

## FormFactor, Inc.

(FORM-NSDQ)

<b>Current Recommendation</b>	<b>Buy</b>
Prior Recommendation	Hold
Date of Last Change	05/31/2005
Current Price (11/15/07)	\$38.97
<b>Six- Month Target Price</b>	<b>\$50.00</b>

### OUTLOOK

FormFactor is the market leader in advanced wafer probe cards used to test semiconductor wafers during the manufacturing process. The company has a very strong growth profile. September quarter numbers were incomplete due to an ongoing inventory valuation investigation. Operating expenses have spiked recently, but we feel the spending is in anticipation of a strong 2007. The company's technology is leveraged towards leading edge 300mm and sub-110nm nodes, which are ramping quickly throughout the industry. We envision a strong 2007 for FORM, and consequently, are maintaining our BUY rating on FORM shares.

### SUMMARY DATA

52-Week High	\$47.78
52-Week Low	\$35.02
One-Year Return (%)	-1.87
Beta	0.80
Average Daily Volume (sh)	1,329,571

Shares Outstanding (mil)	48
Market Capitalization (\$mil)	\$1,887
Short Interest Ratio (days)	7.47
Institutional Ownership (%)	88
Insider Ownership (%)	26

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

<b>5-Yr. Historical Growth Rates</b>	
Sales (%)	45.3
Earnings Per Share (%)	47.7
Dividend (%)	N/A

P/E using TTM EPS	27.8
P/E using 2007 Estimate	26.3
P/E using 2008 Estimate	20.7

Zacks Rank	5
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Risk Level	Above Avg.
Type of Stock	Mid-Growth
Industry	Elec Comp-Semic
Zacks Rank in Industry	64 of 118

### ZACKS ESTIMATES

#### Revenue

(in millions of \$)

	Q1	Q2	Q3	Q4	Year
	(Mar)	(Jun)	(Sep)	(Dec)	(Dec)
2005	51 A	52 A	62 A	72 A	237 A
2006	81 A	92 A	97 A	99 A	369 A
2007	102 A	114 A	125 E	130 E	471 E
2008	130 E	135 E	140 E	145 E	550 E

#### Earnings per Share

(EPS is operating earnings before non recurring items)

	Q1	Q2	Q3	Q4	Year
	(Mar)	(Jun)	(Sep)	(Dec)	(Dec)
2005	\$0.12 A	\$0.12 A	\$0.15 A	\$0.25 A	\$0.65 A
2006	\$0.25 A	\$0.32 A	\$0.33 A	\$0.39 A	\$1.29 A
2007	\$0.30 A	\$0.38 A	\$0.39 E	\$0.41 E	\$1.48 E
2008	\$0.43 E	\$0.45 E	\$0.48 E	\$0.52 E	\$1.88 E

Adjusted for Stock based compensation

Annualized EPS may not sum due to large changes in share count

 Zacks Projected EPS Growth Rate - Next 5 Years % **27**

 Consensus Projected EPS Growth - Next 5 Years % **24**

## KEY POINTS

- FormFactor is the clear market share leader with over a 50% share of the advanced wafer probe card market.
- The company is strongly positioned in the highest growth segment of the wafer probe card market.
- Its revenue growth rate is much higher than the wafer probe card market rate and the company utilizes a production process that can scale quicker than competitors.
- FORM has a strong patent portfolio with clear technological innovations.
- Production capacity will be expanding throughout the year as the new plant ramps capacity.

## OVERVIEW

Based in Livermore, CA, FormFactor, Inc. (FORM) is an original equipment manufacturer (OEM) of automated wafer probe cards that are used in the back-end portion of the semiconductor integrated circuits (ICs) manufacturing process. Wafer probe card sales accounted for 99% of fiscal 2004 revenue. FORM derives the remainder of its revenue from product sales, licensing, development fees and royalties. The company went public in an IPO during June 2003.

