

Cost-Optimized Portfolio

Product Tables and Product Selection Guide



SPARTAN.6

SPARTAN.7

ARTIX.7

ARTIX.
UltraSCALE

ZYNQ

ZYNQ.
UltraSCALE+

CoolRunner-II

AMD

Zynq™ UltraScale+™ MPSoCs

	Device Name ⁽¹⁾	ZU1CG/EG	ZU2CG/EG	ZU3CG/EG	ZU3TCG/EG	ZU4CG/EG	ZU5CG/EG	ZU6CG/EG	ZU7CG/EG	ZU9CG/EG		
Processing System (PS)	Application	Processor Core	Dual-core/Quad-core Arm® Cortex®-A53 MPCore™ up to 1.3GHz									
	Processor Unit	Memory w/ECC	L1 Cache 32KB I / D per core, L2 Cache 1MB, on-chip Memory 256KB									
	Real-Time	Processor Core	Dual-core Arm Cortex-R5F MPCore up to 533MHz									
	Processor Unit	Memory w/ECC	L1 Cache 32KB I / D per core, Tightly Coupled Memory 128KB per core									
	External Memory	Dynamic Memory Interface	x16: DDR4 w/o ECC; x32/x64: DDR4, LPDDR4, DDR3, DDR3L, LPDDR3 w/ ECC									
		Static Memory Interfaces	NAND, 2x Quad-SPI									
	Connectivity	High-Speed Connectivity	PCIe® Gen2 x4, 2x USB3.0, SATA 3.1, DisplayPort, 4x Tri-mode Gigabit Ethernet									
		General Connectivity	2xUSB 2.0, 2x SD/SDIO, 2x UART, 2x CAN 2.0B, 2x I2C, 2x SPI, 4x 32b GPIO									
	Integrated Block Functionality	Power Management	Full / Low / PL / Battery Power Domains									
		Security	RSA, AES, and SHA									
AMS - System Monitor		10-bit, 1MSPS – Temperature and Voltage Monitor										
PS to PL Interface	12 x 32/64/128b AXI Ports											
Programmable Logic (PL)	Programmable Functionality	System Logic Cells (K)	81	103	154	157	192	256	469	504	600	
		CLB Flip-Flops (K)	74	94	141	144	176	234	429	461	548	
		CLB LUTs (K)	37	47	71	72	88	117	215	230	274	
	Memory	Distributed RAM (Mb)	1.0	1.2	1.8	2.1	2.6	3.5	6.9	6.2	8.8	
		Total Block RAM (Mb)	3.8	5.3	7.6	5.1	4.5	5.1	25.1	11.0	32.1	
		UltraRAM (Mb)	-	-	-	14.0	13.5	18.0	-	27.0	-	
	Clocking	Clock Management Tiles (CMTs)	3	3	3	1	4	4	4	8	4	
	Integrated IP	DSP Slices	216	240	360	576	728	1,248	1,973	1,728	2,520	
		PCI Express®	-	-	-	1x Gen3x8	2x Gen3x8 ⁽²⁾	2x Gen3x8 ⁽²⁾	-	1x Gen3x16 & 1x Gen3x8	-	
		150G Interlaken	-	-	-	-	-	-	-	-	-	
		100G Ethernet MAC/PCS w/RS-FEC	-	-	-	-	-	-	-	-	-	
		AMS - System Monitor	2	2	2	2	2	2	2	2	2	
	Transceivers	GTH Transceivers ⁽³⁾	-	-	-	8	16	16	24	24	24	
		GTY Transceivers	-	-	-	-	-	-	-	-	-	
	Speed Grades	Extended ⁽⁴⁾	-1 -2 -2L					-1 -2 -2L -3				
		Industrial	-1 -1L -2									

Notes:

1. For full part number details, see the Ordering Information section in DS891, *Zynq UltraScale+ MPSoC Overview*.
2. ZU4 and ZU5 also support 1x Gen3x16 based on available GTH.
3. GTH data rates are package dependent:

a) Maximum 12.5Gb/s in SFVC784 and SFVD784

b) Maximum 16.3Gb/s in all other packages
- 4.-2LE (Tj = 0°C to 110°C). For more details, see the Ordering Information section in DS891, *Zynq UltraScale+ MPSoC Overview*.

