



DEFENSE-GRADE FPGAS:  
HIGH PERFORMANCE,  
SECURE-SWAP-C

## DEFENSE-GRADE VIRTEX-6Q FPGAS

### › Today's High-End Design Challenges

- Increasingly complex systems and shrinking schedules/budgets
- Security (anti-tamper mandates)
- Extended temperature ranges and rugged environments
- DO-254 Requirements

### › The Xilinx Virtex-6Q FPGA Family

- High performance and integration
- Security (anti-tamper features) and superior SWaP-C
- Fully tested temperature range including military
- Off-the-shelf availability
- Pin-compatible commercial-grade portfolio
- Reliability with ruggedized packaging
- Long-term support

Xilinx® Virtex®-6Q Defense-Grade FPGAs introduce advancements in performance, security, and reliability to help defense electronics designers build in more functionality while accelerating design cycles.

### Virtex-6Q Family Target Applications

- Avionics
- Electronic Warfare (EW)
- Intelligence, Surveillance &
- Reconnaissance (ISR)
- Missiles & Munitions (M&M)

### Faster "Time to Mission-Readiness" with Off-the-Shelf Devices

Off-the-shelf Virtex-6Q devices are pin compatible with commercial-grade products; project teams can start designing today and migrate to ruggedized solutions when requirements call for extended temperature range operation or ruggedized installations. Further accelerating the development cycle, Xilinx offers comprehensive Targeted Design Platforms that include all the necessary hardware, design tools, IP and reference designs for application-specific designs. For ultimate design flexibility, teams can also take advantage of bare die options for custom form factors.

### Maximizing Security and SWaP-C

Virtex-6Q devices offer breakthrough performance while reducing SWaP-C through integration and technology node to meet the needs of the most-demanding defense applications. Third-generation anti-tamper features help designers comply with regulations such as the U.S. Department of Defense (DoD) mandated 5000 Series Anti-Tamper requirements. Xilinx pioneering efforts in security resulting in anti-tamper innovations including Security Monitor (SECMON) IP, uniquely give designers the latest security advancements while simultaneously supporting DO-254 enablement, making the features accessible for a broad range of applications.

## Reliably Operating in Harsh Environments

Xilinx defense-grade devices offer ruggedized packaging protection against 'tin-whiskering' and caustic solvent cleaning systems. Virtex-6Q FPGAs are also fully tested for extended temperature ranges, giving designers a choice of solutions qualified for operation in either I-temperature or M-temperature ranges.

## Choosing the Xilinx Difference

The latest additions to the Xilinx defense portfolio—the Virtex-6Q and Spartan®-6Q families—build on more than two decades of commitment to the industry. Besides tailoring devices and targeted design platforms to the unique needs of defense projects, Xilinx commits to long-term support including extended mask set control. Over these product life spans, Xilinx dedicates priority resources in the form of system architecture teams, support professionals, and operations experts that understand what it takes to provide stable, reliable application platforms to defense suppliers. The unrivaled heritage and investments behind the Xilinx solutions make them the best choice for global military markets.

## DEFENSE-GRADE FPGAS

		Defense-Grade FPGAs				
		Virtex®-6Q FPGAs				
Part Number		XQ6VLX130T	XQ6VLX240T	XQ6VLX550T	XQ6VSX315T	XQ6VSX475T
Logic Resources	Logic Cells	128,000	241,000	550,000	315,000	476,000
Memory Resources	Maximum Distributed RAM (Kb)	1,740	3,650	6,200	5,090	7,640
	Block RAM/FIFO w/ECC (36 Kb each)	264	416	632	704	1064
	Total Block RAM (Kb)	9,504	14,976	22,752	25,344	38,304
Clock Resources	Mixed Mode Clock Manager (MMCM)	10	12	18	12	18
I/O Resources	Maximum Single-Ended Pins	360	560	800	680	680
Embedded Hard IP Resources	DSP48E1 Slices	480	768	864	1,344	2,016
	Interface Blocks for PCI Express®	2	2	2	2	2
	10/100/100 Ethernet MAC Blocks	4	4	4	4	4
	GTX Low-Power Transceivers	20	24	36	24	36
Miscellaneous	Speed Grades: Military (M: -55°C - 125°C)	-1	-1	—	-1	—
	Speed Grades: Industrial (I: -40°C - 100°C)	-1, -2 <sup>(2)</sup>	-1, -2 <sup>(2)</sup>	-1 <sup>(2,3)</sup>	-1, -2 <sup>(2)</sup>	-1 <sup>(2,3)</sup>
Package	Area	Maximum User I/O: SelectIO™ Interface Pins (GTX Serial Transceivers)				
RF784 <sup>(1)</sup>	29 X 29 mm	400 (12)	400 (12)			
RF1156	35 x 35 mm	600 (20)	600 (20)		600 (20)	600 (20)
FFG1156 <sup>(4)</sup>	35 x 35 mm	600 (20)	600 (20)		600 (20)	600 (20)
RF1759	42.5 x 42.5 mm		720 (24)	840 (36)	720 (24)	840 (36)

XMP076 (v2.0)

Notes: 1. RF is ruggedized, leaded flip chip package.  
2. -L1 speed grade is under investigation for I-temp, please contact A&D marketing for more information.  
3. -2 speed grade is under investigation for LX550T I-temp and SX475T I-temp, please contact A&D marketing for more information.  
4. No M-temp for FFG.

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