PC Logic Chip Sets—Applications and User Issues

APPLICATIONS AND USER ISSUES

The User's Perspective

The following are points that should be considered when evaluating the risks and rewards of chip sets:

- Optimum performance and chip count—Chip sets can provide an overall optimum solution for many new system designs.

  - In terms of integration, well–engineered chip sets offer a significant reduction in the number of components needed for a given system.

  - Along with integration comes benefits of optimized performance and system reliability.

  - Higher functionality and lower power consumption are typical by–products of chip–count reduction.

  - Fewer devices on a board and, hence, fewer solder joints and package connections can offer greatly enhanced reliability.

- Time to market—Chip sets are available immediately, almost as off–the–shelf commodity parts; thus, they can speed time to market. This is particularly important to OEMs building products with short product life cycles. Personal computer manufacturers must often cycle new designs every 6 to 18 months to remain competitive.

- Only alternative—For many OEMs lacking their own IC design and manufacturing capabilities, chip sets may provide the only viable path to entry into a given market. With the cost of chip sets near that of the discrete components they are replacing, and with their inherent advantages, chip sets may be the commodity of choice.

- Cost savings—Other benefits of reducing the chip count in a given system that could result in further cost savings to users include improved manufacturability, lower inventory, simplified debugging, and easier field repair.

- Hard to differentiate—Product differentiation is often more difficult with chip sets because every OEM using the same off–the–shelf parts ends up with basically the same system. Although many chip sets are designed using ASIC methodologies and CAD tools enabling modification of parts for a given buyer, adding proprietary features to a chip set can have an impact on time to market as well as component cost.

- Sourcing--Most chip sets are single-sourced products, although each supplier usually has several manufacturing foundries available for use. Potential users should be interested in the overall strength of a vendor both in terms of track record on timely delivery and quality and in terms of economic health and commitment to the industry.

Critical Success Factors for Suppliers

In order to compete effectively in this industry, participants will require certain capabilities and resources, including the following:

- Systems expertise--Systems designers are looking for vendors able to work with them from the beginning of the board design to integrate and sometimes customize the chip set in the system. Chip set vendors with board design and systems expertise will be able to provide this capability. The ultimate goal of the chip set vendor is to become the technology driver of the systems market.

- Design tools--Fast chip design turnaround will be required because of short product life cycles. Access to design tools will allow the vendor to offer the product as a core, which can be modified to allow the customer some degree of differentiation.

- High-volume/low-cost manufacturing--As a result of the increasing commoditization of these products, access to a high-volume/low-cost foundry will be essential. Many chip set vendors do not own their own foundries. As long as there are no capacity shortages in the industry, these vendors have the benefit of shopping around for the best prices. However, vendors must consider the risk of being shut out in the event of capacity shortages.

- Customer service/support--Because of the lack of major differentiation in these products, service and customer support are as important as pricing. A user might not switch vendors for either better pricing or better service but, if offered both, will find it difficult to resist. Support--including technical assistance, extensive documentation, and the availability of evaluation and development boards--is demanded by users. Users also demand service, in the form of rapid turnaround in both design and manufacture, in order to meet ever-shorter time-to-market requirements.

- Growth path--Each new generation of microprocessor or major performance upgrade requires a new chip set design. Suppliers must be able to commit resources to fulfill product migration needs of the systems designers.

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