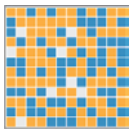
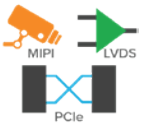
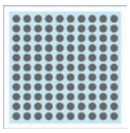
Topaz FPGAs



Excellent Utilization



Protocol Support



Easy-to-Use Packages

Seamless Migration

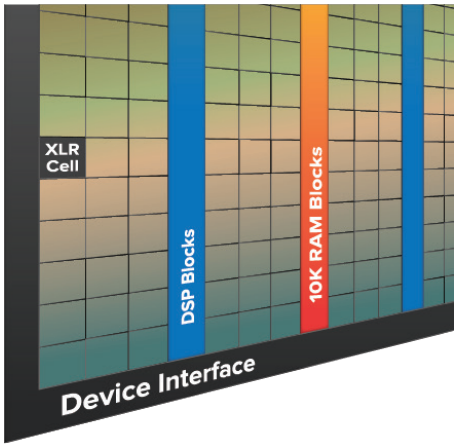
When you are ready to go big, you need a device that is just right for volume production. Topaz™ FPGAs offer a streamlined architecture, combining essential features and widely used protocols like PCIe Gen3, MIPI, LPDDR4, and LVDS, enabling growth while leaving room for innovation. With high-speed connectivity and hardened RISC-V CPUs, the Topaz family is equipped to support high-performance edge and AI workloads in high-volume deployments. A wide range of packaging options and densities ensures maximum efficiency for any given application and delivers optimum system costs at scale.

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.

TOPAZ™

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

Topaz FPGA Block Diagram



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.

Industrial Robotics

Industrial Printers

Wireless Repeaters

Broadcast Imaging and Controls

Table 1 Resources and Interfaces

Feature	Tz50	Tz75	Tz100	Tz110	Tz170	Tz200	Tz325
Logic Elements (LEs)	52,160	75,520	101,440	120,584	161,008	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	9	9	8	8	12	12
High-voltage I/O	27	84	84	74	74	51	51
High-speed I/O	142	139	139	200	200	176	176
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	1 TX 1 RX	1 TX 1 RX
Transceivers 12.5 Gbps	—	2 x4	2 x4	—	—	4 x4	4 x4
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				✓	✓		
441-ball FBGA	0.5	11x11		✓	✓				
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						✓	✓