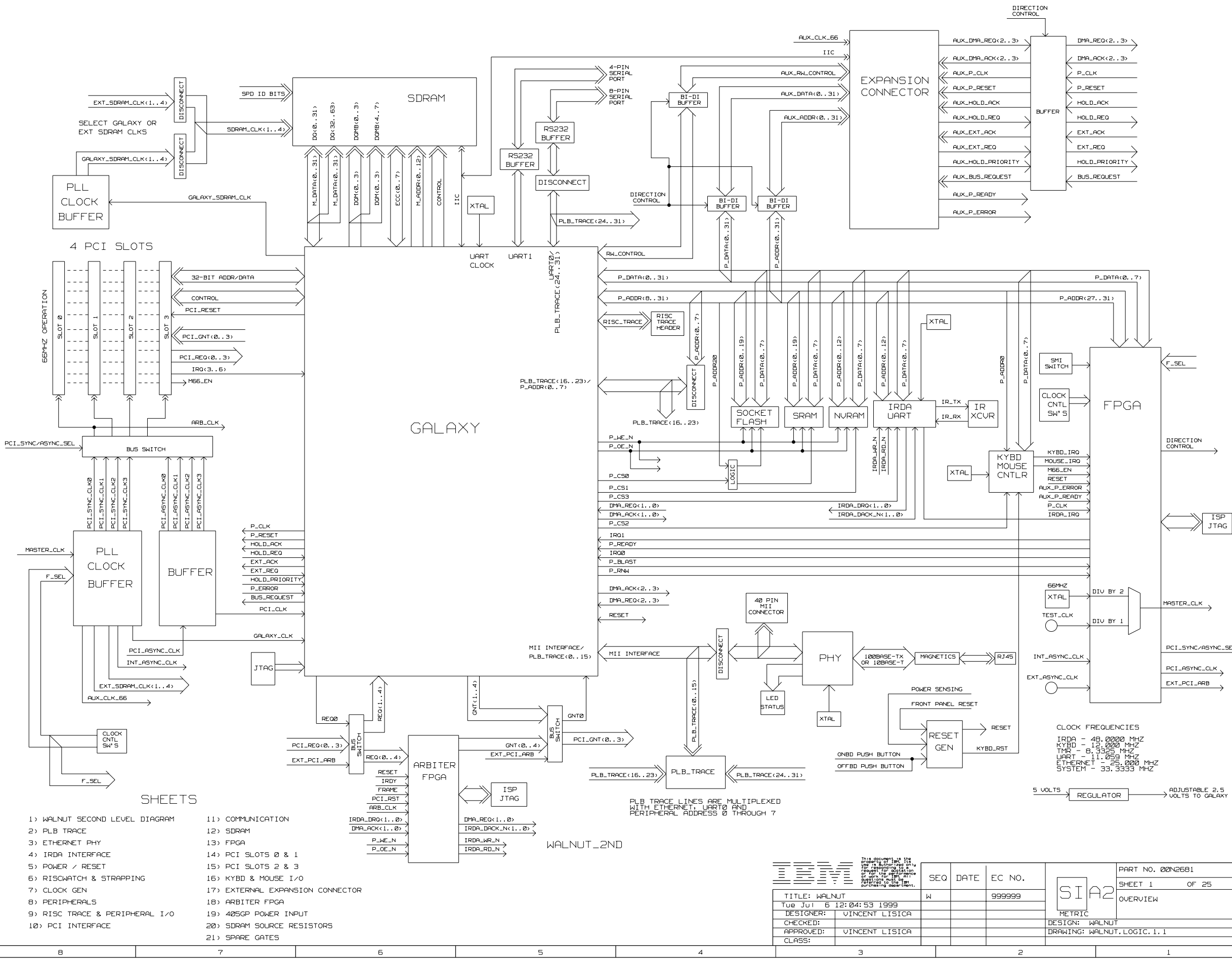
AMCC 405GP
PowerPC

Document Issue 1.00

September 2004

PPC405GP Embedded Processor Schematic

AMCC
APPLIED MICRO CIRCUITS CORPORATION



SHEETS

WALNUT_2ND

TITLE: WALNUT	W		999999
Tue Jul 6 12:04:53 1999			
DESIGNER: VINCENT LISICA			
CHECKED:			
APPROVED: VINCENT LISICA			
CLASS:			

SEQ	DATE	EC NO.

SIA2 METRIC

PART NO. 00N2681
SHEET 1 OF 25
OVERVIEW
DESIGN: WALNUT
DRAWING: WALNUT.LOGIC.1.1

12A5> IN PLB_TEST_CLK

MAX FREQ 100 MHZ
R334.2:J10.5:1000:3700

GND

J10
2-767004-2
MICTOR 38

11DB<> 8E6<> 6D1> 6C1> BI PLB_TRACE<31..0>

UNUSED.J10.1

		1	+5VDC	SCL	2		UNUSED.J10.2
		3	GND DC	SDA	4		UNUSED.J10.4
		5	CLK	CLK	6		UNUSED.J10.6
U12.AD20:J10.7:1000:2000	15	7	D15	D15	8	31	U12.D5:J10.8:1000:2000
U12.AC20:J10.9:1000:2000	14	9	D14	D14	10	30	U12.A3:J10.10:1000:2000
U12.AF23:J10.11:1000:2000	13	11	D13	D13	12	29	U12.B4:J10.12:1000:2000
U12.AE23:J10.13:1000:2000	12	13	D12	D12	14	28	U12.B5:J10.14:1000:2000
U12.P25:J10.15:1000:2000	11	15	D11	D11	16	27	U12.D6:J10.16:1000:2000
U12.L24:J10.17:1000:2000	10	17	D10	D10	18	26	U12.B6:J10.18:1000:2000
U12.L25:J10.19:1000:2000	9	19	D9	D9	20	25	U12.C6:J10.20:1000:2000
U12.J26:J10.21:1000:2000	8	21	D8	D8	22	24	U12.D7:J10.22:1000:2000
U12.U24:J10.23:1000:2000	7	23	D7	D7	24	23	U12.AD15:J10.24:1000:2000
U12.U24:J10.25:1000:2000	6	25	D6	D6	26	22	U12.AE16:J10.26:1000:2000
U12.W23:J10.27:1000:2000	5	27	D5	D5	28	21	U12.AF3:J10.28:1000:2000
U12.K25:J10.29:1000:2000	4	29	D4	D4	30	20	U12.AE18:J10.30:1000:2000
U12.K23:J10.31:1000:2000	3	31	D3	D3	32	19	U12.AE3:J10.32:1000:2000
U12.AA25:J10.33:1000:2000	2	33	D2	D2	34	18	U12.AB4:J10.34:1000:2000
U12.H24:J10.35:1000:2000	1	35	D1	D1	36	17	U12.AF2:J10.36:1000:2000
U12.AD26:J10.37:1000:2000	0	37	D0	D0	38	16	U12.AD16:J10.38:1000:2000

EVEN POD ODD POD

PHY_RXD<3..0> IN 3B4> 11FB>

EMC_TXD<3..0> OUT 3C8< 11EB<

J10.37:R68.1:0:500	R68 71F7680	PHY_RXD<0>	
J10.35:R81.1:0:500	R81 71F7680	PHY_RXD<1>	
J10.33:R87.1:0:500	R87 71F7680	PHY_RXD<2>	
J10.31:R95.1:0:500	R95 71F7680	PHY_RXD<3>	
J10.29:R111.1:0:500	R111 71F7680	EMC_TXD<3>	
J10.27:R57.1:0:500	R57 71F7680	EMC_TXD<2>	
J10.25:R60.1:0:500	R60 71F7680	EMC_TXD<1>	
J10.23:R66.1:0:500	R66 71F7680	EMC_TXD<0>	
J10.21:R73.1:0:500	R73 71F7680	PHY_RX_ER	IN 3C4> 11FB>
J10.19:R78.1:0:500	R78 71F7680	PHY_RX_DV	IN 3D3> 11FB>
J10.17:R82.1:0:500	R82 71F7680	PHY_CRS	IN 3D3> 11EB>
J10.15:R88.1:0:500	R88 71F7680	EMC_TX_ER	OUT 3C8< 11FB<
J10.13:R97.1:0:500	R97 71F7680	EMC_TX_EN	OUT 3C8< 11EB<
J10.11:R113.1:0:500	R113 71F7680	PHY_COL	IN 3D3> 11EB>
J10.9:R119.1:0:500	R119 71F7680	EMC_MDC	OUT 3D8< 11F8<
J10.7:R61.1:0:500	R61 71F7680	EMC_MIO_MDIO	BI 3D3<> 11F8<>

10K R422 40G7417 — DO_NOT_POPULATE — GND

10K R423 40G7417 — DO_NOT_POPULATE — GND

P_ADDR<31..0> BI 8F6<> 17F8<> 4E7< 9A6< 13E3< 13E8<

J10.38:R77.1:0:500	R77 71F7680	P_ADDR<0>
J10.36:R45.1:0:500	R45 71F7680	P_ADDR<1>
J10.34:R47.1:0:500	R47 71F7680	P_ADDR<2>
J10.32:R50.1:0:500	R50 71F7680	P_ADDR<3>
J10.30:R58.1:0:500	R58 71F7680	P_ADDR<4>
J10.28:R62.1:0:500	R62 71F7680	P_ADDR<5>
J10.26:R69.1:0:500	R69 71F7680	P_ADDR<6>
J10.24:R76.1:0:500	R76 71F7680	P_ADDR<7>
J10.22:R80.1:0:500	R80 71F7680	UART0_RI_N	IN 11B2>
J10.20:R84.1:0:500	R84 71F7680	UART0_RX	IN 11B2>
J10.18:R92.1:0:500	R92 71F7680	UART0_TX	OUT 11C4<
J10.16:R49.1:0:500	R49 71F7680	UART0_DCD_N	IN 11A2>
J10.14:R52.1:0:500	R52 71F7680	UART0_DSR_N	IN 11B2>
J10.12:R59.1:0:500	R59 71F7680	UART0_CTS_N	IN 11B2>
J10.10:R64.1:0:500	R64 71F7680	UART0_DTR_N	OUT 11B4<
J10.8:R72.1:0:500	R72 71F7680	UART0_RTS_N	OUT 11B4<

TITLE: WALNUT		W	
Wed Jul 28 10:35:31 1999			
DESIGNER:	VINCENT LISICA		
CHECKED:			
APPROVED:	VINCENT LISICA		
CLASS:			

SEQ	DATE	EC NO.
		999999

SIA2 METRIC

PART NO. 00N2681
SHEET 2 OF 25
PLB TRACE
DESIGN: WALNUT
DRAWING: WALNUT.LOGIC.1.2

DIFFERENTIAL PAIR
ROUTE SIDE BY SIDE

RXDIFF RD+

RXDIFF RD-

TPTD AMPLITUDE FINE TUNE

TW_GND

DO_NOT_POPULATE

TW_AVDD

TW_AGND

TXDIFF TD+

TXDIFF TD-

DIFFERENTIAL PAIR
ROUTE SIDE BY SIDE

TRANSMIT TRANSITION
TIME CONTROL CAP

FRAME_GND

MOUNT SUPRESSION DIODES NEXT TO J22

MDC MAX FREQ 2.5MHZ

DP83843
PQFP80

U43
DP83843VJE

U90
37F9110
SOIC

U35
88G9890
SOIC
MAX_DELAY=10000

U55
68X5492

U63
09F1601
SOIC

J22
406549-4
RJ45L1X1LED2

T1
CDS00150
H1086

J6
02L2184
BERGHDR3X1

J8
02L2184
BERGHDR3X1

Y1
MA-505-25.000M

NO SIGNALS PERMITTED UNDER XTAL

HIGH, LOW AND MID
ARE VALID SELECTIONS
FLOAT = FULL AUTO
NEGOTIATION

PU = INTERNAL PULLUP

PINS 2, 55, 56, 58, 59 & 62 ARE NO CONNECTS
THESE PINS MUST FLOAT

PHY ADDR = 00000 = ISOLATE MODE

PHY ADDR 000XX
JUMPER SETTING
J6 PIN 1 TO ω
J8 PIN 2 TO ω

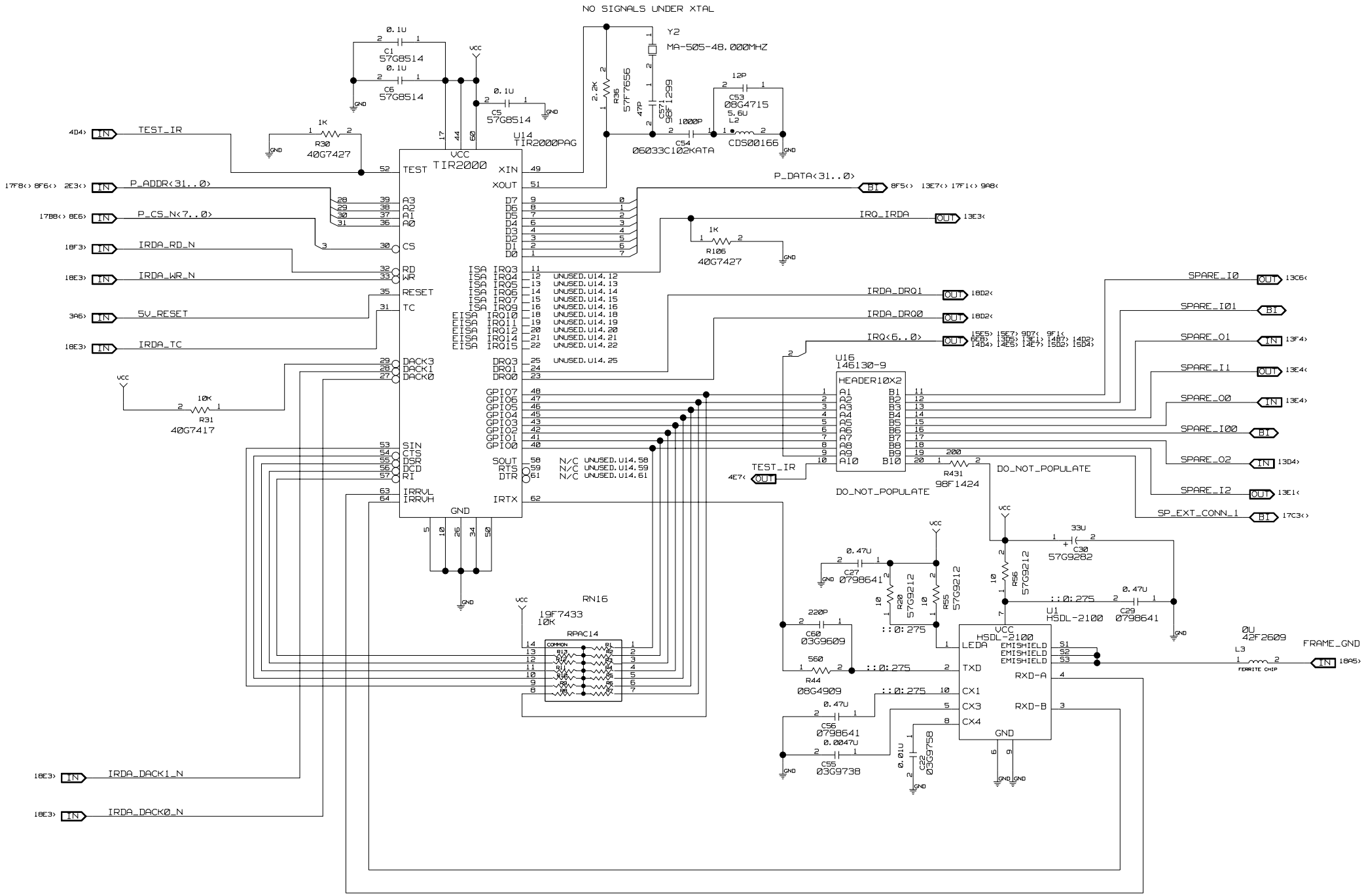
LITE = 100MHZ MODE

2 NON-PLATED THROUGH HOLES

TITLE: WALNUT	SEQ	DATE	EC NO.
Wed Jul 28 10:35:38 1999	W		999999
DESIGNER: VINCENT LISICA			
CHECKED:			
APPROVED: VINCENT LISICA			
CLASS:			

