



HIGH PERFORMANCE,
LARGE CAPACITY
DEFENSE-GRADE FPGAS

DEFENSE-GRADE VIRTEX-5Q FPGAS

➤ **Requirements for Defense Electronics**

- Increased performance with high connectivity
- Tamper-resistant, secure designs
- Reduced time to 'mission-ready'
- High reliability and operational range

➤ **The Xilinx Defense-Grade Virtex-5Q FPGA Family Solution**

- Industry's most extensive defense-grade portfolio with bare-die option
- Next-generation cryptographic features with approved manufacturing controls
- Off-the-shelf availability with extended lifecycle support
- Across-the-board ruggedized packaging
- Fully tested temperature ranges, including military

Defense-grade Virtex[®]-5Q FPGAs are the defense-grade variants of the high-performance Xilinx Virtex-5 FPGAs. The devices deliver 30-percent faster speeds, 65-percent more capacity, and 35-percent lower dynamic power over previous generations. This unique product line includes four domain-specific families:

- LX: High-performance logic
- LXT: High-performance logic with connectivity
- SXT: Digital signal processing (DSP)
- FXT: Embedded processing with high-speed connectivity

Industry's Largest Offering of Defense-Grade Devices

The Virtex-5Q FPGA family comprises an extensive number of off-the-shelf part and package options, providing developers with the flexibility to choose the solution that best matches needs. Virtex-5Q devices are pin-to-pin compatible with the Xilinx commercial parts, enabling seamless migration from prototyping to production. In addition, all Virtex-5Q devices are available in bare-die form for the most extreme form factor requirements.

Designed for Secure, Mission-Critical Applications

The Virtex-5Q family delivers state-of-the-art cryptographic technology to address the next-generation secure systems. These devices provide an ideal solutions for developing of modern defense electronics systems, particularly for secure communications, electronic warfare, aircraft and transport vehicles; (Command, Control, Communications, Computer, Intelligence, Surveillance and Reconnaissance (C4ISR) systems); radar; and missiles and munitions.

The entire Virtex-5Q defense-grade product line is offered with ruggedized packaging protection against 'tin-whiskering' and caustic solvent cleaning systems to ensure high-reliability. Long-term product support is also standard for the defense-grade Virtex-5Q family.

High-Performance, Large-Capacity FPGAs

The defense-grade Virtex-5Q devices deliver unique features for maximum integration and performance:

- Up to 330,000 logic cells
- Single-chip Crypto Type-1
- Anti-tamper IP cores
- Partial reconfiguration capabilities
- Isolation verification tool
- Multiple embedded PowerPC® 440 processors
- 6.5 Gbps serial transceivers
- 528 GMACs from 500 MHz DSP48E slices with 25x18 multipliers for DSP acceleration
- 192 GFLOPS single-precision and 68 GFLOPS double-precision floating point DSP

Complete Design Methodology

Next-generation advances in Xilinx FPGA design environments offer unprecedented benefits in three distinct but interrelated categories: productivity, time to design completion, and quality of results. The ISE Design Suite provides a tighter connection between embedded processor and DSP flows to enable integration of designs containing processor, DSP, IP, and user blocks in one system. The Xilinx design environment, combined with seamless migration between commercial-grade Virtex-5 and defense-grade Virtex-5Q FPGAs, allows designers to:

- Achieve greater designer productivity
- Focus on design differentiation
- Shrink time to production
- Attain breakthrough performance

PRODUCT FEATURE COMPARISON

FEATURES	LX	LXT	SXT	FXT
ExpressFabric architecture with 6-input LUTs	●	●	●	●
500 MHz clocking & management files (2 DCM +1 PLL)	2-6	1-6	2-6	2-6
500 MHz block RAM	1,152-10,369	936-11,664	3,024-18,576	2,448-16,416
1.25 Gbps SelectIO™ Technology	●	●	●	●
RocketIO™ GTP transceivers	●	4-24	8-24	●
RocketIO GTX transceivers	●	●	●	8-24
PCI Express® endpoint blocks	●	1	1	1-4
Ethernet Media Access Controllers	●	2-4	4	4-8
500 MHz DSP48E slices	32,192	24-192	192-1,056	64-320
PowerPC® 440 processor blocks	●	●	●	1-2
System monitor and analog-to-digital converter	●	●	●	●
Sparse chevron packaging technology	●	●	●	●
Enhanced configuration and bitstream protection	●	●	●	●

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