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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

Tower Semiconductor (NASDAQ: TSEM)

Reaping the Rewards of Supply Constraints as it Expands Capacity

We believe that the stock could be worth $44.00 using a 20.9x PE peer multiple on $2.13 per share in earnings by 2022.

Current Price (11/08/21)	$36.82
Valuation	**$44.00**

OUTLOOK

Tower Semiconductor 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 is serving high growth markets in mobile such as RF High Position analog, as well as in CMOS image sensors, and power management. This year it is expanding capacity to fulfill the high demand for both 200mm and 300mm product. It will be also adding a new fab in Italy in partnership with STMicro.

SUMMARY DATA

52-Week High	**$36.82**
52-Week Low	**$22.05**
One-Year Return (%)	**61.1**
Beta	**1.3**
Average Daily Volume (sh)	**388,945**
Shares Outstanding (mil)	**108.4**
Market Capitalization ($mil)	**$3,991**
Short Interest Ratio (days)	**0.9**
Institutional Ownership (%)	**57**
Insider Ownership (%)	**1**
Annual Cash Dividend	**$0.00**
Dividend Yield (%)	**0.00**
5-Yr. Historical Growth Rates	
Sales (%)	**-0.4**
Earnings Per Share (%)	**-22.2**
Dividend (%)	**N/A**
P/E using TTM EPS	**26.3**
P/E using 2021 Estimate	**23.8**
P/E using 2022 Estimate	**17.2**

Risk Level	**Average**
Type of Stock	**Large-Blend**
Industry	**Elec Comp-Semis**

ZACKS ESTIMATES

Revenue
(in millions of $)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2019	310 A	306 A	312 A	306 A	1,234 A
2020	300 A	310 A	310 A	345 A	1,266 A
2021	347 A	362 A	387 A	410 E	1,506 E
2022					1,660 E

Earnings Per Share
(Adjusted non-GAAP Diluted)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2019	$0.30 A	$0.24 A	$0.25 A	$0.22 A	$1.00 A
2020	$0.20 A	$0.22 A	$0.18 A	$0.34 A	$0.94 A
2021	$0.31 A	$0.34 A	$0.41 A	$0.49 E	$1.55 E
2022					$2.13 E

Zacks Projected EPS Growth Rate - Next 5 Years % **12**

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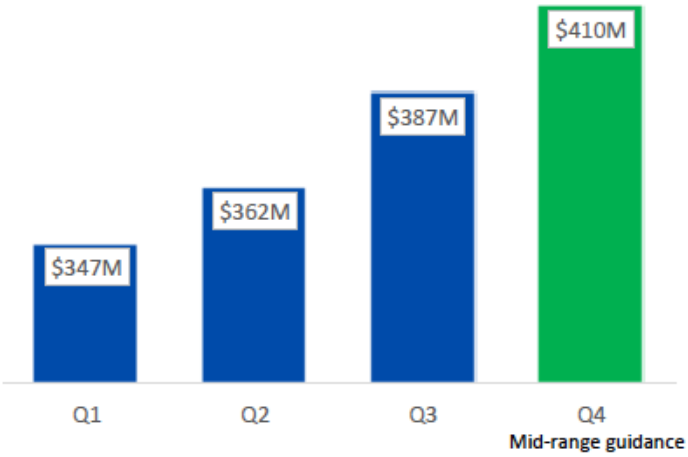
WHAT'S NEW

Q3 2021 Results

Tower Semiconductor again beat revenues and earnings in Q3 2021 and its sales are still gated by its ability to fill orders despite continuing to increase capacity. It guided to Q4 revenues of $410 million ±5% with 26% organic growth. We are raising 2021 and 2022 estimates to $1.5 billion and $1.7 billion in revenues respectively. Non-GAAP EPS is now $1.55 for 2021 and $2.13 for 2022. Although the company is doing what is can to increase capacity, revenues will be throttled. The new Italian fab will not be contributing meaningfully to revenues until 2023.

