the period between t_8 and t_9.

Since a SIPMOS transistor has no storage time, the switching time is solely determined by the charge/discharge of the input capacitance. As a result of the freely selectable internal impedance Z_i of the driving circuit the switching time of SIPMOS transistors can be adjusted over a wide range. The limit for a high internal impedance is given by the thermal rating because of the increasing appearance of switching power losses. With a low internal impedance the charge/discharge current limits of the input capacitance depend on the gate path resistance and the inductance of the drive circuit. When paralleling SIPMOS transistors, it should particularly be noted that oscillations can occur – as a result of feedback across the Miller capacitance and driving across a resistance that is too low – which may cause a failure. Paralleled SIPMOS transistors should consequently be decoupled from one another, e.g. by means of resistors in the gate supply path. (cf. fig. 11).

1.4.2 Switching behavior for a switched inductive load with a free-wheel diode

In steady state, a current flows across the inductive load and the free-wheel diode that does not alter for the duration of the turn-on procedure (cf. fig. 9a). The SIPMOS transistor is blocked and is driven at time t_0 by a rectangular voltage (cf. fig. 9b). The gate-source voltage increases according to the charging process, which results from the input capacitance C_{iss} of the transistor and the internal impedance Z_i of the drive circuit. At the time t_1 the threshold voltage will have been reached. In the period between t_1 and t_2 the drain current increases proportionally to the gate-source voltage, whereas the drain-source voltage remains unaltered at the level of the operating voltage. At time t_2, the transistor takes over the load current entirely.

In the following period between t_2 and t_3 the drain current continues to increase because the diode reverse recovery current has been added to the load current. The maximum value of the drain current occurs at time t_3, which is the reversal point of the diode reverse recovery current. Until this time the drain-source voltage will have remained unaltered and equal to the operating voltage. The gate-source voltage will have reached a value at which the transistor is able to carry the peak current that appears.

In the period between t_3 and t_4 the drain-source voltage drops, while the diode reverse voltage increases accordingly. The drain-source voltage normally drops during the period required by the Miller capacitance to be charged/discharged by the instantaneous gate drive current. During this phase of operation the gate-source voltage remains constant (Miller integrator), as is the case in the following period between t_4 and t_5.

During the period t_3 to t_4, however, the alteration in drain current, caused by the reduction in diode reverse recovery current, additionally influences the switching procedure. As the drain current falls, the gate-source capacitance is discharged via the Miller capacitance. The gate-source voltage drops far enough for the instantaneous drain current to be able to flow. During this period, therefore, an appreciably steeper drain-source voltage slope occurs.

The processes that lead to the voltage response at the drain-source path during period t_3 to t_4 must be noted. Driving a SIPMOS transistor via a low resistance causes a high rate of drain current rise which means also a high commutation rate of the free-wheel diode current. As a result of this there is a high diode reverse recovery current, which falls off sharply after reaching its maximum. The fast alteration in the decaying reverse recovery current of the diode causes voltage overshoot in the circuit and produces, in conjunction with the SIPMOS capacitances, extremely steep drain-source voltage slopes.

In bridge circuits the free-wheel diode is replaced by the reverse diode of the other SIPMOS transistor, and it should be noted that this kind of operation in particular is critical as regards the turning on of the parasitic transistor. To prevent this undesirable effect, the SIPMOS FRED FET (**F**ast-**R**ecovery **E**pitaxial-**D**iode FET) has been developed. The reverse diode of this transistor shows an extremely short reverse recovery time. Thus the reverse currents during commutation are sufficiently reduced to prevent turn-on and second breakdown of the parasitic transistor.

At time t_2, the drain-source voltage is equal to the gate-source voltage; the Miller capacitance increases considerably. In continuation, between t_5 and t_6, there is a drop in the drain-source voltage and the transistor operates now with the increased Miller capacitance as an integrator. In the period between t_6 and t_7, the gate-source voltage increases to the level of the applied drive voltage.

The turn-off procedure starts at time t_8. At time t_9, the gate-source voltage will have reached a value at which the transistor is just about able to conduct the instantaneous drain current in the resistive region of the characteristics. In the period between t_9 and t_{10} the transistor works as Miller integrator with an increased Miller capacitance, and in period t_{10} to t_{11}, when the drain-source voltage has risen to more than the gate-source voltage, the transistor works as an integrator with a small Miller capacitance. At the time t_{11}, the free-wheel diode conducts, the drain-source voltage remains constant. The drain current is then reduced proportionally to the gate-source voltage and becomes 0 at time t_{12}, when the gate-source voltage has fallen to the level of the threshold voltage. Between t_{12} and t_{13}, the input capacitance is discharged to 0.

1.5 Safe operating area (SOA)

Because of the technology on which it is based, the SIPMOS transistor is a very rugged component. Its cellular structure produces a very favorable distribution of the power dissipation in the chip. The positive temperature coefficient of all regions that are involved in conducting currents provides for a kind of self-stabilization. The source metallization forms a reliable short circuit for the base-emitter path of the parasitic bipolar transistor contained in the transistor. In this way, the possibility of the bipolar transistor becoming conductive with the added possibility of a second breakdown is prevented in any situation (except where there is excessive commutation of the reverse diode current).

The current handling capability of the SIPMOS transistor ist outstanding. It may have a maximum drain current pulse that amounts to typically four times the permissible dc drain current.

From the diagram on the safe operating area (see fig. 10) it can be seen that the pulsed drain current may even appear for a short time at maximum drain-source breakdown voltage. The maximum drain-source breakdown voltage may not, even for short periods, be exceeded because otherwise a breakdown may occur and destroy the transistor. Besides the maximum ratings stated in the data sheet for the dc drain current, the actual drain current that is permitted in operation depends also on the thermal resistance (junction-case-cooling medium).

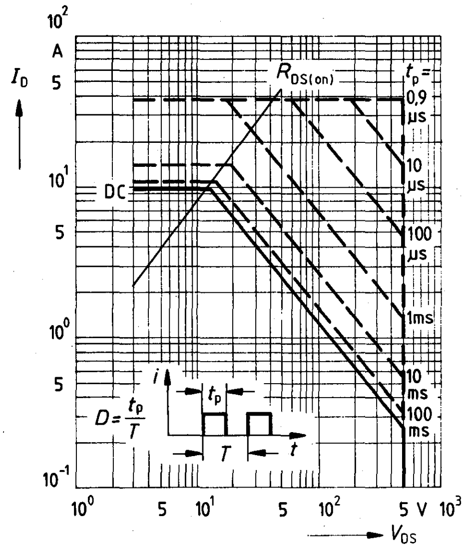


Figure 10 Safe operating area taking the BUZ 45 as an example

1.6 Parallel operation

SIPMOS transistors may be paralleled to increase their switching capability. It should be noted, however, that oscillations may appear because of the fast switching speed and the steep slopes of SIPMOS transistors. These oscillations can be suppressed with a decoupling resistor in each gate path (cf. fig. 11) or by using separate drivers (cf. fig. 12). As a result of component tolerances and unsymmetrical design there may be an irregular distribution of current among paralleled transistors. To prevent an individual transistor from being overloaded it is advisable to reduce the drain current by a factor of 0.8:

$I_{D\,tot} = 0.8 \times I_D \times n$ (where n is the number of transistors to be connected in parallel.)

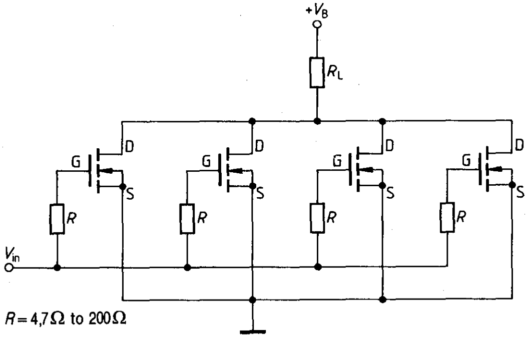


Fig. 11 Parallel configuration with gate resistors

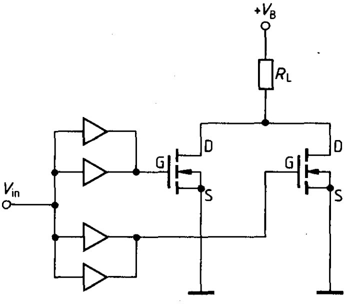


Fig. 12 Parallel configuration with separate drivers

In general the following points should be observed:
- low-induction circuit design
- balanced routing of the load current
- prevent ground loops
- mutually decoupled drive lines
- drain-current determination according to $I_{D\,tot} = 0.8 \times I_D \times n$* ($R_{DS(on)}$ spread)
- voltage supply blocked by a capacitor
- switching speeds as high as possible (parameter spread)

1.7 MOS handling

- The input (gate-source) must be protected against voltages of more than ± 20 V. Even short-term voltage spikes can already destroy the transistor.
- MOS FETs have to be protected against electrostatic charges. The general handling regulations for electrostatic-discharge sensitive (ESDS) devices should be observed. This sensitivity of the devices increases with decreasing chip area and the resulting smaller input capacitance C_{iss}.
- To protect such transistors against electrostatic charge during shipping, they are packed in anti-static containers. When SIPMOS transistors are assembled, the same regulations should be observed as generally apply to MOS devices.
- In circuit design, it should be observed that the transistor is not operated with open-circuited terminals.

1.8 Use of indices

1.8.1 Voltages

Two indices are used, defining the points between which a voltage is measured. Positive potentials of the point defined by the first index correspond to positive values of the voltage referred to the point defined by the second index (reference point), e.g. V_{GS}.

1.8.2 Currents

At least one index is used. Positive currents that appear in the component at the point defined by the first index correspond to positive values of current, e.g. I_{GS}.

*) n = number of transistors to be paralleled

2. Absolute maximum ratings

The limits stated in the data sheets are absolute limit values. Exceeding one of these limits, can lead to the destruction of the component, even if the other limits are not fully utilized. If not otherwise stated, the maximum ratings apply to 25°C.

2.1 Drain-source voltage V_{DS}

Maximum permissible value of the voltage between drain and source.

2.2 Drain-gate voltage V_{DGR}

Maximum permissible value of the voltage between drain and gate, when bridging gate-source connections with a predefined resistance.

2.3 Continuous drain current I_D

Maximum permissible value of the direct current at the drain connection.

2.4 Pulsed drain current $I_{D\ puls}$

Maximum permissible peak value of the drain current during pulse operation as specified in the diagram "safe operating area" for a respective pulse width and duty cycle. For individual pulses, higher values are permitted at a maximum transistor drive. Those values can be obtained upon request.

2.5 Gate-source voltage V_{GS}

Maximum permissible value of the voltage between gate and source.

2.6 Maximum power dissipation P_D

Maximum permissible power dissipation of the transistor.

2.7 Operating temperature range T_j

The range of the permissible chip temperature, within which the transistor may be operated continuously.

2.8 Storage temperature range T_{stg}

The temperature range within which the transistor may be stored or transported without electrical load.

2.9 Soldering temperature T_{sold}

The maximum permissible temperature during soldering at the terminals of the component, at a specified distance to the case and for a specified time. (see section 7.3)

2.10 Thermal resistance $R_{th\ JC}$

Thermal resistance between chip and case at thermal equilibrium.

2.11 Thermal resistance $R_{th\ JA}$

Thermal resistance between chip and ambient air at thermal equilibrium.

2.12 Thermal resistance $R_{th\ JSR}$

Thermal resistance between chip and substrate metallization rear side at thermal equilibrium. This thermal resistance applies to SOT 23 and SOT 89 packages.

2.13 Isolation test voltage V_{is}

An isolation test between drain connection and base plate is carried out for the TO 238 package. Measurement is subject to a dc test voltage specified by DIN 57558 and standard climate at 23°C and 50% relative humidity in accordance with DIN 50014, as well as short-circuited drain-source-gate connections. DIN 57558 requirements are met.

2.14 Humidity category
The humidity categories are specified in accordance with DIN 40040.

3. Electrical characteristics
The values stated under "electrical characteristics" are to be taken as typical values. In many cases, these electrical characteristics are supplemented by limit values.
The values apply to 25 °C if no other temperature is specified.

3.1 Drain-source breakdown voltage $V_{(BR)\ DSS}$
The voltage between the drain and source at a specified drain current; gate and source short-circuited.

3.2 Gate threshold voltage $V_{GS\ (th)}$
The value of the gate-source voltage at a specified drain current and at a specified drain-source voltage.

3.3 Zero gate voltage drain current I_{DSS}
The value of the drain current at a specified drain-source voltage and short-circuited gate-source.

3.4 Gate-source leakage current I_{GSS}
The value of the gate leakage current at a specified gate-source voltage and short-circuited drain-source.

3.5 Drain-source on-state resistance $R_{DS\ (on)}$
The value of the resistance between the drain and source at a specified gate-source voltage and drain current.

3.6 Forward transconductance g_{fs}
Ratio between the change in drain current for a given change in gate-source voltage at specified drain-source voltage and specified drain current.

3.7 Input capacitance C_{iss}
That capacitance measured between gate and source connections with drain-source connections short-circuited for ac voltages. The values of the dc voltage between gate-source and drain-source connections, as well as the measuring frequency are specified.

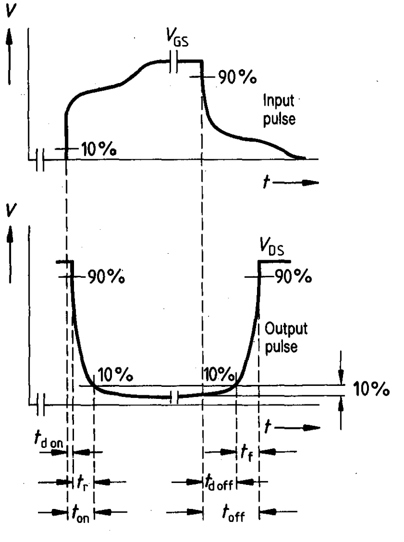
3.8 Output capacitance C_{oss}
That capacitance measured between the drain and source connections with the gate-source connections short-circuited for ac voltages. The values of the dc voltage between gate-source and drain-source connections, as well as the measuring frequency are specified.

3.9 Reverse transfer capacitance C_{rss}
That capacitance measured between drain and gate with the source connected to ground. The values of the dc voltage between gate-source and drain-source, as well as the measuring frequency are specified.

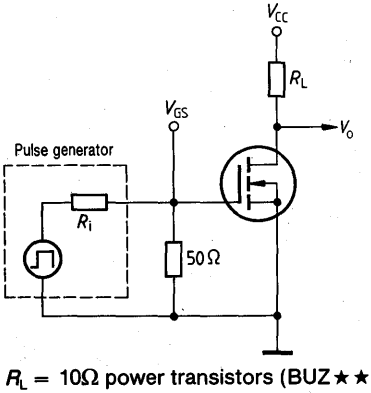
3.10 Turn-on time $t_{on} = t_{d\ (on)} + t_r$
Sum of:
the turn-on delay time $t_{d\ (on)}$ measured between the 10% value of the gate-source voltage and the 90% value of the drain-source voltage, and the rise time t_r measured between the 90% value and the 10% value of the drain-source voltage.
Circuitry and parameter are specified.

3.11 Turn-off time $t_{off} = t_{d\,(off)} + t_f$
Sum of:
the turn-off delay time $t_{d\,(off)}$ measured between the 90% value of the gate-source voltage and the 10% value of the drain-source voltage,
and the fall time t_f measured between the 10% value and the 90% value of the drain-source voltage.
Circuitry and parameter are specified.

3.12 Definition of switching times



3.13 Test circuit for measuring the switching time



R_L = 10Ω power transistors (BUZ★★)
R_L = 100Ω small signal transistors (BSS★★★)

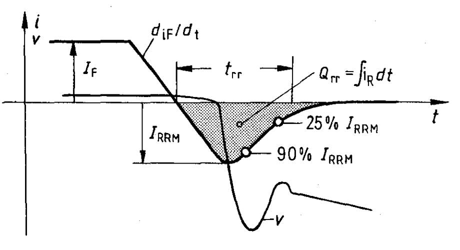
4. Reverse diode characteristics

4.1 Continuous reverse drain current I_{DR}
Maximum permissible value of the dc forward current.

4.2 Pulsed reverse drain current I_{DRM}
Maximum permissible peak value of the reverse diode current for pulse operation. The duty cycle is the same as the one specified for the transistor.

4.3 Diode forward on-voltage V_{SD}
Diode forward voltage between source and drain in the on-state. The forward current I_F, the voltage V_{GS}, and the chip temperature T_j are specified.

4.4 Reverse recovery time t_{rr} and reverse recovery charge Q_{rr}
Respectively stated is a typical value for the test and auxiliary conditions specified in the data sheet (refer to figure according to DIN 41 782). For FRED FETs*, maximum values have been specified.



4.5 Repetitive peak reverse current I_{RRM}
The typical value for the repetitive peak reverse current of the reverse diode is specified in the data sheets for FRED FETs.

5. Diagrams

5.1 Power dissipation P_D
The power dissipation P_D is shown versus case temperature T_{case}.

5.2 Typical output characteristic
Drain current I_D is shown versus drain-source voltage V_{DS}, with V_{GS} and pulse width as parameter.

5.3 Safe operating area
Maximum drain current I_D shown versus drain-source voltage V_{DS}. Parameters are pulse width, duty cycle, and case temperature. Within this range, all values of I_D and V_{DS} are permitted, if they do not thermally overload the transistor.

5.4 Typical transfer characteristic
Drain current I_D is shown versus gate-source voltage V_{GS}. Parameters are chip temperature T_j, pulse width, and drain-source voltage V_{DS}.

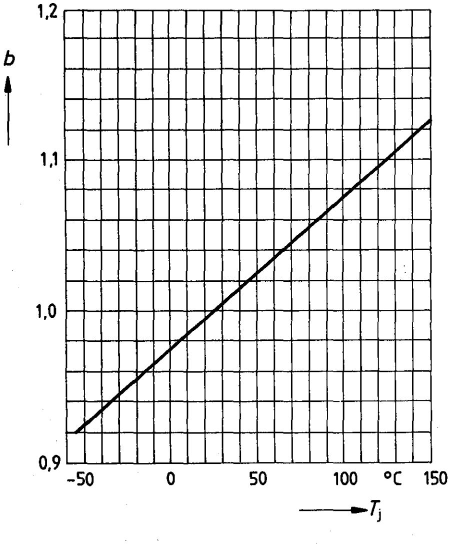
5.5 Typical transconductance g_{fs} versus continuous drain current I_D
The forward transconductance is shown versus the drain current. Parameters are pulse time and drain-source voltage V_{DS}.

*) FRED FETs are transistors with a fast-recovery reverse diode (Fast Recovery Epitaxial Diode Field-Effect Transistor).

5.6 Drain-source on-state resistance $R_{DS\ (on)}$
Chip temperature shown versus the permissible operating temperature range. The characteristics represent production spreads; they apply to a specified continuous drain current I_D at the gate threshold voltage $V_{GS\ (th)}$ stated.

5.7 Drain-source breakdown voltage $V_{(BR)\ DSS}$ versus chip temperature T_j
A constant "*b*" is stated dependent on the chip temperature over the permissible operating temperature range, for which the following mathematical relationship holds true:

$V_{(BR)\ DSS}\ (T_j) = b \times V_{(BR)\ DSS}\ (25\ °C)$. $V_{(BR)DSS}$ (25° C) is the value specified in the data sheets.



5.8 Continuous drain current I_D versus case temperature T_{case}
Shown is the maximum permissible dc drain current versus case temperature.

5.9 Typical capacitances
The input capacitance C_{iss}, the output capacitance C_{oss}, and the reverse transfer capacitance C_{rss} are shown versus the drain-source voltage at a frequency *f* of 1 MHz and a gate-source voltage V_{GS} of 0V.

5.10 Gate threshold voltage $V_{GS\ (th)}$
The spread of the gate threshold voltage $V_{GS\ (th)}$ is shown versus the chip temperature T_j at parameters $V_{DS} = V_{GS}$ and I_D.

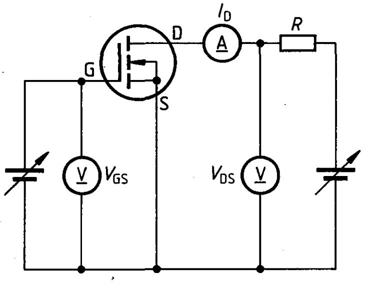
5.11 Transient thermal impedance $Z_{th\ JC}$
The transient thermal impedance response $Z_{th\ JC}$ is shown versus pulse widh at a specified duty cyle $D = t/T$.

5.12 Forward characteristic of the integrated "reverse diode"
Continuous reverse drain current I_{DR} shown versus forward voltage V_{SD}. Pulse width is parameter.

5.13 Typical drain-source on-state resistance $R_{DS\,(on)}$
The typical drain-source on-resistance $R_{DS\,(on)}$ is shown versus drain current I_D at $T_{case} = 25\,°C$ and varying gate-source voltage.

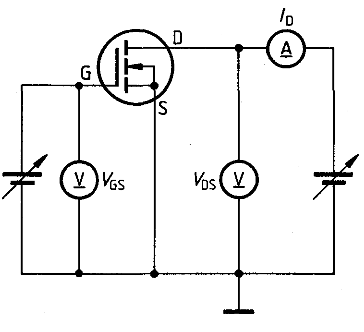
6. Test circuits (according to DIN 41792, sheet 6, and IEC 147-2G)
The temperature values for the specified parameters, stated in the data sheets, are to be adhered to during the respective measurements.

6.1 Continuous drain current I_D



Schematic circuit diagram to measure the continuous drain current I_D
R serves as protective resistor. The specified gate-source voltage V_{GS} is set. If V_{GS} is specified to be 0V, gate and source must be short-circuited.

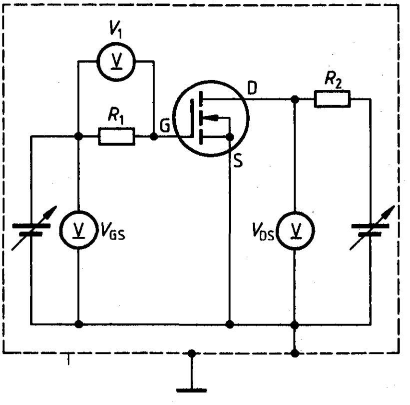
6.2 Drain-source on-state resistance $R_{DS(on)}$



Schematic circuit diagram to measure the drain-source on-state resistance $R_{DS(on)}$.
Generally, the drain-source on-state resistance $R_{DS(on)}$ is measured in the saturation range. The internal resistance of the voltmeter V_{DS} must be considerably higher than the on-resistance $R_{DS(on)}$.

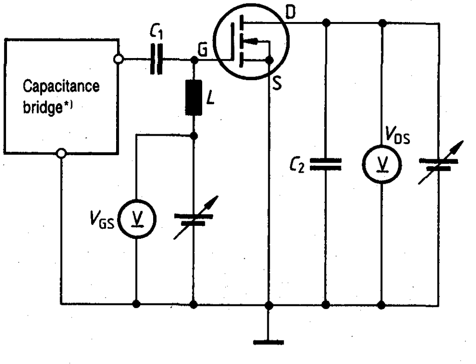
6.3 Gate threshold voltage $V_{GS(th)}$
(Refer to schematic circuit diagram 6.1) The gate-source voltage, starting from the value 0, is slowly increased until the specified continuous drain current I_D is reached. Parameter is the drain-source voltage V_{DS} which has the same rating.

6.4 Gate-source leakage current I_{GSS}



Schematic circuit diagram to measure the gate-source leakage current I_{GSS}
R_1 and R_2 serve as protective resistors. The value of R_1 should be lower than $V_{GS}/100\ I_{GSS}$. V_1 is a very sensitive voltmeter with an internal resistance of at least 100 times the value of R_1. The leakage current is given by $I_{GSS} = V_1/R_1$.
The circuit must be electrostatically shielded. Care must be taken that the measurement is not falsified by leakage currents that may be caused by the circuit layout.

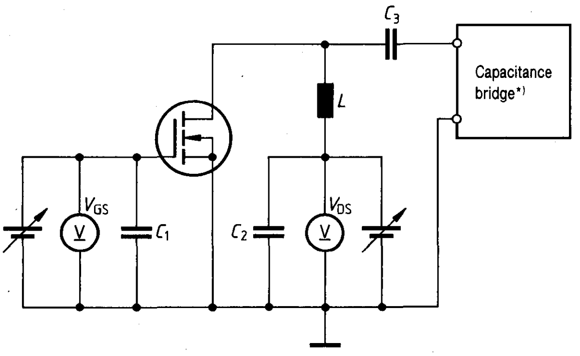
6.5 Input capacitance C_{iss}



Schematic circuit diagram to measure the input capacitance C_{iss}, using a bridge without dc passage.
The capacitors C_1 and C_2 must form a short circuit at the measuring frequency. The inductor L decouples the dc supply.

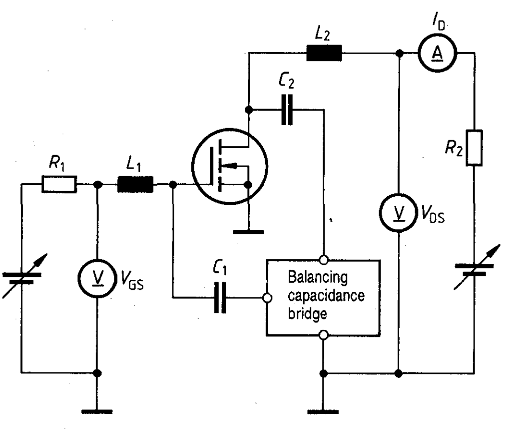
*) e.g. HP 4280 A

6.6 Output capacitance C_{oss}



Schematic circuit diagram to measure the output capacitance C_{oss}, when using a bridge without dc passage.
The capacitors C_1, C_2, and C_3 must form a short circuit at the measuring frequency. The inductor L decouples the dc supply.

6.7 Reverse transfer capacitance C_{rss}



Schematic circuit diagram to measure the reverse transfer capacitance C_{rss}, when using a bridge without dc passage.
The capacitors C_1 and C_2 must form a short circuit at the measuring frequency. The inductors L_1 and L_2 decouple the dc supply.

*) e.g. HP 4280 A

7. Mounting instructions

The transistors may be mounted in any position.
If it is required to bend the leads, this should be done in a bending device. If it is necessary to bend the leads by hand, the lead must be held with pliers between the bending point and the header. Please avoid notches and repeated bending of the leads. For insulated mounting of transistors in the cases TO 202, TO 204, TO 218, TO 220, note the increased thermal resistance between transistor and heat sink.

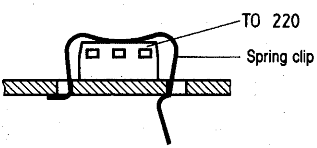
Mounting parts

The mounting parts shown in the fallowing are not covered by the Components Group's product line. Please contact the respective manufacturers.

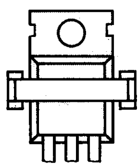
7.1 Mounting procedures

7.1.1 Plastic package TO 220

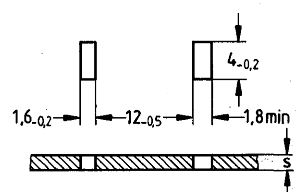
Non-insulated construction with spring clip



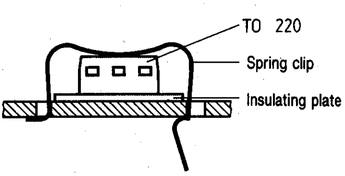
Chassis thickness $s =$ 1 to 2 mm
Contact pressure $F =$ 100 to 250 N



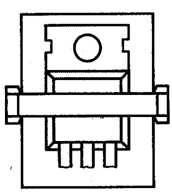
Chassis center spacing



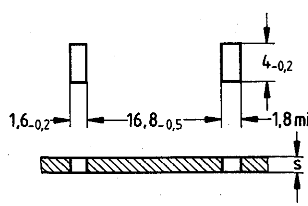
Insulated construction with spring clip



Chassis thickness $s =$ 1 to 2.5 mm
Contact pressure $F =$ 100 to 250 N



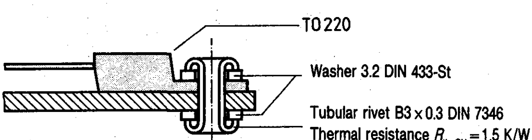
Chassis center spacing



Dimensions in mm

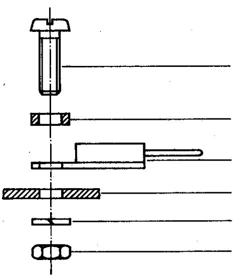
Non-insulated construction with rivets

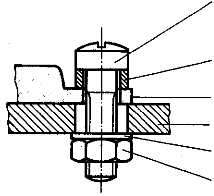
The prefabricated rivet head must always be located at the terminal side, and at least one planar washer (in accordance with DIN 433) is to be provided at the snaphead side as well as one at the heat sink side. During riveting, it has to be observed that the parts will not be deformed and that the bias will be maintained during head formation.



Non-insulated construction by screw mounting

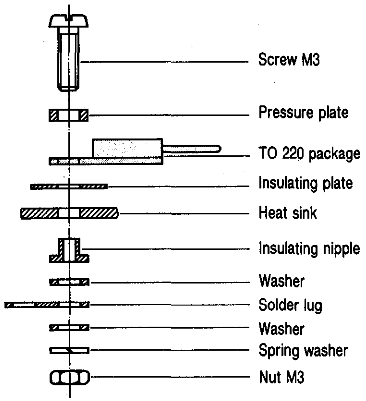
- Heat sinks or mounting plates made of aluminum must at least have a thickness of 2 mm; with copper the minimum value is 1.2 mm. Smaller thickness will cause heat sink deformation which is impermissible for the heat transition.
- The mounting hole in the mounting plate has to be levelled down; the maximum diameter is 3.7 mm. Countersinking may not show a diameter larger than 4 mm.
- The screw head should not be located directly on the terminal, but over the pressure plate to distribute the force properly.
- The nut must always be at the mounting plate side and should be secured by a spring washer (DIN 137).
- Screw tools must not touch the plastic package. Therefore, cross-slotted screws are preferred.
- The recommended mounting torque for M3 and M 3.5 screws is 60 Ncm with the screw material 5.8. This results in a mounting force of max. 1600 N.
  Compared with 60 Ncm, applying a max. torque of 80 Ncm to such screws will not improve the thermal contact resistance considerably.

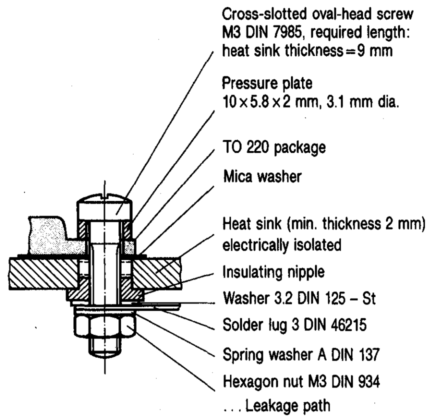




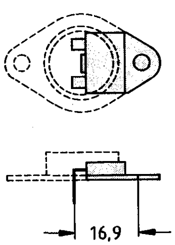
Insulated construction by screw mounting

- This construction permits a maximum leakage path of 1.0 mm. That corresponds to insulation group Ao according to VDE 0110 for 250 V ac (rms).
- The hole diameter in the heat sink may be between 3.8 mm and 5.5 mm. The hole has to be levelled down.
- With the maximum diameter, the contact surface must be flat up to the hole edge.
- During assembly, particularly when passing the screw through the mica washer, it has to be observed that this mica washer will not be damaged.
- Screw tools must not touch the plastic package; therefore, cross-slotted screws are preferred.
- The mounting torque should not exceed 60 Ncm with the insulated construction.

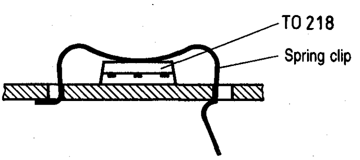


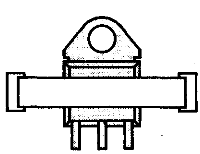


7.1.2 Plastic package TO 218 (TOP 3)
Screw mounting of a TO 218 package instead of a metal case TO 3

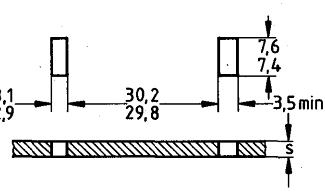


Non-insulated construction with spring clip





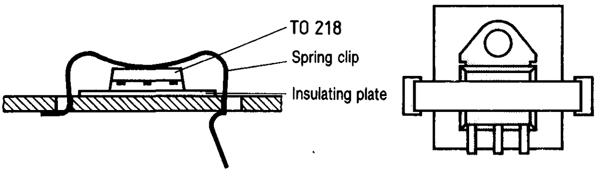
Chassis center spacing



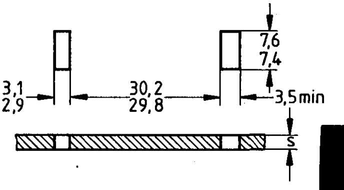
Chassis thickness $s = 1.9$ to 2.1 mm
Contact pressure $F = 100$ to 250 N

Dimensions in mm

Insulated construction with spring clip



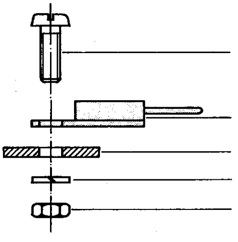
Chassis center spacing



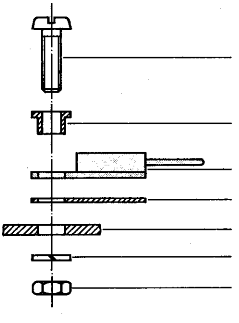
Chassis thickness s = 1.9 to 2.1 mm
Contact pressure F = 100 to 250 N

Dimensions in mm

Non-insulated construction by screw mounting

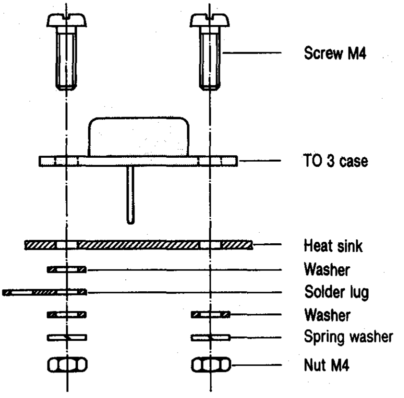


Insulated construction by screw mounting

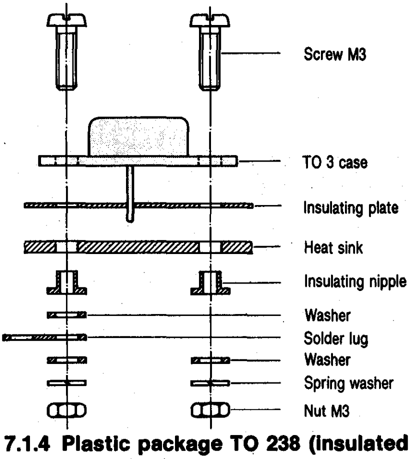


7.1.3 Metal case TO 3

Non-insulated construction by screw mounting

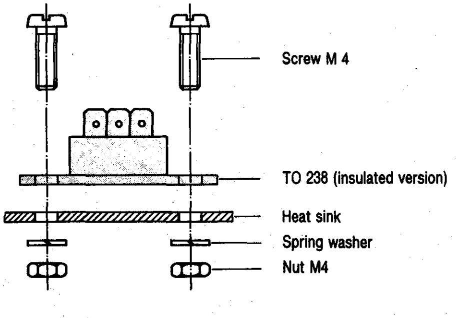


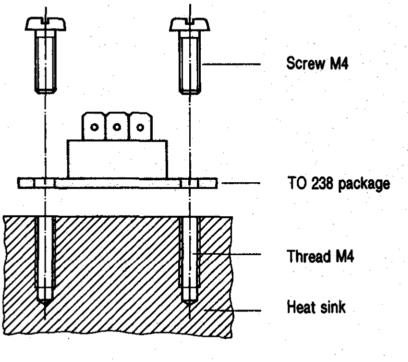
Insulated construction by screw mounting



7.1.4 Plastic package TO 238 (insulated version)

Directly insulated construction (to base plate)





7.2 Heat dissipation

In order to achieve better heat dissipation, power transistors are mounted on heat sinks. In these cases, the thermal resistance of the chip through the heat sink to ambient air $R_{th\,JA}$ is given by:

$R_{th\,JA} = R_{th\,JC} + R_{th\,CA}$

The thermal resistance of the heat sink $R_{th\,CA}$ is calculated according to the following approximative equation (flat plate cooling fins – not applicable for heat sink with profile):

$$R_{th\,CA} = \frac{3.3}{\sqrt{\lambda\,d}}\,C\,\frac{0.25}{} + \frac{650}{A}\,C$$

Thermal conductance λ of the heat sink

Material	Thermal conductance λ
Aluminum	2.1 W/K cm
Copper	3.8 W/K cm
Brass	1.1 W/K cm
Steel	0.46 W/K cm

d thickness of the heat sink in mm
A area of the heat sink in cm^2
C correction factor for position and surface of heat sink

Correction factor

Position \ Surface	shiny	blackened
vertical	0.85	0.43
horizontal	1	0.5

This formula applies to approximately square-shaped heat sinks if the transistor, mounted in the center of the heat sink, represents the only heat source on that heat sink. The values of the constants and correction factor hold true in static air up to an ambient temperature of approx. 45 °C, if no heat radiating components are in the vicinity.

Thermal resistance R_{th} of a mica washer

Case	Thickness of the dry washer 50 µm	100 µm	Washer, greased on both sides, reduces the resistance by:
TO 202	8.0 K/W	10.0 K/W	4.0 K/W
TO 204 (TO 3)	1.25 K/W	1.5 K/W	0.9 K/W
TO 218 (TOP 3)	1.5 K/W	2.0 K/W	0.8 K/W
TO 220	1.5 K/W	2.0 K/W	0.8 K/W

Insulating washers produce better thermal resistance than mica washers do.

7.3 Soldering instructions

Every semiconductor is extremely sensitive to the exceeding of its maximum permissible chip temperature. When soldering semiconductors, care must be taken that the components will not be thermally overloaded. The chip temperature may not exceed 200 °C during soldering (max. 1 minute). The leads must not be subject to high mechanical stress during soldering.

7.3.1 Small signal transistors (BSS★★★)

Soldering data for the plastic packages TO 202, TO 92

Soldering temperature	Lead length 0.5 mm	Lead length 1.5 mm	Lead length 5 mm
245 °C	4.0 s	5.0 s	10.0 s
260 °C	3.0 s	5.0 s	5.0 s
300 °C [1])	2.5 s	3.0 s	5.0 s

Soldering data for the metal cases TO 18

Soldering temperature	Lead length 0.5 mm	Lead length 1.5 mm	Lead length 5 mm
245 °C	5.0 s	6.0 s	13.0 s
260 °C	3.5 s	4.0 s	10.0 s
300 °C [1])	3.0 s	3.5 s	8.0 s

Surface-mounted components (SMC) SOT 23, SOT 89
Small signal transistors in SOT 23 and SOT 89 packages are intended for surface mounting. The following soldering instructions apply to substrates with conductor paths and resistors having a Sn-Pb surface.
During soldering, the substrate may not be subject to high mechanical stress caused by temperature, temperature cycles, or fixing parts.

● **Component placement**
Placing semiconductors on the substrate must be carried out with utmost precision. **Note:** the leads must be absolutely plane and exactly situated on the conductor paths. In the case of flow soldering the components have to be attached to the PC board by adhesive. High demands are placed on the adhesive in as much as the process of applying the adhesive is concerned and the automatic assembly machine. The adhesive must be electrically neutral and not produce any chemical reactions with the materials that are used for the PC board and the components. An adhesive that can be recommended for its compliance with these different requirements is RTV 3140 from Dow Corning. The application of the adhesive must not impair the following soldering process, e.g. by covering the solder pads. Following the insertion of the components the adhesive has to be hardened. The usual methods involving UV radiation and/or heat impose no critical stresses on Siemens components.
Other soldering processes do not require any adhesive because the soldering flux or paste serves as the adhesive.

● **Assembly**
Siemens offers an automatic assembly machine available for surface-mounted components. This machine is computer-controlled and of modular design so that it can be adapted to diverse user requirements.

● **Soldering**
Depending on the application of the components there are different soldering methods to be considered. We recommend that the following points be observed to ensure that soldered connections of the required quality and reliability are obtained:

[1]) These values apply only when using a soldering iron. The lead length is measured from the soldering point.

Soldering flux
Colophony flux is recommended (F-SW 32 in acc. with DIN 8511). The pins of the components have an Sn-Pb coating and provide for good soldering even after storage for some time.

Solder
An Sn-Pb solder should be used, e.g. L-Sn 60 Pb for flow soldering, and L-Sn 63 PbAg (DIN 1707) for other soldering methods. In the case of soldering pastes the metal contents should make up more than 80%.

Soldering temperature
During the soldering process a maximum soldering temperature of 260 °C should not be exceeded for a dwell time of 5 s. At lower soldering temperatures the duration may, of course, be extended appropriately.

Flow soldering
The bath temperature is generally 255 °C ± 5 °C, this applying for the mentioned soldering time of 5 s. What is important for the soldering results that are achieved is the position of the components, their spacing and orientation referred to the direction in which they are unreeled.

Reflow soldering
With reflow soldering, heating is performed in a furnace where the items are gradually brought to a temperature of approx. 200 °C. The duration of soldering is approx. 5 to 10 s.

Vapor-phase soldering
This is a special form of reflow soldering and similar data applies.

Iron soldering
Soldering with a temperature-controlled miniature iron, for example, is permissible, but it is important to ensure that the tip does not come into contact with the component. This method should nevertheless only be used in exceptional cases (repairs, etc.) because of the associated disadvantages, e.g. risk of damaging the components and PC boards, inaccurate positioning, etc.

Cleaning agents.
If cleaning is required after the soldering process, we recommend a mild solvent such as isopropyl alcohol or freon.

7.3.3 Power transistors (BUZ★★★)

Soldering data for the metal case TO 204 (TO 3)

Soldering temperature	Lead length 1.6 mm	Lead length 5 mm
245 °C	15 s	20 s
260 °C	12 s	15 s
300 °C[1])	10 s	15 s

Soldering data for the plastic packages TO 202, TO 218, TO 220

Soldering temperature	Lead length 1.6 mm	Lead length 5 mm
245 °C	7 s	10 s
260 °C	7 s	7 s
300 °C [1]	4 s	7 s

7.4 Maintenance

As they are electrical components without moveable parts, transistors are generally maintenance-free. The insulation path, however, is neither protected against splashing and dripping, nor against dust. In order that the insulation and the heat dissipation of the transistors will not be impeded, transistors and heat sinks should be cleaned from time to time.

8. Quality specifications

8.1 Delivery quality

In this data book, the delivery quality is characterized by maximum ratings and by deviation limits of characteristic data.

8.2 Acceptance quality

To judge the acceptance quality level (AQL) of delivery lots, certain AQL values have been provided for the sampling inspection of the quality characteristics (attributes). Inspection by attributes is based on the single sampling plan for normal inspections, inspection level II in accordance with DIN 40080 (or IEC Publ. 410, ABC-STD-105D).

8.3 Classification of defects

A defect will exist if a component characteristic does not correspond to the data sheet specification. The defects are classified according to their type and their extent.

8.3.1 Defect type

- Defects at cases and terminals
- Defects in the electrical features

8.3.2 Defect extent

- Tolerance defect: exists when a characteristic value exceeds the permitted range.
- Total defect: exists when any functional application of the component is excluded.

8.4 AQL table

Defect type	AQL value
total defects	0.1
sum of defects in electrical features	0.4
sum of defects at cases and terminals	0.4

The AQL values do not characterize the actual quality of the individual delivery lots, but when applying the sampling inspection plan they determine the degree of acceptance or rejection. The average defect percentage in delivery is generally less than the AQL values.

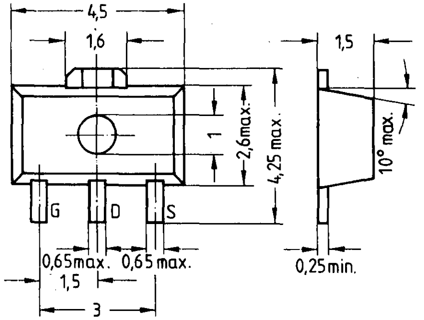
[1] These values apply only when using a soldering iron.
The lead length is measured from the soldering point.

Small Signal Transistors

Drain-source voltage V_{DS} = **200 V**
Continuous drain current I_D = **0,28 A**
Drain-source on-resistance $R_{DS(on)}$ = **6,0 Ω**

Description SIPMOS small signal FET, N-channel enhancement mode
Case Plastic package SOT 89 in accordance with JEDEC
Approx. weight 0,1 g

Type	Marking	Ordering code
BSS 87	KA	Q62702-S453



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	200V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	200V
Continuous drain current, T_A = 30 °C	I_D	0,28A
Pulsed drain current, T_A = 25 °C	I_{Dpuls}	1,1A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	1W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤125K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	200	–	–	V	V_{GS} = 0V I_D = 0,5 mA
Gate threshold voltage	$V_{GS\,(th)}$	0,8	2,2	2,8		V_{DS} = V_{GS} I_D = 1mA
Zero gate voltage drain current	I_{DSS}	– –	4 8	60 200	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 200V V_{GS} = 0V
		– – –	– – –	200 – –	nA	T_j = 25 °C V_{DS} = 60V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100		V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	5,5	6,0	Ω	V_{GS} = 10V I_D = 0,4A

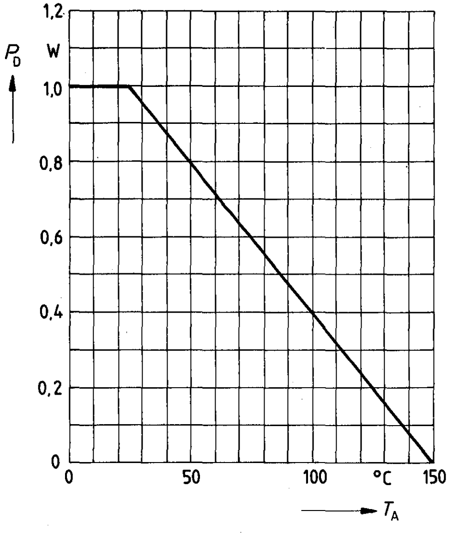
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	0,14	0,2	–	S	V_{DS} = 25V I_D = 0,4A
Input capacitance	C_{iss}	–	110	–	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	20	–		
Reverse transfer capacitance	C_{rss}	–	5	–		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	15	20	ns	V_{CC} = 30V I_D = 0,28A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	70	90		
	t_f	–	40	55		

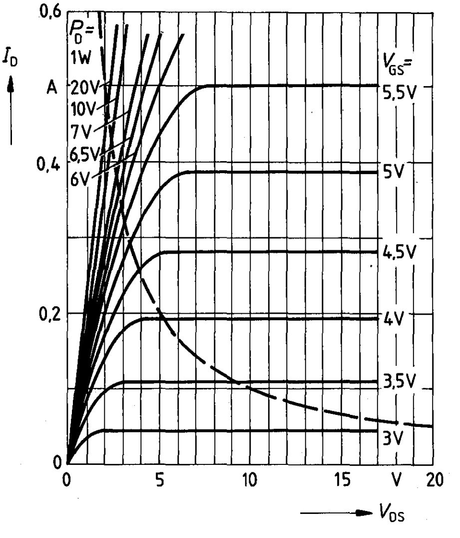
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	0,28	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	1,1		
Diode forward on-voltage	V_{SD}	–	1,0	1,4	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	–	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	–	–	µC	

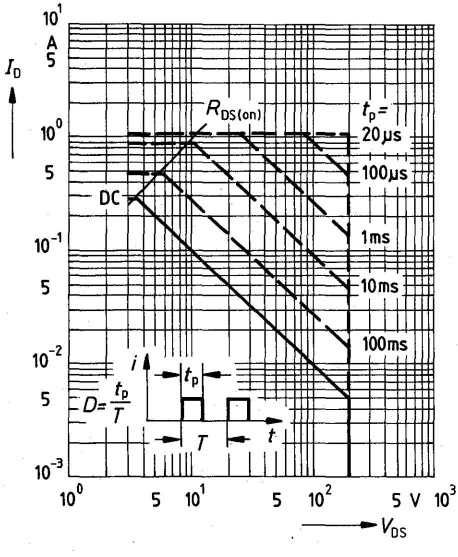
Power dissipation $P_D = f(T_A)$



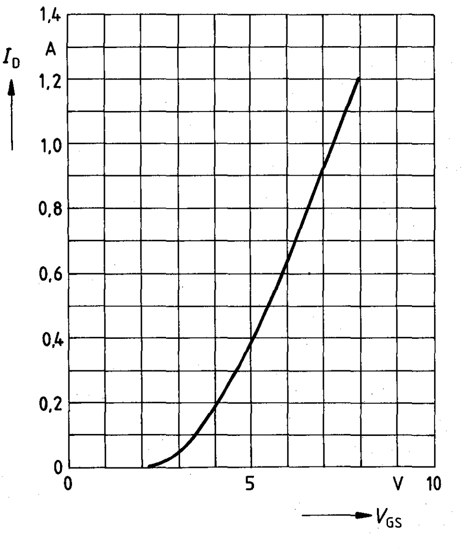
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



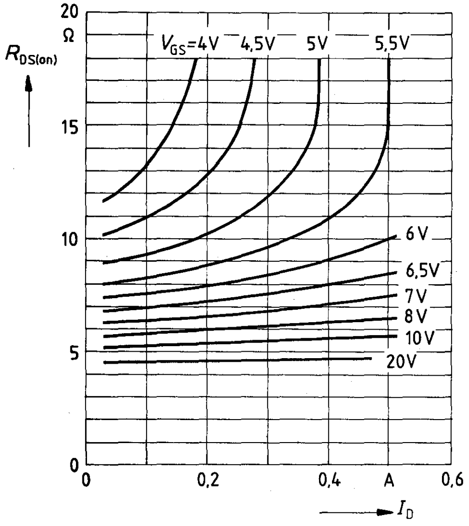
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



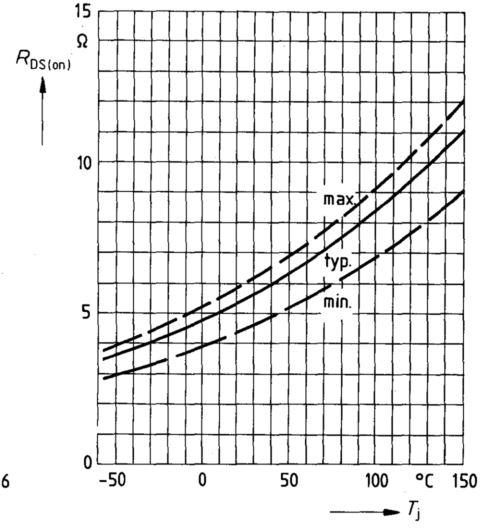
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



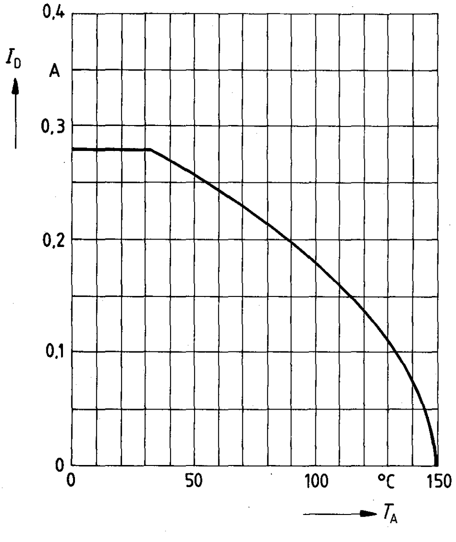
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



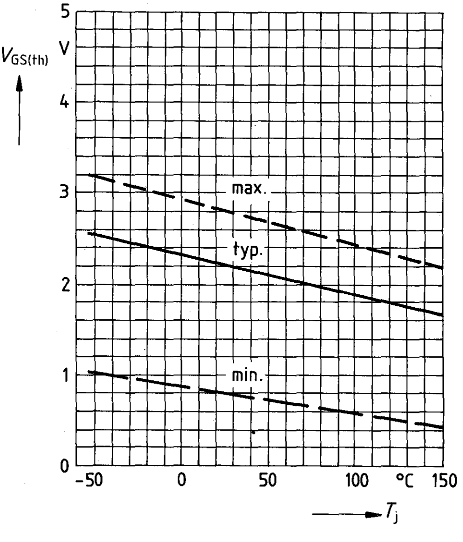
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 0.4$ A, $V_{GS} = 10$ V



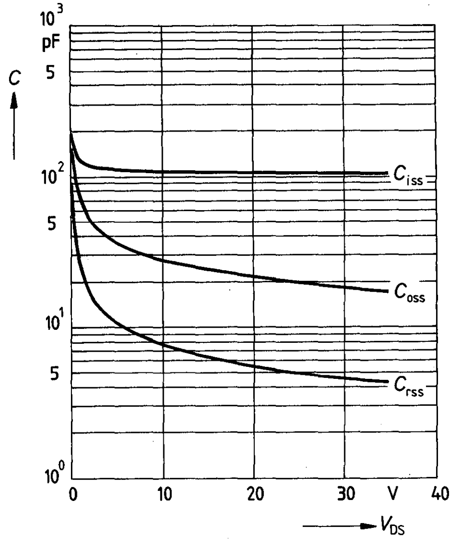
Continuous drain current $I_D = f(T_A)$



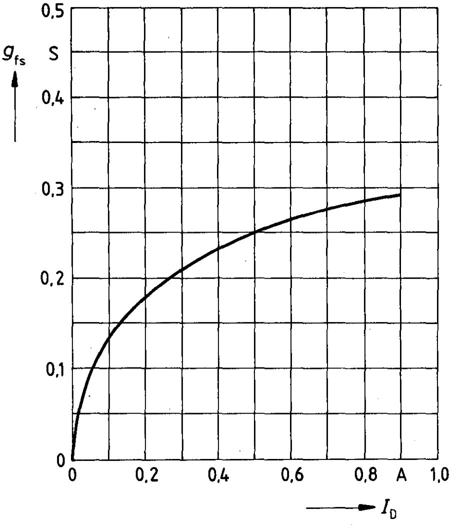
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 1$ mA



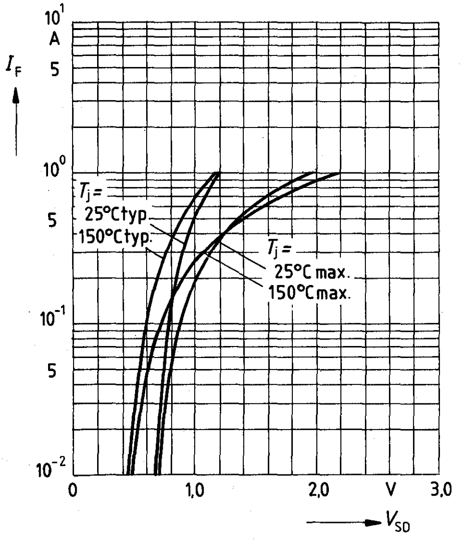
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



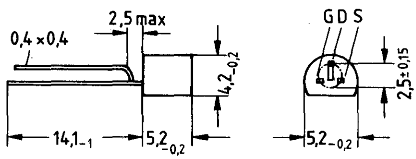
Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Drain-source voltage V_{DS} **= 200 V**
Continuous drain current I_D **= 0,3 A**
Drain-source on-resistance $R_{DS(on)}$ **= 6,0 Ω**

Description SIPMOS small signal FET, N-channel enhancement mode
Case Plastic package 10 A 3 in accordance with DIN 41868,
or TO 92 in accordance with JEDEC.
Approx. weight 0,2 g

Type	Ordering code
BSS 89	Q62702-S455



Dimensions in mm

Absolute maximum ratings		
Drain-source voltage	V_{DS}	200V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	200V
Continuous drain current, T_A = 25 °C	I_D	0,30A
Pulsed drain current, T_A = 25 °C	I_{Dpuls}	1,2A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	1W
Operating and storage temperature range	T_j T_{stg}	−55 °C... +150 °C
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤125K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics			Unit	Conditions
		min.	typ.	max.		
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	200	–	–	V	V_{GS} = 0V I_D = 0,5 mA
Gate threshold voltage	$V_{GS\,(th)}$	0,8	2,2	2,8	V	V_{DS} = V_{GS} I_D = 1mA
Zero gate voltage drain current	I_{DSS}	– –	4 8	60 200	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 200V V_{GS} = 0V
		– – –	– – –	200 – –	nA	T_j = 25 °C V_{DS} = 60V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	5,5	6,0	Ω	V_{GS} = 10V I_D = 0,4A

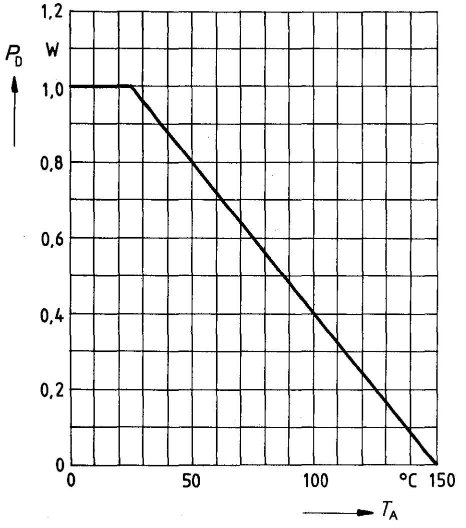
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	0,14	0,2	–	S	V_{DS} = 25V I_D = 0,4A
Input capacitance	C_{iss}	–	110	–	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	20	–	pF	
Reverse transfer capacitance	C_{rss}	–	5	–	pF	
Turn-on time t_{on} (t_{on} = $t_{d\,(on)}$ + t_r)	$t_{d\,(on)}$	–	15	20	ns	V_{CC} = 30V I_D = 0,28A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60	ns	
Turn-off time t_{off} (t_{off} = $t_{d\,(off)}$ + t_f)	$t_{d\,(off)}$	–	70	90	ns	
	t_f	–	40	55	ns	

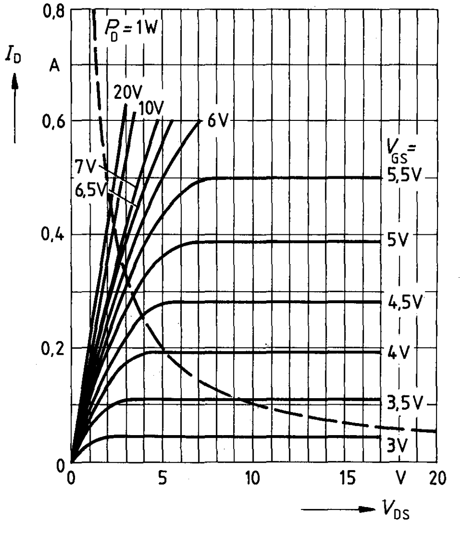
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	0,3	A	T_A = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	1,2	A	
Diode forward on-voltage	V_{SD}	–	1,0	1,4	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	–	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	–	–	µC	

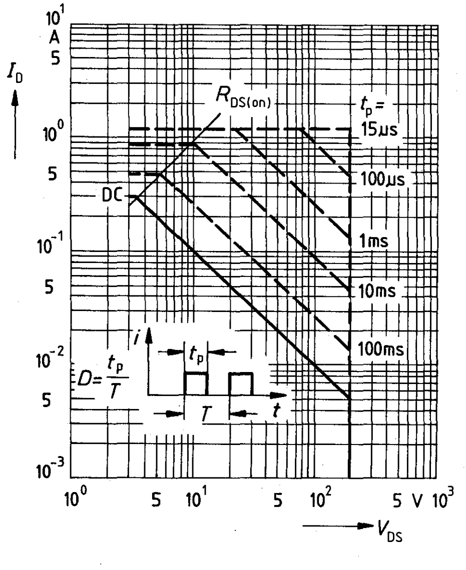
Power dissipation $P_D = f(T_A)$



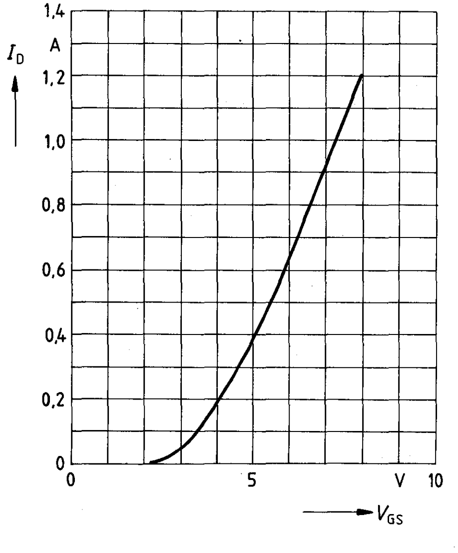
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



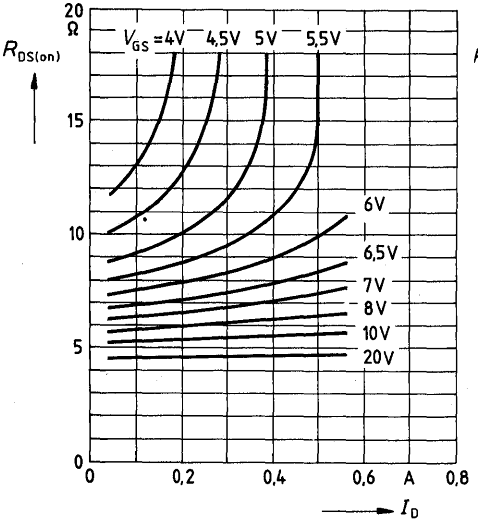
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



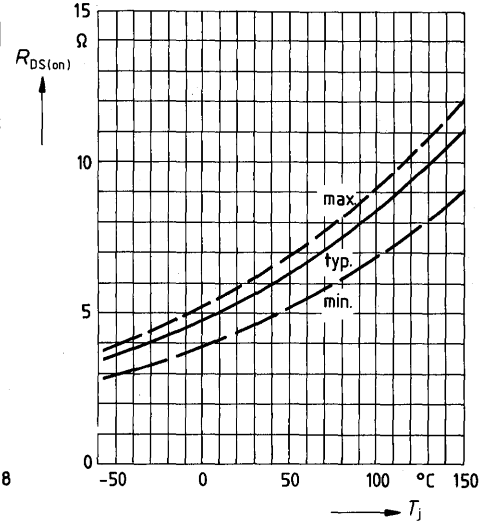
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



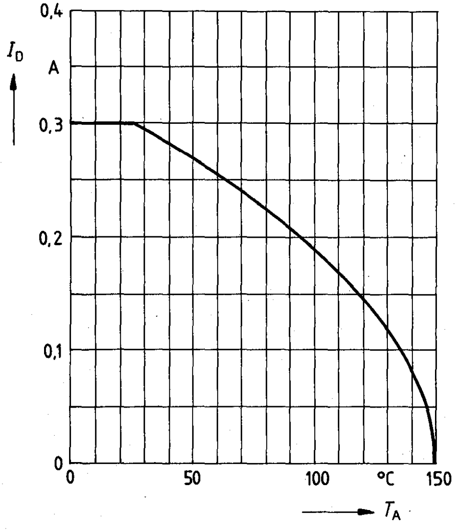
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



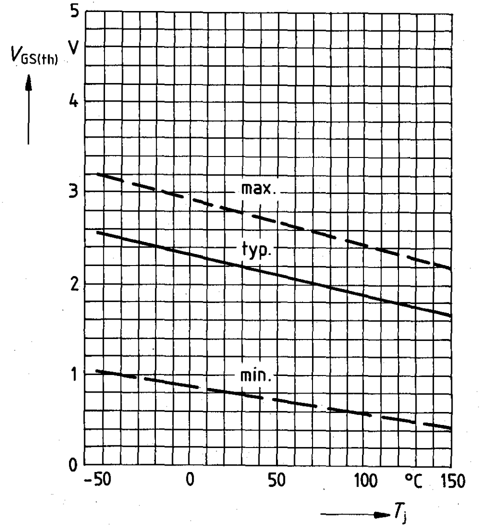
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 0.4$ A, $V_{GS} = 10$ V



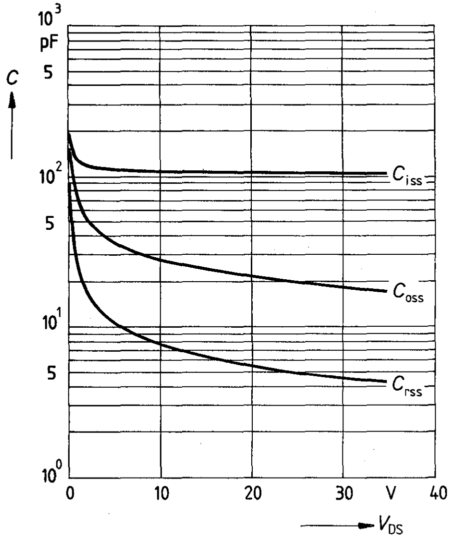
Continuous drain current $I_D = f(T_A)$



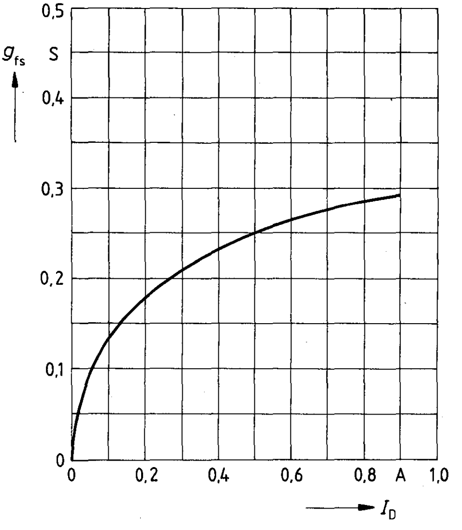
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 1$ mA



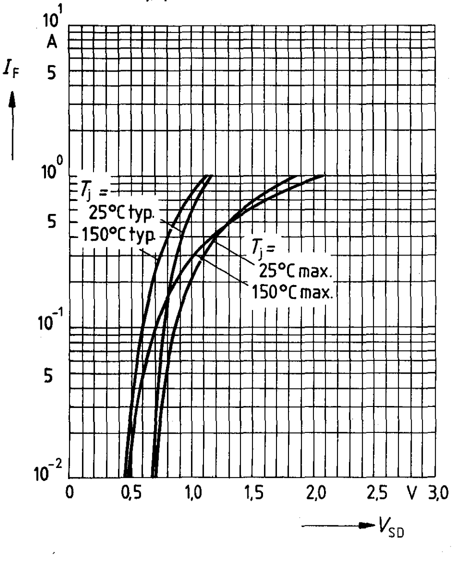
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



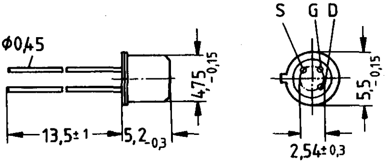
Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Drain-source voltage	V_{DS}	**= 200 V**
Continuous drain current	I_D	**= 0,35 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 6,0 Ω**

Description SIPMOS small signal FET, N-channel enhancement mode
Case Metal case 18 A 3 in accordance with DIN 41876,
or TO 18 in accordance with JEDEC.
Approx. weight 0,3 g

Type	Ordering code
BSS 91	Q62702-S457



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	200V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	200V
Continuous drain current, T_{case} = 25 °C	I_D	0,35A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	1,4A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	1,5W
Operating and storage temperature range	T_j T_{stg}	−55 °C... +150 °C
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤300K/W
	$R_{th\ JC}$	≤83K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	200	–	–	V	V_{GS} = 0V I_D = 0,5 mA
Gate threshold voltage	$V_{GS\,(th)}$	0,8	2,2	2,8		V_{DS} = V_{GS} I_D = 1mA
Zero gate voltage drain current	I_{DSS}	– –	4 8	60 200	μA	T_j = 25 °C T_j = 125 °C V_{DS} = 200V V_{GS} = 0V
		– – –	– – –	200 – –	nA	T_j = 25 °C V_{DS} = 60V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100		V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	5,5	6,0	Ω	V_{GS} = 10V I_D = 0,4A

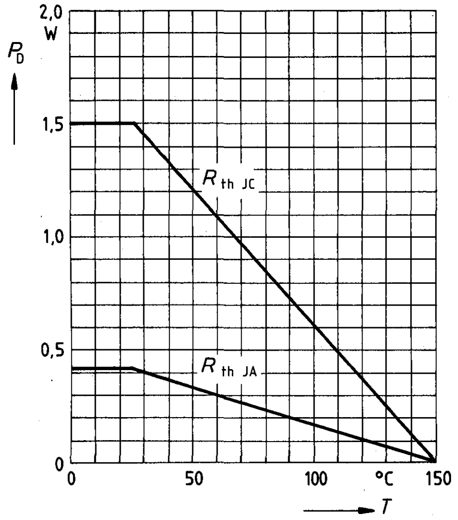
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	0,14	0,2	–	S	V_{DS} = 25V I_D = 0,4A
Input capacitance	C_{iss}	–	110	–	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	20	–		
Reverse transfer capacitance	C_{rss}	–	5	–		
Turn-on time t_{on} (t_{on} = $t_{d\,(on)}$ + t_r)	$t_{d\,(on)}$	–	15	20	ns	V_{CC} = 30V I_D = 0,28A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} (t_{off} = $t_{d\,(off)}$ + t_f)	$t_{d\,(off)}$	–	70	90		
	t_f	–	40	55		

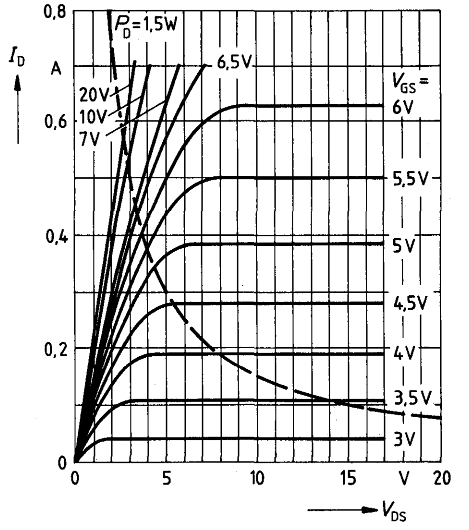
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	0,35	A	T_A = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	1,4		
Diode forward on-voltage	V_{SD}	–	1,0	1,4	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	–	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/μs
Reverse recovery charge	Q_{rr}	–	–	–	μC	

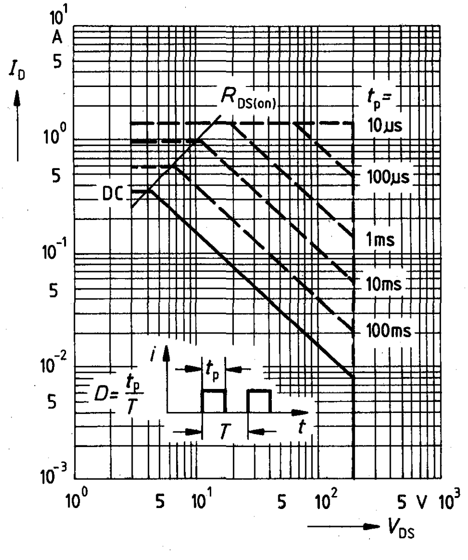
Power dissipation $P_D = f(T)$



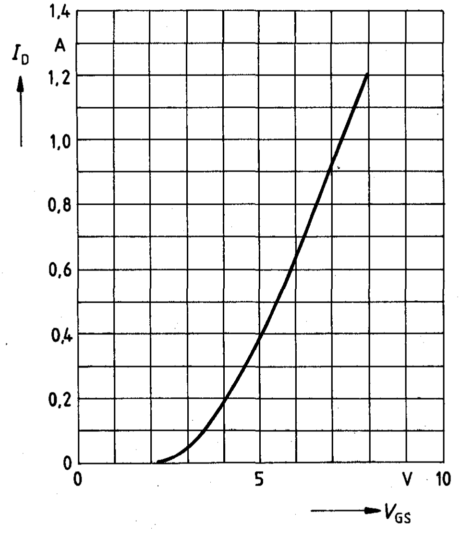
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



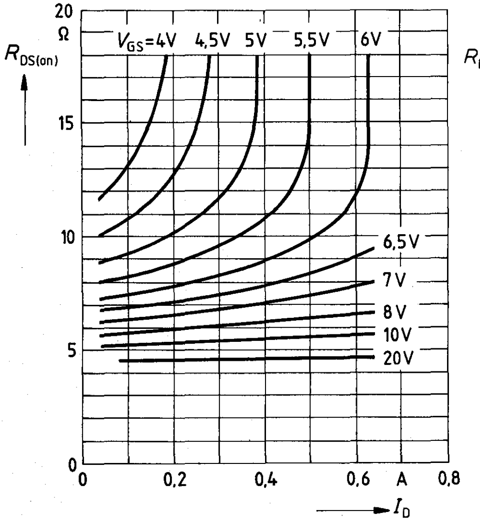
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



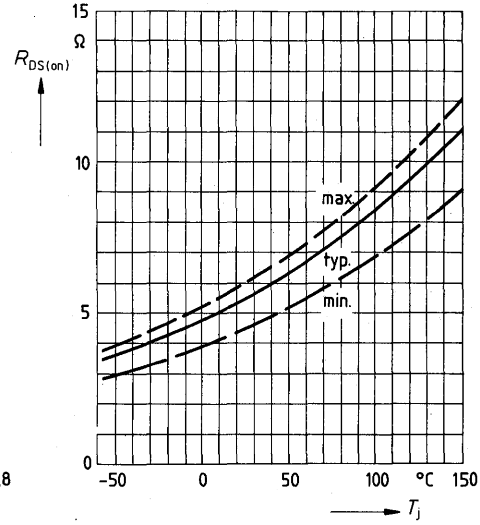
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



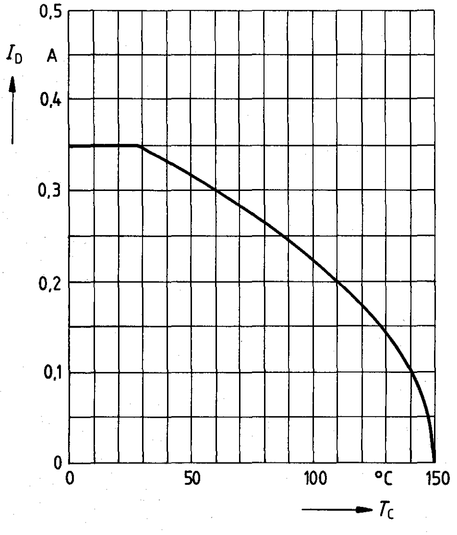
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



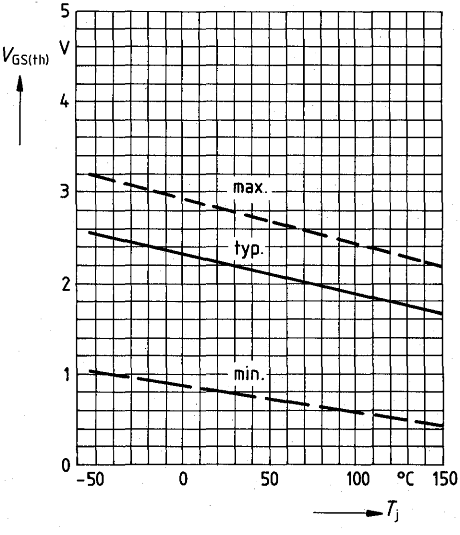
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 0.4$ A, $V_{GS} = 10$ V



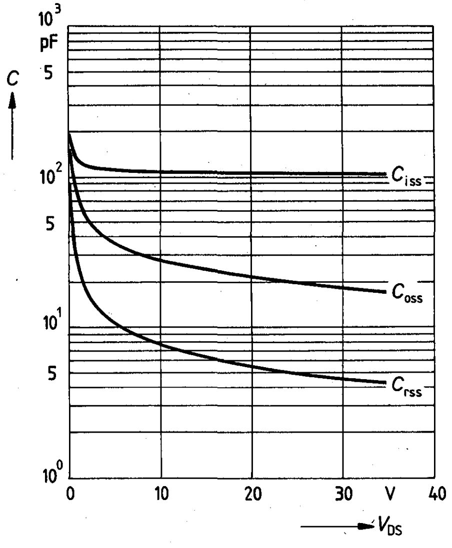
Continuous drain current $I_D = f(T_{case})$



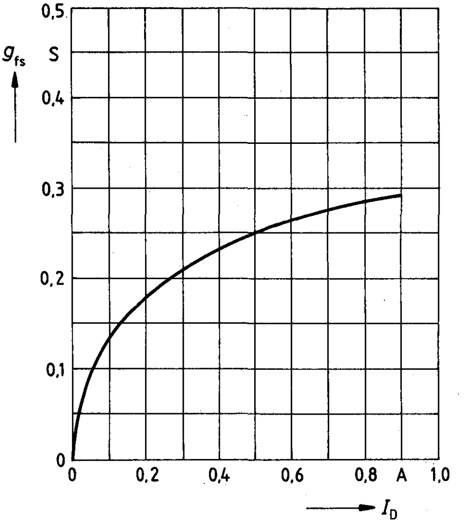
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 1$ mA



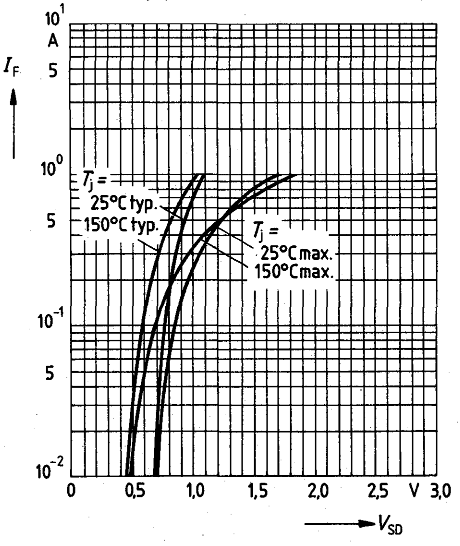
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



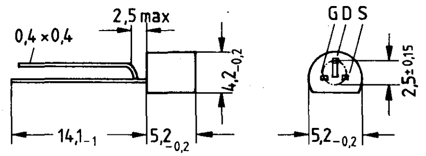
Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Drain-source voltage V_{DS} = **−200 V**
Continuous drain current I_D = **−0,15 A**
Drain-source on-resistance $R_{DS(on)}$ = **20 Ω**

Description SIPMOS small signal FET, P-channel enhancement mode
Case Plastic package 10 A 3 in accordance with DIN 41868, or TO 92 in accordance with JEDEC. Approx. weight 0,2 g

Type	Ordering code
BSS 92	Q62702-S458



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	−200V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	−200V
Continuous drain current, T_A = 35 °C	I_D	−0,15A
Pulsed drain current, T_A = 25 °C	I_{Dpuls}	−0,6A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	1W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤125K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	– 200	–	–	V	V_{GS} = 0V I_D = – 0,5 mA
Gate threshold voltage	$V_{GS\,(th)}$	– 0,8	– 2,4	– 2,8		V_{DS} = V_{GS} I_D = – 1mA
Zero gate voltage drain current	I_{DSS}	– –	– 4 – 8	– 60 – 200	µA	T_j = 25 °C T_j = 125 °C V_{DS} = – 200V V_{GS} = 0V
		– – –	– – –	– 0,2 – –	µA	T_j = 25 °C V_{DS} = – 60V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	– 10	– 100		V_{GS} = – 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	11	20	Ω	V_{GS} = – 10V I_D = – 100mA

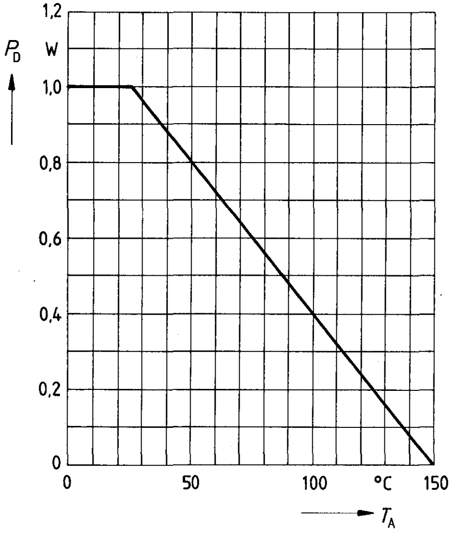
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	0,06	0,10	–	S	V_{DS} = – 25V I_D = – 100mA
Input capacitance	C_{iss}	–	170	–	pF	V_{GS} = 0V V_{DS} = – 25V f = 1MHz
Output capacitance	C_{oss}	–	20	–		
Reverse transfer capacitance	C_{rss}	–	6	–		
Turn-on time t_{on} (t_{on} = $t_{d\,(on)}$ + t_r)	$t_{d\,(on)}$	–	10	–	ns	V_{CC} = – 30V I_D = – 0,25A V_{GS} = – 10V R_{GS} = 50Ω
	t_r	–	10	–		
Turn-off time t_{off} (t_{off} = $t_{d\,(off)}$ + t_f)	$t_{d\,(off)}$	–	20	–		
	t_f	–	30	–		

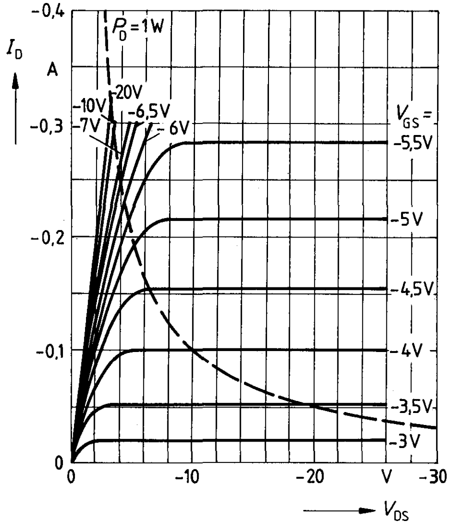
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	– 0,15	A	T_A = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	– 0,6		
Diode forward on-voltage	V_{SD}	–	– 0,9	– 1,2	V	I_F = 2 × I_{DR} V_{GS} = 0V
Reverse recovery time	t_{rr}	–	–	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	–	–	µC	

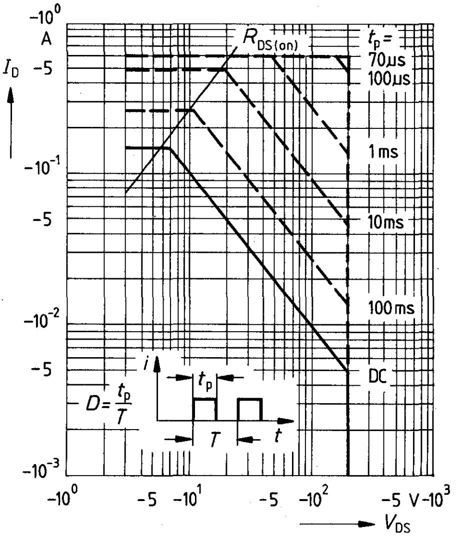
Power dissipation $P_D = f(T_A)$



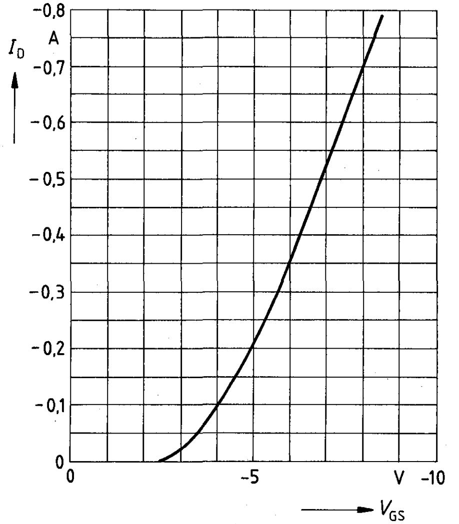
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



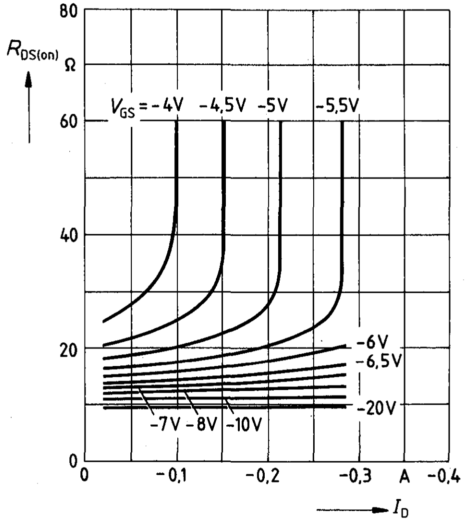
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



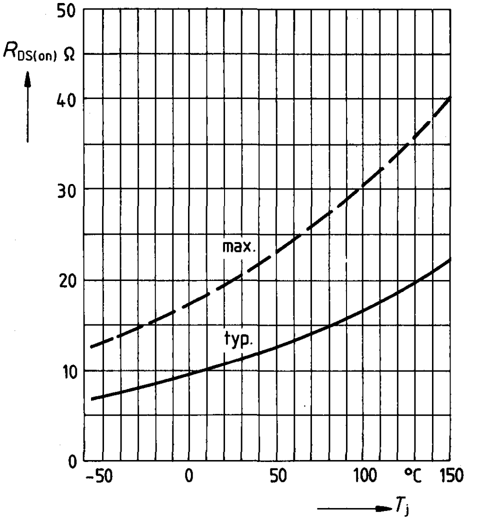
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = -25V$, $T_j = 25\,°C$



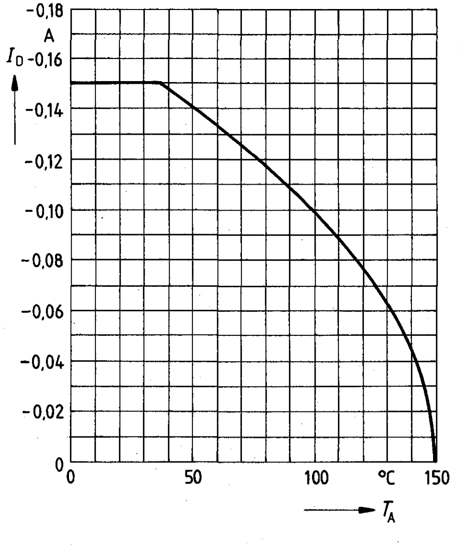
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



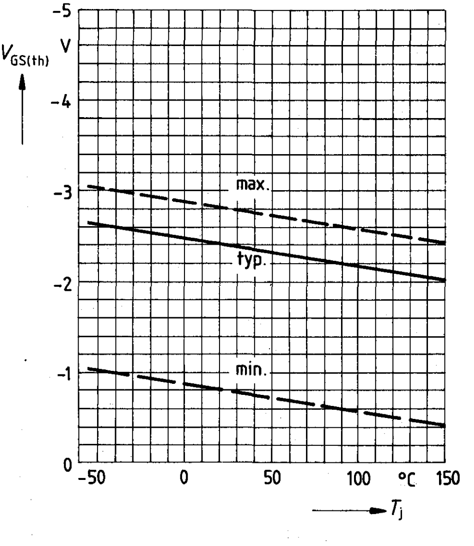
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = -100$ mA, $V_{GS} = -10$ V



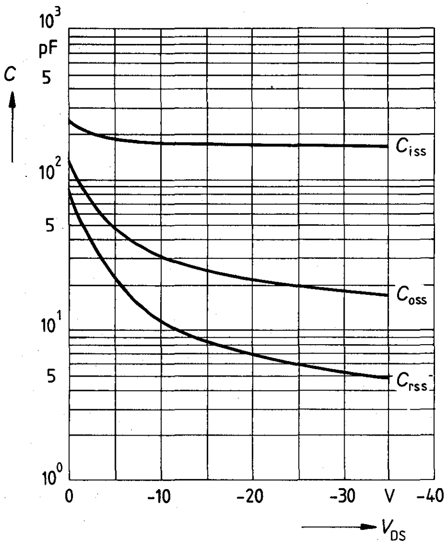
Continuous drain current $I_D = f(T_A)$



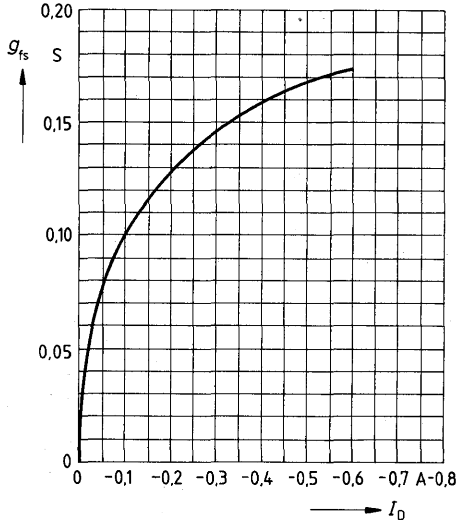
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = -1$ mA



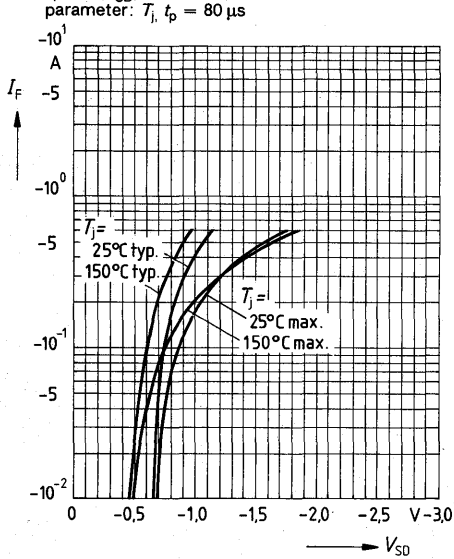
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = -25$V, $T_j = 25\,°C$



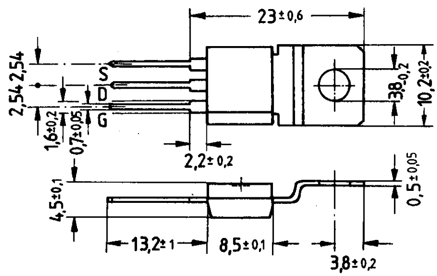
Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Drain-source voltage V_{DS} **= 200 V**
Continuous drain current I_D **= 0,8 A**
Drain-source on-resistance $R_{DS(on)}$ **= 6,0 Ω**

Description SIPMOS small signal FET, N-channel enhancement mode
Case Plastic package TO 202 in accordance with JEDEC.
Approx. weight 1,8 g

Type	Ordering code
BSS 95	Q62702-S461



Dimensions in mm

Absolute maximum ratings		
Drain-source voltage	V_{DS}	200V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	200V
Continuous drain current, T_{case} = 35 °C	I_D	0,80A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	3,2A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	8,3W
Operating and storage	T_j	
temperature range	T_{stg}	−55 °C ... +150 °C
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤65K/W
	$R_{th\ JC}$	≤15K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	200	–	–	V	V_{GS} = 0V I_D = 0,5 mA
Gate threshold voltage	$V_{GS\,(th)}$	0,8	2,2	2,8		V_{DS} = V_{GS} I_D = 1mA
Zero gate voltage drain current	I_{DSS}	– –	4 8	60 200	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 200V V_{GS} = 0V
		– – –	– – –	200 – –	nA	T_j = 25 °C V_{DS} = 60V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100		V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	5,5	6,0	Ω	V_{GS} = 10V I_D = 0,4A

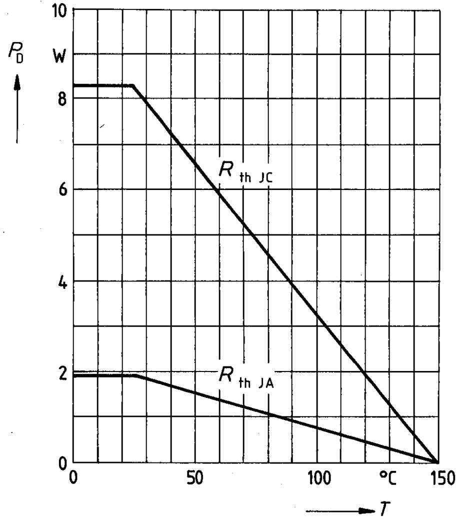
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	0,14	0,2	–	S	V_{DS} = 25V I_D = 0,4A
Input capacitance	C_{iss}	–	110	–	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	20	–		
Reverse transfer capacitance	C_{rss}	–	5	–		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	15	20	ns	V_{CC} = 30V I_D = 0,28A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	70	90		
	t_f	–	40	55		

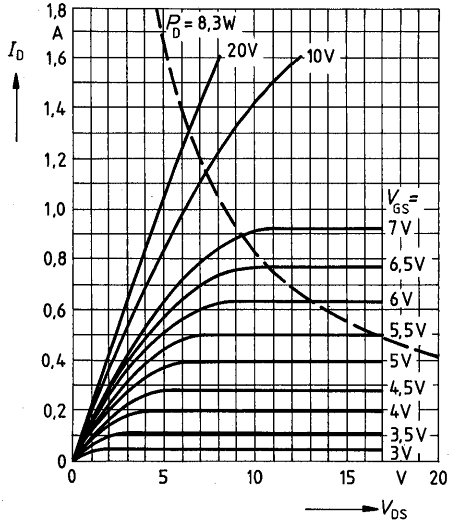
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	0,8	A	T_A = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	3,2		
Diode forward on-voltage	V_{SD}	–	1,4	1,8	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	–	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	–	–	µC	

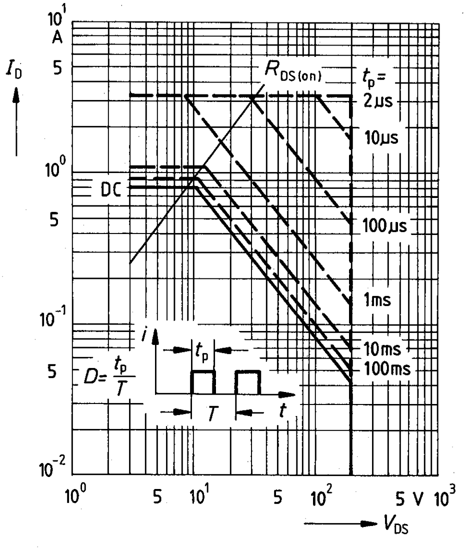
Power dissipation $P_D = f(T)$



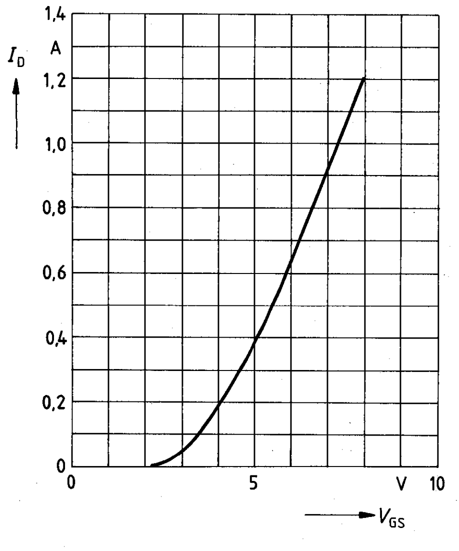
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



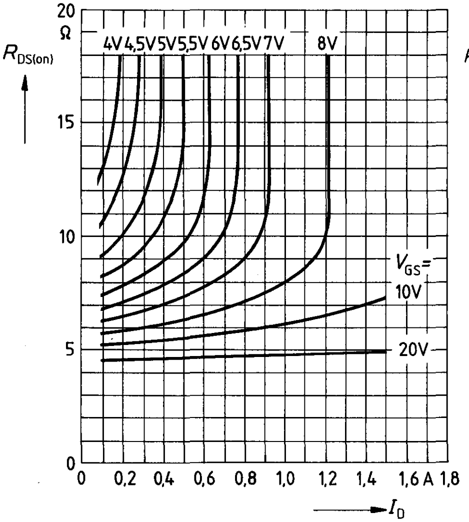
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



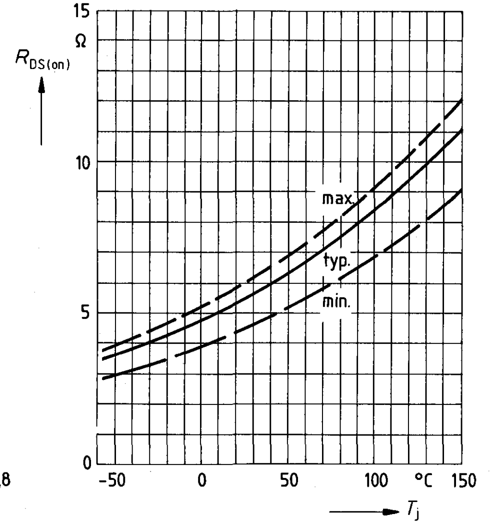
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



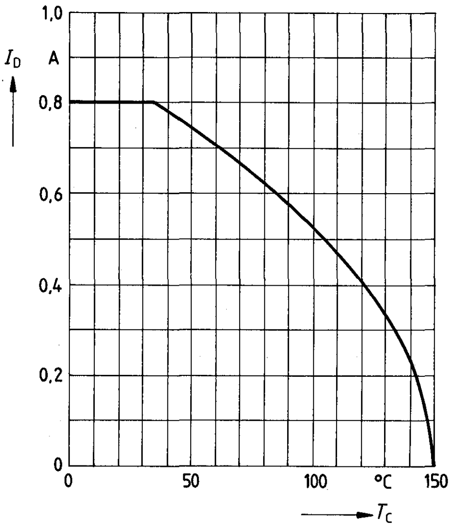
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



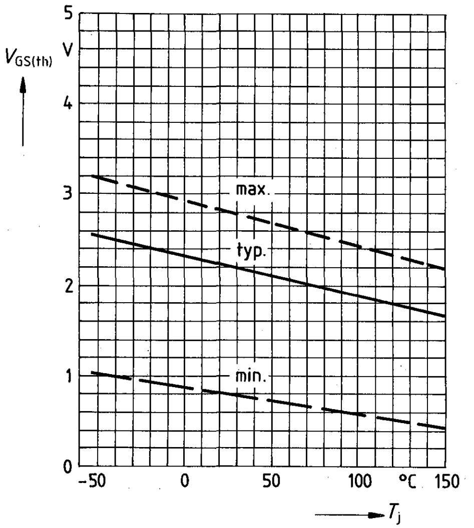
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 0.4$ A, $V_{GS} = 10$ V



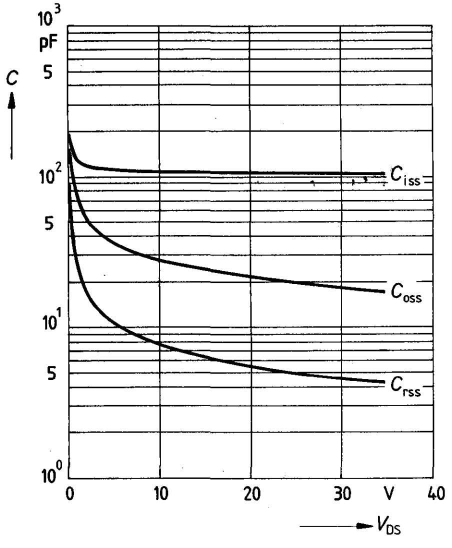
Continuous drain current $I_D = f(T_{case})$



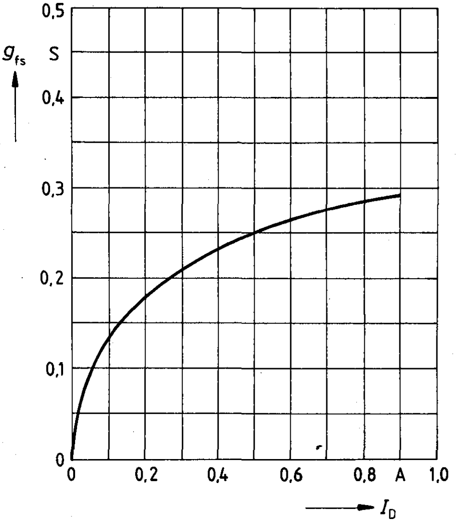
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 1$ mA



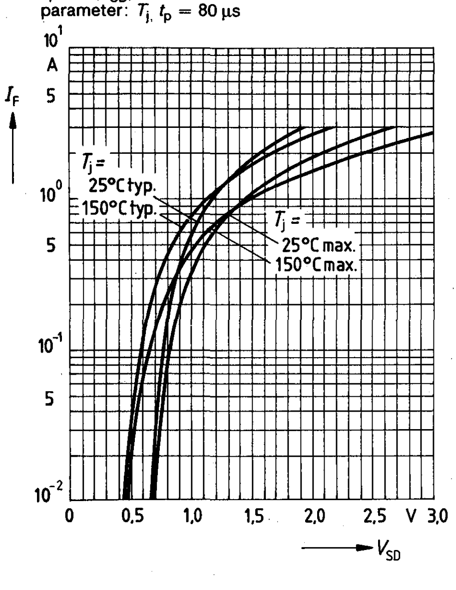
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



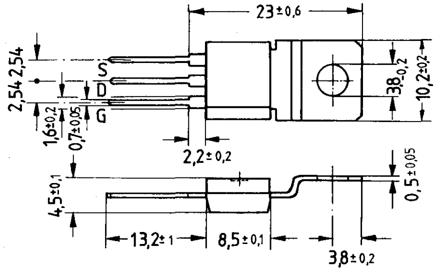
Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Drain-source voltage V_{DS} **= 200 V**
Continuous drain current I_D **= 1,5 A**
Drain-source on-resistance $R_{DS(on)}$ **= 2,0 Ω**

Description SIPMOS small signal FET, N-channel enhancement mode
Case Plastic package TO 202 in accordance with JEDEC.
Approx. weight 1,8 g

Type	Ordering code
BSS 97	Q62702-S463



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	200V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	200V
Continuous drain current, T_{case} = 35 °C	I_D	1,5A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	6A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	10W
Operating and storage temperature range	T_j T_{stg}	–55 °C ... +150 °C
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤65K/W
	$R_{th\ JC}$	≤12,5K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	200	–	–	V	V_{GS} = 0V I_D = 0,5 mA
Gate threshold voltage	$V_{GS\,(th)}$	0,8	2,2	2,8		V_{DS} = V_{GS} I_D = 1mA
Zero gate voltage drain current	I_{DSS}	– –	4 8	60 200	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 200V V_{GS} = 0V
		– – –	– – –	200 – –	nA	T_j = 25 °C V_{DS} = 60V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100		V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	1,6	2,0	Ω	V_{GS} = 10V I_D = 0,75A

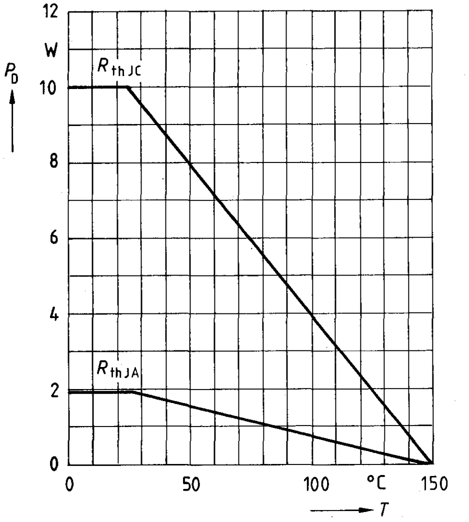
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	0,5	1	–	S	V_{DS} = 25V I_D = 0,75A
Input capacitance	C_{iss}	–	400	–	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	60	–		
Reverse transfer capacitance	C_{rss}	–	30	–		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	15	20	ns	V_{CC} = 30V I_D = 0,29A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	70	90		
	t_f	–	40	55		

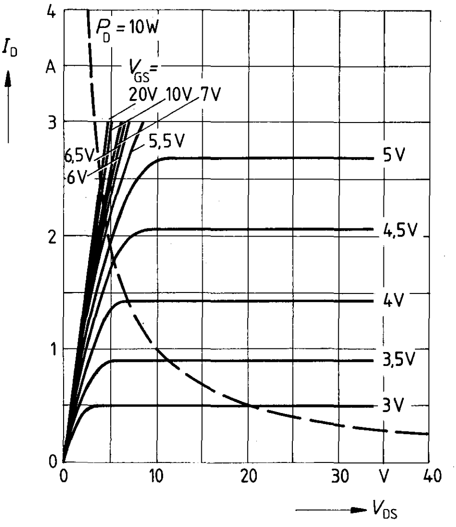
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	1,5	A	T_A = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	6,0		
Diode forward on-voltage	V_{SD}	–	1,4	1,8	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	–	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	–	–	µC	

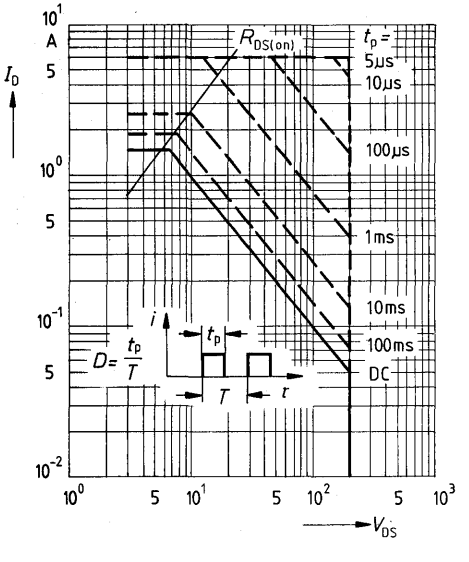
Power dissipation $P_D = f(T)$



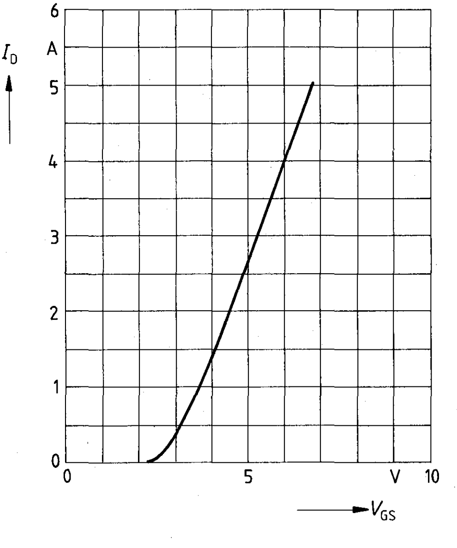
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



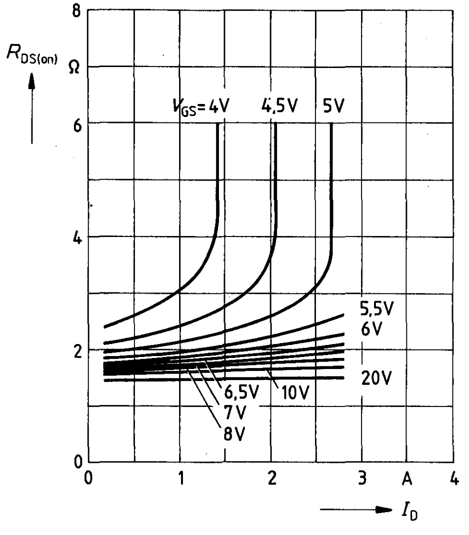
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



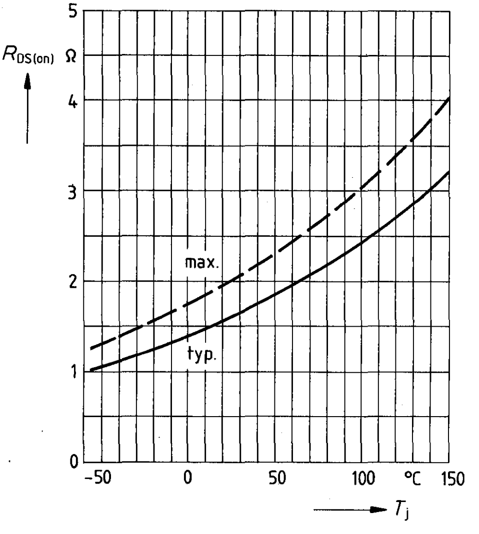
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



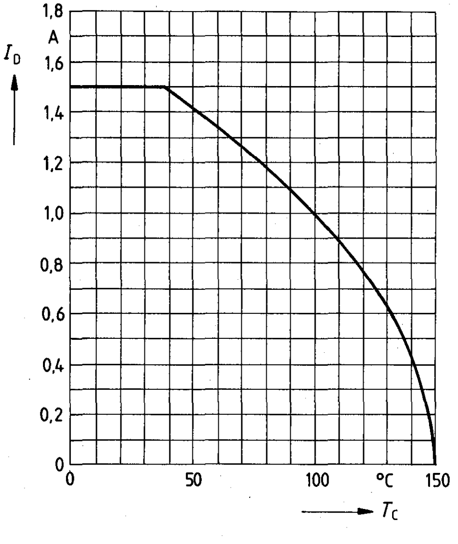
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



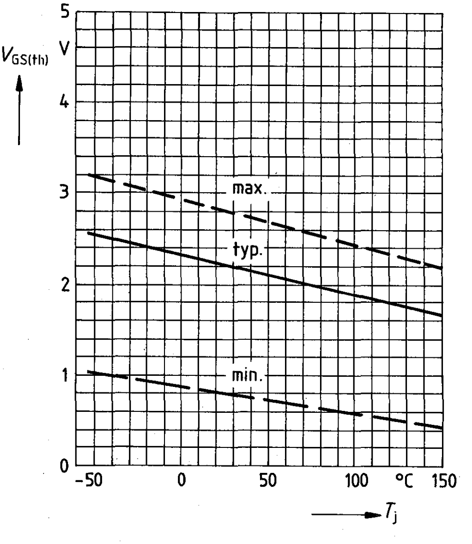
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 0.75$ A, $V_{GS} = 10$ V



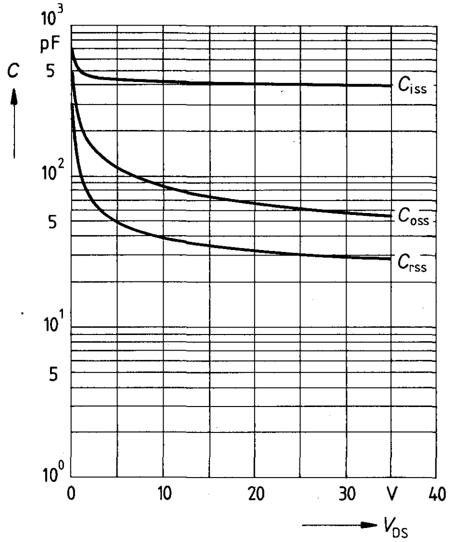
Continuous drain current $I_D = f(T_{case})$



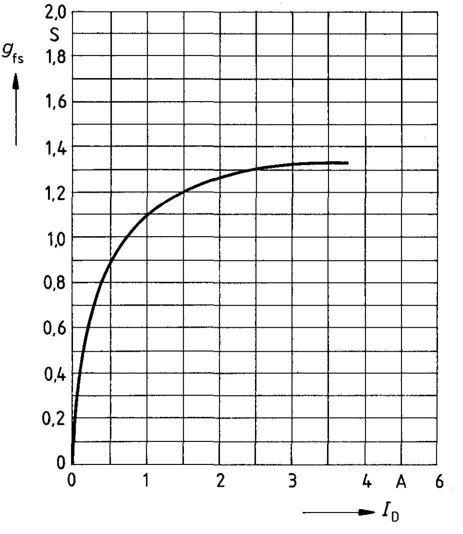
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS,}$ $I_D = 1$ mA



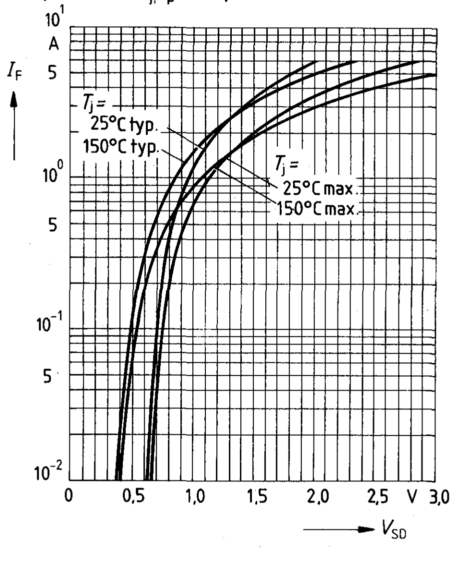
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs

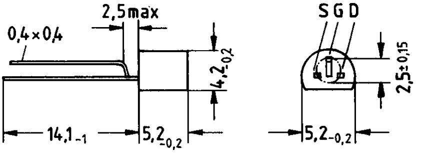


Drain-source voltage	V_{DS}	**= 100 V**
Continuous drain current	I_D	**= 0,23 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 6,0 Ω**

Description SIPMOS small signal FET, N-channel enhancement mode

Case Plastic package 10 A 3 in accordance with DIN 41868, or TO 92 in accordance with JEDEC. Approx. weight 0,2 g

Type	Ordering code
BSS 100	Q62702-S483



Dimensions in mm

Absolute maximum ratings		
Drain-source voltage	V_{DS}	100V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	100V
Continuous drain current, T_A = 25 °C	I_D	0,23A
Pulsed drain current, T_A = 25 °C	I_{Dpuls}	0,9A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	0,63W
Operating and storage temperature range	T_j T_{stg}	−55 °C … +150 °C
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤200K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	100	–	–	V	V_{GS} = 0V I_D = 0,5 mA
Gate threshold voltage	$V_{GS\,(th)}$	0,8	2,2	2,8		V_{DS} = V_{GS} I_D = 1mA
Zero gate voltage drain current	I_{DSS}	– –	1 2	15 60	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 100V V_{GS} = 0V
		– – –	– – –	10 – –	nA	T_j = 25 °C V_{DS} = 60V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100		V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	5,0	6,0	Ω	V_{GS} = 10V I_D = 0,12A

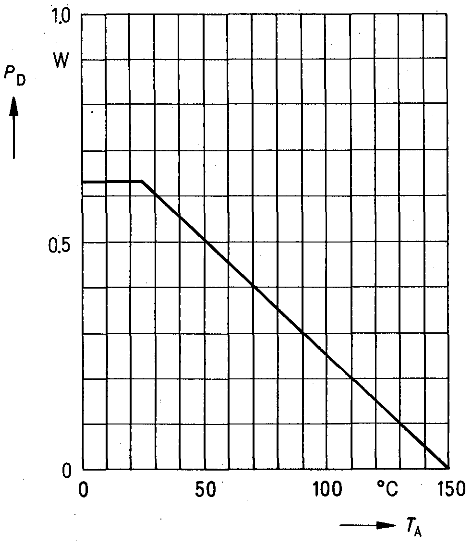
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	0,08	0,12	–	S	V_{DS} = 25V I_D = 0,12A
Input capacitance	C_{iss}	–	20	–	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	9,0	–		
Reverse transfer capacitance	C_{rss}	–	4,0	–		
Turn-on time t_{on}	$t_{d\,(on)}$	–	10	–	ns	V_{CC} = 30V I_D = 0,28A V_{GS} = 10V R_{GS} = 50Ω
($t_{on} = t_{d\,(on)} + t_r$)	t_r	–	10	–		
Turn-off time t_{off}	$t_{d\,(off)}$	–	15	–		
($t_{off} = t_{d\,(off)} + t_f$)	t_f	–	25	–		

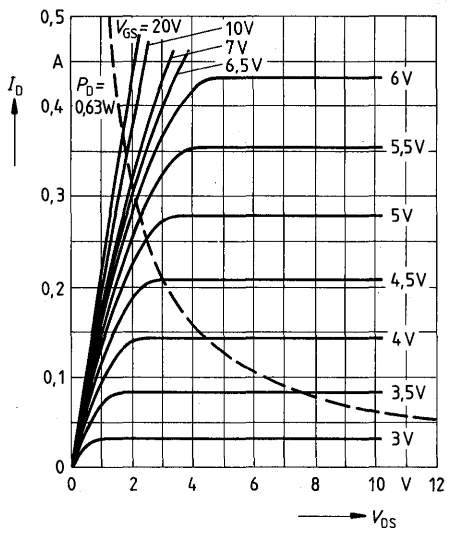
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	0,23	A	T_A = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	0,9		
Diode forward on-voltage	V_{SD}	–	1,1	1,3	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	–	–	ns	T_j = 25 °C
Reverse recovery charge	Q_{rr}	–	–	–	µC	I_F = I_{DR} $d_{iF/dt}$ = 100A/µs

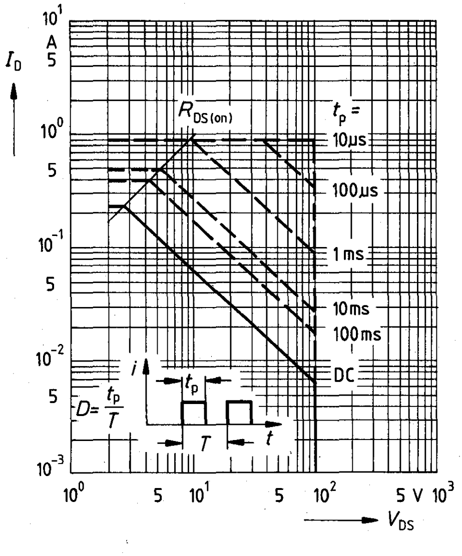
Power dissipation $P_D = f(T_A)$



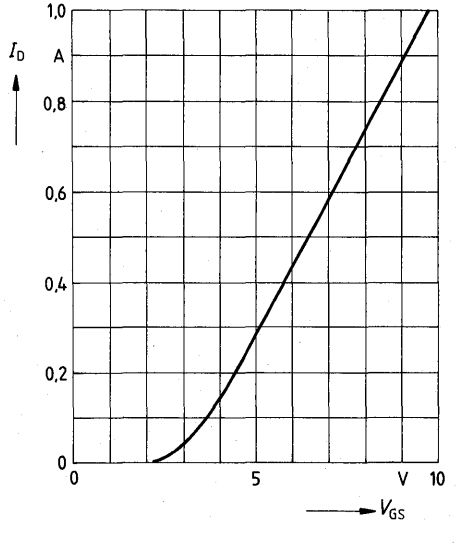
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



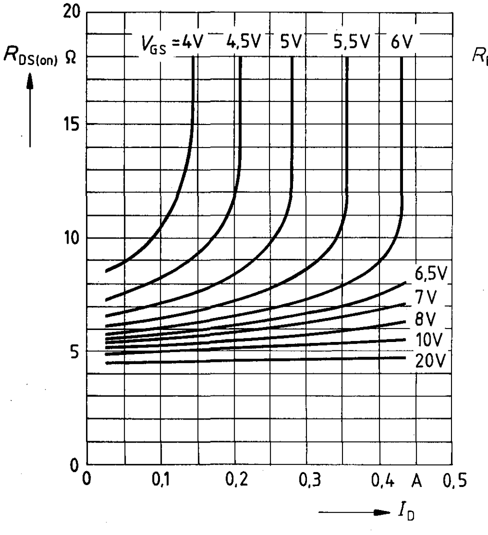
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



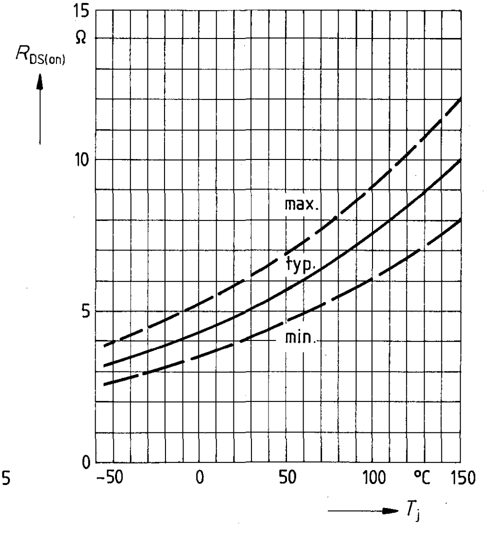
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



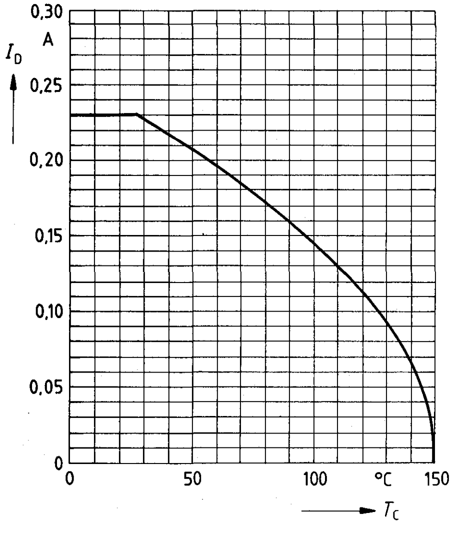
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



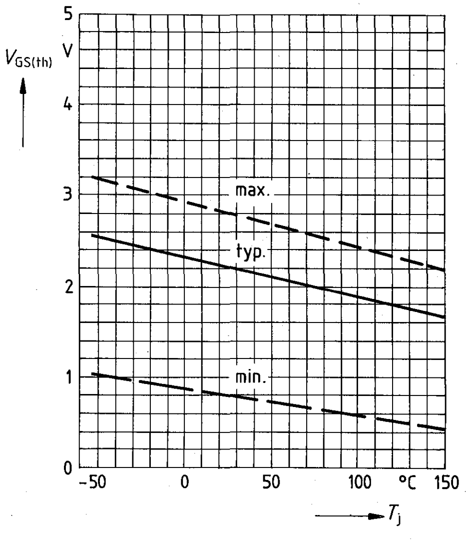
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 0.12$ A, $V_{GS} = 10$ V



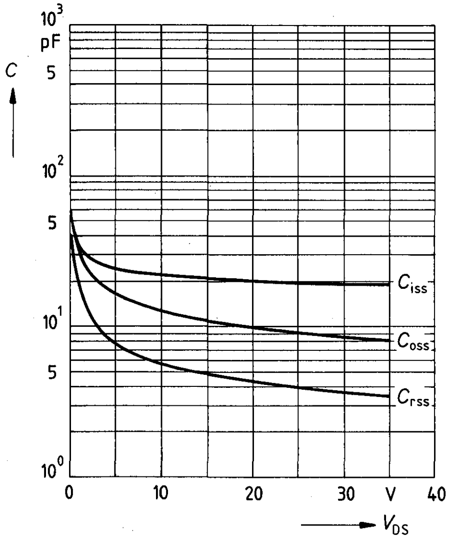
Continuous drain current $I_D = f(T_{case})$



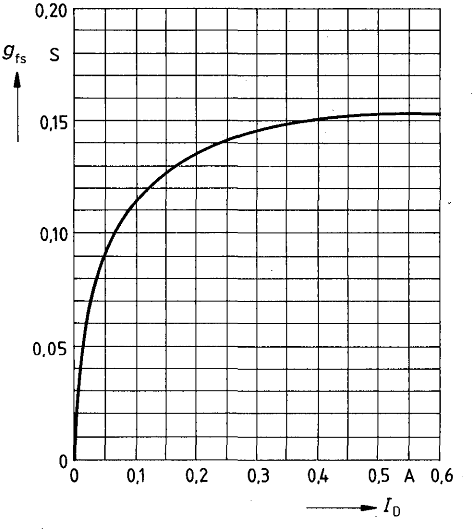
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 1$ mA



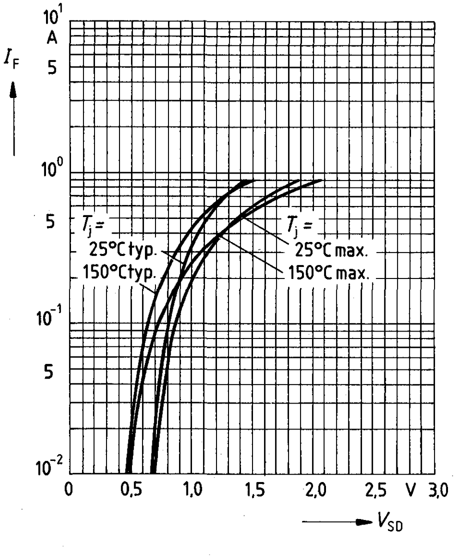
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$ °C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs

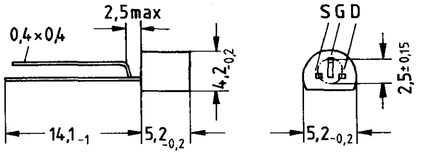


Drain-source voltage	V_{DS}	**= 200 V**
Continuous drain current	I_D	**= 0,16 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 12 Ω**

Description SIPMOS small signal FET, N-channel enhancement mode

Case Plastic package 10 A 3 in accordance with DIN 41868, or TO 92 in accordance with JEDEC. Approx. weight 0,2 g

Type	Ordering code
BSS 101	Q62702-S484



Dimensions in mm

Absolute maximum ratings		
Drain-source voltage	V_{DS}	200V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	200V
Continuous drain current, T_A = 25 °C	I_D	0,16A
Pulsed drain current, T_A = 25 °C	I_{Dpuls}	0,64A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	0,63W
Operating and storage temperature range	T_j T_{stg}	−55 °C... +150 °C
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤200K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	200	–	–	V	V_{GS} = 0V I_D = 0,5 mA
Gate threshold voltage	$V_{GS\,(th)}$	0,8	2,2	2,8		V_{DS} = V_{GS} I_D = 1mA
Zero gate voltage drain current	I_{DSS}	– –	1 2	15 60	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 200V V_{GS} = 0V
		– – –	– – –	30 – –	nA	T_j = 25 °C V_{DS} = 130V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100		V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	11	12	Ω	V_{GS} = 10V I_D = 80mA

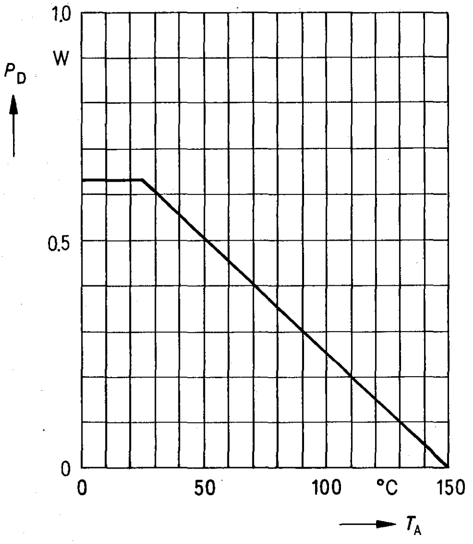
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	0,06	0,07	–	S	V_{DS} = 25V I_D = 80mA
Input capacitance	C_{iss}	–	20	–	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	6	–		
Reverse transfer capacitance	C_{rss}	–	2,5	–		
Turn-on time t_{on} (t_{on} = $t_{d\,(on)}$ + t_r)	$t_{d\,(on)}$	–	10	–	ns	V_{CC} = 30V I_D = 0,27A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	10	–		
Turn-off time t_{off} (t_{off} = $t_{d\,(off)}$ + t_f)	$t_{d\,(off)}$	–	15	–		
	t_f	–	25	–		

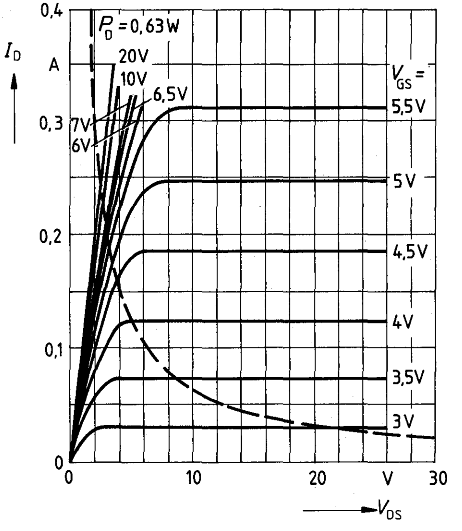
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	0,16	A	T_A = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	0,64		
Diode forward on-voltage	V_{SD}	–	1,0	1,2	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	–	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	–	–	µC	