SIA2 METRIC

PART NO. 00N2681
SHEET 3 OF 25
ETHERNET PHY
DESIGN: WALNUT
DRAWING: WALNUT.LOGIC.1.3



CONTROLLER MODES:

1) FAST IRDA - FIR
2) MEDIUM IRDA - MIR
3) SLOW IRDA - SIR
4) SHARP INFRARED - IR
5) TV MODE
6) UART MODE - NOT AVAILABLE

SEQ	DATE	EC NO.
W		999999

TITLE: WALNUT	
Wed Jul 28 10:35:48 1999	
DESIGNER:	VINCENT LISICA
CHECKED:	
APPROVED:	VINCENT LISICA
CLASS:	

SIZE: A2 METRIC

PART NO. 00N2681
SHEET 4 OF 25
IRDA INTERFACE
DESIGN: WALNUT
DRAWING: WALNUT.LOGIC.1.4

U3 UNUSED.U3.2 U3 UNUSED.U3.4 U3 UNUSED.U3.6 U3 UNUSED.U3.8 U3 UNUSED.U3.10
HC14 HC14 HC14 HC14 HC14
VCC=5V_SB VCC=5V_SB VCC=5V_SB VCC=5V_SB VCC=5V_SB
37F8996 SOIC

5V_SB CR3 CR2
5D7> IN
40G7427 1K R523 08G4771 57G8514 0.1U C103 57G9282 33U C14 40G7417 10K R524 08G4771 40G7427 1K R525
U2 VCC=5V_SB 68X5969 SOIC
J3 33F8029
BERG2X1 P1 P2 WHITE BLACK
09G9739 100 R522
U3 HC14
VCC=5V_SB 37F8996 SOIC
57G9282 33U C15
09G9739 100 R506
57G9282 33U C3
12 D PR Q 9 UNUSED.U2.9 HC74 CL Q 8 13
DC POWER FOR HC74 AND HC14 MUST BE FROM 5V_SB
POWER ON MOMENTARY SWITCH
U50 TPBF11FG PLUNGER NC 1 C 2 NO 3 UNUSED.U50.1

U2 VCC=5V_SB 68X5969 SOIC
UNUSED.U2.4
1K R501 40G7427 D PR Q HC74 CL Q UNUSED.U2.5
1K R509 40G7427 UNUSED.U2.6
UNUSED.U2.1
SPARE TRIGGER ON 5V_SB SUPPLY

VCC
40G7427 1K R4 40G7427 1K R5 40G7427 1K R3
PANEL POWER GOOD LED
U57 68X5492
J7 02L2184 BERGHDR3X1 P1 P2 P3 BROWN BLACK
UNUSED.J7.2
PWR_OK ASSERTS HIGH WHEN 5 AND 3.3 ARE ABOVE UNDERVOLTAGE THRESHOLDS
VCC=+3.3V
U7 MC74LVX14D LVX14
PWR_OK
100 R518 09G9739
57G8514 0.1U C82
SOIC VCC=+3.3V U5 74LCX125M LCX125
BOARD POWER GOOD LED
DS5 LN1351C LED1X1
200 R180 98F1424
100 R145 09G9739
0.1U C382 57G8514
STANDBY POWER 5V+/-5% 10MA MIN 720MA MAX
5V_SB OUT 5F8<
10 MILS
0.1U C61 57G8514
30 MILS
POWER CONN
2PEGS J1 39-29-9202 CONN10X2
3.3V P1 3.3V P2 COMMON P3 P4 5V P5 COMMON P6 5V P7 POWER OK P8 5V SB P9 +12V P10 3.3V P11 -12V P12 COMMON P13 PS-ON P14 COMMON P15 COMMON P16 COMMON P17 5V P18 5V P19 5V P20
F1 154-004 FUSE 30 MILS
F3 154-004 FUSE 30 MILS
F5 154-001 FUSE 30 MILS
F2 154-001 FUSE 30 MILS N12V
F4 154-001 FUSE 30 MILS
U8 EHOLE11 OUT 5B1< 17C3<
EHOLE9 _5VOLTS_NEG
30 MILS

VCC=+3.3V U7 MC74LVX14D LVX14
R144 715-7680 DO_NOT_POPULATE
SOIC VCC=+3.3V U5 74LCX125M RESET_OC_N
B1 9E7<> 14E4> 6A5< 9D8< 9F1< 13F1<
TEST PATH FOR USING POWER_OK AS RESET
40G7417 10K R517

U11 05H1621 VCC DS1233DZ RESET GND
U10 DS1233AZ-10 VCC DS1233AZ RESET GND
C190 C173 C168 C157 57G8514 0.1U
1K R515 40G7427
1K R513 40G7427
C170 57G8514 0.1U
U57 68X5492
1K R507 40G7427 1K R505 40G7427 1K R504 40G7427
U4 MC74LVX14D
VCC=+3.3V
C41 C59 57G8514 0.1U

CR1
PANEL RESET SWITCH
J2 33F8029 BERG2X1 P1 P2 GREY GREY
40G7427 1K R1 08G4771
100 R2 09G9739
57G9282 33U C17
TPBF11FG PLUNGER U48 NC 1 C 2 NO 3 UNUSED.U48.1
BOARD RESET SWITCH
U4 & U7, MC74LVX14 IS 5 VOLT TOLERANT
SOIC VCC=+3.3V U5 74LCX125M
1K R519 40G7427
5V_RESET_N OUT 3C8< 8C4<
100 R510 09G9739

PCI BULK DECOUPLING
+3.3V
33U C116 57G9282
33U C124 57G9282
33U C133 57G9282
33U C110 57G9282

BOARD BULK BOARD DECOUPLING
+12V
57G9282 33U C132 0.1U C40 57G8514
57G9282 33U C113 0.1U C32 57G8514
33U C115 57G9282 0.1U C165 57G8514
33U C123 57G9282 0.1U C120 57G8514
-12V N12V
57G9282 33U C131 0.1U C97 57G8514
33U C122 57G9282 0.1U C76 57G8514
33U C114 57G9282 0.1U C51 57G8514
33U C112 57G9282 0.1U C151 57G8514
57G9282 33U C50 0.1U C77 57G8514
57G9282 33U C2 0.1U C98 57G8514
57G9282 33U C16 0.1U C121 57G8514
57G9282 33U C100 0.1U C146 57G8514
57G9282 33U C4 0.1U C142 57G8514
57G9282 33U C20 0.1U C156 57G8514
57G9282 33U C49 0.1U C167 57G8514
57G9282 33U C10 0.1U C146 57G8514
_5VOLTS_NEG 5C6> IN
57G9282 33U C13 0.1U C139 57G8514

TITLE: WALNUT		W		999999
Wed Jul 28 10:35:52 1999				
DESIGNER:	VINCENT LISICA			
CHECKED:				
APPROVED:	VINCENT LISICA			
CLASS:				

SEQ | DATE | EC NO.

SIA2 METRIC

PART NO. 00N2681
SHEET 5 OF 25
POWER / RESET
DESIGN: WALNUT
DRAWING: WALNUT.LOGIC.1.5

RISCWATCH INTERFACE

TDO
9D5> IN J24.1:U12.AD23:1000:4400

DI_RI_TIE_UP<3..1>
9E7< OUT

RN3
19F7433
10K
RPAC14
+3.3V

UNUSED.RN3.4
UNUSED.RN3.5
UNUSED.RN3.6
UNUSED.RN3.8

CLIPPED
J24
PS-16DS-WXA
RWPPC4XX
PWRSENSE
TDO
TDI
TCK
TMS
HALT
KEY
GND

UNUSED.J24.5
UNUSED.J24.13
UNUSED.J24.15
UNUSED.J24.2
UNUSED.J24.8
UNUSED.J24.10
UNUSED.J24.12

40G7427 1K R653
+3.3V
TRST_N
OUT 9D1< 9D8<

IRQ<6..0>
OUT 4D3> 13D5> 13E1> 14B7> 14D2> 14D4> 14E5> 14E7> 15D2> 15D4> 9F1<

J24.11:U12.AB26:1000:2100 SYS_HALT_N OUT 9D1< 9E7<
J24.9:U12.AC22:1000:2400 TMS OUT 9D1< 9D7<
J24.7:U12.AD22:1000:3500 TCK OUT 9D1< 9D7<
J24.3:U12.AE24:1000:3200 TDI OUT 9D1< 9D7<

GALAXY STRAPPING

BITS 0 - 21 ARE FOR STRAPPING
BITS 22 & 23 ARE FOR CLOCK SELECTION

DEFAULT SETTINGS

CLOSE 0 - PLL FORWARD DIV
OPEN 1 - PLL FORWARD DIV
CLOSE 2 - PLL FEEDBACK DIV
OPEN 3 - PLL FEEDBACK DIV
CLOSE 4 - PLL TUNING
OPEN 5 - PLL TUNING
OPEN 6 - PLL TUNING
CLOSE 7 - PLB DIV FROM CPU

U52
90HBW08S
SWITCH8

OPEN 8 - PLB DIV FROM CPU
CLOSE 9 - OPB DIV FROM PLB
OPEN 10 - OPB DIV FROM PLB
CLOSE 11 - PCI DIV FROM PLB
OPEN 12 - PCI DIV FROM PLB
CLOSE 13 - EXT BUS DIV FROM PLB
CLOSE 14 - EXT BUS DIV FROM PLB
CLOSE 15 - ROM WIDTH

U53
90HBW08S
SWITCH8

CLOSE 16 - ROM WIDTH
CLOSE 17 - ROM LOCATION
OPEN 18 - RESERVED
CLOSE 19 - PCI ASYNCH MODE ENABLE
CLOSE 20 - ECC MODE ENABLE
OPEN 21 - PCI ARBITER ENABLE
CLOSE 22 - SW_CLK_SRC0
OPEN 23 - SW_CLK_SRC1

U54
90HBW08S
SWITCH8

RESULTS OF SETTINGS

PLL FORWARD DIV = 2
PLL FEEDBACK DIV = 2
PLL TUNING = 4, M>6
PLB DIV FROM CPU = 2, M=12
OPB DIV FROM PLB = 2
PCI DIV FROM PLB = 2
EXT BUS DIV FROM PLB = 2
ROM WIDTH = 8 BITS
ROM LOCATION IS PERIPHERAL ATTACH
PCI = SYNCH MODE
ECC IS DISABLED
PCI INTERNAL ARB IS ENABLED
33.33 MHZ ON BOARD CLOCK IS SELECTED (FROM 66.66 MHZ OSC)
VCO = 400 MHZ
CPU = 133.33 MHZ
PLB = 66.66 MHZ
OPB = 33.33 MHZ
EXT = 33.33 MHZ
PCI = 33.33 MHZ
PCI_ASYNC_CLK = 1 = VCC

RN5
2.2K
767-161-222-GTR
RPAC16
+3.3V
UNUSED.RN5.1
UNUSED.RN5.15

U103
EHOLE11
EHOLE4

SW_SEL<3..0>
OUT 13D5< 13E1< 13F3<

RN4
2.2K
767-161-222-GTR
RPAC16
+3.3V
UNUSED.RN4.8
UNUSED.RN4.9
UNUSED.RN4.15
UNUSED.RN4.14

RESET_OC_N
14E4> 9E7< 5D5<
IN

0.1U C358 57G8514

SOIC
VCC=+3.3V
U5
74LCX125M
100 R112 09G9739

VCC=+3.3V
U82
74LCX125M
100 R8 09G9739

R151.1:C153.2:50:500
R167.1:C148.2:50:500
R160.1:C145.2:50:500
R153.1:C101.2:50:500
R147.1:C141.2:50:500
R141.1:C137.2:50:500
R136.1:C105.2:50:500
R131.1:C95.2:50:500

R159.1:C144.2:50:500
R166.1:C147.2:50:500
R174.1:C150.2:50:500
R124.1:C158.2:50:500
R152.1:C140.2:50:500
R146.1:C99.2:50:500
R140.1:C104.2:50:500
R135.1:C136.2:50:500

