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Sep 04, 2020

Advanced Micro Devices (AMD)

$82.54 (As of 09/03/20)

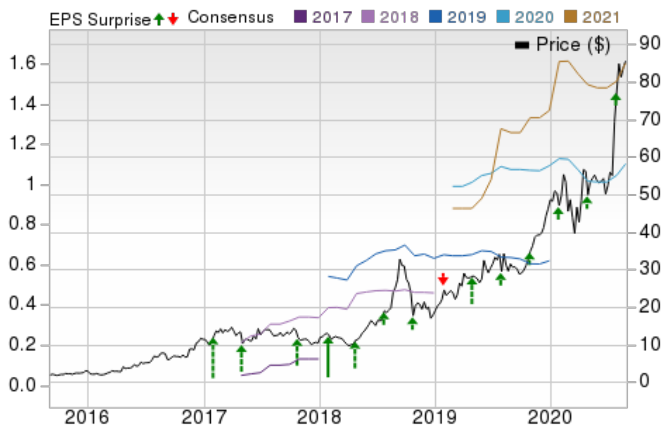
Price Target (6-12 Months): **$84.00**

Long Term: 6-12 Months	**Zacks Recommendation:** (Since: 08/13/20) Prior Recommendation: Outperform	**Neutral**
Short Term: 1-3 Months	**Zacks Rank:** (1-5)	**3-Hold**
	Zacks Style Scores:	VGM:B
	Value: F | Growth: A	Momentum: B

Summary

AMD is benefiting from robust adoption of 7 nanometer-based Ryzen, Radeon and latest second-generation EPYC server processors, courtesy of increasing proliferation of AI and ML in industries like cloud gaming and supercomputing domain. Growing clout of AMD's products in the data center vertical, driven by work-from-home and online learning trends, remains a key catalyst. Further, partnerships with Amazon, Microsoft, Baidu and JD.com are opening newer business avenues. Notably, shares of AMD have outperformed the industry on a year-to-date basis. However, broad-based macroeconomic weakness owing to coronavirus-induced lockdowns are likely to put pressure on desktop processor-related sales. Also, increasing expenses on account of product development amid stiff competition from NVIDIA and Intel are likely to dent margins at least in near term.

Price, Consensus & Surprise

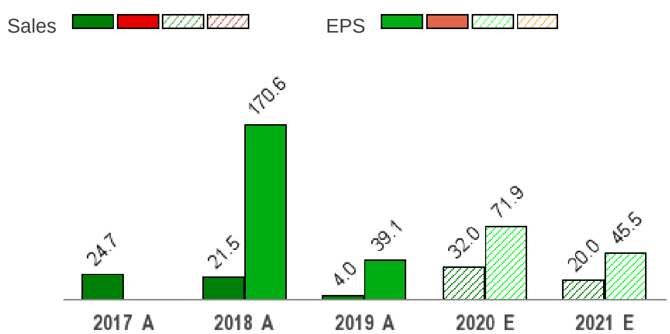


Source: Zacks Investment Research

Data Overview

52-Week High-Low	**$94.28 - $27.43**
20-Day Average Volume (Shares)	**54,820,364**
Market Cap	**$96.9 B**
Year-To-Date Price Change	**80.0%**
Beta	**2.28**
Dividend / Dividend Yield	**$0.00 / 0.0%**
Industry	**Electronics - Semiconductors**
Zacks Industry Rank	**Top 24% (61 out of 251)**
Last EPS Surprise	**12.5%**
Last Sales Surprise	**4.3%**
EPS F1 Estimate 4-Week Change	**0.0%**
Expected Report Date	**11/03/2020**
Earnings ESP	**0.0%**
P/E TTM	**96.0**
P/E F1	**75.0**
PEG F1	**1.9**
P/S TTM	**12.7**

Sales and EPS Growth Rates (Y/Y %)



Sales Estimates (millions of $)

	Q1	Q2	Q3	Q4	Annual*
2021	2,375 E	2,541 E	2,873 E	2,929 E	10,660 E
2020	1,786 A	1,932 A	2,557 E	2,611 E	8,887 E
2019	1,272 A	1,531 A	1,801 A	2,127 A	6,731 A

EPS Estimates

	Q1	Q2	Q3	Q4	Annual*
2021	$0.31 E	$0.36 E	$0.45 E	$0.46 E	$1.60 E
2020	$0.18 A	$0.18 A	$0.36 E	$0.39 E	$1.10 E
2019	$0.06 A	$0.08 A	$0.18 A	$0.32 A	$0.64 A

*Quarterly figures may not add up to annual.

The data in the charts and tables, including the Zacks Consensus EPS and Sales estimates, is as of 09/03/2020. The reports text is as of 09/04/2020.

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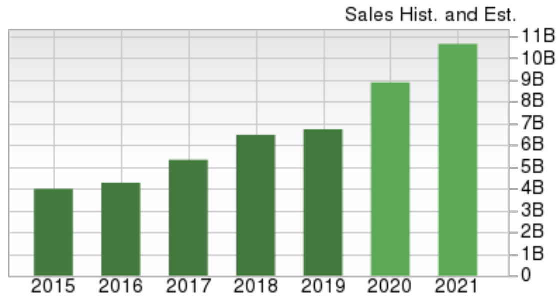
Overview

Advanced Micro Devices has strengthened its position in the semiconductor market on the back of its evolution as an enterprise-focus company from a pure-bred consumer-PC chip provider.



AMD has emerged as a strong challenger to NVIDIA's dominance in the graphic processing unit or GPU market based on its Radeon technology.

Launch of 7 nanometer (nm)-based AMD Radeon RX 5700-series gaming graphics card family featuring RDNA architecture, high-speed GDDR6 (Graphics Double Data Rate type 6) memory and support for the PCIe 4.0 interface, has helped the company increase presence among gamers.

Moreover, AMD's Radeon Pro graphics cards and Radeon VR Creator cards support game developers, and virtual reality (VR) and augmented reality (AR) technologies, respectively.

Further, AMD Radeon Instinct family of GPU products are gaining traction in data center applications, including deep learning training and traditional high-performance computing (HPC) workloads.