Zynq™ UltraScale+™ MPSoCs

PS I/Os⁽¹⁾, 3.3V High-Density (HD) I/O, 1.8V High-Performance (HP) I/Os

PS-GTR 6Gb/s, GTH 16.3Gb/s, GTY 32.75Gb/s

Pkg Footprint ^(2,3)	Dimensions (mm)	Ball Pitch (mm)	ZU1	ZU2	ZU3	ZU3T	ZU4	ZU5	ZU6	ZU7	ZU9
A484	19x19	0.8	170, 24, 58 4, 0, 0	170, 24, 58 4, 0, 0	170, 24, 58 4, 0, 0						
A494	9.5x15	0.5	170, 24, 58 4, 0, 0								
A530	9.5x16	0.5		170, 24, 58 4, 0, 0	170, 24, 58 4, 0, 0						
A625	21x21	0.8	170, 24, 156 4, 0, 0	170, 24, 156 4, 0, 0	170, 24, 156 4, 0, 0						
C784 ⁽⁴⁾	23x23	0.8	214, 24, 156, 4, 0, 0	214, 96, 156 4, 0, 0	214, 96, 156 4, 0, 0	214, 72, 52 4, 4, 0	214, 96, 156 4, 4, 0	214, 96, 156 4, 4, 0			
D784 ⁽⁴⁾	23x23	0.8				214, 72, 52 4, 8, 0					
B900	31x31	1.0					214, 48, 156 4, 16, 0	214, 48, 156 4, 16, 0		214, 48, 156 4, 16, 0	
C900	31x31	1.0							214, 48, 156 4, 16, 0		214, 48, 156 4, 16, 0
B1156	35x35	1.0							214, 120, 208 4, 24, 0		214, 120, 208 4, 24, 0
C1156	35x35	1.0								214, 48, 312 4, 20, 0	
B1517	40x40	1.0									
F1517	40x40	1.0								214, 48, 416 4, 24, 0	
C1760	42.5x42.5	1.0									
D1760	42.5x42.5	1.0									
E1924	45x45	1.0									

- Notes:
1. PS I/O is a combination of PS MIO and PS DDRIO.
 2. Packages with the same last letter and number sequence, e.g., A484, are footprint compatible with all other UltraScale devices with the same sequence.
 3. For full part number details, see the Ordering Information section in DS891, *Zynq UltraScale+ MPSoC Overview*.
 4. GTH transceivers in the C784 and D784 packages support data rates up to 12.5Gb/s.

Zynq™ 7000 SoC Family

		Cost-Optimized Devices						Mid-Range Devices			
Device Name		Z-7007S	Z-7012S	Z-7014S	Z-7010	Z-7015	Z-7020	Z-7030	Z-7035	Z-7045	Z-7100
Part Number		XC7Z007S	XC7Z012S	XC7Z014S	XC7Z010	XC7Z015	XC7Z020	XC7Z030	XC7Z035	XC7Z045	XC7Z100
Processing System (PS)	Processor Core	Single-Core Arm® Cortex®A9 MPCore™ Up to 766MHz			Dual-Core Arm Cortex-A9 MPCore Up to 866MHz			Dual-Core Arm Cortex-A9 MPCore Up to 1GHz ⁽¹⁾			
	Processor Extensions	NEON™ SIMD Engine and Single/Double Precision Floating Point Unit per processor									
	L1 Cache	32KB Instruction, 32KB Data per processor									
	L2 Cache	512KB									
	On-Chip Memory	256KB									
	External Memory Support ⁽²⁾	DDR3, DDR3L, DDR2, LPDDR2									
	External Static Memory Support ⁽²⁾	2x Quad-SPI, NAND, NOR									
	DMA Channels	8 (4 dedicated to PL)									
	Peripherals	2x UART, 2x CAN 2.0B, 2x I2C, 2x SPI, 4x 32b GPIO									
	Peripherals w/ built-in DMA ⁽²⁾	2x USB 2.0 (OTG), 2x Tri-mode Gigabit Ethernet, 2x SD/SDIO									
Security ⁽³⁾		RSA Authentication of First Stage Boot Loader, AES and SHA 256b Decryption and Authentication for Secure Boot									
Processing System to Programmable Logic Interface Ports (Primary Interfaces & Interrupts Only)		2x AXI 32b Master, 2x AXI 32b Slave 4x AXI 64b/32b Memory AXI 64b ACP 16 Interrupts									
Programmable Logic (PL)	7 Series PL Equivalent	Artix™ 7	Artix 7	Artix 7	Artix 7	Artix 7	Artix 7	Kintex™ 7	Kintex 7	Kintex 7	Kintex 7
	Logic Cells	23K	55K	65K	28K	74K	85K	125K	275K	350K	444K
	Look-Up Tables (LUTs)	14,400	34,400	40,600	17,600	46,200	53,200	78,600	171,900	218,600	277,400
	Flip-Flops	28,800	68,800	81,200	35,200	92,400	106,400	157,200	343,800	437,200	554,800
	Total Block RAM (# 36Kb Blocks)	1.8Mb (50)	2.5Mb (72)	3.8Mb (107)	2.1Mb (60)	3.3Mb (95)	4.9Mb (140)	9.3Mb (265)	17.6Mb (500)	19.2Mb (545)	26.5Mb (755)
	DSP Slices	66	120	170	80	160	220	400	900	900	2,020
	PCI Express®	—	Gen2 x4	—	—	Gen2 x4	—	Gen2 x4	Gen2 x8	Gen2 x8	Gen2 x8
	Analog Mixed Signal (AMS) / XADC ⁽²⁾	2x 12 bit, MSPS ADCs with up to 17 Differential Inputs									
	Security ⁽³⁾	AES & SHA 256b Decryption & Authentication for Secure Programmable Logic Config									
	Speed Grades	Commercial	-1			-1			-1		
Extended		-2			-2,-3			-2,-3			-2
Industrial		-1, -2			-1, -2, -1L			-1, -2, -2L			-1, -2, -2L