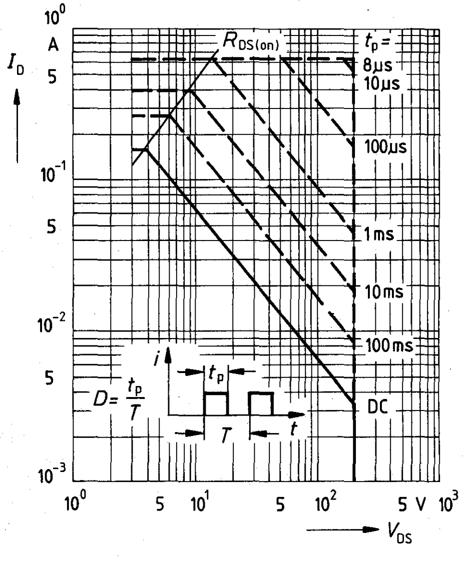
Power dissipation $P_D = f(T_A)$



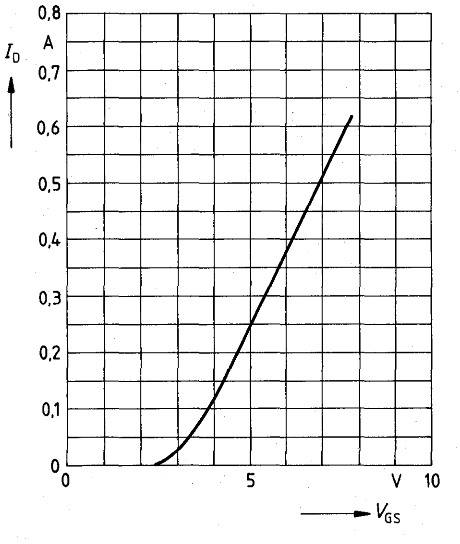
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



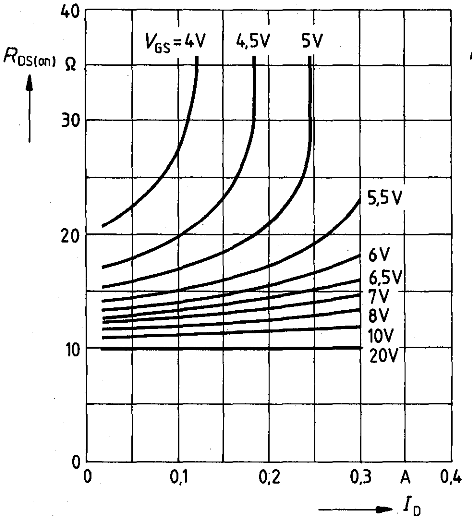
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



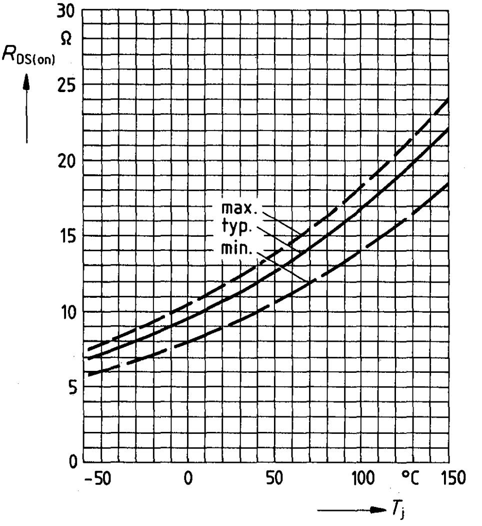
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



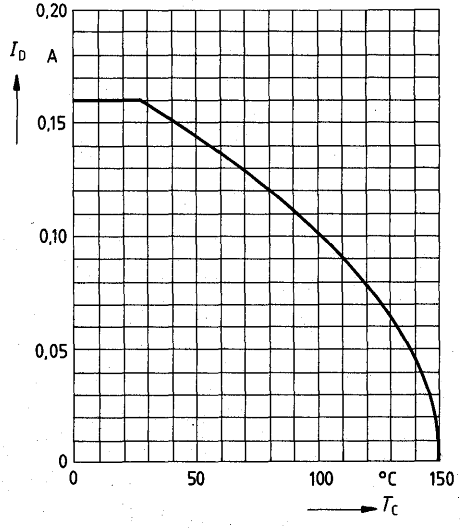
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25°C$



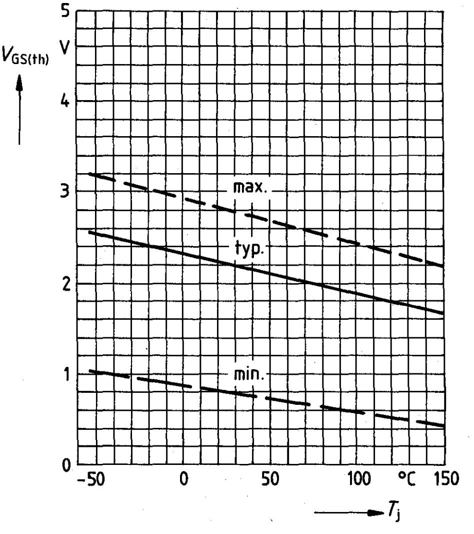
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: I_D = 80 mA, V_{GS} = 10 V



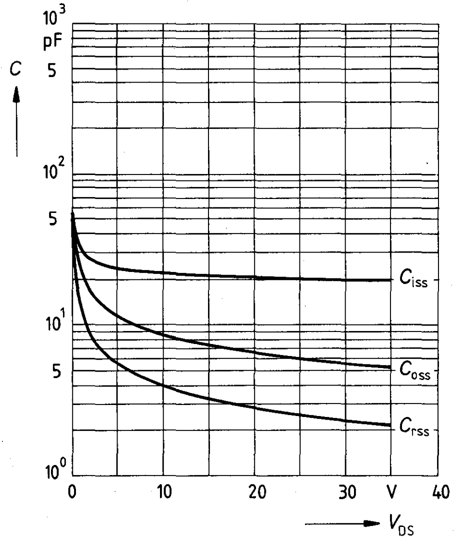
Continuous drain current $I_D = f(T_{case})$



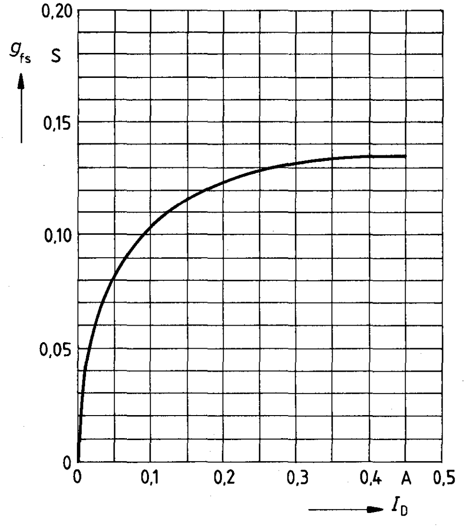
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, I_D = 1 mA



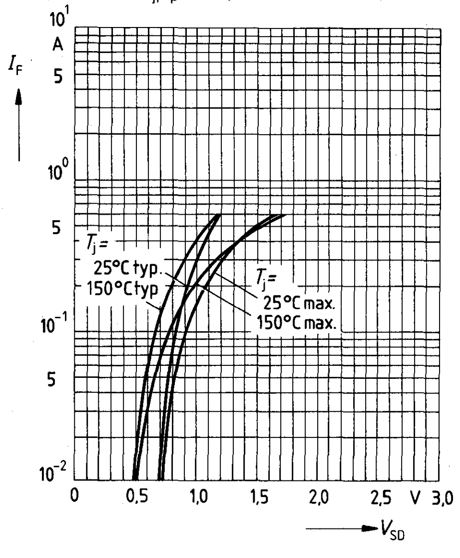
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs

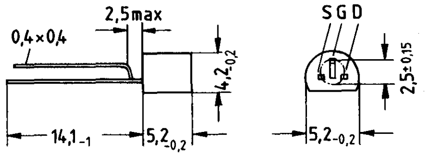


Drain-source voltage	V_{DS}	=	**−50 V**
Continuous drain current	I_D	=	**−0,17 A**
Drain-source on-resistance	$R_{DS(on)}$	=	**10 Ω**

Description SIPMOS small signal FET, P-channel enhancement mode

Case Plastic package 10 A 3 in accordance with DIN 41868, or TO 92 in accordance with JEDEC. Approx. weight 0,2 g

Type	Ordering code
BSS 110	Q62702-S0489



Dimensions in mm

Absolute maximum ratings		
Drain-source voltage	V_{DS}	−50V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	−50V
Continuous drain current, T_A = 35 °C	I_D	−0,17A
Pulsed drain current, T_A = 25 °C	I_{Dpuls}	−0,68A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	0,63W
Operating and storage temperature range	T_j T_{stg}	−55 °C… +150 °C
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤200K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	–50	–	–	V	V_{GS} = 0V I_D = –0,5mA
Gate threshold voltage	$V_{GS\,(th)}$	–0,8	–2,4	–2,8		V_{DS} = V_{GS} I_D = –1,0mA
Zero gate voltage drain current	I_{DSS}	– –	–1 –2	–15 –60	µA	T_j = 25 °C T_j = 125 °C V_{DS} = –50V V_{GS} = 0V
		– – –	– – –	–0,1 – –	nA	T_j = 25 °C V_{DS} = –25V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	–10	–100		V_{GS} = ±20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	6	10	Ω	V_{GS} = –10V I_D = – 0,1A

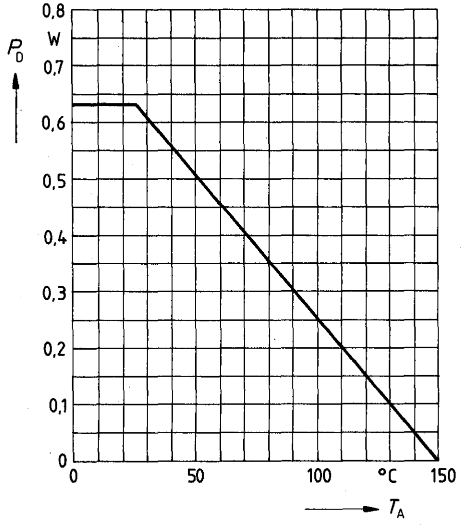
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	0,05	0,07	–	S	V_{DS} = –25V I_D = – 0,1A
Input capacitance	C_{iss}	–	40	–	pF	V_{GS} = 0V V_{DS} = –25V f = 1MHz
Output capacitance	C_{oss}	–	15	–		
Reverse transfer capacitance	C_{rss}	–	6	–		
Turn-on time t_{on} (t_{on} = $t_{d\,(on)}$ + t_r)	$t_{d\,(on)}$	–	10	–	ns	V_{CC} = –30V I_D = – 0,27A V_{GS} = –10V R_{GS} = 50Ω
	t_r	–	10	–		
Turn-off time t_{off} (t_{off} = $t_{d\,(off)}$ + t_f)	$t_{d\,(off)}$	–	18	–		
	t_f	–	25	–		

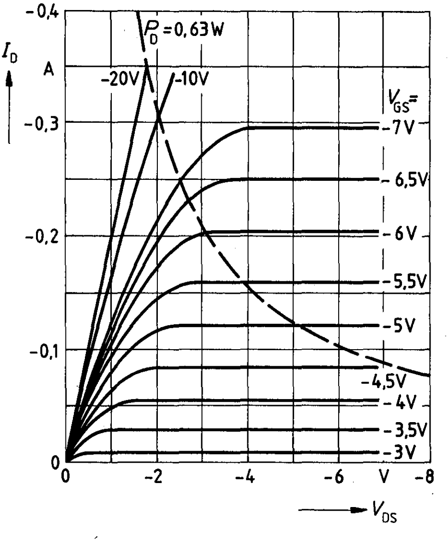
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	–0,17	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	–0,68		
Diode forward on-voltage	V_{SD}	–	–1	–1,2	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	–	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	–	–	µC	

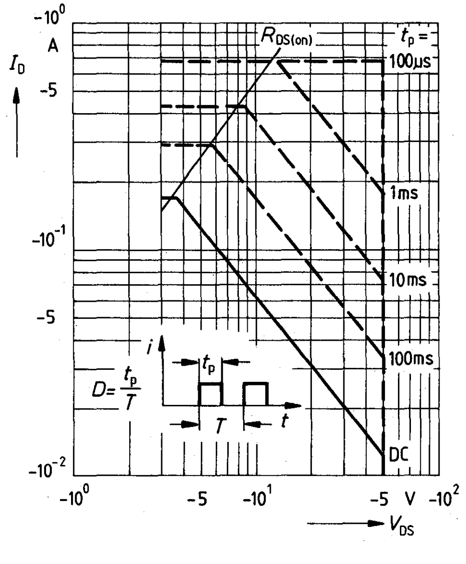
Power dissipation $P_D = f(T_A)$



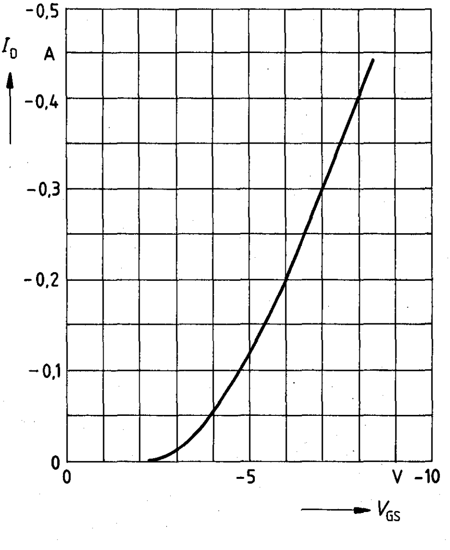
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



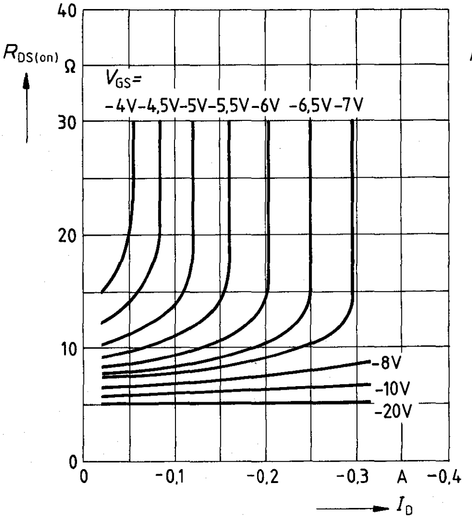
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



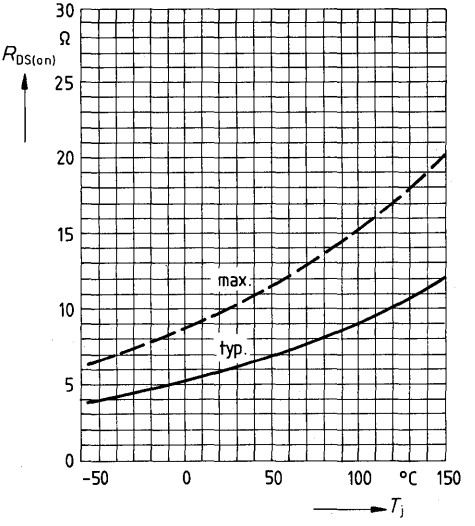
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = -25V$, $T_j = 25°C$



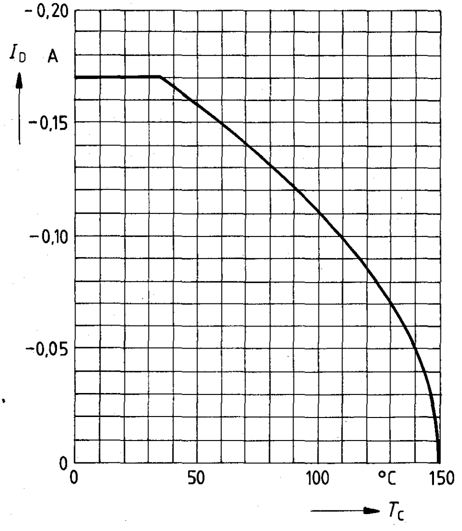
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



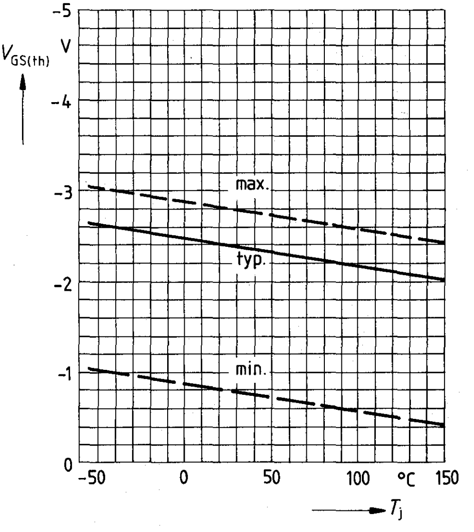
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = -0.1$ A, $V_{GS} = -10$ V



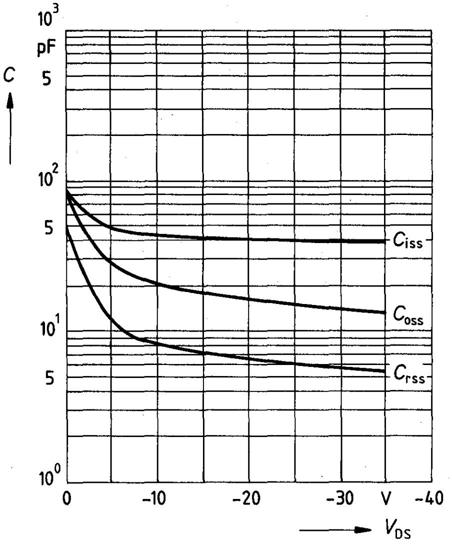
Continuous drain current $I_D = f(T_{case})$



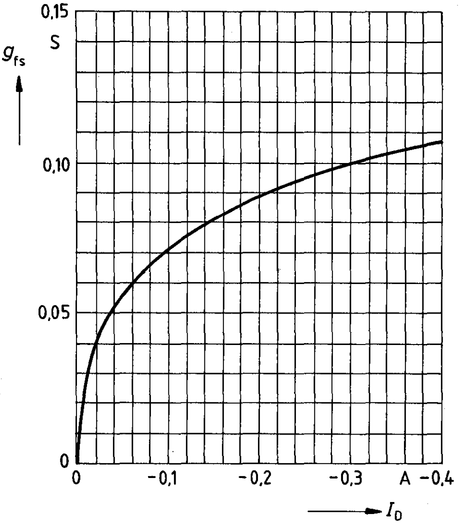
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = -1$ mA



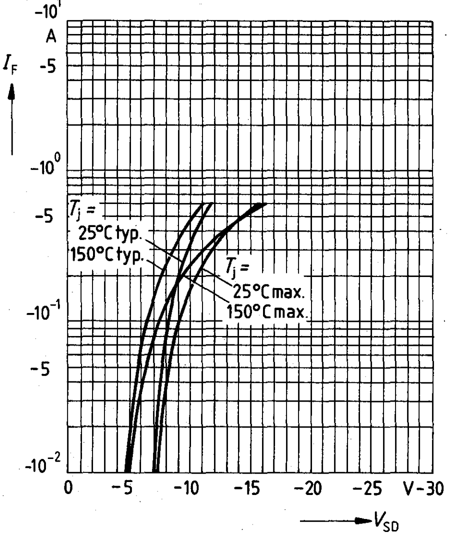
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = -25$V, $T_j = 25\,°C$



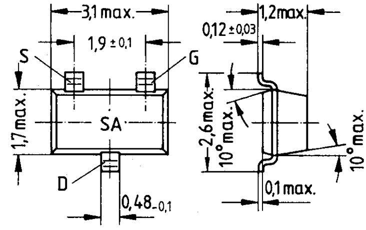
Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Drain-source voltage V_{DS} = **100 V**
Continuous drain current I_D = **0,17 A**
Drain-source on-resistance $R_{DS(on)}$ = **6,0 Ω**

Description SIPMOS small signal FET, N-channel enhancement mode
Case Plastic package 23 A 3 in accordance with DIN 41869, or SOT 23 in accordance with JEDEC. Approx. weight 0,02 g

Type	Marking	Ordering code
BSS 123	SA	Q62702-50507



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	100V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	100V
Continuous drain current, T_{SR} = 50 °C	I_D	0,17A
Pulsed drain current, T_{SR} = 25 °C	I_{Dpuls}	0,68A
Gate-source voltage	V_{GS}	35V
Max. power dissipation	P_D	0,36W
Operating and storage temperature range	T_j T_{stg}	– 55 °C... + 150 °C
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤350K/W
	$R_{th\ JSR}$ [1])	≤285K/W

[1]) Ceramic substrate: 0,7 mm thick; 2,5 cm^2 area

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	100	–	–	V	V_{GS} = 0V I_D = 0,5 mA
Gate threshold voltage	$V_{GS\,(th)}$	0,8	2,2	2,8		V_{DS} = V_{GS} I_D = 1mA
Zero gate voltage drain current	I_{DSS}	– –	1 2	15 60	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 100V V_{GS} = 0V
		– – –	– – –	10 – –	nA	T_j = 25 °C V_{DS} = 20V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	50		V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	5,0	6,0	Ω	V_{GS} = 10V I_D = 100mA

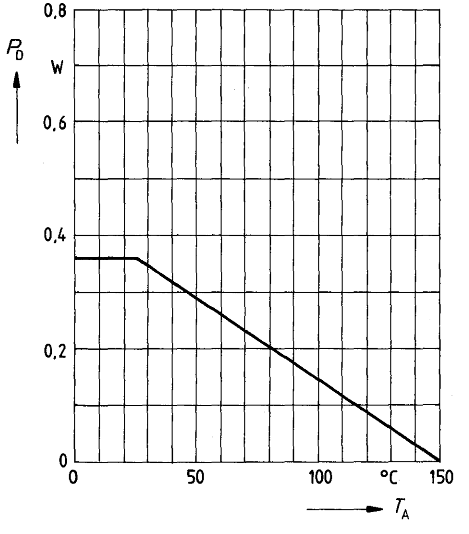
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	0,08	0,12	–	S	V_{DS} = 25V I_D = 100mA
Input capacitance	C_{iss}	–	20	–	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	9	–		
Reverse transfer capacitance	C_{rss}	–	4	–		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	10	–	ns	V_{CC} = 30V I_D = 0,28A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	10	–		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	15	–		
	t_f	–	25	–		

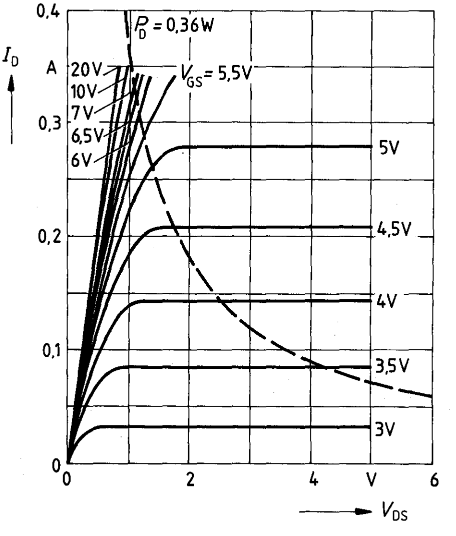
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	0,17	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	0,68		
Diode forward on-voltage	V_{SD}	–	1,1	1,3	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	–	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	–	–	µC	

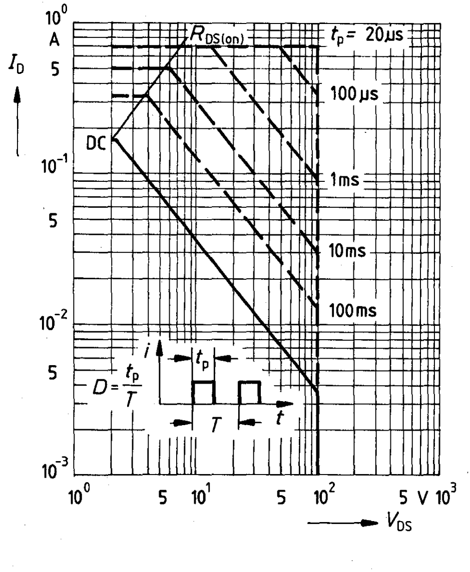
Power dissipation $P_D = f(T_A)$



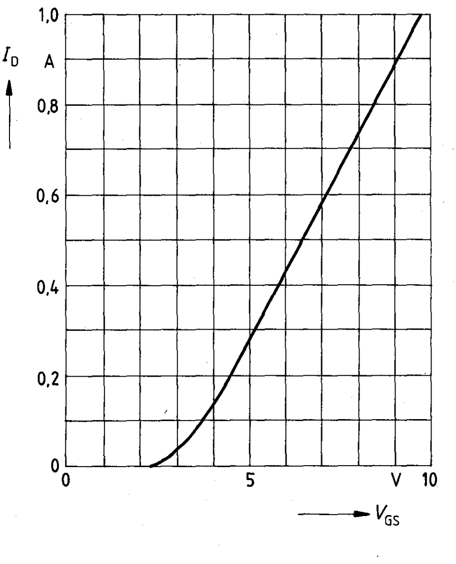
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



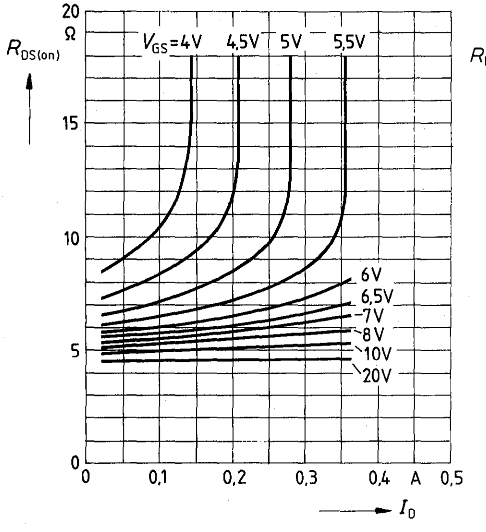
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



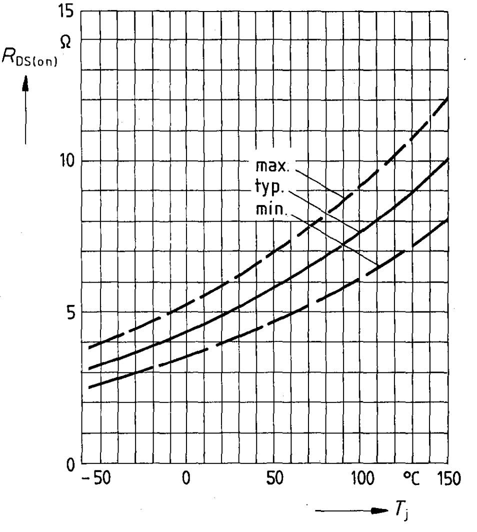
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



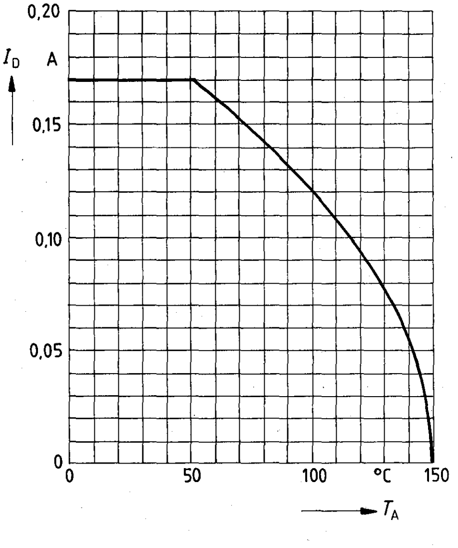
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25°C$



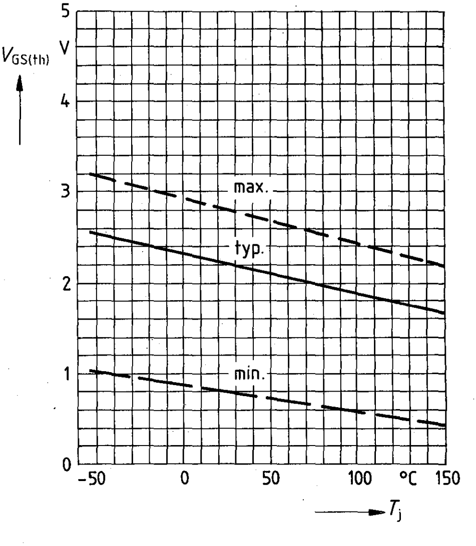
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: I_D = 100 mA, V_{GS} = 10 V



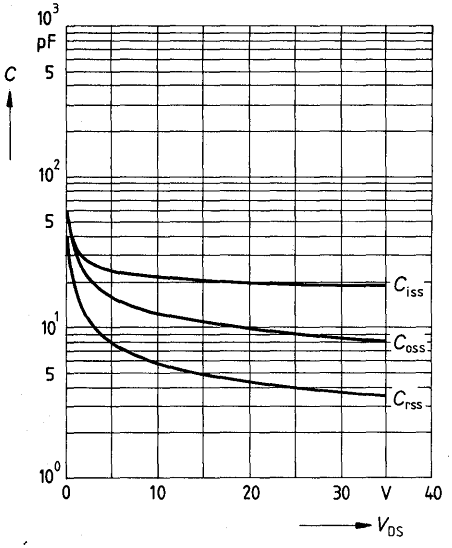
Continuous drain current $I_D = f(T_A)$



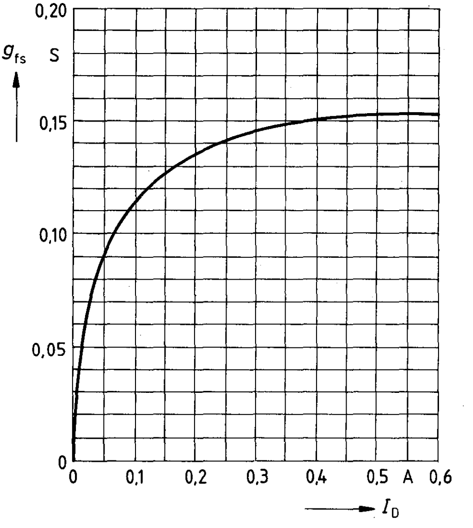
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, I_D = 1 mA



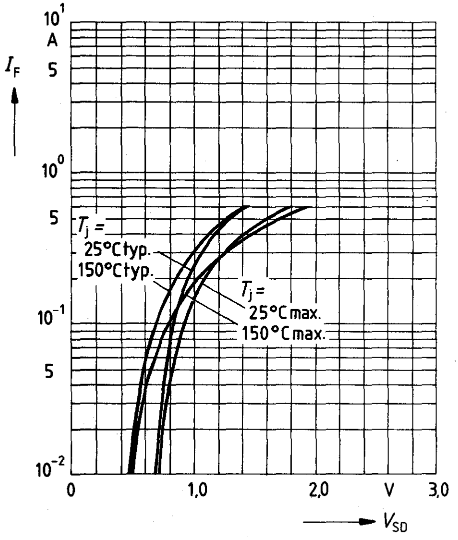
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, t_p = 80 µs

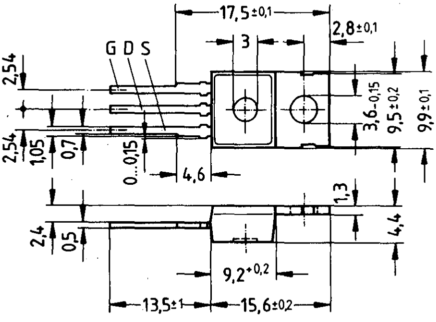


Power Transistors

Drain-source voltage V_{DS} **= 50 V**
Continuous drain current I_D **= 19 A**
Drain-source on-resistance $R_{DS(on)}$ **= 0,1 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 14A3 in accordance with DIN 41869, or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 10	C67078-A1300-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	50V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	50V
Continuous drain current, T_{case} = 30 °C	I_D	19A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	75A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j, T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤75K/W
	$R_{th\ JC}$	≤1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	50	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 50V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,085	0,1	Ω	V_{GS} = 10V I_D = 10A

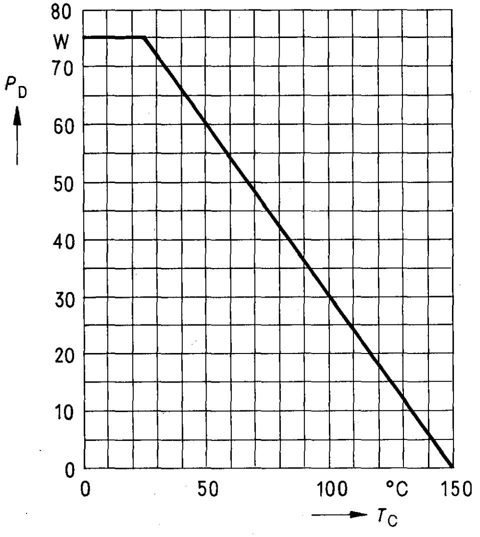
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	3,0	4,8	–	S	V_{DS} = 25V I_D = 10A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	550	800		
Reverse transfer capacitance	C_{rss}	–	200	300		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	60	90		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	130	170		
	t_f	–	110	140		

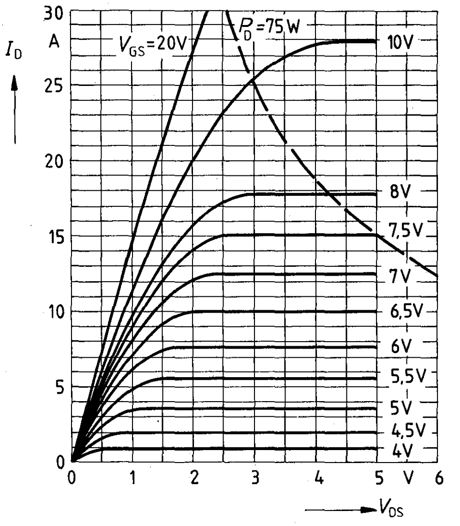
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	19	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	75		
Diode forward on-voltage	V_{SD}	–	1,3	1,5	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	150	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	1,0	–	µC	

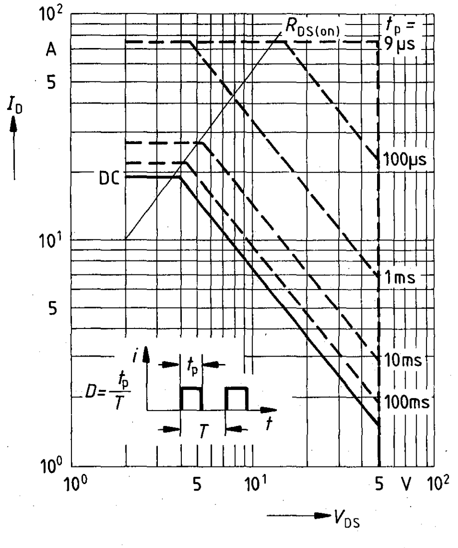
Power dissipation $P_D = f(T_{case})$



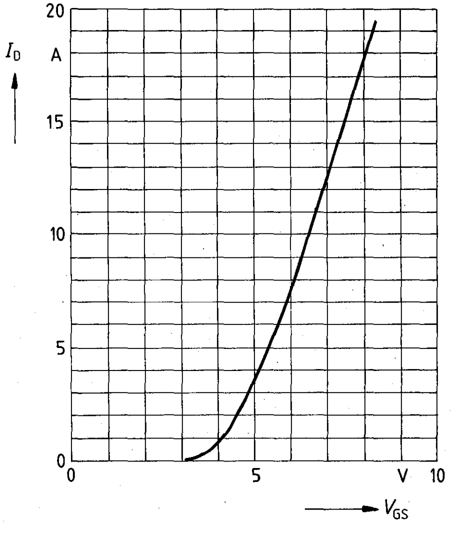
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 μs pulse test,
$T_{case} = 25°C$



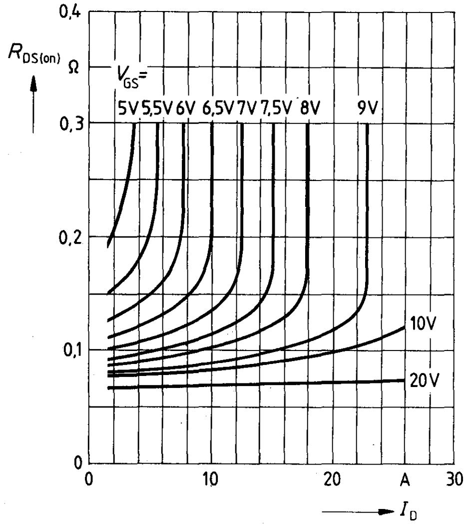
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



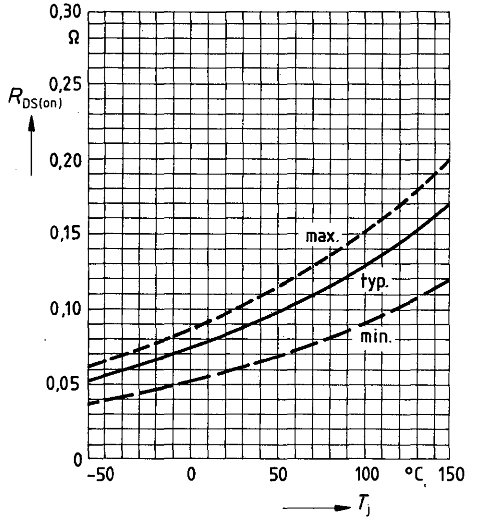
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 μs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



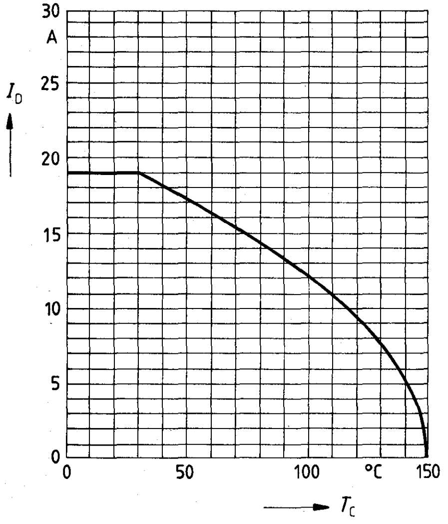
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



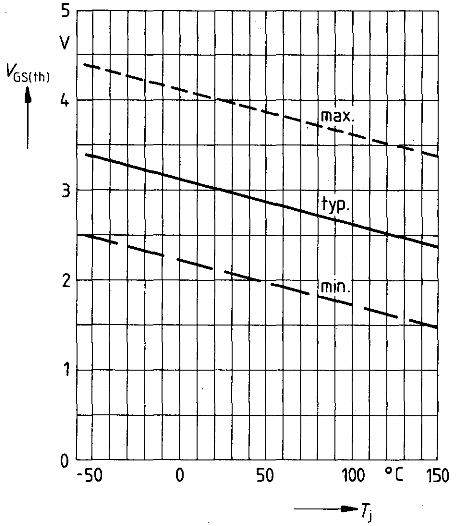
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 10\,A$, $V_{GS} = 10\,V$



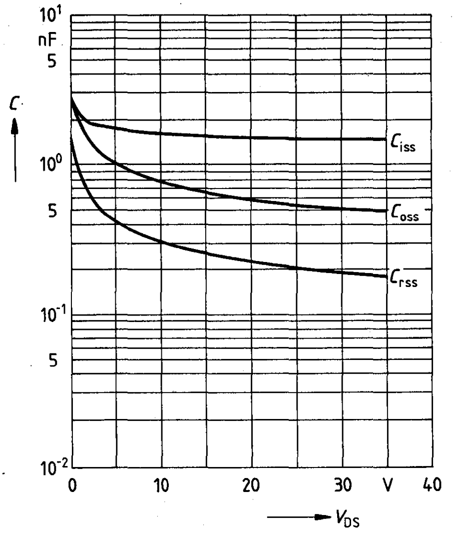
Continuous drain current $I_D = f(T_{case})$



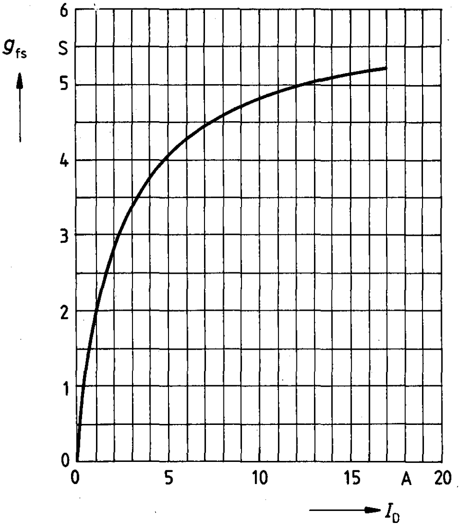
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



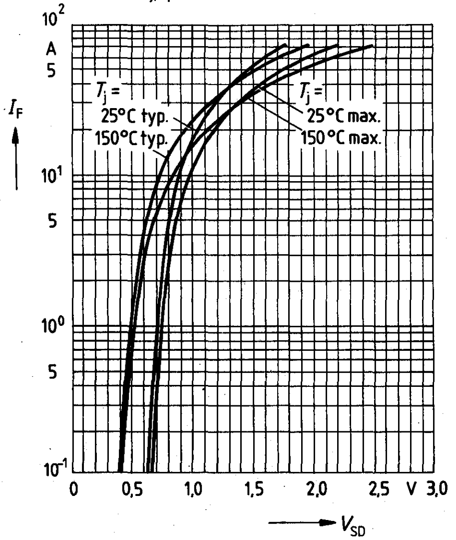
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



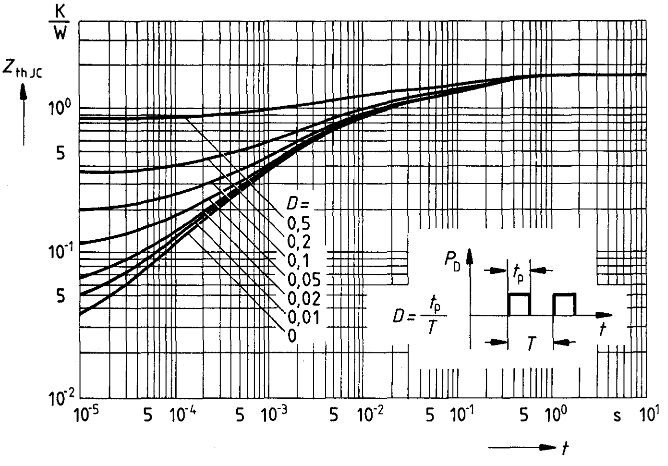
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$°C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



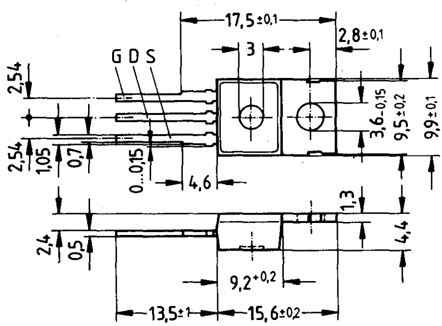
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **50 V**
Continuous drain current I_D = **17 A**
Drain-source on-resistance $R_{DS(on)}$ = **0,12 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 10 A	C67078-A1300-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	50V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	50V
Continuous drain current, T_{case} = 35 °C	I_D	17A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	65A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤75K/W
	$R_{th\ JC}$	≤1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)DSS}$	50	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 50V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS(on)}$	–	0,11	0,12	Ω	V_{GS} = 10V I_D = 10A

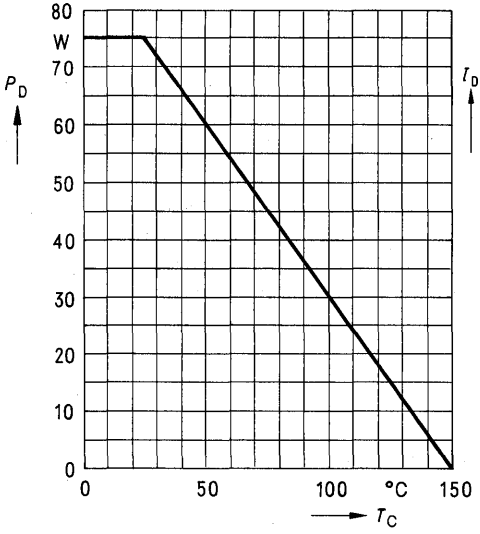
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	3,0	4,8	–	S	V_{DS} = 25V I_D = 10A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	500	800		
Reverse transfer capacitance	C_{rss}	–	200	300		
Turn-on time t_{on} ($t_{on} = t_{d(on)} + t_r$)	$t_{d(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	60	90		
Turn-off time t_{off} ($t_{off} = t_{d(off)} + t_f$)	$t_{d(off)}$	–	130	170		
	t_f	–	110	140		

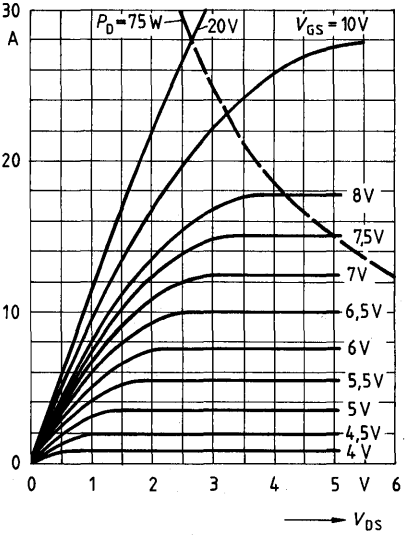
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	17	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	65		
Diode forward on-voltage	V_{SD}	–	1,3	1,5	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	150	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	1,0	–	µC	

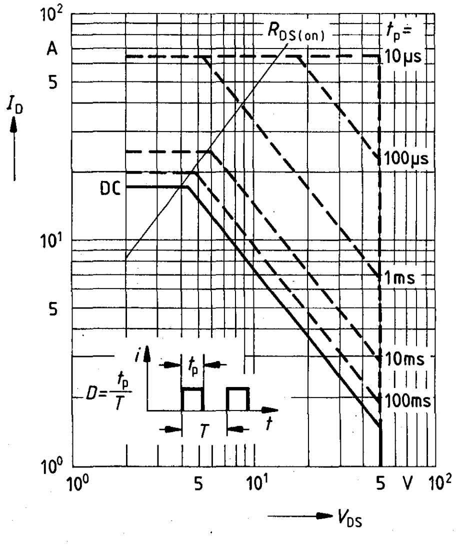
Power dissipation $P_D = f(T_{case})$



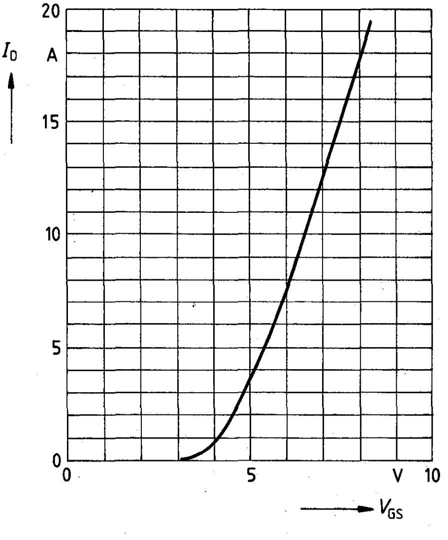
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



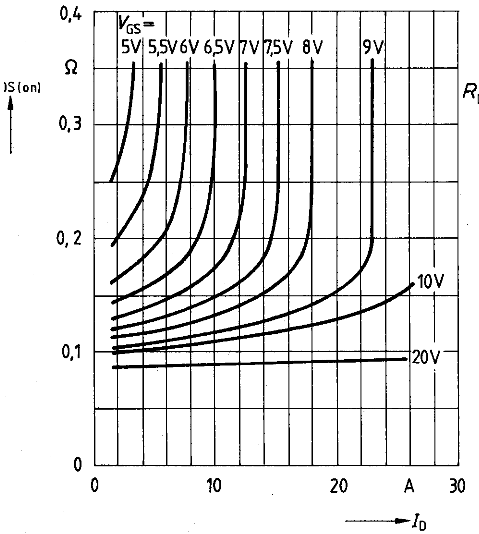
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, T_{case} = 25 °C



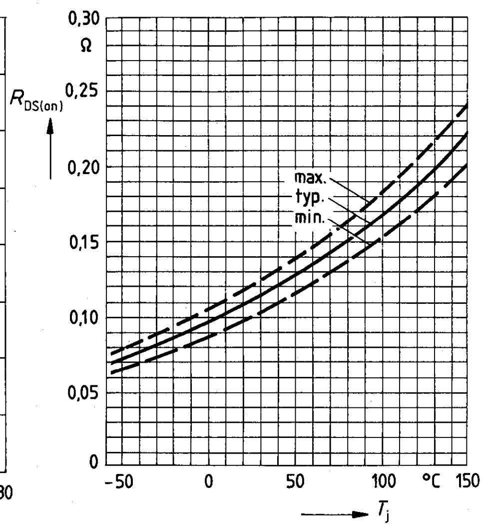
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



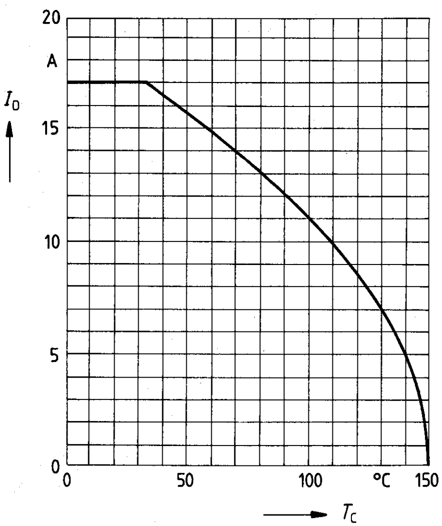
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



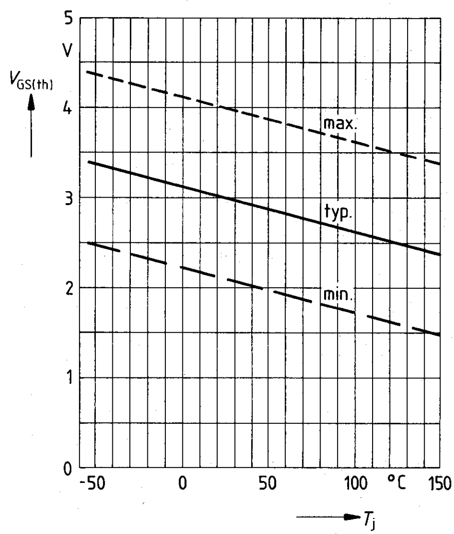
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: I_D = 10 A, V_{GS} = 10 V



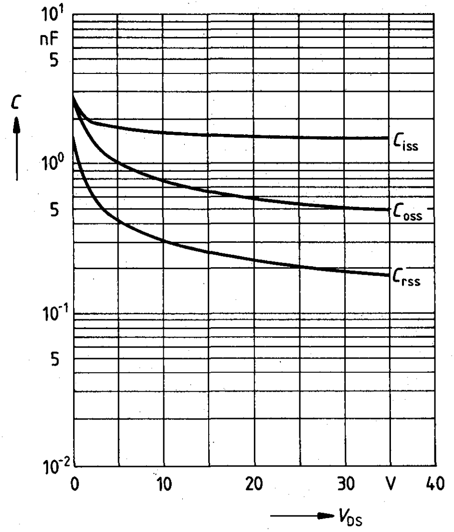
Continuous drain current $I_D = f(T_{case})$



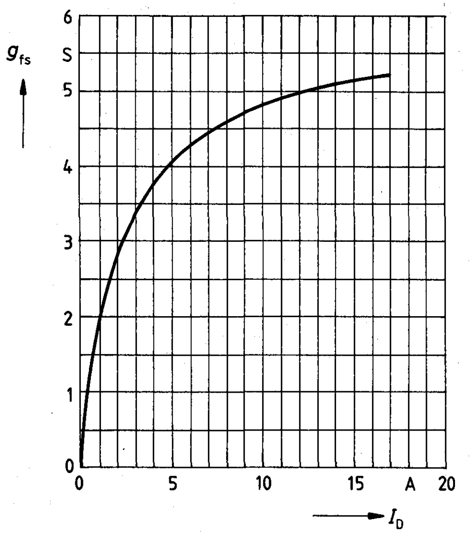
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, I_D = 10 mA



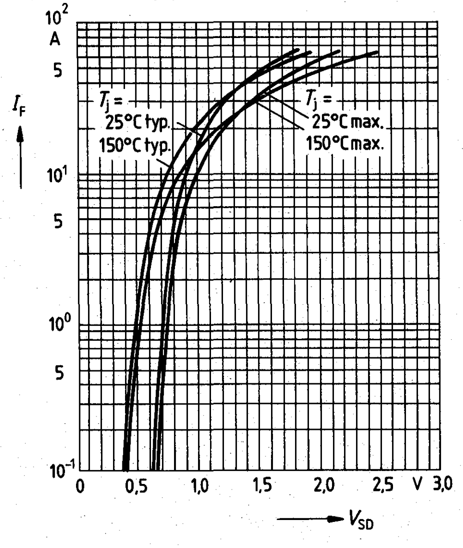
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



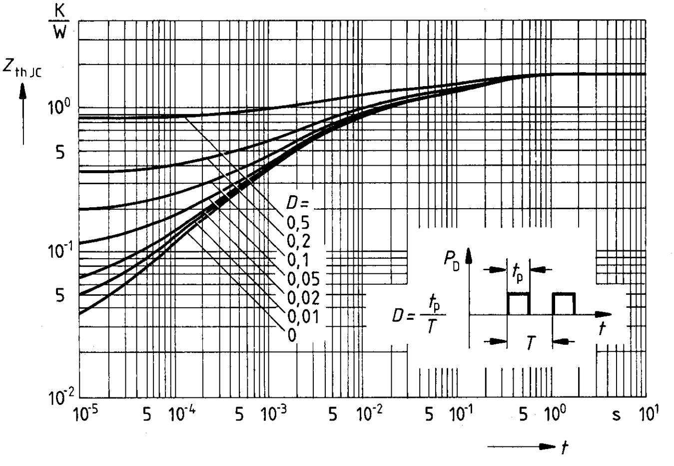
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V; $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

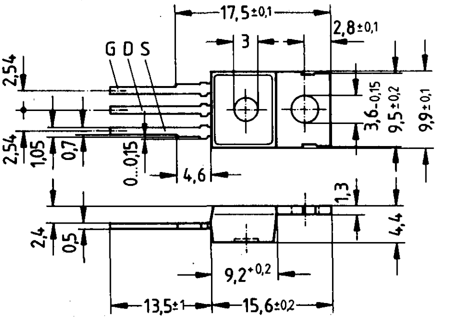


Drain-source voltage	V_{DS}	**= 50 V**
Continuous drain current	I_D	**= 30 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 0,04 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 11	C67078-A1301-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	50V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	50V
Continuous drain current, T_{case} = 30 °C	I_D	30A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	120A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤75K/W
	$R_{th\,JC}$	≤1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	50	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	μA	T_j = 25 °C T_j = 125 °C V_{DS} = 50V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,03	0,04	Ω	V_{GS} = 10V I_D = 15A

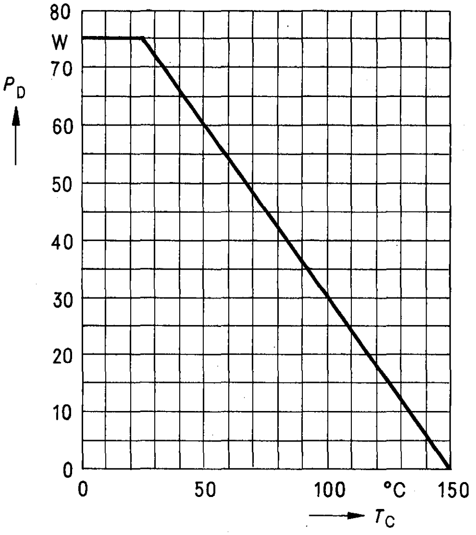
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	4,0	8,0	–	S	V_{DS} = 25V I_D = 15A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	750	1100		
Reverse transfer capacitance	C_{rss}	–	250	400		
Turn-on time t_{on} (t_{on} = $t_{d\,(on)}$ + t_r)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	70	110		
Turn-off time t_{off} (t_{off} = $t_{d\,(off)}$ + t_f)	$t_{d\,(off)}$	–	180	230		
	t_f	–	130	170		

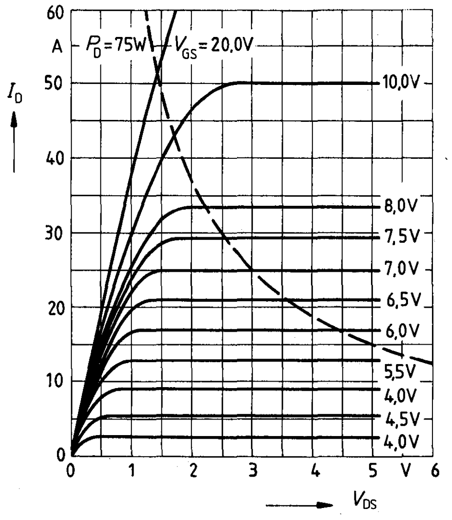
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	30	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	120		
Diode forward on-voltage	V_{SD}	–	1,7	2,6	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/μs
Reverse recovery charge	Q_{rr}	–	0,25	–	μC	

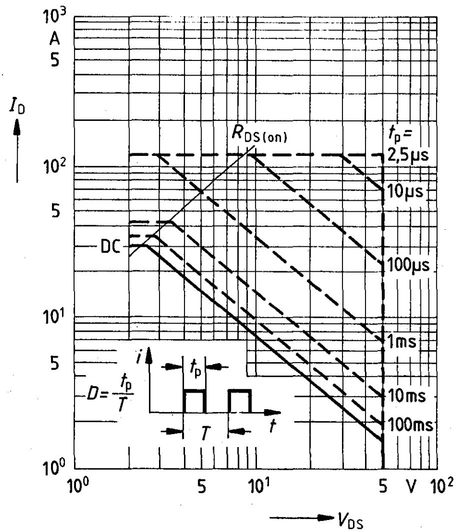
Power dissipation $P_D = f(T_{case})$



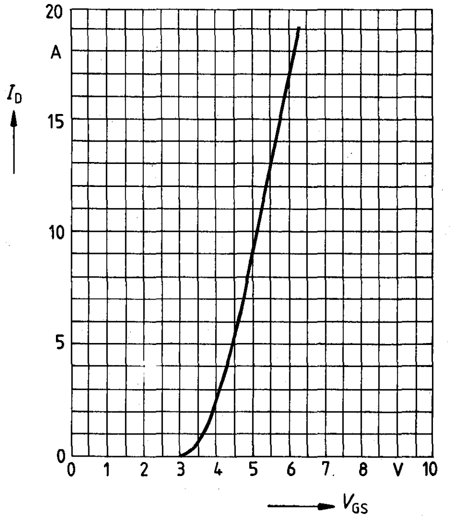
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



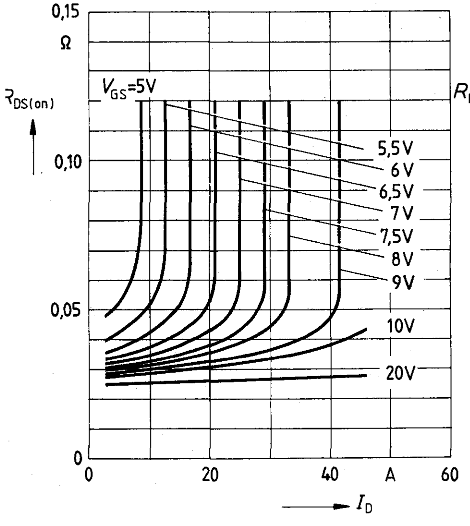
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



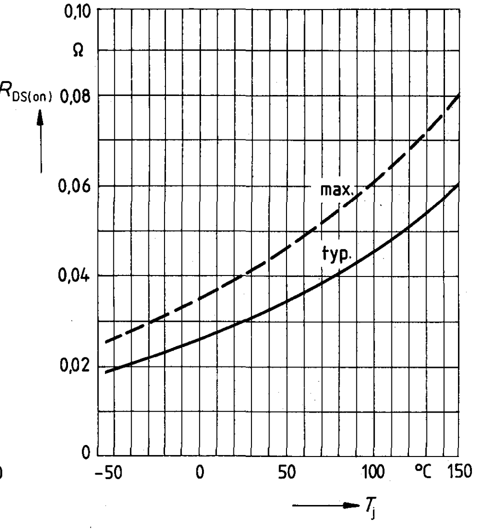
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



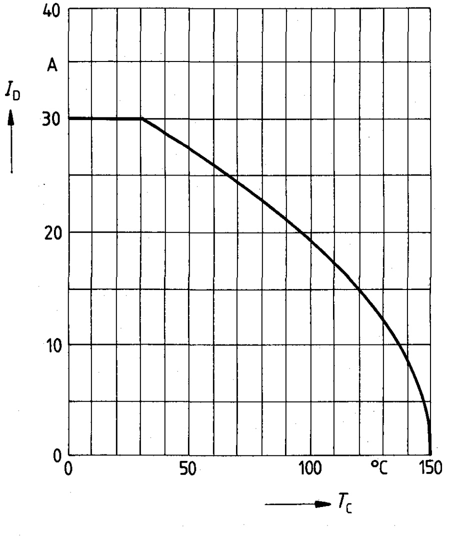
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



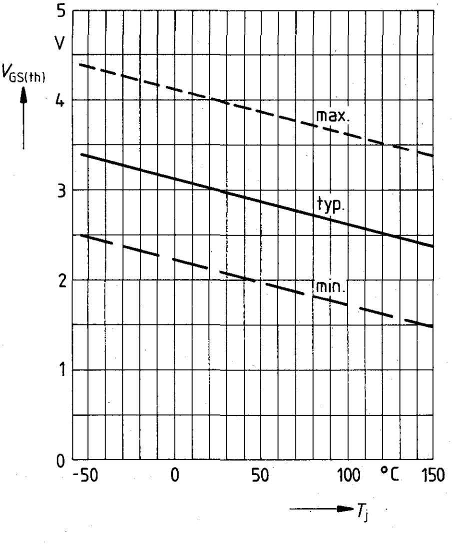
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 15$ A, $V_{GS} = 10$ V



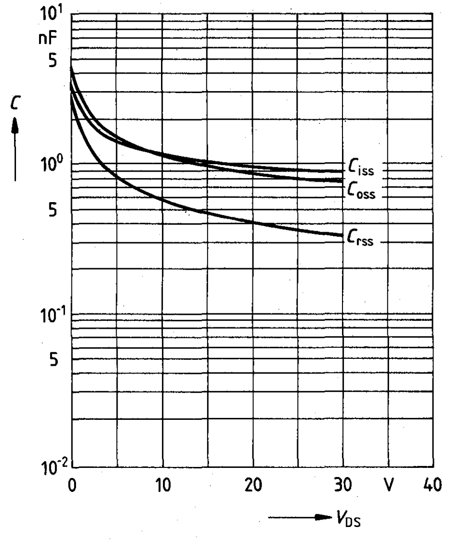
Continuous drain current $I_D = f(T_{case})$



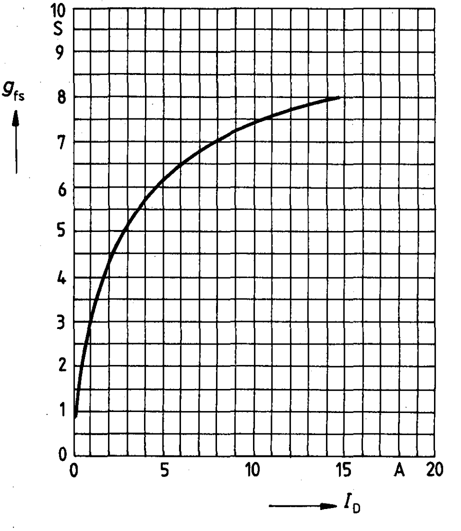
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



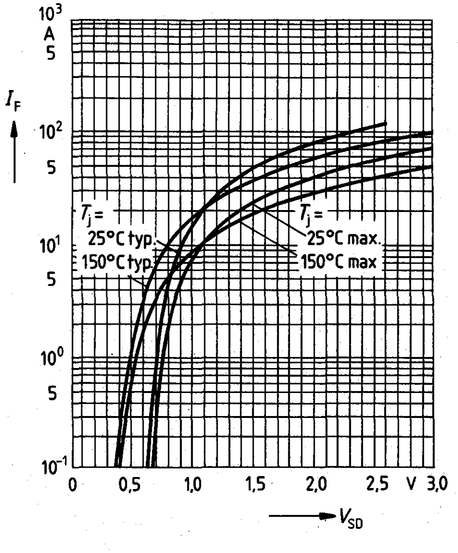
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



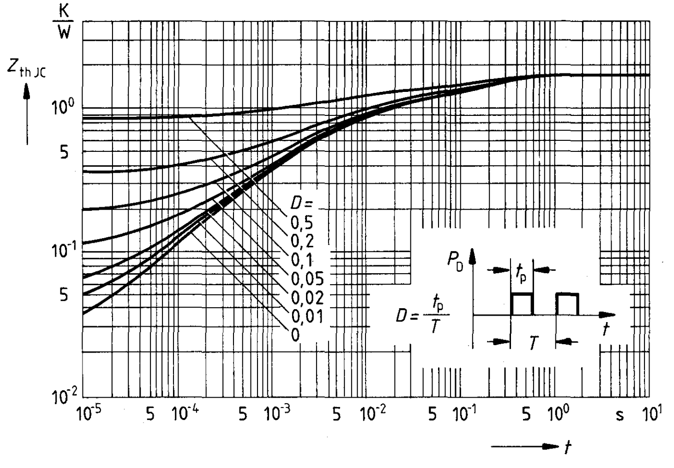
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$°C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

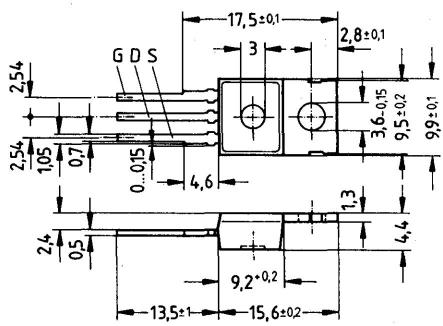


Drain-source voltage	V_{DS}	**= 50 V**
Continuous drain current	I_D	**= 25 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 0,06 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC. The drain terminal is conductively connected to the mounting flange. Approx. weight 2 g

Type	Ordering code
BUZ 11 A	C67078-A1301-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	50V
Drain-gate voltage, $R_{GS} = 20$ kΩ	V_{DGR}	50V
Continuous drain current, $T_{case} = 25$ °C	I_D	25A
Pulsed drain current, $T_{case} = 25$ °C	I_{Dpuls}	100A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage ($t = 1$ min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤75K/W
	$R_{th\,JC}$	≤1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	50	–	–	V	V_{GS} = 0V; I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS}; I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 50V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V; V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,05	0,06	Ω	V_{GS} = 10V; I_D = 15A

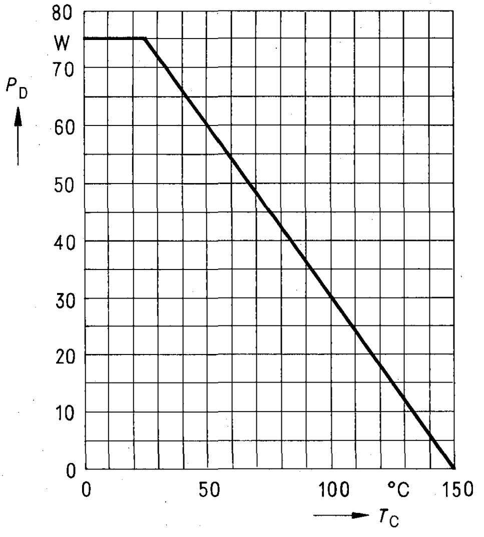
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	4,0	8,0	–	S	V_{DS} = 25V; I_D = 15A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V; V_{DS} = 25V; f = 1MHz
Output capacitance	C_{oss}	–	750	1100		
Reverse transfer capacitance	C_{rss}	–	250	400		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V; I_D = 3A; V_{GS} = 10V; R_{GS} = 50Ω
	t_r	–	70	110		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	180	230		
	t_f	–	130	170		

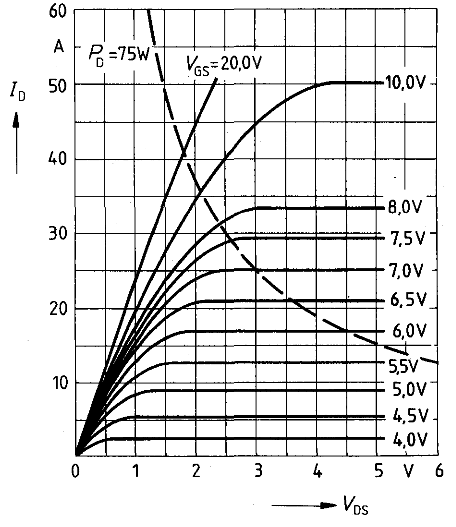
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	25	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	100		
Diode forward on-voltage	V_{SD}	–	1,6	2,4	V	I_F = 2 × I_{DR}; V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	200	–	ns	T_j = 25 °C; I_F = I_{DR}; $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	0,25	–	µC	

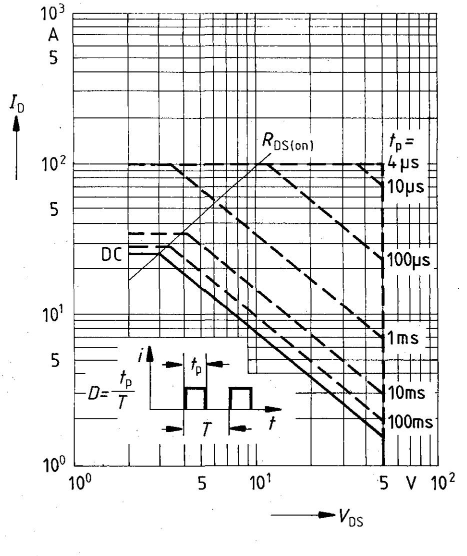
Power dissipation $P_D = f(T_{case})$



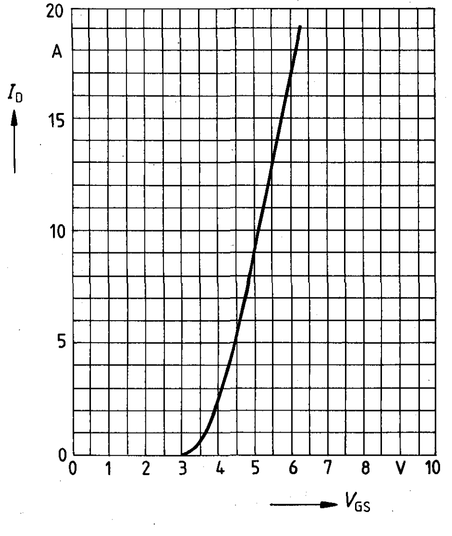
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 μs pulse test,
$T_{case} = 25\,°C$



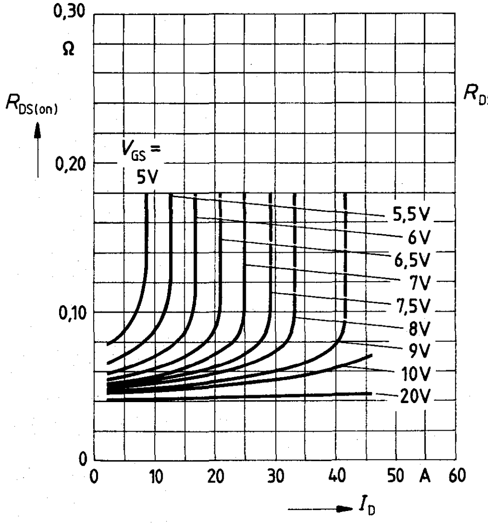
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



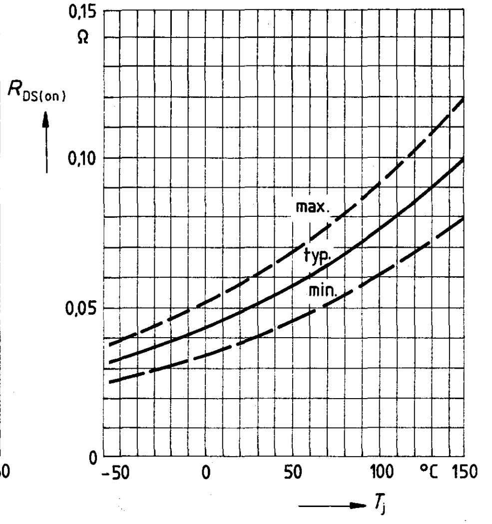
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 μs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



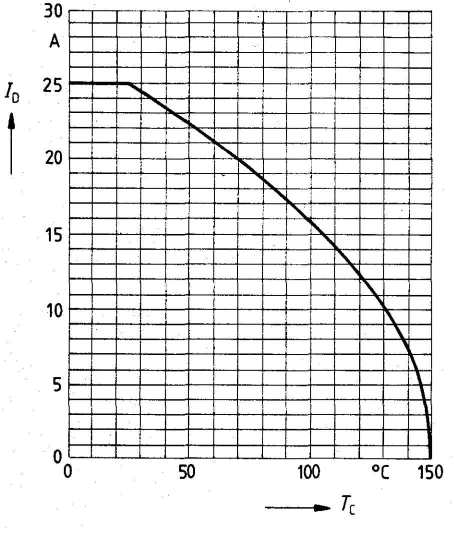
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



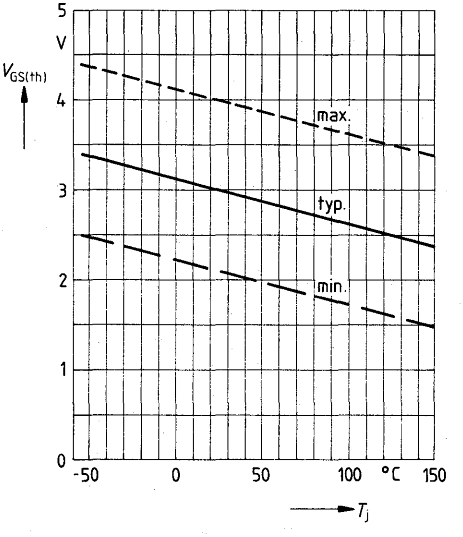
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 15\,A$, $V_{GS} = 10\,V$



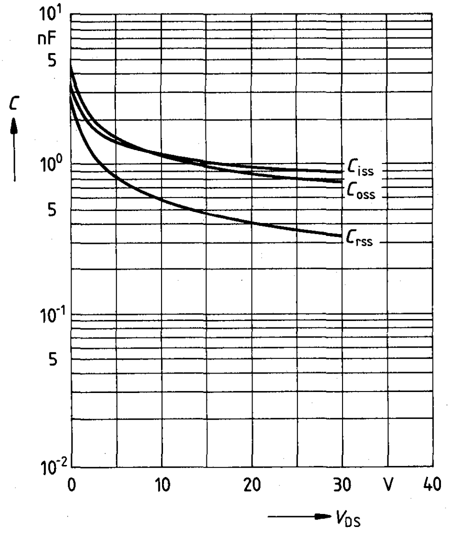
Continuous drain current $I_D = f(T_{case})$



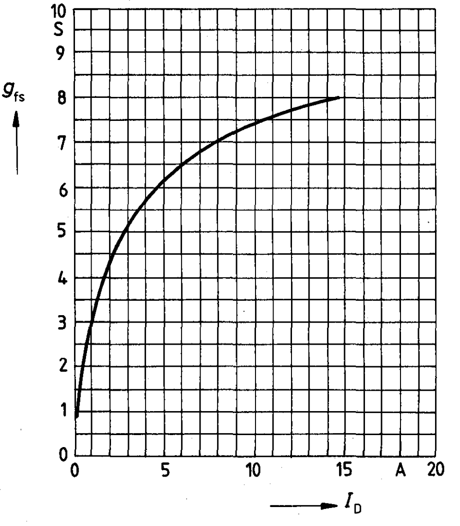
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



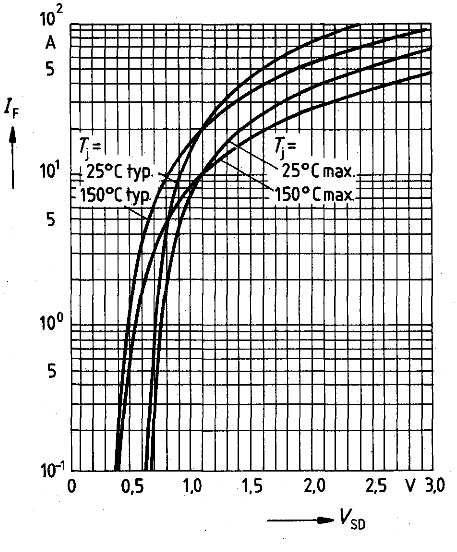
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



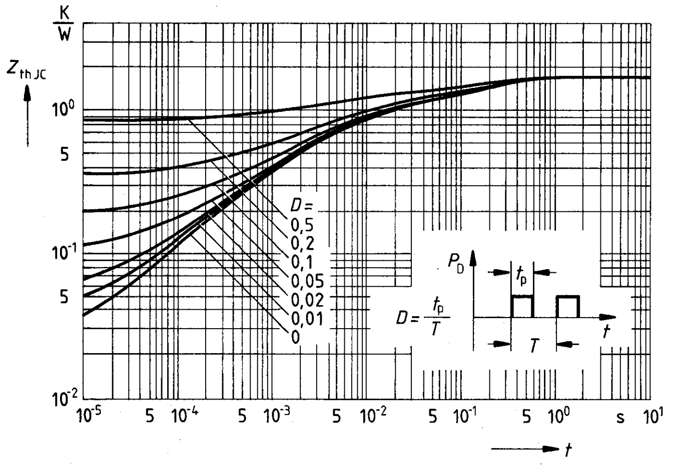
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, t_p = 80 µs



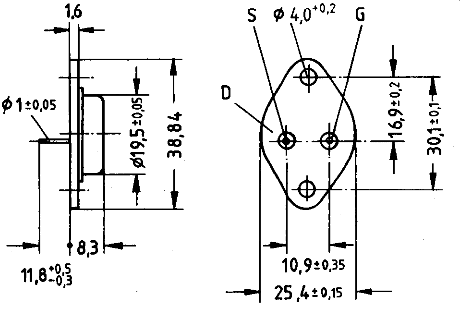
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **50 V**
Continuous drain current I_D = **39 A**
Drain-source on-resistance $R_{DS(on)}$ = **0,04 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Metal case 3A2 in accordance with DIN 41 872,
or TO 204 AE (TO 3) in accordance with JEDEC.
Approx. weight 12 g

Type	Ordering code
BUZ 14	C67078-A1000-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	50V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	50V
Continuous drain current, T_{case} = 25 °C	I_D	39A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	155A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C… +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\ JA}$	≤35K/W
	$R_{th\ JC}$	≤1,0K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	50	65	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 50V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,035	0,04	Ω	V_{GS} = 10V I_D = 22A

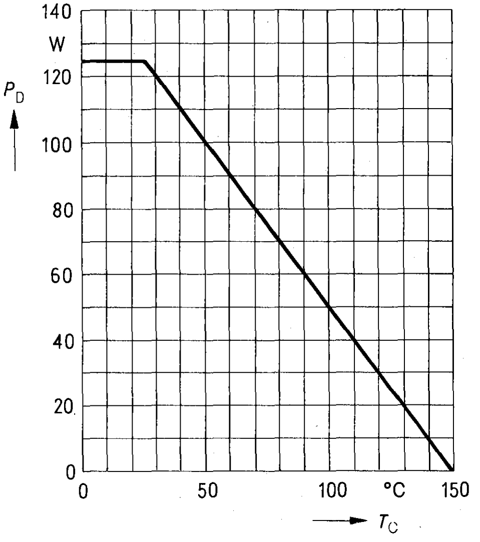
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	7,0	18,0	–	S	V_{DS} = 25V I_D = 22A
Input capacitance	C_{iss}	–	1600	2100	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	1300	2000		
Reverse transfer capacitance	C_{rss}	–	500	800		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	110	170		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	250	330		

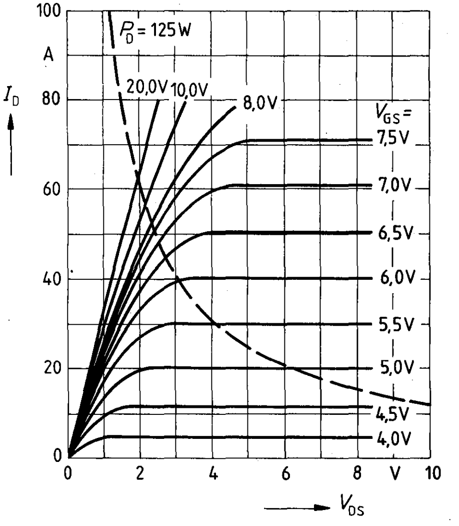
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	39	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	155		
Diode forward on-voltage	V_{SD}	–	1,5	2,2	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	150	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	1,0	–	µC	

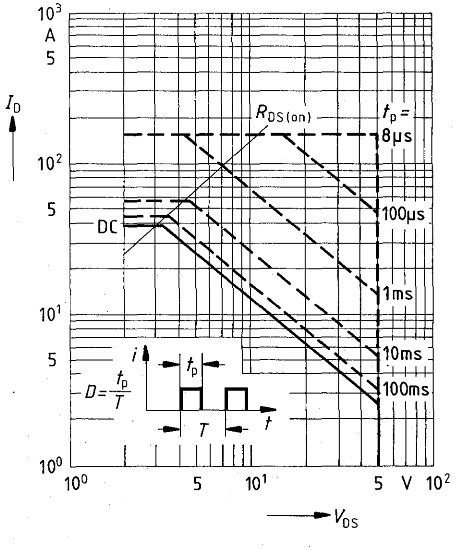
Power dissipation $P_D = f(T_{case})$



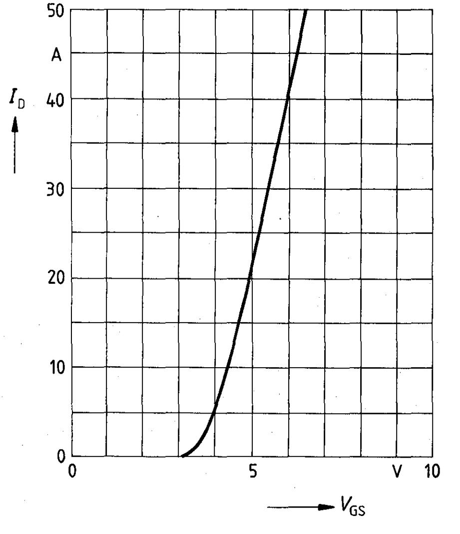
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



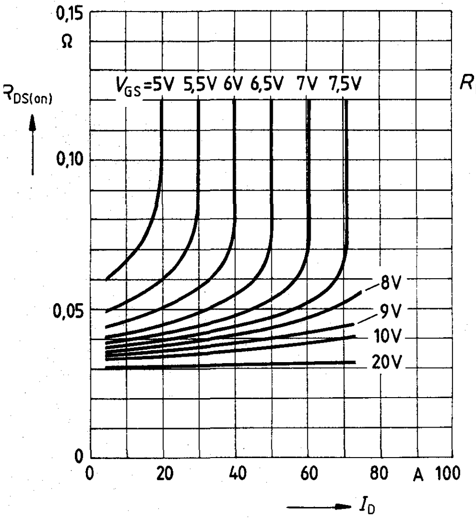
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



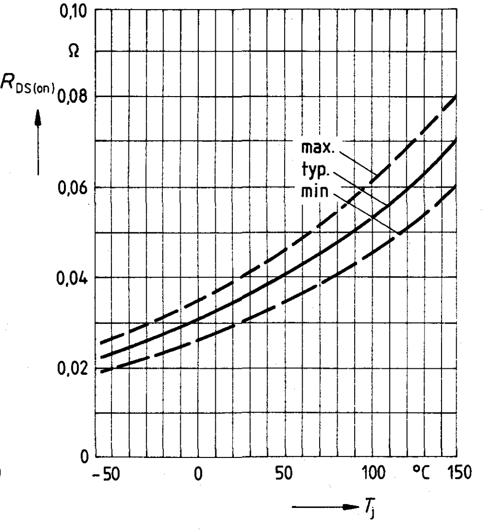
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



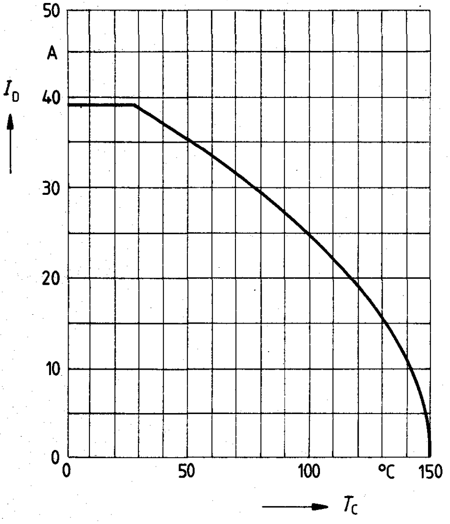
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



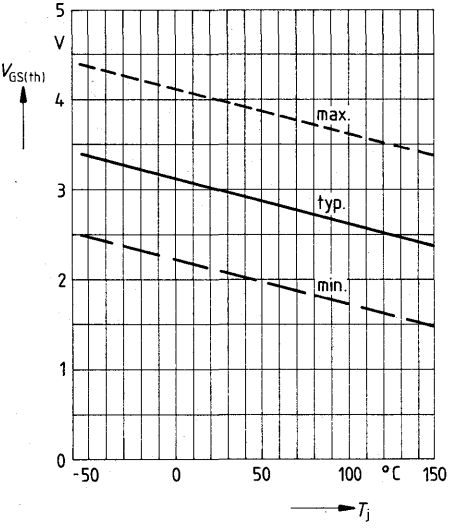
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 22$ A, $V_{GS} = 10$ V



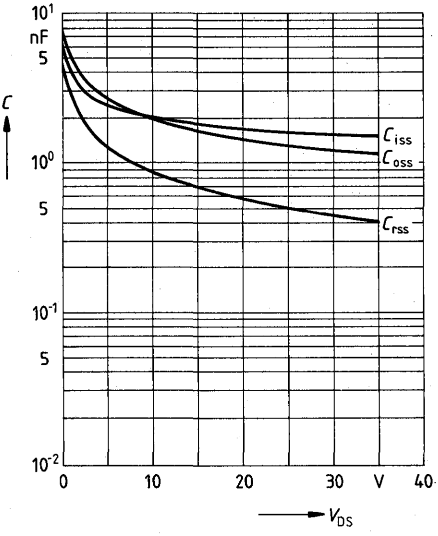
Continuous drain current $I_D = f(T_{case})$



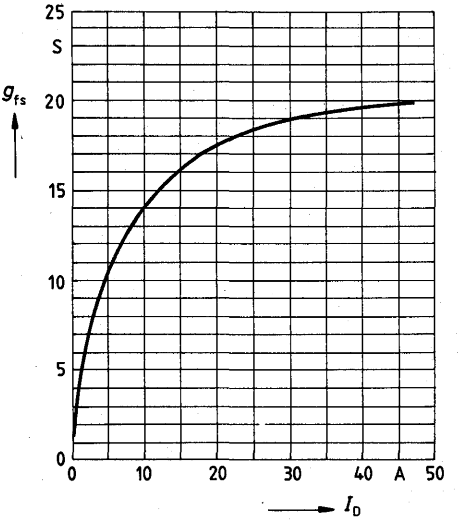
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



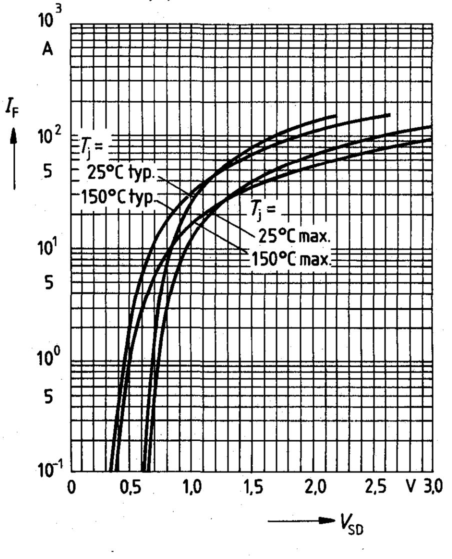
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



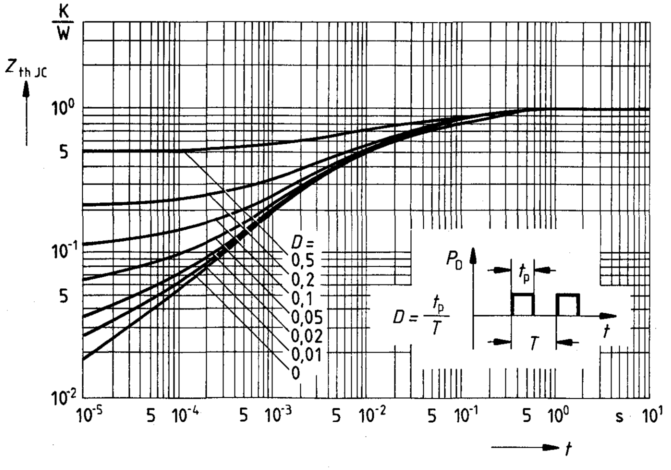
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



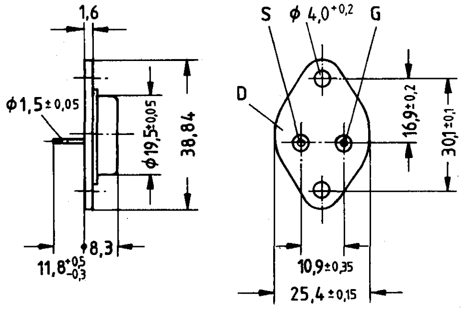
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage	V_{DS}	**= 50 V**
Continuous drain current	I_D	**= 45 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 0,03 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AE (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 15	C67078-A1001-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	50V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	50V
Continuous drain current, T_{case} = 25 °C	I_D	45A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	180A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j, T_{stg}	−55 °C ... + 150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\,JA}$	≤35K/W
	$R_{th\,JC}$	≤1,0K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	50	65	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 50V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,025	0,03	Ω	V_{GS} = 10V I_D = 22A

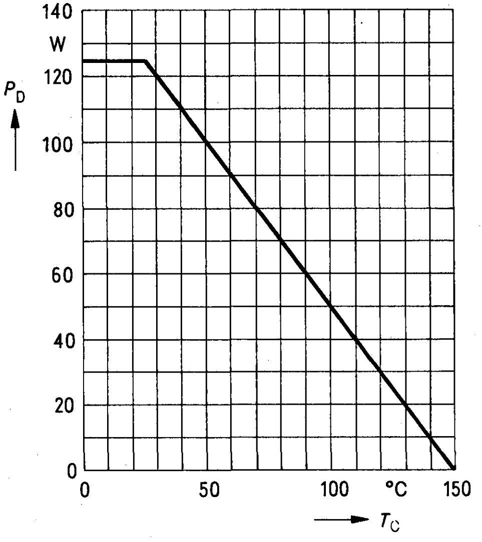
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	7,0	18,0	–	S	V_{DS} = 25V I_D = 22A
Input capacitance	C_{iss}	–	1600	2100	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	1300	2000		
Reverse transfer capacitance	C_{rss}	–	500	800		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	110	170		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	250	330		

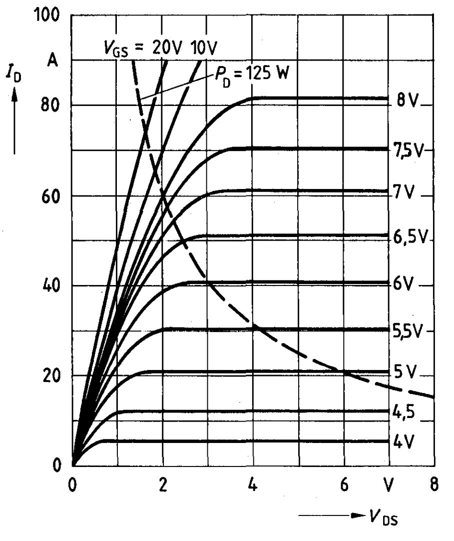
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	45	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	180		
Diode forward on-voltage	V_{SD}	–	1,6	2,4	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25°C
Reverse recovery time	t_{rr}	–	150	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	1,0	–	µC	

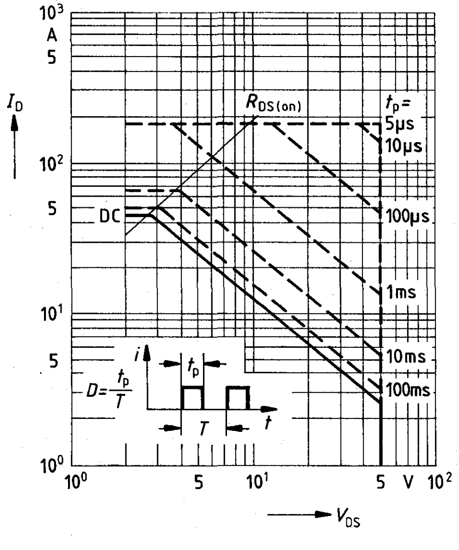
Power dissipation $P_D = f(T_{case})$



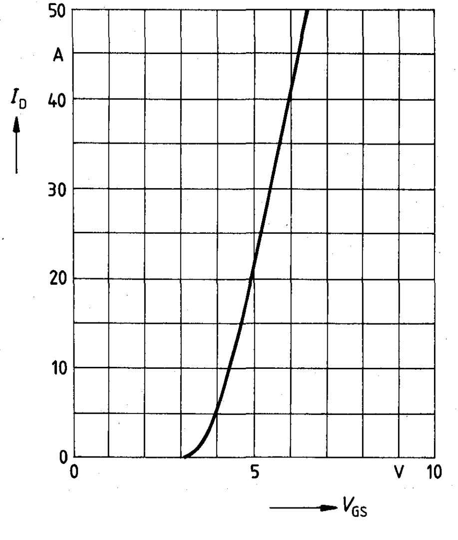
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 μs pulse test,
$T_{case} = 25°C$



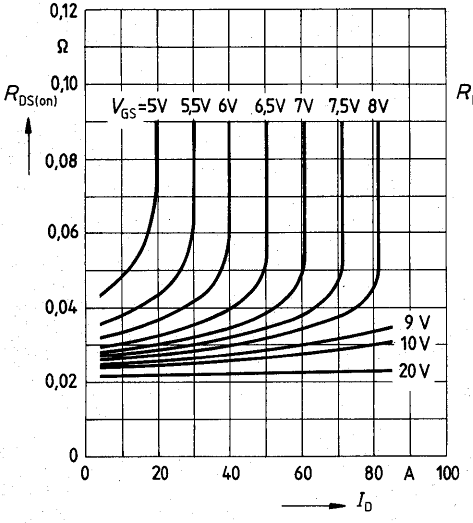
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



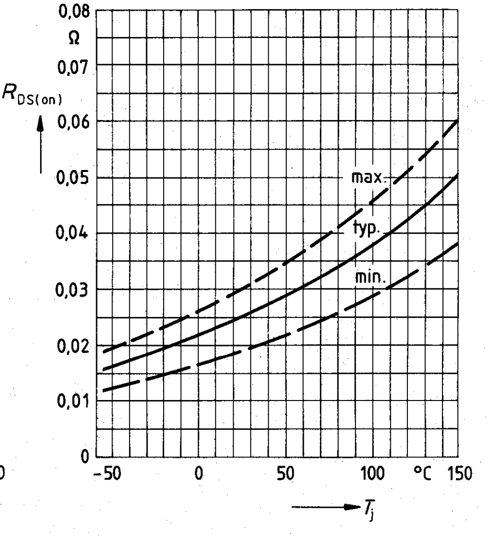
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 μs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



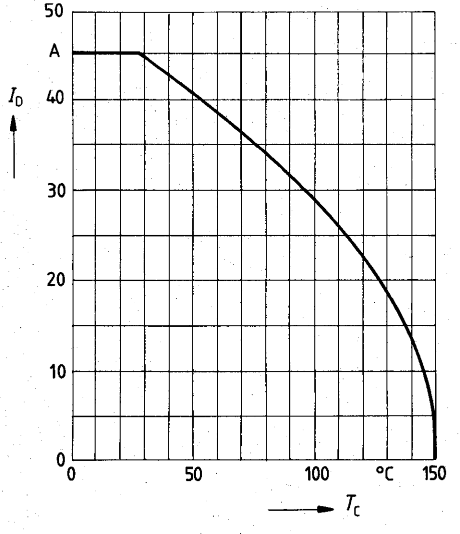
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



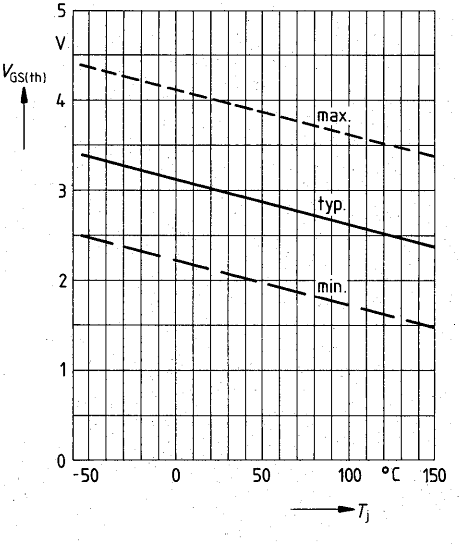
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 22$ A, $V_{GS} = 10$ V



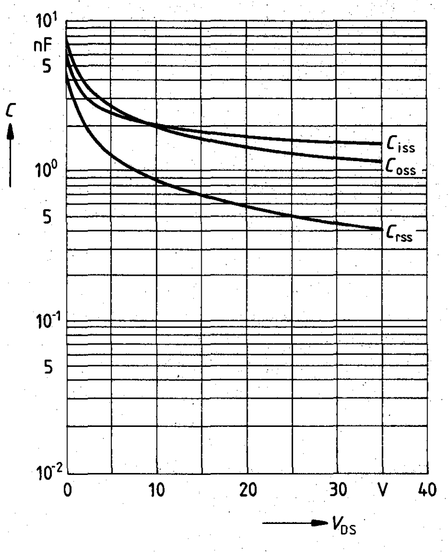
Continuous drain current $I_D = f(T_{case})$



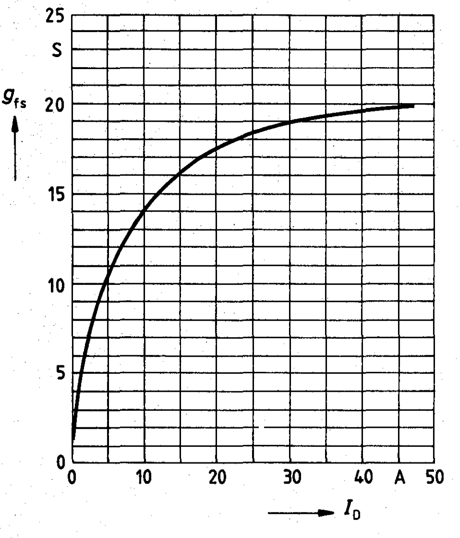
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



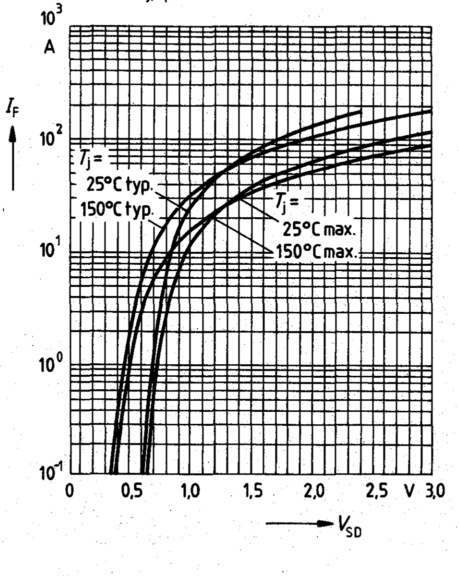
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



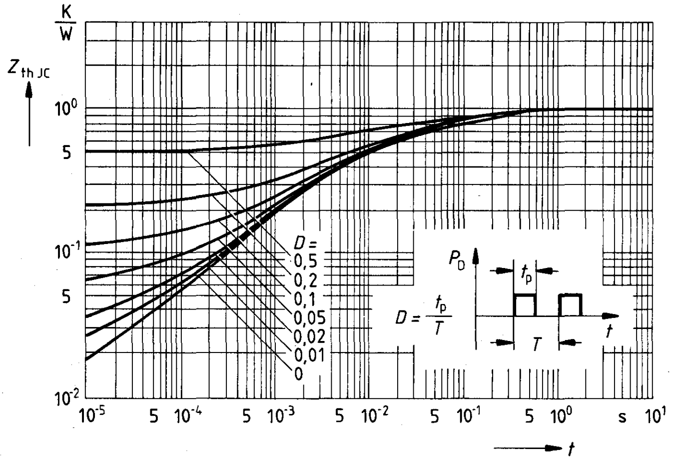
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



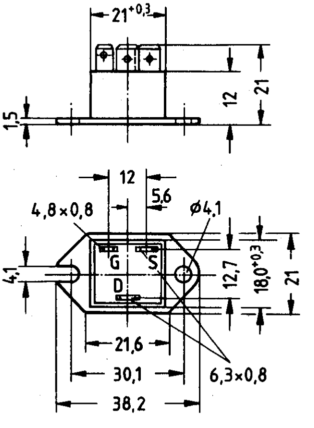
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **50 V**
Continuous drain current I_D = **32 A**
Drain-source on-resistance $R_{DS(on)}$ = **0,04 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package TO 238 AA with insulated metal base plate in accordance with JEDEC, compatible with TO 3; AMP plug-in connections.
Approx. weight 21 g

Type	Ordering code
BUZ 17	C67078-A1600-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	50V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	50V
Continuous drain current, T_{case} = 25 °C	I_D	32A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	125A
Gate-source voltage	V_{GS}	± 20V
Max. power dissipation	P_D	83,3W
Operating and storage temperature range	T_j, T_{stg}	– 55 °C ... + 150 °C
Isolation test voltage (t = 1 min)	V_{is}	3500Vdc[1])
DIN humidity category		F
Thermal resistance	$R_{th\ JA}$	–
	$R_{th\ JC}$	≤ 1,5K/W

[1]) Isolation test voltage between drain and heat sink referred to standard climate 23/50 in accordance with DIN 50014.

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	50	65	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	μA	T_j = 25 °C T_j = 125 °C V_{DS} = 50V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,035	0,04	Ω	V_{GS} = 10V I_D = 22A

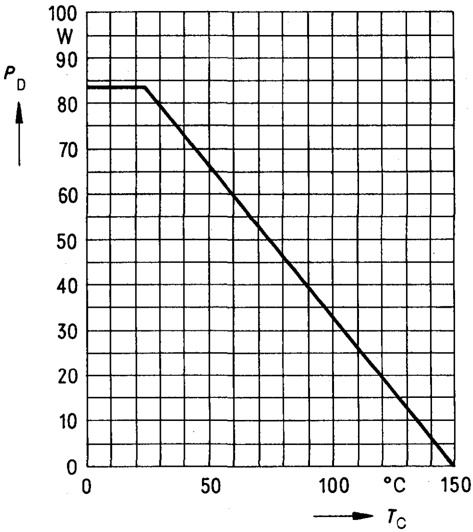
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	7,0	18,0	–	S	V_{DS} = 25V I_D = 22A
Input capacitance	C_{iss}	–	1600	2100	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	1300	2000		
Reverse transfer capacitance	C_{rss}	–	500	800		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	110	170		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	250	330		

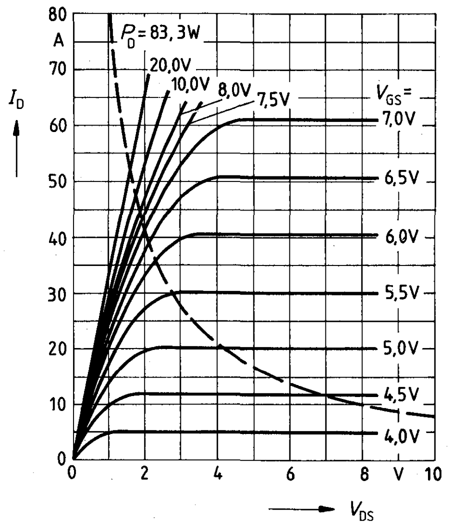
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	32	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	125		
Diode forward on-voltage	V_{SD}	–	1,4	2,0	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	150	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/μs
Reverse recovery charge	Q_{rr}	–	1,0	–	μC	

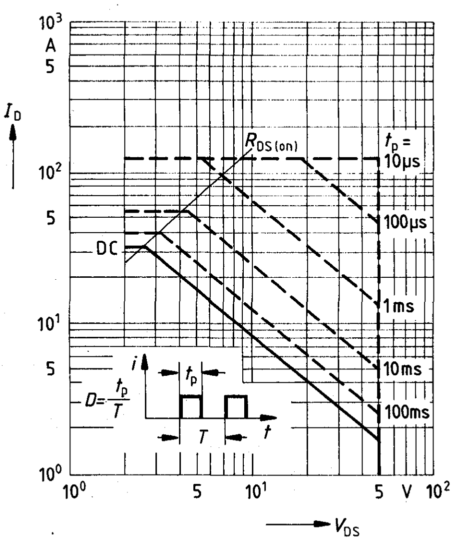
Power dissipation $P_D = f(T_{case})$



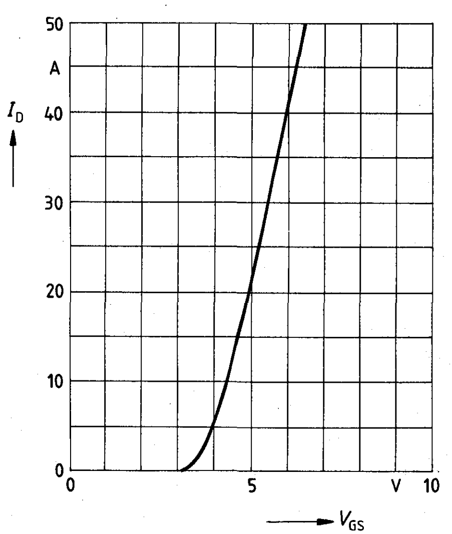
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



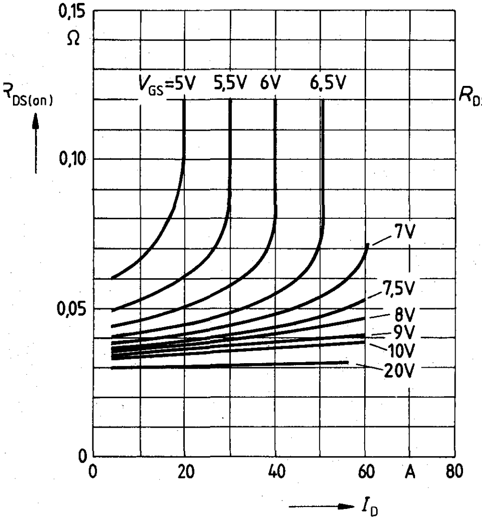
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



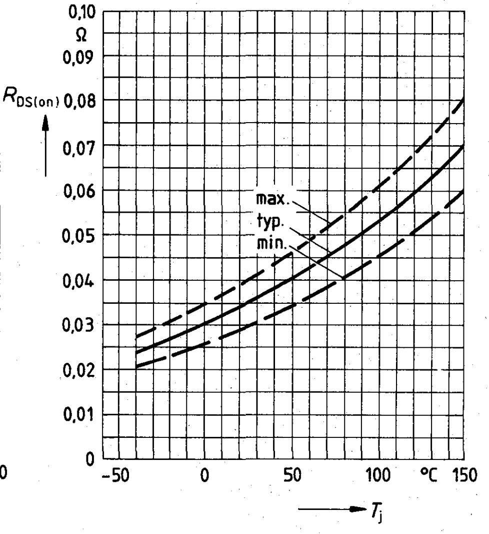
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



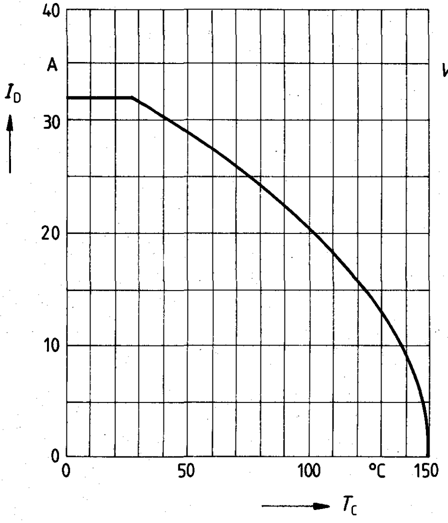
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



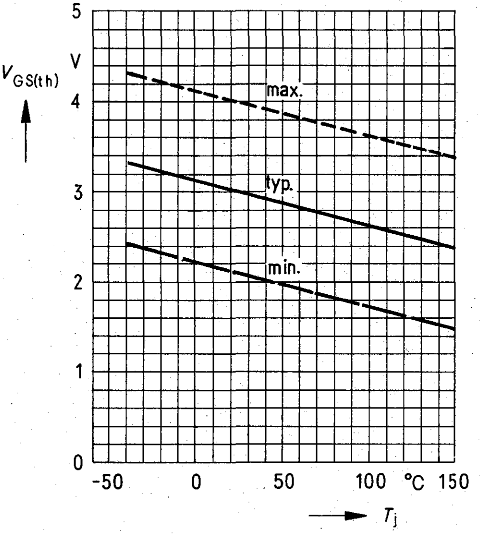
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 22$ A, $V_{GS} = 10$ V



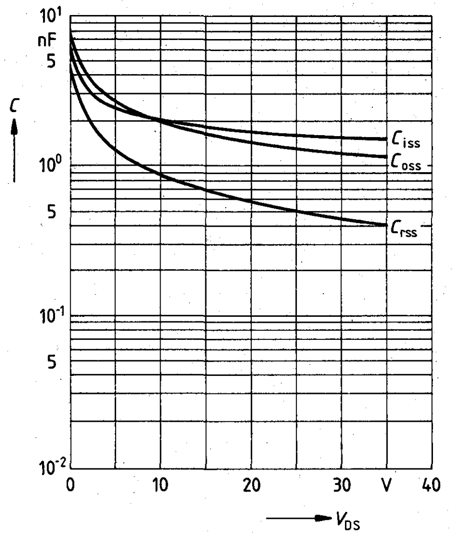
Continuous drain current $I_D = f(T_{case})$



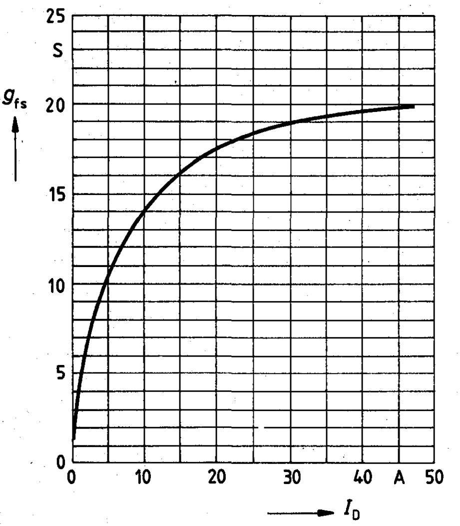
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



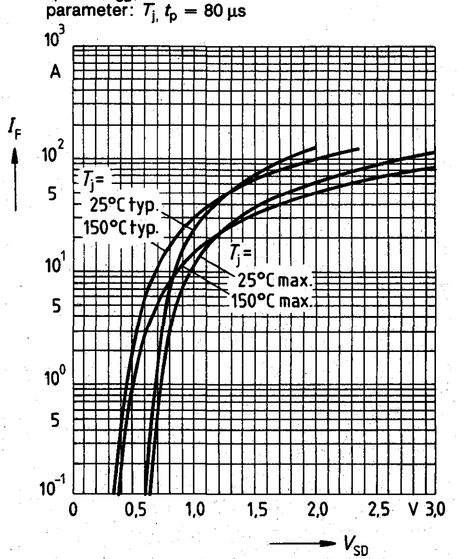
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



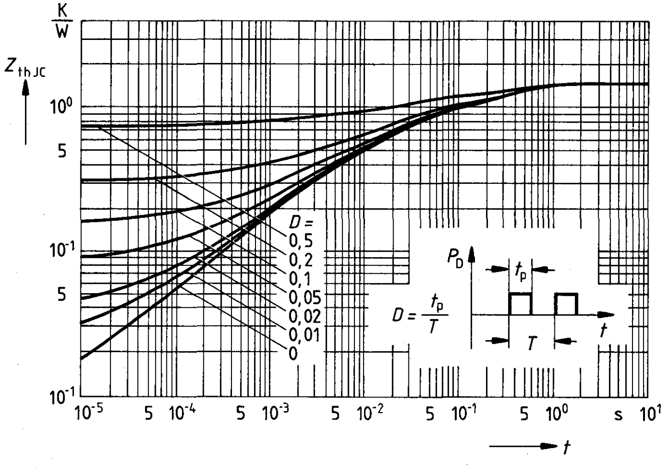
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



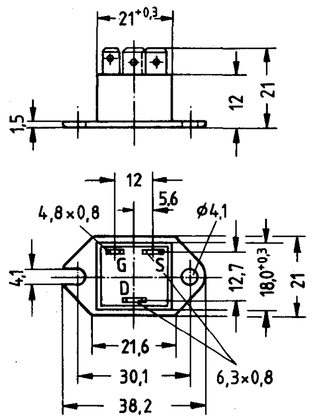
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **50 V**
Continuous drain current I_D = **37 A**
Drain-source on-resistance $R_{DS(on)}$ = **0,03 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package TO 238 AA with insulated metal base plate in accordance with JEDEC, compatible with TO 3; AMP plug-in connections.
Approx. weight 21 g

Type	Ordering code
BUZ 18	C67078-A1601-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	50V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	50V
Continuous drain current, T_{case} = 25 °C	I_D	37A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	145A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	83,3W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	3500 Vdc[1])
DIN humidity category		F
Thermal resistance	$R_{th\ JA}$	–
	$R_{th\ JC}$	≤1,5K/W

[1]) Isolation test voltage between drain and heat sink referred to standard climate 23/50 in accordance with DIN 50014.

