

Cyclone III low-cost FPGAs

industry's first
low-cost
65-nm FPGA

Your innovative design ideas have the potential to prosper, if they can be executed fast enough and at the right price. Altera® Cyclone® III low-cost FPGAs deliver an unprecedented combination of low power, high functionality, and low cost. Manufactured using the Taiwan Semiconductor Manufacturing Company's (TSMC's) 65-nm low-power (LP) process technology, these devices consume very low power, often for a lower total cost than ASICs. Cyclone III FPGAs are part of our complete design solutions portfolio, ideal for your cost-sensitive, high-volume applications. With Cyclone III FPGAs, your great ideas will quickly turn into revenue. Your possibilities are unlimited.

Forging ahead in new applications

You can use Cyclone III FPGAs in an ever-expanding list of high-volume applications—many of which were previously exclusive to ASICs and ASSPs. Video and image processing, displays, and wireless are just a few of the many application areas where we can help you prosper.

The FPGA advantage gets you to market first

Use Cyclone III FPGAs as the heart of your system to get to market fast. FPGAs are reprogrammable, so you can make changes even after your product is deployed. If you already have an ASIC in your system, you can make enhancements and add features by using a Cyclone III FPGA to coprocess functions. When you use our devices for typical ASSP functions, you won't be locked into that specific functionality in the future. The real benefit: you'll cut your development time from a year or more to just weeks and keep costs down. The risk is next to none.



Features and benefits

Lowest-power 65-nm FPGA

- Manufactured using a low-power 65-nm process technology.
- Core static power as low as 35 mW at 25°C junction temperature.
- Support for hot-socketing operation so unused I/O banks can be turned off when there's no current.
- Low-power benefits include: system thermal management, elimination or reduction in cooling system costs, and extended battery life for portable applications.

Cost optimized for the best value anywhere

- Staggered I/O ring to reduce die size and board space.
- Selection of low-cost packages.
- Support for low-cost serial flash and commodity parallel flash configuration devices.

Complete system integration

- 1.7 times the density to 120,000 logic elements (LEs) and over 3.5 times the embedded memory to 4 Mbits versus Cyclone II FPGAs.
- 260-MHz multiplier performance with the highest multiplier-to-logic ratio in the industry.
- Robust clock management and synthesis with dynamically reconfigurable and flexible phase-locked loops (PLLs).
- Improved signal integrity with adjustable I/O slew rates.
- Support for high-speed external memory interfaces including DDR, DDR2, SDR SDRAM, and QDR II SRAM with an autocalibrating PHY for fast timing closure.
- Support for I/O standards including LVTTTL, LVCMOS, SSTL, High-Speed Transceiver Logic (HSTL), PCI Express, LVPECL, LVDS, mini-LVDS, reduced swing differential signaling (RSDS), and point-to-point differential signaling (PPDS).

Device features
that deliver functionality.

Cyclone III device overview

Device	LEs	M9K Memory Blocks	Total Memory (Mbits)	Multipliers	PLLs	Total Global Clocks	Maximum User I/O Pins
EP3C5	5,136	46	0.4	23	2	10	182
EP3C10	10,320	46	0.4	23	2	10	182
EP3C16	15,408	56	0.5	56	4	20	346
EP3C25	24,624	66	0.6	66	4	20	215
EP3C40	39,600	126	1.1	126	4	20	535
EP3C55	55,856	260	2.3	156	4	20	377
EP3C80	81,264	305	2.7	244	4	20	428
EP3C120	119,088	432	3.9	288	4	20	531

A selection of low-cost packages
and user I/O pin counts.

Cyclone III package overview¹

Device/ package size (mm)	E144 22x22	Q240 35x35	F256 17x17	F324 19x19	F484 23x23	F780 29x29	U256 14x14	U484 19x19
EP3C5	94		182				182	
EP3C10	94		182				182	
EP3C16	84	160	168		346		168	346
EP3C25	82	148	156	215			156	
EP3C40		128		195	331	535		331
EP3C55					327	377		217
EP3C80					295	429		295
EP3C120					283	531		

¹For more information on packages, see *Cyclone FPGA Series Package and I/O Matrix* at www.altera.com/selectorguides.

The answer to your design challenges

Altera's suite of complete, easy-to-use tools assures you of a smooth and successful design process. In addition to the extensive portfolio of proven intellectual property (IP), the Nios® II embedded processor offers low-cost and custom-fit embedded processing solutions. You can put it all together by downloading the free Quartus® II Web Edition software. Altera also delivers next-generation design support with application-specific reference designs and low-cost development kits.

Now's the time to prosper. Turn your ideas into revenue.

Unlimited possibilities.

www.altera.com/cyclone3

Altera Corporation
101 Innovation Drive
San Jose, CA 95134
USA
Telephone: (408) 544-7000
www.altera.com

Altera European Headquarters
Holmers Farm Way
High Wycombe
Buckinghamshire
HP12 4XF
United Kingdom
Telephone: (44) 1 94 602 000

Altera Japan Ltd.
Shinjuku i-Land Tower 32F
6-5-1, Nishi-Shinjuku
Shinjuku-ku, Tokyo 163-1332
Japan
Telephone: (81) 3 3340 9480
www.altera.co.jp

Altera International Ltd.
2102 Tower 6
The Gateway, Harbour City
9 Canton Road
Tsimshatsui Kowloon
Hong Kong
Telephone: (852) 2945 7000

