OPPENHEIMER

EQUITY RESEARCH

INITIATION OF COVERAGE

December 14, 2015

TECHNOLOGY/SEMICONDUCTORS & COMPONENTS

Tower Semiconductor Ltd.

Initiating Specialty Foundry Leader with Outperform & $20 PT

Stock Rating:

OUTPERFORM

12-18 mo. Price Target	$20.00
TSEM - NASDAQ	$15.02
3-5 Yr. EPS Gr. Rate	NA
52-Wk Range	$18.29-$10.68
Shares Outstanding	86.8M
Float	57.5M
Market Capitalization	$1,214.9M
Avg. Daily Trading Volume	430,627
Dividend/Div Yield	NA/NM
Book Value	$3.38
Fiscal Year Ends	Dec
2015E ROE	81.0 %
LT Debt	$206.8M
Preferred	NA
Common Equity	$325M
Convertible Available	Yes

EPS GAAP	Q1	Q2	Q3	Q4	Year	Mult.
2014A	0.81	(0.31)	(0.37)	0.01	0.08	NM
2015E	(1.15)A	0.09A	0.16A	0.26	(0.36)	NM
2016E	0.27	0.32	0.39	0.41	1.40	10.7x
2017E	--	--	--	--	2.00	7.5x

EPS Non-GAAP	Q1	Q2	Q3	Q4	Year	Mult.
2014A	0.41	0.62	0.58	0.83	2.46	6.1x
2015E	0.78A	0.58A	0.62A	0.63	2.51	6.0x
2016E	0.65	0.69	0.74	0.76	2.84	5.3x
2017E	--	--	--	--	3.22	4.7x

Excludes depreciation, amortization, stock-based compensation and one-time charges

SUMMARY

We are initiating coverage of Tower Semiconductor (TSEM) with an Outperform and $20 PT. Tower is a specialty foundry focusing on the RF/HPA, Power Mgmt and Image Sensor markets. TSEM has been an acquirer of inexpensive fab capacity in recent years, helping drive top-line growth and revenue stability. In November 2013, Tower signed an agreement with Panasonic to take a controlling interest in three of Panasonic's fabs, creating a JV between the two parties (TPSCo). Additionally, the company recently announced the acquisition of MXIM's TX fab. These two acquisitions have increased Tower's capacity from ~$600M in CY13 to $1.5B today. With a revenue run-rate of $1B and demand outstripping TSEM's supply, we see the company as a unique growth story with improving GMs/FCFs.

KEY POINTS

- TPSCo increased TSEM's capacity by $650-700M/yr with a steady revenue stream from Panasonic of ~$360-400M. We believe TSEM has largely earmarked the remaining ~$300M in capacity with third-party deals. Third-party revenue started ramping in CY15 to $10M in 3Q. We estimate third-party revenues to increase to $25M/qtr exiting CY16 and ~$50M/qtr exiting CY17.
- The acquisition of MXIM's 8" San Antonio fab (closes early 1Q) should help TSEM alleviate capacity constraints longer term. MXIM adds ~$100M in annual revenues (~10-12% GM, <$1M opex) with an additional $100M in free capacity. We estimate this deal adds ~$0.10/$0.30 to our CY16/17 GAAP EPS. Third-party revenues are expected to ramp in late CY16 at 50%+ contribution margin.
- With TSEM likely shifting to GAAP EPS reporting in 2016, we believe the overhang of mgmt's non-GAAP reconciliation could be lifted early next year. Mgmt has historically backed out D&A in non-GAAP reporting, unlike peers including depreciation in non-GAAP results. We believe that, going forward, GAAP results should be largely reflective of TSEM's cash-generating abilities.
- TSEM executed well in expanding non-GAAP gross margins through CY15, driving 400bps of expansion from 1Q15's 36% to 4Q15E 40%, as utilization rates increased at Fab 2/3. We expect non-GAAP GM to trend toward 50% over time, as TSEM fills excess capacity at TPSCo/MXIM fabs with higher-margin third-party revenue. We are introducing CY15/16/17 GAAP EPS of ($0.36)/$1.40/$2.00.
- TSEM shares are up 13% YTD (vs. SOX -4%) and trade at 7.5x our CY17E GAAP EPS, a significant discount to peers' 11x. We look for gradual multiple expansion as margins increase and GAAP reporting removes an overhang currently in the shares today. We are buyers of this unique growth and GM expansion story with a $20 PT.

Stock Price Performance

Company Description

Tower Semiconductor Ltd. is an independent specialty foundry dedicated to the manufacture of semiconductors.

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For analyst certification and important disclosures, see the Disclosure Appendix.

5-YEAR PRICE PERFORMANCE

Source: Bloomberg

INVESTMENT THESIS

Tower has been a selective acquirer of inexpensive fab capacity over the last several years, helping drive top-line growth and revenue stability. In November 2013, Tower signed an agreement with Panasonic to take a controlling interest in three of Panasonic's fabs. Additionally, the company recently announced the acquisition of MXIM's 8" San Antonio fab. These two acquisitions have increased Tower's total capacity from ~$600M in CY13 to $1.5B today. With a revenue run-rate of $1B and demand outstripping TSEM's current supply, we see the company as a unique growth story in semiconductors with improving GMs/FCFs.

BASE CASE ASSUMPTION

- Gradual GM expansion through 2017 as third-party revenue ramps at both TPSCo and MXIM
- Switch to GAAP only reporting in early 2016
- Gradually filling excess capacity purchased in recent years through 2017
- Maintain high utilization levels in Fab 2 and Fab 3

CATALYSTS

- Closing MXIM fab acquisition in January 2016 and ramping third-party revenue by exiting that year
- Switching to GAAP only reporting in early 2016
- Continued GM expansion as third-party revenue ramps at 50%-plus contribution margin

UPSIDE SCENARIO

- Third-party revenue ramping at TPSCo and MXIM faster than initial expectations
- GMs expanding toward mgmt's 50% non-GAAP target faster than expected as third-party revenue ramps
- Continued share gains from GlobalFoundries in RF-SOI

DOWNSIDE SCENARIO

- Share loss in core markets, particularly RF SOI
- Inability to fill unused capacity at both TPSCo and MXIM over the next several years
- GMs contracting due to lower ASPs and/or lower utilization
- Significant decrease in demand for consumer electronic devices, particularly smartphones

PRICE TARGET CALCULATION

We are establishing a 12-18 month price target of $20. Our $20 price target is based on 10x our CY17 estimate of $2.00, a slight discount to peers' 11x. TSEM shares are currently trading at just 7.5x CY17, a significant discount to peers' 11x. We believe the shares trade at a discount due to TSEM's lower margin profile and confusing non-GAAP reconciliation. With the switch to GAAP-based reporting in early 2016 and margin expectations increasing in 2016-17, we look for the shares to see gradual multiple expansion toward the group average.

KEY RISKS

Risks to our thesis include, but are not limited to: 1) Any significant decrease in the demand for smartphones, consumer electronics, PCs or other electronic devices may decrease the demand for Tower's services and products. 2) If ASPs of smartphones or tablets come under pressure, Tower may be pressured to reduce their own ASPs, which could impact the company’s revenues and margins significantly. 3) A slowdown in demand for consumer electronics could lead to elevated inventory levels at customers, which could result in Tower having to lower utilization rates, which could impact margins. 4) Risk of dilution from convertible bonds could impact EPS. 5) Specialty foundries typically operate one generation behind new technologies. If there is a technology breakthrough making newer generation tech cheaper and more economical, later generation fabricators could lose capacity and customers.

