

Here Come the Fastest ×16 Dual-Ports You Can Buy, Anywhere

Cypress has introduced a group of eight dual-port RAMs, all of which exhibit a 15 ns (max.) access time—the fastest in the industry. Pin-for-pin compatible with industry standard devices, these are low-power dual-ports (150 mA., typ.) that meet your need for increased performance and address the requirements of wider 16- and 32-bit buses. Moreover, six of the eight new devices are available in the space-saving TQFP (thin, quad flat-

pack) package, for designs in which board space is critical. You'll find the new dual-ports very well suited to applications in data communications (ATM, Fibre Channel, Fast Ethernet), where new standards require dual-ports as a mainstream design technique; in digital cellular telephony, which requires high-performance base-station memory for which dual-ports are ideal; in telecommunications switches; and in

networking equipment (hubs, routers, LAN equipment).

Advanced features

Dual-port RAMs allow a piece of data to be shared by multiple processors simultaneously, thereby effectively doubling system performance over that attainable with standard SRAMs. Two ports provide independent, synchronous access for reads and writes to any location in memory. Besides their high performance at low power, Cypress's new dual-ports incorporate a variety of advanced features and functionality.

For example, Cypress is the only dual-port supplier to offer a ×18 configuration; the extra bits allow for parity (to ensure data integrity) and flag bits (that delineate end-of-record). The new dual-ports also feature semaphore, BUSY, and interrupt signals. Semaphores are used to pass status from one port to the other to indicate that a shared resource is in use; a BUSY signal means that wait states are never incurred by either port; and an interrupt provides a lockout mechanism without complex programming. And interrupt flags permit communication between ports—and systems—by means of a mailbox.

Available now

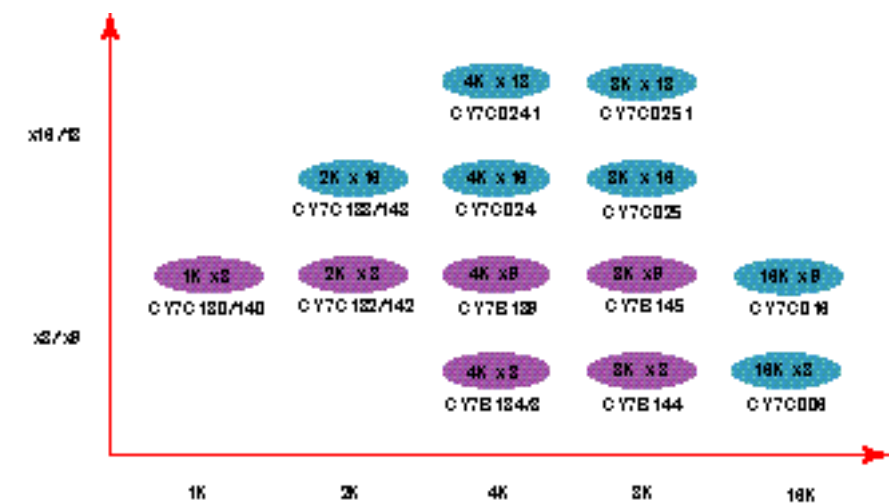
The new dual-ports carry the following part numbers:

- CY7C133 (Master), 2K × 16
- CY7C143 (Slave), 2K × 16
- CY7C024, 4K × 16
- CY7C0241, 4K × 18
- CY7C025, 8K × 16
- CY7C0251, 8K × 18
- CY7C006, 16K × 8
- CY7C016, 16K × 9

The CY7C133/143 Master/Slave devices are pin-strappable to allow bus-width expansion to ×32 and wider.

All the new dual-ports are available now. The CY7C133 and CY7C143 come in 68-lead PLCCs. The CY7C024 and CY7C0241, plus the CY7C025 and CY7C0251, are offered in an 84-lead PLCC and 100-lead TQFP. The CY7C006 is available in a 68-lead PLCC or 64-lead TQFP, while the CY7C016 comes in a 68-lead PLCC or 80-lead TQFP. ❖

For literature, visit the Cypress web site. See the appropriate site address (URL) for article 204 in the listing on the back cover.



Expanding family. Cypress's broad, dual-port RAM product line continues to grow. With the addition of the eight 15 ns ×16/×18 devices shown here in blue, Cypress now offers you the fastest dual-ports you can buy—and they run at the lowest power, too.

