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# 2016 Top 25 Firm

*as ranked by Accounting Today*

# 2015 Best of the Best Firm

*as ranked by Accounting Today*

# 2014 Fastest Growing Firm

*as ranked by Inside Public Accounting*

**Strategic Thinking.**  
**Sound Insights.**  
**Positive Action.**

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## MARKET HIGHLIGHTS

**After a slow second quarter, the semiconductor industry is back with a strong performance in the third quarter:** The Semiconductor & Semiconductor Equipment Index increased by 13.0% for the quarter, and outperformed the S&P 500 by a wide margin over 3, 6, 12, and 24 months.

**All segments were up significantly over the last three months,** with a median gain of +14.2% for the IDM/Foundries segment, +8.9% for the Fabless segment, +24.2% for the Equipment segment, and +11.8% for the EDA/IP segment. Median price increases for these segments ranged from 27.2% to 72.8% year over year.

Within the IDM/Foundries segment, stock price changes over 3 months ranged from +34.9% (STMicroelectronics; with an impressive increase of +136.9% over 12 months) to -2.6% (Sony). Within the Fabless segment, Himax lead the charge with +33.3%, but NVIDIA still performed well with +23.7% (+160.9% over 12 months). Cirrus Logic decreased the most with -15.0%. The Semiconductor Equipment segment had a strong quarter; increases ranged from +3.8% on the low

end (SCREEN) to +40.3% (MKS Instruments). The EDA/IP segment saw increases between +17.9% (Cadence) and -5.8% (PDF Solutions).

**Valuation momentum has increased again:** All segments showed increasing revenue multiples as well as EBITDA multiples over the last three months. Revenue multiples in the equipment segment increased by more than 40% over the last twelve months.

**The semiconductor M&A market continues to be slow,** with few large transactions to report. Imagination Technologies has found a buyer in Chinese-backed private equity group Canyon Bridge; however, its MIPS division will be sold separately to Tallwood Venture Capital.

*Gunther Hofmann, CFA, CVA, CEPA  
Managing Director*

MARKET SECTOR	Median % Change		PEG Ratio	Earnings Ratio	
	Price				
	3 mo	12 mo	2017E	LTM	2016E
Integrated Device Manufacturers (IDMs) & Foundries	14.2%	34.6%	1.1x	19.8x	18.1x
Fabless Semiconductor Manufacturers	8.9%	27.2%	1.3x	40.9x	21.9x
Semiconductor Equipment	24.2%	72.8%	1.1x	19.5x	18.6x
Electronic Design Automation & IP	11.8%	32.5%	2.9x	42.7x	33.7x

**EV/REVENUE MULTIPLES**

MARKET SECTOR	Median 9/30/17	LTM		NTM
		Median % Change		Median
		3 mo	12 mo	9/30/17
Integrated Device Manufacturers (IDMs) & Foundries	2.9x	6.6%	17.0%	2.6x
Fabless Semiconductor Manufacturers	3.1x	9.4%	20.9%	3.1x
Semiconductor Equipment	3.8x	13.3%	40.8%	3.4x
Electronic Design Automation & IP	4.0x	2.3%	6.5%	3.9x

**EV/EBITDA MULTIPLES**

MARKET SECTOR	Median 9/30/17	Median % Change		NTM
		LTM EBITDA Multiples		Median
		3 mo	12 mo	9/30/17
Integrated Device Manufacturers (IDMs) & Foundries	10.9x	1.7%	4.6%	8.9x
Fabless Semiconductor Manufacturers	16.0x	5.9%	(6.9%)	11.4x
Semiconductor Equipment	12.4x	8.4%	14.1%	11.5x
Electronic Design Automation & IP	23.6x	12.6%	25.8%	15.6x

INDICIES	Price	% Change			
	9/30/17	3 mo	6 mo	12 mo	24 mo
S&P 500	2,519.36	4.0%	6.4%	16.2%	31.2%
Dow Jones Industrial Average	22,405.09	4.9%	8.1%	22.4%	37.6%
NASDAQ Composite Index	6,495.96	5.8%	9.8%	22.3%	40.6%
Russell 2000 Index	1,490.86	5.3%	7.9%	19.1%	35.4%
S&P Composite 1500 Information Technology (Sector)	1,048.22	8.0%	12.0%	26.8%	53.4%
S&P Composite 1500 Semiconductor & Semiconductor Equipment (Industry)	856.44	13.0%	14.8%	29.6%	77.1%
S&P Composite 1500 Semiconductors (Sub Ind)	805.28	11.1%	12.7%	24.4%	67.0%
S&P Composite 1500 Semiconductor Equipment (Sub Ind)	762.72	24.4%	28.2%	69.9%	162.9%

