

## Tower Semiconductor

(NASDAQ: TSEM)

**TSEM: Tower's Revenues May Have Bottomed; Sequential Improvement is Expected Going Forward**

Using the 2.4 times EV to Sales for 2024, we believe TSEM stock is worth at least \$40.23 per share despite declining revenues. The company is flush with \$1.2 billion in cash with which it is expanding capacity.

Current Price (5/8/2024) **\$34.25**  
Valuation **\$40.23**

**OUTLOOK**

Tower 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 markets in mobile such as RF High Position analog, as well as in CMOS image sensors, and power management. It also added a new fab in Italy in partnership with STMicro that has just started shipping product and whose capacity will continue to ramp over the next two years. Margins are expected to increase as volumes increase. The company is flush with \$1.2 billion in cash (or \$11.16 per share), is cash flow positive and sees improving demand through much of its customer base.

**SUMMARY DATA**

52-Week High **42.79**  
52-Week Low **21.91**  
One-Year Return (%) **-17.2**  
Beta **0.9**  
Average Daily Volume (sh) **437,012**

Shares Outstanding (mil) **110.8**  
Market Capitalization (\$mil) **\$3,789**  
Short Interest Ratio (days) **0.7**  
Institutional Ownership (%) **71**  
Insider Ownership (%) **1**

Annual Cash Dividend **\$0.00**  
Dividend Yield (%) **0.00**

5-Yr. Historical Growth Rates  
Sales (%) **6.4**  
Earnings Per Share (%) **21.6**  
Dividend (%) **N/A**

P/E using TTM EPS **16.5**  
P/E using 2024 Estimate **17.9**  
P/E using 2025 Estimate **17.7**

**Risk Level****Type of Stock****Industry****Below Average****Large Value****Elec Comp-Semis****ZACKS ESTIMATES****Revenue**

(In millions of US\$)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2022	\$421 A	\$426 A	\$427 A	\$403 A	\$1,678 A
2023	\$356 A	\$357 A	\$358 A	\$352 A	\$1,423 A
2024	\$327 A	\$350 E	\$365 A	\$385 E	\$1,427 E
2025					\$1,500 E

**Earnings per Share**

(non-GAAP)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2022	\$0.55 A	\$0.58 A	\$0.72 A	\$0.69 A	\$2.52 A
2023	\$0.60 A	\$0.52 A	\$0.54 A	\$0.55 A	\$2.17 A
2024	\$0.46 A	\$0.47 E	\$0.45 E	\$0.52 E	\$1.91 E
2025					\$1.93 E

