

## Broadcom Inc

**Strong AI ASIC Pipeline Extends Through CY26 with Google/Meta....Adds TikTok/ByteDance as 3rd AI ASIC customer; Strong Datacenter Networking Roadmaps; Reit OW**

Yesterday, we attended Broadcom's AI Infrastructure Investor Day and the team articulated a compelling and sustainable growth strategy for its AI datacenter networking/ASIC business. The team is leveraging its broad portfolio of AI networking products (custom AI accelerators, switching/routing chipsets, PCIe interconnect, optical interconnects/CPO, and PHY ) and systems expertise to intercept the strong growth profile in datacenter AI/accelerated compute applications. Our takeaways were: 1) AI/accelerated compute is distributed computing and relies on an open and scalable network system which plays to the strength of Broadcom's core networking expertise. 2) Broadcom is targeting custom AI silicon (ASIC) opportunities (see Figure 1) for consumer internet companies and the team highlighted its strong AI ASIC pipeline that extends through CY26 with Google/Meta and announced a 3<sup>rd</sup> AI ASIC customer ( we believe TikTok/ByteDance). The team highlighted the costs, power, and form-factor improvements of custom AI ASICs (vs general merchant GPUs) given that it is optimized for specific workloads. 3) Ethernet is the back-end network fabric of choice given its open ecosystem and cost/power performance which is reflected in the strong adoption from cloud/hyperscalers. 4) The team is driving strong product innovation and sustaining its leadership profile in each of its networking businesses given its strong R&D scale (\$3B+ per year). 5) The increasing compute requirements are accelerating its networking product cadence (e.g. annual product cadence for PCIe switches/retimers) and driving new technology adoption (e.g. co-packaged optics which represents 2-3x revenue capture opportunity per switch platform). In sum, the team has shown a stellar track record of execution and sustained technology leadership. A big competitive advantage for Broadcom in its AI ASIC business is its strong experience in custom chip development, multi-year customer partnerships (10 years with Google, 4+ years with Meta, 4+ years with ByteDance/TikTok), R&D scale, and the ability to leverage technology from its networking merchant portfolio which has allow the team to help customers accelerate the time to market (7-9 month development and 3-month product ramp). The team believes that increasing chip complexity plays to the strength of Broadcom and should put upward pressure on margins over time. We continue to believe the team can drive a stable revenue growth profile even in a period of macro volatility given its portfolio breadth/diversification/product cycle.

### Overweight

AVGO, AVGO US  
Price (20 Mar 24):\$1,276.00  
Price Target (Dec-24):\$1,700.00



### Semiconductors & Semiconductor Capital Equipment / IT Hardware

Harlan Sur <sup>AC</sup>

Peter K Peng

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J.P. Morgan Securities LLC

### Quarterly Forecasts (FYE Oct)

Adj. EPS (\$)	2023A	2024E	2025E
Q1	10.33	10.99A	13.95
Q2	10.32	10.36	14.07
Q3	10.54	11.89	15.15
Q4	11.06	13.89	16.86
FY	42.25	47.13	60.04

### Style Exposure

Quant Factors	Current	Hist %Rank (1=Top)			
	%Rank	6M	1Y	3Y	5Y
Value	72	63	53	50	58
Growth	69	62	56	73	34
Momentum	10	18	27	54	13
Quality	10	10	13	29	6
Low Vol	17	14	14	22	34
ESGQ	23	27	28	95	-

Sources for: Style Exposure – J.P. Morgan Quantitative and Derivatives Strategy; all other tables are company data and J.P. Morgan estimates.

### See page 7 for analyst certification and important disclosures.

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## Price Performance



	YTD	1m	3m	12m
Abs	14.3%	4.0%	14.9%	98.2%
Rel	4.8%	-1.0%	3.7%	66.0%

## Company Data

Shares O/S (mn)	478
52-week range (\$)	1,438.17-601.29
Market cap (\$ mn)	609,928.00
Exchange rate	1.00
Free float(%)	98.0%
3M - Avg daily vol (mn)	2.97
3M - Avg daily val (\$ mn)	3,641.7
Volatility (90 Day)	38
Index	S&P 500
BBG BUY/HOLD/SELL	27/7/1

