

Topaz FPGA Selector Guide

Topaz FPGAs combine an efficient 16 nm architecture with the features and protocols commonly used today (such as PCIe Gen3, MIPI, LPDDR4, and LVDS). 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 Family Features

| | | | | | | | | | |
|---|---|---|---|---|---|--|---|---|---|
|  |  |  |  |  |  |  |  |  |  |
| 50K to 325K Logic Elements | 10 Kb Embedded RAM Blocks | DSP Blocks | PLLs | High-Voltage I/O (HVIO) | High-Speed I/O (HSIO) | Hardened RISC-V Block | MIPI D-PHY 2 Gbps | LPDDR4 Controller & PHY | Transceivers 12.5G |

Topaz Ordering Codes

You can use HSIO pairs for a various differential standards such as LVDS (1.3 Gbps), differential HSTL/SSTL.

| FPGA | LEs | RAM (Mbits) | RAM Blocks (10 Kb) | DSP Blocks | Package | Pins | HVIO | HSIO | PLLs | 2G MIPI D-PHY | Hardened RISC-V Block | LPDDR4 | Transceivers ⁽¹⁾ | PCIe® | Temperature | Speed Grade | Ordering Code | | | | |
|-------|---------|-------------|--------------------|------------|---------|------|------|------|------|---------------|-----------------------|--------|-----------------------------|---------|-------------|-------------|---------------|---|------|---------------|--------------|
| Tz50 | 52,160 | 2.4 | 235 | 140 | FBGA | 100 | - | 61 | 3 | - | - | - | - | - | C | 2, 3 | Tz50F100C2/3 | | | | |
| | | | | | | | | | | | | | | | I | | Tz50F100I2/3 | | | | |
| | | | | | | 225 | 23 | 140 | 4 | - | - | - | - | - | - | - | - | C | 2, 3 | Tz50F225C2/3 | |
| | | | | | | | | | | | | | | | | | | I | | Tz50F225I2/3 | |
| | | | | | | 256 | 27 | 142 | 4 | - | - | - | - | - | - | - | - | - | C | 2, 3 | Tz50F256C2/3 |
| | | | | | | | | | | | | | | | | | | | I | | Tz50F256I2/3 |
| Tz75 | 75,520 | 5.34 | 522 | 264 | FBGA | 676 | 84 | 139 | 9 | 2 TX 2 RX | Quad Core | x32 | up to 2 | 1x Gen3 | C | 2, 3 | Tz75N676C2/3 | | | | |
| | | | | | | | | | | | | | | | I | | Tz75N676I2/3 | | | | |
| Tz100 | 101,440 | 6.32 | 618 | 312 | FBGA | 676 | 84 | 139 | 9 | 2 TX 2 RX | Quad Core | x32 | up to 2 | 1x Gen3 | C | 2, 3 | Tz100N676C2/3 | | | | |
| | | | | | | | | | | | | | | | I | | Tz100N676I2/3 | | | | |
| Tz110 | 120,584 | 6.41 | 626 | 320 | FBGA | 361 | 20 | 110 | 8 | 2 TX 2 RX | - | x16 | - | - | C | 2, 3 | Tz110J361C2/3 | | | | |
| | | | | | | | | | | | | | | | I | | Tz110J361I2/3 | | | | |
| | | | | | | 400 | 74 | 200 | 8 | - | - | - | - | - | - | - | - | C | 2, 3 | Tz110G400C2/3 | |
| | | | | | | | | | | | | | | | | | | I | | Tz110G400I2/3 | |
| | | | | | | 484 | 27 | 116 | 8 | 4 TX 4 RX | - | x32 | - | - | - | - | - | C | 2, 3 | Tz110J484C2/3 | |
| | | | | | | | | | | | | | | | | | | I | | Tz110J484I2/3 | |