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	50	65	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 50V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,025	0,03	Ω	V_{GS} = 10V I_D = 22A

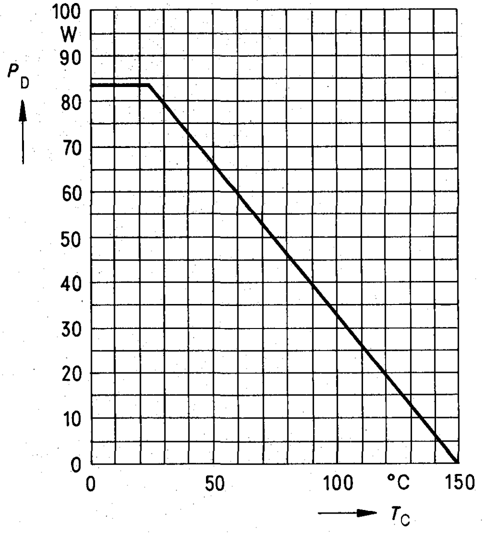
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	7,0	18,0	–	S	V_{DS} = 25V I_D = 22A
Input capacitance	C_{iss}	–	1600	2100	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	1300	2000		
Reverse transfer capacitance	C_{rss}	–	500	800		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	110	170		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	250	330		

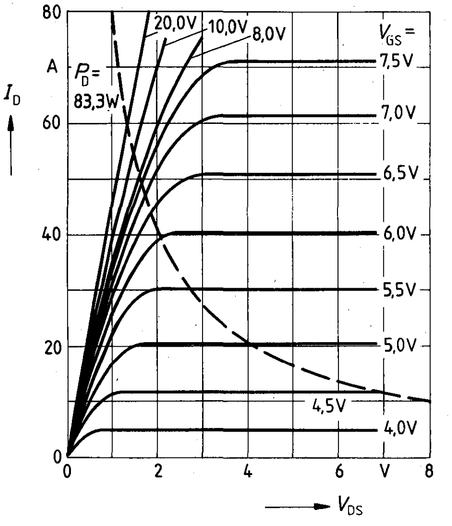
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	37	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	145		
Diode forward on-voltage	V_{SD}	–	1,5	2,2	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	150	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	1,0	–	µC	

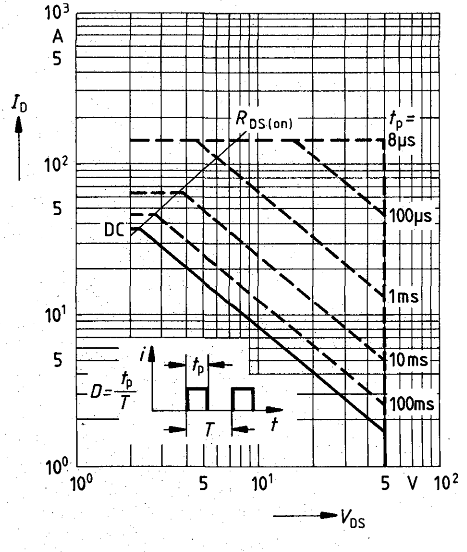
Power dissipation $P_D = f(T_{case})$



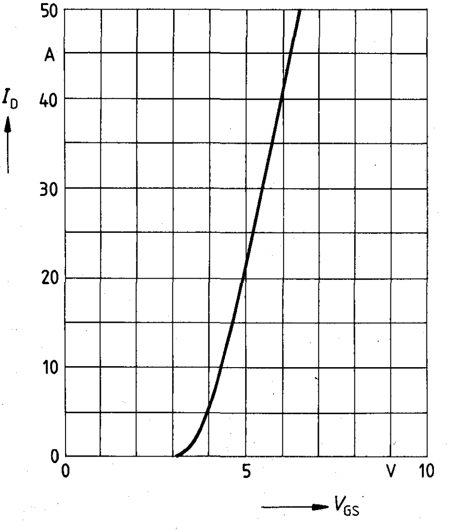
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



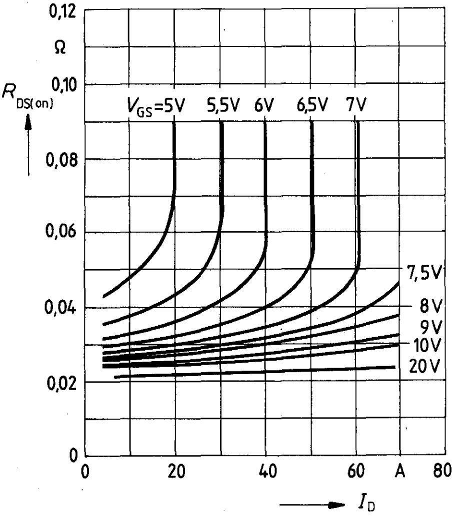
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



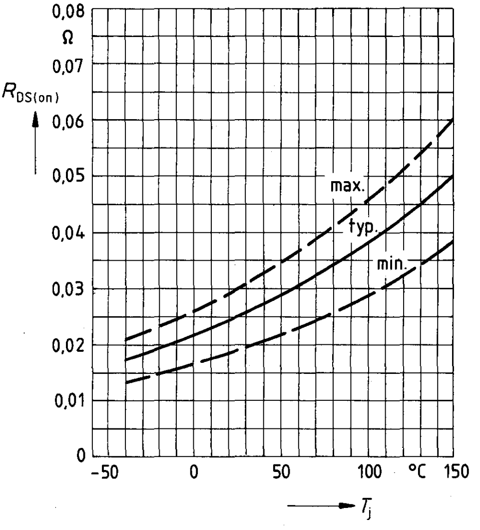
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



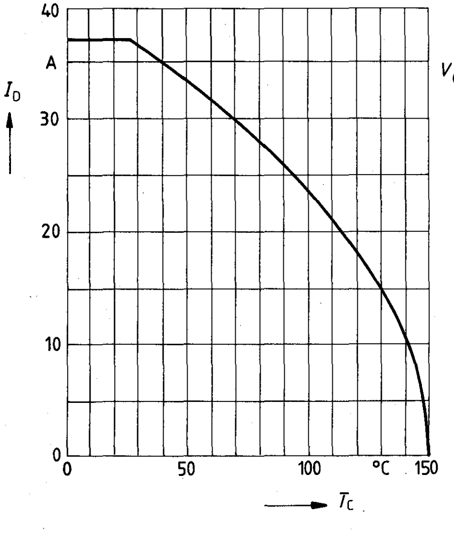
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



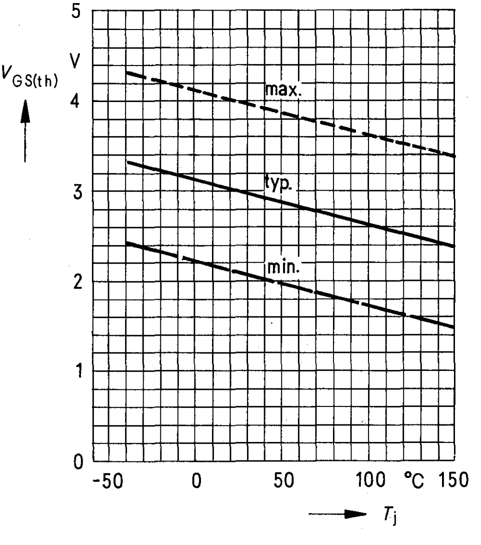
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 22$ A, $V_{GS} = 10$ V



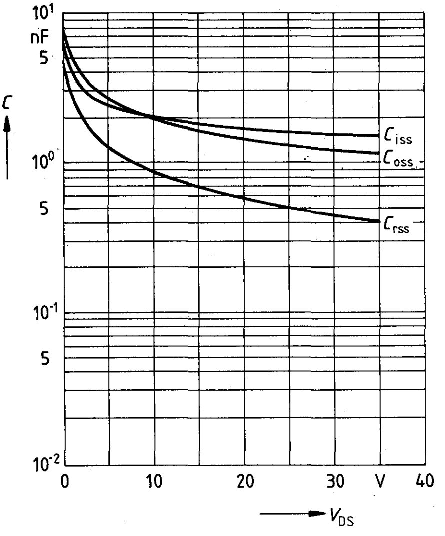
Continuous drain current $I_D = f(T_{case})$



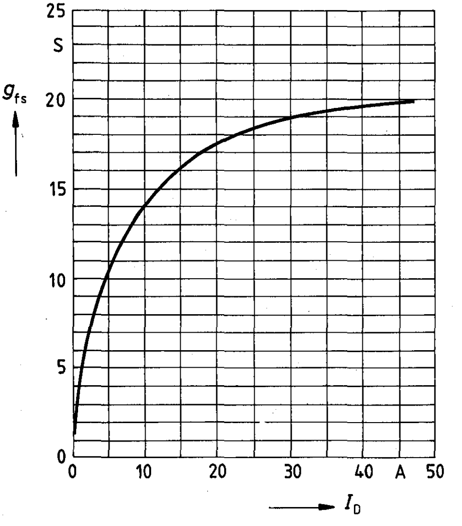
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



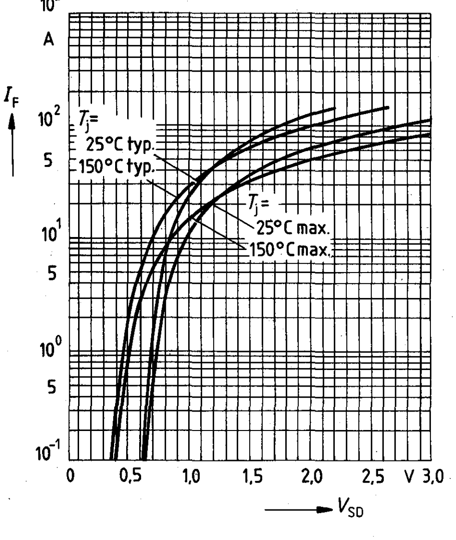
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



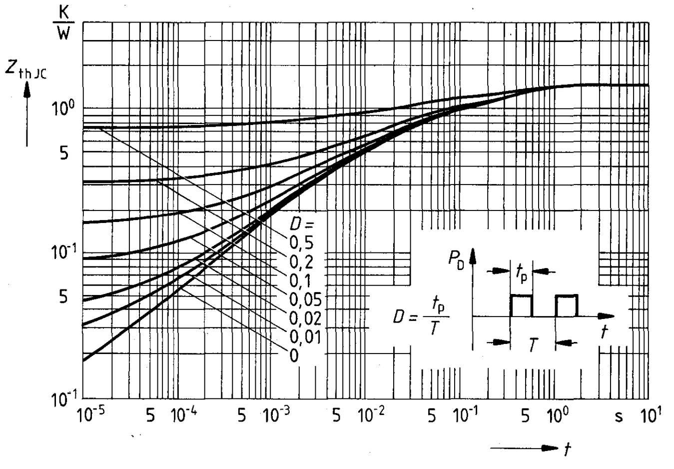
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

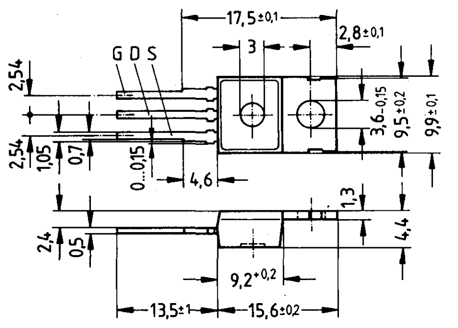


Drain-source voltage V_{DS} = **100 V**
Continuous drain current I_D = **12 A**
Drain-source on-resistance $R_{DS(on)}$ = **0,2 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 20	C67078-A1302-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	100V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	100V
Continuous drain current, T_{case} = 55 °C	I_D	12A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	48A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤75K/W
	$R_{th\,JC}$	≤1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	100	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 100V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,15	0,2	Ω	V_{GS} = 10V I_D = 6A

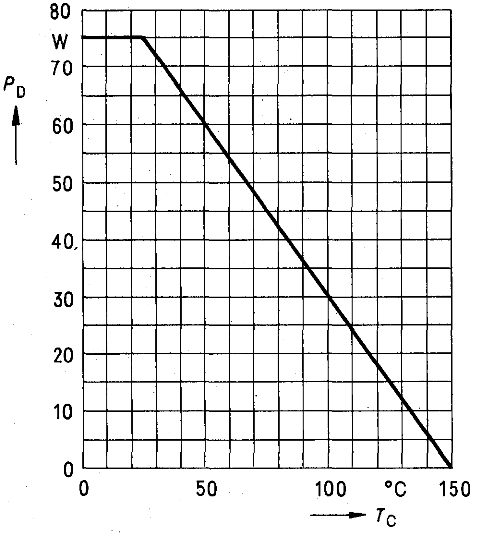
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,7	4,0	–	S	V_{DS} = 25V I_D = 6A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	300	500		
Reverse transfer capacitance	C_{rss}	–	80	140		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	50	75		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	110	140		
	t_f	–	60	80		

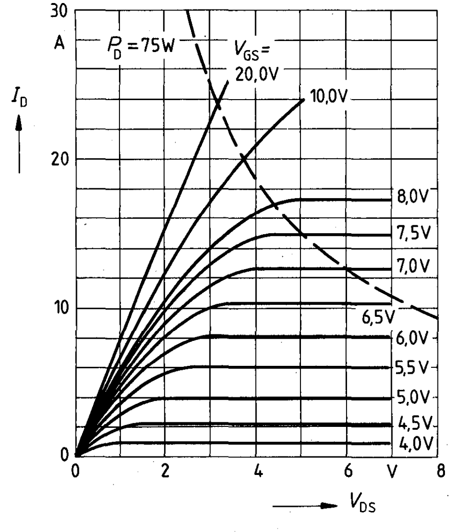
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	12	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	48		
Diode forward on-voltage	V_{SD}	–	1,4	1,8	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	1,6	–	µC	

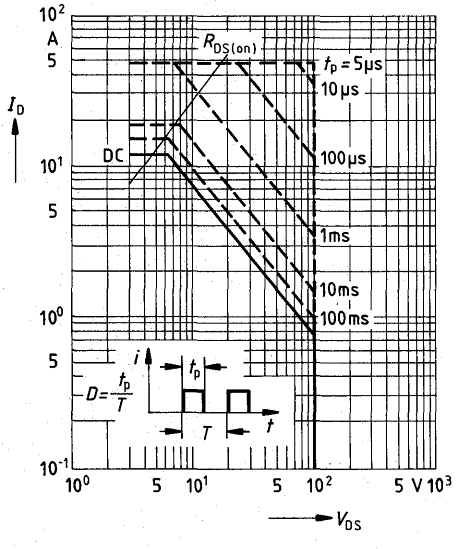
Power dissipation $P_D = f(T_{case})$



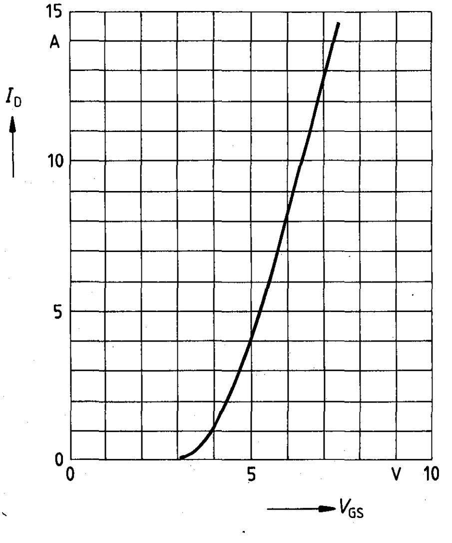
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



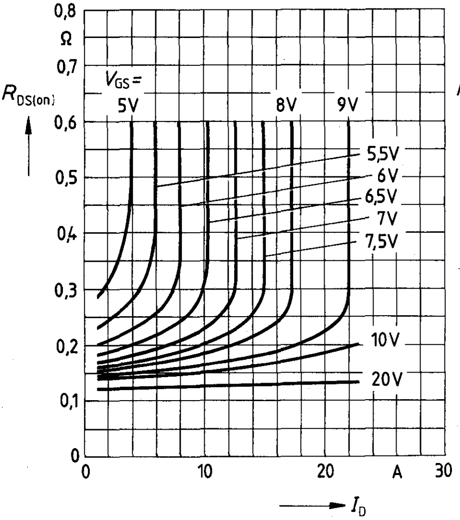
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



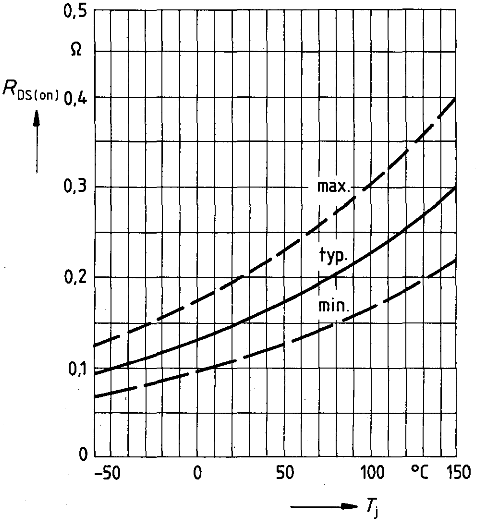
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



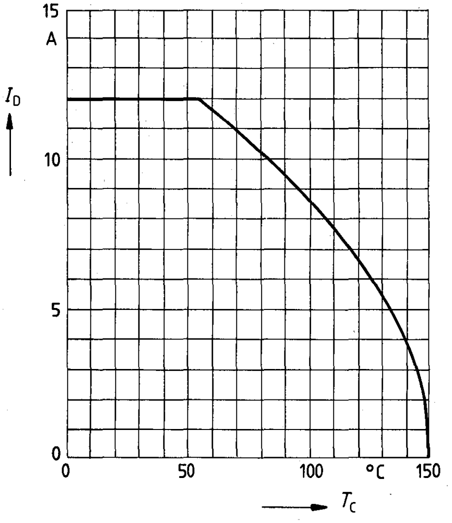
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



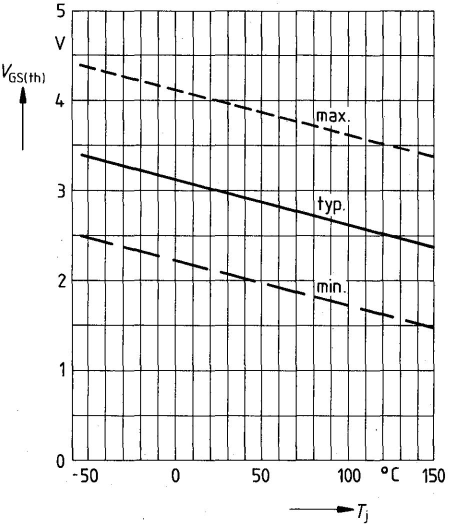
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 6$ A, $V_{GS} = 10$ V



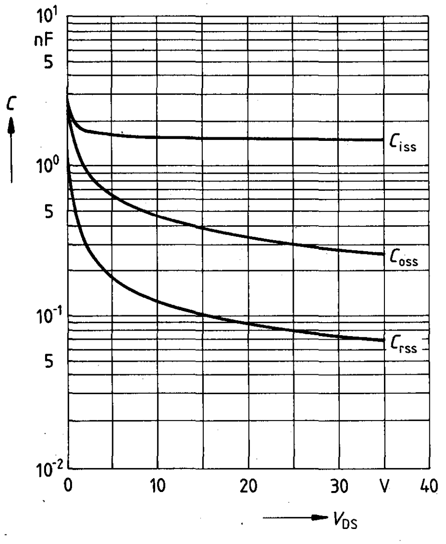
Continuous drain current $I_D = f(T_{case})$



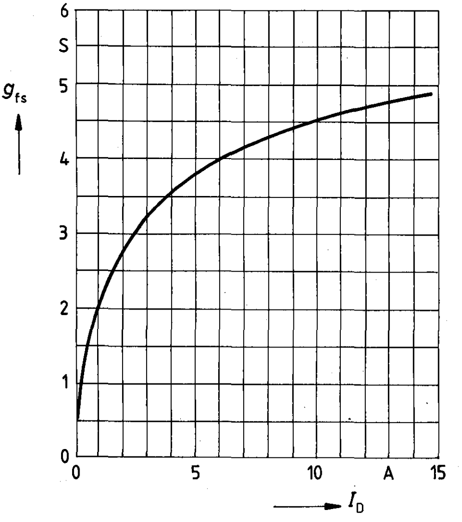
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



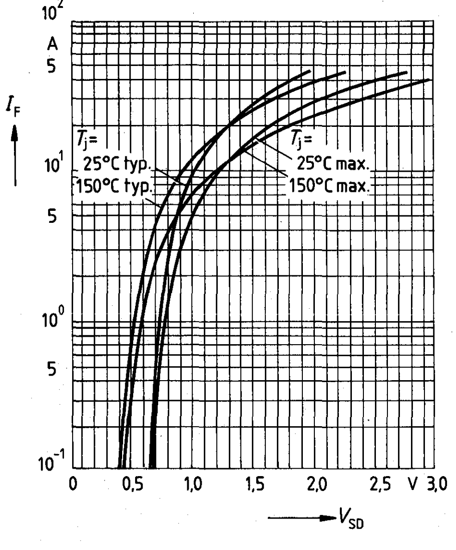
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



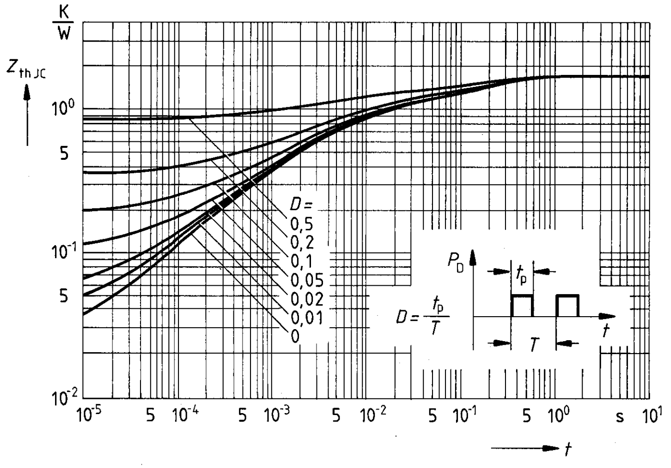
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



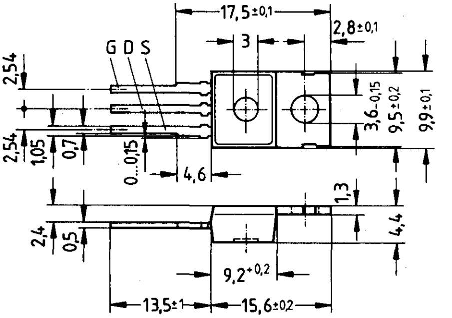
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 100 V**
Continuous drain current I_D **= 19 A**
Drain-source on-resistance $R_{DS(on)}$ **= 0,1 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 21	C67078-A1308-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	100V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	100V
Continuous drain current, T_{case} = 30 °C	I_D	19A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	75A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j T_{stg}	−55 °C… +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤75K/W
	$R_{th\ JC}$	≤1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	100	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 100V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,09	0,1	Ω	V_{GS} = 10V I_D = 9A

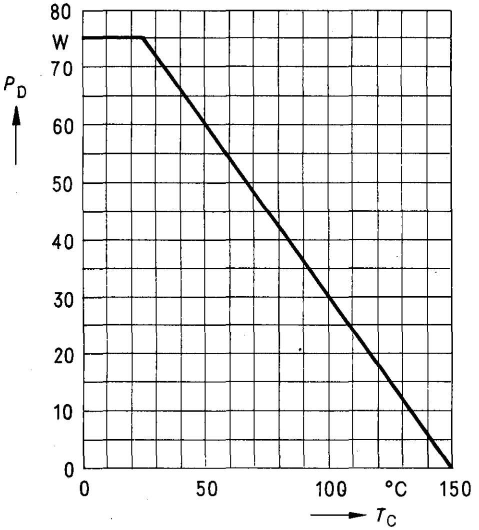
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	4,0	8,0	–	S	V_{DS} = 25V I_D = 9A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	450	700		
Reverse transfer capacitance	C_{rss}	–	150	240		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	50	75		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	170	220		
	t_f	–	80	110		

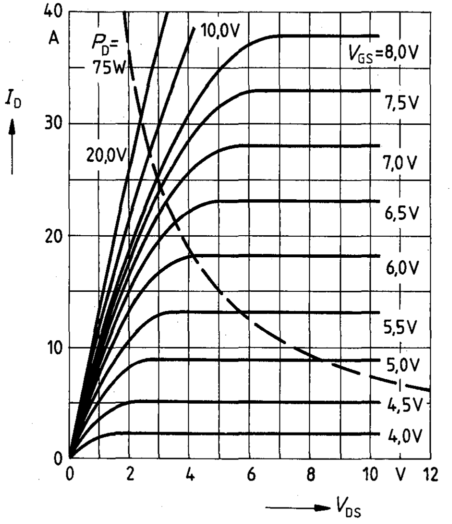
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	19	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	75		
Diode forward on-voltage	V_{SD}	–	1,5	2,1	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	0,25	–	µC	

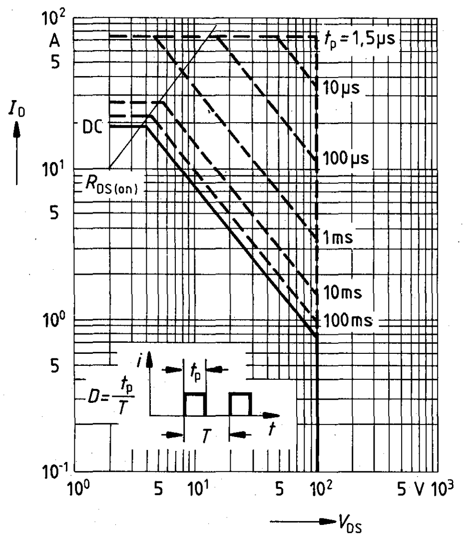
Power dissipation $P_D = f(T_{case})$



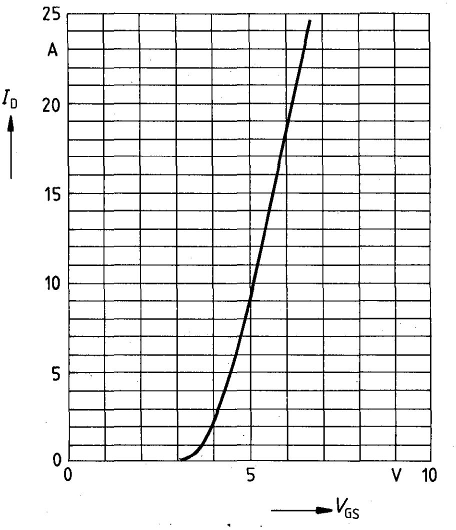
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



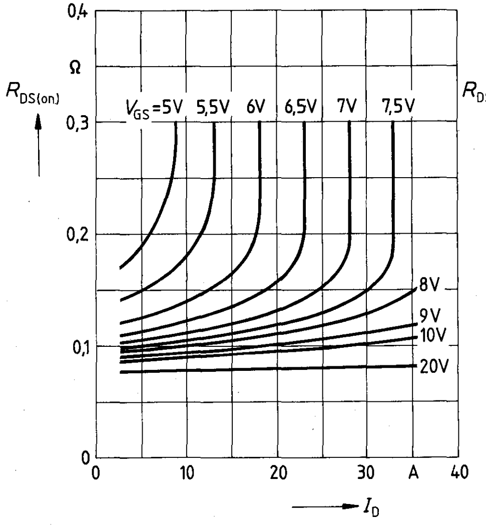
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



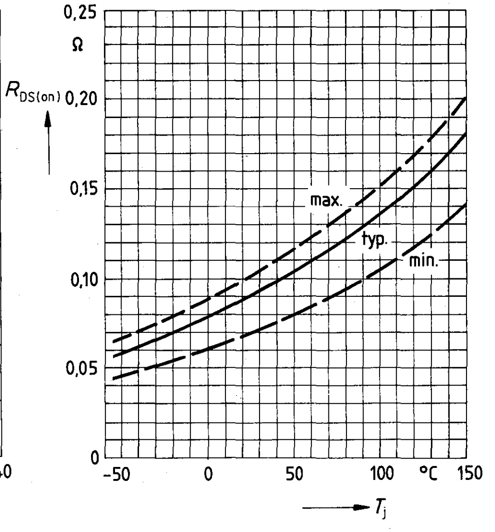
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



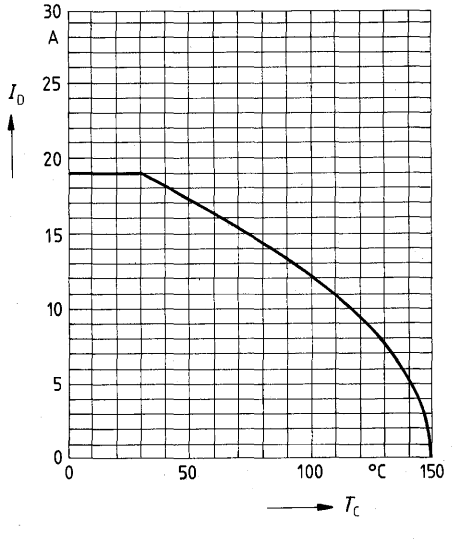
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



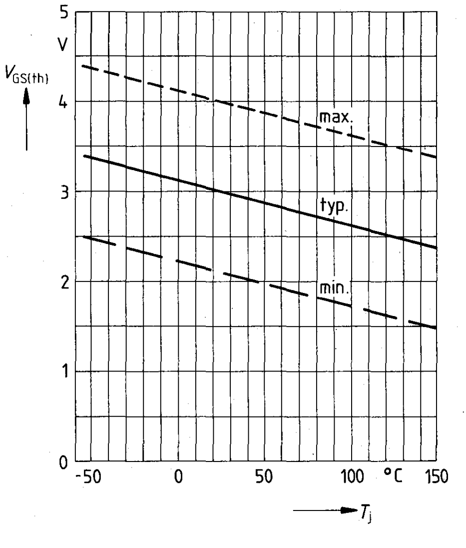
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 9$ A, $V_{GS} = 10$ V



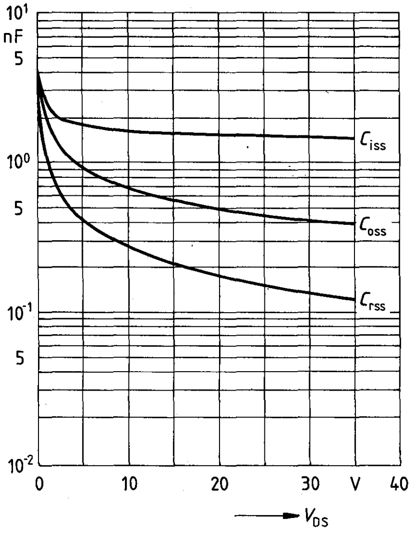
Continuous drain current $I_D = f(T_{case})$



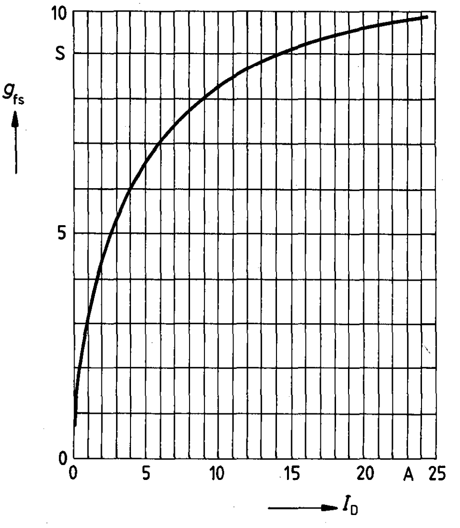
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



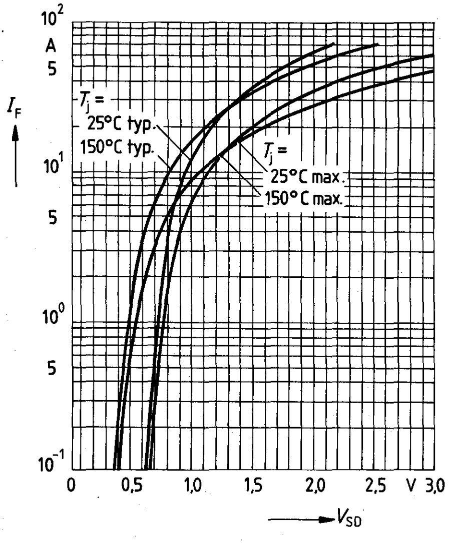
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



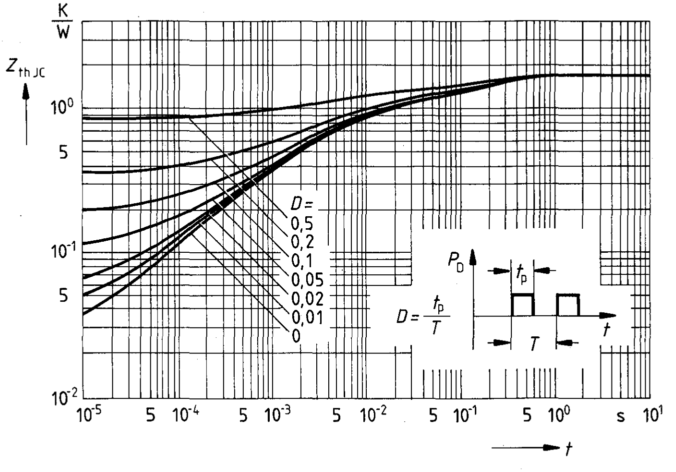
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25°$C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

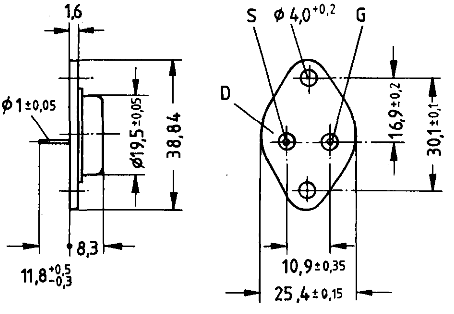


Drain-source voltage	V_{DS}	=	**100 V**
Continuous drain current	I_D	=	**10 A**
Drain-source on-resistance	$R_{DS(on)}$	=	**0,2 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 23	C67078-A1002-A2



Dimensions in mm

Absolute maximum ratings		
Drain-source voltage	V_{DS}	100V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	100V
Continuous drain current, T_{case} = 85 °C	I_D	10A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	40A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	78W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\,JA}$	≤35K/W
	$R_{th\,JC}$	≤1,6K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	100	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 100V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,15	0,2	Ω	V_{GS} = 10V I_D = 6A

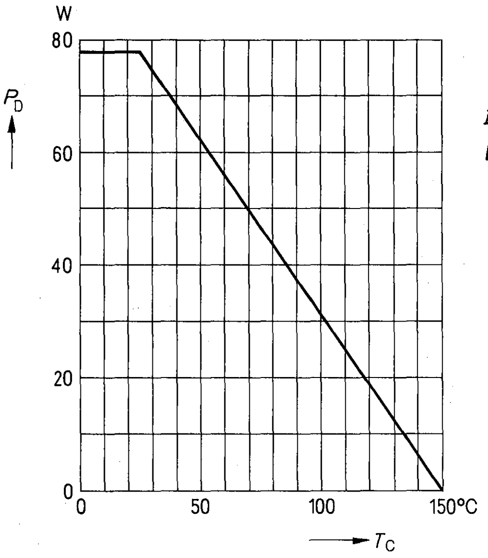
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,7	4,0	–	S	V_{DS} = 25V I_D = 6A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	300	500		
Reverse transfer capacitance	C_{rss}	–	80	140		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	50	75		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	110	140		
	t_f	–	60	80		

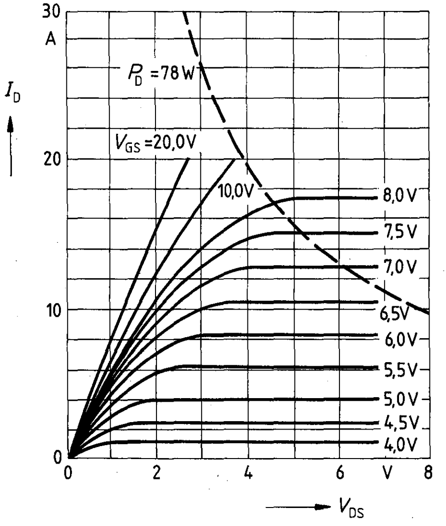
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	10	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	40		
Diode forward on-voltage	V_{SD}	–	1,3	1,6	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	1,6	–	µC	

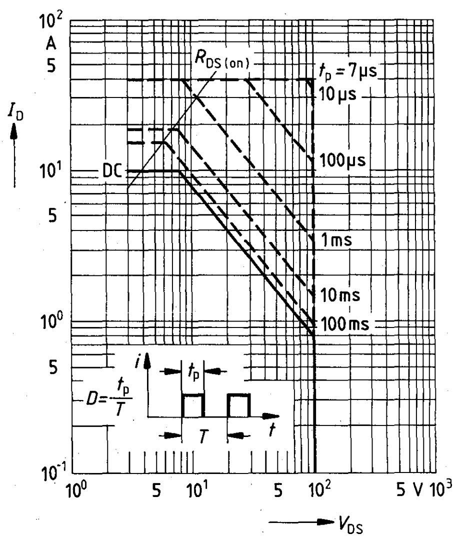
Power dissipation $P_D = f(T_{case})$



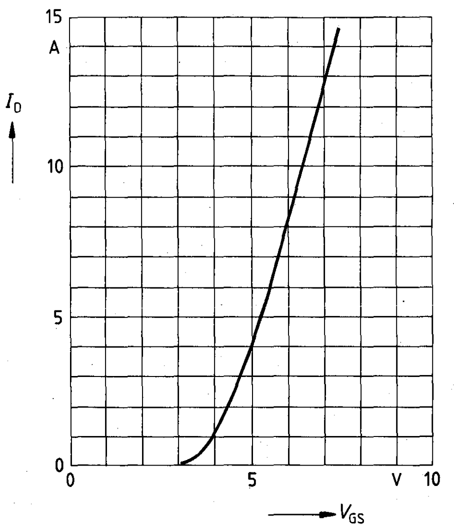
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



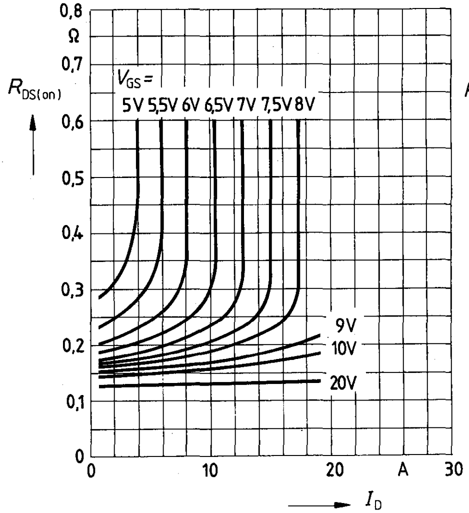
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



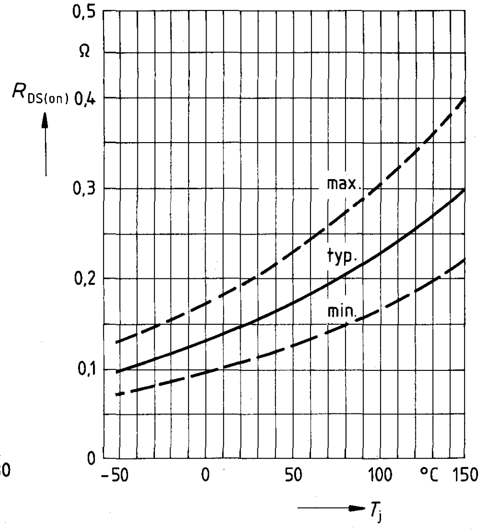
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



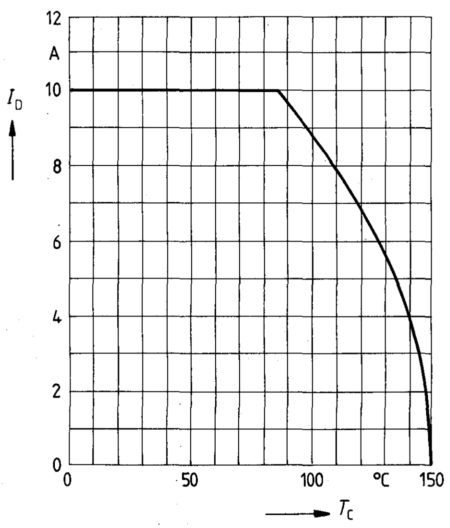
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



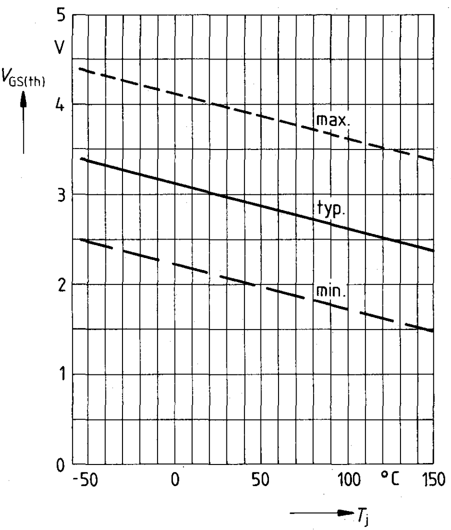
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 6\,A$, $V_{GS} = 10\,V$



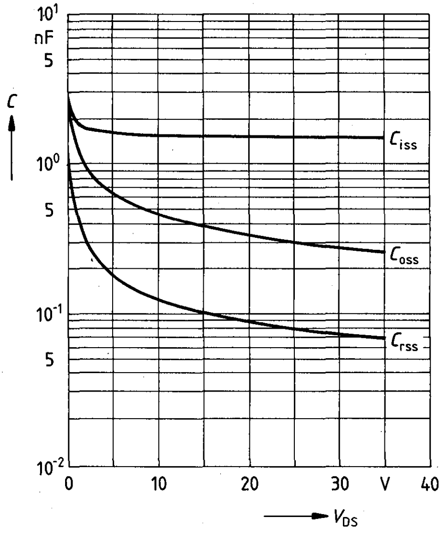
Continuous drain current $I_D = f(T_{case})$



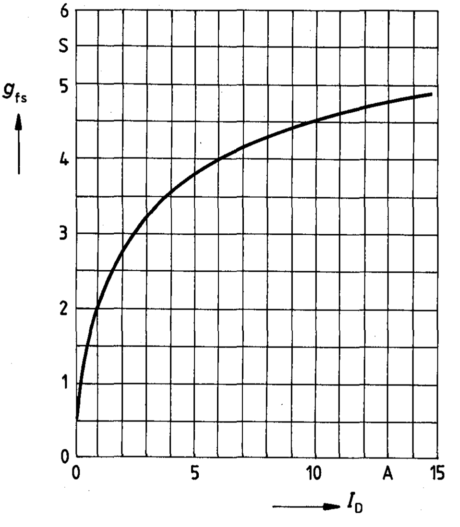
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



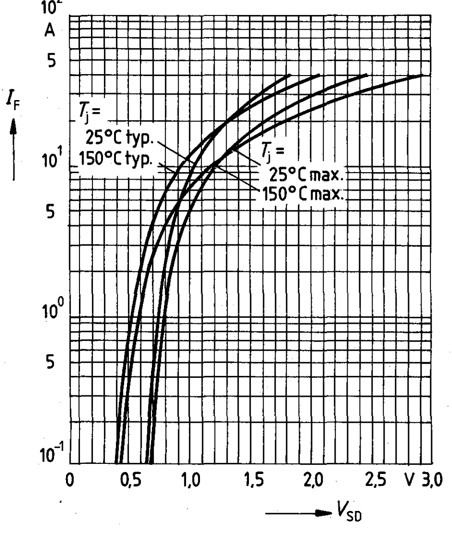
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



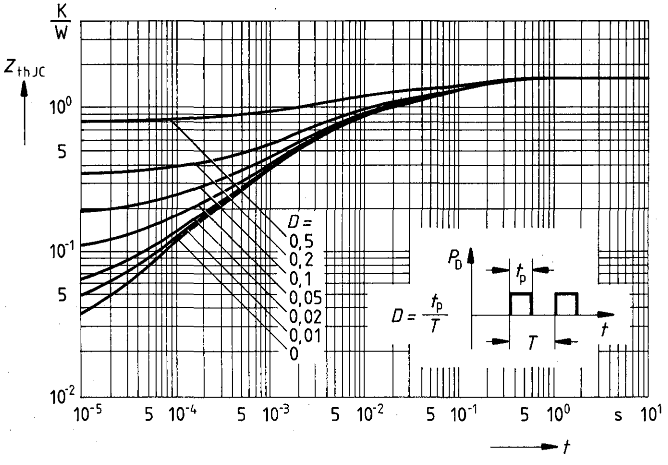
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



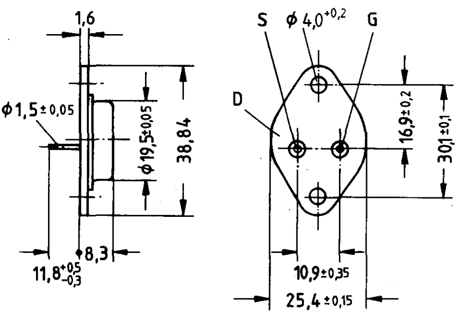
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **100 V**
Continuous drain current I_D = **32 A**
Drain-source on-resistance $R_{DS(on)}$ = **0,06 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AE (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 24	C67078-A1003-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	100V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	100V
Continuous drain current, T_{case} = 25 °C	I_D	32A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	125A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\,JA}$	≤35K/W
	$R_{th\,JC}$	≤1,0K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	100	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 100V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,045	0,06	Ω	V_{GS} = 10V I_D = 16A

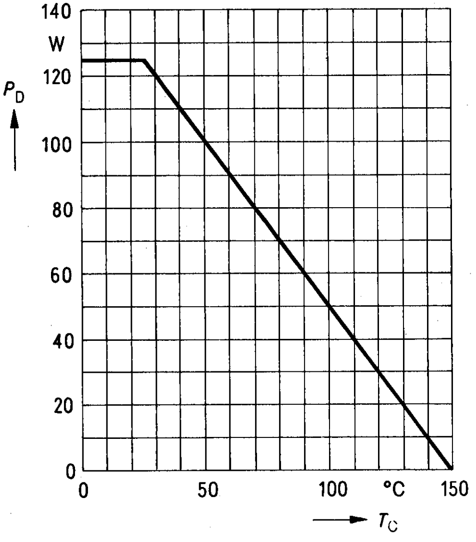
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	6,0	10,0	–	S	V_{DS} = 25V I_D = 16A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	800	1200		
Reverse transfer capacitance	C_{rss}	–	300	500		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	80	120		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	170	220		

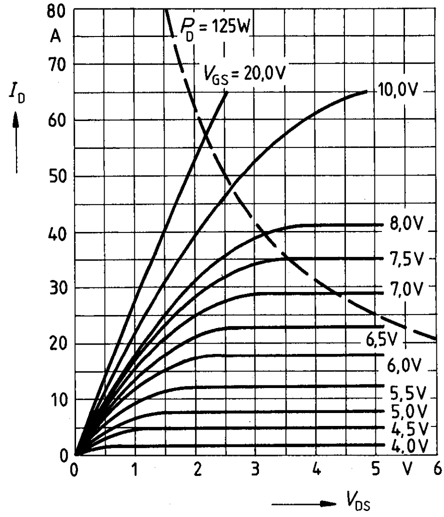
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	32	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	125		
Diode forward on-voltage	V_{SD}	–	1,5	2,0	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	1,6	–	µC	

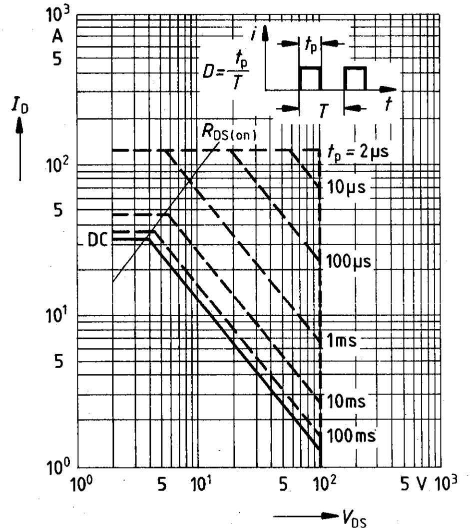
Power dissipation $P_D = f(T_{case})$



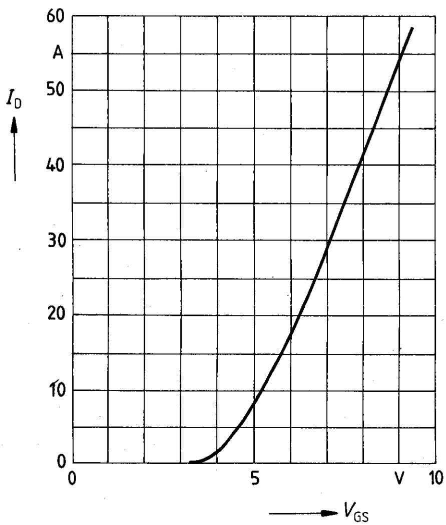
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



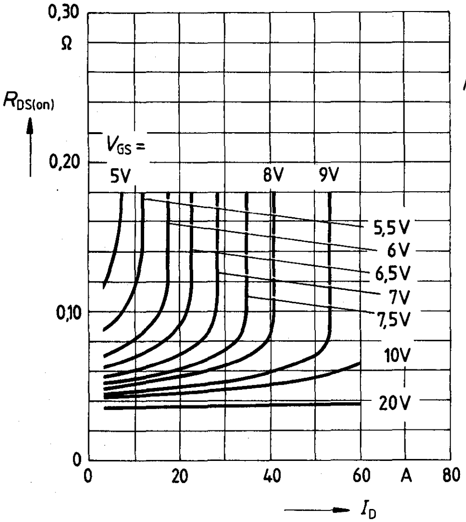
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



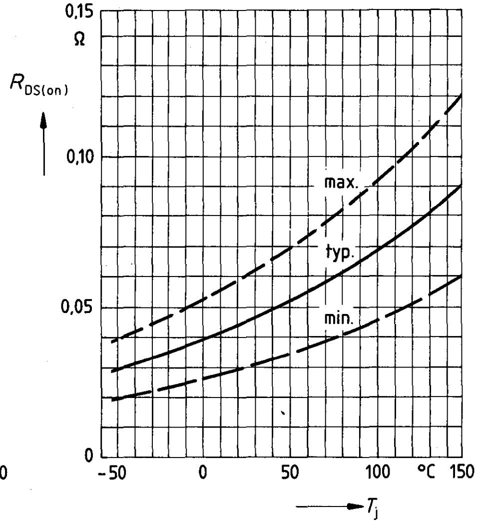
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



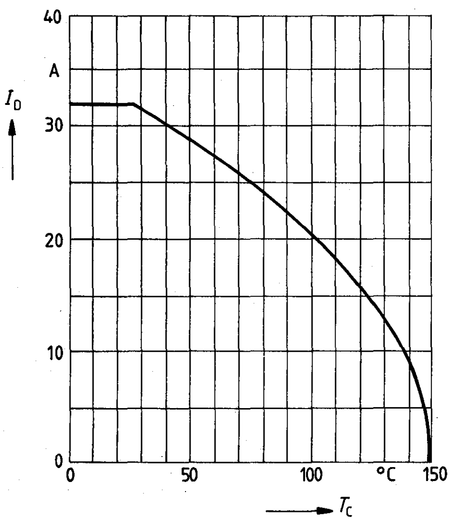
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



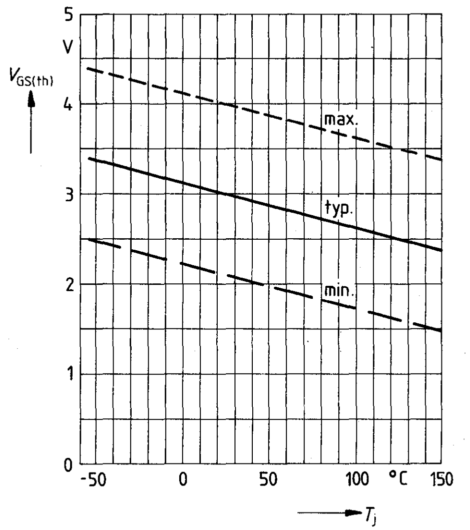
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 16$ A, $V_{GS} = 10$ V



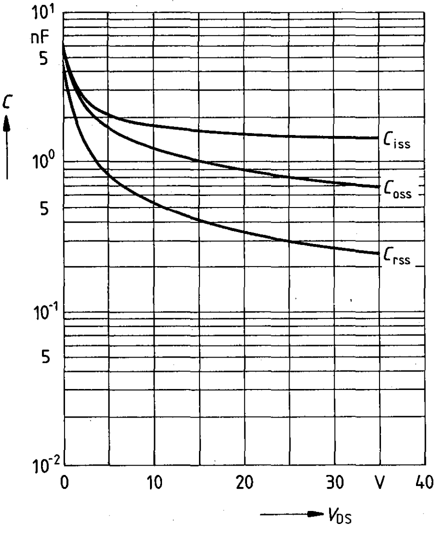
Continuous drain current $I_D = f(T_{case})$



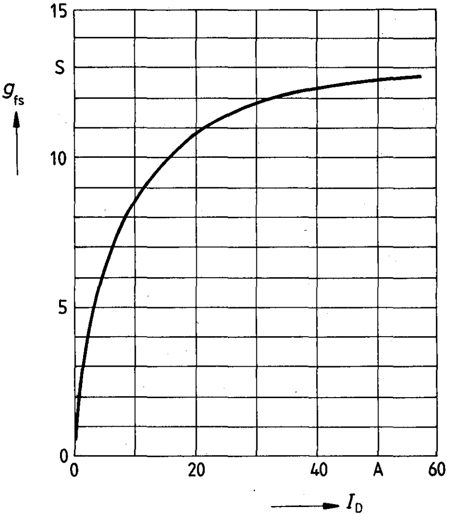
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



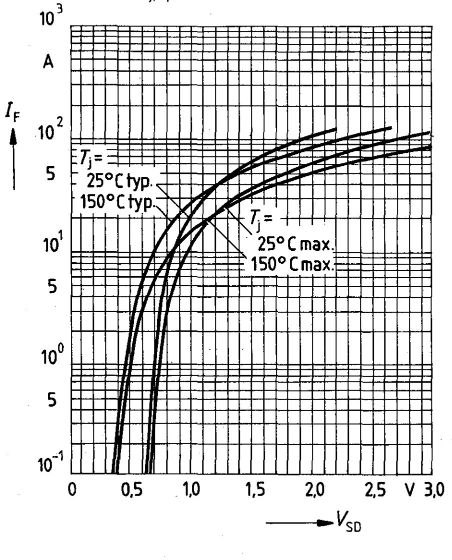
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



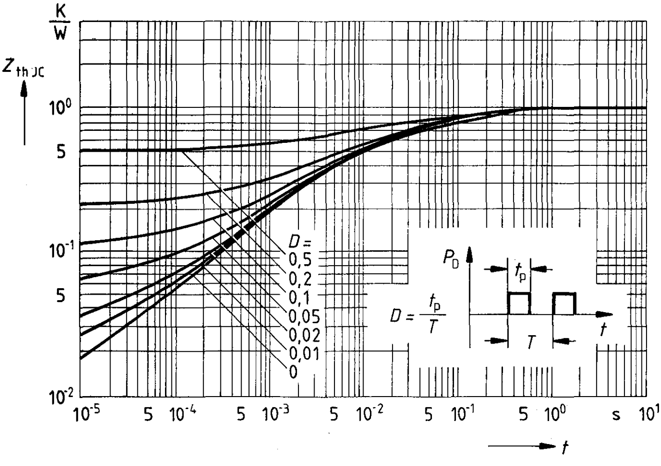
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°$C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



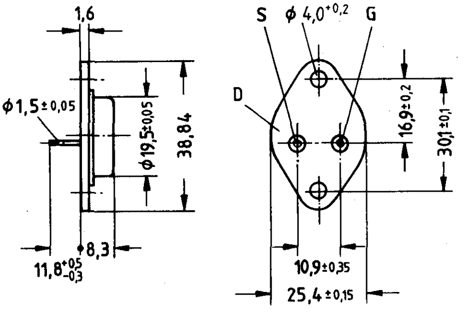
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 100 V**
Continuous drain current I_D **= 19 A**
Drain-source on-resistance $R_{DS(on)}$ **= 0,1 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AE (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 25	C67078-A1011-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	100V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	100V
Continuous drain current, T_{case} = 35 °C	I_D	19A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	75A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	78W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\,JA}$	≤35K/W
	$R_{th\,JC}$	≤1,6K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	100	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	μA	T_j = 25 °C T_j = 125 °C V_{DS} = 100V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,09	0,1	Ω	V_{GS} = 10V I_D = 9A

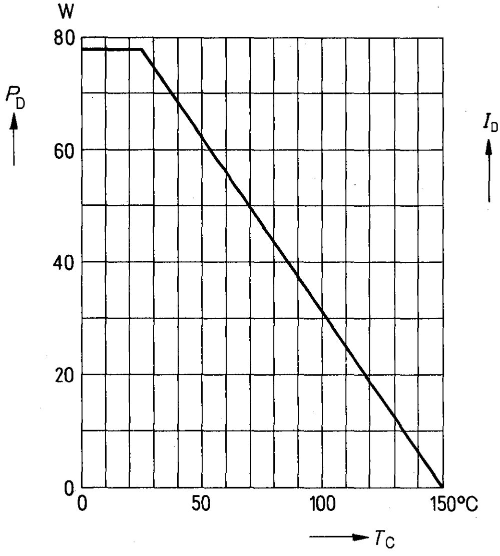
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	4,0	8,0	–	S	V_{DS} = 25V I_D = 9A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	450	700		
Reverse transfer capacitance	C_{rss}	–	150	240		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	50	75		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	170	220		
	t_f	–	80	110		

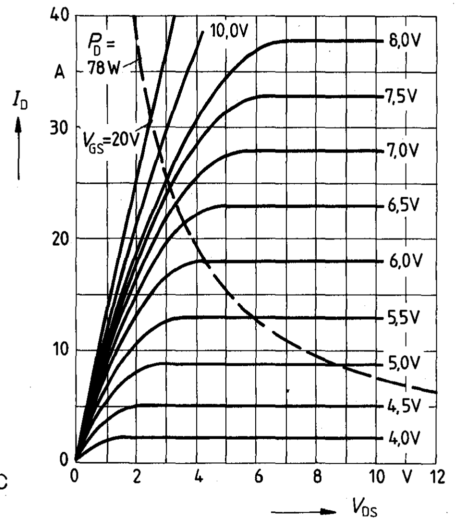
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	19	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	75		
Diode forward on-voltage	V_{SD}	–	1,5	2,1	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/μs
Reverse recovery charge	Q_{rr}	–	0,25	–	μC	

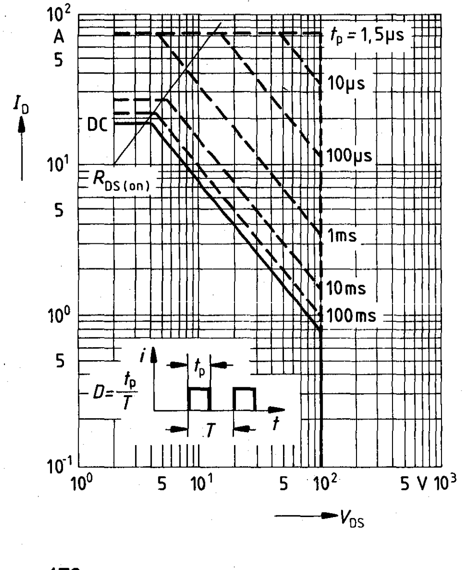
Power dissipation $P_D = f(T_{case})$



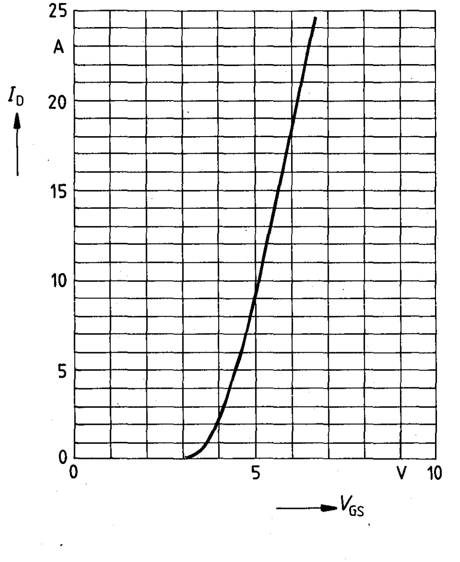
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



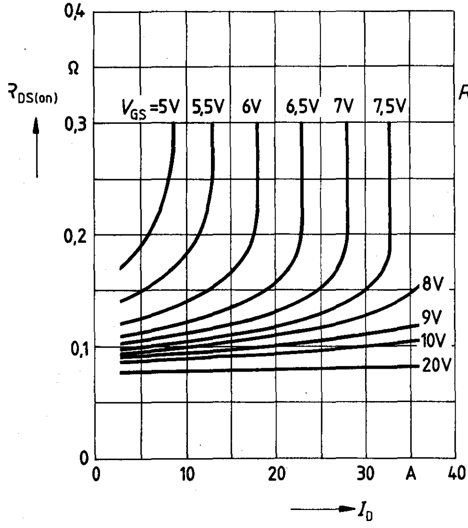
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



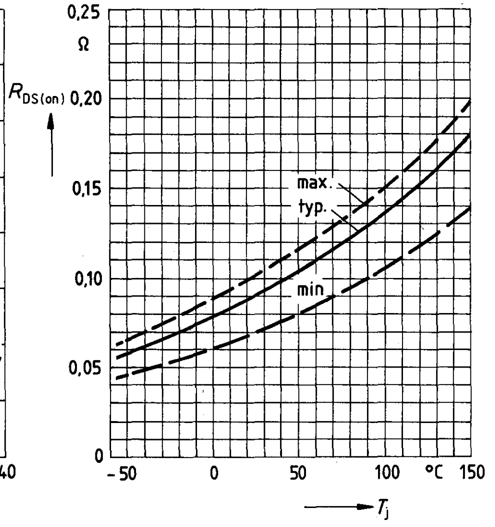
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



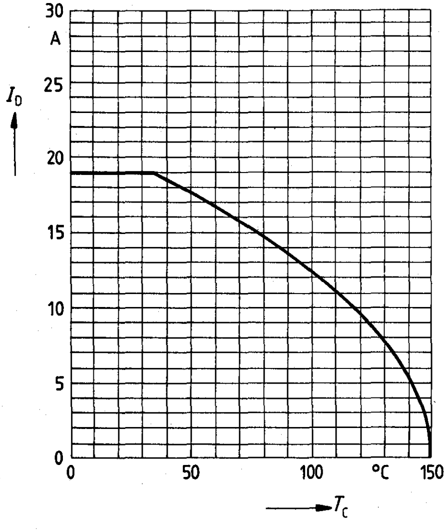
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



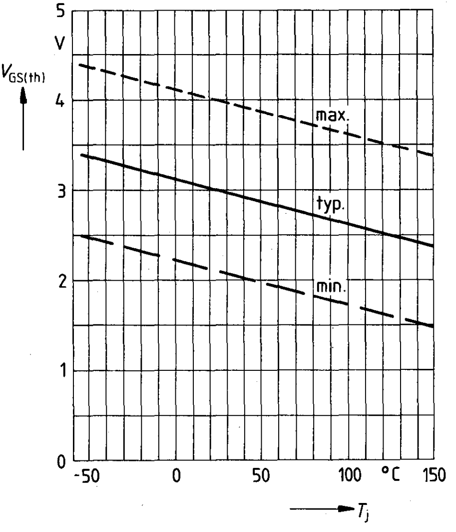
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 9\,A$, $V_{GS} = 10\,V$



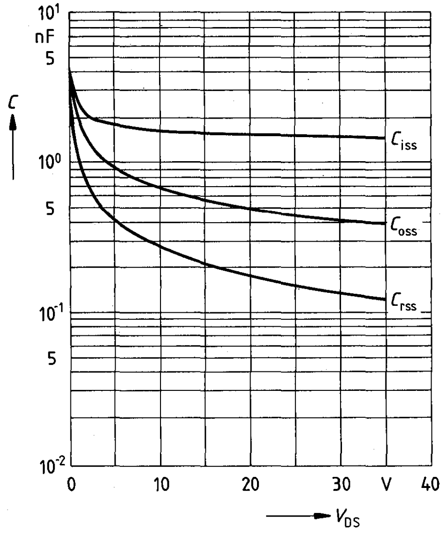
Continuous drain current $I_D = f(T_{case})$



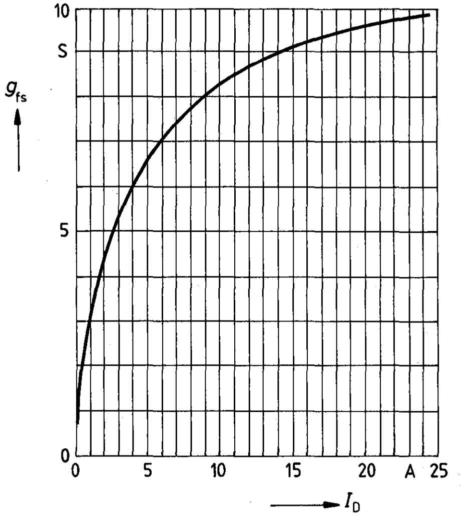
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



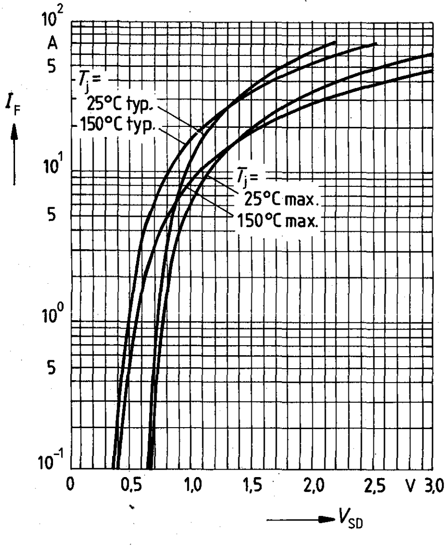
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



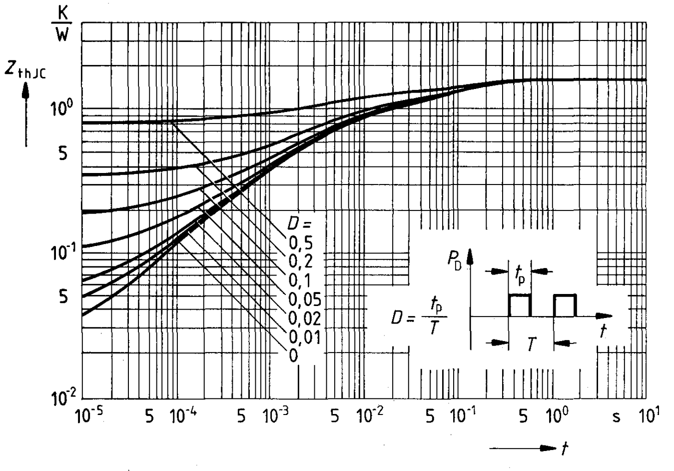
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

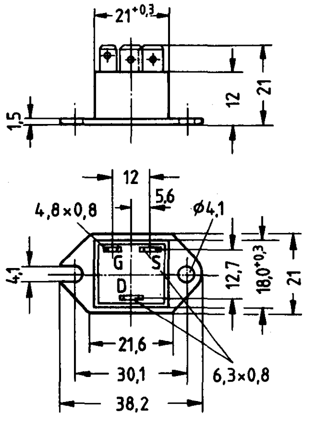


Drain-source voltage	V_{DS}	**= 100 V**
Continuous drain current	I_D	**= 26 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 0,06 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Plastic package TO 238 AA with insulated metal base plate in accordance with JEDEC, compatible with TO 3; AMP plug-in connections.
Approx. weight 21 g

Type	Ordering code
BUZ 27	C67078-A1602-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	100V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	100V
Continuous drain current, T_{case} = 25 °C	I_D	26A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	100A
Gate-source voltage	V_{GS}	± 20V
Max. power dissipation	P_D	83,3W
Operating and storage temperature range	T_j, T_{stg}	– 40 °C ... + 150 °C
Isolation test voltage (t = 1 min)	V_{is}	3500 Vdc[1])
DIN humidity category		F
Thermal resistance	$R_{th\ JA}$	–
	$R_{th\ JC}$	≤ 1,5K/W

[1]) Isolation test voltage between drain and heat sink, referred to standard climate 23/50 in accordance with DIN 50014.

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	100	–	–	V	V_{GS} = 0V, I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS}, I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	μA	T_j = 25 °C T_j = 125 °C V_{DS} = 100V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V, V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,045	0,06	Ω	V_{GS} = 10V, I_D = 16A

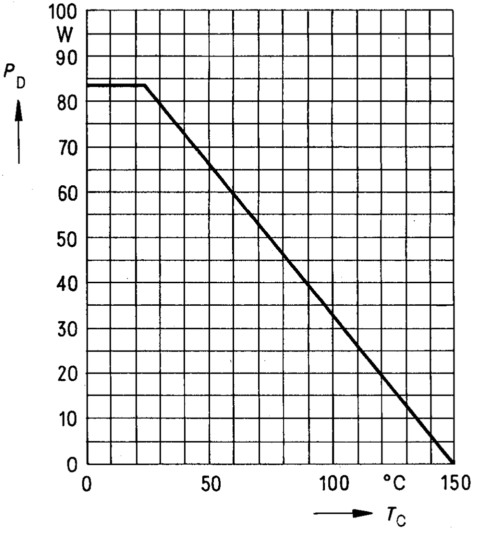
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	6,0	10,0	–	S	V_{DS} = 25V, I_D = 16A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	800	1200		
Reverse transfer capacitance	C_{rss}	–	300	500		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	80	120		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	170	220		

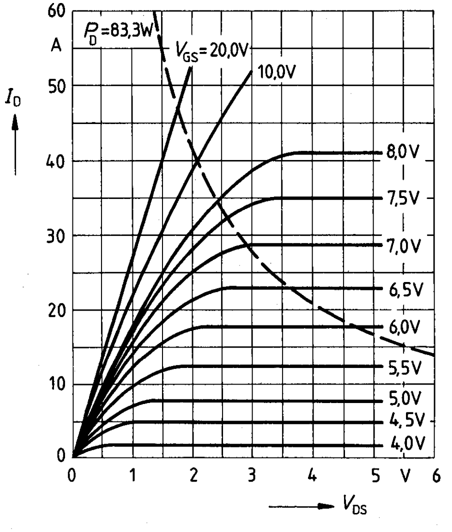
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	26	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	100		
Diode forward on-voltage	V_{SD}	–	1,4	1,8	V	$I_F = 2\times I_{DR}$ V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	200	–	ns	T_j = 25 °C $I_F = I_{DR}$ $d_{iF/dt}$ = 100A/μs
Reverse recovery charge	Q_{rr}	–	1,6	–	μC	

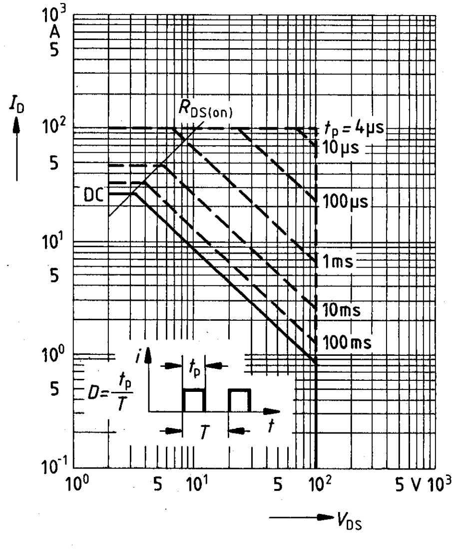
Power dissipation $P_D = f(T_{case})$



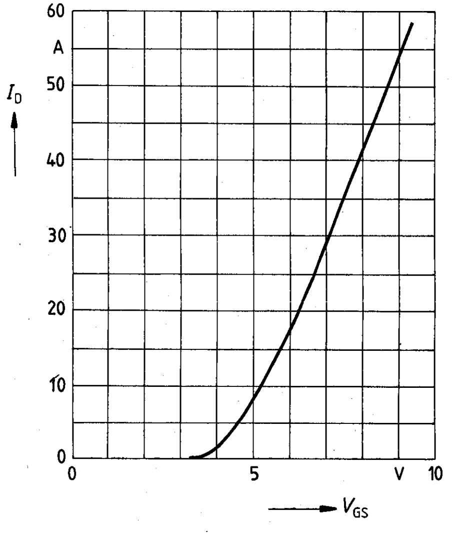
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



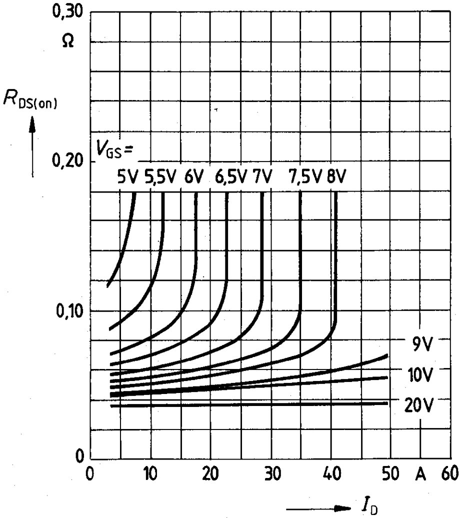
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



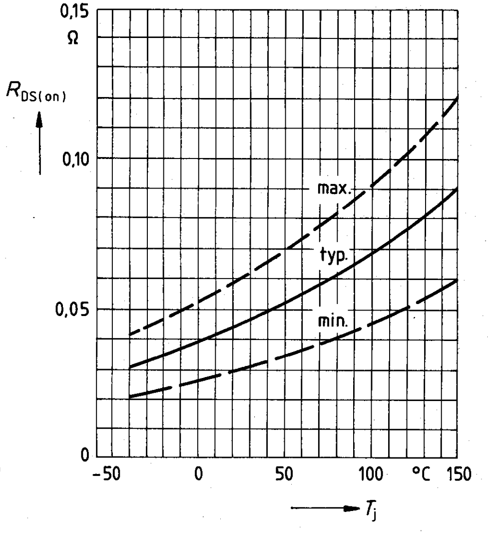
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



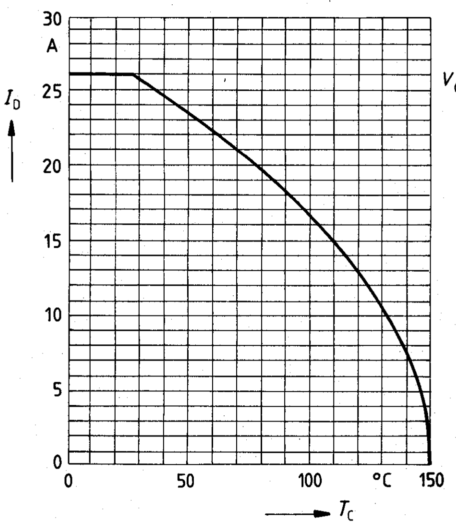
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



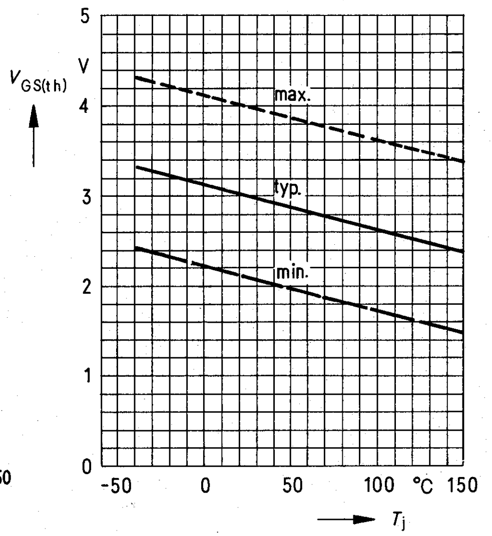
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 16\,A$, $V_{GS} = 10\,V$



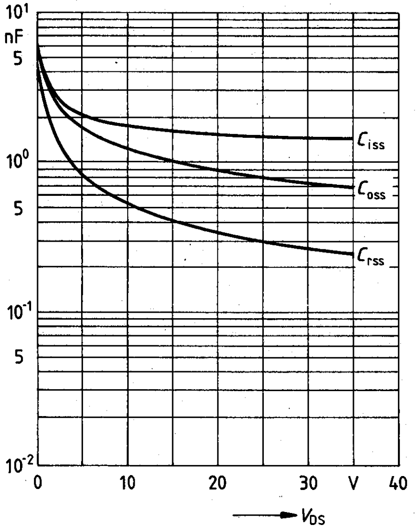
Continuous drain current $I_D = f(T_{case})$



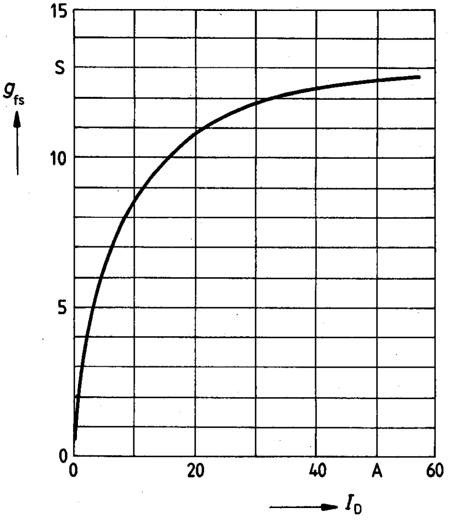
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



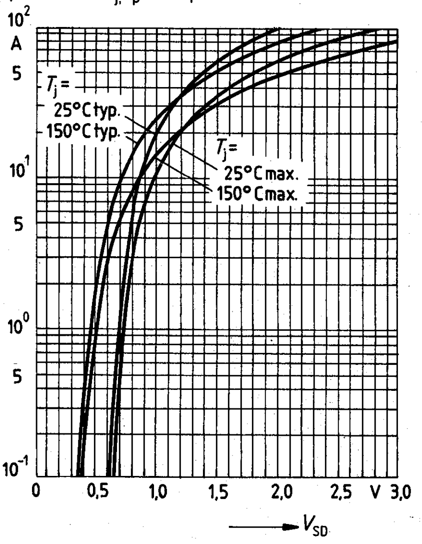
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



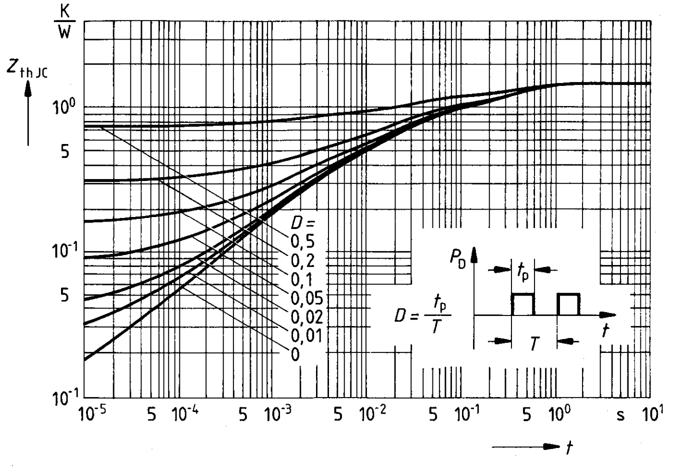
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



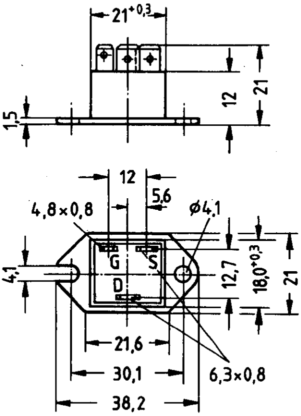
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage	V_{DS}	=	**100 V**
Continuous drain current	I_D	=	**18 A**
Drain-source on-resistance	$R_{DS(on)}$	=	**0,1 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package TO 238 AA with insulated metal base plate in accordance with JEDEC, compatible with TO 3; AMP plug-in connections.
Approx. weight 21 g

Type	Ordering code
BUZ 28	C67078-A1608-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	100V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	100V
Continuous drain current, T_{case} = 35 °C	I_D	18A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	70A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	70W
Operating and storage temperature range	T_j, T_{stg}	−40 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	3500 Vdc[1])
DIN humidity category		F
Thermal resistance	$R_{th\ JA}$	–
	$R_{th\ JC}$	≤1,78K/W

[1]) Isolation test voltage between drain and heat sink referred to standard climate 23/50 in accordance with DIN 50014.

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)DSS}$	100	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 100V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS(on)}$	–	0,09	0,1	Ω	V_{GS} = 10V I_D = 9A

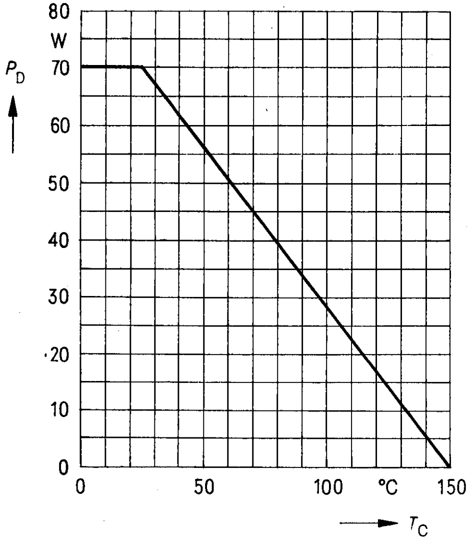
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	4,0	8,0	–	S	V_{DS} = 25V I_D = 9A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	450	700		
Reverse transfer capacitance	C_{rss}	–	150	240		
Turn-on time t_{on} ($t_{on} = t_{d(on)} + t_r$)	$t_{d(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	50	75		
Turn-off time t_{off} ($t_{off} = t_{d(off)} + t_f$)	$t_{d(off)}$	–	170	220		
	t_f	–	80	110		

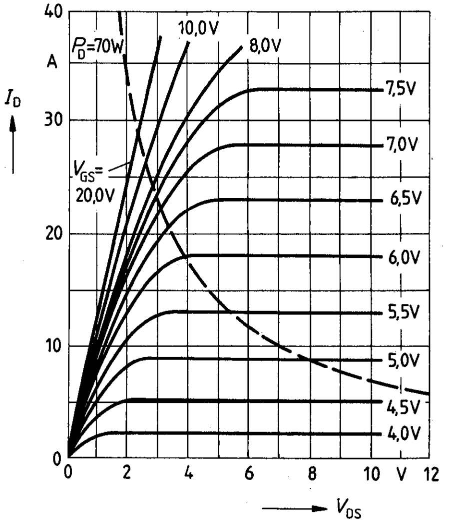
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	18	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	70		
Diode forward on-voltage	V_{SD}	–	1,4	2,0	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	0,25	–	µC	

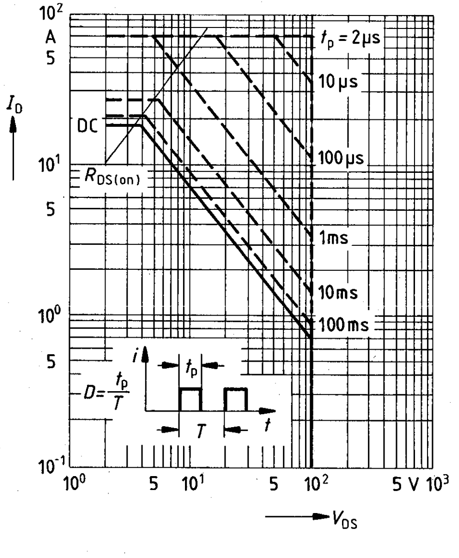
Power dissipation $P_D = f(T_{case})$



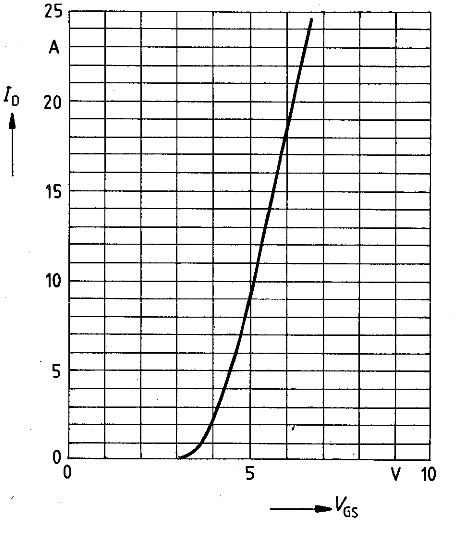
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



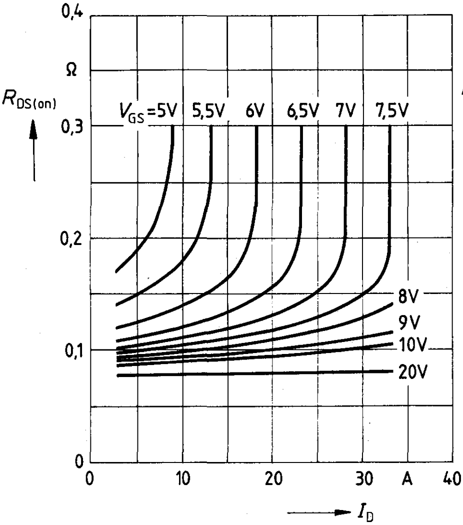
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



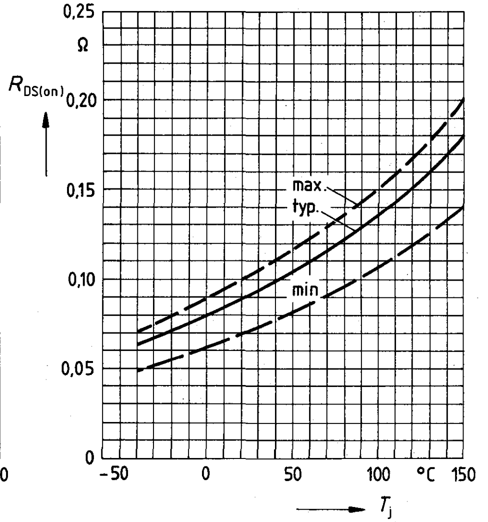
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



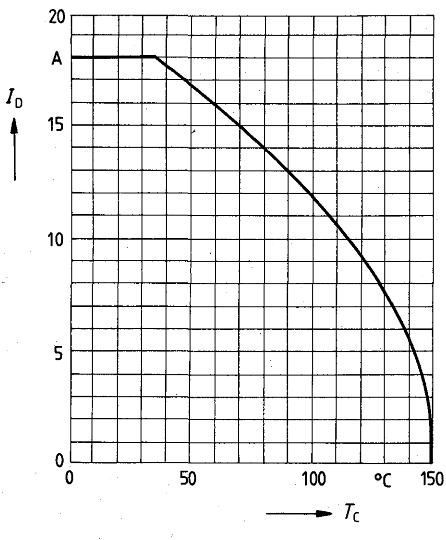
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



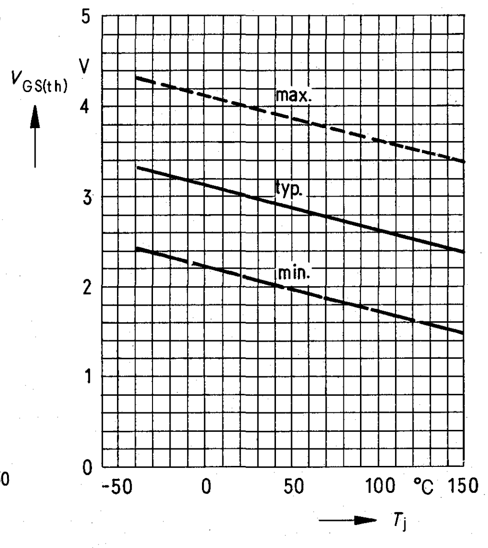
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 9$ A, $V_{GS} = 10$ V



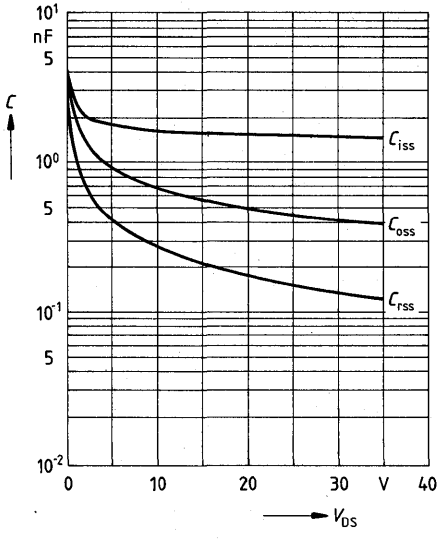
Continuous drain current $I_D = f(T_{case})$



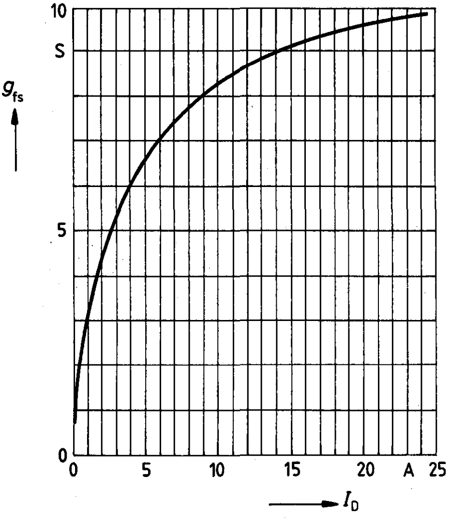
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



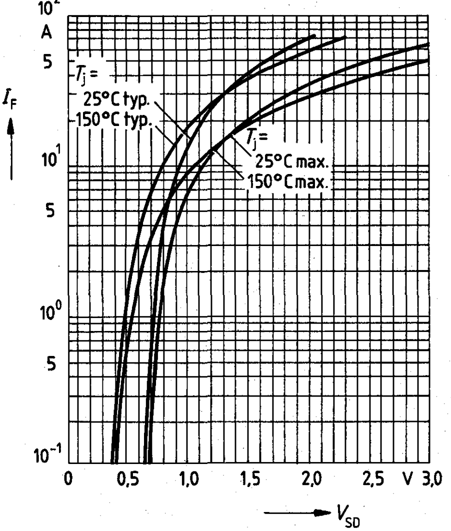
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



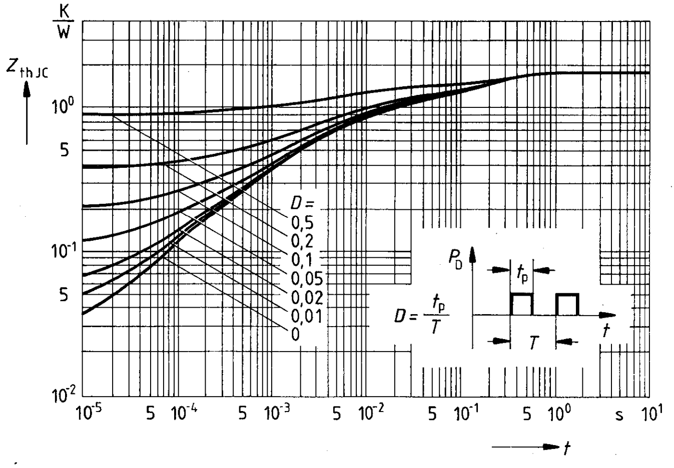
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

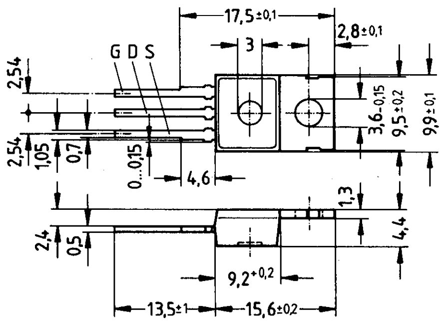


Drain-source voltage	V_{DS}	=	**200 V**
Continuous drain current	I_D	=	**12,5 A**
Drain-source on-resistance	$R_{DS(on)}$	=	**0,2 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 31	C67078-A1304-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	200V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	200V
Continuous drain current, T_{case} = 45 °C	I_D	12,5A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	50A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤75K/W
	$R_{th\,JC}$	≤1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	200	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	μA	T_j = 25 °C T_j = 125 °C V_{DS} = 200V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,17	0,2	Ω	V_{GS} = 10V I_D = 7A

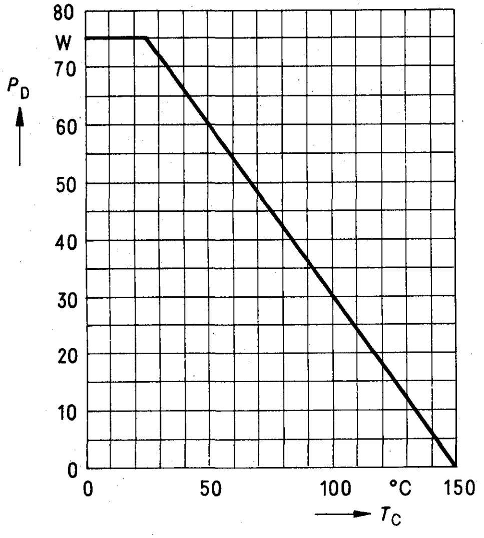
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	3,0	5,0	–	S	V_{DS} = 25V I_D = 7A
Input capacitance	C_{iss}	–	900	1400	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	300	500		
Reverse transfer capacitance	C_{rss}	–	140	250		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	170	220		
	t_f	–	60	80		

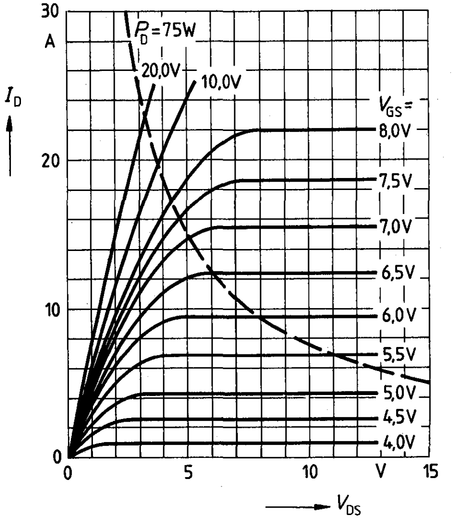
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	12,5	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	50		
Diode forward on-voltage	V_{SD}	–	1,4	1,8	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	400	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/μs
Reverse recovery charge	Q_{rr}	–	6,0	–	μC	

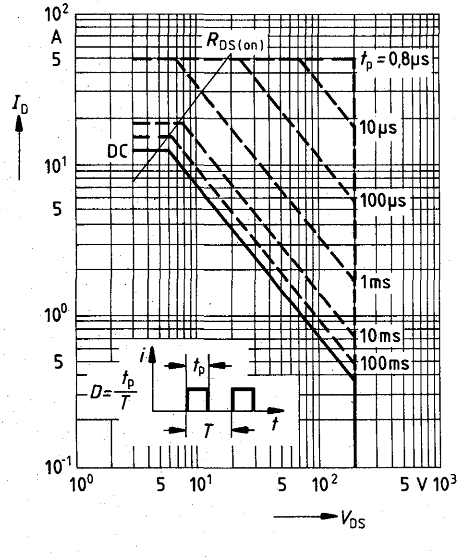
Power dissipation $P_D = f(T_{case})$



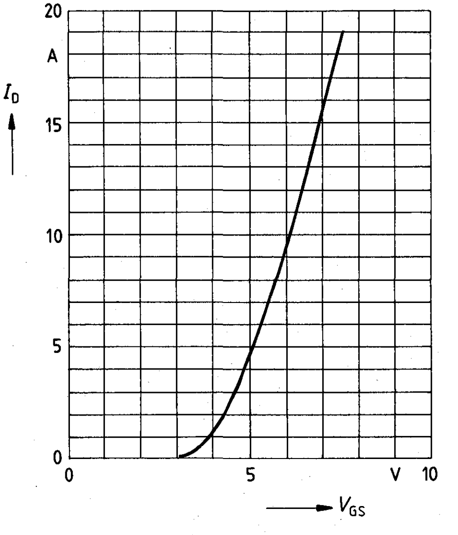
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



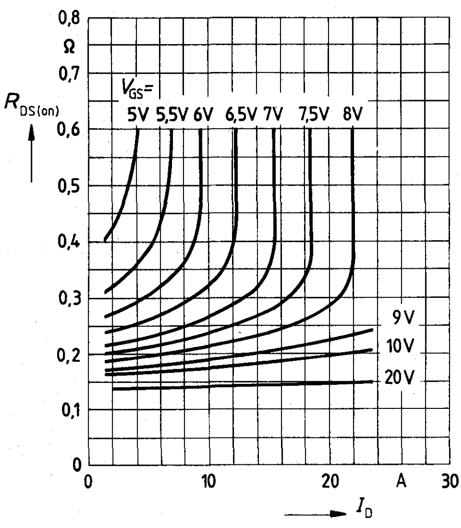
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



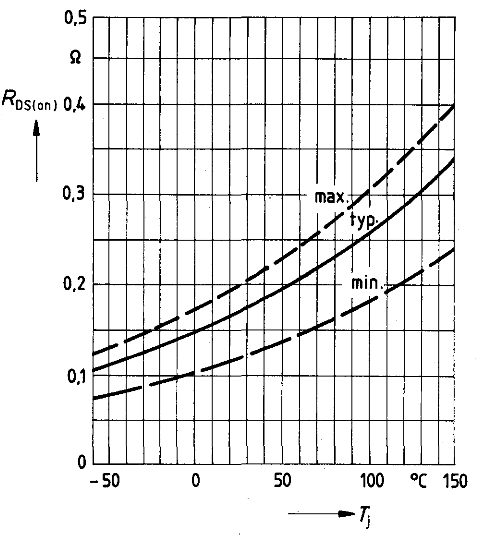
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



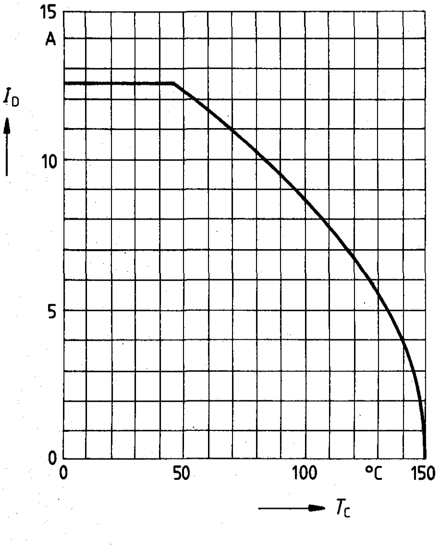
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



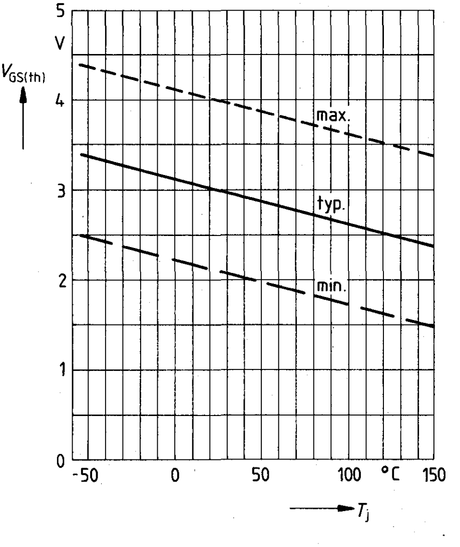
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 7$ A, $V_{GS} = 10$ V



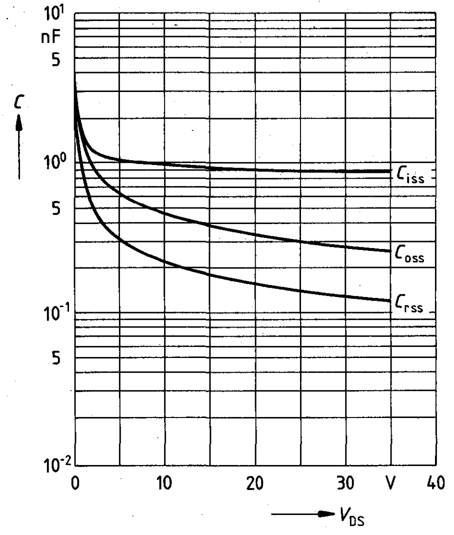
Continuous drain current $I_D = f(T_{case})$



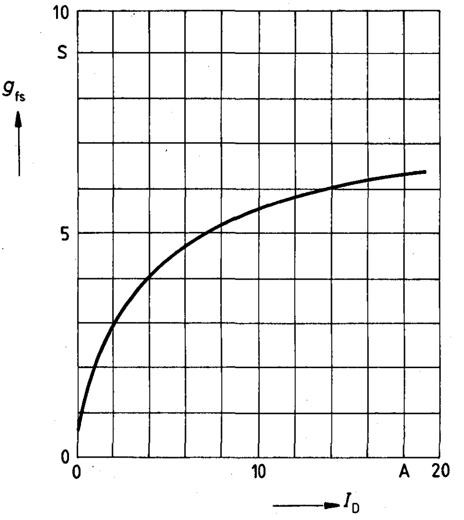
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



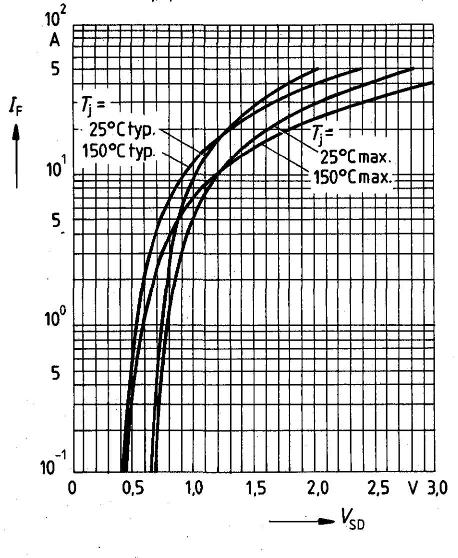
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



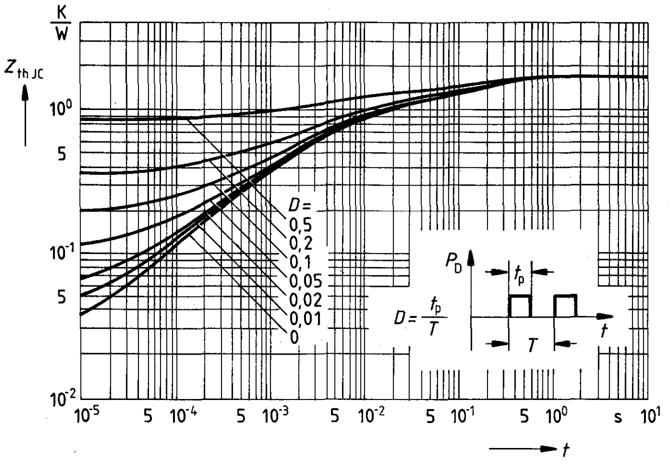
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



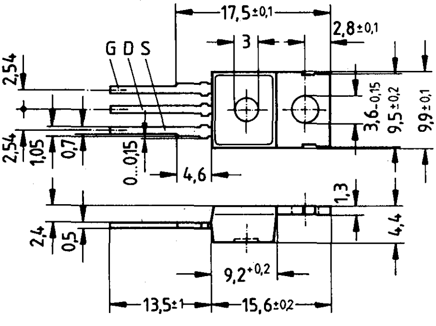
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **200 V**
Continuous drain current I_D = **9,5 A**
Drain-source on-resistance $R_{DS(on)}$ = **0,4 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 14A3 in accordance with DIN 41 869,
or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 32	C67078-A1310-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	200V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	200V
Continuous drain current, T_{case} = 30 °C	I_D	9,5A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	38A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j T_{stg}	−55 °C... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤75K/W
	$R_{th\,JC}$	≤1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	200	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 200V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,35	0,4	Ω	V_{GS} = 10V I_D = 4,5A

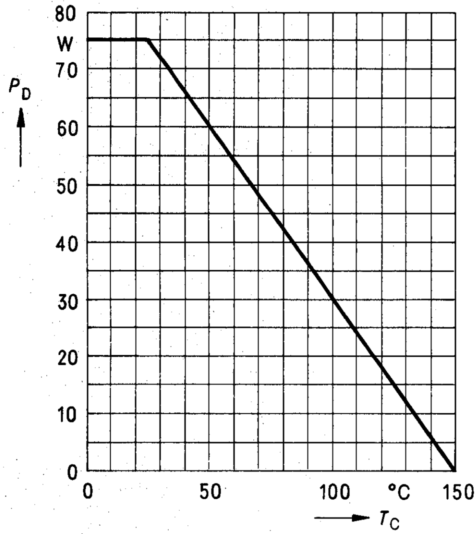
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,2	5,0	–	S	V_{DS} = 25V I_D = 4,5A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	250	400		
Reverse transfer capacitance	C_{rss}	–	70	120		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	110	140		
	t_f	–	60	80		

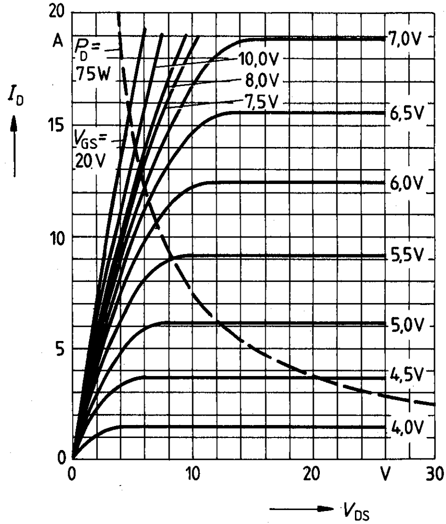
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	9,5	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	38		
Diode forward on-voltage	V_{SD}	–	1,3	1,7	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	400	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	6,0	–	µC	

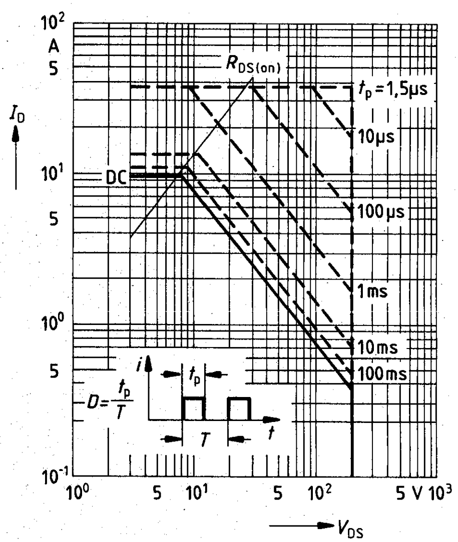
Power dissipation $P_D = f(T_{case})$



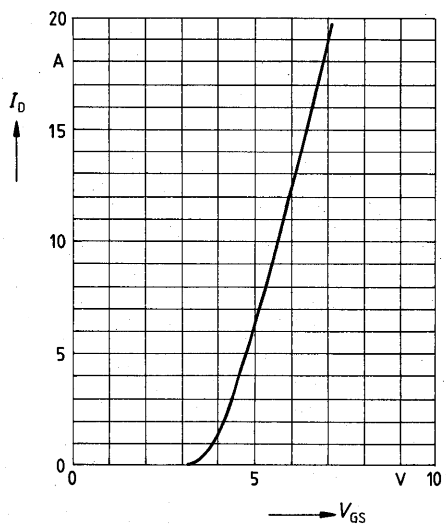
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



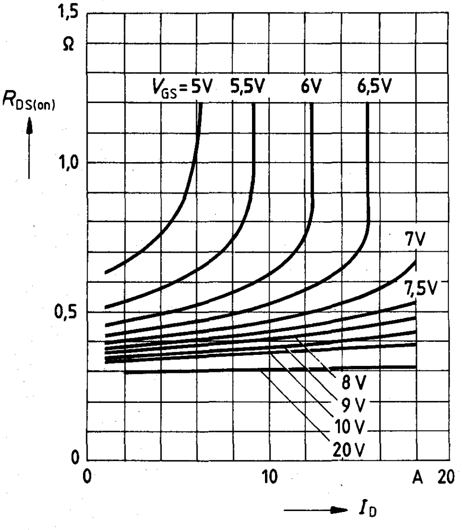
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



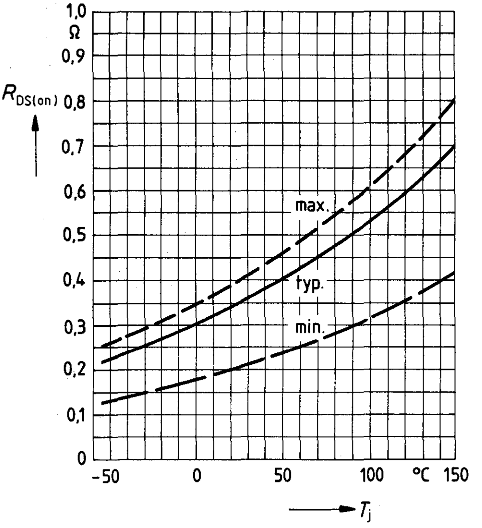
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25\,V$, $T_j = 25\,°C$



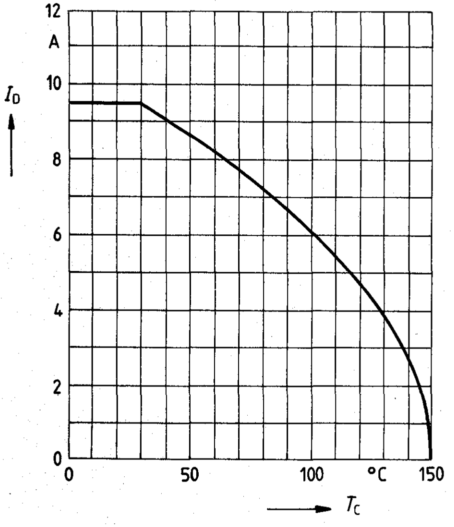
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



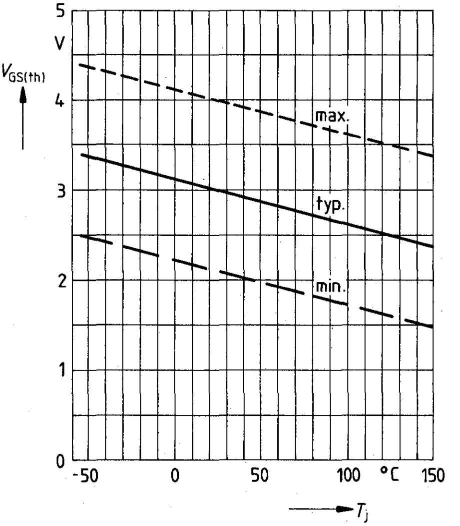
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 4.5$ A, $V_{GS} = 10$ V



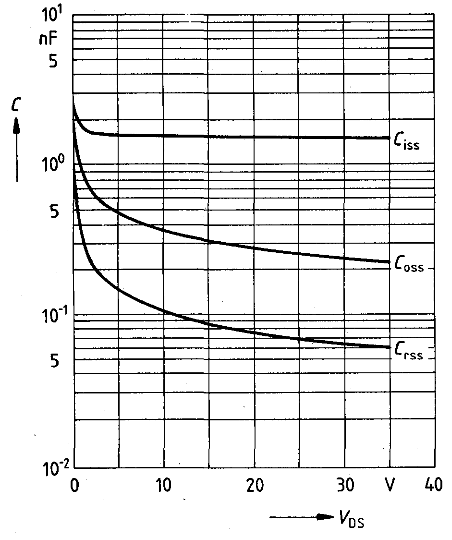
Continuous drain current $I_D = f(T_{case})$



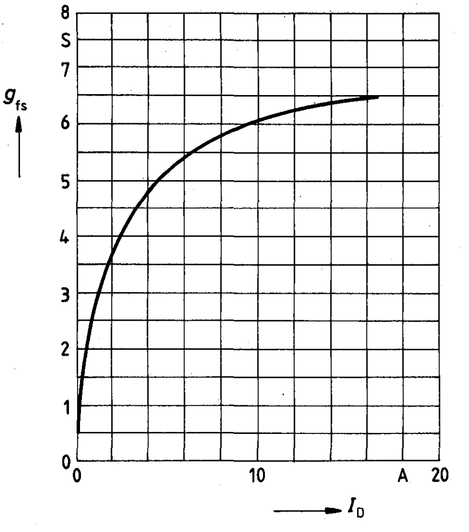
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



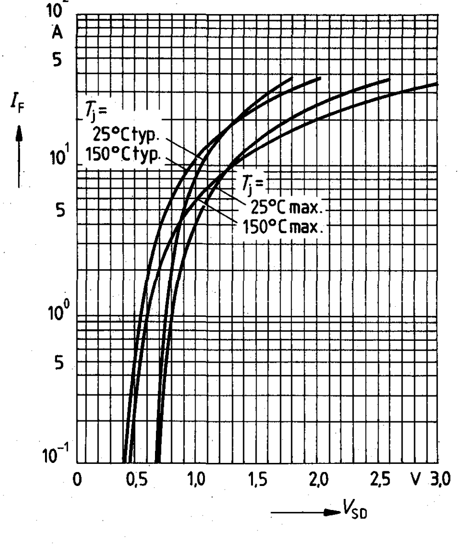
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



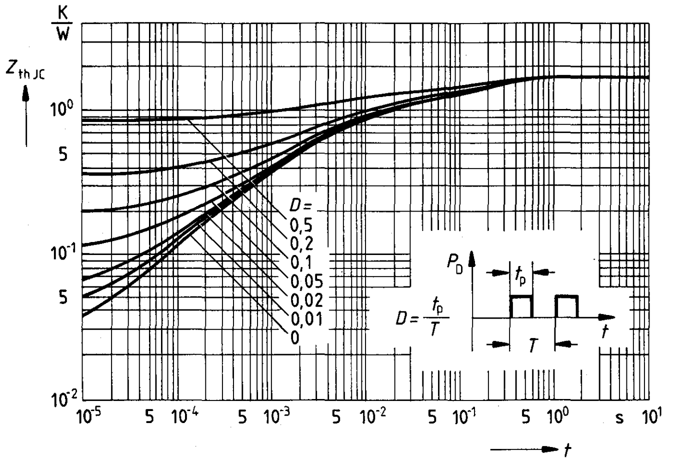
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$°C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



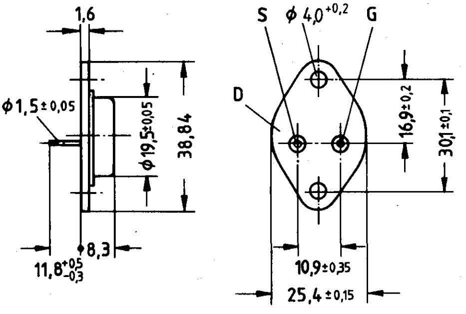
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 200 V**
Continuous drain current I_D **= 14 A**
Drain-source on-resistance $R_{DS(on)}$ **= 0,2 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AE (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 34	C67078-A1005-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	200V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	200V
Continuous drain current, T_{case} = 25 °C	I_D	14A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	56A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	78W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\ JA}$	≤35K/W
	$R_{th\ JC}$	≤1,6K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	200	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 200V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,17	0,2	Ω	V_{GS} = 10V I_D = 7A

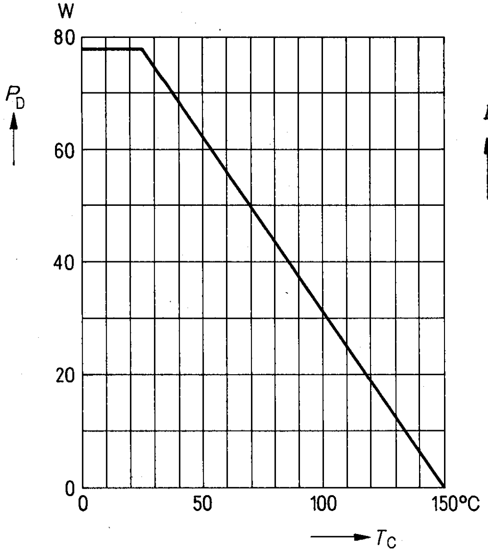
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	3,0	5,0	–	S	V_{DS} = 25V I_D = 7A
Input capacitance	C_{iss}	–	900	1400	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	300	500		
Reverse transfer capacitance	C_{rss}	–	140	250		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	170	220		
	t_f	–	60	80		

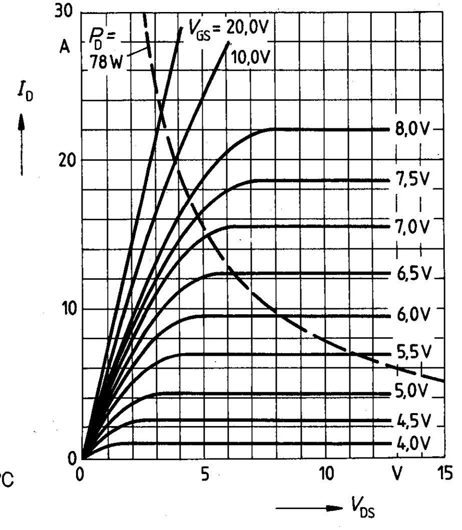
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	14	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	56		
Diode forward on-voltage	V_{SD}	–	1,5	1,9	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	400	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	6,0	–	µC	

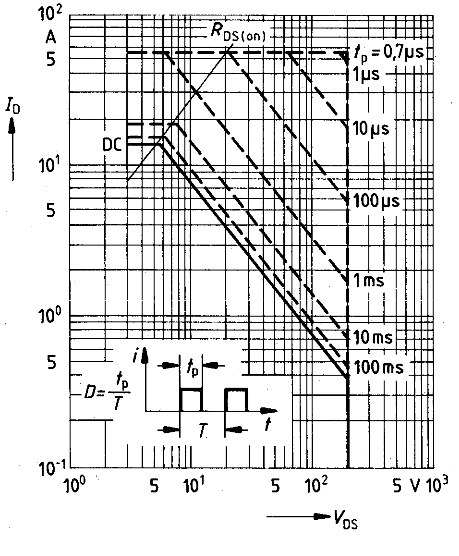
Power dissipation $P_D = f(T_{case})$



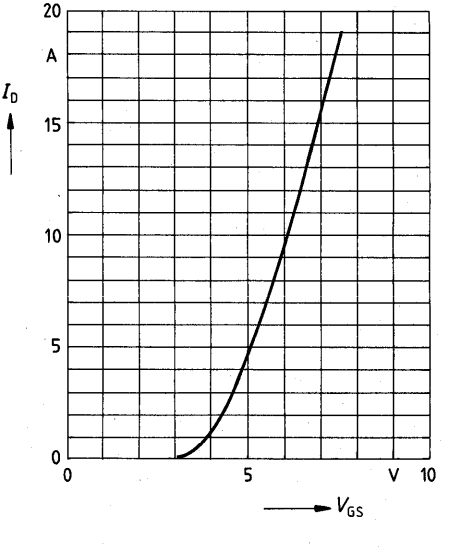
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



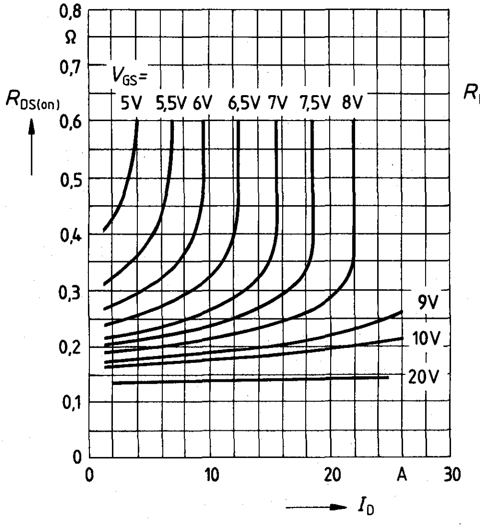
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



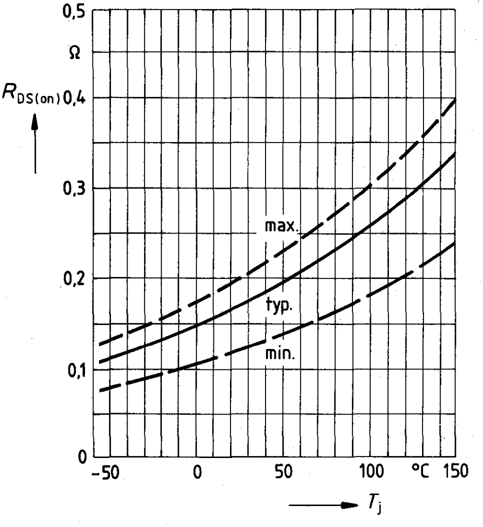
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



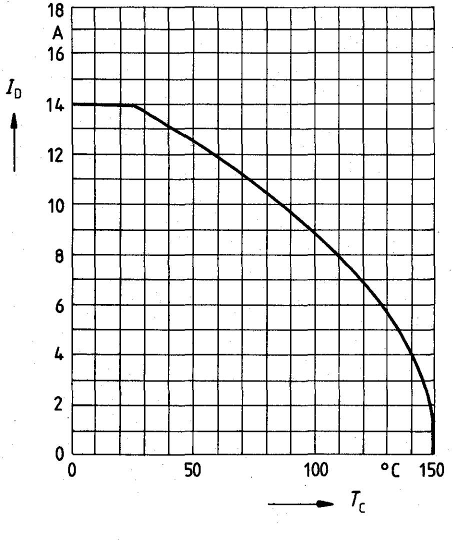
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



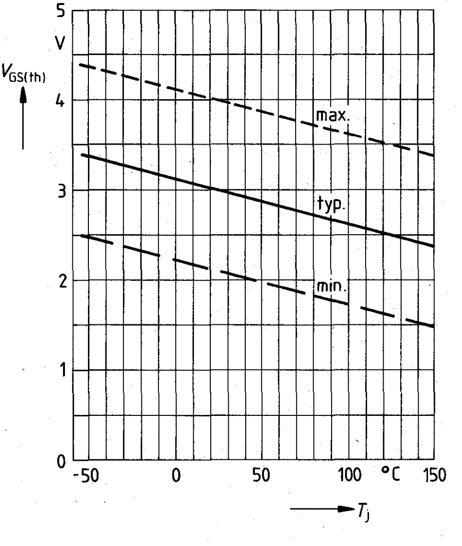
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 7$ A, $V_{GS} = 10$ V



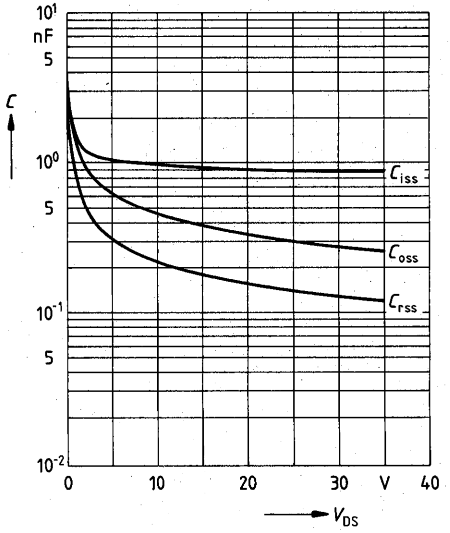
Continuous drain current $I_D = f(T_{case})$



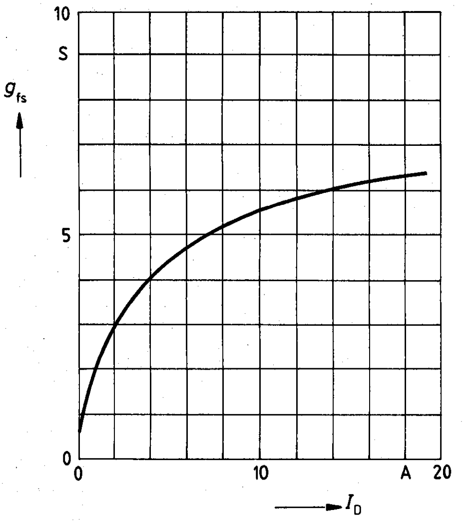
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



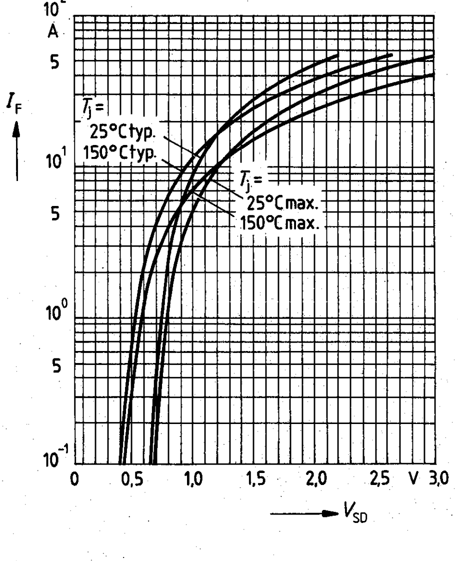
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



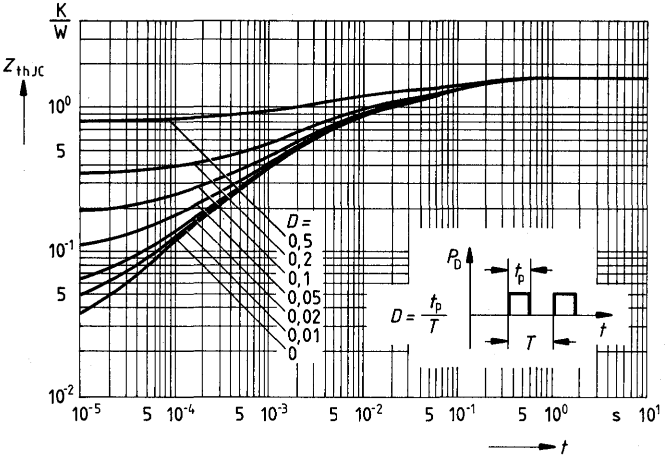
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°$C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



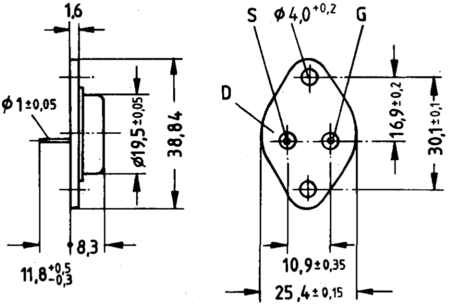
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **200 V**
Continuous drain current I_D = **9,9 A**
Drain-source on-resistance $R_{DS(on)}$ = **0,4 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 35	C67078-A1014-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	200V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	200V
Continuous drain current, T_{case} = 25 °C	I_D	9,9A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	39A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	78W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\,JA}$	≤35K/W
	$R_{th\,JC}$	≤1,6K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	200	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 200V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,35	0,4	Ω	V_{GS} = 10V I_D = 4,5A

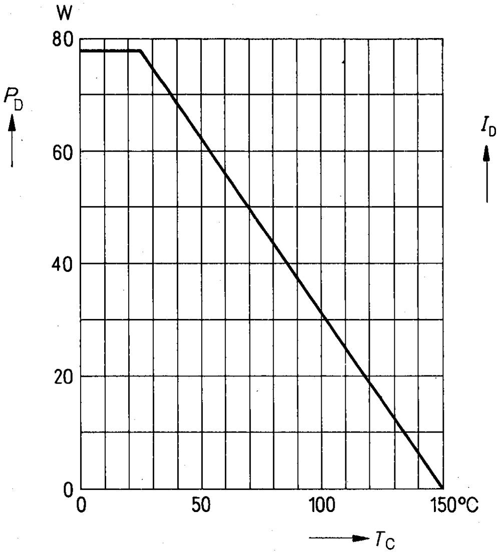
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,2	5,0	–	S	V_{DS} = 25V I_D = 4,5A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	250	400		
Reverse transfer capacitance	C_{rss}	–	70	120		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	110	140		
	t_f	–	60	80		

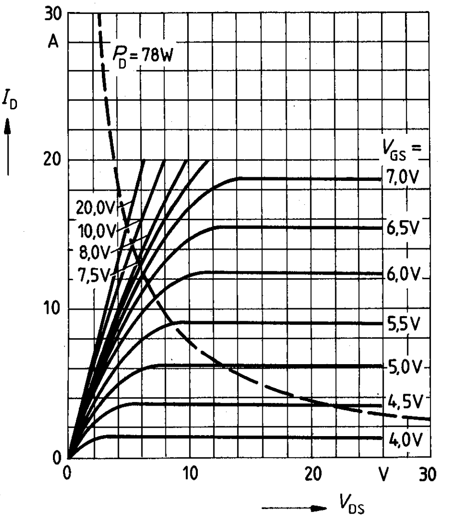
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	9,9	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	39		
Diode forward on-voltage	V_{SD}	–	1,3	1,7	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	400	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	6,0	–	µC	

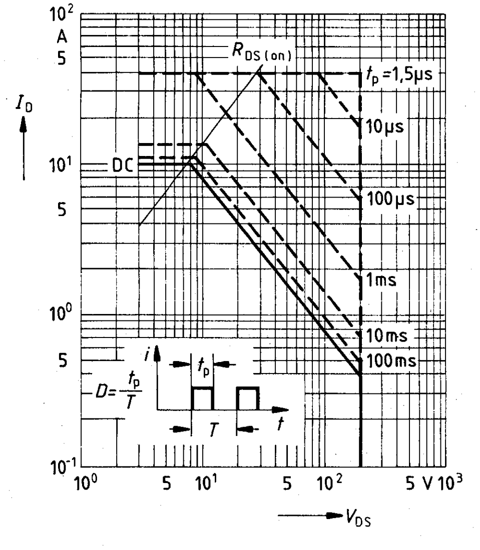
Power dissipation $P_D = f(T_{case})$



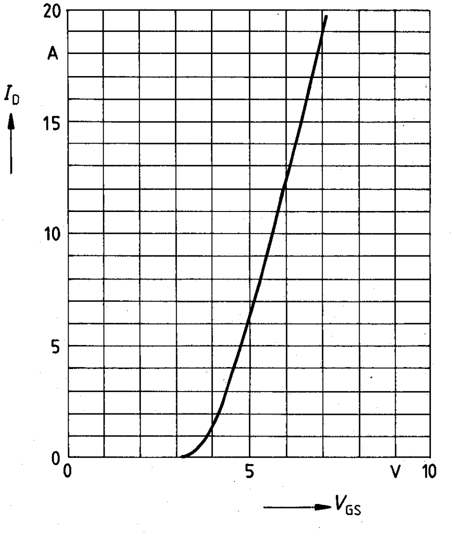
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



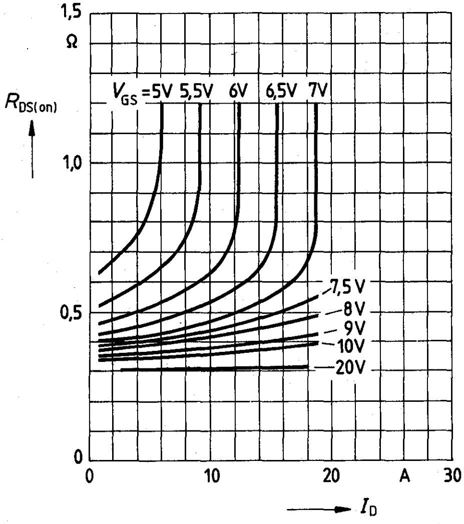
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



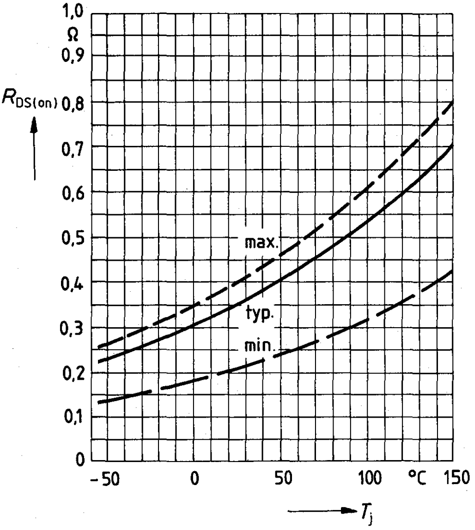
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



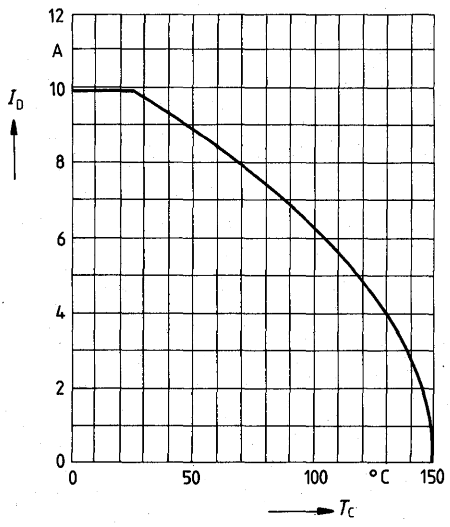
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25°C$



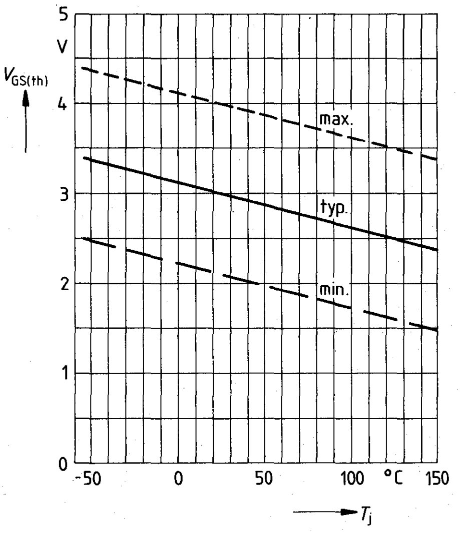
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 4.5$ A, $V_{GS} = 10$ V



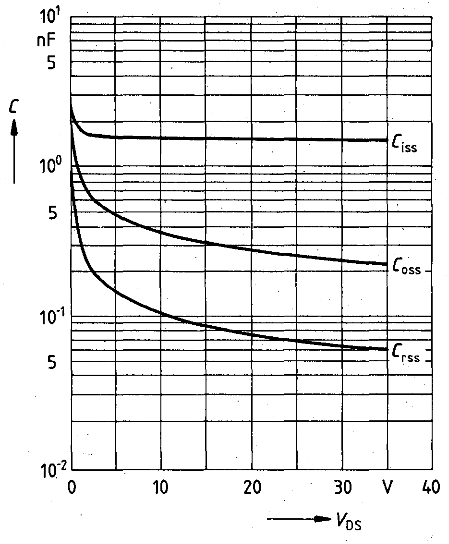
Continuous drain current $I_D = f(T_{case})$



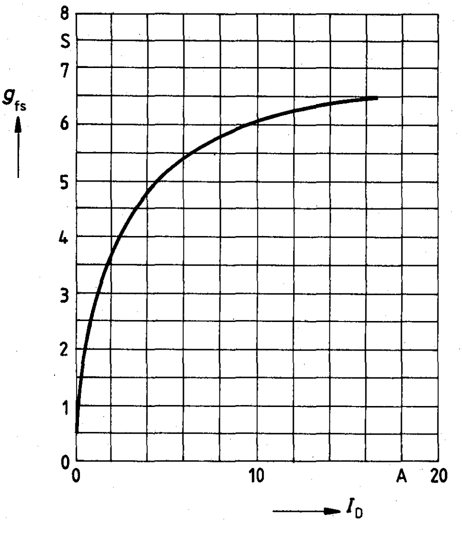
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



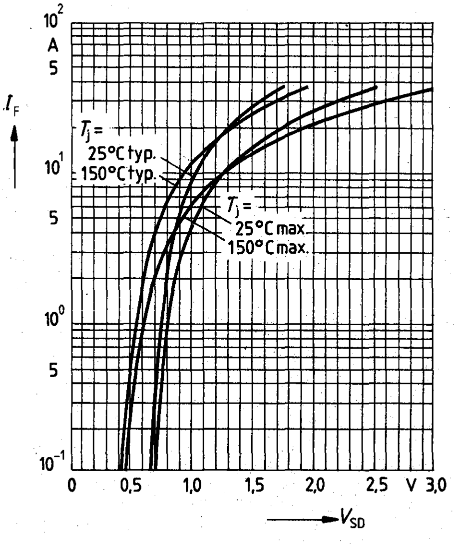
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



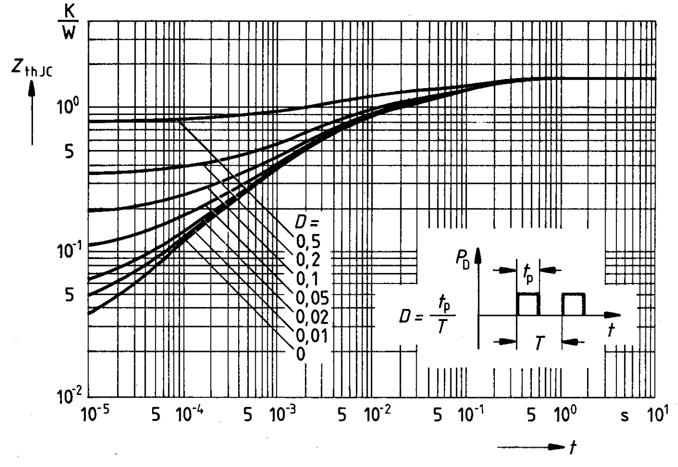
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, t_p = 80 µs



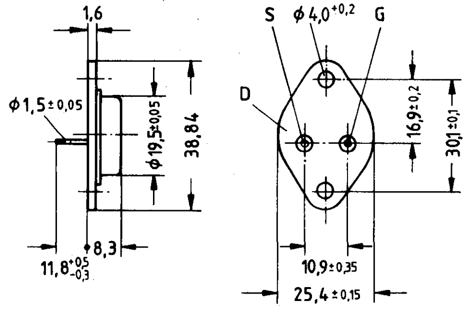
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **200 V**
Continuous drain current I_D = **22 A**
Drain-source on-resistance $R_{DS(on)}$ = **0,12 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AE (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 36	C67078-A1018-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	200V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	200V
Continuous drain current, T_{case} = 30 °C	I_D	22A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	85A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\,JA}$	≤35K/W
	$R_{th\,JC}$	≤1,0K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	200	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 200V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,09	0,12	Ω	V_{GS} = 10V I_D = 11A

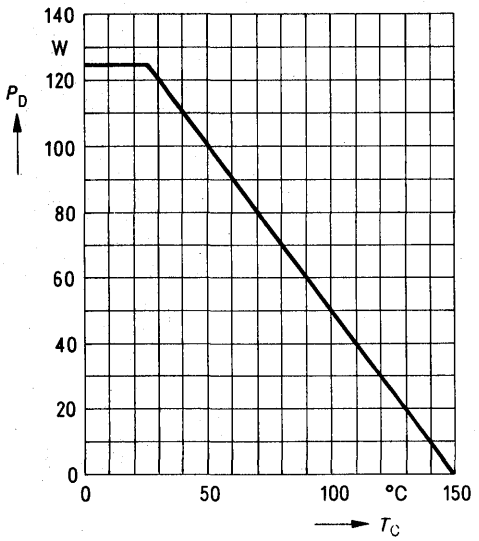
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	9,0	13,0	–	S	V_{DS} = 25V I_D = 11A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	500	800		
Reverse transfer capacitance	C_{rss}	–	200	350		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	70	110		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	120	160		

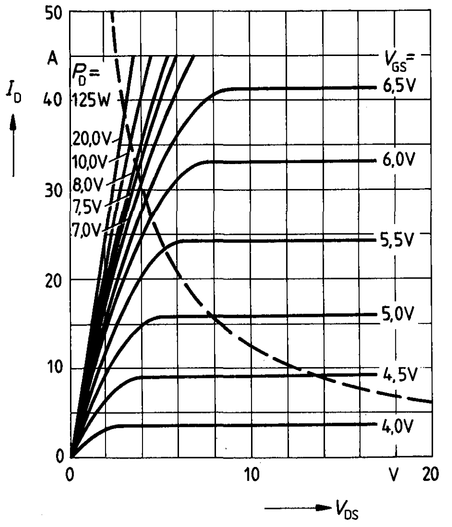
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	22	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	85		
Diode forward on-voltage	V_{SD}	–	1,2	1,7	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	400	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	6,0	–	µC	

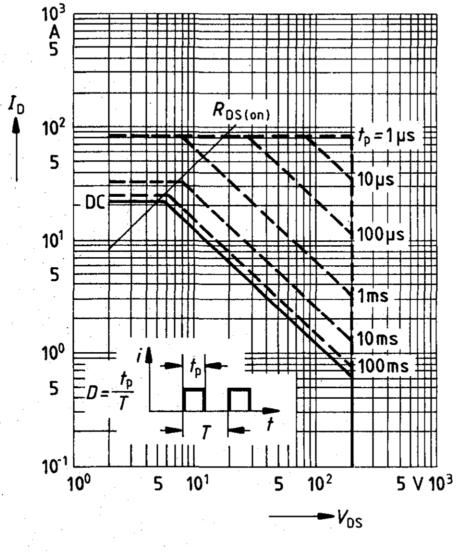
Power dissipation $P_D = f(T_{case})$



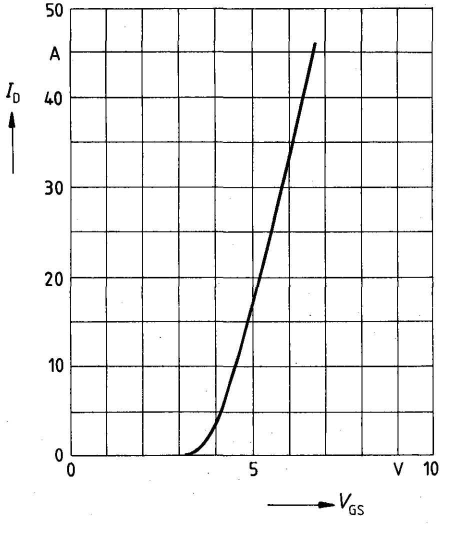
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



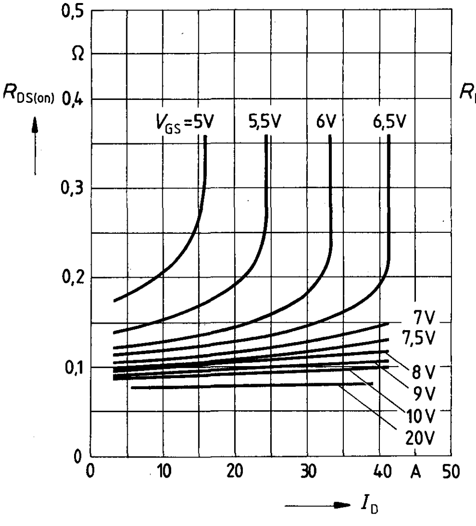
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



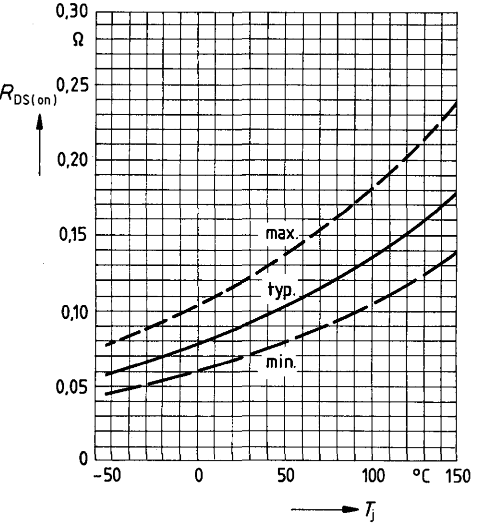
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



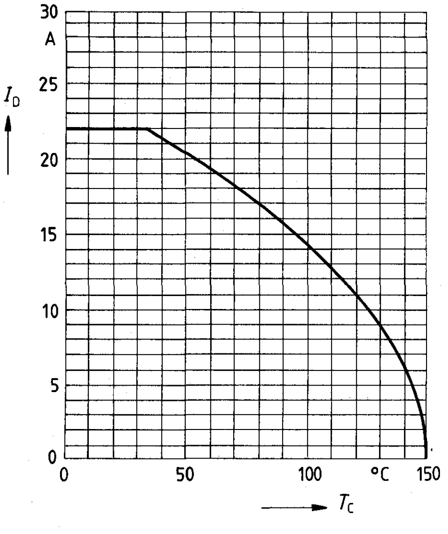
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



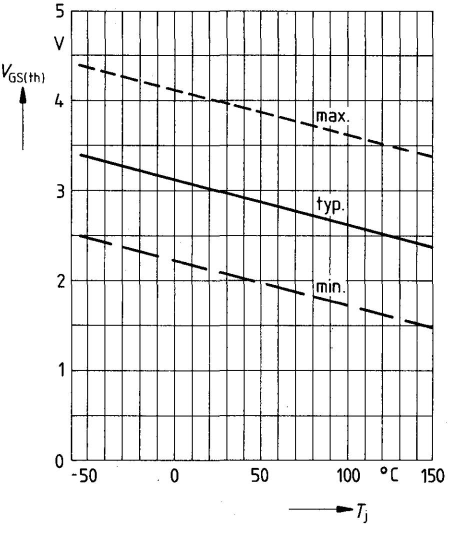
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: I_D = 11 A, V_{GS} = 10 V



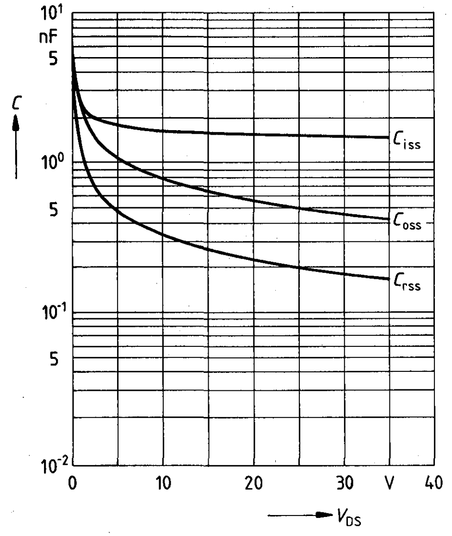
Continuous drain current $I_D = f(T_{case})$



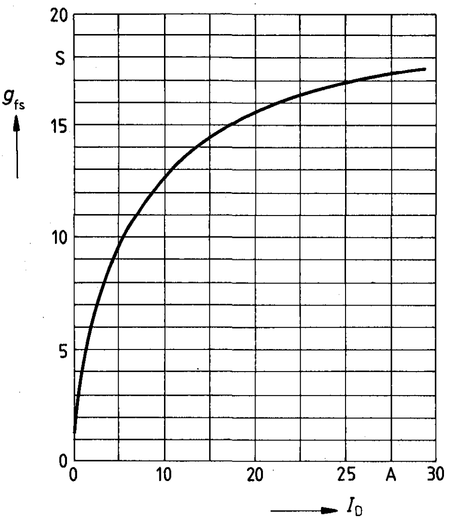
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, I_D = 10 mA



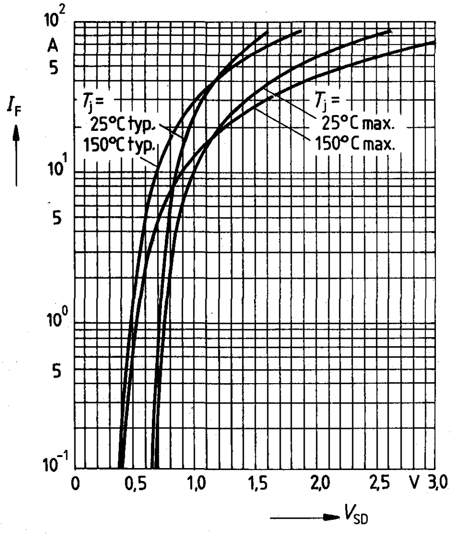
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



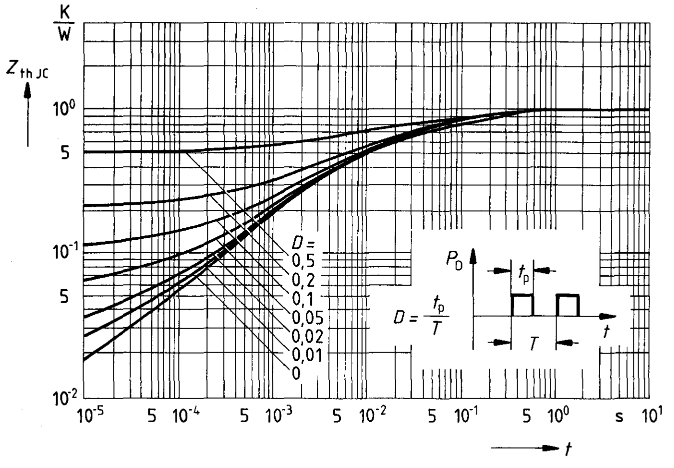
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$ °C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



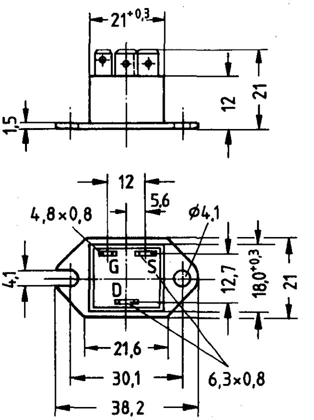
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 200 V**
Continuous drain current I_D **= 13 A**
Drain-source on-resistance $R_{DS(on)}$ **= 0,2 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package TO 238 AA with insulated metal base plate in accordance with JEDEC, compatible with TO 3; AMP plug-in connections.
Approx. weight 21 g

Type	Ordering code
BUZ 37	C67078-A1603-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	200V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	200V
Continuous drain current, T_{case} = 30 °C	I_D	13A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	52A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	70W
Operating and storage temperature range	T_j T_{stg}	−40 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	3500 Vdc[1])
DIN humidity category		F
Thermal resistance	$R_{th\ JA}$	–
	$R_{th\ JC}$	≤1,78K/W

[1]) Isolation test voltage between drain and heat sink referred to standard climate 23/50 in accordance with DIN 50014.