R130.1:C85.1:50:500
R123.1:C81.1:50:500
R117.1:C79.1:50:500
R165.1:C78.1:50:500
R158.1:C89.1:50:500

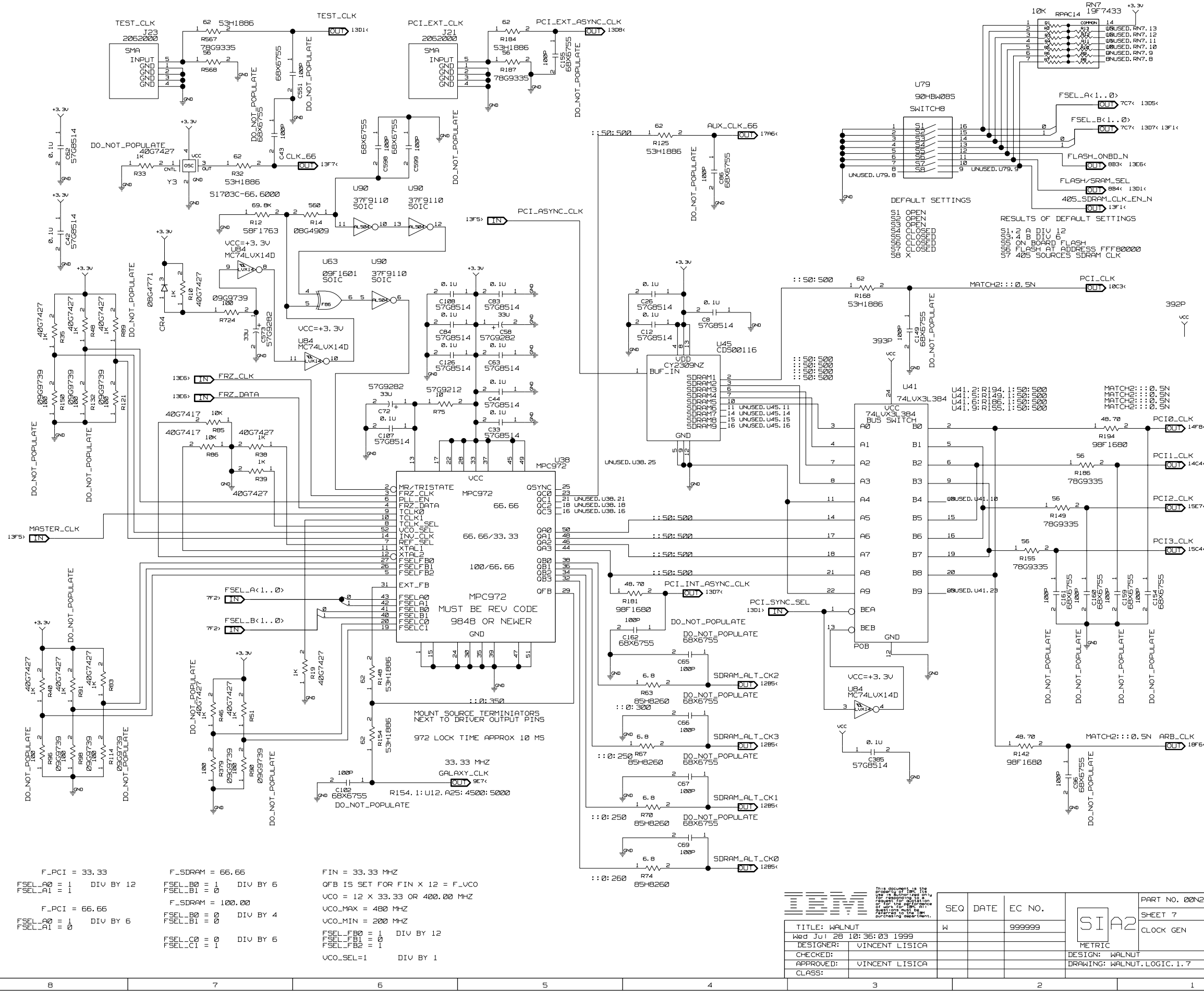
DMA_ACK<3..0> OUT BB6> 9C8< 13D8< 13E1< 17C3< 18E4< 18F6<
U12.D16:R151.2:1000:1900
R151 1K 40G7427
U12.B15:R167.2:800:1600
R167 1K 40G7427
U12.B14:R160.2:700:1400
R160 1K 40G7427
U12.C12:R153.2:800:1600
R153 1K 40G7427
R92.1:R147.2:50:960
R147 1K 40G7427
R64.1:R141.2:50:920
R141 1K 40G7427
R72.1:R136.2:50:960
R136 1K 40G7427
R111.1:R131.2:50:1000
R131 1K 40G7427

PLB_TRACE<31..0> OUT 2F8<> 6C1> 8E6<> 11D8<>
R57.1:R159.2:600:1200
R159 1K 40G7427
R60.1:R166.2:50:850
R166 1K 40G7427
R66.1:R174.2:50:900
R174 1K 40G7427
STRAP<4..1> OUT 6B1> 9D5>
RN15.4:R124.2:50:500
R124 1K 40G7427
RN15.3:R152.2:50:500
R152 1K 40G7427
PLB_TRACE<31..0> OUT 2F8<> 6D1> 8E6<> 11D8<>
R88.1:R146.2:50:900
R146 1K 40G7427
R97.1:R140.2:50:700
R140 1K 40G7427
U12.AC2:R135.2:0:970 UART1_TX OUT 11D5<
R135 1K 40G7427
U12.AD2:R130.2:0:650 UART1_DTR OUT 11E5<
R130 1K 40G7427
U12.U2:R123.2:0:500 HOLD_ACK OUT 9D2<> 13D7<
R123 1K 40G7427
U12.Y3:R117.2:0:950 EXT_ACK_N OUT 9C2<> 9B8<
R117 560 08G4909
RN15.2:R165.2:50:500
R165 1K 40G7427
RN15.1:R158.2:50:500
R158 560 08G4909
STRAP<4..1> OUT 6C1> 9D5>

		SEQ	DATE	EC NO.
TITLE: WALNUT		W		999999
Wed Jul 28 10:35:57 1999				
DESIGNER:	VINCENT LISICA			
CHECKED:				
APPROVED:	VINCENT LISICA			
CLASS:				

SIA2 METRIC

PART NO. 00N2681
SHEET 6 OF 25
RISCWATCH & STRAPPING
DESIGN: WALNUT
DRAWING: WALNUT.LOGIC.1.6



TITLE: WALNUT		SEQ	DATE	EC NO.
Wed Jul 28 10:36:03 1999		W		999999
DESIGNER:	VINCENT LISICA			
CHECKED:				
APPROVED:	VINCENT LISICA			
CLASS:				

SIA2 METRIC

PART NO. 00N2681
SHEET 7 OF 25
CLOCK GEN
DESIGN: WALNUT
DRAWING: WALNUT.LOGIC.1.7

U12
CDS00160
405GP
456 PBGA
LSB
MSB
3 OF 6

P_DATA<31..0>
P_ADDR<31..0>
PLB_TRACE<31..0>
P_PAR<3..0>
P_CS_N<7..0>
P_WBE_N<3..0>
P_RNW
P_READY
P_BLAST_N
DMA_REQ<3..0>
DMA_ACK<3..0>
DMA_EOT/TC<3..0>
AUX_DMA_EOT/TC<3..0>
P_OE_N

MOUSE_DATA_OC
KYBD_DATA_OC
KYBD_CLK_OC
MOUSE_CLK_OC
KYBD_MSE_FUSE_GOOD
R551 1K
40G7427

KYBD_DATA
KYBD_CLK
IRQ_MOUSE
IRQ_KYBD
MOUSE_CLK
MOUSE_DATA

U56
DS1743P
57G8514
0.1U
C191

U25
82C42PC
VCC VDD
C182 0.1U
C127 0.1U

U51
CDS00393
HM628512

U23
04H5457
AM29F040
PLCC

Y4
DO_NOT_POPULATE
CDS00383
40G7427
OSCILLATOR
12.0000MHZ
R22 1K
R156 62
53H1886
C169 0.1U 57G8514
C106 100P 68X6755

R554 10K
R543 10K
R556 10K
R169 10K

5V_RESET_N

U82
74LCX125M
VCC=+3.3V

FLASH_ONBD_N

RN12
68X6875 1K
RPAC16

PULL_DN<7..0>

U86
74LVCH245APW
74LVCH245A

P_PAR<3..0>
AUX_P_PAR<3..0>
AUX_DIR_DATA
AUX_ENABLE_DATA_N

DMA_EOT/TC3_DIR
DMA_EOT/TC2_DIR

U72
74LCX125M
VCC=+3.3V

U84
MC74LVX14D

C198 0.1U 57G8514
C194 0.1U 57G8514

FLASH/SRAM_SEL

U27
74LCX86MTC
VCC=+3.3V

U36
0798765
74LVC32

U7
MC74LVX14D

C164 0.1U 57G8514
C150 0.1U 57G8514

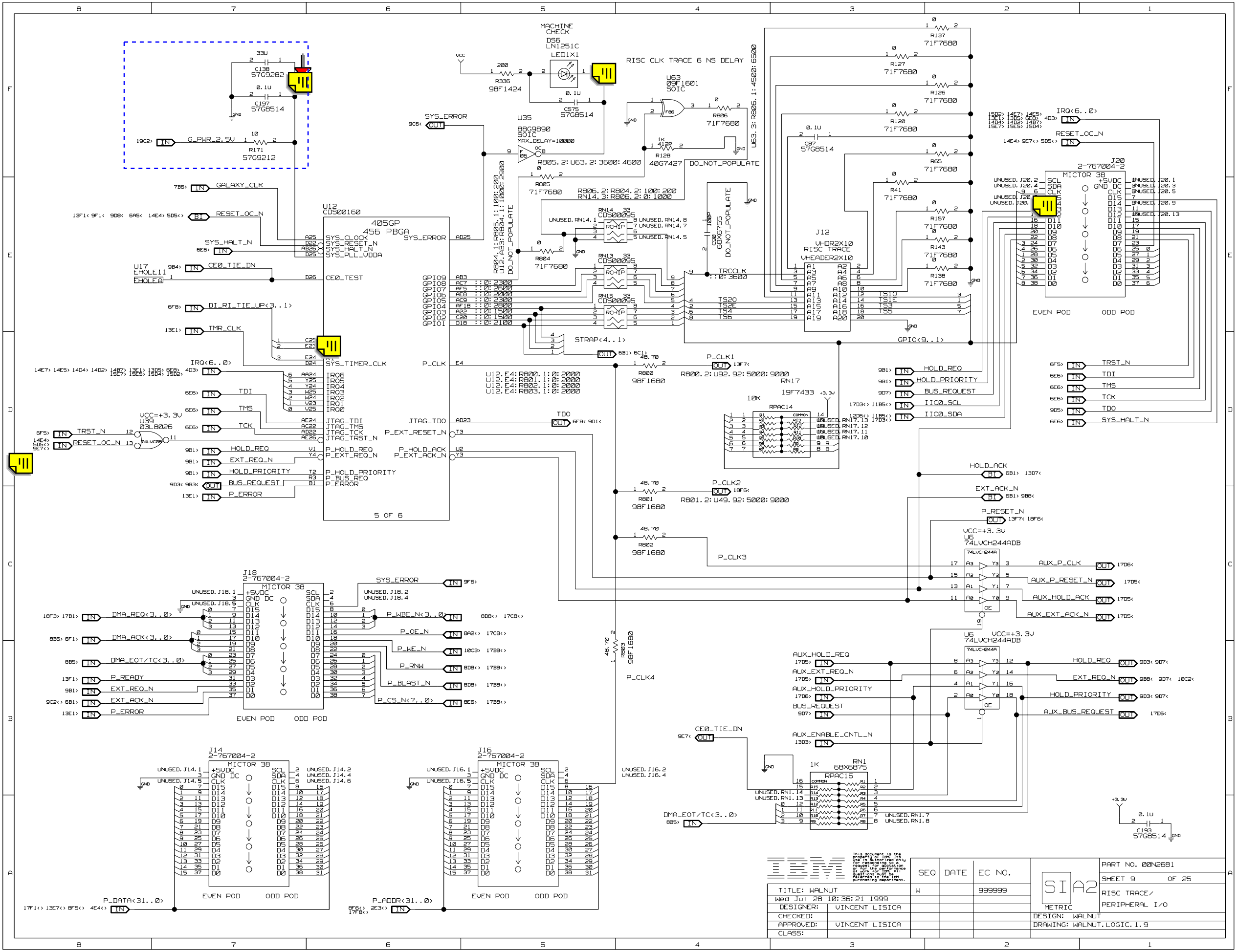
UNUSED.U56.4
UNUSED.U25.29
UNUSED.U25.19
UNUSED.U25.8
UNUSED.U25.12
UNUSED.U25.21
UNUSED.U25.44
UNUSED.U25.9
UNUSED.U25.7
UNUSED.U25.6
UNUSED.U25.5
UNUSED.U25.40
UNUSED.U25.39
UNUSED.RN12.15
UNUSED.RN12.14
UNUSED.RN12.13

TITLE: WALNUT		W	999999
Wed Jul 28 10:36:11 1999			
DESIGNER:	VINCENT LISICA		
CHECKED:			
APPROVED:	VINCENT LISICA		
CLASS:			

SEQ	DATE	EC NO.

