

DesignPerspective

Designing for High-Performance, Low-Power Applications.

What is the Stratix III device family?

Altera's new 65-nm Stratix® III device family offers the industry's lowest-power high-performance FPGAs. Extending the success of the Stratix series, Stratix III FPGAs combine high density, high performance, and a rich feature set with a unique power management capability. You can integrate more functions, maximize system performance and still meet your power budget. To meet diverse application needs, Stratix III FPGAs now offer:

- 25% higher performance and 50% less power consumption than previous-generation devices
- At least one speed grade faster than competing devices
- An internal clock speed of up to 600 MHz

What's new and unique for the Stratix III family?

Stratix III devices are the only high-performance FPGAs available with programmable power technology that allows you to manage power consumption according to your requirements, while still maximizing performance. To do that, Altera co-developed both the silicon and software, giving customers the ability to meet their design targets.

Stratix III FPGAs provide a number of key power innovations:

- **Programmable Power Technology**—Every programmable logic array block (LAB), DSP block, and memory consumes just the power needed
- **Selectable Core Voltage**—Provides the option of using 1.1 V or 0.9 V core voltage
- **Quartus® II PowerPlay Power Optimization**—Automatically minimizes total power consumption and supplies accurate power estimation and reporting

How fast are Stratix III devices?

Stratix III FPGAs average a full speed grade faster than competing 65-nm devices, based on an industry-endorsed performance benchmarking methodology and using a set of real customer

designs. Stratix III devices are also 25% faster than the fastest Altera® 90-nm devices, and are the only FPGAs able to support DDR3 and QDR2+ at 400 MHz. See www.altera.com for Stratix III performance details.

How do I start a Stratix III design?

You can begin designing now with the Stratix III family using Quartus II software version 6.1. It's easy to use, with feature-rich synthesis and simulation tools to take full advantage of Stratix III performance and design benefits. To deliver maximum productivity benefits, Quartus II software offers the industry's first incremental compilation feature, plus advanced timing analysis and team-based design support. Quartus II software, which also supports Stratix II and Stratix II GX devices,

reduces design iteration times by up to 70 percent compared to traditional high-density FPGA design flows.

Seamless integration with all leading third-party tools results in a single, unified design environment that enables the highest level of productivity and the fastest path to design completion for high-density FPGA designs

Do Stratix III FPGAs ensure design security?

Stratix III design security protects designs from copying and tampering by competitors or nefarious forces. Stratix III devices are the industry's first FPGAs to support configuration bitstream encryption using the Advanced Encryption Standard (AES), the most advanced encryption algorithm available today, and a 256-bit key with the option of volatile or non-volatile on-chip storage.

Table 1. Stratix III Family Plan

	Device	ALMs	Equiv. LEs	Reg.	M9K Blocks	M144K Blocks	Embedded Memory (Kbits)	MLAB (Kbits)	Max. 18 x 18 Multipliers (Sum of Mult.)
Stratix III Logic	EP3SL50	19,000	47,500	38,000	108	6	1,836	594	216
	EP3SL70	27,000	67,500	54,000	150	6	2,214	844	288
	EP3SL110	42,600	106,500	85,200	275	12	4,203	1,331	288
	EP3SL150	56,800	142,000	113,600	355	16	5,499	1,775	384
	EP3SL200	79,560	198,900	159,120	468	24	7,668	2,468	576
	EP3SE260 ¹	101,760	254,400	203,520	864	48	14,688	3,180	768
Stratix III Enhanced	EP3SE50	19,000	47,500	38,000	400	12	5,328	594	384
	EP3SE80	32,000	80,000	64,000	495	12	6,183	1,000	672
	EP3SE110	42,600	106,500	85,200	639	16	8,055	1,331	896
	EP3SE260 ¹	101,760	254,400	203,520	864	48	14,688	3,180	768

Note:

¹ EP3SE260 FPGAs are the optimum solution for both logic (Stratix III Logic) and DSP/memory (Stratix III Enhanced) applications at this density.