Figure 1. Tower Semiconductor 2021 Quarterly Revenues



Source: Tower Semiconductor

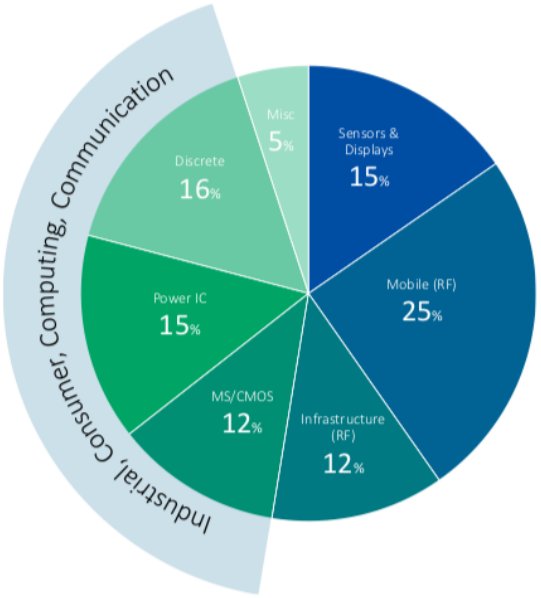
Q3 revenues were $386.7 million compared to $310.2 last year, and beat expectations and the mid-range of guidance. This was growth of 25%. It was also up sequentially as it has been since Q1 2020. Organic (i.e. excluding revenues generated by the Nuvoton Japan JV and Maxim) growth was 40% year over year. During last year's quarter the company had a cybersecurity breach and as a result Tower shut down all of its Israeli and US IT systems, which stopped all activities in those locations. In less than a week, all the factories were back operating. Because of this shut down, Tower missed between 8-12 days of new wafer starts and a few weeks of full fab activity levels during the third quarter. RF CMOS grew organically 75% from last year, sensors grew 65%, and power ICs increased 50%.

Mobile RF is still the largest part of the company at 25%, which go into smartphones. This segment is benefitting by the move to 5G that provides the company with faster growth, higher ASPs, and higher gross margins. The RF infrastructure business (13%) is maintaining a high run rate due to data center. Photonics is a newer segment for Tower and it has just started its first significant ramp of silicon photonics flows. This business provides the highest margins for the company. On Sept. 2nd Tower Semiconductor announced a collaboration with Quintessent, a leader in laser integration with silicon photonic integrated circuits, to create a Silicon Photonics (SiPho) process with integrated lasers for use in the Artificial Intelligence/ Machine Learning and data center markets. The initial process development kit (PDK) is planned for 2021, with multi-project wafer runs (MPWs) following in 2022. Tower also just announced a partnership with Anello Photonics to productize a new low-loss wave guide technology. Anello will use it in its own products-- precision gyroscopes—and it will also be used in a new foundry offering for other photonics applications such as automotive LiDAR, bio sensing, and quantum computing.

Power IC (16%) showed strength in industrial, consumer, and automotive battery management where the company signed a long-term agreement with a market leader. Power discrete (16%) was again led by automotive applications. The company expects this business to decline as a percent of overall sales as it

focuses on higher margin segments. Imaging (15%) has strong demand from the industrial and machine vision markets as well as medical and dental X-rays. TSEM will benefit from the industry technology switch for displays, monitors, and TVs to mini-LEDs.

Figure 2. Tower Semiconductor Q3 Revenue Breakdown by End Market Applications



Source: Tower Semiconductor

Q3 2021 gross margin increased to 22.1% from 17.2% a year ago and 20.4% in Q2 2021. Gross margin dollars increased $32 million, or 60%. Operating expenses increased $6.8 million year over year, and were up $1.5 million sequentially. The operating margin improved to 11.4% from 6.2% last year with the shut down. On a dollar basis it more than doubled. Other income was an expense of $2.7 compared to $565,000 a year ago.

Pretax profit was $45.5 million versus $18.5 million a year ago. Taxes were $1.1 million in the quarter compared $2.8 million last year.

GAAP net income was $39.1 million versus $15.2 million last year, while non-GAAP net income was $45.0 million versus $19.1 million, up 135%.