SIA2 METRIC

PART NO. 00N2681
SHEET 8 OF 25
PERIPHERALS
DESIGN: WALNUT
DRAWING: WALNUT.LOGIC.1.8


MACHINE CHECK
DS6 LN1251C LED1X1
RISC CLK TRACE 6 NS DELAY
U63 09F1601 SOIC
U35 88G9890 SOIC
SYS_ERROR
G_PWR_2.5V
GALAXY_CLK
RESET_OC_N
SYS_HALT_N
CE0_TIE_DN
DI_RI_TIE_UP<3..1>
TMR_CLK
IRQ<6..0>
TDI
TMS
TCK
TRST_N
HOLD_REQ
EXT_REQ_N
HOLD_PRIORITY
BUS_REQUEST
P_ERROR
VCC=+3.3V U39 03L8026
U12 CDS00160 405GP 456 PBGA
SYS_CLOCK
SYS_RESET_N
SYS_HALT_N
SYS_PLL_VDDA
SYS_TIMER_CLK
IRQ6
IRQ5
IRQ4
IRQ3
IRQ2
IRQ1
IRQ0
JTAG_TDI
JTAG_TMS
JTAG_TCK
JTAG_TRST_N
P_HOLD_REQ
P_EXT_REQ_N
P_HOLD_PRIORITY
P_BUS_REQ
P_ERROR
5 OF 6
GPIO9
GPIO8
GPIO7
GPIO6
GPIO5
GPIO4
GPIO3
GPIO2
GPIO1
STRAP<4..1>
TRCCLK
TS20
TSIE
TSIO
TSOE
TS5
TS6
P_CLK
P_CLK1
P_CLK2
P_CLK3
P_CLK4
TDO
JTAG_TDO
P_EXT_RESET_N
P_HOLD_ACK
P_EXT_ACK_N
J12 VHDR2X10 RISC TRACE VHEADER2X10
J20 2-767004-2 MICTOR 38
EVEN POD
ODD POD
GPIO<9..1>
RN17 19F7433 RPAC14 10K
HOLD_ACK
EXT_ACK_N
P_RESET_N
VCC=+3.3V U6 74LVCH244ADB
AUX_P_CLK
AUX_P_RESET_N
AUX_HOLD_ACK
AUX_EXT_ACK_N
AUX_HOLD_REQ
AUX_EXT_REQ_N
AUX_HOLD_PRIORITY
AUX_BUS_REQUEST
AUX_ENABLE_CNTL_N
CE0_TIE_DN
RN1 68X6875 RPAC16 1K
DMA_EOT/TC<3..0>
J18 2-767004-2 MICTOR 38
DMA_REQ<3..0>
DMA_ACK<3..0>
P_READY
P_WBE_N<3..0>
P_OE_N
P_WE_N
P_RNW
P_BLAST_N
P_CS_N<7..0>
J14 2-767004-2 MICTOR 38
J16 2-767004-2 MICTOR 38
P_DATA<31..0>
P_ADDR<31..0>
SEQ
DATE
EC NO.
PART NO. 00N2681
SHEET 9 OF 25
RISC TRACE/ PERIPHERAL I/O
TITLE: WALNUT
Wed Jul 28 10:36:21 1999
DESIGNER: VINCENT LISICA
CHECKED:
APPROVED: VINCENT LISICA
CLASS:
DESIGN: WALNUT
DRAWING: WALNUT.LOGIC.1.9
SIA2 METRIC

PCI INTERFACE

15D5< 15B2< 14D5< 14B2< BI PAR
18F6< 15D5< 15C2< 14D5< 14C7> 14C2< BI FRAME_N
18E6< 15D7< 15C4< 14D7< 14C4< 14B7> BI IRDY_N
15D5< 15C2< 14D5< 14C7> 14C2< BI TRDY_N
15D5< 15C2< 14D5< 14C2< 14B7> BI STOP_N
15D8< 15C4< 14D8< 14C4< 14B7> BI DEVSEL_N
15D7< 15B4< 14D7< 14B7> 14B4< BI SERR_N
15D8> 15C4> 14D8> 14C4> 14B7> BI PERR_N

MATCH2:::0.5N SOURCE_LOAD_DAISY_CHAIN (×8)

18E6< 15E5< 15C2< 14E4< 14C2< OUT PCI_RST_N

U12
CDS00160
405GP
456 PBGA

PCI_AD<31..0>
BI 14C4< 14E7< 15C4< 15E7<

E26 PCI_PAR
J24 PCI_FRAME_N
J23 PCI_IRDY_N
G26 PCI_TRDY_N
H23 PCI_STOP_N
H25 PCI_DEVSEL_N
G24 PCI_SERR_N
G25 PCI_PERR_N
B24 PCI_RST_N

MSB PCI_AD31 V26 31
PCI_AD30 T25 30
PCI_AD29 U26 29
PCI_AD28 T24 28
PCI_AD27 R25 27
PCI_AD26 P23 26
PCI_AD25 R23 25
PCI_AD24 R24 24
PCI_AD23 P24 23
PCI_AD22 N26 22
PCI_AD21 M26 21
PCI_AD20 N25 20
PCI_AD19 M23 19
PCI_AD18 M25 18
PCI_AD17 L23 17
PCI_AD16 K26 16
PCI_AD15 F25 15
PCI_AD14 C26 14
PCI_AD13 C22 13
PCI_AD12 B23 12
PCI_AD11 B22 11
PCI_AD10 D21 10
PCI_AD9 A23 9
PCI_AD8 B21 8
PCI_AD7 A20 7
PCI_AD6 B18 6
PCI_AD5 C18 5
PCI_AD4 D17 4
PCI_AD3 A18 3
PCI_AD2 C17 2
PCI_AD1 B16 1
LSB PCI_AD0 A17 0

UNUSED.U12.M24 PCI_GNT5_N
N23 PCI_GNT4_N
H26 PCI_GNT3_N
F23 PCI_GNT2_N
T23 PCI_GNT1_N
U23 PCI_GNT0_REQ_N

L11 HS_RTN1
L12 HS_RTN2
L13 HS_RTN3
L14 HS_RTN4
L15 HS_RTN5
L16 HS_RTN6
M11 HS_RTN7
M12 HS_RTN8
M13 HS_RTN9
M14 HS_RTN10
M15 HS_RTN11
M16 HS_RTN12
N11 HS_RTN13
N12 HS_RTN14
N13 HS_RTN15
N14 HS_RTN16
N15 HS_RTN17
N16 HS_RTN18
P11 HS_RTN19
P12 HS_RTN20
P13 HS_RTN21
P14 HS_RTN22
P15 HS_RTN23
P16 HS_RTN24
R11 HS_RTN25
R12 HS_RTN26
R13 HS_RTN27
R14 HS_RTN28
R15 HS_RTN29
R16 HS_RTN30
T11 HS_RTN31
T12 HS_RTN32
T13 HS_RTN33
T14 HS_RTN34
T15 HS_RTN35
T16 HS_RTN36

C_BE_N<3..0>
BI 14C4< 14D7< 15C4< 15E7<

MSB PCI_C_BE3_N R26 3
PCI_C_BE2_N K24 2
PCI_C_BE1_N F24 1
LSB PCI_C_BE0_N D19 0

PCI_IDSEL P26
PCI_CLK B20
P_WE_N/ PCI_INT_N C23
PCI_REQ5_N J25
PCI_REQ4_N G23
PCI_REQ3_N A24
PCI_REQ2_N B19
PCI_REQ1_N C21
PCI_REQ0_GNT_N C19
SPARE D20
SPARE Y23
SPARE Y26

127P
1 OF 6

PCI_TEST_IDSEL
IN 14E4>
5.1K
R93
98F1426
PCI_CLK
IN 7E2>
P_WE_N
OUT 17B8<> 9B6< 14F5< 17A7<
RN2
19F7433
10K
RPAC14
UNUSED.RN2.7
UNUSED.RN2.8
EXT_REQ_N
IN 9B1>

TO FPGA EXT ARB
R164
71F7680
18E2< OUT GALAXY_REQ_N
VCC
DO_NOT_POPULATE
R172
71F7680
FROM PCI_TEST_REQ

U40
74LUX3L384
VCC
74LUX3L384
BUS SWITCH
POB

15C2< OUT GNT3_N
15E5< OUT GNT2_N
14C2< OUT GNT1_N
14E4< OUT GNT0_N

A0 3 B0 2
A1 4 B1 5
A2 7 B2 6
A3 8 B3 9
A4 11 B4 UNUSED.U40.10
A5 14 B5 15
A6 17 B6 16
A7 18 B7 19
A8 21 B8 20
A9 22 B9 UNUSED.U40.23
BEA 1
BEB 13
GND
12

VCC=+3.3V
U7
MC74LVX14D
LVX14

13D1> IN EXT_PCI_ARB
18E3> IN EXT_GNT0_N
18D3> IN EXT_GNT1_N
18D3> IN EXT_GNT2_N
18F2> IN EXT_GNT3_N
R511
71F7680

U58
74LUX3L384
VCC
74LUX3L384
BUS SWITCH
POB

A0 3 B0 2
A1 4 B1 5
A2 7 B2 6
A3 8 B3 9
A4 11 B4 UNUSED.U58.10
A5 14 B5 15
A6 17 B6 16
A7 18 B7 19
A8 21 B8 20
A9 22 B9 UNUSED.U58.23
BEA 1
BEB 13
GND
12

14E8> 14A7> IN REQ0_N
14C4> 14A7> IN REQ1_N
15E7> 14A7> IN REQ2_N
15C4> 14A7> IN REQ3_N

EXT_REQ0_N OUT 18D2<
EXT_REQ1_N OUT 18D2<
EXT_REQ2_N OUT 18D2<
EXT_REQ3_N OUT 18D2<

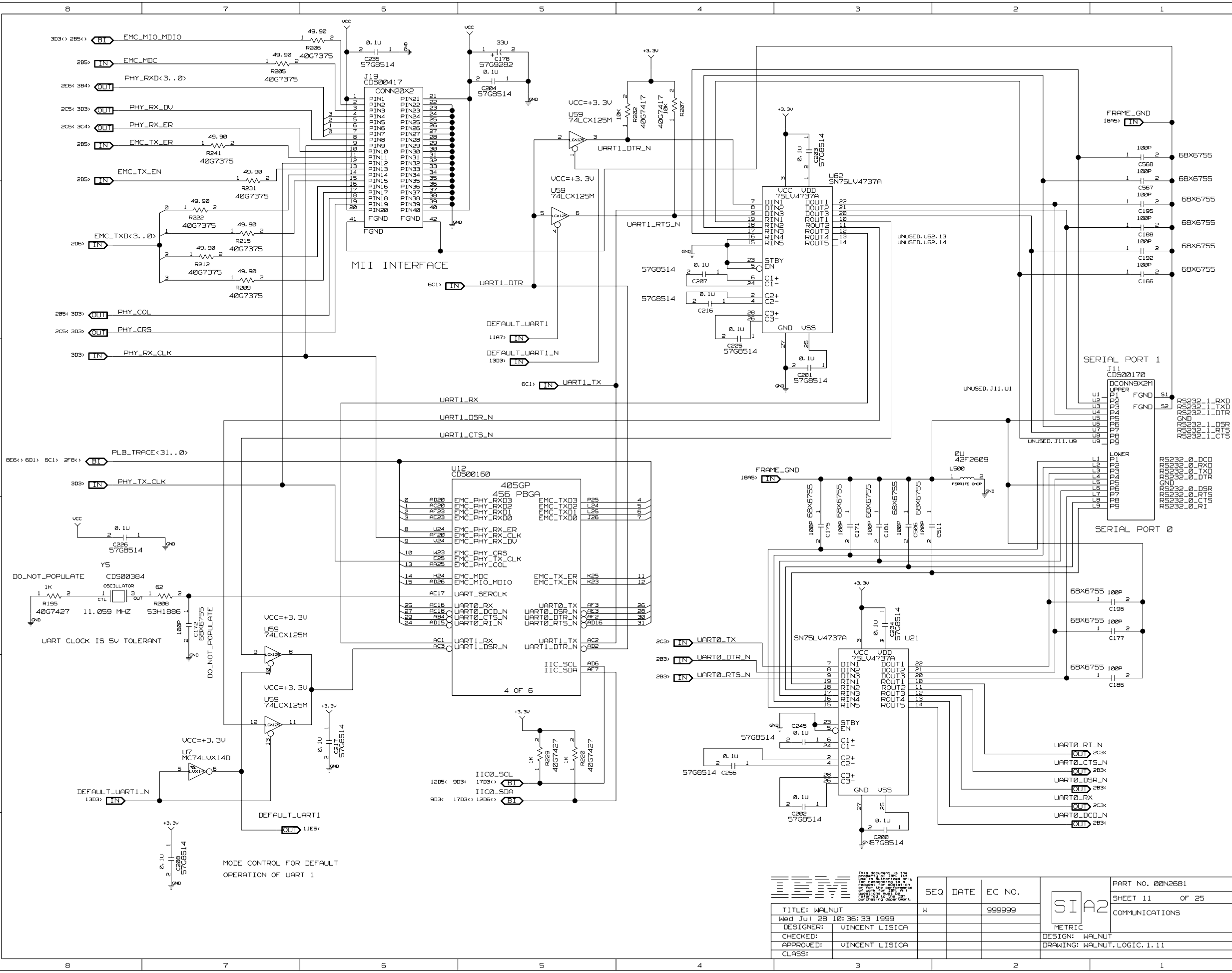
FROM FPGA EXT ARB
GALAXY_GNT_N IN 18E2>
R163
71F7680

FROM PCI_TEST_GNT
DO_NOT_POPULATE
R162
71F7680

TITLE: WALNUT		SEQ W	DATE	EC NO. 999999
Wed Jul 28 10:36:28 1999				
DESIGNER:	VINCENT LISICA			
CHECKED:				
APPROVED:	VINCENT LISICA			
CLASS:				