Investment Thesis

We are initiating coverage of Tower Semiconductor (TSEM) with an Outperform rating and establishing a 12-18 month price target of $20. Tower is a leading specialty foundry focusing on the RF, High Performance Analog, Power Management and CMOS Image Sensor markets. Tower has been a selective acquirer of relatively inexpensive fab capacity over the last several years, helping drive top line growth and revenue stability. In November 2013, Tower signed an agreement with Panasonic to take a controlling interest in three of Panasonic's fabs, creating a JV between the two parties (TowerJazz Panasonic Semiconductor Co., Ltd., or TPSCo). The agreement between the two parties gave Tower access to over 120 silicon process flows on both 200mm and 300mm wafers, as well as internal back end processing, assembly and test services. The deal gives Tower access to a roughly $360-400M revenue stream over the 5-year commitment, giving Tower time to ramp third-party revenue, and access to additional capacity.

Similarly, in November of 2015, Tower announced that it has entered into an agreement to purchase Maxim Integrated's 8" fab in San Antonio, Texas for $40M in stock. Tower has had a foundry relationship with Maxim for several years, manufacturing SiGe products for Maxim most recently. Similar to the Panasonic deal, the purchase of the Maxim fab comes with a long-term agreement whereby Tower will continue to supply Maxim, which we estimate to be a $100M revenue stream. As the commitment to Maxim winds down, we expect Tower to transition its RF-SOI and Power Management product lines to the fab, enabling Tower to support a larger revenue stream as demand for RF-SOI-based solutions continues to rise.

Tower's total revenue capacity has increased from $600M in 2013 to $1.5B currently with the addition of the Panasonic and Maxim fabs. Importantly, fall through margin on incremental revenue is 50%-plus. As the long-term supply agreements wind down, and Tower can ramp third-party revenue, we see organic top line expansion. Third-party revenue at the Panasonic fabs is currently running about $10M/quarter, tracking toward $25M/quarter exiting next year and $50M exiting CY17. When the Maxim deal closes, likely 1Q16, third-party sales should come in around $5M/quarter by early 2017 and slowly build toward $25M/quarter over following three years.

As utilization rates at Tower's fabs increase, and the company is able to ramp third-party revenue at the Panasonic and Maxim fabs, we see opportunity for steady and significant GM expansion. Tower executed well in expanding non-GAAP gross margins (which are exclusive of depreciation and amortization) through CY15, driving 400bps of expansion alone from 1Q15 (36%) to 4Q15E (estimated 40% GM), as utilization rates at the Newport Beach and Midgal HaEmek fabs have increased. We expect non-GAAP GM to trend toward 50% over time, as Tower fills excess capacity at Panasonic and Maxim fabs with higher-margin third-party revenue.

With the shift to GAAP profitability over the past two quarters and GAAP-only reporting in 2016, we believe the overhang of management's non-GAAP reconciliation could be lifted early next year. Management has historically backed out depreciation and amortization in non-GAAP reporting, unlike peers including depreciation in non-GAAP results. We believe this decision will be largely reflective of the company's cash-generating prospects and thus valuing TSEM on a GAAP basis.

Estimates & Valuation

We are introducing CY15/16/17 revenue estimates of $958M/$1.08B/$1.19B, respectively. Our non-GAAP CY15/16/17 EPS estimates are $2.51/$2.84/$3.22, respectively. The consensus CY16 EPS estimate is $2.99. Our CY15/16/17 GAAP EPS estimates are ($0.36), $1.40 and $2.00, respectively. We are modeling GMs to increase from an expected 37.8% in CY15 to 41.6% in CY17 primarily on higher margin third-party revenue. We are modeling operating margins to increase from 25.3% in CY15 to 30.7% in CY17. We expect management to tightly control opex spend, compounding top-line and GM gains.

Year-to-date, TSEM shares are up 13% vs. the SOX's down 4%, and trade at just 7.5x our CY17 GAAP EPS estimate, a significant discount to peers' 11x. We believe the shares trade at a discount due to TSEM's lower margin profile and confusing non-GAAP reconciliation. With the switch to GAAP-based reporting in early 2016 and margins expectations increasing in 2016-17, we look for the shares to see gradual multiple expansion toward the group average.

Company Background

TowerJazz Semiconductor Ltd. was founded in 1993 with the purchase of National Semiconductor's 150 mm wafer fabrication facility in Israel. Originally slated to produce 5,000 wafers per month, the facility, after significant modernization, is capable of 20,000 wafers per month with geometries ranging from 1.0 micron to 0.35 micron with capabilities for CMOS image sensors, embedded flash and mixed-signal technologies. In 2003, TowerJazz expanded to build a second Fab with 40,000 wafers per month capability and geometries of 0.18-micron to 0.13 micron. In 2008, TowerJazz merged with Jazz technologies. This brought along a third Fab, a second location (California), and new tech-advanced analog, radio frequency, high voltage, bipolar and silicon germanium bipolar complementary metal oxide semiconductor processes. The facility has a 24,000 wafers per month capacity and geometries of 0.50-micron to 0.13-micron.

In 2011, TowerJazz entered into an agreement to purchase a Micron Technology facility located in Japan. This nearly doubled TSEM's capacity at the time by adding 60,000 wafers per month. With it came access to the Japanese market and three-year supply agreement with Micron Technology. The facility supported geometries down to 95nm and can be used for power management and high-end RF chips.

In June 2011, Tower acquired a fabrication facility in Nishiwaki City, Hyogo, Japan from Micron, which they refer to as Fab 4. The assets and related business that were acquired from Micron are held and conducted through a wholly owned Japanese subsidiary, TowerJazz Japan Ltd. In 2014, the operations of Fab 4 ceased in the course of the restructuring of activities and business in Japan as Micron shifted production elsewhere.

Tower Semiconductor is a pure play specialty foundry company. Most pure play foundries, including Tower, do not offer their own products; rather, they focus on producing integrated circuits based on the specifications of their customers. Tower primarily uses third-party designs in their manufacturing processes. Tower has the capability to produce geometries of 0.35, 0.50, 0.55, 0.60, 0.80-micron and above on 150-mm wafers and 0.35, 0.18, 0.16, 0.13, and 0.11-micron on 200nm wafers and 45nm and 65nm on 300-mm wafers. They also offer design support and complementary technical services. The products that are manufactured by Tower are incorporated into a wide range of products in a diverse set of markets including consumer electronics, personal computers, communications, automotive, industrial and medical device products.

Tower currently owns three fabrication facilities (Fab 1, Fab 2, and Fab 3) located around the world and utilizes the capacity of three additional fabs in Japan. Their historical focus has been standard digital complementary metal oxide semiconductor ("CMOS") process technology, which is the most widely used method of producing ICs. They are currently focused on the emerging opportunities in specialized technologies including CMOS image sensors, mixed-signal, radio frequency CMOS (RFCMOS), bipolar CMOS (BiCMOS), and silicon-germanium BiCMOS (SiGe BiCMOS or SiGe), high voltage CMOS, radio frequency identification (RFID) technologies and power management.

Most recently in March 2014, Tower acquired from Panasonic 51% of a newly established company, TowerJazz Panasonic Semiconductor Co., Ltd., ("TPSCo"). This entity manufactures products for Panasonic and potentially other third parties, using Panasonic's three semiconductor manufacturing facilities located in Hokuriku Japan (Uozu E, Tonami CD and Arai E). Pursuant to the transaction, Panasonic transferred its semiconductor wafer manufacturing process and capacity tools (8-inch and 12-inch) at said three fabs to TPSCo, and entered into a five-year manufacturing agreement for the manufacture of products for Panasonic by TPSCo. This transaction provides Tower newfound capacity on the 200nm and 300nm wafer level as well as internal back end processing, assembly and test services.

