

## Micron Technology (MU)

**\$44.40** (As of 08/18/20)

Price Target (6-12 Months): **\$47.00**

Long Term: 6-12 Months

**Zacks Recommendation:**

**Neutral**

(Since: 08/18/20)

Prior Recommendation: Outperform

Short Term: 1-3 Months

**Zacks Rank:** (1-5)

**3-Hold**

Zacks Style Scores:

VGM:B

Value: A

Growth: C

Momentum: C

### Summary

Micron's near-term performance might be hurt by the bleak memory chip demand as customers are adjusting inventories in response to the economic recession caused by COVID-19. Additionally, higher mix of low-margin NAND products and a slow decline in manufacturing costs might strain margins. Stock has underperformed the industry over the past year. Nonetheless, growing demand from cloud-computing providers and acceleration in 5G adoption are an upside. Increasing mix of high-value solutions, enhancement in customer engagement and improvement in cost structure are positives. Rising mix of high-value solutions, enhancement in customer engagement and improvement in cost structure are growth drivers as well. Further, 5G adoption beyond mobile is likely to spur demand for memory and storage, particularly in IoT devices and wireless infrastructure.

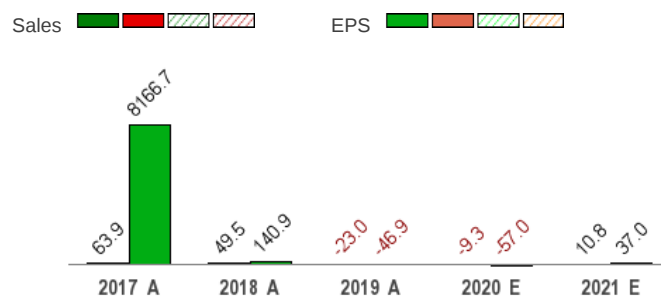
### Price, Consensus & Surprise



### Data Overview

|                            |                                      |
|----------------------------|--------------------------------------|
| 52 Week High-Low           | \$61.19 - \$31.13                    |
| 20 Day Average Volume (sh) | 19,636,476                           |
| Market Cap                 | \$49.3 B                             |
| YTD Price Change           | -17.4%                               |
| Beta                       | 1.48                                 |
| Dividend / Div Yld         | \$0.00 / 0.0%                        |
| Industry                   | <a href="#">Semiconductor Memory</a> |
| Zacks Industry Rank        | Top 50% (125 out of 252)             |

### Sales and EPS Growth Rates (Y/Y %)



|                           |            |
|---------------------------|------------|
| Last EPS Surprise         | 5.1%       |
| Last Sales Surprise       | 2.2%       |
| EPS F1 Est- 4 week change | -0.9%      |
| Expected Report Date      | 09/24/2020 |
| Earnings ESP              | -1.7%      |
| P/E TTM                   | 19.2       |
| P/E F1                    | 16.3       |
| PEG F1                    | 1.6        |
| P/S TTM                   | 2.4        |

### Sales Estimates (millions of \$)

|      | Q1      | Q2      | Q3      | Q4      | Annual*  |
|------|---------|---------|---------|---------|----------|
| 2021 | 5,837 E | 5,724 E | 5,984 E | 6,624 E | 23,532 E |
| 2020 | 5,144 A | 4,797 A | 5,438 A | 5,911 E | 21,237 E |
| 2019 | 7,913 A | 5,835 A | 4,788 A | 4,870 A | 23,406 A |

### EPS Estimates

|      | Q1       | Q2       | Q3       | Q4       | Annual*  |
|------|----------|----------|----------|----------|----------|
| 2021 | \$0.85 E | \$0.76 E | \$0.93 E | \$1.20 E | \$3.74 E |
| 2020 | \$0.48 A | \$0.45 A | \$0.82 A | \$0.97 E | \$2.73 E |
| 2019 | \$2.97 A | \$1.71 A | \$1.05 A | \$0.56 A | \$6.35 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 08/18/2020. The reports text is as of 08/19/2020.