SIA2 METRIC

PART NO. 00N2681
SHEET 10 OF 25
PCI INTERFACE
DESIGN: WALNUT
DRAWING: WALNUT.LOGIC.1.10


MII INTERFACE
SERIAL PORT 1
SERIAL PORT 0
UART CLOCK IS 5V TOLERANT
MODE CONTROL FOR DEFAULT
OPERATION OF UART 1
J19
CDS00417
CONN20X2
U12
CDS00160
405GP
456 PBGA
4 OF 6
U59
74LCX125M
U62
SN75LV4737A
75LV4737A
U21
J11
CDS00170
DCONN9X2M
Y5
DO_NOT_POPULATE
CDS00384
11.059 MHZ
U7
MC74LVX14D
EMC_MIO_MDIO
EMC_MDC
PHY_RXD<3..0>
PHY_RX_DV
PHY_RX_ER
EMC_TX_ER
EMC_TX_EN
EMC_TXD<3..0>
PHY_COL
PHY_CRS
PHY_RX_CLK
PHY_TX_CLK
PLB_TRACE<31..0>
UART1_DTR_N
UART1_RTS_N
UART1_DTR
UART1_TX
UART1_RX
UART1_DSR_N
UART1_CTS_N
DEFAULT_UART1
DEFAULT_UART1_N
IIC0_SCL
IIC0_SDA
UART0_TX
UART0_DTR_N
UART0_RTS_N
UART0_RI_N
UART0_CTS_N
UART0_DSR_N
UART0_RX
UART0_DCD_N
FRAME_GND
RS232_1_RXD
RS232_1_TXD
RS232_1_DTR
RS232_1_DSR
RS232_1_RTS
RS232_1_CTS
RS232_0_DCD
RS232_0_RXD
RS232_0_TXD
RS232_0_DTR
RS232_0_DSR
RS232_0_RTS
RS232_0_CTS
RS232_0_RI
UNUSED.U62.13
UNUSED.U62.14
UNUSED.J11.U1
UNUSED.J11.U9
VCC=+3.3V
+3.3V
FGND
GND
57G8514
40G7375
40G7417
57G9282
68X6755
57H1886
40G7427
42F2609
FERRITE CHIP
IBM
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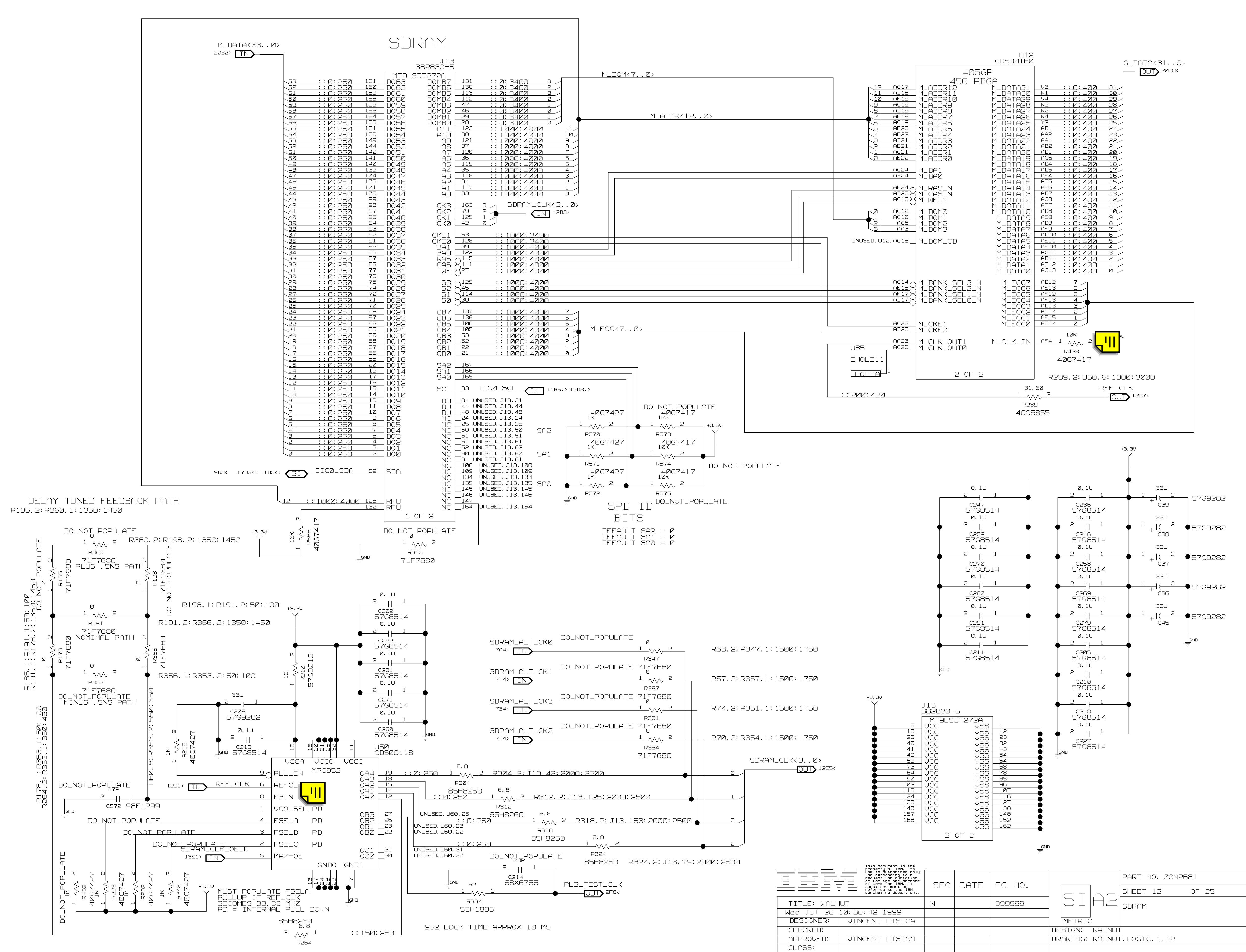
SEQ
DATE
EC NO.
TITLE: WALNUT
Wed Jul 28 10:36:33 1999
DESIGNER: VINCENT LISICA
CHECKED:
APPROVED: VINCENT LISICA
CLASS:
W
999999
SIZE A2
METRIC
PART NO. 00N2681
SHEET 11 OF 25
COMMUNICATIONS
DESIGN: WALNUT
DRAWING: WALNUT.LOGIC.1.11


SDRAM
M_DATA<63..0>
J13
382830-6
MT9LSDT272A
1 OF 2
U12
CDS00160
405GP
456 PBGA
2 OF 6
G_DATA<31..0>
M_DQM<7..0>
M_ADDR<12..0>
M_ECC<7..0>
SDRAM_CLK<3..0>
IIC0_SCL
IIC0_SDA
REF_CLK
R239.2:U60.6:1800:3000
SPD ID
BITS
DEFAULT SA2 = 0
DEFAULT SA1 = 0
DEFAULT SA0 = 0
DO_NOT_POPULATE
DELAY TUNED FEEDBACK PATH
R185.2:R360.1:1350:1450
R360.2:R198.2:1350:1450
PLUS .5NS PATH
NOMINAL PATH
MINUS .5NS PATH
R198.1:R191.2:50:100
R191.2:R366.2:1350:1450
R366.1:R353.2:50:100
U60.8:R353.2:550:650
U60
CDS00118
MPC952
SDRAM_ALT_CK0
SDRAM_ALT_CK1
SDRAM_ALT_CK3
SDRAM_ALT_CK2
R63.2:R347.1:1500:1750
R67.2:R367.1:1500:1750
R74.2:R361.1:1500:1750
R70.2:R354.1:1500:1750
R304.2:J13.42:2000:2500
R312.2:J13.125:2000:2500
R318.2:J13.163:2000:2500
R324.2:J13.79:2000:2500
PLB_TEST_CLK
SDRAM_CLK_OE_N
MUST POPULATE FSELA
PULLUP IF REF_CLK
BECOMES 33.33 MHZ
PD = INTERNAL PULL DOWN
952 LOCK TIME APPROX 10 MS
J13
382830-6
MT9LSDT272A
2 OF 2
TITLE: WALNUT
Wed Jul 28 10:36:42 1999
DESIGNER: VINCENT LISICA
CHECKED:
APPROVED: VINCENT LISICA
CLASS:
SEQ
DATE
EC NO.
W
999999
PART NO. 00N2681
SHEET 12 OF 25
SDRAM
METRIC
DESIGN: WALNUT
DRAWING: WALNUT.LOGIC.1.12
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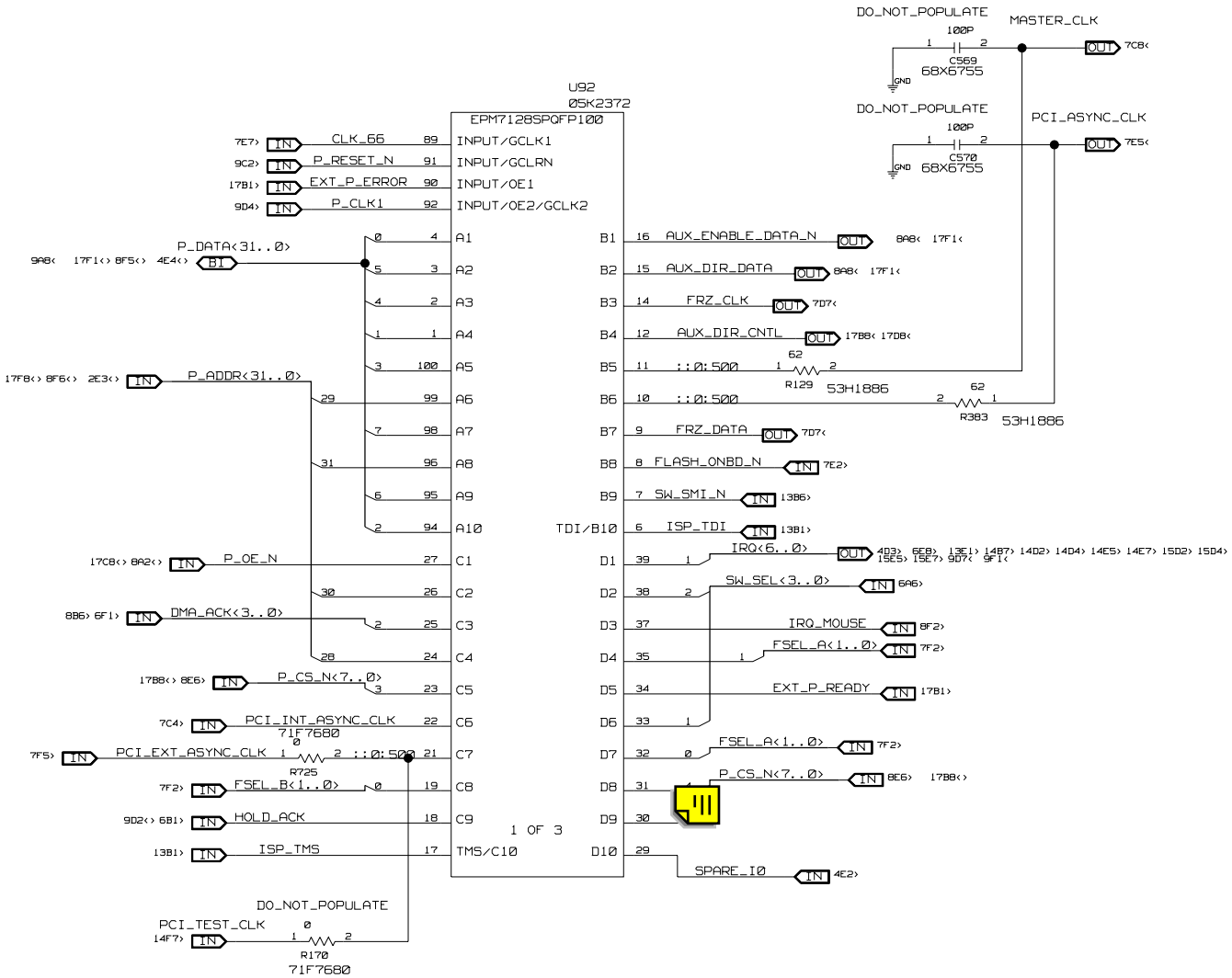
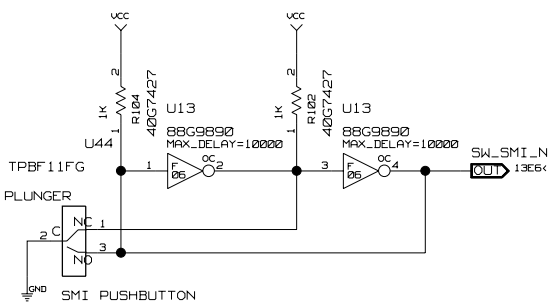
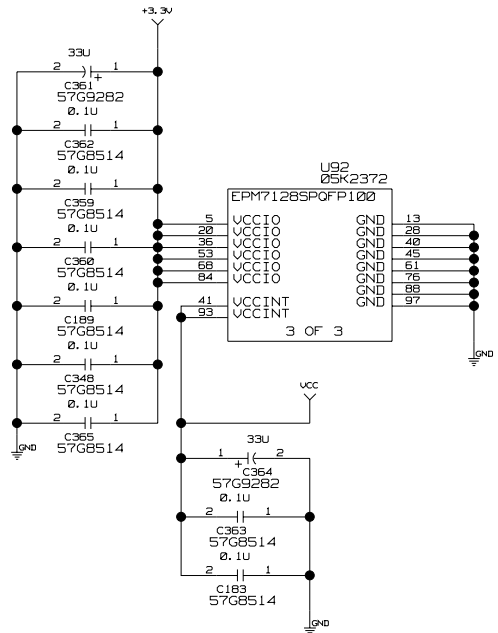
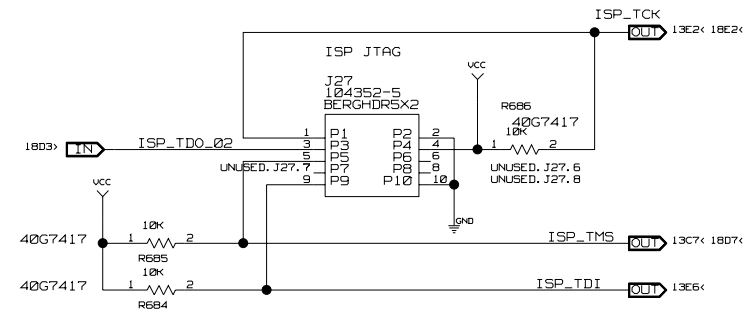








TITLE: WALNUT	SEQ	DATE	EC NO.
Wed Jul 28 10:36:48 1999	W		999999
DESIGNER: VINCENT LISICA			
CHECKED:			
APPROVED: VINCENT LISICA			
CLASS:			

SIA2 METRIC

PART NO. 00N2681
SHEET 13 OF 25
FPGA
DESIGN: WALNUT
DRAWING: WALNUT.LOGIC.1.13

PCI SLOT0

SLOT 0 MUST BE LAST PCI CONNECTOR IN PCI A/D DAISY CHAIN FOR USE AT 66 MHZ

NOT FOR GENERAL USE

PCI JTAG IS NOT SUPPORTED

NOTE: SIGNALS LABELED PCI_TEST_XXXX ARE RESERVED FOR IBM TESTING THESE LINES ARE NOT MEANT TO CONVEY STANDARD PCI INTERFACE USAGE

J31 PCI-SPECIAL

PCI_SPECIAL

8 NON-PLATED THROUGH HOLES

NOTE: VIO_S0,1,2,3 MIN TRACE WIDTH .020

INSTALL J20,21,23,24 WITH CONNECTOR POLARIZING PYLON AT LOCATION A50,51 B50,51 FOR 5VOLT PCI OPERATION

NOTE: MAX LENGTH FROM CONNECTOR PAD TO VCC/GND SHALL BE LESS THAN .25 INCHES MIN TRACE WIDTH .020

CONFIGURATION ADDRESS SELECT

IS ALSO: PCI_TEST_REQ

IS ALSO: PCI_TEST_GNT

IS ALSO: PCI_TEST_RESET

IS ALSO: PCI_TEST_IRQ

IS ALSO: PCI_TEST_IDSEL

PCI SLOT1

NOT FOR GENERAL USE

PCI JTAG IS NOT SUPPORTED

J29 PCI-SPECIAL

PCI_SPECIAL

8 NON-PLATED THROUGH HOLES

REQUIRED PCI MOTHERBOARD PULLUPS

03G9712 (8.2K)

