Zacks Equity Research

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Ken Nagy, CFA

www.zacks.com
111 North Canal Street, Chicago, IL 60606

Towerjazz (TSEM-NASDAQ)

TSEM: Tower Achieves GAAP Net Profit for First Time in Ten Years.

Current Recommendation	**Outperform**
Prior Recommendation	N/A
Date of Last Change	01/31/2010
Current Price (11/12/10)	$1.44
Six- Month Target Price	**$4.00**

OUTLOOK

Towerjazz is a pure-play semiconductor wafer foundry with two IC plants in Israel and one in California, that manufacture SiGe, MEMS, RF, embedded flash-based memory, analog/mixed-signal, and CMOS image-sensor devices. The firm has been building capacity due to accelerated design-win momentum, which have been realized within a large group of diversified, global customers, many of which being market share and technology platform leaders for their respective markets. We see value in the shares and reiterate our outperform rating.

SUMMARY DATA

52-Week High	**$1.84**
52-Week Low	**$0.89**
One-Year Return (%)	**59.02**
Beta	**1.86**
Average Daily Volume (sh)	**851,541**
Shares Outstanding (mil)	**234**
Market Capitalization ($mil)	**$373**
Short Interest Ratio (days)	**1.50**
Institutional Ownership (%)	**7**
Insider Ownership (%)	**1**
Annual Cash Dividend	**$0.00**
Dividend Yield (%)	**0.00**
5-Yr. Historical Growth Rates	
Sales (%)	**26.6**
Earnings Per Share (%)	**N/A**
Dividend (%)	**N/A**
P/E using TTM EPS	**2.9**
P/E using 2010 Estimate	**2.7**
P/E using 2011 Estimate	**2.3**
Zacks Rank	**3**

Risk Level	**Above Avg.,**
Type of Stock	**Small-Blend**
Industry	**Elec Comp-Semic**
Zacks Rank in Industry	**N/A**

ZACKS ESTIMATES

Revenue
(in millions of $)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2008	58 A	58 A	59 A	77 A	252 A
2009	58 A	61 A	80 A	101 A	297 A
2010	114 A	126 A	135 A	136 E	511 E
2011	125 E	135 E	138 E	142 E	540 E

Earnings per Share
(Non-GAAP)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2008	-$0.04 A	$0.08 A	$0.04 A	$0.04 A	$0.12 A
2009	-$0.02 A	$0.03 A	$0.07 A	$0.11 A	$0.19 A
2010	$0.13 E	$0.15 A	$0.15 A	$0.16 E	$0.59 E
2011	$0.14 E	$0.15 E	$0.18 E	$0.21 E	$0.68 E

Zacks Projected EPS Growth Rate - Next 5 Years % **15**

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WHATS NEW

Given fourth quarter guidance, Towerjazz will make good on its promises of $500 million revenue run rate and 70% year over year growth. For good measure the firm got to GAAP net profit one quarter earlier than the firm originally promised. (The first in 10 years) The firm has been building capacity due to accelerated design-win momentum, which have been realized within a large group of diversified, global customers, many of which being market share and technology platform leaders for their respective markets. We feel Towerjazz should outpace its foundry competitors as well as the overall semiconductor industry in 2011. Specialty foundry enjoys higher margins and is less susceptible to industry downturns. In addition the firm is out in front on several industry leading technologies such as HPA, Power, and optical. The Tower and Jazz merger was completed at a time when the rest of the industry was struggling to survive. The balance sheet improvements are a source of strength which likely sets up the firm for further growth activity in the future.

On November 11th 2010 TSEM announced results for the third quarter of fiscal year 2010 ending September 2010. Revenue for the period was $134.7 million rising 7.2% sequentially from $125.7 million and up 69.3% year over year.

Pro-forma gross profit for the third quarter 2010 was $62 million, representing a year over year growth of 139% and sequential growth of 9%. This represents a gross margin of 46%, compared with a gross margin of 32% in the third quarter of last year and a gross margin of 45% in the prior quarter. On a GAAP basis, the Company reported a gross profit of $36 million.

Looking at the balance sheet, the company's cash balance, as of September 30, 2010, was $88 million, as compared to $52 million as of September 30, 2009, and shareholders' equity was $102 million as compared to $56 million as of December 31, 2009.

Management forecasts revenue in the fourth quarter of 2010 to range between $133 and $137 million, representing a sequential revenue growth of -1.3% to + 1.7% and 71-72% year-over-year growth in revenues.

Tower Semiconductor Raises $100 Million

On October 25, 2010, Tower Semiconductor successfully completed the institutional stage of a fund raising in Israel, receiving commitments from investors to a new series of long-term bonds it intends to issue. The bonds will mature in two equal installments on December 2015 and December 2016.