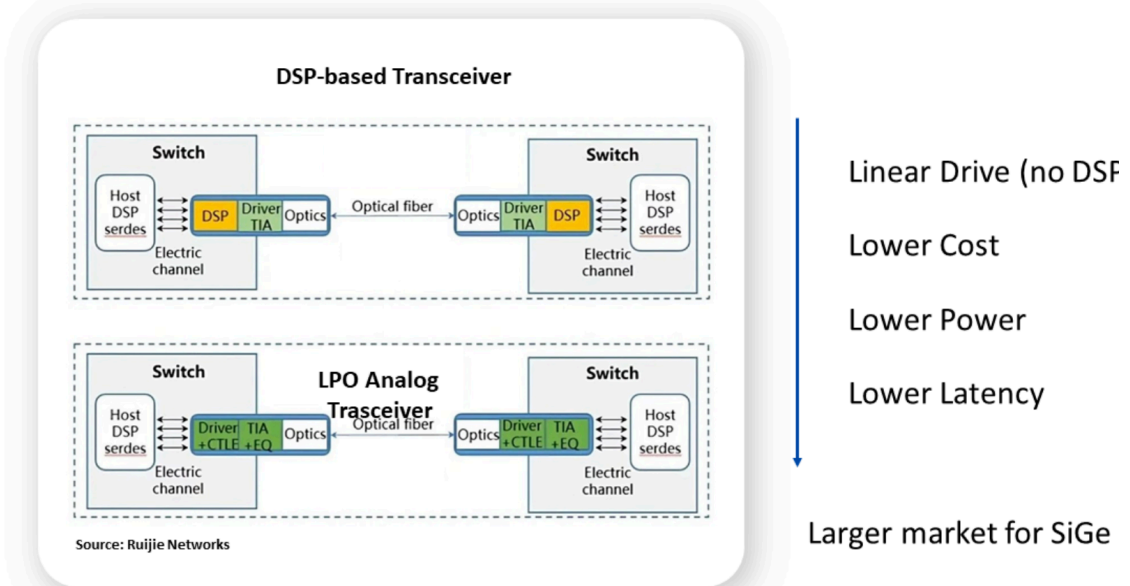
## WHAT'S NEW

### Tower Projects Sequential Revenue Improvement Throughout the Year Despite Industry Doldrums

Tower's quarterly revenue again declined in Q1 2024 as expected but the company expects quarterly sequential improvement throughout 2024 as 300mm capacity comes on line and certain products see increasing demand. We could see revenue growth return by Q3 2024. TSEM now trades at an enterprise value of \$2.8 billion, or 2.0 times EV to estimated sales for 2024 versus its peers who trade at 4.3 times. Even at the low end at 2.4 times sales, Tower's market cap would be \$4.5 billion or \$40.23 per share.

The company highlighted its success in Silicon Photonics which contributed 5% of revenues in Q1 2024. This new business is experiencing high demand and interest for use in 800g pluggables used in data centers and spurred by the demands of AI. While still early days, Tower is talking to all the major players in the optical market, many of which are already customers for other products. It expects even more success as the market moves to 1.6T speeds where photonics will be the only game in town.

### Linear Pluggable Optics Replace the DSP with SiGe-based Redrivers and TIAs



Source: Tower Semiconductor

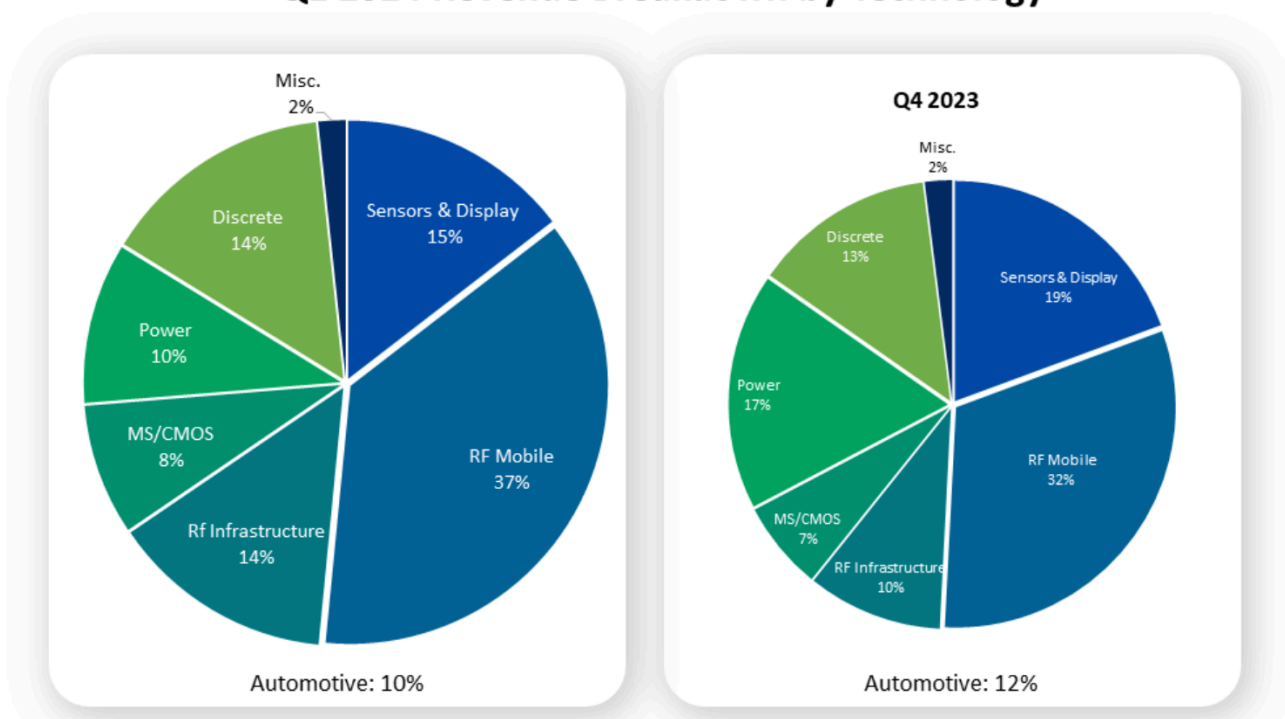
The company continues to see weakness in automotive which was 10% of revenues (\$32.7 million) in the quarter compared to 12% (\$42.2 million) in Q4 2023.