## Overview

Idaho-based Micron Technology has established itself as one of the leading worldwide providers of semiconductor memory solutions.

Through global brands, namely Micron, Crucial and Ballistix, Micron manufactures and markets high-performance memory and storage technologies including Dynamic Random Access Memory (DRAM), NAND flash memory, NOR Flash, 3D XPoint memory and other technologies. Its solutions are used in leading-edge computing, consumer, networking and mobile products.

A major portion of the revenues is derived from DRAM sales. The company's mission is to be the most efficient and innovative global provider of semiconductor memory solutions.

Micron reported revenues of \$23.4 billion in fiscal 2019. The company has four reportable segments:

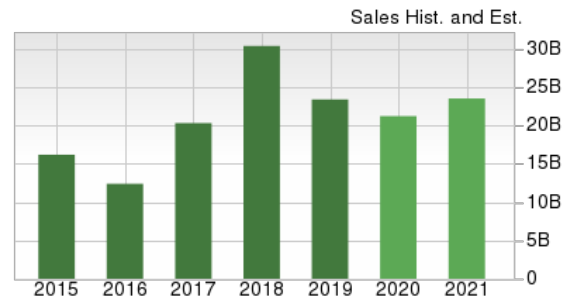
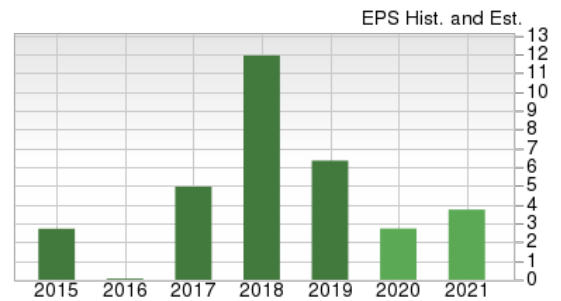
**Compute and Networking Business Unit (CNBU):** The unit comprises of DRAM and NOR Flash products that are sold to the computer, networking, graphics, and cloud server markets, and NAND Flash products which are sold into the networking market. CNBU delivered revenues of \$10 billion (43% of total revenues) in fiscal 2019.

**Mobile Business Unit (MBU):** The unit comprises Micron's discrete DRAM, discrete NAND and managed NAND (including eMMC and universal flash storage (UFS) solutions) products that are sold to smartphone and other mobile-device markets. MBU generated revenues of \$6.4 billion (28%) in fiscal 2019.

**Storage Business Unit (SBU):** The unit accounts for solid state drives (SSDs) and component-level solutions sold into enterprise and cloud, client and consumer storage markets as well as other discrete storage products sold in component and wafer forms to the removable storage markets. SBU's revenues grossed \$3.8 billion (16%) in fiscal 2019.

**Embedded Business Unit (EBU):** The unit includes Micron's discrete DRAM, discrete NAND, managed NAND and NOR products, which are sold to the automotive, industrial and consumer markets. EBU's revenues logged \$3.1 billion (13%) in fiscal 2019.

The company struggles with intense competition from Intel, Samsung Electronics, SK Hynix, Toshiba Memory and Western Digital Corporation.