Notes:
1. 1 GHz processor frequency is available only for -3 speed grades for devices in flip-chip packages. Please see the data sheet for more details.
2. Z-7007S and Z-7010 in CLG225 have restrictions on PS peripherals, memory interfaces, and I/Os. Please refer to the Technical Reference Manual for more details.
3. Security block is shared by the Processing System and the Programmable Logic.

Zynq™ 7000 SoC Family

HR I/O, HP I/O, PS I/O, and Transceivers (GTP or GTX)

			Cost-Optimized Devices						Mid-Range Devices			
		Device Name	Z-7007S	Z-7012S	Z-7014S	Z-7010	Z-7015	Z-7020	Z-7030	Z-7035	Z-7045	Z-7100
Package Footprint	Dimensions (mm) ⁽¹⁾	Ball Pitch (mm)	HR I/O, HP I/O PS I/O ⁽²⁾ , GTP Transceivers						HR I/O, HP I/O PS I/O ⁽²⁾ , GTX Transceivers			
CLG225	13x13	0.8	54, 0 84 ⁽³⁾ , 0			54, 0 84 ⁽³⁾ , 0						
CLG400	17x17	0.8	100, 0 128, 0		125, 0 128, 0	100, 0 128, 0		125, 0 128, 0				
CLG484	19x19	0.8			200, 0 128, 0			200, 0 128, 0				
CLG485 ⁽⁴⁾	19x19	0.8		150, 0 128, 4			150, 0 128, 4					
SBG485 ⁽⁴⁾	19x19	0.8							50, 100 128, 4			
FBG484	23x23	1.0							100, 63 128, 4			
FBG676 ⁽¹⁾	27x27	1.0							100, 150 128, 4	100, 150 128, 8	100, 150 128, 8	
FFG676 ⁽¹⁾	27x27	1.0							100, 150 128, 4	100, 150 128, 8	100, 150 128, 8	
FFG900	31x31	1.0								212, 150 128, 16	212, 150 128, 16	212, 150 128, 16
FFG1156	35x35	1.0										250, 150 128, 16

Notes:

1. Devices in the same package are footprint compatible. FBG676 and FFG676 are also footprint compatible.
2. PS I/O count does not include dedicated DDR calibration pins.
3. PS DDR and PS MIO pin count is limited by package size. See DS190, *Zynq 7000 SoC Overview* for details.
4. CLG485 and SBG485 are pin-to-pin compatible. See product data sheets and user guides for more details.
See DS190, *Zynq 7000 SoC Overview* for package details.

Artix™ UltraScale+™ FPGAs

Device Name			AU7P	AU10P	AU15P	AU20P	AU25P
System Logic Cells (K)			82	96	170	238	308
CLB Flip-Flops (K)			75	88	156	218	282
CLB LUTs (K)			37	44	78	109	141
Dist. RAM (Mb)			1.1	1.0	2.5	3.2	4.7
Total Block RAM (Mb)			3.8	3.5	5.1	7.0	10.5
36K Block RAM Blocks			108	100	144	200	300
UltraRAM (Mb)			–	–	–	–	–
Clock Management Tiles (CMTs)			2	3	3	3	4
DSP Slices			216	400	576	900	1,200
PCI Express®			1x Gen3x4	1x Gen4x4 ⁽¹⁾	1x Gen4x4 ⁽¹⁾	1x Gen3x8	1x Gen3x8
AMS - System Monitor			1	1	1	1	1
Max. Single-Ended HD I/Os			144	72	72	72	96
Max. Single-Ended HP I/Os			104	156	156	156	208
GTH Transceivers ⁽²⁾			4	12	12	–	–
GTY Transceivers ⁽²⁾			–	–	–	12	12
Extended			-1 -2				
Industrial			-1 -2 -1L				
Package	Dim. (mm)	Ball Pitch (mm)	HD I/O, HP I/O, GTH, GTY				
FCVA289	9x9	0.5	72, 58, 4, 0				
UBVA368	11.5x9.5	0.5		24, 104, 8, 0	24, 104, 8, 0		
SBVB484	19x19	0.8		48, 156, 12, 0	48, 156, 12, 0		
SBVC484	19x19	0.8	144, 104, 4, 0				
SFVB784	23x23	0.8				72, 156, 0, 12	96, 208, 0, 12
FFVB676	27x27	1.0		72, 156, 12, 0	72, 156, 12, 0	72, 156, 0, 12	72, 208, 0, 12