Source: Capital IQ. (\$ in '000, except per share)

COMPANY	TICKER	Price		% Change		52-Week		Market Cap	Ent Val (TEV)	LTM		NTM		EPS		Earnings Ratio		PEG Ratio	
		9/30/17		3 mo	12 mo	High	Low			Rev	EBITDA	Rev	EBITDA	2016	2017E	LTM	2017E		
<b>Integrated Device Manufacturers (IDMs) &amp; Foundries</b>																			
Samsung Electronics Co., Ltd.	A005930	\$2,241.85		8.0%	54.3%	\$2,346.77	\$1,306.29	\$301,061	\$260,299	\$ 185,971	\$ 50,842	\$225,012	\$74,295	\$131.06	\$263.95	12.3x	8.9x	0.4x	
Intel Corporation	INTC	38.08		12.9%	0.9%	38.45	33.23	178,938	184,994	61,711	24,705	61,940	25,673	2.12	3.25	14.5x	13.7x	1.7x	
TSMC	2330	7.13		4.0%	22.5%	7.35	5.87	184,991	170,936	31,977	20,731	33,938	23,388	0.39	0.44	16.1x	18.1x	1.5x	
Texas Instruments Incorporated	TXN	89.64		16.5%	27.7%	89.89	66.80	88,747	89,346	14,184	6,282	14,922	6,768	3.48	4.48	22.4x	21.7x	2.1x	
Sony Corporation	6758	37.17		(2.6%)	14.3%	40.99	26.02	46,970	46,174	69,696	7,118	73,690	9,705	1.05	0.51	40.6x	NM	NM	
NXP Semiconductors N.V.	NXPI	113.09		3.3%	10.9%	113.40	95.88	38,238	42,392	9,322	2,752	9,120	3,292	0.58	6.51	20.1x	18.0x	0.8x	
SK Hynix Inc.	A000660	72.48		23.2%	98.3%	75.46	33.84	51,174	50,814	19,746	10,863	28,345	18,195	3.48	13.19	8.9x	5.3x	0.1x	
Micron Technology, Inc.	MU	39.33		31.7%	121.2%	39.36	16.17	43,659	50,214	20,322	9,741	24,581	14,487	(0.27)	4.73	8.9x	NM	NM	
Infineon Technologies AG	IFX	25.14		19.2%	40.8%	25.14	17.62	28,402	27,979	8,178	2,055	8,720	2,357	0.74	1.04	28.7x	26.5x	2.0x	
Skyworks Solutions, Inc.	SWKS	101.90		6.2%	33.8%	112.11	71.65	18,723	17,279	3,502	1,451	3,968	1,735	5.18	6.40	19.6x	16.9x	1.1x	
Renesas Electronics Corporation	6723	10.89		24.9%	79.6%	11.68	5.43	18,152	19,261	5,577	1,184	7,110	1,956	0.30	0.42	34.8x	28.2x	1.2x	
Microchip Technology Incorporated	MCHP	89.78		16.3%	44.5%	91.83	57.52	20,894	22,659	3,581	1,255	3,986	1,618	1.49	3.90	NM	NM	NM	
STMicroelectronics N.V.	STM	19.35		34.9%	136.9%	19.63	8.35	16,854	16,378	7,667	1,268	8,395	1,728	0.19	0.90	38.2x	25.8x	0.4x	
Maxim Integrated Products, Inc.	MXIM	47.71		6.3%	19.5%	49.70	37.25	13,457	12,200	2,296	852	2,366	961	0.79	2.11	24.1x	NM	NM	
Toshiba Corporation	6502	2.80		15.6%	(15.4%)	4.22	1.58	11,843	19,544	42,689	4,495	42,477	4,633	(1.24)	(2.05)	3.7x	NM	NM	
ON Semiconductor Corporation	ON	18.47		31.6%	49.9%	18.49	10.74	7,786	10,078	4,987	1,017	5,362	1,206	0.43	1.40	27.2x	14.9x	0.8x	
United Microelectronics Corporation	2303	0.50		2.9%	35.4%	0.55	0.37	6,095	7,130	4,990	1,876	4,966	1,997	0.02	0.02	19.2x	20.8x	NM	
Cypress Semiconductor Corporation	CY	15.02		10.0%	23.5%	15.11	9.63	4,994	6,085	2,180	210	2,380	498	(2.15)	0.86	NM	19.2x	1.3x	
<b>Median</b>				<b>14.2%</b>	<b>34.6%</b>												<b>19.8x</b>	<b>18.1x</b>	<b>1.1x</b>