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)DSS}$	200	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 200V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS(on)}$	–	0,17	0,2	Ω	V_{GS} = 10V I_D = 7A

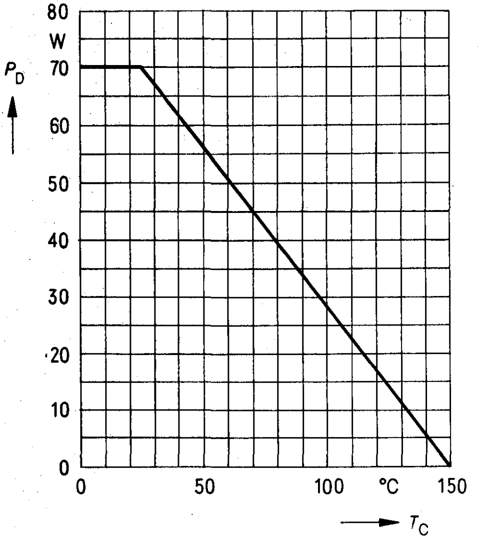
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	3,0	5,0	–	S	V_{DS} = 25V I_D = 7A
Input capacitance	C_{iss}	–	900	1400	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	300	500		
Reverse transfer capacitance	C_{rss}	–	140	250		
Turn-on time t_{on} (t_{on} = $t_{d(on)}$ + t_r)	$t_{d(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} (t_{off} = $t_{d(off)}$ + t_f)	$t_{d(off)}$	–	170	220		
	t_f	–	60	80		

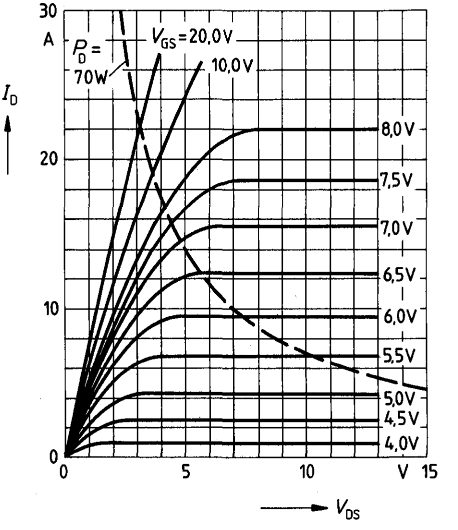
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	13	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	52		
Diode forward on-voltage	V_{SD}	–	1,4	1,8	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	400	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	6,0	–	µC	

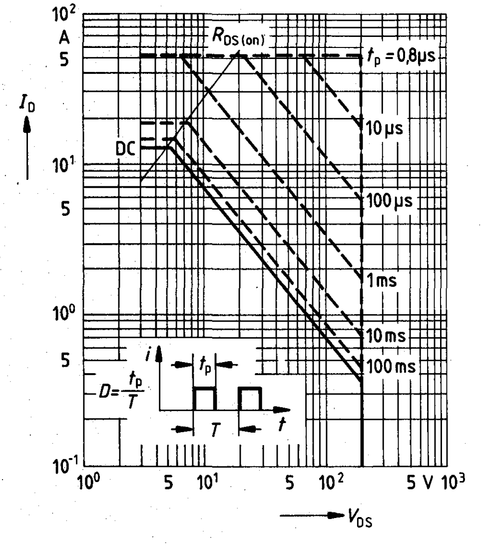
Power dissipation $P_D = f(T_{case})$



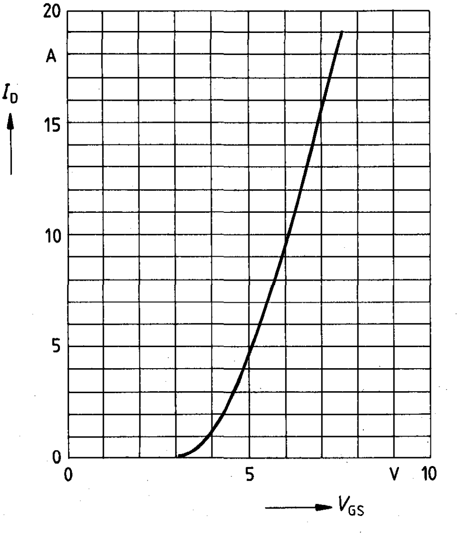
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



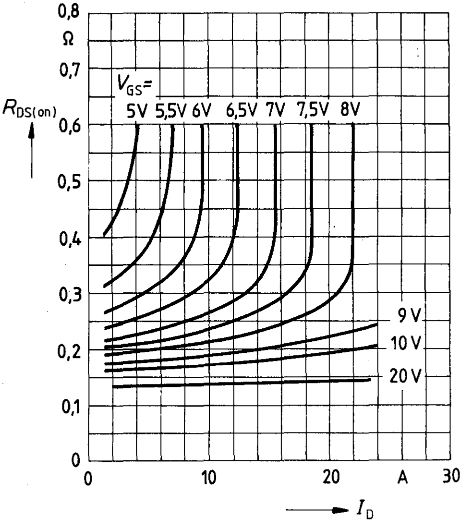
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



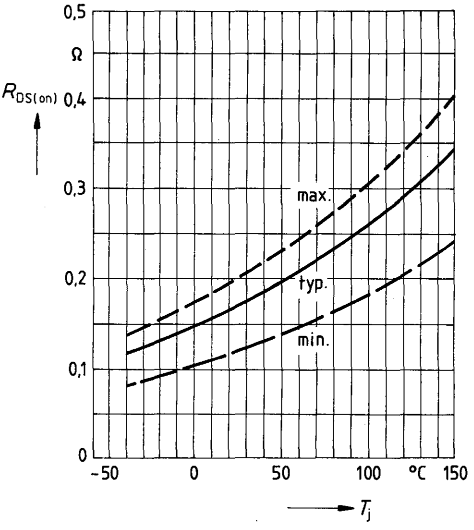
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



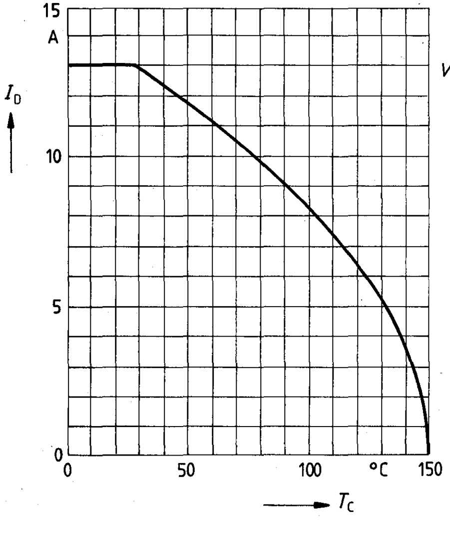
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



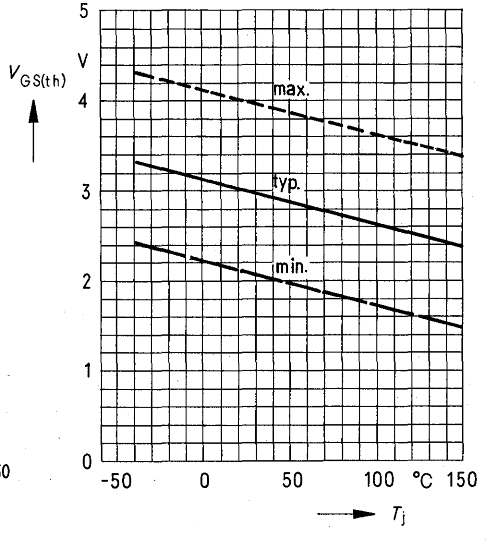
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 7$ A, $V_{GS} = 10$ V



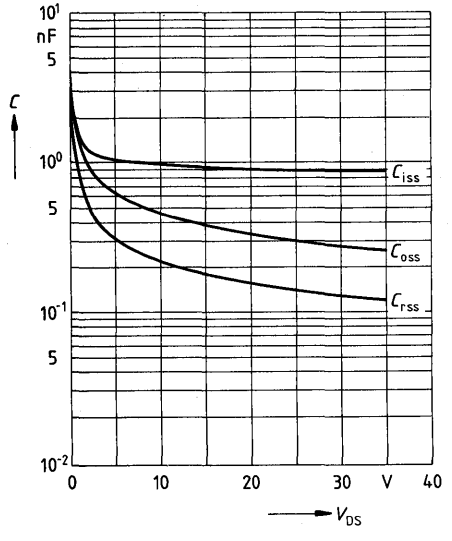
Continuous drain current $I_D = f(T_{case})$



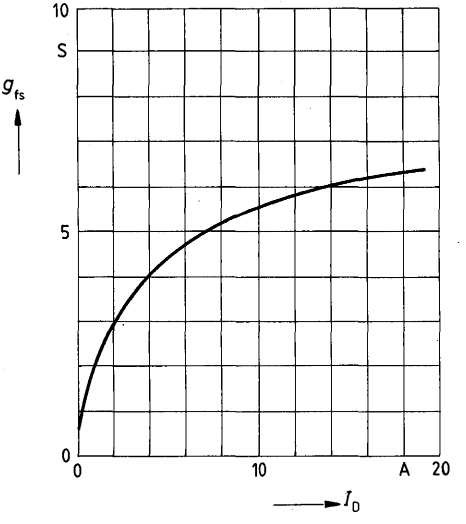
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



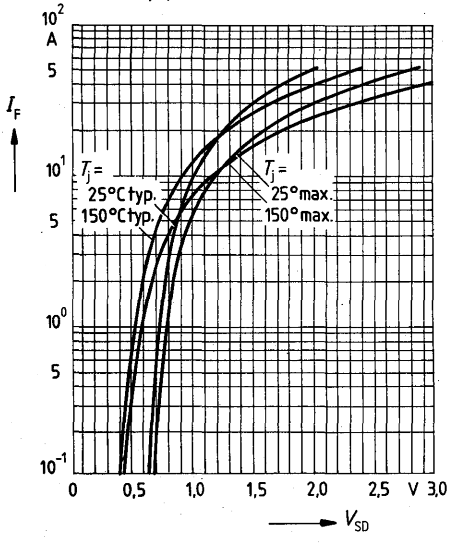
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



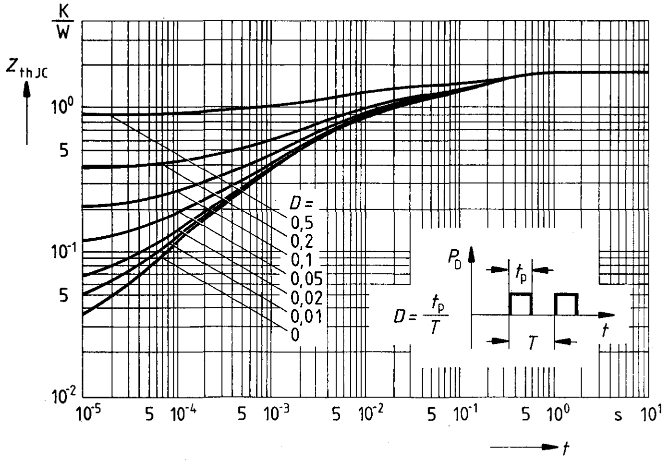
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$°C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



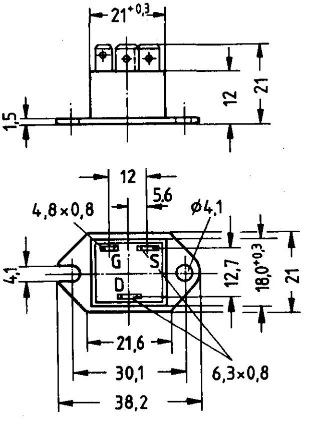
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **200 V**
Continuous drain current I_D = **18 A**
Drain-source on-resistance $R_{DS(on)}$ = **0,12 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package TO 238 AA with insulated metal base plate in accordance with JEDEC, compatible with TO 3; AMP plug-in connections.
Approx. weight 21 g

Type	Ordering code
BUZ 38	C67078-A1611-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	200V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	200V
Continuous drain current, T_{case} = 30 °C	I_D	18A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	70A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	83,3W
Operating and storage temperature range	T_j, T_{stg}	−40 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	3500 Vdc[1])
DIN humidity category		F
Thermal resistance	$R_{th\,JA}$	–
	$R_{th\,JC}$	≤1,5K/W

[1]) Isolation test voltage between drain and heat sink referred to standard climate 23/50 in accordance with DIN 50014.

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	200	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 200V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,09	0,12	Ω	V_{GS} = 10V I_D = 11A

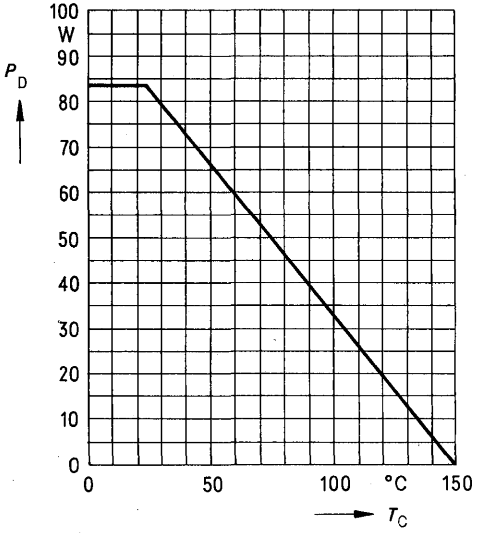
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	9,0	13,0	–	S	V_{DS} = 25V I_D = 11A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	500	800		
Reverse transfer capacitance	C_{rss}	–	200	350		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	70	110		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	120	160		

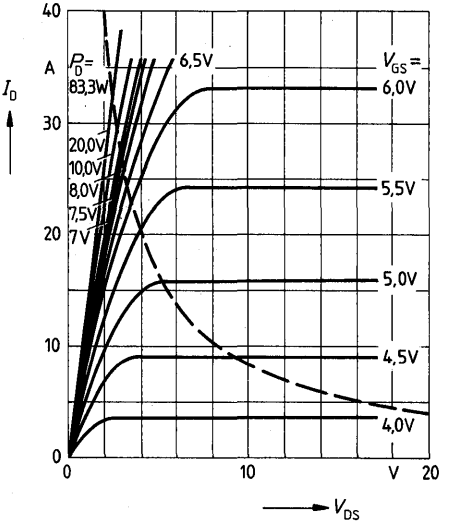
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	18	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	70		
Diode forward on-voltage	V_{SD}	–	1,15	1,6	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25°C
Reverse recovery time	t_{rr}	–	400	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	6,0	–	µC	

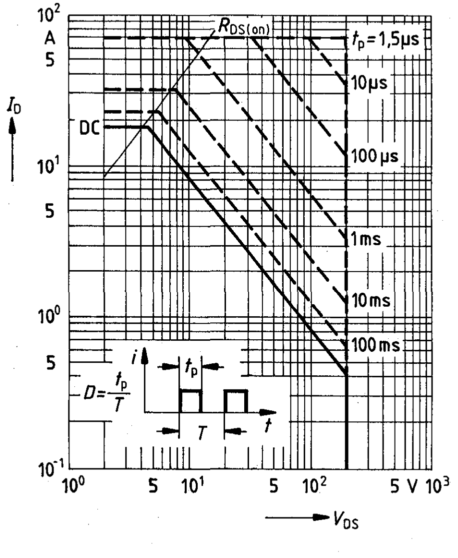
Power dissipation $P_D = f(T_{case})$



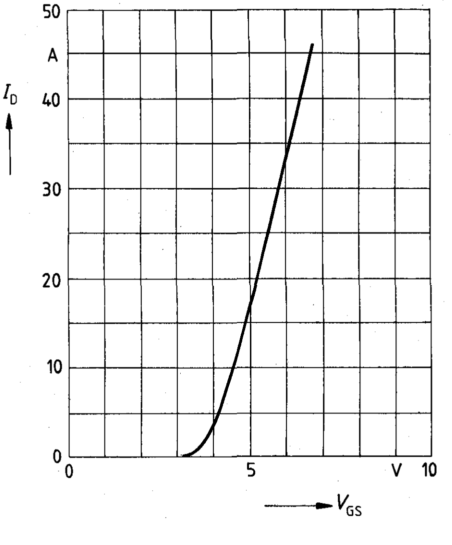
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



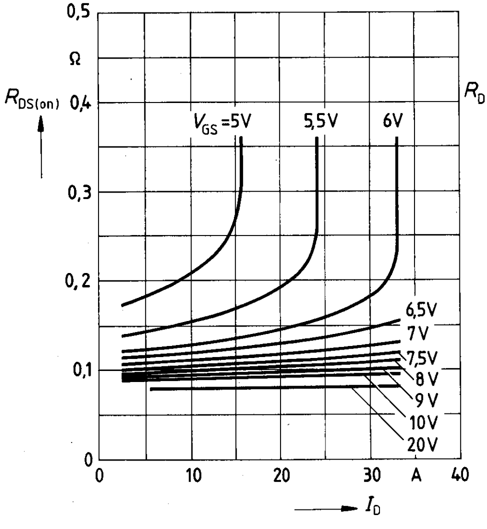
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



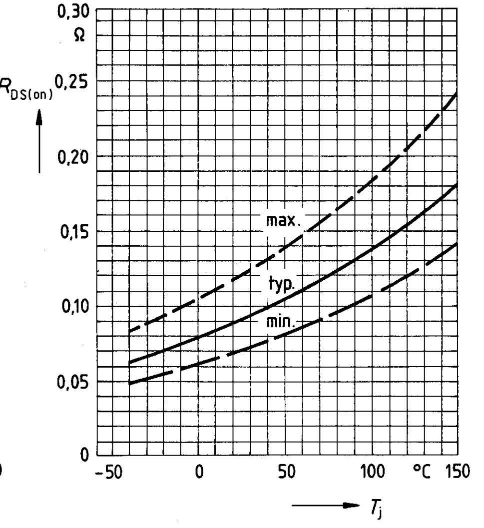
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



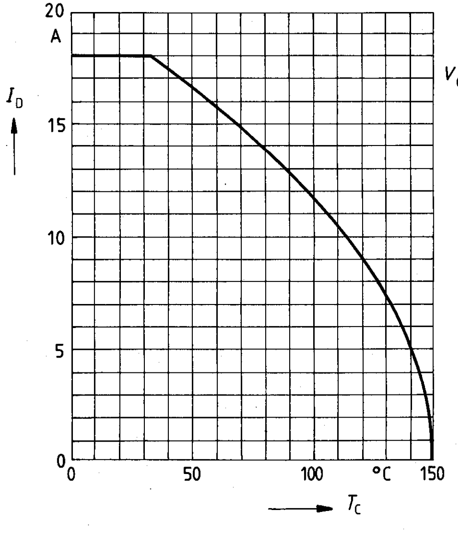
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



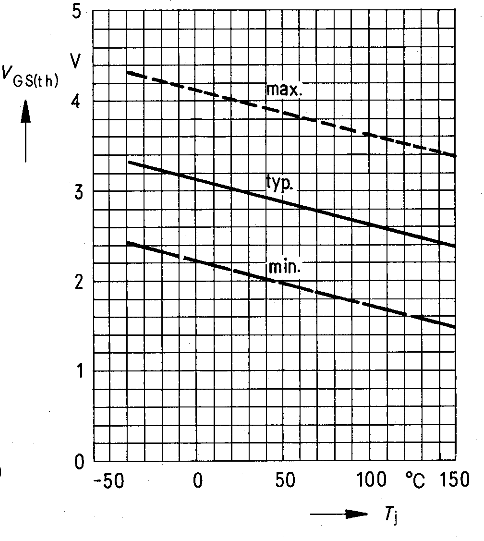
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 11\,A$, $V_{GS} = 10\,V$



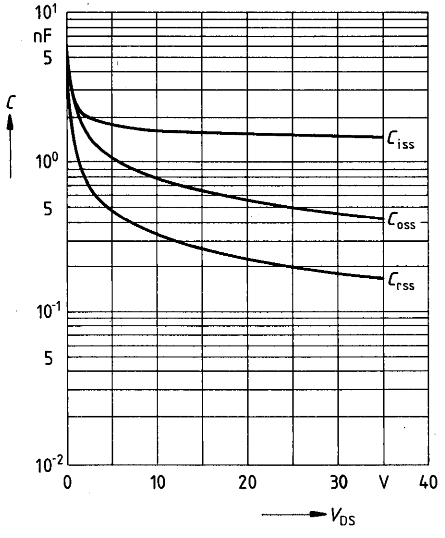
Continuous drain current $I_D = f(T_{case})$



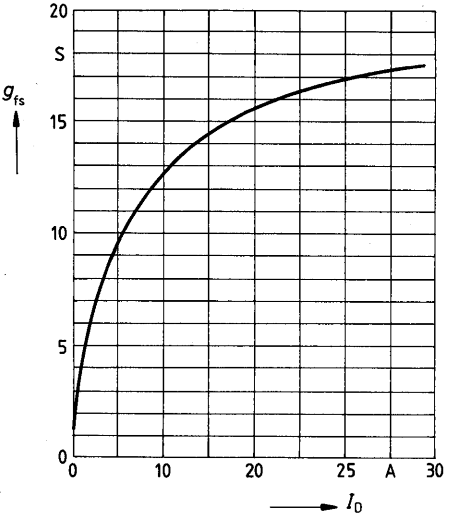
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



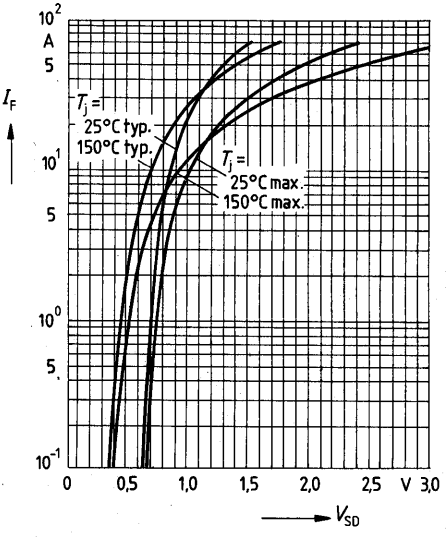
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



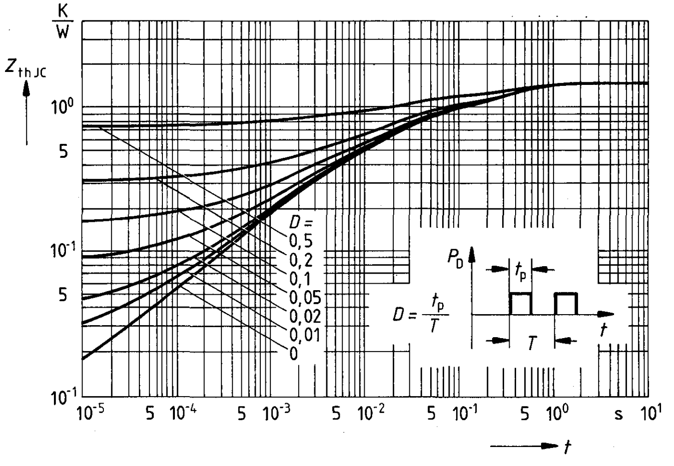
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°$C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



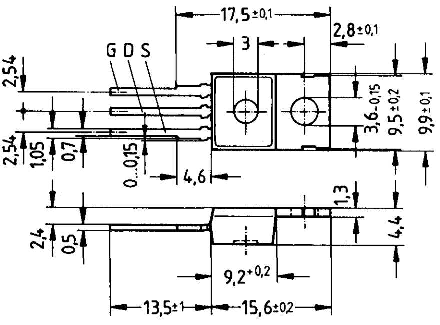
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 500 V**
Continuous drain current I_D **= 4,5 A**
Drain-source on-resistance $R_{DS(on)}$ **= 1,5 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 41 A	C67078-A1306-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	500V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	500V
Continuous drain current, T_{case} = 35 °C	I_D	4,5A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	18A
Gate-source voltage	V_{GS}	± 20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j T_{stg}	− 55 °C ... + 150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤ 75K/W
	$R_{th\,JC}$	≤ 1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	500	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 500V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	1,4	1,5	Ω	V_{GS} = 10V I_D = 2,5A

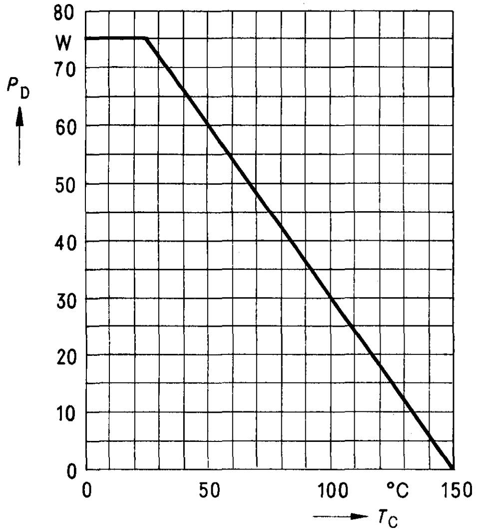
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,5	2,5	–	S	V_{DS} = 25V I_D = 2,5A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	110	170		
Reverse transfer capacitance	C_{rss}	–	40	70		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,6A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	110	140		
	t_f	–	50	65		

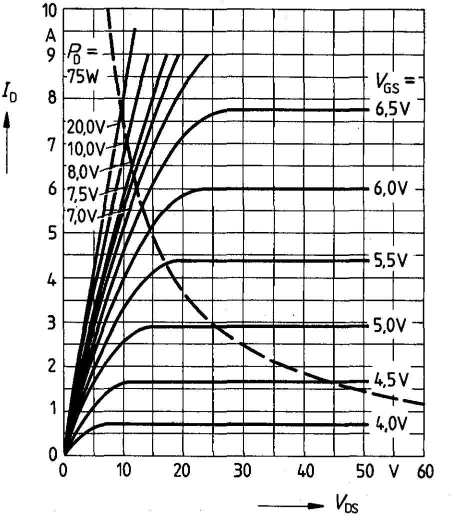
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	4,5	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	18		
Diode forward on-voltage	V_{SD}	–	1,1	1,5	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	6,0	–	µC	

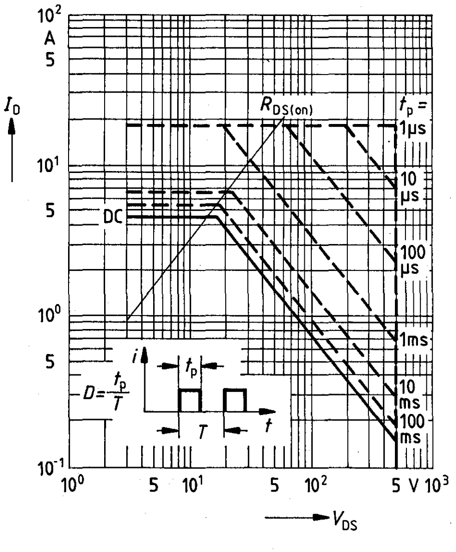
Power dissipation $P_D = f(T_{case})$



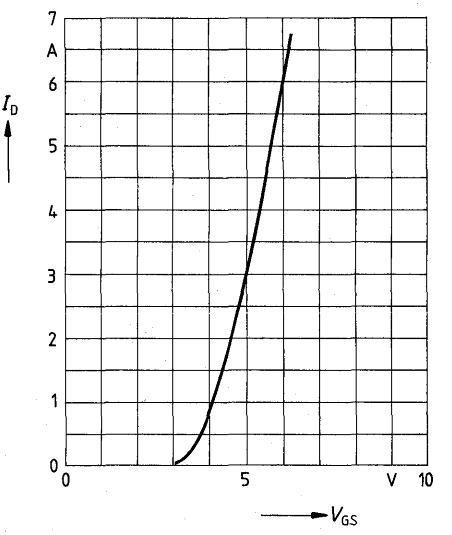
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



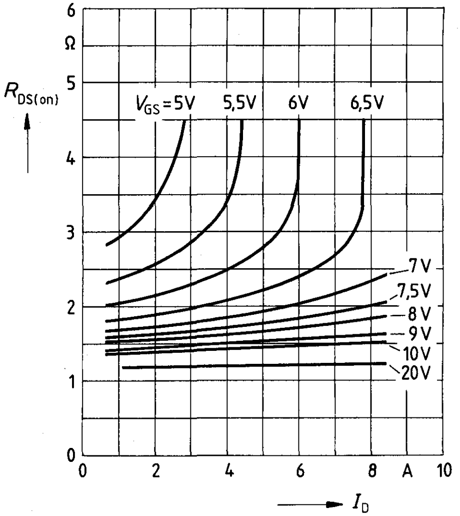
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



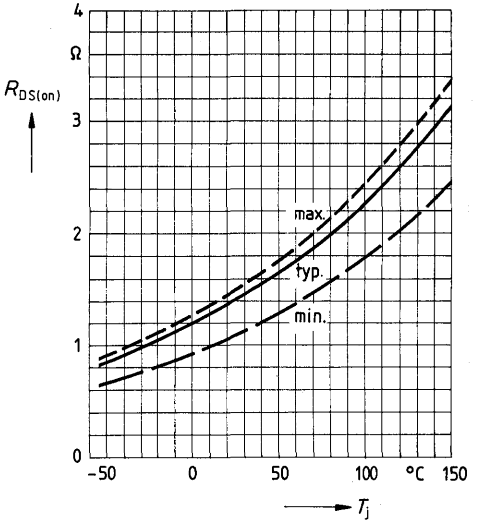
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



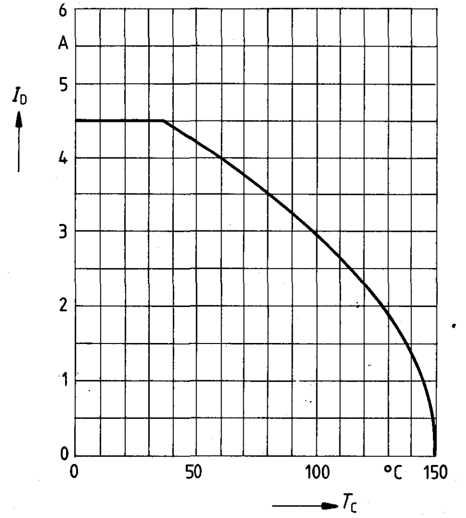
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



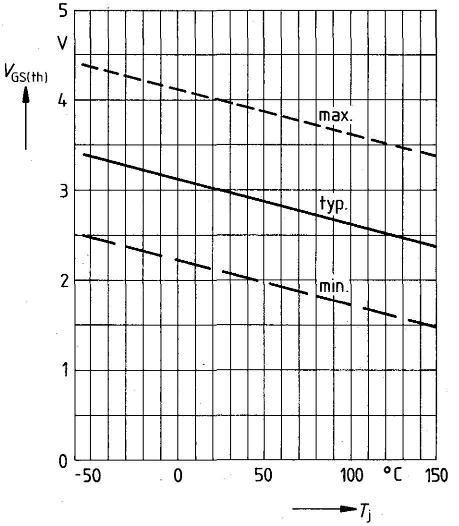
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 2.5$ A, $V_{GS} = 10$ V



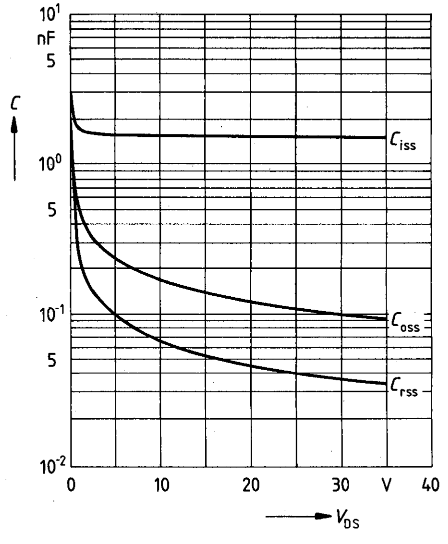
Continuous drain current $I_D = f(T_{case})$



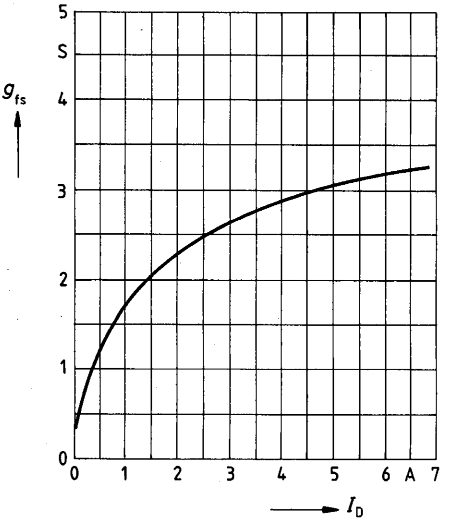
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



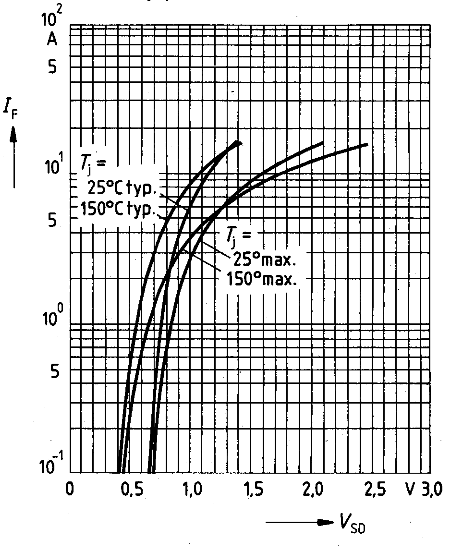
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



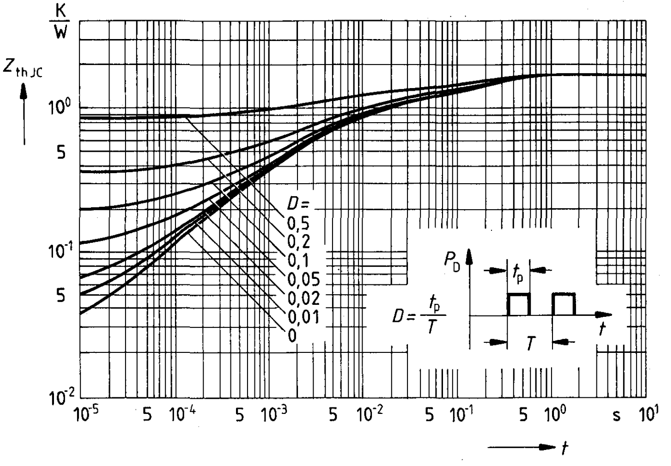
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



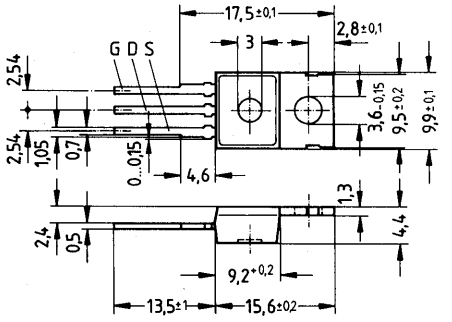
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 500 V**
Continuous drain current I_D **= 4 A**
Drain-source on-resistance $R_{DS(on)}$ **= 2,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 42	C67078-A1311-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	500V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	500V
Continuous drain current, T_{case} = 30 °C	I_D	4,0A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	16A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage	T_j	
temperature range	T_{stg}	−55 °C... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤75K/W
	$R_{th\ JC}$	≤1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)DSS}$	500	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 500V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS(on)}$	–	1,6	2,0	Ω	V_{GS} = 10V I_D = 2,5A

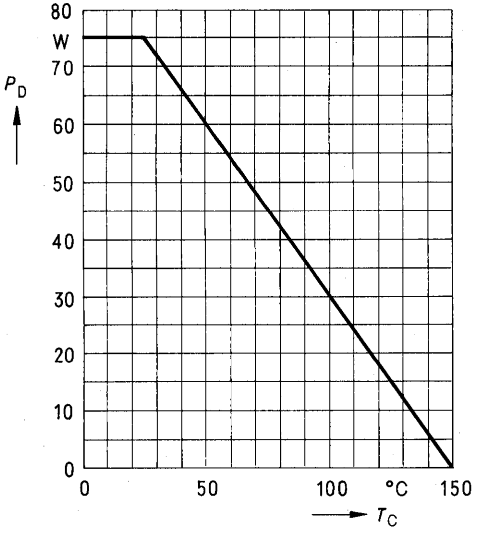
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,5	2,5	–	S	V_{DS} = 25V I_D = 2,5A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	110	170		
Reverse transfer capacitance	C_{rss}	–	40	70		
Turn-on time t_{on} ($t_{on} = t_{d(on)} + t_r$)	$t_{d(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,5A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d(off)} + t_f$)	$t_{d(off)}$	–	110	140		
	t_f	–	50	65		

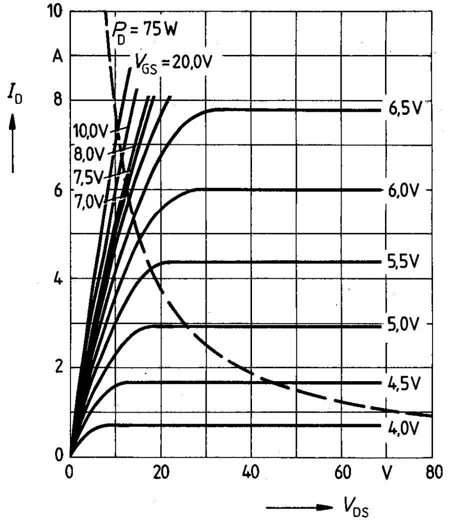
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	4,0	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	16		
Diode forward on-voltage	V_{SD}	–	1,1	1,5	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	6,0	–	µC	

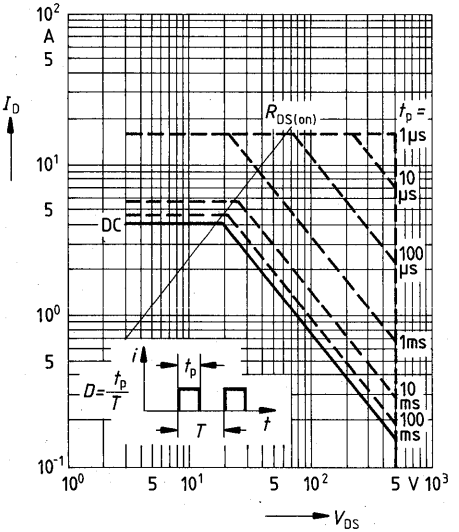
Power dissipation $P_D = f(T_{case})$



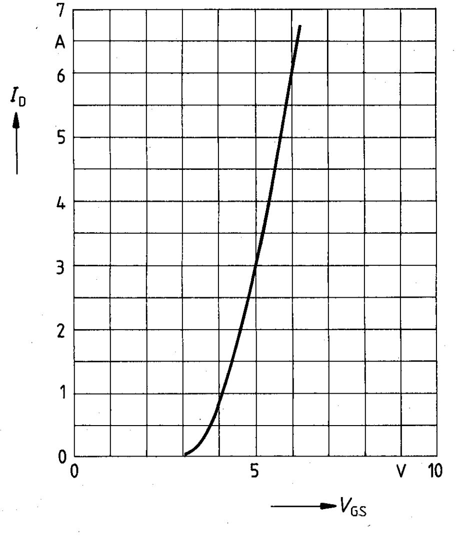
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



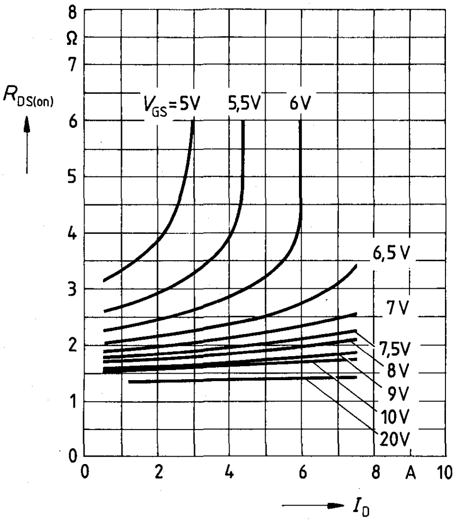
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



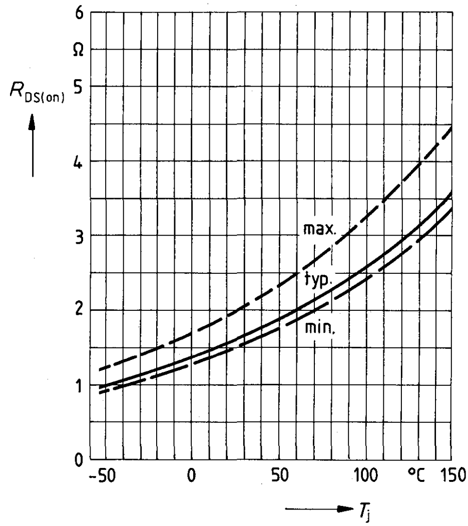
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



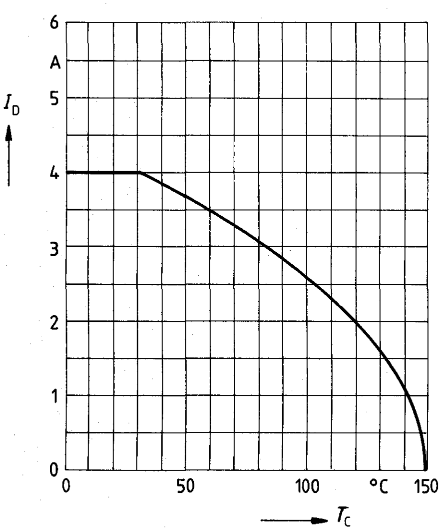
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



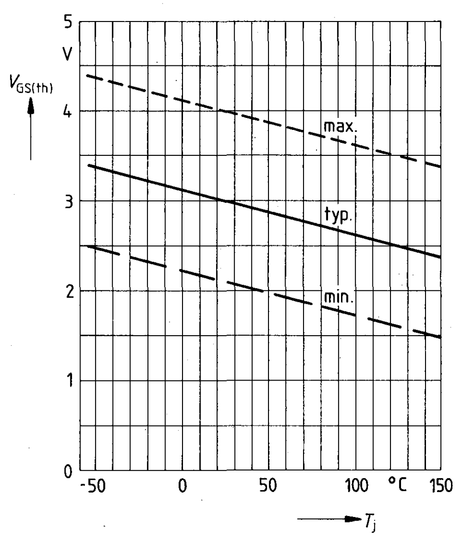
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 2.5$ A, $V_{GS} = 10$ V



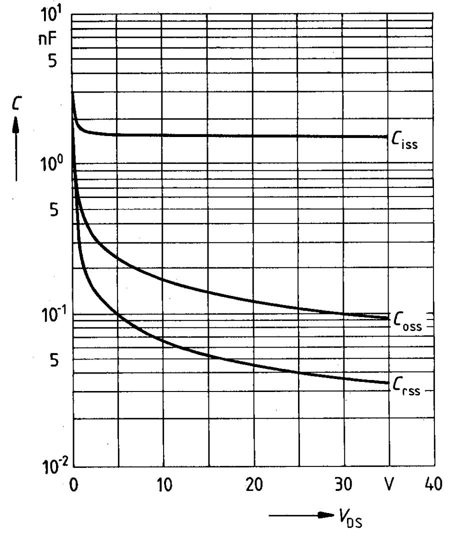
Continuous drain current $I_D = f(T_{case})$



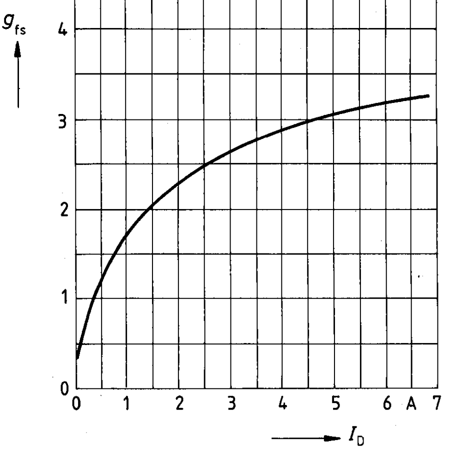
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



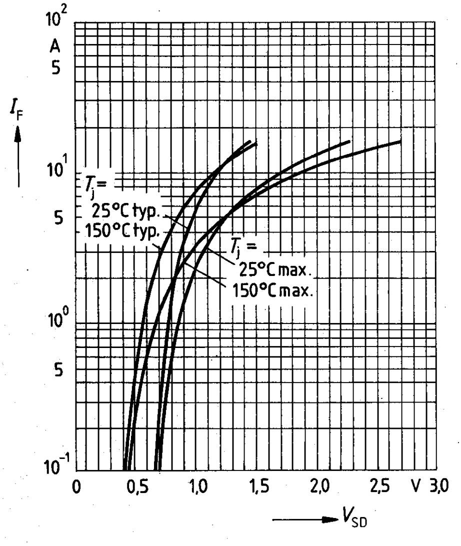
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



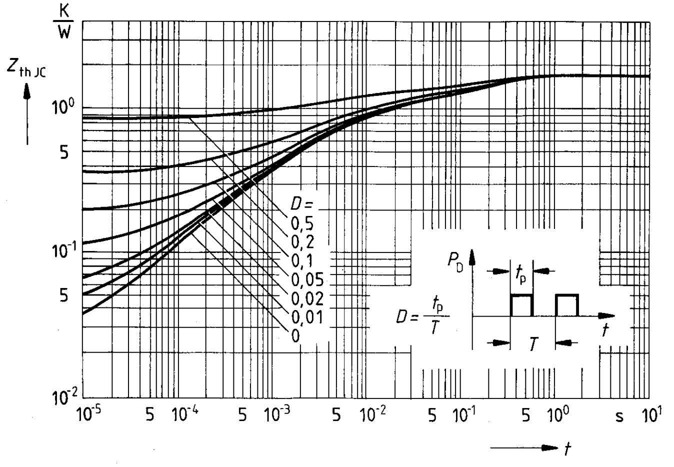
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



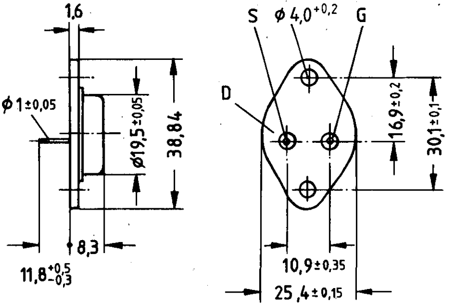
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage	V_{DS}	**= 500 V**
Continuous drain current	I_D	**= 4,8 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 1,5 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 44 A	C67078-A1007-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	500V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	500V
Continuous drain current, T_{case} = 25 °C	I_D	4,8A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	19A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	78W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\,JA}$	≤35K/W
	$R_{th\,JC}$	≤1,6K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	500	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 500V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	1,4	1,5	Ω	V_{GS} = 10V I_D = 2,5A

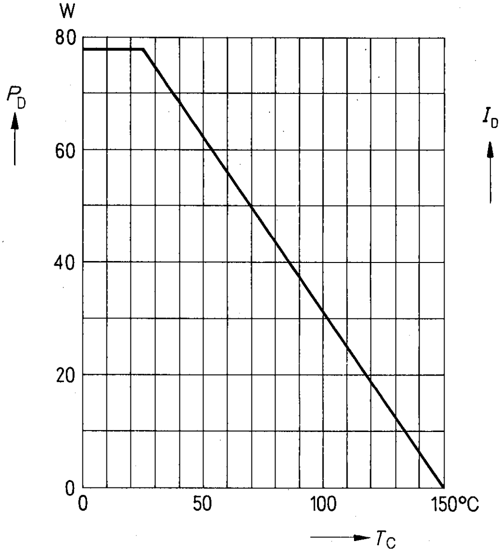
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,5	2,5	–	S	V_{DS} = 25V I_D = 2,5A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	110	170		
Reverse transfer capacitance	C_{rss}	–	40	70		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,6A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	110	140		
	t_f	–	50	65		

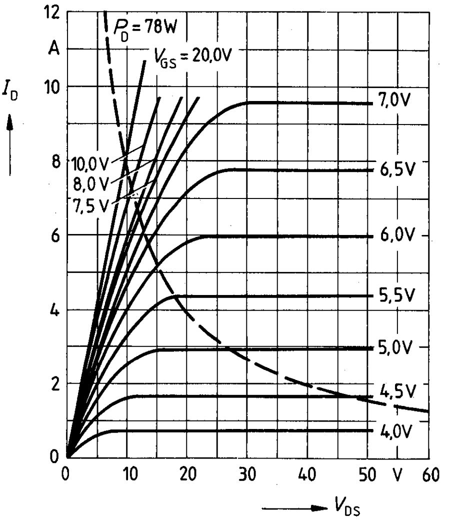
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	4,8	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	19		
Diode forward on-voltage	V_{SD}	–	1,15	1,5	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	6,0	–	µC	

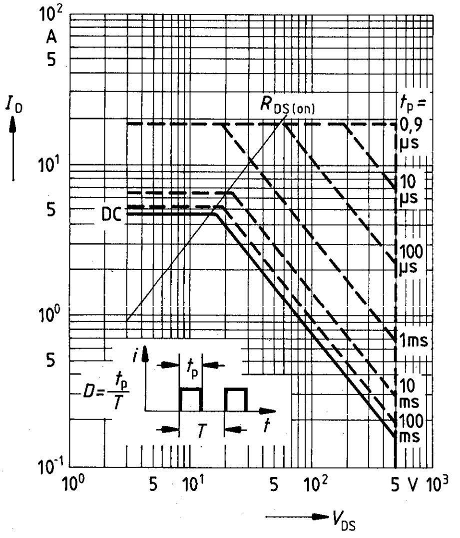
Power dissipation $P_D = f(T_{case})$



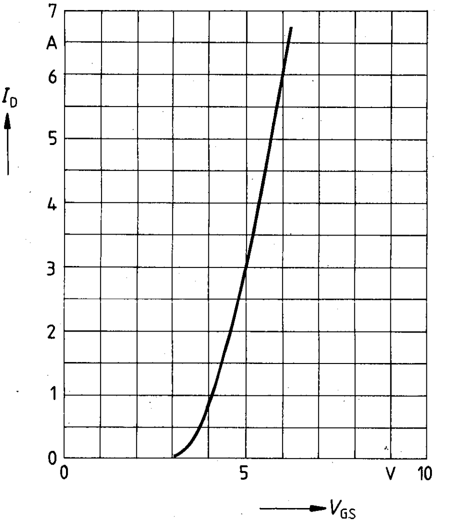
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



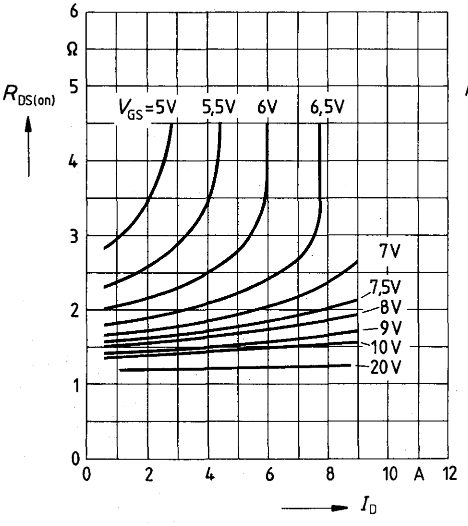
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



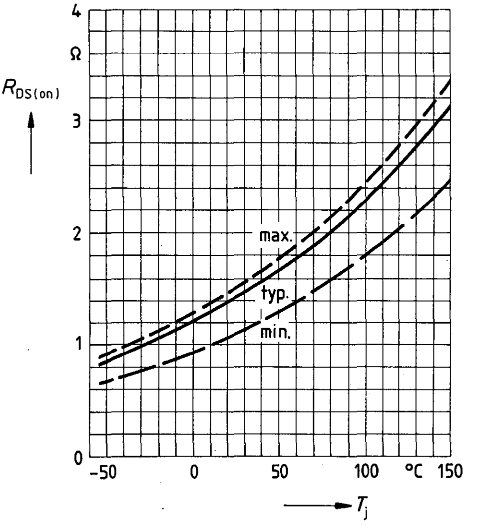
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



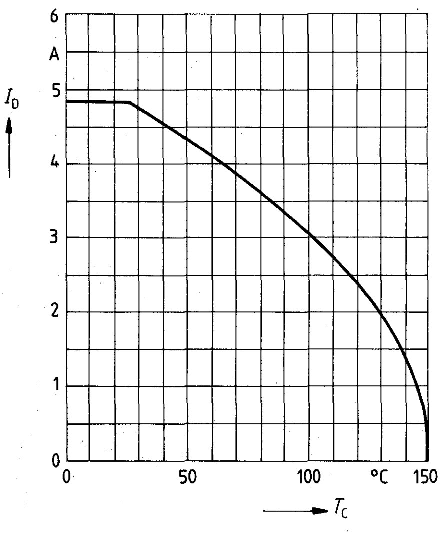
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



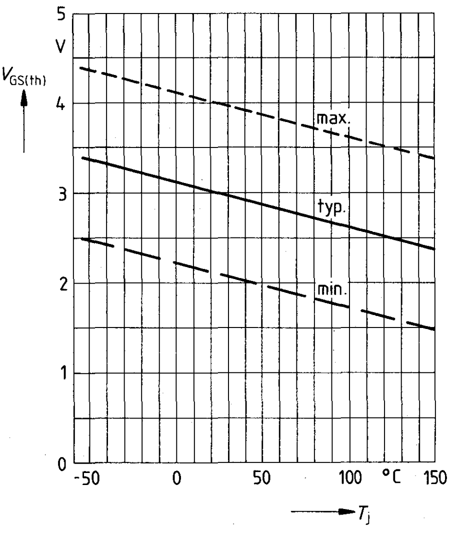
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 2.5$ A, $V_{GS} = 10$ V



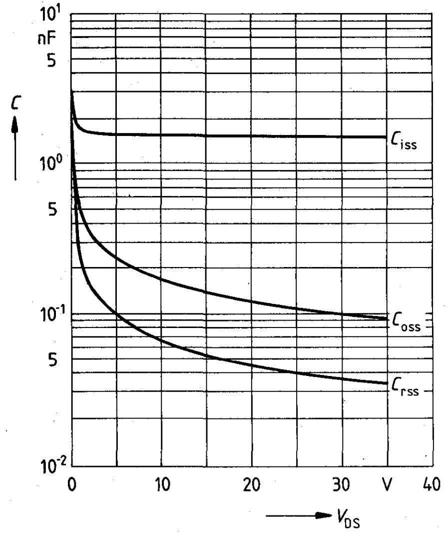
Continuous drain current $I_D = f(T_{case})$



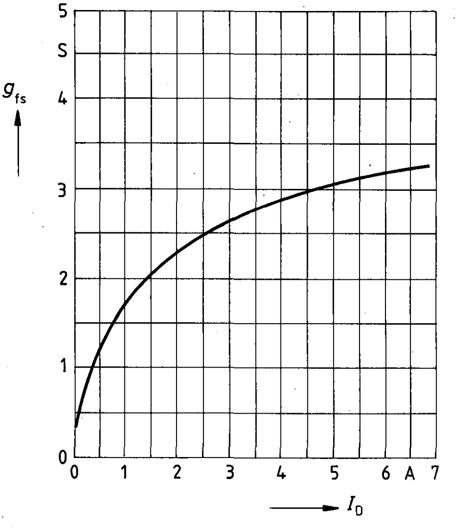
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



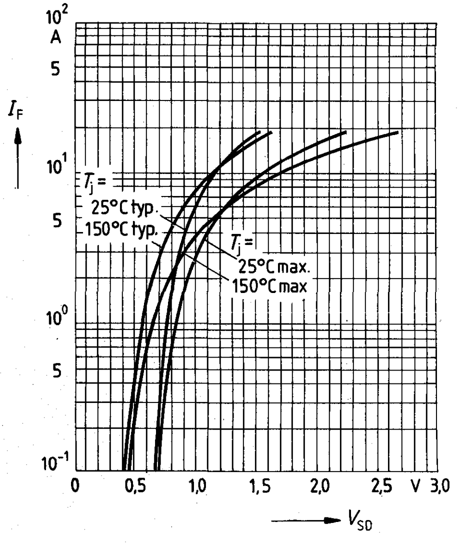
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



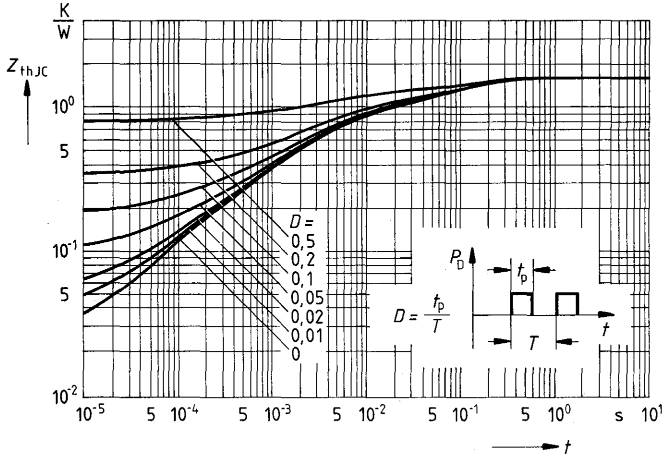
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



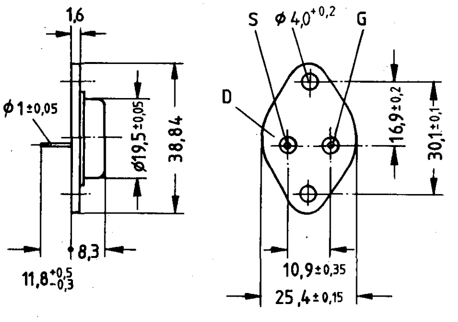
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 500 V**
Continuous drain current I_D **= 9,6 A**
Drain-source on-resistance $R_{DS(on)}$ **= 0,6 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 45	C67078-A1008-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	500V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	500V
Continuous drain current, T_{case} = 25 °C	I_D	9,6A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	38A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C… +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\,JA}$	≤35K/W
	$R_{th\,JC}$	≤1,0K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	500	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 500V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,55	0,6	Ω	V_{GS} = 10V I_D = 5,0A

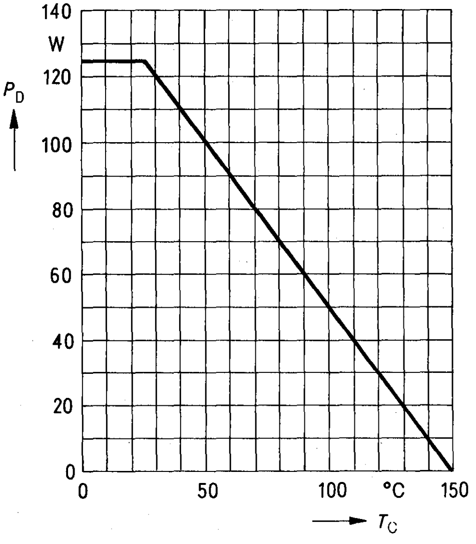
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,7	5,0	–	S	V_{DS} = 25V I_D = 5,0A
Input capacitance	C_{iss}	–	3800	4900	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	250	400		
Reverse transfer capacitance	C_{rss}	–	100	170		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,8A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	80	120		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		

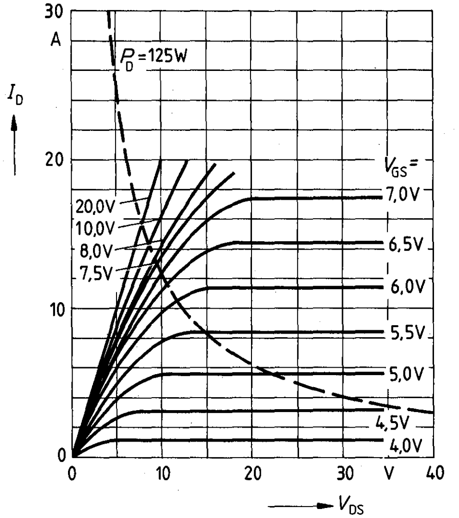
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	9,6	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	38		
Diode forward on-voltage	V_{SD}	–	1,3	1,7	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25°C
Reverse recovery time	t_{rr}	–	1200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	12	–	µC	

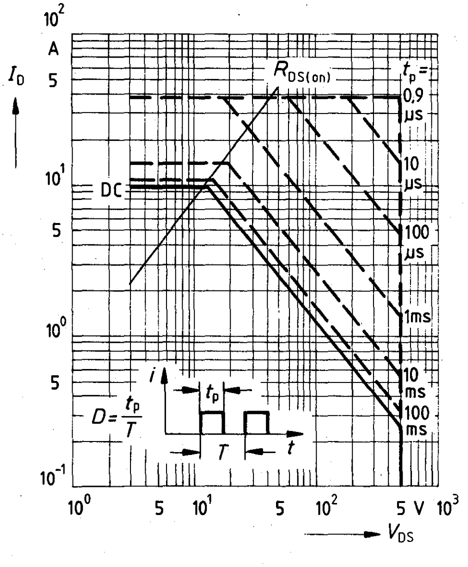
Power dissipation $P_D = f(T_{case})$



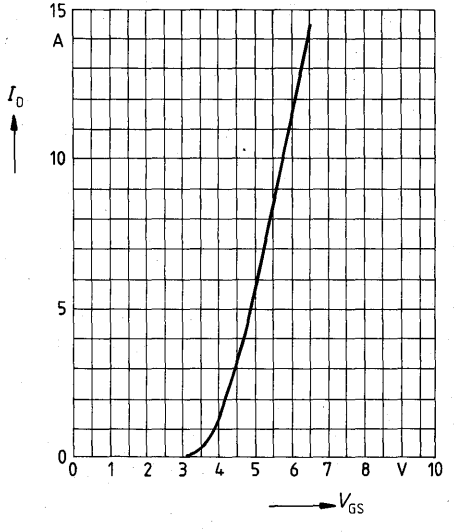
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



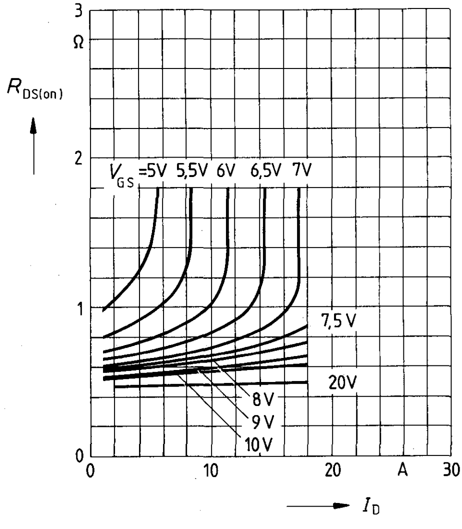
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



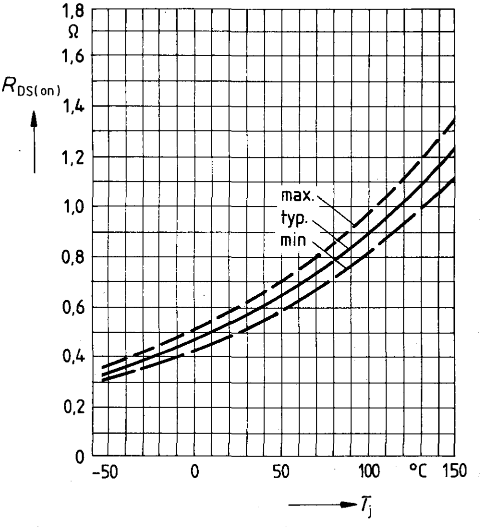
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



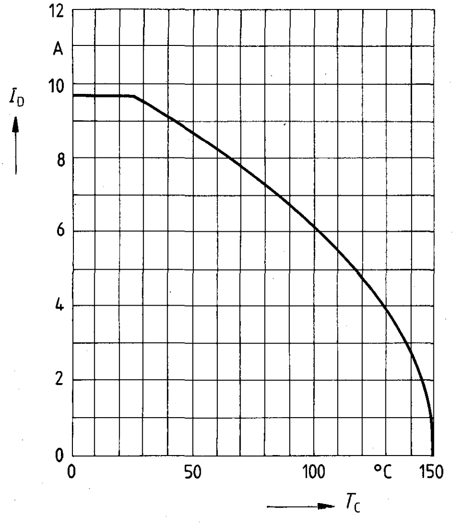
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



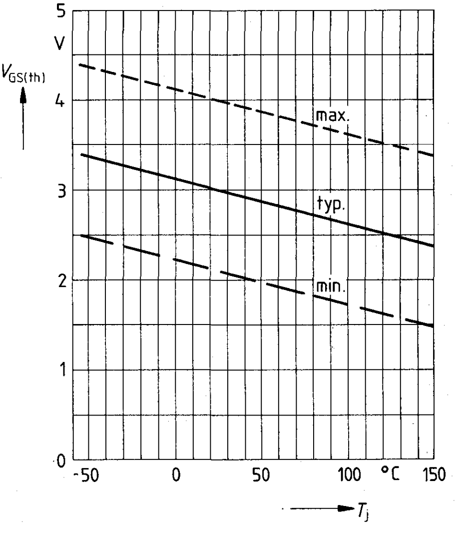
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 5.0$ A, $V_{GS} = 10$ V



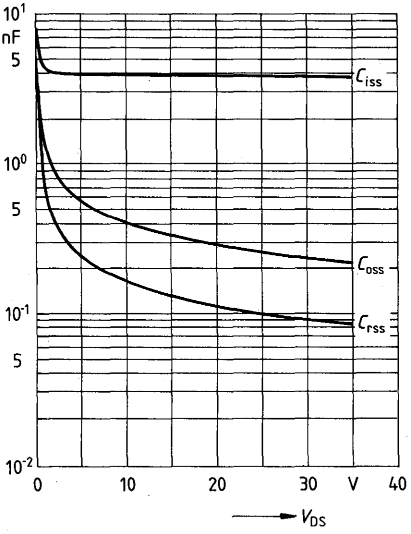
Continuous drain current $I_D = f(T_{case})$



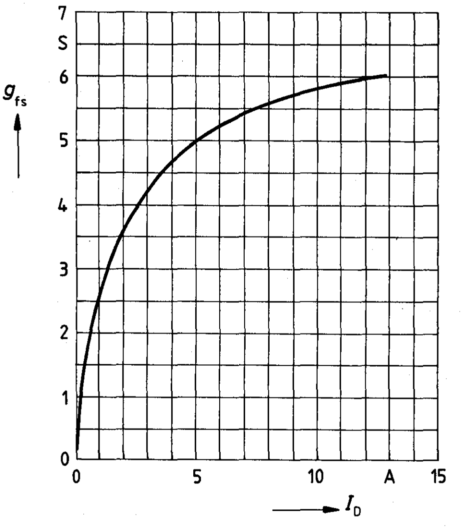
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



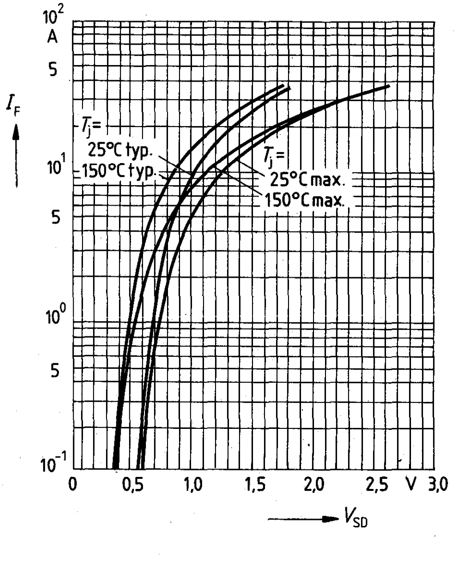
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



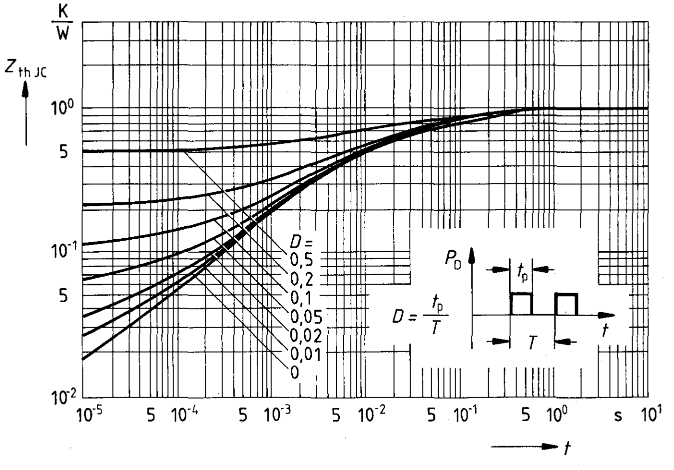
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

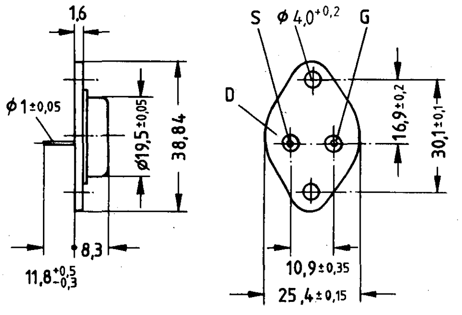


Drain-source voltage	V_{DS}	**= 500 V**
Continuous drain current	I_D	**= 8,3 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 0,8 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 45 A	C67078-A1008-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	500V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	500V
Continuous drain current, T_{case} = 25 °C	I_D	8,3A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	33A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C … +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\,JA}$	≤35K/W
	$R_{th\,JC}$	≤1,0K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)DSS}$	500	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 500V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS(on)}$	–	0,7	0,8	Ω	V_{GS} = 10V I_D = 5A

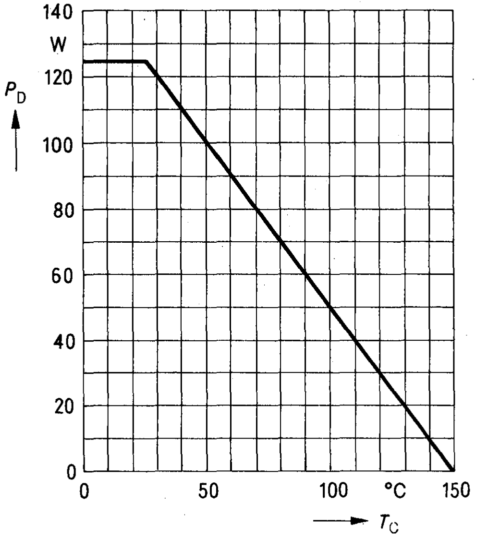
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,7	5,0	–	S	V_{DS} = 25V I_D = 5A
Input capacitance	C_{iss}	–	3800	4900	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	250	400		
Reverse transfer capacitance	C_{rss}	–	100	170		
Turn-on time t_{on} ($t_{on} = t_{d(on)} + t_r$)	$t_{d(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,8A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	80	120		
Turn-off time t_{off} ($t_{off} = t_{d(off)} + t_f$)	$t_{d(off)}$	–	330	430		
	t_f	–	110	140		

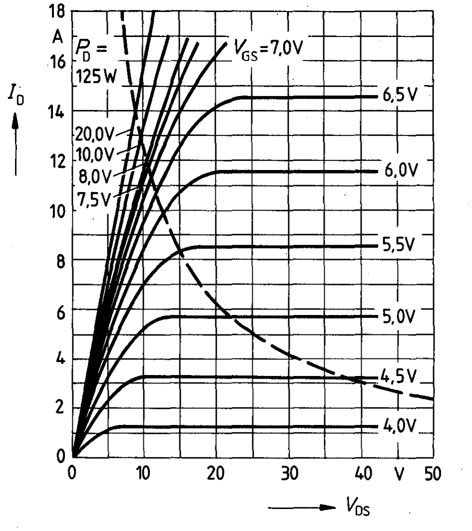
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	8,3	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	33		
Diode forward on-voltage	V_{SD}	–	1,3	1,6	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	12	–	µC	

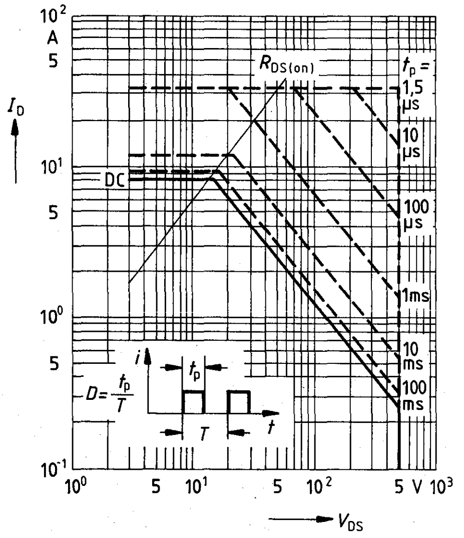
Power dissipation $P_D = f(T_{case})$



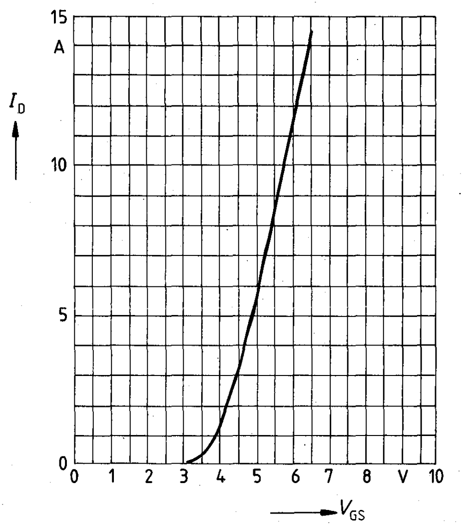
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



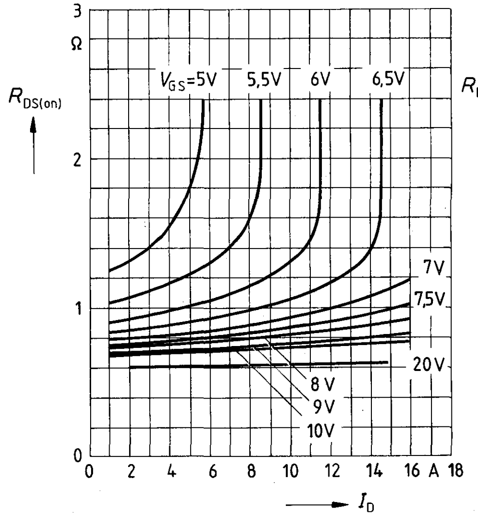
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



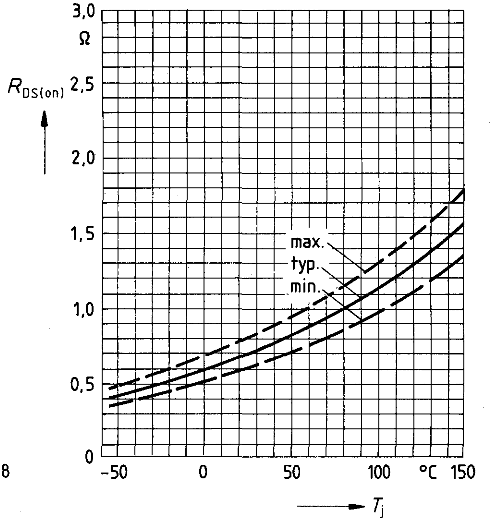
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



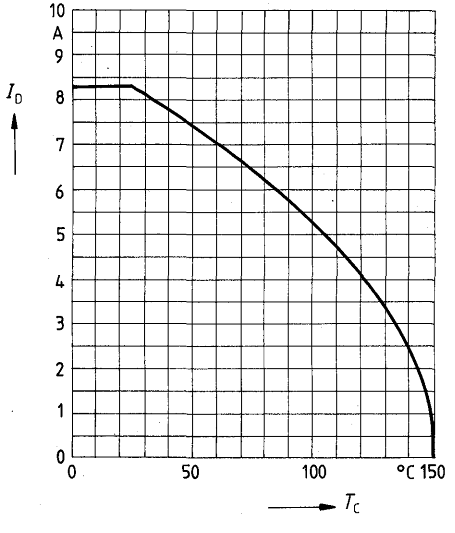
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25°C$



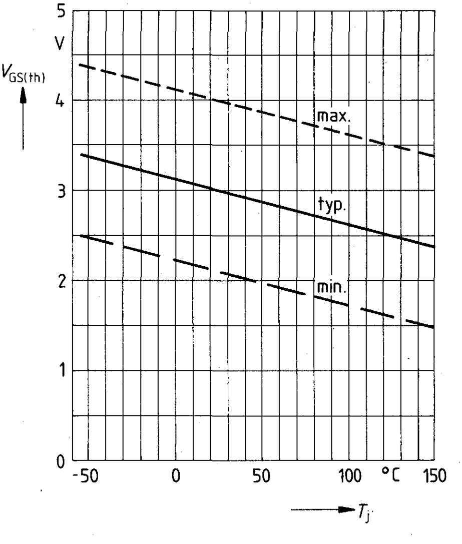
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: I_D = 5.0 A, V_{GS} = 10 V



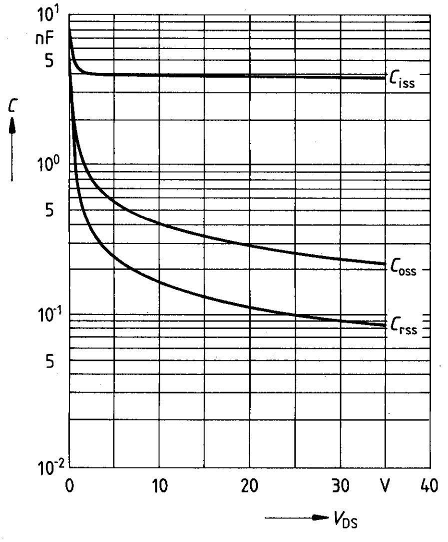
Continuous drain current $I_D = f(T_{case})$



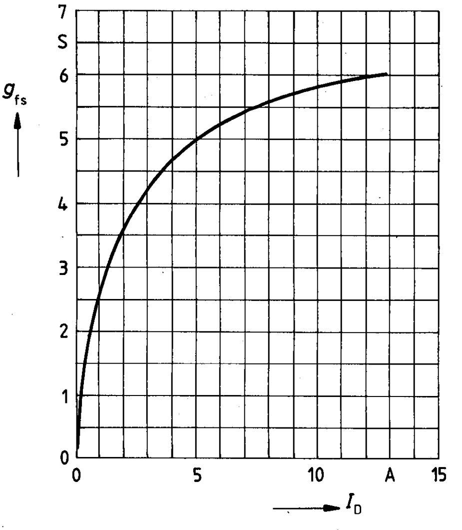
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, I_D = 10 mA



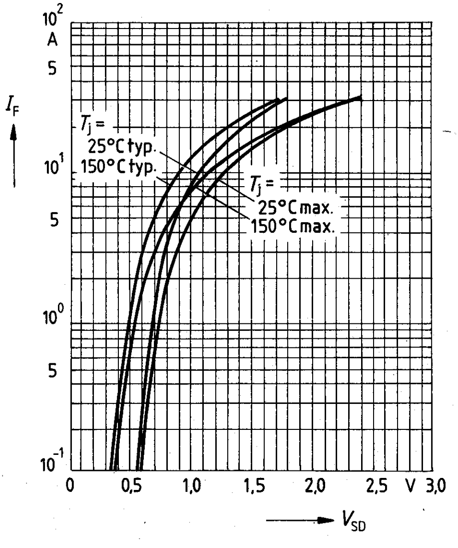
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



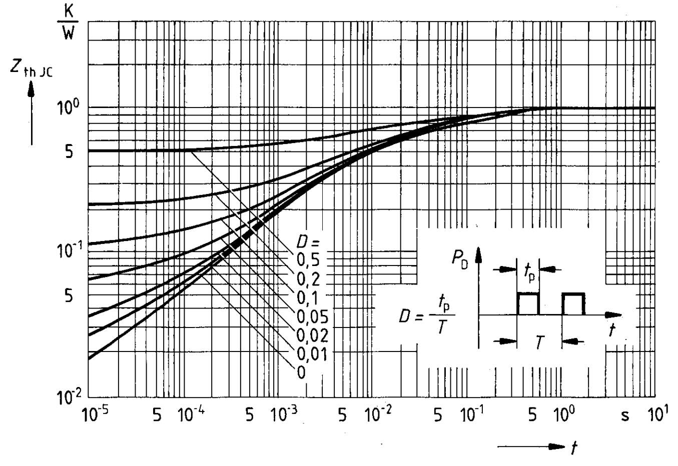
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

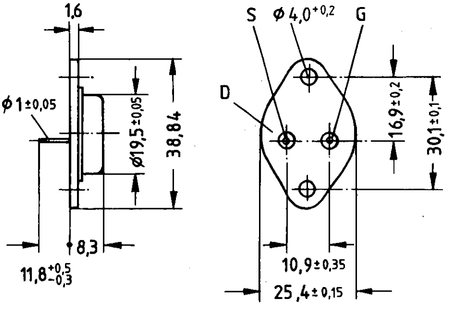


Drain-source voltage	V_{DS}	=	**500 V**
Continuous drain current	I_D	=	**10 A**
Drain-source on-resistance	$R_{DS(on)}$	=	**0,50 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 45 B	C67078-A1008-A4



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	500V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	500V
Continuous drain current, T_{case} = 35 °C	I_D	10A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	40A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\ JA}$	≤35K/W
	$R_{th\ JC}$	≤1,0K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	500	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 500V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,49	0,50	Ω	V_{GS} = 10V I_D = 5A

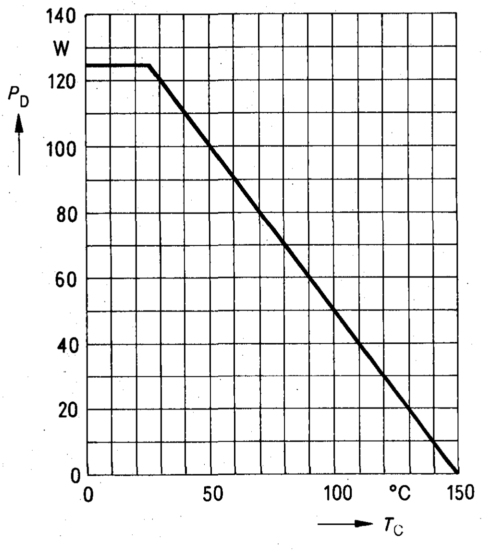
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,7	5,0	–	S	V_{DS} = 25V I_D = 5A
Input capacitance	C_{iss}	–	3800	4900	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	250	400		
Reverse transfer capacitance	C_{rss}	–	100	170		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	80	120		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		

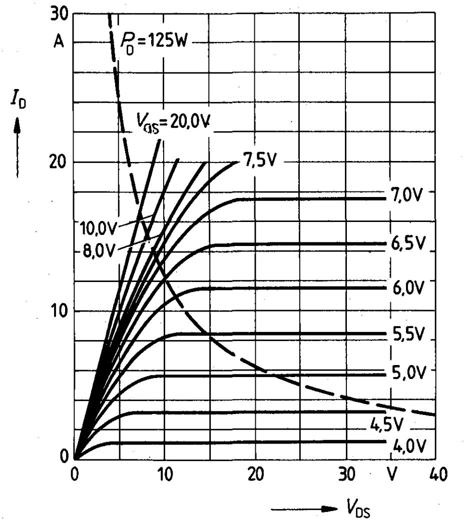
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	10	A	$_{R}$ = 25 °C C
Pulsed reverse drain current	I_{DRM}	–	–	40		$_{R}$ 100A/µs
›iode forward on-voltage	V_{SD}	–	1,3			
›everse recovery time	t_{rr}	–				
›everse recovery ›arge	Q_{rr}	–				

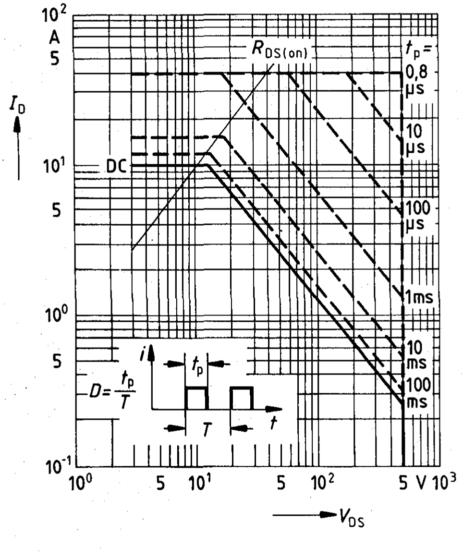
Power dissipation $P_D = f(T_{case})$



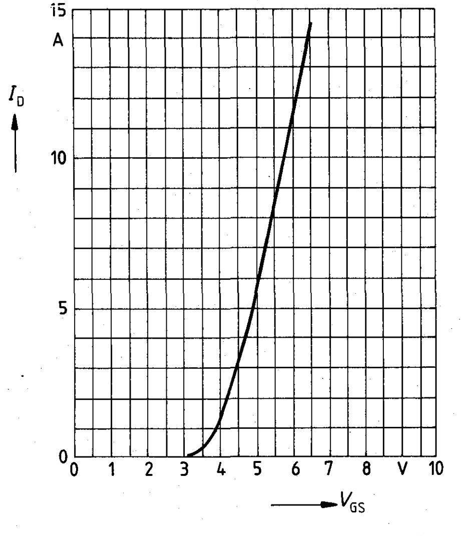
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



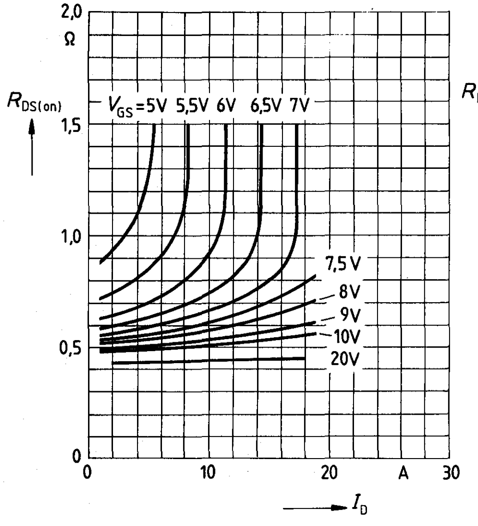
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



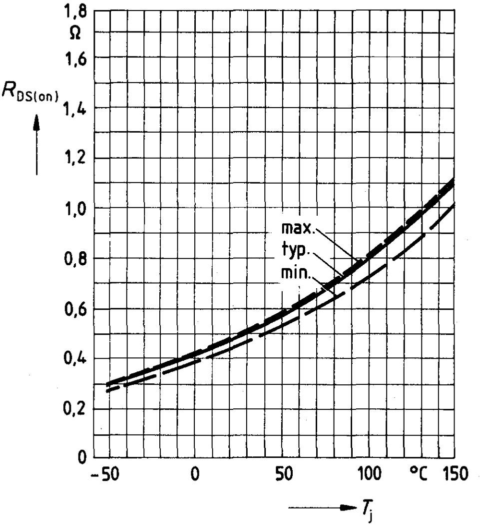
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



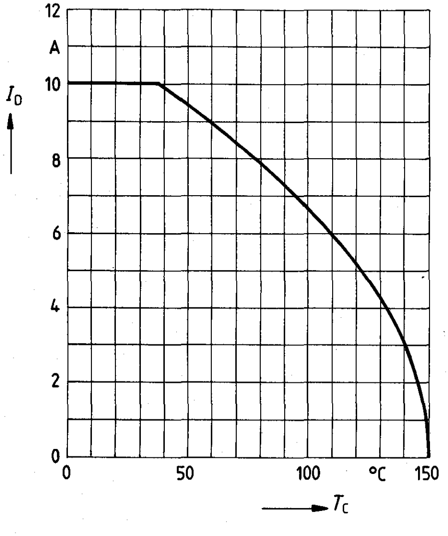
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



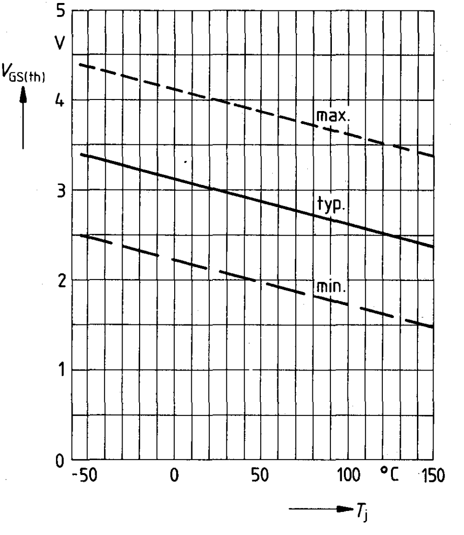
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 5$ A, $V_{GS} = 10$ V



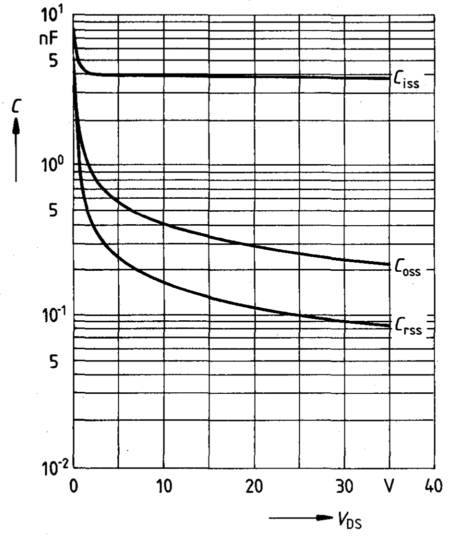
Continuous drain current $I_D = f(T_{case})$



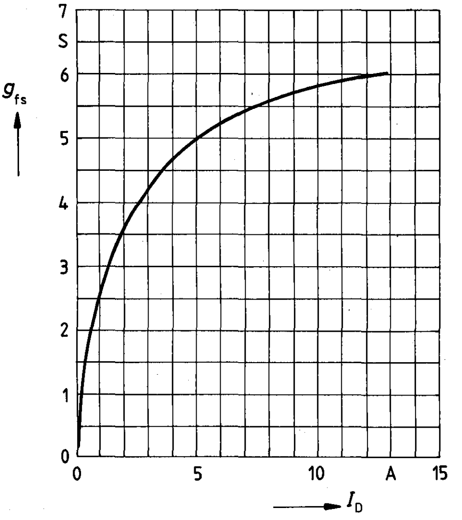
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



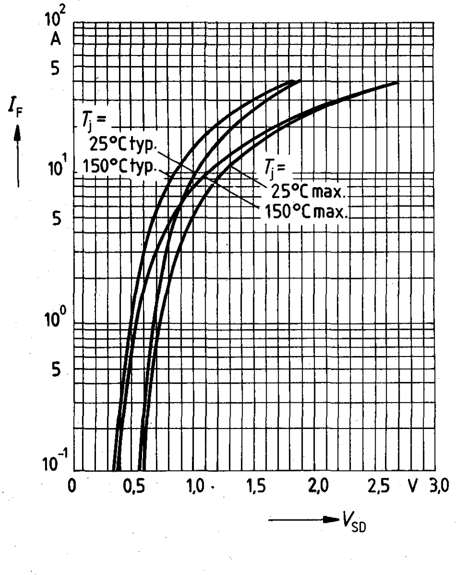
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



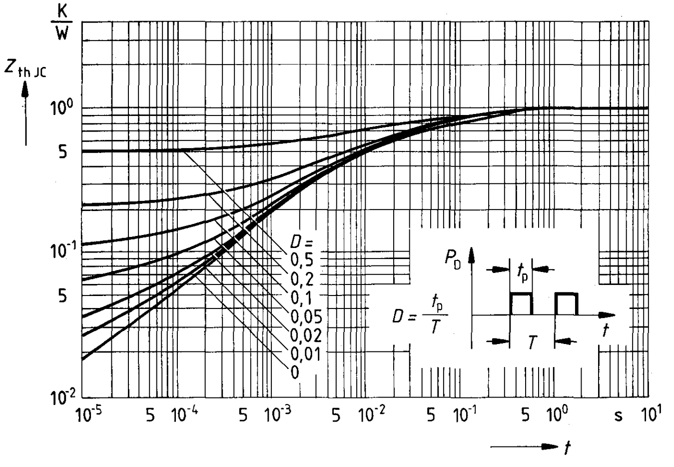
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

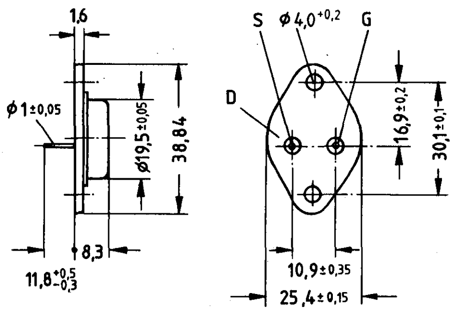


Drain-source voltage	V_{DS}	**= 500 V**
Continuous drain current	I_D	**= 4,2 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 2,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 46	C67078-A1015-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	500V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	500V
Continuous drain current, T_{case} = 25 °C	I_D	4,2A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	16A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	78W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\ JA}$	≤35K/W
	$R_{th\ JC}$	≤1,6K/W

Electrical characteristics

at T_{case} = 25°C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	500	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25°C T_j = 125°C V_{DS} = 500V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,49	0,50	Ω	V_{GS} = 10V I_D = 5A

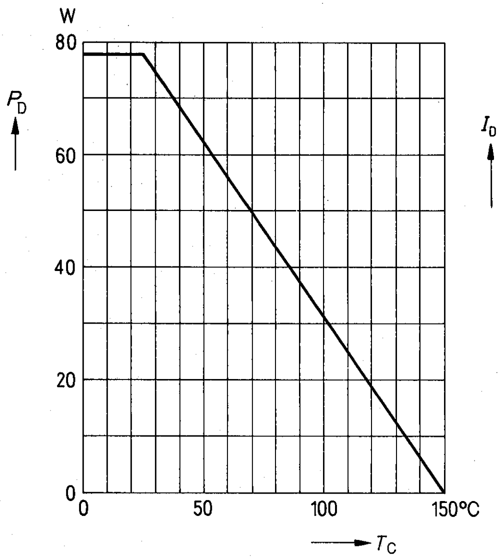
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,7	5,0	–	S	V_{DS} = 25V I_D = 5A
Input capacitance	C_{iss}	–	3800	4900	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	250	400		
Reverse transfer capacitance	C_{rss}	–	100	170		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	80	120		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		

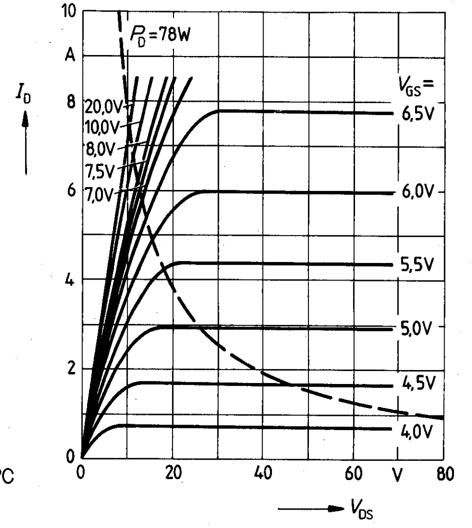
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	10	A	T_C = 25°C
Pulsed reverse drain current	I_{DRM}	–	–	40		
Diode forward on-voltage	V_{SD}	–	1,3	1,7	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25°C
Reverse recovery time	t_{rr}	–	1200	–	ns	T_j = 25°C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	12	–	µC	

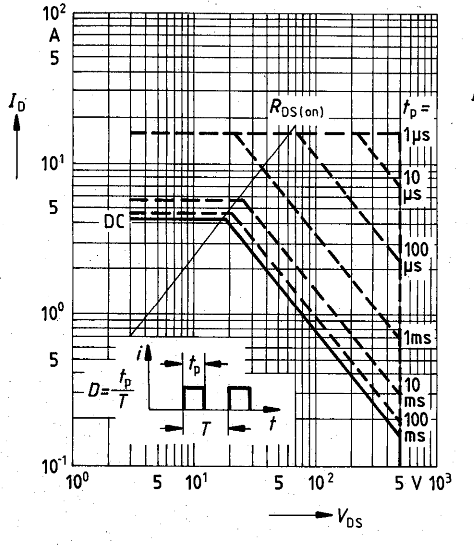
Power dissipation $P_D = f(T_{case})$



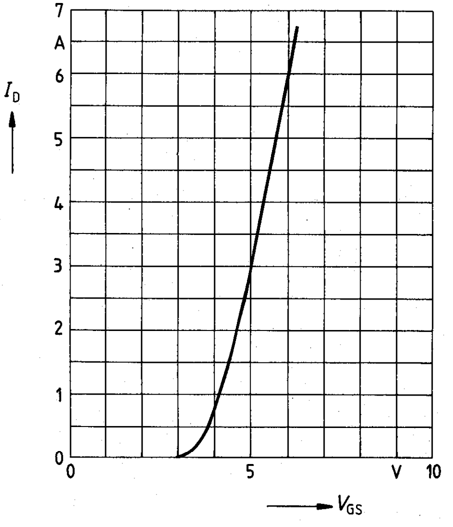
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



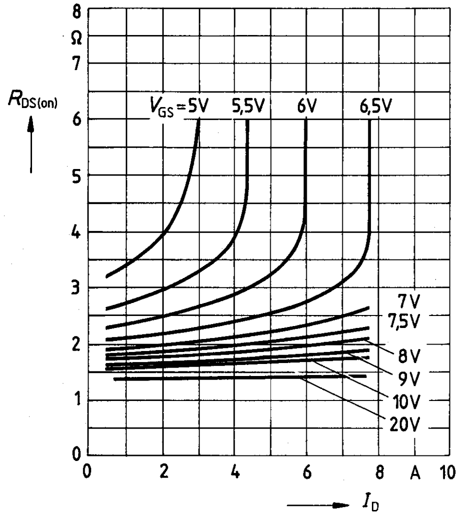
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



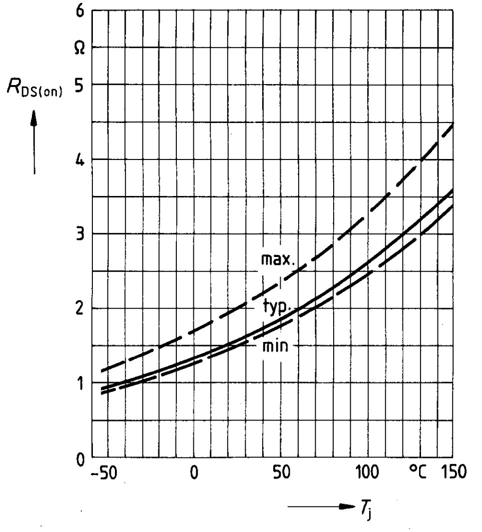
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



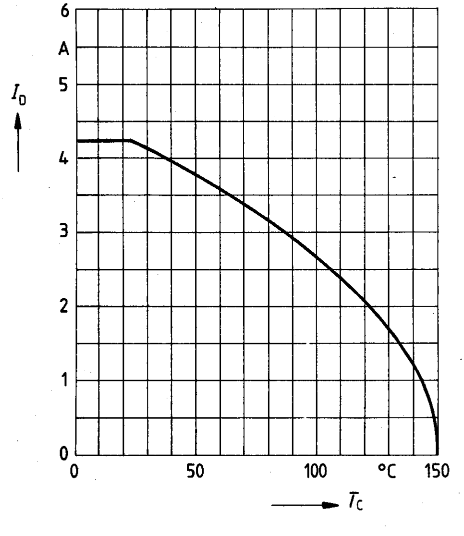
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



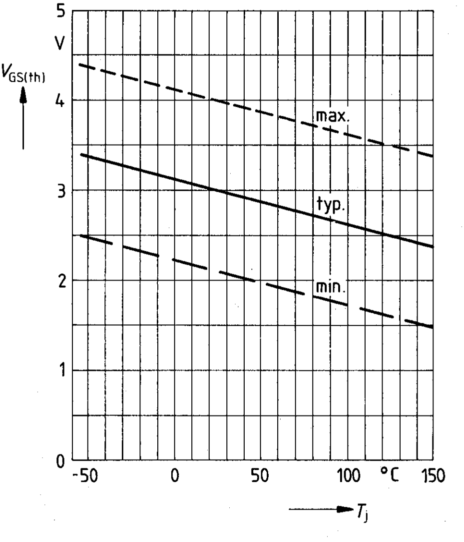
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 2.5\,A$, $V_{GS} = 10\,V$



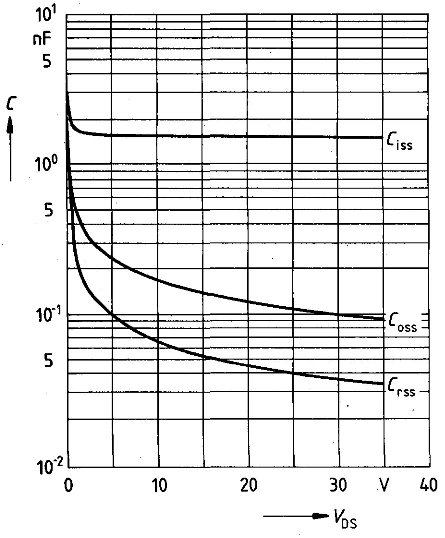
Continuous drain current $I_D = f(T_{case})$



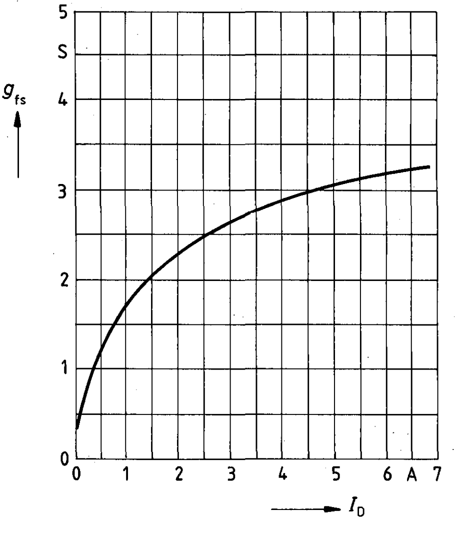
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



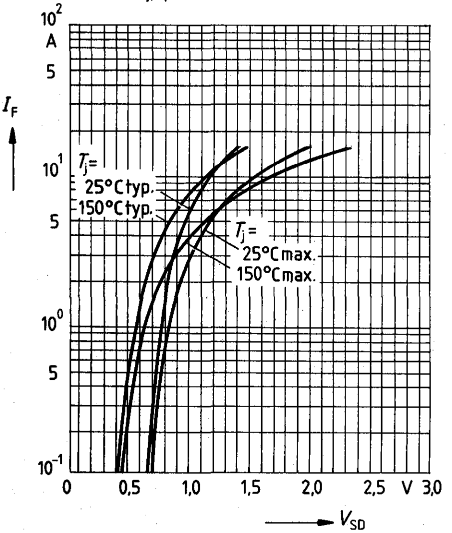
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



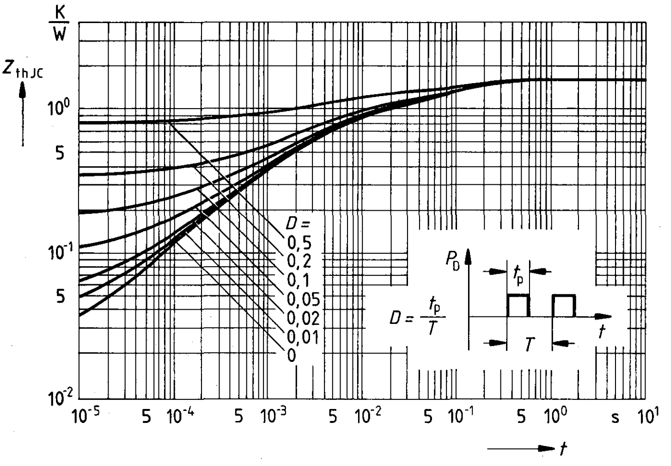
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25°C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, t_p = 80 µs



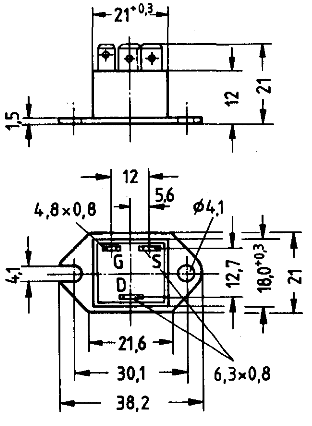
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 500 V**
Continuous drain current I_D **= 7,8 A**
Drain-source on-resistance $R_{DS(on)}$ **= 0,6 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package TO 238 AA with insulated metal base plate in accordance with JEDEC; compatible with TO 3; AMP plug-in connections.
Approx. weight 21 g

Type	Ordering code
BUZ 48	C67078-A1605-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	500V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	500V
Continuous drain current, T_{case} = 25 °C	I_D	7,8A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	31A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	83,3W
Operating and storage temperature range	T_j T_{stg}	−40 °C … +150 °C
Isolation test voltage (t = 1 min)	V_{is}	3500Vdc[1])
DIN humidity category		F
Thermal resistance	$R_{th\ JA}$	–
	$R_{th\ JC}$	≤1,5K/W

[1]) Isolation test voltage between drain and heat sink referred to standard climate 23/50 in accordance with DIN 50014.

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	500	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 500V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,55	0,6	Ω	V_{GS} = 10V I_D = 5A

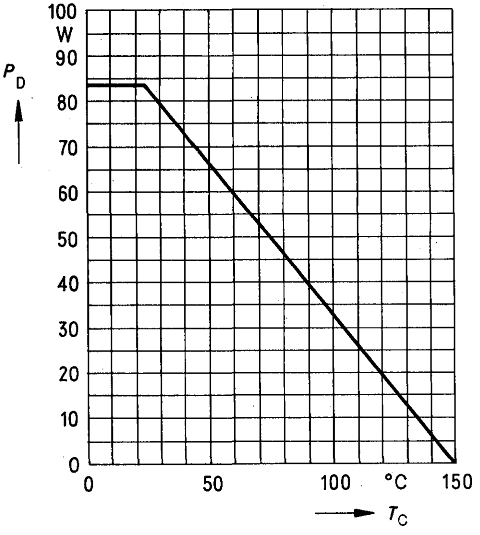
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,7	5,0	–	S	V_{DS} = 25V I_D = 5A
Input capacitance	C_{iss}	–	3800	4900	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	250	400		
Reverse transfer capacitance	C_{rss}	–	100	170		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,8A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	80	120		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		

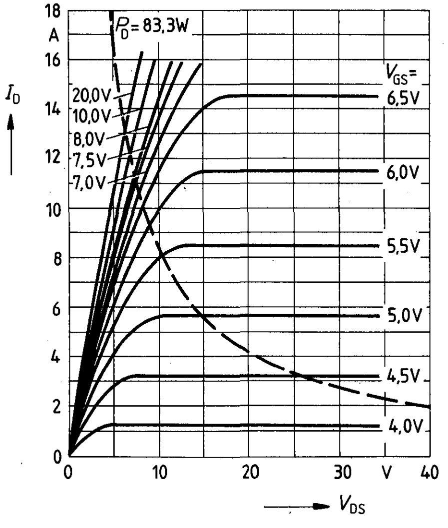
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	7,8	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	31		
Diode forward on-voltage	V_{SD}	–	1,3	1,6	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	12	–	µC	

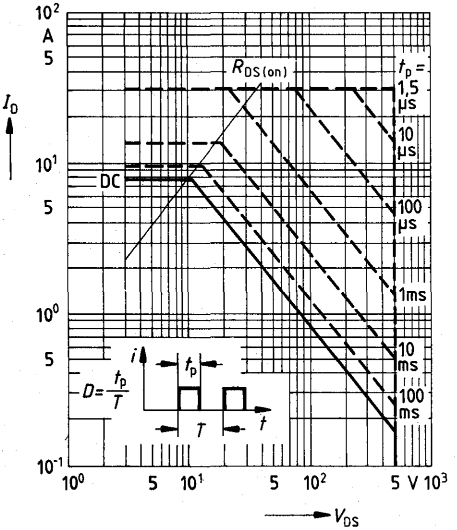
Power dissipation $P_D = f(T_{case})$



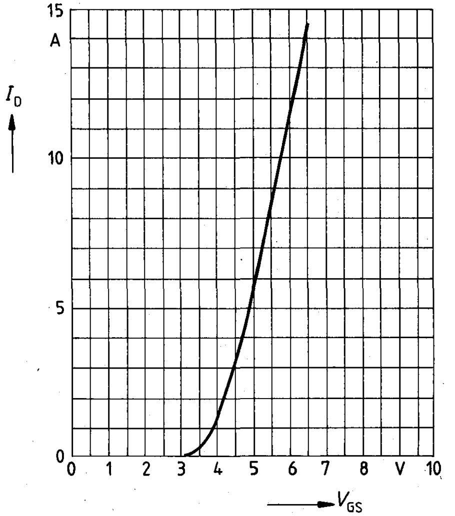
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



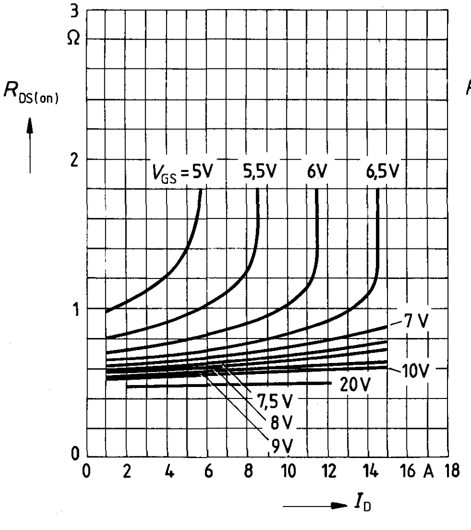
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



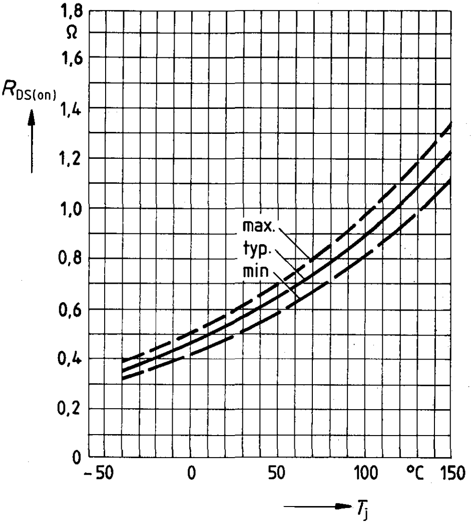
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



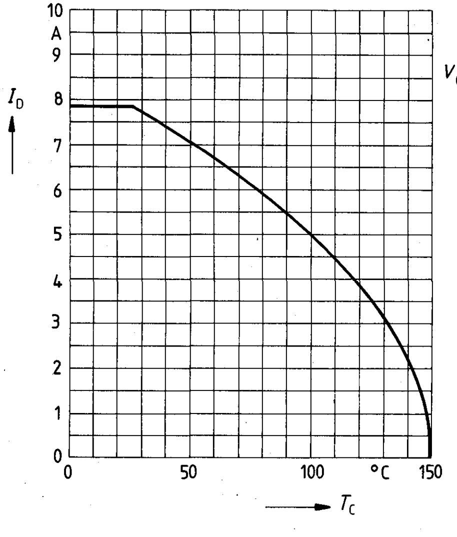
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



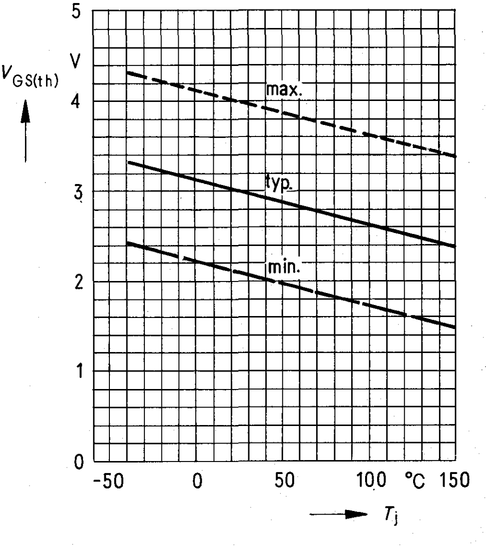
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 5$ A, $V_{GS} = 10$ V



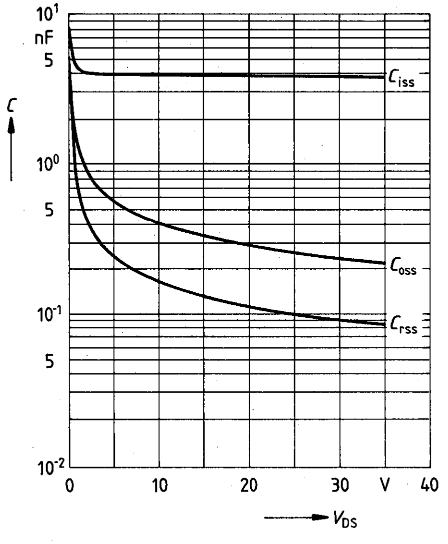
Continuous drain current $I_D = f(T_{case})$



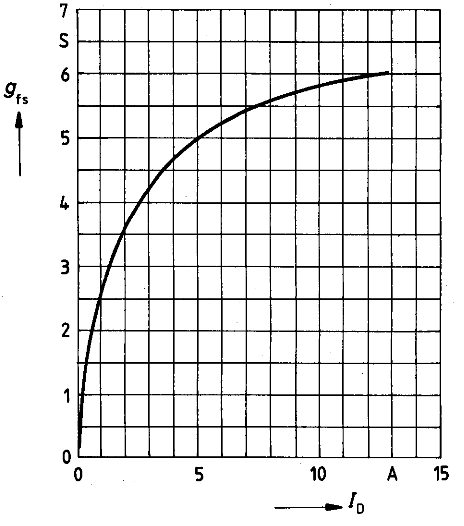
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



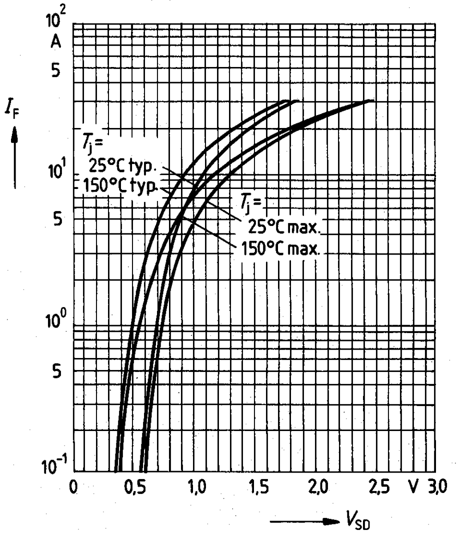
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



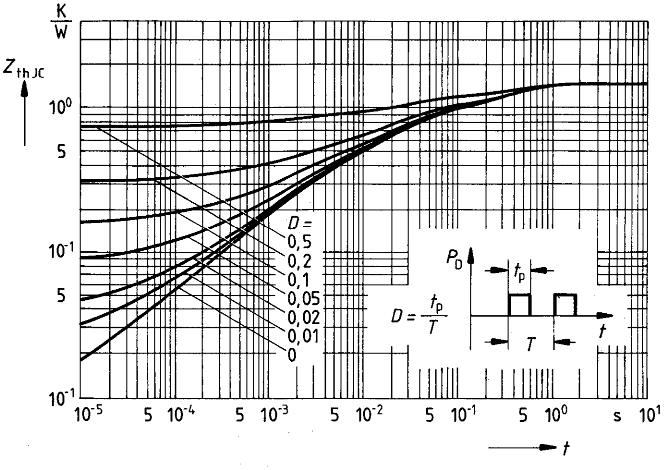
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



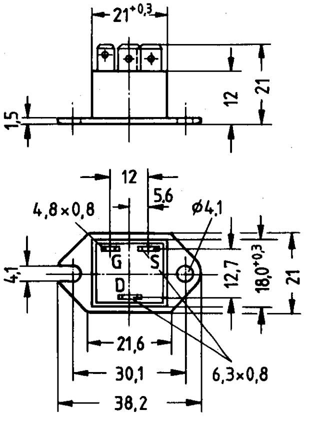
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage	V_{DS}	**= 500 V**
Continuous drain current	I_D	**= 6,8 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 0,8 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package TO 238 AA with insulated metal base plate in accordance with JEDEC, compatible with TO 3; AMP plug-in connections.
Approx. weight 21 g

Type	Ordering code
BUZ 48 A	C67078-A1605-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	500V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	500V
Continuous drain current, T_{case} = 25 °C	I_D	6,8A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	27A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	83,3W
Operating and storage temperature range	T_j, T_{stg}	−40 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	3500Vdc[1])
DIN humidity category		F
Thermal resistance	$R_{th\,JA}$	–
	$R_{th\,JC}$	≤1,5K/W

[1]) Isolation test voltage between drain and heat sink referred to standard climate 23/50 in accordance with DIN 50014.