## Key Metrics (FYE Oct)

\$ in millions	FY23A	FY24E	FY25E
<b>Financial Estimates</b>			
Revenue	35,819	50,934	58,902
Adj. EBIT	22,125	29,469	36,485
Adj. EBITDA	23,789	32,561	39,577
Adj. net income	18,378	23,034	29,538
Adj. EPS	42.25	47.13	60.04
BBG EPS	42.19	47.04	57.46
Cashflow from operations	18,085	19,624	28,032
FCFF	17,633	19,136	27,544
<b>Margins and Growth</b>			
Revenue Growth Y/Y (%)	7.9%	42.2%	15.6%
EBIT margin	61.8%	57.9%	61.9%
EBIT growth	9.0%	33.2%	23.8%
EBITDA margin	66.4%	63.9%	67.2%
EBITDA Growth Y/Y (%)	0.2%	36.9%	21.5%
Net margin	51.3%	45.2%	50.1%
Adj. EPS growth	12.3%	11.6%	27.4%
<b>Ratios</b>			
Adj. tax rate	13.9%	17.4%	16.3%
Interest cover	21.2	11.2	16.2
Net debt/Equity	1.0	0.7	0.4
Net debt/EBITDA	1.1	1.7	1.0
ROE	78.7%	42.6%	32.0%
<b>Valuation</b>			
FCFF yield	3.2%	3.1%	4.4%
Dividend yield	1.4%	1.6%	1.9%
EV/Revenue	19.6	14.4	12.2
EV/EBITDA	29.5	22.6	18.2
Adj. P/E	30.2	27.1	21.3

## Summary Investment Thesis and Valuation

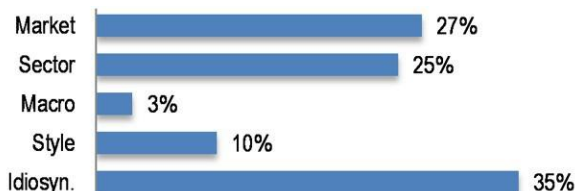
## Investment Thesis

We believe Broadcom is a leader in wireless, datacenter networking, AI/deep learning ASICs, storage, and infrastructure silicon/hardware/software with broad-based exposure to positive trends in these end markets. Broadcom is a technology infrastructure powerhouse with unmatched scale and technology capabilities in the industry, securing its leadership positions in a diverse set of end markets.

## Valuation

Our Dec-24 price target of \$1,700 assumes that AVGO trades at 23-27x (in-line with SOX multiple) applied to our 2H CY25 estimated run-rate earnings power of ~\$67.30 per share (=2 \* \$16.86+\$16.77). The multiple reflects sustainable long-term revenue growth, strong operating model leverage, and robust free cash flow generation.

## Performance Drivers



Factors	6M Corr	1Y Corr
<b>Market:</b> MSCI US	0.58	0.52
<b>Sect:</b> Technology	0.47	0.60
<b>Ind:</b> Semicond & S Equip	0.72	0.78
<b>Macro:</b>		
Economic Surprise	-0.04	0.15
US Dollar	0.07	0.14
Crude Oil	0.02	-0.04
<b>Quant Styles:</b>		
Growth	0.34	0.34
LowVol	-0.18	-0.34
DivYld	-0.39	-0.28

Source: J.P. Morgan Quantitative and Derivatives Strategy for Performance Drivers; company data, Bloomberg Finance L.P. and J.P. Morgan estimates for all other tables. Note: Price history may not be complete or exact.

- **Strong AI networking product portfolio should position Broadcom to benefit from the rising growth of AI and distributed computing.** AI revenue as a % of semiconductor revenue have increased from <5% in FY19 to 35% in FY24, driving \$10B+ in revenues for FY24. Recall that AI revenue mix is 70% custom AI ASICs, 20% switches/routing, and 10% other networking products. The team is leveraging its broad portfolio of AI networking products and systems expertise to intercept the strong growth profile in datacenter AI applications.
- **Strong barriers to entry in custom AI ASICs; strong multiyear wins with Google/Meta and adds TikTok/ByteDance as 3rd AI ASIC customer....strong \$10B AI semiconductor revenue outlook this year (see Figure 1).** The team highlighted its strong AI ASIC pipeline that extends through CY26 with Google/Meta and announced a 3<sup>rd</sup> AI ASIC customer ( we believe TiKTok/ByteDance who the team has been working with for ~ 4 years in our view). The team has built a strong multi-year relationships with these large AI customers. For example, the team has partnered with Google for 10 years (10 XPU co-development) and with Meta for 4 years (4 XPU). A big competitive advantage for Broadcom in its AI ASIC business is its strong experience in custom chip development, multi-year customer partnerships, R&D scale, and the ability to leverage technology from its networking merchant portfolio which has allow the team to help customers accelerate the time to market (7-9 month development and 3-month product ramp). Given that the chips are optimized for specific workloads, the team is able to produce chips that has a much smaller footprint and with much lower power consumptions. The team believes that as these chips become increasingly more complex that should put upward pressure on margins over time.
- **AI accelerator cluster size increasing over time and driving towards open and scalable networking.** The number of AI accelerators in a cluster increased from 4K + in 2022 to 30K+ in 2024e and is expected to reach 1M in 2027+. The team believes this should lead to stronger adoption of ethernet as the back-end network fabric of choice given its open ecosystem and cost/power performance. The team provided examples of cloud/hyperscalers that are using ethernet for their AI clusters (e.g. Amazon, Oracle, Meta). Moreover the team has been driving a 2x bandwidth increase in their switching/routing chipsets and we believe the team is set to introduce its next generation 3nm Tomahawk 6 chipset to support 102.4Tbps switching throughput this year. The team also offers the Jericho3-AI which are for switch scheduled networks and drives a 10% performance improvement.
- **Strong networking portfolio in optical interconnects, PCIEs switches/retimers, and PHY.** Given the increasing bandwidth/power requirements, the team is accelerating its product cadence on introducing new products to the market. In server interconnect, the team believes its end to end PCIE portfolio can help deliver 40% greater reach with 50% lower power profile. In optical networking, the team has strong leadership position in VCSEL, EML and silicon photonics. Co-packaged optics can drive a 2-3x revenue capture opportunity per switch platform and the team has shipped its 2<sup>nd</sup> generation CPO Bailey to hyperscalers. The team is working on its 3<sup>rd</sup> generation and is working on scaling it in volume. For PHYs, the team has #1 SerDes market share position with backplane/direct attach cables and optics.