Additionally, AMD EPYC 7001 Series of high-performance processors is helping AMD gain share in the server market. Further, AMD EPYC Embedded 3000 Series of processors addresses new markets including, networking, storage and edge computing devices.

In consumer-PC market, AMD has become a key challenger to Intel courtesy AMD Ryzen desktop processor family. The company's desktop-based processor offerings include Ryzen and high-end Ryzen Threadripper processors, among others. AMD Athlon and AMD PRO series of processors cater to commercial and consumer desktop PC market.

AMD's processors are primarily powered by the company's proprietary "Zen" CPU and "Vega" GPU architectures.

Santa Clara, CA-based, AMD generated revenues of $6.731 billion in 2019. The company reports operations under two segments — Computing and Graphics, and Enterprise, Embedded and Semi-Custom.

Computing and Graphics segment includes desktop and notebook processors and chipsets, discrete GPUs and professional graphics. This segment generated revenues of $4.709 billion in 2019.

Enterprise, Embedded and Semi-Custom segment includes server and embedded processors, dense servers, semi-custom SoC products, engineering services and royalties. This segment generated $2.02 billion in 2019.

Source: Zacks Investment Research

Reasons To Buy:

AMD is well-poised to benefit from strong demand for its x86-based microprocessors, semi-custom chips, and embedded processors, and GPUs driven by increasing adoption of AI and ML techniques.

- In order to diversify its business beyond the slowing, transitioning PC market, AMD is enhancing its semi-custom chip business, which has been performing well till date. AMD plans to expand its semi-custom business into other high-growth markets such as the semi-custom ultra-low power client, embedded, dense server and professional graphics markets, where it can offer differentiated products that use its APU and graphics IP. The company's release of Vega-based GPUs and increasing demand for in both gaming and blockchain industries are key catalysts. The number of Ryzen notebook models set to be launched in 2020 is 50% higher than the ones launched in 2019. These systems are mostly from the likes of Acer, Asus, Dell, HP, Lenovo and other OEMs.

- Despite its late entry, AMD has attained the position of a major player in the microprocessor and graphics processing markets. The company started small, targeting the low-end segment and gradually built a position for itself. AMD has had a very rough time because of the strength and market position of its two primary competitors Intel and NVIDIA. While Intel remains supreme in the microprocessor segment and has also notably strengthened its graphics capabilities, NVIDIA remains strong in the graphics market. AMD combined its own engineering talent with that of ATI to develop capabilities in both these areas. Considering the might of its competitors, AMD has done well to hold its own in the face of significant changes in the markets it serves. Moreover, increasing demand for cryptocurrency mining has been a key catalyst for AMD's GPU sales in recent times.

- Strength in 7 nanometer-based processors are expected to strengthen the company's competitive position in the commercial and server market against Intel. Notably, Intel's chips utilize process technologies that are designed in-house. Meanwhile, AMD is currently leveraging Taiwan Semiconductor Manufacturing Company's 7 nm process technology, which is enabling it to deliver its advanced 7 nm chips faster to market. Further, AMD aims to deliver "Zen 4" core architecture, which is "currently in design" utilizing advanced 5 nm process technology. This is a major concern for Intel, which is yet to deliver 7 nm chips. Markedly, Intel noted delay in 7nm process-based chips in its second-quarter earnings conference. The company has detected a defect mode in 7 nm process, which caused yield degradation. This is expected to favor AMD capture market share and challenge Intel's dominance in the semiconductor market.

- Given the persistent weakness in the core PC business, AMD like Intel, has started investing in its embedded business. Strength in this segment should continue in the future too as the company scores more wins. Given continued product enhancements and design wins at strategic players in key verticals such as digital signage and medical equipment, we expect the momentum to continue through 2020. The company is currently targeting the communications, industrial, and gaming segments of the market and there appear to be suitable design wins to generate substantial revenue growth over the next few years. AMD expects the total addressable market for its high-performance embedded SOCs and processors to be $9 billion and therefore the company is trying to increase its share in this market by delivering competitive products.

- Per Gartner's preliminary data, PC shipments in second-quarter 2020 improved 2.8% year over year to 64.8 million units. Going by the IDC report, shipments were up 11.2% on a year-over-year basis to 72.3 million in the quarter. The improving trend in PC shipments, driven by work-from-home and online learning wave, is likely to positively impact PC-makers that eventually bode well for AMD's growth prospects.

- Management execution has been good amid testing times in the wake of the coronavirus pandemic. AMD has solid net-cash balance of $1.09 billion as of Jun 27, 2020, up from $902 million as of Mar 28, 2020. During the second quarter, the company generated $243 million in cash from operations, against operating cash outflow of $65 million in the first quarter. Free cash flow was $152 million in the second quarter against free cash flow outflow of $120 million in the prior quarter. The increasing liquidity and cash flow trend reflect that the company is making investments in the right direction. Notably, total debt to total capital of 12.9% is much lower than the industry's figure of 44.3%. Further, times interest earned is 10.6X, compared with the industry's figure of 4.8X. The strong cash balance can aid the company to pursue strategic acquisitions and other investments in growth initiatives.

Past performance is no guarantee of future results. Please see important disclosures and definitions at the end of this report.

Reasons To Sell:

Intensifying competition in the traditional PC market and GPU segment, and customer concentration remain headwinds.

- In the traditional computing market, which still generates a chunk of its revenues, AMD is up against Intel's strong market position. With Intel systems so well entrenched, there is an obvious preference for system integrators to choose Intel processors over AMD. So far, Intel processors have also afforded superior functionality, enabling it to exercise pricing power. In the past, AMD was forced to resort to penetration pricing, which severely impacted its profitability. Now that it is getting into the higher-range segment, it is facing very stiff competition from Intel. Moreover, AMD faces significant competition from NVIDIA in GPU market. AMD has had relatively greater success in the mobile segment and its current product lineup indicates that this focus will continue. However, competition in the mobile segment is likely to accelerate, with more ARM-based devices coming on the market.

- AMD faces significant customer concentration from Sony and Microsoft. Consequently, loss of any one of these customers is anticipated to massively hurt the top line. Notably, Sony accounted for more than 10% of the company's total revenues in 2019. Also, AMD derives a significant proportion of its revenues from outside the United States (74% in 2019), subjecting the company to exchange rate volatility.