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	500	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 500V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,7	0,8	Ω	V_{GS} = 10V I_D = 5A

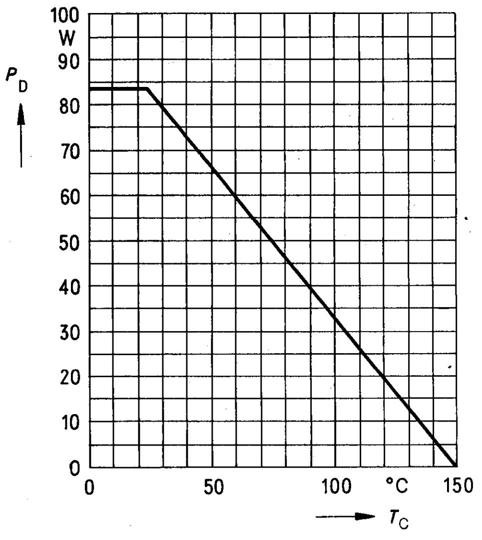
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,7	5,0	–	S	V_{DS} = 25V I_D = 5A
Input capacitance	C_{iss}	–	3800	4900	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	250	400		
Reverse transfer capacitance	C_{rss}	–	100	170		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,8A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	80	120		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		

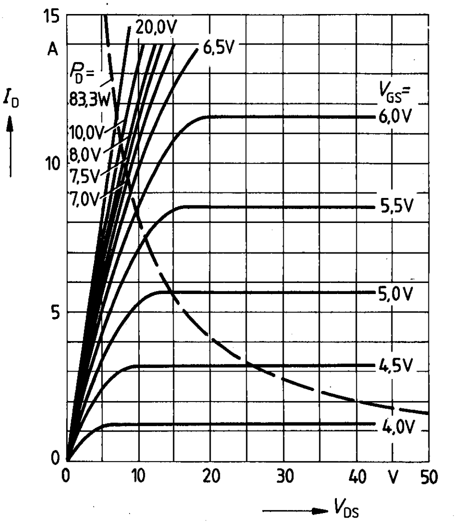
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	6,8	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	27		
Diode forward on-voltage	V_{SD}	–	1,3	1,55	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	12	–	µC	

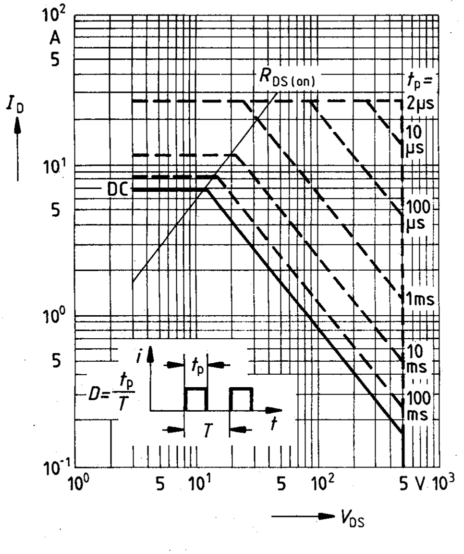
Power dissipation $P_D = f(T_{case})$



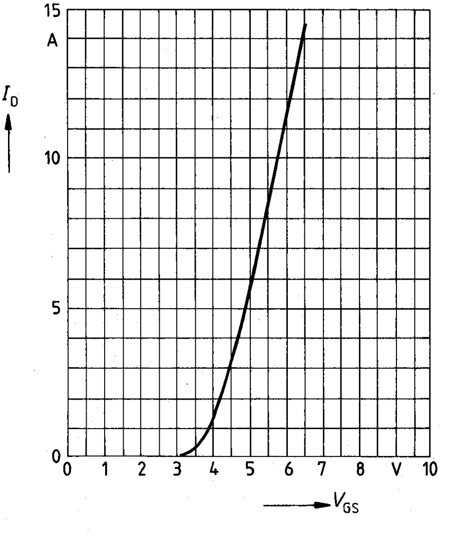
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



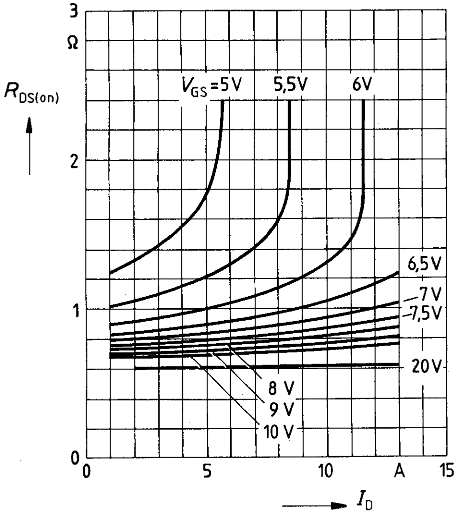
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



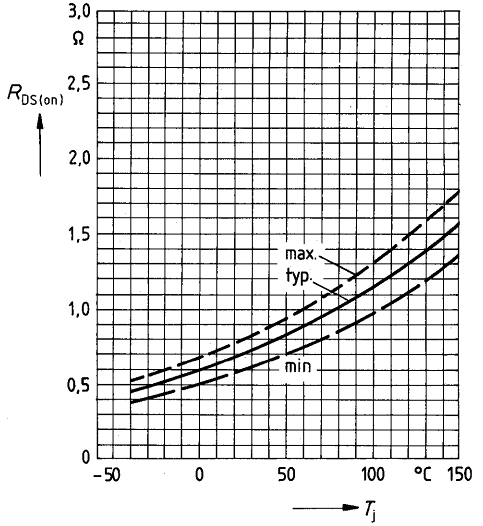
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



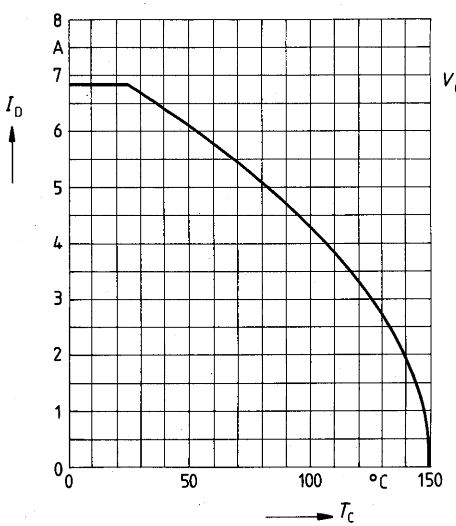
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; T_{case} = 25 °C



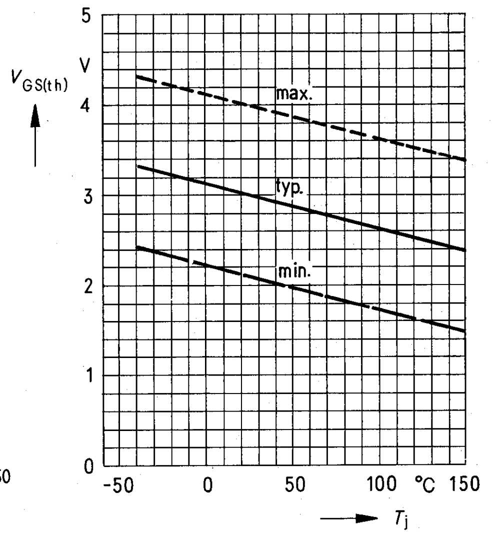
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: I_D = 5 A, V_{GS} = 10 V



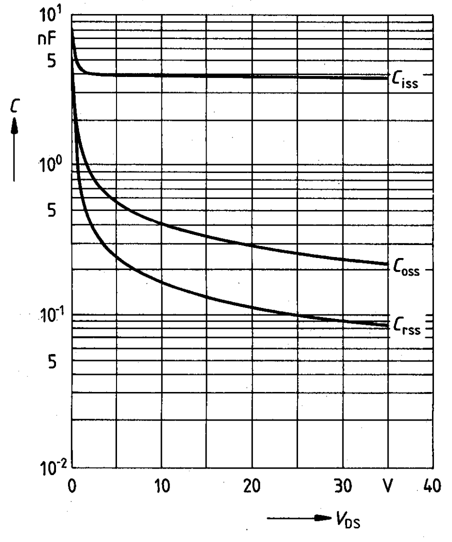
Continuous drain current $I_D = f(T_{case})$



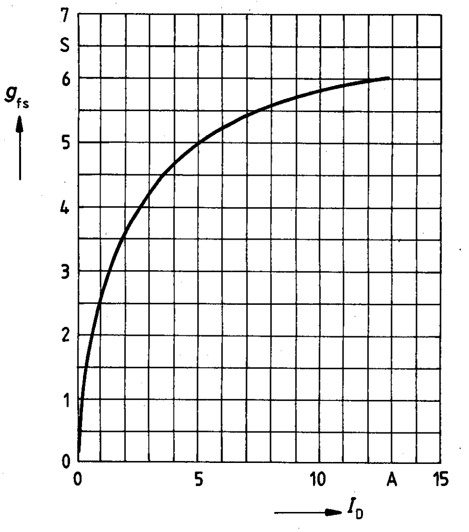
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, I_D = 10 mA



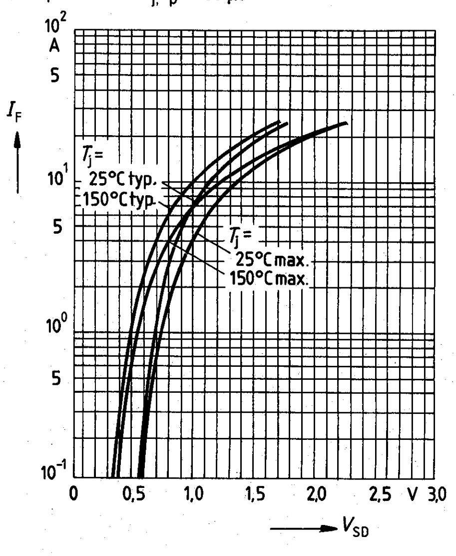
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



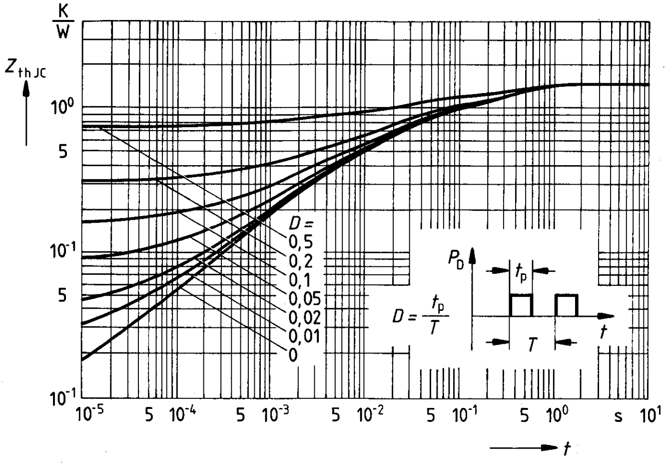
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



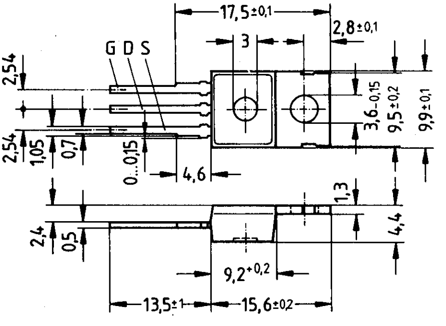
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage	V_{DS}	=	**1000 V**
Continuous drain current	I_D	=	**2,5 A**
Drain-source on-resistance	$R_{DS(on)}$	=	**5,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 14A3 in accordance with DIN 41869, or TO 220 AB in accordance with JEDEC. The drain terminal is conductively connected to the mounting flange. Approx. weight 2 g

Type	Ordering code
BUZ 50 A	C67078-A1307-A3



Dimensions in mm

Absolute maximum ratings		
Drain-source voltage	V_{DS}	1000V
Drain-gate voltage, $R_{GS} = 20\ k\Omega$	V_{DGR}	1000V
Continuous drain current, $T_{case} = 30\ °C$	I_D	2,5A
Pulsed drain current, $T_{case} = 25\ °C$	I_{Dpuls}	10A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage	T_j	
temperature range	T_{stg}	−55 °C ... +150 °C
Isolation test voltage ($t = 1$ min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤75K/W
	$R_{th\ JC}$	≤1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	1000	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 1000V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	4,5	5,0	Ω	V_{GS} = 10V I_D = 1,5A

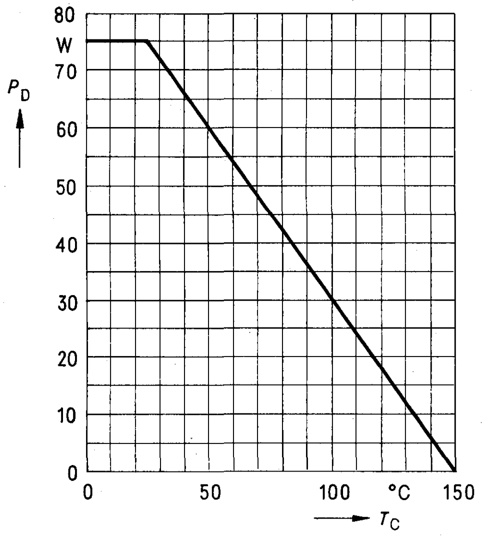
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	0,7	1,5	–	S	V_{DS} = 25V I_D = 1,5A
Input capacitance	C_{iss}	–	1600	2100	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	70	120		
Reverse transfer capacitance	C_{rss}	–	30	55		
Turn-on time t_{on} (t_{on} = $t_{d\,(on)}$ + t_r)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} (t_{off} = $t_{d\,(off)}$ + t_f)	$t_{d\,(off)}$	–	110	140		
	t_f	–	60	80		

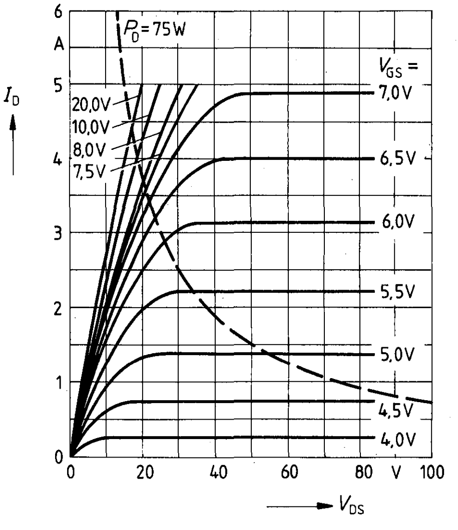
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	2,5	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	10		
Diode forward on-voltage	V_{SD}	–	1,05	1,3	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	2000	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	15	–	µC	

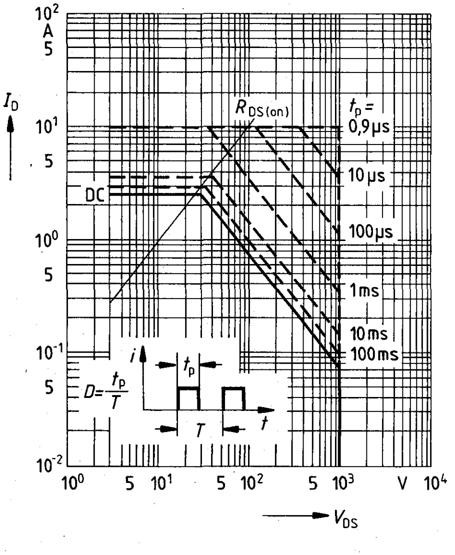
Power dissipation $P_D = f(T_{case})$



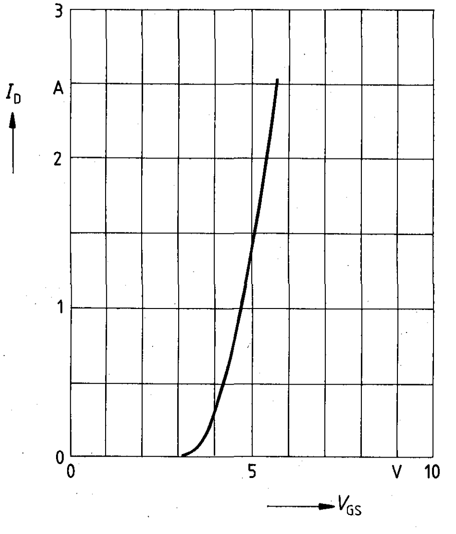
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



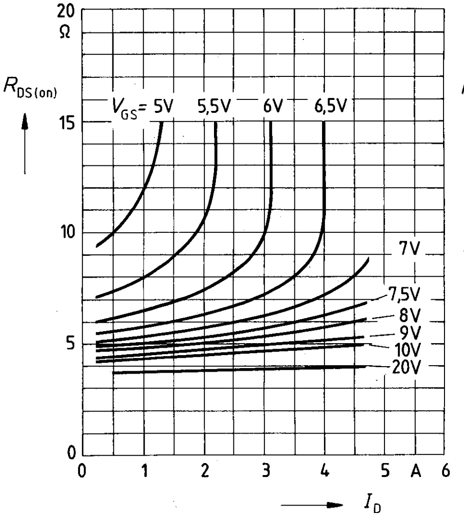
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



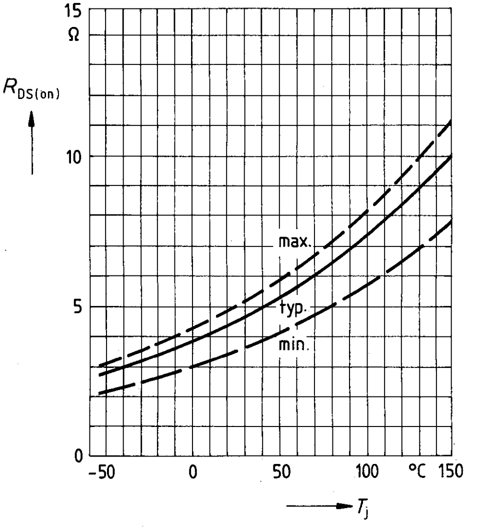
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



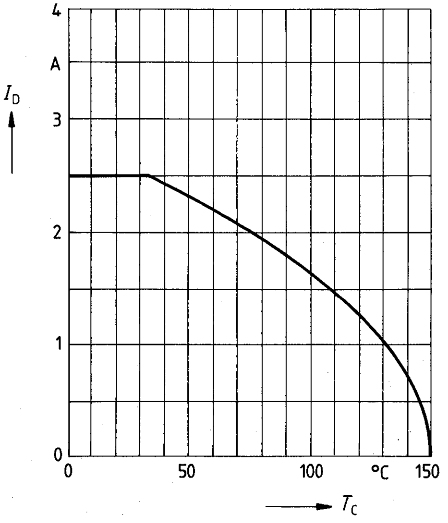
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



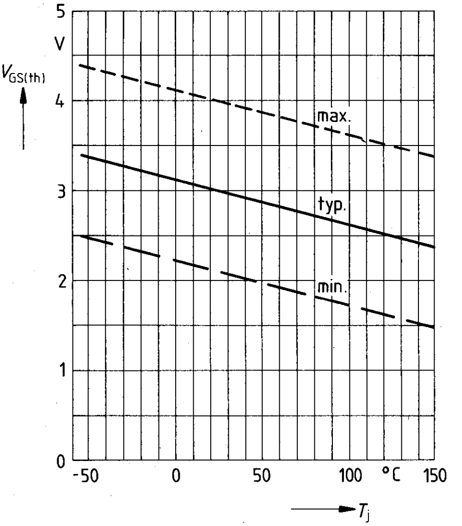
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 1.5$ A, $V_{GS} = 10$ V



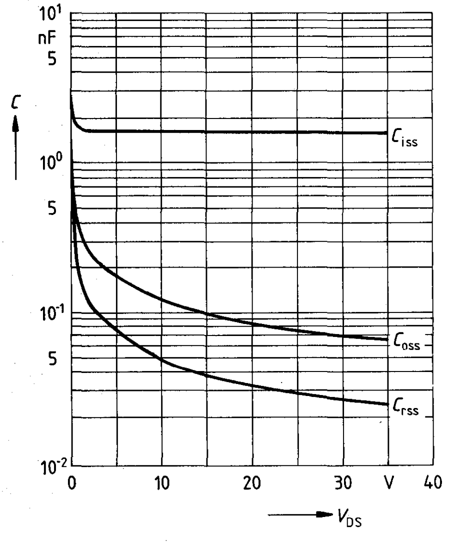
Continuous drain current $I_D = f(T_{case})$



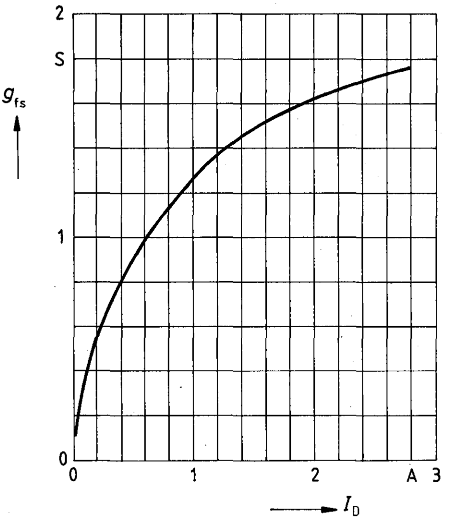
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



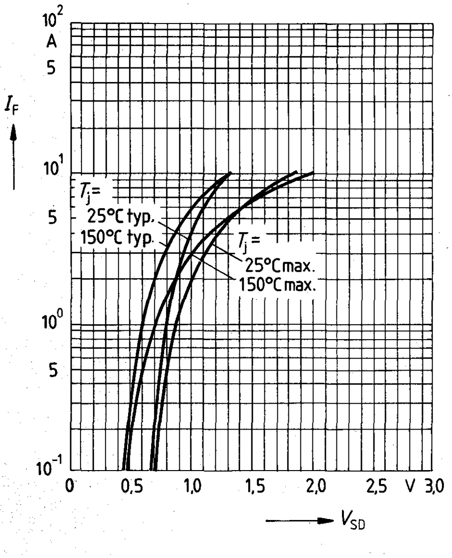
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



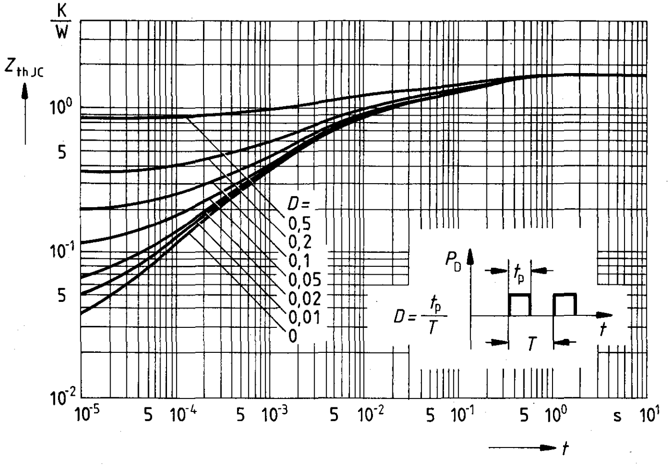
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



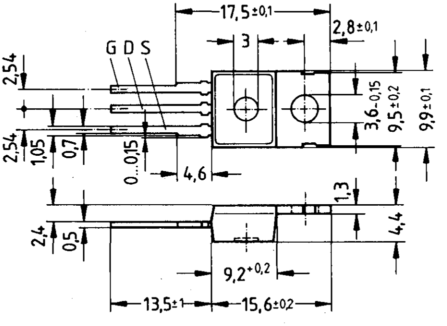
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **1000 V**
Continuous drain current I_D = **2 A**
Drain-source on-resistance $R_{DS(on)}$ = **8,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 50 B	C67078-A1307-A4



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	1000V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	1000V
Continuous drain current, T_{case} = 30 °C	I_D	2A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	8A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤75K/W
	$R_{th\ JC}$	≤1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	1000	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 1000V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	6,5	8,0	Ω	V_{GS} = 10V I_D = 1,5A

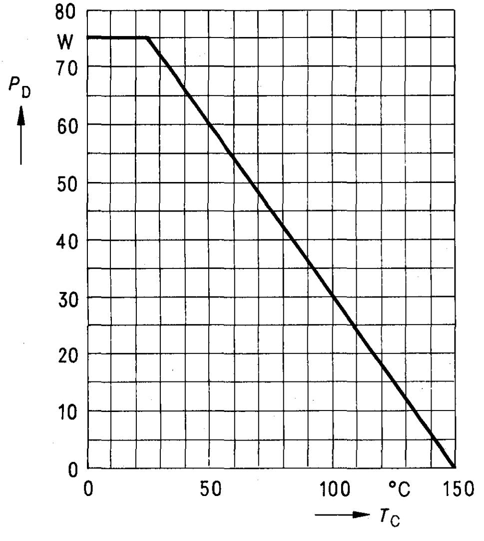
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	0,7	1,5	–	S	V_{DS} = 25V I_D = 1,5A
Input capacitance	C_{iss}	–	1600	2100	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	70	120		
Reverse transfer capacitance	C_{rss}	–	30	55		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 1,7A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	110	140		
	t_f	–	60	80		

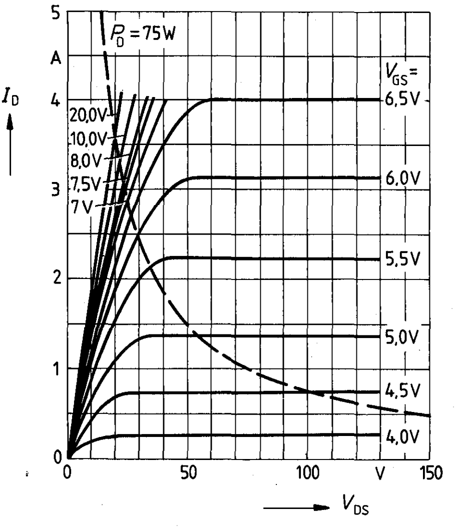
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	2	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	8		
Diode forward on-voltage	V_{SD}	–	1,05	1,30	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	2000	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	15	–	µC	

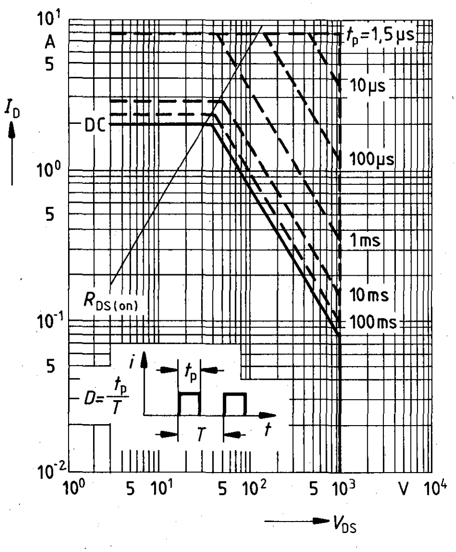
Power dissipation $P_D = f(T_{case})$



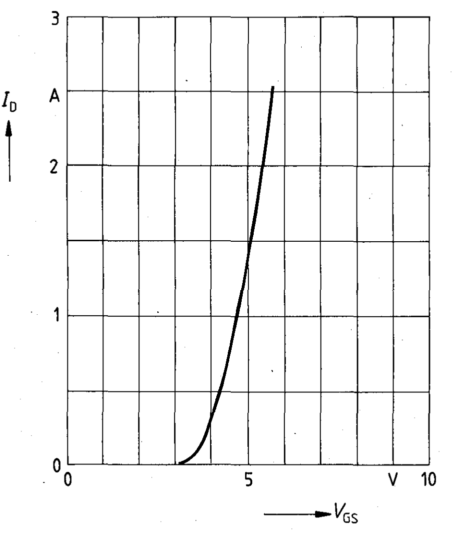
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



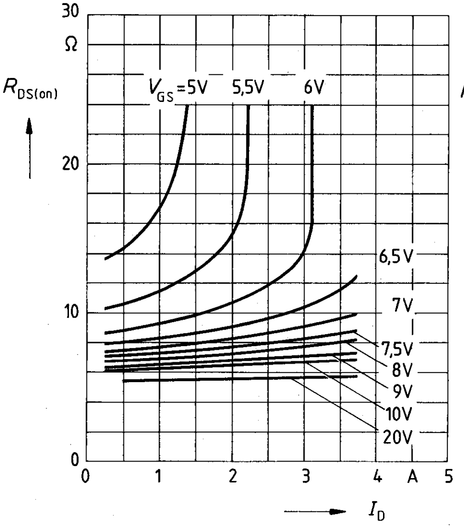
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



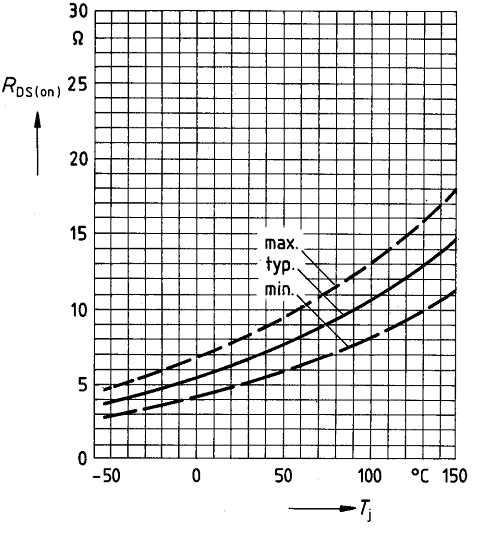
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



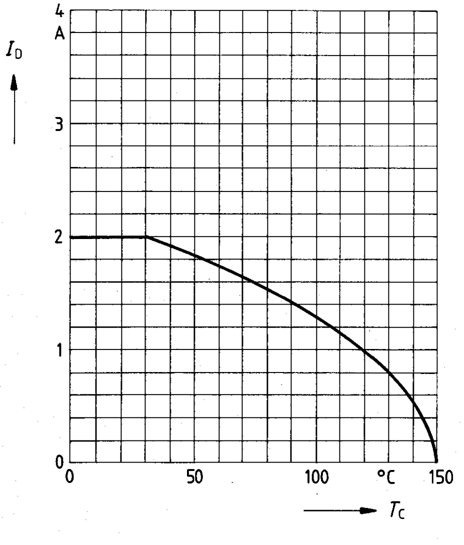
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



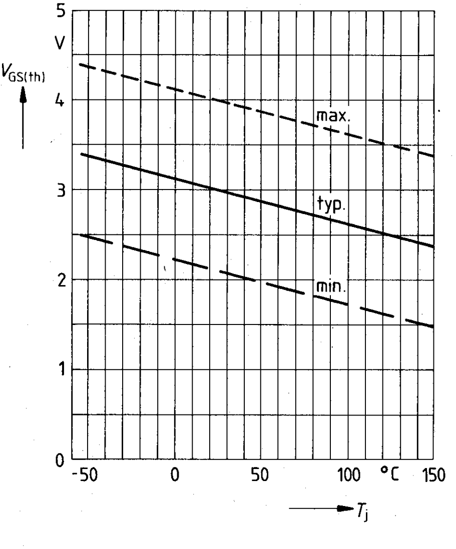
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 1.5$ A, $V_{GS} = 10$ V



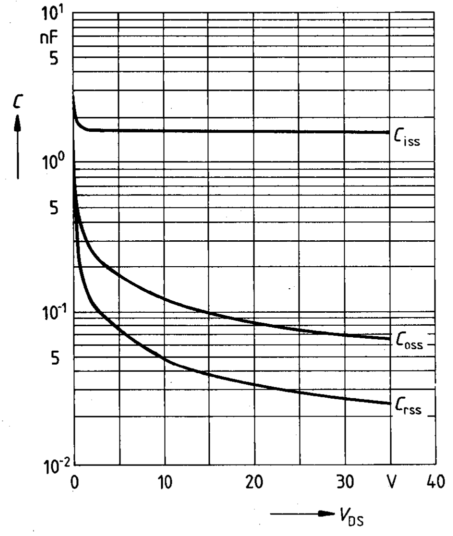
Continuous drain current $I_D = f(T_{case})$



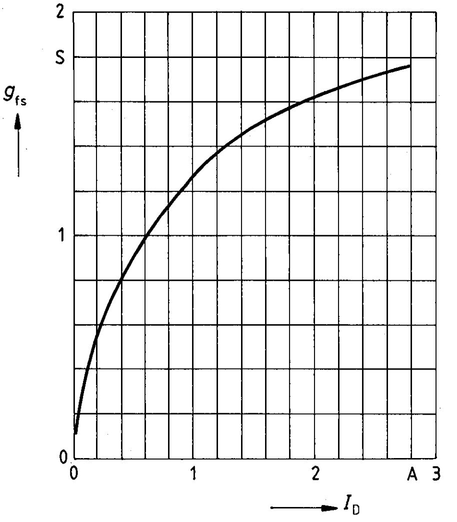
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



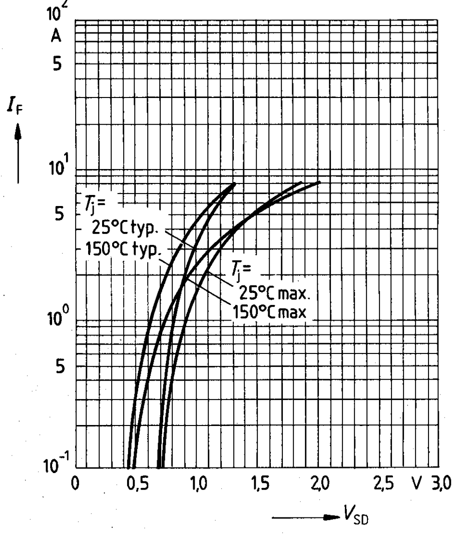
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



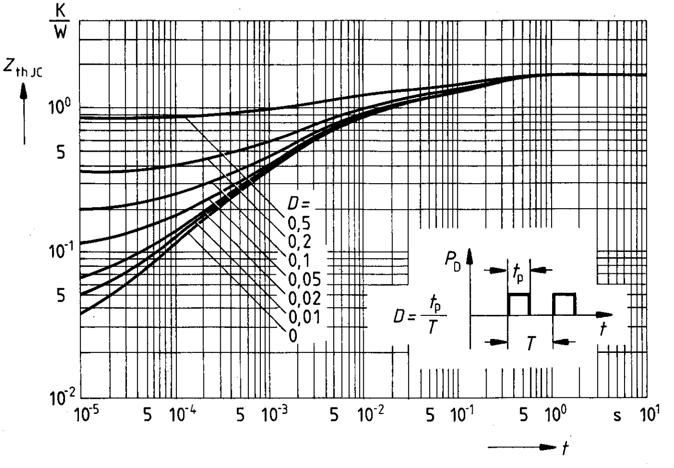
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$°C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



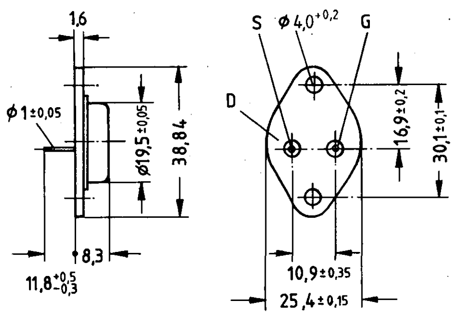
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **1000 V**
Continuous drain current I_D = **2,6 A**
Drain-source on-resistance $R_{DS(on)}$ = **5,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 53 A	C67078-A1009-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	1000V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	1000V
Continuous drain current, T_{case} = 25 °C	I_D	2,6A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	10A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	78W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\,JA}$	≤35K/W
	$R_{th\,JC}$	≤1,6K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	1000	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 1000V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	4,5	5,0	Ω	V_{GS} = 10V I_D = 1,5A

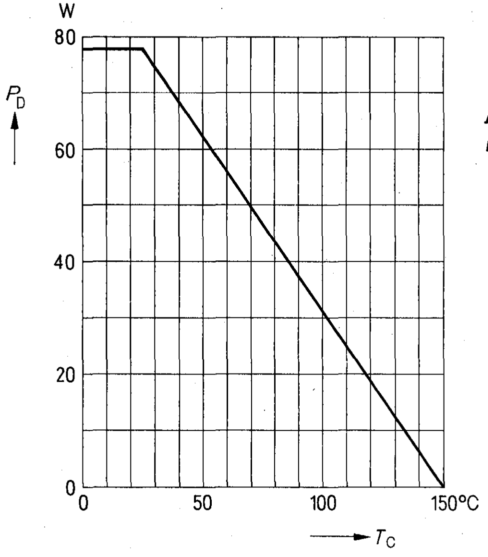
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	0,7	1,5	–	S	V_{DS} = 25V I_D = 1,5A
Input capacitance	C_{iss}	–	1600	2100	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	70	120		
Reverse transfer capacitance	C_{rss}	–	30	55		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	110	140		
	t_f	–	60	80		

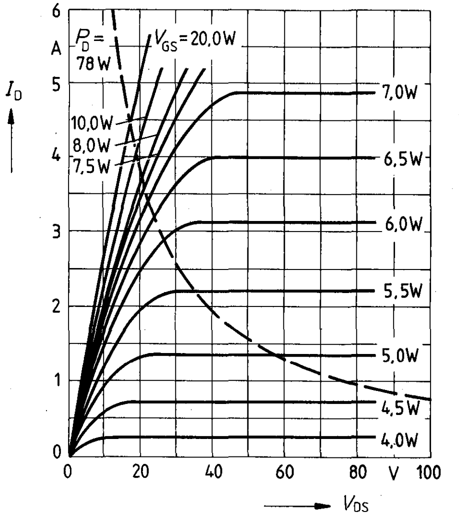
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	2,6	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	10		
Diode forward on-voltage	V_{SD}	–	1,05	1,3	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	2000	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	15	–	µC	

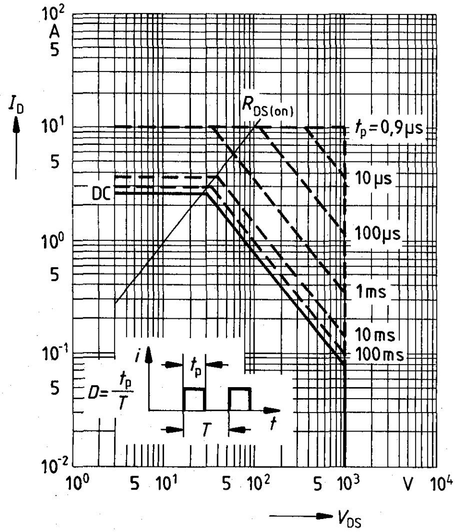
Power dissipation $P_D = f(T_{case})$



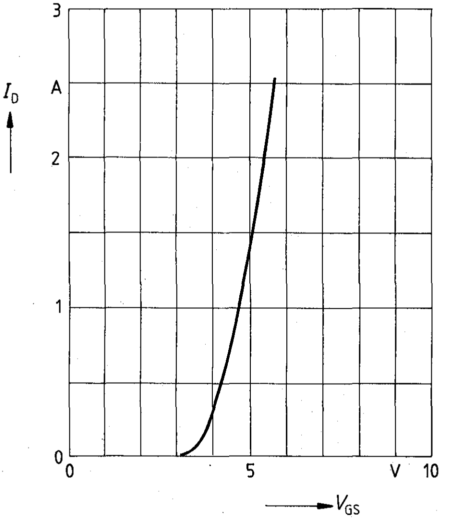
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



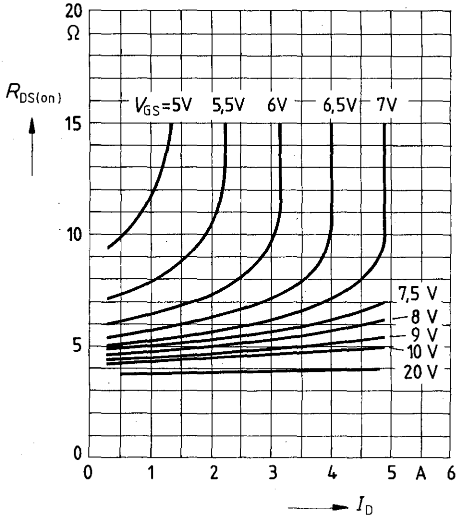
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



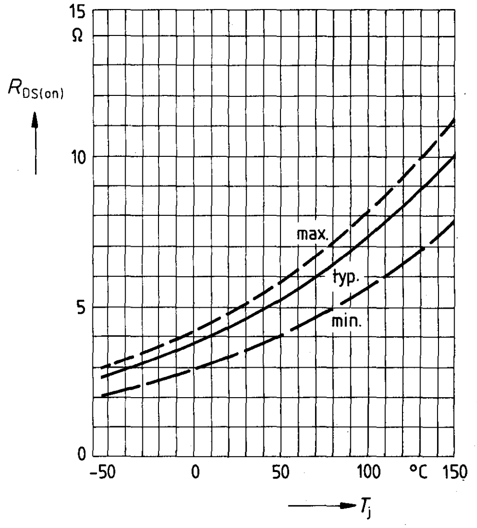
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



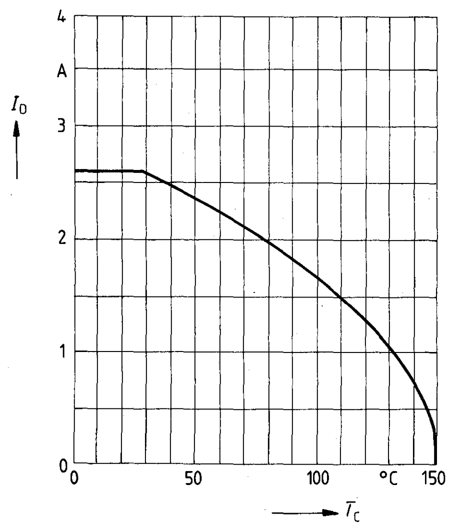
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



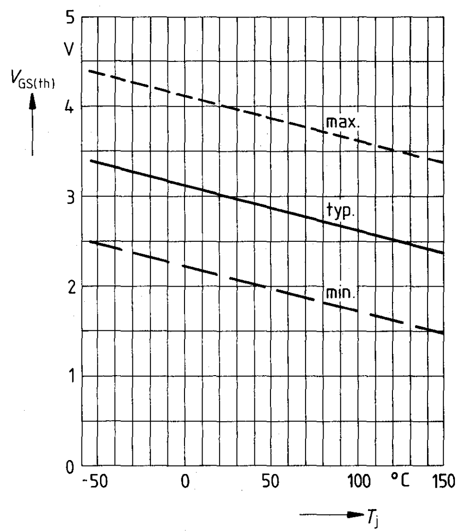
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 1.5$ A, $V_{GS} = 10$ V



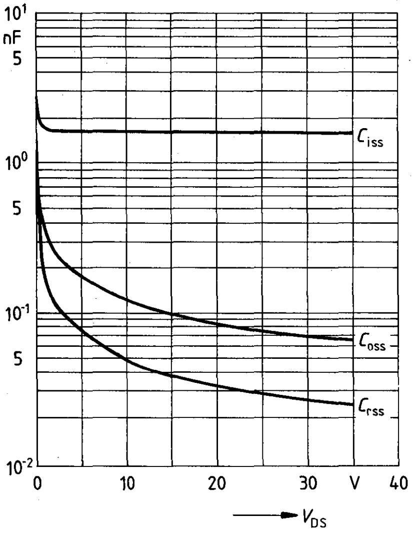
Continuous drain current $I_D = f(T_{case})$



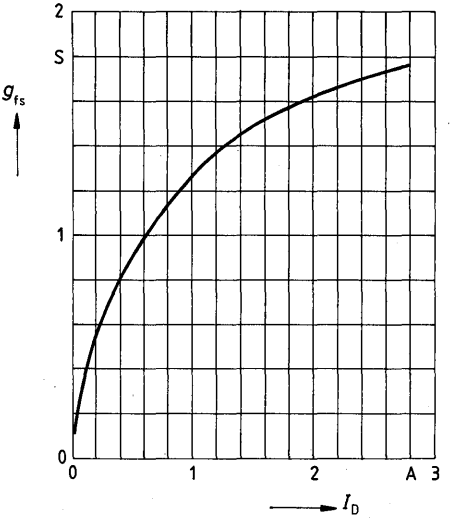
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



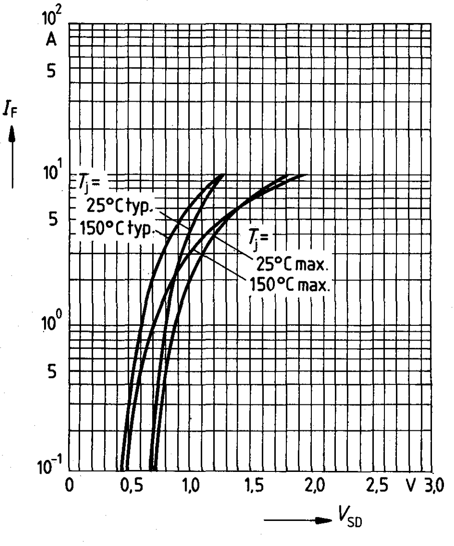
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



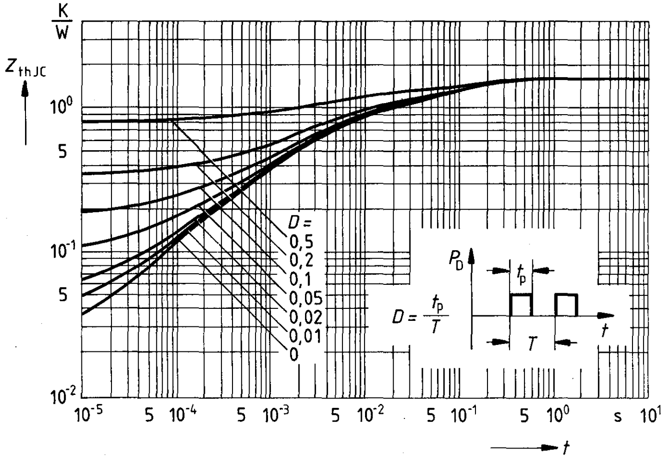
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

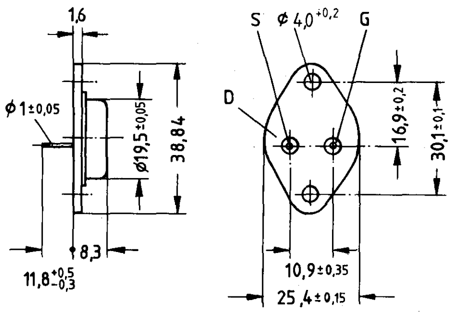


Drain-source voltage	V_{DS}	**= 1000 V**
Continuous drain current	I_D	**= 5,3 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 2,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 54	C67078-A1010-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	1000V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	1000V
Continuous drain current, T_{case} = 25 °C	I_D	5,3A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	21A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\,JA}$	≤35K/W
	$R_{th\,JC}$	≤1,0K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	1000	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 1000V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	1,7	2,0	Ω	V_{GS} = 10V I_D = 2,5A

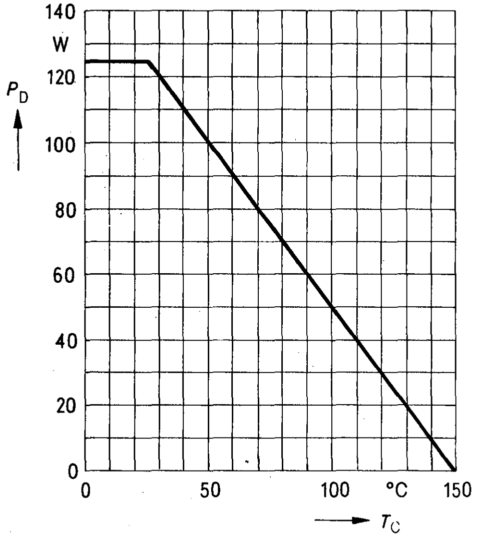
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,4	3,5	–	S	V_{DS} = 25V I_D = 2,5A
Input capacitance	C_{iss}	–	3900	5000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	180	300		
Reverse transfer capacitance	C_{rss}	–	70	120		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	60	90	ns	V_{CC} = 30V I_D = 2,5A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	90	140		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		

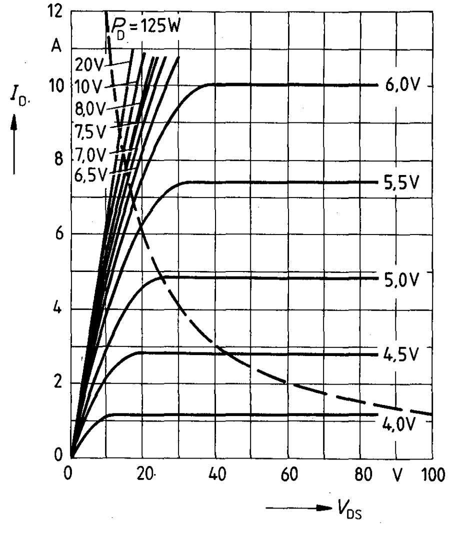
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	5,3	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	21		
Diode forward on-voltage	V_{SD}	–	1,15	1,4	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	2000	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	30	–	µC	

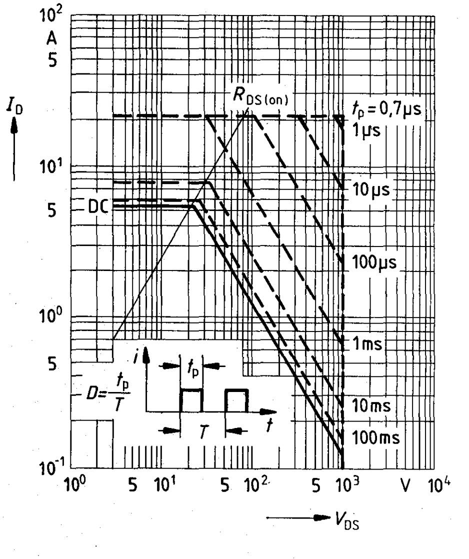
Power dissipation $P_D = f(T_{case})$



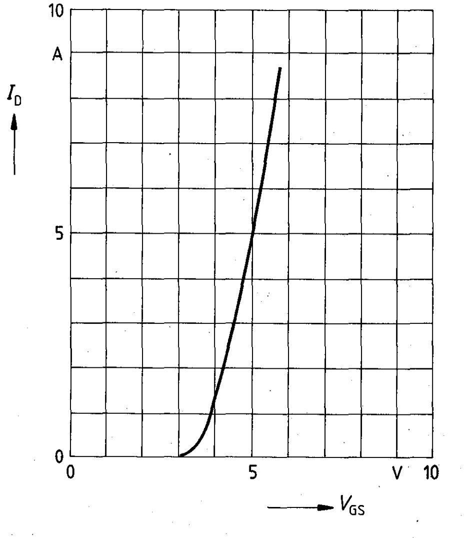
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



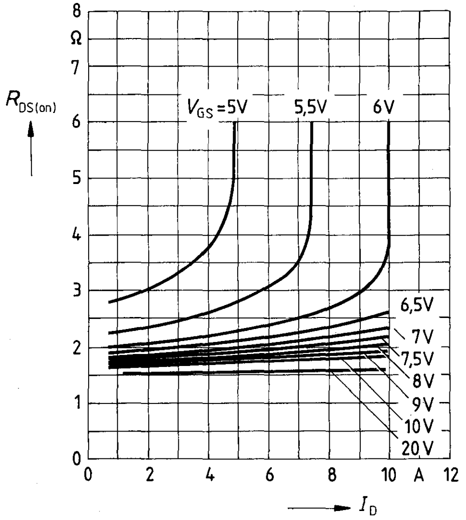
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



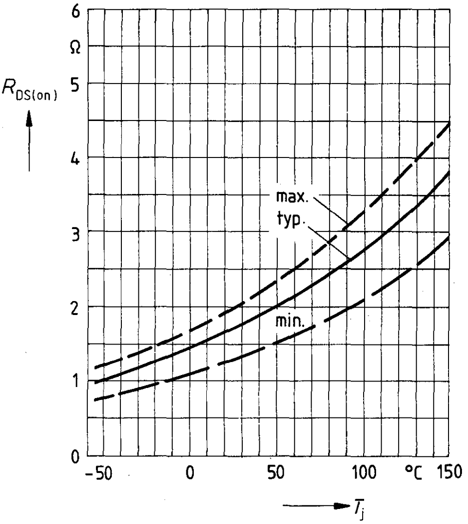
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



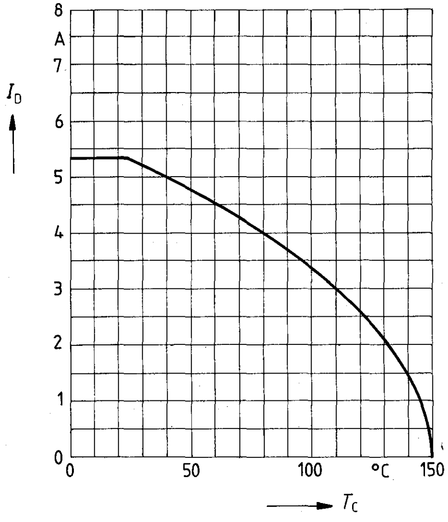
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



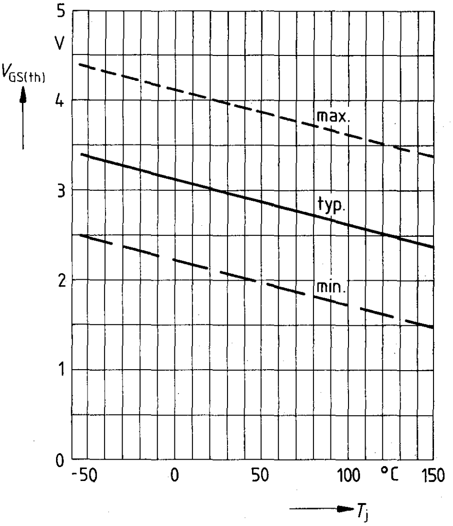
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 2.5$ A, $V_{GS} = 10$ V



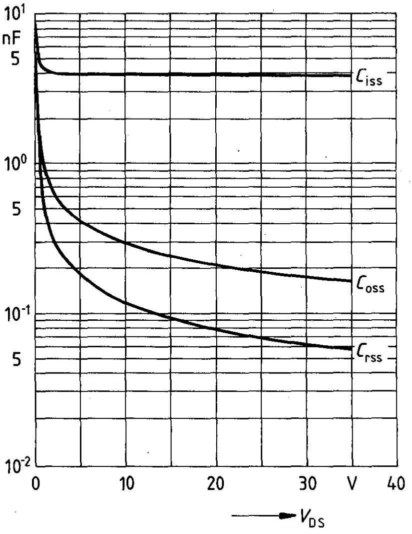
Continuous drain current $I_D = f(T_{case})$



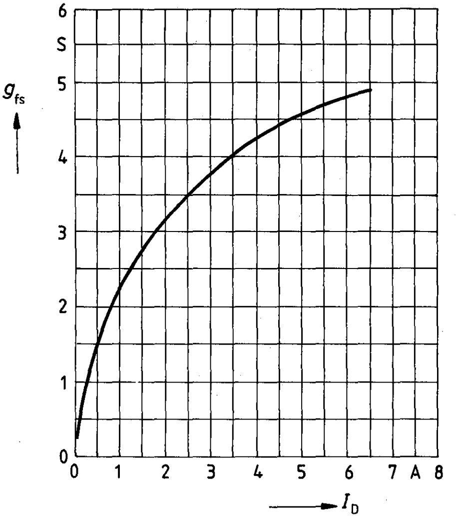
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



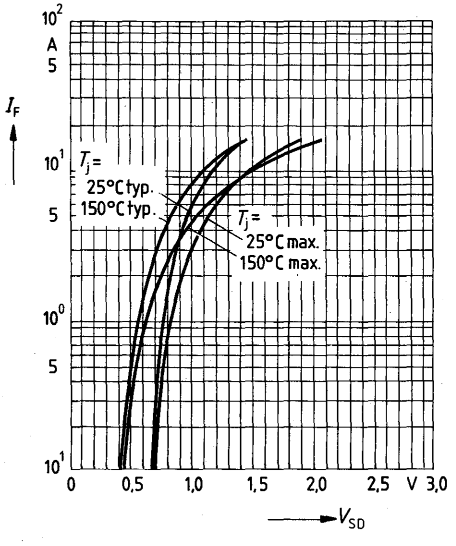
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



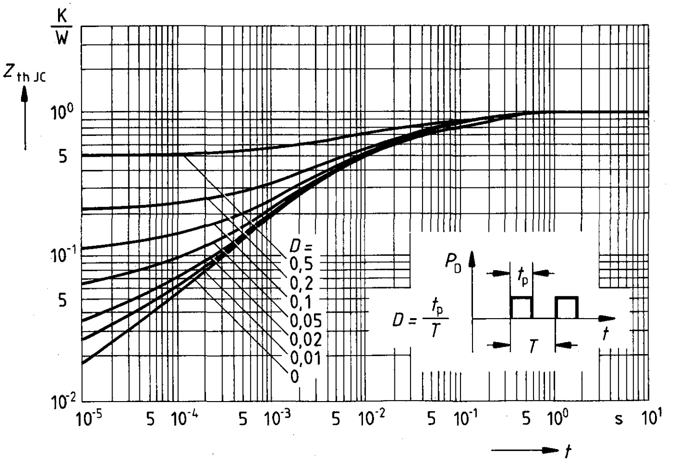
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°$C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



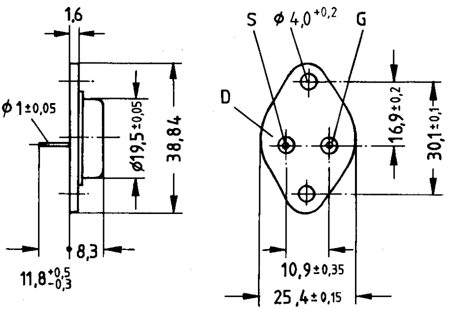
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 1000 V**
Continuous drain current I_D **= 4,6 A**
Drain-source on-resistance $R_{DS(on)}$ **= 2,6 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 2 g

Type	Ordering code
BUZ 54 A	C67078-A1010-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	1000V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	1000V
Continuous drain current, T_{case} = 25 °C	I_D	4,6A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	18A
Gate-source voltage	V_{GS}	± 20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	– 55 °C ... + 150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\ JA}$	≤ 35K/W
	$R_{th\ JC}$	≤ 1,0K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	1000	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 1000V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	2,3	2,6	Ω	V_{GS} = 10V I_D = 2,5A

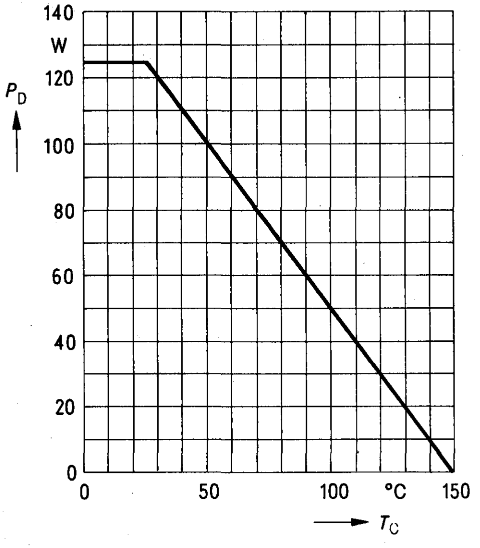
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,4	3,5	–	S	V_{DS} = 25V I_D = 2,5A
Input capacitance	C_{iss}	–	3900	5000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	180	300		
Reverse transfer capacitance	C_{rss}	–	70	120		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	60	90	ns	V_{CC} = 30V I_D = 2,4A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	90	140		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		

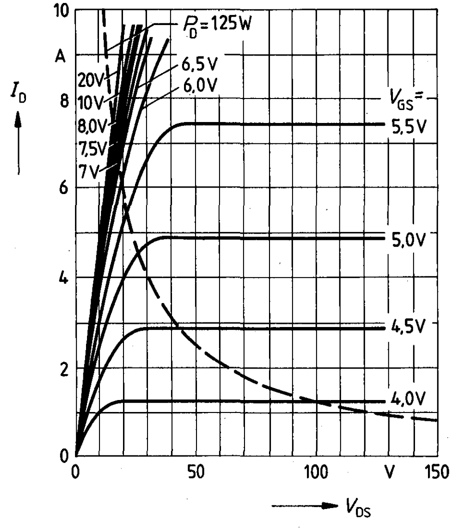
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	4,6	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	18		
Diode forward on-voltage	V_{SD}	–	1,15	1,4	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	2000	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	30	–	µC	

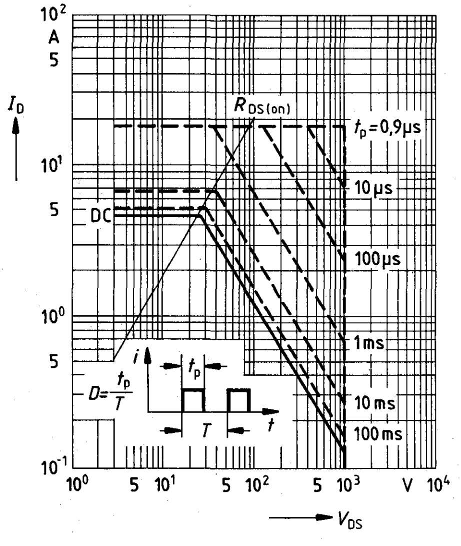
Power dissipation $P_D = f(T_{case})$



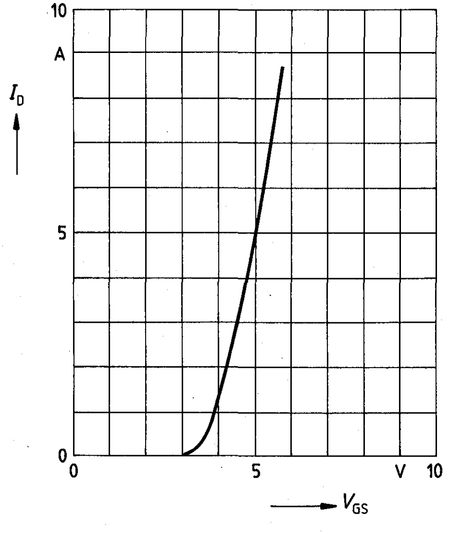
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



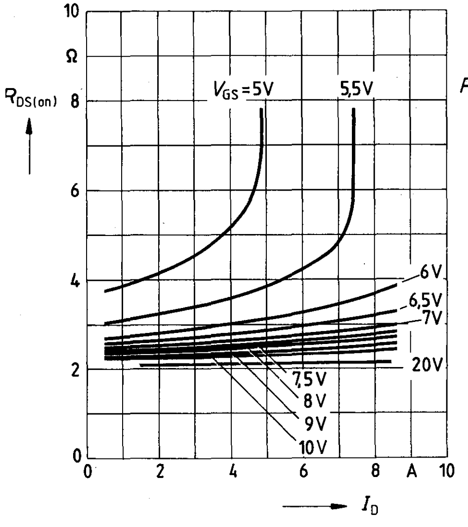
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



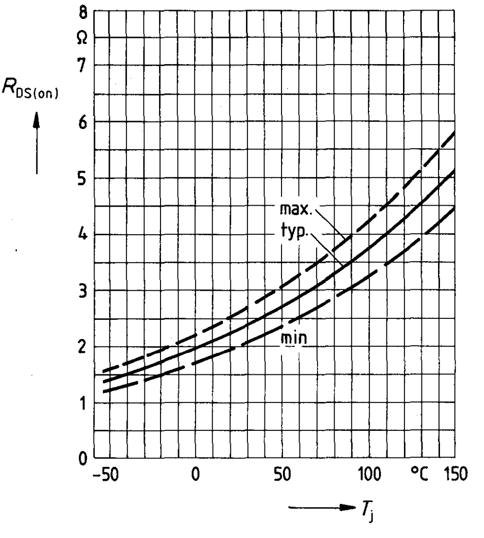
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



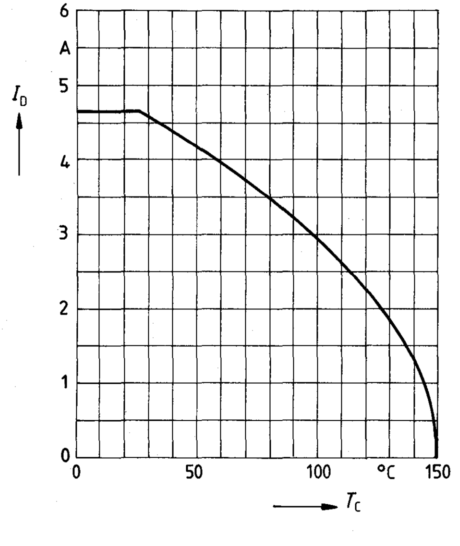
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



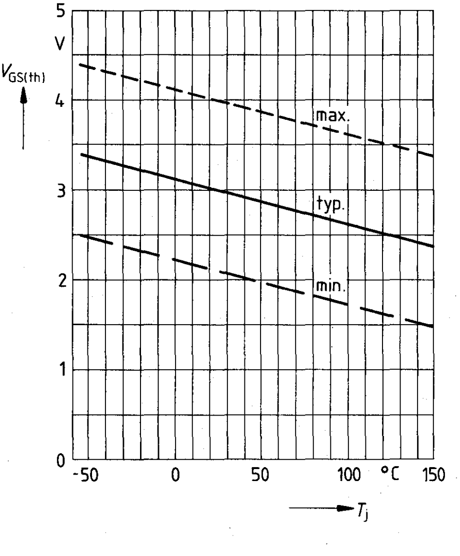
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 2.5\ A$, $V_{GS} = 10\ V$



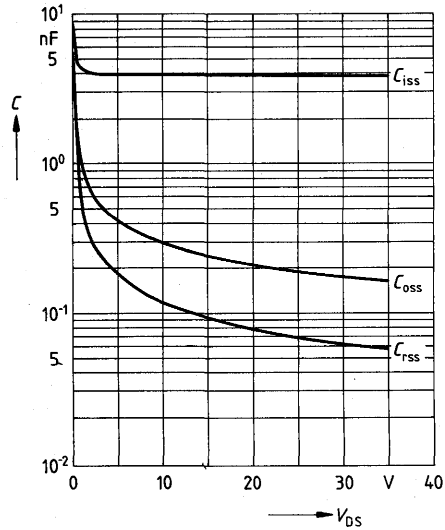
Continuous drain current $I_D = f(T_{case})$



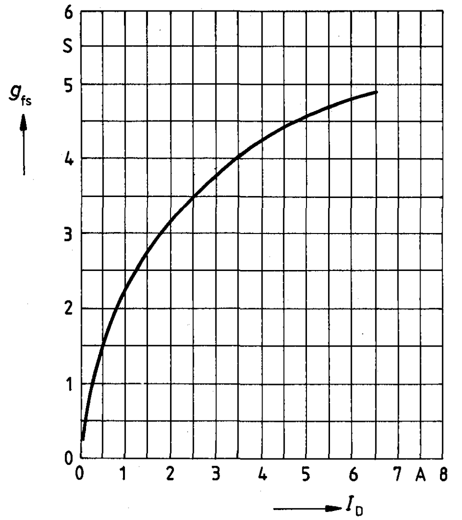
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\ mA$



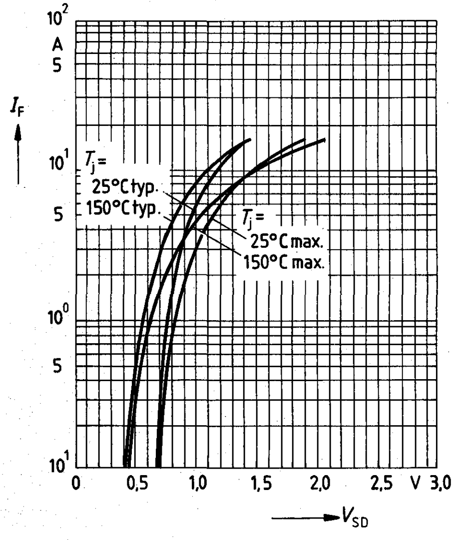
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



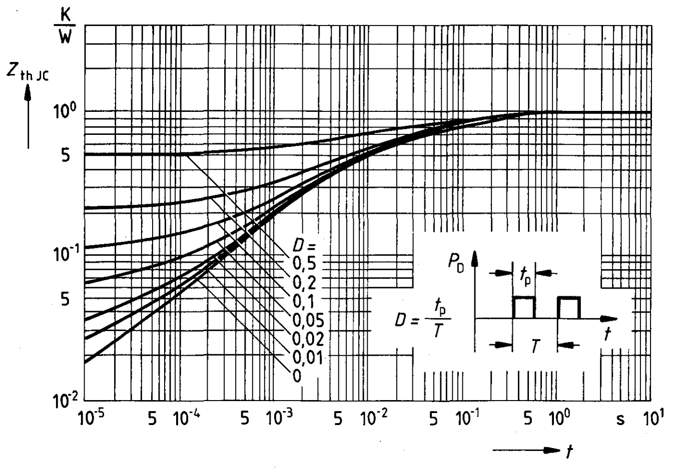
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°$C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



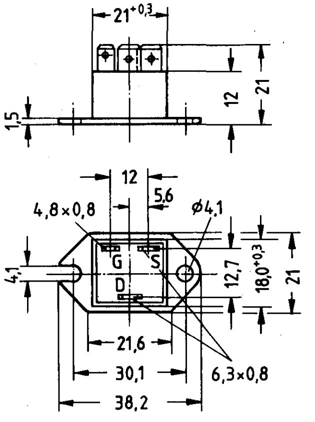
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 1000 V**
Continuous drain current I_D **= 2,5 A**
Drain-source on-resistance $R_{DS(on)}$ **= 5,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package TO 238 AA with insulated metal base plate in accordance with JEDEC, compatible with TO 3; AMP plug-in connections.
Approx. weight 21 g

Type	Ordering code
BUZ 57 A	C67078-A1606-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	1000V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	1000V
Continuous drain current, T_{case} = 25 °C	I_D	2,5A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	10A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	70W
Operating and storage temperature range	T_j T_{stg}	−40 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	3500Vdc[1])
DIN humidity category		F
Thermal resistance	$R_{th\,JA}$	–
	$R_{th\,JC}$	≤1,78K/W

[1]) Isolation test voltage between drain and heat sink referred to standard climate 23/50 in accordance with DIN 50014.

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\ DSS}$	1000	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\ (th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 1000V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\ (on)}$	–	4,5	5,0	Ω	V_{GS} = 10V I_D = 1,5A

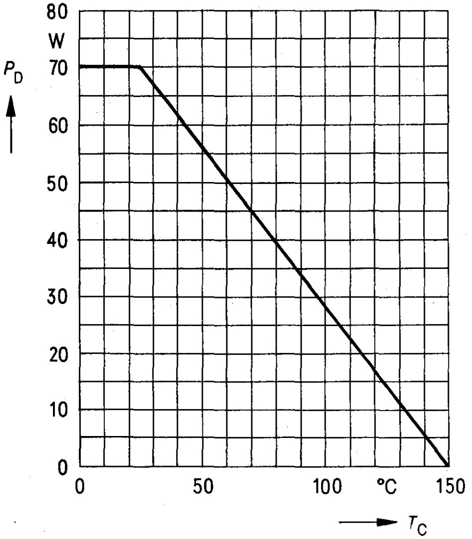
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	0,7	1,5	–	S	V_{DS} = 25V I_D = 1,5A
Input capacitance	C_{iss}	–	1600	2100	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	70	120		
Reverse transfer capacitance	C_{rss}	–	30	55		
Turn-on time t_{on} (t_{on} = $t_{d\ (on)}$ + t_r)	$t_{d\ (on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} (t_{off} = $t_{d\ (off)}$ + t_f)	$t_{d\ (off)}$	–	110	140		
	t_f	–	60	80		

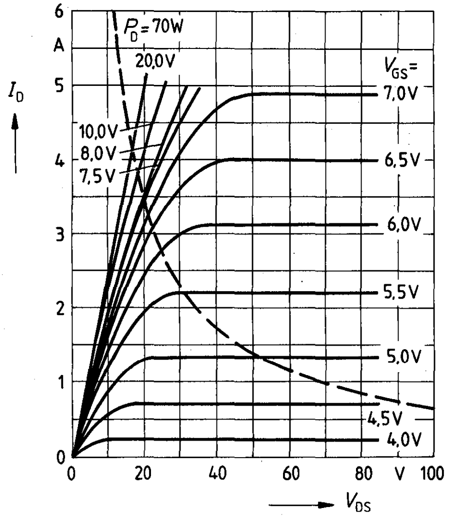
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	2,5	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	10		
Diode forward on-voltage	V_{SD}	–	1,05	1,25	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	2000	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	15	–	µC	

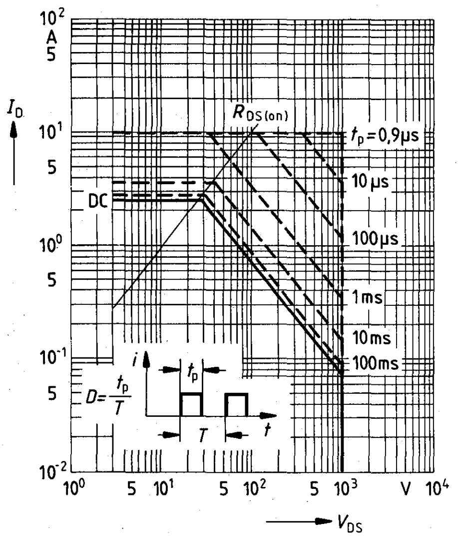
Power dissipation $P_D = f(T_{case})$



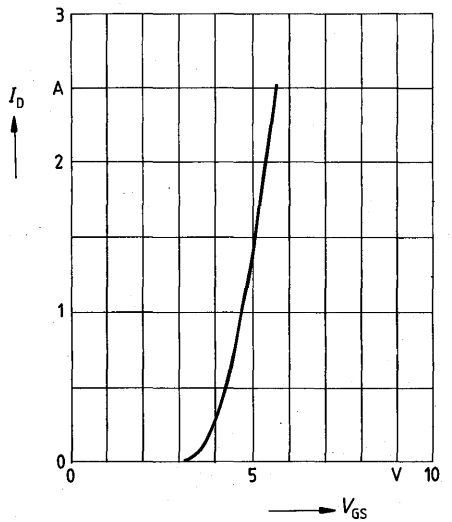
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



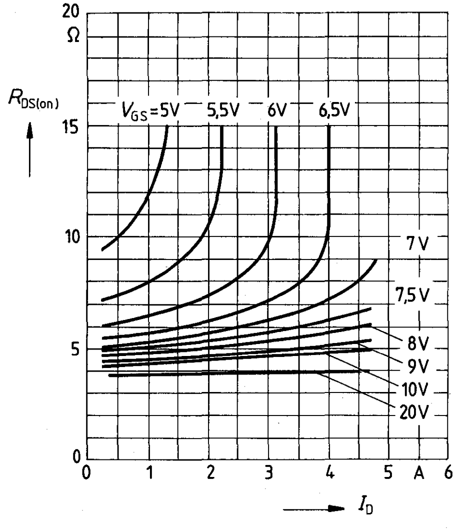
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



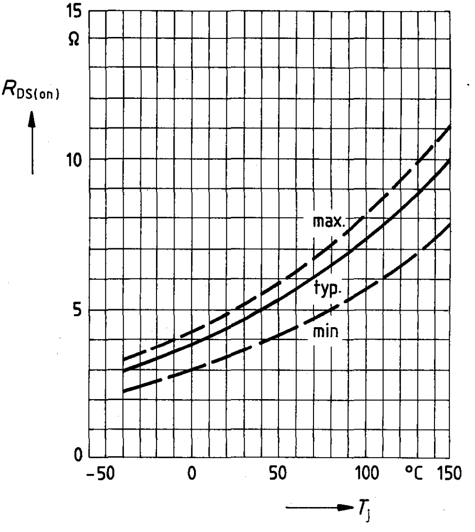
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



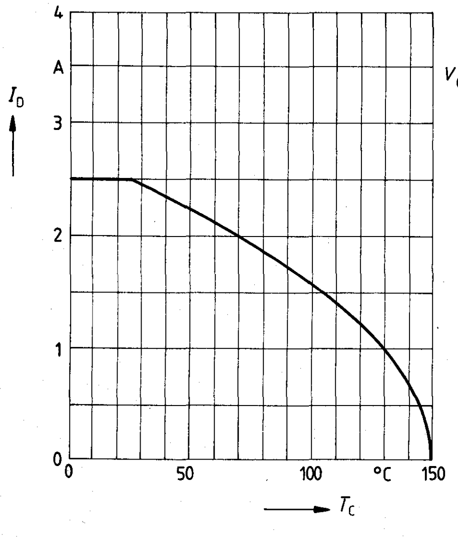
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



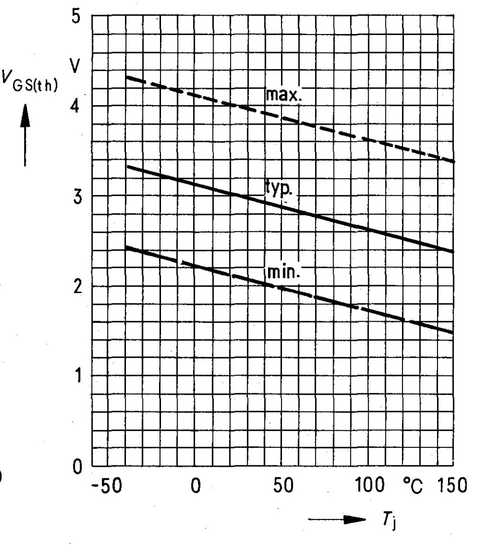
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 1.5\,A$, $V_{GS} = 10\,V$



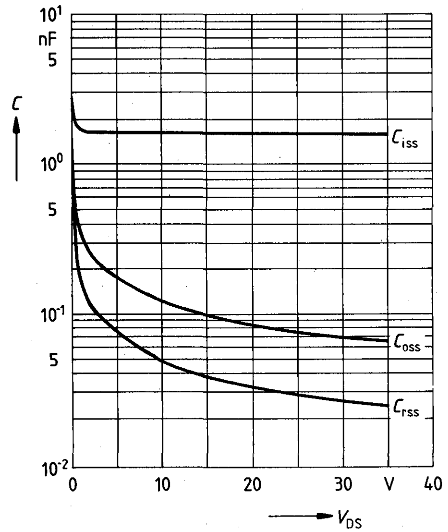
Continuous drain current $I_D = f(T_{case})$



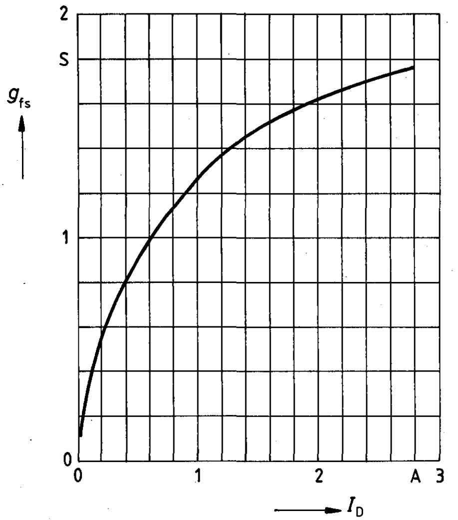
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



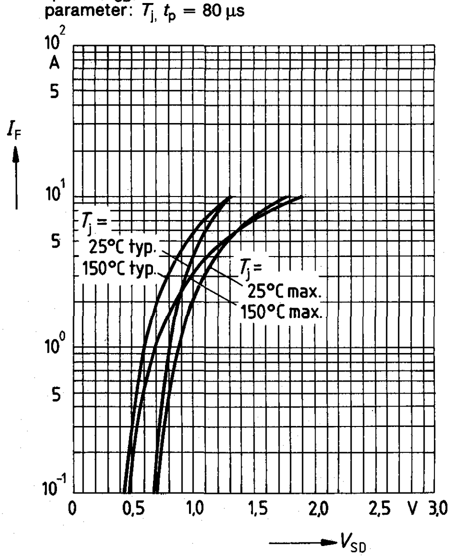
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



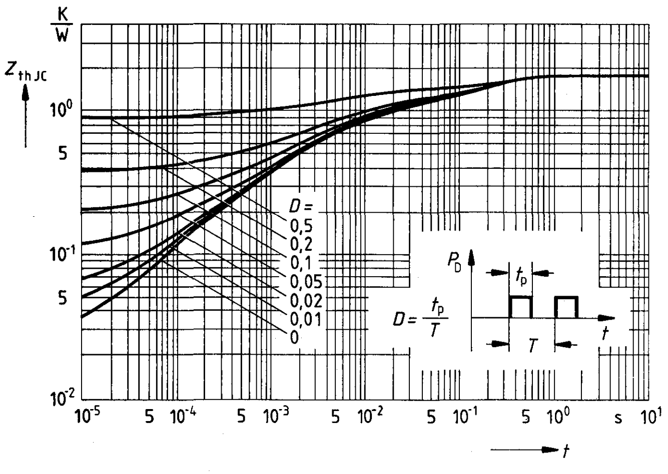
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



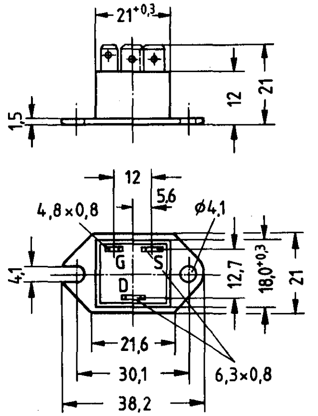
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **1000 V**
Continuous drain current I_D = **4,3 A**
Drain-source on-resistance $R_{DS(on)}$ = **2,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package TO 238 AA with insulated metal base plate in accordance with JEDEC, compatible with TO 3; AMP plug-in connections.
Approx. weight 21 g

Type	Ordering code
BUZ 58	C67078-A1607-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	1000V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	1000V
Continuous drain current, T_{case} = 25 °C	I_D	4,3A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	17A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	83,3W
Operating and storage temperature range	T_j T_{stg}	−40 °C... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	3500Vdc[1])
DIN humidity category		F
Thermal resistance	$R_{th\ JA}$	–
	$R_{th\ JC}$	≤1,5K/W

[1]) Isolation test voltage between drain and heat sink referred to standard climate 23/50 in accordance with DIN 50014.

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	1000	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 1000V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	1,7	2,0	Ω	V_{GS} = 10V I_D = 2,5A

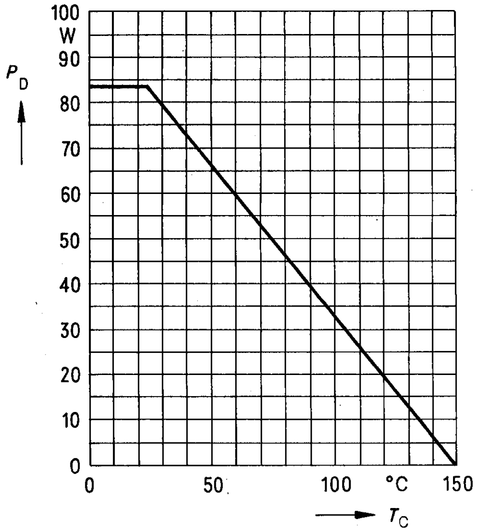
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,4	3,5	–	S	V_{DS} = 25V I_D = 2,5A
Input capacitance	C_{iss}	–	3900	5000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	180	300		
Reverse transfer capacitance	C_{rss}	–	70	120		
Turn-on time t_{on} (t_{on} = $t_{d\,(on)}$ + t_r)	$t_{d\,(on)}$	–	60	90	ns	V_{CC} = 30V I_D = 2,5A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	90	140		
Turn-off time t_{off} (t_{off} = $t_{d\,(off)}$ + t_f)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		

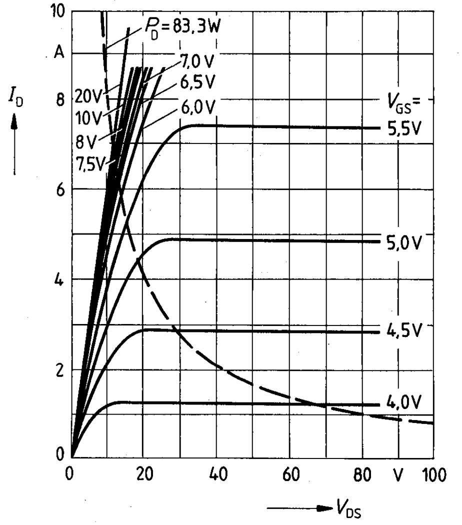
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	4,3	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	17		
Diode forward on-voltage	V_{SD}	–	1,1	1,4	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	2000	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	30	–	µC	

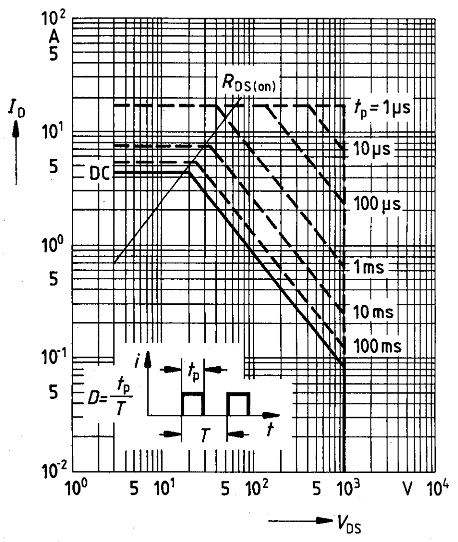
Power dissipation $P_D = f(T_{case})$



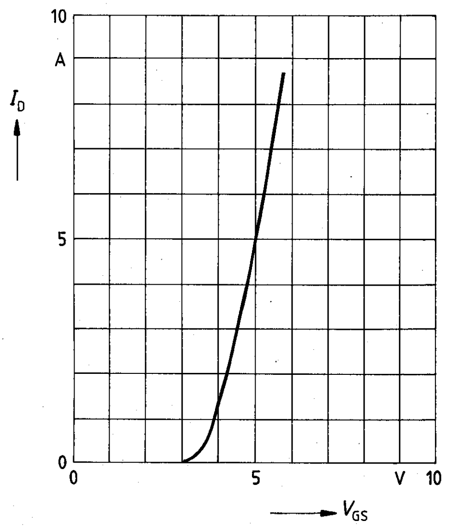
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



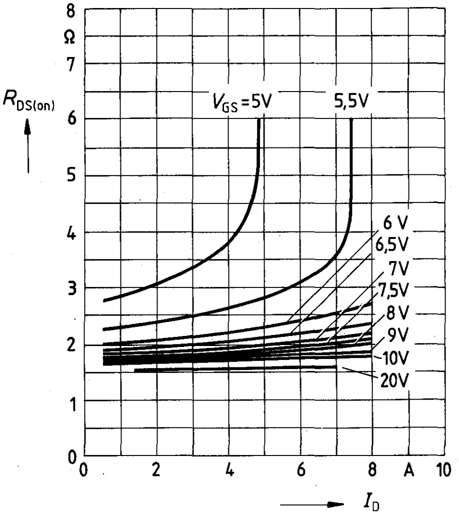
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



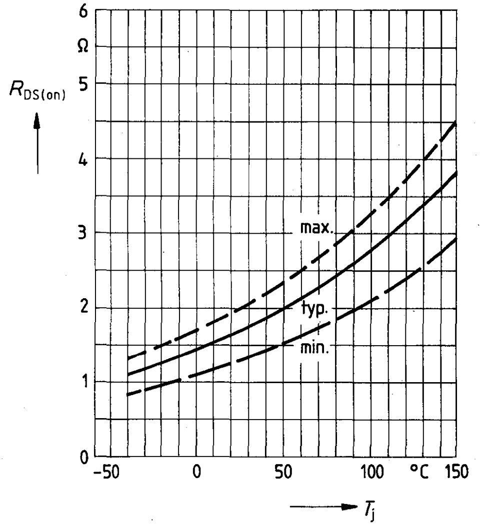
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



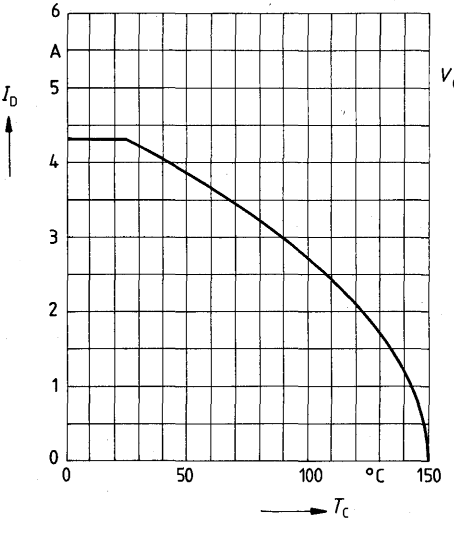
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



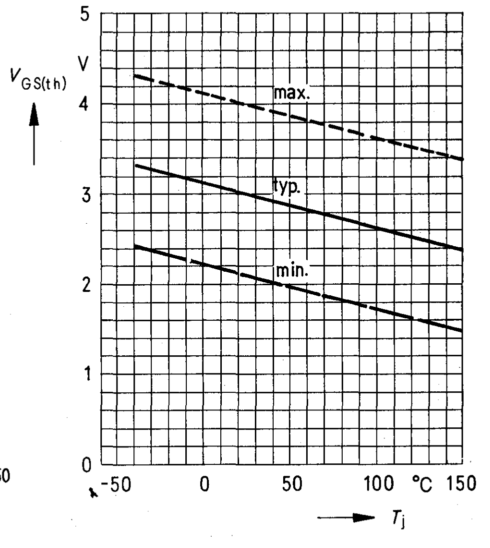
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 2.5$ A, $V_{GS} = 10$ V



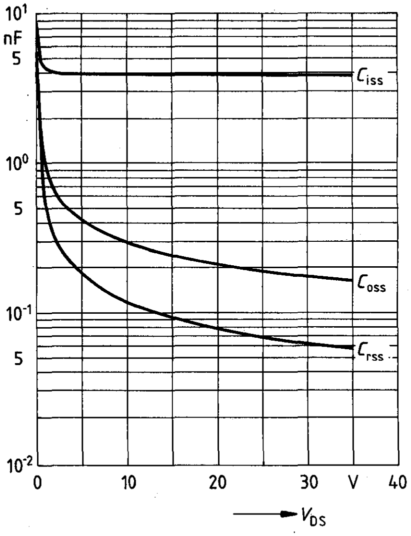
Continuous drain current $I_D = f(T_{case})$



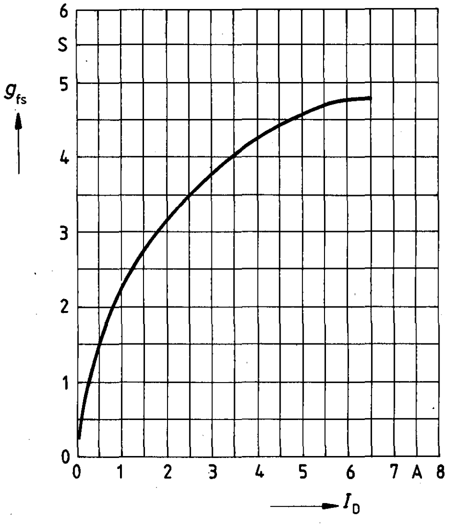
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



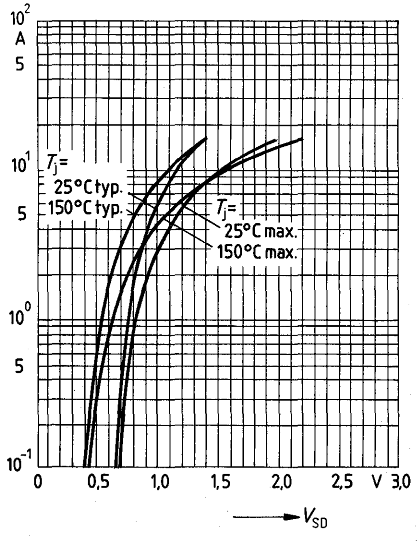
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



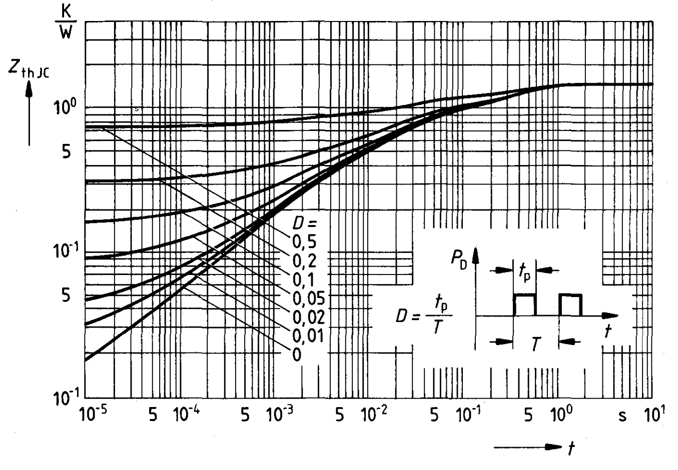
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

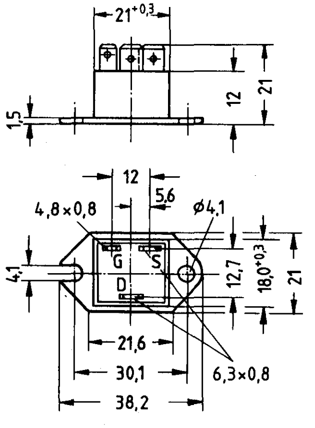


Drain-source voltage	V_{DS}	**= 1000 V**
Continuous drain current	I_D	**= 3,7 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 2,6 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Plastic package TO 238 AA with insulated metal base plate in accordance with JEDEC, compatible with TO 3; AMP plug-in connections.
Approx. weight 21 g

Type	Ordering code
BUZ 58 A	C67078-A1607-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	1000V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	1000V
Continuous drain current, T_{case} = 30 °C	I_D	3,7A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	14A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	83,3W
Operating and storage temperature range	T_j T_{stg}	−40 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	3500Vdc[1])
DIN humidity category		F
Thermal resistance	$R_{th\,JA}$	–
	$R_{th\,JC}$	≤1,5K/W

[1]) Isolation test voltage between drain and heat sink referred to standard climate 23/50 in accordance with DIN 50014.

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	1000	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 1000V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	2,3	2,6	Ω	V_{GS} = 10V I_D = 2,5A

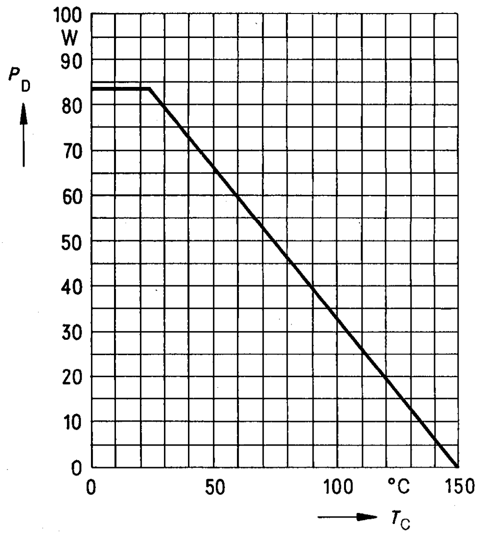
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,4	3,5	–	S	V_{DS} = 25V I_D = 2,5A
Input capacitance	C_{iss}	–	3900	5000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	180	300		
Reverse transfer capacitance	C_{rss}	–	70	120		
Turn-on time t_{on} (t_{on} = $t_{d\,(on)}$ + t_r)	$t_{d\,(on)}$	–	60	95	ns	V_{CC} = 30V I_D = 2,4A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	90	140		
Turn-off time t_{off} (t_{off} = $t_{d\,(off)}$ + t_f)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		

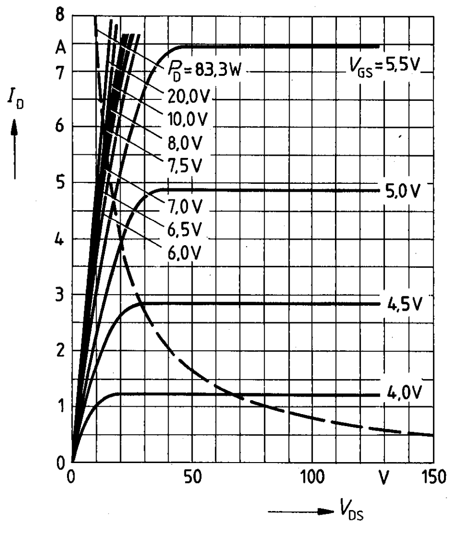
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	3,7	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	14		
Diode forward on-voltage	V_{SD}	–	1,1	1,4	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	2000	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	30	–	µC	

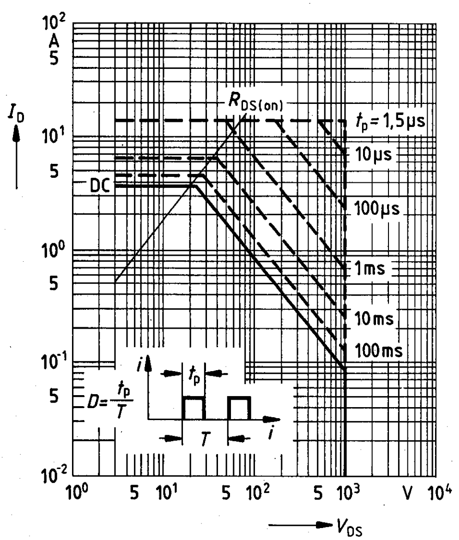
Power dissipation $P_D = f(T_{case})$



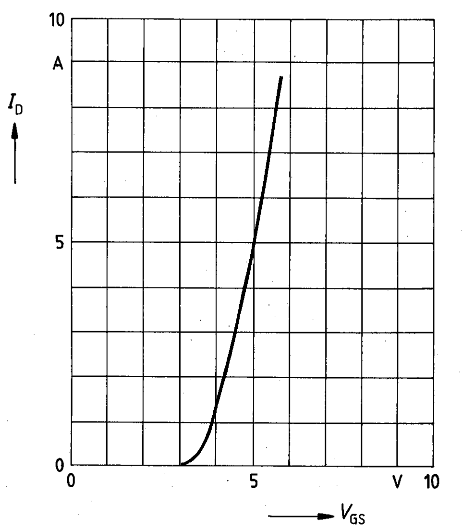
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



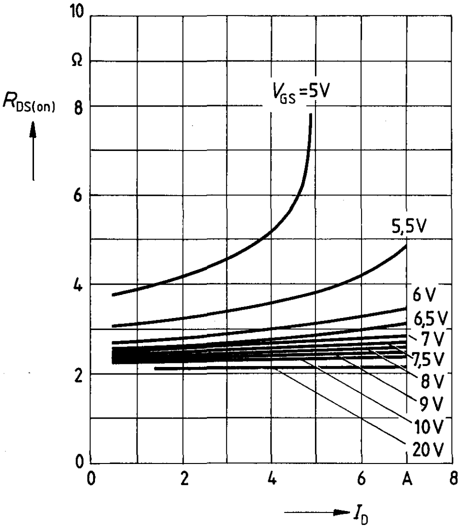
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



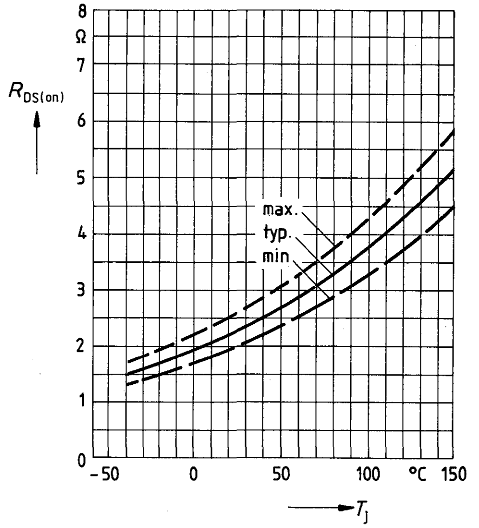
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



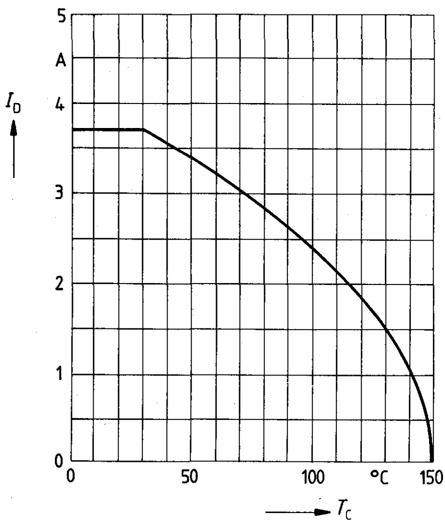
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



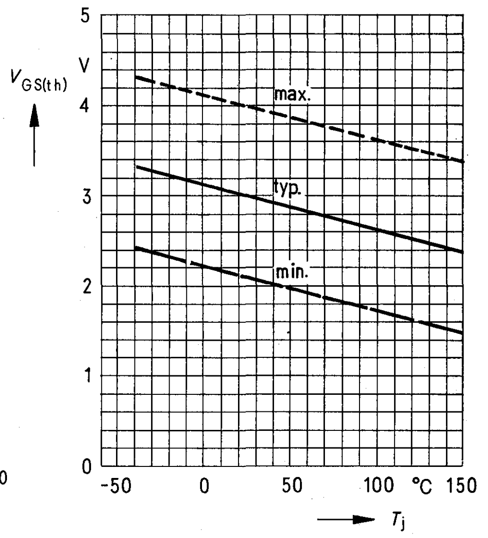
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 2.5$ A, $V_{GS} = 10$ V



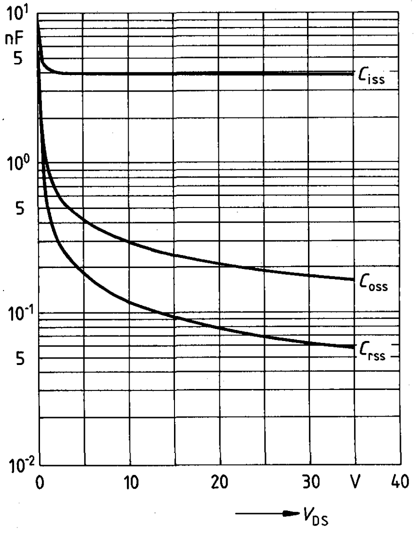
Continuous drain current $I_D = f(T_{case})$



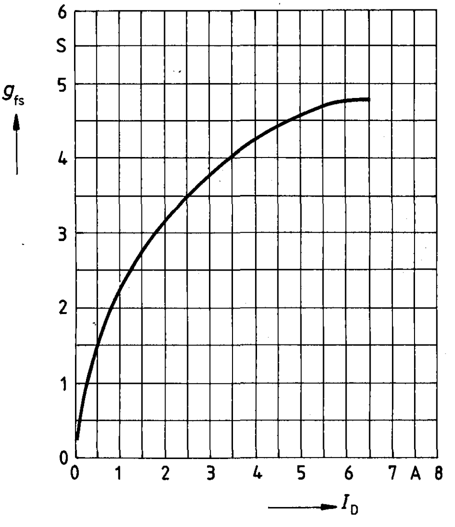
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



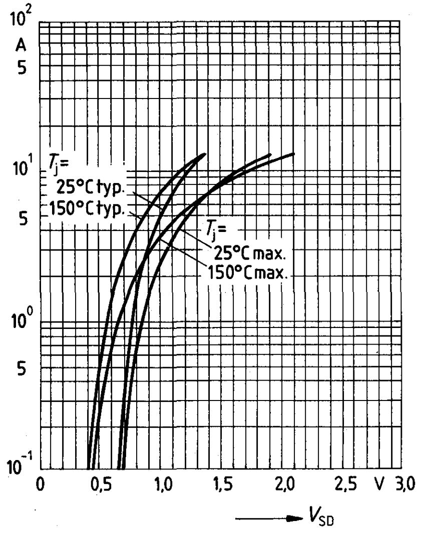
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



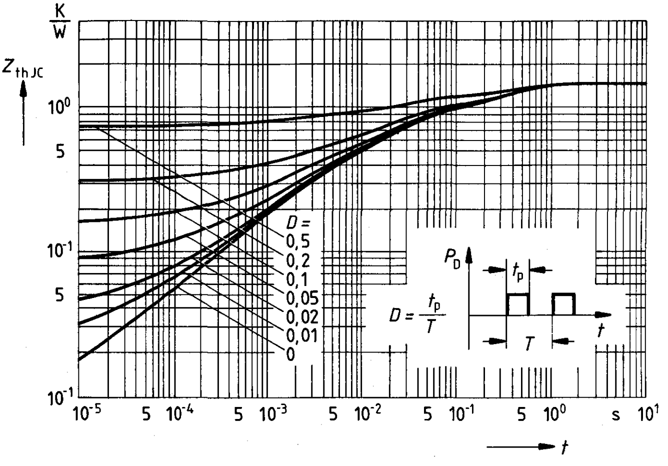
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$°C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



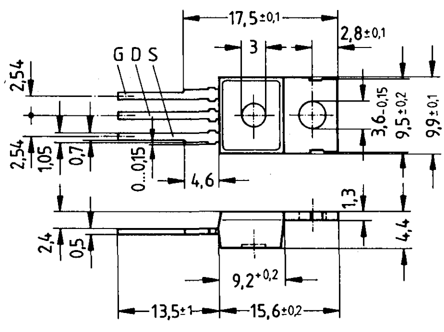
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 400 V**
Continuous drain current I_D **= 5,5 A**
Drain-source on-resistance $R_{DS(on)}$ **= 1,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 14A3 in accordance with DIN 41 869,
or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 60	C67078-A1312-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	400V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	400V
Continuous drain current, T_{case} = 35 °C	I_D	5,5A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	22A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤75K/W
	$R_{th\ JC}$	≤1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	400	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 400V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,9	1,0	Ω	V_{GS} = 10V I_D = 2,5A

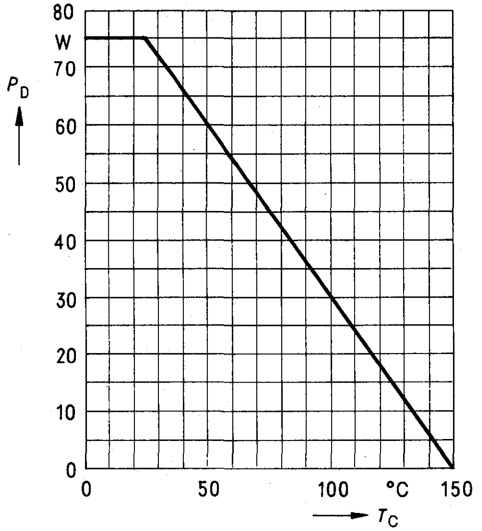
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,7	2,5	–	S	V_{DS} = 25V I_D = 2,5A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	120	180		
Reverse transfer capacitance	C_{rss}	–	35	60		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,7A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	110	140		
	t_f	–	50	65		

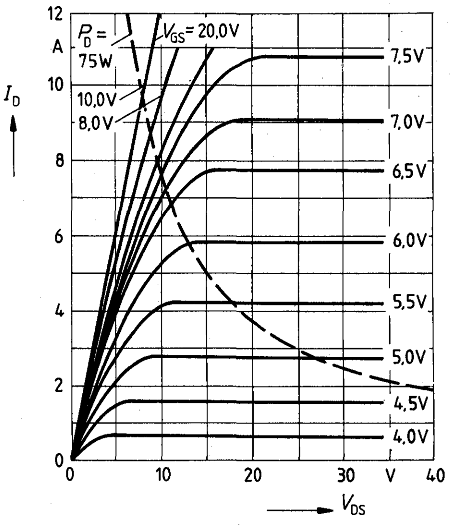
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	5,5	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	22		
Diode forward on-voltage	V_{SD}	–	1,15	1,6	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1000	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	5	–	µC	

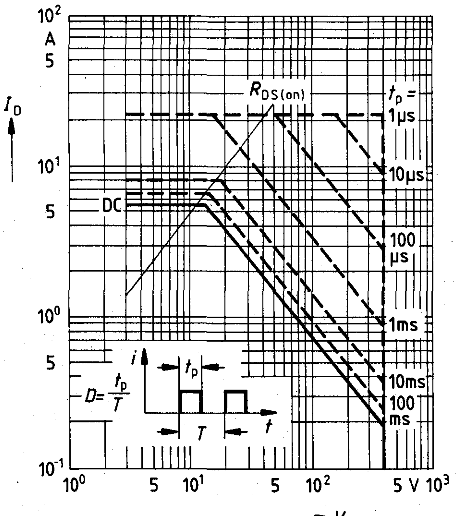
Power dissipation $P_D = f(T_{case})$



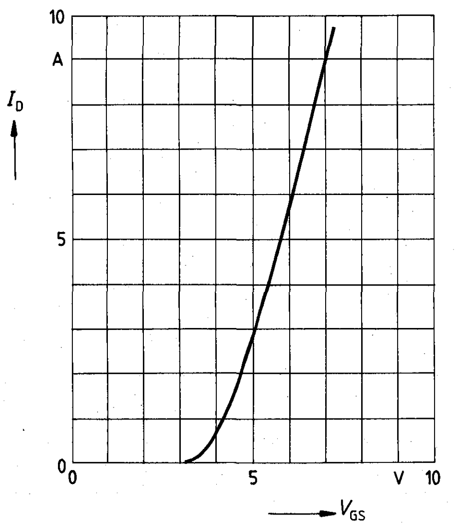
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



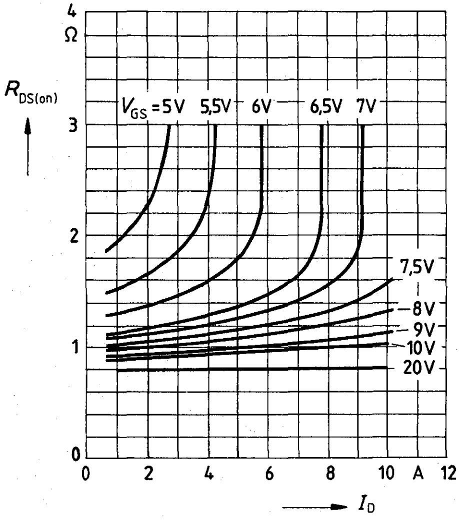
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



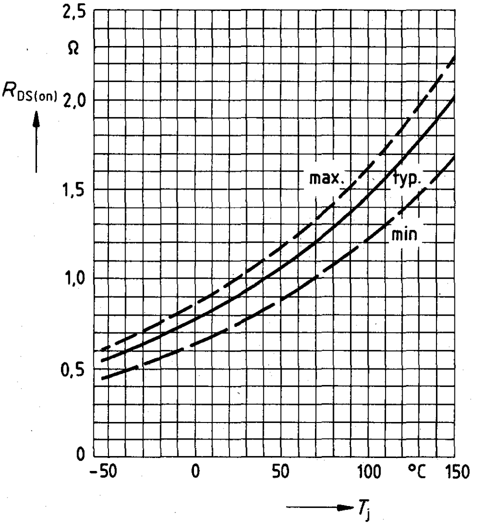
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



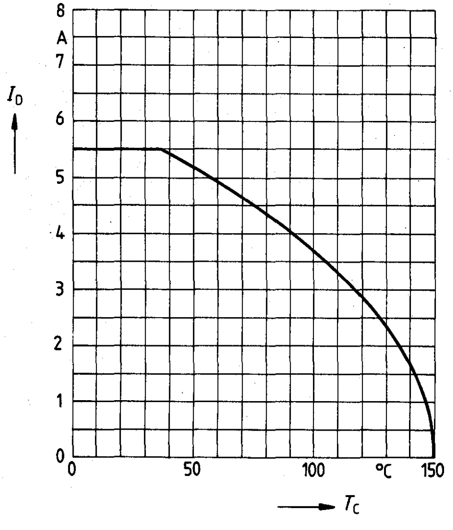
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



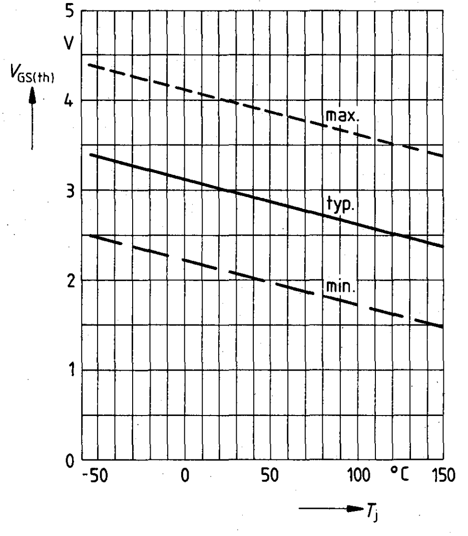
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 2.5$ A, $V_{GS} = 10$ V



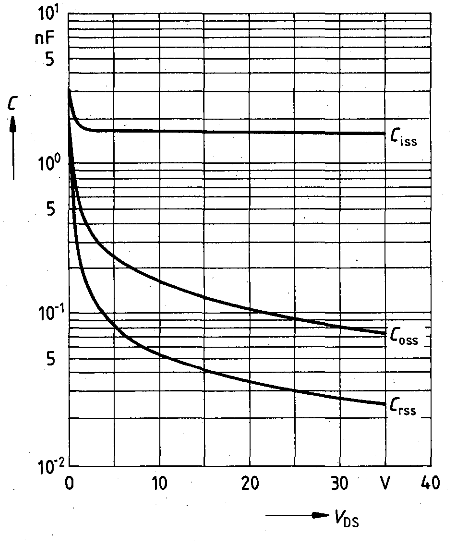
Continuous drain current $I_D = f(T_{case})$



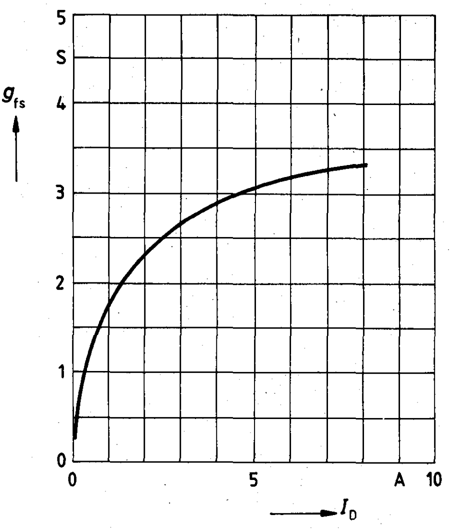
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



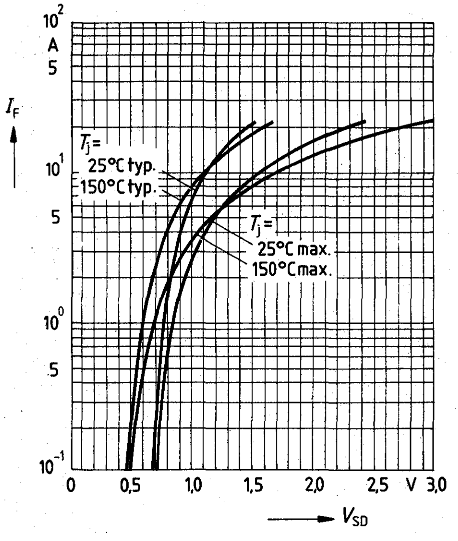
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



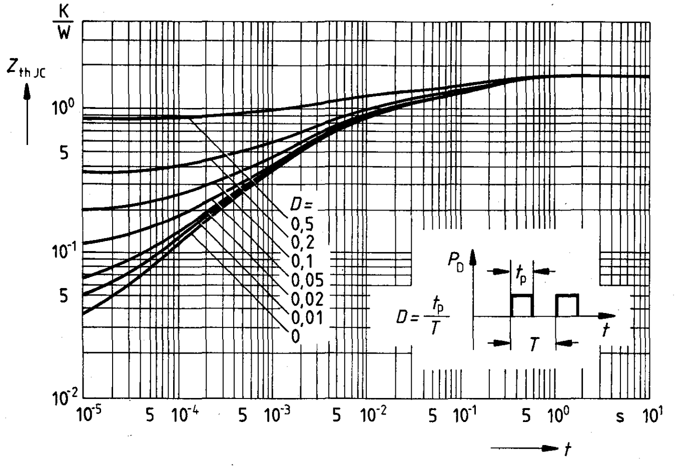
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

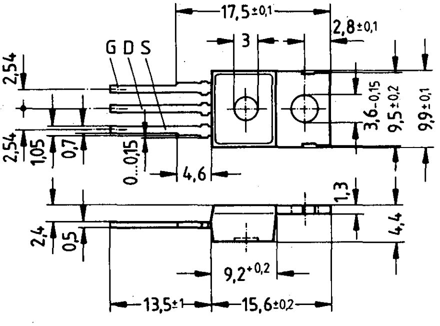


Drain-source voltage	V_{DS}	**= 400 V**
Continuous drain current	I_D	**= 4,5 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 1,5 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC. The drain terminal is conductively connected to the mounting flange. Approx. weight 2 g

Type	Ordering code
BUZ 60 B	C67078-A1312-A4



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	400V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	400V
Continuous drain current, T_{case} = 35 °C	I_D	4,5A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	18A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤75K/W
	$R_{th\,JC}$	≤1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	400	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 400V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	1,2	1,5	Ω	V_{GS} = 10V I_D = 2,5A

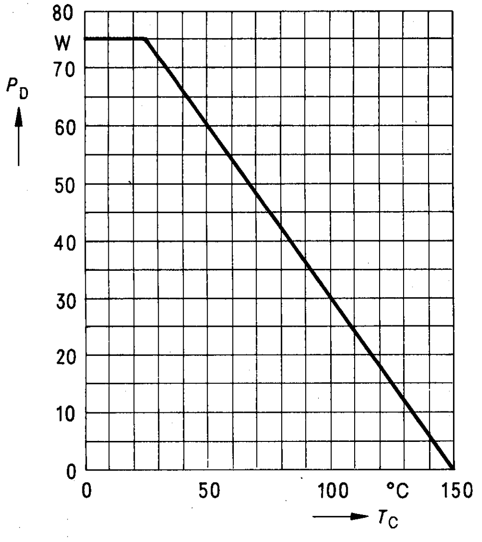
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,7	2,5	–	S	V_{DS} = 25V I_D = 2,5A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	120	180		
Reverse transfer capacitance	C_{rss}	–	35	60		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,6A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	110	140		
	t_f	–	50	65		

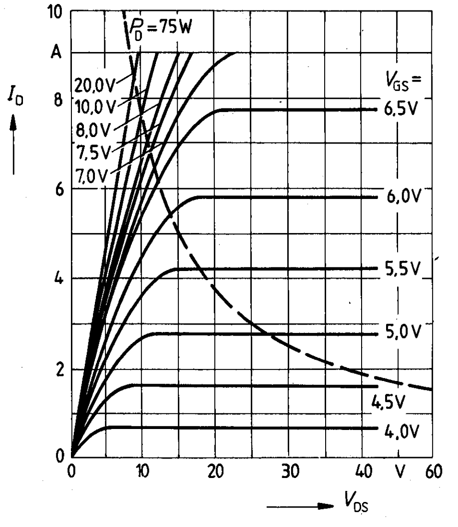
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	1,7	4,5	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	18		
Diode forward on-voltage	V_{SD}	–	1,15	1,50	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1000	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	5	–	µC	

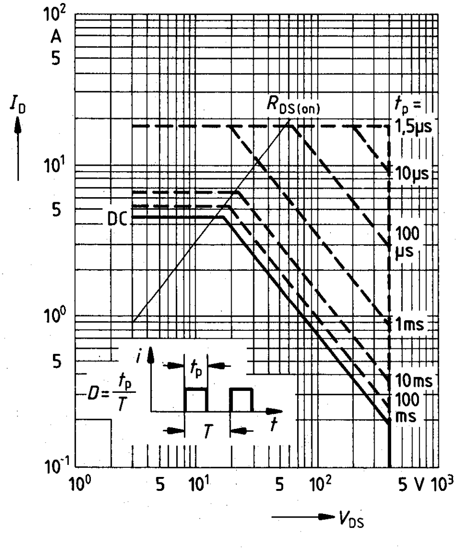
Power dissipation $P_D = f(T_{case})$



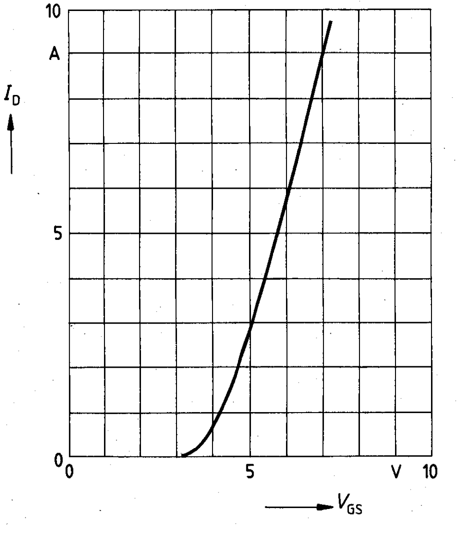
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



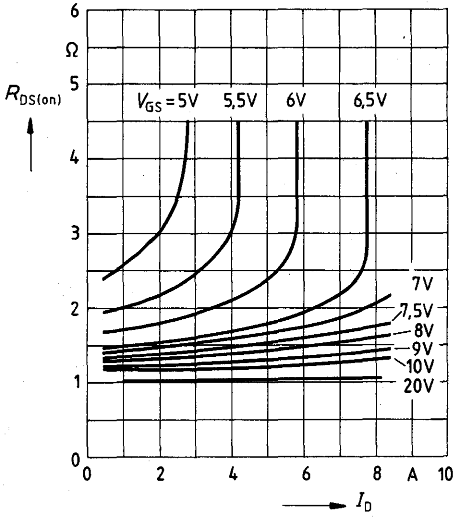
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



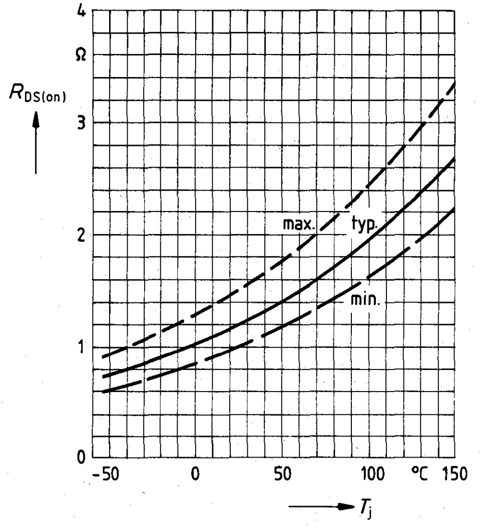
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



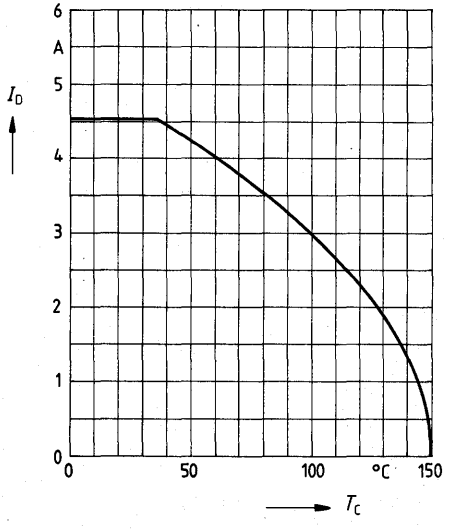
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



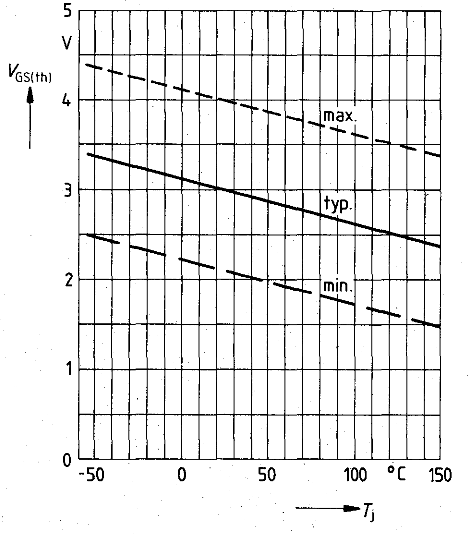
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 2.5$ A, $V_{GS} = 10$ V



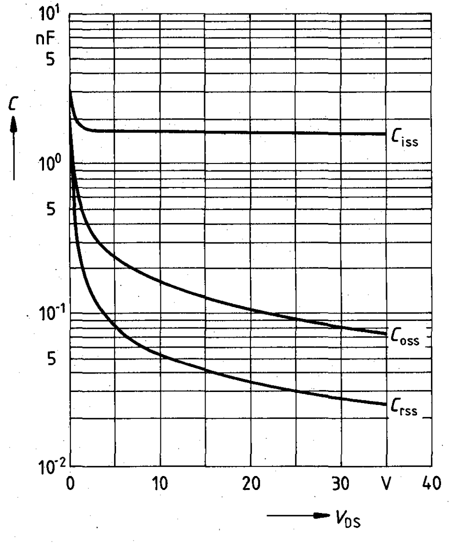
Continuous drain current $I_D = f(T_{case})$



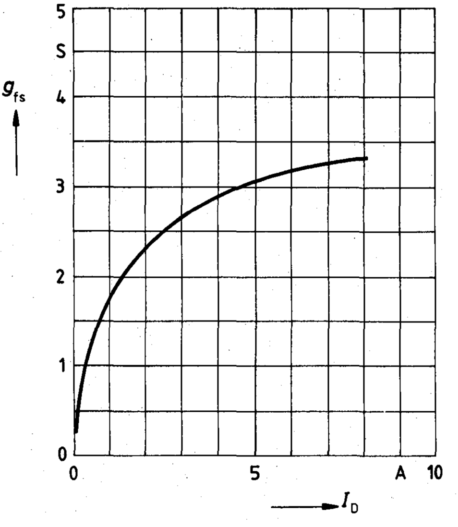
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



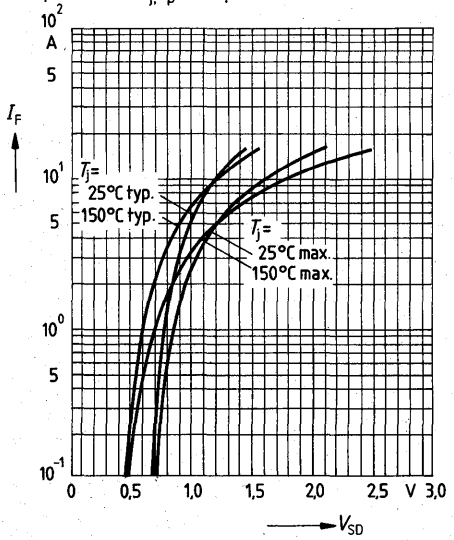
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



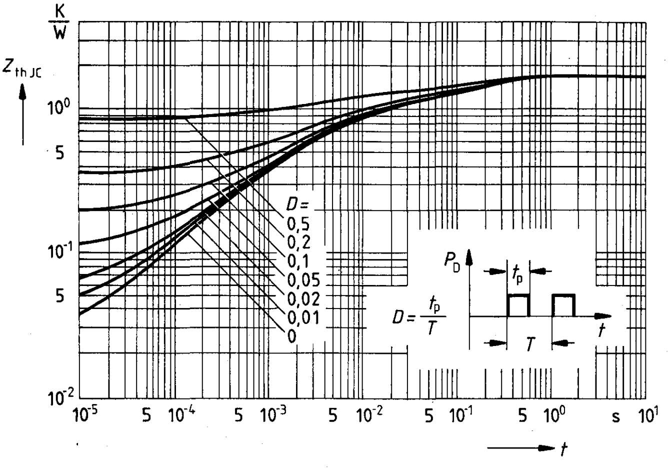
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 μs pulse test,
$V_{DS} = 25$V, $T_j = 25$°C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ μs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

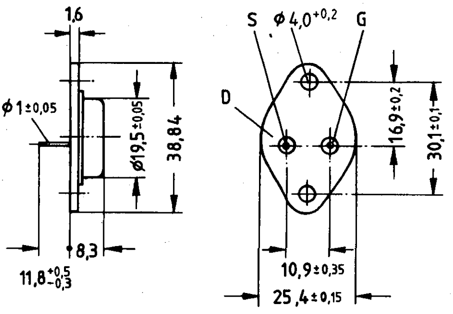


Drain-source voltage	V_{DS}	**= 400 V**
Continuous drain current	I_D	**= 5,9 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 1,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Metal case 3A2 in accordance with DIN 41872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 63	C67078-A1016-A2



Dimensions in mm

Absolute maximum ratings		
Drain-source voltage	V_{DS}	400V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	400V
Continuous drain current, T_{case} = 25 °C	I_D	5,9A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	23A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	78W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\ JA}$	≤35K/W
	$R_{th\ JC}$	≤1,6K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	400	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 400V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,9	1,0	Ω	V_{GS} = 10V I_D = 2,5A

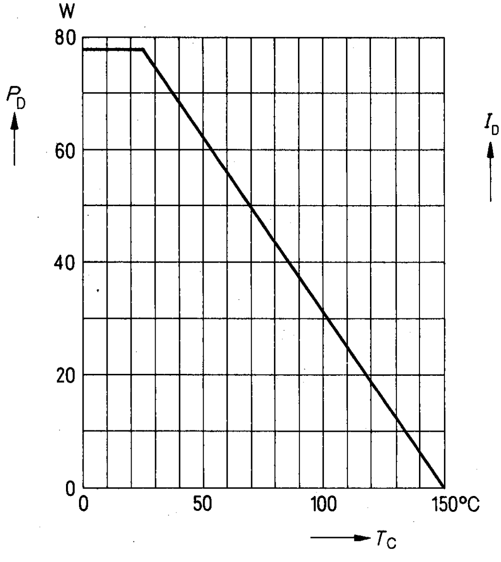
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,7	2,5	–	S	V_{DS} = 25V I_D = 2,5A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	120	180		
Reverse transfer capacitance	C_{rss}	–	35	60		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,7A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	110	140		
	t_f	–	50	65		

