

Allegro MicroSystems

Attractive end markets long-term, cautious on cycle corrections near-term

Reiterate Rating: NEUTRAL | PO: 33.00 USD | Price: 28.73 USD

Necessary estimate reset as corrections persist

Inline Q3 (DecQ), Q4 sales/EPS miss (7%/25% below) amid digestion at auto and industrial customers. Q1 sales implied down 7%-8% QoQ (inline with Dec/Mar), ~15%-17% below Street. If outlook holds, ALGM's JunQ (expected to be trough) would mark peak-to-trough sales declines at ~22%, in line with peers around 20%-35%. ALGM's 70%-75+ exposure to autos enabled resilience in CY23 (sales +19% YoY), but as inventory corrections expand beyond industrial, we project CY24 could be down mid-teens YoY. ALGM's estimate reset should help de-risk the model. As headwinds ease, sales/gross margin (53%-54% in MarQ/JunQ vs. 58% pre-cycle peak) should recover, and autos mix (~35% of total sales xEV/ADAS) should support long-term double-digit growth. Still, we wait for better visibility, and confirmation channel trends are rebounding. We take CY24-26 sales down 17%-18%, EPS 25%-35%. Maintain Neutral, \$33 PO on higher 29x CY25 PE (vs. 20x prior), placing ALGM's 3-yr average multiple on potentially trough estimates. Positive stock reaction to eps cuts incrementally positive for preferred NXPI and ON that report next week, where we also saw near-term headwinds (see [our preview report](#)).

Likes: EV/hybrid agnostic, margin levers, estimate reset

1) E-mobility (ADAS/xEV) >50% of auto, and despite concerns around global BEV adoption, ALGM is agnostic towards hybrid or BEV mix. Therefore, even if more OEMs prioritize hybrid models, we still see multi-year 20%-30% annual e-mobility growth post cycle; 2) MarQ gross margin guide (53%-54%) is ~450bp below peak, though represents cycle low, and multiple levers (reduced Crocus M&A headwinds, improving disty sales which are 800bp-1000bp higher in GM vs. direct) can help margins recover back to mid-50s in the next several quarters; 3) Necessary estimate reset provides better clarity into cycle trough, brings peak-to-trough estimates in line with peers (down 20%-25%).

Risks: Autos cycle/visibility, Industrial, valuation

1) We remain early in the autos cycle, and while ALGM's guide suggests JunQ trough, visibility likely remains limited (channel +/- 50% of sales), with risk cycle gets pushed out beyond 1H24; 2) Industrial peak-trough declines approaching -50% YoY, and while exposure to high growth markets (solar, data center, etc.) can drive long-term above market growth, we expect normalized run rate below the \$50-\$60mn/qtr seen pre-corrections; 3) ALGM trading ~25x our revised CY25 PE, well above peer avg ~18x.

Estimates (Mar) (US\$)	2022A	2023A	2024E	2025E	2026E
EPS	0.78	1.28	1.32	0.87	1.22
GAAP EPS	0.62	0.97	0.99	0.72	1.05
EPS Change (YoY)	69.6%	64.1%	3.1%	-34.1%	40.2%
Consensus EPS (Bloomberg)			1.36	1.37	1.67
DPS	0	0	0	0	0
Valuation (Mar)					
P/E	36.8x	22.4x	21.8x	33.0x	23.5x
GAAP P/E	46.3x	29.6x	29.0x	39.9x	27.4x
EV / EBITDA*	24.3x	16.6x	15.7x	21.1x	16.1x
Free Cash Flow Yield*	1.6%	2.1%	2.0%	3.1%	4.0%

* For full definitions of *IQmethod*SM measures, see page 10.

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Timestamp: 01 February 2024 02:59PM EST

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Equity

Key Changes

(US\$)	Previous	Current
2024E Rev (m)	1,072.2	1,043.8
2025E Rev (m)	1,151.9	935.2
2026E Rev (m)	1,332.2	1,091.4
2024E EPS	1.37	1.32
2025E EPS	1.38	0.87
2026E EPS	1.70	1.22

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Stock Data

Price	28.73 USD
Price Objective	33.00 USD
Date Established	15-Dec-2023
Investment Opinion	C-2-9
52-Week Range	24.66 USD - 53.05 USD
Mrkt Val (mn) / Shares Out (mn)	5,530 USD / 192.5
Free Float	37.5%
Average Daily Value (mn)	40.03 USD
BofA Ticker / Exchange	ALGM / NAS
Bloomberg / Reuters	ALGM US / ALGM.OQ
ROE (2024E)	24.0%
Net Dbt to Eqty (Mar-2023A)	-33.3%
ESGMeter TM	Medium

ESGMeter is not indicative of a company's future stock price performance and is not an investment recommendation or rating. ESGMeter is independent of BofA Global Research's equity investment rating, volatility risk rating, income rating, and price objective for that company. For full details, refer to ["BofA ESGMeter Methodology"](#).

See page 9 for abbreviations

iQprofileSM Allegro MicroSystems

iQmethodSM – Bus Performance*

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Return on Capital Employed	21.8%	28.0%	21.1%	12.2%	15.2%
Return on Equity	22.7%	29.1%	24.0%	13.5%	16.3%
Operating Margin	23.2%	28.6%	28.2%	23.0%	27.1%
Free Cash Flow	86	113	109	169	222

iQmethodSM – Quality of Earnings*

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Cash Realization Ratio	1.0x	0.8x	0.9x	1.3x	1.2x
Asset Replacement Ratio	1.4x	1.6x	1.9x	0.7x	0.9x
Tax Rate	15.1%	11.3%	9.6%	8.2%	8.2%
Net Debt-to-Equity Ratio	-34.5%	-33.3%	-0.6%	-12.9%	-24.5%
Interest Cover	NA	NA	33.4x	10.7x	14.8x

Income Statement Data (Mar)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Sales	769	974	1,044	935	1,091
% Change	30.0%	26.7%	7.2%	-10.4%	16.7%
Gross Profit	416	553	587	508	611
% Change	40.7%	32.9%	6.1%	-13.4%	20.2%
EBITDA	230	335	355	265	346
% Change	70.1%	46.1%	5.8%	-25.3%	30.7%
Net Interest & Other Income	0	0	(4)	(20)	(20)
Net Income (Adjusted)	150	247	257	171	242
% Change	83.4%	64.7%	4.0%	-33.4%	41.4%

