AMD Versal™ HBM Series Product Selection Guide

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AMD Versal™ HBM Series – Resources & Packages

		VH1522	VH1542	VH1582	VH1742	VH1782
Programmable Logic	System Logic Cells (K)	3,837	3,837	3,837	5,631	5,631
	LUTs	1,753,984	1,753,984	1,753,984	2,574,208	2,574,208
	DSP Engines	7,392	7,392	7,392	10,848	10,848
	NoC Master / NoC Slave Ports	52	52	52	76	76
	Super Logic Regions (SLRs)(3)	2	2	2	3	3
	Distributed RAM (Mb)	54	54	54	79	79
Memory	Total Block RAM (Mb)	89	89	89	132	132
	UltraRAM (Mb)	366	366	366	541	541
	Total PL Memory (Mb)	509	509	509	752	752
	HBM DRAM (GB)	8	16	32	16	32
	DDR Memory Controllers	4	4	4	4	4
	DDR Bus Width	256	256	256	256	256
Processing System	APU	Dual-core Arm® Cortex®-A72, 48 KB/32 KB L1 Cache w/ parity & ECC; 1 MB L2 Cache w/ ECC				
	RPU	Dual-core Arm Cortex-R5F, 32 KB/32 KB L1 Cache, and 256 KB TCM w/ECC				
	Memory	256 KB 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	68(1)	68(1)	68(1)	68(1)	68(1)
	GTM Transceivers(2) (56G (112G))	20 (10)	20 (10)	20 (10)	60 (30)	60 (30)
Integrated Protocol IP	PCIe® w/DMA (CPM5)	2 x Gen5x8	2 x Gen5x8	2 x Gen5x8	2 x Gen5x8	2 x Gen5x8
	PCI Express (PL PCIE5)	8 x Gen5x4	8 x Gen5x4	8 x Gen5x4	8 x Gen5x4	8 x Gen5x4
	100G Multirate Ethernet MAC	4	4	4	6	6
	600G Ethernet MAC	1	1	1	3	3
	600G Interlaken	0	0	0	1	1
	400G High-Speed Crypto Engines	2	2	2	3	3
Ordering Information	Extended Temp	-1MSE, -1LSE, -2MSE, -2MLE, -2LSE, -2LLE, -3HSE				
	Industrial Temp	–				

Package Footprint	Package Dimensions (mm)	Ball Pitch (mm)	XPIO DDR Only, XPIO DDR+PL, XPIO Only HDIO, MIO GTYP, GTM (112G)				
VSVA3697	57.5x57.5	0.92	132, 516, 54 0, 78 68, 20 (10)	132, 516, 54 0, 78 68, 20 (10)	132, 516, 54 0, 78 68, 20 (10)		
LSVA4737	70x70	1.0		132, 516, 54 0, 78 68, 20 (10)	132, 516, 54 0, 78 68, 20 (10)	132, 516, 54 0, 78 68, 60 (30)	132, 516, 54 0, 78 68, 60 (30)

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

All parameters listed are maximum values. Verify all data in this document with the device data sheets or product guides.

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AMD Versal™ HBM Series – Figures of Merit