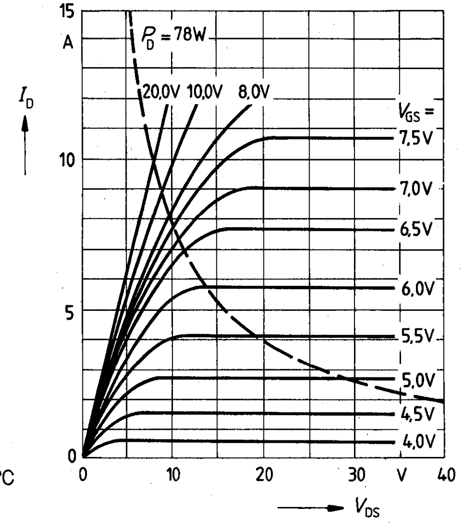
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	5,9	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	23		
Diode forward on-voltage	V_{SD}	–	1,2	1,65	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1000	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	5	–	µC	

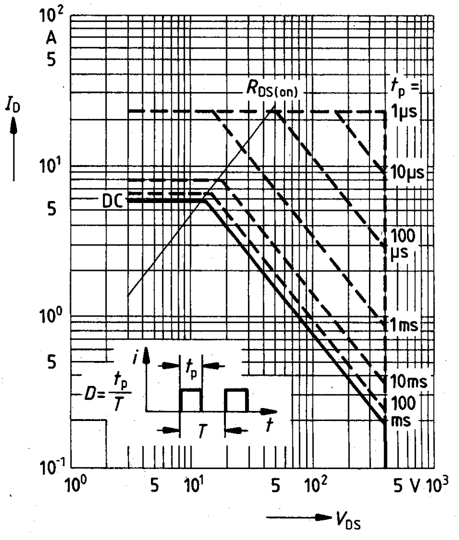
Power dissipation $P_D = f(T_{case})$



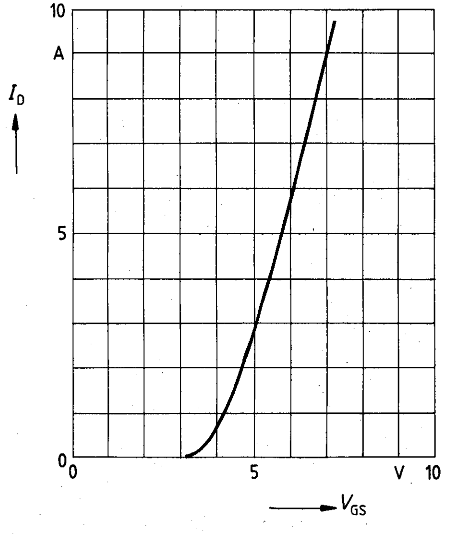
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



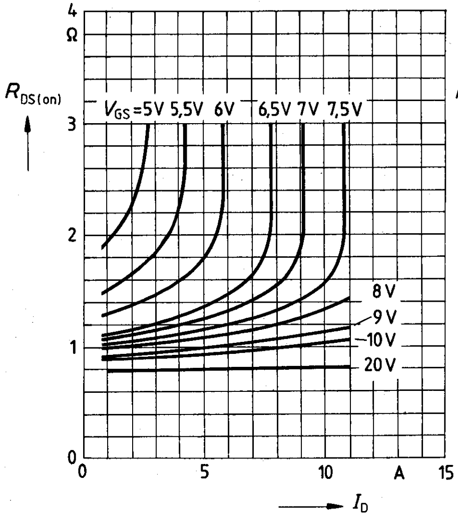
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



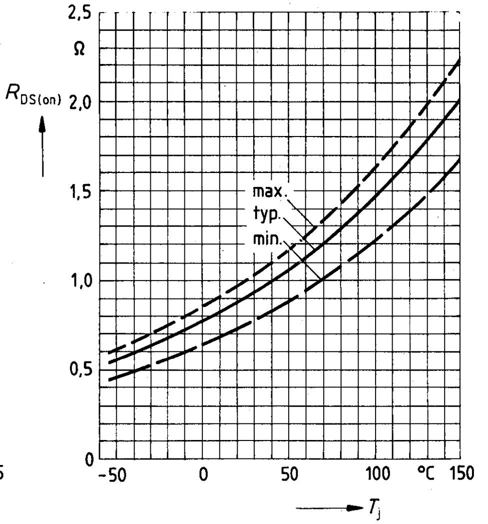
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



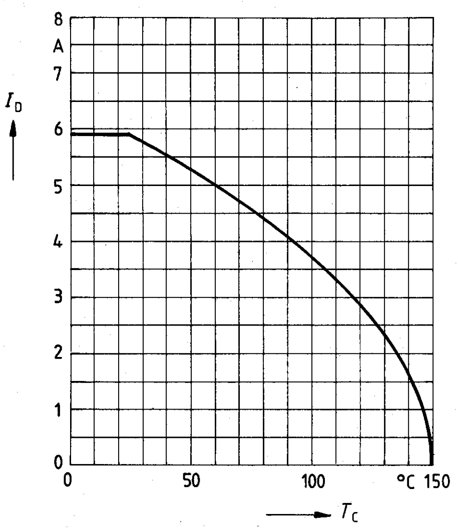
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



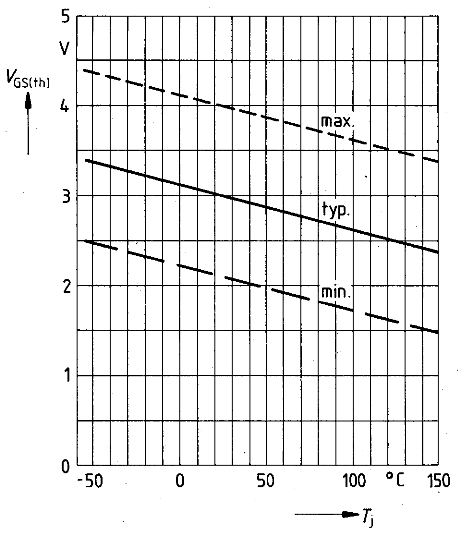
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 2.5\,A$, $V_{GS} = 10\,V$



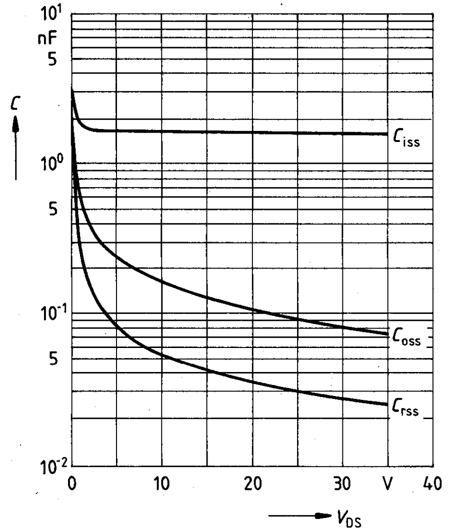
Continuous drain current $I_D = f(T_{case})$



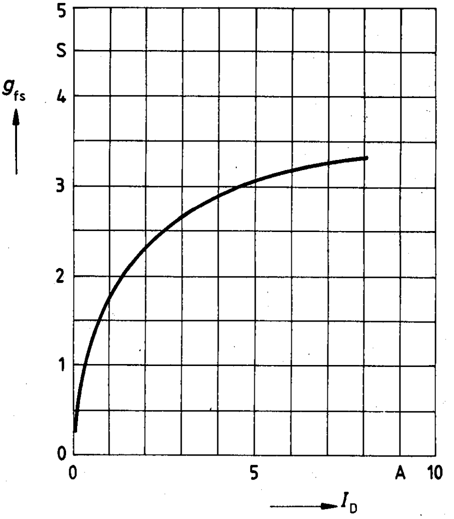
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



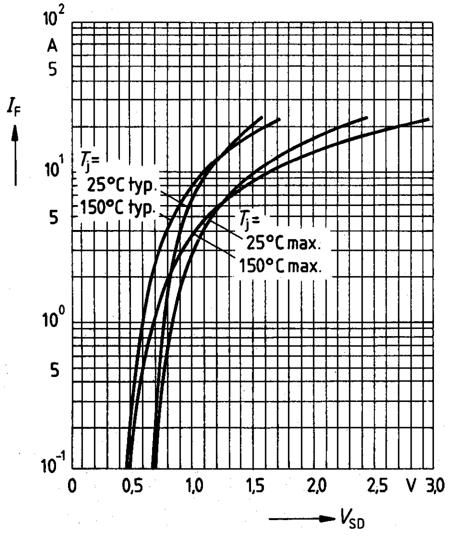
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



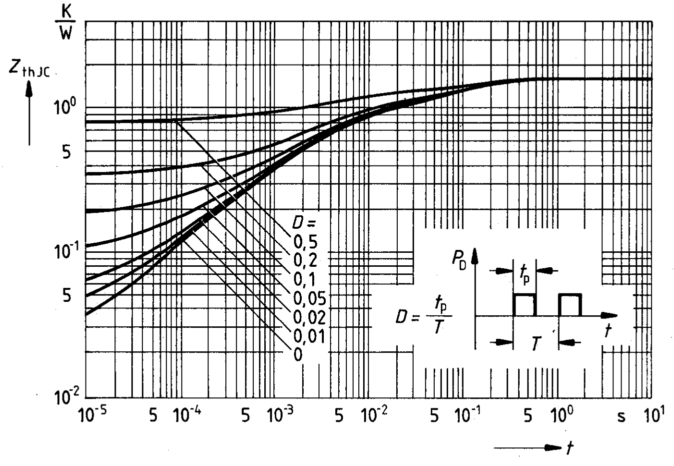
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



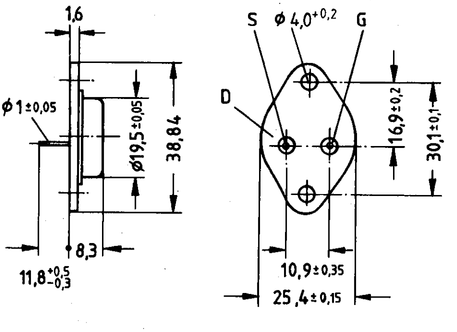
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **400 V**
Continuous drain current I_D = **4,5 A**
Drain-source on-resistance $R_{DS(on)}$ = **1,5 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Metal case 3A2 in accordance with DIN 41 872,
or TO 204 AA (TO 3) in accordance with JEDEC.
Approx. weight 12 g

Type	Ordering code
BUZ 63 B	C67078-A1016-A4



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	400V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	400V
Continuous drain current, T_{case} = 40 °C	I_D	4,5A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	18A
Gate-source voltage	V_{GS}	± 20V
Max. power dissipation	P_D	78W
Operating and storage temperature range	T_j T_{stg}	− 55 °C ... + 150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\ JA}$	≤ 35K/W
	$R_{th\ JC}$	≤ 1,6K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	400	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 400V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	1,2	1,5	Ω	V_{GS} = 10V I_D = 2,5A

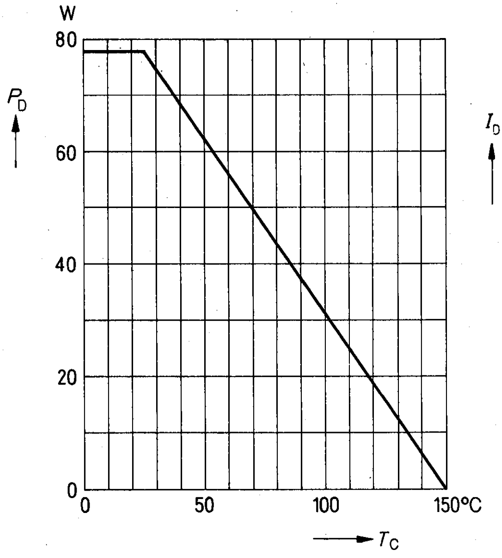
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,7	2,5	–	S	V_{DS} = 25V I_D = 2,5A
Input capacitance	C_{iss}	–	1500	2000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	120	180		
Reverse transfer capacitance	C_{rss}	–	35	60		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,6A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	110	140		
	t_f	–	50	65		

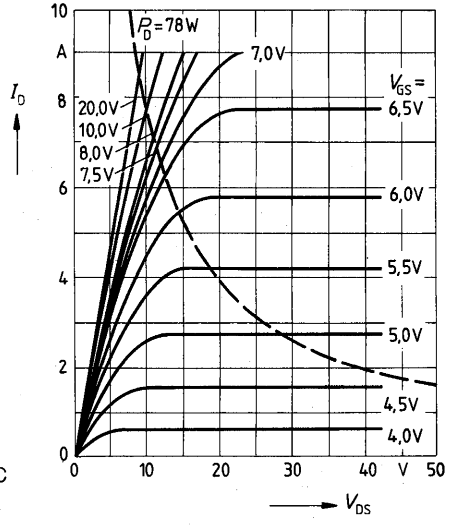
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	4,5	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	18		
Diode forward on-voltage	V_{SD}	–	1,15	1,50	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1000	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	5	–	µC	

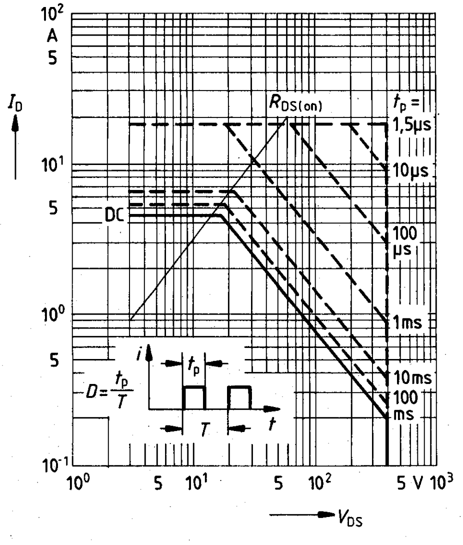
Power dissipation $P_D = f(T_{case})$



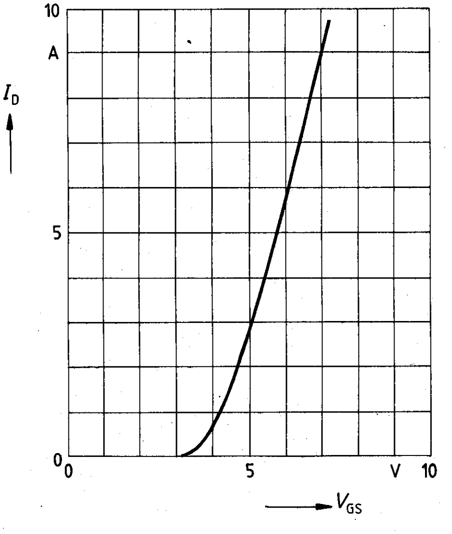
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



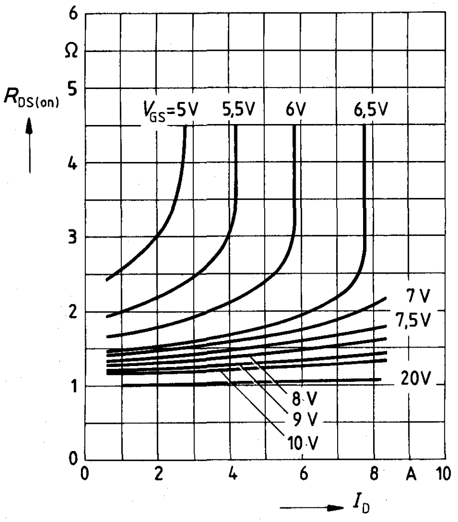
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



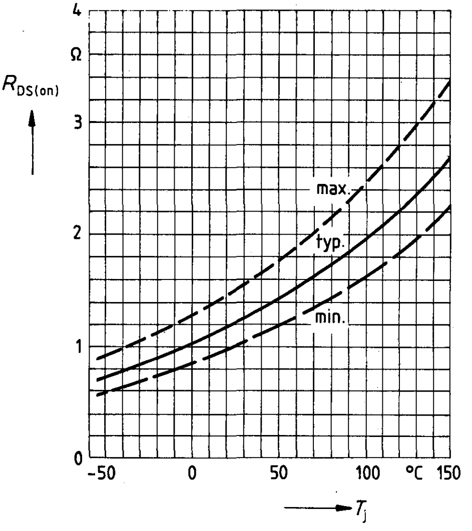
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



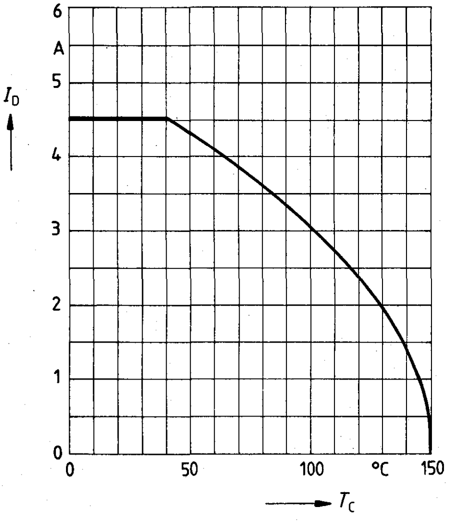
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



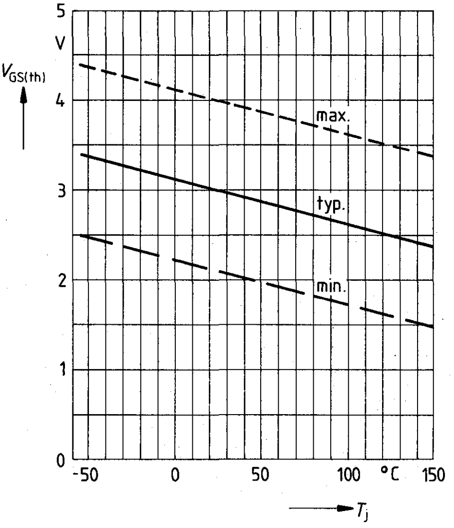
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 2.5$ A, $V_{GS} = 10$ V



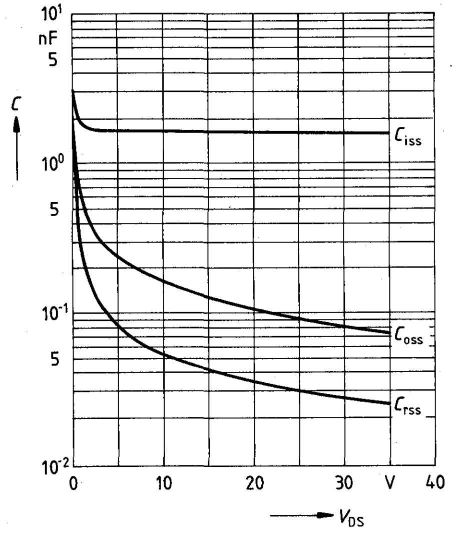
Continuous drain current $I_D = f(T_{case})$



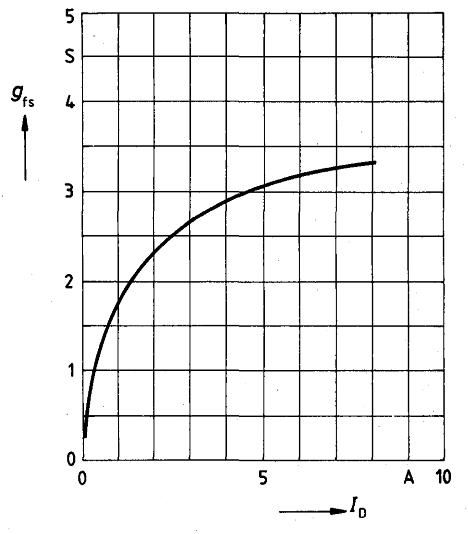
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



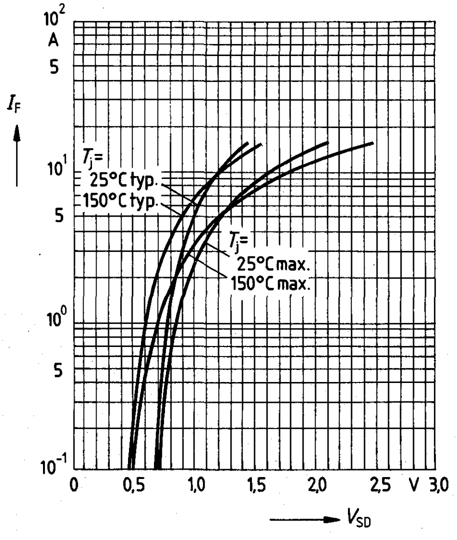
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



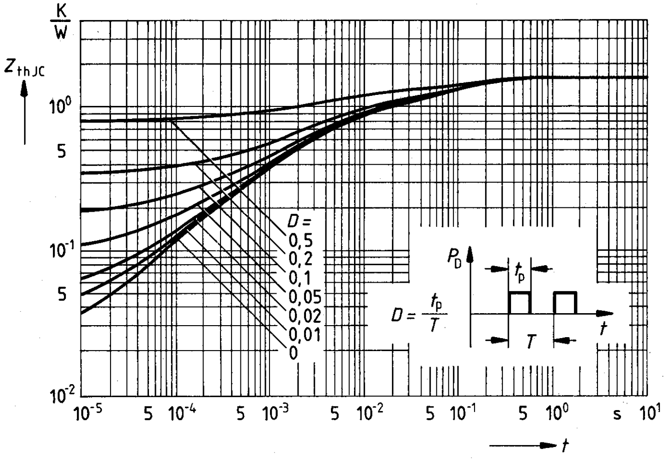
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p/T$

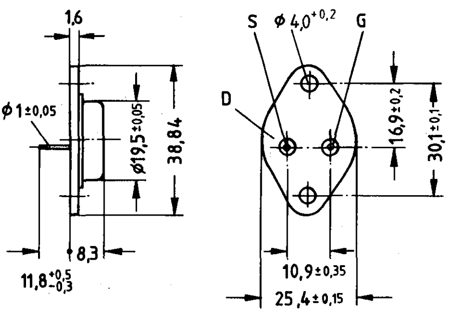


Drain-source voltage	V_{DS}	**= 400 V**
Continuous drain current	I_D	**= 11,5 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 0,4 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 64	C67078-A1017-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	400V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	400V
Continuous drain current, T_{case} = 30 °C	I_D	11,5A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	46A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\ JA}$	≤35K/W
	$R_{th\ JC}$	≤1,0K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)DSS}$	400	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 400V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS(on)}$	–	0,35	0,40	Ω	V_{GS} = 10V I_D = 5A

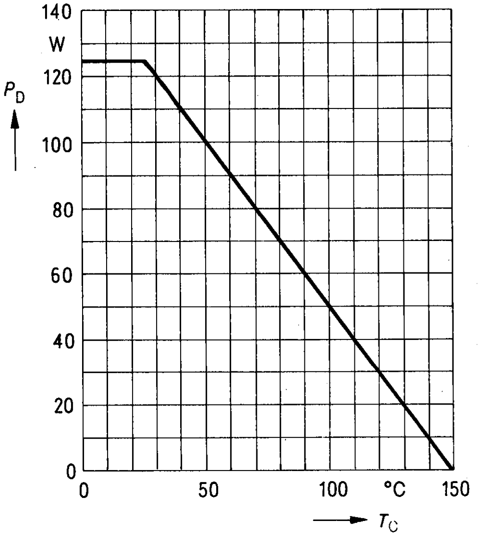
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	3,3	4,5	–	S	V_{DS} = 25V I_D = 5A
Input capacitance	C_{iss}	–	3800	4900	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	300	500		
Reverse transfer capacitance	C_{rss}	–	120	200		
Turn-on time t_{on} ($t_{on} = t_{d(on)} + t_r$)	$t_{d(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	80	120		
Turn-off time t_{off} ($t_{off} = t_{d(off)} + t_f$)	$t_{d(off)}$	–	330	430		
	t_f	–	110	140		

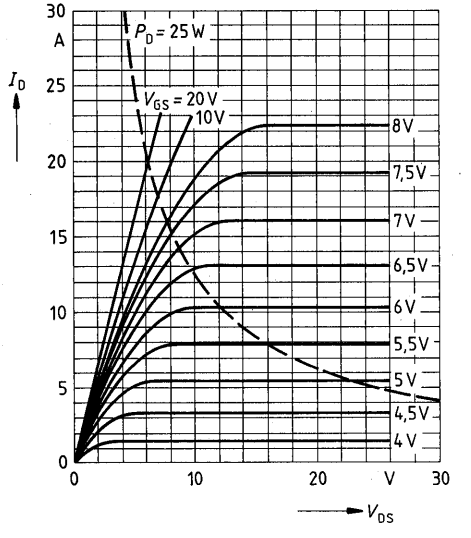
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	11,5	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	46		
Diode forward on-voltage	V_{SD}	–	1,3	1,7	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1000	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	10	–	µC	

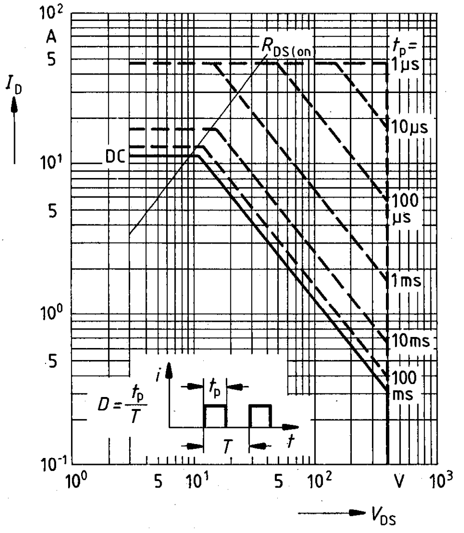
Power dissipation $P_D = f(T_{case})$



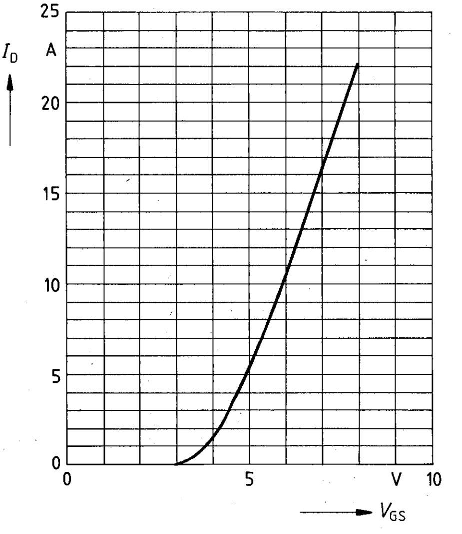
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 μs pulse test,
$T_{case} = 25°C$



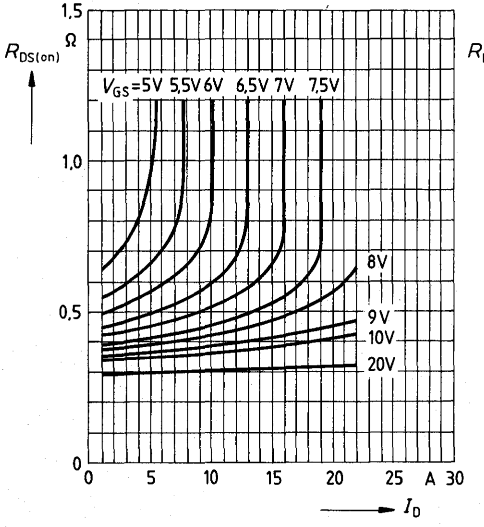
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



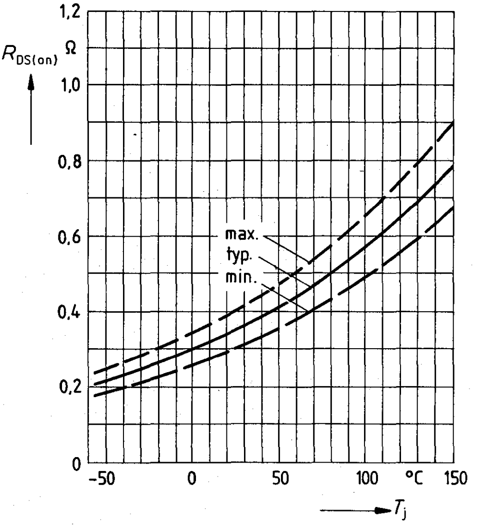
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 μs pulse test,
$V_{DS} = 25$V, $T_j = 25°C$



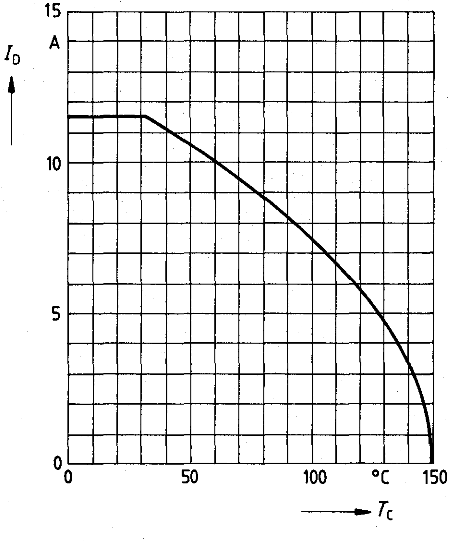
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



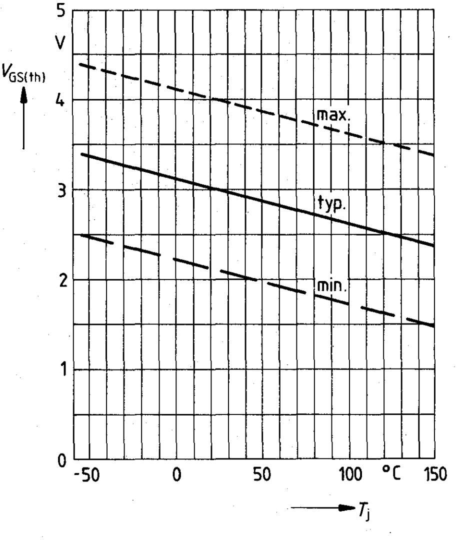
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 5.0$ A, $V_{GS} = 10$ V



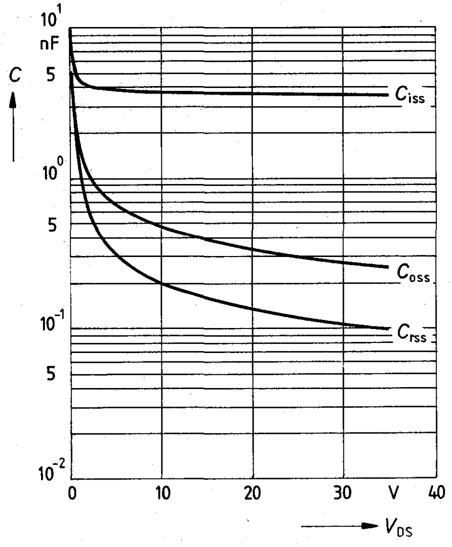
Continuous drain current $I_D = f(T_{case})$



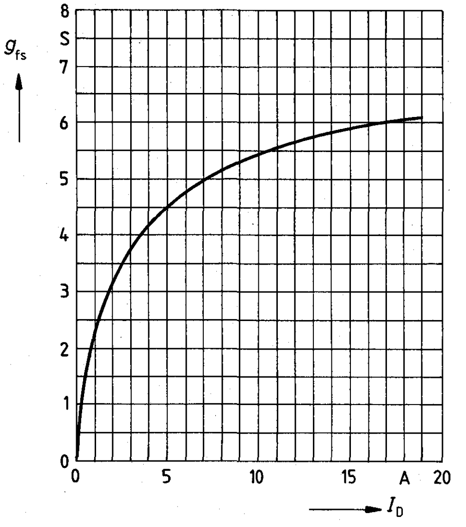
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



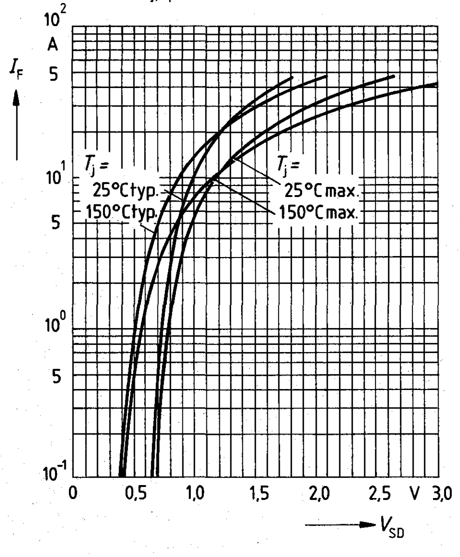
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



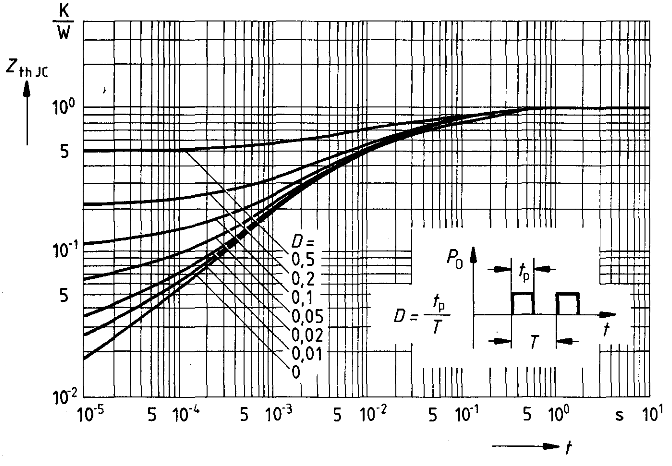
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



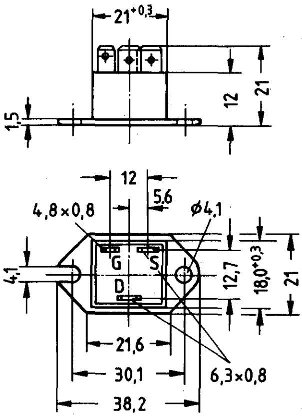
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 400 V**
Continuous drain current I_D **= 9,6 A**
Drain-source on-resistance $R_{DS(on)}$ **= 0,4 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package TO 238 AA with insulated metal base plate in accordance with JEDEC, compatible with TO 3; AMP plug-in connections.
Approx. weight 21 g

Type	Ordering code
BUZ 67	C67078-A1610-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	400V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	400V
Continuous drain current, T_{case} = 25 °C	I_D	9,6A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	38A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	83,3W
Operating and storage temperature range	T_j T_{stg}	−40 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	3500Vdc[1])
DIN humidity category		F
Thermal resistance	$R_{th\,JA}$	–
	$R_{th\,JC}$	≤1,5K/W

[1]) Isolation test voltage between drain and heat sink referred to standard climate 23/50 in accordance with DIN 50014.

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	400	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 400V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,35	0,40	Ω	V_{GS} = 10V I_D = 5A

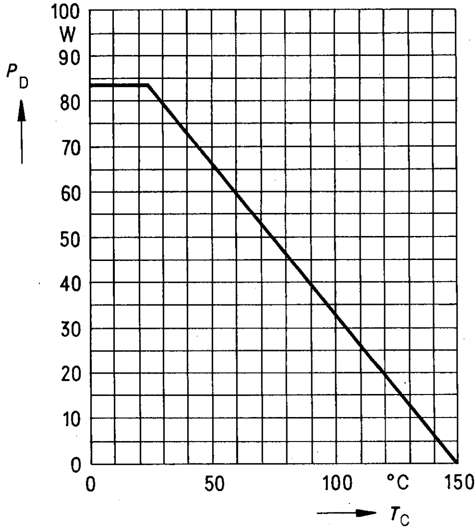
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	3,3	4,5	–	S	V_{DS} = 25V I_D = 5A
Input capacitance	C_{iss}	–	3800	4900	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	300	500		
Reverse transfer capacitance	C_{rss}	–	120	200		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	80	120		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		

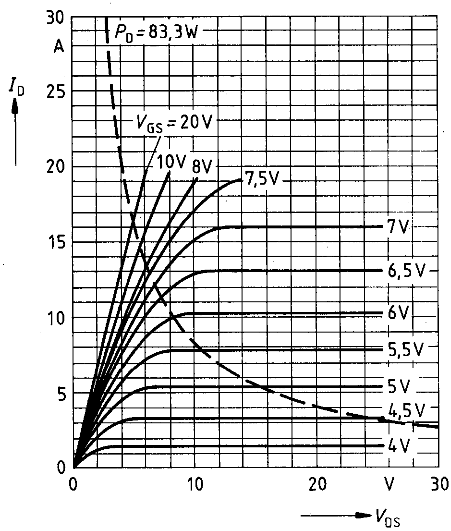
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	9,6	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	38		
Diode forward on-voltage	V_{SD}	–	1,3	1,7	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1000	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	10	–	µC	

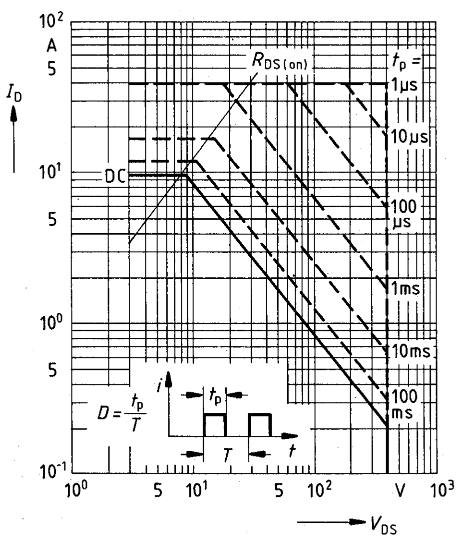
Power dissipation $P_D = f(T_{case})$



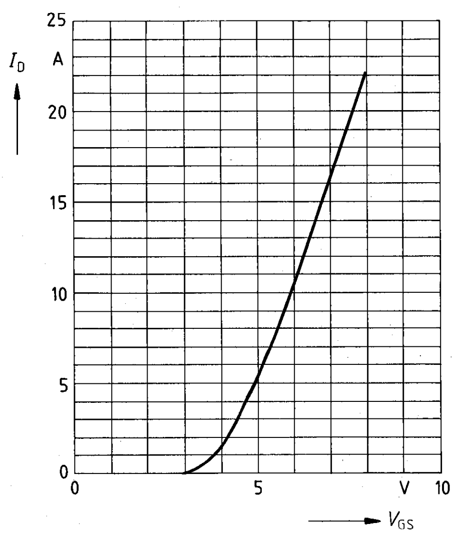
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 μs pulse test,
T_{case} = 25 °C



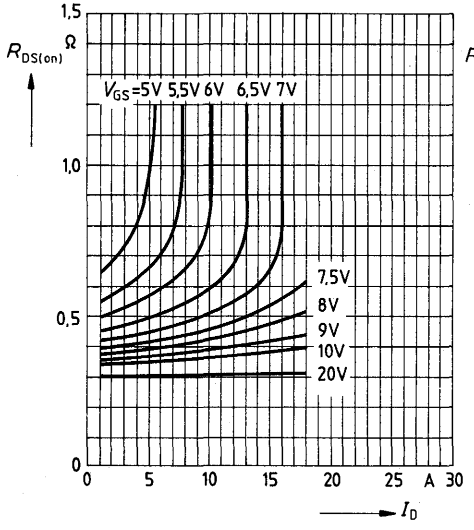
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



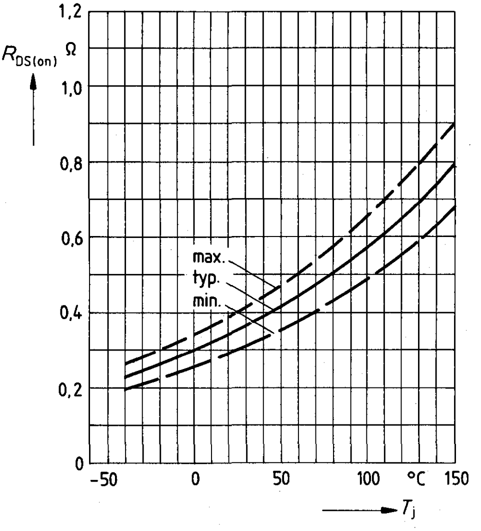
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 μs pulse test,
V_{DS} = 25V, T_j = 25 °C



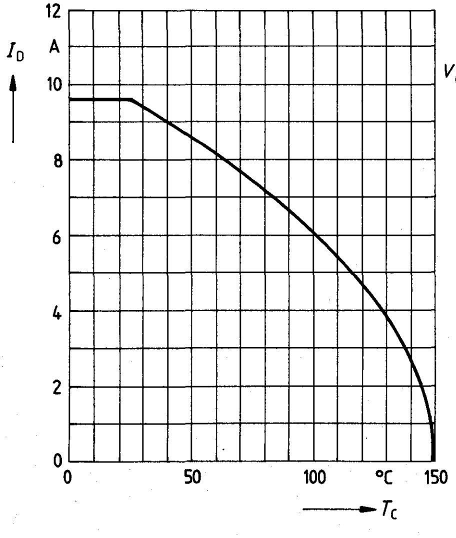
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



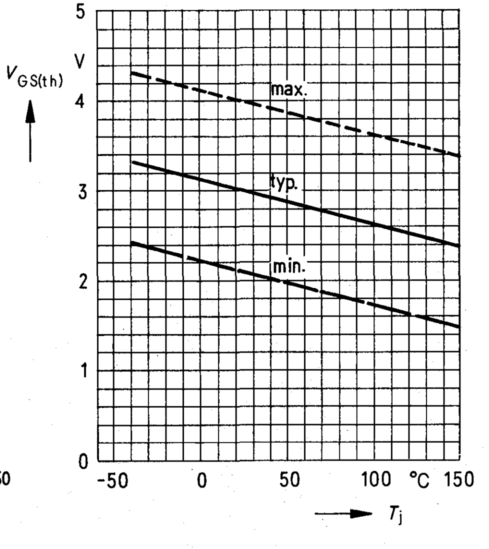
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 5.0\,A$, $V_{GS} = 10\,V$



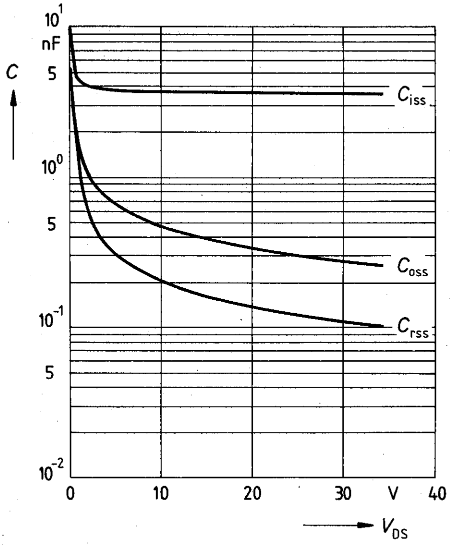
Continuous drain current $I_D = f(T_{case})$



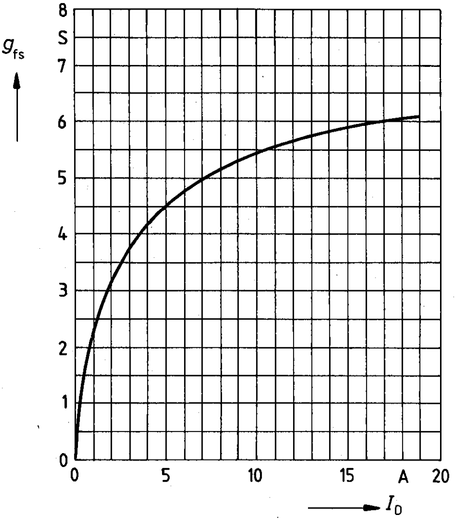
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



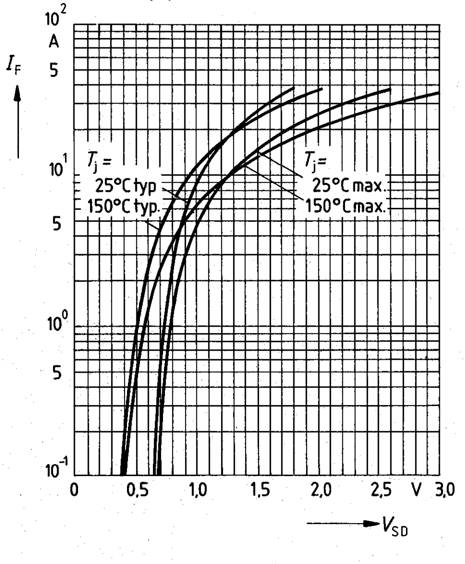
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



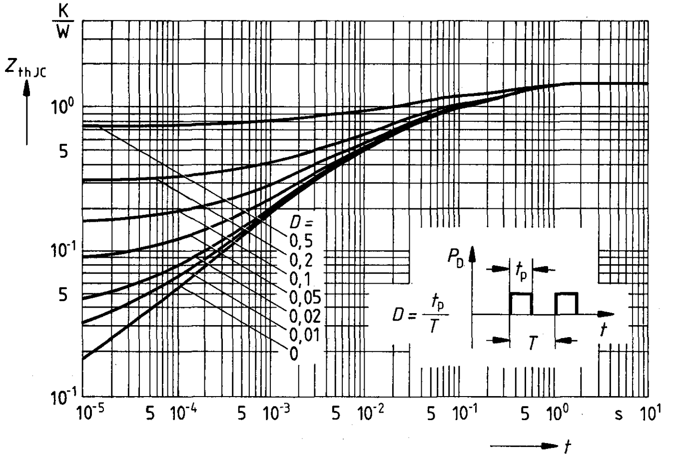
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



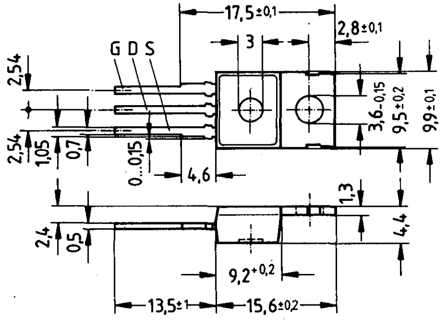
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **50 V**
Continuous drain current I_D = **12 A**
Drain-source on-resistance $R_{DS(on)}$ = **0,1 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 71	C67078-A1316-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	50V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	50V
Continuous drain current, T_{case} = 60 °C	I_D	12A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	48A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	40W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤75K/W
	$R_{th\,JC}$	≤3,1K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	50	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,2	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	25 50	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 50V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,09	0,1	Ω	V_{GS} = 10V I_D = 6A

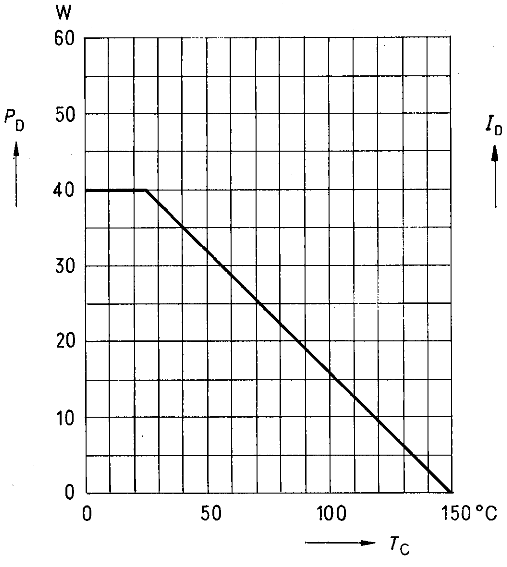
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	3,0	4,8	–	S	V_{DS} = 25V I_D = 6A
Input capacitance	C_{iss}	–	480	650	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	280	450		
Reverse transfer capacitance	C_{rss}	–	160	280		
Turn-on time t_{on}	$t_{d\,(on)}$	–	20	30	ns	V_{CC} = 30V I_D = 3A V_{GS} = 10V R_{GS} = 50Ω
($t_{on} = t_{d\,(on)} + t_r$)	t_r	–	55	85		
Turn-off time t_{off}	$t_{d\,(off)}$	–	70	90		
($t_{off} = t_{d\,(off)} + t_f$)	t_f	–	80	110		

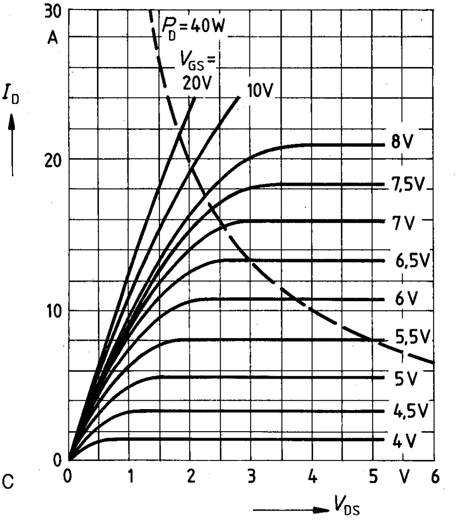
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	12	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	48		
Diode forward on-voltage	V_{SD}	–	1,6	2,2	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	120	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	0,15	–	µC	

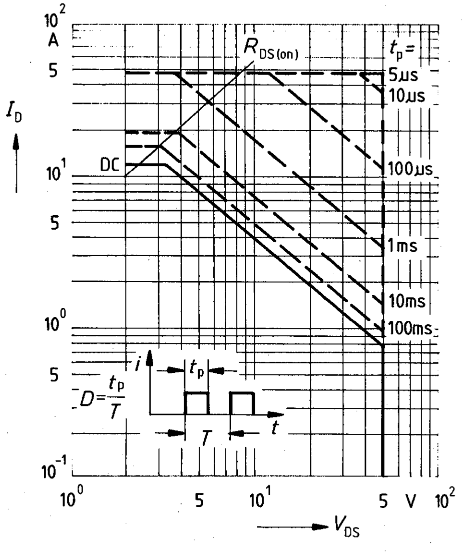
Power dissipation $P_D = f(T_{case})$



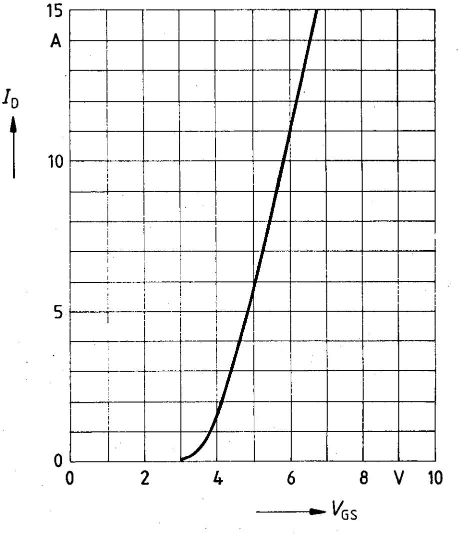
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



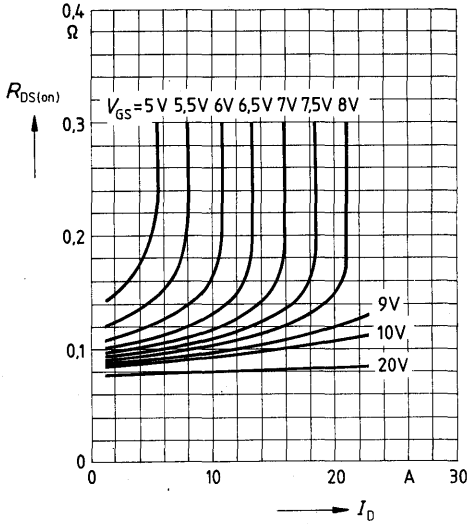
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



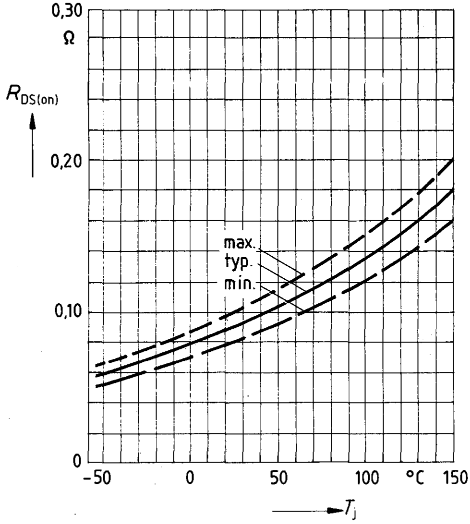
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



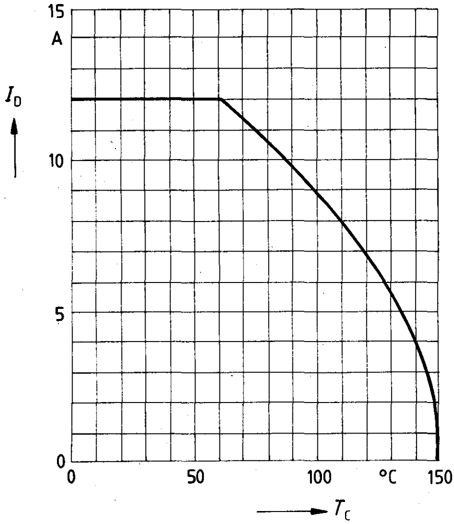
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



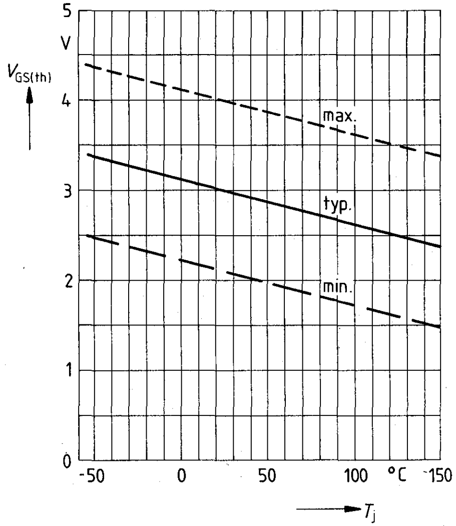
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 6\,A$, $V_{GS} = 10\,V$



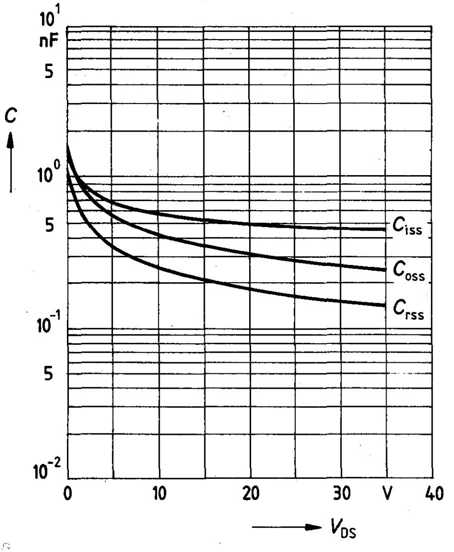
Continuous drain current $I_D = f(T_{case})$



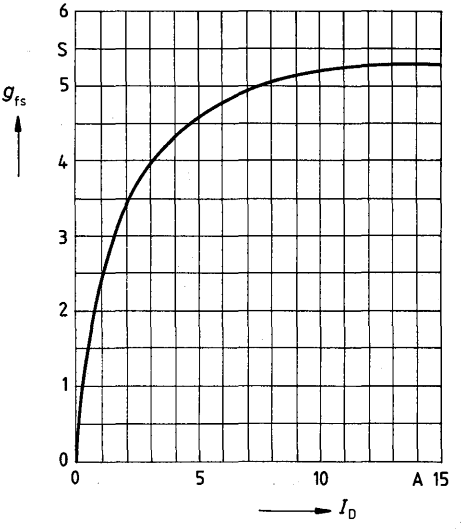
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



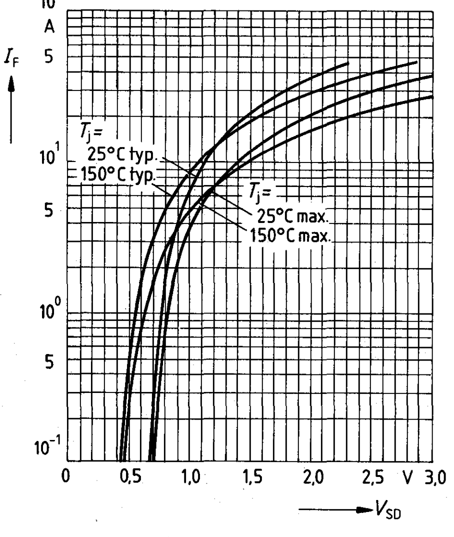
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



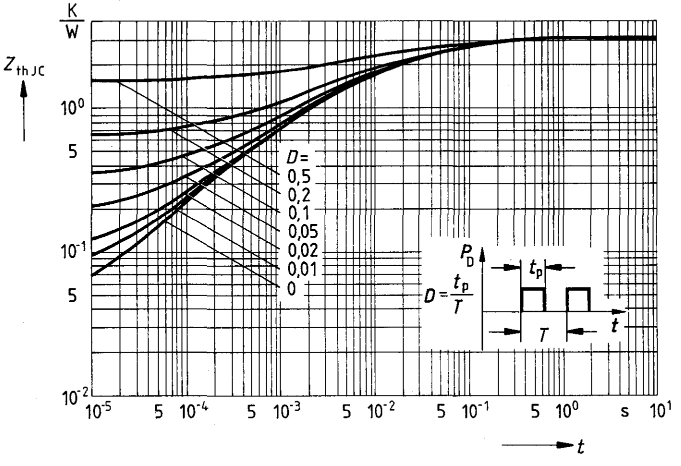
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$°C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



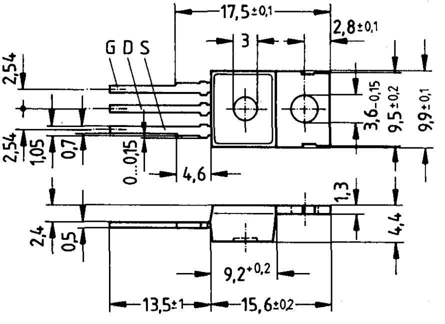
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 50 V**
Continuous drain current I_D **= 12 A**
Drain-source on-resistance $R_{DS(on)}$ **= 0,12 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 71 A	C67078-A1316-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	50V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	50V
Continuous drain current, T_{case} = 40 °C	I_D	12A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	48A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	40W
Operating and storage temperature range	T_j T_{stg}	−55 °C... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤75K/W
	$R_{th\,JC}$	≤3,1K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	50	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,1	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 50V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,11	0,12	Ω	V_{GS} = 10V I_D = 6A

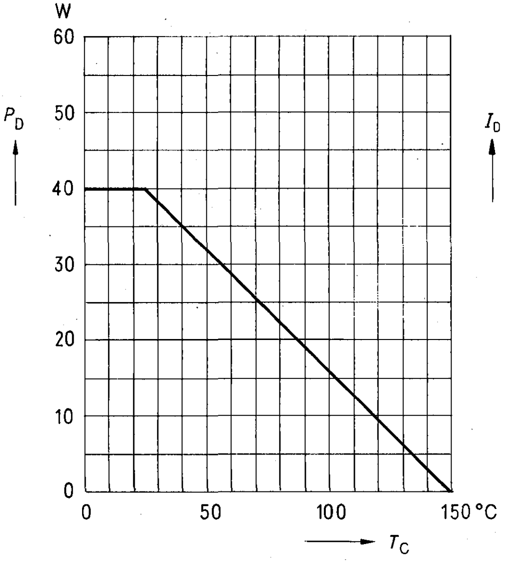
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	3,0	4,8	–	S	V_{DS} = 25V I_D = 6A
Input capacitance	C_{iss}	–	480	650	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	280	450		
Reverse transfer capacitance	C_{rss}	–	160	280		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	20	30	ns	V_{CC} = 30V I_D = 3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	55	85		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	70	90		
	t_f	–	80	110		

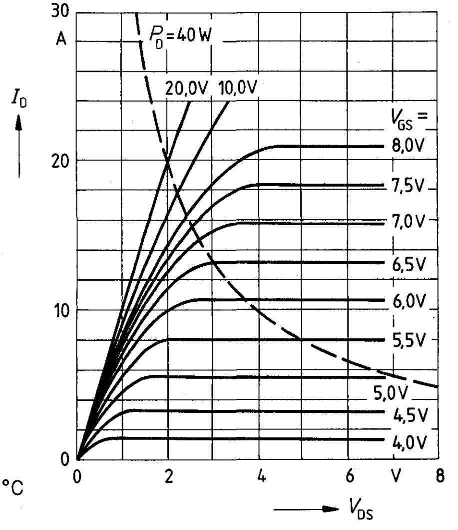
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	12	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	48		
Diode forward on-voltage	V_{SD}	–	1,6	2,2	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	120	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	0,15	–	µC	

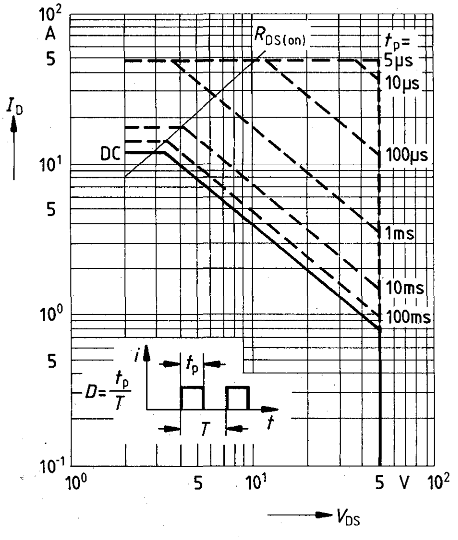
Power dissipation $P_D = f(T_{case})$



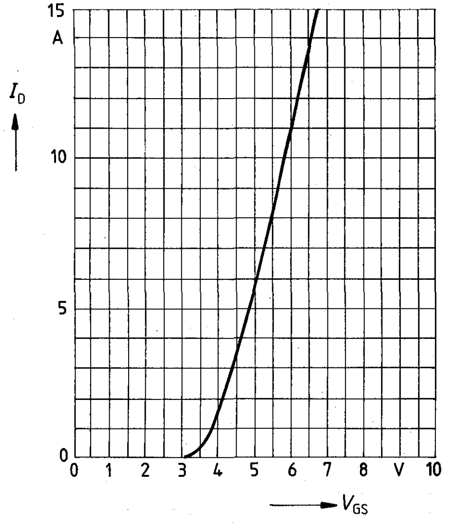
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25$ °C



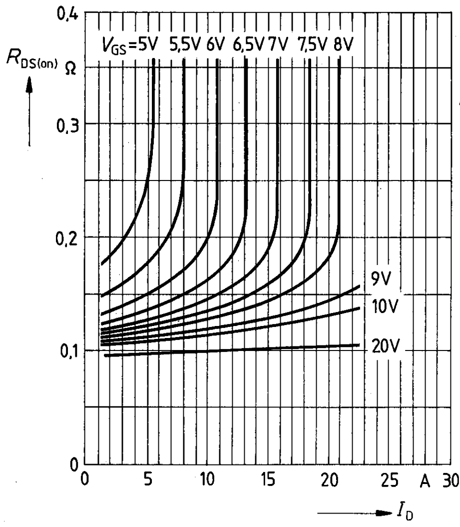
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25$ °C



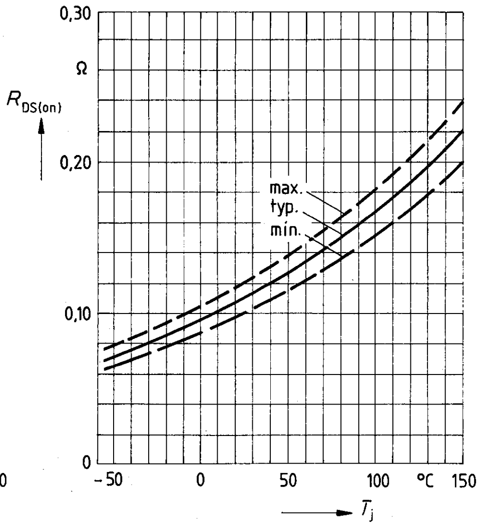
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$ °C



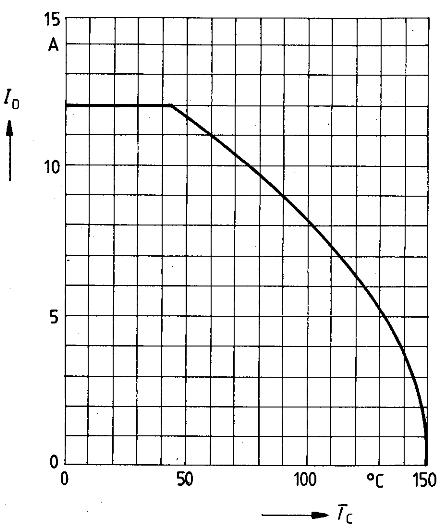
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



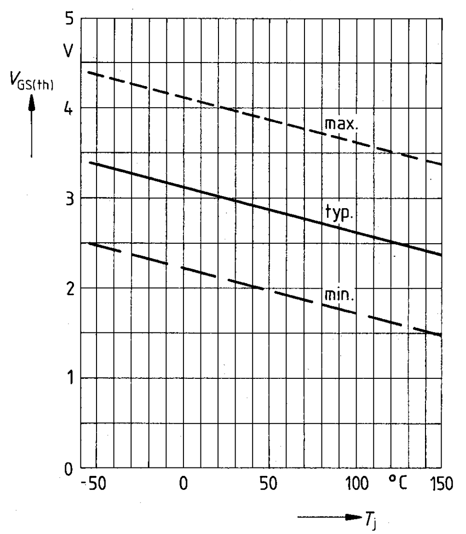
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 6\,A$, $V_{GS} = 10\,V$



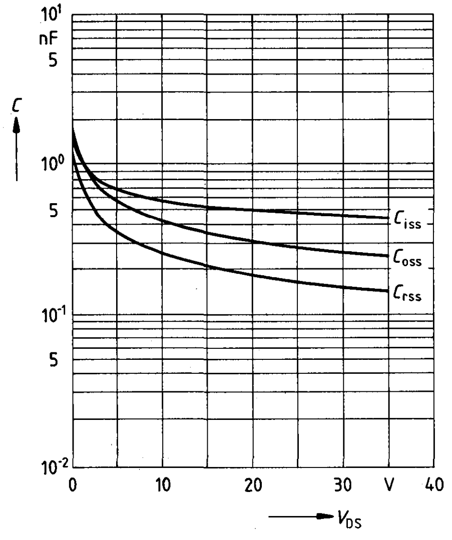
Continuous drain current $I_D = f(T_{case})$



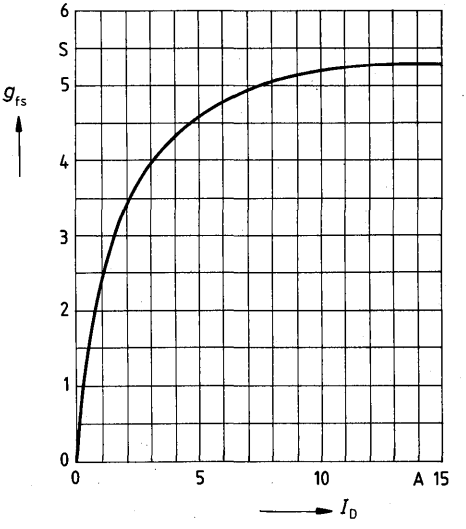
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



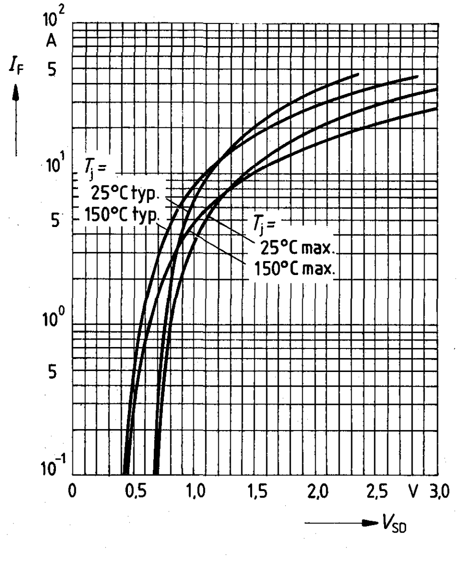
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



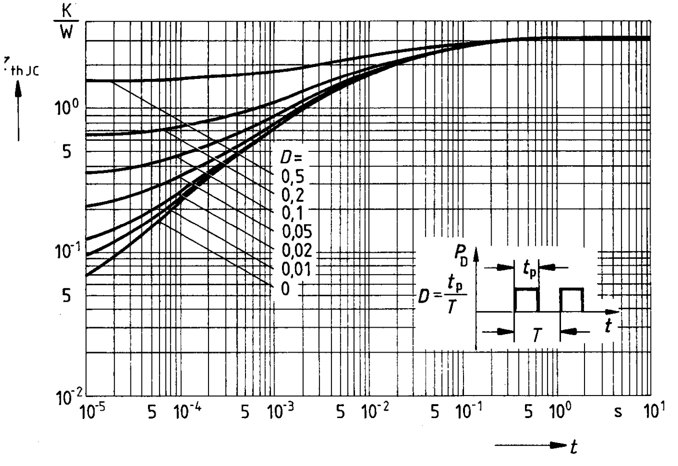
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$ °C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

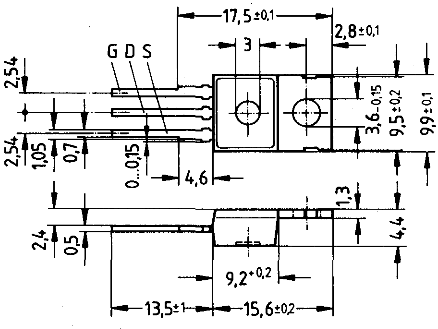


Drain-source voltage	V_{DS}	**= 100 V**
Continuous drain current	I_D	**= 10 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 0,2 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC. The drain terminal is conductively connected to the mounting flange. Approx. weight 2 g

Type	Ordering code
BUZ 72	C67078-A1313-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	100V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	100V
Continuous drain current, T_{case} = 25 °C	I_D	10A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	40A
Gate-source voltage	V_{GS}	± 20V
Max. power dissipation	P_D	40W
Operating and storage temperature range	T_j T_{stg}	– 55 °C ... + 150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤75K/W
	$R_{th\ JC}$	≤3,1K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	50	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,2	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 100V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,17	0,2	Ω	V_{GS} = 10V I_D = 5A

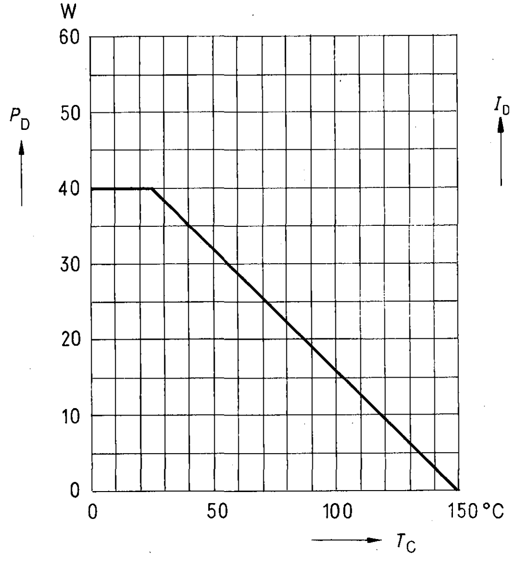
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,7	3,8	–	S	V_{DS} = 25V I_D = 5A
Input capacitance	C_{iss}	–	450	600	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	150	240		
Reverse transfer capacitance	C_{rss}	–	80	130		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	20	30	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	45	70		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	70	90		
	t_f	–	55	70		

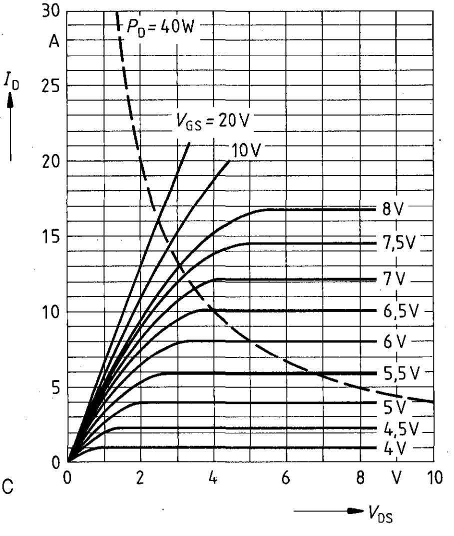
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	10	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	40		
Diode forward on-voltage	V_{SD}	–	1,55	2,1	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	170	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	0,30	–	µC	

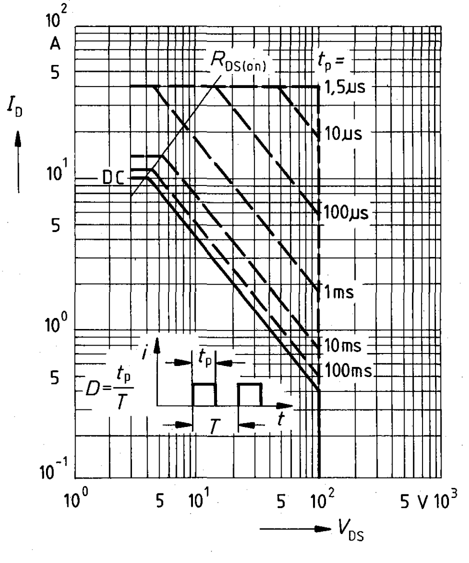
Power dissipation $P_D = f(T_{case})$



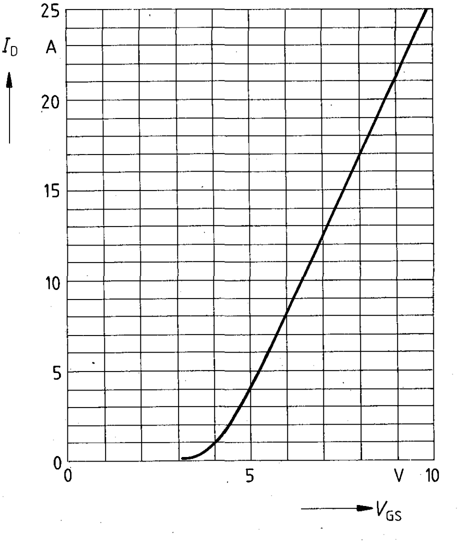
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



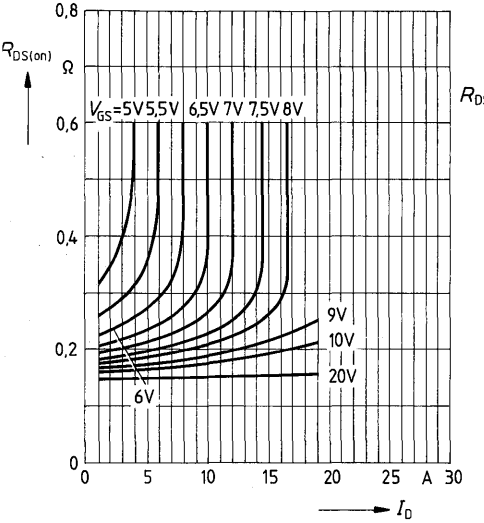
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



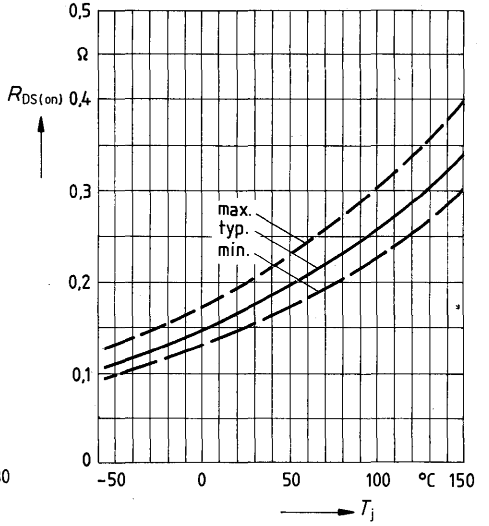
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



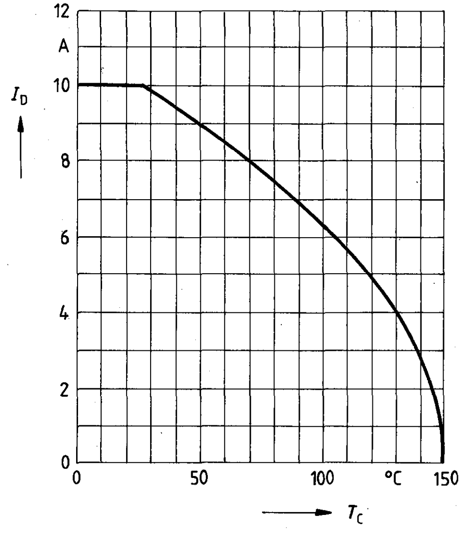
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



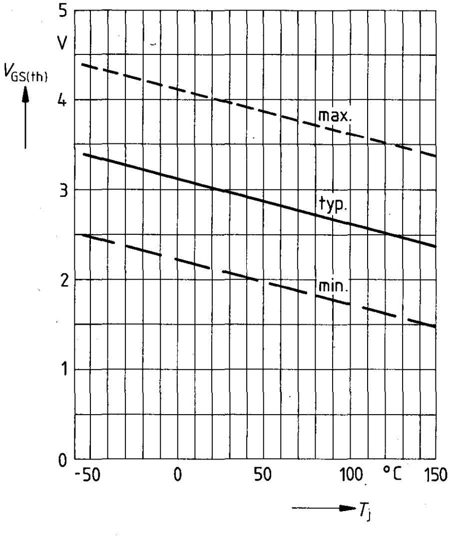
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 5.0\,A$, $V_{GS} = 10\,V$



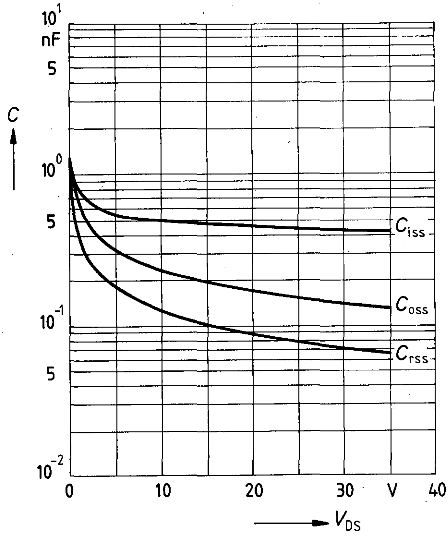
Continuous drain current $I_D = f(T_{case})$



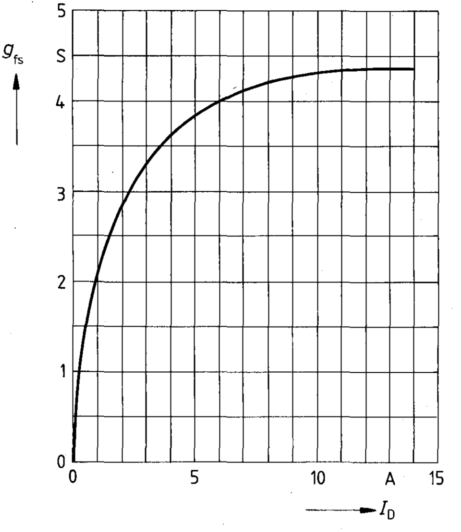
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



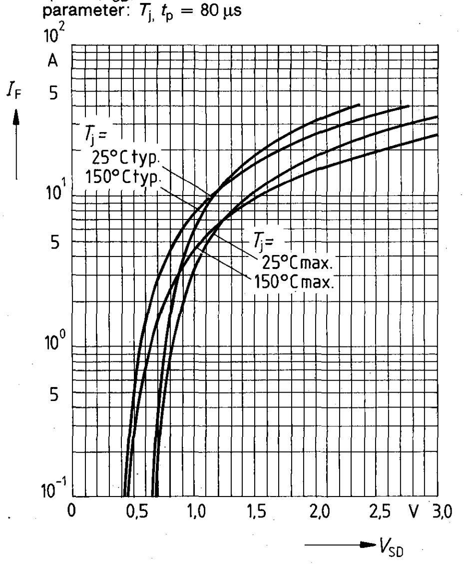
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



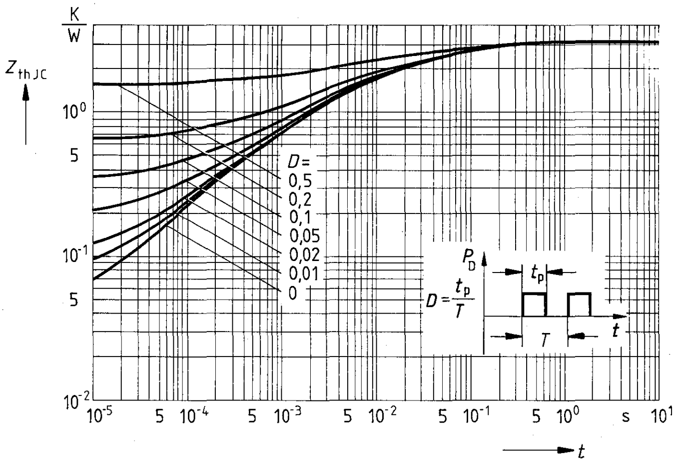
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



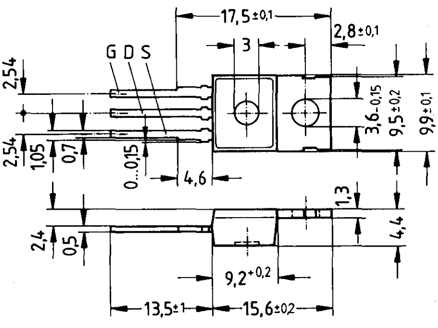
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 100 V**
Continuous drain current I_D **= 9,0 A**
Drain-source on-resistance $R_{DS(on)}$ **= 0,25 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 72 A	C67078-A1313-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	100V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	100V
Continuous drain current, T_{case} = 25 °C	I_D	9,0A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	36A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	40W
Operating and storage temperature range	T_j T_{stg}	−55 °C... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤75K/W
	$R_{th\,JC}$	≤3,1K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	100	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,2	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 100V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,23	0,25	Ω	V_{GS} = 10V I_D = 5A

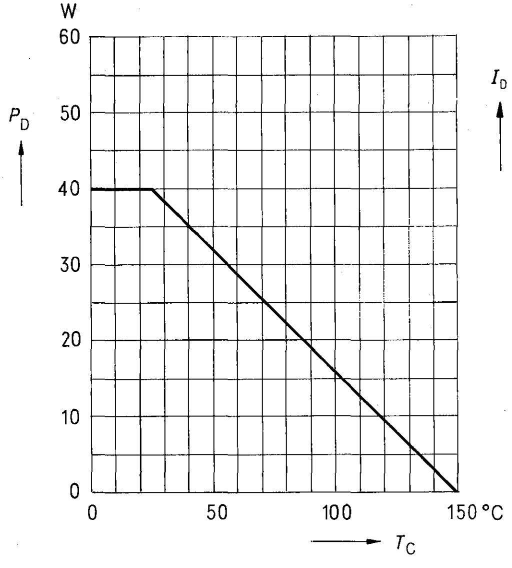
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,7	3,8	–	S	V_{DS} = 25V I_D = 5A
Input capacitance	C_{iss}	–	450	600	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	150	240		
Reverse transfer capacitance	C_{rss}	–	80	130		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	20	30	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	45	70		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	70	90		
	t_f	–	55	70		

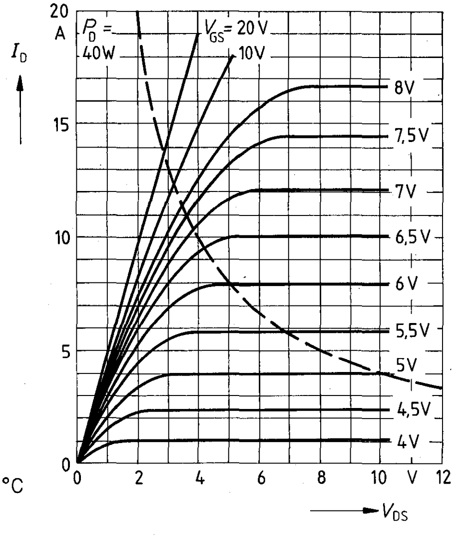
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	9,0	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	36		
Diode forward on-voltage	V_{SD}	–	1,5	2,0	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	170	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	0,30	–	µC	

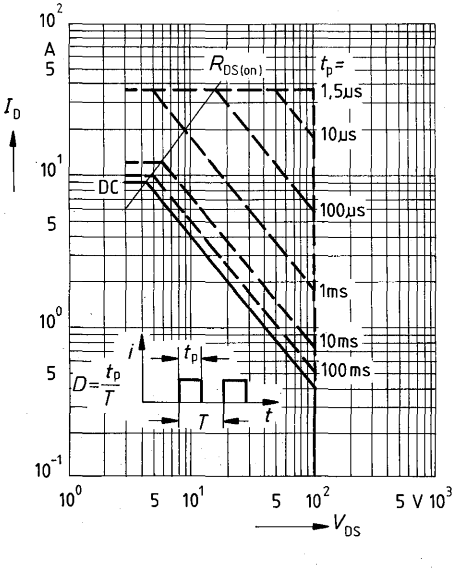
Power dissipation $P_D = f(T_{case})$



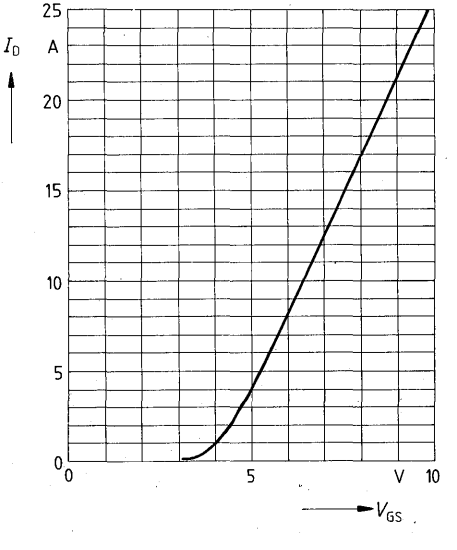
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



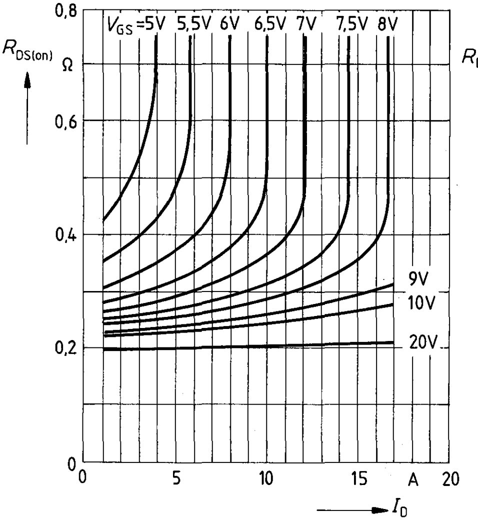
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



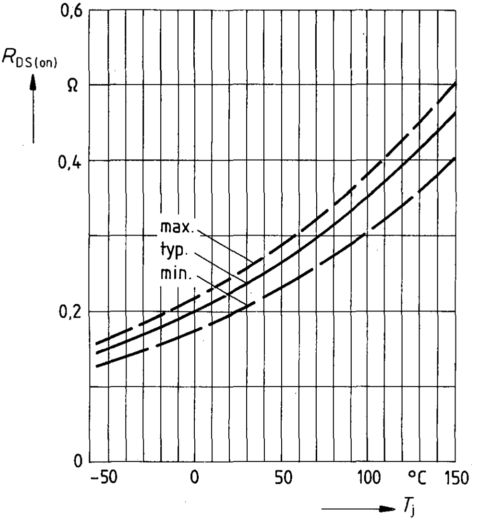
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



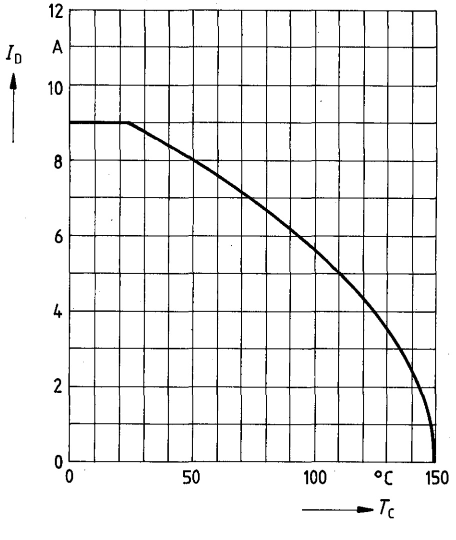
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



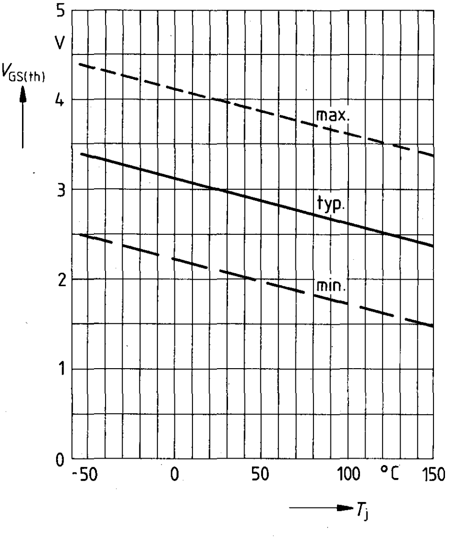
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 5$ A, $V_{GS} = 10$ V



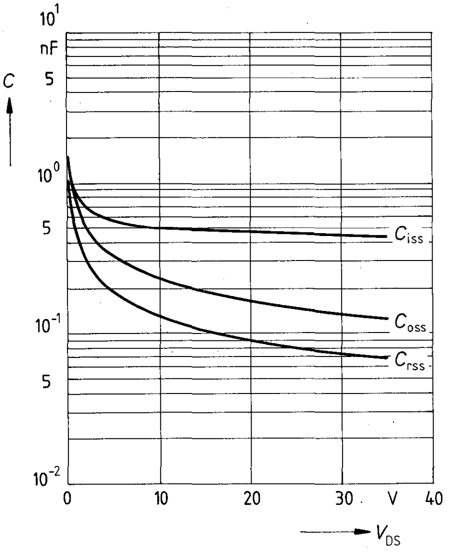
Continuous drain current $I_D = f(T_{case})$



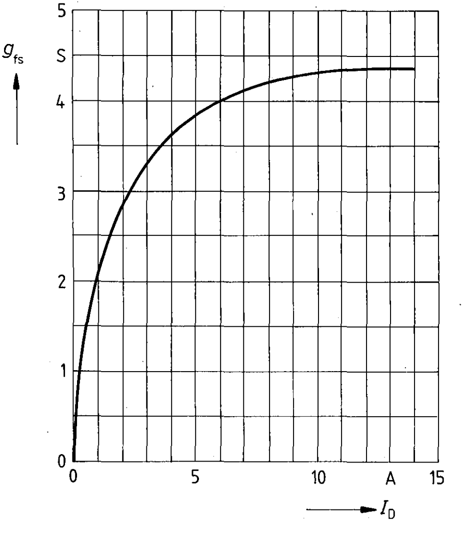
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



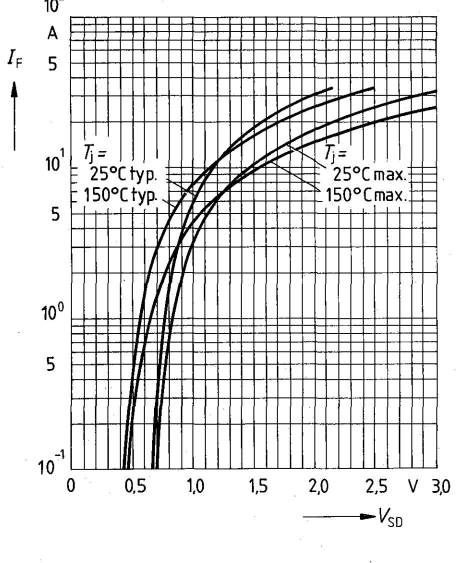
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



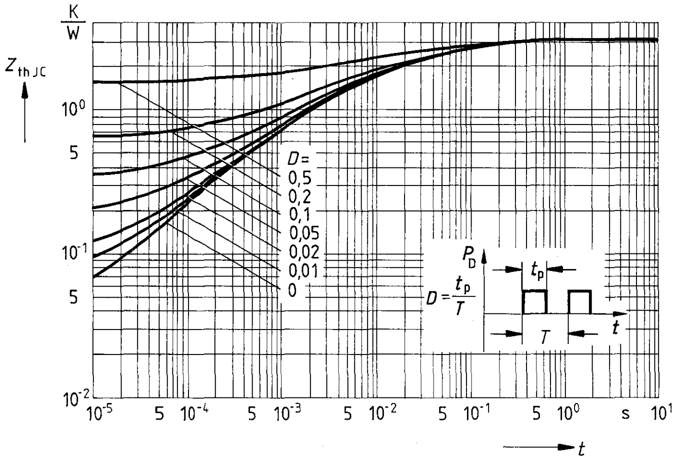
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



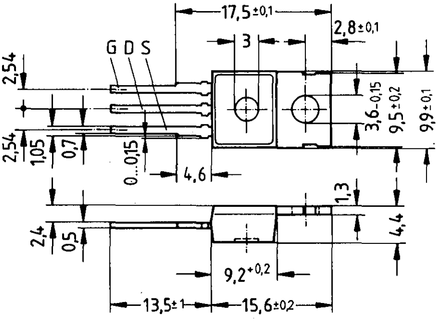
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 200 V**
Continuous drain current I_D **= 7 A**
Drain-source on-resistance $R_{DS(on)}$ **= 0,4 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 73	C67078-A1317-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	200V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	200V
Continuous drain current, T_{case} = 25 °C	I_D	7A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	28A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	40W
Operating and storage	T_j	
temperature range	T_{stg}	−55 °C... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤75K/W
	$R_{th\,JC}$	≤3,1K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	200	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 200V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,35	0,4	Ω	V_{GS} = 10V I_D = 3,5A

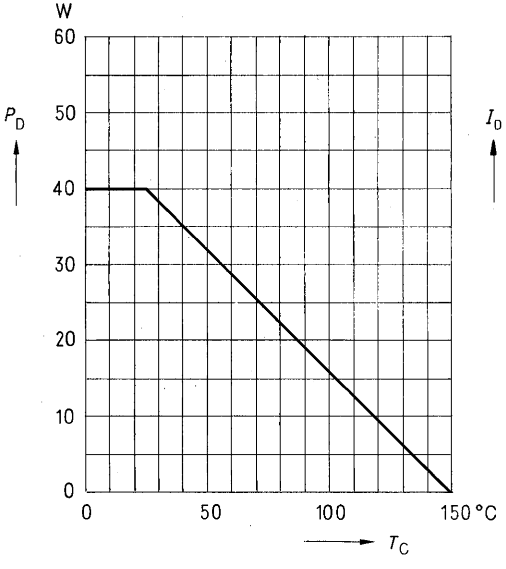
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,2	3,5	–	S	V_{DS} = 25V I_D = 3,5A
Input capacitance	C_{iss}	–	450	600	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	100	160		
Reverse transfer capacitance	C_{rss}	–	50	80		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	15	20	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	70	90		
	t_f	–	40	55		

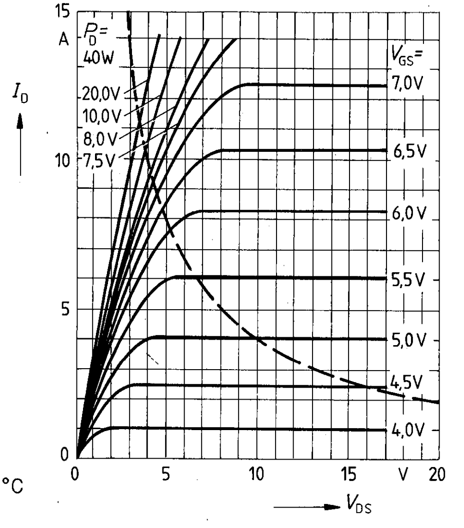
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	7,0	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	28		
Diode forward on-voltage	V_{SD}	–	1,4	1,7	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	0,6	–	µC	

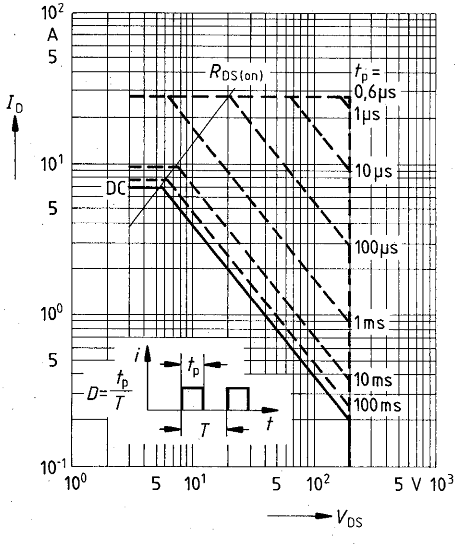
Power dissipation $P_D = f(T_{case})$



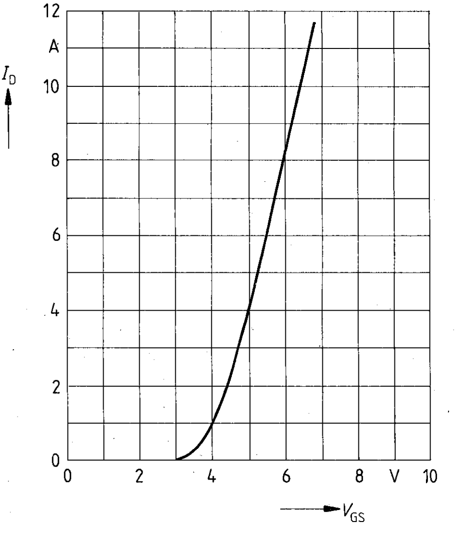
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



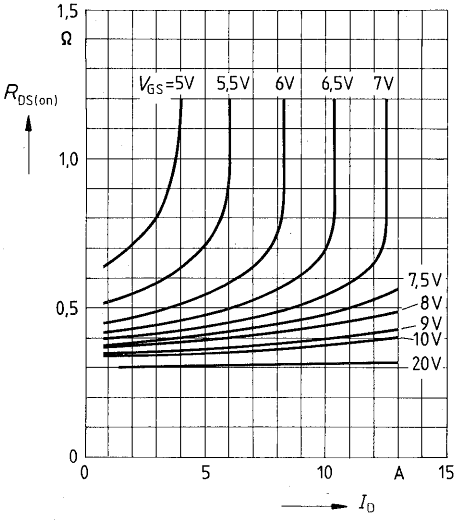
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



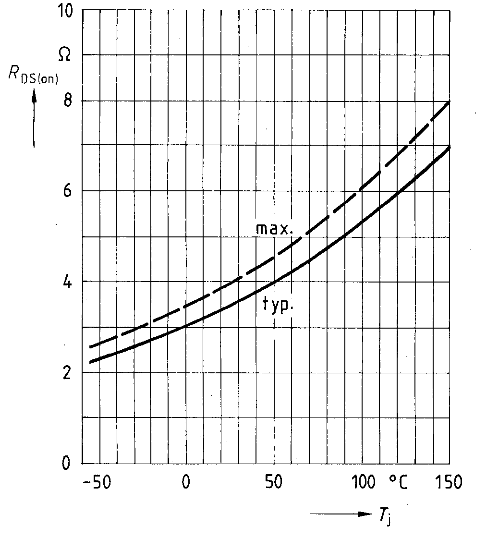
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



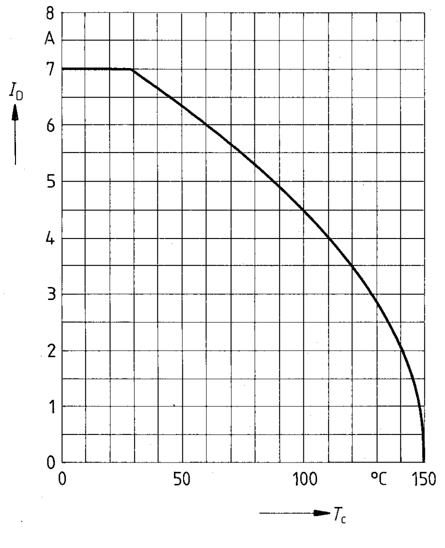
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



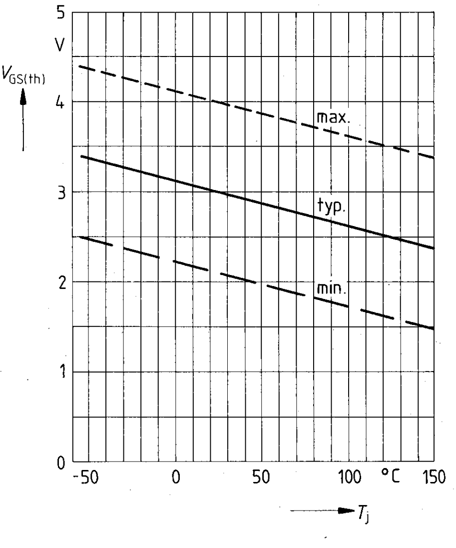
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 3.5$ A, $V_{GS} = 10$ V



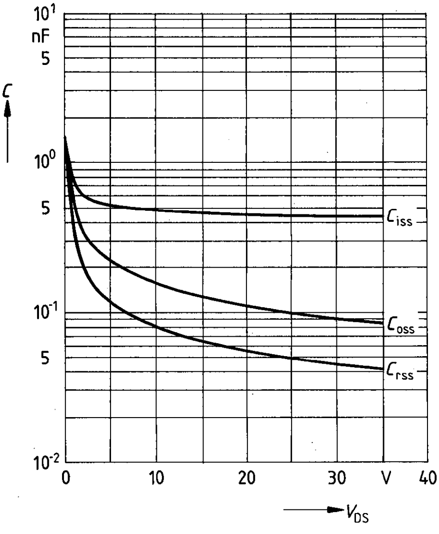
Continuous drain current $I_D = f(T_{case})$



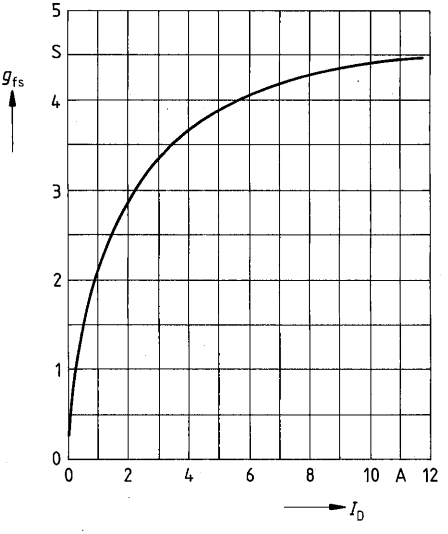
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



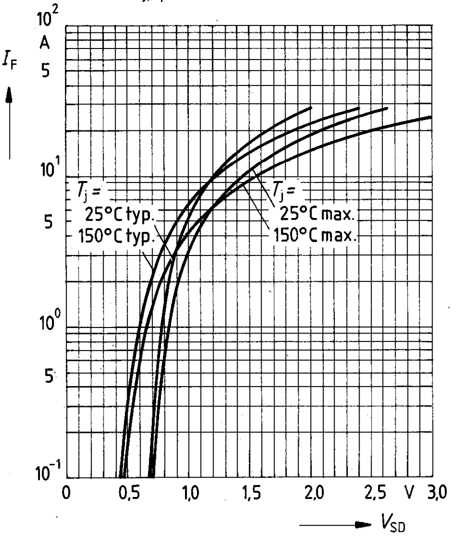
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



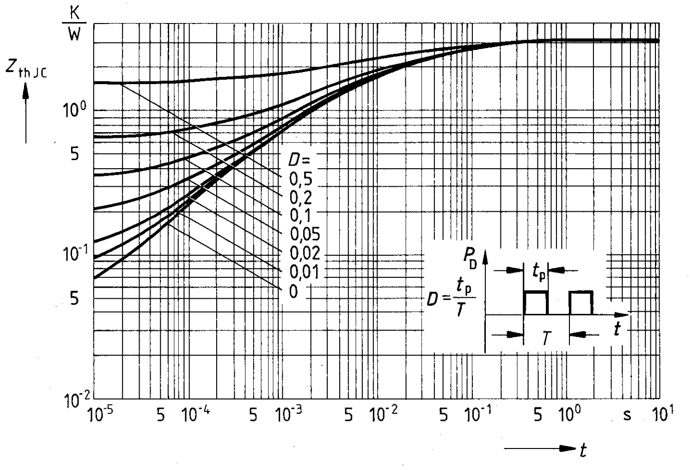
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$°C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

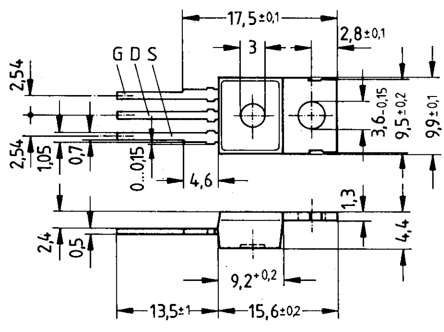


Drain-source voltage	V_{DS}	=	**200 V**
Continuous drain current	I_D	=	**5,8 A**
Drain-source on-resistance	$R_{DS(on)}$	=	**0,6 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC. The drain terminal is conductively connected to the mounting flange. Approx. weight 2 g

Type	Ordering code
BUZ 73 A	C67078-A1317-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	200V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	200V
Continuous drain current, T_{case} = 25 °C	I_D	5,8A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	23A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	40W
Operating and storage temperature range	T_j T_{stg}	−55 °C... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤75K/W
	$R_{th\ JC}$	≤3,1K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	200	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 200V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,5	0,6	Ω	V_{GS} = 10V I_D = 3,5A

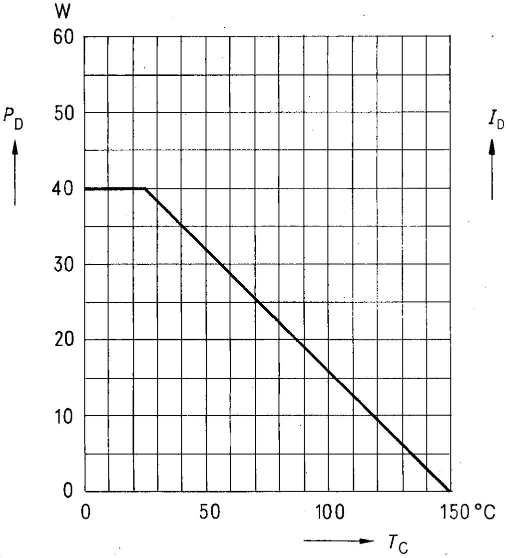
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,2	3,5	–	S	V_{DS} = 25V I_D = 3,5A
Input capacitance	C_{iss}	–	450	600	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	100	160		
Reverse transfer capacitance	C_{rss}	–	50	80		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	15	20	ns	V_{CC} = 30V I_D = 2,8A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	70	90		
	t_f	–	40	55		

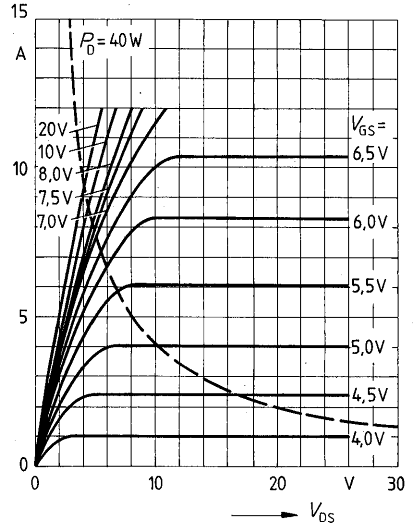
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	5,3	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	23		
Diode forward on-voltage	V_{SD}	–	1,4	1,7	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	0,6	–	µC	

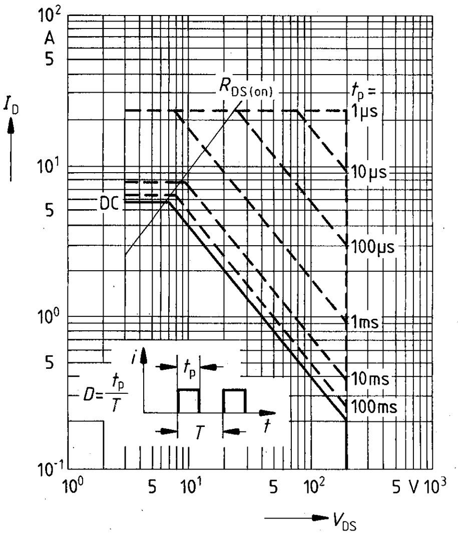
Power dissipation $P_D = f(T_{case})$



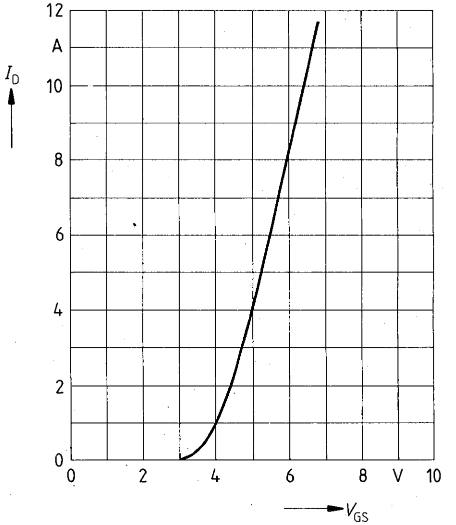
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



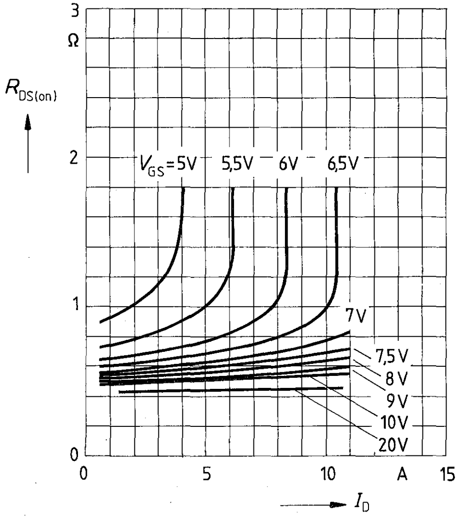
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



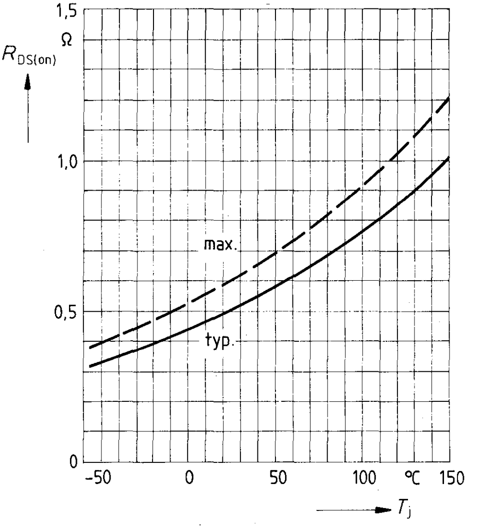
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



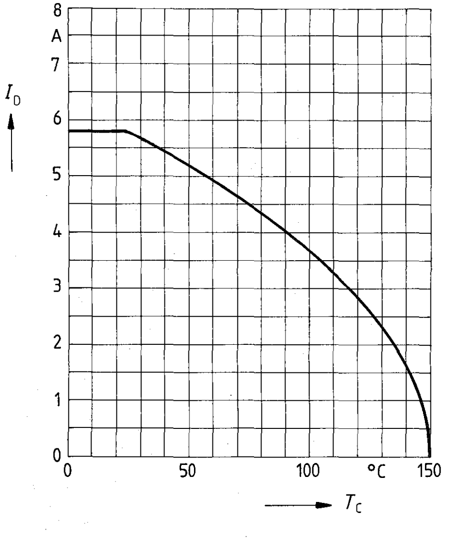
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



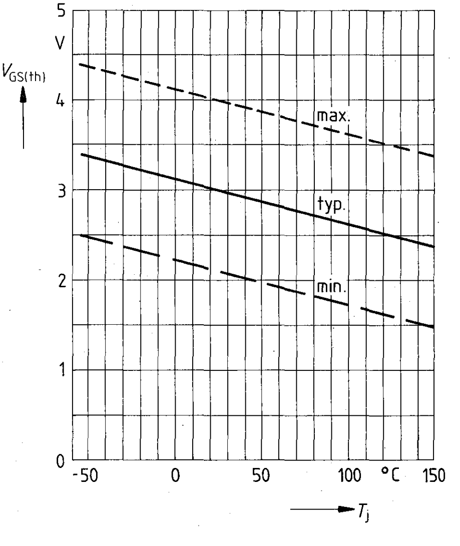
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 3.5$ A, $V_{GS} = 10$ V



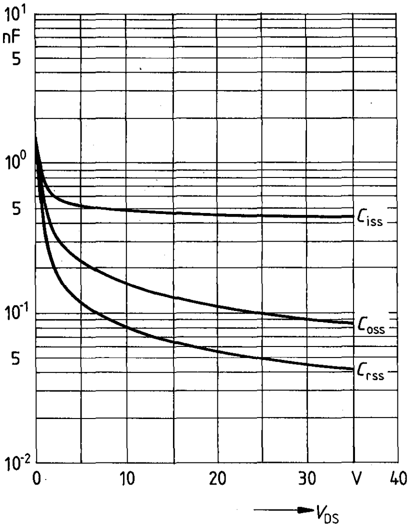
Continuous drain current $I_D = f(T_{case})$



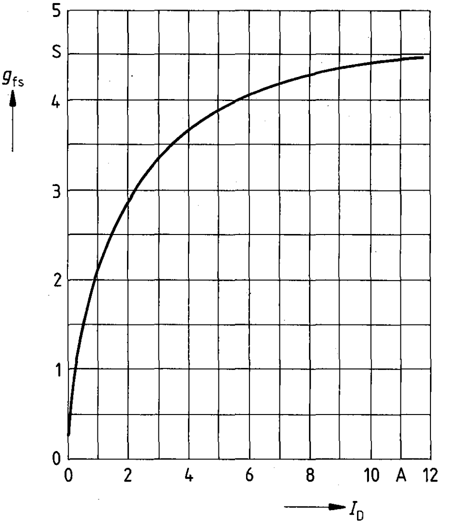
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



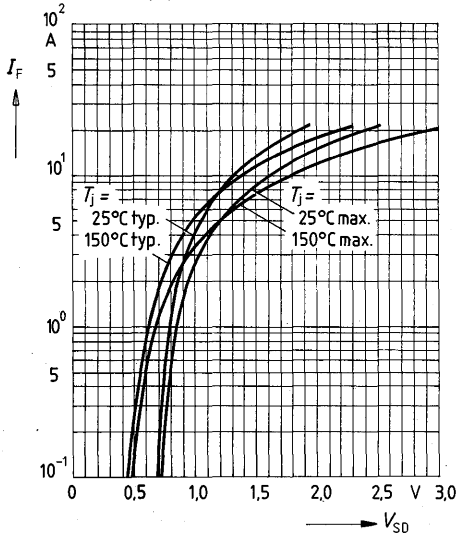
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



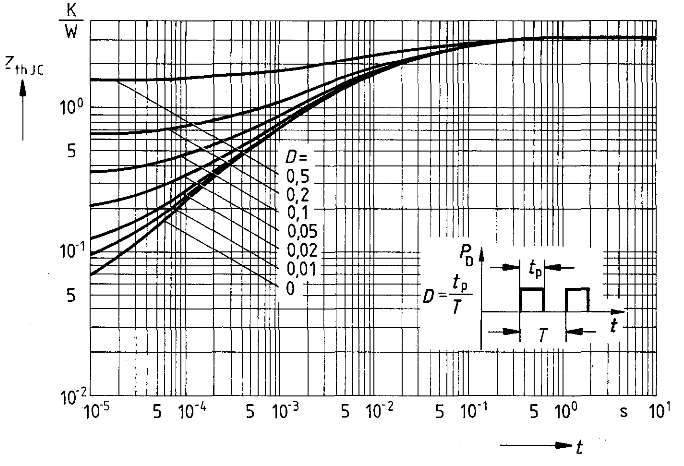
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$°C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

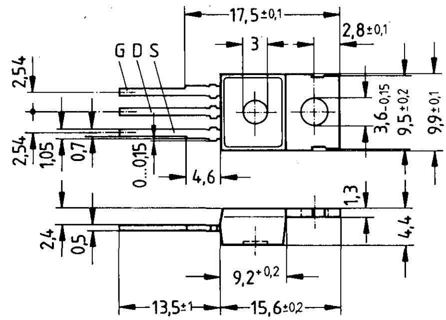


Drain-source voltage	V_{DS}	**= 500 V**
Continuous drain current	I_D	**= 2,4 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 3,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Plastic package 14A3 in accordance with DIN 41 869,
or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 74	C67078-A1314-A2



Dimensions in mm

Absolute maximum ratings		
Drain-source voltage	V_{DS}	500V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	500V
Continuous drain current, T_{case} = 30 °C	I_D	2,4A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	9,5A
Gate-source voltage	V_{GS}	± 20V
Max. power dissipation	P_D	40W
Operating and storage	T_j	
temperature range	T_{stg}	− 55 °C ... + 150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤ 75K/W
	$R_{th\ JC}$	≤ 3,1K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	500	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 500V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	2,6	3,0	Ω	V_{GS} = 10V I_D = 1,2A

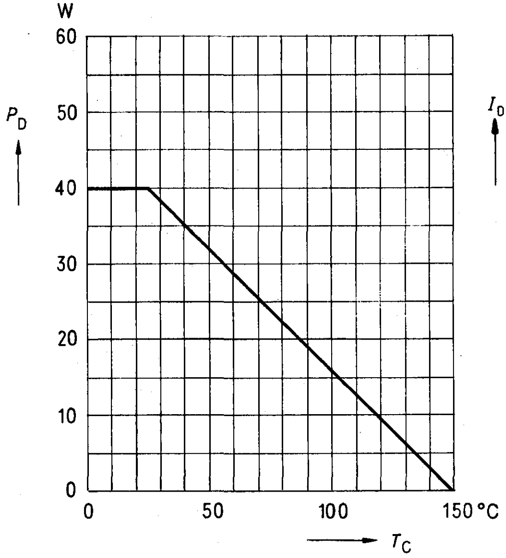
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,9	2,5	–	S	V_{DS} = 25V I_D = 1,2A
Input capacitance	C_{iss}	–	300	500	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	50	80		
Reverse transfer capacitance	C_{rss}	–	30	55		
Turn-on time t_{on} (t_{on} = $t_{d\,(on)}$ + t_r)	$t_{d\,(on)}$	–	15	20	ns	V_{CC} = 30V I_D = 2,3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} (t_{off} = $t_{d\,(off)}$ + t_f)	$t_{d\,(off)}$	–	50	65		
	t_f	–	30	40		

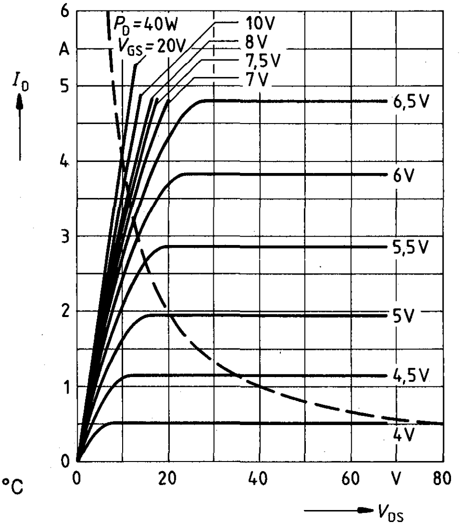
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	2,4	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	9,5		
Diode forward on-voltage	V_{SD}	–	1,0	1,3	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	350	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	3,5	–	µC	

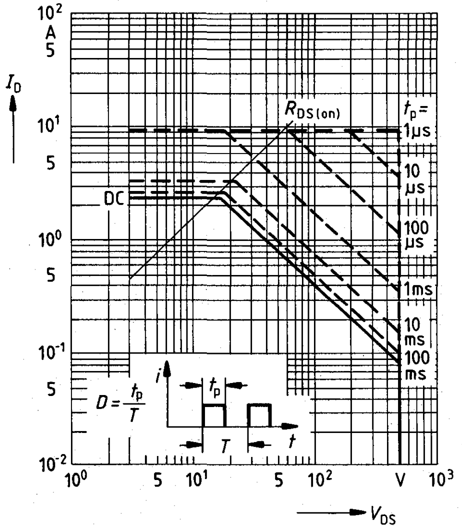
Power dissipation $P_D = f(T_{case})$



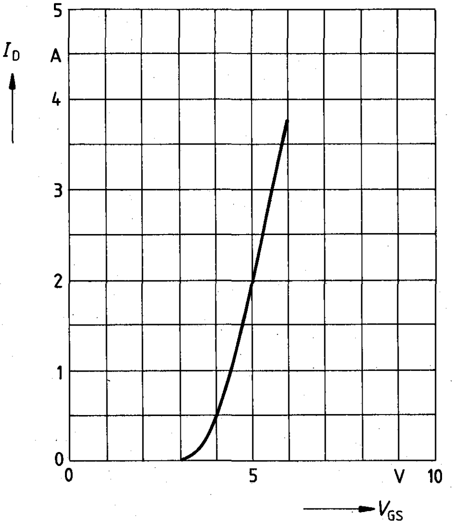
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



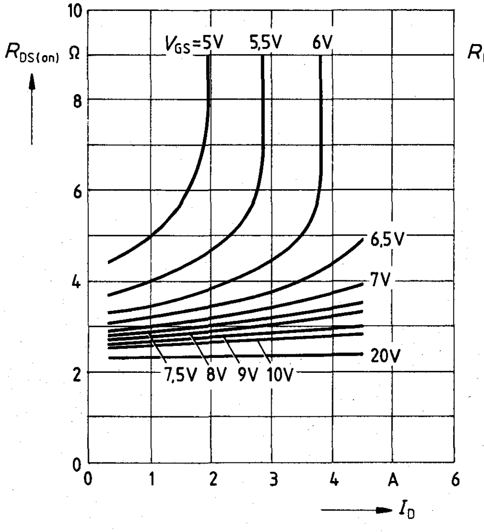
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



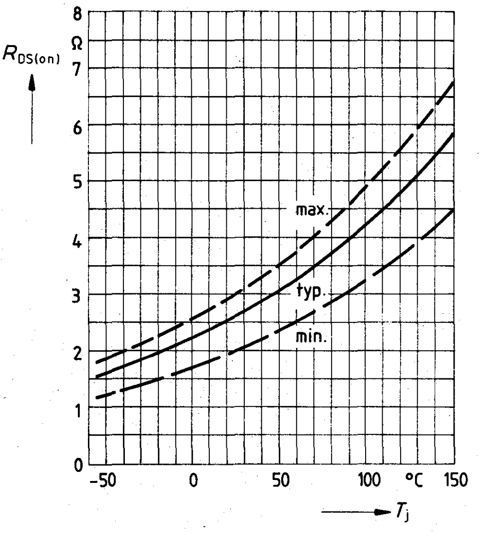
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



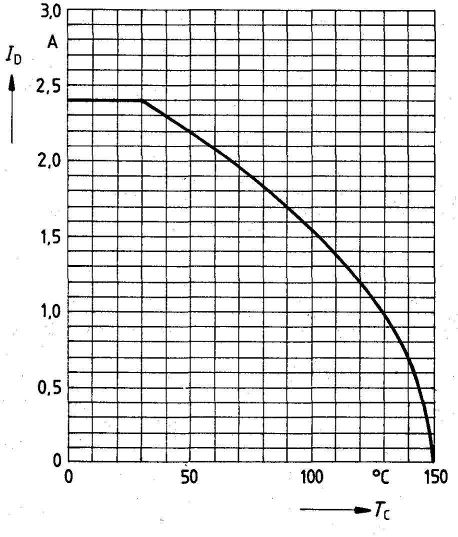
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



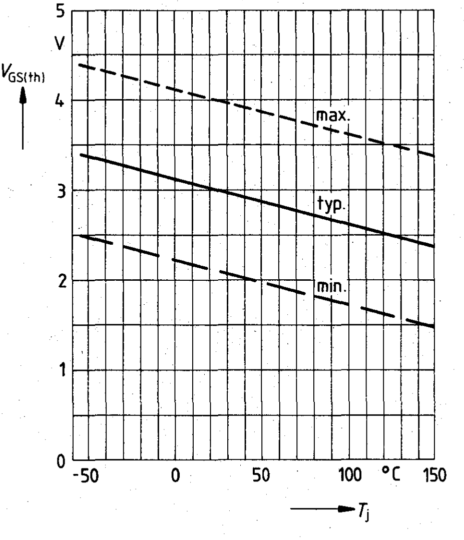
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 1.2$ A, $V_{GS} = 10$ V



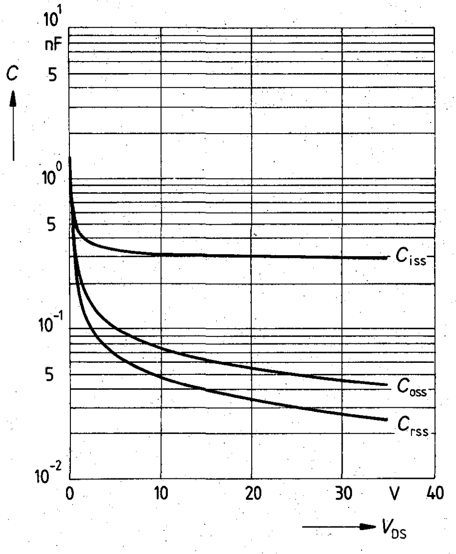
Continuous drain current $I_D = f(T_{case})$



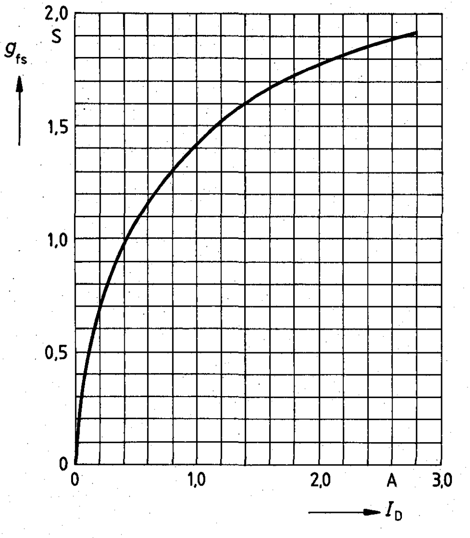
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



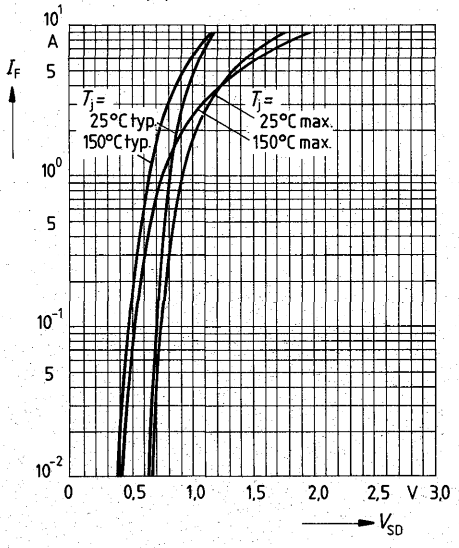
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



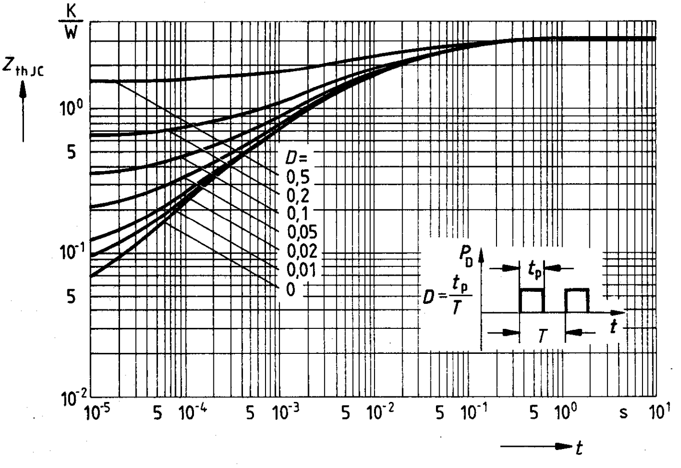
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$°C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