## EV/REVENUE MULTIPLES

COMPANY	TICKER	TTM					NTM
		Trailing		% Change			
		9/30/17	3 mo	12 mo	3 mo	12 mo	
<b>Integrated Device Manufacturers (IDMs) &amp; Foundries</b>							
Samsung Electronics Co., Ltd.	A005930	1.4x	1.2x	0.8x	15.2%	76.6%	1.2x
Intel Corporation	INTC	3.0x	2.8x	3.3x	8.2%	(10.5%)	3.0x
TSMC	2330	5.3x	5.1x	5.1x	5.1%	4.6%	5.0x
Texas Instruments Incorporated	TXN	6.3x	5.6x	5.5x	12.7%	13.7%	6.0x
Sony Corporation	6758	0.7x	0.7x	0.5x	(4.4%)	27.2%	0.6x
NXP Semiconductors N.V.	NXPI	4.5x	4.4x	5.5x	4.2%	(17.1%)	4.6x
SK Hynix Inc.	A000660	2.6x	2.4x	1.7x	8.3%	48.7%	1.8x
Micron Technology, Inc.	MU	2.5x	2.4x	1.9x	4.0%	31.8%	2.0x
Infineon Technologies AG	IFX	3.4x	3.1x	2.7x	10.3%	24.5%	3.2x
Skyworks Solutions, Inc.	SWKS	4.9x	4.9x	4.0x	1.5%	23.7%	4.4x
Renesas Electronics Corporation	6723	3.5x	2.8x	1.3x	21.5%	165.6%	2.7x
Microchip Technology Incorporated	MCHP	6.3x	5.7x	6.6x	11.4%	(4.2%)	5.7x
STMicroelectronics N.V.	STM	2.1x	1.6x	1.0x	33.7%	117.8%	2.0x
Maxim Integrated Products, Inc.	MXIM	5.3x	5.1x	4.7x	4.2%	13.3%	5.2x
Toshiba Corporation	6502	0.5x	0.4x	0.5x	3.2%	(0.7%)	0.5x
ON Semiconductor Corporation	ON	2.0x	1.9x	2.3x	8.1%	(13.4%)	1.9x
United Microelectronics Corporation	2303	1.4x	1.4x	1.2x	(1.1%)	20.3%	1.4x
Cypress Semiconductor Corporation	CY	2.8x	2.7x	2.5x	1.9%	9.5%	2.6x
<b>Median</b>		<b>2.9x</b>	<b>2.8x</b>	<b>2.4x</b>	<b>6.6%</b>	<b>17.0%</b>	<b>2.6x</b>

## EV/EBITDA MULTIPLES

	TTM					NTM
	Trailing		% Change			
	9/30/17	3 mo	12 mo	3 mo	12 mo	
	5.1x	4.7x	3.2x	8.4%	57.7%	3.5x
	7.5x	7.1x	8.4x	5.8%	(11.0%)	7.2x
	8.2x	7.8x	7.9x	5.2%	4.6%	7.3x
	14.2x	12.9x	13.4x	10.0%	6.3%	13.2x
	6.5x	7.1x	6.5x	(9.2%)	0.5%	4.8x
	15.4x	15.5x	20.9x	(0.5%)	(26.3%)	12.9x
	4.7x	4.8x	3.9x	(3.3%)	19.7%	2.8x
	5.2x	5.9x	6.5x	(12.2%)	(20.6%)	3.5x
	13.6x	12.6x	11.1x	7.8%	22.9%	11.9x
	11.9x	11.7x	9.7x	1.7%	22.8%	10.0x
	16.3x	13.4x	6.2x	21.5%	160.7%	9.8x
	18.1x	18.1x	22.6x	(0.2%)	(20.1%)	14.0x
	12.9x	10.3x	7.4x	25.8%	73.7%	9.5x
	14.3x	14.2x	14.5x	1.2%	(1.3%)	12.7x
	4.4x	NM	NM	NM	NM	4.2x
	9.9x	9.4x	13.1x	5.4%	(24.6%)	8.4x
	3.8x	3.8x	3.1x	0.3%	23.0%	3.6x
	29.0x	35.1x	30.1x	(17.3%)	(3.6%)	12.2x
<b>Median</b>	<b>10.9x</b>	<b>10.3x</b>	<b>8.4x</b>	<b>1.7%</b>	<b>4.6%</b>	<b>8.9x</b>