Cypress Offers Second GAL-Compatible PLD in QSOP

The industry's broadest line of programmable logic has broadened still more with Cypress's introduction of the PALCE20V8. Like its predecessor, the PALCE16V8, the new PLD is fully pin- and function-compatible with Generic Array Logic (GAL) devices. The Cypress part offers you significant advantages, however—it is fabricated in CMOS flash technology; you can get a low-power version in a tiny, 20-lead QSOP (Quarter-size Small Outline Package); and a low-power military version is also available.

Eight outputs, 16 inputs

Flash technology means that the PALCE20V8 is electrically erasable and reprogrammable. That is, its eight outputs (each with eight product terms) derive from eight user-programmable macrocells that offer output polarity control, and which you can select individually for registered or combinatorial operation. And there can be as many as 20 inputs. The PALCE16V8 has a sec-

ond-generation Programmable Array Logic (PAL) architecture and thus functions as a superset of the older, small PLDs like the 20L8, 20R8, 20R6, and 20R4.

Small size

The 24-lead QSOP package measures just 0.340 × 0.153 × 0.061 in. Other packaging options include 24-pin, 300-mil plastic DIP and ceramic dual-inline Cerdip packages; and a 28-lead, 0.490-in.-square plastic leaded chip carrier (PLCC).

And fast, too

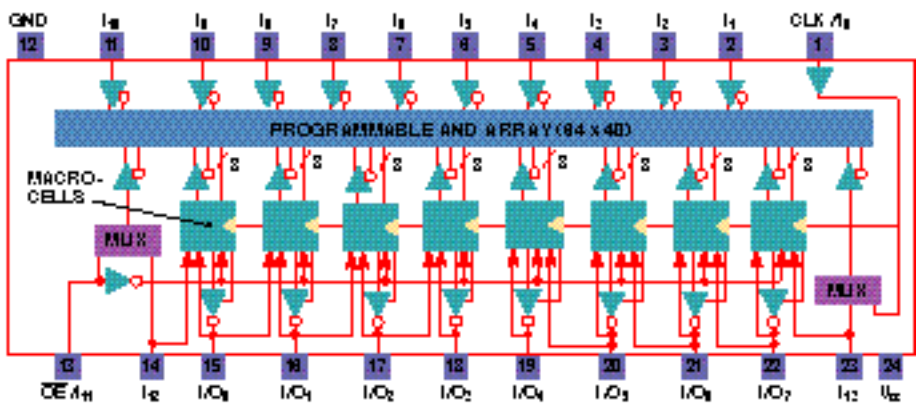
All versions—commercial, industrial, military—offer you a choice of input-to-output propagation delays (t_{PD}) of 25, 15, or 10 ns (max.). The standard-power commercial version runs at 10 ns with an I_{CC} of 115 mA, while a low-power commercial version runs at 15 ns at an I_{CC} of 55 mA. A low-power military version hits 15 ns at 65 mA.

The PALCE20V8 augments Cypress's already broad line of programmable logic,

fabricated in CMOS and CMOS flash technologies. The line includes small, industry standard PLDs; a variety of very fast, low-power 22V10s including flash-based reprogrammable versions; enhanced, application-tailored PLDs; CY7C340

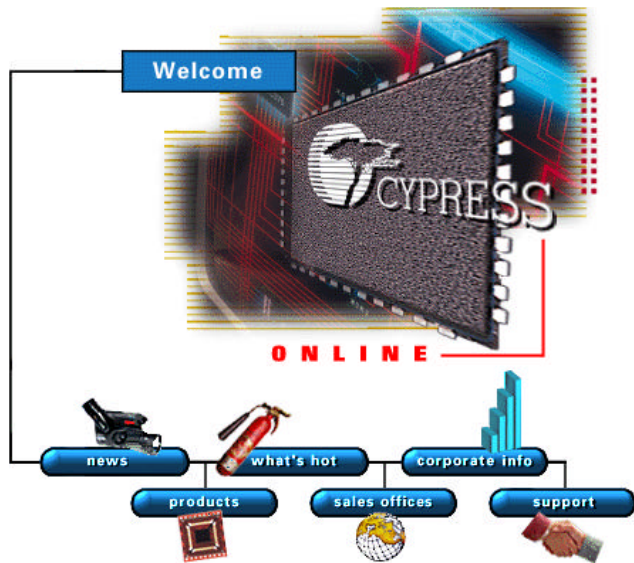
family MAX PLDs; and high-density UltraLogic™ FLASH370i™ CPLDs, pASIC380 FPGAs, and Ultra38000™ FPGAs. ❖

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Logical approach. This is the logic diagram for Cypress's new GAL-compatible PALCE20V8. It's a second-generation device accommodating up to 20 inputs and featuring eight user-programmable macrocells, one per I/O, with each output supporting eight product terms.

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