Zacks Small-Cap Research

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Towerjazz (TSEM-NASDAQ)

TSEM: The Road to $1 Billion Begins; OUTPERFORM

Current Recommendation	**Outperform**
Prior Recommendation	N/A
Date of Last Change	01/31/2010
Current Price (05/13/11)	$1.26
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. Over the past year 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	**$1.66**
52-Week Low	**$1.21**
One-Year Return (%)	**-16.00**
Beta	**1.57**
Average Daily Volume (sh)	**352,402**
Shares Outstanding (mil)	**277**
Market Capitalization ($mil)	**$350**
Short Interest Ratio (days)	**2.70**
Institutional Ownership (%)	**3**
Insider Ownership (%)	**1**
Annual Cash Dividend	**$0.00**
Dividend Yield (%)	**0.00**
5-Yr. Historical Growth Rates	
Sales (%)	**27.3**
Earnings Per Share (%)	**N/A**
Dividend (%)	**N/A**
P/E using TTM EPS	**12.6**
P/E using 2011 Estimate	**2.1**
P/E using 2012 Estimate	**1.9**
Zacks Rank	**3**

Risk Level	**Moderate**
Type of Stock	**Small-Blend**
Industry	**Elec Comp-Semic**

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	135 A	510 A
2011	124 E	138 E	145 E	149 E	556 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	$0.14 A	$0.57 A
2011	$0.13 E	$0.15 E	$0.19 E	$0.21 E	$0.68 E

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

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WHATS NEW

The Road to $1 Billion Begins

Just a year removed from being the only worldwide foundry with positive year over year growth (2009 vs 2008), Towerjazz completed it's goal of $500 million in annual revenue in 2010. During the fourth quarter conference call the number one specialty foundry, obviously not ready to put the bold predictions to rest, predicted $1 billion in annual revenue by 2014.

On Monday (April 4th) they got to work on that $1 Billion number when they signed a non-binding agreement to buy Micron Technology's plant in Nishiwaki City, Japan for $140 million (40 million in cash 20 million of Tower ordinary shares would be issued to Micron Technology) in a deal that would nearly double production capacity. The proposed purchase of the plant, located south of Tokyo, would increase production by 80%, or 60,000 wafers per month. It should also strengthen the company's presence in the Asia-Pacific region. Reading between the lines we feel the deal will help margins eventually, but perhaps not until 2013. 20 million shares for increasing your revenues by 80% is dilution we can live with.

In September of 2008 the firm merged with Jazz, the owner of the Newport Beach CA 200mm facility. The merger was significant to Tower because the customer base was doubled, it was done at a time when most FAB's were struggling to survive, and Jazz possessed several industry leading technologies such as SiGE, BiCMOS, and MEMS

The non-operating side of the business has been busy as well. 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. By October 27th the firm had $100 million in commitments

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.

Foundry Landscape 2008-2010

($M)	2008		2009		2010	
1	TSMC	10,556	TSMC	,8989	TSMC	13,307
2	UMC	3,070	UMC	2,815	UMC	3,965
3	Chartered	1,743	GlobalFoundries*	2,641	GlobalFoundries	3,510
4	SMIC	1,353	SMIC	1,070	SMIC	1,555
5	Vanguard	511	Dongbu	395	**TowerJazz**	**510**
6	Dongbu	490	Vanguard	382	Vanguard	505
7	X-Fab	368	**TowerJazz**	**299**	Dongbu	495
8	SSMC	340	SSMC	280	SSMC	330
9	HHNEC	290	HHNEC	240	X-Fab	320
10	**TowerJazz**	**252**	X-Fab	212	HHNEC	295
11	Grace	230	He Jian	180	Grace	260
12	He Jian	195	Silterra	170	WIN	221
13	Silterra	175	WIN	145	Altis	215
14	ASMC	134	Grace	100	He Jian	205
15	WIN	117	ASMC	94	Silterra	200
16	Mosel-Vitelic	98	XinXin	55	ASMC	150
17	XinXin	20	Mosel-Vitelic	51	Mosel-Vitelic	80
18	Altis	0	Altis	0	XinXin	75
19	-	-	-	-	-	-
20+	Others	148	Others	171	Others	204

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

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.