Free Cash Flow Data (Mar)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Net Income from Cont Operations (GAAP)	120	187	194	142	210
Depreciation & Amortization	49	51	68	70	71
Change in Working Capital	(53)	(55)	(57)	(32)	(41)
Deferred Taxation Charge	7	(40)	(28)	0	0
Other Adjustments, Net	34	50	62	40	47
Capital Expenditure	(70)	(80)	(129)	(51)	(65)
Free Cash Flow	86	113	109	169	222
% Change	7.9%	31.6%	-4.1%	55.2%	31.3%
Share / Issue Repurchase	0	(15)	(25)	0	0
Cost of Dividends Paid	0	0	0	0	0
Change in Debt	3	0	(26)	(4)	(100)

Balance Sheet Data (Mar)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Cash & Equivalents	282	352	261	426	548
Trade Receivables	119	127	116	139	179
Other Current Assets	110	188	212	219	230
Property, Plant & Equipment	210	263	326	307	302
Other Non-Current Assets	171	252	690	690	690
Total Assets	893	1,181	1,606	1,781	1,948
Short-Term Debt	4	4	4	0	0
Other Current Liabilities	101	161	113	110	121
Long-Term Debt	25	25	250	250	150
Other Non-Current Liabilities	28	24	59	59	59
Total Liabilities	157	214	426	420	330
Total Equity	735	967	1,179	1,361	1,618
Total Equity & Liabilities	893	1,181	1,606	1,781	1,948

* For full definitions of iQmethodSM measures, see page 10.

Company Sector

Semiconductors

Company Description

Allegro Microsystems (ALGM) is a fabless provider of magnetic sensing and application-specific analog power integrated circuits (ICs). ALGM's sensing products help support measurement of motion, speed, while its Power ICs help regulate system voltages. While ALGM went public in 2020, the company was formed from Sanken Group's US subsidiary, with the entity holding more than 30+ years of operational experience. ALGM is now headquartered in Manchester, New Hampshire with over 4,500 employees.

Investment Rationale

We rate Allegro Microsystems Neutral. We believe the company's leadership in magnetic sensing ICs combined with its emerging power IC products put the company in a favorable position to benefit from ramp in demand for electric vehicles/ADAS applications. In the near-/medium-term, we remain concerned with demand uncertainty from China, rising inventories across auto/industrial OEMs, and gross margin potential reaching peak levels.

Stock Data

Average Daily Volume 1,393,298

Quarterly Earnings Estimates

	2023	2024
Q1	0.24A	0.39A
Q2	0.31A	0.40A
Q3	0.35A	0.32A
Q4	0.37A	0.21E

Summary of Model Changes

Exhibit 1: Summary of sales and EPS changes

We materially lower estimates amid auto/industrial inventory correction cycle

	Sales (\$mn)			Non-GAAP EPS		
	Old	NEW	delta	Old	NEW	delta
Jun-23	\$278	\$278	\$0	\$0.39	\$0.39	\$0.00
Sep-23	\$276	\$276	\$0	\$0.40	\$0.40	\$0.00
Dec-23	\$255	\$255	\$0	\$0.28	\$0.32	\$0.04
Mar-24E	\$263	\$235	(\$28)	\$0.30	\$0.21	(\$0.09)
FY24E	\$1,072	\$1,044	(\$28)	\$1.37	\$1.32	(\$0.05)
YoY%	10.1%	7.2%	-2.7%	6.9%	3.1%	-3.5%
Jun-24E	\$269	\$216	(\$53)	\$0.31	\$0.18	(\$0.13)
Sep-24E	\$281	\$223	(\$57)	\$0.33	\$0.19	(\$0.14)
Dec-24E	\$297	\$242	(\$55)	\$0.36	\$0.24	(\$0.12)
Mar-25E	\$305	\$253	(\$52)	\$0.38	\$0.26	(\$0.12)
FY25E	\$1,152	\$935	(\$217)	\$1.38	\$0.87	(\$0.51)
YoY%	7.4%	-10.4%	-18.8%	1.2%	-34.0%	-37.0%
CY24E	\$1,110	\$917	(\$194)	\$1.30	\$0.82	(\$0.48)
YoY%	3.0%	-15.0%	-17.4%	-9.6%	-44.3%	-36.8%
CY25E	\$1,286	\$1,059	(\$227)	\$1.64	\$1.16	(\$0.48)
YoY%	15.8%	15.5%	-17.7%	26.0%	40.7%	-29.4%
CY26E	\$1,469	\$1,201	(\$268)	\$1.89	\$1.42	(\$0.48)
YoY%	14.2%	13.5%	-18.2%	15.6%	22.5%	-25.2%

Source: BofA Global Research, company reports

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Summary of FQ3 results

Exhibit 2: Summary of DecQ results

DecQ sales roughly in line with guide, EPS 3c ahead

	Dec-22	Sep-23	Dec-23						
			Guidance	Consensus	BofA	Reported	Delta	QoQ	YoY
Sales (\$mn, Non-GAAP)	\$249	\$276	\$255 (\$250-\$260)	\$255	\$255	\$255	-0.1%	-7.4%	2.5%
QoQ%	4.7%	-1.0%		-7.4%	-7.5%	-7.4%			
Automotive	165	197		194	195	195	0.4%	-1.3%	18.2%
Industrial	54	61		45	44	46	1.9%	-24.6%	-14.5%
Other	30	17		16	16	14	-10.2%	-17.2%	-53.0%
Gross Margin % (Non-GAAP)	58.0%	58.3%	54.0%	54.0%	54.0%	54.6%	61	(373)	(341)
Gross Profit (Non-GAAP)	144	161			138	139		-13.4%	-3.5%
R&D	36	40			39	39		-1.4%	7.8%
SG&A	32	35			32	31		-11.3%	-5.5%
Opex Total (Non-GAAP)	69	74	\$71	\$71	71	70	-2.1%	-6.0%	1.5%
Op Inc (Non-GAAP)	75	86		\$66	66	69	4.4%	-19.7%	-8.2%
Op Margin % (Non-GAAP)	30.3%	31.3%		26.0%	26.0%	27.2%	117	(415)	(315)
Financial Income (Non-GAAP)	0	1			(4)	(1)			
Pretax Income (Non-GAAP)	76	88			63	68		-22.1%	-10.0%
Tax expense (Non-GAAP)	(7)	(10)			(8)	(7)		-32.5%	-5.1%
Tax rate (Non-GAAP)	9.3%	11.4%			12.5%	9.8%		(152)	51
Net Income (Non-GAAP)	69	78			55	62		-20.7%	-10.5%
Diluted EPS (Non-GAAP)	\$0.35	\$0.40	\$0.29 (\$0.27-\$0.31)	\$0.29	\$0.28	\$0.32	9.6%	-20.5%	-10.8%
Diluted Shares	194	195			197	195		-0.3%	0.3%

