May 15, 2019

Zacks Small-Cap Research

Sponsored – Impartial - Comprehensive

Lisa Thompson
312-265-9154
lthompson@zacks.com

scr.zacks.com
10 S. Riverside Plaza, Chicago, IL 60606

TowerJazz (TSEM-NASDAQ)

TSEM: Management Sees Signs of Second Half Improvement

We believe that the stock could be worth $21.00 next year using industry average PE ratios given current earnings estimates.

Current Price (05/14/19)	$17.17
Valuation	**$21.00**

OUTLOOK

TowerJazz is a pure-play analog semiconductor wafer foundry that manufactures SiGe, MEMS, RF, embedded flash-based memory, analog/mixed-signal, and CMOS image-sensor devices in the US, Israel and Japan. It has capacity to $1.6B in sales and is serving high growth markets such as RF High Position analog, CMOS image sensors, and power management. It is reaching the end of its contract with Panasonic and is expected to receive lower revenues from them as of March 31 affecting revenue growth but possibly not profits. We believe the company will benefit greatly from the shift to 5G.

SUMMARY DATA

52-Week High	**$26.29**
52-Week Low	**$13.59**
One-Year Return (%)	**-30.9**
Beta	**1.2**
Average Daily Volume (sh)	**268,585**
Shares Outstanding (mil)	**105.3**
Market Capitalization ($mil)	**$1,808**
Short Interest Ratio (days)	**3.9**
Institutional Ownership (%)	**52**
Insider Ownership (%)	**1**
Annual Cash Dividend	**$0.00**
Dividend Yield (%)	**0.00**
5-Yr. Historical Growth Rates	
Sales (%)	**19.3**
Earnings Per Share (%)	**-0.2**
Dividend (%)	**N/A**
P/E using TTM EPS	**11.4**
P/E using 2019 Estimate	**16.5**
P/E using 2020 Estimate	**13.5**
Zacks Rank	**N/A**

Risk Level	**Average**
Type of Stock	**Mid-Value**
Industry	**Elec Comp-Semis**

ZACKS ESTIMATES

Revenue
(in millions of $)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2017	330 A	345 A	355 A	358 A	1,387 A
2018	313 A	335 A	323 A	334 A	1,304 A
2019	310 A	305 E	315 E	327 E	1,257 E
2020					1,348 E

Earnings Per Share
(Adjusted non-GAAP Diluted)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2017	$0.50 A	$0.54 A	$0.60 A	$0.58 A	$2.21 A
2018	$0.31 A	$0.42 A	$0.37 A	$0.41 A	$1.51 A
2019	$0.30 A	$0.22 E	$0.26 E	$0.31 E	$1.04 E
2020					$1.27 E

Zacks Projected EPS Growth Rate - Next 5 Years % **6**

© Copyright 2019, Zacks Investment Research. All Rights Reserved.

WHAT'S NEW

TowerJazz reported Q1 2019 revenues of $310 million versus $313 million a year ago (down 1%), exactly in the midpoint of its guidance range. The industry is still suffering from the over-ordering in advance of tariffs, and current macroeconomic uncertainties that are driving tighter inventory management. The company guided to a revenue range of $291 million to $321 million for Q2 2019, which has a midpoint of $306 million. New terms in TowerJazz's agreement with Panasonic went into effect after March 31, 2019. These terms reduce the amount of revenues paid by Panasonic to the joint venture and we expect that to amount to be approximately $20 million dollars per quarter starting in this quarter. The company however believes that these new terms, while reducing revenues, should produce the same net income for TowerJazz from reduced taxes and the elimination of dividend payments to Panasonic. In 2017 TowerJazz paid Panasonic a $4.4 million dividend.

Gross margin for the first quarter was 20.4% versus 21.2% a year ago and 22.7% in Q4 2018.

Operating expenses increased $1.5 million year over year mostly due to a $900,000 increase in R&D. The operating margin declined to 9% from 10% year over year. On a dollar basis it was down 14%.

Other expense was a gain of $725,000 compared to expenses of $3.8 million last year and $2.3 million in Q4. During the quarter TowerJazz repaid another $3.1 million in debt.