Products & Segments

TowerJazz (Tower) offers specialty process technologies including radio frequency (RF), high-performance analog (HPA), integrated power management, CMOS image sensors, mixed-signal/CMOS and micro-electromechanical systems (MEMS). Additionally, Tower provides transfer optimization and development process services (TOPS) to IDMs and fabless companies that need to expand capacity. Given the specialized nature of Tower's product suite, the company tends to focus on lower-volume, higher-margin and highly-differentiated applications, with high barriers to entry.

Radio Frequency & High-Performance Analog. *Approximately 45% of sales, ex-Panasonic (~30% RF-CMOS & ~15% SiGe).* Tower offers a suite of Silicon Germanium (SiGe) BiCMOS, RF-SOI and RF-CMOS solutions which enable high-speed/low-power products across the consumer, infrastructure and automotive applications. RF/HPA seems on track to grow 45% Y/Y in 2015 vs. 2014, and based on current customer forecasts, Tower expects to see similar growth rates in 2016 driven by both RF-SOI and SiGe based-solutions.

RF-Silicon-on-Insulator (RF-SOI) and RF-CMOS platforms. Tower's RF-SOI-based switching and tuner solutions are primarily used in the smartphone market today. The high-performance nature of these parts results in lower losses in smartphone switching, lower power consumption, and improved reception. Smartphone OEMs are increasingly focused on more advanced/complex RF front-ends to achieve higher-levels of data throughput and global roaming capabilities. This complexity is driving higher levels of RF content, thus tower has seen rapid growth in this segment of the last several years.

Silicon-Germanium (SiGe). Tower's SiGe solutions have traditionally been used in high-speed data networks as they are ideally suited for handling high data traffic. More recently however, Tower has seen SiGe expanding into power amplifiers and low-noise amplifiers for smartphones. In 3Q15, Tower began production of a new line of power amplifiers for mobile devices and began ramping their new low-noise amplifiers into the smartphone market. While it is still early on, we believe the migration into these new, high-value markets, should provide sustainable growth opportunities for Tower's SiGe products into and beyond 2016.

Exhibit 1: RF / High-Performance Analog Applications and Technology

RF / HPA Applications and Technology	
Wireless Front-Ends *RF SOI & SiGe*	Power Amplifiers Antenna Switch Low Noise Amplifiers
Wireline Front-Ends *High-Performance SiGe*	Optical Fiber Networks TIA, LA, Laser Drivers, CDRs Photodetectors, Photonics
mmWave *High-Performance SiGe*	5G Wireless Automotive Radar 60GHz WiFi and Backhaul
High-Performance Analog *Complementary BiCMOS*	DSL Line Drivers HDD PreAmp for the Cloud OpAmps, DAC, ADC

Source: Company Reports, Oppenheimer & Co.

Power Management. *Approximately 10% of sales, ex-Panasonic.* Tower's power management business offers solutions across a wide range of voltages based on their bipolar-CMOS-DMOS (BCD) process technology. Tower's power management solutions range from 1.8V to 700V and are used across a broad range of applications including driver ICs, battery and portable power management, PC power control, Class-D audio amplifiers as well as other consumer, communications, computing, automotive and industrial applications. The advantage of Tower's offerings compared to traditional analog CMOS is Tower's processes allow for higher levels of integration at higher voltage ranges.

Tower's power platforms are designed for maximum flexibility, enabling customers to create cost-effective products at varying levels of integration. Further, Tower's solutions are differentiated given the available integration of non-volatile memory (NVM) and digital libraries, yielding cost-effective, enhanced power management solutions, with relatively fast time to market.

Exhibit 2: Power Management Platforms and Applications

Power Management Platforms and Applications	
Low Voltage *1.8V / 5V - 60V*	PMICs, DC/DC, Audio Display/Motor Drivers POE
Medium Voltage *80V - 200V*	Automotive Industrial Medical
High Voltage *200V - 700V*	AC/DC, IGBT LED Lighting MOSFET Drivers

Source: Company Reports, Oppenheimer & Co.

CMOS Image Sensors (CIS). *Approximately 15% of sales, ex-Panasonic.* Tower offers advanced CMOS image sensor technology for use in the automotive, industrial, medical, consumer, and high-end photography markets. Tower estimates the silicon portion of the CMOS image sensor market to be a ~$10B TAM, with ~$3B potentially being served via foundry offerings. Today, roughly two-thirds of this market serves the cellular/smartphone camera market; however, the migration to image-based communication across the automotive, industrial, security and IoT markets is expanding the applications for Tower's

CIS offerings. Tower is tracking toward 35% Y/Y growth in this segment in 2015, outpacing the industry's 9% compounded growth rate, as the company has gained traction in areas previously not served by specialty foundries.

Tower has IP related to highly customized pixels, which lend the technology to a wide variety of applications. We see opportunities in automotive, security/surveillance, medical imaging, and 3D gesture control driving sustainable growth in this segment long term.

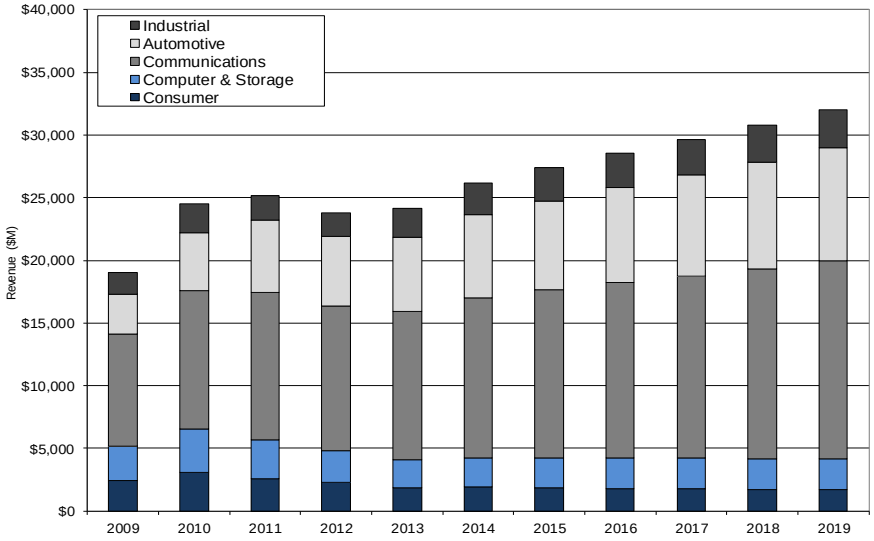
Transfer Optimization and Development Process Services (TOPS). *Approximately 15-20% of sales, ex-Panasonic.* Tower's TOPS business targets integrated device manufacturers (IDMs) that employ "fab-lite" strategies, or have capacity shortages (those looking for second sources) within internal fabs, or opt to close internal fabs to control costs. Tower's TOPS business also works with fabless semiconductor companies that have process IP and are looking for a manufacturing site, or process development at an R&D site. Tower's established transfer methodologies and manufacturing experience enables customers to get products to market faster, at lower risk and with the added benefit of flexible capacity.

End Markets

Understanding and quantifying the scope and scale of TowerJazz's end markets is a challenging and imperfect exercise given the wide range of applications and expanding TAM of many of today's end markets. With that being said, below we attempt to size up the various end markets by looking at the broader applications and how Tower's specialized foundry solutions fit into the overall mix.

