ALVEO™ PORTFOLIO PRODUCT SELECTION GUIDE

AMD
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AMD ALVEO

PRODUCT PORTFOLIO OVERVIEW

Accelerator Card	Network Interface	Optical Interface	Form Factor	Logic Density	DSP	DDR4	HBM	AI Engines	PCIe®	Max Power[1]
Alveo U30	-	-	HHHL	N/A	N/A	8 GB	-	-	Gen3x8, 2x Gen3x4	75W
Alveo MA35D	-	-	HHHL	N/A	-	-	-	-	Gen4x8	50W
Alveo U45N	2x 100G	2x QSFP28	FHHL	1M LUTs	1,320	8 GB	-	-	Gen4x8, Gen3x16	150W
Alveo U50	1x 100G	1x SFP28	HHHL	872K LUTs	5,952	-	8 GB	-	2x Gen4x8, Gen3x16	75W
Alveo U55C	2x 100G	2x QSF28	FHHL	1.3M LUTs	9,024	-	16 GB	-	Gen3x16, 2x Gen4x8	150W
Alveo V80	4x 200G	4x QSFP56	FH¾L	2,574K LUTs	10,848	32 GB	32 GB	-	Gen4x16, 2x Gen5x8	300W
Alveo X3522PV	2x 10/25G	2x DSFP	HHHL	1M LUTs	1,320	8 GB	-	-	Gen4x8, Gen3x8	75W
Alveo UL3524	32x 10/25G	4x QSFPDD	FH¾L	787K LUTs	1,680	16 GB	-	-	Gen4x8	125W
Alveo V70	-	-	HHHL	N/A	N/A	16 GB		404 TOPs[2]	Gen4x8, Gen5x8	75W

1. The maximum power represents the total electrical limit of the card. The thermal design power (TDP) of the Alveo card may vary depending on factors such as workload, inlet temperature, CFM/LFM airflow conditions, and the card's placement within the server. For specific TDP values, please refer to the associated Alveo accelerator card data sheet.
2. Alveo V70: INT8 Peak Performance with 50% Sparsity; https://www.xilinx.com/applications/data-center/v70.html

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COMPUTE ACCELERATORS

Our compute accelerators are among the most versatile cards in the portfolio, targeting big data workloads with large data sets and those demanding massive parallelism, including data analytics, HPC, network switching, computational storage, blockchain, and various applications in FinTech including algorithmic trading and backtesting. The Alveo U50 is our smallest form factor HBM-based card for memory bound compute, while the Alveo U55C offers a balanced mix of HBM memory, logic density, and DSP resources in an FHHL form factor. The Alveo V80 is powered by the Versal HBM adaptive SoC and delivers the highest logic density, HBM bandwidth, network bandwidth, and DSP resources in the Alveo portfolio–ideal for the most compute-intensive big data workloads.

	Alveo™ U50	Alveo U55C	Alveo V80
Network Interface	1x100 Gb/s	2x 100 Gb/s	4x 200 Gb/s
Form Factor	HHHL	FHHL	FH¾L
Logic Density	872K LUTs	1,304K LUTs	2,574K LUTs
DSP Resources	5,952 Slices	9,024 Slices	10, 848 Slices
DDR4 Memory	-	–	32 GB
HBM Memory	8 GB	16 GB	32 GB
PCIe®	Gen4x8 or Gen3x16	Gen4x8 or Gen3x16	2x Gen5x8 or Gen4x16

Verify all data in this document with the device data sheets or product guides found at www.amd.com/alveo

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NETWORK ACCELERATORS

Our portfolio of network accelerators offload server CPUs from infrastructure tasks in the data center, accelerating workloads such as virtual switching, load balancing, virtual firewall, and computational storage. The Alveo U45N is versatile for diverse networking applications, supported by the AMD OpenNIC reference design for ease of development of custom solutions. The Alveo U55C compute accelerator card can serve as a load balancer or Smart Top-of-Rack switch with the ability to rapidly process large flow tables in HBM.