Source: Capital IQ. (\$ in '000, except per share)

COMPANY	TICKER	Price 9/30/17	% Change		52-Week		Market Cap	Ent Val (TEV)	LTM		NTM		EPS		Earnings Ratio		PEG Ratio 2017E	
			3 mo	12 mo	High	Low			Rev	EBITDA	Rev	EBITDA	2016	2017E	LTM	2017E		
<b>Fabless Semiconductor Manufacturers</b>																		
Broadcom Limited	AVGO	\$242.54	4.1%	40.6%	\$259.36	\$160.62	\$ 98,951	\$109,976	\$16,928	\$ 6,958	\$ 18,789	\$ 12,285	\$(4.45)	\$15.83	162.2x	16.0x	1.0x	
QUALCOMM Incorporated	QCOM	51.84	(6.1%)	(24.3%)	71.62	48.92	76,519	77,543	22,571	7,153	23,270	8,965	3.81	4.16	19.9x	13.1x	1.3x	
NVIDIA Corporation	NVDA	178.77	23.7%	160.9%	191.20	63.70	107,262	103,461	8,344	2,816	9,391	2,862	1.08	2.91	51.4x	NM	NM	
Xilinx, Inc.	XLNX	70.83	10.1%	30.3%	70.93	48.75	17,608	15,695	2,390	756	2,541	811	2.05	2.28	30.3x	NM	NM	
Advanced Micro Devices, Inc.	AMD	12.75	2.2%	84.5%	15.65	6.22	12,071	12,644	4,619	(164)	5,396	434	(0.60)	0.13	NM	90.9x	11.7x	
MediaTek Inc.	2454	9.37	9.4%	22.6%	9.98	6.69	14,757	11,865	8,608	736	8,303	866	0.47	0.37	20.4x	29.4x	2.1x	
Marvell Technology Group Ltd.	MRVL	17.90	8.4%	34.9%	18.67	12.30	8,875	7,301	2,384	503	2,393	682	(1.51)	0.58	40.9x	NM	NM	
Microsemi Corporation	MSCC	51.48	10.0%	22.6%	57.97	37.11	5,955	7,749	1,787	550	1,880	679	(0.31)	3.84	52.1x	13.7x	0.9x	
Cirrus Logic, Inc.	CRUS	53.32	(15.0%)	0.3%	71.97	49.05	3,402	3,227	1,600	414	1,687	483	1.87	4.36	12.5x	NM	NM	
Silicon Laboratories Inc.	SLAB	79.90	16.9%	35.9%	81.95	55.97	3,399	3,073	730	113	790	171	1.45	3.19	47.6x	29.5x	2.0x	
Mellanox Technologies, Ltd.	MLNX	47.15	8.9%	9.0%	52.80	38.75	2,371	2,274	846	105	923	211	0.37	2.12	NM	21.9x	1.2x	
Silicon Motion Technology Corporation	SIMO	48.03	(0.4%)	(7.3%)	56.25	37.37	1,716	1,435	563	146	533	133	3.12	2.60	16.2x	17.5x	0.9x	
Himax Technologies, Inc.	HIMX	10.93	33.3%	27.2%	11.97	4.88	1,880	1,804	728	35	816	66	0.30	0.14	100.4x	74.1x	2.5x	
<b>Median</b>			<b>8.9%</b>	<b>27.2%</b>											<b>40.9x</b>	<b>21.9x</b>	<b>1.3x</b>	