RF & HPA Market Analysis: Given the highly specialized nature of Tower's products, we have chosen to look at the Application Specific Standard Products (ASSPs) market. ASSPs include radio frequency (RF) ICs in cellular phones, physical layer interface devices for networking applications, read channels in hard disk drives, demodulators in consumer electronics, battery management ICs in notebook computers, and engine and power train control devices in automobiles. We forecast the ASSP market to grow at a 4% CAGR, rising from $26.2B in 2014 to $32.1B in 2019. While the trend toward integration in the digital logic segment continues to weigh on application-specific analog, particularly in the Consumer and Computing segments, we view Tower's highly specialized product suite as defensible, and believe Tower should be able to outgrow the overall market. RF provider Qorvo estimates the total RF TAM will grow to $15B-plus by 2018, the majority of which is power amplifiers, switching solutions and filters. Further, Tower sizes the RF-SOI switching TAM at approximately $500-600M annually, and growing at a 15% CAGR.

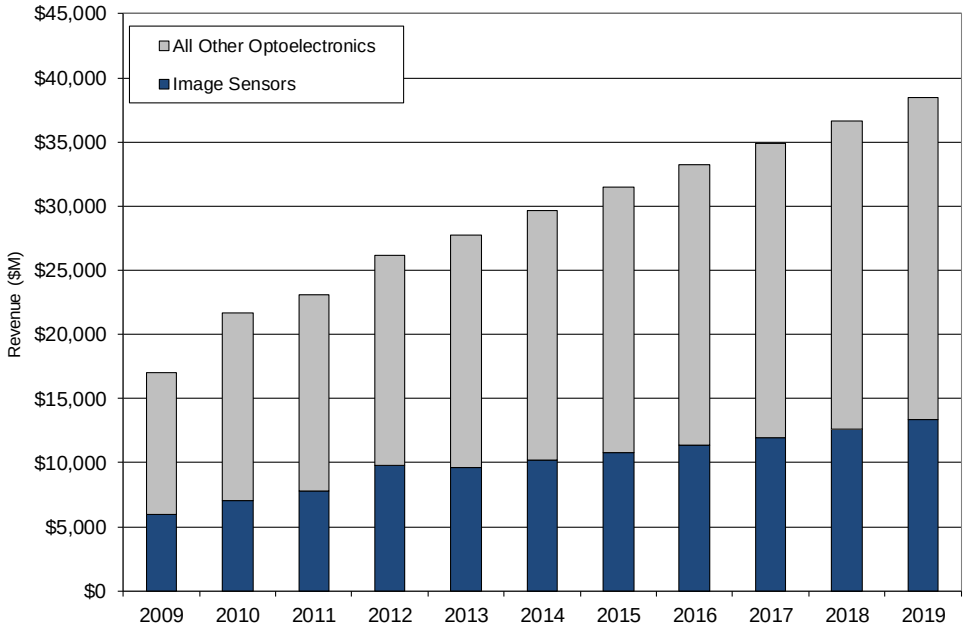
Exhibit 3: ASSP Market Forecast 2009 – 2019E



Source: Gartner, WSTS, SIA, Oppenheimer & Co. Estimates

CIS End Market Analysis: CMOS image sensors fall into the broad category of optoelectronics, and represent approximately 35% of total optoelectronic sales. This category has experienced strong growth in the past driven primarily by the proliferation of the smartphone. We expect the optoelectronics segment to grow at a 5% CAGR from 2014 to 2019, from $29.7B to $38.4B. We expect image sensor growth to outpace the overall optoelectronics segment, and forecast growth at a 6% CAGR from 2014 to 2019 to approximately $13.3B, from $10.4B in 2014.

Exhibit 4: Optoelectronics & Image Sensor Forecast 2009-19E



Source: Gartner, WSTS, SIA, Oppenheimer & Co. Estimates

Power Management Market Analysis: The power management segment is a stable business and we expect a 7% CAGR from 2014 to 2019 from $34.5B to $45.2B. Tower represents a small piece of this segment which is dominated by general purpose components whereas Tower's niche is the specialized segments. Still we think 5% growth rate is reasonable for Tower's end market as higher levels of semiconductors are designed into automotive and industrial applications, and battery life becomes a critical factor for consumer devices.

Manufacturing Operations

In 2014, Tower operated seven manufacturing facilities; two in Israel (Fab 1 & 2), one in Newport Beach California (Fab 3), one in Japan (Fab 4) and TSPCo's three fabs in Japan. The capacity of each fab is variable and depends on the combination of processes being used and the product mix being manufactured at any given time. Each fab has the ability to rapidly change the production mix in order to respond to changing customer demand. Expansion of capacity is usually achieved through the addition of equipment, improvement in equipment utilization, the reconfiguration and expansion of the clean room area and the construction of additional clean room area.

In March 2014, Tower acquired a 51% equity stake in TPSCo, a company formed by Panasonic Corporation, to manufacture products for Panasonic and potentially other third parties, using Panasonic's three semiconductor manufacturing facilities located in Hokuriku, Japan. TowerJazz issued Panasonic ~$8M worth of ordinary shares for this transaction, making Panasonic a minority shareholder. Pursuant to the transaction, Panasonic transferred its semiconductor wafer manufacturing process and capacity tools (8-inch and 12-inch) at its three fabs located in Hokuriku (Uozu E, Tonami CD and Arai E) to TPSCo. The fabs support geometries ranging down to 45 nanometers.

In November of 2015, Tower entered into an agreement to purchase Maxim's 8" wafer fab in San Antonio, for $40M in stock, and is expected to close in January 2016. The Maxim San Antonio fab expands Tower's capacity by roughly $200M annually. We believe third-party wafers will enter the fab as early as 4Q16. Tower has had a foundry relationship with Maxim for several years, manufacturing SiGe products for Maxim most recently. The deal includes a long-term agreement in which Tower will continue to supply Maxim, which we estimate to be a $100M annual revenue stream. As the commitment to Maxim winds down starting two to three years from now, we expect Tower to transition its RF-SOI and Power Management product lines to the fab, enabling Tower to support a larger revenue stream as demand for RF-SOI-based solutions continues to rise.

Exhibit 5. Wholly Owned Fabs

	Ownership	*Began Use*	*Location*	*Square Footage*	*Geometry*
Fab 1	100%	1993	Israel	51,900	.35-1.0 micron
Fab 2	100%	2003	Israel	100,000	.18-.13 micron
Fab 3	100%	2010	CA, USA	320,000	.5-.13 micron
Uozu E	TPSCo	2014	Japan	N/A	65nm - 45nm
Tonami CD	TPSCo	2014	Japan	N/A	.35-.15 micron
Arai E	TPSCo	2014	Japan	N/A	.13-.11 micron

Source: Company reports

Customers

The primary customers of Tower's foundry services are fabless companies and independent device manufacturers. Among the customers are various industry leaders. In

2014, Tower had four customers that each accounted for somewhere between 7% and 38% of total revenue. That number is up from 2013, when there were only three significant customers and they fell between 7% and 27% of overall revenue. Tower's major customers are Panasonic, Skyworks, Qorvo, Himax, Semtech, Fairchild, Intel and Avago. Tower's deal with Panasonic contributes roughly $90-105M of revenue per quarter dependent on the Yen exchange rate. Panasonic revenues are closer to $90M as of the latest quarter. Additionally, we estimate Tower's deal with Maxim's is slated to increase revenues by $25M per quarter moving forward.