The series F bonds will be NIS denominated and will be linked to the exchange rate of the NIS into the US Dollar. Under the terms of the bonds, it will carry an interest rate of 7.8% per annum, payable semi-annually on June 30 and on December 31 of each year through 2016, commencing December 31, 2010, and will be convertible into the Company's ordinary shares commencing September 2012 at about 20 percent premium over the Company's ordinary shares market price. (With a 2 year vesting period ending September 2012)

By October 27th the firm had $100 million in commitments. Cash will be used to grow internal capacity (mainly fab2) potential M&A.

Looking at the past year this completes a comprehensive debt restructure. This restructure comprised the extension of the $45 million Wells-Fargo credit lines, $80 million Jazz level bonds exchange to bonds due in 2015, $50 million pay down and restructure of the remaining $160 million Israeli banks debt to a long term loan and this deal. Tower has created a new balance sheet with zero bank loans' principal due

during the coming 3 years, servable debt ratios and a cash balance which will enable the firm to be flexible if M&A opportunities present themselves.

INVESTMENT THESIS

Tower Semiconductor Ltd. operates as a global specialty foundry company. Its wholly owned subsidiary, Jazz Semiconductor, Inc., specializes in analog-intensive mixed-signal (AIMS) foundry solutions. Tower and Jazz manufacture integrated circuits with geometries ranging from 1.0 to 0.13-micron, as well as provide design enablement tools to allow complex designs to be achieved quickly and accurately. The company and its subsidiary offer a range of process technologies, including digital, mixed-signal and RFCMOS, HV CMOS, BCD, non-volatile memory (NVM), embedded NVM, MEMS, and CMOS image sensors. Tower and Jazz maintain two fabrication facilities in Israel, as well as one fabrication facility in the United States, with additional capacity available through manufacturing partnerships in China.

As of December 31, 2009, Tower has 85 patents and Jazz has 174 Patents

Foundry History
Historically semiconductor firms (also called integrated device manufacturers or IDMs) manufactured chips in their own fabs (chip fabrication plant). By the 1990's as chips grew smaller and more complex it was a natural that fab less outsourced manufacturing began to emerge. Semiconductor devices are broadly divided into three categories—analog, digital and radio frequency (RF). Analog semiconductors condition and regulate real world information such as light, temperature, speed, pressure, power and electrical currents. Digital logic semiconductors process information in only two states. Mixed-signal semiconductors combine both analog and digital technology into a single device. Typically, an analog sensor samples real world information, and then converts the input into an electronic analog signal, which is converted into a digital format for further digital processing. The analog and mixed-signal markets tend to be more varied and specialized, with customized products that have longer life cycles than the digital industry segment. There is an ongoing drive to decrease the number of discrete devices, lessen power requirements and shrink the size of the existing devices, which correspondingly increase performance and reliability. Consequently, a greater amount of functionality is being consolidated into increasingly smaller devices.

Foundry Revenue (McLean Report, iSupply IC Insights, Company reports)

(in $M)	2005		2006		2007		2008		2009	
A	TSMC	8217	TSMC	9748	TSMC	9813	TSMC	10253	TSMC	9026
B	UMC	3259	UMC	3670	UMC	3755	UMC	2939	UMC	2755
C	SMIC	1171	Chartered	1528	SMIC	1560	Chartered	1778	Globall/Chrtd	2641
D	Chartered	1132	SMIC	1465	Chartered	1445	SMIC	1148	SMIC	1448
1	Vanguard	353	Dongbu	456	Vanguard	485	Vanguard	515	Dongbu	395
2	Dongbu	347	Vanguard	398	X-Fab	410	Dongbu	433	Vanguard	382
3	HHNEC	313	SSMC	325	Dongbu	405	X-Fab	370	**TowerJazz**	**299**
4	SSMC	280	HHNEC	315	SSMC	350	HHNEC	290	X-Fab	223
5	He Jian	250	X-Fab	290	HHNEC	345	**TowerJazz**	**252**	HHNEC	220
6	X-Fab	202	He Jian	290	He Jian	330	He Jian	222	Grace	203
7	Jazz	199	Jazz	213	**Tower**	**231**	Grace	219	He Jian	195
8	Mosel-Vitelic	140	Grace	191	Grace	214	Silterra	192	Silterra	160
9	Silterra	130	**Tower**	**187**	Jazz	207	SSMC	176	SSMC	144
10	ASMC	114	ASMC	170	Silterra	185	CSMC		CSMC	NA
11	Grace	100	Silterra	155	ASMC	170	ASMC	137	ASMC	NA
12	**Tower**	**94**	Mosel-Vitelic	155	Mosel-Vitelic	157	Episil		Episil	NA
13	Polar Semi.	90	CSMC Tech.	114	CSMC Tech.	155	1st Silicon	0	1st Silicon	0
14	CSMC Tech.	78	Polar Semi.	95	Polar Semi.	105	Mosel-Vitelic	0	Mosel-Vitelic	0
15	1st Silicon	71	1st Silicon	0	1st Silicon	0	-	-	-	-
16+	Others	105	Others	139	Others	163	Others	NA	Others	NA