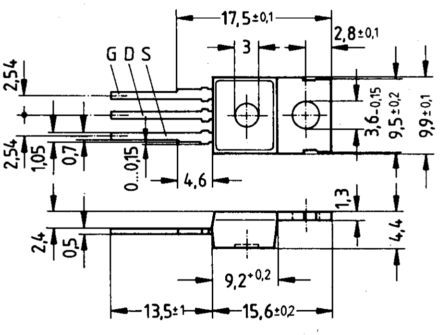
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **500 V**
Continuous drain current I_D = **2 A**
Drain-source on-resistance $R_{DS(on)}$ = **4 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 74 A	C67078-A1314-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	500V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	500V
Continuous drain current, T_{case} = 40 °C	I_D	2,0A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	8A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	40W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤75K/W
	$R_{th\ JC}$	≤3,1K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	500	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 500V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	3,6	4,0	Ω	V_{GS} = 10V I_D = 1,2A

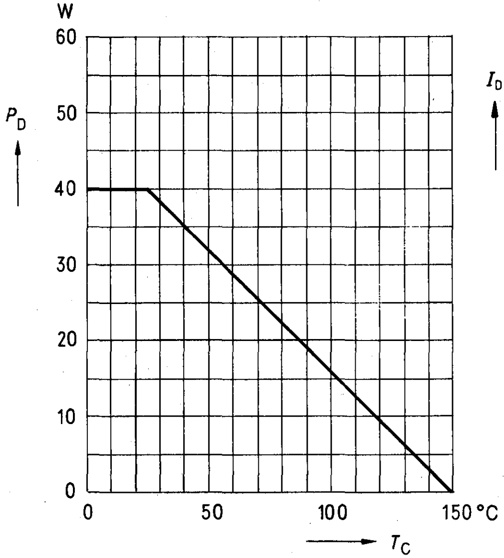
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,9	2,5	–	S	V_{DS} = 25V I_D = 1,2A
Input capacitance	C_{iss}	–	300	500	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	50	80		
Reverse transfer capacitance	C_{rss}	–	30	55		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	15	20	ns	V_{CC} = 30V I_D = 2,1A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	50	65		
	t_f	–	30	40		

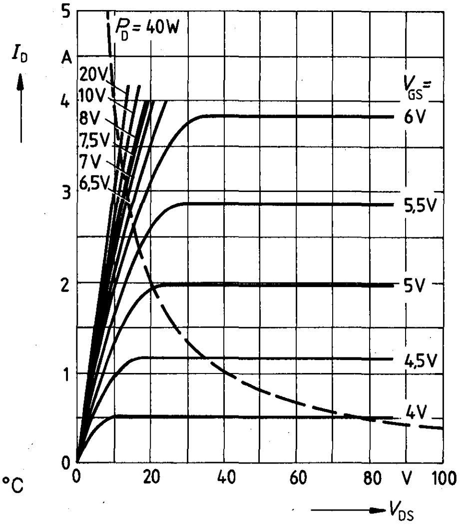
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	2,0	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	8,0		
Diode forward on-voltage	V_{SD}	–	1,0	1,3	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	350	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	3,5	–	µC	

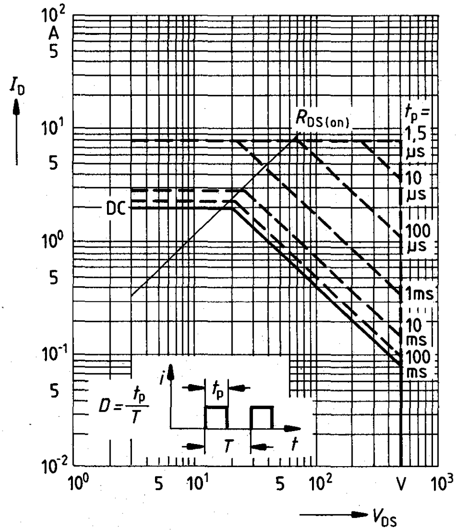
Power dissipation $P_D = f(T_{case})$



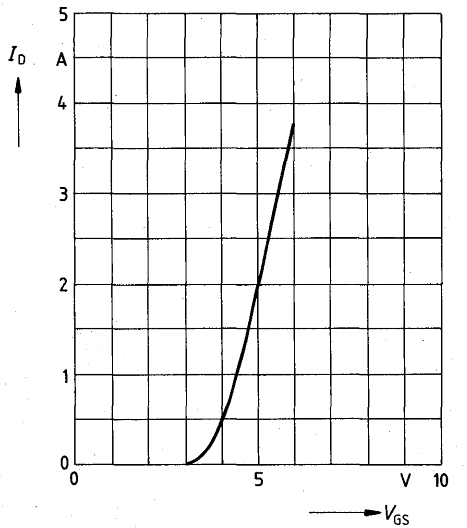
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



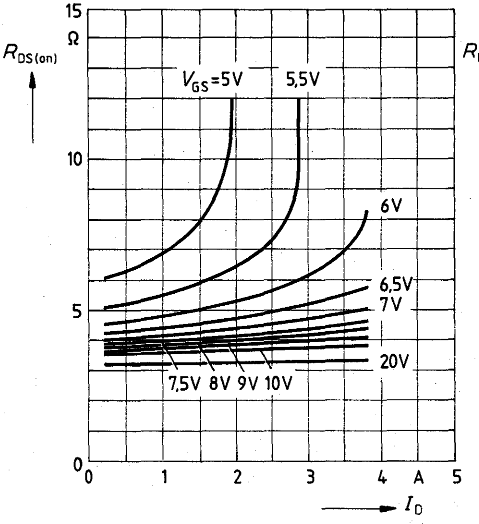
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



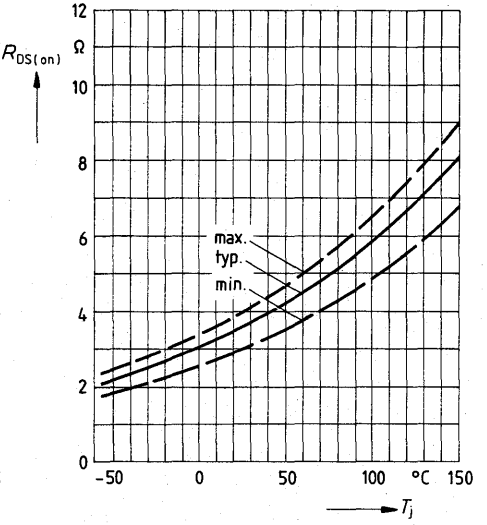
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



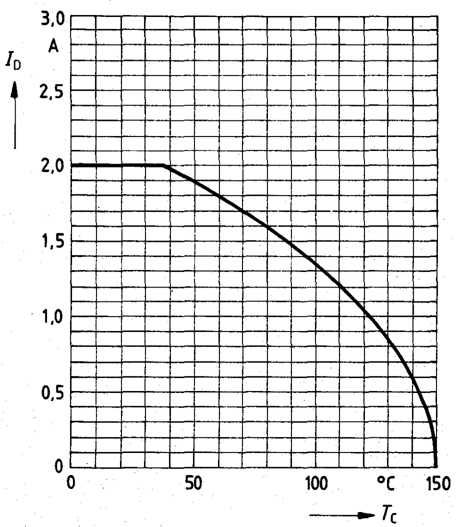
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



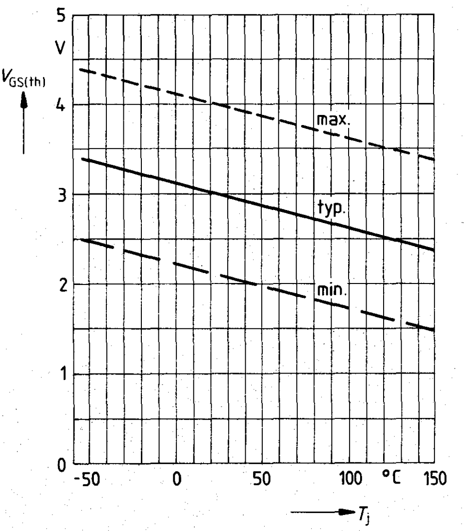
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 1.2\,A$, $V_{GS} = 10\,V$



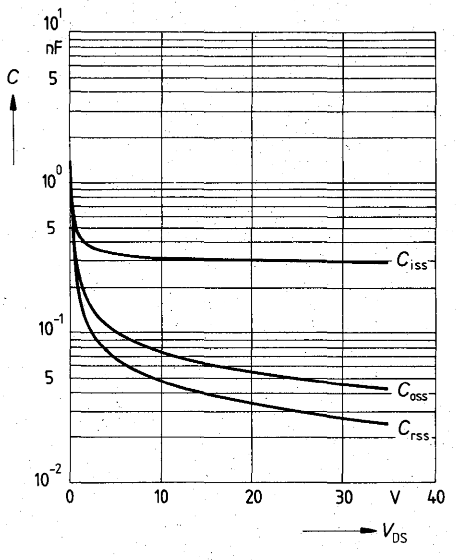
Continuous drain current $I_D = f(T_{case})$



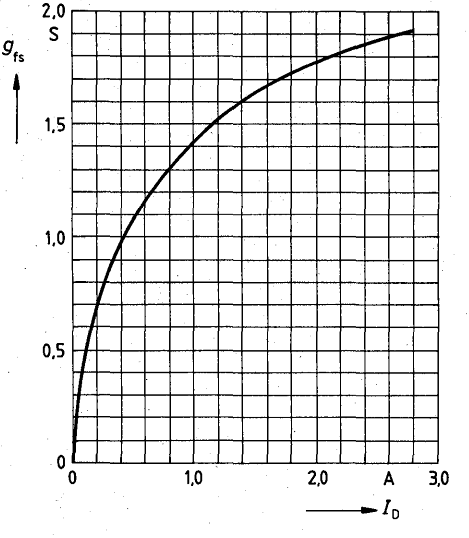
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



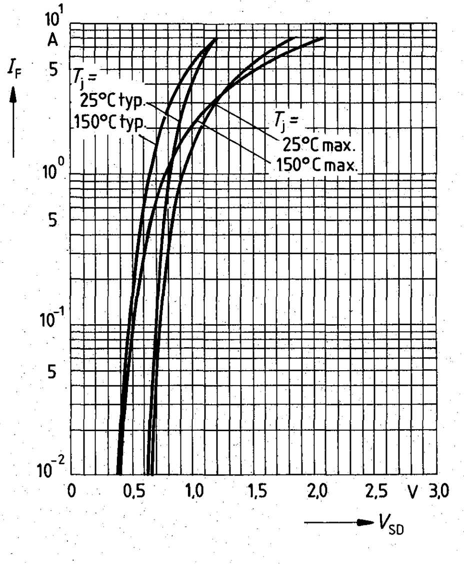
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



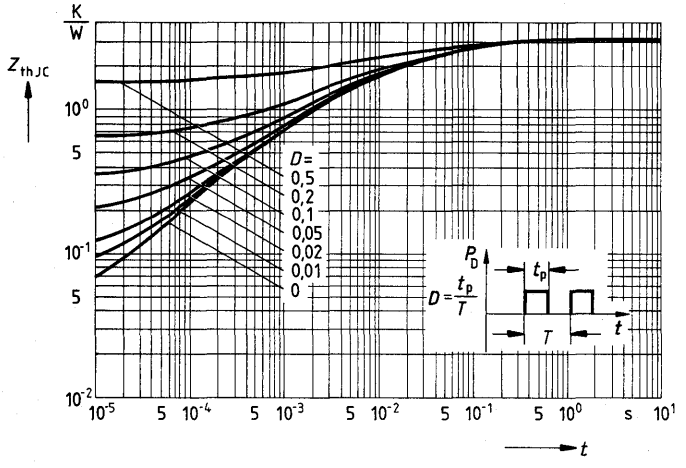
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



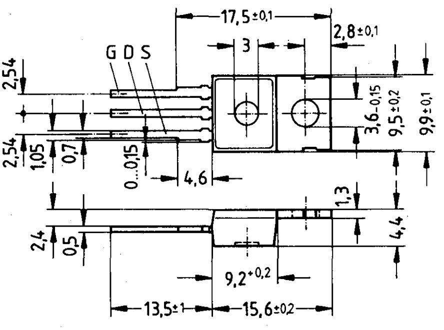
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **400 V**
Continuous drain current I_D = **3,0 A**
Drain-source on-resistance $R_{DS(on)}$ = **1,8 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 14A3 in accordance with DIN 41 869,
or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 76	C67078-A1315-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	400V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	400V
Continuous drain current, T_{case} = 35 °C	I_D	3,0A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	12A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	40W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤75K/W
	$R_{th\,JC}$	≤3,1K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	400	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 400V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	1,65	1,8	Ω	V_{GS} = 10V I_D = 1,5A

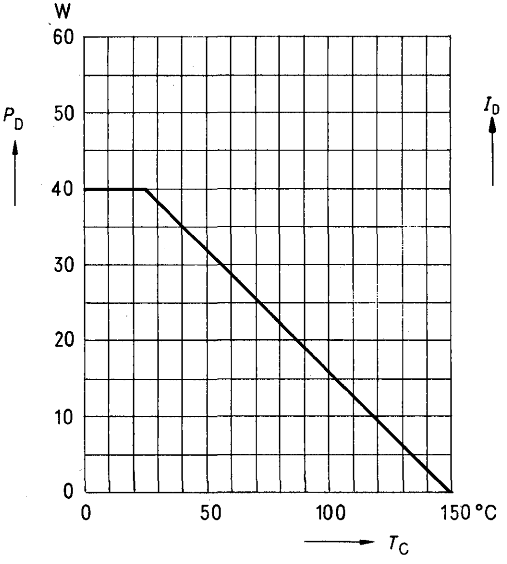
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,1	2,5	–	S	V_{DS} = 25V I_D = 1,5A
Input capacitance	C_{iss}	–	300	500	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	50	80		
Reverse transfer capacitance	C_{rss}	–	35	60		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	15	20	ns	V_{CC} = 30V I_D = 2,5A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	50	65		
	t_f	–	30	40		

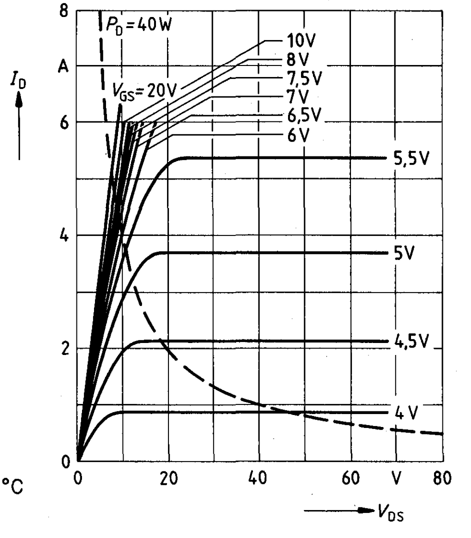
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	3,0	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	12		
Diode forward on-voltage	V_{SD}	–	1,1	1,4	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	300	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	2,5	–	µC	

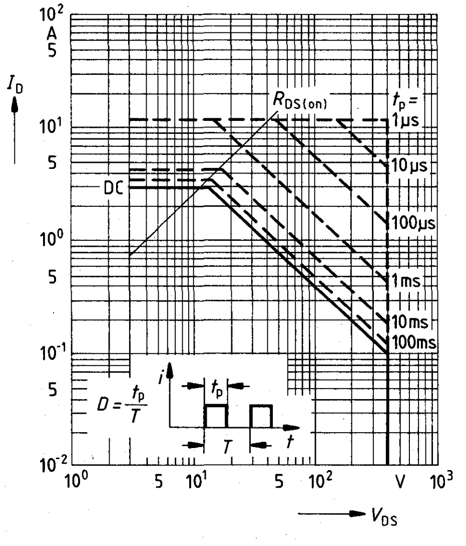
Power dissipation $P_D = f(T_{case})$



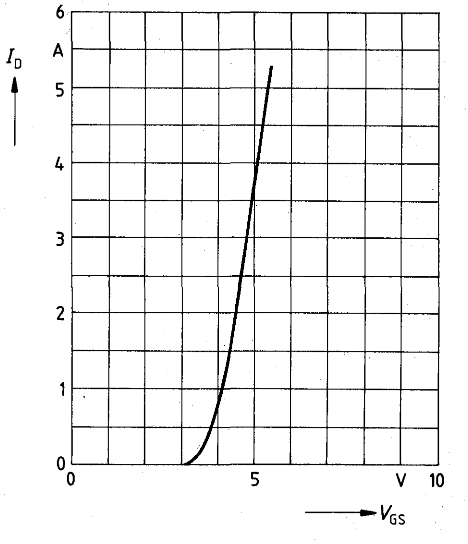
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 μs pulse test,
$T_{case} = 25\,°C$



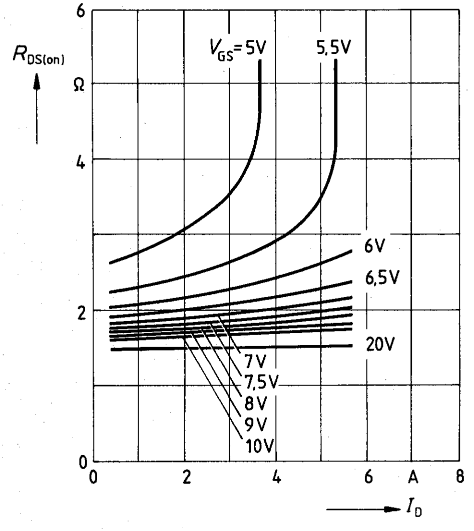
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



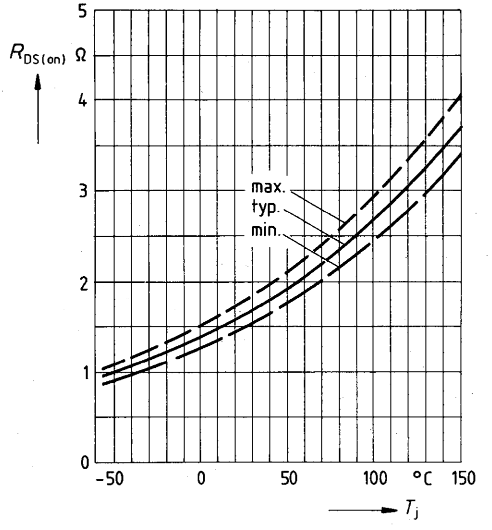
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 μs pulse test,
$V_{DS} = 25\text{V}$, $T_j = 25\,°C$



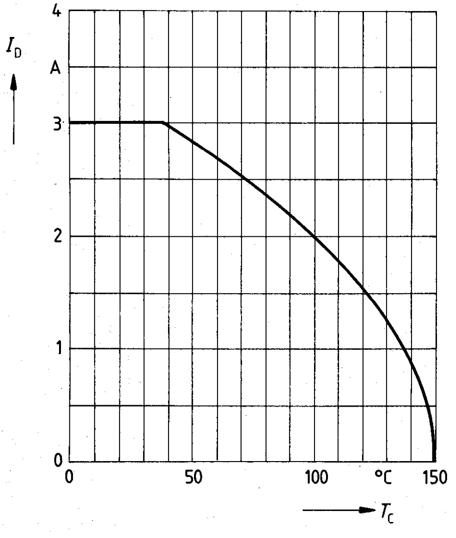
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



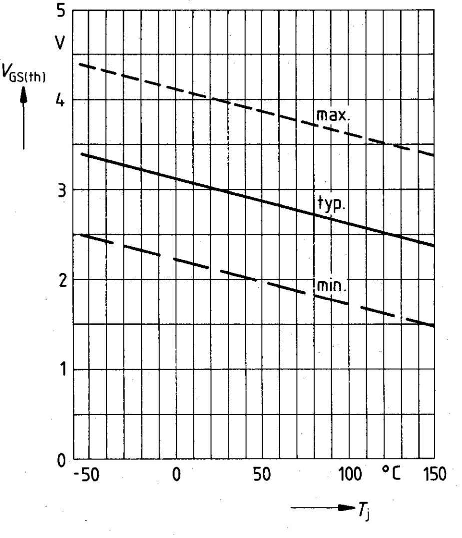
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 1.5$ A, $V_{GS} = 10$ V



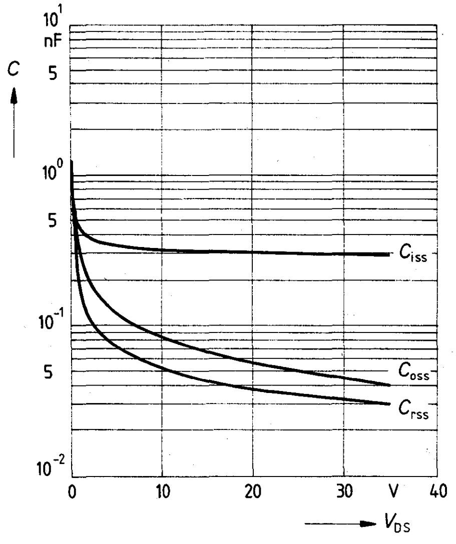
Continuous drain current $I_D = f(T_{case})$



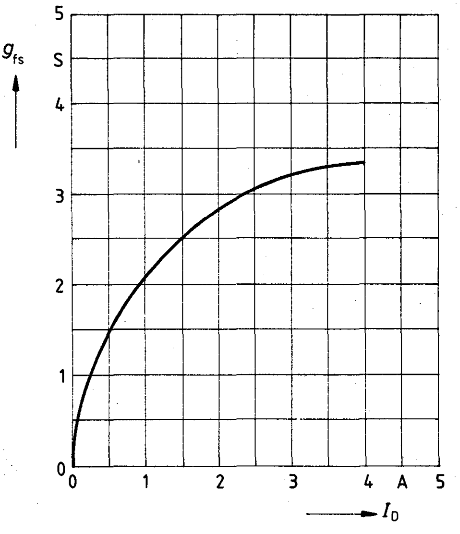
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



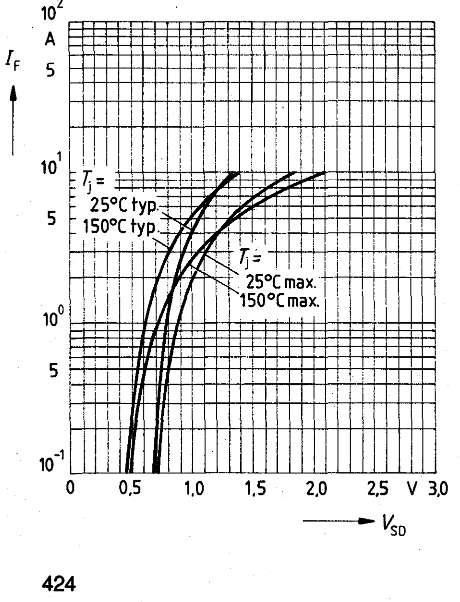
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



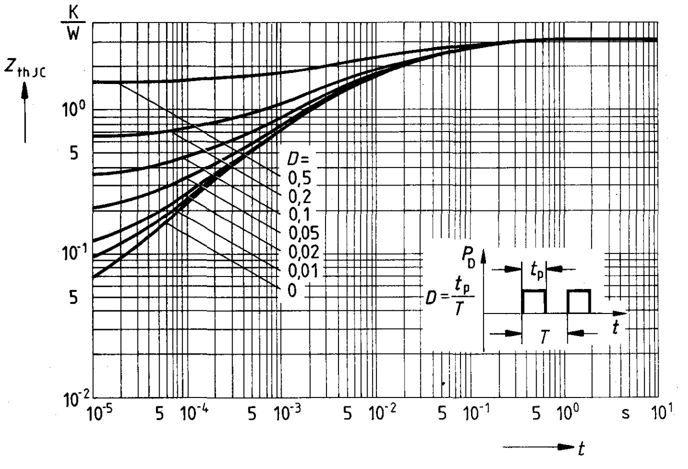
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$ °C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

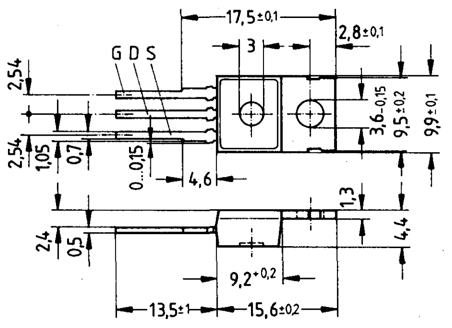


Drain-source voltage	V_{DS}	=	**400 V**
Continuous drain current	I_D	=	**2,6 A**
Drain-source on-resistance	$R_{DS(on)}$	=	**2,5 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Plastic package 14A3 in accordance with DIN 41869, or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 76 A	C67078-A1315-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	400V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	400V
Continuous drain current, T_{case} = 30 °C	I_D	2,6A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	10A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	40W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤75K/W
	$R_{th\,JC}$	≤3,1K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	400	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 400V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	2,2	2,5	Ω	V_{GS} = 10V I_D = 1,5A

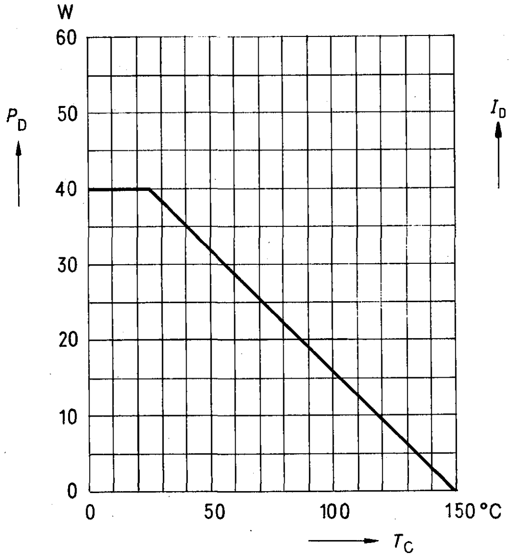
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,1	2,5	–	S	V_{DS} = 25V I_D = 1,5A
Input capacitance	C_{iss}	–	300	500	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	50	80		
Reverse transfer capacitance	C_{rss}	–	35	60		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	15	20	ns	V_{CC} = 30V I_D = 2,4A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	50	65		
	t_f	–	30	40		

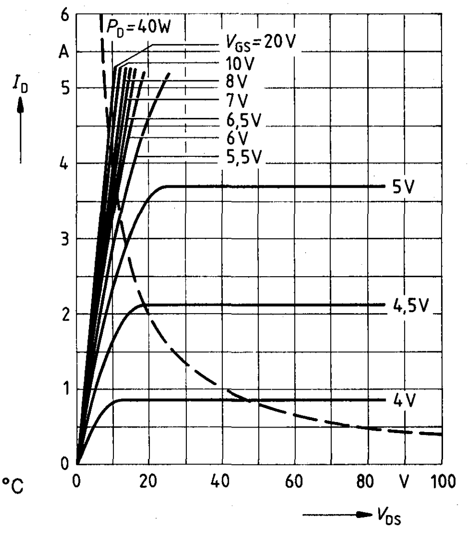
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	2,6	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	10		
Diode forward on-voltage	V_{SD}	–	1,1	1,4	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	300	–	ns	T_j = 25 °C
Reverse recovery charge	Q_{rr}	–	2,5	–	µC	I_F = I_{DR} $d_{iF/dt}$ = 100A/µs

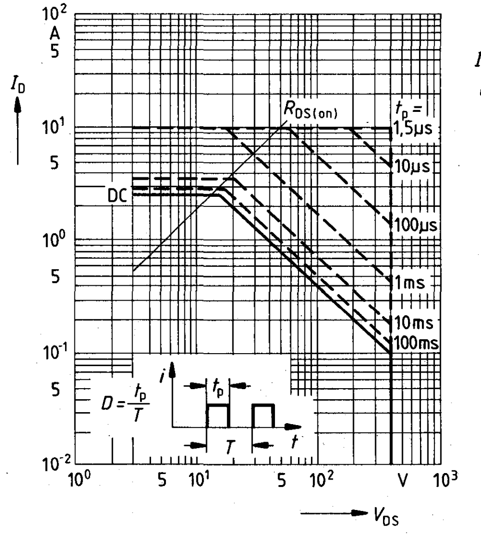
Power dissipation $P_D = f(T_{case})$



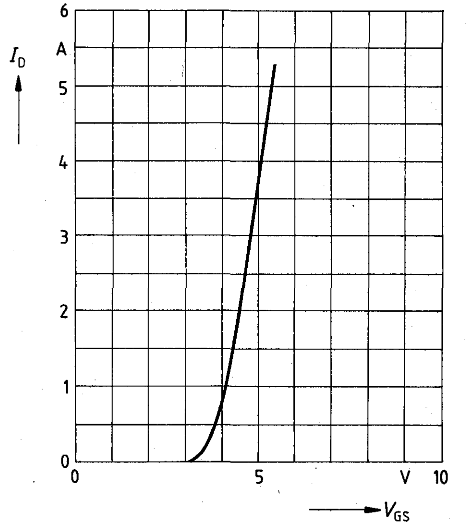
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



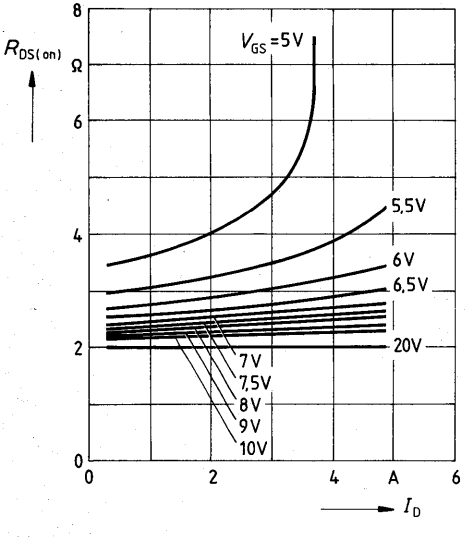
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



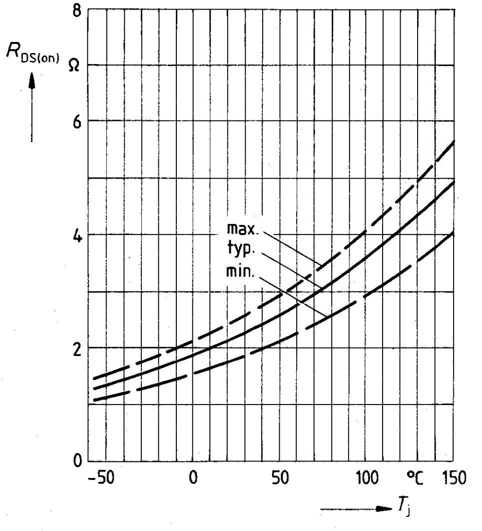
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



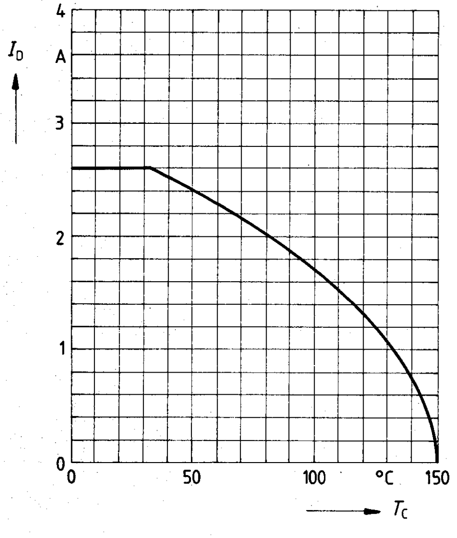
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



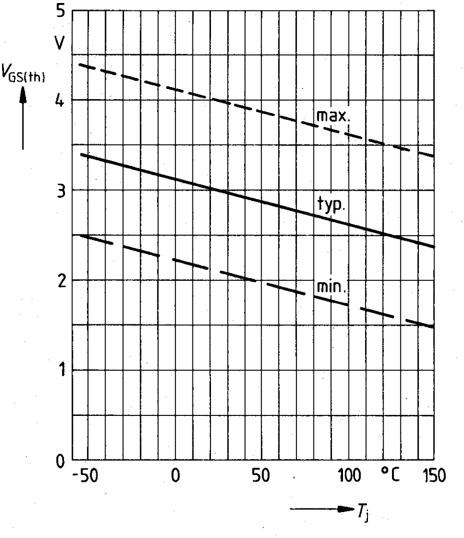
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 1.5$ A, $V_{GS} = 10$ V



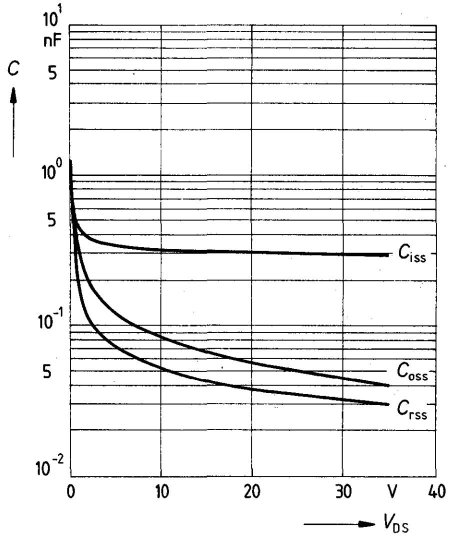
Continuous drain current $I_D = f(T_{case})$



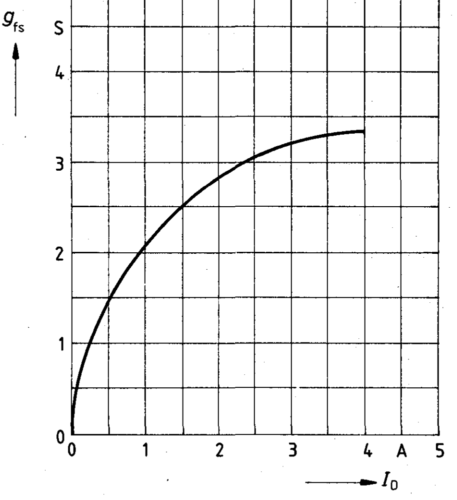
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



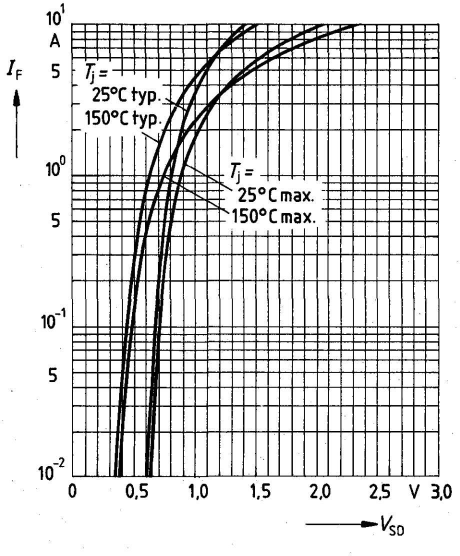
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



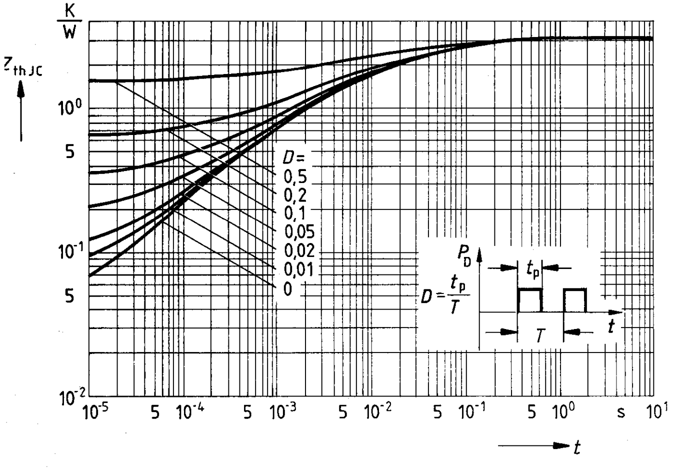
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$°C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

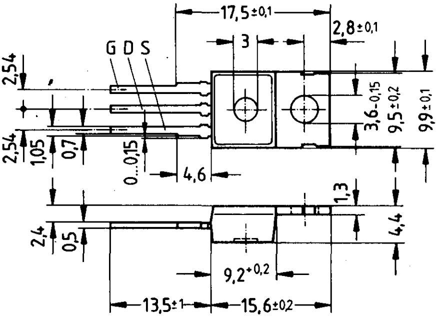


Drain-source voltage	V_{DS}	**= 800 V**
Continuous drain current	I_D	**= 2,6 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 4,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC. The drain terminal is conductively connected to the mounting flange. Approx. weight 2 g

Type	Ordering code
BUZ 80	C67078-A1309-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	800V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	800V
Continuous drain current, T_{case} = 50 °C	I_D	2,6A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	10A
Gate-source voltage	V_{GS}	± 20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j T_{stg}	− 55 °C ... + 150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤ 75K/W
	$R_{th\ JC}$	≤ 1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	800	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	μA	T_j = 25 °C T_j = 125 °C V_{DS} = 800V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	3,5	4,0	Ω	V_{GS} = 10V I_D = 1,5A

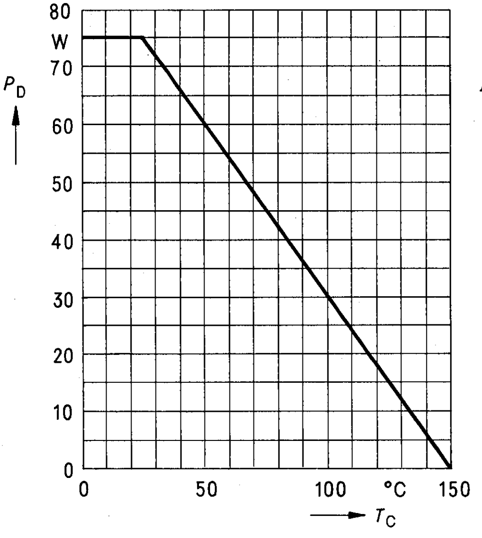
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,0	1,8	–	S	V_{DS} = 25V I_D = 1,5A
Input capacitance	C_{iss}	–	1600	2100	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	90	150		
Reverse transfer capacitance	C_{rss}	–	30	55		
Turn-on time t_{on} (t_{on} = $t_{d\,(on)}$ + t_r)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,1A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} (t_{off} = $t_{d\,(off)}$ + t_f)	$t_{d\,(off)}$	–	110	140		
	t_f	–	60	80		

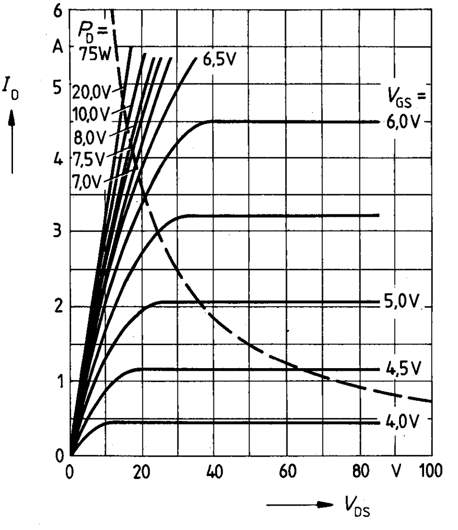
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	2,6	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	10		
Diode forward on-voltage	V_{SD}	–	1,05	1,3	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1800	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/μs
Reverse recovery charge	Q_{rr}	–	12	–	μC	

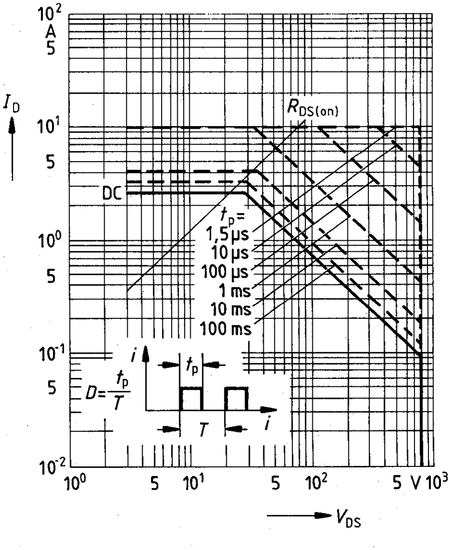
Power dissipation $P_D = f(T_{case})$



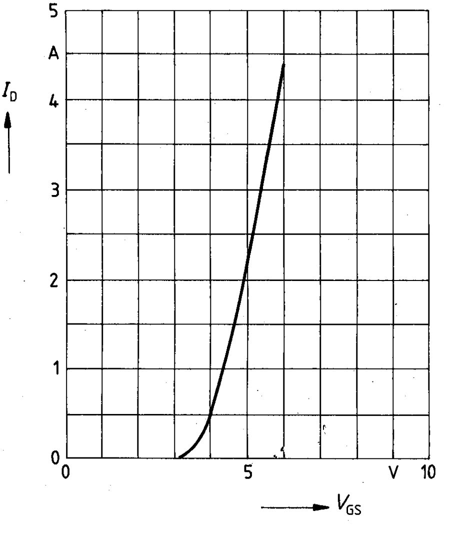
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



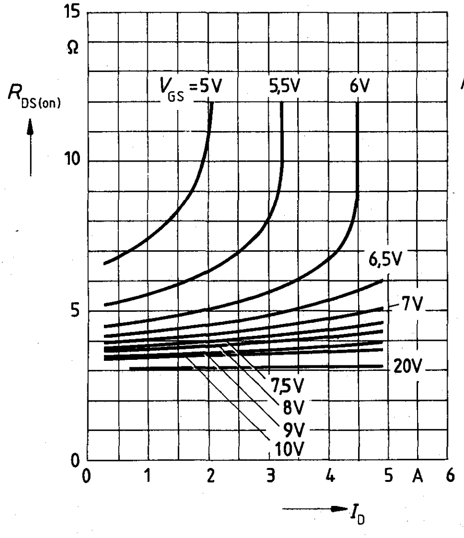
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



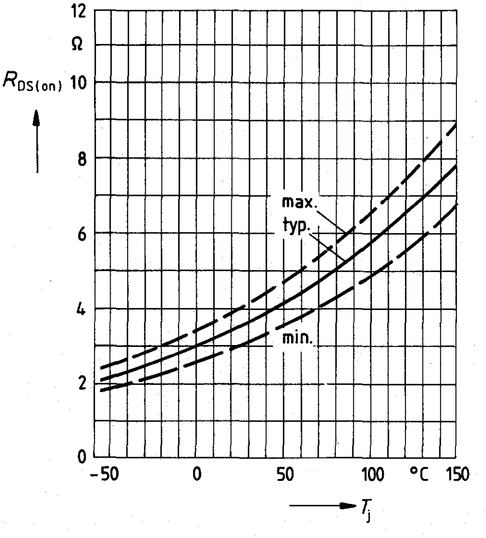
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



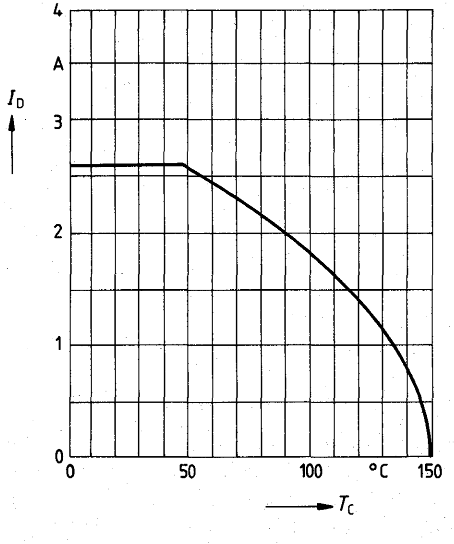
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



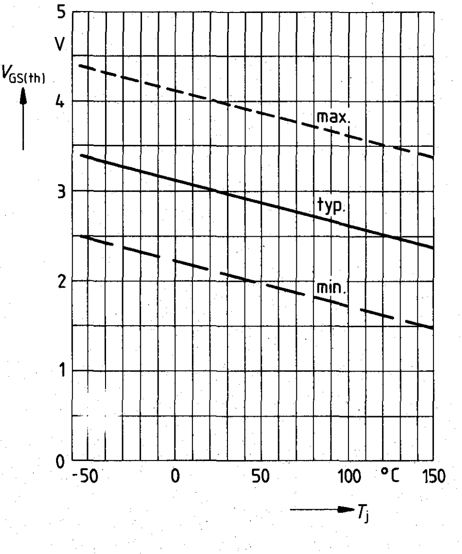
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: I_D = 1.5 A, V_{GS} = 10 V



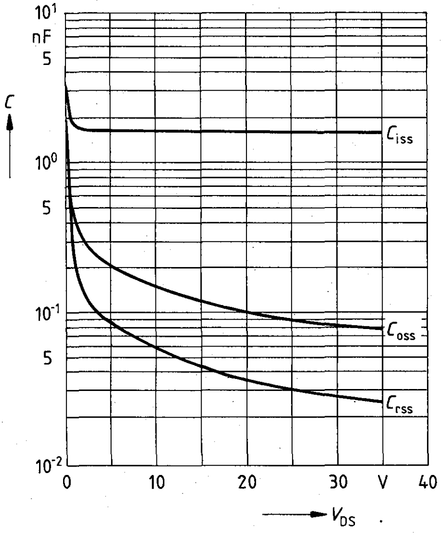
Continuous drain current $I_D = f(T_{case})$



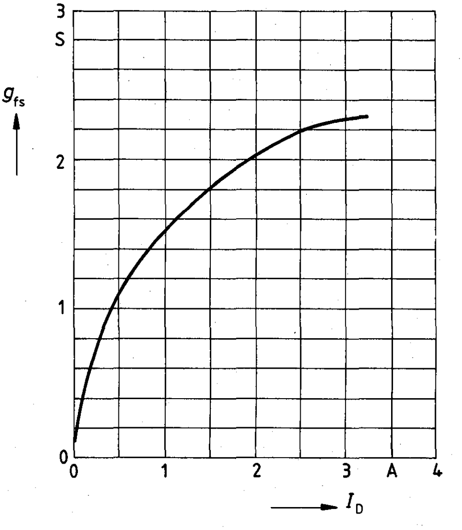
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, I_D = 10 mA



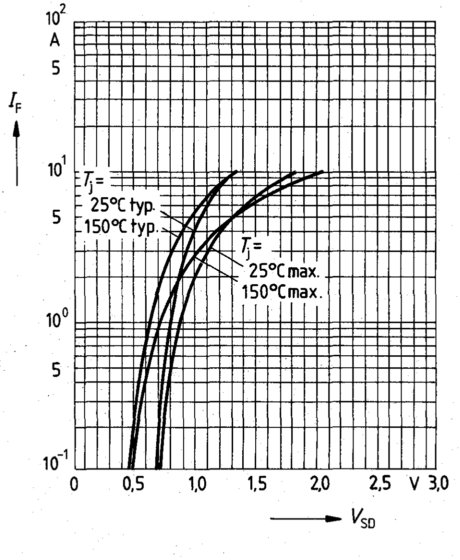
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



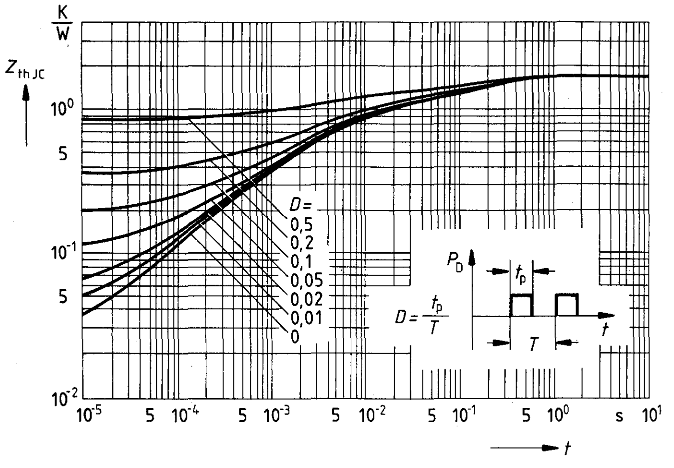
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



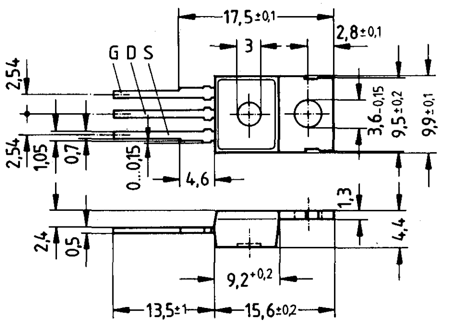
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 800 V**
Continuous drain current I_D **= 3,0 A**
Drain-source on-resistance $R_{DS(on)}$ **= 3,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 14A3 in accordance with DIN 41 869, or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 80 A	C67078-A1309-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	800V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	800V
Continuous drain current, T_{case} = 45 °C	I_D	3,0A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	12A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤75K/W
	$R_{th\ JC}$	≤1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	800	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 800V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	2,7	3,0	Ω	V_{GS} = 10V I_D = 1,5A

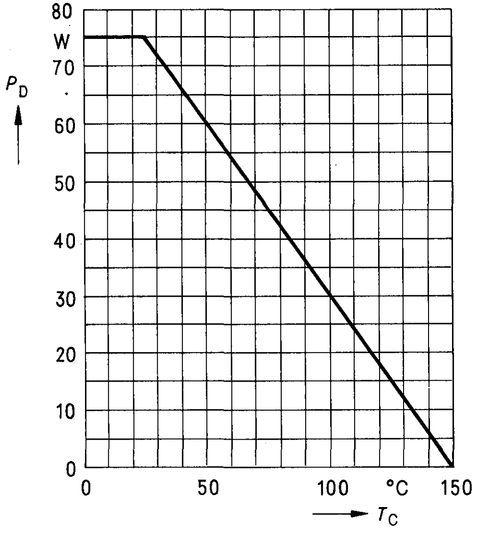
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,0	1,8	–	S	V_{DS} = 25V I_D = 1,5A
Input capacitance	C_{iss}	–	1600	2100	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	90	150		
Reverse transfer capacitance	C_{rss}	–	30	55		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	110	140		
	t_f	–	60	80		

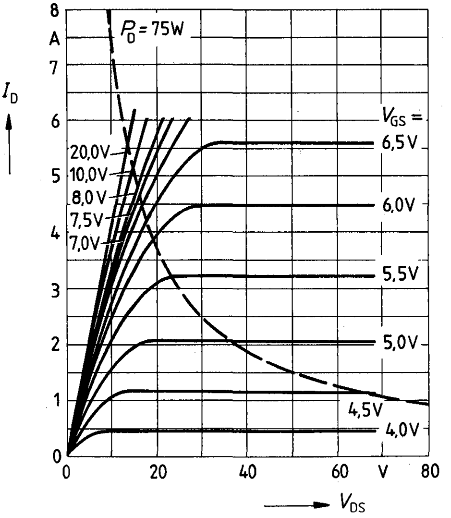
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	3,0	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	12		
Diode forward on-voltage	V_{SD}	–	1,05	1,3	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1800	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	12	–	µC	

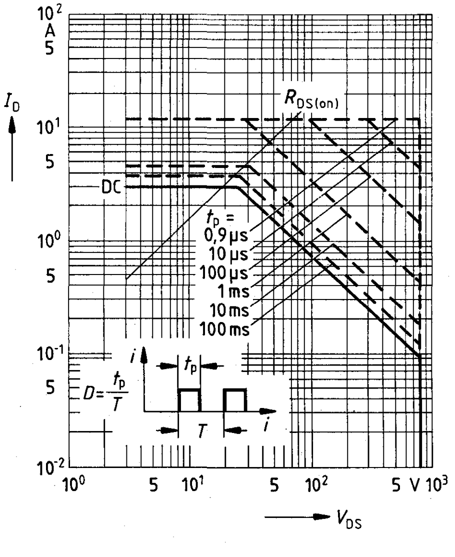
Power dissipation $P_D = f(T_{case})$



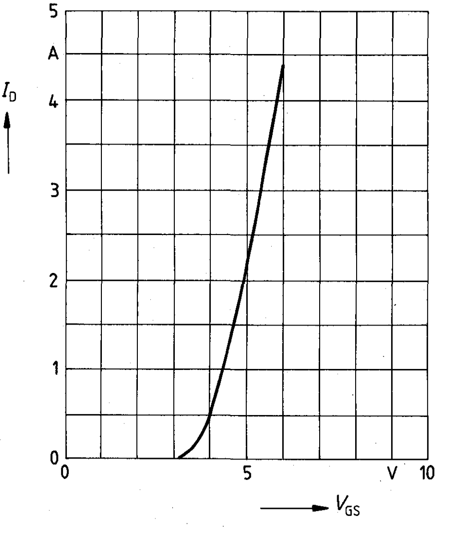
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



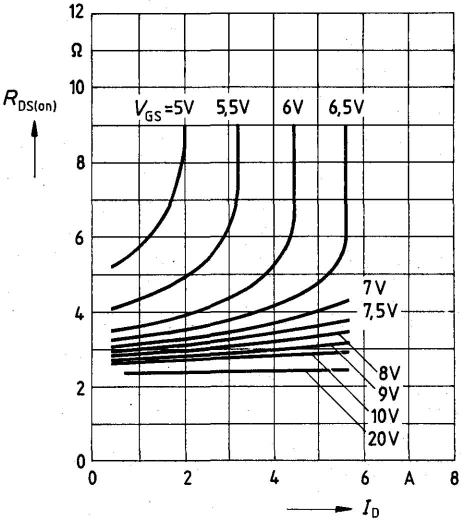
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



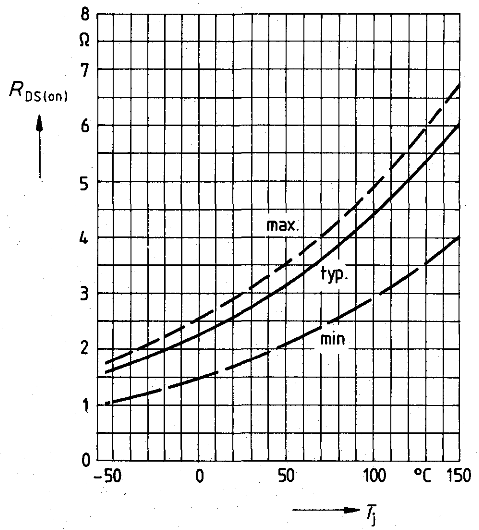
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



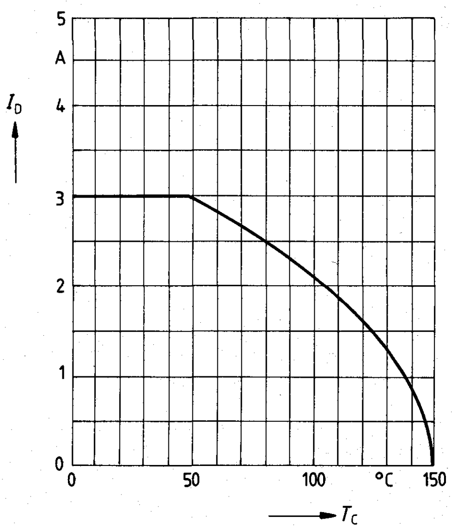
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



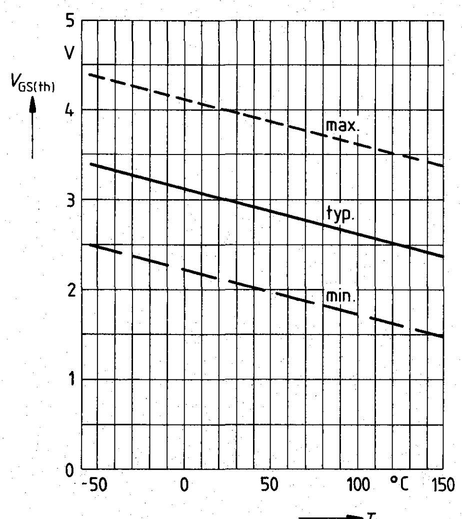
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 1.5\,A$, $V_{GS} = 10\,V$



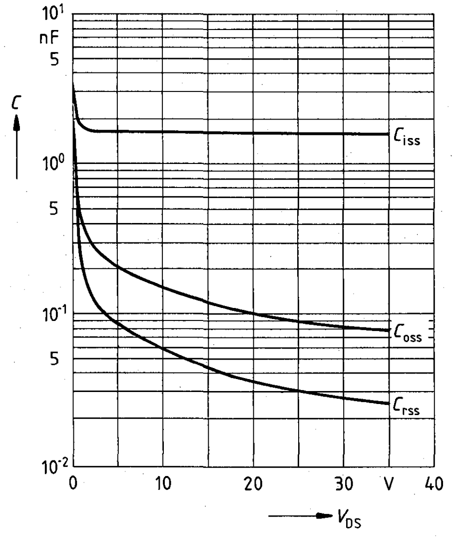
Continuous drain current $I_D = f(T_{case})$



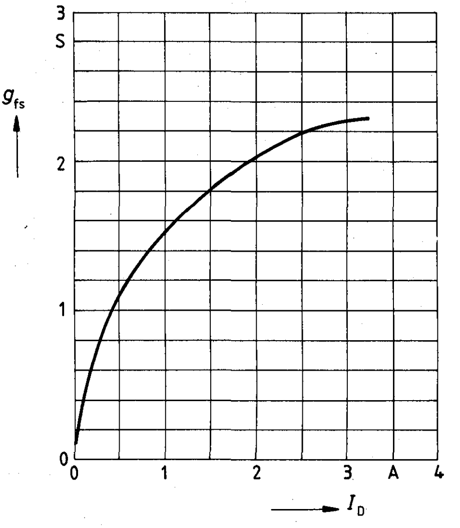
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



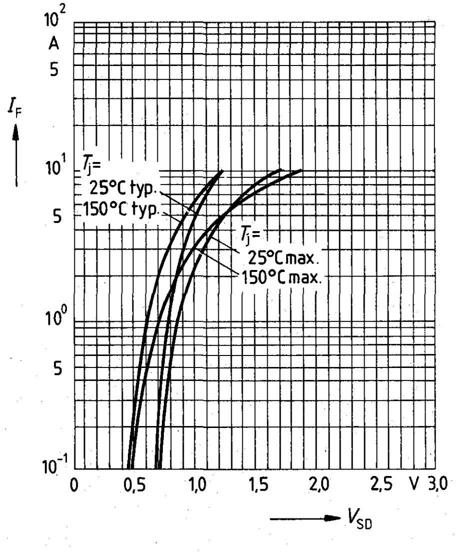
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



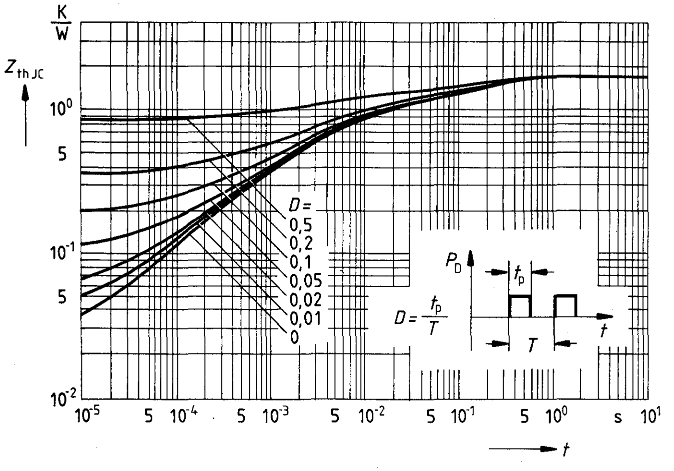
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°$C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



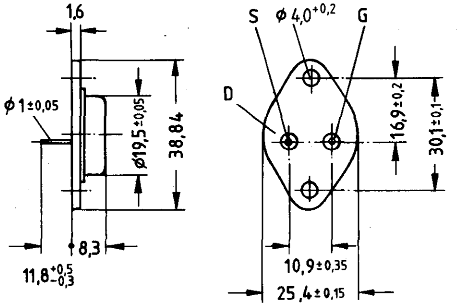
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **800 V**
Continuous drain current I_D = **2,9 A**
Drain-source on-resistance $R_{DS(on)}$ = **4,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 83	C67078-A1012-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	800V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	800V
Continuous drain current, T_{case} = 30 °C	I_D	2,9A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	11A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	78W
Operating and storage temperature range	T_j T_{stg}	−55 °C... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\ JA}$	≤35K/W
	$R_{th\ JC}$	≤1,6K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	800	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 800V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	3,5	4,0	Ω	V_{GS} = 10V I_D = 1,5A

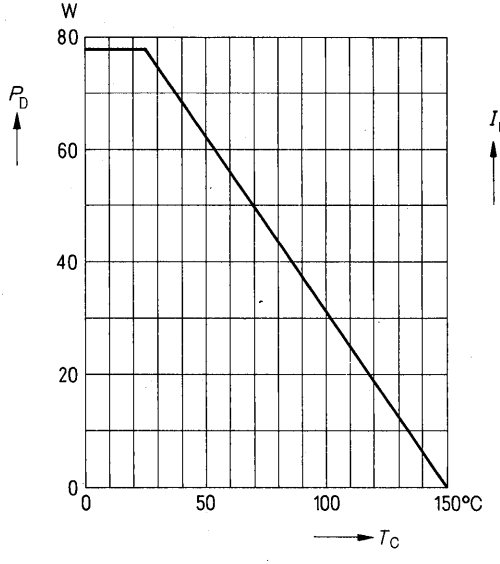
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,0	1,8	–	S	V_{DS} = 25V I_D = 1,5A
Input capacitance	C_{iss}	–	1600	2100	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	90	150		
Reverse transfer capacitance	C_{rss}	–	30	55		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,1A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	110	140		
	t_f	–	60	80		

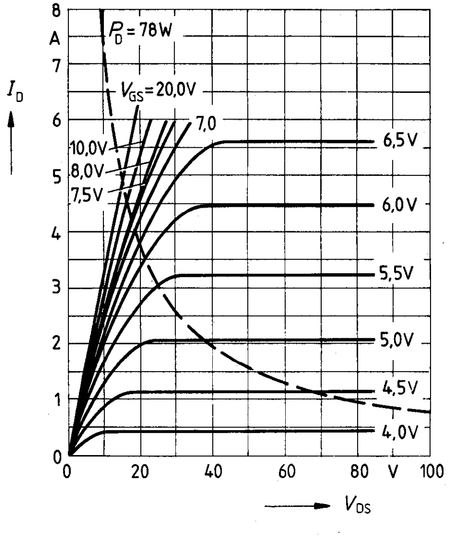
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	2,9	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	11		
Diode forward on-voltage	V_{SD}	–	1,05	1,3	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1800	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	12	–	µC	

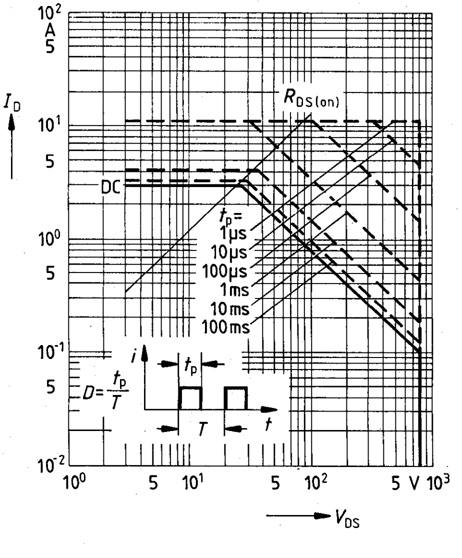
Power dissipation $P_D = f(T_{case})$



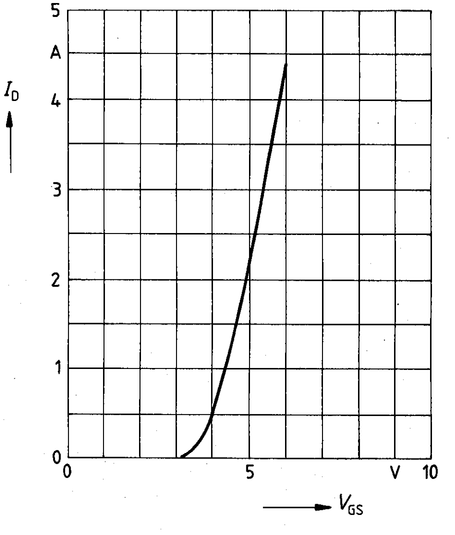
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



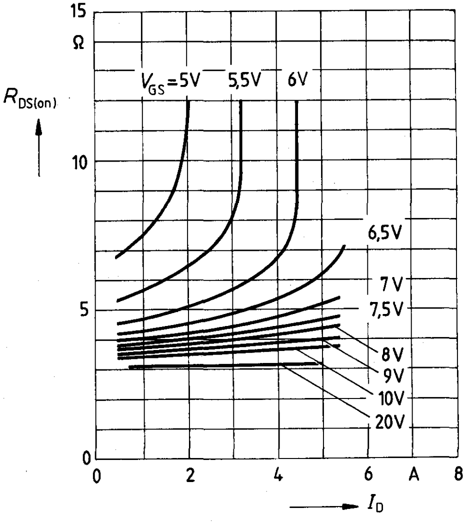
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



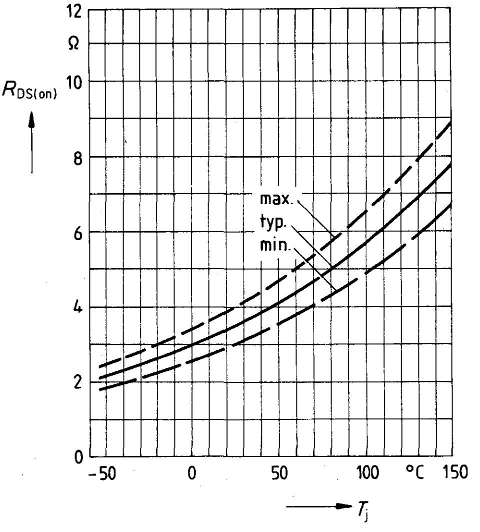
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25\text{V}$, $T_j = 25\,°C$



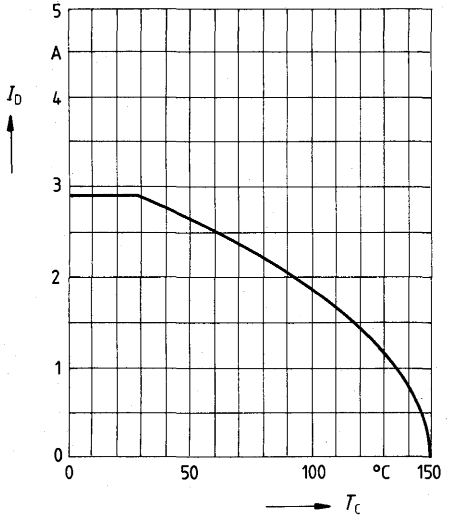
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



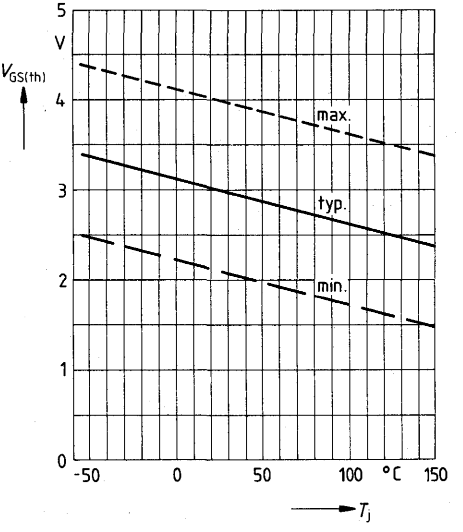
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 1.5$ A, $V_{GS} = 10$ V



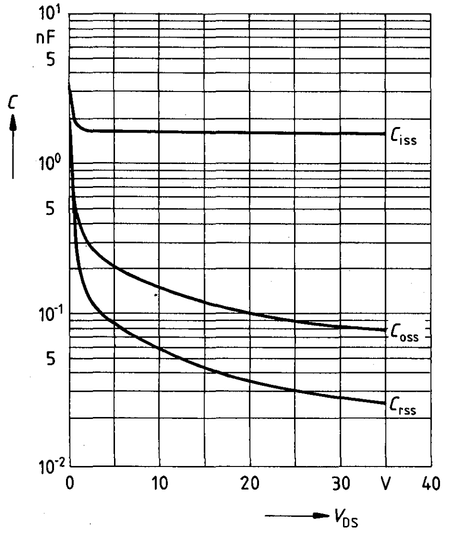
Continuous drain current $I_D = f(T_{case})$



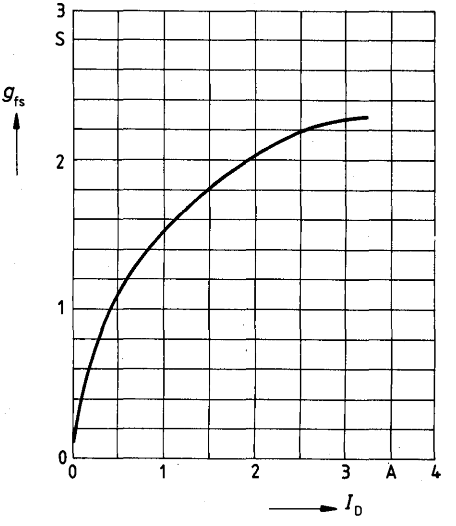
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



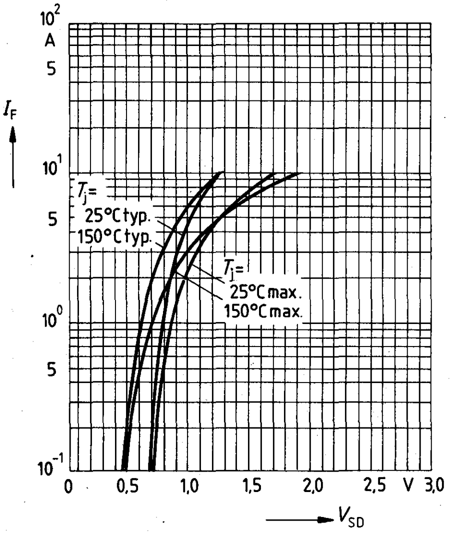
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



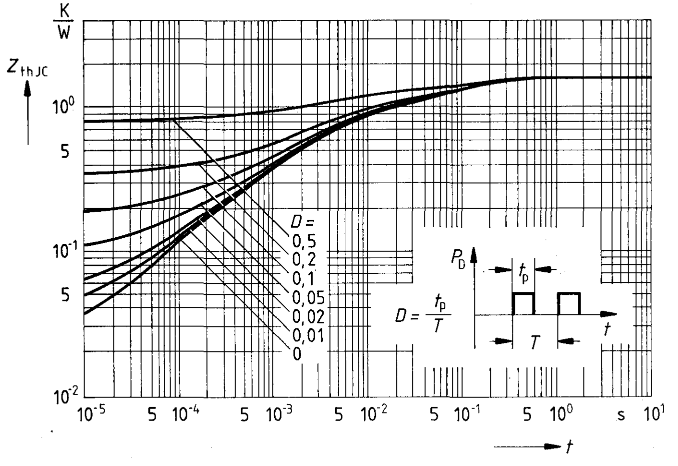
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$°C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

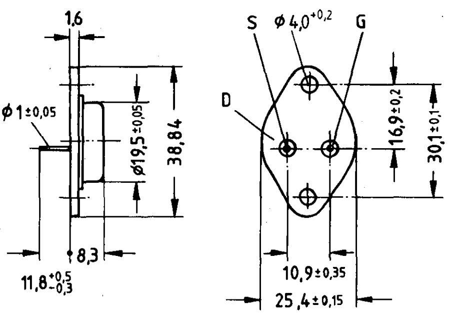


Drain-source voltage	V_{DS}	**= 800 V**
Continuous drain current	I_D	**= 3,4 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 3,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 83 A	C67078-A1012-A3



Dimensions in mm

Absolute maximum ratings		
Drain-source voltage	V_{DS}	800V
Drain-gate voltage, $R_{GS} = 20\ k\Omega$	V_{DGR}	800V
Continuous drain current, $T_{case} = 25\,°C$	I_D	3,4A
Pulsed drain current, $T_{case} = 25\,°C$	I_{Dpuls}	13A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	78W
Operating and storage temperature range	T_j T_{stg}	−55 °C … +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\ JA}$	≤35K/W
	$R_{th\ JC}$	≤1,6K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	800	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 800V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	2,7	3,0	Ω	V_{GS} = 10V I_D = 1,5A

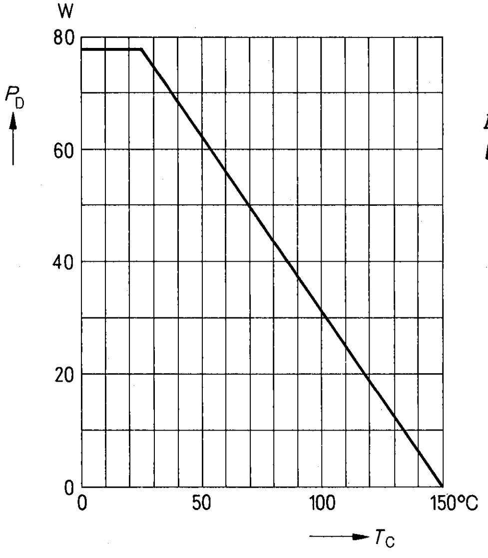
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,0	1,8	–	S	V_{DS} = 25V I_D = 1,5A
Input capacitance	C_{iss}	–	1600	2100	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	90	150		
Reverse transfer capacitance	C_{rss}	–	30	55		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	110	140		
	t_f	–	60	80		

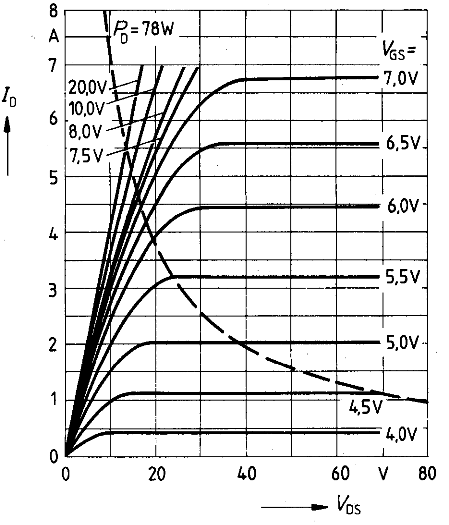
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	3,4	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	13		
Diode forward on-voltage	V_{SD}	–	1,1	1,35	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1800	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	12	–	µC	

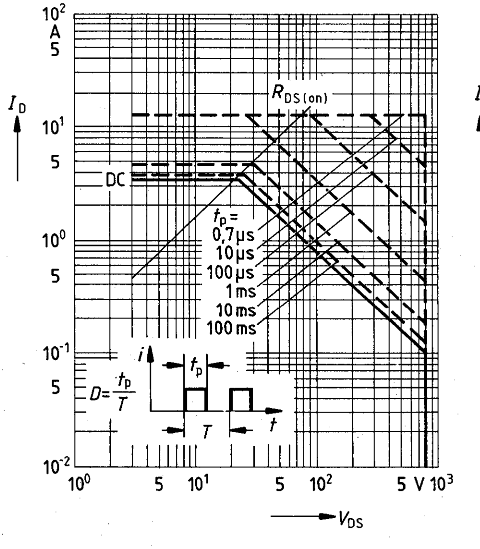
Power dissipation $P_D = f(T_{case})$



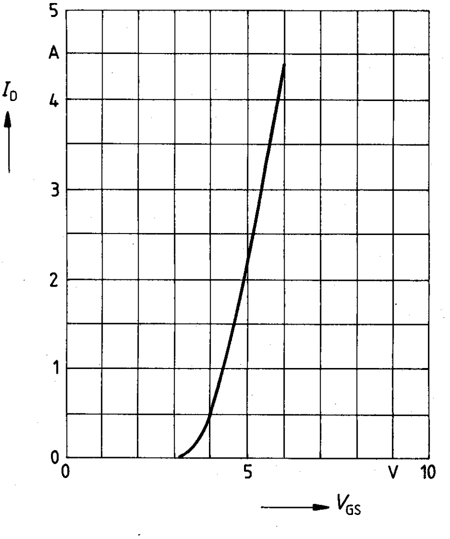
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



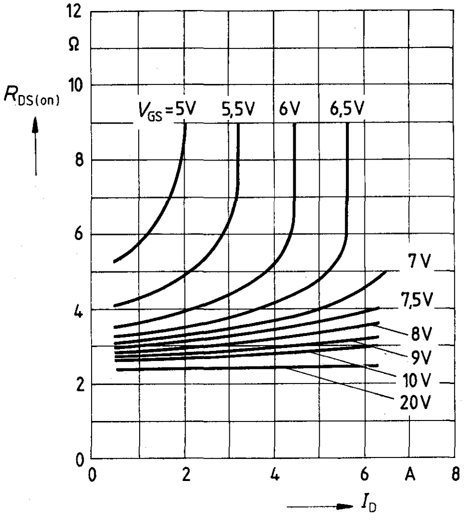
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



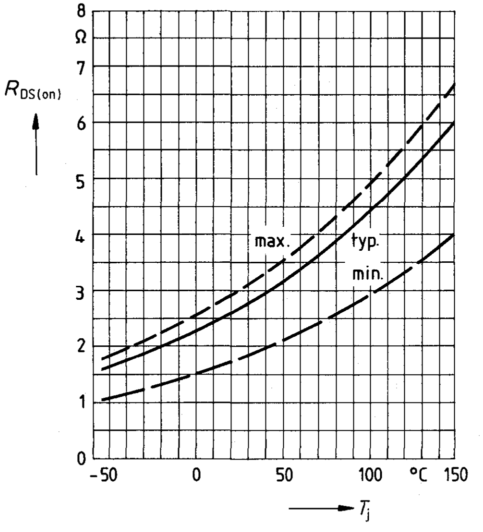
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



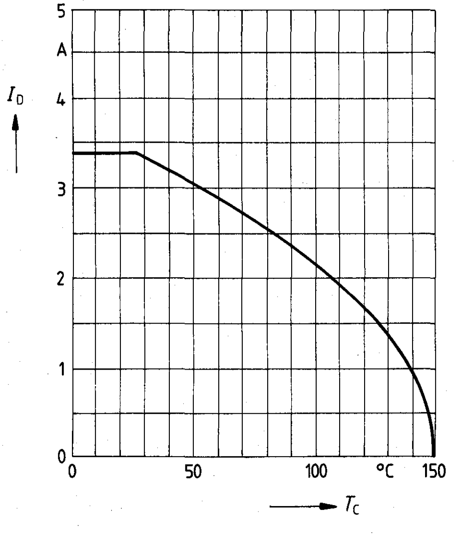
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



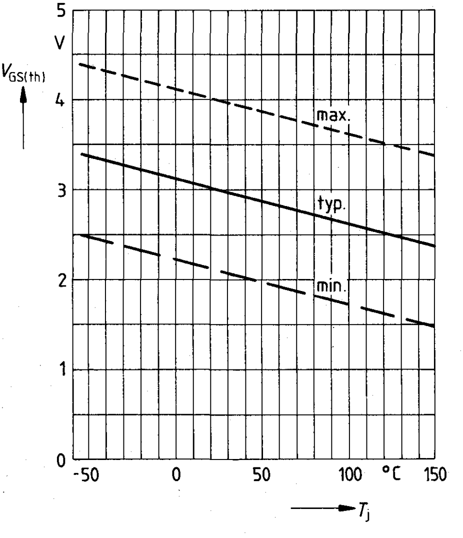
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 1.5$ A, $V_{GS} = 10$ V



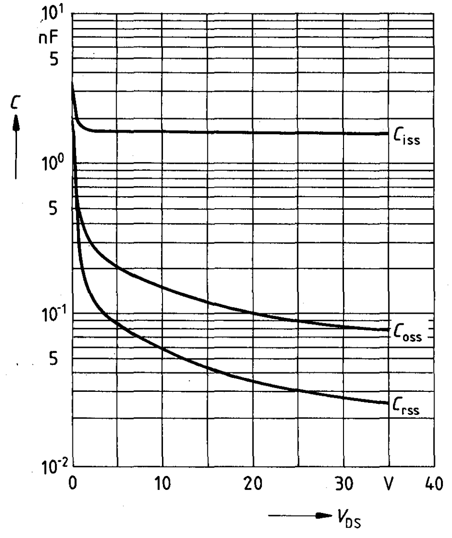
Continuous drain current $I_D = f(T_{case})$



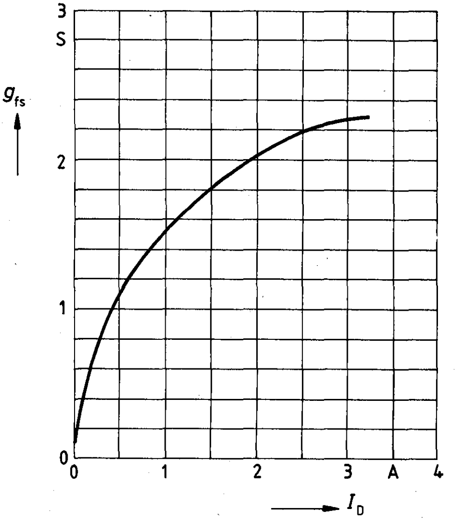
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



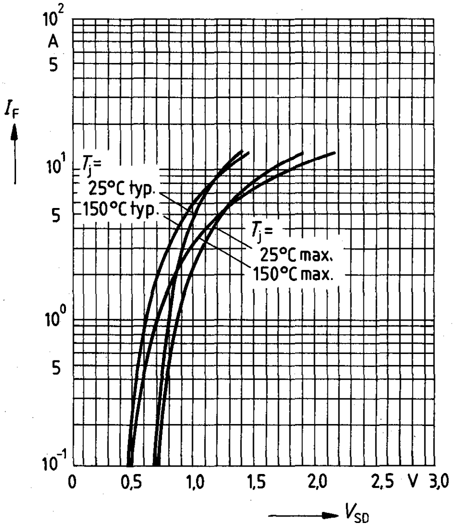
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



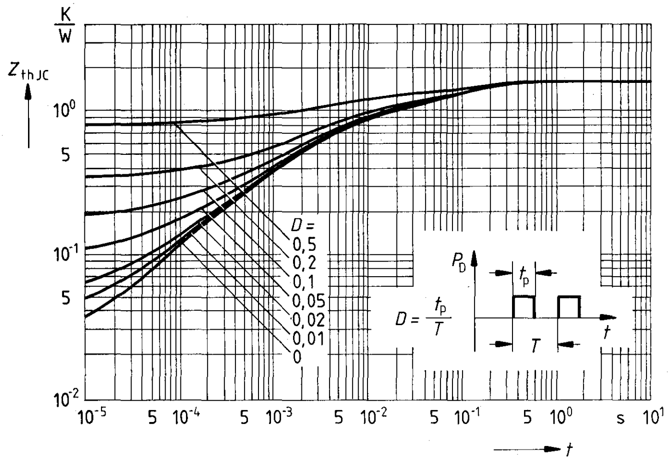
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



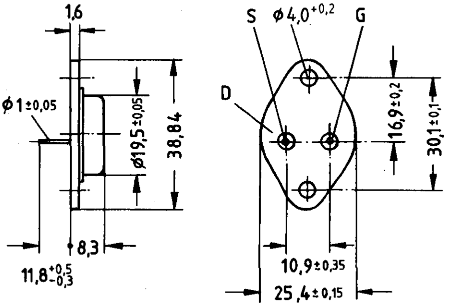
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **800 V**
Continuous drain current I_D = **5,3 A**
Drain-source on-resistance $R_{DS(on)}$ = **2,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 84	C67078-A1013-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	800V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	800V
Continuous drain current, T_{case} = 25 °C	I_D	5,3A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	21A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\,JA}$	≤35K/W
	$R_{th\,JC}$	≤1,0K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	800	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 800V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	1,6	2,0	Ω	V_{GS} = 10V I_D = 3A

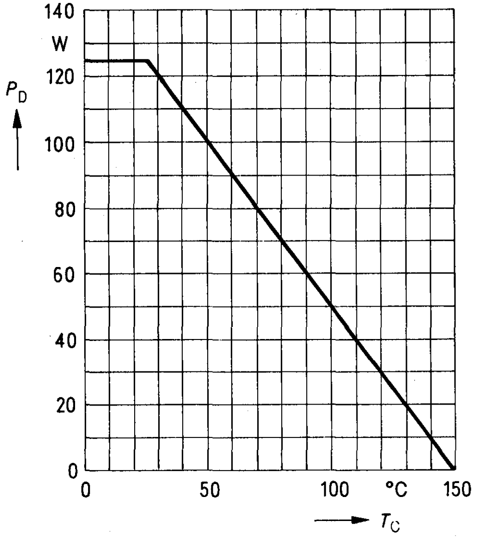
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,8	3,0	–	S	V_{DS} = 25V I_D = 3A
Input capacitance	C_{iss}	–	3900	5000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	200	350		
Reverse transfer capacitance	C_{rss}	–	80	140		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	60	90	ns	V_{CC} = 30V I_D = 2,5A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	90	140		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		

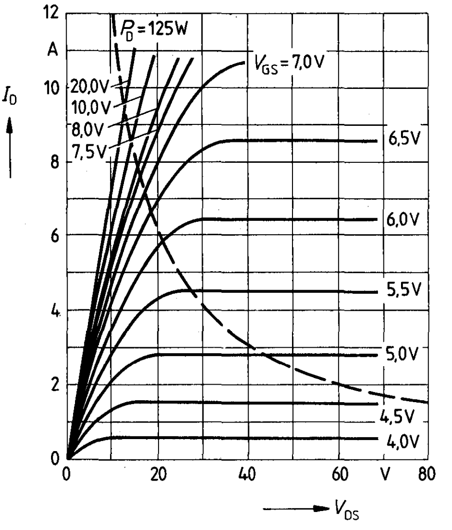
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	5,3	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	21		
Diode forward on-voltage	V_{SD}	–	1,0	1,45	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1800	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	25	–	µC	

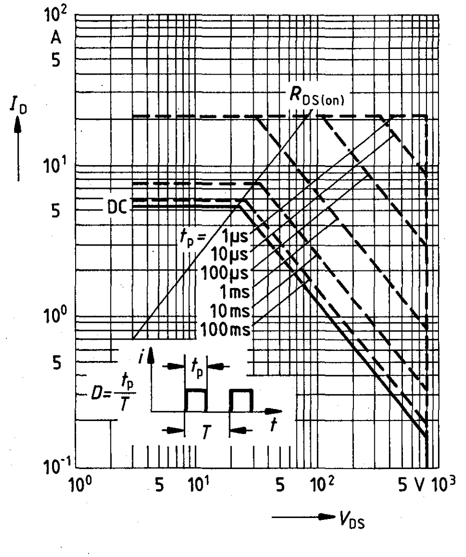
Power dissipation $P_D = f(T_{case})$



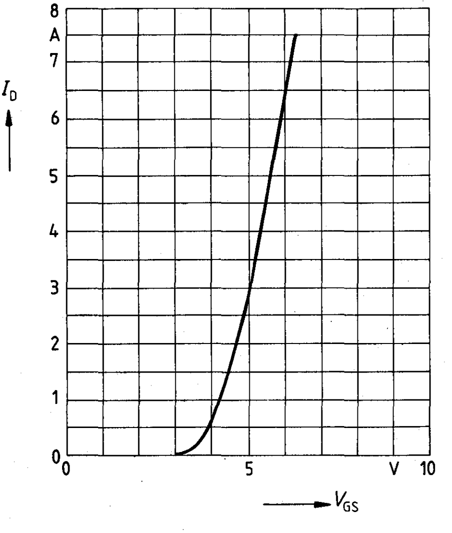
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



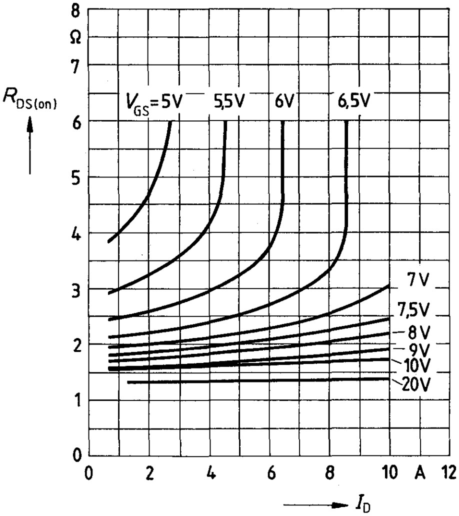
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



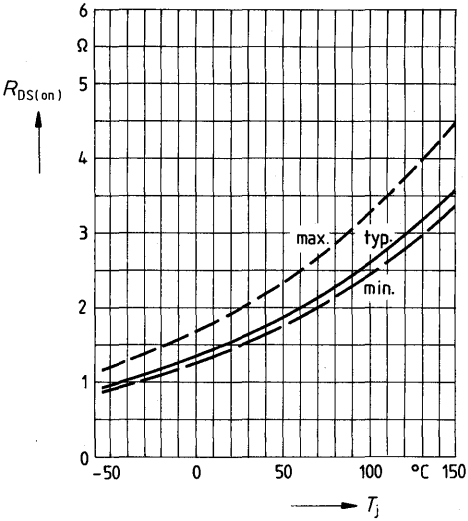
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



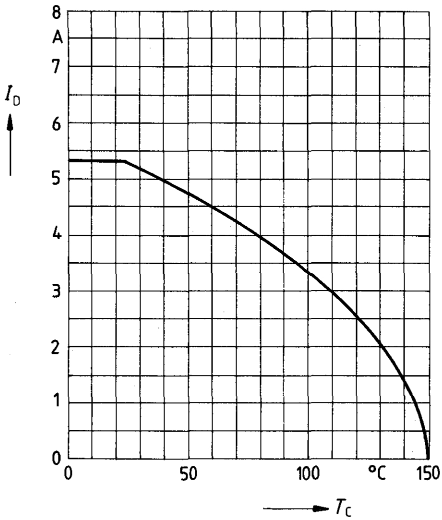
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



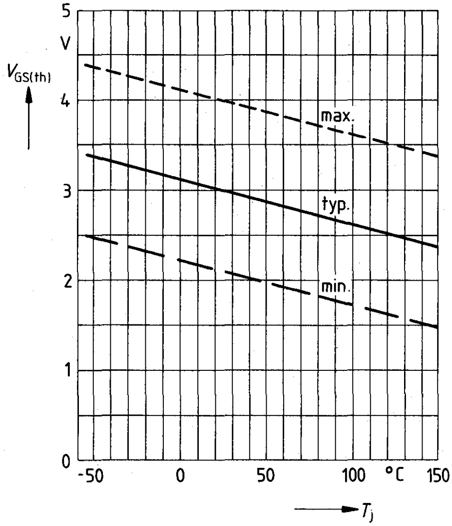
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 3.0$ A, $V_{GS} = 10$ V



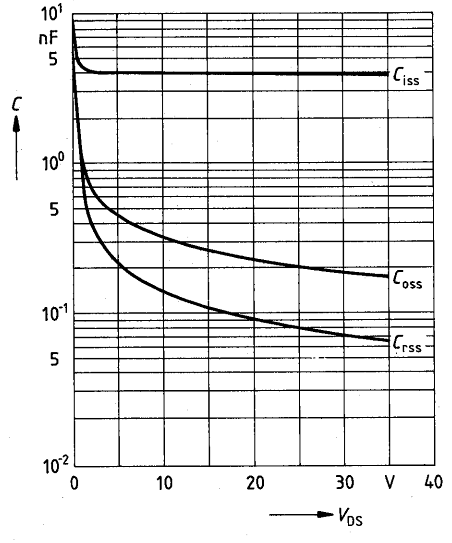
Continuous drain current $I_D = f(T_{case})$



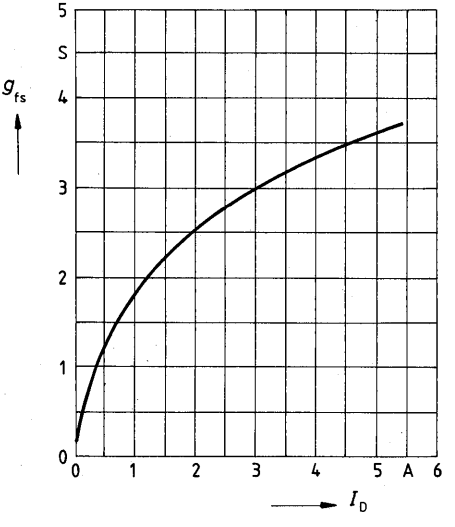
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



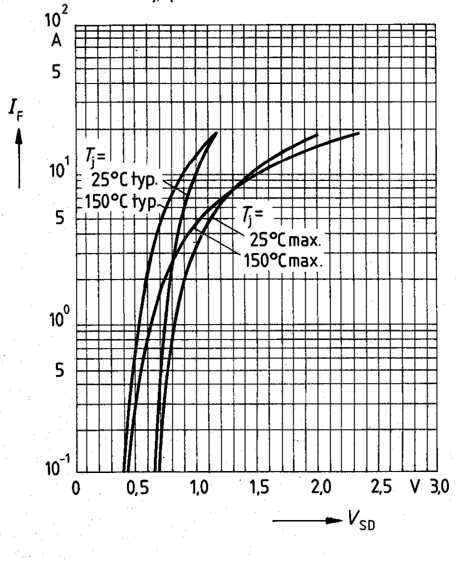
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



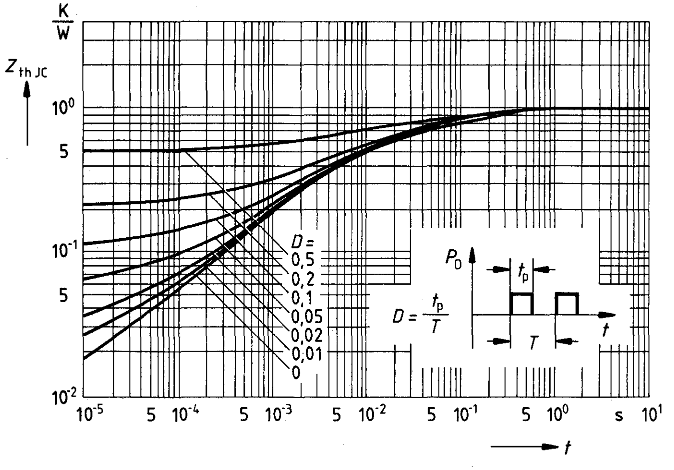
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°$C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



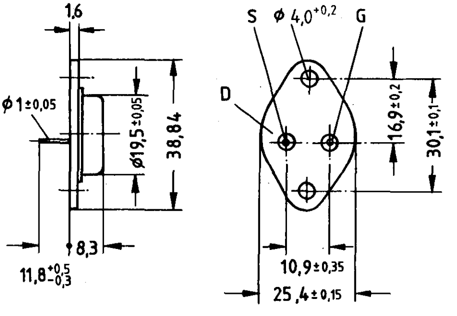
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage	V_{DS}	**= 800 V**
Continuous drain current	I_D	**= 6,0 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 1,5 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 84 A	C67078-A1013-A3



Dimensions in mm

Absolute maximum ratings		
Drain-source voltage	V_{DS}	800V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	800V
Continuous drain current, T_{case} = 30 °C	I_D	6,0A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	24A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\ JA}$	≤35K/W
	$R_{th\ JC}$	≤1,0K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	800	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 800V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	1,3	1,5	Ω	V_{GS} = 10V I_D = 3A

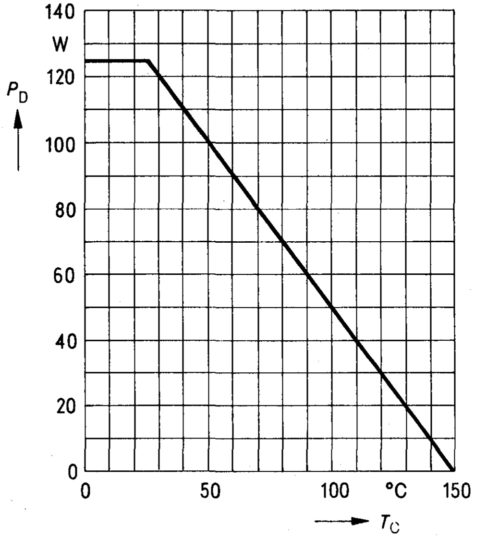
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,8	3,0	–	S	V_{DS} = 25V I_D = 3A
Input capacitance	C_{iss}	–	3900	5000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	200	350		
Reverse transfer capacitance	C_{rss}	–	80	140		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	60	90	ns	V_{CC} = 30V I_D = 2,6A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	90	140		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		

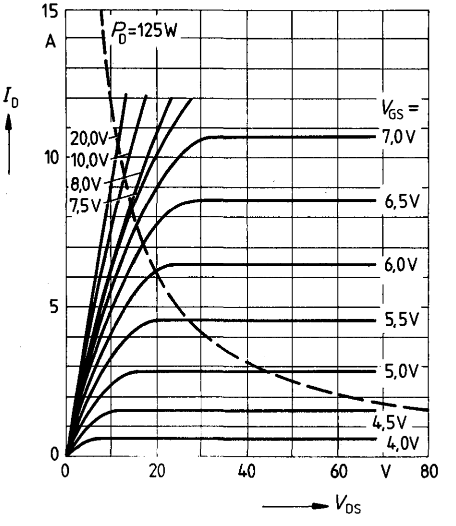
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	6,0	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	24		
Diode forward on-voltage	V_{SD}	–	1,1	1,5	V	I_F = I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1800	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	25	–	µC	

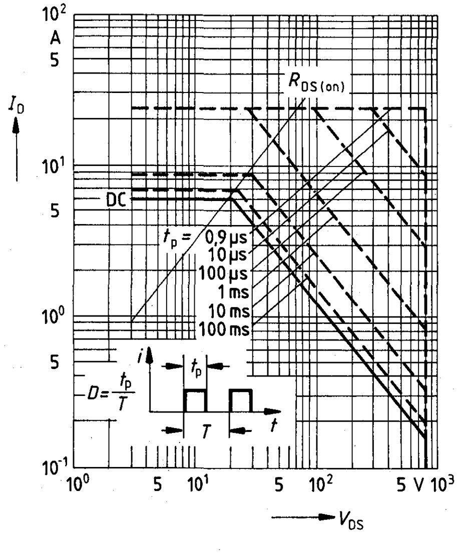
Power dissipation $P_D = f(T_{case})$



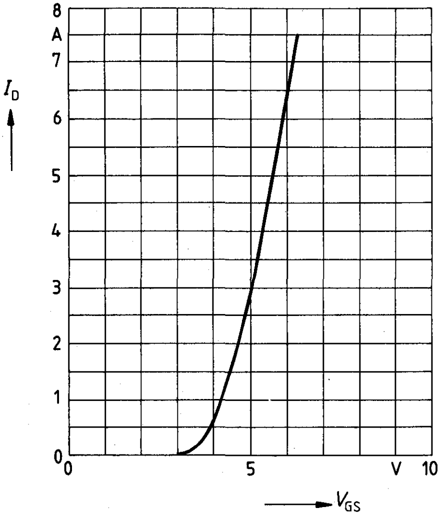
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



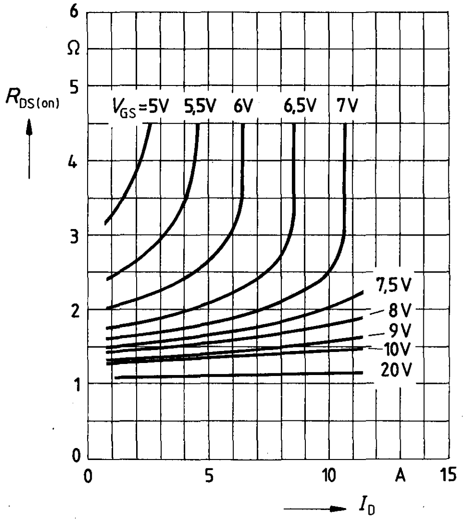
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



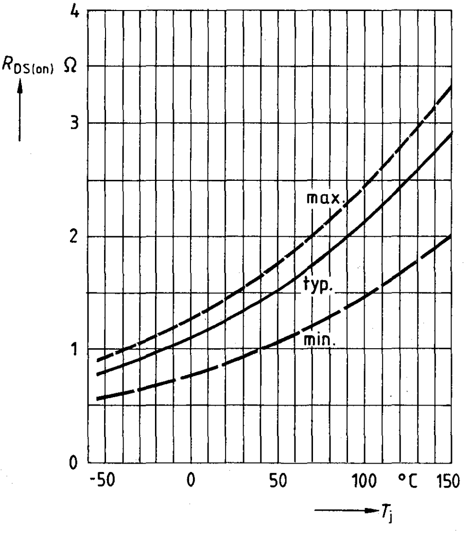
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



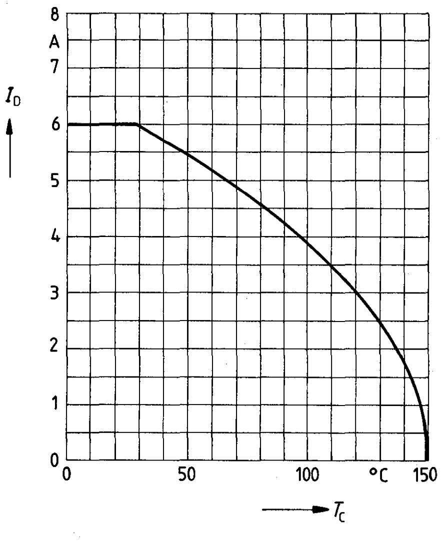
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25°C$



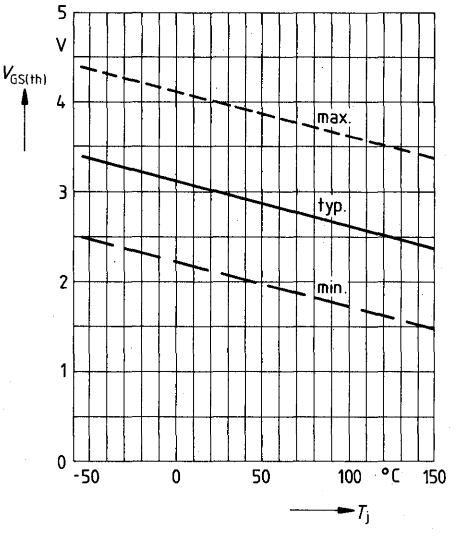
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 3.0$ A, $V_{GS} = 10$ V



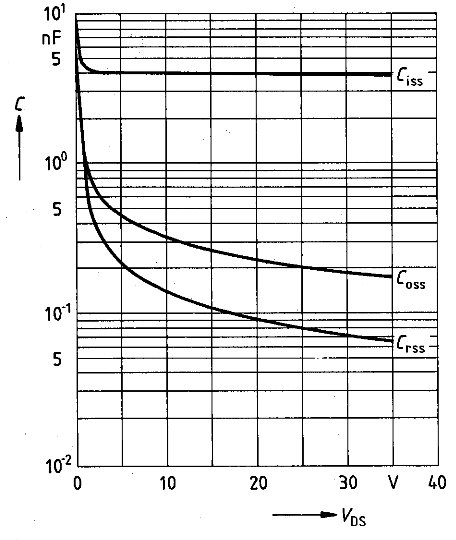
Continuous drain current $I_D = f(T_{case})$



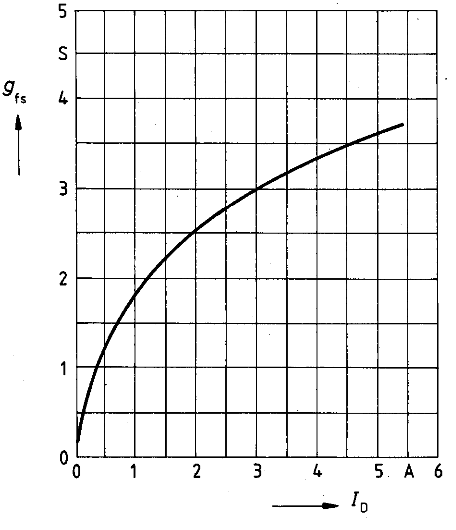
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



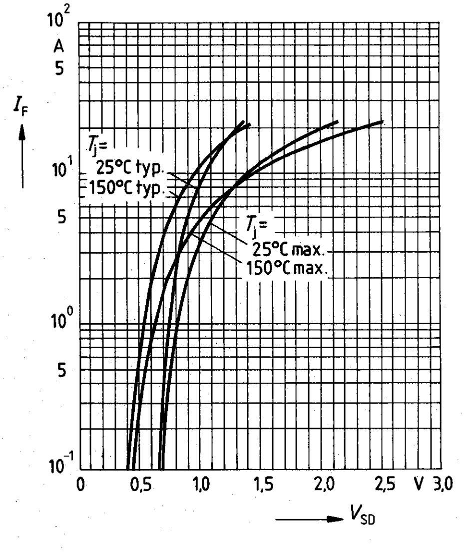
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



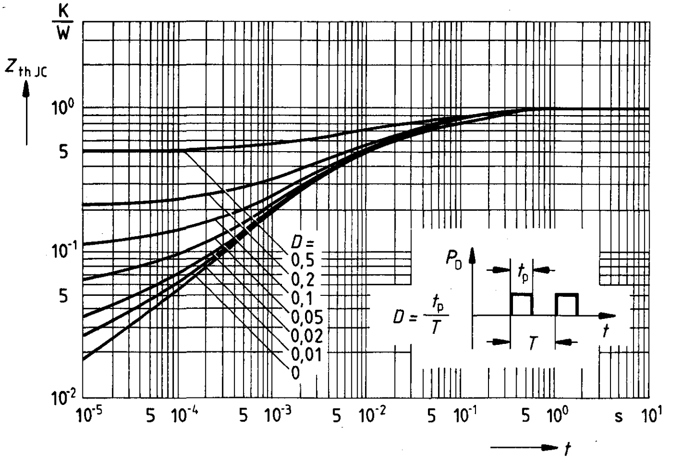
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$°C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



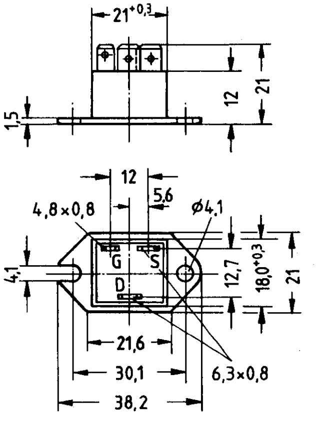
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p/T$



Drain-source voltage V_{DS} **= 800 V**
Continuous drain current I_D **= 4,3 A**
Drain-source on-resistance $R_{DS(on)}$ **= 2,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package TO 238 AA with insulated metal base plate in accordance with JEDEC, compatible with TO 3; AMP plug-in connections.
Approx. weight 21 g

Type	Ordering code
BUZ 88	C67078-A1609-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	800V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	800V
Continuous drain current, T_{case} = 25 °C	I_D	4,3A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	17A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	83,3W
Operating and storage temperature range	T_j T_{stg}	−40 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	3500Vdc[1])
DIN humidity category		F
Thermal resistance	$R_{th\ JA}$	–
	$R_{th\ JC}$	≤1,5K/W

[1]) Isolation test voltage between drain and heat sink referred to standard climate 23/50 in accordance with DIN 50014.

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	800	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 800V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	1,7	2,0	Ω	V_{GS} = 10V I_D = 3A

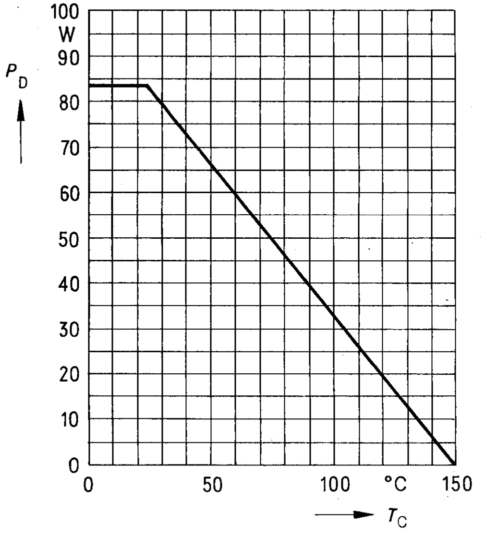
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,8	3,0	–	S	V_{DS} = 25V I_D = 3A
Input capacitance	C_{iss}	–	3900	5000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	200	350		
Reverse transfer capacitance	C_{rss}	–	80	140		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	60	90	ns	V_{CC} = 30V I_D = 2,5A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	90	140		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		

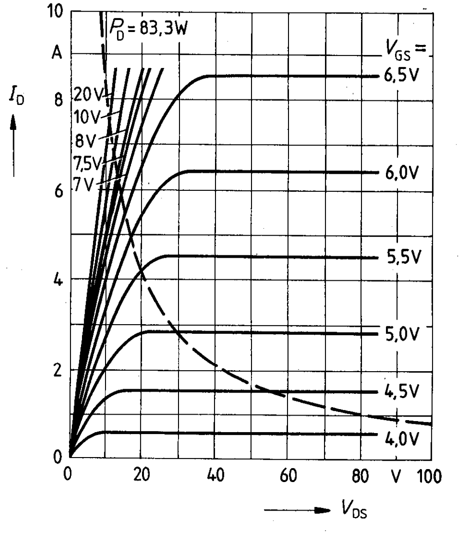
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	4,3	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	17		
Diode forward on-voltage	V_{SD}	–	1,1	1,4	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1800	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	25	–	µC	

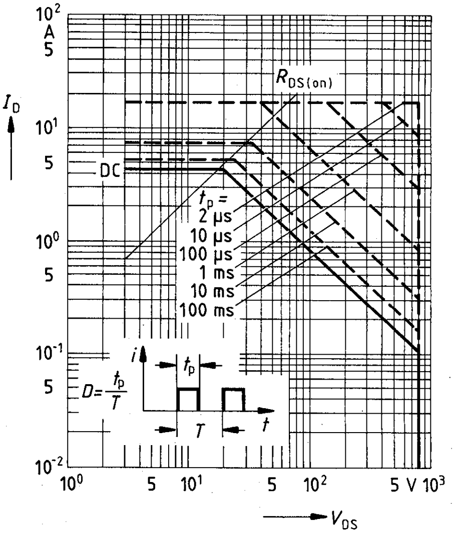
Power dissipation $P_D = f(T_{case})$



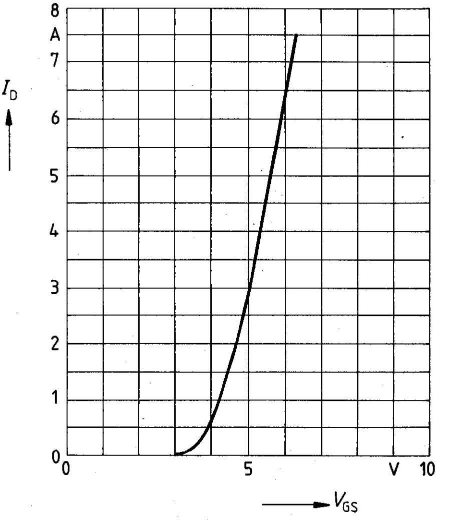
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



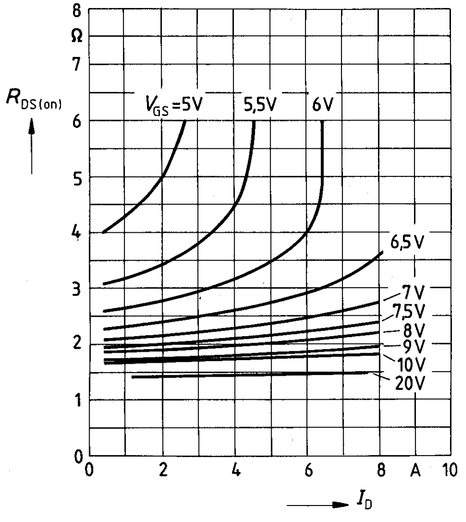
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



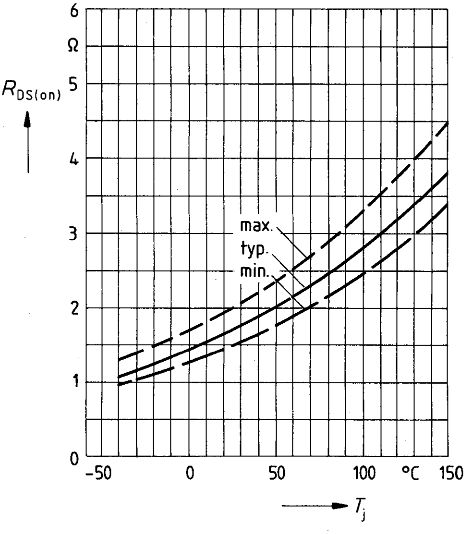
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



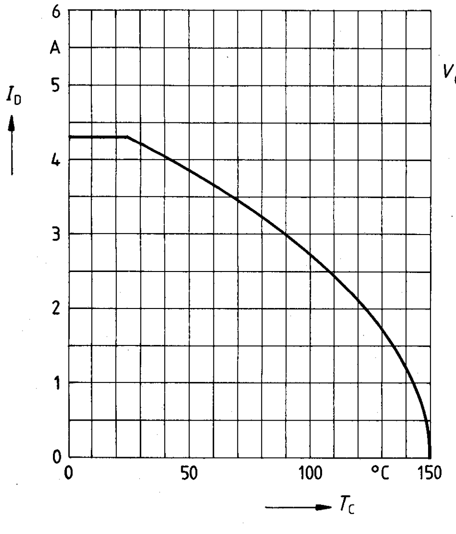
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



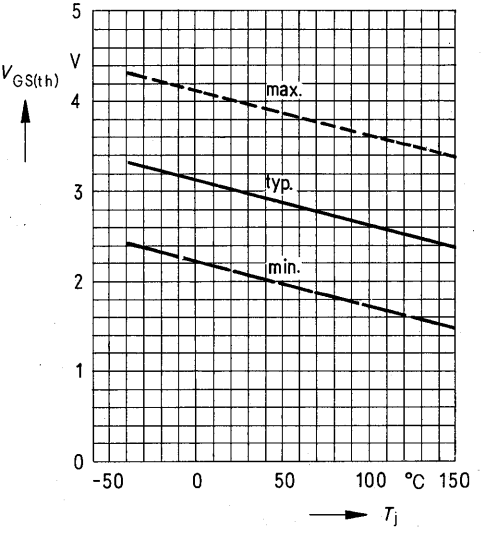
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 3.0$ A, $V_{GS} = 10$ V



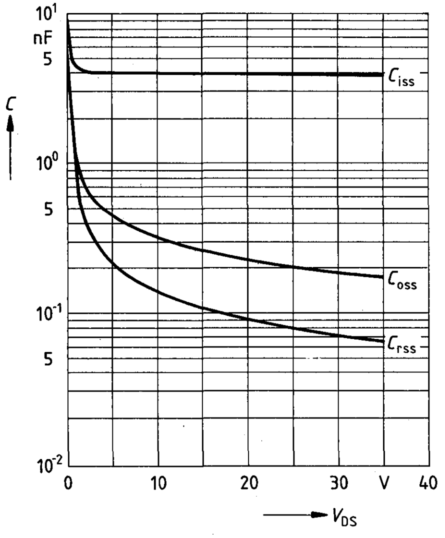
Continuous drain current $I_D = f(T_{case})$



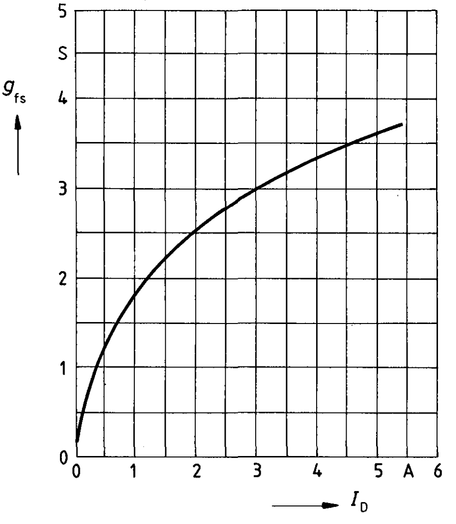
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



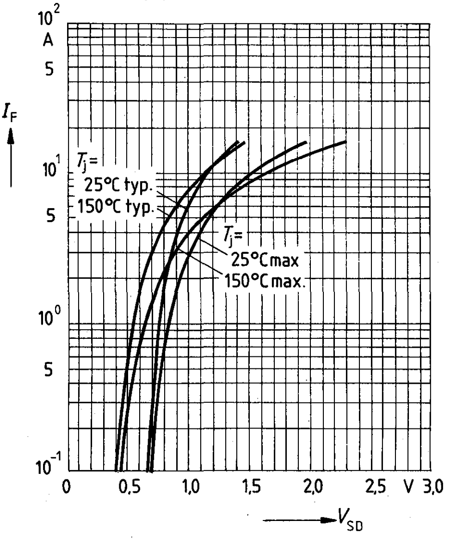
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



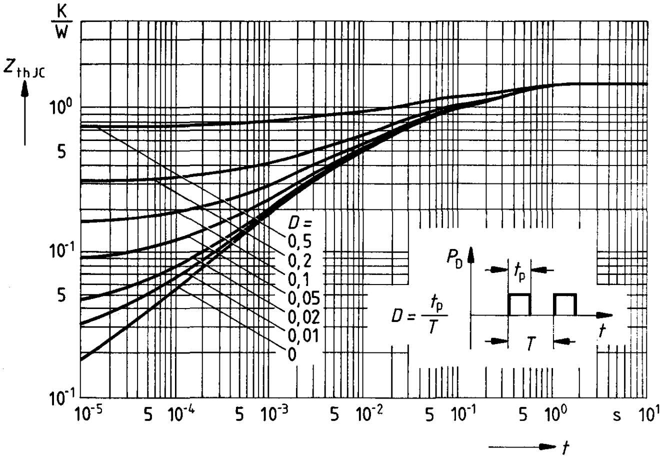
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$ °C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



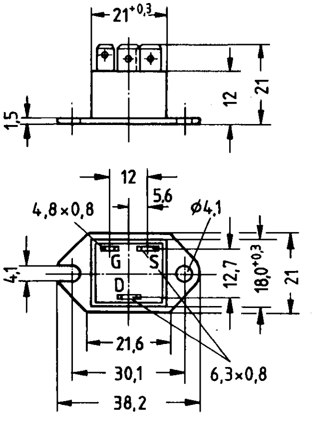
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 800 V**
Continuous drain current I_D **= 5,0 A**
Drain-source on-resistance $R_{DS(on)}$ **= 1,5 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package TO 238 AA with insulated metal base plate in accordance with JEDEC, compatible with TO 3; AMP plug-in connections.
Approx. weight 21 g

Type	Ordering code
BUZ 88 A	C67078-A1609-A3



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	800V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	800V
Continuous drain current, T_{case} = 25 °C	I_D	5,0A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	20A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	83,3W
Operating and storage temperature range	T_j T_{stg}	−40 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	3500Vdc[1]
DIN humidity category		F
Thermal resistance	$R_{th\,JA}$	–
	$R_{th\,JC}$	≤1,5K/W

[1]) Isolation test voltage between drain and heat sink referred to standard climate 23/50 in accordance with DIN 50014.