Figure 1: Snapshot of High Profile Custom ASIC Programs: AVGO and MRVL

ASIC Customers	Programs	Technology	Status
Cloud Titan A	AI Chip	28nm Technology	Deployed
Cloud Titan A	AI Chip	16nm Technology	Deployed
Cloud Titan A	AI Chip	16nm Technology	Deployed
Cloud Titan A	AI Chip	7nm Technology	Deployed
Cloud Titan A	AI Chip	5nm Technology	Ramping High Vol Now
Cloud Titan A	AI Chip	3nm Technology	Won, In Design
Cloud Titan A	AI Chip	3nm 3rd v6 or Next Gen v7	New 1H24 W/In Tape Out 1H25
Cloud Titan A	VCU Chip	12nm/5nm Technology	Deployed/In Design
Cloud Titan A	Switching	7nm technology	Deployed
Cloud Titan A	ARM CPU	5nm Technology	2024
Cloud Titan B	DPU	7nm/5nm/3nm	2021/2022/2023
Cloud Titan B	Video Trans	7nm technology	2021/2022
Cloud Titan B	Storage	5nm	2023
Cloud Titan B	Security	7nm technology	2021
Cloud Titan B	AI Chip	3nm Technology	2024/2025
Cloud Titan C	Security	7nm technology	2020/2021
Cloud Titan C	DPU	7nm/5nm technology	2022/2024
Cloud Titan C	Storage	5nm technology	2023
Cloud Titan D	AI Chip	5nm technology	2024
Cloud Titan D	Storage	5nm technology	2023/2024
Tier-1 US Enterprise Compute	DPU	7nm/5nm technology	2022/2023
Japan HPC	Accelerator	2nm technology	2025
European Auto OEM	Networking	7nm technology	2022
US Auto OEM	Processor	5nm Technology	2024
5G Networking OEMs	Networking	7nm/5nm Technology	5G Basestation/Radio/DFE

**Broadcom ASIC Pipeline:****90+ Cumulative 7nm/5nm/3nm/2nm Designs****Already won 1<sup>st</sup> 2nm ASIC Design in CY23****NEW! Just won new 3nm next-gen AI ASIC program at largest AI ASIC customer - tape-out 1H25****Powerful 2nm ASIC platform (faster time to market):**

- \* 50-100B+ transistors per chip
- \* 2nm/3nm/5nm multi-chip architecture
- \* 50/100/200G Proven SERDES I/O
- \* Broadest IP Portfolio
- \* Adv Pkg (HBM 3/4, 2.5/3D SOIC)
- \* Co-pkg Electro/Optical (CPO)

**Marvell ASIC Pipeline:****45+ Cumulative 12nm/5nm Designs****Starting To Engage on 3nm**

- \* 50-100B+ transistors per chip
- \* 50/100G Proven SERDES I/O
- \* Broad IP Portfolio
- \* Adv Pkg

Source: J.P. Morgan Research

## Investment Thesis, Valuation and Risks

### **Broadcom Inc** *(Overweight; Price Target: \$1,700.00)*

#### **Investment Thesis**

We believe Broadcom is a leader in wireless, datacenter networking, AI/deep learning ASICs, storage, and infrastructure silicon/hardware/software with broad-based exposure to positive trends in these end markets. Broadcom is a technology infrastructure powerhouse with unmatched scale and technology capabilities in the industry, securing its leadership positions in a diverse set of end markets.