The back-end of the manufacturing process takes place after a wafer (usually made of silicon) has completed the device formation stage, in which multiple copies of an IC device have been constructed on it. A wafer prober then moves the wafer so that each IC device's electrical contact points are properly aligned with the probe card's pins, facilitating the parametric or functional testing of the device. Parametric testing is done both during and at the completion of the device fabrication process. Functional testing, completed after final construction, determines whether the device meets performance specifications (wafer sorting). Following the wafer sort, the wafer is cut or separated into individual die. Electrical leads are then attached to the die surface. This is followed by die encapsulation and packaging within an environmentally protective encasement. The purpose of the die package or encasement is to protect the semiconductor device from environmental elements and secure the electrical contacts to the protruding electrical leads. In addition, the encasement acts as a medium through which thermal energy or heat is dissipated from the die. A final test is then conducted on the chip. Wafer probers are used in wafer sorting applications roughly 85% of the time, while the rest are used in parametric testing. Thus most of the testing is done in the back-end of the fabrication process. Each probe card is custom-built for each specific wafer, as well as for the test equipment that accepts the probe card's electronic information. Functionally, this test equipment increases the efficiency of the manufacturing process through the detection and removal of defective semiconductor devices prior to final assembly. The primary challenges facing wafer prober and probe card manufacturers are the transition to larger wafers, the shrinking of device sizes, increasing throughput requirements, and devices running at greater speeds and at lower power.

FormFactor has an extensive intellectual property (IP) portfolio, with over 500 patents. The principal technology used in the probe cards is the proprietary MicroSpring interconnect technology. A legacy wafer probe card is comprised of a printed circuit board (PCB) with several hundred probe needles positioned to establish electrical contact with a series of metalized pads or balls on the semiconductor die or wafer. The differentiated MicroSpring-based technology utilizes a MicroElectroMechanical Systems (MEMS) approach in which a spring is used to push the probe card contact point down sufficiently to establish electrical contact. The wafer interconnect portion is manufactured using precision micro-

machining in a semiconductor-like wafer fabrication process that is both scalable and repeatable. The technology is optimized for a low surface contact force and reliable contact performance. Additionally, proprietary design tools are used to reduce design time. The wafer interconnect portion is then integrated into a probe head. There are a variety of probe array platforms, including 50mm, 75mm and 100mm for use on 200mm wafers. Additionally, there is a 150mm platform used on 300mm wafers. The design objective is to limit the amount of times the surface has to be touched by the probe card ('touchdown') to complete the required electronic testing, consequently speeding up the testing process. FORM's products have a high degree of parallelism, since the interconnect can simultaneously touch many contact points. Each one of these wafer probe cards are custom designed and built to mechanically fit and electrically test a customer's unique semiconductor wafer design. The rest of FORM's probing system product line consists of MicroLign, MicroForce, TRE X64 – X253 and high-speed probing.

The probe cards are used to test various types of semiconductor technologies. FORM currently divides the end application market into DRAM, flash memory and flip chip/logic. In fiscal year 2004, DRAM applications accounted for 69.0% of total revenue, flash 21.9%, flip chip 8.1% and other 1.0%. The DRAM market drivers impacting demand in the near-term include end market demand for the computing industry, architecture shift from DDR I to DDR II (type of DRAM memory), design geometry (process node) shift from 110nm to 90nm, wafer size shift from 200mm to 300mm, and density from 256Mb to 512Mb. Flash market drivers impacting demand in the near-term include end market demand for portable, mobile and consumer products, architecture shift from NOR SLC and NAND SLC to NOR MLC and NAND MLC, design geometry (process node) shift from 110nm to 90nm, wafer size shift from 200mm to 300mm, and density from 256Mb to 512Mb. Management intends to leverage the proprietary technology into new adjacent markets such as high-speed test (front end), burn-in and full final test.