Fab utilization is still weak and below 2019 and 2020 levels but improving. There is a gap in our table below as the company did not report numbers right before and during the acquisition attempt by Intel. During Q1 2024 the company began to move some production from its 40-year-old Fab 1 to Fab 2 to consolidate production and reduce expenses. It is also shutting down some lines no longer needed and possibly selling off the equipment. Fab 1 itself is leased from the government and not owned. In addition, it started shipping small amounts of product from its new Agate fab which will continue to ramp for the next two years. It has not reported utilization. All its capacity there is already spoken for 2024 and 2025. Also, on January 1<sup>st</sup> there was an earthquake in Japan that disrupted production and caused damage to some products and equipment. All is back to normal now and the fab is back to a fully loaded utilization of 85%.

**Table 1. Fab Capacity Utilization**

	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2023	Q3 2023	Q4 2023	Q1 2024
<b>Fab1 Migdal Haemek, Israel 6"</b>	60%	60%	50%	64%	70%	70%	55%	60%	65%
<b>Fab2 Migdal Haemek, Israel 8"</b>	70%	70%	60%	76%	80%	75%	75%	75%	75%
<b>Fab3 Newport Beach, CA 8"</b>	55%	70%	70%	75%	75%	40%	40%	40%	45%
<b>Three TPSCo factories</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>8 inch</b>	55%	60%	60%	65%	70%	70%	60%	40%	40%
<b>12 inch</b>	80%	85%	70%	90%	90%	75%	60%	70%	75%
<b>San Antonio, 8"</b>	65%	70%	60%	67%	70%	65%	65%	70%	60%
	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2020	Q2 2023	Q3 2023	Q4 2023	Q1 2024
Quarterly Average Utilization	64%	69%	62%	73%	76%	66%	59%	59%	60%

### Q1 2024 Revenue Breakdown by Technology



Source: Tower Semiconductor

### Q1 2024 Results

Revenues in Q1 2024 were \$327 versus \$356 million in Q1 2023 and were down 8% year over year. Revenues declined sequentially as expected due to the softness in demand from customers almost across the board. The company guided to a sequentially up Q2 2024 of \$350 million plus or minus 5% near flat with last year.

Q1 2024 gross margin decreased to 22.2% from 26.9% a year ago and 24.0% in Q4 2023. Gross margin dollars decreased by \$23 million, or 24%. Operating expenses without last year's one-time charges were up \$661,000. The operating margin declined to 10.2%. Other income was \$4.0 million compared to \$7.0 million in last year's quarter. The company expects it to fluctuate between \$4 million and \$7 million per quarter.

Pretax profit was \$38.0 million versus \$64.8 million a year ago without the one-time gains. Taxes were a reversal of \$5.1 million in the quarter compared to payment of \$15.0 million last year, or a tax rate of -13.4% due to an over-accrual in previous quarters. The company still expects a more normalized rate near 14% for the year. GAAP net income was \$44.6 million versus \$71.4 million last year, while non-GAAP net income was an estimated \$51.8 million versus \$62.0 million a year ago, down 16%.

Diluted GAAP EPS was \$0.40 per share versus \$0.65 last year. Adjusted non-GAAP diluted EPS decreased to \$0.46 versus \$0.60 a year ago. Average diluted shares for the quarter were 111.6 million, up from 111.1 million last year. EBITDA for the fourth quarter of 2023 was \$101 million compared to \$121 million a year ago and down sequentially from \$117 million in Q4 2023.

## Balance Sheet

On March 31<sup>st</sup>, the company had cash, short-term deposits, and marketable securities of \$1.24 billion or \$11.21 in cash per share. We estimate it is earning between 5% and 5.5% on about \$800 million of that amount. Total debt decreased by \$22 million to \$209 million from the last quarter. It is only paying 2% interest on about \$200,000 of that debt. Its quick ratio decreased to 4.5xs and it has \$1.4 billion in working capital. Operating cash flow was similar to last quarter at \$108 million. Free cash flow was \$11 million after spending a net \$98 million on cap ex in the quarter. Cap ex expenditures are expected to be between \$100 million and \$150 million per quarter going forward for the next four quarters as the company continues to build out Agrate and New Mexico. While it typically spends \$180-\$200 million per year, it will spend a total of \$350 million on Agrate, and \$300 million for New Mexico. This heavy spending is expected to put the company in negative free cash flow territory for the next year or so.