## EV/REVENUE MULTIPLES

COMPANY	TICKER	TTM					NTM
		Trailing		% Change		9/30/17	
		3 mo	12 mo	3 mo	12 mo		
<b>Fabless Semiconductor Manufacturers</b>							
Broadcom Limited	AVGO	6.5x	6.6x	7.6x	(1.1%)	(14.7%)	5.9x
QUALCOMM Incorporated	QCOM	3.4x	3.6x	4.2x	(4.4%)	(18.0%)	3.3x
NVIDIA Corporation	NVDA	12.4x	10.9x	6.1x	14.0%	103.0%	11.0x
Xilinx, Inc.	XLNX	6.6x	6.0x	5.3x	9.5%	24.3%	6.2x
Advanced Micro Devices, Inc.	AMD	2.7x	2.8x	1.9x	(1.2%)	42.2%	2.3x
MediaTek Inc.	2454	1.4x	1.2x	1.1x	18.1%	27.5%	1.4x
Marvell Technology Group Ltd.	MRVL	3.1x	2.8x	2.1x	9.4%	45.6%	3.1x
Microsemi Corporation	MSCC	4.3x	4.1x	4.5x	5.4%	(2.9%)	4.1x
Cirrus Logic, Inc.	CRUS	2.0x	2.4x	2.8x	(15.0%)	(28.8%)	1.9x
Silicon Laboratories Inc.	SLAB	4.2x	3.6x	3.5x	15.5%	20.9%	3.9x
Mellanox Technologies, Ltd.	MLNX	2.7x	2.4x	2.7x	11.3%	(1.5%)	2.5x
Silicon Motion Technology Corporation	SIMO	2.6x	2.5x	3.6x	0.8%	(29.1%)	2.7x
Himax Technologies, Inc.	HIMX	2.5x	1.7x	2.0x	45.8%	24.6%	2.2x
<b>Median</b>		<b>3.1x</b>	<b>2.8x</b>	<b>3.5x</b>	<b>9.4%</b>	<b>20.9%</b>	<b>3.1x</b>

## EV/EBITDA MULTIPLES

COMPANY	TICKER	TTM					NTM
		Trailing		% Change		9/30/17	
		3 mo	12 mo	3 mo	12 mo		
<b>Fabless Semiconductor Manufacturers</b>							
Broadcom Limited	AVGO	15.8x	16.6x	20.3x	(5.1%)	(22.1%)	9.0x
QUALCOMM Incorporated	QCOM	10.8x	10.6x	12.5x	2.3%	(13.0%)	8.6x
NVIDIA Corporation	NVDA	36.7x	33.6x	24.3x	9.5%	51.4%	36.2x
Xilinx, Inc.	XLNX	20.8x	18.5x	15.9x	12.3%	30.5%	19.3x
Advanced Micro Devices, Inc.	AMD	NM	NM	NM	NM	NM	29.1x
MediaTek Inc.	2454	16.1x	11.9x	9.1x	35.5%	77.6%	13.7x
Marvell Technology Group Ltd.	MRVL	14.5x	15.2x	39.8x	(4.5%)	(63.5%)	10.7x
Microsemi Corporation	MSCC	14.1x	13.9x	18.0x	1.1%	(21.9%)	11.4x
Cirrus Logic, Inc.	CRUS	7.8x	9.4x	15.0x	(17.3%)	(48.2%)	6.7x
Silicon Laboratories Inc.	SLAB	27.2x	22.9x	27.4x	18.7%	(0.7%)	18.0x
Mellanox Technologies, Ltd.	MLNX	21.7x	16.6x	17.8x	30.5%	21.4%	10.8x
Silicon Motion Technology Corporation	SIMO	9.8x	9.7x	14.4x	2.0%	(31.8%)	10.8x
Himax Technologies, Inc.	HIMX	51.9x	22.7x	25.4x	128.1%	104.3%	27.3x
<b>Median</b>		<b>16.0x</b>	<b>15.9x</b>	<b>17.9x</b>	<b>5.9%</b>	<b>(6.9%)</b>	<b>11.4x</b>

Source: Capital IQ. (\$ in '000, except per share)