- FRAME_N
- TRDY_N
- IRDY_N
- DEVSEL_N
- STOP_N
- SERR_N
- PERR_N
- LOCK_N
- IRQ<6..0>
- REQ0_N
- REQ1_N
- REQ2_N
- REQ3_N

12 CAPS TO BE EVENLY SPACED AT PCI CONNECTOR

NOTE: MAX LENGTH FROM CONNECTOR PAD TO VCC/GND SHALL BE LESS THAN .25 INCHES MIN TRACE WIDTH .020

SEQ	DATE	EC NO.
W		999999

TITLE: WALNUT	
Wed Jul 28 10:36:55 1999	
DESIGNER:	VINCENT LISICA
CHECKED:	
APPROVED:	VINCENT LISICA
CLASS:	

SIA2 METRIC

PART NO. 00N2681

SHEET 14 OF 25

PCI SLOTS 0 & 1

DESIGN: WALNUT

DRAWING: WALNUT.LOGIC.1.14

PCI SLOT2

NOT FOR GENERAL USE

PCI JTAG IS NOT SUPPORTED

J26 PCI-SPECIAL

PCI_SPECIAL

8 NON-PLATED THROUGH HOLES

PCI SLOT3

NOT FOR GENERAL USE

PCI JTAG IS NOT SUPPORTED

J25 PCI-SPECIAL

PCI_SPECIAL

8 NON-PLATED THROUGH HOLES

CONFIGURATION ADDRESS SELECT

NOTE: MAX LENGTH FROM CONNECTOR PAD TO VCC/GND SHALL BE .25 INCHES MIN TRACE WIDTH .020

12 CAPS TO BE EVENLY SPACED AT PCI CONNECTOR

TITLE: WALNUT	W		999999
Wed Jul 28 10:37:02 1999			
DESIGNER: VINCENT LISICA			
CHECKED:			
APPROVED: VINCENT LISICA			
CLASS:			

SEQ | DATE | EC NO.

SIA2 METRIC

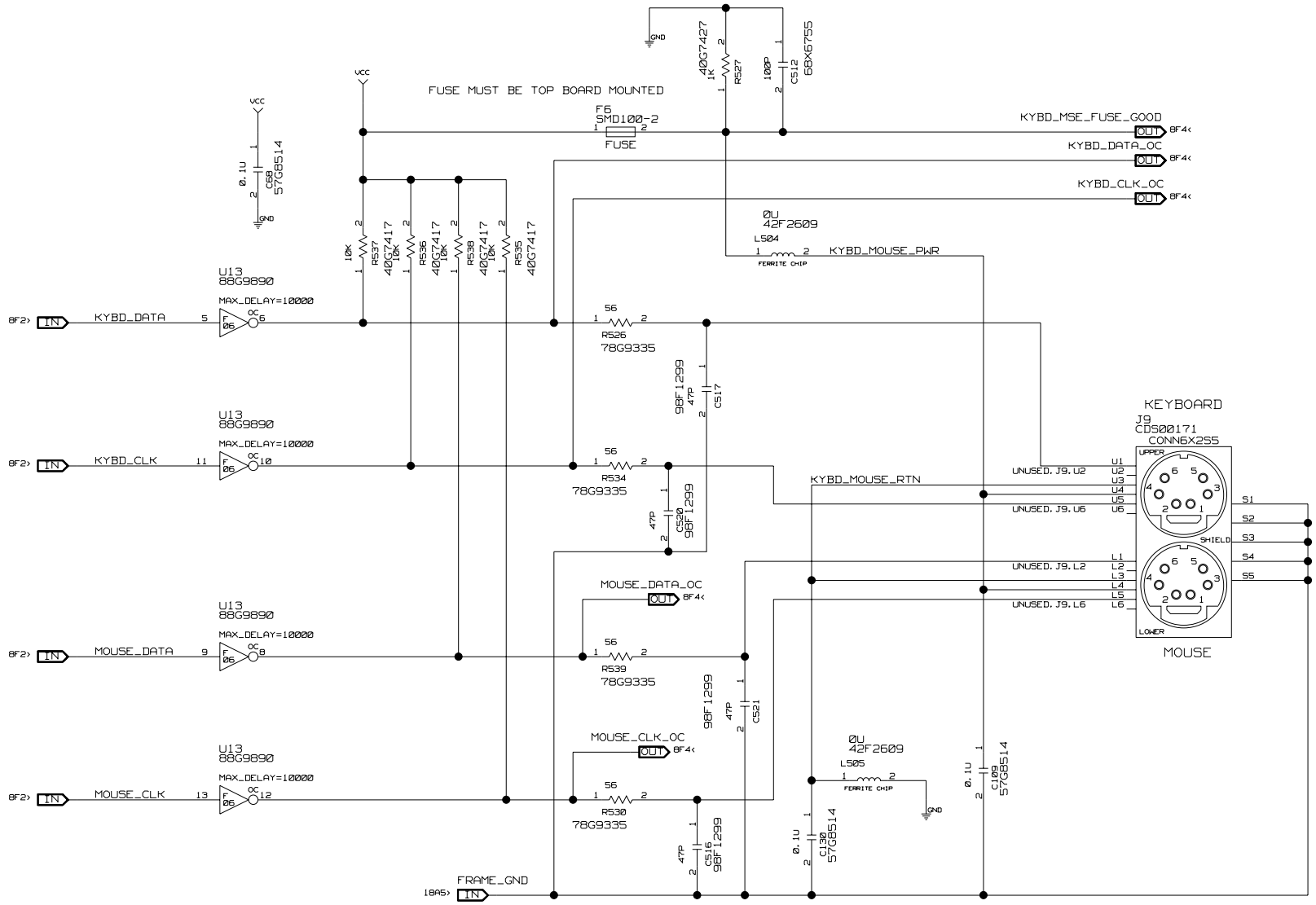
PART NO. 00N2681

SHEET 15 OF 25

PCI SLOTS 2 & 3

DESIGN: WALNUT

DRAWING: WALNUT.LOGIC.1.15



TITLE: WALNUT		W		999999	PART NO. 00N2681
Wed Jul 28 10:37:06 1999					SHEET 16 OF 25
DESIGNER:	VINCENT LISICA				KYBD & MOUSE I/O
CHECKED:					DESIGN: WALNUT
APPROVED:	VINCENT LISICA				DRAWING: WALNUT.LOGIC.1.16
CLASS:					

SEQ | DATE | EC NO.

SIZE: A2 METRIC

P_ADDR<31..0>

AUX_ADDR<31..0>

AUX_DATA<31..0>

P_DATA<31..0>

AUX_DIR_CNTL

AUX_ENABLE_CNTL_N

AUX_ENABLE_DATA_N

AUX_DIR_DATA

AUX_BUS_REQUEST

AUX_HOLD_PRIORITY

AUX_P_CLK

AUX_P_RESET_N

AUX_HOLD_REQ

AUX_HOLD_ACK

AUX_EXT_REQ_N

AUX_EXT_ACK_N

AUX_P_PAR<3..0>

AUX_DMA_EOT/TC<3..0>

DMA_ACK<3..0>

DMA_REQ<3..0>

AUX_DMA_ACK<3..2>

AUX_DMA_REQ<3..2>

AUX_P_READY

AUX_P_ERROR

AUX_IRQ

EXT_P_READY

EXT_P_ERROR

EXT_IRQ

IIC0_SCL

IIC0_SDA

AUX_WBE_N<3..0>

P_WBE_N<3..0>

P_OE_N

P_WE_N

P_RNW

P_BLAST_N

P_CS_N<7..0>

AUX_BLAST_N

AUX_OE_N

AUX_WE_N

AUX_RNW

AUX_CS_N<7..0>

AUX_CLK_66

_5VOLTS_NEG

SP_EXT_CONN_1

TITLE: WALNUT		SEQ	W
Wed Jul 28 10:37:13 1999		DATE	
DESIGNER:	VINCENT LISICA	EC NO.	999999
CHECKED:			
APPROVED:	VINCENT LISICA		
CLASS:			

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SIA2 METRIC

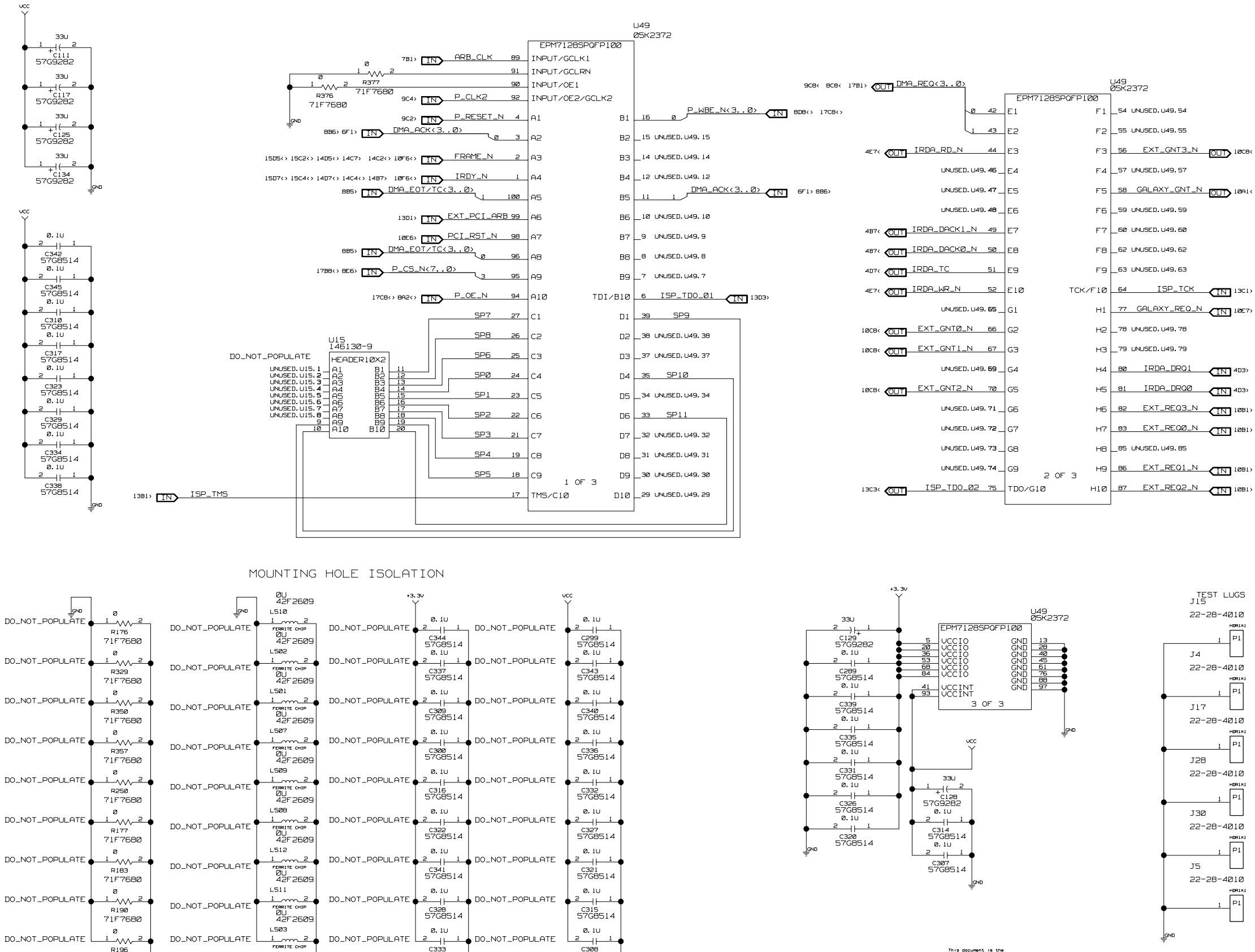
PART NO. 00N2681

SHEET 17 OF 25

EXTERNAL EXPANSION CONNECTOR

DESIGN: WALNUT

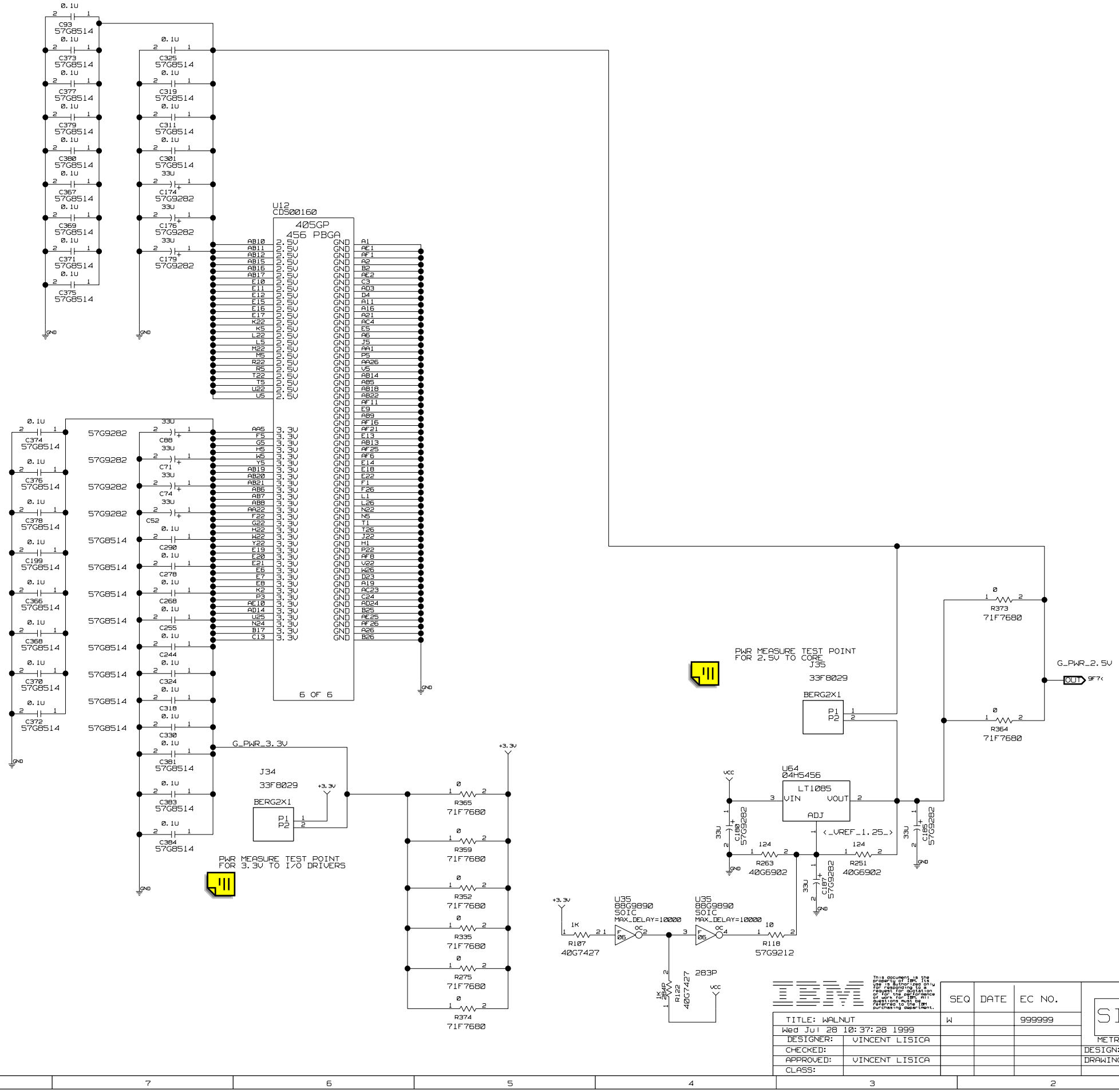
DRAWING: WALNUT.LOGIC.1.17



TITLE: WALNUT		SEQ	DATE	EC NO.
Wed Jul 28 10:37:23 1999		W		999999
DESIGNER:	VINCENT LISICA			
CHECKED:				
APPROVED:	VINCENT LISICA			
CLASS:				