Source: BofA Global Research, company reports, Bloomberg, Visible Alpha

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Summary of FQ4 Outlook

Exhibit 3: Summary of MarQ outlook

MarQ outlook below Street given broad inventory digestion

	Dec-23	Mar-24E				Delta	QoQ	YoY
	Reported	BofA	Cons	Guidance	New BofA			
Sales (\$mn)	\$255	\$263	\$253	\$235 (\$230-\$240)	\$235	-7.3%	-7.8%	-12.8%
QoQ%	-7.4%	3.3%	-0.6%		-7.8%			
Automotive	195	202	198		185	-6.7%	-5.3%	1.2%
Industrial	46	45	44		37	-17.0%	-20.0%	-36.6%
Other	14	16	16		14	-13.8%	-4.0%	-52.9%
Gross Margin % (Non-GAAP)	54.6%	54.5%	54.5%	53.5% (53%-54%)	53.5%	(98)	(111)	(428)
Gross Profit (Non-GAAP)	139	144			126		-9.7%	-19.3%
R&D	39	39			41		5.0%	7.7%
SG&A	31	32			32		3.0%	-12.4%
Opex Total (Non-GAAP)	70	72	\$72.0	\$73	73	1.2%	4.1%	-2.0%
Op Inc (Non-GAAP)	69	72	\$66		53	-19.9%	-23.7%	-35.0%
Op Margin % (Non-GAAP)	27.2%	27.2%	26.1%		22.5%	(356)	(467)	(768)
Financial Income (Non-GAAP)	(1)	(5)			(6)			
Pretax Income (Non-GAAP)	68	67			47		-31.3%	-42.1%
Tax expense (Non-GAAP)	-7	-8			(6)		-16.2%	-40.2%
Tax rate (Non-GAAP)	9.8%	12.5%			12.0%		217	38
Net Income (Non-GAAP)	62	58			41		-33.0%	-42.3%
Diluted EPS (Non-GAAP)	\$0.32	\$0.30	\$0.28	\$0.21 (\$0.19-\$0.23)	\$0.21	-24.4%	-33.4%	-42.6%
Diluted Shares	195	197			196		0.6%	0.4%

Source: BofA Global Research, company reports, Bloomberg, Visible Alpha

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Balance Sheet and Cash Flow Metrics

Exhibit 4: Summary of major balance sheet and cash flow metrics

Net cash per share down QoQ post M&A

	Dec-22	Mar-23	Jun-23	Sep-23	Dec-23	QoQ%	YoY%
Total Cash	\$344	\$359	\$362	\$378	\$224	-40.9%	-35.0%
ST Debt	\$4	\$4	\$82	\$0	\$4		
LT Debt	\$25	\$25	\$25	\$25	\$250		
Total Debt	\$29	\$29	\$107	\$25	\$254		
Net Cash	\$315	\$329	\$256	\$353	(\$31)		
Net Cash/Share	\$1.63	\$1.69	\$1.31	\$1.81	(\$0.16)		
DSO	47.7	42.8	39.7	39.3	40.8		
DPO	47.6	51.6	49.4	49.1	28.3		
Inventory \$	\$120	\$151	\$174	\$173	\$166	-4.4%	38.4%
Inventory Turns	3.6	3.1	2.8	2.7	2.9		
Inventory Days	102.8	118.7	132.1	136.2	124.7	(11.5)	21.9
Cash Conversion days	102.8	109.9	122.4	126.3	137.2		
Cash Flow from Ops	\$54	\$48	\$49	\$47	\$77	63.8%	42.2%
Capex	(\$14)	(\$30)	(\$45)	(\$31)	(\$34)		
Free cash flow	\$40	\$17	\$4	\$16	\$42	171.3%	6.7%
FCF as % of sales (ttm)	15.9%	6.4%	1.5%	5.6%	16.5%		

Source: BofA Global Research, company reports

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Exhibit 5: We model Allegro Microsystem sales declining ~10% in FY25E

ALGM Income statement (in \$mn)