Diluted GAAP EPS was $0.36 per share versus $0.14 last year. Adjusted non-GAAP diluted EPS increased to $0.41 versus $0.18 a year ago (up 102%). Average diluted shares for the quarter were 109.8 million, up from 108.5 million last year. EBITDA for the second quarter of 2021 was $113.1 million compared to $79.2 million a year ago and sequentially up from $98.9 million in Q2 2021.

Balance Sheet and Capacity

On September 30st the company had cash, short-term deposits, and marketable securities of $718 million compared to $729 million last quarter while decreasing debt by $21 million to $318 million. Its quick ratio is high at 3.0xs and it has $827 million in working capital. Operating cash flow was $113 million and free cash flow was $25 million.

In 2020, the company invested a total of $100 million in capacity expansion in Japan, plus another $20 million for QT9 capacity (TSEM's new 200-millimeter RF SOI technology). In Q3 2021, it spent $88 million on investments in cap ex. This year it will spend $150 million starting in Q3 2021 plus another $100 million spread over the next five quarters. Cap ex spending is expected to be $85-95 million in Q4 2021 and Q1 2022. The company has already started to order equipment for use in the ST Micro fab that will be installed and paid for in 2022. Revenue from that fab is not expected until the end of 2022 or the beginning of 2023.

Utilization

The company has been running over its targeted utilization rates in 300mm and the ST deal will vastly improve that situation. The ST deal could increase that another $300-$400 million at full production. The company reports capacity data as shown below:

Foundry Layers - 8" Equivalents

	Q2 2020	Q3 2020	Q1 2021	Q2 2021	Q3 2021	Yr-Yr %	Seq. %
150mm	353,000	293,000	411,000	451,000	455,000	55.3%	0.9%
200mm	5,115,000	4,850,000	5,772,000	5,921,000	6,197,000	27.8%	4.7%
300mm	903,000	981,000	1,375,000	1,404,000	1,539,000	56.9%	9.6%

ST Microelectronics Deal Recap

Tower struck a deal with STMicroelectronics (NYSE: STM) to utilize a third of ST's Agrate R3 fab now under construction in Agrate Brianza, Italy. It is a 300mm fab and Tower will help increase capacity utilization reducing wafer costs and making it a win-win for both companies. Most importantly this arrangement **will more than triple Tower's 300mm foundry capacity**. Currently the company has capacity in the Uozo fab of approximately 8,000 wafers per month and at full capacity Tower expects the STMicro fab to add at least another 16,000 per month. This could equate to another $300-$400 million a year in incremental 300mm sales. Tower expects to reach half capacity by 2024 with production starting at the end of 2022 and building. Since this is a new fab, we expect gross margins to initially be slightly higher than the corporate average of 20%, but not at the over 50% one might expect for incremental sales at older fabs. The two will share a cleanroom, but Tower will install its own equipment in one third of the total space. Operations will continue to be managed by ST with help from Tower. First 130, 90 and 65nm processes for smart power, analog mixed signal and RF processes will be qualified in R3. Both companies are targeting the automotive, industrial and personal electronics markets but Tower's focus will be on 65nm for analog RF, power platforms, and displays. Tower will establish a wholly owned Italian subsidiary.

KEY POINTS

- Although the semiconductor market is typically considered cyclical, we believe that based on the end-user markets for which Tower Semiconductor's products used, it should be less so. The company is currently being impacted in slower sales of mobile handsets and discretes.
- 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 although this year that is expected to be lower in the first three quarters as the company staffs up and invests in more capacity. When the company adds 12" revenues that blended percentage will trend higher as 12" can sell at 60+

gross margins. 300mm product also enjoys higher gross margins, although it will be initially lower than that at the new ST Micro fab. In Q4 2020 incremental gross margins are expected to exceed 50% as the company ships higher ASP products and is also able to raise prices due to demand. It expects margins to improve even further in 2022.

