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Versal™ ACAP Premium Series Product Selection Guide

Industry's First Adaptive Compute Acceleration Platform (ACAP)

Versal™ Premium Series – Resources

		VP1102	VP1202	VP1402	VP1502	VP1552	VP1702	VP1802
Adaptable Engines	System Logic Cells (K)	1,575	1,969	2,233	3,763	3,837	5,558	7,352
	LUTs	719,872	900,224	1,020,928	1,720,448	1,753,984	2,540,672	3,360,896
	NoC Master / NoC Slave Ports	30	28	42	52	52	76	100
	Distributed RAM (Mb)	22	27	31	53	54	78	103
Memory	Total Block RAM (Mb)	49	47	70	89	89	132	174
	UltraRAM (Mb)	127	190	181	366	366	541	717
	Total PL Memory (Mb)	198	264	282	508	509	751	994
	DDR Memory Controllers	3	4	3	4	4	4	4
	DDR Bus Width	192	256	192	256	256	256	256
Intelligent Engines	DSP Engines	1,904	3,984	2,672	7,440	7,392	10,896	14,352
Scalar Engines	APU	Dual-core Arm® Cortex®-A72, 48KB/32KB L1 Cache w/ parity & ECC; 1MB L2 Cache w/ ECC						
	RPU	Dual-core Arm Cortex-R5F, 32KB/32KB L1 Cache, and 256KB TCM w/ECC						
	Memory	256KB On-Chip Memory w/ECC						
	Connectivity	Ethernet (x2); UART (x2); CAN-FD (x2); USB 2.0 (x1); SPI (x2); I2C (x2)						
Serial Transceivers	GTYP Transceivers (32.75Gb/s)	8	28(1)	8	28(1)	68(1)	28(1)	28(1)
	GTM Transceivers(2) (58G (112G))	64 (32)	20 (10)	96 (48)	60 (30)	20 (10)	100 (50)	140 (70)
Integrated Protocol IP	CCIX & PCIe® w/DMA (CPM5)	-	2 x Gen5x8, CCIX	-	2 x Gen5x8, CCIX	2 x Gen5x8, CCIX	2 x Gen5x8, CCIX	2 x Gen5x8, CCIX
	PCI Express®	2 x Gen5x4	2 x Gen5x4	2 x Gen5x4	2 x Gen5x4	8 x Gen5x4	2 x Gen5x4	2 x Gen5x4
	100G Multirate Ethernet MAC	6	2	6	4	4	6	8
	600G Ethernet MAC	4	1	8	3	1	5	7
	600G Interlaken	2	0	2	1	0	2	3
	400G High-Speed Crypto Engine	3	1	5	2	2	3	4

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Notes:
1. 16 GTYP transceivers are dedicated to the CPM5 for PCI Express use.
2. GTM transceivers can operate at data rates up to 112Gb/s by combining two transceivers together.

Versal™ Premium Series – Packaging

			VP1102	VP1202	VP1402	VP1502	VP1552	VP1702	VP1802
Package	Package Dimensions (mm)	Ball Pitch (mm)	XPIO DDR Only, XPIO DDR+PL HDIO, MIO GTYP, GTM (112G)						
VFVF1760(1)	40x40	0.92	180, 306 22, 78 8, 40 (20)		180, 306 22, 78 8, 40 (20)				
VSVC2197(1)	45x45	0.92		132, 516 0, 78 28, 20 (10)					
VSVA2785(2)	50x50	0.92	180, 306 44, 78 8, 64 (32)	132, 570 0, 78 28, 20 (10)	180, 306 44, 78 8, 80 (40)	132, 570 0, 78 28, 56 (28)	132, 570 0, 78 68, 16 (8)		
VSVA3340	55x55	0.92			180, 306 44, 78 8, 96 (48)	132, 354 0, 78 28, 60 (30)	132, 354 0, 78 68, 20 (10)	132, 354 0, 78 28, 88 (44)	
LSVC4072	65x65	1.0						132, 570 0, 78 28, 100 (50)	132, 570 0, 78 28, 140 (70)

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Notes:
1. Some packages are footprint compatible with Versal Prime series devices.
2. VP1202, VP1502, and VP1552 in VSVA2785 support LPDDR4 in 486 I/O only.

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Versal™ Premium Series – Figures of Merit