## Target Business Model

During the Q3 conference call management showed a new business model reflecting investments in new capacity which it still deems valid. In the past incremental revenues were coming in at above 50% gross margin, increased investment and current prices should result in incremental margins at 32% as shown in the following chart. Through operating leverage, this incremental gross margin should translate into 24% net margins. So as shown at 85% capacity utilization, revenues would increase by 86% to \$2.66 billion and net income by 140% to \$500 million.

### Financial Model (\$M)

	Q3 2023 Annualized Run Rate		Built-out capacity@85% utilization*	Incremental	
				\$M	% of Incremental Revenue
Revenue	1,432	1.9X	2,660	1,228	
Gross Profit	347	2.1X	740	393	32%
Operating Profit	195	2.9X	560	365	30%
Net Profit	208 **	2.4X	500	292	24%

\* Including New Mexico capacity corridor and Agrate capacity based on previously announced Cap-Ex investments

\*\* Excluding Intel merger contract termination fees received in Q3'2023, net of associated cost and taxes

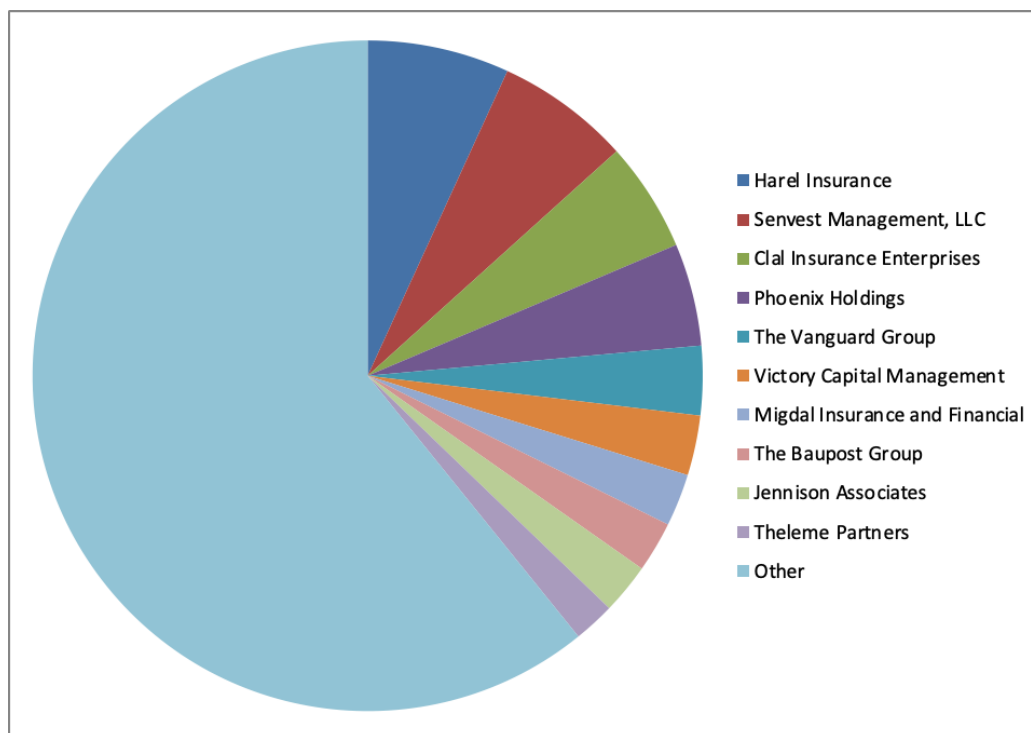
Source: Tower Semiconductor

## VALUATION

TSEM trades at an enterprise value of \$2.8 billion, or 2.0 times EV to estimated sales for 2024 versus its peers who trade at 4.3 times. Even at the low end at 2.4 times sales, Tower's market cap would be \$4.5 billion or \$40.23 per share.