- Moreover, the company is trading at premium in terms of Price/Book (P/B). AMD currently has a trailing 12-month P/B ratio of 29.32X. This level compares unfavorably with what the industry witnessed in the last year. Additionally, the ratio is higher than the average level of 19.92X and is in line with the high end of the valuation range in this period. Consequently, the valuation looks slightly stretched from P/B perspective.

Last Earnings Report

AMD Q2 Earnings Match Estimates, Revenues Up Y/Y

Quarter Ending	06/2020
Report Date	Jul 28, 2020
Sales Surprise	4.29%
EPS Surprise	12.50%
Quarterly EPS	0.18
Annual EPS (TTM)	0.86

Advanced Micro Devices (AMD) reported second-quarter 2020 non-GAAP earnings of 18 cents per share, which surpassed the Zacks Consensus Estimate by 12.5%. Notably, the bottom line soared 125% year over year but remained flat sequentially.

Revenues of $1.93 billion outpaced the Zacks Consensus Estimate by 4.3% and surged 26% year over year. On a quarter-over-quarter basis, the top line improved 8%.

Strength in Computing and Graphics segment drove year-over-year improvement. Markedly, Datacenter products contributed more than 20% to total second-quarter revenues.

Segmental Details

Computing and Graphics segment's (70.8% of total revenues) revenues of $1.37 billion, improved 45% year over year. This can be attributed to robust adoption of Ryzen processors. The figure declined 5% sequentially thanks to sluggish graphics processor sales.

Client processor average selling price (ASP) improved year over year on higher Ryzen processor sales. Client processor ASP declined sequentially owing to higher Ryzen mobile processor sales.

Coronavirus crisis-induced work-from-home and online learning wave drove PC market strength, which led to robust growth in client processor revenues. Management noted that growth was also backed by "11th straight quarter of market share gains."

Nevertheless, desktop processor sales fell on a quarter-over-quarter basis, as was anticipated. Meanwhile, revenues in ASP improved year over year, driven by higher mix and solid demand for high-end Ryzen processors.

In mobile domain, growth in notebook processor unit shipments and revenues was driven by increasing traction of Ryzen 4000 mobile processors.

Management also remains optimistic regarding growing clout of Ryzen 4000 mobile processors families across leading OEMs. Markedly, Ryzen PRO 4000 Series processors are powering "more than 30 ultrathin premium and gaming consumer notebooks launch for multiple OEMs."

AMD's latest series of notebook processors — Ryzen 4000 — offer superior performance and longer battery life. This has been enabling company to strengthen mobile processor business.

Markedly, latest Ryzen 4,000 Series processors sales surged significantly in the second quarter, which led to strong double-digit percentage growth in mobile revenues. Besides on a year-over-year basis, revenues more than doubled courtesy of significant increase in unit shipments and ASP.

The latest AMD Ryzen PRO 4000 Series mobile processors are witnessing traction across leading commercial OEMs. Lenovo is leveraging the processors in its ThinkPad T series, X series and L series of business notebooks, while HP has rolled out new "enterprise-ready" ProBooks. ASUS and Acer have already launched notebooks based on the AMD Ryzen 4000 Series mobile processors.

In graphics domain, revenues fell year over year as decline in desktop channel sales offset the robust double-digit growth in mobile GPU sales.

Desktop GPU shipments declined on a year-over-year basis, while channel sellout improved in the second quarter. Higher sales of Radeon RX 5000 M series mobile GPUs based on RDNA architecture on deal wins from Apple and Dell, remained noteworthy. However, GPU ASP declined on a year-over-year basis and sequentially owing to lower channel sales.

The company noted that Data Center GPU business decreased on a year-over-year basis. Management is optimistic on new deal wins in cloud gaming and VDI verticals.

Enterprise, Embedded and Semi-Custom segment's (29.2% of total revenues) revenues of $565 million were down 4% year over year but up 62% sequentially.

The year-over-year decline can primarily be attributed to lower semi-custom product revenues, partially offset by higher EPYC server processor sales. Improvement on a quarter-over-quarter basis was led by robust uptake of EPYC processors and growth in semi-custom product sales.

In semi-custom space, AMD commenced initial production and shipments of next generation game console SOCs during the second quarter.

In server domain, strength in AMD' latest EPYC processors are enabling the company to win new deals from major enterprise, cloud, and HPC companies.

In cloud vertical, AMD's second gen EYPC processors witnessed traction across Amazon Web Services, Tencent, and Microsoft Azure. Moreover, major cloud players utilized server processors to meet accelerated demand for collaboration services induced by coronavirus-led work-from-home wave and increased use of online schooling solutions.

AMD's focus on introducing new high-performance processors to support complex applications, advanced modeling, database and hyper-converged workloads is driving growth. In enterprise domain, Dell, Lenovo and HPE have selected EPYC processors to power their respective next gen platforms.

Considering HPC vertical, AMD's second Gen EPYC processors wins across Indiana University, Purdue and CERN, remain noteworthy.

Moreover, the processors have been selected by Amazon, Oracle, Microsoft and IBM to power their respective cloud based HPC offerings.

Further, management is optimistic on increasing utilization of AMD CPUs and GPUs across supercomputing systems.

Operating Details

Non-GAAP gross margin expanded 300 basis points (bps) on a year-over-year basis to 44%, driven by strong adoption of client and server processors.

Non-GAAP operating expenses increased 20.5% year over year to $617 million, due to higher investments in Research & development (R&D) and go-to-market initiatives.

R&D expenses rose 23.3% year over year to $460 million. Marketing, general and administrative expenses climbed 13.8% year over year to $215 million.

As a percentage of revenues, non-GAAP operating expenses were 32%, contracting 100 bps from the year-ago quarter.

Adjusted EBITDA soared 87.1% year over year to $305 million. The increase can be attributed to earnings growth.

Non-GAAP operating income came in at $233 million, up 109.9% year over year. Growth in revenue base drove year-over-year improvement.

Non-GAAP operating margin of 12% expanded 500 bps year over year.