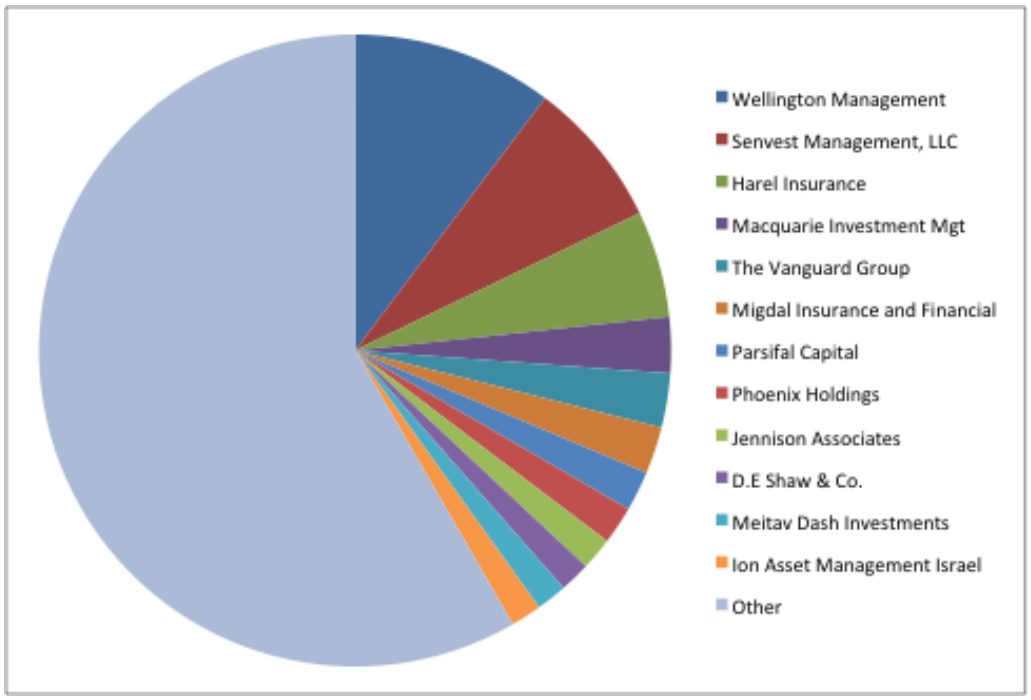
- The company has a strong market position in high quality imaging and 3D, which is increasing being used for gesturing controls, machine vision, security anti-crash systems and self driving cars, as well as smartphones with high megapixel cameras.
- The company has considerable exposure to data center growth and 5G and should be a major beneficiary of these growing markets in 2021 and beyond.
- The company has no fabs in China and suffers less disruption to its business than its Chinese competitors due to pandemic supply chain issues or political issues.
- Tower hopes to benefit from S.1260, the proposed Innovation and Competition Act of 2021, which passed the Senate on 6/8/21 and now goes to the House. It appropriated $52 billion towards US semiconductor growth.
- We believe the stock is currently undervalued on a PE basis versus peers and even deserves a premium. Our price target is $44.00 per share, and we expect continued improvement in revenues, earnings, and margins going forward.

VALUATION

Our fully diluted non-GAAP EPS estimate for 2021 for TSEM is $1.55 and our 2022 EPS estimate is $2.13. Using our 2022 estimate of $2.13 and 20.8 times, gives us a future stock price of $44.30 per share. However by being based entirely outside China or Taiwan, and with EPS growth at 66% this year and 37% next, it deserves a premium. We expect that the stock will continue to move up as the company continues to grow and add capacity to meet its strong demand. We are raising our price target to $44.00.

Foundry Companies										
	Ticker	**EPS 21E**	**EPS 22E**	**Price**	**PE 2021E**	**PE 2022E**	**Growth Rate**	**Sales 2021E**	**EV/Sales**	**EV**
Company										
Taiwan Semiconductor	TSM	4.11	4.93	112.18	27.3	22.8	20.0%	56.81	10.95	622.3
United Microelectronics	UMC	0.79	0.87	11.26	14.3	12.9	10.1%	7.59	2.95	22.4
Average					20.8	17.8			7.0	

OWNERSHIP


Wellington Management
Senvest Management, LLC
Harel Insurance
Macquarie Investment Mgt
The Vanguard Group
Migdal Insurance and Financial
Parsifal Capital
Phoenix Holdings
Jennison Associates
D.E Shaw & Co.
Meitav Dash Investments
Ion Asset Management Israel
Other