Foundry Companies											
Company	Ticker	EPS 24E	EPS 25E	Price	PE 2024E	PE 2025E	Growth Rate	PE/Growth	Sales 2024E	EV/Sales	EV
GLOBALFOUNDRIES	GFS	1.29	2.11	53.37	41.4	25.3	63.6%	0.7	6.8	4.0	26.9
Semiconductor Manufacturing	0981.HK	0.53	0.85	15.74	29.7	18.5	60.4%	0.5	54.4	3.5	192.85
Taiwan Semiconductor	TSM	6.28	7.88	142.18	22.6	18.0	25.5%	0.9	84.6	7.2	607.5
United Microelectronics	UMC	0.63	0.72	8.03	12.7	11.2	14.3%	0.9	7.4	2.4	17.6
<b>Average</b>					26.6	18.3		0.7	38.3	4.3	211.2

## OWNERSHIP



# INCOME STATEMENT

	March Q1 23	June Q2 23	Sept Q3 23	Dec Q4 23	March Q1 24	June Q2 24E	Sept Q3 24E	Dec Q4 24E	2023	2024E	2025E
<b>REVENUE</b>	355.6	357.2	358.2	351.7	327.2	350.0	365.0	385.0	1,422.7	1,427.2	1,500.0
Yr-to-yr Gr.	-16%	-16%	-16%	-13%	-8%	-2%	2%	9%	-15%	0%	5%
<b>OPERATING EXPENSES</b>											
Cost of goods sold	259.9	270.7	271.3	267.3	254.6	266.0	279.5	289.5	1,069.2	1,089.7	1,131.1
Gross Margin	95.7	86.5	86.9	84.4	72.6	84.0	85.5	95.5	353.5	337.6	368.9
% of Sales	26.9%	24.2%	24.3%	24.0%	22.2%	24.0%	23.4%	24.1%	24.8%	23.7%	24.6%
R&D	19.3	19.5	20.2	20.8	20.0	20.0	20.0	20.0	79.8	79.8	83.0
M, G&A	18.6	17.4	18.0	18.4	18.7	18.7	18.8	18.9	72.5	75.0	75.5
One-time charges	(31.7)	(0.9)	(313.5)	0.0	0.0	0.0	0.0	0.0	(346.0)	0.0	0.0
	37.960										
Tot Operating Exp.	6.3	36.0	(275.3)	39.3	38.6	38.6	38.8	38.9	(193.7)	154.8	158.5
<b>Operating Income</b>	89.4	50.5	362.2	45.2	34.0	45.4	46.7	56.6	547.3	182.7	210.4
<b>Operating Margin</b>	25.1%	14.1%	101.1%	12.8%	10.4%	13.0%	12.8%	14.7%	38%	13%	14%
Yr-to-yr Gr.	42%	-29%	357%	-54%	-59%	-8%	-87%	15%	107%	-67%	10%
Interest & other non-cash financing	7.0	3.9	10.0	16.7	4.0	5.5	5.5	5.5	37.6	20.5	15.0
Gain from acquisition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Profit before tax</b>	96.4	54.5	372.1	61.8	38.0	50.9	52.2	62.1	584.8	203.2	225.4
Profit margin	27.1%	15.2%	103.9%	17.6%	11.6%	14.5%	14.3%	16.1%	41.1%	14.2%	14.0%
Taxes	(15.0)	(5.7)	(34.4)	(10.1)	5.1	(7.1)	(7.3)	(8.7)	(65.3)	(18.1)	(31.5)
Tax Rate	15.6%	10.6%	9.2%	16.4%	-13.4%	14.0%	14.0%	14.0%	11.2%	8.9%	14.0%
Profit before non-controlling	81.4	48.7	337.7	51.7	43.0	43.7	44.9	53.4	519.5	185.2	193.8
Minority Income	(10.0)	2.5	4.3	2.1	1.6	1.0	(2.0)	(3.0)	(1.0)	(2.4)	(8.0)
<b>GAAP Net income</b>	71.4	51.2	342.1	53.8	44.6	44.7	42.9	50.4	518.5	182.7	185.8
Yr-to-yr Gr.	32%	-12%	395%	-35%	-37%	-13%	-87%	-6%	96%	-65%	2%
<b>Non-GAAP Net Income</b>	62.0	57.9	60.5	61.0	51.8	52.2	50.4	57.9	241.3	212.3	215.8
Yr-to-yr Gr.	3%	-10%	-25%	-21%	-16%	-10%	-17%	-5%	-14%	-12%	2%
<b>GAAP primary EPS</b>	\$0.65	\$0.47	\$3.10	\$0.49	\$0.40	\$0.40	\$0.39	\$0.45	\$4.70	\$1.65	\$1.67
Fully diluted GAAP EPS	\$0.64	\$0.46	\$3.07	\$0.48	\$0.40	\$0.40	\$0.38	\$0.45	\$4.66	\$1.64	\$1.66
<b>Adj Non-GAAP EPS-Fully dil.</b>	<b>\$0.60</b>	<b>\$0.52</b>	<b>\$0.54</b>	<b>\$0.55</b>	<b>\$0.46</b>	<b>\$0.47</b>	<b>\$0.45</b>	<b>\$0.52</b>	<b>\$2.17</b>	<b>\$1.91</b>	<b>\$1.93</b>
Yr-to-yr Gr.	10%	-10%	-25%	-21%	-23%	-10%	-17%	-5%	-14%	-12%	1%
Primary Share Out	110.0	110.0	110.3	110.8	110.8	111.0	111.1	111.3	110.3	110.8	111.3
Fully Diluted GAAP	111.1	111.2	111.2	111.3	111.6	111.6	111.7	111.7	111.2	111.3	111.7
<b>EBITDA</b>	<b>120.7</b>	<b>124.1</b>	<b>146.9</b>	<b>117.0</b>	<b>100.7</b>	<b>118.8</b>	<b>120.2</b>	<b>130.1</b>	<b>508.7</b>	<b>436.7</b>	<b>464.8</b>
EBITDA Margin	34%	35%	41%	33%	31%	34%	33%	34%	36%	31%	31%
Yr-to-yr Gr.	-10%	-10%	-7%	-28%	-9%	-2%	-20%	2%	-14%	-14%	6%

