

FormFactor Inc. (FORM)

\$35.03 (As of 06/16/21)

Price Target (6-12 Months): **\$37.00**

Long Term: 6-12 Months

Zacks Recommendation:

Neutral

(Since: 05/31/21)

Prior Recommendation: Underperform

Short Term: 1-3 Months

Zacks Rank: (1-5)

3-Hold

Zacks Style Scores:

VGM:B

Value: B

Growth: A

Momentum: F

Summary

FormFactor is benefiting from its strength across 5G and advanced packaging. Further, its increasing focus on Mobile SoC and Mobile DRAM probe card continues to be a tailwind. Moreover, solid demand for DRAM products is contributing well to the top line of the company. Additionally, FormFactor expects increased DRAM probe card shipments in the current quarter, driven primarily by higher volume of new 16-gigabit DDR4 and DDR5 mobile and server designs. Further, growing momentum across millimeter wave RF front ends and high-power compute processors remains a tailwind. However, the company expects Foundry & Logic demand to decline sequentially due to specific timing of individual customer design releases. Further, Product mix is expected to be less favorable in the second quarter. The stock has underperformed its industry on a year-to-date basis.

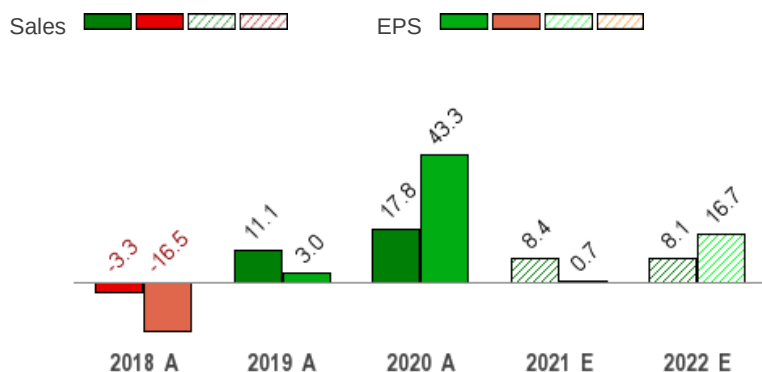
Price, Consensus & Surprise



Data Overview

52-Week High-Low	\$52.39 - \$22.37
20-Day Average Volume (Shares)	504,256
Market Cap	\$2.7 B
Year-To-Date Price Change	-18.6%
Beta	1.39
Dividend / Dividend Yield	\$0.00 / 0.0%
Industry	Electronics - Semiconductors
Zacks Industry Rank	Top 38% (97 out of 252)

Sales and EPS Growth Rates (Y/Y %)



Last EPS Surprise	-2.6%
Last Sales Surprise	1.7%
EPS F1 Estimate 4-Week Change	-0.8%
Expected Report Date	07/29/2021
Earnings ESP	0.0%

Sales Estimates (millions of \$)

	Q1	Q2	Q3	Q4	Annual*
2022					813 E
2021	187 A	186 E	186 E	193 E	752 E
2020	161 A	158 A	178 A	197 A	694 A

EPS Estimates

	Q1	Q2	Q3	Q4	Annual*
2022					\$1.75 E
2021	\$0.38 A	\$0.33 E	\$0.36 E	\$0.40 E	\$1.50 E
2020	\$0.33 A	\$0.33 A	\$0.39 A	\$0.44 A	\$1.49 A

*Quarterly figures may not add up to annual.

P/E TTM	22.8
P/E F1	23.4
PEG F1	2.0
P/S TTM	3.8

The data in the charts and tables, including the Zacks Consensus EPS and sales estimates, is as of 06/16/2021. The report's text and the

analyst-provided price target are as of 06/17/2021.

Overview

Livermore, California based-FormFactor is an OEM of automated wafer probe cards used in the back-end portion of the semiconductor manufacturing process.

The company's product portfolio is comprised of probe cards, analytical probes, probe stations, thermal sub-systems, and related services.

Probe Cards help FormFactor to serve customers' design layout and electrical test requirements by testing semiconductor device types such as systems on a chip, mobile application processors, microprocessors, microcontrollers, graphic processors, radio frequency, analog, mixed signal, image sensors, electrooptical, dynamic random access memory (DRAM), memory, NAND flash memory and NOR flash memory devices.