			VP1102	VP1202	VP1402	VP1502	VP1552	VP1702	VP1802
Adaptable Engines	Adaptable Engine Peak Perf – INT1	TOPs	753	941	1067	1799	1834	2656	3514
	Adaptable Engine Peak Perf – INT2	TOPs	345	431	489	824	840	1217	1610
	Adaptable Engine Peak Perf – INT4	TOPs	89	112	127	214	218	316	418
	Adaptable Engine Peak Perf – INT8	TOPs	23	29	33	55	56	81	107
	NoC Cross-sectional Bandwidth	Tb/s	1.7	2.2	1.7	2.2	2.2	2.2	2.2
Memory	Total Bandwidth - Block RAM	Tb/s	202	193	285	366	366	539	712
	Total Bandwidth - Ultra RAM	Tb/s	48	72	69	138	138	205	271
	Total SRAM Bandwidth	Tb/s	250	265	354	504	504	743	982
	DDR4 Memory Bandwidth	Gb/s	76.8	102.4	76.8	102.4	102.4	102.4	102.4
	LPDDR4 Memory Bandwidth	Gb/s	102.4	136.5	102.4	136.5	136.5	136.5	136.5
Intelligent Engines	DSP Engine Peak Perf – INT8	TOPs	13.1	27.5	18.4	51.3	51.0	75.2	99.0
	DSP Engine Peak Perf – INT24	TOPs	4.4	9.2	6.1	17.1	17.0	25.1	33.0
	DSP Engine Peak Perf – CINT18	Complex TOPs	1.9	3.9	2.6	7.3	7.3	10.7	14.1
	DSP Engine Peak Perf – FP32	TFLOPs	3.1	6.4	4.3	12.0	11.9	17.5	23.1
Scalar Engines	Arm® Cortex-A72 Performance	DMIPs	15980	15980	15980	15980	15980	15980	15980
	Arm Cortex-R5F Performance	DMIPs	2505	2505	2505	2505	2505	2505	2505
I/O	Transceiver Bandwidth	Tb/s	3.97	2.08	5.83	4.40	3.39	6.72	9.04
	Sensor I/O Bandwidth	Gb/s	979	1,824	979	1,824	1,824	1,824	1,824
Connectivity Throughput	PCIe Gen5 Throughput	GT/s	256	768	256	768	1536	768	768
	Interlaken Throughput	Gb/s	1200	0	1800	600	0	1200	1800
	Ethernet Throughput	Gb/s	3000	800	4400	2200	1000	3600	5000
	Cryptographic (AES-256) Throughput	Gb/s	1200	400	1600	800	800	1200	1600
Connectivity Ports	10G Ethernet Ports	#	24	8	32	16	16	24	32
	25G Ethernet Ports	#	24	8	32	16	16	24	32
	40G Ethernet Ports	#	6	2	8	4	4	6	8
	50G Ethernet Ports	#	12	4	16	8	8	12	16
	100G Ethernet Ports	#	30	8	44	22	10	36	50
	200G Ethernet Ports	#	12	3	18	9	3	15	21
	400G Ethernet Ports	#	4	1	6	3	1	5	7

Versal Premium Series

Versal™ ACAP Migration Table

Package Name	Footprint	Versal AI Edge Series							Versal AI Core Series							Versal Prime Series									Versal Premium Series						
		VE2002	VE2102	VE2202	VE2302	VE2602	VE1752	VE2802	VC1352	VC1502	VC1702	VC1802	VC1902	VC2602	VC2802	VM1102	VM1302	VM1402	VM1502	VM1802	VM2202	VM2302	VM2502	VM2902	VP1102	VP1202	VP1402	VP1502	VP1552	VP1702	VP1802
SBVA484	A484	■	■																												
SBVA625	A625	■	■																												
SFVA784	A784	■	■	■	■											■															
VBVA1024	A1024								■																						
NBVB1024	B1024																■	■													
VFVB1369	B1369																■	■	■												
VSVE1369	E1369								■																						
VSVF1369	F1369																■	■													
VSVG1369	G1369						■		■	■	■																				
VSVH1369	H1369					■	■							■	■																
VSVA1596[1]	A1596						■		■	■	■																				
VIVA1596[1]	A1596											■	■																		
VFVC1596	C1596																■	■													
VFVC1760	C1760																		■	■											
VSVD1760	D1760											■	■				■	■	■	■											
VFVF1760	F1760																				■	■	■	■	■	■	■				
VFVH1760	H1760					■	■							■	■																
VSVA2197	A2197						■		■	■	■	■	■						■	■											
VSVC2197	C2197																				■	■	■	■							
VSVA2785	A2785																									■	■	■	■	■	
VSVA3340	A3340																										■	■	■	■	
LSVC4072	C4072																													■	■

Legend
■ Device
— Migration Path

Note:
1. VSVA1596 package dimensions are 37.5x37.5mm, VIVA1596 package dimensions are 40x40mm with 1.25mm overhang

Versal™ ACAP Ordering Information

Device Name				Device Attributes				Package Definition			
XC	V	C	1902	-1	M	S	E	V	S	V	D1760
Xilinx XC: Commercial XA: Automotive XQ: Defense	**Architecture** Versal	**Series Name** E: AI Edge C: AI Core M: Prime P: Premium H: HBM	**Device Number** Digits 1-3: Value Identifier Digit 4: # of Primary Cores	**Speed Grade** -1: Slowest -2: Mid -3: Highest	**Voltage** L: Low (0.7V) M: Mid (0.80V) H: High (0.88V)	**Static Screen** S: Standard L: Low Static	**Temp Grade** E: 0 to 110°C(1) I: –40 to 110°C(1) Q: –40 to +125°C M: –55 to +125°C	**Ball Pitch** V: 0.92mm, w/LSC N: 0.92mm, no LSC S: 0.8mm L: 1.0mm	**Lid** S: Lidless, w/Stiffener Ring F: Lidded B: Lidless, no Stiffener Ring H: Lidded Overhang I: Lidless, w/Stiffener Ring & Overhang	**RoHS6 Code** (2) V: Pb-free Ball Q: Eutectic Ball R: Ruggedized, Eutectic Ball	**Footprint**

Note:
1. Operation at 110°C Tj is limited to 3% of the device lifetime and can occur sequentially or at regular intervals as long as the total time does not exceed 3% of device lifetime—except -1E and -3E (standard 0–100°C).
2. All packages have Pb-free bumps.