The availability of IC designs require process technologies other than standard digital CMOS have created a market for independent foundries that focus on providing specialized process technologies. Thus, wafer manufacturers may also need to make a significant investment in specialty process technologies to manufacture these semiconductors. Specialty process technologies enable greater analog content and can reduce the die size of an analog or mixed-signal semiconductor, thereby increasing the number of dies that can be manufactured on a wafer and reducing final die cost. In addition, specialty process technologies can enable increased performance, superior noise reduction and improved power efficiency of analog and mixed-signal semiconductors compared to traditional standard CMOS processes. These specialty process technologies include advanced analog CMOS, radio frequency CMOS (RF CMOS),CMOS Image Sensors (CIS), high voltage CMOS, bipolar CMOS (BiCMOS), silicon germanium BiCMOS (SiGe BiCMOS), and bipolar double-diffused metal oxide semiconductor (BCD).

Specialized Markets, higher margin

The company uses CMOS (complementary metal oxide semiconductor) IC technology within the semiconductor devices. Strategically, management has targeted the manufacture of embedded flash-based memory, analog/mixed-signal and CMOS image-sensor device markets. Management asserts that these targeted specialized markets produce relatively higher gross margins and have higher growth characteristics than the general industry. Embedded flash memory is non-volatile erasable memory used within MP3 players, wireless handsets, digital cameras, DVD players, set-top boxes and PCs. The analog/mixed signal ICs are used in a wide variety of end applications that include wireless handsets, PCs, DVD players, automotive electronics and medical imaging equipment. CMOS image sensors are

used within wireless handsets, digital cameras, video cameras and video game consoles. Applications within the consumer market account for 50% of revenue, while communications was 15%, PC was 7%, multi-markets 18% and the combined industrial, medical and automotive the remaining 10%.

Some industries that will benefit from optical sensors include certain processing industries that can use sensors for controlling chemical formulations and temperatures. In the medical industry, the sensors will facilitate the development of novel imaging systems. The sensors will help the construction industry monitor the structural health of different buildings, bridges, and tunnels and facilitate the environmental industry in monitoring pollutants and contamination.
The multiplexing capability of optical sensors makes them an excellent candidate for structural health monitoring in aerospace applications where weight is a major consideration. Degradable polymer sensors are used to deliver antiviral drugs, pain and chemotherapy medications, and contraceptives. Universities and companies can use simulation equipment for their research and teaching needs. A range of basic and applied research programs are being conducted in aeropropulsion, space sciences, photonics, and materials technology

Merger.
Jazz semiconductor was formed as the result of a spin off in 2002 from Conexant (Conexant dates back to Rockwell Semiconductor). Jazz is the owner of the Newport Beach CA 200mm facility and several industry leading technologies such as SiGE, BiCMOS, and MEMS. We feel the merger is significant to Tower for the following reasons.

- The merger was done at a time when the rest of the industry was in survival mode.
- The customer base was doubled.
- Towerjazz is the lead in specialty higher margin foundry.



Diverse Customer Base (Source,Towerjazz)

The firm produces its products with its specialty process technology the designs are typically more complex than the manufacture of standard technology. This has the effect of drawing industry leading customers to the firm and makes it harder for them to leave for the competition.

SiGe

TSEM's BiCMOS process technologies have more features than RF CMOS process technologies and power various RF semiconductors such as wireless transceivers and television tuners. Towerjazz takes it a step further and incorporate high-speed bipolar transistors into an RF CMOS process. The equipment requirements for BiCMOS manufacturing are specialized and require enhanced tool capabilities to achieve high yield manufacturing. Towerjazz remains the only foundry in the world with multi-fab SiGE capacity.

Power Management

TSEM's high voltage CMOS and BCD process technologies have more features than advanced analog CMOS processes and are well suited for power and driver semiconductors such as voltage regulators, battery chargers, power management products and audio amplifiers.