## BALANCE SHEET

\$ in thousands	Mar 31, 2024	Dec 31, 2023	Qtr-Qtr % Change	Mar 31, 2023	Yr-Yr % Change
<b>CURRENT ASSETS</b>					
Cash and cash equivalents	\$260,497	\$260,664	-0.1%	\$304,934	-14.6%
Short term deposits	848,522	790,823	7.3%	469,284	80.8%
Marketable securities	133,611	184,960	-27.8%	171,747	-22.2%
Trade accounts receivable	159,398	154,067	3.5%	144,195	10.5%
Inventories	299,377	282,688	5.9%	358,715	-16.5%
Other current assets	42,049	35,956	16.9%	35,416	18.7%
Total current assets	1,743,454	1,709,158	2.0%	1,484,291	17.5%
PROPERTY AND EQUIPMENT, NET	1,180,569	1,155,929	2.1%	1,009,632	16.9%
GOODWILL & INTANGIBLE ASSETS, NET	11,666	12,115	-3.7%	13,540	-13.8%
DEFERRED TAX & OTHER ASSETS, NET	41,226	41,315	-0.2%	69,623	-40.8%
TOTAL ASSETS	2,976,915	2,918,517	2.0%	2,577,086	15.5%
<b>CURRENT LIABILITIES</b>					
<b>Short term debt</b>	<b>57,700</b>	<b>58,952</b>	<b>-2.1%</b>	<b>42,224</b>	<b>36.7%</b>
Trade accounts payable	169,526	139,128	21.8%	191,006	-11.2%
Deferred revenue	19,732	18,418	7.1%	30,268	-34.8%
Other current liabilities	76,947	60,340	27.5%	90,637	-15.1%
Total current liabilities	323,905	276,838	17.0%	354,135	-8.5%
<b>LONG-TERM DEBT</b>	<b>151,699</b>	<b>172,611</b>	<b>-12.1%</b>	<b>201,445</b>	<b>-24.7%</b>
LONG-TERM CUSTOMERS' ADVANCES	22,465	25,710	-12.6%	34,066	-34.1%
DEFERRED TAX LIABILITY	16,277	16,319	-0.3%	11,188	45.5%
Total liabilities	514,346	491,478	4.7%	600,834	-14.4%
SHAREHOLDERS' EQUITY	2,462,569	2,427,039	1.5%	1,976,252	24.6%
TOTAL LIABILITIES AND EQUITY	\$2,976,915	\$2,918,517	2.0%	\$2,577,086	15.5%
Current Ratio	5.4	6.2	-12.8%	4.2	28.4%
Quick Ratio	4.5	5.2	-13.5%	3.2	40.3%
Working Capital	1,419,549	1,432,320	-0.9%	1,130,156	25.6%
Debt Percent of Assets	7.0%	7.9%	-11.3%	9.5%	-25.6%
Debt to Equity	0.1	0.1	-10.9%	0.1	-31.0%
Cash and equivalents	1,242,630	1,236,447	0.5%	945,965	31.4%
Cash and equivalents per share	\$11.21	\$11.16	0.5%	\$8.60	30.3%
Debt	209,399	231,563	-9.6%	243,669	-14.1%
Change in cash	6,183	6,868	-10.0%	(59,847)	-110.3%
Change in debt	(22,164)	3,991	-655.3%	(28,675)	-22.7%

