

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

RAM Blocks

10 Kb Embedded DSP Blocks PLLs High-Voltage I/O

High-Speed I/O (HVIO) (HSIO)

Hardened RISC-V Block 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				
						100		61	3						С	2.2	Tz50F100C2/3				
						100	_	61	3	_	_	_	_	_	I	2, 3	Tz50F100I2/3				
Tz50	52,160	2.4	235	140	FBGA	225	23	140	4						С	2, 3	Tz50F225C2/3				
1250	52,160	2.4	235	140	FBGA	225	23	140	4	_	_	_	_	_	I	2, 3	Tz50F225I2/3				
							256	27	142	4			_			С	2, 3	Tz50F256C2/3			
						250	21	142	4	_					I	2, 3	Tz50F256I2/3				
Tz75	75,520	5.34 522	522	264	FBGA	676	84	139	9	2 TX	Quad	x32	up to	1x	С	2, 3	Tz75N676C2/3				
12/5	75,520	5.54	522		FBGA	070	04	155	9	2 RX	Core			Gen3		2, 3	Tz75N676I2/3				
Tz100	101,440	6.32	618	312	FBGA	676	84	139	9	2 TX		Quad x32	up to	1x	С	2, 3	Tz100N676C2/3				
12100	101,440	0.32	010	312	312	312	312	312	FBGA	070	04	139	9	2 RX	Core	X32	2	Gen3	I	2, 3	Tz100N676I2/3
		6.41				361	20	110	0	2 TX		x16			С	2.2	Tz110J361C2/3				
						301	20	110	8	2 RX	_	XIO	-	_	I	2, 3	Tz110J361I2/3				
Tz110	120,584		626	220	FBGA	400	74	200	8						С	2.2	Tz110G400C2/3				
12110	120,564		020	320	FBGA	400	74	200	0	_	_	_	_	_	I	2, 3	Tz110G400I2/3				
						40.1	27	116	8	4 TX		v22			С	2.2	Tz110J484C2/3				
						484	21	110	0	4 RX	_	x32	_	_	I	2,3	Tz110J484I2/3				

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						361	20	110	8	2TX	_	x16	_	_	С	2, 3	Tz170J361C2/3	
										2RX		X10			I	2, 0	Tz170J361I2/3	
T-170	Tz170 161,008 11.14	11 1/1	1,088	544	FBGA	400	00 74	200	8	_	-	_	-	-	С	2, 3	Tz170G400C2/3	
12170		11.14				400									I		Tz170G400I2/3	
						484	4 27	116	8	4 TX 4 RX	-	x32	_	-	С	2, 3	Tz170J484C2/3	
															I		Tz170J484I2/3	
			15.77 1,541	11 840	FBGA	484	20	85	9	1TX	Quad	x32	up to	1x	С	2, 3	Tz200N484C2/3	
Tz200	215,360	15 77				404	20	65	9	1 RX	Core	7.52	2	Gen3	I	2, 3	Tz200N484I2/3	
12200	215,300	15,360 15.77	13.//	5.77 1,541	840	FBGA	529	51	176	12		Quad	x32			С	2, 3	Tz200C529C2/3
						529	51	176	12	_	Core	X32	_	_	I	2, 3	Tz200C529I2/3	
			9.22 1,877		FBGA	484	20	85	0	1 TX	Quad	v22	32 up to 2	1x	С	2.2	Tz325N484C2/3	
т-225	226.000	10.22		7 1,008		404	20	65	9	1 RX	Core	X32		Gen3	I	2,3	Tz325N484I2/3	
Tz325	326,080	19.22				F20		17.0	12		Quad	nd			С	2.2	Tz325C529C2/3	
						529	51	176	12	_	Core	x32	_	_	I	2,3	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	10×10			
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

Topaz FPGA Tz50 F	225 C 2 —	Speed Grade
		2, 3
Package Code		Higher numbers are faster
C, F, G, J, N: FBGA Package		Operating Temperature
		C: Commercial (T ₁ = 0° C to 85° C)
Number of Pins		I: Industrial ($T_j = -40^\circ$ C to 100° C)

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.