Products are primarily distributed through a direct sales force, supplemented with a distributor (Spirox) that serves Singapore and China. Customers in the DRAM market include Samsung, Micron, Hynix, Infineon, Elpida, SMIC, IC Tech, Nanya and ProMOS; flash market customers include Hitachi, Renesas, Toshiba, STMicroelectronics, Intel and Spansion; and logic market customers are Intel and AMD. The company possesses a concentrated customer base, with roughly 64.8% of fiscal year 2004 revenue coming from distributor Spirox Corporation (20.0%), Elpida (18.7%), Intel Corporation (14.5%) and Infineon Technologies (11.6%). Geographically in 2004, North America contributed 35.8% of revenue, Asia Pacific 25.4%, Japan 25.5% and Europe 13.3%.

The company has exhibited strong growth and maintained a market-leading position. The wafer probe card market grew 17% from 2003 to 2004. The advanced wafer probe sub-segment grew to a \$240 million market in 2004, and is expected to grow 24% annually through 2008 due to the more stringent technological requirements of newer wafer production processes. FormFactor grew 81% from 2003 to 2004, indicating that the firm is well positioned within the fastest growing segment and is taking market share. A new fabrication facility is ramping production this year and should almost double capacity, running at normal utilization rates. As a result of continuing operational expansion, the company increased personnel by over 80% during the last year, taking the total headcount to 616.

Even though many end markets in which wafer probes are used are suffering from sluggish demand, management asserts that the company has been unaffected. Semiconductor capital equipment orders have also declined slightly, as foundry capacity utilization rates have declined from the 100% level to the 90% level over the past two quarters. However, wafer probe card demand is driven by new wafer designs and not strictly capacity, therefore it is less sensitive to the traditional semiconductor capital equipment demand curve. Demand is primarily dependent on the need for new wafer designs utilizing increased density packaging along with continued deployment of 300mm wafer fabrication lines.

FormFactor's wafer probe cards are more expensive than competitors. However, because of increased efficiencies, fewer probe cards are required, and the total cost of ownership is lower. On the other hand, the high cost does make it more difficult to initially sell the product to a new customer. Given the fact that there has been little customer turnover, it is reasonable to assume that most customers are satisfied with the products.

### *Change is Good*

The industry is continuing its march towards finer geometries. New semiconductor fabrication plants have been adding 300mm capabilities. These new production fabrication lines typically begin with memory applications such as DRAM, which require less complex processes. As the fab lines mature, some of the capacity is gradually shifted to the fabrication of logic ICs. Furthermore, older 200mm plants have begun to ramp production at smaller design geometries or the sub-110nm segment. Manufacturers are required to purchase a new suite of probe cards during any of these production line transitions. As a result, order momentum continued through the fourth quarter, with bookings rising to an all-time high for the company.

### *No Longer Capacity Constrained*

The company has actually been capacity constrained for the past four quarters. A new plant has begun to ramp production, as 75% of the workforce has been trained and certified. Therefore, the company is no longer capacity constrained. The new plant should nearly double total capacity. In the interim, FORM has to absorb start-up costs that are impacting margins. . As the new plant starts running at a higher capacity level and closedown costs work themselves through the next two quarters, we expect margins to expand. We anticipate that expectations will continue to rise in conjunction with additional available capacity. Management believes the capacity will reach \$125 million per quarter.

On March 15, 2006, the Company completed its follow-on offering in which it sold 5,000,000 shares of its common stock. The sales of shares of common stock by the Company resulted in aggregate gross proceeds of approximately \$190 million, approximately \$8 million of which the Company applied to underwriting discounts, commissions and expenses. As a result, the Company received approximately \$182 million of the net offering proceeds.

### *New product launches.*

Management is excited (as are we) about the company's launch of its new single touch-down 300mm probe card which is a derivative of FORM's harmony platform. This is in the NAND Flash segment, a very high growth area. The company is currently engaged with three early adopter market leading customers. This product has the potential to also address the DRAM and Wafer Level Burn In one touchdown 300mm challenges and may lay the foundation for FormFactor to become the only provider of complete testing solutions.