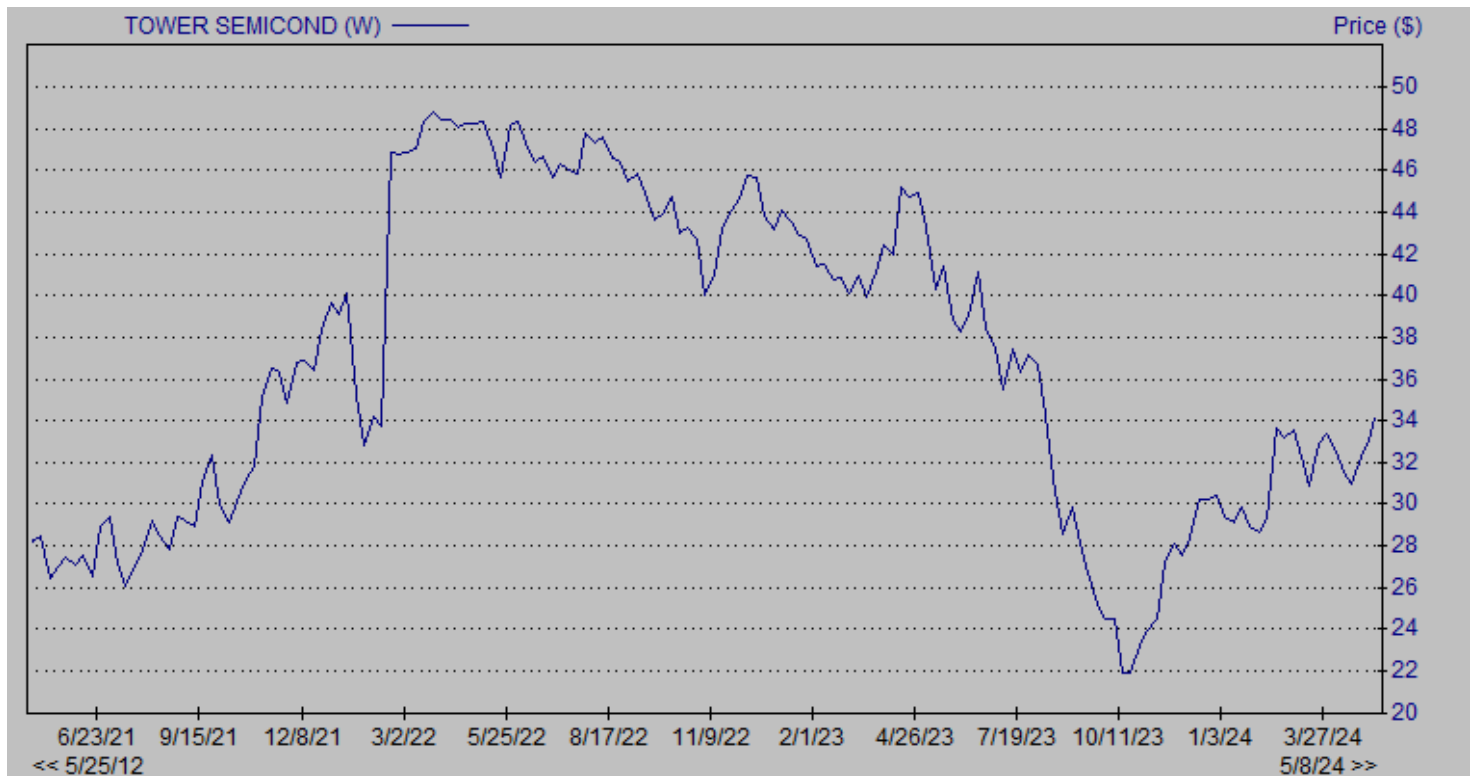


## CASH FLOW

	Year	Year	Year	3-Mo	3-Mo	3-Mo	3-Mo	Year	3-Mo
	2020	2021	2022	3/31/23	6/30/23	9/30/23	12/31/23	2023	3/31/24
<b>CASH FLOWS - OPERATING ACTIVITIES</b>									
Net profit (loss)	\$ 83,289	\$ 154,075	\$ 266,471	\$ 81,368	\$ 48,706	\$ 337,737	\$ 51,719	\$ 519,530	\$ 43,047
<b>Income and non-cash expense items:</b>									
Depreciation and amortization	240,531	270,710	292,638	62,387	63,579	66,877	65,178	258,021	59,544
Effect of fair value measurement on debt	6,645	1,138	10,362	(926)	3,102	3,044	(6,852)	(1,632)	227
Other expense (income), net	5,215	(1,461)	6,934	815	(149)	(21)	(7,692)	(7,047)	5,993
<b>Changes in assets and liabilities:</b>									
Trade accounts receivable	(33,087)	14,335	(15,232)	7,413	(21,241)	12,529	(1,861)	(3,160)	(6,716)
Other assets	(7,999)	(26,731)	20,427	(1,138)	2,114	(4,099)	(6,418)	(9,541)	(13,454)
Inventories	(2,891)	(44,192)	(77,891)	(57,420)	16,315	22,477	27,310	8,682	(23,703)
Trade accounts payable	(18,576)	(25,004)	(20,893)	44,542	(24,712)	(58,107)	30,023	(8,254)	32,559
Deferred revenue and customers' advances	(3,072)	74,524	(30,069)	(15,470)	(10,723)	419	(9,902)	(35,676)	(1,931)
Other current liabilities	347	16,850	61,033	(45,053)	(5,479)	(3,885)	(15,746)	(70,163)	16,868
Employee related liabilities	3,936	(2,681)	2,956	371	267	191	(2,039)	(1,210)	0
Deferred tax liability, net	2,223	(10,270)	13,084	(4,162)	3,715	25,080	2,378	27,011	0
Other long-term liabilities	0	0	0	0	0	0	0	0	(2,396)
<b>Net cash provided by operating activities</b>	<b>276,561</b>	<b>421,293</b>	<b>529,820</b>	<b>72,727</b>	<b>75,494</b>	<b>402,242</b>	<b>126,098</b>	<b>676,561</b>	<b>110,038</b>
<b>CASH FLOWS - INVESTING ACTIVITIES</b>									