Segment wise, Computing and Graphics operating income was $200 million, compared with $22 million reported in the year-ago quarter courtesy of higher revenues. Enterprise, Embedded and Semi-Custom operating income was $33 million compared with $89 million reported in the year-ago quarter. The decline can be attributed to higher operating expenses and lower revenue base.

Balance Sheet & Cash Flow

As of Jun 27, 2020, AMD had cash and cash equivalents (including marketable securities) of $1.78 billion compared with $1.39 billion as of Mar 28, 2020. As of Jun 27, 2020, total debt (long-term plus short-term) was $690 million, up from $488 million as of Mar 28, 2020.

Operating cash flow was reported at $243 million, against operating cash outflow of $65 million in the first quarter. Free cash flow was $152 million in the second quarter against free cash flow outflow of $120 million in the prior quarter.

Guidance

AMD expects third-quarter 2020 revenues of $2.55 billion (+/-$100 million), indicating year-over-year and quarter-over-quarter growth of 42% and 32%, respectively.

For third-quarter 2020, AMD expects robust sales from Ryzen, EPYC processors and next-gen semi-custom products to drive year-over-year and sequential increase in revenues.

Semi-custom revenues are projected for strong growth, driven by gains from production increase to support the launch of the latest Xbox Series X and PlayStation 5 gaming consoles scheduled for holiday season of 2020.

Non-GAAP gross margin is anticipated to be 44%.

For 2020, AMD now projects revenues to grow 32% over 2019 backed by momentum in PC, gaming and data center products. Previously, AMD had projected growth 25% (+/-5%) over 2019.

The company expects to "deliver strong growth in the second half" backed by strength in current product portfolio. Also, initial shipments of latest next generation ZEN 3 CPUs and RDNA GPUs, set to launch in late 2020, are projected to drive growth.

For 2020, management continues to expect non-GAAP gross margin of 45%.

Recent News

On Aug 29, AMD unveiled Radeon RX 5300 GPU, designed primarily to enhance video gaming experience. The graphics card will support AAA, eSports and Virtual Reality (VR) titles, giving it the desired speed for optimal graphics solutions required for desktops.

On Aug 4, AMD announced availability of latest Radeon Pro 5000 series GPUs for Apple's new 27-inch iMac. The new GPUs offer high-performance, leverage 7 nm process technology and AMD RDNA architecture to aid consumer and professional users to enhance productivity.

On Jul 21, AMD unveiled 7 nm based x86 Ryzen 4000 Series Desktop Processors and Athlon 3000 Series Desktop Processors, processors embedded with advanced Radeon graphics for commercial and consumer PC markets.

On Jul 14, AMD announced that Google Cloud is expanding its use of second-gen EPYC processors to provide enhanced security features to customers. Google Cloud's latest Confidential Virtual Machines ("VMs") will leverage second-gen EPYC processors' Secure Encrypted Virtualization feature to help customers encrypt sensitive data not only when it is at rest but also while it is being processed.

On Jul 14, AMD expanded Ryzen Threadripper PRO Processor family of processors with up to 64 cores and enhanced bandwidth performance integrated with enterprise-grade AMD PRO technologies.

On Jun 22, AMD announced that the AMD EPYC processors have been adopted by multiple high-performance computers that include seventh fastest supercomputer in the world and four of the 50 highest-performance systems on the bi-annual TOP500 list. The processors are witnessing adoption in advanced science and health research with new installations at Purdue University, Indiana University and CERN.

On Jun 16, AMD expanded third generation Ryzen desktop processor family with Ryzen 9 3900XT, Ryzen 7 3800XT and Ryzen 5 3600XT processors to aid users maximize performance of complex workloads and higher boost frequencies to enhance gaming experience.

Valuation

Advanced Micro Devices shares are up 68.7% in the year-to-date period and 150% over the trailing 12-month period. Stocks in the Zacks sub-industry and the Zacks Computer & Technology sector are up 24.7% and 23.8% in the year-to-date period, respectively. Over the past year, the Zacks sub-industry and the sector are up 52.1% and 35.8%, respectively.

The S&P 500 index is up 6.9% in the year-to-date period and 15.9% in the past year.

The stock is currently trading at 9.61X forward 12-month sales, which compares to 7.75X for the Zacks sub-industry, 4.65X for the Zacks sector and 4.4X for the S&P 500 index.

Over the past five years, the stock has traded as high as 10.75X and as low as 0.32X, with a 5-year median of 2.4X. Our Neutral recommendation indicates that the stock will perform in line with the market. Our $84 price target reflects 9.78X forward 12-month sales.

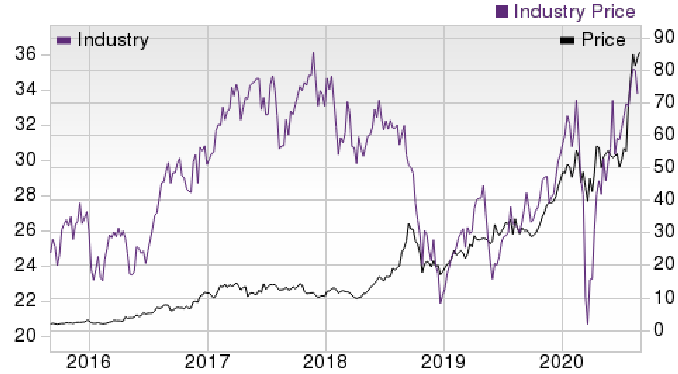
The table below shows summary valuation data for AMD

Valuation Multiples - AMD

		Stock	Sub-Industry	Sector	S&P 500
P/S F12M	Current	9.61	7.75	4.65	4.4
	5-Year High	10.75	7.75	4.65	4.4
	5-Year Low	0.32	4.68	2.32	2.53
	5-Year Median	2.4	5.74	3.15	3.07
EV/Sales TTM	Current	12.51	7.28	4.59	3.23
	5-Year High	13.99	7.8	5.02	3.44
	5-Year Low	0.54	2.75	2.56	2.11
	5-Year Median	2.7	5.39	3.64	2.86

As of 09/03/2020

Industry Analysis Zacks Industry Rank: Top 24% (61 out of 251)



Source: Zacks Investment Research

Top Peers

Company (Ticker)	Rec	Rank
Cirrus Logic, Inc. **(CRUS)**	Outperform	2
DIALOG SEMICON **(DLGNF)**	Outperform	1
Synaptics Incorporated **(SYNA)**	Outperform	1
Amkor Technology, Inc. **(AMKR)**	Neutral	2
Intel Corporation **(INTC)**	Neutral	3
Microchip Technology Incorporated **(MCHP)**	Neutral	3
NVIDIA Corporation **(NVDA)**	Neutral	3
SemiconductorManufacturing International Corporation **(SMICY)**	Neutral	3

The positions listed should not be deemed a recommendation to buy, hold or sell.