#### **Valuation**

Our Dec-24 price target of \$1,700 assumes that AVGO trades at 23-27x (in-line with SOX multiple) applied to our 2H CY25 estimated run-rate earnings power of ~\$67.30 per share  $= 2 * \$16.86 + \$16.77$ ). The multiple reflects sustainable long-term revenue growth, strong operating model leverage, and robust free cash flow generation.

#### **Risks to Rating and Price Target**

Broadcom's products are sold into a wide range of end markets and are sold to thousands of customers worldwide. If the global economy or any regional end market suffers unexpected negative shocks that lead to changes in demand for Broadcom's products, we may reassess our estimates and our Overweight rating.



## Broadcom Inc: Summary of Financials

Income Statement - Annual						Income Statement - Quarterly					
	FY22A	FY23A	FY24E	FY25E	FY26E		1Q24A	2Q24E	3Q24E	4Q24E	
Revenue	33,203	35,819	50,934	58,902		Revenue	11,961A	11,909	12,745	14,318	
COGS	(8,243)	(9,272)	(13,132)	(14,431)		COGS	(3,108)A	(3,071)	(3,243)	(3,710)	
Gross profit	24,960	26,547	37,802	44,471		Gross profit	8,853A	8,838	9,503	10,608	
SG&A	(1,280)	(1,340)	(5,308)	(5,306)		SG&A	(1,287)A	(1,407)	(1,307)	(1,307)	
Adj. EBITDA	23,745	23,789	32,561	39,577		Adj. EBITDA	7,604A	7,394	8,229	9,334	
D&A	(4,984)	(3,835)	(9,380)	(9,380)		D&A	(2,345)A	(2,345)	(2,345)	(2,345)	
Adj. EBIT	20,294	22,125	29,469	36,485		Adj. EBIT	6,831A	6,621	7,456	8,561	
Net Interest	(1,515)	(1,122)	(2,916)	(2,436)		Net Interest	(774)A	(744)	(714)	(684)	
Adj. PBT	17,246	18,832	20,265	27,761		Adj. PBT	4,485A	4,305	5,170	6,305	
Tax	(2,253)	(2,625)	(3,519)	(4,512)		Tax	(803)A	(779)	(893)	(1,044)	
Minority Interest	-	-	-	-		Minority Interest	-	-	-	-	
Adj. Net Income	16,526	18,378	23,034	29,538		Adj. Net Income	5,254A	5,098	5,848	6,833	
Reported EPS	34.14	37.26	34.26	47.26		Reported EPS	7.70A	7.17	8.69	10.69	
Adj. EPS	37.63	42.25	47.13	60.04		Adj. EPS	10.99A	10.36	11.89	13.89	
DPS	16.40	18.40	21.00	24.15		DPS	5.25A	5.25	5.25	5.25	
Payout ratio	48.0%	49.4%	61.3%	51.1%		Payout ratio	68.2%A	73.3%	60.4%	49.1%	
Shares outstanding	439	435	489	492		Shares outstanding	478A	492	492	492	
Balance Sheet & Cash Flow Statement						Ratio Analysis					
	FY22A	FY23A	FY24E	FY25E	FY26E		FY22A	FY23A	FY24E	FY25E	FY26E
Cash and cash equivalents	12,416	14,189	14,602	22,264		Gross margin	75.2%	74.1%	74.2%	75.5%	-
Accounts receivable	2,958	3,154	4,887	5,432		EBITDA margin	71.5%	66.4%	63.9%	67.2%	-
Inventories	1,925	1,898	2,976	3,178		EBIT margin	61.1%	61.8%	57.9%	61.9%	-
Other current assets	1,205	1,606	8,439	8,439		Net profit margin	49.8%	51.3%	45.2%	50.1%	-
Current assets	18,504	20,847	30,904	39,313		ROE	69.3%	78.7%	42.6%	32.0%	-
PP&E	2,223	2,154	2,845	3,089		ROA	22.2%	25.2%	18.2%	16.0%	-
LT investments	0	0	0	0		ROCE	27.8%	30.4%	22.4%	19.3%	-
Other non current assets	52,522	49,860	146,202	146,202		SG&A/Sales	3.9%	3.7%	10.4%	9.0%	-
Total assets	73,249	72,861	179,951	188,604		Net debt/equity	1.2	1.0	0.7	0.4	-
Short term borrowings	440	1,608	2,433	2,433		P/E (x)	33.9	30.2	27.1	21.3	-
Payables	998	1,210	1,671	1,752		P/BV (x)	24.7	23.1	7.4	6.2	-
Other short term liabilities	5,614	4,587	16,440	16,440		EV/EBITDA (x)	29.7	29.5	22.6	18.2	-
Current liabilities	7,052	7,405	20,544	20,625		Dividend Yield	1.3%	1.4%	1.6%	1.9%	-
Long-term debt	39,075	37,621	67,468	59,468		Sales/Assets (x)	0.4	0.5	0.4	0.3	-
Other long term liabilities	4,413	3,847	7,738	7,905		Interest cover (x)	15.7	21.2	11.2	16.2	-
Total liabilities	50,540	48,873	95,750	87,998		Operating leverage	131.4%	114.5%	78.7%	152.2%	-
Shareholders' equity	22,709	23,988	84,201	100,606		Revenue y/y Growth	21.0%	7.9%	42.2%	15.6%	-
Minority interests	-	-	-	-		EBITDA y/y Growth	17.3%	0.2%	36.9%	21.5%	-
Total liabilities & equity	73,249	72,861	179,951	188,604		Tax rate	13.1%	13.9%	17.4%	16.3%	-
BVPS	51.71	55.14	172.28	204.48		Adj. Net Income y/y Growth	31.4%	11.2%	25.3%	28.2%	-
y/y Growth	(7.0%)	6.6%	212.4%	18.7%		EPS y/y Growth	34.4%	12.3%	11.6%	27.4%	-
Net debt/(cash)	27,099	25,040	55,299	39,637		DPS y/y Growth	13.9%	12.2%	14.1%	15.0%	-
Cash flow from operating activities	16,736	18,085	19,624	28,032							
o/w Depreciation & amortization	4,984	3,835	9,380	9,380							
o/w Changes in working capital	(1,654)	(1,643)	(1,081)	(666)							
Cash flow from investing activities	(667)	(689)	(25,843)	(488)							
o/w Capital expenditure	(424)	(452)	(488)	(488)							
as % of sales	1.3%	1.3%	1.0%	0.8%							
Cash flow from financing activities	(15,816)	(15,623)	4,662	(19,882)							
o/w Dividends paid	(7,032)	(7,645)	(10,111)	(11,882)							
o/w Net debt issued/(repaid)	(443)	(415)	23,062	(8,000)							
Net change in cash	253	1,773	(1,557)	7,662							
Adj. Free cash flow to firm	16,312	17,633	19,136	27,544							
y/y Growth	22.5%	8.1%	8.5%	43.9%							