GAAP net income was $26.3 million versus $26.1 million last year, while non- GAAP net income was $31.7 million versus $31.1 million.

Diluted GAAP EPS was $0.25 per share versus $0.26 last year. Adjusted non-GAAP EPS declined to $0.30 versus $0.31 a year ago. Average diluted shares for the quarter were 107.0 million up 101.1 million last year, due to the conversion of the Jazz bonds.

EBITDA for the fourth quarter of 2018 was $79 million compared to $93 million in Q4 and $84 million a year ago.

Balance Sheet and Capacity

The company has **cash, short-term deposits, and marketable securities of $673 million** compared to $641 million last quarter as it increased debt by $41 million to $309 million versus $267 million last quarter.

Its quick ratio is high at 3.7xs and it has $781 million in working capital. The company is stockpiling cash to increase future capacity internally as well as possibly through acquisition. Customers are adopting 300mm at a pace that TSEM expects that by this quarter or the third quarter of 2019 it may need to make a decision as to how to add additional capacity by in order to meet 2020 and 2021 demand.

The company has a goal to reach $3.5 billion in revenues. It believes that it can grow organically to $2.3 billion to $2.5 billion with all its current and planned initiatives including the Takoma project, a new 8-inch semiconductor fab in Nanjing, China. The rest is expected to come from acquisitions. The Chinese government has taken major ownership of the project in China and TowerJazz has gotten its first milestone payment of $10 million for services within the project scope. With current trade tariffs in place, TowerJazz is in a good position being able to provide product outside of China and in the long run, if tariffs continue, it could be at a competitive advantage versus Chinese fabs particularly by having Japanese fabs.

The current fab capacity will allow the company to grow revenues and improve margins through capacity utilization. TowerJazz continues to increase capacity at its current fabs. Blended TPSCo factories had an average of about 50% utilization, but TSEM bought tools to increase capacity for certain products at the Uozu 300 millimeter foundry. It expects to make a decision in Q2 or Q3 about purchasing equipment to relieve the bottlenecks in processing flows at the Uozo fab that will require greater financial investment.

When the decision has been reached, TSEM will release a press release with the details. The company targets 85% utilization at its fabs. Its current fabs were at the following capacity utilization at quarter end:

	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019
Fab1 Migdal Haemek, Israel 6"	87%	90%	91%	93%	90%	95%	90%	90%	84%
Fab2 Migdal Haemek, Israel 8"	89%	85%	86%	85%	80%	85%	80%	76%	70%
Fab3 Newport Beach, CA 8"	87%	86%	81%	76%	80%	85%	85%	90%	80%
Three TPSCo factories	50%	50%	58%	60%	50%	50%	60%	55%	50%
San Antonio, 8"	60%	60%	60%	60%	55%	60%	50%	50%	50%

RF Group

Within RF, SiGe continues to grow. It is being used in data centers, 5G infrastructure, automotive radar, mobile handset, and IoT markets. Capacity continues to be added in San Antonio and Newport Beach fabs and the company expects that SiGe revenue capability should increase approximately 40% (or $70 million) by Q4 2019 compared to the $50 million achieved in Q4 2018 and the $40 million expected in Q2 2019. The capabilities, size, and cost advantages of its silicon photonics products should allow it to take market share. In the RF wireless business, revenues should be predominantly flat to 2018, they should yield much higher margins due to product mix and sales should improve in the second half and grow versus 2018. In 2020, revenues should grow due to the acceleration of 5G spend. Infrastructure continues to suffer both because of the over-ordering in the industry to beat tariffs, and the wait for 400G products to become available.

Power Management

In 2018, this business was 34% of sales. It is enjoying an accelerated pipeline of design activity even though the automotive business is expected to be flat to down in 2019.

Sensors Business

In 2018, sensors were 18% of total revenue. New products will ramp production and be used in machine vision, facial recognition, 3D mapping and augmented, and virtual reality. In the non-image sensing market, sensors are being used to measure temperature, magnetism, UV light, radon, and other characteristics for use in the IoT industry. Sensors are also being incorporated into AI applications.