Industry Comparison Industry: Electronics - Semiconductors

Industry Peers

	AMD	X Industry	S&P 500	AMKR	INTC	NVDA
Zacks Recommendation (Long Term)	Neutral	-	-	Neutral	Neutral	Neutral
Zacks Rank (Short Term)	3	-	-	2	3	3
VGM Score	B	-	-	A	A	B
Market Cap	96.91 B	881.66 M	23.52 B	2.87 B	214.31 B	321.22 B
# of Analysts	12	3	14	1	13	13
Dividend Yield	0.00%	0.00%	1.62%	0.00%	2.62%	0.12%
Value Score	F	-	-	A	A	F
Cash/Price	0.02	0.22	0.07	0.36	0.12	0.03
EV/EBITDA	126.82	6.18	13.12	4.30	6.44	93.21
PEG F1	1.78	1.63	2.97	NA	1.38	3.18
P/B	29.32	2.29	3.20	1.35	2.61	23.09
P/CF	108.52	13.73	12.72	4.30	6.63	99.11
P/E F1	71.48	19.86	21.67	11.88	10.38	57.50
P/S TTM	12.67	2.65	2.49	0.63	2.71	24.59
Earnings Yield	1.33%	2.59%	4.40%	8.42%	9.62%	1.74%
Debt/Equity	0.15	0.15	0.70	0.70	0.44	0.50
Cash Flow ($/share)	0.76	0.57	6.93	2.76	7.60	5.25
Growth Score	A	-	-	A	A	A
Historical EPS Growth (3-5 Years)	80.17%	3.53%	10.41%	12.54%	22.01%	37.24%
Projected EPS Growth (F1/F0)	72.27%	13.58%	-4.75%	78.57%	-0.33%	56.37%
Current Cash Flow Growth	44.79%	-0.89%	5.22%	-5.49%	6.53%	-20.70%
Historical Cash Flow Growth (3-5 Years)	27.24%	10.34%	8.49%	-0.41%	9.99%	28.68%
Current Ratio	2.10	3.24	1.35	1.83	1.97	6.09
Debt/Capital	12.91%	13.27%	42.95%	41.21%	30.56%	33.34%
Net Margin	7.96%	2.01%	10.25%	5.94%	29.97%	25.93%
Return on Equity	28.66%	3.22%	14.59%	13.54%	31.55%	30.41%
Sales/Assets	1.29	0.63	0.50	0.96	0.55	0.64
Projected Sales Growth (F1/F0)	32.03%	3.04%	-1.42%	18.47%	4.34%	44.80%
Momentum Score	B	-	-	B	C	A
Daily Price Change	-8.51%	-5.08%	-2.14%	-6.97%	-3.56%	-9.28%
1-Week Price Change	2.08%	0.00%	2.59%	0.64%	2.33%	3.66%
4-Week Price Change	-4.81%	-7.81%	2.25%	-11.41%	3.75%	14.82%
12-Week Price Change	56.24%	10.44%	11.04%	6.93%	-15.60%	47.97%
52-Week Price Change	162.03%	23.67%	2.01%	30.98%	0.58%	189.65%
20-Day Average Volume (Shares)	54,820,364	173,207	1,827,096	1,012,140	34,194,456	13,483,514
EPS F1 Estimate 1-Week Change	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EPS F1 Estimate 4-Week Change	0.00%	0.00%	0.00%	0.00%	0.00%	4.08%
EPS F1 Estimate 12-Week Change	10.51%	7.31%	3.89%	42.86%	0.97%	4.16%
EPS Q1 Estimate Monthly Change	0.00%	0.00%	0.00%	0.00%	0.00%	10.36%

Source: Zacks Investment Research

Zacks Style Scores

The Zacks Style Score is as a complementary indicator to the Zacks rating system, giving investors a way to focus on the highest rated stocks that best fit their own stock picking preferences.

Value Score	F
Growth Score	A
Momentum Score	B
VGM Score	B

Academic research has proven that stocks with the best Value, Growth and Momentum characteristics outperform the market. The Zacks Style Scores rate stocks on each of these individual styles and assigns a rating of A, B, C, D and F. We also produce the VGM Score (V for Value, G for Growth and M for Momentum), which combines the weighted average of the individual Style Scores into one score. This is perfectly suited for those who want their stocks to have the best scores across the board.

As an investor, you want to buy stocks with the highest probability of success. That means buying stocks with a Zacks Recommendation of Outperform, which also has a Style Score of an A or a B.

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Investing involves risk; principal loss is possible. There is no guarantee that companies that can issue dividends will declare, continue to pay or increase dividends.

Glossary of Terms and Definitions

52-Week High-Low: The range of the highest and lowest prices at which a stock has traded during the past year. This range is determined based on the stock's daily closing price which may differ from the intra-day high or low. Many investors use it as a technical indicator to determine a stock's current value and future price movement. The idea here is that if price breaks out from the 52-week range, in either direction, the momentum may continue in the same direction.

20-Day Average Volume (Shares): The average number of shares of a company traded in a day over the last 20 days. It is a direct indication of a security's overall liquidity. The higher the average daily trading volume, the easier it is to enter or exit the stock at a desired price with more buyers and sellers being available.

Daily Price Change: This is the percentage difference between a trading day's closing price and the prior trading day's closing price. This item is updated at 9 p.m. EST each day.