---

## Reasons To Buy:

- ▲ Micron's third-quarter fiscal 2020 results reflect that the company stood resilient to the coronavirus impact on global economic and business activities. During the quarterly conference call, the memory chip maker revealed that coronavirus had minimal impact on its financials. Micron has been witnessing stronger memory-chip demand from PC manufacturers and data-center operators. Notably, the coronavirus-led global lockdown is spurring demand for PCs and notebooks as more and more workers and students work and learn from home. The work-and-learn-from home necessity is also driving demand for cloud storage. Furthermore, the lockdown has enhanced the usage of online services globally. Therefore, data-center operators are enhancing their cloud-storage capacities to accommodate the need of growing demand for cloud services. In addition, the company noted that it has ample inventory to counter the near-term supply-chain disruption caused by the pandemic and support the spike in memory-chip demand from PC manufacturers and data-center operators.
- ▲ Micron offers both DRAM and NAND products. While DRAM chips are key components of PCs and servers, NAND flash chips are crucial to smartphones and solid-state hard drives. Micron believes rapid 5G adoption, advent of foldable phones and upcoming innovations in AR/VR will shore up sustained content growth and augment smartphone unit sales this year. Further, 5G adoption beyond mobile is likely to foster demand for memory and storage, particularly in IoT devices, wireless infrastructure and data centers. Moreover, steep demand from PC, server and smartphone makers and any supply shortage will push prices up, thereby bolstering Micron's top- and bottom-line results.
- ▲ Micron is expanding its foothold in the SSD storage market. The emergence of thinner laptops and tablets over the past few years has created ideal market conditions for SSDs, which are now entering the higher end of the market. Furthermore, secular growth of digital data, modest growth in TAM and higher demand for storage will drive growth in general, and especially for SSDs. Per MarketInsightsReports, the SSD market is expected to witness a CAGR of 5.5% between 2020 and 2025 and reach \$16.98 billion by 2025. The SSD segment's growth potential is a major positive for Micron as this could offset the losses incurred from the sluggishness in the PC market, which does not necessarily use SSDs.
- ▲ Micron's focus on improving its cost structure and increasing the mix of high-value solutions in its portfolio is likely to boost margins. A strong execution of this strategy has improved the company's annualized profitability by more than \$6 billion from fiscal 2016 to fiscal 2019. Further, it has bettered Micron's EBITDA margin by more than 15 basis points (bps) relative to the company's peers over the same period, per management.
- ▲ Over the years, Micron has made several significant acquisitions to enhance its capabilities. Over the last two decades the company has acquired 13 businesses. A few notable among them were Elpida, Inotera, Numonyx, and Lexar Media. These buyouts have helped Micron in expanding its wafer manufacturing capacity, DRAM offerings and wafer testing and probe services.
- ▲ Micron is a cash rich company with a strong balance sheet. As of May 28, 2020, the company had cash and short-term investments of nearly \$8.7 billion, which is significantly higher than its debt (long-term including current maturities) of approximately \$6.7 billion. Since it has net cash available on its balance sheet, the existing cash can be used for pursuing strategic acquisitions, investment in growth initiatives and distribution to shareholders.
- ▲ Micron has a strong cash-flow generating ability, which enables it to improve its cash balance and lower debt. Notably, in the last three years, its cash balance has improved to \$8.7 billion as of May 28, 2020 from \$4.3 billion as of Jun 1, 2017. During the same time frame, it has managed to lower its debt to \$6.7 billion from \$11.7 billion. In the first nine months of fiscal 2020, the company generated \$6 billion of operating cash flow and repaid nearly \$4.3 billion of its debt. Strong cash flows also enable the company to enhance shareholders' wealth through share repurchases. In fiscal 2019, the company repurchased shares worth \$2.7 billion (representing 65% of free cash flow) under the authorized buyback program and remains committed to allocating at least 50% of free cash flow toward repurchases. Moreover, it has bought back approximately \$203 million worth of its common stocks in fiscal 2020 so far.

Micron banks on revival in DRAM demand and increasing mix of high-value solutions in its portfolio.