KEY POINTS

- Although the semiconductor market is typically considered cyclical, we believe that based on the end-user markets for which TowerJazz's products used, it should be less so. The company is currently being impacted in slow mobile handset sales.
- As a foundry, the company has natural operating leverage given its high fixed costs. Every dollar in revenue tends to add over $0.50 to gross margin. When the company adds 12" revenues that blended percentage will trend higher as 12" can sell at 60+ gross margins.
- The company has a strong market position in high quality imaging and 3D, which is increasing being used for gesturing controls, machine vision, security anti-crash systems and self driving cars, as well as smartphones with high megapixel cameras. In this area its primary competition is Sony, which makes it a preferable source for many companies that compete with Sony.
- The company has considerable exposure to 5G and should be a major beneficiary of this transition in 2020.

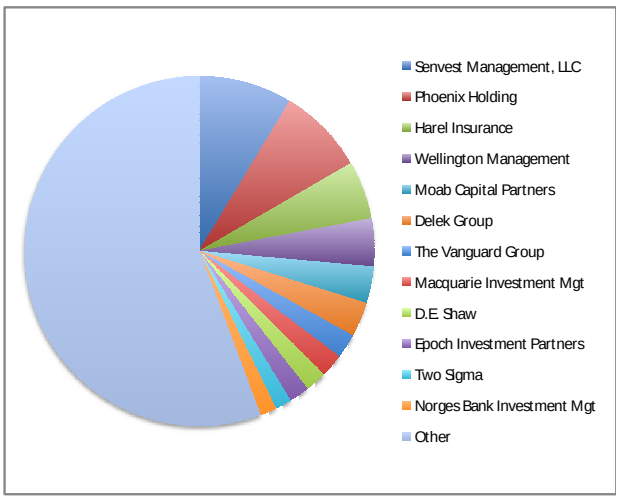
- Having Panasonic (who generated 33% of the company's revenues in 2018) as a partner gives the company increased stature in the industry and has attracted new customers who have a favorable disposition to working with a trusted and known company with high quality product and leading edge expertise in imaging. However TowerJazz expects to receive less revenue from Panasonic going forward and this has effected earnings expectations.
- The major long-term risk to the stock is the need to add capacity, which is currently $1.6 billion in revenue. The company can do this by increasing current fab capacities, buying a new fab either outright or in a joint venture. It has recently partnered with Tacoma to create capacity in China.
- We believe the stock is currently undervalued on a PE basis versus its peers, as well as by PE to long-term growth rate. Peer companies trade at an average PE of 16.6 times 2020 estimates. At an industry average PE, TSEM's stock could trade at $21.00 per share. However investors may be waiting to see the company return to revenue growth, which may not happen until Q4 of 2019 at the earliest.

VALUATION

Our fully diluted non-GAAP EPS estimate for 2019 for TSEM is now $1.04 and our 2020 EPS estimate is $1.27. Using TSM's 2020 PE, TSEM could be worth 16.6 times $1.27 or $21.00 per share by next year. The biggest risks to the stock is that the mobile market continues its weakness beyond the expected time frame, the ramp to 300 mm technology is impeded or constrained, customer components continue to be in short supply, or that an acquisition of a fab or a joint venture could incur short-term earnings dilution. We also need more detail on the effect of Panasonic agreement changes on the income statement, which will start in Q2 2019.

Foundry Companies							
	Ticker	**EPS 19E**	**EPS 20E**	**Price**	**PE 2019**	**PE 2020E**	**Growth Rate**
Company							
Semiconductor Manufacturing	SMI	0.01	NA	5.09	509.0	NA	NA
Taiwan Semiconductor	TSM	2.05	2.53	41.97	20.5	16.6	23.4%
United Microelectronics	UMC	0.00	0.00	2.07	NM	NM	NM
X-Fab	XFAB.PA	0	0	4.775	NM	NM	NM
Average						16.6	