	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4E	Q1E	Q2E	Q3E	Q4E	FY23	FY24E	FY25E	CY23	CY24E	CY25E
FY (Mar)	Jun-22	Sep-22	Dec-22	Mar-23	Jun-23	Sep-23	Dec-23	Mar-24E	Jun-24E	Sep-24E	Dec-24E	Mar-25E	Mar-23	Mar-24E	Mar-25E	Dec-23	Dec-24E	Dec-25E
Revenues	\$218	\$238	\$249	\$269	\$278	\$276	\$255	\$235	\$216	\$223	\$242	\$253	\$974	\$1,044	\$935	\$1,078	\$917	\$1,059
QoQ	9%	9%	5%	8%	3%	-1%	-7%	-8%	-8%	3%	8%	5%	0%	0%	0%	0%	0%	0%
YoY	16%	23%	33%	35%	28%	16%	2%	-13%	-22%	-19%	-5%	8%	27%	7%	-10%	19%	-15%	15%
Cost of Sales	99	106	106	116	120	116	121	110	102	104	111	115	428	468	431	474	427	473
Gross Profit	118	132	143	153	158	160	134	125	114	120	131	139	546	576	504	604	490	586
Non-GAAP Gross Profit	119	134	144	156	161	161	139	126	115	121	132	140	553	587	508	617	494	590
GAAP R&D Expense	34	36	40	42	43	43	44	45	42	45	46	48	151	176	182	173	178	196
GAAP SG&A Expense	70	39	37	48	44	43	53	37	36	36	37	38	195	177	148	188	146	155
Non GAAP R&D expenses	33	34	36	38	40	40	39	41	39	41	43	44	141	160	168	157	164	180
Non GAAP SG&A expenses	32	34	32	36	35	35	31	32	31	31	32	32	134	132	126	137	125	130
Total GAAP Opex	104	72	77	90	87	87	97	82	78	81	84	86	343	353	329	361	325	351
Total Non-GAAP Opex	64	67	69	74	75	74	70	73	70	72	74	77	275	292	293	294	289	310
Total GAAP Operating Income	15	60	66	63	71	73	37	43	36	39	48	52	203	223	175	243	165	235
Non-GAAP Operating Income	55	66	75	81	86	86	69	53	45	48	58	63	278	294	215	323	204	281
GAAP Interest/other Income	(2)	(1)	6	5	(3)	0	(0)	(6)	(5)	(5)	(5)	(5)	8	(9)	(20)	2	(21)	(20)
Non-GAAP Interest/Other Income	(0)	0	0	(0)	2	1	(1)	(6)	(5)	(5)	(5)	(5)	0	(4)	(20)	2	(21)	(20)
GAAP Tax expense	(2)	(8)	(8)	(6)	(7)	(7)	(3)	(3)	(3)	(3)	(3)	(4)	(24)	(21)	(13)	(23)	(12)	(18)
Non-GAAP Tax Expense	(8)	(7)	(7)	(9)	(11)	(10)	(7)	(6)	(5)	(5)	(6)	(7)	(31)	(33)	(23)	(37)	(22)	(31)
GAAP Net Income	10	51	65	62	61	66	33	34	28	31	39	43	187	194	142	222	132	197
Non-GAAP Net Income	47	60	69	72	77	78	62	41	35	38	47	51	247	257	171	287	161	229
Diluted EPS (Non-GAAP)	\$0.24	\$0.31	\$0.35	\$0.37	\$0.39	\$0.40	\$0.32	\$0.21	\$0.18	\$0.19	\$0.24	\$0.26	\$1.28	\$1.32	\$0.87	\$1.47	\$0.82	\$1.16
Diluted EPS (GAAP)	\$0.05	\$0.26	\$0.33	\$0.32	\$0.31	\$0.34	\$0.17	\$0.17	\$0.14	\$0.16	\$0.20	\$0.22	\$0.97	\$0.99	\$0.72	\$1.14	\$0.67	\$0.99
GAAP Diluted Shares	192	193	194	195	195	195	195	196	196	197	197	198	193	195	197	195	197	199
Non-GAAP Diluted Shares	192	193	194	195	195	195	195	196	196	197	197	198	193	195	197	195	197	199
Margin Analysis % (Non-GAAP)																		
Gross Margin	54.9%	56.2%	58.0%	57.8%	57.8%	58.3%	54.6%	53.5%	53.2%	54.0%	54.7%	55.2%	56.8%	56.2%	54.3%	57.2%	53.9%	55.8%
Opex	29.6%	28.3%	27.7%	27.6%	27.1%	27.0%	27.4%	31.0%	32.3%	32.4%	30.7%	30.2%	28.2%	28.0%	31.3%	27.3%	31.6%	29.3%
Operating Income	25.3%	27.9%	30.3%	30.2%	30.8%	31.3%	27.2%	22.5%	20.9%	21.6%	24.0%	25.0%	28.6%	28.2%	23.0%	29.9%	22.3%	26.5%
Tax rate	14.3%	10.2%	9.3%	11.6%	12.6%	11.4%	9.8%	12.0%	12.0%	12.0%	12.0%	12.0%	11.2%	11.5%	12.0%	11.4%	12.0%	12.0%
Net Income	21.6%	25.1%	27.7%	26.6%	27.5%	28.2%	24.2%	17.6%	16.4%	17.0%	19.3%	20.2%	25.4%	24.6%	18.3%	26.7%	17.6%	21.7%

Source: BofA Global Research, company reports

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Exhibit 6: Allegro Microsystems generates >70% of sales from autos, with over half coming from EV/ADAS applications

ALGM Segment Revenue breakdown (\$mn)

FY (Mar)	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4E	Q1E	Q2E	Q3E	Q4E	FY23	FY24E	FY25E	CY23	CY24E	CY25E
Sales by end-market	Jun-22	Sep-22	Dec-22	Mar-23	Jun-23	Sep-23	Dec-23	Mar-24E	Jun-24E	Sep-24E	Dec-24E	Mar-25E	Mar-23	Mar-24E	Mar-25E	Dec-23	Dec-24E	Dec-25E
Automotive	150	157	165	182	185	197	195	185	167	173	188	197	654	762	725	760	712	826
E-Mobility (EV, ADAS)	58	65	71	86	89	99	105	102	95	98	107	116	279	395	416	379	402	502
Other Auto	92	93	94	97	96	99	90	83	73	75	80	81	375	367	309	381	310	324
Industrial	40	48	54	58	73	61	46	37	35	36	38	40	200	217	150	238	146	170
Other	28	32	30	29	20	17	14	14	14	15	16	16	119	65	60	80	58	63
Total	218	238	249	269	278	276	255	235	216	223	242	253	974	1,044	935	1,078	917	1,059
% of sales																		
Automotive	69%	66%	66%	68%	67%	72%	76%	79%	77%	77%	78%	78%	67%	73%	78%	70%	78%	78%
E-Mobility (EV, ADAS)	27%	27%	28%	32%	32%	36%	41%	43%	44%	44%	44%	46%	29%	38%	45%	35%	44%	47%
Other Auto	42%	39%	38%	36%	35%	36%	35%	35%	34%	33%	33%	32%	39%	35%	33%	35%	34%	31%
Industrial	18%	20%	22%	22%	26%	22%	18%	16%	16%	16%	16%	16%	21%	21%	16%	22%	16%	16%
Other	13%	14%	12%	11%	7%	6%	6%	6%	6%	7%	6%	6%	12%	6%	6%	7%	6%	6%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
QoQ%																		
Automotive	6%	5%	5%	11%	2%	6%	-1%	-5%	-9%	3%	9%	5%						
E-Mobility (EV, ADAS)	13%	12%	10%	21%	4%	11%	7%	-3%	-7%	3%	10%	8%						
Other Auto	2%	1%	1%	3%	0%	2%	-9%	-8%	-12%	3%	8%	1%						
Industrial	16%	20%	12%	8%	26%	-17%	-25%	-20%	-5%	3%	7%	5%						
Other	14%	15%	-5%	-4%	-32%	-13%	-17%	-4%	1%	8%	5%	1%						
Total	9%	9%	5%	8%	3%	-1%	-7%	-8%	-8%	3%	8%	5%						
YoY%																		
Automotive	12%	25%	26%	29%	24%	25%	18%	1%	-10%	-13%	-4%	7%	23%	16%	-5%	24%	-6%	16%
E-Mobility (EV, ADAS)	24%	45%	45%	67%	54%	53%	48%	19%	7%	-1%	2%	14%	46%	42%	5%	55%	6%	25%
Other Auto	6%	14%	14%	8%	5%	6%	-5%	-15%	-25%	-24%	-10%	-2%	10%	-2%	-16%	3%	-19%	4%
Industrial	32%	33%	68%	67%	82%	27%	-14%	-37%	-52%	-41%	-16%	10%	50%	8%	-31%	35%	-39%	16%
Other	15%	3%	27%	19%	-29%	-46%	-53%	-53%	-30%	-13%	10%	15%	15%	-46%	-7%	-30%	-28%	8%
Total	16%	23%	33%	35%	28%	16%	2%	-13%	-22%	-19%	-5%	8%	27%	7%	-10%	19%	-15%	15%