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## **INDUSTRY OUTLOOK – POSITIVE**

We believe that the semiconductor industry is a positive story in 2007, as inventory issues should be corrected by the end of the first quarter and demand will again pick up. The Semiconductor Industry Association (SIA) released its annual forecast for 2006-2009. The new forecast projects worldwide sales of microchips will reach \$321 billion in 2009 – an increase of 41 percent from the \$227 billion record level in 2005. The forecast projects that sales will grow at a compound annual growth rate of 9% to \$321 billion in 2009. According to the SIA, expected areas of application strength include PCs (up 10%), cell phones (up 13%), digital cameras (up 11%), digital TVs (up 56%) and MP3 players (up 35%).

Unit sales of cell phones increased by more than 20% in 2006 to more than 1 billion units. With an average semiconductor content of \$41 per unit, the cell phone market is now the second-largest consumer of semiconductors, after personal computers.

We also believe there is a fundamental shift in the semiconductor industry from Corporate IT to Consumer Demand. This shift will continue in the years ahead, as consumers all over the world are

captivated by the richness and portability of digital media. Advances in computing, digital media processing and wireless technology are enabling the industry to create lifestyle-changing devices and gadgets that could only be imagined a few years ago. The changing nature of customers will affect every aspect of the business, from product design to marketing to demand forecasting.

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## INDUSTRY POSITION

*VLSI Research*, an industry consulting group, estimates that the probe card market size grew from \$478 million to \$560 million in 2004. We believe that FormFactor was the leader in the probe card market once again in 2004, ahead of the following in order, Japan Electronics Materials, Kulicke & Soffa, Micronics Japan, Tokyo Cathode, SV Probe and Wentworth.

According to *Gartner Dataquest*, the advanced wafer probe card sub-segment was a \$182 million market in 2003, and is estimated to reach \$530 million by 2008, at a compounded annual growth rate (CAGR) of 24%, which is a higher growth rate than the overall wafer probe card market. The market leaders of the advanced wafer probe sub-segment were FormFactor, Wentworth and Kulicke and Soffa. We estimate that FormFactor has a greater than 50% share of the advanced wafer probe card market.

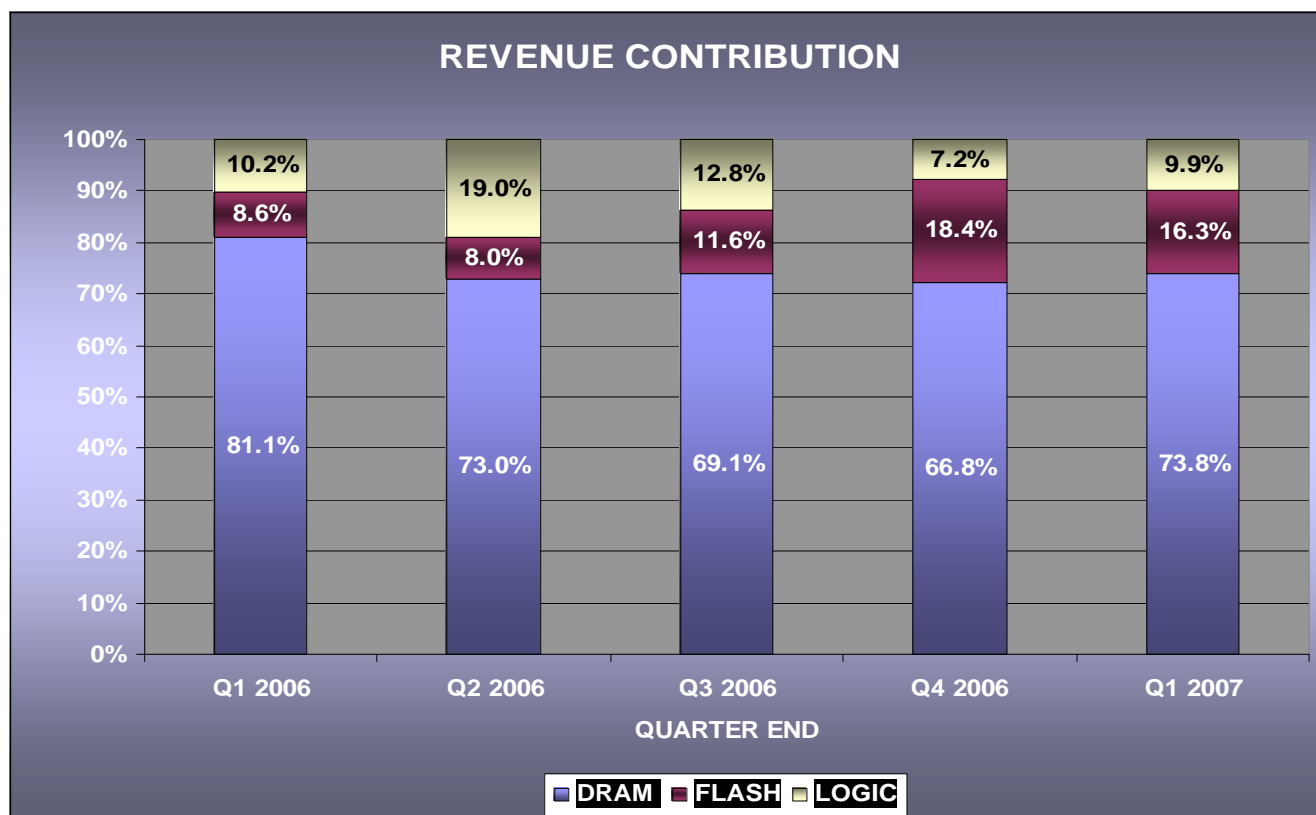
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## RECENT NEWS