	Alveo U45N	Alveo U55C
Network Interface	2x100G	2x100G
Form Factor	FHHL	FHHL
Logic Density	1,030K LUTs	1,304K LUTs
Processor	Discrete 16-Core Arm Cortex-A72	–
DDR4 Memory	12 GB	–
HBM Memory	–	16 GB
PCIe®	Gen4x8 or Gen3x16	Gen4x8, Gen3x16
Target Workloads	• OVS • IPsec • 5G UPF	• Load Balancer • Smart Top-of-Rack (ToR) Switch • Transport Layer Security (TLS)

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FINTECH ACCELERATORS

Our FinTech accelerators address the unique requirements of the financial market, which often demands a convergence of low latency networking and hardware acceleration for algorithmic trading, pre-trade risk analysis, and market data delivery services at nanosecond speeds. The Alveo X3522PV and Alveo UL3524 target low-latency and ultra-low latency trading, respectively, for algorithms that prioritize trade execution performance vs. algorithmic complexity. The Alveo U55C compute accelerators offer more resources for complex trading algorithms, risk & price modeling, as well as data analytics, while the Alveo V80 offers the most compute and bandwidth capability in the portfolio, ideal for financial modeling, analytics, and strategy backtesting.

	Alveo™ X3522PV	Alveo UL3524	Alveo U55C	Alveo V80
Network Interface	4x 10/25G	32x 10/25G	2x 100 Gb/s	4x 200 Gb/s
Form Factor	HHHL	FH¾L	FHHL	FH¾L
Logic Density	1,030K LUTs	787K LUTs	1,304K LUTs	2,574K LUTs
DSP Resources	1,320 Slices	1,680 Slices	9,024 Slices	10, 848 Slices
AI Engines	–	–	–	-
DDR4 Memory	8 GB	16 GB	–	32 GB
HBM Memory	–	–	16 GB	32 GB
PCIe®	Gen4x8 or Gen3x8	Gen4x8	Gen4 x8 or Gen3 x16	2x Gen5x8 or Gen4x16
Expansion	–	32x 10/25G ARF6	–	2x Gen5x4, 1x Gen5x8 MCIO
Target Workloads	Low Latency Trading	Ultra-Low Latency Trading	Compute & Analytics	Algo Trading

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MEDIA ACCELERATORS

Our portfolio of Alveo™ media accelerators is enabling a new era of interactive media and live streaming applications that demand a high volume of concurrent streams—including video collaboration, watch parties, live shopping, social streaming, sports betting, online auctions, and more. The portfolio delivers high streaming density at low latency by accelerating the full video pipeline, from decoding, to adaptive-bitrate (ABR) scaling, to encoding.

The Alveo U30 media accelerator provides low-latency live streaming (as low as 32 ms 4Kp60 transcode) and supports the mainstream H.264 and H.265 codec standards. In addition to on-premise deployment, the Alveo U30 card is available on the AWS cloud (Amazon EC2 VT1 instances) and through Avnet co-location services for evaluation or production deployment. The accelerator card also supports the Wowza Streaming Engine for ease of bring-up and deployment without the need for video frameworks.

The Alveo MA35D media accelerator provides ultra-low latency streaming (as low as 8 ms 4Kp60 transcode) and supports the AV1 codec standard for state-of-the-art compression, as well as the H.264 and H.264 standards. The 5 nm ASIC-based technology offers breakthrough preprocessing and postprocessing engines for next-generation use cases, including cloud gaming services.

Both accelerators are powered by a full video SDK software stack, supporting the familiar FFmpeg and GStreamer frameworks, as well as a C-API for further customization. The Alveo U30 video SDK and Alveo MA35D AMD Media Acceleration SDK are both available on GitHub.