In terms of geographical distribution, revenue from customers based outside of the United States accounted for 55% of total revenue. This is a significant jump from the 23% of revenue generated outside of the United States in 2013. Japan was the second largest international market in 2014, accounting for 40% of revenue. Asia, excluding Japan and Europe, accounted for 11% and 4% of 2014 revenue respectively.

Competition

Tower competes in a highly competitive semiconductor foundry industry. Major pure play foundry competitors are Taiwan Semiconductor Manufacturing Corporation, United Microelectronics Corporation, Global Foundries Inc. and Semiconductor Manufacturing International Corp. Tower, along with its major competitors, primarily focuses on the 12" deep-submicron CMOS processing. The rest of the foundry industry generally targets either industry standard 8" CMOS processing or specialty process technologies. In the specialty segment, the most direct competitors are Vanguard Semiconductor, DongBu, X-Fab and HH Semi. On an integrated device level, Tower competes with GlobalFoundries, STM and Samsung, all of which produce ICs for their own use and allocate excess capacity for external customers. Most of the competing foundries are located in Asia-Pacific and benefit from their proximity to companies involved in IC design and the Asian customer base.

Management

Russell Ellwanger – CEO

Mr. Ellwanger was appointed Chief Executive Officer in May 2005. Previously, from 1998 to 2005, he served in various positions for Applied Materials Corporation, including Group Vice President, General Manager of the Applied Global Services division from 2004-2005, and Group Vice President, General Manager of the CMP and Electroplating Business Group from 2002-2004. Mr. Ellwanger also served as Corporate Vice President, General Manager of the Metrology and Inspection Business Group from 2000-2002, during which he was based in Israel. From 1998 to 2000, he served as Vice President of Applied Materials' 300-nm Program Office, USA. Mr. Ellwanger also served as General Manager of Applied Materials' Metal CVD Business Development, during which he was based in Singapore. In addition, Mr. Ellwanger held various managerial positions at Novellus Systems, Inc. from 1992 to 1996 and at Philips Semiconductors from 1980 to 1992.

Dr. Itzhak Edrei – President

Dr. Edrei was appointed President in November 2011. He previously served as an Executive Vice President of Tower Business Units and Business Development since 2008 and as Senior Vice President of Product Lines and Worldwide Sales since August 2005. In 1996, Dr. Edrei established the Research and Development Group at Tower. He was the Director for R&D and later Vice President of R&D from August 2001. From 1994 to 1996, Dr. Edrei served as Tower's Device and Yield Department Manager. Prior to joining Tower, he was employed by National Semiconductor as Device and Yield Section Head. Dr. Edrei received his Ph.D. in Physics and his B.Sc. in Computer Science and Physics

from Bar Ilan University in Israel in 1988 and 1983, respectively. From 1988-1990, he did his Post Doctorate at Rutgers University, NJ.

Ephie Koltin – COO
Mr. Koltin was appointed COO in February of 2013. He previously served as Executive Vice President of Worldwide Operations since November 2011, Senior Vice President of Worldwide operations since 2009, Fab 1 Manager since April 2007, and Vice President of Business Development since August 2005. He also served as Vice President, General Foundry and Mixed Signal Technology since 2003 and as Senior Director, FAB2 Process Engineering since 2000. From 1996-1999, Mr. Koltin served in several senior positions as Director, NVM Technology, CIS Technology and ERS Manager, Fab1. Prior to joining Tower, he was employed at National Semiconductor and the Technion – Israel Institute of Technology. Mr. Koltin holds a M.Sc. in Materials Engineering and a B.Sc. in Mechanical Engineering from the Technion – Israel Institute of Technology.

Oren Shirazi – CFO, Senior VP Finance
Mr. Shirazi was appointed CFO in November 2004, after serving as Controller since July 2000. He joined Tower in October 1998 serving as Vice Controller. Previously, he was employed as an Audit Manager in the accounting firm of Ratzkovski-Fried & Co., which merged with Ernst & Young (Israel), commencing August 1995. Mr. Shrazi is a Certified Public Accountant in Israel, and has an MBA in Business Management from the Graduate School of Business at Haifa University with honors and a B.A. in Economics and Accounting from Haifa University.

Dalit Dahan – Senior VP HR and IT
Ms. Dahan was appointed Senior Vice President of Human Resources in April 2004, and IT manager in January 1998. She served as Director of Personnel, Recreation & compensation from 1998 through 2004 and as Compensation and Benefits Manager from 1993 to 2004. Previously, she was employed by ORS, a manpower company as the manager of the company's northern branch responsible for all recruitment activities and the daily personnel and compensation activities of approximately 150 employees. Ms. Dahan holds an MBA from the University of Derby and a B.A. in Social Science from Haifa University.

Nati Somekh – Senior VP, Chief Legal Officer and Corporate Secretary
Ms. Somekh was appointed Senior Vice President, Chief Legal Officer and Corporate Secretary in September 2008, having served as Corporate Secretary and General Counsel since March 2005, and as Associate General Counsel since May 2004. From 2001-2004, she was employed by Goldsobel & Kirshen, Adv., specializing in the areas of intellectual property, biotechnology and corporate law. Ms. Somekh holds an LL.M and J.D. from Boston University and a B.A. from Johns Hopkins University. She is a member of the Israeli Bar Association and the New York Bar.

Yossi Netzer – Senior VP of Corporate Planning
Mr. Netzer was appointed Senior Vice President of Corporate Planning in February 2013 after serving as Vice President of Corporate Planning since November 2008. Prior to this, he served as General Manager of Mixed Signal, RF and Power Management Product Lines since 2005 and as Director, FAB 2 Yield and Device Engineering Manager since 2000. From 1995 to 2000, Mr. Netzer served in various engineering management positions within the R&D division dealing with CMOS, Mixed Signal, RF, and NVM Technologies. Prior to joining Tower, he was employed at National Semiconductor and the Technion – Israel Institute of Technology. Mr. Netzer holds a B.Sc. degree in electrical engineering from the Technion – Israel Institute of Technology.

Rafi Mor – TowerJazz Japan, Ltd. Representative Director & CEO
Mr. Mor was appointed TowerJazz, Ltd. Representative Director and CEO of TowerJazz Japan in January 2013 after serving as CEO of TowerJazz Japan from October 2012. Prior he served as Senior Vice President and General Manager at Newport Beach from September 2008. In April 2007, he was the vice President of Business Development for Tower Semiconductor. Previously, he served as Tower's Vice President and Fab 2 Manager since August 2005 and as Fab 1 Manager since March 2003. From November 2000 to March 2003, Mr. Mor served as Senior Director of Process Device and Yield of Fab 1. From 1998 to 2000, he served as Director of Equipment & Support of Fab 1. Prior to this, he was employed by National Semiconductor in various engineering and management capacities. Mr. Mor earned his M.Sc. and B.Sc. in Chemical Engineering from Ben Gurion University in Israel.

Key Risks

Risks to our thesis include, but are not limited to: 1) Any significant decrease in the demand for smartphones, consumer electronics, PCs or other electronic devices may decrease the demand for Tower's services and products. 2) If ASPs of smartphones or tablets come under pressure, Tower may be pressured to reduce their own ASPs, which could impact the company's revenues and margins significantly. 3) A slowdown in demand for consumer electronics could lead to elevated inventory levels at customers, which could result in Tower having to lower utilization rates, which could impact margins. 4) Risk of dilution from convertible bonds could impact EPS. 5) Specialty foundries typically operate one generation behind new technologies. If there is a technology breakthrough making newer generation tech cheaper and more economical, later generation fabricators could lose capacity and customers.