			VH1522	VH1542	VH1582	VH1742	VH1782
Programmable Logic	DSP Engine Peak Perf – INT8	TOPS	51.0	51.0	51.0	74.9	74.9
	DSP Engine Peak Perf – INT24	TOPS	17.0	17.0	17.0	25.0	25.0
	DSP Engine Peak Perf – CINT18	Complex TOPS	7.3	7.3	7.3	10.7	10.7
	DSP Engine Peak Perf – FP32	TFLOPs	11.9	11.9	11.9	17.5	17.5
	NoC Cross-Sectional Bandwidth	Tb/s	2.2	2.2	2.2	2.2	2.2
Processing System	Arm® Cortex®-A72 Performance	DMIPs	19,516	19,516	19,516	19,516	19,516
	Arm Cortex-R5F Performance	DMIPs	2,672	2,672	2,672	2,672	2,672
Memory	Total Bandwidth - Block RAM	Tb/s	366	366	366	539	539
	Total Bandwidth - Ultra RAM	Tb/s	138	138	138	205	205
	Total PL Memory Bandwidth	Tb/s	504	504	504	743	743
	DDR4 Memory Bandwidth	GB/s	102.4	102.4	102.4	102.4	102.4
	LPDDR4 Memory Bandwidth	GB/s	136.5	136.5	136.5	136.5	136.5
	HBM Bandwidth	GB/s	409.6	819.2	819.2	819.2	819.2
I/O	Transceiver Bandwidth	Tb/s	6.77	6.77	6.77	11.41	11.41
Connectivity Throughput	PCIe® Gen5 Throughput	GT/s	1,536	1,536	1,536	1,536	1,536
	Interlaken Throughput	Gb/s	-	-	-	600	600
	Ethernet Throughput	Gb/s	1,000	1,000	1,000	2,400	2,400
	Cryptographic (AES-256) Throughput	Gb/s	800	800	800	1,200	1,200
Connectivity Ports	10G Ethernet Ports	#	16	16	16	24	24
	25G Ethernet Ports	#	16	16	16	24	24
	40G Ethernet Ports	#	4	4	4	6	6
	50G Ethernet Ports	#	8	8	8	12	12
	100G Ethernet Ports	#	10	10	10	24	24
	200G Ethernet Ports	#	3	3	3	9	9
	400G Ethernet Ports	#	1	1	1	3	3

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AMD Versal™ Device Ordering Information

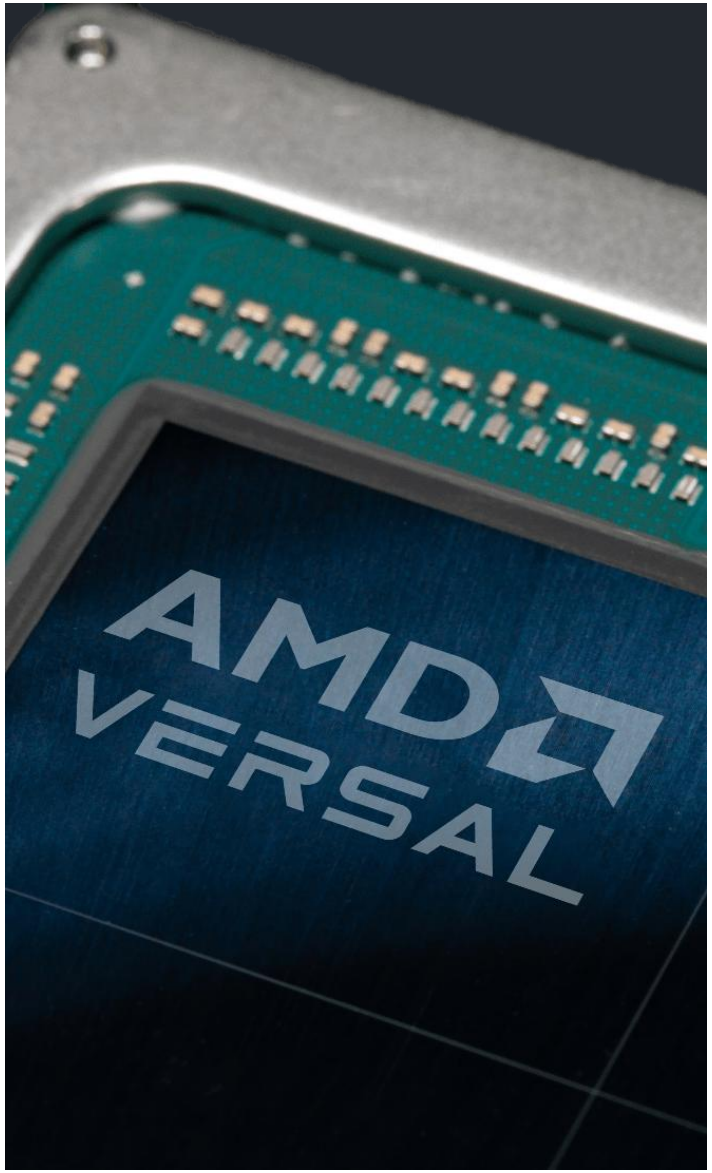
Device Name					Device Attributes				Package Definition			
XC	2	V	E	3558	-1	M	S	E	S	B	V	A1440
Device Grade XC: Commercial XA: Automotive XQ: Defense	**Generation**[1] 2: Gen 2	**Architecture** Versal	**Series Name** E: AI Edge C: AI Core M: Prime P: Premium H: HBM R: RF	**Device Number** Digits 1-3: Value Identifier Digit 4: # of Primary Cores	**Speed Grade** -1: Slowest -2: Mid -3: Highest	**Voltage** L: Low M: Mid H: High	**Static Screen** S: Standard L: Low Static	**Temp Grade** E: 0 to 110°C[2] I: –40 to 110°C[2] Q: –40 to +125°C M: –55 to +125°C	**Ball Pitch** V: 0.92 mm, w/LSC N: 0.92 mm, no LSC S: 0.8 mm L: 1.0 mm	**Lid** S: Lidless, w/Stiffener Ring F: Lidded B: Lidless, no Stiffener Ring H: Lidded Overhang I: Lidless, w/Stiffener Ring & Overhang	**RoHS6 Code** [3] V: Pb-free Ball Q: Eutectic Ball R: Ruggedized, Eutectic Ball	**Footprint**