Notes:

1. PCIe Gen4 is available in AU10P and AU15P in the FFVB676 package. AU10P and AU15P in other packages support Gen3x8.

2. GTH and GTY data rates are package dependent:

- Maximum 12.5Gb/s in FCVA289, UBVA368, SBVB484, SBVC484, SFVB784
- Maximum 16.3Gb/s in FFVB676.

Artix™ 7 FPGAs

Transceiver Optimization at the Lowest Cost and Highest DSP Bandwidth
(1.0V, 0.95V, 0.9V)

	Part Number	XC7A12T	XC7A15T	XC7A25T	XC7A35T	XC7A50T	XC7A75T	XC7A100T	XC7A200T	
Logic Resources	Logic Cells	12,800	16,640	23,360	33,280	52,160	75,520	101,440	215,360	
	Slices	2,000	2,600	3,650	5,200	8,150	11,800	15,850	33,650	
	CLB Flip-Flops	16,000	20,800	29,200	41,600	65,200	94,400	126,800	269,200	
Memory Resources	Maximum Distributed RAM (Kb)	171	200	313	400	600	892	1,188	2,888	
	Block RAM/FIFO w/ ECC (36 Kb each)	20	25	45	50	75	105	135	365	
	Total Block RAM (Kb)	720	900	1,620	1,800	2,700	3,780	4,860	13,140	
Clock Resources	CMTs (1 MMCM + 1 PLL)	3	5	3	5	5	6	6	10	
I/O Resources	Maximum Single-Ended I/O	150	250	150	250	250	300	300	500	
	Maximum Differential I/O Pairs	72	120	72	120	120	144	144	240	
Embedded Hard IP Resources	DSP Slices	40	45	80	90	120	180	240	740	
	PCIe® Gen2 ⁽¹⁾	1	1	1	1	1	1	1	1	
	Analog Mixed Signal (AMS) / XADC	1	1	1	1	1	1	1	1	
	Configuration AES / HMAC Blocks	1	1	1	1	1	1	1	1	
	GTP Transceivers (6.6 Gb/s Max Rate) ⁽²⁾	2	4	4	4	4	8	8	16	
Speed Grades	Commercial Temp (C)	-1, -2	-1, -2	-1, -2	-1, -2	-1, -2	-1, -2	-1, -2	-1, -2	
	Extended Temp (E)	-2L, -3	-2L, -3	-2L, -3	-2L, -3	-2L, -3	-2L, -3	-2L, -3	-2L, -3	
	Industrial Temp (I)	-1, -2, -1L	-1, -2, -1L	-1, -2, -1L	-1, -2, -1L	-1, -2, -1L	-1, -2, -1L	-1, -2, -1L	-1, -2, -1L	
	Package ^{(3), (4)}	Dimensions (mm)	Ball Pitch (mm)	Available User I/O: 3.3V SelectIO™ HR I/O (GTP Transceivers)						
	CPG236	10 x 10	0.5		106 (2)		106 (2)	106 (2)		
	CPG238	10 x 10	0.5	112 (2)		112 (2)				
	CSG324	15 x 15	0.8		210 (0)		210 (0)	210 (0)	210 (0)	
	CSG325	15 x 15	0.8	150 (2)	150 (4)	150 (4)	150 (4)	150 (4)		
	FTG256	17 x 17	1.0		170 (0)		170 (0)	170 (0)	170 (0)	
	SBG484	19 x 19	0.8							285 (4)
Footprint Compatible	FGG484 ⁽⁵⁾	23 x 23	1.0		250 (4)		250 (4)	250 (4)	285 (4)	285 (4)
	FBG484 ⁽⁵⁾	23 x 23	1.0							285 (4)
Footprint Compatible	FGG676 ⁽⁶⁾	27 x 27	1.0					300 (8)	300 (8)	
	FBG676 ⁽⁶⁾	27 x 27	1.0							400 (8)
	FFG1156	35 x 35	1.0							500 (16)

Notes:

1. Supports PCI Express Base 2.1 specification at Gen1 and Gen2 data rates.
2. Represents the maximum number of transceivers available. Note that the majority of devices are available without transceivers. See the Package section of this table for details.
3. Leaded package option available for all packages. See DS180, *7 Series FPGAs Overview* for package details.
4. Device migration is available within the Artix 7 family for like packages but is not supported between other 7 series families.
5. Devices in FGG484 and FBG484 are footprint compatible.
6. Devices in FGG676 and FBG676 are footprint compatible.