OWNERSHIP



INCOME STATEMENT

	March Q1 18	June Q2 18	Sept Q3 18	Dec Q4 18	March Q1 19	June Q2 19E	Sept Q3 19E	Dec Q4 19E	2017	2018	2019E	2020E
REVENUE	312.7	335.1	322.6	333.6	310.1	305.0	315.0	327.0	1,387.3	1,304.0	1,257.1	1,348.2
Yr-to-yr Gr.	-5%	-3%	-9%	-7%	-1%	-9%	-2%	-2%	11%	-6%	-4%	7%
OPERATING EXPENSES												
Cost of goods sold	246.5	256.6	250.0	258.0	247.0	253.0	259.0	266.2	1,033.0	1,011.1	1,025.0	1,079.7
Gross Margin	66.2	78.5	72.6	75.6	63.2	52.0	56.0	60.8	354.3	292.9	232.1	268.5
% of Sales	21.2%	23.4%	22.5%	22.7%	20.4%	17.1%	17.8%	18.6%	25.5%	22.5%	18.5%	19.9%
R&D	18.3	18.2	18.2	18.4	19.2	19.0	19.0	19.0	67.7	73.1	76.2	75
M, G&A	16.0	16.1	15.8	17.0	16.6	16.6	16.6	16.6	66.8	65.0	66.6	64
One-time charges	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Tot Operating Exp.	34.3	34.3	34.1	35.4	35.8	35.6	35.6	35.6	134.5	138.0	142.7	139.0
Operating Income	31.9	44.2	38.6	40.2	27.3	16.4	20.4	25.2	219.8	154.9	89.4	129.5
Operating Margin	10%	13%	12%	12%	9%	5%	6%	8%	16%	12%	7%	10%
Yr-to-yr Gr.	-40%	-23%	-30%	-26%	-14%	-63%	-47%	-37%	25.5%	-29.5%	-40%	35%
Net Interest	(0.6)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(7.8)	(0.6)	0.0	0.0
Other non-cash financing expense	(3.2)	(7.0)	(2.5)	(3.9)	0.7	0.7	0.7	0.7	(7.6)	(16.6)	2.9	(6.0)
Other income	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	(2.6)	1.6	0.0	0.0
Gain from acqusiition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Profit before tax	28.1	38.8	36.1	36.3	28.1	17.1	21.1	25.9	201.8	139.3	92.3	123.5
Profit margin	9.0%	11.6%	11.2%	10.9%	9.1%	5.6%	6.7%	7.9%	14.5%	10.7%	7.3%	9.2%
Taxes	(1.0)	(2.8)	(2.4)	0.2	(1.7)	0.0	0.0	0.0	99.9	(5.9)	(1.7)	(10.0)
Tax Rate	3.4%	7.2%	6.6%	-0.5%	5.9%	0.0%	0.0%	0.0%	-49.5%	4.3%	1.8%	8.1%
Profit before non-controlling	27.2	36.0	33.7	36.5	26.4	17.1	21.1	25.9	301.7	133.4	90.6	113.5
Minority Income	(1.1)	1.7	(0.0)	1.6	(0.2)	2.0	2.0	2.0	(3.6)	2.2	5.8	8.0
GAAP Net income	26.1	37.7	33.6	38.1	26.2	19.1	23.1	27.9	298.0	135.6	96.4	121.5
Yr-to-yr Gr.	-43%	-25%	-39%	-74%	0%	-49%	-31%	-27%	46%	-55%	-29%	26%
Non-GAAP Net Income	31.1	42.1	38.0	43.6	31.7	23.4	27.5	33.5	227.76	154.8	113.00	137.13
GAAP primary EPS	$0.27	$0.38	$0.34	$0.37	$0.25	$0.18	$0.22	$0.26	$3.08	1.35	$0.91	$1.14
Fully diluted GAAP	$0.26	$0.37	$0.33	$0.36	$0.25	$0.18	$0.22	$0.26	$2.90	1.32	$0.90	$1.14
Adj Non-GAAP EPS-Fully dil.	**$0.31**	**$0.42**	**$0.37**	**$0.41**	**$0.30**	**$0.22**	**$0.26**	**$0.31**	**$2.21**	**$1.51**	**$1.04**	**$1.27**
Yr-to-yr Gr.	-48%	-31%	-45%	-38%	-20%	-57%	-42%	-37%	23%	-32%	-31%	21%
Primary Share Out	98.5	98.9	100.2	104.0	105.3	106.3	106.3	106.3	96.6	100.4	106.1	106.3
Fully Diluted GAAP	101.1	101.1	102.1	105.8	107.0	107.0	107.0	107.0	105.9	102.5	107.0	107.0
All in shares	107.7	107.9	108.1	108.1	108.2	108.2	108.2	108.2	107.7	108.0	108.2	108.2
EBITDA	**84.3**	**95.5**	**89.1**	**92.7**	**78.8**	**67.7**	**89.0**	**77.0**	**425.3**	**361.6**	**293.4**	**333.5**
EBITDA Margin	27%	29%	28%	28%	25%	22%	28%	24%	31%	28%	23%	25%
Yr-to-yr Gr.	-17%	-12%	-18%	-14%	-6%	-29%	0%	-17%	16%	-15%	-16%	6%