Note:

1. This character is only present in Versal AI Edge Series Gen 2, Prime Series Gen 2, and Premium Series Gen 2 devices.
2. 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).
3. All packages have Pb-free bumps.

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AMD Versal™ Adaptive SoC Portfolio



Prime Series	**Mid-Range Devices with Option for High-End Scalar Compute** • Gen 1: Broad range of capabilities incl. PCIe® Gen 5, DDR5/LPDDR5[1] • **Gen 2:** Adds up to 10X scalar compute[2], LPDDR5X, VCU	General-Purpose
Premium Series	**High-End Devices Maximizing Connectivity, Hard IP, & DSP** • Gen 1: 112G SerDes, PCIe Gen 5, DDR4, High-Speed Crypto, AIE • **Gen 2:** Adds 128G SerDes, PCIe Gen 6, CXL® 3.1, DDR5/LPDDR5X	General-Purpose
HBM Series	**Adds Integrated HBM Memory to Premium Series Capabilties** • 8, 16, or 32 GB of HBM2e per device • 6X memory bandwidth at up to 65% lower power[3]	Specialized
AI Edge Series	**End-to-End Acceleration for AI-Driven Embedded Systems** • Gen 1: PL for preprocessing, AIE-ML for high-perf. inference • **Gen 2:** Adds up to 10X scalar compute[2] for postprocessing, add'l FuSa	Specialized
AI Core Series	**High-Throughput DSP & AI in a Mid-Size Footprint** • AIE for strong DSP performance/watt & perf/area • AIE-ML for high-performance inference w/PCIe Gen 5, 100 GbE	Specialized
RF Series	**Integrated RF-ADC/RF-DACs w/New DSP Hard IP** • 16 GSPS RF-DACs, 8 GSPS or 32 GSPS RF-ADCs, AIE • FFT/iFFT, Channelizer, LDPC, Frac. Resampler, Polyphase Filters	Specialized

1. DDR5/LPDDR5 support is available in the VM2152 device. All other first-generation Versal Prime Series devices support DDR4/LPDDR4/LPDDR4X.
2. Pre-silicon estimated performance. See Endnotes VER-027.
3. See Endnotes VER-013.

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