---

## Reasons To Sell:

- ▼ Micron's near-term performance might be hurt by the bleak memory chip demand as customers are adjusting inventories in response to the economic recession caused by COVID-19. The company's chief financial officer David Zinsner recently warned that the company is likely to miss the first-quarter fiscal 2021 revenue forecast as the memory chip demand is worsening. This makes us slightly cautious about the company's near-term growth prospects.
- ▼ Micron's fate is highly tied to DRAM and NAND flash pricing. Oversupply and lower-than-expected growth in end-market demand has been a dampener. Higher level of customer inventory in the cloud, graphics and enterprise market is a key threat. Moreover, soft server demand from several enterprise OEM customers is a concern. Additionally, Intel's CPU shortages coupled with macroeconomic uncertainties are likely to pose key challenges to the company.
- ▼ The United States and China's tit-for-tat trade war is a major threat to the company. This is because the United States is the largest semiconductor manufacturing country with China being its biggest importer. Micron's heavy dependence on China is anticipated to keep the company under pressure, at least in the near term. Further, last May, the company suspended chip shipments to Huawei, in response to the export ban imposed by the U.S. government. The company fears a worsening decline in sales to Huawei over the coming quarters in case it fails to secure the license to ship additional products to Huawei or if the trade ban is not removed.
- ▼ Micron faces competition from Samsung Electronics Co., Ltd., SK Hynix Inc., Spansion Inc. and Toshiba Corporation in the semiconductor memory market. Notably, wafer capacity increases from its competitors could disrupt DRAM and NAND supply dynamics affecting prices and the company's results. Moreover, heightening trade tension might compel many Chinese companies to buy chips from Samsung and other non-American chipmakers, consequently dumping Micron.
- ▼ Ramped-up production of domestic memory chips in China can also seriously jeopardize Micron's prospects going forward. Changxin Memory Technologies has recently unveiled China's first domestically designed DRAM chip. Moreover, Yangtze Memory Technologies is likely to start manufacturing NAND flash memory to challenge Samsung, Toshiba, Western Digital and Micron, per Nikkei.
- ▼ The merger between Western Digital and SanDisk has made it more challenging for Micron to capture share in the newer storage technology space – SSD. The companies will also be able to offer competitive solutions in cloud-based computing, which has overtaken digital storage solution space over the past couple of years. Therefore, it will be difficult for Micron to remain competitive in the storage business.
- ▼ Micron continues to acquire a large number of companies. While this improves revenue opportunities, business mix and profitability, it also adds to integration risks. Moreover, frequent acquisitions are a distraction for management, which could impact organic growth, going forward. Additionally, higher mix of NAND, which has lower gross margin, coupled with falling memory prices and minimal decline in manufacturing cost is likely to keep margins under pressure.

Product mix, falling memory prices and minimal decline in manufacturing cost are key headwinds.

## Last Earnings Report

Micron reported stronger-than-anticipated results for third-quarter fiscal 2020. The company's fiscal third-quarter non-GAAP earnings per share of 82 cents beat the Zacks Consensus Estimate by 5.1% and surpassed its guided range of 75-80 cents as well. Nonetheless, non-GAAP earnings registered a year-over-year decline of 21.9%.

Quarterly revenues of \$5.44 billion outpaced the consensus mark of \$5.32 billion and increased 13.6% from the year-ago quarter's \$4.79 billion. The memory chip maker's revenues also came in line with the higher-end of management's guided range of \$5.2-\$5.4 billion.

**Quarter Ending** **05/2020**

| Report Date      | Jun 29, 2020 |
|------------------|--------------|
| Sales Surprise   | 2.19%        |
| EPS Surprise     | 5.13%        |
| Quarterly EPS    | 0.82         |
| Annual EPS (TTM) | 2.31         |

### Revenue Details

DRAM revenues of \$3.59 billion, accounting for 66% of total revenues in the fiscal third quarter, grew 5.6% year over year and 16.3% sequentially. Bit shipments rose nearly 10%, sequentially. On a sequential basis, ASP increased in the mid-single-digit percentage range.

NAND revenues of \$1.67 billion, representing 31% of the total top line, were up 50.8% on a year-over-year basis and 10% quarter on quarter. While NAND ASP increased in the upper single-digit percentage band, shipment quantities grew in the low-single-digit percent range sequentially.