BALANCE SHEET

$ in thousands	Mar. 31, 2019	Dec. 31, 2018	Qtr-Qtr % Change	Mar. 31, 2018	Yr-Yr % Change
CURRENT ASSETS					
Cash and cash equivalents	**$408,098**	**$385,091**	6.0%	**$464,661**	-12.2%
Short term deposits	**$121,101**	**$120,079**	0.9%	**$0**	NM
Marketable securities	**$144,023**	**135,850**	6.0%	**$125,105**	15.1%
Trade accounts receivable	134,223	153,409	-12.5%	144,352	-7.0%
Inventories	173,782	170,778	1.8%	148,367	17.1%
Other current assets	22,084	22,752	-2.9%	19,175	15.2%
Total current assets	**1,003,311**	**987,959**	1.6%	**901,660**	11.3%
LONG-TERM INVESTMENTS	36,117	35,945	0.5%	28,798	25.4%
PROPERTY AND EQUIPMENT, NET	698,447	657,234	6.3%	652,816	7.0%
INTANGIBLE ASSETS, NET	11,759	13,435	-12.5%	18,479	-36.4%
GOODWILL	7,000	7,000	0.0%	7,000	0.0%
DEFERRED TAX & OTHER ASSETS, NET	89,357	88,404	1.1%	110,771	-19.3%
TOTAL ASSETS	1,845,991	1,789,977	3.1%	1,719,524	7.4%
CURRENT LIABILITIES					
Short term debt	**43,148**	**10,814**	299.0%	**114,763**	-62.4%
Trade accounts payable	109,536	104,329	5.0%	116,496	-6.0%
Deferred revenue	9,213	20,711	-55.5%	14,310	-35.6%
Other current liabilities	60,512	67,867	-10.8%	64,011	-5.5%
Total current liabilities	**222,409**	**203,721**	9.2%	**309,580**	-28.2%
LONG-TERM DEBT	**265,397**	**256,669**	3.4%	**229,013**	15.9%
LONG-TERM CUSTOMERS' ADVANCES	28,939	28,131	2.9%	31,224	-7.3%
EMPLOYEE RELATED LIABILITIES	14,092	13,898	1.4%	14,517	-2.9%
DEFERRED TAX LIABILITY	47,968	51,353	-6.6%	67,435	-28.9%
Total liabilities	578,805	553,772	4.5%	651,769	-11.2%
SHAREHOLDERS' EQUITY	1,267,186	1,236,205	2.5%	1,067,755	18.7%
TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY	$1,845,991	$1,789,977	3.1%	$1,719,524	7.4%
Current Ratio	4.5	4.8	-7.0%	2.9	54.9%
Quick Ratio	3.7	4.0	-7.0%	2.4	53.3%
Working Capital	780,902	784,238	-0.4%	592,080	31.9%
Debt Percent of Assets	17%	15%	11.9%	20%	-16.4%
Debt to Equity	0.2	0.2	12.5%	0.3	-24.4%
Cash	673,222	641,020	5.0%	$589,766	14.2%
Cash per share	$6.47	$6.16	5.0%	$5.67	14.2%
Debt	308,545	267,483	15.4%	343,776	-10.2%