INCOME STATEMENT

	March Q1 20	June Q2 20	Sept Q3 20	Dec Q4 20	March Q1 21	June Q2 21	Sept Q3 21	Dec Q4 21E	2019	2020	2021E	2022E
REVENUE	300.2	310.1	310.2	345.2	347.2	362.1	386.7	410.0	1,234.0	1,265.7	1,506.1	1,660.0
Yr-to-yr Gr.	-3%	1%	-1%	13%	16%	17%	25%	19%	-5%	3%	19%	10%
OPERATING EXPENSES												
Cost of goods sold	247.6	252.4	256.8	275.6	277.4	288.4	301.3	311.8	1,004.3	1,032.4	1,178.9	1,252.8
Gross Margin	52.5	57.7	53.5	69.6	69.8	73.8	85.4	98.2	229.7	233.3	327.1	407.2
% of Sales	17.5%	18.6%	17.2%	20.2%	20.1%	20.4%	22.1%	23.9%	18.6%	18.4%	21.7%	24.5%
R&D	19.4	19.4	19.6	19.9	20.3	21.1	21.6	21.8	75.6	78.3	84.8	85.0
M, G&A	16.7	16.2	14.8	16.3	17.0	18.7	19.6	20.0	67.4	64.0	75.3	80.0
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	0.0
Tot Operating Exp.	36.1	35.6	34.4	36.2	37.3	39.8	41.2	41.8	143.0	142.3	160.1	165.0
Operating Income	16.4	22.1	19.1	33.4	32.5	34.0	44.2	56.4	86.7	91.0	167.0	242.2
Operating Margin	5%	7.1%	6%	10%	9.4%	9.4%	11.4%	14%	7.0%	7%	11%	15%
Yr-to-yr Gr.	-40%	25%	-16%	77%	98%	54%	131%	69%	-44%	5%	54%	32%
Interest & other non-cash financing	(2.1)	1.8	(0.6)	(1.5)	(7.8)	(0.5)	(2.7)	(2.0)	4.3	(2.3)	(13.0)	(10.0)
Other income	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	14.3	24.0	18.5	31.9	24.6	33.5	41.5	54.4	91.0	88.7	154.0	232.2
Profit margin	4.8%	7.7%	6.0%	9.2%	7.1%	9.3%	10.7%	13.3%	7.4%	7.0%	10.2%	14.0%
Taxes	1.7	(2.4)	(2.8)	(1.8)	5.9	(2.2)	(1.1)	(4.6)	(2.9)	(5.3)	(2.0)	(13.9)
Tax Rate	11.9%	10.1%	15.1%	5.7%	-23.8%	6.6%	-2.6%	8.5%	3.2%	6.0%	1.3%	6.0%
Profit before non-controlling	16.0	21.5	15.7	30.1	30.5	31.3	40.4	49.8	88.1	83.4	152.0	218.3
Minority Income	1.0	(2.4)	(0.5)	1.0	(2.2)	(0.5)	(1.3)	(1.5)	2.0	(1.0)	(5.4)	(8.0)
								11.8%				12.7%
GAAP Net income	17.0	19.1	15.2	31.0	28.3	30.9	39.1	48.3	90.0	82.4	146.5	210.3
Yr-to-yr Gr.	-35%	-9%	-32%	50%	66%	61%	157%	56%	-34%	-9%	78%	155%
Non-GAAP Net Income	21.9	23.4	19.1	36.6	33.7	37.3	45.0	54.2	107.68	101.01	170.26	234.25
GAAP primary EPS	$0.16	$0.18	$0.14	$0.29	$0.26	$0.29	$0.36	$0.44	$0.85	$0.77	$1.35	$1.94
Fully diluted GAAP	$0.16	$0.18	$0.14	$0.28	$0.26	$0.28	$0.36	$0.44	$0.84	$0.76	$1.33	$1.91
Adj Non-GAAP EPS-Fully dil.	**$0.20**	**$0.22**	**$0.18**	**$0.34**	**$0.31**	**$0.34**	**$0.41**	**$0.49**	**$1.00**	**$0.94**	**$1.55**	**$2.13**
Yr-to-yr Gr.	-47%	-25%	-43%	27%	27%	30%	102%	31%	-34%	-7%	66%	37%
Primary Share Out	106.8	107.0	107.5	107.8	108.0	108.0	108.4	108.6	106.3	106.7	108.2	108.2
Fully Diluted GAAP	108.1	108.3	108.5	109.0	110.0	109.6	109.8	109.8	107.4	108.0	109.8	110.0
EBITDA	**72.8**	**81.6**	**79.2**	**95.9**	**94.5**	**98.9**	**113.1**	**125.3**	**298.9**	**329.4**	**431.9**	**490.6**
EBITDA Margin	24%	26%	26%	28%	27%	27%	29%	31%	24%	26%	29%	30%
Yr-to-yr Gr.	-8%	16%	5%	28%	30%	21%	43%	31%	-17%	10%	10%	14%