Analytical probes cater to the needs of a diverse set of applications such as device characterization, failure analysis, prototype design debugging and electrical simulation model development.

Probe stations are designed to take care of customers' complex measurement requirements by creating integrated measurement systems.

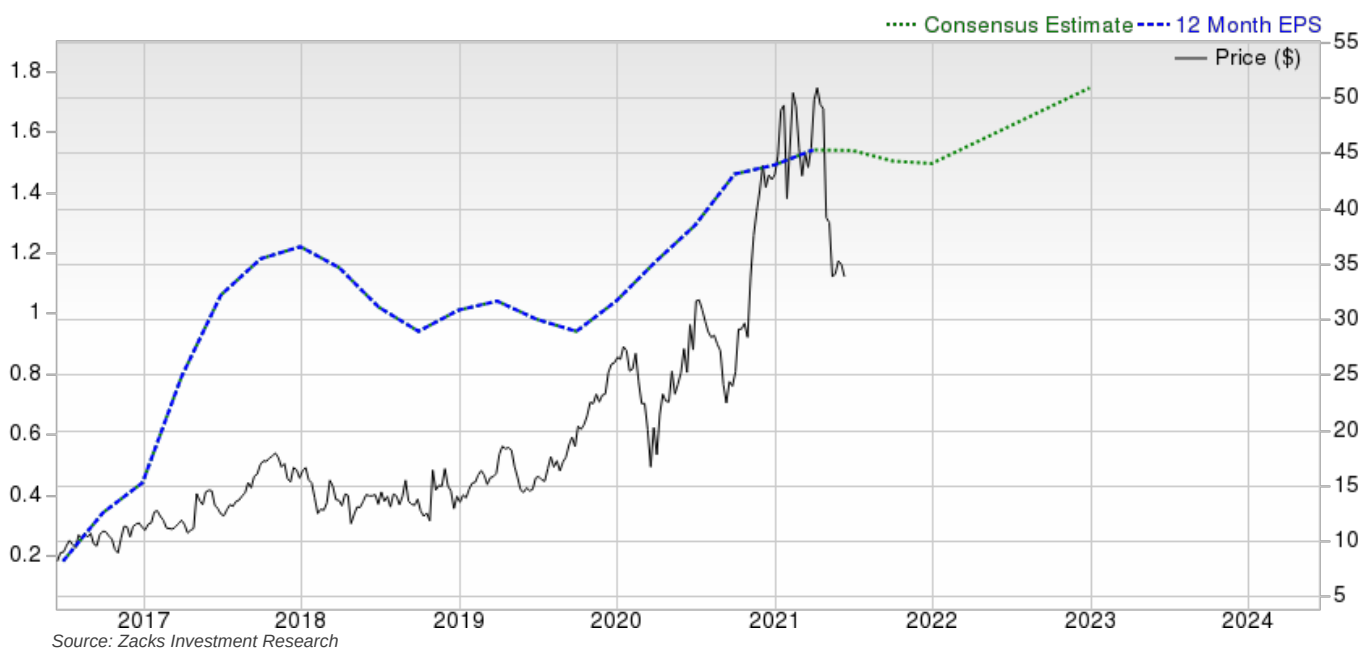
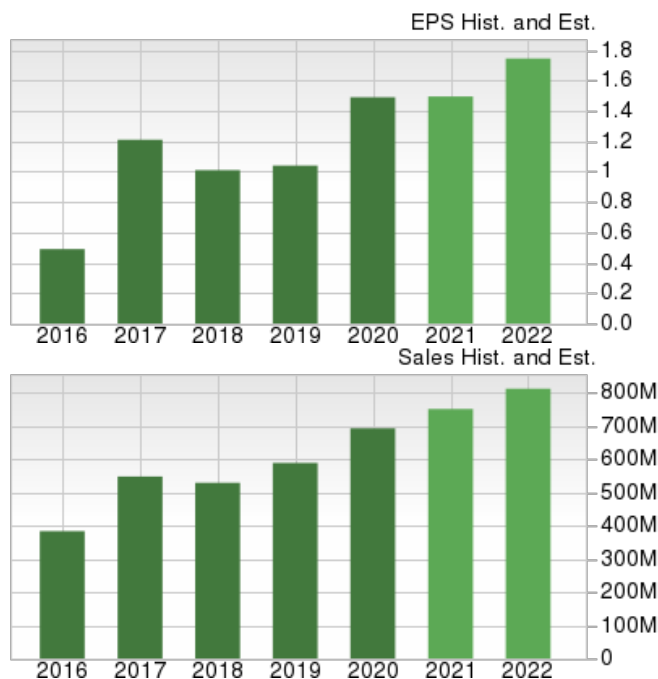
Thermal sub-systems aid in the testing of devices at a particular temperature or across a range of temperatures by producing thermal chucks and other test systems.