Source: BofA Global Research, company reports

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Exhibit 7: Allegro Microsystems net cash declined following acquisition of Crocus

ALGM Balance Sheet (in \$mn)

	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4E	Q1E	Q2E	Q3E	Q4E	FY23	FY24E	FY25E	CY23	CY24E	CY25E
FY (Mar)	Jun-22	Sep-22	Dec-22	Mar-23	Jun-23	Sep-23	Dec-23	Mar-24E	Jun-24E	Sep-24E	Dec-24E	Mar-25E	Mar-23	Mar-24E	Mar-25E	Dec-23	Dec-24E	Dec-25E
Assets																		
Cash and cash equivalents	287	294	334	352	353	370	214	261	306	345	377	426	352	261	426	214	377	514
Restricted cash	10	10	10	7	9	8	9	9	9	9	9	9	7	9	9	9	9	9
Accounts receivable	123	121	130	127	122	119	114	116	119	123	133	139	127	116	139	114	133	174
Inventories	89	98	120	151	174	173	166	157	145	148	158	163	151	157	163	166	158	168
Deferred tax assets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prepaid expenses & other current assets	21	23	26	29	42	44	46	46	46	46	46	46	29	46	46	46	46	46
Total current assets	529	545	620	666	700	715	549	590	626	671	723	784	666	590	784	549	723	911
Net property, plant and equipment	215	219	232	263	285	312	326	326	322	317	312	307	263	326	307	326	312	303
Deferred compensation plan investments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Investments in related 3rd party	27	26	28	27	27	25	26	26	26	26	26	26	27	26	26	26	26	26
Goodwill	20	28	28	28	28	28	215	215	215	215	215	215	28	215	215	215	215	215
Intangible assets, net	36	52	53	52	52	52	294	294	294	294	294	294	52	294	294	294	294	294
Deferred tax assets	26	34	46	50	59	68	79	79	79	79	79	79	50	79	79	79	79	79
Other assets	74	75	76	95	83	85	76	76	76	76	76	76	95	76	76	76	76	76
Total Assets	926	980	1,084	1,181	1,234	1,285	1,565	1,606	1,637	1,678	1,726	1,781	1,181	1,606	1,781	1,565	1,726	1,904
Liabilities & Shareholders Equity																		
Accounts payable	39	45	56	66	65	63	38	34	28	29	30	31	66	34	31	38	30	40
Deferred income on shipments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Income taxes payable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other current liabilities	69	64	78	95	6	72	79	79	79	79	79	79	95	79	79	79	79	79
Short-term borrowings and current portion of long-term debt	4	3	4	4	82	0	4	4	4	4	0	0	4	4	0	4	0	0
Total current liabilities	112	113	137	165	154	134	120	117	111	111	109	110	165	117	110	120	109	119
Long-term debt and obligations under capital leases	25	25	25	25	25	25	250	250	250	250	250	250	25	250	250	250	250	175
Deferred income taxes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deferred compensation plan liability	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other non-current liabilities	26	26	27	24	28	27	59	59	59	59	59	59	24	59	59	59	59	59
Total non-current liabilities	51	51	52	49	53	52	310	310	310	310	310	310	58	55	53	310	310	235
Total shareholders' equity	763	816	895	967	1,028	1,098	1,135	1,179	1,217	1,258	1,307	1,361	967	1,179	1,361	1,135	1,307	1,550
Total Liabilities and Shareholders' Equity	926	980	1,084	1,181	1,234	1,285	1,565	1,606	1,637	1,678	1,726	1,781	1,181	1,606	1,781	1,565	1,726	1,904
Cash and Liquidity Ratios																		
Total cash (incl. equivalents)	296	303	344	359	362	378	224	271	315	354	387	435	359	271	435	224	387	523
Short-term debt	4	3	4	4	82	0	4	4	4	4	0	0	4	4	0	4	0	0
Long-term debt	25	25	25	25	25	25	250	250	250	250	250	250	25	250	250	250	250	175
Total debt	29	28	29	29	107	25	254	254	254	254	250	250	29	254	250	254	250	175
Net Cash	268	275	315	329	256	353	-31	16	61	100	136	185	329	16	185	-31	136	347
Net Cash/dil. share	\$1.39	\$1.43	\$1.63	\$1.69	\$1.31	\$1.81	-\$0.16	\$0.08	\$0.31	\$0.51	\$0.69	\$0.94	\$1.70	\$0.08	\$0.94	-\$0.16	\$0.69	\$1.75

Source: BofA Global Research, company reports

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Exhibit 8: Allegro Microsystems can approach +/- 20% FCF margin in coming years

ALGM Cash Flow Statement (in \$mn)