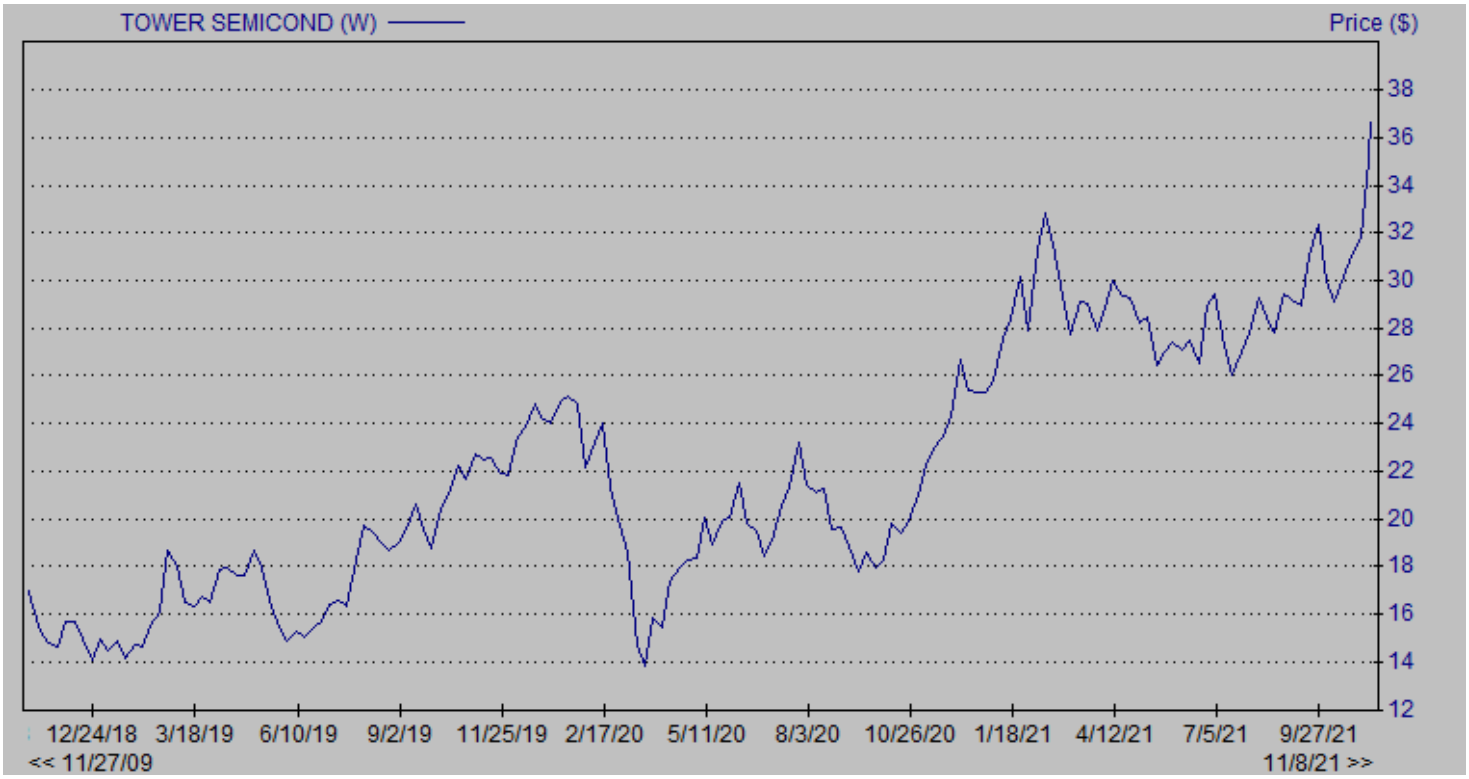
BALANCE SHEET

$ in thousands	Sept 30, 2021	June 30, 2021	Qtr-Qtr % Change	Sept 30, 2020	Yr-Yr % Change
CURRENT ASSETS					
Cash and cash equivalents	**$211,503**	**$215,755**	-2.0%	**$207,704**	1.8%
Short term deposits	**315,964**	**323,713**	-2.4%	**313,029**	0.9%
Marketable securities	**190,523**	**189,489**	0.5%	**183,946**	3.6%
Trade accounts receivable	144,878	144,868	0.0%	118,111	22.7%
Inventories	220,668	209,306	5.4%	204,933	7.7%
Other current assets	43,653	39,929	9.3%	30,379	43.7%
Total current assets	**1,127,189**	**1,123,060**	0.4%	**1,058,102**	6.5%
LONG-TERM INVESTMENTS	39,157	41,453	-5.5%	41,363	-5.3%
PROPERTY AND EQUIPMENT, NET	879,323	859,589	2.3%	780,596	12.6%
GOODWILL & INTANGIBLE ASSETS, NET	17,581	16,978	3.6%	15,806	11.2%
DEFERRED TAX & OTHER ASSETS, NET	91,581	91,312	0.3%	88,878	3.0%
TOTAL ASSETS	2,154,831	2,132,392	1.1%	1,984,745	8.6%
CURRENT LIABILITIES					
Short term debt	**105,414**	**104,062**	1.3%	**86,717**	21.6%
Trade accounts payable	92,989	100,426	-7.4%	104,354	-10.9%
Deferred revenue	31,866	19,608	62.5%	9,660	229.9%
