



Ann Dennis
Xilinx, Inc.
(408) 879-4726

Mary Jane Reiter
Tsantes & Assoc.
(408) 452-8700

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XILINX XC4000E FAMILY AIMED AT HIGH PERFORMANCE APPLICATIONS

New Family Achieves 50 Percent Performance Increase Over Leading FPGA Family

SAN JOSE, Calif., July 31, 1995—Xilinx, Inc., (NASDAQ:XLNX), high density FPGA market leader, today announced the XC4000“E” family of field programmable gate arrays (FPGAs) aimed at high performance applications. The XC4000E family increases performance over the existing XC4000 family of FPGAs by 50 percent. This dramatic improvement is manifested in a new design, a new process technology, and new on-chip RAM features. The new high performance XC4000E family will offer eight devices ranging from 3,000 to 25,000 gates, including the XC4020E device, which will be the first 20,000 gate device offered by Xilinx. Even higher density devices will be announced later this year.

“As we continue to focus on the gate array replacement market, it is clear that increased speed and cost reductions are critical,” said Chuck Fox, vice president of product marketing. “To that end, the XC4000E family was developed to offer the industry’s highest performance, high density FPGAs scaleable to beyond 50,000 usable gates. This high performance family, with the benefits of the new on-board synchronous dual port RAM, enables FPGAs to become the logic devices of choice in telecom, DSP, and PCI-based system applications.”

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2100 Logic Drive • San Jose, CA 95124-3400
Telephone: 408-559-7778 • FAX: 408-559-7114

“Clearly, future growth in the FPGA market will come from penetration of the low-end gate array market—defined as 50,000 gates and below,” said Rhondalee Rohleder, president of the market research firm PACE Technologies (Scottsdale, AZ). “In order to capture that low-end segment, FPGA vendors must develop architectures that can achieve the high performance and low-cost required by today’s gate array users.”

Unique Capabilities of the XC4000E

- 50 percent faster speed (–2 speed grade)
- 60 percent faster carry chain for arithmetic functions
- On-chip synchronous RAM, reducing chip count, design time, and increasing RAM performance by up to 2X
- Dual port RAM enabling on-chip buffering
- 100 percent PCI compliance
- Advanced application modules for memory and PCI functions

Example benchmarks:

	<u>XC40XXE-2</u>	<u>XC40XXE-4</u>
Data Path	156 MHz	109 MHz
State Machine	69 MHz	55 MHz
16 Bit pre-scaled counter	115 MHz	64 MHz
Address map decoder	71 MHz	50 MHz

According to Jim Simkins, senior engineering specialist at E-Systems, a manufacturer of military and government systems, “There are dramatic speed increases using the XC4025E device, in fact up to two to three times in several cases. Currently, E-Systems is using an XC4025E device to implement a DSP function that processes 11.5 bops (billion arithmetic and storage operations per second), with a gate capacity of 170,000.”

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Architectural Features of the XC4000E

The new architecture of the XC4000E is a superset of the XC4000; thus, the new family is bitstream and pin-compatible with the leading XC4000 family and is therefore backward compatible. This allows current designs using XC4000 FPGAs to take immediate advantage of the XC4000E's increased speed by simply inserting new devices into existing XC4000 sockets.

The dramatic increase in speed and reduction in price stems from the use of deep submicron, triple-layer metal (TLM) process technology which reduces cost by up to 50 percent for equivalent performance devices over the XC4000. The XC4000E family will start at 0.6 micron and quickly shrink to 0.5 micron, which is scheduled for the fourth quarter 1995.

The XC4000E architecture features an enhanced CLB (configurable logic block) and a new on-board, synchronous dual-port RAM capability. The true dual-port RAM provides simultaneous read/write functions, and the on-chip synchronous RAM allows embedded configuration registers, enabling for the first time, on-chip buffering for local area networking (LAN) switching applications, Peripheral Component Interconnect (PCI), and asynchronous transfer mode (ATM).

Additionally, taking advantage of the new third layer of metal on the TLM process, the routing scheme of the XC4000E architecture was re-designed and optimized to improve CLB access and increase routing connections. The new architecture improves utilization and provides shorter wire lengths which reduce interconnect delay in the devices.

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Xilinx Announces Improvement in Leading FPGA Family

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The new architecture also includes Xilinx application modules (XAMs) created to simplify and speed system design. These modules are pre-engineered functions which include FIFOs and PCI building blocks to provide readily available elements that were previously purchased as separate components or designed from scratch.

The XC4000E family will include the following devices:

Device	Density range without RAM (in usable gates)	Density range with RAM*	Availability	
			Sampling	Production
XC4003E	2,500 – 3,000	4,000 – 6,000	Q4	Q4
XC4005E	4,000 – 5,000	7,000 – 11,000	Now	Q4
XC4006E	5,000 – 6,000	8,500 – 15,000	Now	Q4
XC4008E	6,500 – 8,000	11,000 – 18,000	Now	Q4
XC4010E	8,000 – 10,000	14,000 – 22,000	Now	Q4
XC4013E	10,000 – 13,000	19,000 – 31,000	Now	Q4
XC4020E	18,000 – 20,000	28,000 – 44,000	Q4	Q4
XC4025E	22,500 – 25,000	36,000 – 57,000	Now	Q4

*10% - 30% RAM usage

Prices for selected devices are:

	in 100-piece quantities	in high-volume quantities (2H 96)
XC4003E	\$30 (Q4)	\$15
XC4010E	\$105	\$45
XC4013E	\$175	\$70
XC4020E	\$300 (Q4)	\$125

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XACTstep™ Software Support

Existing customers can presently use the current XACTstep software development system to design with the new XC4000E family to achieve a significant speed increase. A new module for the XACTstep system that allows users to take advantage of the new features of the XC4000E family will be available at no charge to customers under maintenance contracts.

Introduced in 1991, the XC4000 family is currently the world's best-selling family of FPGAs, contributing approximately 40 percent of Xilinx's overall revenues. Encompassing 15 base devices ranging from 2,000 to 25,000 gates, the XC4000 family was the first group of FPGA devices to include user programmable on-chip RAM.

Founded in 1984, Xilinx is the world's largest supplier in the 1.3 billion dollar programmable logic industry. The company pioneered the market for field programmable gate array (FPGA) semiconductor devices that provide high integration and quick time-to-market for electronic equipment manufacturers in the computer peripherals, telecommunications, industrial control, instrumentation, and military markets. Headquartered in San Jose, Calif., the company produces innovative device architectures and associated development system software.

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