	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4E	Q1E	Q2E	Q3E	Q4E	FY23	FY24E	FY25E	CY23	CY24E	CY25E
FY (Mar)	Jun-22	Sep-22	Dec-22	Mar-23	Jun-23	Sep-23	Dec-23	Mar-24E	Jun-24E	Sep-24E	Dec-24E	Mar-25E	Mar-23	Mar-24E	Mar-25E	Dec-23	Dec-24E	Dec-25E
Cash flows from operating activities:																		
Net income	10	51	65	62	61	66	33	34	28	31	39	44	187	194	142	222	132	198
Depreciation	12	12	13	14	14	15	20	19	16	17	18	19	51	68	70	64	70	71
Stock-based compensation expense	34	8	9	11	11	11	11	10	9	10	10	11	62	43	40	43	39	45
Gain on sale of assets	(0)	0	0	(0)	0	0	0	0	0	0	0	0	0	0	0	(0)	0	0
Gain/loss on contingent consideration change in fair value	(0)	(3)	0	(0)	0	0	0	0	0	0	0	0	(3)	0	0	(0)	0	0
Amortization of deferred financing cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operating assets/liabilities changes																		
Deferred income taxes	(8)	(9)	(12)	(12)	(8)	(10)	(10)	0	0	0	0	0	(40)	(28)	0	(40)	0	0
Prov for inventory and credit loss/bad debt	3	(2)	2	(3)	5	4	0	0	0	0	0	0	(1)	9	0	6	0	0
Other non-cash activity	3	(0)	(3)	(7)	9	(0)	0	0	0	0	0	0	(7)	9	0	1	0	0
Changes in operating assets & liabilities:	(18)	(3)	(18)	(17)	(43)	(39)	22	3	3	(6)	(18)	(11)	(55)	(57)	(32)	(77)	(18)	(41)
Net cash from operating activities	37	55	54	48	49	47	77	66	57	51	50	63	193	238	220	220	223	273
Investing Activities - Cash Flow																		
Additions to property, plant and equipment	(14)	(21)	(14)	(30)	(45)	(31)	(34)	(19)	(12)	(12)	(13)	(14)	(80)	(129)	(51)	(141)	(56)	(62)
Payments for acquisitions	0	(20)	0	(0)	10	6	(408)	0	0	0	0	0	(20)	(392)	0	(392)	0	0
Proceeds from sale of property, plant and equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net cash from investing activities	(14)	(41)	(14)	(30)	(35)	(25)	(443)	(19)	(12)	(12)	(13)	(14)	(100)	(521)	(51)	(533)	(56)	(62)
Financing Activities - Cash Flow																		
Net Proceeds from issuance of long-term debt	0	0	1	1	(1)	0	245	0	0	0	0	0	3	245	0	246	0	0
Dividend payments to shareholders	0	0	0	(0)	0	0	0	0	0	0	0	0	(0)	0	0	(0)	0	0
Net proceeds from employee stock plans	(10)	2	(3)	(4)	(12)	(2)	(11)	0	0	0	0	0	(15)	(25)	0	(29)	0	0
Other financing activities	0	(8)	0	0	0	(3)	1	0	0	0	0	0	(8)	(2)	0	(2)	0	0
Net cash from financing activities	(9)	(5)	(2)	(3)	(11)	(5)	210	0	0	0	(4)	0	(20)	194	(4)	191	(4)	(75)
Effect of exchange rate changes on cash	(7)	(2)	3	1	1	(1)	1	0	0	0	0	0	(5)	1	0	2	0	0
Net increase in cash and cash equivalents	6	7	41	15	4	16	(155)	47	45	39	32	49	69	(88)	165	(120)	163	136
Cash & equivalents at beginning of period	282	287	294	334	352	353	370	214	261	306	345	377	282	352	261	334	214	377
Cash & equivalents at end of period	287	294	334	352	353	370	214	261	306	345	377	426	352	261	426	214	377	514
Free Cash Flow (FCF)	22	34	40	17	4	16	42	47	45	39	36	49	113	109	169	79	167	211
TTM FCF	85	107	120	113	95	77	79	109	149	173	167	169						
TTM FCF Margin	10.7%	12.7%	13.2%	11.7%	9.2%	7.1%	7.3%	10.4%	15.2%	18.6%	18.2%	18.0%	11.7%	9.2%	7.1%	11.7%	9.2%	7.1%
TTM Capex/Sales %	8.6%	8.5%	7.0%	8.2%	10.7%	11.3%	13.1%	12.4%	9.8%	8.3%	6.1%	5.5%	8.2%	10.7%	11.3%	8.2%	10.7%	11.3%

Source: BofA Global Research, company reports

BofA GLOBAL RESEARCH

Glossary

ADAS: Advanced Driver Assist System

ALGM: Allegro Microsystem

BEV: Battery Electric Vehicle

NXPI: NXP Semiconductor

ON: onsemi

UAW: United Auto Workers



Exhibit 9: Additional stocks mentioned

Prices and ratings for stocks mentioned in this report

BofA Ticker	Bloomberg ticker	Company name	Price	Rating
NXPI	NXPI US	NXP Semiconductors	US\$ 213.00	B-1-7
ON	ON US	ON Semiconductor	US\$ 71.80	C-1-9

Source: BofA Global Research

BofA GLOBAL RESEARCH

Price objective basis & risk**Allegro MicroSystems (ALGM)**

Our \$33 PO is based on 29x CY25E P/E, within the company's historical 16x-45x trading range, justified given ALGM's strong positioning across key secular trends (EVs, ADAS), and factoring in near-term risks related to inventory digestion/China and gross margin, which is already near target levels.

Upside risks are: 1) Faster adoption of electric vehicles and ADAS features, driving up ALGM's overall content opportunity, 2) Topline resiliency as key markets in auto/industrial benefit from secular tailwinds, offsetting near-term cyclical risks, 3) Gross margin strength as ALGM continues to leverage fabless benefits.

Downside risks are: 1) Greater than expected inventory digestion, resulting in demand volatility across all markets, 2) China insourcing more lagging edge components, reducing reliance on US-based firms, 3) Increased competition from sensor/power semiconductor vendors looking to enter market with 55%-60% GM potential, 4) Unidentified conflicts in relationship with parent company Sanken.