Other current liabilities	69,796	78,411	-11.0%	58,098	20.1%
Total current liabilities	**300,065**	**302,507**	-0.8%	**258,829**	15.9%
LONG-TERM DEBT	**212,271**	**234,500**	-9.5%	**229,266**	-7.4%
LONG-TERM CUSTOMERS' ADVANCES	39,074	32,047	21.9%	25,780	51.6%
EMPLOYEE RELATED LIABILITIES	15,959	15,958	0.0%	16,717	-4.5%
DEFERRED TAX LIABILITY	28,211	29,771	-5.2%	40,536	-30.4%
Total liabilities	595,580	614,783	-3.1%	571,128	4.3%
SHAREHOLDERS' EQUITY	1,559,456	1,517,609	2.8%	1,413,557	10.3%
TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY	$2,155,036	$2,132,392	1.1%	$1,984,685	8.6%
Current Ratio	3.8	3.7	1.2%	4.1	-8.1%
Quick Ratio	3.0	3.0	0.0%	3.3	-8.3%
Working Capital	827,124	820,553	0.8%	799,273	3.5%
Debt Percent of Assets	15%	16%	-7.1%	16%	-7.4%
Debt to Equity	0.2	0.2	-8.7%	0.2	-8.9%
Cash and equivalents	717,990	728,957	-1.5%	$704,679	1.9%
Cash and equivalents per share	$6.61	$6.75	-2.0%	$6.56	0.9%
Debt	317,685	338,562	-6.2%	315,983	0.5%
Change in cash	(10,967)	(4,367)	151.1%	13,311	-182.4%
Change in debt	(20,877)	(18,963)	10.1%	$1,702	-1326.6%