Spartan™ 7 FPGAs

				I/O Optimization at the Lowest Cost and Highest Performance-per-Watt (1.0V, 0.95V)						
	Part Number			XC7S6	XC7S15	XC7S25	XC7S50	XC7S75	XC7S100	
Logic Resources	Logic Cells			6,000	12,800	23,360	52,160	76,800	102,400	
	Slices			938	2,000	3,650	8,150	12,000	16,000	
	CLB Flip-Flops			7,500	16,000	29,200	65,200	96,000	128,000	
Memory Resources	Max. Distributed RAM (Kb)			70	150	313	600	832	1,100	
	Block RAM/FIFO w/ ECC (36 Kb each)			5	10	45	75	90	120	
	Total Block RAM (Kb)			180	360	1,620	2,700	3,240	4,320	
Clock Resources	Clock Mgmt Tiles (1 MMCM + 1 PLL)			2	2	3	5	8	8	
I/O Resources	Max. Single-Ended I/O Pins			100	100	150	250	400	400	
	Max. Differential I/O Pairs			48	48	72	120	192	192	
Embedded Hard IP Resources	DSP Slices			10	20	80	120	140	160	
	Analog Mixed Signal (AMS) / XADC			0	0	1	1	1	1	
	Configuration AES / HMAC Blocks			0	0	1	1	1	1	
Speed Grades	Commercial Temp (C)			-1,-2	-1,-2	-1,-2	-1,-2	-1,-2	-1,-2	
	Industrial Temp (I)			-1,-2,-1L	-1,-2,-1L	-1,-2,-1L	-1,-2,-1L	-1,-2,-1L	-1,-2,-1L	
	Expanded Temp (Q)			-1	-1	-1	-1	-1	-1	
		Package ⁽¹⁾	Body Area (mm)	Ball Pitch (mm)	Available User I/O: 3.3V SelectIO™ HR I/O					
		CPGA196	8x8	0.5	100	100				
		CSGA225	13x13	0.8	100	100	150			
		CSGA324	15x15	0.8			150	210		
		FTGB196	15x15	1.0	100	100	100			
		FGGA484	23x23	1.0				250	338	338
		FGGA676	27x27	1.0					400	400

Notes:
1. Packages with the same last letter and number sequence, e.g., A484, are footprint compatible with all other Spartan 7 devices with the same sequence. The footprint compatible devices within this family are outlined.

Spartan™ 6 FPGAs

Spartan 6 LX FPGAs I/O Optimization at the Lowest Cost (1.2V, 1.0V)									Spartan 6 LXT FPGAs I/O Optimization at the Lowest-Cost with Serial Connectivity (1.2V)				
Part Number	XC6SLX4	XC6SLX9	XC6SLX16	XC6SLX25	XC6SLX45	XC6SLX75	XC6SLX100	XC6SLX150	XC6SLX25T	XC6SLX45T	XC6SLX75T	XC6SLX100T	XC6SLX150T
Slices ⁽¹⁾	600	1,430	2,278	3,758	6,822	11,662	15,822	23,038	3,758	6,822	11,662	15,822	23,038
Logic Cells ⁽²⁾	3,840	9,152	14,579	24,051	43,661	74,637	101,261	147,443	24,051	43,661	74,637	101,261	147,443
CLB Flip-Flops	4,800	11,440	18,224	30,064	54,576	93,296	126,576	184,304	30,064	54,576	93,296	126,576	184,304
Max. Distributed RAM (Kb)	75	90	136	229	401	692	976	1,355	229	401	692	976	1,355
Block RAM (18Kb each)	12	32	32	52	116	172	268	268	52	116	172	268	268
Total Block RAM (Kb) ⁽³⁾	216	576	576	936	2,088	3,096	4,824	4,824	936	2,088	3,096	4,824	4,824
Clock Mgmt Tiles (CMT) ⁽⁴⁾	2	2	2	2	4	6	6	6	2	4	6	6	6
Max. Single-Ended I/O Pins	132	200	232	266	358	408	480	576	250	296	348	498	540
Max. Differential I/O Pairs	66	100	116	133	179	204	240	288	125	148	174	249	270
DSP48A1 Slices ⁽⁵⁾	8	16	32	38	58	132	180	180	38	58	132	180	180
Endpoint Block for PCIe®	—	—	—	—	—	—	—	—	1	1	1	1	1
Memory Controller Blocks	0	2	2	2	2	4	4	4	2	2	4	4	4
GTP Low-Power Transceivers	—	—	—	—	—	—	—	—	2	4	8	8	8
Commercial Speed Grade ⁽¹⁰⁾	-1L, -2, -3	-1L, -2, -3, -3N	-1L, -2, -3, -3N	-1L, -2, -3, -3N	-1L, -2, -3, -3N	-1L, -2, -3, -3N	-1L, -2, -3, -3N	-1L, -2, -3, -3N	-2, -3, -3N	-2, -3, -3N	-2, -3, -3N	-2, -3, -3N	-2, -3, -3N
Industrial Speed Grade ⁽¹⁰⁾	-1L, -2, -3	-1L, -2, -3, -3N	-1L, -2, -3, -3N	-1L, -2, -3, -3N	-1L, -2, -3, -3N	-1L, -2, -3, -3N	-1L, -2, -3, -3N	-1L, -2, -3, -3N	-2, -3, -3N	-2, -3, -3N	-2, -3, -3N	-2, -3, -3N	-2, -3, -3N
Configuration Memory (Mb)	2.7	2.7	3.7	6.4	11.9	19.6	26.5	33.8	6.4	11.9	19.6	26.5	33.8
Maximum User I/O: SelectIO™ Interface Pins (GTP Transceivers) ⁽⁶⁾													
Package	Body Area (mm)	Ball Pitch (mm)	106	106	106								
CPG196 ⁽⁷⁾	8 x 8	0.5	106	106	106								
TQG144 ⁽⁷⁾	20 x 20	0.5	102	102									
CSG225 ⁽⁸⁾	13 x 13	0.8	132	160	160								
CSG324	15 x 15	0.8		200	232	226	218		190 (2)	190 (4)			
CSG484 ⁽⁹⁾	19 x 19	0.8				320	328	338	338	296 (4)	292 (4)	296 (4)	296 (4)
FT(G)256	17 x 17	1.0		186	186	186							
FG(G)484 ⁽⁹⁾	23 x 23	1.0			266	316	280	326	338	250 (2)	296 (4)	268 (4)	296 (4)
FG(G)676	27 x 27	1.0				358	408	480	498			348 (8)	376 (8)
FG(G)900	31 x 31	1.0							576			498 (8)	540 (8)