Recent Results & Outlook

Tower reported solid 3Q results and 4Q outlook on November 11th. Sales for 3Q were $244M (+4% Q/Q), in line with consensus, while non-GAAP EPS of $0.62 topped the Street's $0.58 estimate. Non-GAAP GMs increased 120bp sequentially to 38.3% primarily on better utilization at Fab 2 & 3 and, to a lesser extent, third-party revenue ramping at TPSCo. GMs are expected to increase to 40% in 4Q driven by better utilization. As demand continues to outstrip supply for TSEM, management guided 4Q sales up 3% Q/Q to $252M, besting the Street's $250M. We believe continued strength in RF-SOI switching from lead customers AVGO, SWKS and QRVO are driving the solid 4Q outlook. Management also noted that seasonality likely would not impact 1Q sales as third-party revenue at TPSCo continues to ramp.

Foundry & Specialty Foundry Research

Shawn Simmons (212) 667-8387 - Director
Rick Schafer (720) 554-1119 - Managing Director

Rating	Ticker	Name	Price 12/14/2015	Price Target	Mkt Cap	Total Cash	Net Cash	Ent. Value	Net Cash Per Share	EV Per Share	Cash Flow Per Share	Book Per Share	Tang. Book Per Share	Avg Day Vol (M)	Short Int (M)	SI to Float	Days to Cover	Div Yield
Not Covered	AMKR	Amkor	$6.25	NA	$1,481	$432	-$1,008	$2,489	-$4.25	$10.50	$2.67	$5.01	$5.01	1.4	3.1	3%	2.5x	0.0%
Not Covered	SMI	Semiconductor Manufacturing International	$4.98	NA	$4,092	$1,293	$244	$3,847	$0.30	$4.68	$0.40	$4.39	$4.39	0.1	0.1	NA	2.7x	0.0%
Outperform	TSEM	TowerJazz	$15.25	$20	$1,465	$155	-$101	$1,565	-$1.05	$16.30	$2.17	$3.38	$3.31	0.8	1.6	3%	3.8x	0.0%
Not Covered	TSM	Taiwan Semiconductor Manufacturing Co.	$22.33	NA	$115,805	$1,923	$365	$115,440	$0.07	$22.26	$3.13	$7.43	$7.39	12.3	50.0	NA	5.1x	2.6%
Not Covered	UMC	United Manufacturiing Corp	$1.79	NA	$4,448	$1,607	-$110	$4,558	-$0.04	$1.83	$0.76	$2.71	$2.71	1.0	15.4	NA	13.3x	3.3%

Rating	Ticker	Name	CY EPS 16E	CY EPS 17E	P/E 16E	P/E 17E	P/E (Ex-Cash) 16E	P/E (Ex-Cash) 17E	FCF Yield	Price/ Cash	Price/ Book	Price/ Tang.Book	CY Sales 16E	CY Sales 17E	P/S 16E	P/S 17E	EV/Sales 16E	EV/Sales 17E
Not Covered	AMKR	Amkor	$0.42	$0.53	14.9x	11.8x	25.0x	19.8x	42.7%	NM	1.2x	1.2x	$3,794	$3,946	0.4x	0.4x	0.7x	0.6x
Not Covered	SMI	Semiconductor Manufacturing International	$0.42	NA	11.9x	NA	11.1x	NM	8.1%	16.7x	1.1x	1.1x	$2,556	NA	1.6x	NA	1.5x	NA
Outperform	TSEM	TowerJazz	$1.40	$2.00	10.9x	7.6x	11.7x	8.2x	14.2%	NM	4.5x	4.6x	$1,075	$1,185	1.4x	1.2x	1.5x	1.3x
Not Covered	TSM	Taiwan Semiconductor Manufacturing Co.	$1.77	$1.92	12.6x	11.6x	12.6x	11.6x	14.0%	317.3x	3.0x	3.0x	$27,762	$30,240	4.2x	3.8x	4.2x	3.8x
Not Covered	UMC	United Manufacturiing Corp	$0.14	$0.17	12.8x	10.5x	13.1x	10.8x	42.7%	NM	0.7x	0.7x	$4,509	$4,759	1.0x	0.9x	1.0x	1.0x
AVERAGE					**12.6x**	**10.4x**	**14.7x**	**12.6x**	**24.3%**	**167.0x**	**2.1x**	**2.1x**	**$7,939**	**$10,033**	**1.7x**	**1.6x**	**1.8x**	**1.7x**
MEDIAN					**12.6x**	**11.1x**	**12.6x**	**11.2x**	**14.2%**	**167.0x**	**1.2x**	**1.2x**	**$3,794**	**$4,352**	**1.4x**	**1.1x**	**1.5x**	**1.1x**

Estimates for "Not Covered" Companies come from First Call and FactSet.

Source: FactSet, Company Reports and Oppenheimer & Co. Inc.

TowerJazz
Oppenheimer & Co.