FormFactor's serves the requirements of the companies that design or make semiconductor, and semiconductor related products in the Foundry & Logic, DRAM, Flash, Display and Sensor markets.

Its products are primarily distributed through a direct sales force, a distributor (Spirox) in China and three independent sales representatives in Europe and North America.

Owing to its manufacturing locations in Asia, the company derives most of its revenues from the region. North America has started to grow in recent times because of the increasing level of manufacturing activity in the region.

Competitors of FormFactor include the likes of Advantest Corporation, AMST Co., Ltd., BucklingBeam Solutions, Cascade Microtech, Inc., Feinmetall GmbH and Korea Instrument Co., Ltd, to name a few.



Reasons To Buy:

- ▲ FormFactor is the largest probe card manufacturer in the semiconductor industry in addition to being the largest supplier of probe cards to the SOC probe card market. The company has been increasingly functioning as a single worldwide organization to leverage and proficiently take advantage of its collective capabilities. Going forward, the SoC segment looks promising. The SoC Probe Card business remains strong, driven mainly by supplying 16 nanometer mobile application processor projects in the Fabless/Foundry Ecosystem. Further, wafer probe card demand is driven by new wafer designs and not strictly capacity. Therefore, it is less sensitive to the traditional semiconductor capital equipment demand curve. With consumer markets driving the largest sales, there is an underlying demand for lower-priced chips in larger volumes. This, in turn, is driving chip manufacturing to larger wafer sizes and smaller geometries, which could help manufacturers lower production costs. Many semiconductor fabrication plants have been adding 300mm capabilities. Additionally, older 200mm plants continue their shift to smaller design geometries. Manufacturers are required to purchase a new suite of probe cards during any of these production line transitions, which drives demand for probe cards. Therefore, these trends remain positive for the company.
- ▲ The company's **DRAM revenues** continue to recover, with secular demand drivers remaining in place. Some of these are the demand in computing and consumer markets; architecture shift, such as from DDR2 to DDR3 to DDR4 (type of DRAM memory); design geometry (process node) shift, such as the shift from 32nm to 28nm to 20nm to 14nm; wafer size shift, for example from 200mm to 300mm; and package density shift from 256Mb to 512Mb. New production lines usually begin with memory applications such as DRAM, which require less complex processes. As the fab lines mature, some of the capacity is gradually shifted to the fabrication of logic ICs. The decision to target mobile DRAM has worked well for the company, which along with the stabilization in prices is driving its results. FormFactor derives a significant amount of its revenues from this market where it is the dominant player. The company's strong market position and increasing spending trends at its lead customers indicate solid revenue growth this year. FormFactor's DRAM probe card demand has extensively improved the customer exposure of this business over the past year. As of now, a great deal of the market demand for DRAM probe cards is concentrated in mobile DRAM devices on advanced nodes such as 20-nm.
- ▲ FormFactor is targeting the NAND Flash market with its **Vector architecture**. Earlier, the company had introduced the Vector NAND Flash Memory probe card, which is a novel MEMS-based probe card mainly designed to experiment cost-sensitive NAND Flash devices. It addresses customers' NAND Flash test cost and efficiency demands. The innovation enhances test floor flexibility to test different devices, and offers meaningful cost-of-test improvements. It also enables manufacturers to bring their products to market faster by offering test efficiencies and decreasing test costs. The new Vector NAND Flash product got qualified at two major customers. The company has invested in initial production capacity and yield improvement initiatives to meet the aggressive lead time and delivery commitments of consumer device manufacturers while meeting its internal cost and gross margin targets. Initial indications are that Vector is well positioned to serve the fast growing demand associated with 3D NAND. FormFactor is likely to take meaningful share in the \$200 million-plus NAND Flash probe card market once it achieves internal targets for cost, lead time and quality.