On November 9<sup>th</sup> 2007 FORM announced its preliminary financial results for the third quarter of fiscal year 2007, ended September 29, 2007. Net income for the third quarter of fiscal 2007 is expected to be \$22.2 million or \$0.45 per share on a fully diluted basis, including \$4.1 million or \$0.08 per share of stock-based compensation, net of tax.

The Company also announced that it has substantially completed its review of its historical practices with respect to inventory valuation. That review indicates that during fiscal 2006 and the first half of fiscal 2007 the Company did not consistently follow its accounting policies for determining inventory valuation. As a result the Board of Directors determined on November 8, 2007 that the Company will restate its financial statements for the fiscal year ended December 30, 2006, for each of the fiscal quarters for that year, and for the fiscal quarters ended March 31 and June 30, 2007.

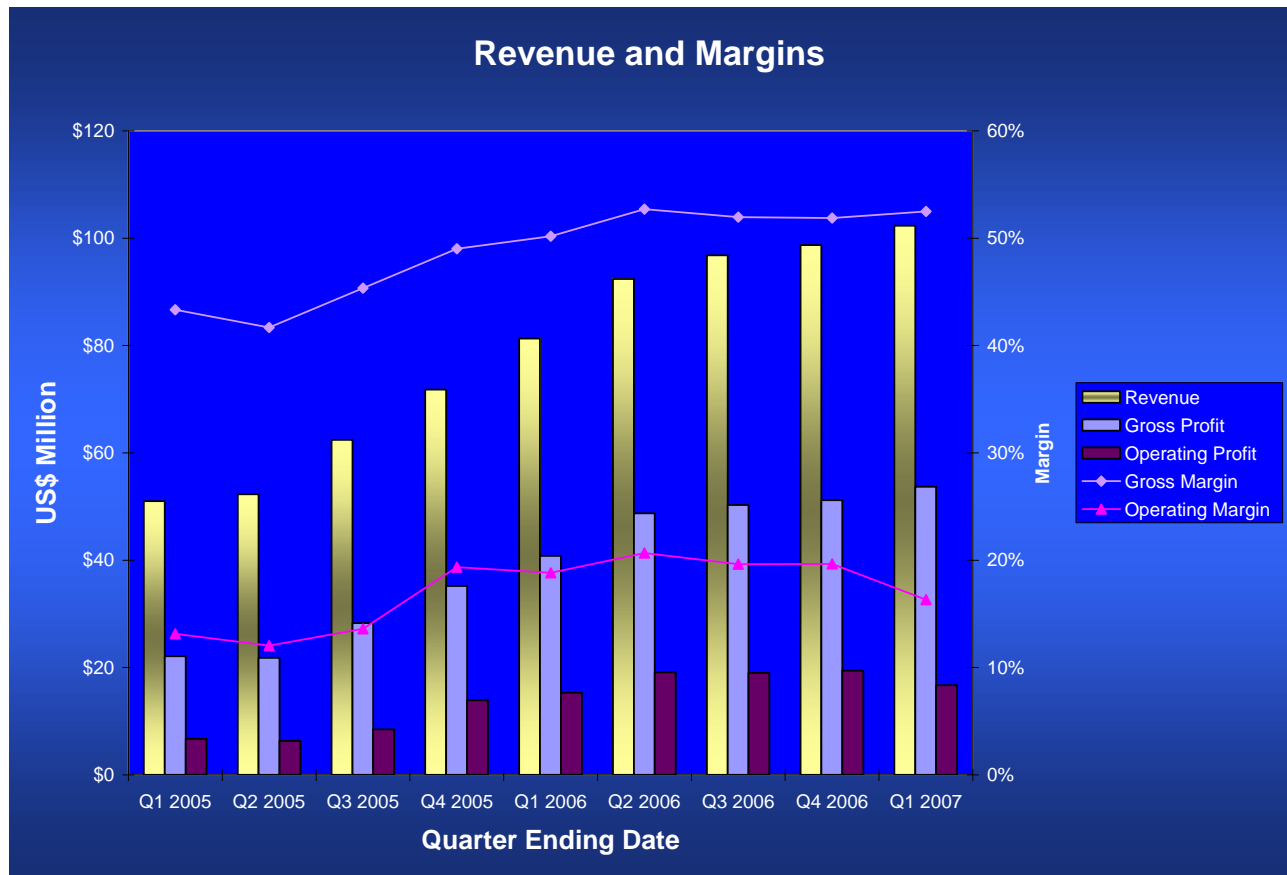
On July 26, 2007, FormFactor announced results for the second quarter of fiscal year 2007 ending June 2007. The top and bottom-lines were in-line consensus estimates. Revenue for the period was \$114.1 million, rising 11.5% sequentially, and reaching a new all-time high. Revenue was slightly higher than management's guidance estimate of \$107-111 million.