- Notes:
- Each slice contains four LUTs and eight flip-flops.
 - Spartan 6 FPGA logic cell ratings reflect the increased logic capacity offered by the 6-input LUT architecture.
 - Block RAM are fundamentally 18Kb in size. Each block can also be used as two independent 9 Kb blocks.
 - Each CMT contains two DCMs and one PLL.
 - Each DSP48A1 slice contains an 18x18 multiplier, an adder, and an accumulator.
 - The LX device pinouts are not compatible with the LXT device pinouts.
 - CPG196 and TQG144 do not have memory controller support. -3N is not available for these packages.
 - CSG225 has X8 memory controller support in the LX9 and LX16 devices. There is no memory controller in the LX4 devices.
 - Devices in the FG(G)484 and CSG484 packages have support for two memory controllers.
 - Devices with -3N speed grade do not support MCB functionality.

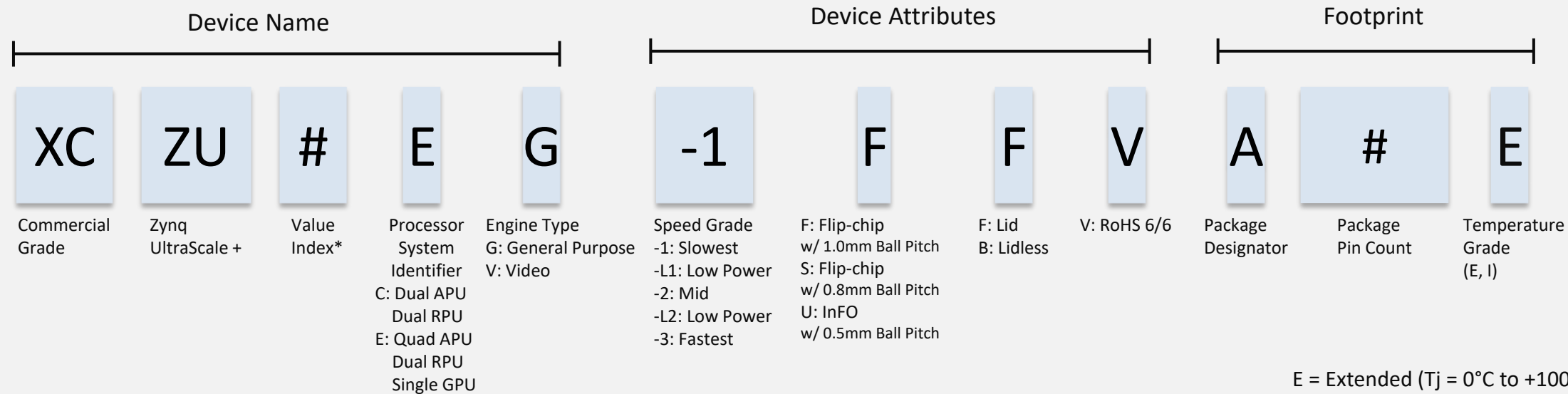
CoolRunner II CPLDs

		High performance and ultra-low power consumption in a single-chip, instant-on programmable device (1.8V)					
Logic Resources	Part Number	XC2C32A	XC2C64A	XC2C128	XC2C256	XC2C384	XC2C512
	System Gates	750	1,500	3,000	6,000	9,000	12,000
	Macrocells	32	64	128	256	384	512
	Product Terms Per Macrocell	56	56	56	56	56	56
Clock Resources	Global Clocks	3	3	3	3	3	3
	Product Term Clocks Per Function Block	16	16	16	16	16	16
I/O Resources	Maximum I/O	33	64	100	184	240	270
	Input Voltage Compatible	1.5 / 1.8 / 2.5 / 3.3					
	Output Voltage Compatible	1.5 / 1.8 / 2.5 / 3.3					