Business-unit wise, revenues of the computing and networking business (CNBU) unit grew 7% from the year-ago quarter and 13% sequentially to \$2.22 billion. This sequential growth was mainly driven by stronger demand for data-center products and double-digit quarter-over-quarter pricing improvements. Quarter-on-quarter growth was partially offset by supply-constraint for certain compute DRAM products, which limited the company's ability to meet some demand.

Revenues of \$1.53 billion from the Mobile Business Unit (MBU) climbed 30% on a year-over-year basis and 21% sequentially. This sequential growth was mainly driven by solid bit shipment growth in Micron's LPDRAM product.

The Embedded Business Unit revenues logged \$675 million, down 4% from the year-ago quarter and 3% from the previous quarter, primarily due to reduced demand from the automotive sector.

Revenues from the Storage Business Unit (SBU), comprising SSD NAND components and 3D XPoint totaled \$1.01 billion, up 25% year over year and 17% sequentially. This sequential growth mainly resulted from improved pricing and increased data-center SSD demand.

### Margins

Micron's non-GAAP gross profit of \$1.8 billion declined 4.2% from the prior-year period, but increased 29% sequentially. Non-GAAP gross margin slipped from 39% in the year-ago quarter to 33%. However, gross margin expanded 400 basis points (bps) sequentially.

Underutilization charges at the Lehi Lab had a negative impact of nearly \$155 million of 285 bps. Nonetheless, sequential growth in gross profit and margin was chiefly aided by increased pricing at both DRAM and NAND, and improvements in product mix.

Micron's non-GAAP operating income of \$981 million declined from the year-ago quarter's \$1.11 billion. Non-GAAP operating margin contracted from 23% to 18%. However, on sequential basis, non-GAAP operating profit and margin improved 81% and 700 bps, respectively.

### Balance Sheet and Cash Flow

The company exited the reported quarter with cash and short-term investments of \$8.66 billion compared with the \$7.5 billion recorded at the end of the prior quarter.

Micron's long-term debt increased to \$6.36 billion from the \$5.2 billion witnessed at the end of the fiscal second quarter.

The company generated operating cash flow of \$2 billion during the fiscal third quarter and free cash flow of \$101 million. In the first nine months of fiscal 2020, the company generated operating and free cash flows of \$6.04 billion and \$250 million, respectively.

The company repurchased shares worth \$40 million in the reported quarter. During the first three quarters of fiscal 2020, Micron repurchased \$134 million worth of its common stocks.

### Guidance for Q4

Buoyed by the better-than-expected quarterly results, Micron has issued an upbeat guidance for the fiscal fourth quarter. The company anticipates revenues of \$5.75-\$6.25 billion (mid-point \$6 billion) for the quarter.

For the fiscal fourth quarter, Micron expects non-GAAP gross margin of 35.5% (+/- 150 bps). The company estimates higher underutilization charges due to contracted production volumes of approximately \$135 million in the quarter to hurt the gross margin.

Operating expenses on a non-GAAP basis are likely to be \$850 million (+/- \$25 million).

Earnings per share are anticipated to be \$1.05 (+/- 10 cents).

## Recent News

On Aug 6, Micron announced the appointment of Kris Baxter to the role of corporate vice president and general manager of Micron's Embedded Business Unit (EBU).

On Aug 5, Micron announced the appointment of Lynn Dugle to its board of directors.

On Jul 14, Micron announced a comprehensive enablement program which will provide early access to technical resources, products and ecosystem partners.

On Jun 11, Micron announced that it has provided \$1 million to support underserved communities disproportionately affected by the coronavirus.

On Jun 4, Micron announced the UV Robot Design Challenge to address the growing need for reliable, low-cost ultraviolet (UV) light robotic solutions that can help automate disinfection and potentially combat the spread of COVID-19 and other diseases.

On May 27, Micron update third-quarter fiscal 2020 outlook. The company expects revenues in the range \$5.2 billion to \$5.4 billion for the third quarter, while non-GAAP gross margin of 33%-34%. Non-GAAP earnings per share are projected to be between 75 cents and 80 cents.