SIZE A2 METRIC

PART NO. 00N2681
SHEET 18 OF 25
ARBITER & DMA FPGA
DESIGN: WALNUT
DRAWING: WALNUT.LOGIC.1.18


U12
CDS00160
405GP
456 PBGA
6 OF 6
J34
33F8029
BERG2X1
PWR MEASURE TEST POINT
FOR 3.3V TO I/O DRIVERS
G_PWR_3.3V
PWR MEASURE TEST POINT
FOR 2.5V TO CORE
J35
33F8029
BERG2X1
G_PWR_2.5V
U64
04H5456
LT1085
VIN
VOUT
ADJ
<_VREF_1.25_>
U35
88G9890
SOIC
MAX_DELAY=10000
U35
88G9890
SOIC
MAX_DELAY=10000
283P
TITLE: WALNUT
Wed Jul 28 10:37:28 1999
DESIGNER: VINCENT LISICA
CHECKED:
APPROVED: VINCENT LISICA
CLASS:
SEQ
DATE
EC NO.
999999
SIA2
METRIC
PART NO. 00N2681
SHEET 19 OF 25
405GP POWER INPUT
DESIGN: WALNUT
DRAWING: WALNUT.LOGIC.1.19

G_DATA<31..0>
12F1> IN

MTERM<31..0>

R287.2:R302.1:3500:4000	R221.2:R331.1:3500:4000	R287.2:R254.1:3500:4000	R221.2:R276.1:3500:4000	R226.2:R338.1:3500:4000	R245.2:R266.1:3500:4000	R226.2:R286.1:3500:4000	R245.2:R219.1:3500:4000
R236.2:R341.1:3500:4000	R256.2:R278.1:3500:4000	R236.2:R297.1:3500:4000	R256.2:R227.1:3500:4000	R247.2:R268.1:3500:4000	R269.2:R289.1:3500:4000	R247.2:R308.1:3500:4000	R269.2:R237.1:3500:4000
R259.2:R280.1:3500:4000	R282.2:R299.1:3500:4100	R259.2:R320.1:3500:4000	R282.2:R248.1:3500:4000	R271.2:R291.1:3500:4000	R293.2:R311.1:3500:4150	R271.2:R233.1:3500:4000	R293.2:R261.1:3500:4000
R284.2:R301.1:3500:4000	R214.2:R322.1:3500:4250	R284.2:R243.1:3500:4000	R214.2:R273.1:3500:4000	R296.2:R315.1:3500:4000	R218.2:R330.1:3500:4250	R296.2:R253.1:3500:4000	R218.2:R285.1:3500:4250
R307.2:R326.1:3500:4000	R225.2:R337.1:3500:4000	R307.2:R265.1:3500:4000	R225.2:R294.1:3500:4000	R317.2:R332.1:3500:4000	R235.2:R255.1:3500:4100	R317.2:R277.1:3500:4000	R235.2:R303.1:3500:4050
R230.2:R339.1:3500:4000	R246.2:R267.1:3500:4100	R230.2:R288.1:3500:4000	R246.2:R310.1:3500:4050	R240.2:R342.1:3500:4000	R258.2:R279.1:3500:4100	R240.2:R298.1:3500:4000	R258.2:R228.1:3500:4000
R252.2:R344.1:3500:4000	R270.2:R290.1:3500:4100	R252.2:R309.1:3500:4000	R270.2:R238.1:3500:4000	R260.2:R281.1:3500:4000	R283.2:R300.1:3500:4250	R260.2:R321.1:3500:4000	R283.2:R249.1:3500:4000
R272.2:R292.1:3500:4000	R295.2:R314.1:3500:4000	R272.2:R328.1:3500:4000	R295.2:R262.1:3500:4000	R234.2:R305.1:3500:4000	R306.2:R323.1:3500:4100	R234.2:R244.1:3500:4000	R306.2:R274.1:3500:4000

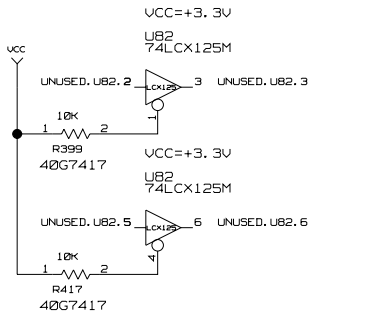
M_DATA<63.
OUT 12F7<

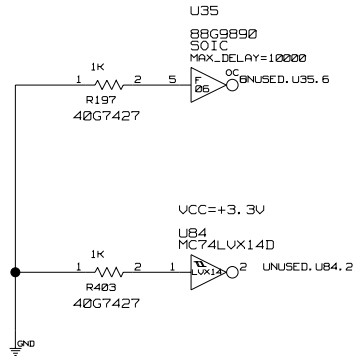
TITLE: WALNUT		W		999999	
Wed Jul 28 10:37:32 1999					
DESIGNER:	VINCENT LISICA				
CHECKED:					
APPROVED:	VINCENT LISICA				
CLASS:					

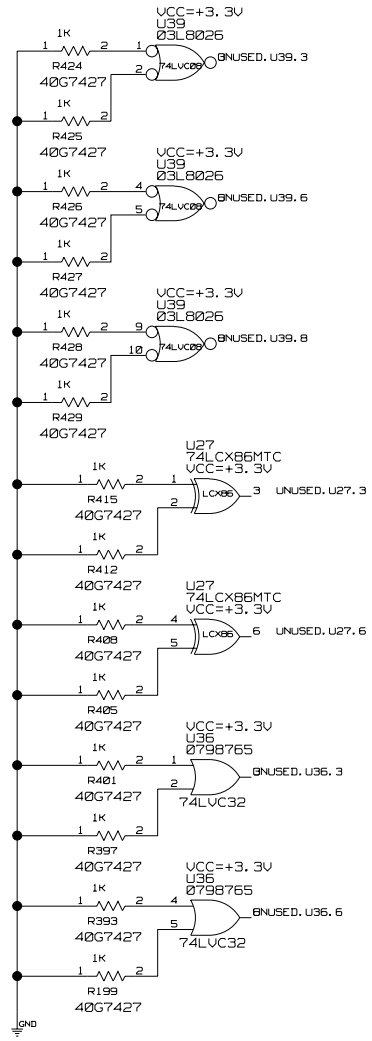
SEQ | DATE | EC NO.

SIA2 METRIC

PART NO. 00N2681
SHEET 20 OF 25
SDRAM
SOURCE RESISTORS
DESIGN: WALNUT
DRAWING: WALNUT.LOGIC.1.20







SEQ	DATE	EC NO.
W		999999

TITLE: WALNUT	
Wed Jul 28 10:37:36 1999	
DESIGNER:	VINCENT LISICA
CHECKED:	
APPROVED:	VINCENT LISICA
CLASS:	