Revenue for DRAM products was up 6.0% sequentially. DRAM was once again driven by strong DDR buys. Flip chip–Logic sales increased by 36.6%. Logic sales turned around in the past three quarters after coming off of two consecutive down quarters. Flash increased by 20.9%.

Gross margin for the quarter was 53.0%, up 50 basis points (bps) from the previous quarter's 52.5%. Operating income for the quarter was \$23.0 million, up 37.7% from the \$16.7 million from the first quarter of 2007. The operating margin was 20.2%, up 390 bps from the 16.3% in the first quarter.

On a Pro Forma basis, FORM had a net income of \$18.7 million, or a 16.3% net income margin, compared to \$14.8 million, or 14.5% in the previous quarter. Fully diluted pro forma earnings per share (EPS) was \$0.38, an 8 cent increase from the \$0.30 of the first quarter. The pro forma estimates include all deferred stock compensation. On a GAAP basis, the company recorded a net profit of \$18.7 million (\$0.38 per share) compared to \$14.8 million (\$0.30 per share) in the previous quarter.



The company ended with a cash and investments balance of \$526 million, which was up \$20 million from the previous quarter. Inventories jumped \$4.5 million to \$32.0 million. Days sales outstanding (DSOs) increased to 49 from 48 days.

Management anticipates 2007 second quarter revenue to be \$122-127 million, which will be a 6.9%-11.3% increase. The Non GAAP operating margin is expected to be between 25.5-26%. The fully diluted GAAP EPS is expected to be \$0.38-\$0.40.