NXP Semiconductors NV (NXPI)

Our PO of \$255 is based on 20x 2025E EV/FCF, in line with median diversified auto/industrial compares which trade in a range of 16x-32x CY24E EV/FCF.

Downside risks: 1) Semiconductor cycle risks, 2) Lumpy nature of projects in key identification segment, 3) Some exposure to and growth driven by Apple, which could add volatility, 4) Execution risk surrounding management's capability to reengage following two-year hiatus, 5) Macroeconomic supply/demand disruption.

onsemi (ON)

Our PO of \$85 PO is based on 16x 2025E P/E, in line with ON's 7x-27x trading range, in our view justified given improving profitability, though partially offset by the heavier capex required for SiC ramp.

Downside risks to our PO are: 1) Macro/cyclical risks, given high exposure to automotive and industrial markets, make ON susceptible to any potential global trade tensions/tariffs, 2) Prolonged COVID-19 headwinds limiting pace of automotive/industrial recovery, impacting utilization levels, 3) Difficulty in ramping 300mm fabrication facility limiting gross margin improvement, 4) sustained elevated capex levels relative to peers.

Analyst Certification

I, Blake Friedman, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.



US - Semiconductors and Semiconductor Capital Equipment Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	Advanced Micro Devices, Inc	AMD	AMD US	Vivek Arya
	Analog Devices Inc.	ADI	ADI US	Vivek Arya
	Applied Materials, Inc.	AMAT	AMAT US	Vivek Arya
	Arm Holdings	ARM	ARM US	Vivek Arya
	Broadcom Inc	AVGO	AVGO US	Vivek Arya
	Cadence	CDNS	CDNS US	Vivek Arya
	Camtek	CAMT	CAMT US	Vivek Arya
	KLA Corporation	KLAC	KLAC US	Vivek Arya
	Lam Research Corp.	LRCX	LRCX US	Vivek Arya
	M/A-Com	MTSI	MTSI US	Vivek Arya
	Marvell Technology Group Ltd.	MRVL	MRVL US	Vivek Arya
	Microchip	MCHP	MCHP US	Vivek Arya
	Micron Technology, Inc	MU	MU US	Vivek Arya
	Nova	NVMI	NVMI US	Vivek Arya
	NVIDIA Corporation	NVDA	NVDA US	Vivek Arya
	NXP Semiconductors NV	NXPI	NXPI US	Vivek Arya
	onsemi	ON	ON US	Vivek Arya
	Synopsys	SNPS	SNPS US	Vivek Arya
NEUTRAL				
	Advanced Energy Industries	AEIS	AEIS US	Duksan Jang
	Allegro MicroSystems	ALGM	ALGM US	Blake Friedman
	Axcelis Technologies	ACLS	ACLS US	Duksan Jang
	Coherent Corp	COHR	COHR US	Vivek Arya
	GlobalFoundries	GFS	GFS US	Vivek Arya
	Intel	INTC	INTC US	Vivek Arya
	Lattice Semiconductor	LSCC	LSCC US	Blake Friedman
	Texas Instruments Inc.	TXN	TXN US	Vivek Arya
UNDERPERFORM				
	Ambarella	AMBA	AMBA US	Vivek Arya
	Credo Technology	CRDO	CRDO US	Vivek Arya
	Lumentum Holdings	LITE	LITE US	Vivek Arya
	Qorvo Inc.	QRVO	QRVO US	Vivek Arya
	Skyworks Solutions, Inc.	SWKS	SWKS US	Vivek Arya
	Teradyne	TER	TER US	Vivek Arya
	Wolfspeed Inc	WOLF	WOLF US	Vivek Arya

iQmethodSM Measures Definitions**Business Performance**

Return On Capital Employed

Return On Equity

Operating Margin

Earnings Growth

Free Cash Flow

Quality of Earnings

Cash Realization Ratio

Asset Replacement Ratio

Tax Rate

Net Debt-To-Equity Ratio

Interest Cover

Valuation Toolkit

Price / Earnings Ratio

Price / Book Value

Dividend Yield

Free Cash Flow Yield

Enterprise Value / Sales

EV / EBITDA

Numerator

NOPAT = (EBIT + Interest Income) × (1 – Tax Rate) + Goodwill Amortization

Net Income

Operating Profit

Expected 5 Year CAGR From Latest Actual

Cash Flow From Operations – Total Capex

Numerator

Cash Flow From Operations

Capex

Tax Charge

Net Debt = Total Debt – Cash & Equivalents

EBIT

Numerator

Current Share Price

Current Share Price

Annualised Declared Cash Dividend

Cash Flow From Operations – Total Capex

EV = Current Share Price × Current Shares + Minority Equity + Net Debt +

Other LT Liabilities

Enterprise Value

Denominator

Total Assets – Current Liabilities + ST Debt + Accumulated Goodwill

Amortization

Shareholders' Equity

Sales

N/A

N/A

Denominator

Net Income

Depreciation

Pre-Tax Income

Total Equity

Interest Expense

Denominator

Diluted Earnings Per Share (Basis As Specified)

Shareholders' Equity / Current Basic Shares

Current Share Price

Market Cap = Current Share Price × Current Basic Shares

Sales

Basic EBIT + Depreciation + Amortization

Valuation Toolkit

Numerator

Denominator

*IQmethod*SM is the set of BofA Global Research standard measures that serve to maintain global consistency under three broad headings: Business Performance, Quality of Earnings, and validations. The key features of iQmethod are: A consistently structured, detailed, and transparent methodology. Guidelines to maximize the effectiveness of the comparative valuation process, and to identify some common pitfalls.

IQdatabase[®] is our real-time global research database that is sourced directly from our equity analysts' earnings models and includes forecasted as well as historical data for income statements, balance sheets, and cash flow statements for companies covered by BofA Global Research.