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| FPGA | LEs | RAM (Mbits) | RAM Blocks (10 Kb) | DSP Blocks | Package | Pins | HVIO | HSIO | PLLs | 2G MIPI D-PHY | Hardened RISC-V Block | LPDDR4 | Transceivers ⁽¹⁾ | PCIe® | Temperature | Speed Grade | Ordering Code |
|-------|---------|-------------|--------------------|------------|-----------|------|------|------|------|---------------|-----------------------|--------|-----------------------------|---------|-------------|-------------|---------------|
| Tz170 | 161,008 | 11.14 | 1,088 | 544 | FBGA | 361 | 20 | 110 | 8 | 2TX 2RX | - | x16 | - | - | C | 2, 3 | Tz170J361C2/3 |
| | | | | | | | | | | | | | | | | | Tz170J361I2/3 |
| | | | | | | 400 | 74 | 200 | 8 | - | - | - | - | - | C | 2, 3 | Tz170G400C2/3 |
| | | | | | | | | | | | | | | | | | Tz170G400I2/3 |
| | | | | | | 484 | 27 | 116 | 8 | 4 TX 4 RX | - | x32 | - | - | C | 2, 3 | Tz170J484C2/3 |
| | | | | | | | | | | | | | | | | | Tz170J484I2/3 |
| Tz200 | 215,360 | 15.77 | 1,541 | 840 | FBGA | 484 | 20 | 85 | 9 | 1 TX 1 RX | Quad Core | x32 | up to 2 | 1x Gen3 | C | 2, 3 | Tz200N484C2/3 |
| | | | | | | | | | | | | | | | | | Tz200N484I2/3 |
| | | | | | | 529 | 51 | 176 | 12 | - | Quad Core | x32 | - | - | C | 2, 3 | Tz200C529C2/3 |
| | | | | | | | | | | | | | | | | | Tz200C529I2/3 |
| | | | | | | 484 | 20 | 85 | 9 | 1 TX 1 RX | Quad Core | x32 | up to 2 | 1x Gen3 | C | 2, 3 | Tz325N484C2/3 |
| | | | | | | | | | | | | | | | | | Tz325N484I2/3 |
| 529 | 51 | 176 | 12 | - | Quad Core | x32 | - | - | C | 2, 3 | Tz325C529C2/3 | | | | | | |
| | | | | | | | | | | | Tz325C529I2/3 | | | | | | |

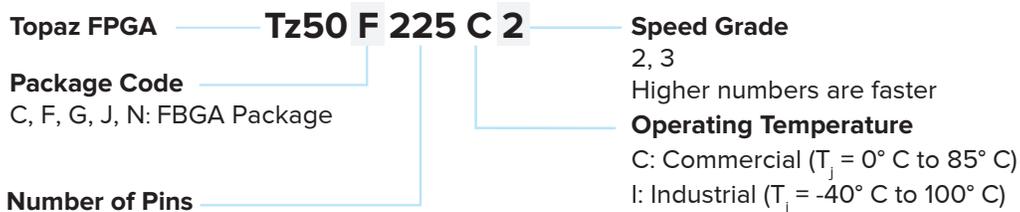
⁽¹⁾ Each transceiver bank has 4 lanes. All banks support SGMII, 10GBase-KR, and PMA Direct. 1 bank supports PCIe.

Package Dimensions

| Package | Pitch (mm) | Dimensions (mm) |
|---------------|------------|-----------------|
| 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 |

| Package | Pitch (mm) | Dimensions (mm) |
|---------------|------------|-----------------|
| 400-ball FBGA | 0.8 | 16x16 |
| 484-ball FBGA | 0.8 | 18x18 |
| 529-ball FBGA | 0.8 | 19x19 |
| 676-ball FBGA | 0.8 | 22x22 |

Example Ordering Code



Product Longevity

At Efinix we are committed to supplying our customers with a stable supply of supported products throughout their product life cycle. We are committed to supporting our Topaz family of FPGAs in customer designs until at least 2045. Contact your local sales representative for more information on product life cycles.