CASH FLOW

	Year 2019	3-Mo 31-Mar-20	3-Mo 30-Jun-20	3-Mo 30-Sep-20	3-Mo 31-Dec-20	Year 2020	3-Mo 31-Mar-21	3-Mo 30-Jun-21	3-Mo 30-Sep-21
CASH FLOWS - OPERATING ACTIVITIES									
Net profit (loss)	$ 88,073	$ 16,031	$ 21,474	$ 15,726	$ 30,058	$ 83,289	$ 30,514	$ 31,317	$ 40,367
Income and non-cash expense items:									
Depreciation and amortization	214,474	56,796	60,268	60,277	63,190	240,531	62,053	65,482	69,482
Effect of fair value measurement on debt	10,294	(4,069)	3,159	828	6,727	6,645	(3,792)	1,798	779
Other expense (income), net	(4,293)	(14)	(876)	558	5,547	5,215	(4,985)	1,758	1,941
Changes in assets and liabilities:									
Trade accounts receivable	27,317	11,685	(12,981)	11,556	(43,347)	(33,087)	(6,274)	18,996	(678)
Other assets	(4,600)	7,355	(1,998)	(7,630)	(5,726)	(7,999)	7,082	(16,065)	(4,186)
Inventories	(21,021)	(6,171)	(11,209)	6,689	7,800	(2,891)	(3,407)	(12,077)	(12,553)
Trade accounts payable	(339)	(6,199)	(6,751)	(10,299)	4,673	(18,576)	(9,266)	(5,302)	(2,100)
Deferred revenue and customers' advances	(10,331)	(571)	(1,927)	(596)	22	(3,072)	19,340	(3,133)	19,288
Other current liabilities	(9,435)	(3,248)	13,977	(10,832)	450	347	7,084	12,612	(8,087)
Employee related liabilities	(310)	(31)	2,109	1,793	65	3,936	(107)	247	(43)
Deferred tax liability, net	1,491	(3,228)	1,358	542	3,551	2,223	(10,829)	(2,383)	2,764
Net cash provided by operating activities	**291,320**	**68,336**	**66,603**	**68,612**	**73,010**	**276,561**	**87,413**	**93,250**	**106,974**
CASH FLOWS - INVESTING ACTIVITIES									
Investments in property and equipment, net	**(172,166)**	**(62,907)**	**(62,537)**	**(66,862)**	**(64,233)**	**(256,539)**	**(49,415)**	**(56,184)**	**(87,714)**
Interest bearing deposits, including designated deposits	(132,928)	(85,356)	6,570	(28,983)	699	(107,070)	(1,611)	(17,055)	6,250
Net cash provided by (used in) investing activities	(305,094)	(148,263)	(55,967)	(95,845)	(63,534)	(363,609)	(51,026)	(73,239)	(81,464)
CASH FLOWS - FINANCING ACTIVITIES									
Exercise of warrants and options	1,842	87	1,127	272	1,026	2,512	364	0	46
Debt repayment	(19,402)	(24,197)	(5,000)	(26,355)	(8,147)	(63,699)	(29,375)	(19,769)	(29,211)
Net cash used in financing activities	(17,560)	(24,110)	(3,873)	(26,083)	(7,121)	(61,187)	(29,011)	(19,769)	(29,165)
Effect of foreign exchange rate change	1,804	(176)	682	2,227	1,624	4,357	(3,478)	(68)	(597)
INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	(29,530)	(104,213)	7,445	(51,089)	3,979	(143,878)	3,898	174	(4,252)
CASH AND CASH EQUIVALENTS - BEGINNING OF PERIOD	385,091	355,561	251,348	258,793	207,704	355,561	211,683	215,581	215,755
CASH AND CASH EQUIVALENTS - END OF PERIOD	355,561	251,348	258,793	207,704	211,683	211,683	215,581	215,755	211,503
Operating Cash Flow	$ 308,548	$ 68,744	$ 84,025	$ 77,389	$ 105,522	$ 335,680	$ 83,790	$ 100,355	$ 112,569
Free cash flow	$ 136,382	$ 5,837	$ 21,488	$ 10,527	$ 41,289	$ 79,141	$ 34,375	$ 44,171	$ 24,855

HISTORICAL STOCK PRICE



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