On May 12, Micron announced new client solid-state drives (SSDs) that bring NVMe performance to client computing applications. The Micron 2300 SSD combines the power and density needed to drive compute-heavy applications in a compact form factor with the reduced power consumption modern mobile users' demand. Moreover, for the first time, the company is offering NVMe performance and low-cost quad-level-cell (QLC) NAND in the Micron 2210 QLC SSD.

On Apr 27, Micron announced the first open-source, heterogeneous-memory storage engine (HSE), designed specifically for solid-state drives (SSDs) and storage-class memory (SCM).

On Apr 27, Micron announced its first open-source, heterogeneous-memory storage engine (HSE), designed specifically for solid-state drives (SSDs) and storage-class memory (SCM). HSE, originally developed by Micron and now available to the open-source community, is ideal for developers using all-flash infrastructure.

On Apr 22, Micron and Motorola together announced integration of Micron's low-power DDR5 (LPDDR5) DRAM into Motorola's new Motorola edge+ smartphone, bringing the full potential of the 5G experience to consumers.

On Apr 21, Micron announced entering an agreement to sell \$1.25 billion 2.497% Senior Notes due 2023.

## Valuation

Micron shares decreased 17.2% in the year-to-date period but up 0.4% over the trailing 12-month period. Stocks in the Zacks sub-industry are down 15.9%, while the Zacks Computer & Technology sector is up 21.2% in the year-to-date period. Over the past year, the Zacks sub-industry and the sector are up 2.2% and 36.6%, respectively.

The S&P 500 Index is up 4.8% in the year-to-date period and 16.7% in the past year.

The stock is currently trading at 2.1X forward 12-month sales, which compares to 2.14X for the Zacks sub-industry, 4.09X for the Zacks sector and 3.71X for the S&P 500 index.

Over the past five years, the stock has traded as high as 3.01X and as low as 0.69X with a 5-year median of 1.69X. Our Neutral recommendation indicates that the stock will perform in-line with the market. Our \$47 price target reflects 2.21X forward 12-month sales.

The table below shows summary valuation data for MU

| Valuation Multiples - MU |               |       |              |        |         |
|--------------------------|---------------|-------|--------------|--------|---------|
|                          |               | Stock | Sub-Industry | Sector | S&P 500 |
| P/S F12M                 | Current       | 2.10  | 2.14         | 4.09   | 3.71    |
|                          | 5-Year High   | 3.01  | 2.76         | 4.09   | 3.71    |
|                          | 5-Year Low    | 0.69  | 0.76         | 2.32   | 2.53    |
|                          | 5-Year Median | 1.69  | 1.69         | 3.14   | 3.05    |
| EV/Sales TTM             | Current       | 2.35  | 2.39         | 4.76   | 3.30    |
|                          | 5-Year High   | 3.13  | 3.13         | 4.79   | 3.46    |
|                          | 5-Year Low    | 0.88  | 0.88         | 2.59   | 2.14    |
|                          | 5-Year Median | 2.05  | 2.05         | 3.63   | 2.87    |
| EV/EBITDA TTM            | Current       | 5.94  | 6.05         | 13.42  | 12.78   |
|                          | 5-Year High   | 8.60  | 8.60         | 13.49  | 12.85   |
|                          | 5-Year Low    | 1.48  | 1.48         | 7.59   | 8.25    |
|                          | 5-Year Median | 3.95  | 3.95         | 10.92  | 10.91   |