PROJECTED INCOME STATEMENT

INCOME STATEMENT ($ Millions)	Dec-09 Q409	Mar-10 Q1 10	Jun-10 Q2 10	Sep-10 Q3 10	Dec-10 Q4 10	Mar-11 Q1 11 E	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010 E	FY 2011 E
REVENUE												
Net Revenue	**100.6**	**113.8**	**125.7**	**134.7**	**135.1**	**124.4**	**187.4**	**230.9**	**251.7**	**298.8**	**509.3**	**556.0**
Sequential Growth		*13%*	*10%*	*7%*	*0%*	*-8%*						
OPERATING EXPENSES												
Cost of Revenues	61.87	64.49	68.78	72.89	78.59	72.50	128.3	147.4	174.2	206.5	284.7	309.0
% of Revenue	*61.5%*	*56.7%*	*54.7%*	*54.1%*	*58.2%*	*58.3%*						
Gross Profit -	**38.7**	**49.3**	**56.9**	**61.8**	**56.5**	**51.9**	**59.1**	**83.5**	**77.5**	**92.3**	**224.5**	**247.0**
Proforma Gross Margin	*38.5%*	*43.3%*	*45.3%*	*45.9%*	*41.8%*	*41.7%*	*31.5%*	*36.2%*	*30.8%*	*30.9%*	*44.1%*	*44.4%*
R&D + Engg	6.69	5.52	6.17	6.59	4.31	7.00	10.6	10.4	13.2	22.2	22.6	25.0
% of Revenue	*6.7%*	*4.9%*	*4.9%*	*4.9%*	*3.2%*	*5.6%*	*5.7%*	*4.5%*	*5.3%*	*7.4%*	*4.4%*	*4.5%*
SG&A	8.71	8.59	9.19	9.65	6.16	8.75	21.9	24.2	28.1	29.0	34	35
% of Revenue	*8.7%*	*7.5%*	*7.3%*	*7.2%*	*4.6%*	*7.0%*	*11.7%*	*10.5%*	*11.2%*	*9.7%*	*6.6%*	*6.3%*
GW Amort, Restructuring, other	-							-	-	-		
% of Revenue												
Total Operating Expenses	15.41	14.11	15.37	16.24	10.47	15.75	32.5	34.6	41.4	51.1	56	60
% of Revenue	*15.3%*	*12.4%*	*12.2%*	*12.1%*	*7.7%*	*12.7%*	*17.3%*	*15.0%*	*16.4%*	*17.1%*	*11%*	*11%*
Operating Income -	**23.34**	**35.20**	**41.5**	**45.6**	**46.1**	**36.2**	**26.6**	**48.9**	**36.1**	**41.2**	**168**	**187**
Operating Margin	*23.2%*	*30.9%*	*33.0%*	*33.8%*	*34.1%*	*29.1%*	*14%*	*21%*	*14%*	*14%*	*33%*	*34%*
NON-OPERATING ITEMS												
Non operating Income/Expense	0.0	-3.6	-2	-6	-8	-8	-34.4	-28.8	-19.4	-22.2	-19	-20
% of Revenue	*0.00%*	*-3.15%*	*-1.93%*	*-4.12%*	*-5.75%*	*-6.03%*	*-18.35%*	*-12.48%*	*-7.72%*	*-7.42%*	*-3.79%*	*-3.60%*
Tax Provision	2.1	2.7	3.5	3.7	3.0	2.0	0.00	0.00	0.58	-5.0	13	15
Effective Tax Rate												
Net Income -	**21.22**	**28.97**	**35.59**	**36.34**	**35.34**	**26.65**	**-7.77**	**20.08**	**16.08**	**24.06**	**136.2**	**152.0**
Net Income Margin	*21.1%*	*25.5%*	*28.3%*	*27.0%*	*26.2%*	*21.4%*	*-4.1%*	*8.7%*	*6.4%*	*8.1%*	*27%*	*27%*
EARNINGS PER SHARE												
EPS - Basic	$0.11	$0.13	$0.15	$0.15	$0.14	$0.13	-$0.09	$0.17	$0.12	$0.19	$0.57	$0.68
EPS - Diluted	$0.11	$0.13	$0.15	$0.15	$0.14	$0.13	-$0.09	$0.17	$0.12	$0.19	$0.57	$0.68

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HISTORICAL ZACKS RECOMMENDATIONS



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