$Mill. Except per Share Data

Income Statement	**2014**				**2014**	**2015E**				**2015E**	**2016E**				**2016E**	**2017E**
FY Ends December	**Mar**	**June**	**Sept**	**Dec**		**Mar**	**June**	**Sept**	**Dec**		**Mar**	**June**	**Sept**	**Dec**		
From Continuting Operations	**Q1**	**Q2**	**Q3**	**Q4**	**Year**	**Q1**	**Q2**	**Q3**	**Q4-E**	**Year**	**Q1-E**	**Q2-E**	**Q3-E**	**Q4-E**	**Year**	**Year**
Net Sales	$132.7	$234.1	$226.0	$235.3	$828.0	$226.2	$235.6	$244.2	$252.0	$958.0	$255.0	$265.0	$275.0	$280.0	$1,075.0	$1,185.0
QoQ Chg	-1%	76%	-3%	4%		-4%	4%	4%	3%		1%	4%	4%	2%		
YoY Chg	17.8%	86.9%	70.5%	74.8%	64.0%	70.5%	0.6%	8.0%	7.1%	15.7%	12.7%	12.5%	12.6%	11.1%	12.2%	10.2%
COGS	88.2	171.7	158.2	151.1	569.1	145.5	148.2	150.6	151.2	595.5	152.4	157.7	162.3	164.5	636.8	691.6
Gross Profit	44.5	62.4	67.8	84.2	258.9	80.7	87.4	93.6	100.8	362.5	102.6	107.3	112.8	115.5	438.2	493.4
									37.5							
Operating Expenses																
R&D	7.2	13.7	15.4	13.7	50.0	14.4	14.4	15.8	16.0	60.6	16.1	16.2	16.4	16.5	65.2	67.4
SG&A	9.9	15.6	15.0	14.6	55.1	14.9	14.4	14.8	15.0	59.1	15.1	15.2	15.3	15.4	61.0	62.4
Total Operating Expenses	17.0	29.3	30.4	28.3	105.0	29.4	28.8	30.6	31.0	119.7	31.2	31.4	31.7	31.9	126.2	129.8
Operating Income (Loss)	27.5	33.1	37.4	55.9	153.9	51.3	58.6	63.1	69.8	242.8	71.4	75.9	81.1	83.6	312.0	363.6
Other Income (Expense), Net	121.8	(5.8)	(14.9)	(25.0)	76.2	(88.2)	(10.9)	(9.1)	(9.0)	(117.3)	(9.0)	(9.0)	(9.0)	(9.0)	(36.0)	(36.0)
Income Before Taxes	19.5	24.4	28.4	48.1	120.3	47.7	55.0	59.2	60.8	222.7	62.4	66.9	72.1	74.6	276.0	327.6
Taxes		0.1		-1.4	-1.3	0.5	0.7	1.2	1.8	4.2	1.9	2.0	2.2	2.2	8.3	9.8
Non Controlling Interest		6.7	2.5	-3.6	5.6	2.3	-0.4	-0.5	1.5	3.0	1.5	1.5	1.5	1.5	6.0	6.0
Net Income	19.5	30.992	30.9	45.9	127.3	49.5	55.8	59.4	60.5	221.5	62.1	66.4	71.4	73.9	273.7	323.8
Avg. Shares Outstanding																
Fully Diluted	48.1	50.1	53.2	55.6	51.8	63.6	96.8	95.9	96.1	88.1	96.1	96.4	96.7	97.0	96.5	100.5
GAAP Shares	48.1	50.1	53.2	66.5	54.5	63.6	87.6	86.8	86.8	81.2	86.8	87.1	87.4	87.7	87.3	87.6
Earnings Per Share																
Fully Diluted	**$0.41**	**$0.62**	**$0.58**	**$0.83**	**$2.46**	**$0.78**	**$0.58**	**$0.62**	**$0.63**	**$2.51**	**$0.65**	**$0.69**	**$0.74**	**$0.76**	**$2.84**	**$3.22**
GAAP EPS	$0.81	($0.31)	($0.37)	$0.01	$0.08	($1.15)	$0.09	$0.16	$0.26	($0.36)	$0.27	$0.32	$0.39	$0.41	$1.40	$2.00
Margin Data																
Gross Margin	33.5%	26.7%	30.0%	35.8%	31.3%	35.7%	37.1%	38.3%	40.0%	37.8%	40.3%	40.5%	41.0%	41.3%	40.8%	41.6%
R&D	5.4%	5.9%	6.8%	5.8%	6.0%	6.4%	6.1%	6.5%	6.3%	6.3%	6.3%	6.1%	6.0%	5.9%	6.1%	5.7%
SG&A	7.4%	6.6%	6.6%	6.2%	6.6%	6.6%	6.1%	6.1%	6.0%	6.2%	5.9%	5.7%	5.6%	5.5%	5.7%	5.3%
Operating Margins	20.7%	14.1%	16.5%	23.8%	18.6%	22.7%	24.9%	25.8%	27.7%	25.3%	28.0%	28.7%	29.5%	29.9%	29.0%	30.7%
Pretax Margin	14.7%	10.4%	12.6%	20.4%	14.5%	21.1%	23.3%	24.3%	24.1%	23.3%	24.5%	25.3%	26.2%	26.6%	25.7%	27.6%
Net Margin	14.7%	13.2%	13.7%	19.5%	15.4%	21.9%	23.7%	24.3%	24.0%	23.1%	24.3%	25.1%	26.0%	26.4%	25.5%	27.3%
Tax Rate		0.3%		5.0%	-1.1%	1.0%	1.3%	2.0%	3.0%	1.9%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%

Source: Company reports and Oppenheimer & Co. Inc.

TowerJazz
Oppenheimer & Co.

BALANCE SHEET ($ MIL)	Dec-13	Mar-14	Jun-14	Sep-14	Dec-14	Mar-15	Jun-15	Sep-15
ASSETS								
Cash, Equivalents, & Short-term	$122.9	$182.8	$192.2	$195.1	$187.2	$134.2	$142.5	$155.3
Accounts Receivable, net	80.3	82.7	106.6	86.3	99.2	105.5	112.6	122.7
Inventories	64.8	94.5	83.7	85.2	87.9	86.2	91.9	104.4
Other Current Assets	22.4	73.2	46.8	27.7	19.9	27.7	25.1	31.0
TOTAL CURRENT ASSETS	290.4	433.2	429.2	394.3	394.1	353.6	372.1	413.4
PP&E, net	350.0	483.5	485.2	447.6	419.1	408.5	415.1	430.5
Goodwill & Intangibles	39.4	33.9	56.6	52.6	49.0	48.2	46.3	43.7
Long-term Investments	14.5	14.1	14.4	13.8	11.9	11.8	12.4	12.1
Other Assets	11.5	10.9	10.8	10.4	10.0	6.4	7.4	7.2
TOTAL ASSETS	$705.9	$975.6	$996.2	$918.8	$884.1	$828.5	$853.3	$906.9
LIABILITIES & SHAREHOLDER EQUITY								
Short-term Debt	$36.4	$46.4	$97.1	$64.7	$120.0	$26.7	$40.6	$49.2
Accounts Payable	$66.4	$73.6	$100.5	$99.9	$98.6	$108.6	$106.7	$111.9
Other Current (Accrued) Liabilities	37.1	126.6	110.7	86.7	81.7	67.2	84.3	91.5
Total Current Liabilities	139.9	246.6	308.3	251.3	300.3	202.6	231.5	252.7
Long-term Debt	316.9	386.8	339.4	340.2	267.1	225.8	214.4	206.8
Other Long Term Liabilities	107.8	135.1	157.0	147.6	121.2	108.1	107.2	122.8
Shareholders' Equity	141.2	207.1	191.5	179.6	195.6	292.0	300.3	324.6
TOTAL LIAB. & SHRHOLDER EQUITY	$705.9	$975.6	$996.2	$918.8	$884.1	$828.5	$853.3	$906.9
PROFITABILITY RATIOS								
Return On Equity	54.3%	37.7%	64.7%	68.8%	93.9%	67.8%	74.3%	73.2%
Return on Avg Equity *	33.8%	35.3%	45.1%	62.7%	63.2%	65.1%	75.9%	81.0%
Return On Assets	10.9%	8.0%	12.4%	13.4%	20.8%	23.9%	26.2%	26.2%
Return On Net Assets	13.1%	9.8%	15.4%	17.1%	26.4%	28.5%	31.4%	31.6%
Return On Sales	14.2%	14.7%	13.2%	13.7%	19.5%	21.9%	23.7%	24.3%
EFFICIENCY RATIOS								
Sales/Total Assets	0.8	0.5	0.9	1.0	1.1	1.1	1.1	1.1
A/R Days Sales Out	54.5	56.9	41.5	34.8	38.5	42.6	43.6	45.8
Inventory Turns	5.3	4.4	7.7	7.5	7.0	6.7	6.7	6.2
Days of Inventory	69.4	82.2	47.2	48.6	52.1	54.4	54.7	59.3
LIQUIDITY RATIOS								
Current Ratio	2.1	1.8	1.4	1.6	1.3	1.7	1.6	1.6
Quick Ratio	1.6	1.4	1.1	1.2	1.0	1.3	1.2	1.2
Net Working Capital	$150.5	$186.6	$120.9	$143.0	$93.8	$151.0	$140.6	$160.8
Long-term Debt/Equity	224.3%	186.7%	177.3%	189.4%	136.6%	77.3%	71.4%	63.7%
Total Debt/Equity	326.5%	274.4%	310.0%	307.6%	259.9%	123.5%	120.6%	116.7%
BOOK VALUE & CASH								
Book Value Per Share	$2.50	$4.31	$3.82	$3.38	$3.51	$4.59	$3.10	$3.38
Cash Per Share	2.44	4.09	4.12	3.93	3.58	2.30	1.60	1.75
Net Cash Per Share	($3.18)	($3.95)	($2.65)	($2.47)	($1.22)	($1.26)	($0.61)	($0.41)

Source: Company reports and Oppenheimer & Co. Inc.