The company leading position in probe card space and strengthening presence in DRAM and NAND markets remain positive.

Reasons To Sell:

- ▼ FormFactor has relatively **long lead times** and the company's ability to deliver in time to meet customer requirements has not been too good. The company's poor history of execution has resulted in the loss of customer confidence. This is an even bigger negative considering the fact that it serves consumer-type end markets where demand forecasting is very important, since demand typically follows seasonal patterns, shooting up in one quarter and slumping in the next. The company remains focused on cost control and continued significant downsizing could affect its ability to meet customer demand.
- ▼ The **reduction of orders or severance of relations** with any one of the customers would significantly impact results. For instance, Apple moving chip manufacturing from Samsung to TSM significantly reduced orders from Samsung, which in turn impacted FormFactor. Further, despite the recent acquisition, FormFactor continues to generate significant revenues from the DRAM market, which typically experiences great volatility in prices. Customer and market concentration increase **execution risks**.
- ▼ The company operates in a market with many competitors, so there is a constant pressure on prices. Any weakness in the semiconductor market further increases the **pricing pressure**. Additionally, there are typical periods of oversupply in the market, which result in steep declines in prices. In subsequent periods, when demand returns, prices do not come back to prior highs.

The weakening demand for probe cards might prevent the FormFactor from absorbing all of its manufacturing costs, thereby impacting margins.

Last Earnings Report

FormFactor Q1 Earnings Miss, Revenues Increase Y/Y

FormFactor reported first-quarter adjusted earnings of 38 cents per share, which missed the Zacks Consensus Estimate by 2.6% but increased 15.2% year over year.

Revenues increased 16.2% year over year to \$186.8 million and also surpassed the Zacks Consensus Estimate by 1.7%. However, on a sequential basis, revenues declined 5.2% year over year.

The year-over-year growth in top line was driven by strong demand for Foundry & Logic probe cards and DRAM products.

Quarter Details

Probe card segment revenues were \$159 million in the first quarter, down 2.2% sequentially but up 17.9% year over year.

The sequential decrease was driven by lower Foundry & Logic, and slightly lower DRAM revenues, partially offset by an increase in Flash revenues.

Foundry & Logic (accounting for 60.7% of revenues) revenues were \$113.4 million, up 7.2% year over year but down 7.6% sequentially. FormFactor's strength in 5G and advanced packaging drove market share.

Revenues for DRAM products (18.2% of revenues) were \$33.9 million, reflecting an increase of 37.2% year over year.

Flash revenues (6.2% of revenues) were \$11.6 million, up 169.8% from the year-ago quarter.

Systems revenues were \$27.7 million, up 6.5% year over year.

On a non-GAAP basis, gross margin contracted 110 basis points (bps) year over year to 45%. Probe card segment's gross margin was 44.3% expanding 40 bps sequentially.

Non-GAAP operating expenses increased 8.7% year over year to \$46.4 million.

Balance Sheet

As of Mar 27, 2021, cash & marketable securities (including restricted cash) were \$269.6 million compared with \$257 million as of Dec 26, 2020.

Guidance

FormFactor expects second-quarter 2021 revenues between \$180 million and \$192 million.

The company expects Foundry & Logic demand to decline sequentially due to specific timing of individual customer design releases. However, FormFactor expects increased DRAM probe card shipments in the second quarter, driven primarily by higher volume of new 16-gigabit DDR4 and DDR5 mobile and server designs.

Product mix is expected to be less favorable in the second quarter. Management also expects higher raw material costs, resulting in non-GAAP gross margin outlook between 41% and 44%.

On a non-GAAP basis, the company projects earnings in the band of 28-36 cents per share. The consensus mark for earnings is pegged at 40 cents.

Quarter Ending	03/2021
Report Date	Apr 28, 2021
Sales Surprise	1.71%
EPS Surprise	-2.56%
Quarterly EPS	0.38
Annual EPS (TTM)	1.54

Recent News

On **Apr 12, 2021**, FormFactor introduced HPD IQ1000, a scanning SQUID (Superconducting Quantum Interference Device) microscope which marks its first product in the quantum computing market.

Valuation

FormFactor shares are down 17.6% in the year-to-date period but up 18.7% over the trailing 12-month period. Stocks in the Zacks sub-industry and the Zacks Computer & Technology sector are up 3.2% and 15% in the year-to-date period, respectively. Over the past year, the Zacks sub-industry is up 55.1% and the sector is up 46.7%.