1-Week Price Change: This is the percentage change in a stock's closing price over the last 5 trading days. This change reflects the collective buying and selling sentiment over the 1-week period.

A strong weekly price increase for the stock, especially when accompanied by increased volume, is an indication of it gaining momentum.

4-Week Price Change: This is the percentage change in a stock's closing price over the last 20 trading days or past 4 weeks. This is a mediumterm price change metric and an indication of the stock gaining momentum.

12-Week Price Change: This is the percentage change of a stock's closing price over the last 60 trading days or past 12 weeks. Similar to 4-week price change, this is a medium-term price change metric. It shows whether a stock has been enjoying strong investor demand, or if it has been in consolidation, or distress over this period.

52-Week Price Change: This is the percentage change in a stock’s closing price over the last 260 trading days or past 52 weeks. This long-term price change metric is a good reference point for investors. Some investors seek stocks with the best percentage price change over the last 52 weeks, expecting the momentum to continue.

Market Cap: The number of outstanding common shares of a company times its latest price per share. This figure represents a company's size, which indicates various characteristics, including price stability and risk, in which investors could be interested.

Year-To-Date Price Change: Change in a stock's daily closing price in the period of time beginning the first day of the current calendar year through to the previous trading day.

# of Analysts: Number of EPS estimates used in calculating the current-quarter consensus. These estimates come from the brokerage analysts tracking this stock. However, the number of such analysts tracking this stock may not match the number of estimates, as all brokerage analysts may not come up with an estimate or provide it to us.

Beta: A measure of risk commonly used to compare the volatility of a stock to the overall market. The S&P 500 Index is the base for calculating beta and carries a value of 1. A stock with beta below 1 is less risky than the market as a whole. And a stock with beta above 1 is riskier.

Dividend: The portion of earnings a company is expected to distribute to its common shareholders in the next 12 months for each share they own. Dividends are usually paid quarterly. Dividend payments reflect positively on a company and help maintain investors' trust. Investors typically find dividend-paying stocks appealing because the dividend adds to any market price appreciation to result in higher return on investment (ROI). Moreover, a steady or increasing dividend payment provides investors a cushion in a down market.

Dividend Yield: The ratio of a company's annual dividend to its share price. The annual dividend used in the ratio is calculated based on the mostrecent dividend paid by the company. Dividend yield is an estimate of the dividend-only return from a stock in the next 12 months. Since dividend itself doesn’t change frequently, dividend yield usually changes with a stock’s price movement. As a result, often an unusually high dividend yield is a result of weak stock price.

S&P 500 Index: The Standard & Poor's 500 (S&P 500) Index is an unmanaged group of securities considered to be representative of the stock market in general. It is a market-capitalization-weighted index of stocks of the 500 largest U.S. companies. Each stock’s weight in the index is proportionate to its market value.

Industry: One of the 250+ groups that Zacks classifies all stocks into based on the nature of business. These groups are termed as expanded (aka "X") industries and map to their respective (economic) sectors; Zacks has 16 sectors.

Zacks Industry Rank: The Zacks Industry Rank is determined by calculating the average Zacks Rank for all stocks in the industry and then assigning an ordinal rank to it. For example, an industry with an average Zacks Rank of 1.6 is better than an industry with an average Zacks Rank of 2.3. So, the industry with the better average Zacks Rank would get a better Zacks Industry Rank. If an industry has the best average Zacks Rank, it would be considered the top industry (1 out of 250+), which would place it at the top 1% of Zacks-ranked industries. Studies have shown that roughly half of a stock's price movement can be attributed to the industry group it belongs to. In fact, the top 50% of Zacks-ranked industries outperforms the bottom 50% by a factor of more than 2 to 1.

Last EPS Surprise: The percentage deviation of a company's last reported earnings per share from the Zacks Consensus Estimate. Companies with a positive earnings surprise are more likely to surprise again in the future (or miss again if they recently missed).

Last Sales Surprise: The percentage deviation of a company's last reported sales from the Zacks Consensus Estimate.

Expected Report Date: This is an estimated date of a company's next earnings release. The information originated or gathered by Zacks Investment Research from its information providers or publicly available sources is the basis of this estimate.

Earnings ESP: The Zacks Earnings ESP compares the Most Accurate Estimate to the Zacks Consensus Estimate for the yet-to-be reported quarter. The Most Accurate Estimate is the most recent version of the Zacks Consensus EPS Estimate. The idea here is that analysts revising their estimates closer to an earnings release have the latest information, which could potentially be more accurate than what they and others contributing to the consensus had predicted earlier. Thus, a positive or negative Earnings ESP reading theoretically indicates the likely deviation of the actual earnings from the consensus estimate. However, the model's predictive power is significant for positive ESP readings only. A positive Earnings ESP is a strong predictor of an earnings beat, particularly when combined with a Zacks Rank #1 (Strong Buy), #2 (Buy) or #3 (Hold). Our research shows that stocks with this combination produce a positive surprise nearly 70% of the time.

Periods:

TTM: Trailing 12 months. Using TTM figures is an effective way of analyzing the most-recent financial data in an annualized format that helps neutralize the effects of seasonality and other quarter-to-quarter variation.

F1: Current fiscal year. This period is used to analyze the estimates for the ongoing full fiscal year.

F2: Next fiscal year. This period is used to analyze the estimates for the next full fiscal year.

F12M: Forward 12 months. Using F12M figures is an effective way of analyzing the near-term (the following four unreported quarters) estimates in an annualized manner. Instead of typically representing estimates for the full fiscal year, which may not represent the nitty-gritty of each quarter, F12M figures suggest an all-inclusive annualized estimate for the following four quarters. The annualization helps neutralize the potential effects of seasonality and other quarter-to-quarter variations.

P/E Ratio: The price-to-earnings ratio measures a company's current market price per share relative to its earnings per share (EPS). Usually, the trailing-12-month (TTM) EPS, current-fiscal-year (F1) EPS estimate, or forward-12-month (F12M) EPS estimate is used as the denominator. In essence, this ratio shows what the market is willing to pay today for each dollar of EPS. In other words, this ratio gives a sense of what the relative value of the company is at the already reported level of earnings or at a future level of earnings.