Source: Company reports and J.P. Morgan estimates.

Note: \$ in millions (except per-share data). Fiscal year ends Oct. o/w - out of which

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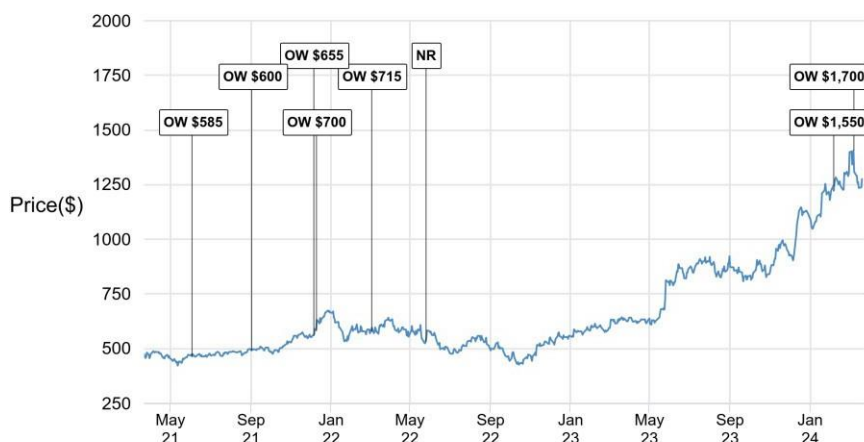
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Broadcom Inc (AVGO, AVGO US) Price Chart



Source: Bloomberg Finance L.P. and J.P. Morgan; price data adjusted for stock splits and dividends.  
Initiated coverage Nov 01, 2010. All share prices are as of market close on the previous business day.

The chart(s) show J.P. Morgan's continuing coverage of the stocks; the current analysts may or may not have covered it over the entire period.

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	Overweight (buy)	Neutral (hold)	Underweight (sell)
J.P. Morgan Global Equity Research Coverage*	47%	39%	13%
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