## VALUATION

Shares of FORM are currently trading at 20.7x our fiscal year 2008 EPS estimate (P/E). We believe the advanced wafer probe market is likely to continue growing at above industry rates, driven by shrinking process nodes, architectural changes within the DRAM and flash markets, increasing densities on ICs, adoption of 300mm wafers, capacity additions and continued demand across a variety of served end markets. There isn't a company or group of companies that can be used for a direct valuation comparison, since the wafer probe cards business within the publicly traded companies such as Kulicke and Soffa are a small part of the greater company, or the competitors are private like Wentworth. We also don't view this company as a typical back-end semiconductor capital equipment manufacturer, due to the high growth profile and operating margins.

Although the stock had a great run since August 2004, in calendar year 2005 it underwent a decline, most likely due to reduced visibility and production capacity constraints regarding revenue growth. The new plant began shipping product during the second quarter of 2005 and accounted for has the potential to add \$125 million per quarter to total sales. The plant is expected to run at full capacity by the beginning of 2007. Since both plants are operating during the transition, there are non-permanent incremental costs that will disappear, thus improving margins. We believe that this stock should command a premium to other back-end semiconductor capital equipment manufacturer companies. Consequently, we are increasing our price target to \$50.00, which corresponds to a P/E multiple of 26.6x.

### Industry Comparables

	Pr Chg YTD	P/E CurrFY	EPS Gr 5Yr Est	Price/ Book	Price/ Sales	Price/ CF
<b>FORMFACTOR INC</b>	5.5	27.3	22.7	2.7	4.3	22.2
Industry Mean	-7.1	51.0	19.2	3.0	6.0	35.3
Industry Median	-11.7	22.5	17.7	1.9	2.4	16.6
S&P 500	3.7	15.6		4.5	2.8	15.3
TRIQUINT SEMICO	27.6	26.7		1.6	1.7	14.7
SILICON STR TCH	-36.6			0.8	0.6	
PMC-SIERRA INC	14.6	81.4	12.0	2.8	3.9	18.7
MICROSEMI CORP	32.9	22.3	20.0	3.6	4.7	21.4

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## RISKS

- FORM has a large exposure to the volatile DRAM industry.
- The company has a highly concentrated customer base.
- The cost of FORM's products is greater than its competitors, making them more difficult to sell.
- There is a potential for alternative technologies being developed by a competitor.
- Smoothly ramping manufacturing production at the new plant is critical for continued revenue growth.
- There are costs associated with legally defending patents, especially in foreign countries (such as Phicom in Korea)

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## INSIDER TRADING AND OWNERSHIP

