

## **CYPRESS INTRODUCES DUAL-PORTS IN BGA PACKAGES**

### **7.2 Gbps FLEx36™ Housed in Manufacturing-Friendly 1.0-mm Lead Pitch BGA**

SAN JOSE, Calif., November 5, 1999 -- Cypress Semiconductor Corp. (NYSE:CY) today announced that the four members of the FLEx36™ family of x36 dual-port SRAMs will be offered in 172-ball, 15 mm x 15 mm BGA packages. This package saves 54% of board space compared with Cypress's x36 dual-port TQFP packages and 71% when compared with competitive offerings.

In addition to saving board space, the BGA package increases reliability versus TQFP packages. Mechanical reliability increases because BGA packages are less susceptible to bent leads as the pin count increases. Electrical reliability is improved due to the minimization of crosstalk resulting from shortening signal trace length. Thermal characteristics also improve due to the BGA package's greater heat dissipation. All of these features point to the BGA as the package of choice going forward.

Cypress has chosen a 1.0-mm lead pitch for the FLEx36 dual-port BGA package in response to customer requests. Competitive offerings with 0.8-mm lead pitch have proven to cause manufacturing headaches for makers of LAN (edge routers, ATM switches), WAN (telecom switches, basestations, routers), and SAN (Storage Area Network) equipment – target markets for the FLEx36 dual-ports.

“Board space is increasingly important to designers of high-performance, complex systems,” said Geoff Charubin, Cypress's director of specialty memories. “Our FLEx36 dual-ports have been well received, and we expect a high level of interest for the BGA offerings. Based on customer input, we are confident that the 1.0-mm lead pitch will be a competitive advantage over 0.8-mm offerings for designers building 10- to 14-layer boards.”

Cypress's FLEx36 dual-ports offer two 36-bit wide ports, each operating at up to 100 MHz to deliver a bandwidth of up to 7.2 Gbps, enough to process 500,000 typed pages of information per second. They are Cypress's first "Internet memories," specialty memories that are designed for bandwidth rather than simply for density. Cypress has announced plans to continue this trend with future offerings topping 10 Gbps throughput in the first half of next year, and breaking the 25 Gbps barrier later next year.

FLEx36 dual-ports give users the ability to select either flowthrough or pipelined operation on each port, independent of the mode of the other port. Designers can match each port to its respective processor's most efficient mode of operation to provide maximum performance and simplicity of design. Dual-port RAMs allow the same piece of data to be shared by multiple processors and/or busses. Two ports provide independent and simultaneous access for reads and writes to any location in memory. The synchronous FLEx36 devices simplify data addressing through the use of an on-board burst-counter. This feature allows users to supply a single address and the dual-port automatically increments this address on each subsequent clock cycle. The counter then cycles the entire depth of the RAM and wraps around.

### **Aggressive Specialty Memory Push**

The new dual-ports are part of an aggressive specialty memory push by Cypress. In 1996, Cypress introduced the Deep Sync™ FIFO family, the first high density FIFOs with industry-standard pinouts. In 1997, Cypress debuted the first 1-Mbit FIFO, and followed that with a family of synchronous 3.3-V FIFOs in 1998 and a line of x36 FIFOs last month. In August 1998, Cypress rolled out over 60 new dual-ports, including the first at 1 Mbit. Cypress recently introduced 133-MHz FIFOs that deliver the industry's highest bandwidth at roughly 10 Gbps.

### **Price and Availability**

The new FLEx36 BGA dual-ports include devices in both synchronous and asynchronous versions. They are expected to sample in January 2000, with full production in March. In 10,000 unit quantities, the 1-Mbit devices are priced starting at \$39, and the 512K dual-ports start at \$27.

## **About Cypress**

Cypress Semiconductor provides high-performance integrated circuit solutions "By Engineers. For Engineers.<sup>TM</sup>" for fast-growing companies in fast-growing markets, including data communications, telecommunications, computation, consumer products, and industrial control. With a focus on emerging communications applications, Cypress's product lines include networking-optimized and micropower static RAMs; high-bandwidth multi-port and FIFO memories; high-density programmable logic devices; timing technology for PCs and other digital systems; and controllers for Universal Serial Bus (USB). Cypress is No. 1 in the USB and clock chip markets.

More than two-thirds of Cypress's sales come from the fast-growing datacom/telecom markets and dynamic companies such as Lucent, Cisco, 3Com, Alcatel, Motorola, Ericsson, and Northern Telecom. Cypress's ability to mix and match its broad portfolio of intellectual property enables targeted, integrated solutions for high-speed systems that feed bandwidth-hungry Internet applications. Cypress aims to become the preferred silicon supplier for Internet switching systems and for every Internet data stream to pass through at least one Cypress IC.

Cypress employs more than 3,500 people worldwide with international headquarters in San Jose, California. Its shares are listed on the New York Stock Exchange under the symbol CY.

More information about Cypress is accessible electronically on the company's worldwide web site at <http://www.cypress.com> or by CD-ROM (call 1-800-858-1810). An electronic investor forum, and other investor information, is located at <http://www.cypress.com/investor/index.html>.

"Safe Harbor" Statement under the Private Securities Litigation Reform Act of 1995: Statements herein that are not historical facts are "forward-looking statements" involving risks and uncertainties. Please refer to Cypress's Securities and Exchange Commission filings for a discussion of such risks.

###

FLEx36 and Deep Sync are trademarks of Cypress Semiconductor Corporation.