CASH FLOW

	3-Mo 31-Mar-17	3-Mo 30-Jun-17	3-Mo 30-Sep-17	3-Mo 31-Dec-17	Year 2017	3-Mo 31-Mar-18	3-Mo 30-Jun-18	3-Mo 30-Sep-18	3-Mo 31-Dec-18	Year 2018	3-Mo 31-Mar-19
CASH FLOWS - OPERATING ACTIVITIES											
Net profit (loss)	$ 47,046	$ 51,727	$ 54,241	$ 148,642	$ 301,656	$ 27,181	$ 36,009	$ 33,674	$ 36,515	$ 133,379	$ 26,400
Income and non-cash expense items:											
Depreciation and amortization	49,698	52,389	55,014	51,310	208,411	53,977	53,493	52,764	54,157	214,391	52,014
Financing expense associated with deb. series F	0	0	0	0	0	0	0	0	0	0	0
Effect of fair value measurement on debt	6,888	4,873	(1,177)	2,281	12,865	(1,740)	(4,797)	788	(4,042)	(9,791)	4,001
Other expense (income), net	(511)	(142)	253	3,027	2,627	(22)	(1,578)	36	4,006	2,442	(17)
Gain from acquisition	0	0	0	0	0	0	0	0	0	0	0
Changes in assets and liabilities:											
Trade accounts receivable	9,529	(17,242)	361	788	(6,564)	8,089	(18,351)	(3,767)	10,933	(3,096)	18,606
Other receivables and other current assets	(4,439)	(7,307)	2,980	445	(8,321)	3,370	5,713	(919)	3,096	11,260	(3,705)
Inventories	(1,421)	1,688	(4,636)	92	(4,277)	(2,692)	(6,713)	(7,237)	(9,702)	(26,344)	(3,395)
Trade accounts payable	(4,128)	(6,530)	4,795	(2,786)	(8,649)	(6,313)	10,222	(2,688)	(4,783)	(3,562)	(2,651)
Deferred revenue and customers' advances	(8,735)	(4,564)	9,378	(17,882)	(21,803)	(712)	(5,466)	35	8,768	2,625	(10,685)
Other current liabilities	(9,090)	12,866	(13,760)	1,765	(8,219)	(4,219)	13,355	(2,764)	(7,239)	(867)	(4,803)
Employee related liabilities	(257)	(234)	(274)	(2,482)	(3,247)	(387)	193	(240)	(361)	(795)	68
Deferred tax liability, net	(2,440)	(3,230)	(3,259)	(99,915)	(108,844)	(1,531)	(5,151)	(211)	148	(6,745)	(965)
Other long-term liabilities	0	0	0	0	0	0	0	0	0	0	0
Net cash provided by operating activities	**82,140**	**84,294**	**103,916**	**85,285**	**355,635**	**75,001**	**76,929**	**69,471**	**91,496**	**312,897**	**74,868**
CASH FLOWS - INVESTING ACTIVITIES											
Investments in property and equipment, net	**(40,348)**	**(41,312)**	**(41,708)**	**(41,349)**	**(164,717)**	**(40,047)**	**(40,148)**	**(40,892)**	**(48,654)**	**(169,741)**	**(41,718)**
Interest bearing deposits, including designated deposits	(5,118)	0	(49,869)	(64,867)	(114,736)	(14,963)	(15,488)	(4,899)	(123,126)	(158,476)	(6,726)
Net cash provided by (used in) investing activities	(45,466)	(41,312)	(91,577)	(106,216)	(279,453)	(55,010)	(55,636)	(45,791)	(171,780)	(328,217)	(48,444)
CASH FLOWS - FINANCING ACTIVITIES											
Exercise of warrants and options	12,756	14,254	1,027	3,278	31,315	658	26	21	9	714	397
Proceeds from long-term loans	0	0	0	0	0	0	0	0	0	0	0
Debt repayment	(11,805)	(5,655)	(15,932)	(16,863)	(50,255)	(6,656)	3,809	(43,078)	(2,924)	(48,849)	(3,074)
Debenture repayment	0	0	0	0	0	0	0	0	0	0	0
TPSCo dividend to Panasonic	(4,378)	0	0	0	(4,378)	0	0	0	0	0	0
Net cash used in financing activities	(3,427)	8,599	(14,905)	(13,585)	(23,318)	(5,998)	3,835	(43,057)	(2,915)	(48,135)	(2,677)
Effect of foreign exchange rate change	4,371	(91)	(630)	70	3,720	4,707	(2,909)	(3,057)	3,844	2,585	(740)
INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	37,618	51,490	51,771	(34,446)	56,584	18,700	22,219	(22,434)	(79,355)	(60,870)	23,007
CASH AND CASH EQUIVALENTS - BEGINNING OF PERIOD	355,284	432,113	311,062	480,407	389,377	445,961	464,661	486,880	464,446	445,961	385,091
CASH AND CASH EQUIVALENTS - END OF PERIOD	392,902	483,603	362,833	445,961	445,961	464,661	486,880	464,446	385,091	385,091	408,098
Operating Cash Flow	$ 103,121	$ 108,847	$ 108,331	$ 205,260	$ 525,559	$ 79,396	$ 83,127	$ 87,262	$ 90,636	$ 340,421	$ 82,398
Free cash flow	$ 62,773	$ 67,535	$ 66,623	$ 163,911	$ 360,842	$ 39,349	$ 42,979	$ 46,370	$ 41,982	$ 170,680	$ 40,680