It is one of the most widely-used multiples for determining the value of a company and helps comparing its valuation with that of a competitor, the industry group or a benchmark.

PEG Ratio: The price/earnings to growth ratio is a stock's P/E ratio using current fiscal year (F1) EPS estimate divided by its expected EPS growth rate over the coming 3 to 5 years. This ratio essentially determines a stock's value by factoring in the company’s expected earnings growth and is thus believed to provide a more complete picture than just the P/E ratio, particularly for faster-growing companies.

P/S Ratio: The price-to-sales ratio is calculated as a company’s current price per share divided by trailing 12 months (TTM) sales or revenues per share. This ratio shows what the market is willing to pay today for each dollar of TTM sales per share. The P/S ratio is at times the only valuation metric when the company has yet to become profitable.

Cash/Price Ratio: The cash-to-price ratio or Cash Yield is calculated as cash and marketable securities per share divided by the company’s current share price. Like the earnings yield, which shows the anticipated yield (or return) on a stock from earnings for each dollar invested, the cash yield does the same, with cash being the source of return instead of earnings. For example, a cash/price ratio of 0.08 suggests a return of 8% or 8 cents for every $1 investment.

EV/EBITDA Ratio: The EV/EBITDA ratio, also known as Enterprise Multiple, is calculated as a company’s enterprise value (market capitalization + value of total long-term debt + book value of preferred shares - cash and marketable securities) divided by EBITDA (earnings before interest, taxes, depreciation and amortization). Usually, trailing-12-month (TTM) or forward-12-month (F12M) EBITDA is used as the denominator.

EV/Sales Ratio: The enterprise value-to-sales ratio is calculated as a company's enterprise value (market capitalization + value of total long-term debt + book value of preferred shares - cash and marketable securities) divided by annual sales. It is an expansion of the P/S valuation, which uses market value instead of enterprise value. The EV/Sales ratio is perceived as more accurate than P/S, in part, because the market capitalization does not take a company's debt into account when valuing it.

EV/CF Ratio: The enterprise value-to-cash flow ratio is calculated as a company's enterprise value (market capitalization + value of total long-term debt + book value of preferred shares - cash and marketable securities) divided by the trailing-12-month (TTM) operating cash flow. It's a measure of how long it would take to buy the entire business if you were able to use all the company's operating cash flow.

The EV/CF ratio is perceived as more accurate than the P/CF ratio, in part, because the market price does not take a company's debt into account when valuing it.

EV/FCF Ratio: The enterprise value-to-free cash flow metric compares a company's enterprise value to its trailing-12-month (TTM) free cash flow (FCF). This metric is very similar to the EV/CF ratio, but is considered a more exact measure owing to the fact that it uses free cash flow, which subtracts capital expenditures (CAPEX) from a company's total operating cash flow, thereby reflecting the actual cash flow available for funding growth activities and payments to shareholders.

P/EBITDA Ratio: The P/EBITDA ratio is calculated as a company's per share market value divided by EBITDA (earnings before interest, taxes, depreciation, and amortization). This metric is very similar to the EV/EBITDA ratio, but is considered a little less exact measure as it uses market price, which does not take a company's debt into account. However, since EBITDA is often considered a proxy for cash income, the metric is used as a measure of what the market is willing to pay today for each dollar of the company’s cash profitability in the trailing 12 months (TTM) or forward 12 months (F12M).

P/B Ratio: The price-to-book ratio is calculated as a company's current price per share divided by its book value (total assets – liabilities – preferred stocks) per share. In short, the book value is how much a company is worth. In other words, it reflects the total value of a company's assets that its common shareholders would receive if it were to be liquidated. So, the P/B ratio indicates whether you're paying higher or lower than what would remain if the company went bankrupt immediately. Investors typically use this metric to determine how a company's stock price stacks up to its intrinsic value.

P/TB Ratio: The price-to-tangible-book value ratio is calculated as a the per share market value of a company divided by the value of its tangible assets (total assets – liabilities – preferred stocks – intangible assets) per share. Tangible book value is the same thing as book value except it excludes the value of intangible assets to get a step closer to the baseline value of the company.

P/CF Ratio: The price-to-cash flow ratio measures a company’s per share market price relative to its trailing-12-month (TTM) operating cash flow per share. This metric is used to determine whether a company is undervalued or overvalued relative to another stock, industry or sector. And like the P/E ratio, a lower number is typically considered better from the value perspective.

One of the reasons why P/CF ratio is often preferred over P/E ratio is the fact that operating cash flow adds back non-cash expenses such as depreciation and amortization to net income. This feature helps valuing stocks that have positive cash flow but are not profitable because of large noncash charges.

P/FCF Ratio: The price-to-free cash flow ratio is an extension of P/CF ratio, which uses trailing-12-month (TTM) free cash flow per share instead of operating cash flow per share. This metric is considered a more exact measure than P/CF ratio, as free cash flow subtracts capital expenditures (CAPEX) from a company's total operating cash flow, thereby reflecting the actual cash flow available for funding activities that generate additional revenues.

Earnings Yield: The earnings yield is calculated as current fiscal year (F1) EPS estimate divided by the company’s current share price. The ratio, which is the inverse of the P/E ratio, measures the anticipated yield (or return) from earnings for each dollar invested in a stock today.

For example, earnings yield for a stock, which is trading at $35 and expected to earn $3 per share in the current fiscal year (F1), would be 0.0857 (3/35 = 0.0857) or 8.57%. In other words, for $1 invested in the stock today, the yield from earnings is anticipated to be 8.57 cents.

Investors most commonly compare the earnings yield of a stock to that of a broad market index (such as the S&P 500) and prevailing interest rates, such as the current 10-year Treasury yield. Since bonds and stocks compete for investors’ dollars, stock investors typically demand a higher yield for the extra risk they assume compared to investors of U.S. Treasury-backed securities that offer virtually risk-free returns. This additional return is referred to as the risk premium.

Debt/Equity Ratio: The debt-to-equity ratio is calculated as a company's total liabilities divided by its shareholder equity. This metric is used to gauge a company's financial leverage. In other words, it is a measure of the degree to which a company is financing its operations through debt versus its own funds. The higher the ratio, the higher the risk for shareholders.