COMPANY	TICKER	Price 9/30/17	% Change		52-Week		Market Cap	Ent Val (TEV)	LTM		NTM		EPS		Earnings Ratio		PEG Ratio 2017E	
			3 mo	12 mo	High	Low			Rev	EBITDA	Rev	EBITDA	2016	2017E	LTM	2017E		
<b>Semiconductor Equipment</b>																		
ASML Holding N.V.	ASML	\$ 170.25	30.8%	55.0%	\$171.02	\$106.96	\$ 73,188	\$ 73,871	\$ 9,180	\$ 3,218	\$ 11,026	\$ 3,325	\$ 3.84	\$ 5.23	NM	34.0x	1.4x	
Applied Materials, Inc.	AMAT	52.09	26.1%	72.8%	52.28	27.56	55,553	53,625	13,865	3,949	15,918	4,892	1.54	3.22	18.5x	17.6x	0.7x	
Lam Research Corporation	LRCX	185.04	30.8%	95.4%	185.23	93.69	30,068	26,728	8,014	2,219	9,778	2,959	5.22	9.86	20.0x	NM	NM	
Tokyo Electron Limited	8035	153.46	13.7%	75.1%	155.77	75.72	25,179	22,564	7,887	1,843	9,077	2,242	4.09	5.73	19.8x	NM	NM	
KLA-Tencor Corporation	KLAC	106.00	15.8%	52.1%	109.59	69.75	16,631	16,545	3,480	1,334	3,869	1,494	4.49	5.89	18.0x	NM	NM	
Teradyne, Inc.	TER	37.29	24.2%	72.8%	37.47	20.22	7,377	6,329	1,944	547	1,939	548	(0.21)	2.23	19.2x	19.8x	1.3x	
ASM Pacific Technology Limited	522	14.40	6.6%	74.8%	16.11	8.20	5,877	5,789	2,036	411	2,267	392	0.46	0.79	20.3x	18.6x	0.7x	
Disco Corporation	6146	203.28	27.4%	73.1%	209.40	104.26	7,291	6,725	1,309	404	1,423	483	5.72	5.98	28.4x	NM	NM	
ASM International NV	ASM	63.22	8.7%	54.5%	67.58	41.99	3,634	3,016	784	399	871	203	2.33	3.94	12.3x	16.6x	1.1x	
MKS Instruments, Inc.	MKSI	94.45	40.3%	89.9%	95.50	46.51	5,126	5,116	1,704	405	1,870	502	1.94	5.89	19.6x	18.1x	0.9x	
Entegris, Inc.	ENTG	28.85	31.4%	65.6%	29.00	14.73	4,091	4,221	1,252	298	1,349	357	0.68	1.40	34.3x	23.0x	1.5x	
SCREEN Holdings Co., Ltd.	7735	69.27	3.8%	8.4%	79.30	55.24	3,253	2,975	2,761	368	2,883	451	3.53	4.67	14.4x	NM	NM	
ULVAC, Inc.	6728	62.79	30.6%	112.3%	63.23	26.17	3,094	3,036	2,059	321	2,186	381	3.30	3.94	14.2x	NM	NM	
Advantest Corporation	6857	18.69	9.3%	39.2%	19.83	11.52	3,316	2,844	1,385	136	1,611	242	0.31	0.66	39.6x	NM	NM	
<b>Median</b>			<b>24.2%</b>	<b>72.8%</b>											<b>19.5x</b>	<b>18.6x</b>	<b>1.1x</b>	

## EV/REVENUE MULTIPLES

COMPANY	TICKER	TTM		% Change		NTM	
		Trailing 9/30/17	3 mo	12 mo	3 mo		12 mo
<b>Semiconductor Equipment</b>							
ASML Holding N.V.	ASML	8.0x	6.6x	6.6x	22.7%	22.4%	6.7x
Applied Materials, Inc.	AMAT	3.9x	3.3x	3.3x	16.0%	17.2%	3.4x
Lam Research Corporation	LRCX	3.3x	2.7x	2.2x	22.6%	53.6%	2.7x
Tokyo Electron Limited	8035	2.9x	2.7x	1.9x	5.3%	53.2%	2.5x
KLA-Tencor Corporation	KLAC	4.8x	4.2x	3.8x	12.7%	23.8%	4.3x
Teradyne, Inc.	TER	3.3x	2.9x	2.0x	13.3%	60.5%	3.3x
ASM Pacific Technology Limited	522	2.8x	2.8x	2.0x	1.9%	40.8%	2.6x
Disco Corporation	6146	5.1x	4.3x	3.0x	20.2%	72.8%	4.7x
ASM International NV	ASM	3.8x	4.4x	3.2x	(13.0%)	20.6%	3.5x
MKS Instruments, Inc.	MKSI	3.0x	2.4x	3.3x	22.6%	(9.2%)	2.7x
Entegris, Inc.	ENTG	3.4x	2.7x	2.5x	26.1%	37.4%	3.1x
SCREEN Holdings Co., Ltd.	7735	1.1x	1.1x	1.1x	0.7%	(2.9%)	1.0x
ULVAC, Inc.	6728	1.5x	1.3x	0.9x	16.6%	66.2%	1.4x
Advantest Corporation	6857	2.1x	1.9x	1.2x	10.7%	69.5%	1.8x
<b>Median</b>		<b>3.8x</b>	<b>3.3x</b>	<b>3.0x</b>	<b>13.3%</b>	<b>40.8%</b>	<b>3.4x</b>

