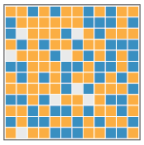
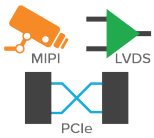
Topaz FPGAs

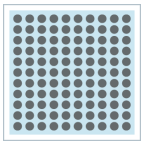
When you are ready to go big, you need a device that is just right for volume production. Topaz FPGAs combine an efficient architecture with the features and protocols commonly used today (such as PCIe Gen3, MIPI, LPDDR4, and LVDS), so you can go big and still have room to innovate. Carefully designed to pack more logic into the XLR cells, the Topaz architecture gives you more room to innovate and more logic to add new features. Topaz FPGAs are available in a wide range of BGA packages that are easy to integrate into your system. Additionally, you can easily migrate from Topaz to Titanium FPGAs when you need to upgrade your design's performance or need more logic.



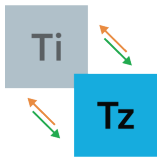
Excellent Utilization



Protocol Support



Easy-to-Use Packages



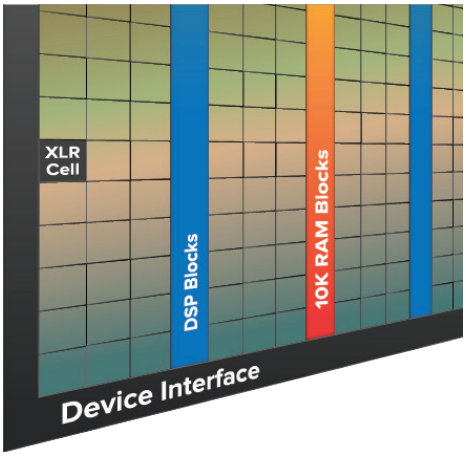
Seamless Migration

Quantum® Compute Fabric

Topaz FPGAs feature our innovative Quantum® compute fabric on an efficient, low-power, 16 nm process node. With this fabric, the Efinity software can pack more logic into the XLR cells, which means you can fit even more logic into the FPGA. Positioned for volume production applications, Topaz FPGAs let you do more for less.

TOPAZ™

Figure 1 Topaz FPGA Block Diagram



- 16 nm process
- Low power
- High Volume
- High Performance



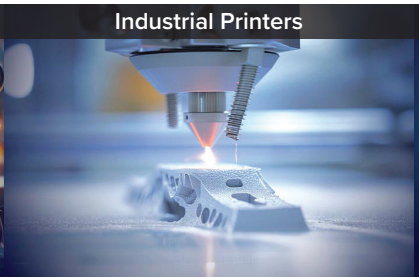






Table 1 Resources and Interfaces

Feature	Tz50	Tz75	Tz100	Tz110	Tz170	Tz200	Tz325
Logic Elements (LEs)	52,160	72,520	101,440	120,584	172,008	215,360	326,080
10K RAM blocks (Mb)	2.4	5.34	6.32	6.41	11.14	15.77	19.22
DSP blocks	140	264	312	320	544	840	1,008
PLLs	4	12	12	10	10	12	12
High-voltage I/O	34	133	133	80	80	181	181
High-speed I/O	146	139	139	232	232	235	235
LPDDR4	—	1 x32	1 x32	1 x32	1 x32	2 x32	2 x32
MIPI D-PHY 2 Gbps	—	2 TX 2 RX	2 TX 2 RX	4 TX 4 RX	4 TX 4 RX	3 TX 3 RX	3 TX 3 RX
Transceivers 12.5 Gbps	—	x8	x8	—	—	x16	x16
Hardened RISC-V block	—	Quad Core	Quad Core	—	—	Quad Core	Quad Core
PCIe® Gen3	—	1 x4	1 x4	—	—	2 x4	2 x4

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

Table 2 Package Options

Package	Pitch (mm)	Size (mm)	Tz50	Tz75	Tz100	Tz110	Tz170	Tz200	Tz325
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				✓	✓		
400-ball FBGA	0.5	10x10		✓	✓				
484-ball FBGA	0.8	18x18		✓	✓	✓	✓	✓	✓
529-ball FBGA	0.8	19x19						✓	✓
576-ball FBGA	0.65	16x16		✓	✓				
676-ball FBGA	0.8	22x22		✓	✓				
676-ball FBGA	0.65	18x18						✓	✓
900-ball FBGA	0.8	25x25						✓	✓

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