However, this ratio is difficult to compare across industry groups where ideal amounts of debt vary. Some businesses are more capital intensive than others and typically require higher debt to finance their operations. So, a company's debt-to-equity ratio should be compared with other companies in the same industry.

Cash Flow ($/share): Cash flow per share is calculated as operating cash flow (after-tax earnings + depreciation + other non-cash charges) divided by common shares outstanding. It is used by many investors as a measure of a company's financial strength. Since cash flow per share takes into consideration a company's ability to generate cash by adding back non-cash expenses, it is regarded by some as a more accurate measure of a company's financial situation than earnings per share, which could be artificially deflated.

Current Ratio: The current ratio or liquidity ratio is a company's current assets divided by its current liabilities. It measures a company's ability to pay short-term obligations. A current ratio that is in line with the industry average or slightly higher is generally considered acceptable. A current ratio that is lower than the industry average would indicate a higher risk of distress or default. A higher number is usually better. However, a very high current ratio compared to the industry average could be an indication of inefficient use of assets by management.

Debt/Capital Ratio: Debt-to-capital ratio is a company's total debt (interest-bearing debt + both short- and long-term liabilities) divided its total capital (interest-bearing debt + shareholders' equity). It is a measure of a company's financial leverage. All else being equal, the higher the debt-to-capital ratio, the riskier the stock.

However, this ratio can vary widely from industry to industry, the ideal amount of required debt being different. Some businesses are more capital intensive than others and typically require higher debt to finance their operations. So, a company's debt-to-capital ratio should be compared with the same for its industry.

Net Margin: Net margin is calculated as net income divided by sales. It shows how much of each dollar in sales generated by a company translates into profit. For example, if a company's net margin is 15%, its net income is 15 cents for every $1 of sales it makes.

A change in margin can reflect either a change in business conditions, or a company's cost controls, or both. If a company's expenses are growing faster than sales, its net margin will decline. However, different net margin rates are considered good for different industries, so it's better to compare net margin rates of companies in the same industry group.

Return on Equity: Return on equity (ROE) is calculated as trailing-12-month net income divided by trailing-12-month average shareholder equity (including reinvested earnings). This metric is considered a measure of how effectively management is using a company's assets to generate profits. For example, if a company's ROE is 10%, it creates 10 cents profits for every $1 shareholder equity, which is basically the company's assets minus debt. A company's ROE deemed good or bad depends on what's normal for its peers or industry group.

Sales/Assets Ratio: The sales-to-assets ratio or asset utilization ratio or asset turnover ratio is calculated as a company's annual sales divided by average assets (average of assets at the beginning of the year and at the year's end). This metric helps investors understand how effectively a company is using its assets to generate sales. For example, a sales-to-assets ratio of 2.5 indicates that the company generated $2.50 in sales for every $1 of assets on its books.

The higher the sales-to-assets ratio, the better the company is performing. However, similar to many other ratios, the asset turnover ratio tends to be higher for companies in certain industries/sectors than in others. So, a company's sales-to-assets ratio should be compared with the same for its industry/sector.

Historical EPS Growth (3-5 Years): This is the average annual (trailing-12-month) EPS growth rate over the last 3-5 years. This metric helps investors see how a company's EPS has grown from a long-term perspective.

Note: There are many factors that can influence short-term numbers — a recession will reduce this number, while a recovery will inflate it. The longterm perspective helps smooth out short-term events.

Projected EPS Growth (F1/F0): This is the estimated EPS growth rate for the current financial year. It is calculated as the consensus estimate for the current fiscal year (F1) divided by the reported EPS for the last completed fiscal year (F0).

Current Cash Flow Growth: It measures the latest year-over-year change in operating cash flow. Cash flow growth tells an investor how quickly a company is generating inflows of cash from operations. A positive change in the cash flow is desired and shows that more 'cash' is coming in than going out.

Historical Cash Flow Growth (3-5 Years): This is the annualized change in cash flow over the last 3-5 years. The change in a longer period helps put the current reading into proper perspective. By looking at the rate, rather than the actual dollar value, the comparison across the industry and peers becomes easier.

Projected Sales Growth (F1/F0): This metric looks at the estimated sales growth for the current year. It is calculated as sales estimate for the current fiscal year (F1) divided by the reported sales for the last completed fiscal year (F0).

Like EPS growth, a higher rate is better for sales growth. A look at a company's projected sales growth instantly tells you what the outlook is for their products and services. However, different sales growth rates are considered good for different industries, so it's better to compare sales growth rates of companies in the same industry group.

EPS F1 Estimate 1-Week Change: The percentage change in the Zacks Consensus EPS estimate for the current fiscal year over the past week. The change in a company's consensus EPS estimate (or earnings estimate revision) has proven to be strongly correlated with the near-term price movement of its shares. It is an integral part of the Zacks Rank.

If a stock's consensus EPS estimate is $1.10 now versus $1.00 a week ago, that will be reflected as a 10% upward revision. If, on the other hand, it went from $1.00 to 90 cents, that would be a 10% downward revision.

EPS F1 Estimate 4-Week Change: The percentage change in the Zacks Consensus EPS estimate for the current fiscal year over the past four weeks.

A stock's earnings estimate revision in a 1-week period is important. But it's more meaningful to look at the longer-term revision. And, of course, the 4-week change helps put the 1-week change into proper perspective.

EPS F1 Estimate 12-Week Change: The percentage change in the Zacks Consensus EPS estimate for the current fiscal year over the past 12 weeks.

This metric essentially shows how the consensus EPS estimate has changed over a period longer than 1 week or 4 weeks.

EPS Q1 Estimate Monthly Change: The percentage change in the Zacks Consensus EPS estimate for the current fiscal quarter over the past four weeks.

While the revision in consensus EPS estimate for the current fiscal year is strongly correlated with the near-term price movement of its shares, the estimate revision for the current fiscal quarter is an important metric as well, especially over the short term, and particularly as a stock approaches its earnings date. If a stock's Q1 EPS estimate decreases ahead of its earnings release, it's usually a negative sign, whereas an increase is a positive sign.