COMPANY	TICKER	TTM		% Change		NTM	
		Trailing 9/30/17	3 mo	12 mo	3 mo		12 mo
<b>Semiconductor Equipment</b>							
ASML Holding N.V.	ASML	23.0x	19.0x	20.8x	21.1%	10.1%	22.2x
Applied Materials, Inc.	AMAT	13.6x	12.3x	15.0x	10.6%	(9.4%)	11.0x
Lam Research Corporation	LRCX	12.0x	9.9x	9.0x	21.3%	33.5%	9.0x
Tokyo Electron Limited	8035	12.2x	12.4x	9.6x	(1.6%)	28.1%	10.1x
KLA-Tencor Corporation	KLAC	12.4x	10.8x	10.9x	15.1%	14.1%	11.1x
Teradyne, Inc.	TER	11.6x	11.4x	9.0x	1.6%	28.3%	11.5x
ASM Pacific Technology Limited	522	14.1x	14.4x	14.3x	(2.0%)	(1.4%)	14.8x
Disco Corporation	6146	16.6x	15.4x	11.0x	8.4%	51.9%	13.9x
ASM International NV	ASM	7.6x	14.2x	12.3x	(46.6%)	(38.5%)	14.9x
MKS Instruments, Inc.	MKSI	12.6x	10.9x	17.2x	15.8%	(26.4%)	10.2x
Entegris, Inc.	ENTG	14.2x	11.5x	11.6x	23.0%	21.8%	11.8x
SCREEN Holdings Co., Ltd.	7735	8.1x	8.2x	9.7x	(1.6%)	(16.5%)	6.6x
ULVAC, Inc.	6728	9.5x	8.6x	6.8x	9.6%	39.2%	8.0x
Advantest Corporation	6857	20.9x	15.5x	9.9x	35.1%	110.9%	11.8x
<b>Median</b>		<b>12.4x</b>	<b>12.4x</b>	<b>11.0x</b>	<b>8.4%</b>	<b>14.1%</b>	<b>11.5x</b>

## EV/EBITDA MULTIPLES

COMPANY	TICKER	TTM		% Change		NTM	
		Trailing 9/30/17	3 mo	12 mo	3 mo		12 mo
<b>Semiconductor Equipment</b>							
ASML Holding N.V.	ASML	8.0x	6.6x	6.6x	22.7%	22.4%	6.7x
Applied Materials, Inc.	AMAT	3.9x	3.3x	3.3x	16.0%	17.2%	3.4x
Lam Research Corporation	LRCX	3.3x	2.7x	2.2x	22.6%	53.6%	2.7x
Tokyo Electron Limited	8035	2.9x	2.7x	1.9x	5.3%	53.2%	2.5x
KLA-Tencor Corporation	KLAC	4.8x	4.2x	3.8x	12.7%	23.8%	4.3x
Teradyne, Inc.	TER	3.3x	2.9x	2.0x	13.3%	60.5%	3.3x
ASM Pacific Technology Limited	522	2.8x	2.8x	2.0x	1.9%	40.8%	2.6x
Disco Corporation	6146	5.1x	4.3x	3.0x	20.2%	72.8%	4.7x
ASM International NV	ASM	3.8x	4.4x	3.2x	(13.0%)	20.6%	3.5x
MKS Instruments, Inc.	MKSI	3.0x	2.4x	3.3x	22.6%	(9.2%)	2.7x
Entegris, Inc.	ENTG	3.4x	2.7x	2.5x	26.1%	37.4%	3.1x
SCREEN Holdings Co., Ltd.	7735	1.1x	1.1x	1.1x	0.7%	(2.9%)	1.0x
ULVAC, Inc.	6728	1.5x	1.3x	0.9x	16.6%	66.2%	1.4x
Advantest Corporation	6857	2.1x	1.9x	1.2x	10.7%	69.5%	1.8x
<b>Median</b>		<b>3.8x</b>	<b>3.3x</b>	<b>3.0x</b>	<b>13.3%</b>	<b>40.8%</b>	<b>3.4x</b>