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	800	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 800V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	1,3	1,5	Ω	V_{GS} = 10V I_D = 3A

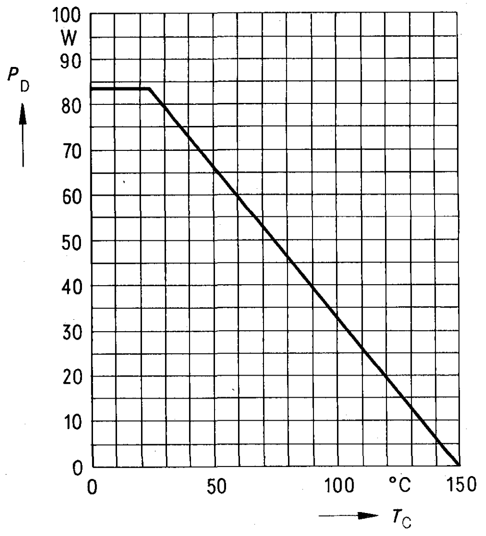
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,8	3,0	–	S	V_{DS} = 25V I_D = 3A
Input capacitance	C_{iss}	–	3900	5000	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	200	350		
Reverse transfer capacitance	C_{rss}	–	80	140		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	60	90	ns	V_{CC} = 30V I_D = 2,6A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	90	140		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		

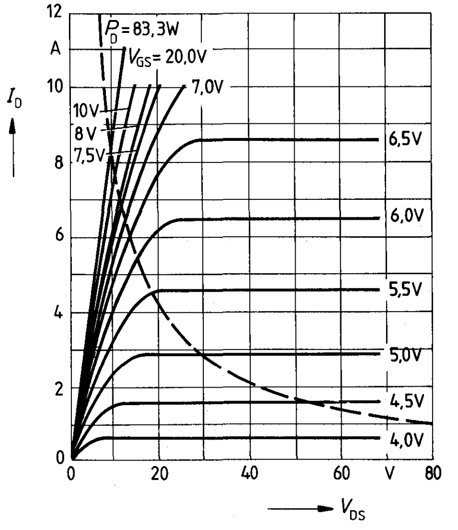
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	5,0	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	20		
Diode forward on-voltage	V_{SD}	–	1,1	1,45	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1800	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	25	–	µC	

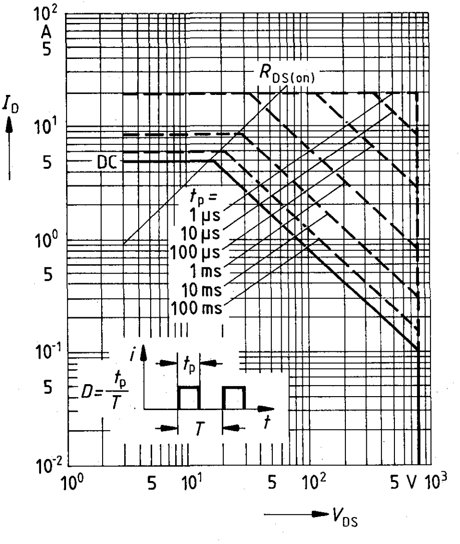
Power dissipation $P_D = f(T_{case})$



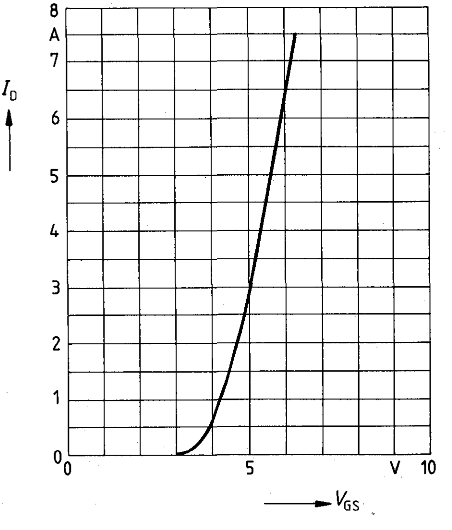
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



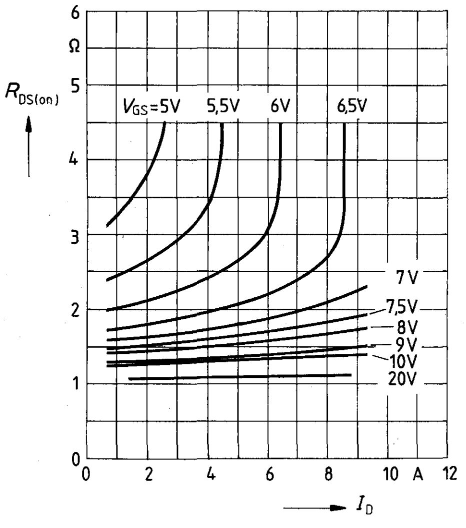
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



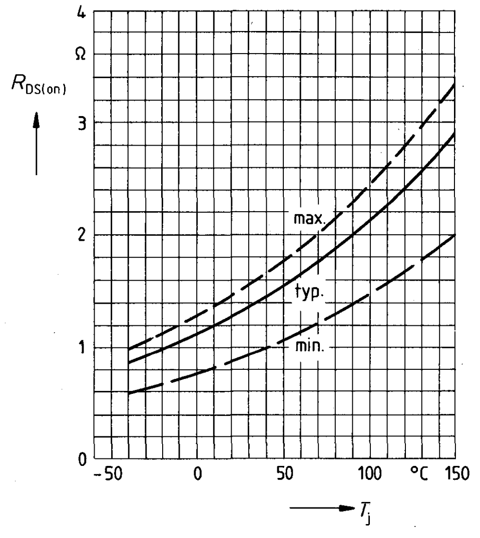
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



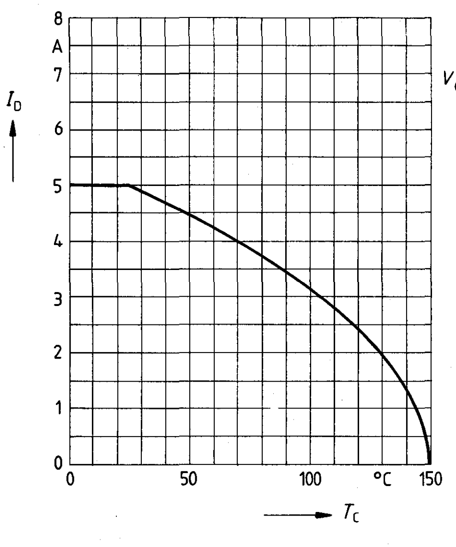
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



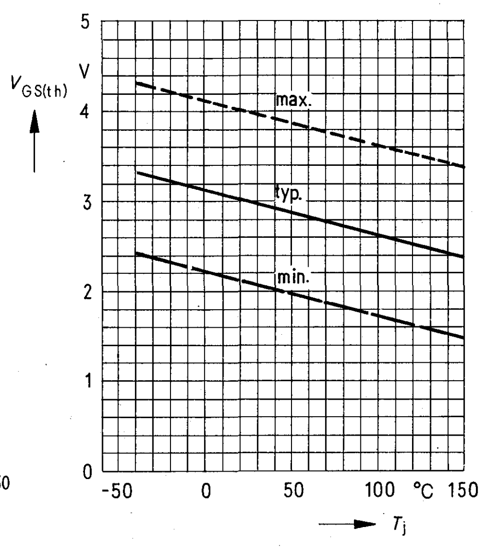
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 3.0\,A$, $V_{GS} = 10\,V$



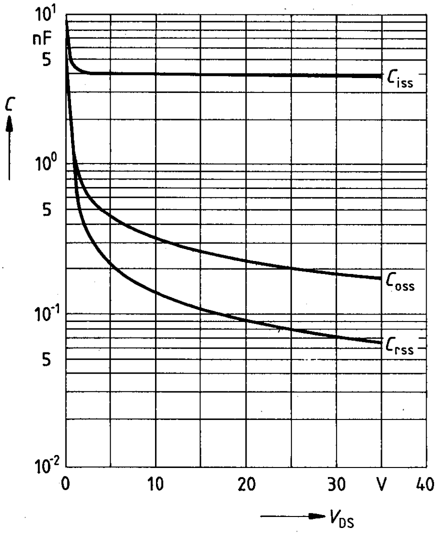
Continuous drain current $I_D = f(T_{case})$



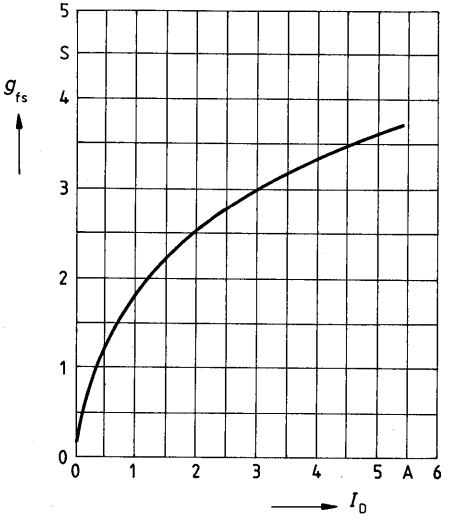
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



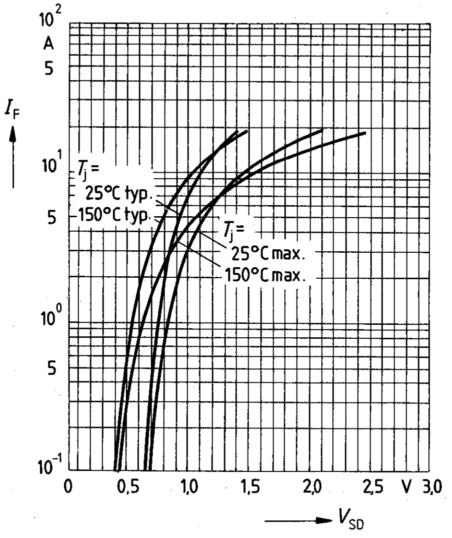
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



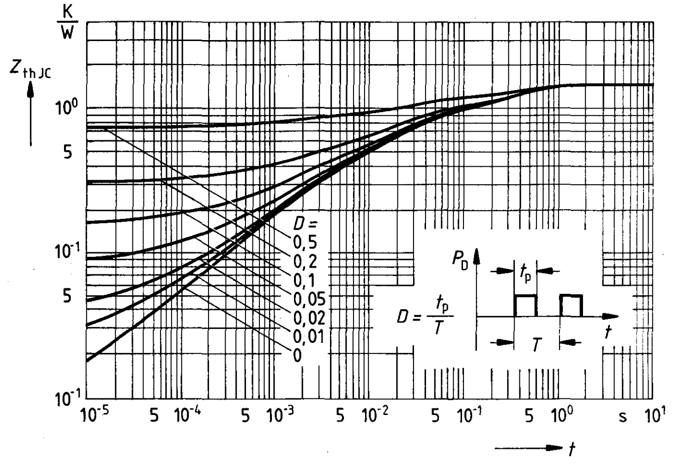
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

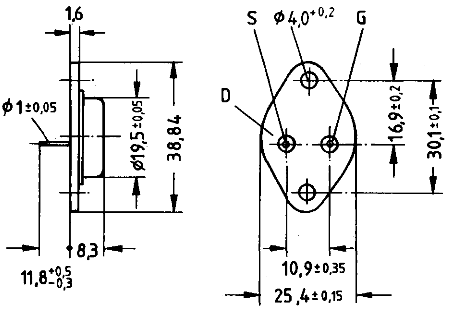


Drain-source voltage V_{DS} = **400 V**
Continuous drain current I_D = **12,5 A**
Drain-source on-resistance $R_{DS(on)}$ = **0,40 Ω**

Description SIPMOS FRED power FET, N-channel enhancement mode with integrated fast-recovery reverse diode

Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 201	C67078-A1101-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	400V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	400V
Continuous drain current, T_{case} = 30 °C	I_D	12,5A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	50A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\ JA}$	≤35K/W
	$R_{th\ JC}$	≤1,0K/W

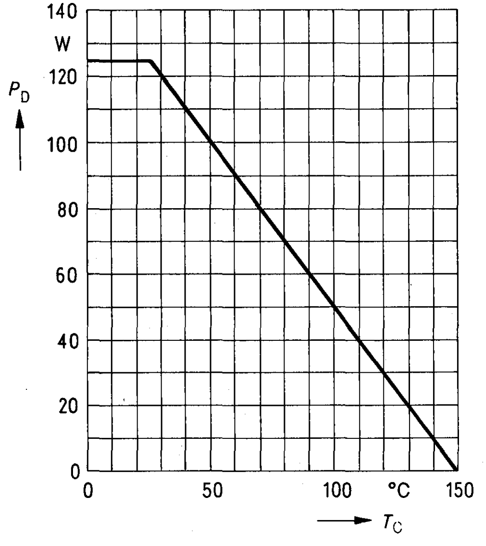
Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

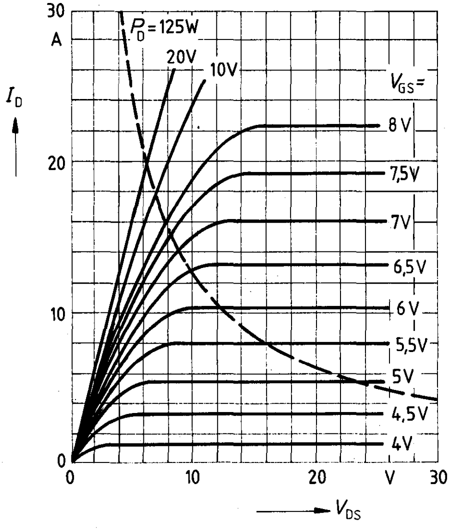
Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions	
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	400	–	–	V	V_{GS} = 0V I_D = 1mA	
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA	
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	μA	T_j = 25 °C T_j = 125 °C V_{DS} = 400V V_{GS} = 0V	
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V	
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,35	0,40	Ω	V_{GS} = 10V I_D = 5,0A	
Dynamic ratings							
Forward transconductance	g_{fs}	3,3	5,0	–	S	V_{DS} = 25V I_D = 5,0A	
Input capacitance	C_{iss}	–	3800	4900	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz	
Output capacitance	C_{oss}	–	300	500			
Reverse transfer capacitance	C_{rss}	–	120	200			
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω	
	t_r	–	80	120			
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430			
	t_f	–	110	140			
Reverse diode							
Continuous reverse drain current	I_{DR}	–	–	12,5	A	T_C = 25 °C	
Pulsed reverse drain current	I_{DRM}	–	–	50			
Diode forward on-voltage	V_{SD}	–	1,4	1,9	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C	
Reverse recovery time	t_{rr}	–	180	250	ns	T_j = 25 °C	I_F = I_{DR} di_F/dt = 100A/μs V_R = 100V
		–	220	300		= 150 °C	
Reverse recovery charge	Q_{rr}	–	0,65	1,2	μC	T_j = 25 °C	
		–	2,6	5,0		= 150 °C	
Repetitive peak reverse current	I_{RRM}	–	–	–	A	T_j = 25 °C	
		–	15	–		= 150 °C	

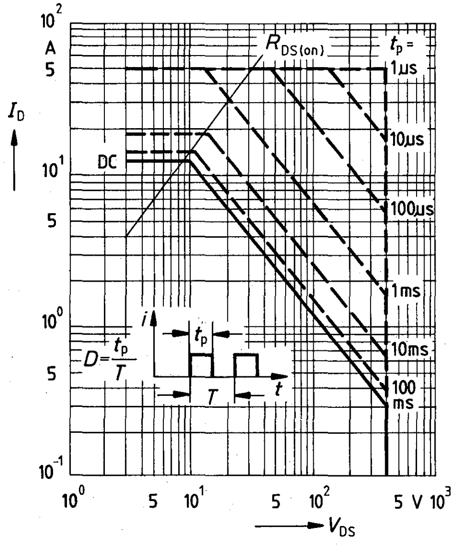
Power dissipation $P_D = f(T_{case})$



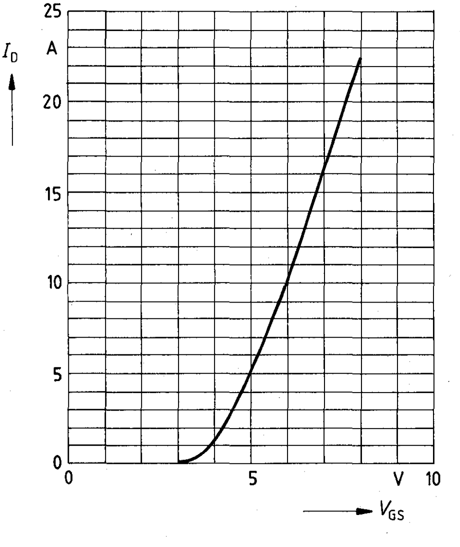
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



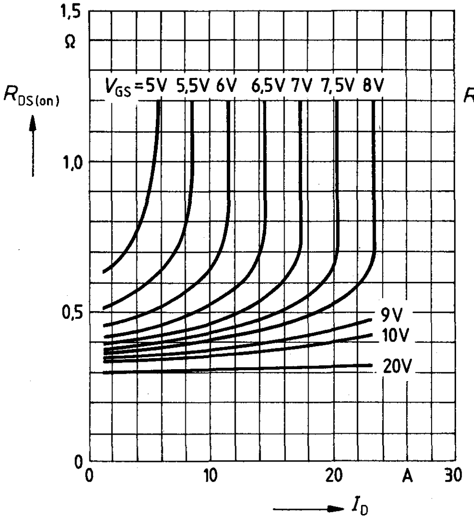
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



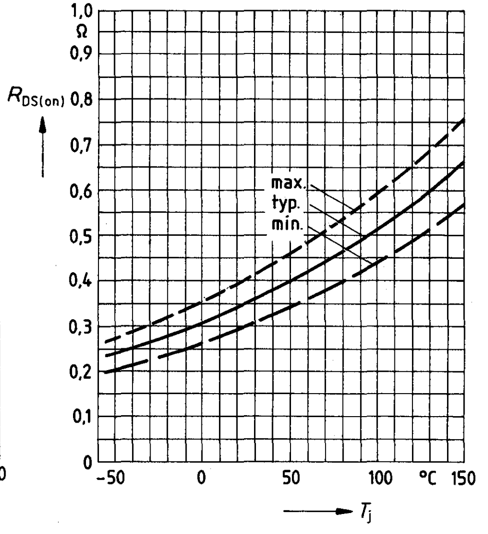
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



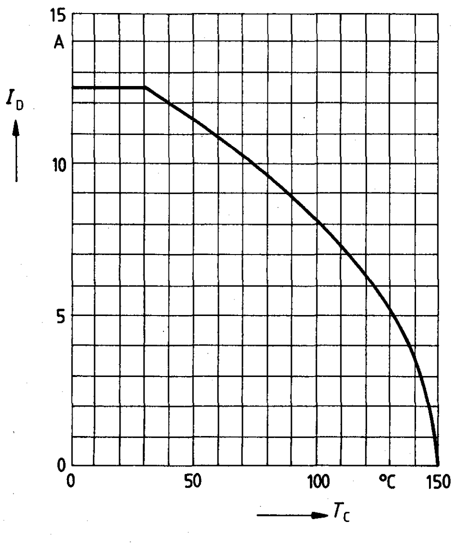
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



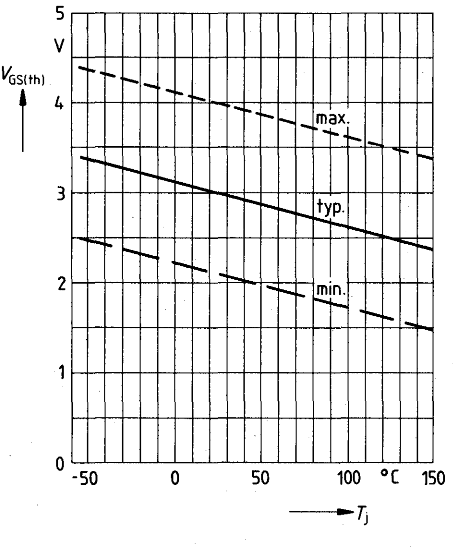
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 5.0\,A$, $V_{GS} = 10\,V$



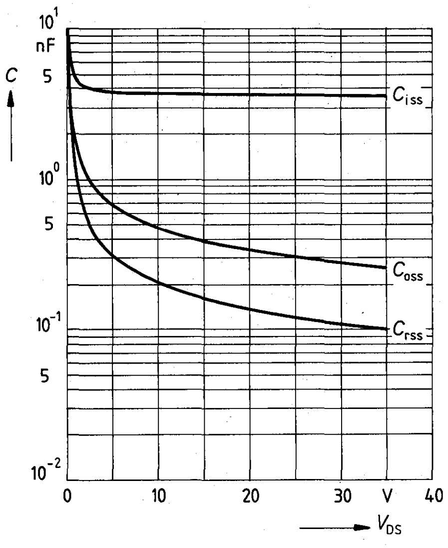
Continuous drain current $I_D = f(T_{case})$



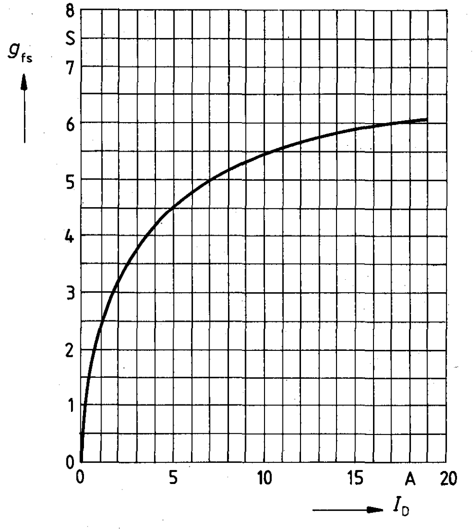
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



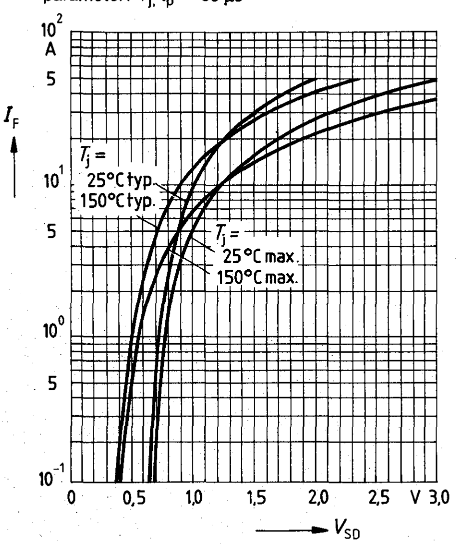
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



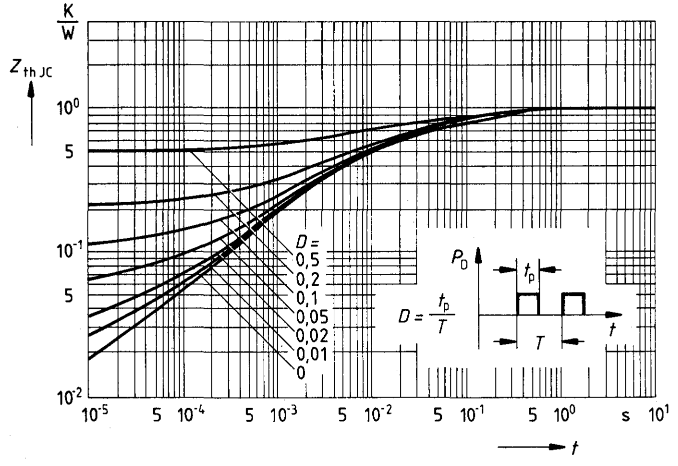
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

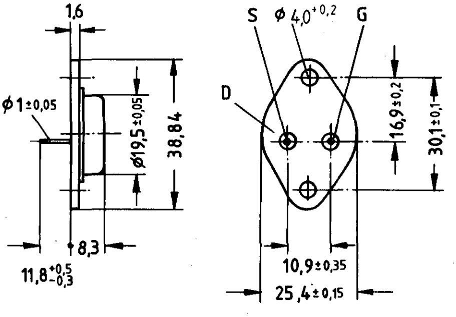


Drain-source voltage	V_{DS}	**= 500 V**
Continuous drain current	I_D	**= 10 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 0,60 Ω**

Description SIPMOS FRED power FET, N-channel enhancement mode with integrated fast-recovery reverse diode

Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 210	C67078-A1102-A2



Dimensions in mm

Absolute maximum ratings		
Drain-source voltage	V_{DS}	500V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	500V
Continuous drain current, T_{case} = 35 °C	I_D	10,0A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	40A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\ JA}$	≤35K/W
	$R_{th\ JC}$	≤1,0K/W

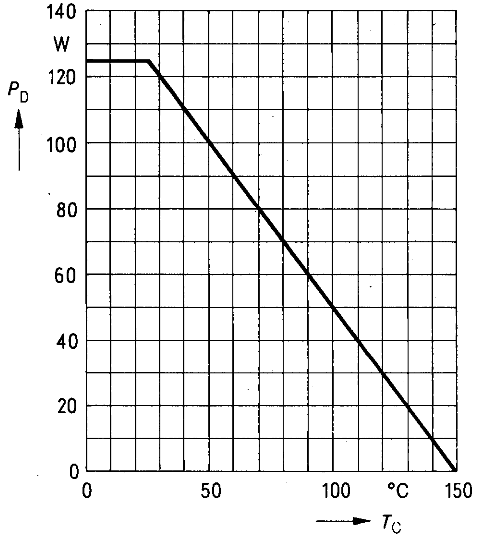
Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

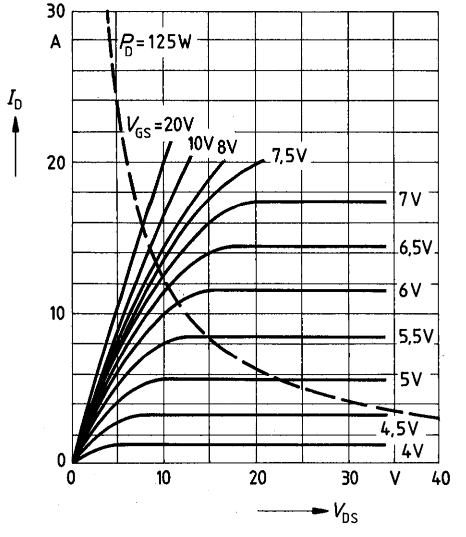
Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	500	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 500V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,55	0,60	Ω	V_{GS} = 10V I_D = 5,0A
Dynamic ratings						
Forward transconductance	g_{fs}	2,7	5,0	–	S	V_{DS} = 25V I_D = 5,0A
Input capacitance	C_{iss}	–	3800	4900	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	250	400		
Reverse transfer capacitance	C_{rss}	–	100	170		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,8A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	80	120		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		
Reverse diode						
Continuous reverse drain current	I_{DR}	–	–	10,0	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	40		
Diode forward on-voltage	V_{SD}	–	1,3	1,7	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	180	250	ns	T_j = 25 °C; $I_F = I_{DR}$, di_F/dt = 100A/µs, V_R = 100V
		–	220	300		= 150 °C
Reverse recovery charge	Q_{rr}	–	0,65	1,2	µC	T_j = 25 °C
		–	2,6	5,0		= 150 °C
Repetitive peak reverse current	I_{RRM}	–	–	–	A	T_j = 25 °C
		–	15	–		= 150 °C

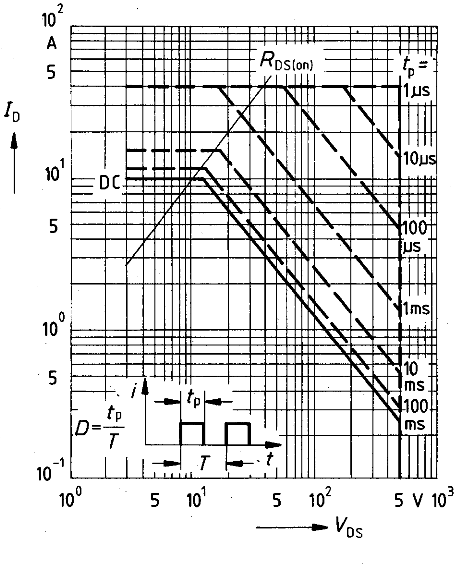
Power dissipation $P_D = f(T_{case})$



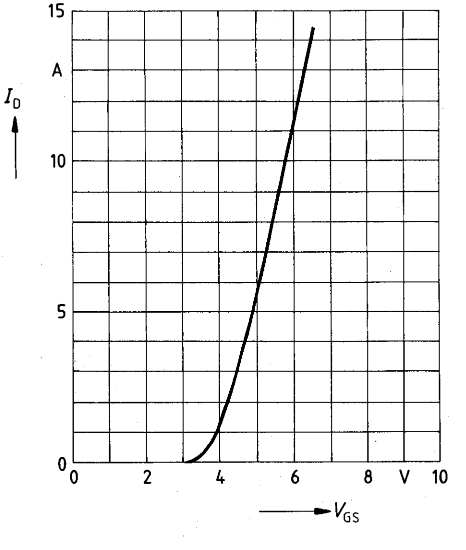
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



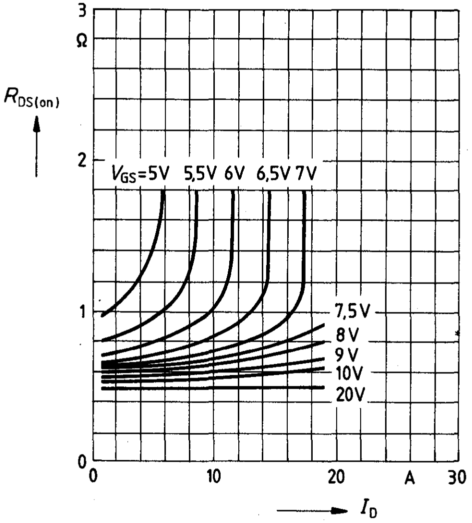
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



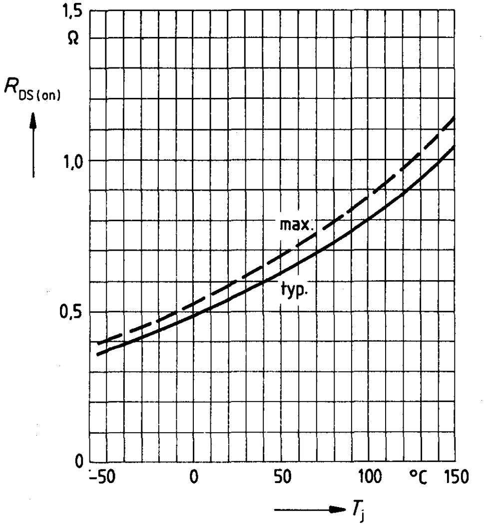
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



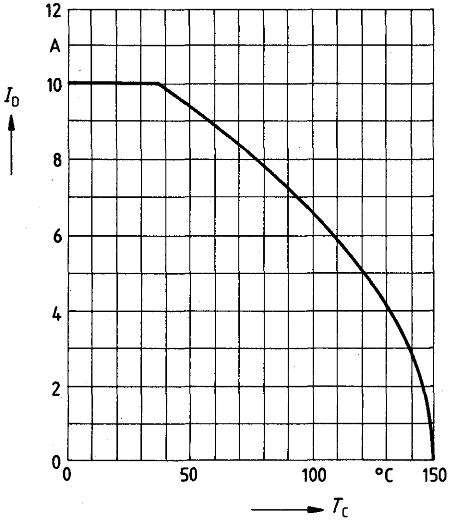
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



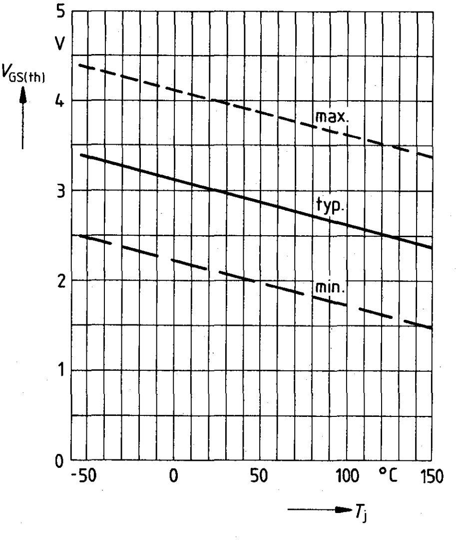
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 5.0$ A, $V_{GS} = 10$ V



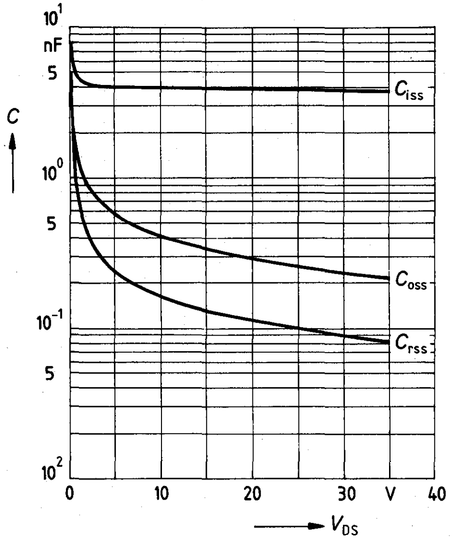
Continuous drain current $I_D = f(T_{case})$



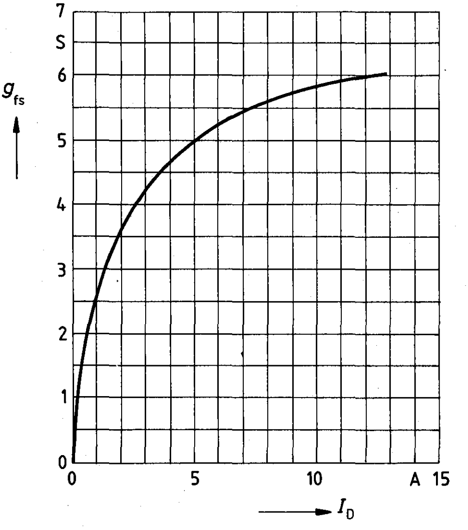
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



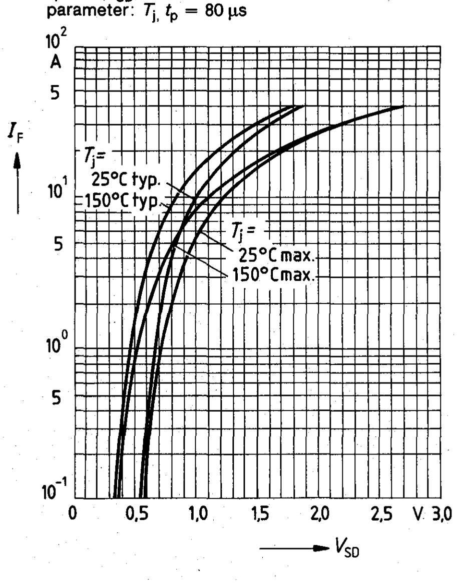
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



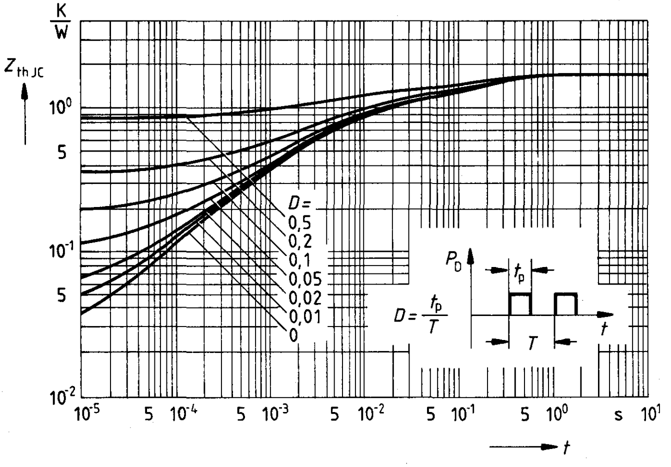
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

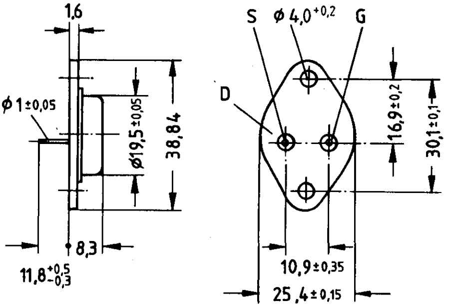


Drain-source voltage	V_{DS}	**= 500 V**
Continuous drain current	I_D	**= 9,0 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 0,8 Ω**

Description SIPMOS FRED power FET, N-channel enhancement mode with integrated fast-recovery reverse diode

Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

Type	Ordering code
BUZ 211	C67078-A1100-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	500V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	500V
Continuous drain current, T_{case} = 25 °C	I_D	9,0A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	36A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		C
Thermal resistance	$R_{th\,JA}$	≤35K/W
	$R_{th\,JC}$	≤1,0K/W

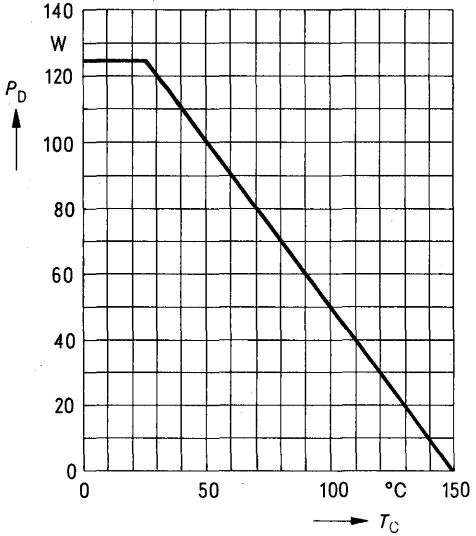
Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

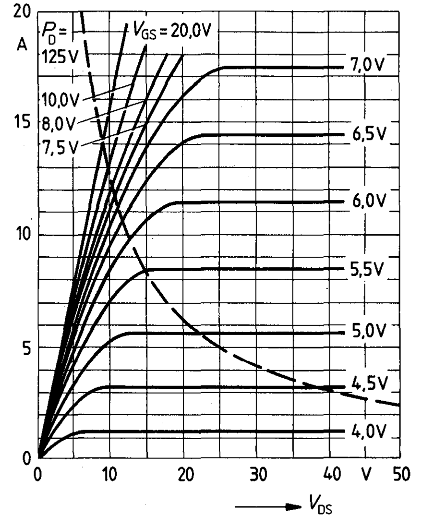
Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions	
Drain-source breakdown voltage	$V_{(BR)DSS}$	500	–	–	V	V_{GS} = 0V I_D = 1mA	
Gate threshold voltage	$V_{GS(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA	
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 500V V_{GS} = 0V	
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V	
Drain-source on-state resistance	$R_{DS(on)}$	–	0,7	0,8	Ω	V_{GS} = 10V I_D = 5,0A	
Dynamic ratings							
Forward transconductance	g_{fs}	2,7	5,0	–	S	V_{DS} = 25V I_D = 5,0A	
Input capacitance	C_{iss}	–	3800	4900	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz	
Output capacitance	C_{oss}	–	250	400			
Reverse transfer capacitance	C_{rss}	–	100	170			
Turn-on time t_{on} (t_{on} = $t_{d(on)}$ + t_r)	$t_{d(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,8A V_{GS} = 10V R_{GS} = 50Ω	
	t_r	–	80	120			
Turn-off time t_{off} (t_{off} = $t_{d(off)}$ + t_f)	$t_{d(off)}$	–	330	430			
	t_f	–	110	140			
Reverse diode							
Continuous reverse drain current	I_{DR}	–	–	9,0	A	T_C = 25 °C	
Pulsed reverse drain current	I_{DRM}	–	–	36			
Diode forward on-voltage	V_{SD}	–	1,3	1,6	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C	
Reverse recovery time	t_{rr}	–	180	250	ns	T_j = 25 °C	I_F = I_{DR} di_F/dt = 100A/µs V_R = 100V
		–	220	300		= 150 °C	
Reverse recovery charge	Q_{rr}	–	0,65	1,2	µC	T_j = 25 °C	
		–	2,6	5,0		= 150 °C	
Repetitive peak reverse current	I_{RRM}	–	–	–	A	T_j = 25 °C	
		–	15	–		= 150 °C	

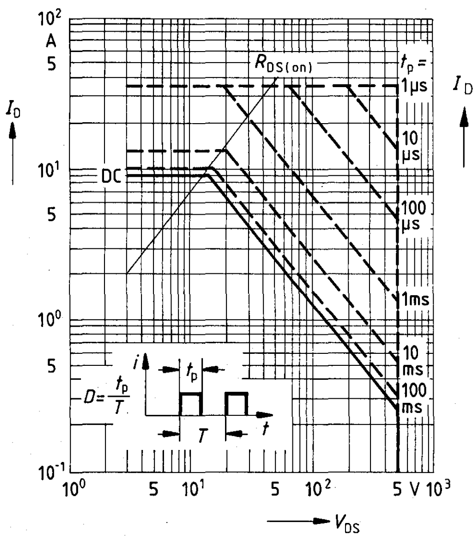
Power dissipation $P_D = f(T_{case})$



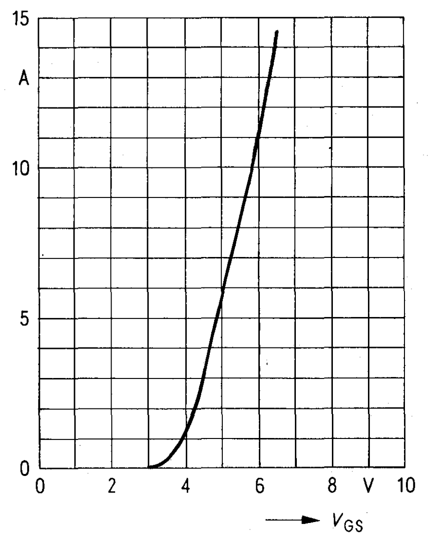
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



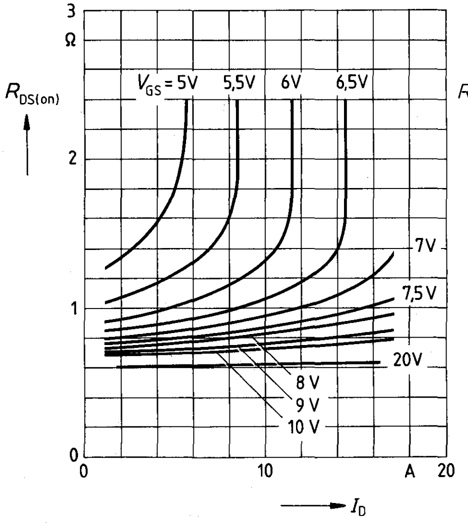
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



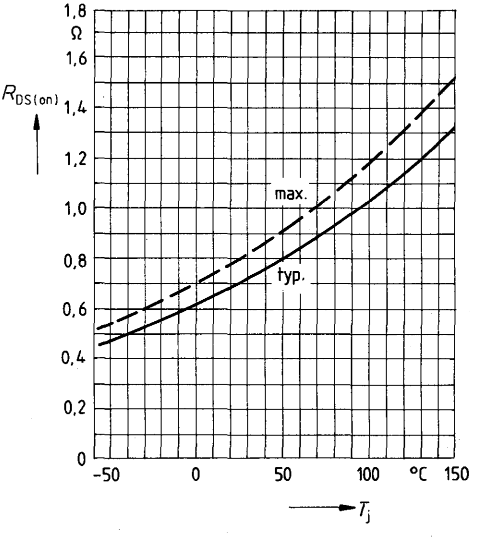
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



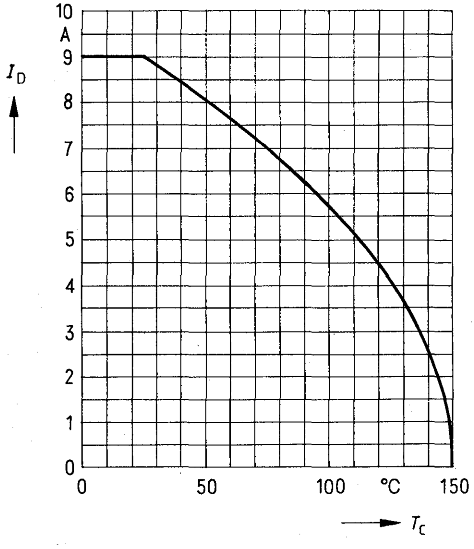
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



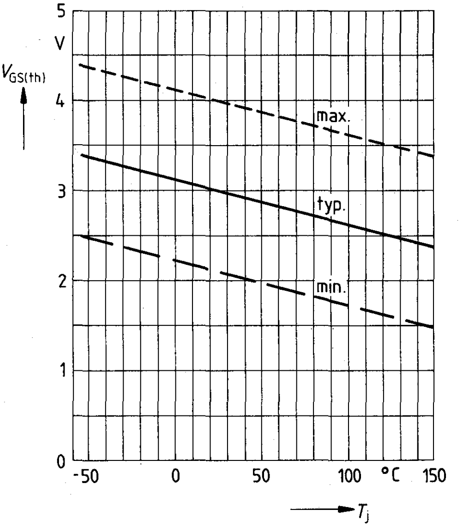
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 5.0\,A$, $V_{GS} = 10\,V$



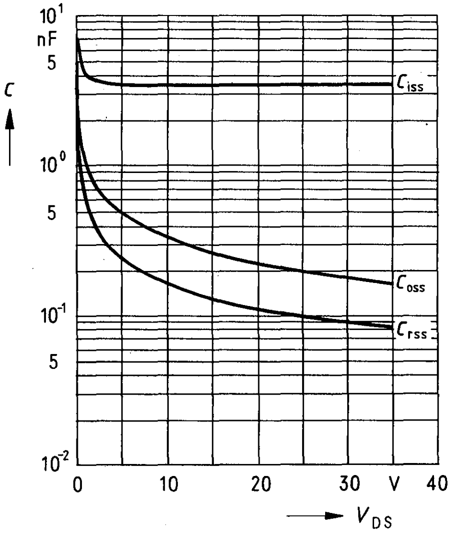
Continuous drain current $I_D = f(T_{case})$



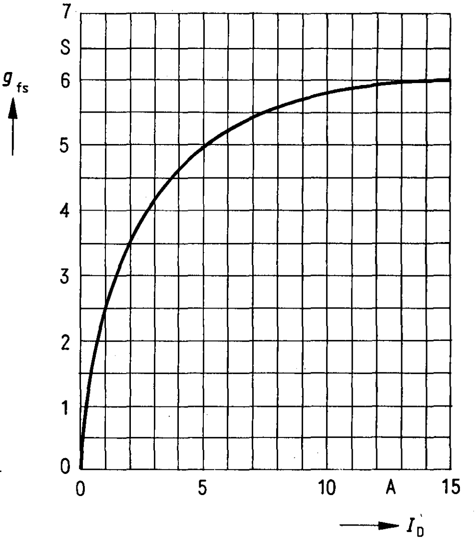
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



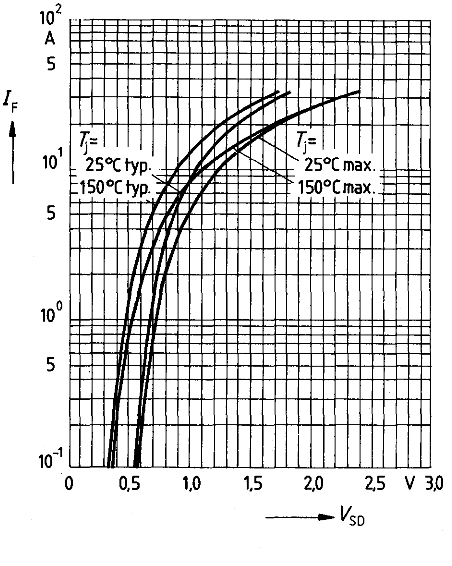
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



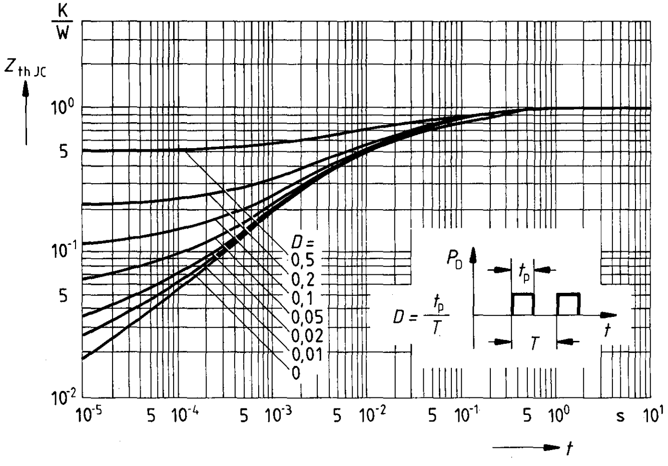
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

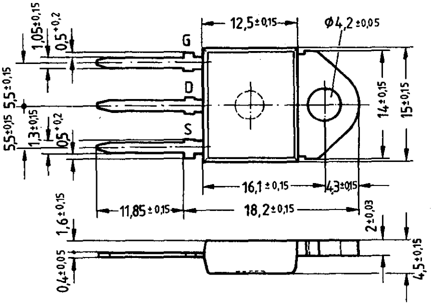


Drain-source voltage V_{DS} = **800 V**
Continuous drain current I_D = **3 A**
Drain-source on-resistance $R_{DS(on)}$ = **3,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode with integrated fast-recovery reverse diode

Case Plastic package 15 in accordance with DIN 41 869 or TO 218 AA (TOP 3) in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 4,5 g

Type	Ordering code
BUZ 307	C67078-A3100-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	800V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	800V
Continuous drain current, T_{case} = 50 °C	I_D	3A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	12A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤45K/W
	$R_{th\,JC}$	≤1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	800	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 800V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	2,7	3,0	Ω	V_{GS} = 10V I_D = 1,5A

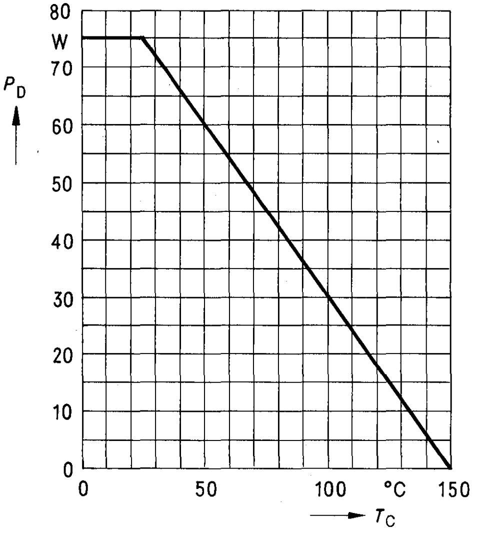
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,0	1,8	–	S	V_{DS} = 25V I_D = 1,5A
Input capacitance	C_{iss}	–	1600	2100	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	90	150		
Reverse transfer capacitance	C_{rss}	–	30	55		
Turn-on time t_{on} (t_{on} = $t_{d\,(on)}$ + t_r)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,3A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} (t_{off} = $t_{d\,(off)}$ + t_f)	$t_{d\,(off)}$	–	110	140		
	t_f	–	60	80		

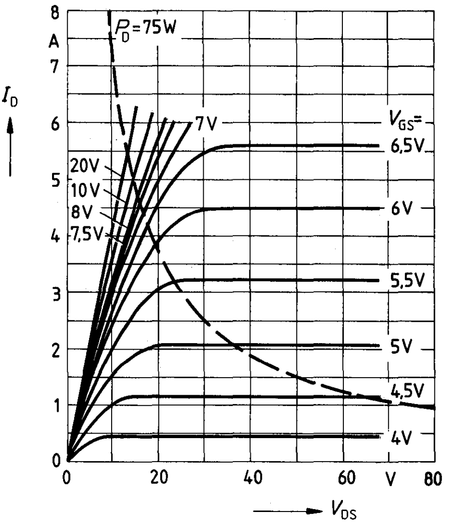
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions	
Continuous reverse drain current	I_{DR}	–	–	3,0	A	T_C = 25 °C	
Pulsed reverse drain current	I_{DRM}	–	–	12			
Diode forward on-voltage	V_{SD}	–	1,05	1,3	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C	
Reverse recovery time	t_{rr}	–	1800	–	ns	T_j = 25 °C	I_F = I_{DR} di_F/dt = 100A/µs
		–	–	–		= 150 °C	
Reverse recovery charge	Q_{rr}	–	12	–	µC	T_j = 25 °C	
		–	–	–		= 150 °C	

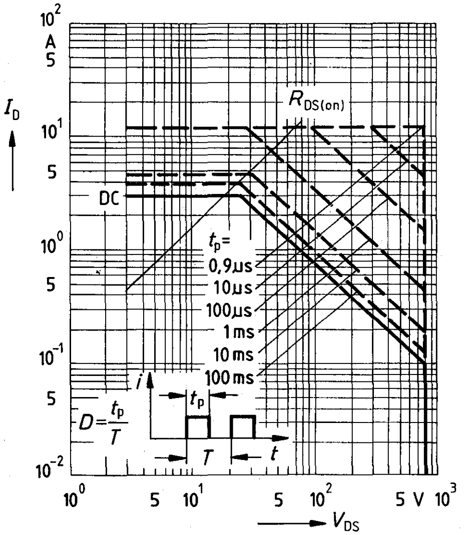
Power dissipation $P_D = f(T_{case})$



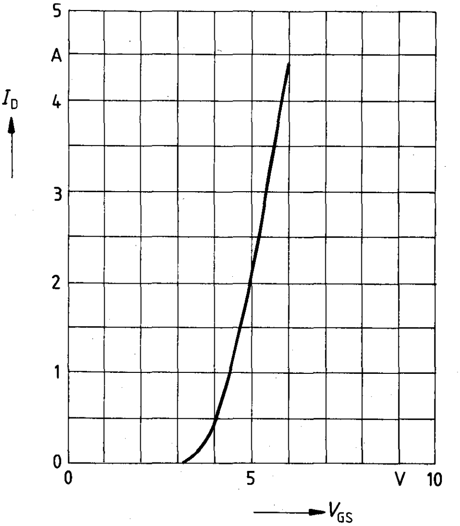
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



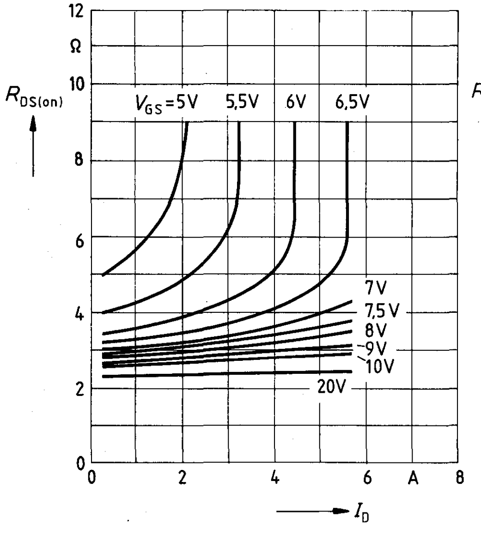
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



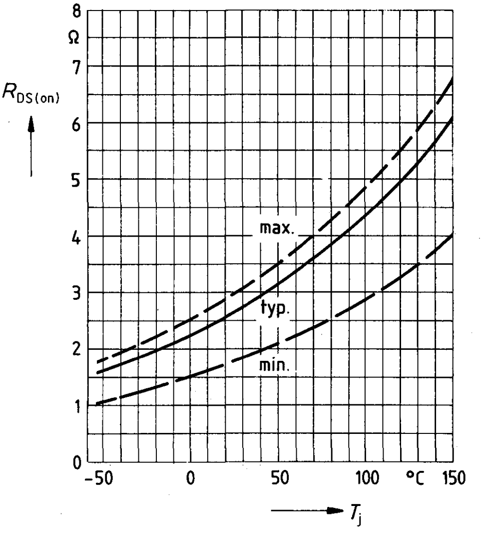
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



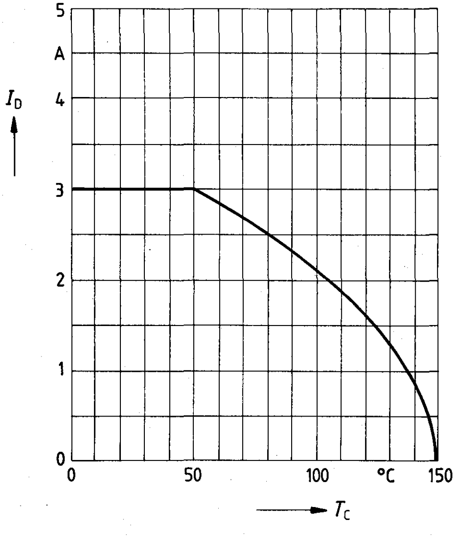
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



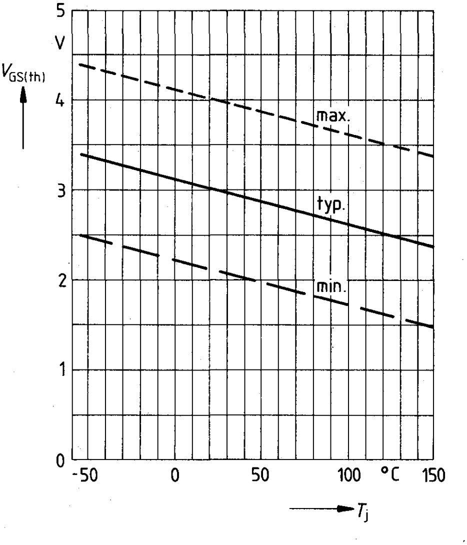
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 1.5$ A, $V_{GS} = 10$ V



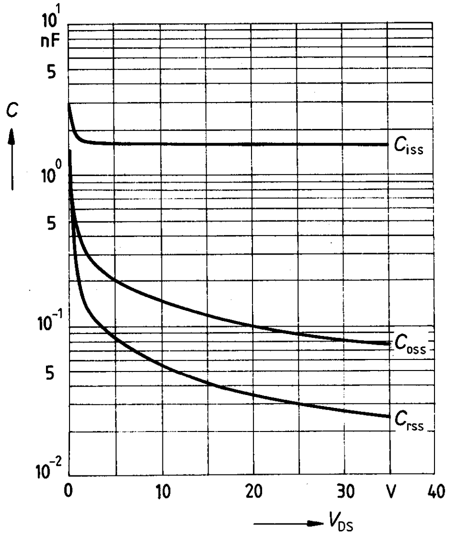
Continuous drain current $I_D = f(T_{case})$



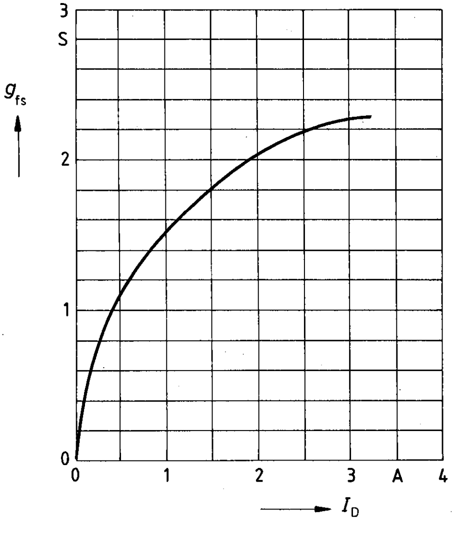
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



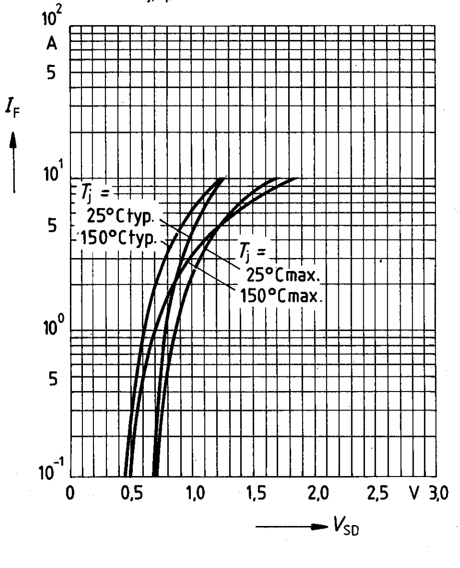
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



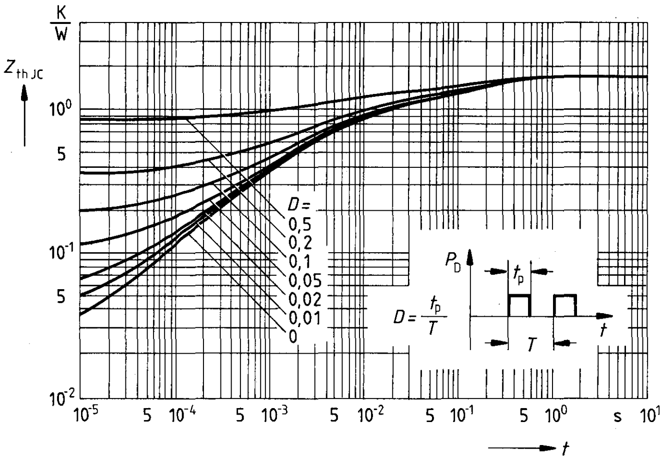
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



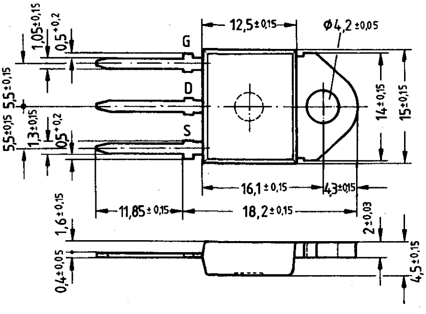
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **800 V**
Continuous drain current I_D = **2,6 A**
Drain-source on-resistance $R_{DS(on)}$ = **4,0 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 15 in accordance with DIN 41 869 or TO 218 AA (TOP 3) in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 4,5 g

Type	Ordering code
BUZ 308	C67078-A3109-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	800V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	800V
Continuous drain current, T_{case} = 50 °C	I_D	2,6A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	10A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	75W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤40K/W
	$R_{th\ JC}$	≤1,67K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	800	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 800V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	3,5	4,0	Ω	V_{GS} = 10V I_D = 1,5A

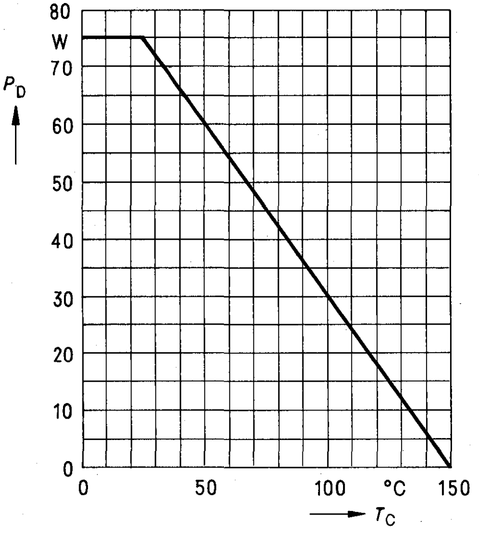
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	1,0	1,8	–	S	V_{DS} = 25V I_D = 1,5A
Input capacitance	C_{iss}	–	1600	2100	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	90	150		
Reverse transfer capacitance	C_{rss}	–	30	55		
Turn-on time t_{on} (t_{on} = $t_{d\,(on)}$ + t_r)	$t_{d\,(on)}$	–	30	45	ns	V_{CC} = 30V I_D = 2,1A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	40	60		
Turn-off time t_{off} (t_{off} = $t_{d\,(off)}$ + t_f)	$t_{d\,(off)}$	–	110	140		
	t_f	–	60	80		

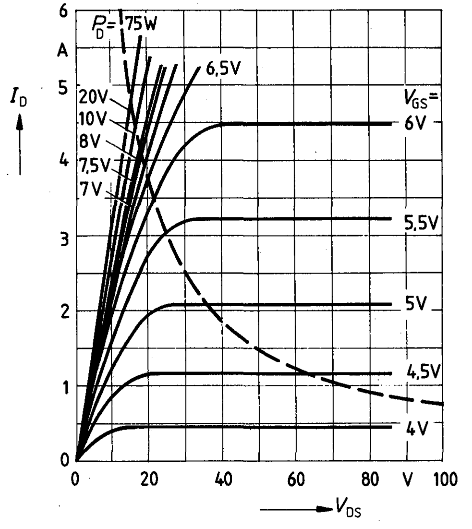
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions	
Continuous reverse drain current	I_{DR}	–	–	2,6	A	T_C = 25 °C	
Pulsed reverse drain current	I_{DRM}	–	–	10			
Diode forward on-voltage	V_{SD}	–	1,05	1,3	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C	
Reverse recovery time	t_{rr}	–	1800	–	ns	T_j = 25 °C	I_F = I_{DR} di_F/dt = 100A/µs
		–	–	–		= 150 °C	
Reverse recovery charge	Q_{rr}	–	12	–	µC	T_j = 25 °C	
		–	–	–		= 150 °C	

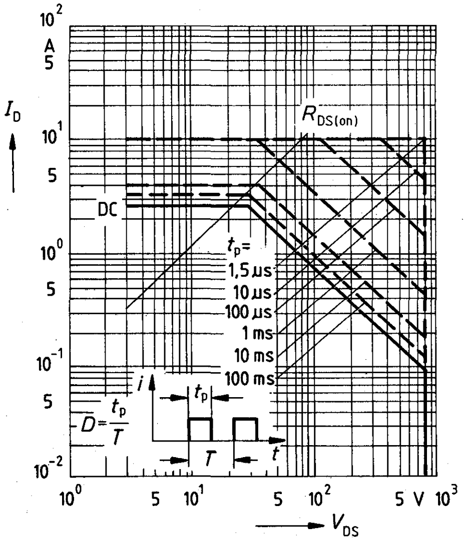
Power dissipation $P_D = f(T_{case})$



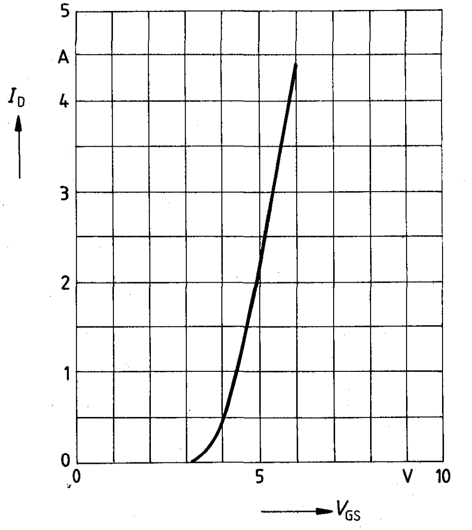
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25°C$



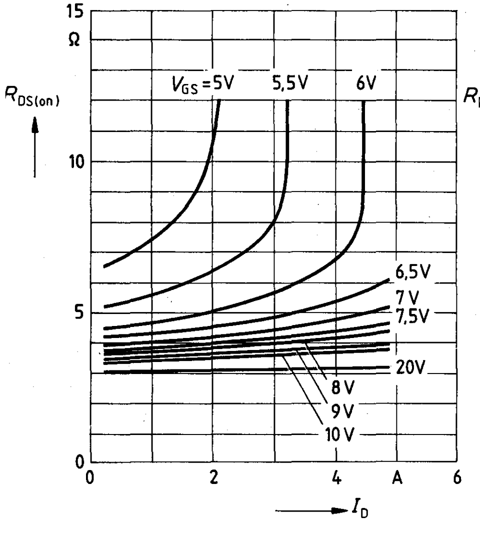
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



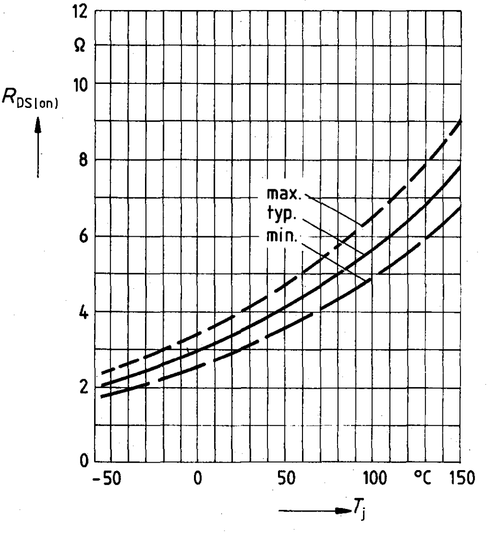
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



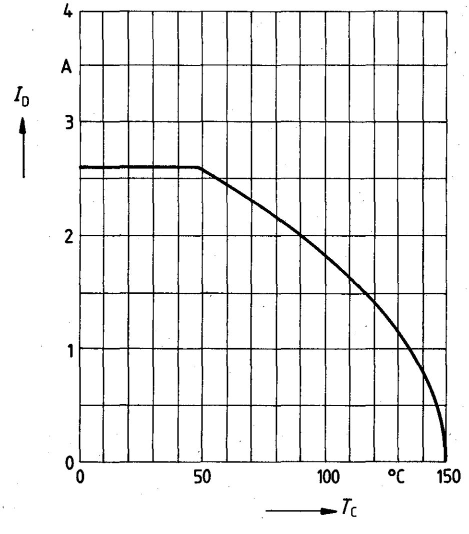
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



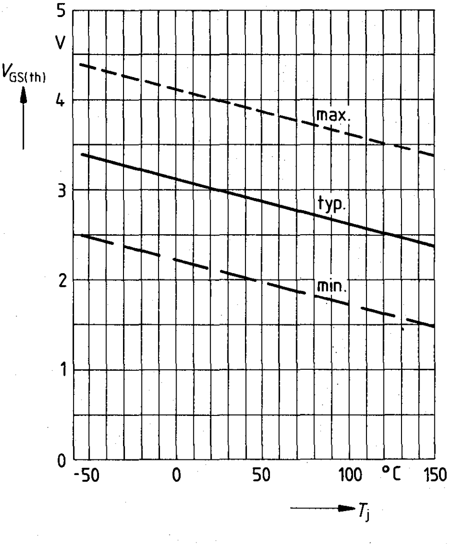
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 1.5$ A, $V_{GS} = 10$ V



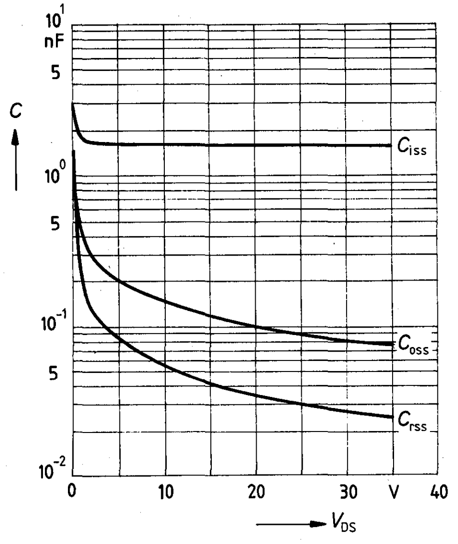
Continuous drain current $I_D = f(T_{case})$



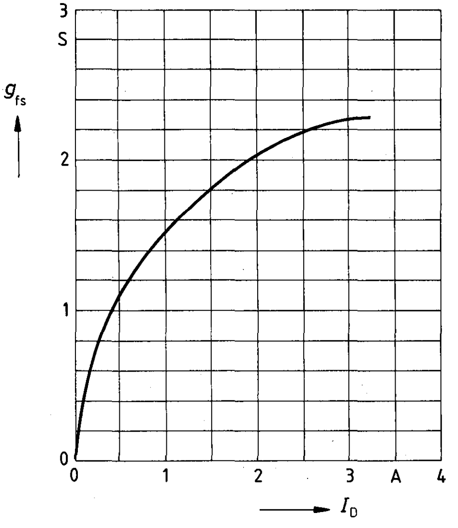
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



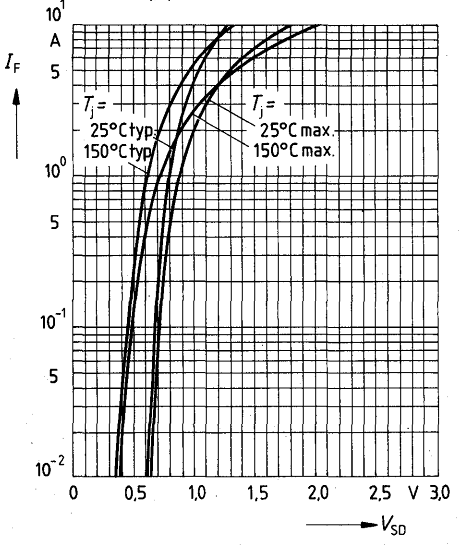
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



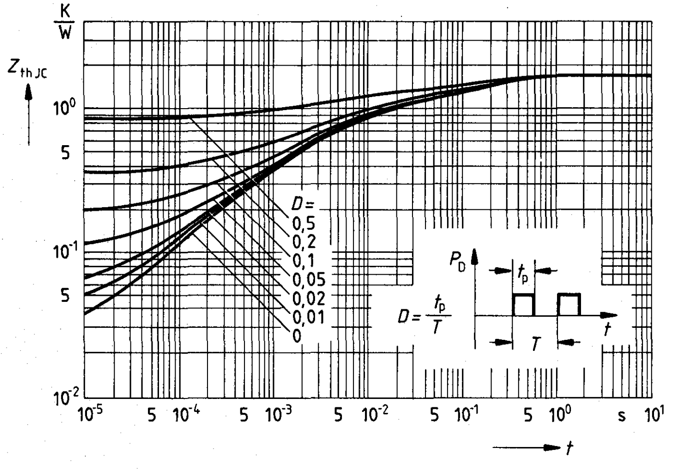
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$ °C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



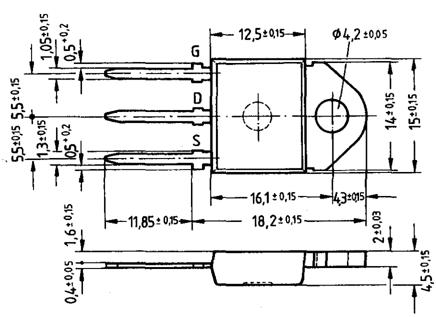
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} **= 400 V**
Continuous drain current I_D **= 11,5 A**
Drain-source on-resistance $R_{DS(on)}$ **= 0,40 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 15 in accordance with DIN 41 869 or
TO 218 AA (TOP 3) in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 4,5 g

Type	Ordering code
BUZ 351	C67078-A3103-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	400V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	400V
Continuous drain current, T_{case} = 30 °C	I_D	11,5A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	46A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤40K/W
	$R_{th\ JC}$	≤1,0K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)DSS}$	400	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 400V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS(on)}$	–	0,35	0,40	Ω	V_{GS} = 10V I_D = 5A

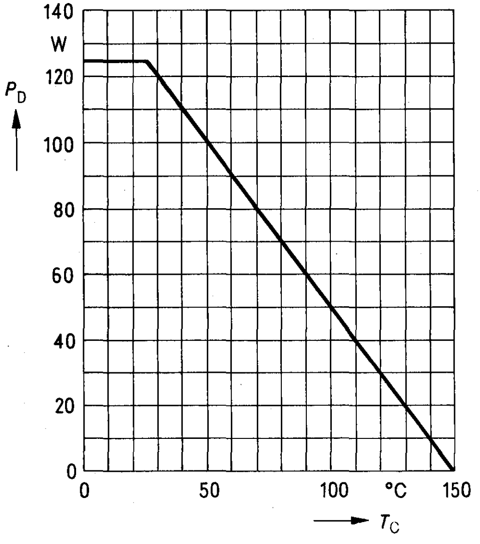
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	3,3	4,5	–	S	V_{DS} = 25V I_D = 5A
Input capacitance	C_{iss}	–	3800	4900	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	300	500		
Reverse transfer capacitance	C_{rss}	–	120	200		
Turn-on time t_{on} ($t_{on} = t_{d(on)} + t_r$)	$t_{d(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	80	120		
Turn-off time t_{off} ($t_{off} = t_{d(off)} + t_f$)	$t_{d(off)}$	–	330	430		
	t_f	–	110	140		

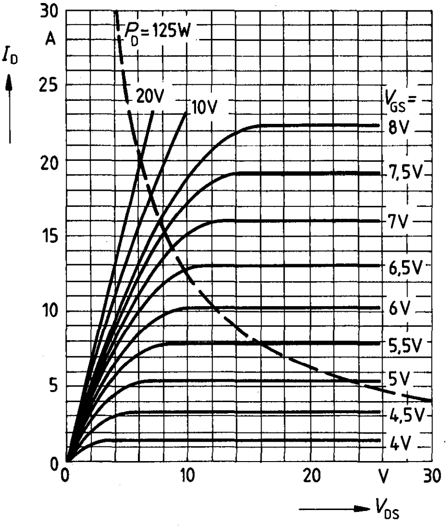
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions	
Continuous reverse drain current	I_{DR}	–	–	11,5	A	T_C = 25 °C	
Pulsed reverse drain current	I_{DRM}	–	–	46			
Diode forward on-voltage	V_{SD}	–	1,3	1,7	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C	
Reverse recovery time	t_{rr}	–	1000	–	ns	T_j = 25 °C	$I_F = I_{DR}$ di_F/dt = 100A/µs
		–	–	–		= 150 °C	
Reverse recovery charge	Q_{rr}	–	10	–	µC	T_j = 25 °C	
		–	–	–		= 150 °C	

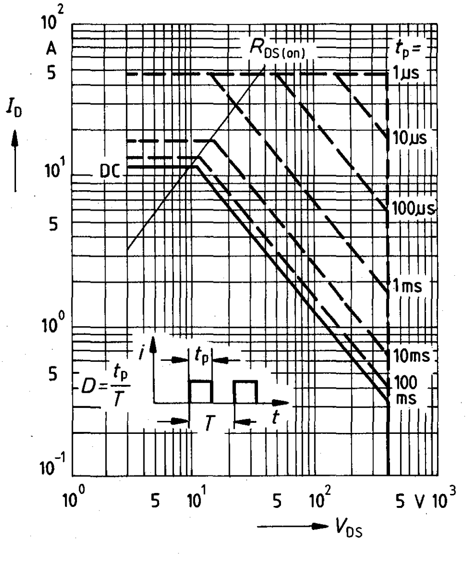
Power dissipation $P_D = f(T_{case})$



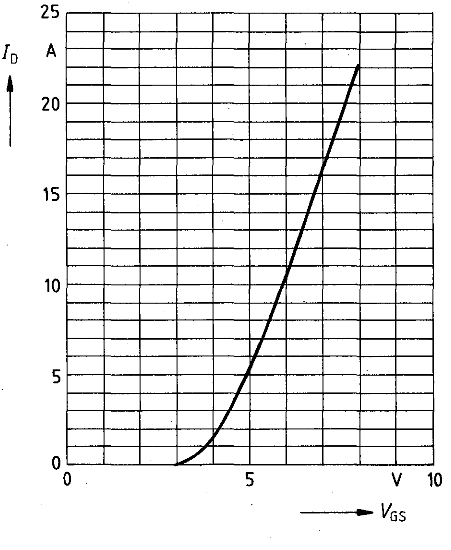
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



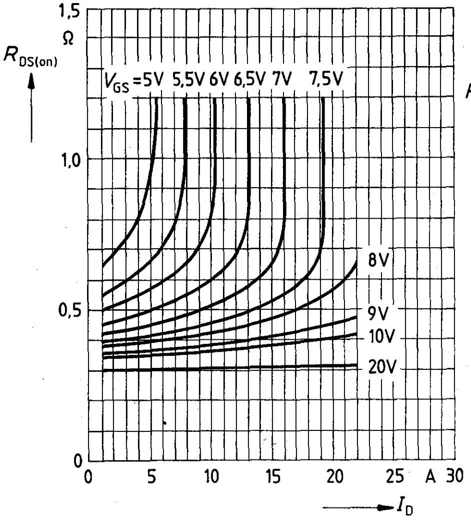
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



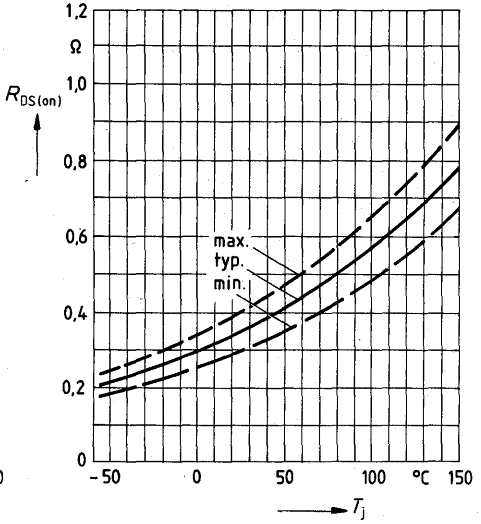
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



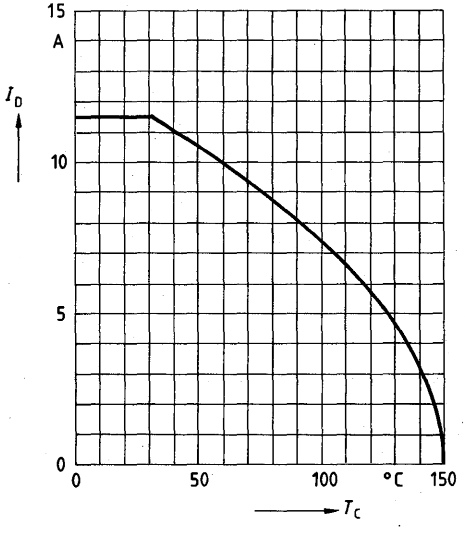
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



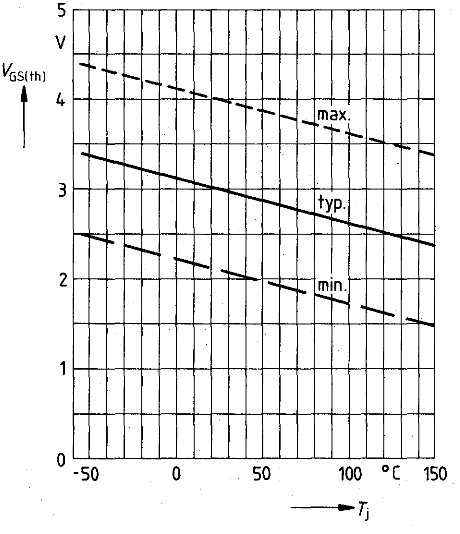
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 5.0$ A, $V_{GS} = 10$ V



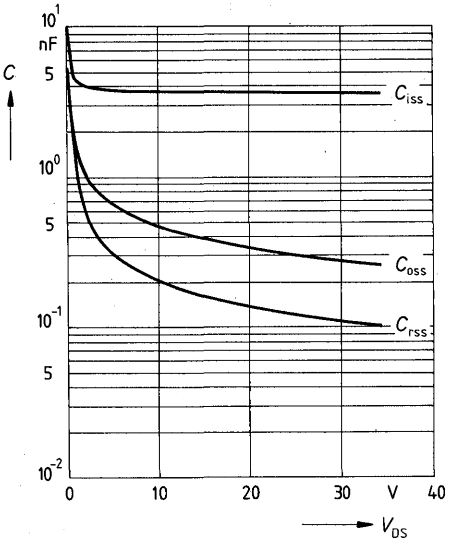
Continuous drain current $I_D = f(T_{case})$



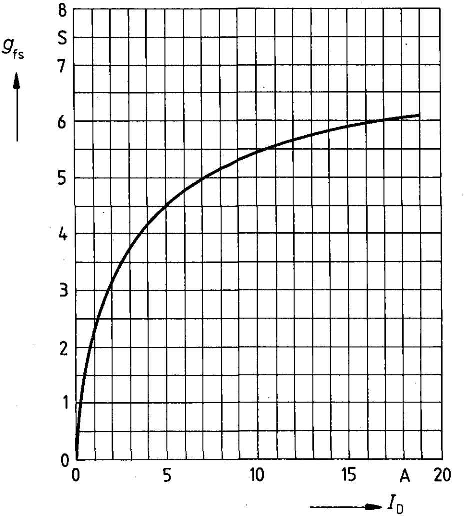
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



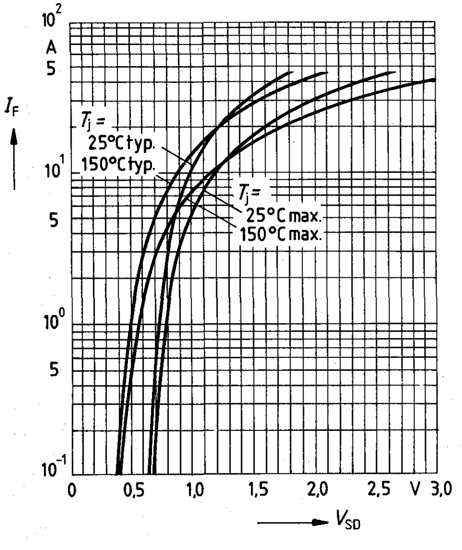
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



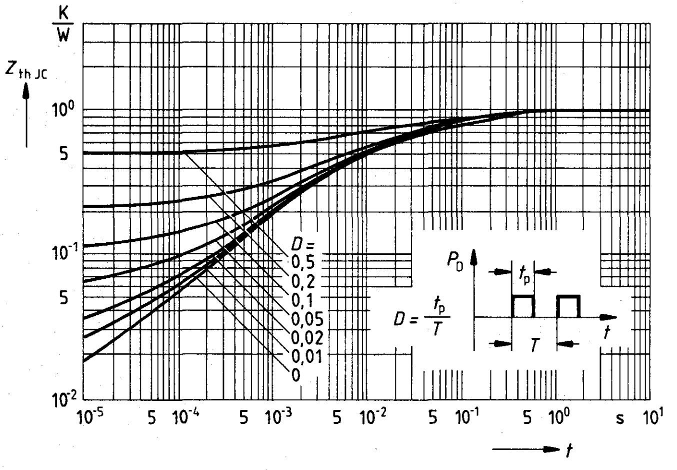
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°$C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



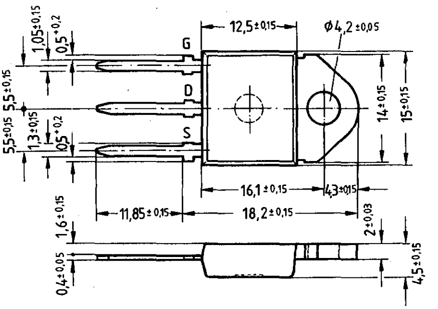
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



Drain-source voltage V_{DS} = **500 V**
Continuous drain current I_D = **9,6 A**
Drain-source on-resistance $R_{DS(on)}$ = **0,6 Ω**

Description SIPMOS power FET, N-channel enhancement mode
Case Plastic package 15 in accordance with DIN 41 869 or
TO 218 AA (TOP 3) in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 4,5 g

Type	Ordering code
BUZ 353	C67078-A3104-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	500V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	500V
Continuous drain current, T_{case} = 25 °C	I_D	9,6A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	38A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤35K/W
	$R_{th\ JC}$	≤1,0K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	500	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 500V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,55	0,6	Ω	V_{GS} = 10V I_D = 5,0A

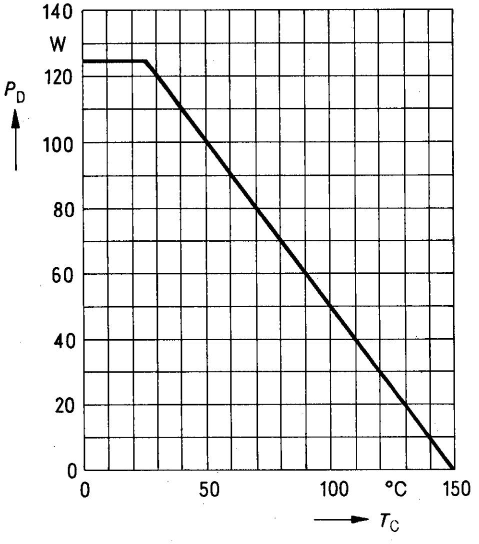
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,7	5,0	–	S	V_{DS} = 25V I_D = 5,0A
Input capacitance	C_{iss}	–	3800	4900	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	250	400		
Reverse transfer capacitance	C_{rss}	–	100	170		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,8A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	80	120		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		

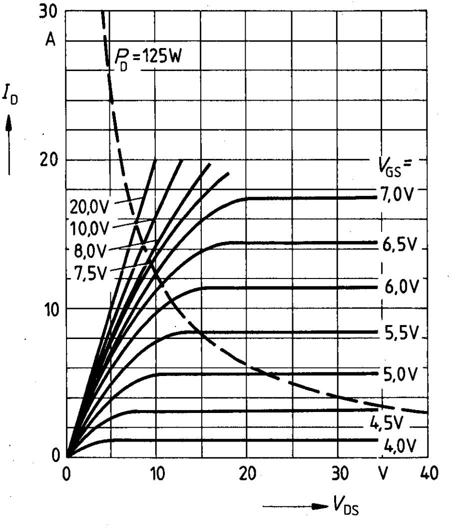
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	9,6	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	38		
Diode forward on-voltage	V_{SD}	–	1,3	1,7	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	12	–	µC	

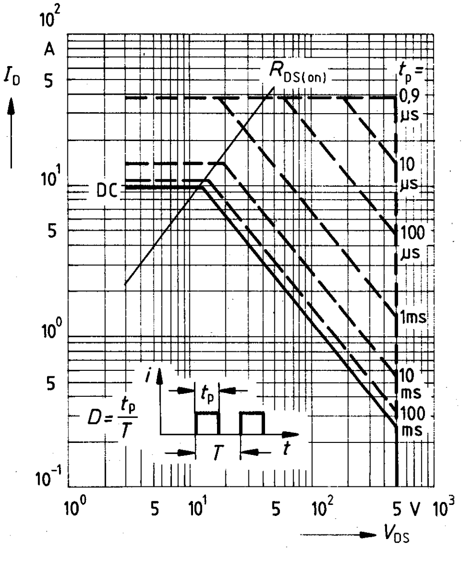
Power dissipation $P_D = f(T_{case})$



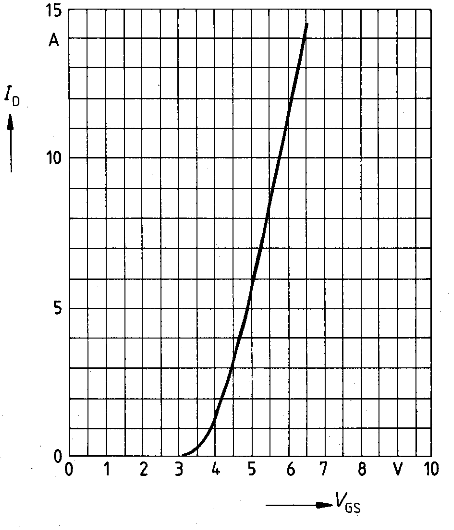
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25°C



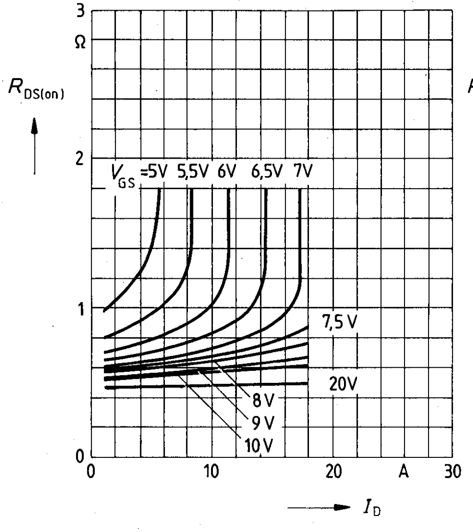
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25°C



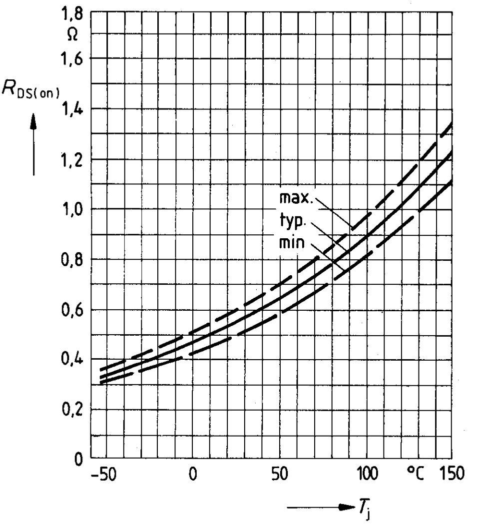
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V; T_j = 25°C



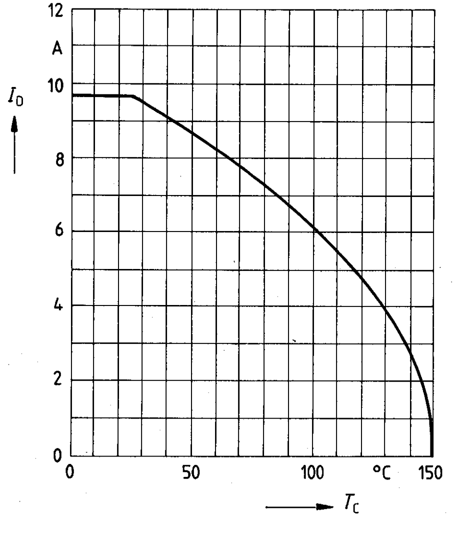
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



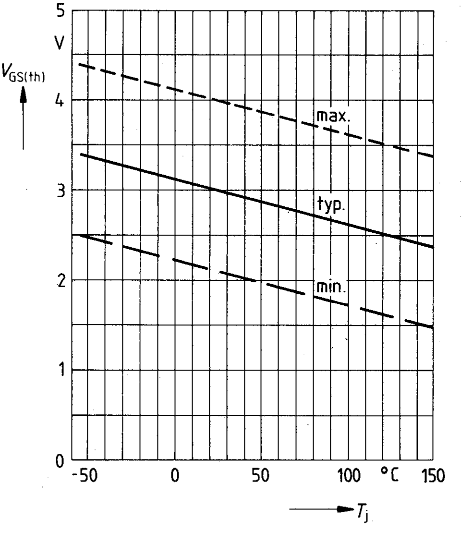
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 5.0$ A, $V_{GS} = 10$ V



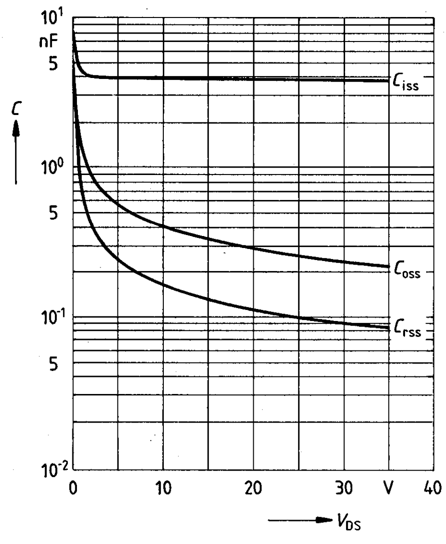
Continuous drain current $I_D = f(T_{case})$



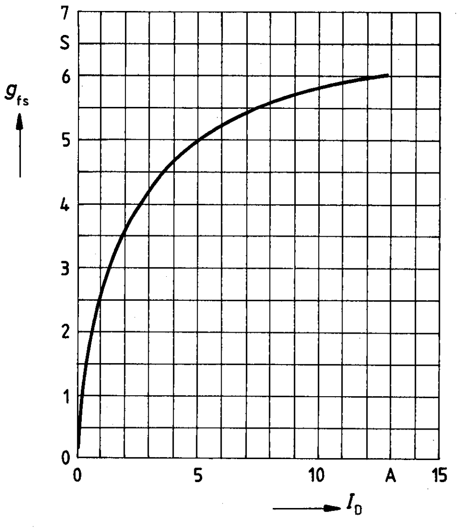
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10$ mA



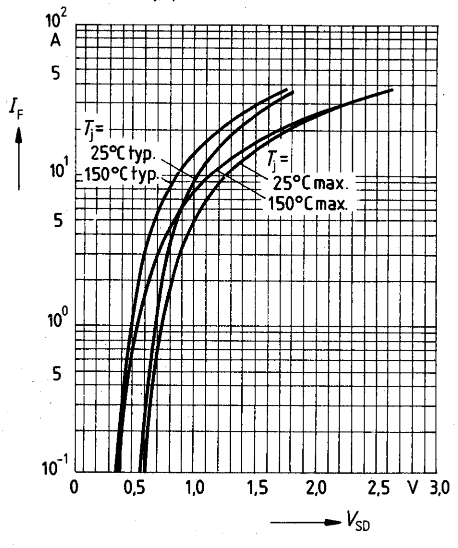
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



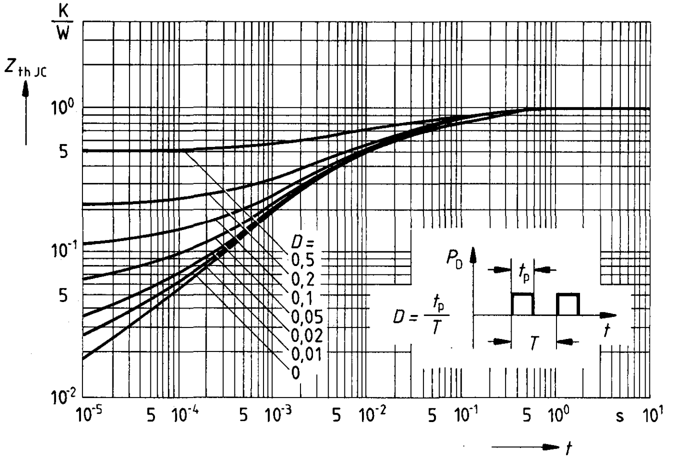
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

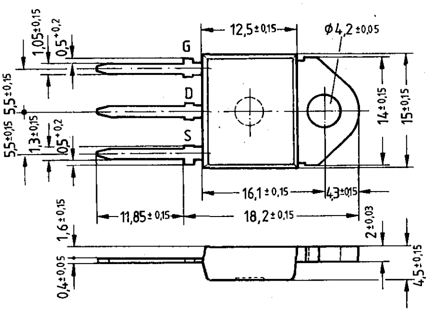


Drain-source voltage	V_{DS}	**= 500 V**
Continuous drain current	I_D	**= 8,3 A**
Drain-source on-resistance	$R_{DS(on)}$	**= 0,8 Ω**

Description SIPMOS power FET, N-channel enhancement mode

Case Plastic package 15 in accordance with DIN 41 869 or TO 218 AA (TOP 3) in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 4,5 g

Type	Ordering code
BUZ 354	C67078-A3106-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	500V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	500V
Continuous drain current, T_{case} = 25 °C	I_D	8,3A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	33A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\ JA}$	≤35K/W
	$R_{th\ JC}$	≤1,0K/W

Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	500	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 500V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,7	0,8	Ω	V_{GS} = 10V I_D = 5A

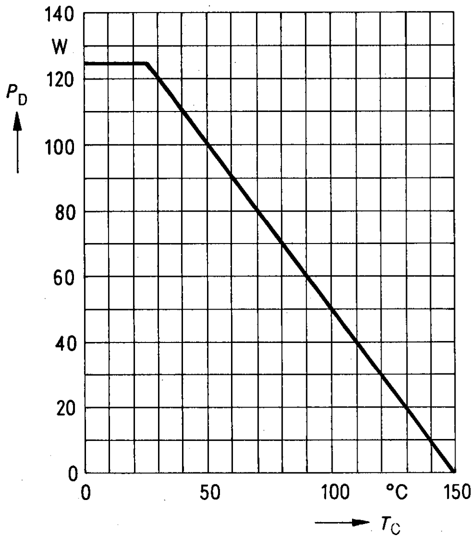
Dynamic ratings

Description	Symbol	min.	typ.	max.	Unit	Conditions
Forward transconductance	g_{fs}	2,7	5,0	–	S	V_{DS} = 25V I_D = 5A
Input capacitance	C_{iss}	–	3800	4900	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	250	400		
Reverse transfer capacitance	C_{rss}	–	100	170		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,8A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	80	120		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		

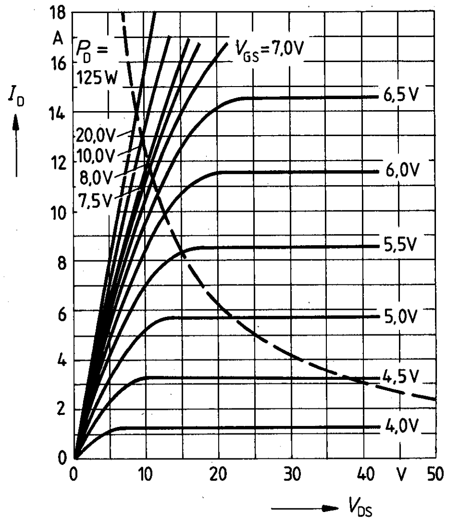
Reverse diode

Description	Symbol	min.	typ.	max.	Unit	Conditions
Continuous reverse drain current	I_{DR}	–	–	8,3	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	33		
Diode forward on-voltage	V_{SD}	–	1,3	1,6	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	1200	–	ns	T_j = 25 °C I_F = I_{DR} $d_{iF/dt}$ = 100A/µs
Reverse recovery charge	Q_{rr}	–	12	–	µC	

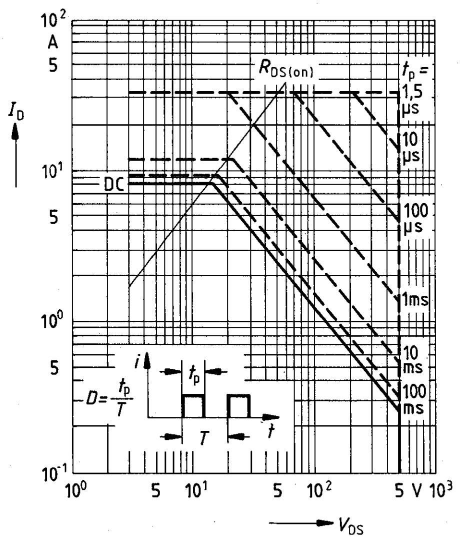
Power dissipation $P_D = f(T_{case})$



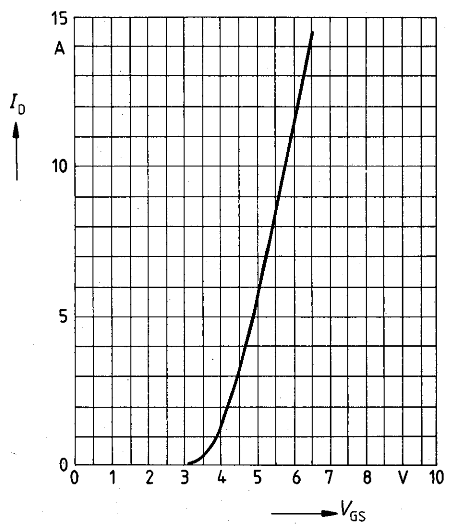
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
T_{case} = 25 °C



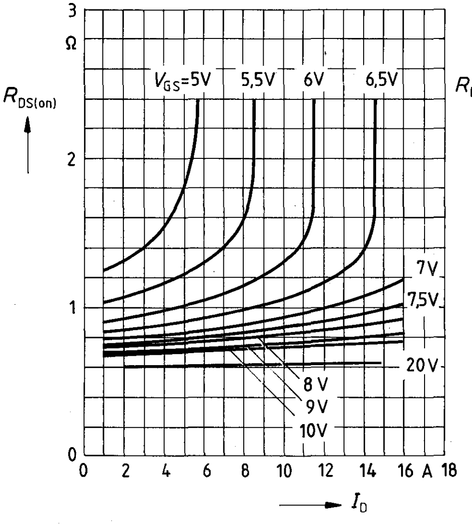
Safe operating area $I_D = f(V_{DS})$
parameter: D = 0.01, T_{case} = 25 °C



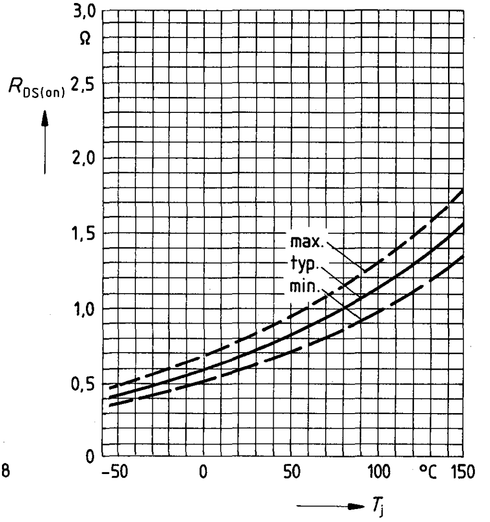
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



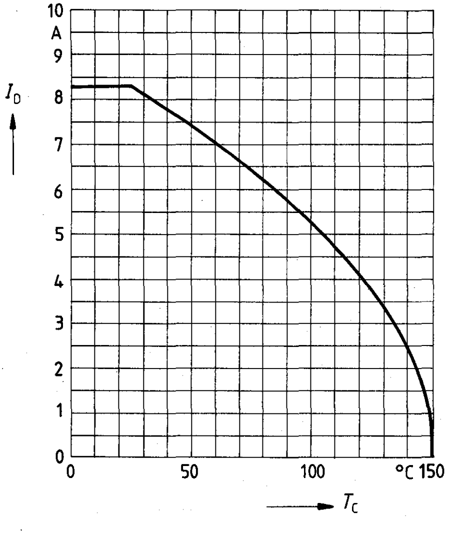
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



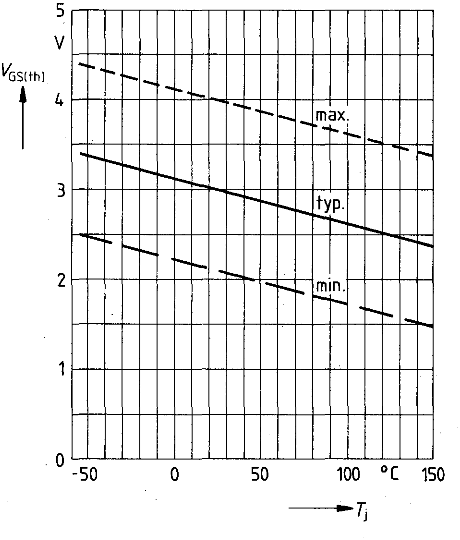
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 5\,A$, $V_{GS} = 10\,V$



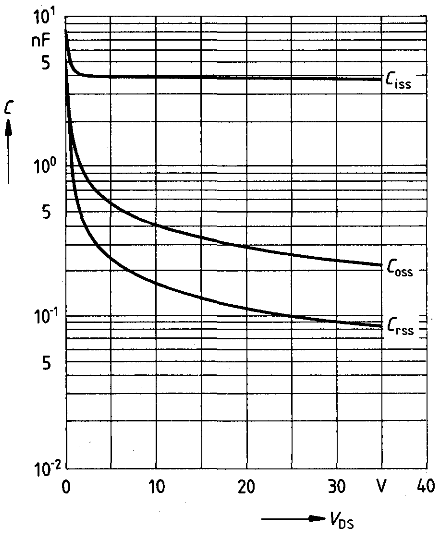
Continuous drain current $I_D = f(T_{case})$



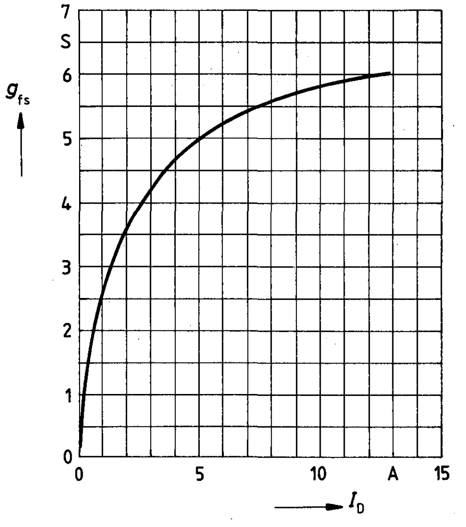
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



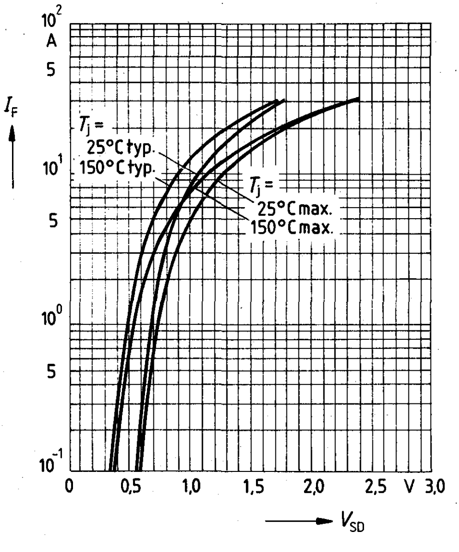
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



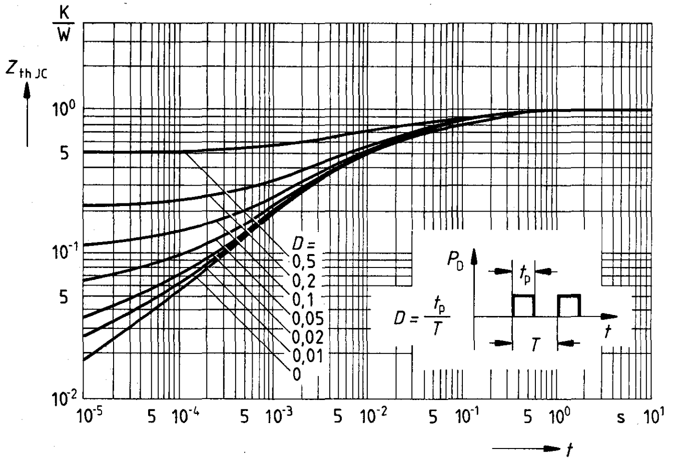
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
V_{DS} = 25V, T_j = 25 °C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, t_p = 80 µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

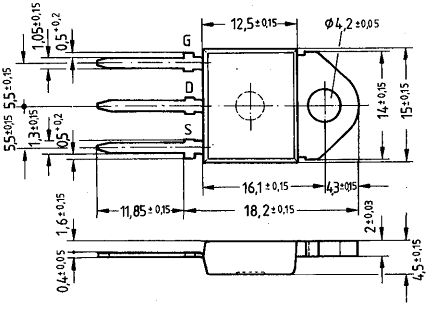


Drain-source voltage	V_{DS}	=	**400 V**
Continuous drain current	I_D	=	**12,5 A**
Drain-source on-resistance	$R_{DS(on)}$	=	**0,40 Ω**

Description SIPMOS FRED power FET, N-channel enhancement mode with integrated fast-recovery reverse diode

Case Plastic package 15 in accordance with DIN 41 869 or TO 218 AA (TOP 3) in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 4,5 g

Type	Ordering code
BUZ 382	C67078-A3207-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	400V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	400V
Continuous drain current, T_{case} = 25 °C	I_D	12,5A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	50A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j, T_{stg}	−55 °C ... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤40K/W
	$R_{th\,JC}$	≤1,0K/W

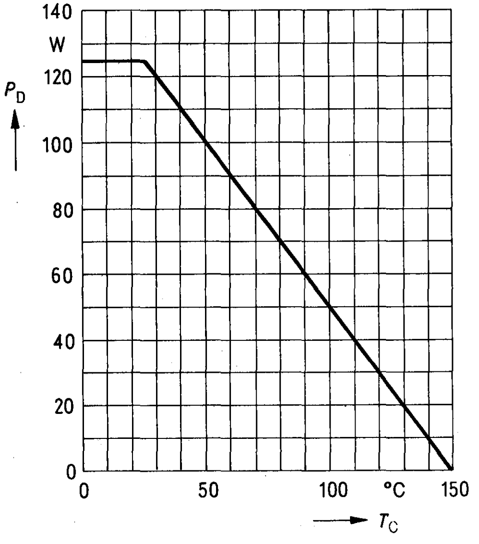
Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

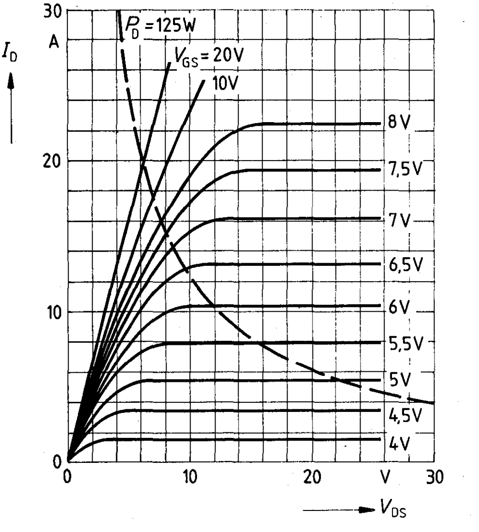
Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	400	–	–	V	V_{GS} = 0V I_D = 1mA
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 400V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,35	0,40	Ω	V_{GS} = 10V I_D = 5A
Dynamic ratings						
Forward transconductance	g_{fs}	3,3	5,0	–	S	V_{DS} = 25V I_D = 5A
Input capacitance	C_{iss}	–	3800	4900	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	300	500		
Reverse transfer capacitance	C_{rss}	–	120	200		
Turn-on time t_{on} ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,9A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	80	120		
Turn-off time t_{off} ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	330	430		
	t_f	–	110	140		
Reverse diode						
Continuous reverse drain current	I_{DR}	–	–	12,5	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	50		
Diode forward on-voltage	V_{SD}	–	1,4	1,9	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	180	250	ns	T_j = 25 °C; I_F = I_{DR}, di_F/dt = 100A/µs, V_R = 100V
		–	220	300		= 150 °C
Reverse recovery charge	Q_{rr}	–	0,65	1,2	µC	T_j = 25 °C
		–	2,6	5,0		= 150 °C
Repetitive peak reverse current	I_{RRM}	–	–	–	A	T_j = 25 °C
		–	15	–		= 150 °C

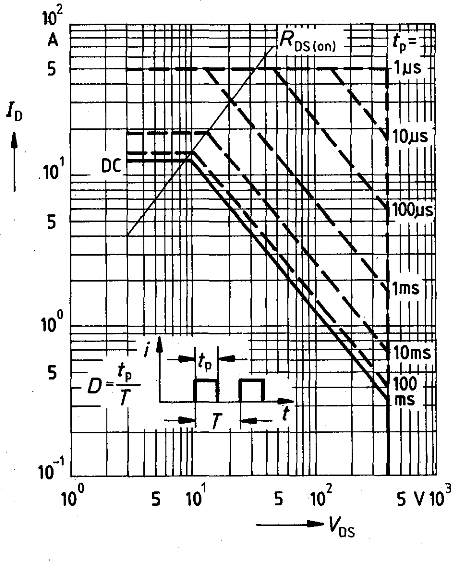
Power dissipation $P_D = f(T_{case})$



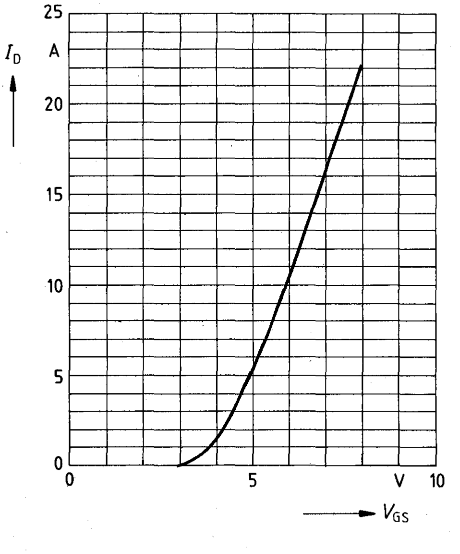
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_{case} = 25\,°C$



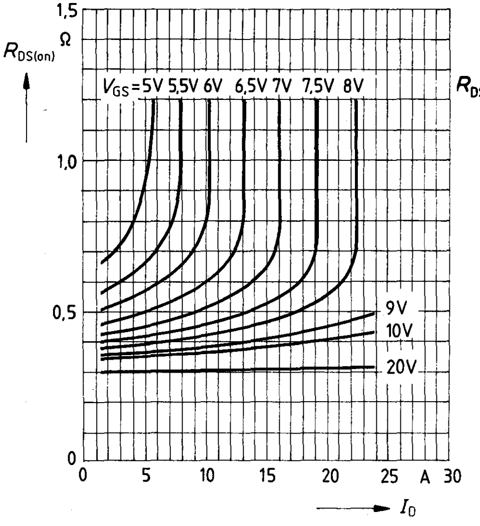
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25\,°C$



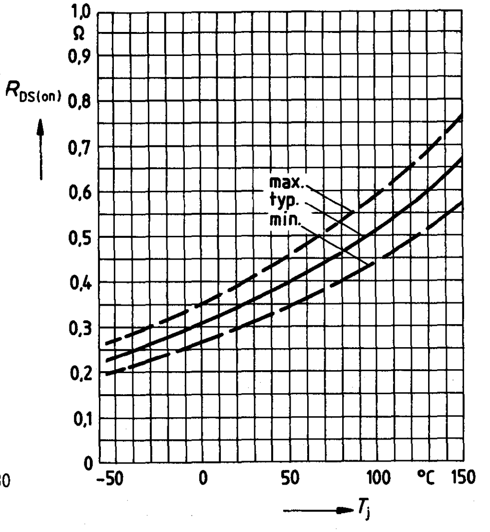
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



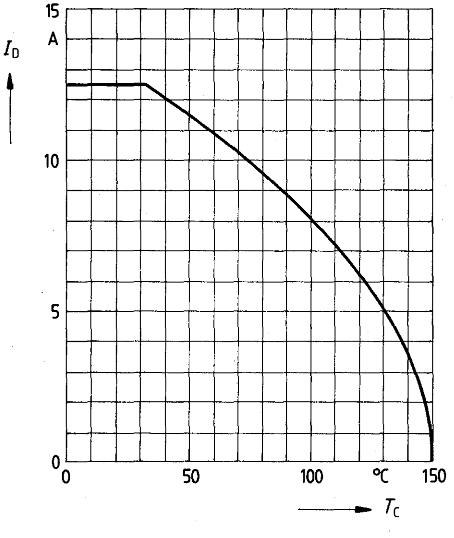
Typical drain-source on-state resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



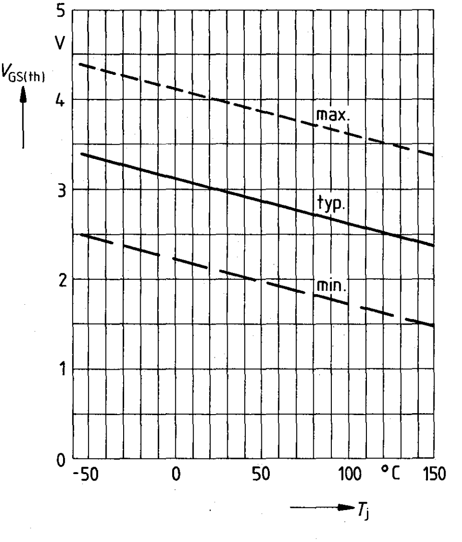
Drain-source on-state resistance
$R_{DS\,(on)} = f(T_j)$; spread
parameter: $I_D = 5\,A$, $V_{GS} = 10\,V$



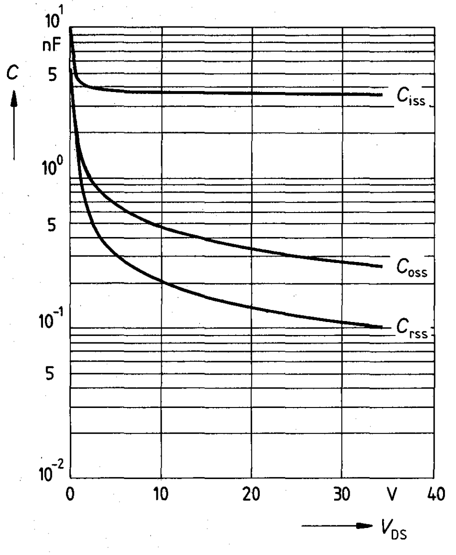
Continuous drain current $I_D = f(T_{case})$



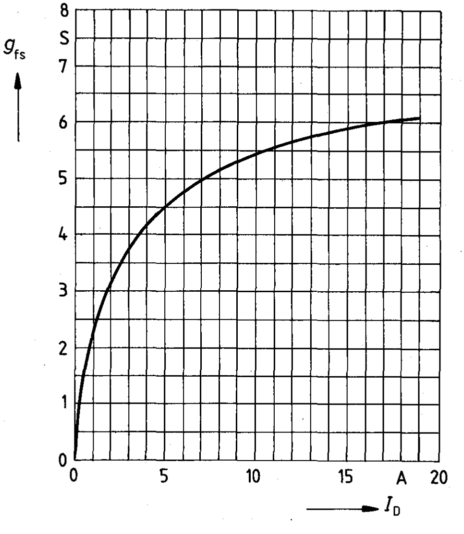
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



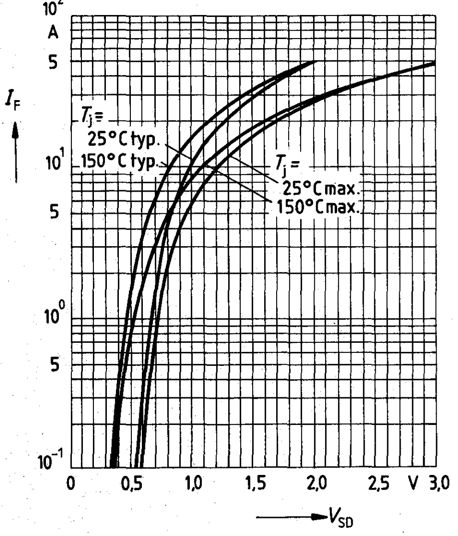
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



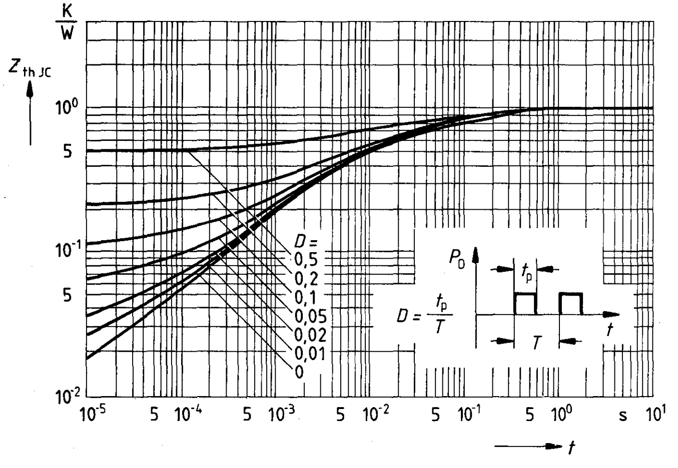
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$ °C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$

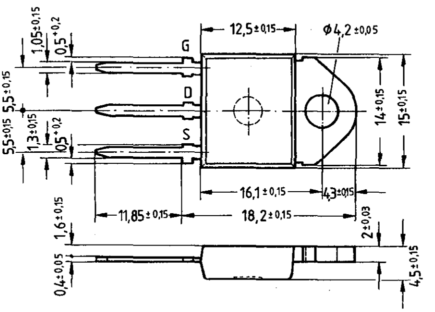


Drain-source voltage V_{DS} = **500 V**
Continuous drain current I_D = **9,0 A**
Drain-source on-resistance $R_{DS(on)}$ = **0,8 Ω**

Description SIPMOS FRED power FET, N-channel enhancement mode with integrated fast-recovery reverse diode

Case Plastic package 15 in accordance with DIN 41 869 or TO 218 AA (TOP 3) in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 4,5 g

Type	Ordering code
BUZ 385	C67078-A3210-A2



Dimensions in mm

Absolute maximum ratings

Drain-source voltage	V_{DS}	500V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	500V
Continuous drain current, T_{case} = 25 °C	I_D	9,0A
Pulsed drain current, T_{case} = 25 °C	I_{Dpuls}	36A
Gate-source voltage	V_{GS}	±20V
Max. power dissipation	P_D	125W
Operating and storage temperature range	T_j T_{stg}	−55 °C... +150 °C
Isolation test voltage (t = 1 min)	V_{is}	–
DIN humidity category		E
Thermal resistance	$R_{th\,JA}$	≤45K/W
	$R_{th\,JC}$	≤1,0K/W

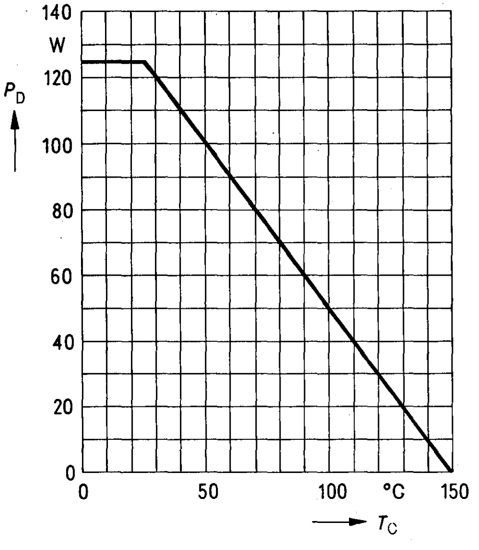
Electrical characteristics

at T_{case} = 25 °C (unless otherwise specified)

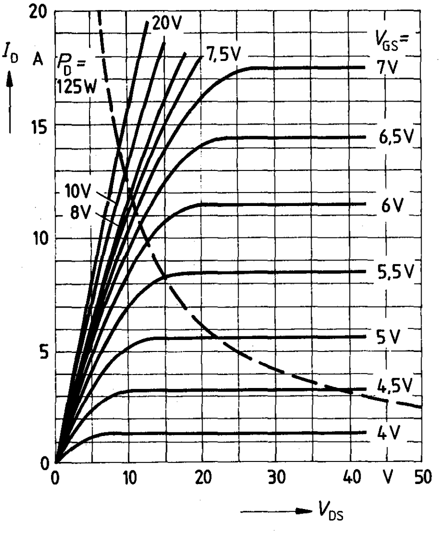
Static ratings

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions	
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	500	–	–	V	V_{GS} = 0V I_D = 1mA	
Gate threshold voltage	$V_{GS\,(th)}$	2,1	3,0	4,0		V_{DS} = V_{GS} I_D = 10mA	
Zero gate voltage drain current	I_{DSS}	– –	20 100	250 1000	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 500V V_{GS} = 0V	
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V	
Drain-source on-state resistance	$R_{DS\,(on)}$	–	0,7	0,8	Ω	V_{GS} = 10V I_D = 5,0A	
Dynamic ratings							
Forward transconductance	g_{fs}	2,7	5,0	–	S	V_{DS} = 25V I_D = 5A	
Input capacitance	C_{iss}	–	3800	4900	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz	
Output capacitance	C_{oss}	–	250	400			
Reverse transfer capacitance	C_{rss}	–	100	170			
Turn-on time t_{on} (t_{on} = $t_{d\,(on)}$ + t_r)	$t_{d\,(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,8A V_{GS} = 10V R_{GS} = 50Ω	
	t_r	–	80	120			
Turn-off time t_{off} (t_{off} = $t_{d\,(off)}$ + t_f)	$t_{d\,(off)}$	–	330	430			
	t_f	–	110	140			
Reverse diode							
Continuous reverse drain current	I_{DR}	–	–	9,0	A	T_C = 25 °C	
Pulsed reverse drain current	I_{DRM}	–	–	36			
Diode forward on-voltage	V_{SD}	–	1,3	1,6	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C	
Reverse recovery time	t_{rr}	–	180	250	ns	T_j = 25 °C	I_F = I_{DR} dI_F/dt = 100A/µs V_R = 100V
		–	220	300		= 150 °C	
Reverse recovery charge	Q_{rr}	–	0,65	1,2	µC	T_j = 25 °C	
		–	2,6	5,0		= 150 °C	
Repetitive peak reverse current	I_{RRM}	–	–	–	A	T_j = 25 °C	
		–	15	–		= 150 °C	

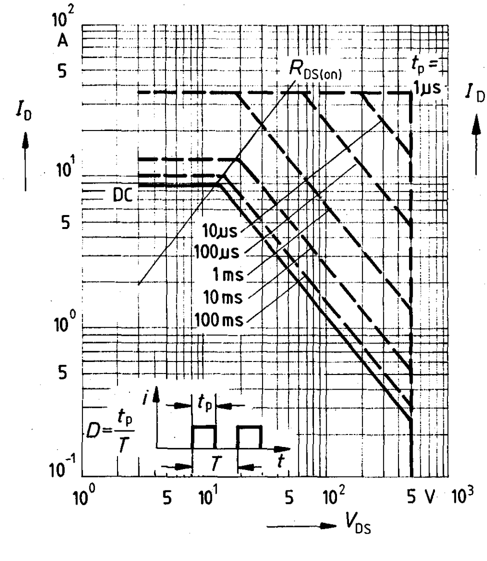
Power dissipation $P_D = f(T_{case})$



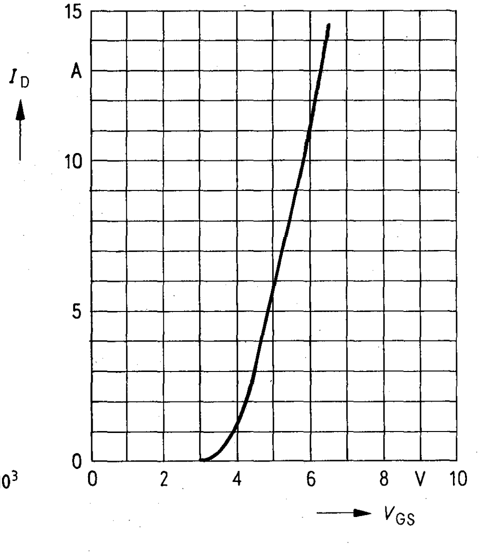
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 μs pulse test,
$T_{case} = 25°C$



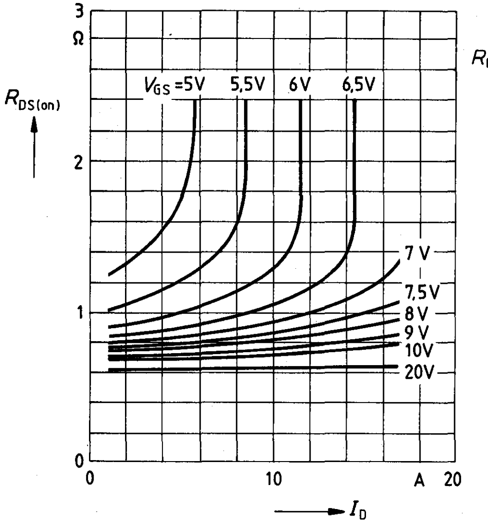
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_{case} = 25°C$



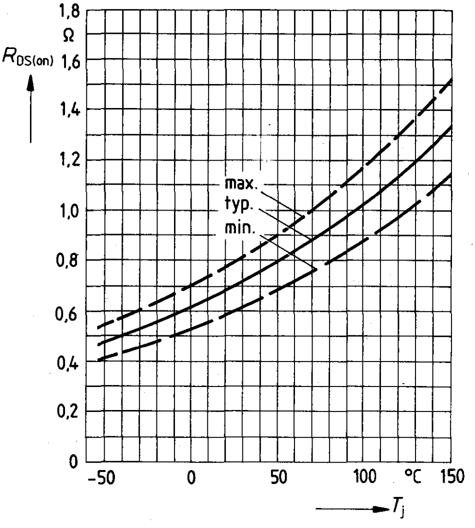
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 μs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$



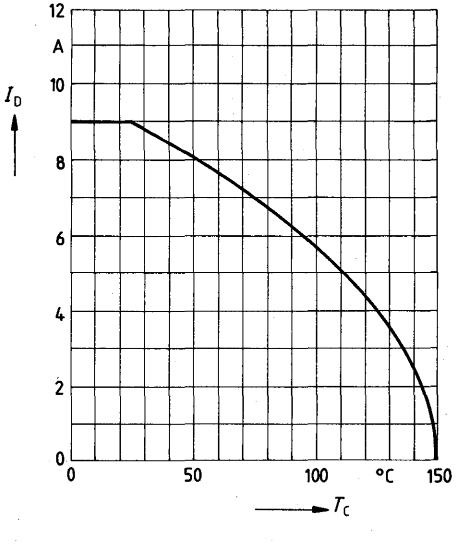
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_{case} = 25\,°C$



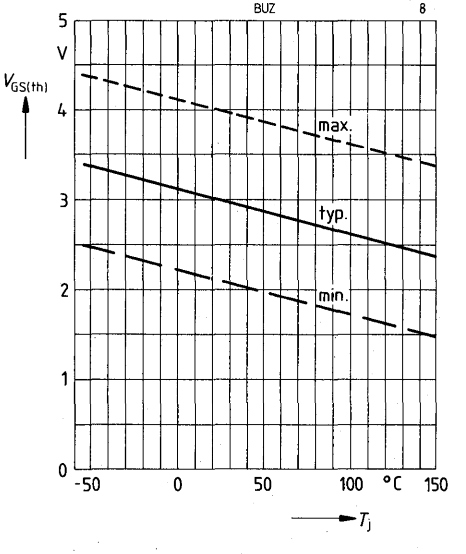
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$; spread
parameter: $I_D = 5.0\,A$, $V_{GS} = 10\,V$



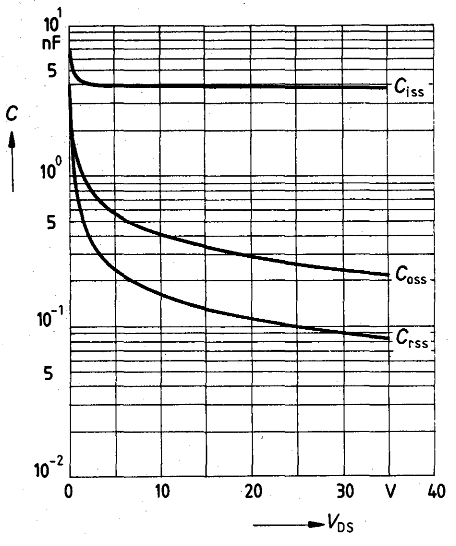
Continuous drain current $I_D = f(T_{case})$



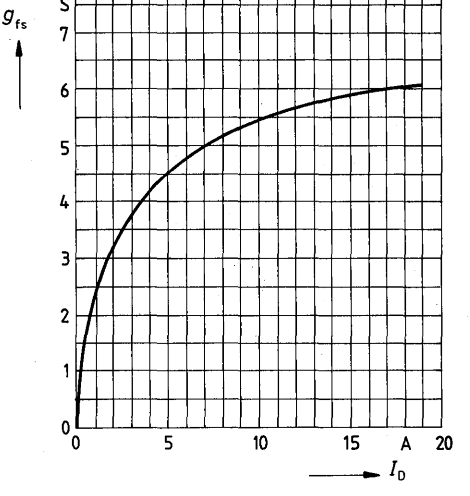
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 10\,mA$



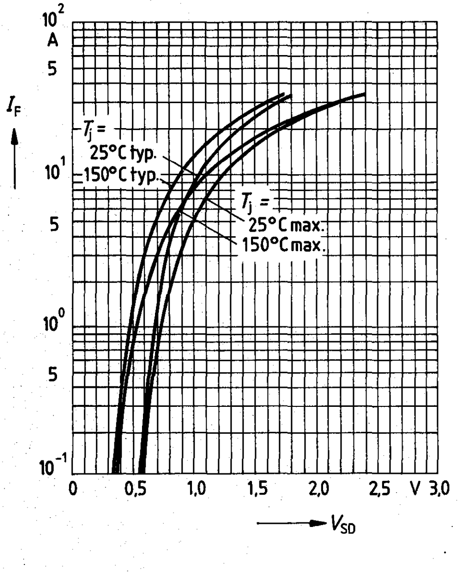
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1$ MHz



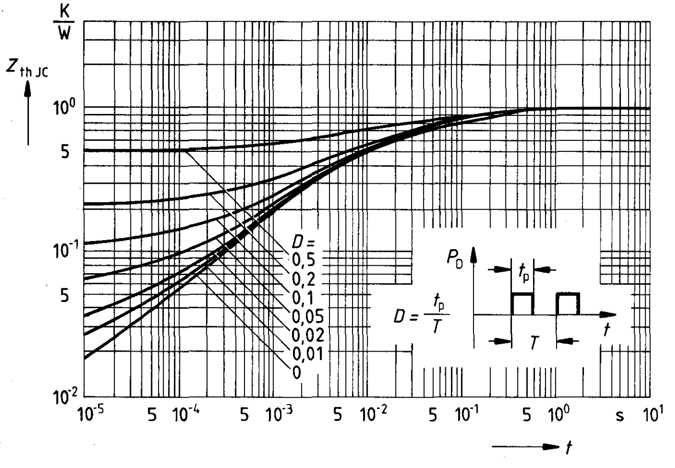
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25\,°$C



Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80$ µs



Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$



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