Speed Grades	Min. Pin-to-Pin Logic Delay (ns)	3.8	4.6	5.7	5.7	7.1	7.1
	Commercial Speed Grades (Fastest to Slowest)	-4, -6	-5, -7	-6, -7	-6, -7	-7, -10	-7, -10
	Industrial Speed Grades (Fastest to Slowest)	-6	-7	-7	-7	-10	-7 ⁽¹⁾ , -10
Package ^{(3), (4)}		Area (mm)		Maximum User I/Os			
QFN Packages (QF): Quad, flat, no-lead (0.5mm lead spacing)							
QFG32 ⁽⁴⁾		5 x 5	21				
QFG48 ⁽⁴⁾		7 x 7	37				
VQFP Packages (VQ): Very thin QFP (VQ44: 0.8mm lead spacing, VQ100: 0.5mm lead spacing)							
VQG44		12 x 12	33	33			
VQG100		16 x 16	64	80	80		
Chip Scale Packages (CP): Wire-bond, chip-scale, BGA (0.5mm ball spacing)							
CPG56		6 x 6	33	45			
CPG132		8 x 8		100	106		
TQFP Packages (TQ): Thin QFP (0.5mm lead spacing)							
TQG100		16 x 16					
TQG144		22 x 22		100	118	118	
PQFP Packages (PQ): Wire-bond, plastic, QFP (0.5 mm lead spacing)							
PQG208		30.6 x 30.6 mm			173	173	173
FBGA Packages (FT): Wire-bond, fine-pitch, thin BGA (1.0 mm ball spacing)							
FTG256		17 x 17 mm			184	212	212
FBGA Packages (FG): Wire-bond, fine-pitch, BGA (1.0 mm ball spacing)							
FGG324		23 x 23 mm				240	270

Notes:

- 1. -7 speed grade is only available in FT(G)256 package.
- 2. All packages are available in Pb-Free and RoHS6 compliant versions.
- 3. Area dimensions for lead-frame product are inclusive of the leads.
- 4. Only available in RoHS6 compliant and Halogen-free packages.

Zynq™ UltraScale+™ MPSoC Ordering Information



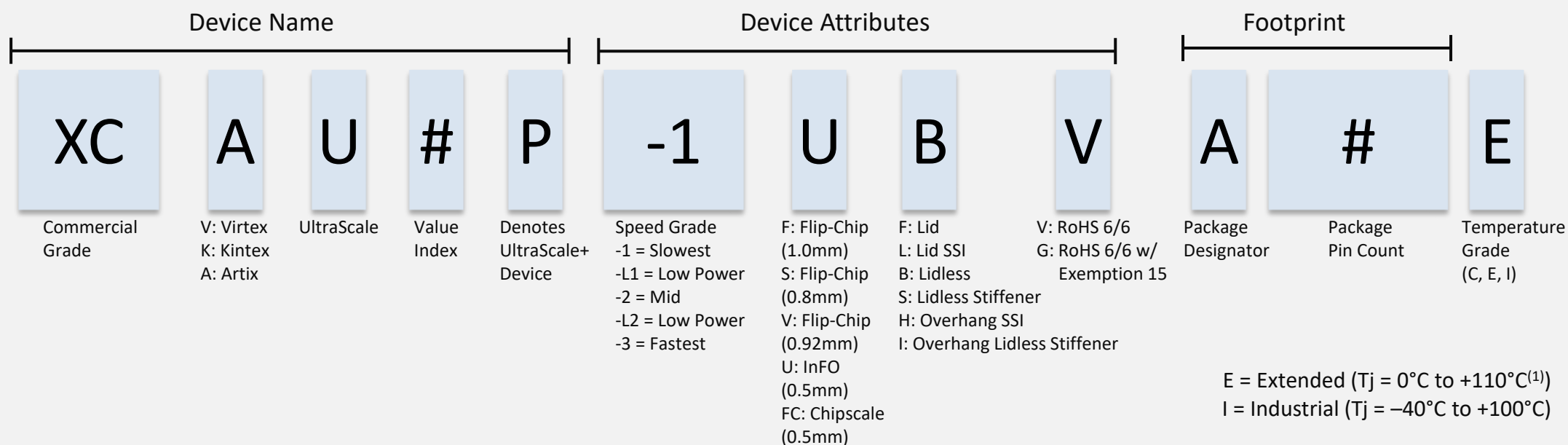
E = Extended (Tj = 0°C to +100°C)