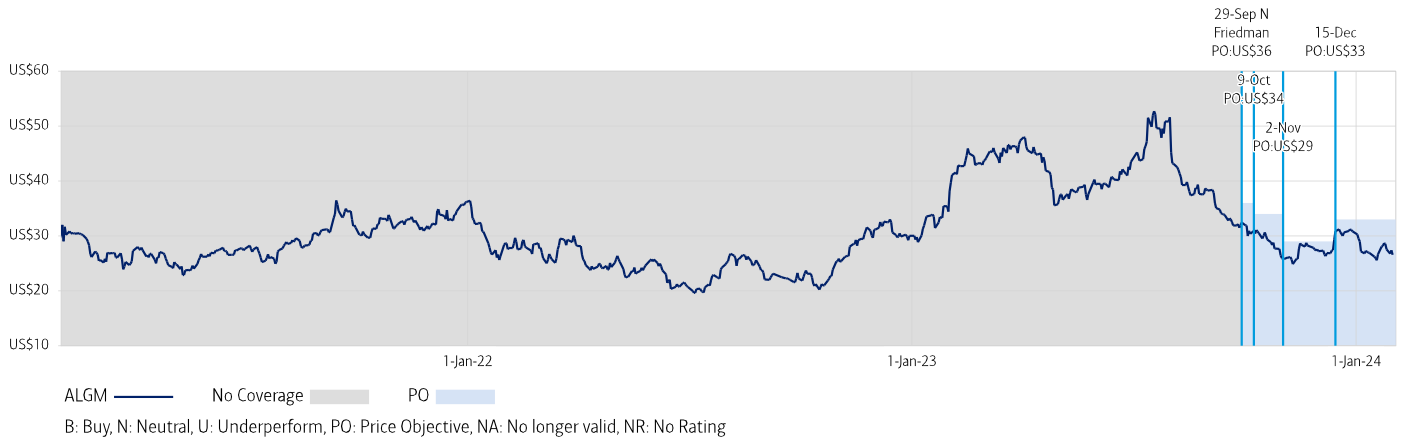
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Disclosures

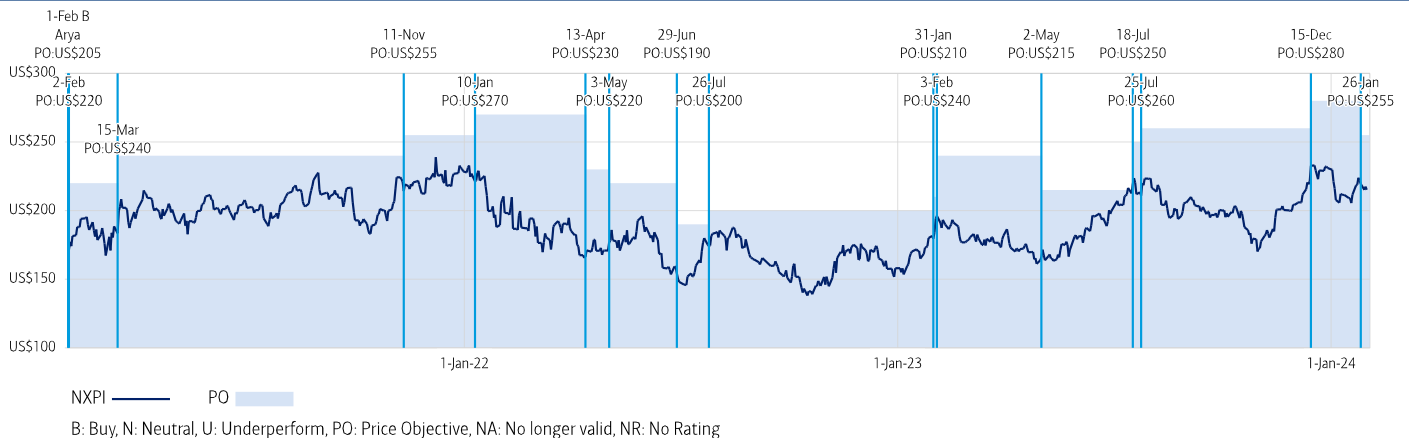
Important Disclosures

Allegro MicroSystems (ALGM) Price Chart



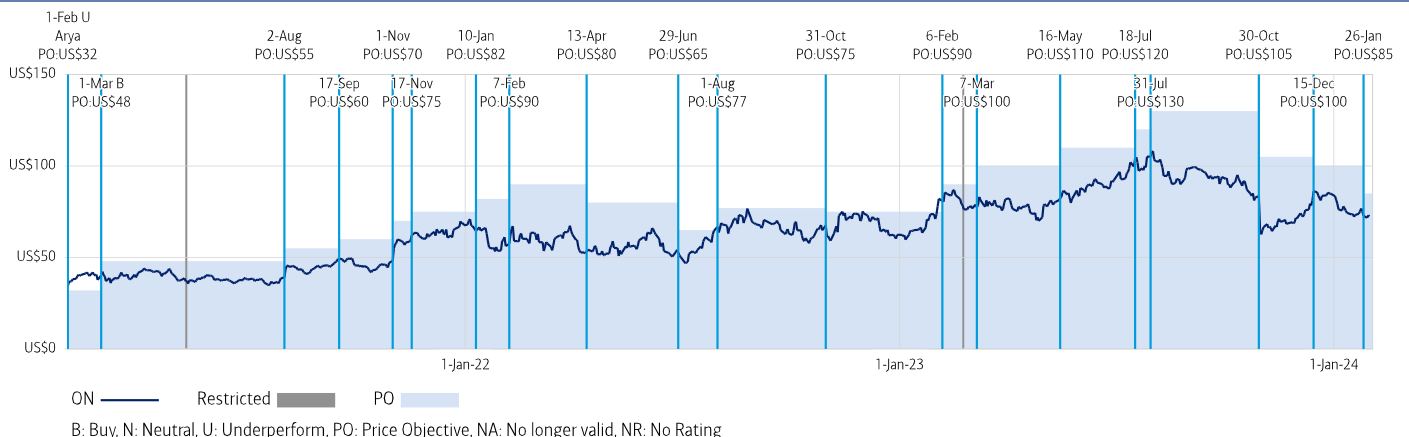
The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

NXP Semiconductors (NXPI) Price Chart



The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

ON Semiconductor (ON) Price Chart



The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

Equity Investment Rating Distribution: Technology Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	215	53.09%	Buy	111	51.63%
Hold	97	23.95%	Hold	45	46.39%
Sell	93	22.96%	Sell	24	25.81%

Equity Investment Rating Distribution: Global Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	1895	53.62%	Buy	1083	57.15%
Hold	832	23.54%	Hold	454	54.57%
Sell	807	22.84%	Sell	383	47.46%

^{R1} Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster ^{R2}
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

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