As of 08/18/2020

## Industry Analysis Zacks Industry Rank: Top 50% (125 out of 252)



## Top Peers

| Company (Ticker)                                      | Rec          | Rank |
|-------------------------------------------------------|--------------|------|
| Taiwan Semiconductor Manufacturing Company Ltd. (TSM) | Outperform   | 2    |
| Advanced Micro Devices, Inc. (AMD)                    | Neutral      | 3    |
| Intel Corporation (INTC)                              | Neutral      | 3    |
| Microchip Technology Incorporated (MCHP)              | Neutral      | 3    |
| NVIDIA Corporation (NVDA)                             | Neutral      | 2    |
| Seagate Technology PLC (STX)                          | Neutral      | 4    |
| Western Digital Corporation (WDC)                     | Neutral      | 5    |
| Samsung Electronics Co. (SSNLF)                       | Underperform | 5    |

| Industry Comparison Industry: Semiconductor Memory |            |            |           | Industry Peers |              |           |
|----------------------------------------------------|------------|------------|-----------|----------------|--------------|-----------|
|                                                    | MU         | X Industry | S&P 500   | INTC           | SSNLF        | WDC       |
| Zacks Recommendation (Long Term)                   | Neutral    | -          | -         | Neutral        | Underperform | Neutral   |
| Zacks Rank (Short Term)                            | 3          | -          | -         | 3              | 5            | 5         |
| VGM Score                                          | B          | -          | -         | A              | F            | A         |
| Market Cap                                         | 49.33 B    | 49.33 B    | 23.71 B   | 206.91 B       | 13,193.22 B  | 10.40 B   |
| # of Analysts                                      | 8          | 9          | 14        | 13             | 1            | 7         |
| Dividend Yield                                     | 0.00%      | 0.00%      | 1.63%     | 2.71%          | 0.00%        | 0.00%     |
| Value Score                                        | A          | -          | -         | A              | F            | B         |
| Cash/Price                                         | 0.17       | 0.17       | 0.07      | 0.12           | NA           | 0.28      |
| EV/EBITDA                                          | 3.76       | 3.76       | 13.45     | 6.23           | NA           | 8.57      |
| PEG Ratio                                          | 1.59       | 1.59       | 3.01      | 1.34           | NA           | NA        |
| Price/Book (P/B)                                   | 1.30       | 1.30       | 3.18      | 2.52           | NA           | 1.09      |
| Price/Cash Flow (P/CF)                             | 3.91       | 3.91       | 12.70     | 6.40           | NA           | 4.57      |
| P/E (F1)                                           | 16.26      | 16.27      | 21.98     | 10.02          | 692.79       | 12.37     |
| Price/Sales (P/S)                                  | 2.44       | 2.44       | 2.46      | 2.62           | 66.07        | 0.62      |
| Earnings Yield                                     | 6.15%      | 6.15%      | 4.33%     | 9.97%          | 0.14%        | 8.10%     |
| Debt/Equity                                        | 0.18       | 0.18       | 0.76      | 0.44           | NA           | 0.97      |
| Cash Flow (\$/share)                               | 11.36      | 11.36      | 6.94      | 7.60           | NA           | 7.60      |
| Growth Score                                       | C          | -          | -         | A              | C            | B         |
| Hist. EPS Growth (3-5 yrs)                         | 69.37%     | 69.37%     | 10.44%    | 22.01%         | 3.97%        | -27.79%   |
| Proj. EPS Growth (F1/F0)                           | -57.03%    | -59.76%    | -5.97%    | -0.33%         | 17.28%       | -7.71%    |
| Curr. Cash Flow Growth                             | -35.35%    | -35.35%    | 5.22%     | 6.53%          | NA           | -23.42%   |
| Hist. Cash Flow Growth (3-5 yrs)                   | 15.84%     | 15.84%     | 8.52%     | 9.99%          | NA           | -5.08%    |
| Current Ratio                                      | 2.89       | 2.89       | 1.33      | 1.97           | NA           | 2.05      |
| Debt/Capital                                       | 15.61%     | 15.61%     | 44.50%    | 30.56%         | NA           | 49.31%    |
| Net Margin                                         | 11.16%     | 11.16%     | 10.13%    | 29.97%         | 9.12%        | -1.49%    |
| Return on Equity                                   | 6.31%      | 6.31%      | 14.59%    | 31.55%         | NA           | 6.72%     |
| Sales/Assets                                       | 0.40       | 0.40       | 0.51      | 0.55           | NA           | 0.65      |
| Proj. Sales Growth (F1/F0)                         | -9.27%     | -9.27%     | -1.54%    | 4.34%          | -0.67%       | -3.43%    |
| Momentum Score                                     | C          | -          | -         | D              | C            | C         |
| Daily Price Chg                                    | -1.81%     | 11.59%     | -0.41%    | -0.57%         | 4,900.00%    | -2.50%    |
| 1 Week Price Chg                                   | -6.46%     | 13.44%     | 1.09%     | 1.79%          | 0.00%        | -3.39%    |
| 4 Week Price Chg                                   | -13.82%    | 68.09%     | 3.41%     | -19.85%        | 4,900.00%    | -21.42%   |
| 12 Week Price Chg                                  | -3.06%     | 198.47%    | 9.80%     | -21.96%        | 4,900.00%    | -22.99%   |
| 52 Week Price Chg                                  | 0.38%      | 0.38%      | 3.43%     | 4.40%          | 4,900.00%    | -38.23%   |
| 20 Day Average Volume                              | 19,636,476 | 9,821,515  | 1,894,669 | 45,102,664     | 63           | 7,191,282 |
| (F1) EPS Est 1 week change                         | -0.94%     | -0.94%     | 0.00%     | 0.00%          | 0.00%        | 0.00%     |
| (F1) EPS Est 4 week change                         | -0.94%     | -0.94%     | 1.86%     | 0.76%          | -5.06%       | -61.30%   |
| (F1) EPS Est 12 week change                        | 31.13%     | 31.13%     | 2.86%     | 0.97%          | -8.33%       | -64.55%   |
| (Q1) EPS Est Mthly Chg                             | -2.40%     | -2.40%     | 0.80%     | -5.10%         | -11.43%      | -66.34%   |