Investments in property and equipment, net	(256,539)	(279,260)	(213,537)	(105,245)	(89,433)	(101,080)	(136,426)	(432,184)	(98,018)
Interest bearing deposits, including designated deposits	(107,070)	(59,684)	(115,911)	24,194	42,615	(318,497)	(36,975)	(288,663)	(1,113)
Net cash provided by (used in) investing activities	(363,609)	(338,944)	(329,448)	(81,051)	(46,818)	(419,577)	(173,401)	(720,847)	(99,131)
<b>CASH FLOWS - FINANCING ACTIVITIES</b>									
Exercise of warrants and options	2,512	458	44	0	0	0	0	0	0
Debt repayment	(63,699)	(77,315)	(78,379)	(28,796)	(10,093)	15,493	(8,950)	(32,346)	(8,409)
Proceeds from investment in subsidiary	0	0	11,685	1,932	0	0	0	1,932	0
Net cash used in financing activities	(61,187)	(76,857)	(66,650)	(26,864)	(10,093)	15,493	(8,950)	(30,414)	(8,409)
Effect of foreign exchange rate change	4,357	(6,245)	(3,893)	(637)	(5,322)	(1,537)	2,101	(5,395)	(2,665)
<b>INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS</b>	<b>(143,878)</b>	<b>(753)</b>	<b>129,829</b>	<b>(35,825)</b>	<b>13,261</b>	<b>(3,379)</b>	<b>(54,152)</b>	<b>(80,095)</b>	<b>(167)</b>
<b>CASH AND CASH EQUIVALENTS - BEGINNING OF PERIOD</b>	<b>355,561</b>	<b>211,683</b>	<b>210,930</b>	<b>340,759</b>	<b>304,934</b>	<b>318,195</b>	<b>314,816</b>	<b>340,759</b>	<b>260,664</b>
<b>CASH AND CASH EQUIVALENTS - END OF PERIOD</b>	<b>211,683</b>	<b>210,930</b>	<b>340,759</b>	<b>304,934</b>	<b>318,195</b>	<b>314,816</b>	<b>260,664</b>	<b>260,664</b>	<b>260,497</b>
Operating Cash Flow	\$ 335,680	\$ 424,462	\$ 576,405	\$ 143,644	\$ 115,238	\$ 407,637	\$ 102,353	\$ 768,872	\$ 108,811
Free cash flow	\$ 79,141	\$ 145,202	\$ 362,868	\$ 38,399	\$ 25,805	\$ 306,557	\$ (34,073)	\$ 336,688	\$ 10,793



## HISTORICAL STOCK PRICE



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