Alveo™ U30

Alveo MA35D

PLATFORM		
Max Resolution	4K	8K
Transcode Latency (4K)	32 ms	8 ms
Video Codec	H.264, H.265	H.264, H.265, AV1
PCIe®	Gen3	Gen4
Typical Power	25W	30–45W
HHHL, Single Slot	✓	✓
CHANNEL DENSITY		
1080p60 (H.26x / AV1)	8 / -	16 / 32
4Kp60 (H.26x / AV1)	2 / -	4 / 8
8Kp30 (H.26x AV1)	-	4
HARDWARE ENGINES		
ABR Scaler	✓	✓
Look-Ahead Engine	✓	✓
AI Processor		✓
Compositor Engine		✓
VQ QoE Engine		✓
DEPLOYMENT		
On-Premise	✓	✓
Cloud Instances and Co-Location Availability	✓	
Wowza Streaming Engine Support	✓	

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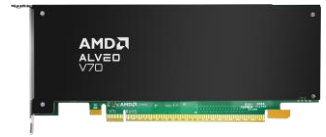
AI INFERENCE ACCELERATORS

The Alveo™ V70 production card feature AI Engines for breakthrough AI compute as high as 404 INT8 Peak TOPS.[1] The card is powered by Versal™ adaptive SoCs.

The Alveo V70 card comes in a slim HHHL form factor and is tuned for video analytics and natural language processing applications. With industry-standard framework support, AI developers can directly compile models trained in TensorFlow and PyTorch.



Alveo V70

AI Compute Technology	AI Engines-ML
INT8 TOPS	404 TOPS[1]
Network Interface	–
Form Factor	HHHL
Logic Density	N/A
DSP Resources	N/A
Video Decoder (H.264, H.265)	96 channels, 1920x1080p[2]
DDR4 Memory	16 GB
PCIe®	Gen4x8, Gen5x8
Vivado™ Tool Support	–
Vitis™ Tool Support	–
Vitis™ AI Tool Support	✓

1: INT8 peak performance with 50% Sparsity: https://www.xilinx.com/applications/data-center/v70.html
2: 10fps, H.264/H.265

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COMPUTE AND DATA CENTER ACCELERATORS

Product Name
Alveo™

U: UltraScale™
V : Versal™
##: Card Name
Yy: Feature Option

Card Name
U50
U55C
U45N
V80

Cooling
P: Passive
A: Active

DDR Memory
00G: 0 GB
08G: 8 GB
32G: 32 GB
64G: 64 GB

Solution Qualification
ESx: Engineering sample, not qualified for volume production
PQ: Fully qualified for volume production

RoHS Indicator
G: RoHS 6/6

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FINTECH ACCELERATORS

Product Name
Alveo™

Architecture
UL: Ultra Low
X: Xtreamscale

Generation
2: 2nd Gen
3: 3rd Gen
4: 4th Gen

Form Factor
2: HHHL
4: FHHL
5: FH3/4L

Speed
1: 10G
2: 25G
4: 100G

Port Count
1: Single
2: Dual
4: Quad

Solution Qualification
ESx: Engineering sample, not qualified for volume production
PQ: Fully qualified for volume production

RoHS Indicator
G: RoHS 6/6

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MEDIA STREAMING ACCELERATORS

Product Name
Alveo™

Card Name
MA35D

MA##: Media Accelerator Card Name
Yy: Feature Option
S: Single, D: Dual, Q: Quad

Cooling
P: Passive
A: Active

DDR Memory
00G: 0 GB
08G: 8 GB
16G: 16 GB
32G: 32 GB

Solution Qualification
ESx: Engineering sample, not qualified for volume production
PQ: Fully qualified for volume production

RoHS Indicator
G: RoHS 6/6

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NEXT STEPS

TAKE THE NEXT STEP

- To buy online or learn more, go to www.amd.com/alveo
- To enquire about volume purchase and lead times, contact your local sales representative or complete the Alveo Inquiry Form.
- To start designing for Alveo™ accelerator cards using the Vivado™ Design Suite, visit www.amd.com/vivado-for-alveo
- Search through our partner network of OEM qualified servers at https://www.xilinx.com/products/boards-and-kits/alveo/qualified-servers.html

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