HISTORICAL STOCK PRICE



DISCLOSURES

The following disclosures relate to relationships between Zacks Small-Cap Research ("Zacks SCR"), a division of Zacks Investment Research ("ZIR"), and the issuers covered by the Zacks SCR Analysts in the Small-Cap Universe.

ANALYST DISCLOSURES

I, Lisa Thompson, hereby certify that the view expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the recommendations or views expressed in this research report. I believe the information used for the creation of this report has been obtained from sources I considered reliable, but I can neither guarantee nor represent the completeness or accuracy of the information herewith. Such information and the opinions expressed are subject to change without notice.

INVESTMENT BANKING AND FEES FOR SERVICES

Zacks SCR does not provide investment banking services nor has it received compensation for investment banking services from the issuers of the securities covered in this report or article.
Zacks SCR has received compensation from the issuer directly or from an investor relations consulting firm engaged by the issuer for providing non-investment banking services to this issuer and expects to receive additional compensation for such non-investment banking services provided to this issuer. The non-investment banking services provided to the issuer includes the preparation of this report, investor relations services, investment software, financial database analysis, organization of non-deal road shows, and attendance fees for conferences sponsored or co-sponsored by Zacks SCR. The fees for these services vary on a per-client basis and are subject to the number and types of services contracted. Fees typically range between ten thousand and fifty thousand dollars per annum. Details of fees paid by this issuer are available upon request.

POLICY DISCLOSURES

This report provides an objective valuation of the issuer today and expected valuations of the issuer at various future dates based on applying standard investment valuation methodologies to the revenue and EPS forecasts made by the SCR Analyst of the issuer's business.
SCR Analysts are restricted from holding or trading securities in the issuers that they cover. ZIR and Zacks SCR do not make a market in any security followed by SCR nor do they act as dealers in these securities. Each Zacks SCR Analyst has full discretion over the valuation of the issuer included in this report based on his or her own due diligence. SCR Analysts are paid based on the number of companies they cover. SCR Analyst compensation is not, was not, nor will be, directly or indirectly, related to the specific valuations or views expressed in any report or article.

ADDITIONAL INFORMATION

Additional information is available upon request. Zacks SCR reports and articles are based on data obtained from sources that it believes to be reliable, but are not guaranteed to be accurate nor do they purport to be complete. Because of individual financial or investment objectives and/or financial circumstances, this report or article should not be construed as advice designed to meet the particular investment needs of any investor. Investing involves risk. Any opinions expressed by Zacks SCR Analysts are subject to change without notice. Reports or articles or tweets are not to be construed as an offer or solicitation of an offer to buy or sell the securities herein mentioned.