The S&P 500 index is up 13.2% in the year-to-date period and 37.7% in the past year.

The stock is currently trading at 3.49X forward 12-month sales, which compares to 7.28X for the Zacks sub-industry, 4.89X for the Zacks sector and 4.7X for the S&P 500 index.

Over the past five years, the stock has traded as high as 5.3X and as low as 1.31X, with a 5-year median of 2.06X. Our Neutral recommendation indicates that the stock will perform in-line with the market. Our \$37 price target reflects 3.66X forward 12-month sales.

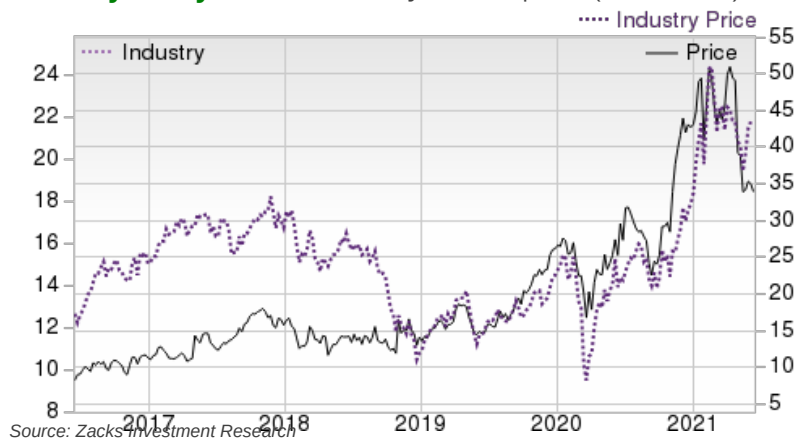
The table below shows summary valuation data for FORM

Valuation Multiples - FORM					
		Stock	Sub-Industry	Sector	S&P 500
P/S F12M	Current	3.49	7.28	4.89	4.7
	5-Year High	5.3	8.39	4.89	4.74
	5-Year Low	1.31	4.81	2.81	3.21
	5-Year Median	2.06	5.89	3.53	3.72
P/B TTM	Current	3.55	10	9.92	7.03
	5-Year High	5.3	11.86	10.03	7.08
	5-Year Low	1.44	4.16	4.44	3.84
	5-Year Median	2.29	6.2	5.87	5.02
EV/Sales TTM	Current	3.44	7.37	5.63	4.84
	5-Year High	5.35	8.69	5.79	4.88
	5-Year Low	1.11	3.99	3.08	2.65
	5-Year Median	2.21	5.62	4	3.64

As of 06/16/2021

Source: Zacks Investment Research

Industry Analysis Zacks Industry Rank: Top 38% (97 out of 252)



Top Peers

Company (Ticker)	Rec	Rank
Texas Instruments Incorporated (TXN)	Outperform	2
ASE Technology Holding Co., Ltd. (ASX)	Neutral	3
Danaher Corporation (DHR)	Neutral	2
KLA Corporation (KLAC)	Neutral	2
Roper Technologies, Inc. (ROP)	Neutral	3
Teradyne, Inc. (TER)	Neutral	2
Taiwan Semiconductor Manufacturing Company Ltd. (TSM)	Neutral	3
Xylem Inc. (XYL)	Neutral	2