---

## 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 have an excellent 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    | A |
| Growth Score   | C |
| Momentum Score | C |
| 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

**This report contains independent commentary to be used for informational purposes only. The analysts contributing to this report do not hold any shares of this stock. The analysts contributing to this report do not serve on the board of the company that issued this stock. The EPS and revenue forecasts are the Zacks Consensus estimates, unless indicated otherwise on the reports first page.** Additionally, the analysts contributing to this report certify that the views expressed herein accurately reflect the analysts personal views as to the subject securities and issuers. ZIR certifies that no part of the analysts compensation was, is, or will be, directly or indirectly, related to the specific recommendation or views expressed by the analyst in the report.

Additional information on the securities mentioned in this report is available upon request. This report is based on data obtained from sources we believe to be reliable, but is not guaranteed as to accuracy and does not purport to be complete. Any opinions expressed herein are subject to change.

ZIR is not an investment advisor and the report should not be construed as advice designed to meet the particular investment needs of any investor. Prior to making any investment decision, you are advised to consult with your broker, investment advisor, or other appropriate tax or financial professional to determine the suitability of any investment. This report and others like it are published regularly and not in response to episodic market activity or events affecting the securities industry.

This report is not to be construed as an offer or the solicitation of an offer to buy or sell the securities herein mentioned. ZIR or its officers, employees or customers may have a position long or short in the securities mentioned and buy or sell the securities from time to time. ZIR is not a broker-dealer. ZIR may enter into arms-length agreements with broker-dealers to provide this research to their clients. Zacks and its staff are not involved in investment banking activities for the stock issuer covered in this report.

ZIR uses the following rating system for the securities it covers. **Outperform-** ZIR expects that the subject company will outperform the broader U.S. equities markets over the next six to twelve months. **Neutral-** ZIR expects that the company will perform in line with the broader U.S. equities markets over the next six to twelve months. **Underperform-** ZIR expects the company will underperform the broader U.S. equities markets over the next six to twelve months.

No part of this report can be reprinted, republished or transmitted electronically without the prior written authorization of ZIR.