With worldwide energy standards becoming more stringent, we are optimistic about Towerjazz technology. In particular, several new government standards are being enacted that will force new products to adopt newer technologies, displacing the inefficient legacy linear transformers. The standards imposed by the California Energy Commission (CEC) became mandatory for all external power supplies by July 2008. This is a critical event given that California is the seventh largest economy in the world and usually the pioneer in leading edge legislation that many other states usually adopt later. Washington State and Arizona have both since adopted the same California standard. China recently announced a new voluntary program similar to the Energy Star program and also adopted the California standards. The European Commission has set European standards for energy efficient external AC/DC power supplies that are even more stringent than the CEC standards, although it is initially on a voluntary basis. Australia not only adopted the CEC standards, but made compliance mandatory by April 2006. The current worldwide energy situation has created greater sensitivity to the burgeoning problem. TSEM integrated power products conform to these new standards. As customers begin to design-in integrated power ICs that are in conformance with these new energy efficiency standards, the firm should be able to capitalize on the conversion.

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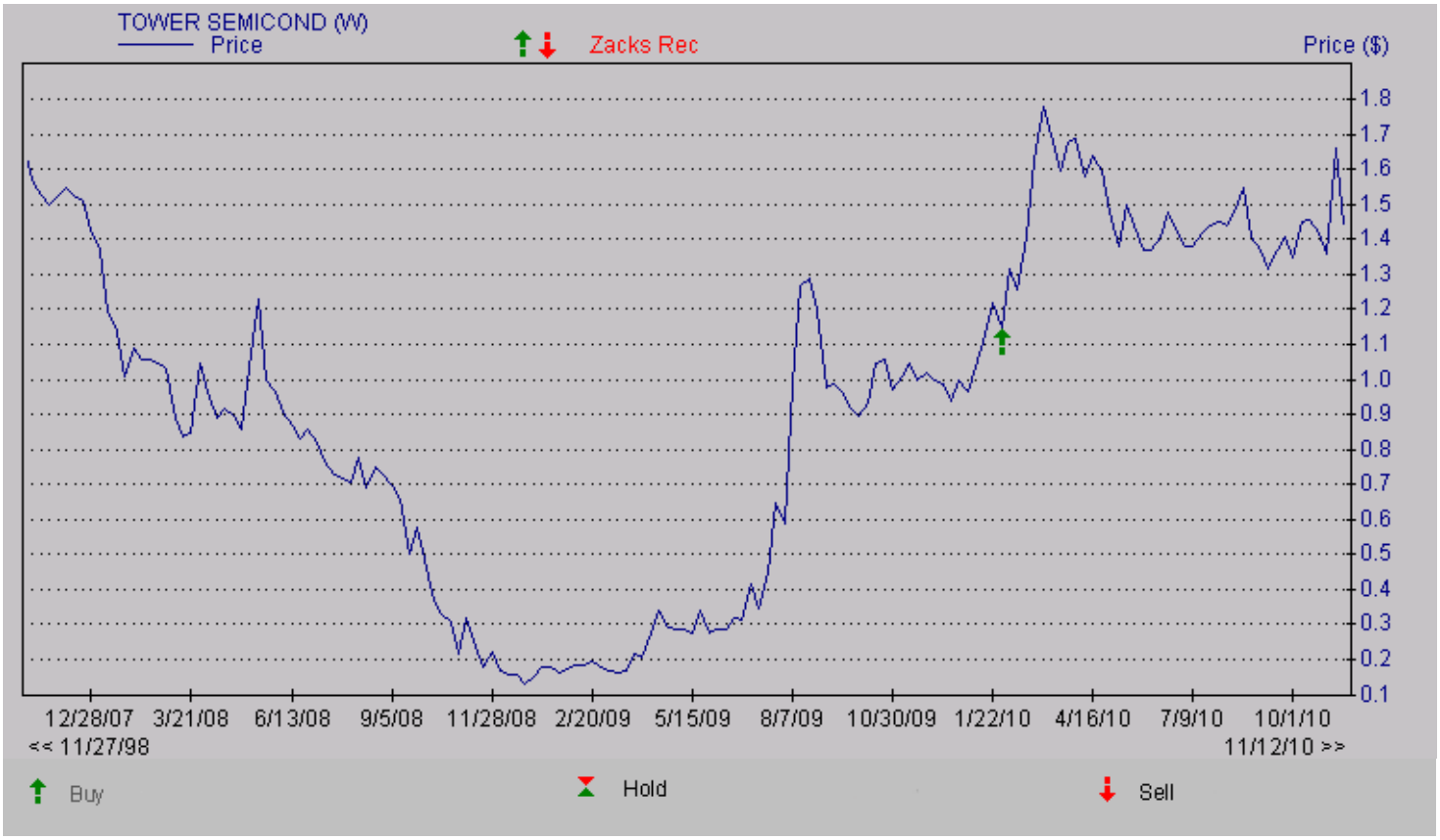
HISTORICAL ZACKS RECOMMENDATIONS



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