Ti-Series FPGAs

You only have a few square millimeters to spare, and you need to pack in as much computing power as you can. Elitestek's next-generation Ti-Series FPGAs can help.

Ti-Series FPGAs are fabricated on a 16 nm process, delivering high performance with the lowest possible power and a small physical size. They feature the innovative Quantum® compute fabric that, with its enhanced compute capability, makes Ti-Series FPGAs ideal for embedded hardware acceleration applications. With a wide range of logic element (LE) densities from 35K to 1M, and compatibility with the Elitestek RISC-V SoCs, they can help you turn a tiny chip into an accelerated embedded compute system.
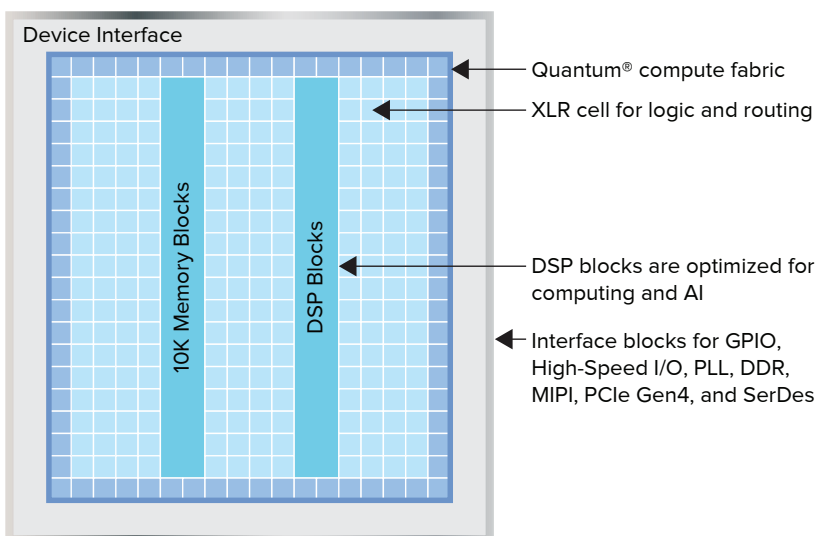
Quantum® Compute Fabric

The Quantum compute fabric is made up of configurable tiles, the eXchangeable logic and routing (XLR) cell, that optimizes routing efficiency and speed while achieving high utilization ratios. The fabric also has highly configurable, 10K embedded memory blocks along with dedicated, high-speed, DSP blocks. Together, these features deliver optimum performance for a wide array of applications from edge compute to industrial automation and video processing.

The 16 nm process node gives Ti-Series FPGAs a small footprint with low power consumption, making them ideal for highly integrated applications.

Figure 1   Ti-Series FPGA Block Diagram

Device Interface

Quantum® compute fabric

XLR cell for logic and routing

10K Memory Blocks

DSP Blocks

DSP blocks are optimized for computing and AI

Interface blocks for GPIO, High-Speed I/O, PLL, DDR, MIPI, PCIe Gen4, and SerDes

- **16 nm process**
- **Low power**
- **High performance**
- **Small size**
- **Quantum® compute fabric**

Ti-Series FPGA Overview

Table 1 Resources and Interfaces

Feature	Ti35	Ti60	Ti90	Ti120	Ti135	Ti180	Ti200	Ti375	Ti550	Ti750	Ti1000
Logic Elements (LEs)	36,176	62,016	92,534	123,379	133,844	176,256	198,288	370,137	550,000	750,000	1,000,004
10K RAM blocks (Mb)	1.53	2.62	6.88	9.18	9.95	13.11	14.75	27.53	40.92	55.8	74.4
DSP blocks	93	160	336	448	486	640	720	1,344	2,006	2,736	3,648
PLLs	4	4	10	10	12	10	12	12	12	12	12
High-voltage I/O	34	34	80	80	181	80	181	181	200	200	200
High-speed I/O	146	146	232	232	235	232	235	235	320	320	320
LPDDR4/4x	—	—	x32	x32	2 x32	x32	2 x32	2 x32	2 x72	2 x72	2 x72
MIPI D-PHY 2.5 Gbps	—	—	4 TX 4 RX	4 TX 4 RX	3 TX 3 RX	4 TX 4 RX	3 TX 3 RX	3 TX 3 RX	3 TX 3 RX	3 TX 3 RX	3 TX 3 RX
Transceivers	—	—	—	—	x16	—	x16	x16	x24	x24	x24
25.8G Transceivers	—	—	—	—	—	—	—	—	x8	x8	x8
Hardened RISC-V block	—	—	—	—	Quad Core	—	Quad Core	Quad Core	Quad Core	Quad Core	Quad Core
PCIe® Gen4 (16G)	—	—	—	—	2 x4	—	2 x4	2 x4	2 x8	2 x8	2 x8

Refer to the FPGA data sheet or Ti-Series Selector Guide for details on which resources are available in each package.

Ti35 and Ti60

Designed for highly integrated mobile and edge devices that need low power, a small footprint, and a multitude of I/Os.

- Mobile
- Edge
- AI IoT
- Sensor fusion

Ti90, Ti120, and Ti180

2.5 Gbps MIPI interfaces for multi-camera, high definition vision systems, edge computing, and hardware acceleration.

- Vision systems
- Edge computing
- Hardware acceleration
- Machine learning

Ti135, Ti200 and Ti375

Combines the compute power and transceiver interfaces required for compute and industrial automation.

- Industrial automation
- Automotive
- Medical imaging
- Machine vision

Ti550, Ti750 and Ti1000

High-performance platform with the density and interfaces needed in the most demanding applications.

- Communications
- PCIe accelerator cards
- FPGA-based servers
- Smart storage

Table 2 Package Options

Package	Pitch (mm)	Size (mm)	Ti35	Ti60	Ti90	Ti120	Ti135	Ti180	Ti200	Ti375	Ti550	Ti750	Ti1000
64-ball WLCSP	0.4	3.5x3.4		✓									
100-ball FBGA	0.5	5.5x5.5	✓	✓									
225-ball FBGA	0.65	10x10	✓	✓									
256-ball FBGA	0.8	13x13	✓	✓									
361-ball FBGA	0.65	13x13			✓	✓		✓					
400-ball FBGA	0.8	16x16			✓	✓		✓					
484-ball FBGA	0.8	18x18			✓	✓		✓					
529-ball FBGA	0.8	19x19			✓	✓	✓	✓	✓	✓			
676-ball FBGA	0.8	22x22					✓		✓	✓			
900-ball FBGA	0.8	25x25					✓		✓	✓			
1156-ball FBGA	1.0	35x35					✓		✓	✓	✓	✓	✓