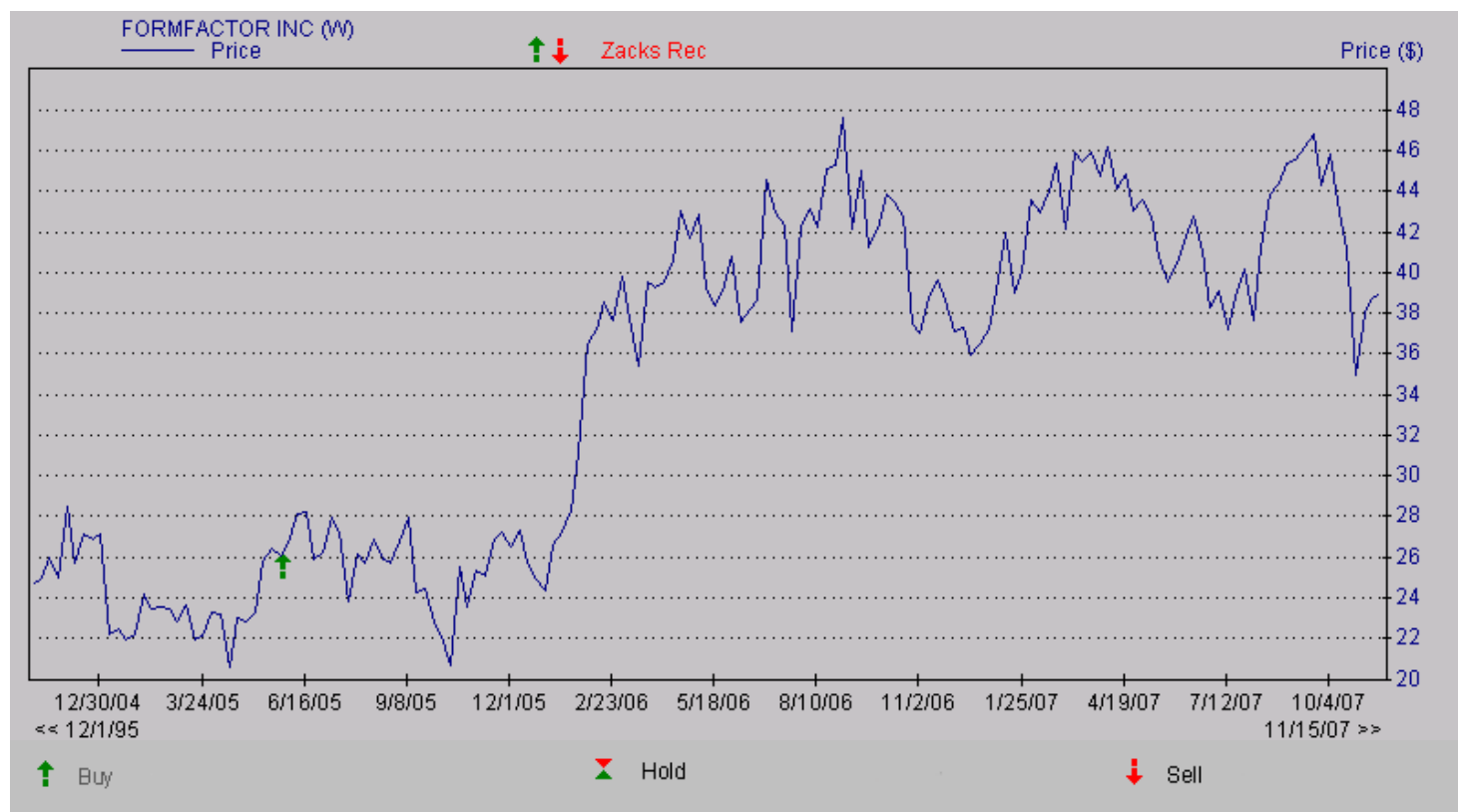
The following are the major institutional shareholders and percentage of outstanding shares owned—Fidelity Management & Research Co. 13.3%, Franklin Templeton 5.9%, Primecap Management Co 5.8%, Goldman Sachs 5.2%, and Oppenheimer funds, 3.7%. Three of the top five holders increased their positions in the current quarter. Insiders sold roughly 2.9 million shares over the last six months.

## PROJECTED INCOME STATEMENT & BALANCE SHEET

### Formfactor Inc Income Statement and Balance Sheet (Dollars in millions, except EPS data)

	12/03	12/04	12/05	12/06	12/07E
Sales	98	178	237	369	471
Cost of Goods Sold	50	91	130	178	224
SG&A	21	31	41	72	92
Other operating expenses	16	20	28	43	60
Interest and other	4	11	8	13	16
Zacks Adjusted Income before NRI	9	25	27	61	72
<b>Net Income</b>	9	25	30	61	72
Diluted EPS before NRI	0.25	0.63	0.65	1.29	1.48
<b>Reported EPS</b>	0.25	0.63	0.73	1.29	1.48
Cash & Marketable Securities	179	191	212	492	492
Current Assets	212	240	293	598	598
Current Liabilities	22	35	60	78	78
Long Term Debt	0	0	0	0	0
Shareholder's Equity	214	265	318	618	689

## HISTORICAL ZACKS RECOMMENDATIONS



## DISCLOSURES

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