I = Industrial (Tj = -40°C to +100°C)

*T in ZU3T value index denotes increase in resources and transceivers vs. ZU3.

Note: -L2E (Tj = 0°C to +110°C). Refer to DS891, Zynq UltraScale+ MPSoC Overview for additional information.

UltraScale+™ Device Ordering Information



Notes:

1. For more details on 110°C operation, see the Ordering Information section in DS890, *UltraScale Architecture and Product Overview*

Device Ordering Information

ZYNQ.⁷	XC Xilinx Commercial	7 Generation	Z Family	### Value Index	S Single Core Indicator (Z-7007S, Z-7012S, Z-7014S)	-1 Speed Grade -1: Slowest -L1: Low Power -2: Mid -L2: Low Power -3: Fastest	FF Package Type CL: Wire-bond (.8mm) SB: Bare-die Flip-chip (.8mm) FB: Bare-die Flip-chip (1mm) FF: Flip-chip (1mm)	V V: RoHS 6/6 G (CLG) = RoHS 6/6 G (SBG, FBG, FFG) = RoHS 6/6 with exemption 15	### Package Pin Count	C Temperature Grade (C, E, I)
ARTIX.⁷	XC Xilinx Commercial	7 Generation	A Family	### Logic Cells In 1K units	-1 Speed Grade -1 = Slowest -L1 = Low Power -L2 = Low Power -2 = Mid -3 = Highest	FF Package Type CP: Wire-bond (.5mm) CS: Wire-bond (.8mm) SB: Bare-die Flip-chip (.8mm) FT: Wire-bond (1mm) FG: Wire-bond (1mm) FB: Bare-die Flip-chip (1mm) FF: Flip-chip (1mm)	G V: RoHS 6/6 G: RoHS 6/6 w/exemption 15	900 Nominal Package Pin Count	C Temperature Grade (C, E, I)	
SPARTAN.⁷	XC Xilinx Commercial	7 Generation	S Family	### Logic Cells In 1K units	-1 Speed Grade -1 = Slowest -L1 = Low Power -2 = Mid	FG Package Type CP: Wire-bond (.5mm) CS: Wire-bond (.8mm) FG: Wire-bond (1mm) FT: Wire-bond (1mm)	G G: RoHS 6/6	A Package Designator	484 Package Pin Count	C Temperature Grade (C, I, Q)
SPARTAN.⁶	XC Xilinx Commercial	6 Generation	S Family	LX LXT Sub-families	### Logic Cells In 1K units	-1 Speed Grade -L1 = Low Power -2 = Mid -3 = Highest -N3 = No MCB functionality	FB Package Type CP: Wire-bond (.5mm) TQ: Quad Flat Pack (.5mm) CS: Wire-bond (.8mm) FT: Wire-bond (1mm) FG: Wire-bond (1mm)	G G: RoHS 6/6	900 Package Pin Count	C Temperature Grade (C, I)

-1L speed grade.
-2L speed grade.
ended (Tj = 0°C to +100°C) I = Industrial (Tj = -40°C to +100°C) Q = Expanded (Tj = -40°C to +125°C)

CPLD Device Ordering Information



XC2C128

Device

-4

Speed Grade
-4 thru -10
(Fastest to Slowest)

TQ

Package Type
QFN Packages (QF): Quad, flat, no-lead (0.5mm lead spacing)
VQFP Packages (VQ): Very thin QFP (VQ44: 0.8mm lead spacing, VQ100: 0.5mm lead spacing)
Chip Scale Packages (CP): Wire-bond, chip-scale, BGA (0.5mm ball spacing)
TQFP Packages (TQ): Thin QFP (0.5mm lead spacing)
FBGA Packages (FG): Wire-bond, fine-pitch, BGA (1.0mm ball spacing)
FBGA Packages (FT): Wire-bond, fine-pitch, thin BGA (1.0mm ball spacing)

G

Pb-Free

144

Pin
Count

C

Temperature
Grade
(C, I)

Notes:
C = Commercial ($T_A = 0^{\circ}\text{C}$ to $+70^{\circ}\text{C}$) I = Industrial ($T_A = -40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$)

Important: Verify all data in this document with the device data sheets.

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