Stock prices of other companies mentioned in this report (as of 12/11/15):

Amkor Technology, Inc. (AMKR-NASDAQ, $6.2, Not Covered)
Fairchild Semiconductor International, Inc. (FCS-NASDAQ, $20.65, Not Covered)
Himax Technologies, Inc. (HIMX-NASDAQ, $7.97, Not Covered)
International Business Machines Corp. (IBM-NYSE, $134.57, Not Covered)
Micron Technology, Inc. (MU-NASDAQ, $14.04, Not Covered)
Panasonic Corp. (6752-JP, ¥1261.5, Not Covered)
Samsung Electronics Co., Ltd. (005930-KRX, W1261000, Not Covered)
Semiconductor Manufacturing International Corp. (981-HKG, HK$0.8, Not Covered)
STMicroelectronics NV (STM - NYSE, $6.59, Not Covered)
Taiwan Semiconductor Manufacturing Co., Ltd. (2330-TAI, NT$139, Not Covered)
United Microelectronics Corp. (UMC - NYSE, $1.79, Not Covered)
Vanguard International Semiconductor Corp. (5347-TAI, NT$39.25, Not Covered)

Disclosure Appendix

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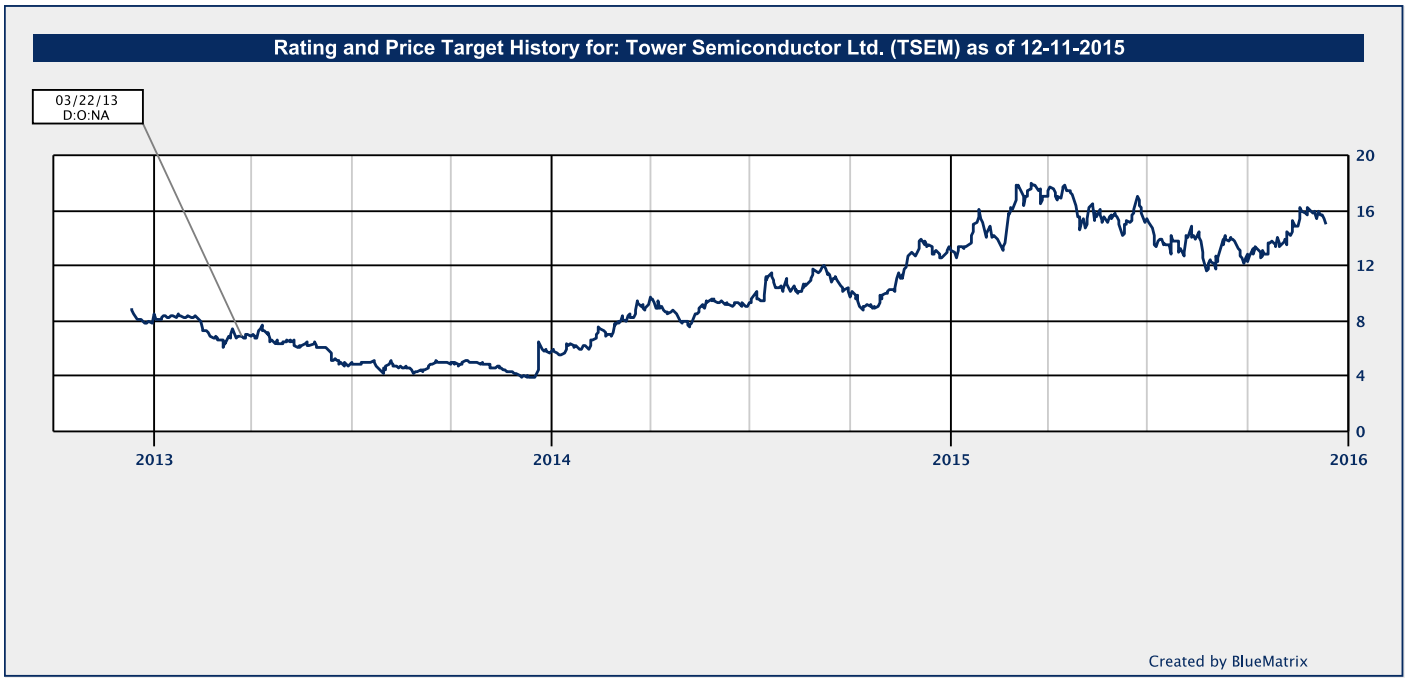
Important Disclosure Footnotes for Companies Mentioned in this Report that Are Covered by Oppenheimer & Co. Inc:

Stock Prices as of December 14, 2015

Avago Technologies (AVGO - NYSE, $144.42, OUTPERFORM)
Himax Technologies, Inc. (HIMX - NASDAQ, $7.97, PERFORM)
Intel Corp. (INTC - NASDAQ, $34.27, PERFORM)
Maxim Integrated Products (MXIM - NASDAQ, $37.79, PERFORM)
Qorvo, Inc. (QRVO - NASDAQ, $56.19, PERFORM)
Semtech Corp. (SMTC - OTC, $19.01, PERFORM)
Skyworks Solutions, Inc. (SWKS - NASDAQ, $81.43, OUTPERFORM)



All price targets displayed in the chart above are for a 12- to- 18-month period. Prior to March 30, 2004, Oppenheimer & Co. Inc. used 6-, 12-, 12- to 18-, and 12- to 24-month price targets and ranges. For more information about target price histories, please write to Oppenheimer & Co. Inc., 85 Broad Street, New York, NY 10004, Attention: Equity Research Department, Business Manager.

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Outperform(O) - Stock expected to outperform the S&P 500 within the next 12-18 months.

Perform (P) - Stock expected to perform in line with the S&P 500 within the next 12-18 months.

Underperform (U) - Stock expected to underperform the S&P 500 within the next 12-18 months.

Not Rated (NR) - Oppenheimer & Co. Inc. does not maintain coverage of the stock or is restricted from doing so due to a potential conflict of interest.

Oppenheimer & Co. Inc. Rating System prior to January 14th, 2008:

Buy - anticipates appreciation of 10% or more within the next 12 months, and/or a total return of 10% including dividend payments, and/or the ability of the shares to perform better than the leading stock market averages or stocks within its particular industry sector.

Neutral - anticipates that the shares will trade at or near their current price and generally in line with the leading market averages due to a perceived absence of strong dynamics that would cause volatility either to the upside or downside, and/or will perform less well than higher rated companies within its peer group. Our readers should be aware that when a rating change occurs to Neutral from Buy, aggressive trading accounts might decide to liquidate their positions to employ the funds elsewhere.

Sell - anticipates that the shares will depreciate 10% or more in price within the next 12 months, due to fundamental weakness perceived in the company or for valuation reasons, or are expected to perform significantly worse than equities within the peer group.

Distribution of Ratings/IB Services Firmwide

			IB Serv/Past 12 Mos.	
Rating	Count	Percent	Count	Percent
OUTPERFORM [O]	356	57.05	154	43.26
PERFORM [P]	264	42.31	81	30.68
UNDERPERFORM [U]	4	0.64	1	25.00

Although the investment recommendations within the three-tiered, relative stock rating system utilized by Oppenheimer & Co. Inc. do not correlate to buy, hold and sell recommendations, for the purposes of complying with FINRA rules, Oppenheimer & Co. Inc. has assigned buy ratings to securities rated Outperform, hold ratings to securities rated Perform, and sell ratings to securities rated Underperform.

Company Specific Disclosures

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Additional Information Available

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