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

Industry Comparison Industry: Electronics - Semiconductors				Industry Peers		
	FORM	X Industry	S&P 500	KLAC	TER	TXN
Zacks Recommendation (Long Term)	Neutral	-	-	Neutral	Neutral	Outperform
Zacks Rank (Short Term)	3	-	-	2	2	2
VGM Score	B	-	-	C	F	D
Market Cap	2.72 B	1.18 B	29.96 B	48.42 B	21.33 B	173.37 B
# of Analysts	4	2	12	6	7	11
Dividend Yield	0.00%	0.00%	1.3%	1.14%	0.31%	2.17%
Value Score	B	-	-	D	D	F
Cash/Price	0.10	0.12	0.05	0.05	0.06	0.04
EV/EBITDA	18.34	13.98	17.13	23.73	19.37	24.02
PEG F1	1.95	1.57	2.12	1.60	1.73	2.72
P/B	3.55	3.90	4.17	15.56	9.19	17.05
P/CF	18.28	18.46	17.46	21.93	22.97	26.23
P/E F1	23.45	17.86	21.27	22.45	23.84	25.40
P/S TTM	3.78	3.96	3.46	7.50	6.67	11.24
Earnings Yield	4.28%	2.58%	4.62%	4.45%	4.19%	3.94%
Debt/Equity	0.03	0.02	0.66	1.10	0.15	0.61
Cash Flow (\$/share)	1.92	0.42	6.83	14.41	5.58	7.16
Growth Score	A	-	-	C	F	C
Historical EPS Growth (3-5 Years)	256.59%	4.19%	9.44%	19.70%	27.86%	15.62%
Projected EPS Growth (F1/F0)	0.34%	47.32%	21.49%	35.96%	16.45%	23.80%
Current Cash Flow Growth	38.72%	14.87%	0.86%	43.45%	50.99%	8.57%
Historical Cash Flow Growth (3-5 Years)	34.27%	7.99%	7.28%	31.56%	17.62%	10.34%
Current Ratio	3.40	2.88	1.39	2.66	3.64	6.12
Debt/Capital	2.84%	3.74%	41.51%	52.37%	13.31%	38.07%
Net Margin	11.43%	6.49%	11.95%	28.77%	25.43%	40.04%
Return on Equity	14.24%	10.84%	16.48%	69.63%	39.86%	69.92%
Sales/Assets	0.77	0.67	0.51	0.67	0.91	0.83
Projected Sales Growth (F1/F0)	8.40%	14.33%	9.41%	18.14%	12.76%	20.30%
Momentum Score	F	-	-	C	C	C
Daily Price Change	1.33%	-0.55%	-0.54%	-1.46%	-1.56%	-0.47%
1-Week Price Change	-3.12%	-0.53%	0.10%	0.98%	-2.81%	-0.74%
4-Week Price Change	2.91%	8.30%	2.62%	3.93%	4.80%	3.31%
12-Week Price Change	-17.42%	4.72%	8.60%	6.05%	14.54%	4.94%
52-Week Price Change	15.21%	85.12%	35.66%	62.93%	63.58%	48.73%
20-Day Average Volume (Shares)	504,256	208,103	1,734,994	915,272	1,181,865	3,711,948
EPS F1 Estimate 1-Week Change	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EPS F1 Estimate 4-Week Change	-0.77%	0.00%	0.05%	0.15%	0.40%	0.44%

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

EPS F1 Estimate 12-Week Change	-7.50%	:	9.80%	3.39%	:	4.68%	10.57%	9.45%
EPS Q1 Estimate Monthly Change	-0.87%	:	0.00%	0.00%	:	0.52%	0.17%	0.34%

Source: Zacks Investment Research

Zacks Stock Rating System

We offer two rating systems that take into account investors' holding horizons: Zacks Rank and Zacks Recommendation. Each provides valuable insights into the future profitability of the stock and can be used separately or in combination with each other depending on your investment style.

Zacks Recommendation

The Zacks Recommendation aims to predict performance over the next 6 to 12 months. The foundation for the quantitatively determined Zacks Recommendation is trends in the company's estimate revisions and earnings outlook. The Zacks Recommendation is broken down into 3 Levels; Outperform, Neutral and Underperform. Unlike many Wall Street firms, we maintain a balance between the number of Outperform and Neutral recommendations. Our team of 70 analysts are fully versed in the benefits of earnings estimate revisions and how that is harnessed through the Zacks quantitative rating system. But we have given our analysts the ability to override the Zacks Recommendation for the 1200 stocks that they follow. The reason for the analyst over-rides is that there are often factors such as valuation, industry conditions and management effectiveness that a trained investment professional can spot better than a quantitative model.

Zacks Rank

The Zacks Rank is our short-term rating system that is most effective over the one- to three-month holding horizon. The underlying driver for the quantitatively-determined Zacks Rank is the same as the Zacks Recommendation, and reflects trends in earnings estimate revisions.

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.

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.

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

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.

Disclosures

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Returns quoted represent past performance which is no guarantee of future results. Investment returns and principal value will fluctuate so that when shares are redeemed, they may be worth more or less than their original cost. Current performance may be higher or lower than the performance shown.

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 medium-term 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 most recent 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 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.