SIZE A2 METRIC

PART NO. 00N2681

SHEET 21 OF 25

UNUSED GATES

DESIGN: WALNUT

DRAWING: WALNUT.LOGIC.1.21

*** Signal Cross-Reference ***
--- for the entire design --

```
5V_RESET          3A6> 4D7<
5V_RESET_N        5A4> 3C8< 8C4<
5V_SB             5D7> 5F8<
405_SDRAM_CLK_EN_N 7E2> 13F1<
ARB_CLK           7B1> 18F6<
AUX_ADDR <31..0>  17F6
AUX_BLAST_N       17C6<>
AUX_BUS_REQUEST   9B1> 17E6<
AUX_CLK_66        7F4> 17A6<
AUX_CS_N <7..0>   17B5
AUX_DATA <31..0>  17F4
AUX_DIR_CNTL      13E6> 17B8< 17D8<
AUX_DIR_DATA      13E6> 8A8< 17F1<
AUX_DMA_ACK <3..2> 17B3
AUX_DMA_EOT/TC <3..0> 8B5<> 17D3<>
AUX_DMA_REQ <3..2> 17B3
AUX_ENABLE_CNTL_N 13D3> 9B3< 17B3< 17B8< 17D8<
AUX_ENABLE_DATA_N 13E5> 8A8< 17F1<
AUX_EXT_ACK_N     9C1> 17D5<
AUX_EXT_REQ_N     17D5> 9B3< 17A6<
AUX_HOLD_ACK      9C1> 17D5<
AUX_HOLD_PRIORITY 17D6> 9B3<
AUX_HOLD_REQ      17D5> 9B3<
AUX_IRQ           17B3<
AUX_OE_N          17C6<>
AUX_P_CLK         9C1> 17D6<
AUX_P_ERROR       17B3<
AUX_P_PAR <3..0>  8A7<> 17D3<>
AUX_P_READY       17B3<
AUX_P_RESET_N     9C1> 17D5<
AUX_RNW           17B6<>
AUX_WBE_N <3..0>  17C6
AUX_WE_N          17B6<>
BUS_REQUEST       9D7> 9B3< 9D3<
CE0_TIE_DN        9B4> 9E7<
CLK_66            7E7> 13F7<
C_BE_N <4..0>     10D2<> 14C4<> 14D7<> 15C4<> 15E7<>
DEFAULT_UART1     11A7> 11E5<
DEFAULT_UART1_N   13D3> 11B8< 11D5<
DEVSEL_N          10F6<> 14B7> 14C4<> 14D8<> 15C4<>
                  15D8<>
DI_RI_TIE_UP <3..1> 6F8> 9E7<
DMA_ACK <3..0>    6F1> 8B6> 9C8< 13D8< 13E1< 17C3<
                  18E4< 18F6<
DMA_EOT/TC <3..0> 8B5> 9A4< 9B8< 18E6<
DMA_EOT/TC2_DIR   13E3> 8A6<
DMA_EOT/TC3_DIR   13E3> 8B6<
DMA_REQ <3..0>    17B1> 18F3> 8C8< 9C8<
EMC_MDC           2B5> 3D8< 11F8<
EMC_MIO_MDIO      2B5<> 3D3<> 11F8<>
EMC_TXD <3..0>    2D6> 3C8< 11E8<
EMC_TX_EN         2B5> 3C8< 11E8<
EMC_TX_ER         2B5> 3C8< 11F8<
EXT_ACK_N         6B1> 9C2<> 9B8<
EXT_GNT0_N        18E3> 10C8<
EXT_GNT1_N        18D3> 10C8<
EXT_GNT2_N        18D3> 10C8<
EXT_GNT3_N        18F2> 10C8<
EXT_IRQ           17B1> 13F1<
EXT_PCI_ARB       13D1> 10C8< 18E6<
EXT_P_ERROR       17B1> 13F7<
EXT_P_READY       17B1> 13D5<
EXT_REQ0_N        10B1> 18D2<
EXT_REQ1_N        10B1> 18D2<
EXT_REQ2_N        10B1> 18D2<
EXT_REQ3_N        10B1> 18D2<
EXT_REQ_N         9B1> 9B8< 9D7< 10C2<
FLASH/SRAM_SEL    7E2> 8B4< 13D1<
FLASH_ONBD_N      7E2> 8B3< 13E6<
FRAME_GND         18A5> 3E1< 4C1< 11D3< 11F1< 16C5<
FRAME_N           10F6<> 14C2<> 14C7> 14D5<> 15C2<>
                  15D5<> 18F6<
FRZ_CLK           13E6> 7D7<
FRZ_DATA          13E6> 7D7<
FSEL_A <1..0>     7F2> 7C7< 13D5<
FSEL_B <1..0>     7F2> 7C7< 13D7< 13F1<
GALAXY_CLK        7B6> 9E7<
GALAXY_GNT_N      18E2> 10A1<
GALAXY_REQ_N      10E7> 18E2<
GNT0_N            10D8> 14E4<
GNT1_N            10D8> 14C2<
GNT2_N            10D8> 15E5<
GNT3_N            10D8> 15C2<
GPIO <9..1>       9D3
G_DATA <31..0>    12F1> 20F8<
G_PWR_2.5V        19C2> 9F7<
G_PWR_3.3V        19B7<
HOLD_ACK          6B1> 9D2<> 13D7<
HOLD_PRIORITY     9B1> 9D3< 9D7<
HOLD_REQ          9B1> 9D3< 9D7<
IDSEL_0           14E5<
IDSEL_1           14C2<
IDSEL_2           15E5<
IDSEL_3           15C2<
IIC0_SCL          11B5<> 17D3<> 9D3< 12D5<
IIC0_SDA          11B5<> 12D6<> 17D3<> 9D3<
IRDA_DACK0_N      18E3> 4B7<
IRDA_DACK1_N      18E3> 4B7<
IRDA_DRQ0         4D3> 18D2<
IRDA_DRQ1         4D3> 18D2<
IRDA_RD_N         18F3> 4E7<
IRDA_TC           18E3> 4D7<
IRDA_WR_N         18E3> 4E7<
IRDY_N            10F6<> 14B7> 14C4<> 14D7<> 15C4<>
                  15D7<> 18E6<
```

```
IRQ <6..0>        4D3> 6E8> 13D5> 13E1> 14B7> 14D2>
                  14D4> 14E5> 14E7> 15D2> 15D4> 15E5>
                  15E7> 9D7< 9F1<
IRQ_IRDA          4E3> 13E3<
IRQ_KYBD          8F2> 13F3<
IRQ_MOUSE         8F2> 13D5<
ISP_TCK           13C1> 13E2< 18E2<
ISP_TDI           13B1> 13E6<
ISP_TDO_01        13D3> 18E4<
ISP_TDO_02        18D3> 13C3<
ISP_TMS           13B1> 13C7< 18D7<
KYBD_CLK          8F2> 16D7<
KYBD_CLK_OC       16E2> 8F4<
KYBD_DATA         8F2> 16E7<
KYBD_DATA_OC      16E2> 8F4<
KYBD_MOUSE_PWR    16E4<
KYBD_MOUSE_RTN    16D4<
KYBD_MSE_FUSE_GOOD 16E2> 8F4<
LOCK_N            14B7> 14C4< 14D8< 15C4< 15D8<
M66EN             14B4> 14D7> 15B4> 15D7> 13D3<
MASTER_CLK        13F5> 7C8<
MOUSE_CLK         8F2> 16C7<
MOUSE_CLK_OC      16C4> 8F4<
MOUSE_DATA        8F2> 16C7<
MOUSE_DATA_OC     16D4> 8F4<
MTERM <31..0>     20F5
M_ADDR <12..0>    12F4
M_DATA <63..0>    20B2> 12F7<
M_DOM <7..0>      12F4
M_ECC <7..0>      12D5
PAR               10F6<> 14B2<> 14D5<> 15B2<> 15D5<>
PCI0_CLK          7D1> 14F8<
PCI1_CLK          7D1> 14C4<
PCI2_CLK          7C1> 15E7<
PCI3_CLK          7C1> 15C4<
PCI_AD <31..0>    10E3<> 14C4<> 14E7<> 15C4<> 15E7<>
PCI_ASYNC_CLK     13F5> 7E5<
PCI_CLK           7E2> 10C3<
PCI_EXT_ASYNC_CLK 7F5> 13D8<
PCI_INT_ASYNC_CLK 7C4> 13D7<
PCI_RST_N         10E6> 14C2< 14E4< 15C2< 15E5< 18E6<

PCI_SYNC_SEL      13D1> 7C4<
PCI_TEST_CLK      14F7> 13C7<
PCI_TEST_IDSEL    14E4> 10D3<
PERR_N            10F6<> 14B7> 14C4> 14D8> 15C4>
                  15D8>
PHYAD <4..0>      3C3
PHY_COL           3D3> 11E8> 2B5<
PHY_CRS           3D3> 11E8> 2C5<
PHY_RXD <3..0>    3B4> 11F8> 2E6<
PHY_RX_CLK        3D3> 11D8<
PHY_RX_DV         3D3> 11F8> 2C5<
PHY_RX_EN         3C4<
PHY_RX_ER         3C4> 11F8> 2C5<
PHY_TX_CLK        3D3> 11D8<
PLB_TEST_CLK      12A5> 2F8<
PLB_TRACE <31..0> 2F8<> 6C1> 6D1> 8E6<> 11D8<>
PULL_DN <7..0>    8B7
PWR_OK            5E7<
P_ADDR <31..0>    2E3<> 8F6<> 17F8<> 4E7< 9A6< 13E3<
                  13E8<
P_BLAST_N         8D8> 17B8<> 9B6< 17A8<
P_CLK1            9D4> 13F7<
P_CLK2            9C4> 18F6<
P_CLK3            9C4<
P_CLK4            9B4<
P_CS_N <7..0>     8E6> 17B8<> 4E7< 9B6< 13D5< 13D7<
                  13E1< 13F1< 13F3< 17A8< 18E6<
P_DATA <31..0>    4E4<> 8F5<> 13E7<> 17F1<> 9A8<
P_ERROR           13E1> 9B8< 9C7<
P_OE_N            8A2<> 17C8<> 9C6< 13D8< 17A7< 18E6<

P_PAR <3..0>      8A8<> 8E6<>
P_READY           13F1> 8D8< 9B8<
P_RESET_N         9C2> 13F7< 18F6<
P_RNW             8D8<> 17B8<> 9B6< 13E3<
P_WBE_N <3..0>    8D8<> 17C8<> 9C6< 13D1< 18F4<
P_WE_N            10C3> 17B8<> 9B6< 14F5< 17A7<
RD+               3F4<
RD-               3F4<
REF_CLK           12D1> 12B7<
REQ0_N            14A7> 14E8> 10B8<
REQ1_N            14A7> 14C4> 10B8<
REQ2_N            14A7> 15E7> 10B8<
REQ3_N            14A7> 15C4> 10B8<
RESET_OC_N        5D5<> 9E7<> 14E4> 6A6< 9D8< 9F1<
                  13F1<
SDRAM_ALT_CK0     7A4> 12B5<
SDRAM_ALT_CK1     7B4> 12B5<
SDRAM_ALT_CK2     7B4> 12B5<
SDRAM_ALT_CK3     7B4> 12B5<
SDRAM_CLK <3..0>  12B3> 12E5<
SDRAM_CLK_OE_N    13E1> 12A7<
SERR_N            10F6<> 14B4<> 14B7> 14D7<> 15B4<>
                  15D7<>
SP0               18D6<
SP1               18D6<
SP2               18D6<
SP3               18D6<
SP4               18D6<
SP5               18D6<
SP6               18D6<
SP7               18E6<
SP8               18E6<
SP9               18E5<>
SP10              18D5<>
SP11              18D5<>
```

```
SPARE_I0          4E2> 13C6<
SPARE_I00         4D2<>
SPARE_I01         4D2<>
SPARE_I1          4D2> 13E4<
SPARE_I2          4D2> 13E1<
SPARE_I00         13E4<>
SPARE_IO1         13F4<>
SPARE_O0          13E4> 4D2<
SPARE_O1          13F4> 4D2<
SPARE_O2          13D4> 4D2<
SPEED10           3D3<>
SP_EXT_CONN_1     4C2<> 17C3<>
STOP_N            10F6<> 14B7> 14C2<> 14D5<> 15C2<>
                  15D5<>
STRAP <4..1>      6B1> 6C1> 9D5>
SW_SEL <3..0>     6A6> 13D5< 13E1< 13F3<
SW_SMI_N          13B6> 13E6<
SYS_ERROR         9F6> 9C6<
SYS_HALT_N        6E6> 9D1< 9E7<
TCK               6E6> 9D1< 9D7<
TD+               3F3<>
TD-               3E3<>
TDI               6E6> 9D1< 9D7<
TDI_PCI           15E5<
TDO               9D5> 6F8> 9D1<
TEST_CLK          7F6> 13D1<
TEST_IR           4D4> 4E7<
TMR_CLK           13E1> 9E7<
TMS               6E6> 9D1< 9D7<
TMS_PCI           15E5<
TRCCLK            9E4<>
TRDY_N            10F6<> 14C2<> 14C7> 14D5<> 15C2<>
                  15D5<>
TRST_N            6F5> 9D1< 9D8<
TS1E              9E3<>
TS1O              9E3<>
TS2E              9E4<>
TS2O              9E4<>
TS3               9E3<>
TS4               9E4<>
TS5               9E3<>
TS6               9E4<>
TW_AGND           3D7<
TW_AVDD           3E8<
UART0_CTS_N       11B2> 2B3<
UART0_DCD_N       11A2> 2B3<
UART0_DSR_N       11B2> 2B3<
UART0_DTR_N       2B3> 11B4<
UART0_RI_N        11B2> 2C3<
UART0_RTS_N       2B3> 11B4<
UART0_RX          11B2> 2C3<
UART0_TX          2C3> 11C4<
UART1_CTS_N       11D6<>
UART1_DSR_N       11D6<
UART1_DTR         6C1> 11E5<
UART1_DTR_N       11F5<>
UART1_RTS_N       11E4<>
UART1_RX          11D6<>
UART1_TX          6C1> 11D5<
UNUSED.J7.2       5E5>
UNUSED.J9.L2      16D3<
UNUSED.J9.L6      16D3<
UNUSED.J9.U2      16D3<
UNUSED.J9.U6      16D3<
UNUSED.J10.1      2F7<
UNUSED.J10.2      2F6<
UNUSED.J10.4      2F6<
UNUSED.J10.6      2F6<
UNUSED.J11.U1     11D2<
UNUSED.J11.U9     11D2<
UNUSED.J13.24     12D5<
UNUSED.J13.25     12D5<
UNUSED.J13.31     12D5<
UNUSED.J13.44     12D5<
UNUSED.J13.48     12D5<
UNUSED.J13.50     12D5<
UNUSED.J13.51     12D5<
UNUSED.J13.61     12D5<
UNUSED.J13.62     12D5<
UNUSED.J13.80     12D5<
UNUSED.J13.81     12D5<
UNUSED.J13.108    12D5<
UNUSED.J13.109    12D5<
UNUSED.J13.134    12D5<
UNUSED.J13.135    12D5<
UNUSED.J13.145    12C5<
UNUSED.J13.146    12C5<
UNUSED.J13.164    12C5<
UNUSED.J14.1      9B7<
UNUSED.J14.2      9B7<
UNUSED.J14.4      9B7<
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CHECKED:
APPROVED:
CLASS:

SIA2 METRIC

PART NO. 00N2681
SHEET 22 OF 25
CROSS REFERENCE
DESIGN: WALNUT
DRAWING: CREFOUT.LOGIC.1.22

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APPROVED:			
CLASS:			

SIA2 METRIC

PART NO. 00N2681

SHEET 23 OF 25

CROSS REFERENCE

DESIGN: WALNUT

DRAWING: CREFOUT.LOGIC.1.23

*** Unit Cross-Reference ***
--- for the entire design --

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CR3	DIODE3PIN	5F8
CR4	DIODE3PIN	7E7
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CR6	TVSDIODE	3D2
CR7	TVSDIODE	3D2
CR8	TVSDIODE	3D1
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DS2	LED1X1	3B4
DS3	LED1X1	3B5
DS4	LED1X1	3D2
DS5	LED1X1	5D4
DS6	LED1X1	9F5
F1	FUSE	5D7
F2	FUSE	5C6
F3	FUSE	5D7
F4	FUSE	5C7
F5	FUSE	5C7
F6	FUSE	16F4
FL1	EMIRFIFILTER	3B5
FL2	EMIRFIFILTER	3B6
FL3	EMIRFIFILTER	3E5
FL4	EMIRFIFILTER	3E5
FL5	EMIRFIFILTER	3E6
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J3	BERG2X1	5F8
J4	HDR1X1	18C2
J5	HDR1X1	18B2
J6	BERGHDR3X1	3B1
J7	BERGHDR3X1	5E5
J8	BERGHDR3X1	3B2
J9	CONN6X2S5	16D2
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J11	DCONN9X2M	11D1
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J15	HDR1X1	18C2
J16	MICTOR38	9B5
J17	HDR1X1	18B2
J18	MICTOR38	9C7
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J26	PCI5PECIAL	15F7
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J30	HDR1X1	18B2
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R41	RESISTOR	9E3
R42	RESISTOR	3D4
R43	RESISTOR	3B3

TITLE: CREFOUT	W		999999
Tue Jul 6 12:06:37 1999			
DESIGNER:			
CHECKED:			
APPROVED:			
CLASS:			

SEQ	DATE	EC NO.

SIA2 METRIC

PART NO. 00N2681
SHEET 24 OF 25
CROSS REFERENCE
DESIGN: WALNUT
DRAWING: CREFOUT.LOGIC.1.24

R44 RESISTOR 4C4
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RN9 RPAC14 17B5
RN10 RPAC16 17B3
RN12 RPAC16 8B8
RN13 RCHIP 9E5
RN14 RCHIP 9E5
RN15 RCHIP 9E5
RN16 RPAC14 4C5
RN17 RPAC14 9D3
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U1 XCVR_IR 4C3
U2 HC74 5F4 5F6
U3 HC14 5F4 5F5 5F5 5F6 5F6 5F7
U4 MC74LVX14 5A6 5A7 5B5 5B6
U5 74LCX125 5A5 5D5 6B4
U6 74LVCH244A 9C2
U7 MC74LVX14 5D5 5E6 8B4 10C7 11B7
U8 EHOLE 5C7
U10 DS1233AZ 5B6
U11 DS1233DZ 5B7
U12 405GP 8F7 9E6 10E4 11D6 12F2 19E6
U13 F06 13B7 16C6 16D6 16E6
U14 TIR20000 4E5
U15 HEADER10X2 18E6
U16 HEADER10X2 4D4
U17 EHOLE 9E8
U21 75LV4737A 11C3
U23 AM29F040P 8C2
U25 82C42PC 8E3
U27 74LCX86 8B3 21C7 21D7
U35 F06 3C1 3C2 9F5 19B4 21F5
U36 74LVC32 8B3 21B7 21C7
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U84 MC74LVX14 7B3 7D7 7E7 8A6 8B6 21E5
U85 EHOLE 12D3
U86 74LVCH245A 8B7
U90 ALS04 3C1 3C2 3C8 7E6
U92 EPM7128SPQFP100 13B5 13F2 13F6
U93 74LVCH244A 17B3 17C3
U97 EHOLE 17C3
U98 EHOLE 17C3
U99 EHOLE 17C3
U100 EHOLE 17C3
U101 EHOLE 17D3
U103 EHOLE 6A6
Y1 CRYSTAL_2 3C7
Y2 CRYSTAL_2 4F4
Y3 OSC_SMC 7E7
Y4 OSCILLATOR_SMT 8D4
Y5 OSCILLATOR_SMT 11C8

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SHEET 25 OF 25
CROSS REFERENCE
DESIGN: WALNUT
DRAWING: CREFOUT.LOGIC.1.25