Source: Capital IQ. (\$ in '000, except per share)

COMPANY	TICKER	Price 9/30/17	% Change		52-Week		Market Cap	Ent Val (TEV)	LTM		NTM		EPS		Earnings Ratio		PEG Ratio 2017E	
			3 mo	12 mo	High	Low			Rev	EBITDA	Rev	EBITDA	2016	2017E	LTM	2017E		
<b>Electronic Design Automation &amp; IP</b>																		
Synopsys, Inc.	SNPS	\$ 80.53	10.4%	35.7%	\$ 81.57	\$ 56.03	\$ 12,099	\$ 11,233	\$ 2,662	\$ 535	\$ 2,745	\$ 719	\$ 1.73	\$ 3.31	37.8x	26.4x	2.9x	
Ansys, Inc.	ANSS	122.73	0.9%	32.5%	132.74	82.28	10,403	9,539	1,034	461	1,099	532	2.99	3.86	39.4x	35.1x	3.2x	
Cadence Design Systems, Inc.	CDNS	39.47	17.9%	54.6%	39.49	24.15	11,060	11,044	1,871	421	1,972	613	0.70	1.40	45.9x	30.9x	2.7x	
Rambus Inc.	RMBS	13.35	16.8%	NA	14.39	11.30	1,459	1,458	379	104	403	142	0.06	0.20	NM	68.7x	6.9x	
Imagination Technologies Group plc	IMG	2.25	13.2%	(29.9%)	3.99	1.02	643	688	195	22	200	59	(0.14)	0.08	NM	NM	NM	
PDF Solutions, Inc.	PDFS	15.49	(5.8%)	(14.7%)	24.44	14.11	501	392	104	9	111	25	0.28	0.37	91.9x	33.7x	2.1x	
<b>Median</b>			<b>11.8%</b>	<b>32.5%</b>											<b>42.7x</b>	<b>33.7x</b>	<b>2.9x</b>	

COMPANY	TICKER	EV/REVENUE MULTIPLES					NTM
		TTM		% Change		NTM	
		Trailing		3 mo	12 mo		
<b>Electronic Design Automation &amp; IP</b>							
Synopsys, Inc.	SNPS	4.2x	4.0x	3.4x	6.3%	22.7%	4.1x
Ansys, Inc.	ANSS	9.2x	9.4x	7.5x	(1.7%)	22.6%	8.7x
Cadence Design Systems, Inc.	CDNS	5.9x	5.2x	4.2x	14.5%	40.6%	5.6x
Rambus Inc.	RMBS	3.8x	3.5x	4.3x	10.6%	(9.7%)	3.6x
Imagination Technologies Group plc	IMG	3.5x	3.8x	6.0x	(7.8%)	(41.6%)	3.4x
PDF Solutions, Inc.	PDFS	3.8x	3.9x	4.5x	(3.1%)	(16.2%)	3.5x
<b>Median</b>		<b>4.0x</b>	<b>3.9x</b>	<b>4.4x</b>	<b>2.3%</b>	<b>6.5%</b>	<b>3.9x</b>

COMPANY	TICKER	EV/EBITDA MULTIPLES					NTM
		TTM		% Change		NTM	
		Trailing		3 mo	12 mo		
<b>Electronic Design Automation &amp; IP</b>							
Synopsys, Inc.	SNPS	21.0x	20.6x	19.5x	2.0%	7.8%	15.6x
Ansys, Inc.	ANSS	20.7x	21.0x	16.4x	(1.3%)	25.8%	17.9x
Cadence Design Systems, Inc.	CDNS	26.2x	23.3x	17.7x	12.6%	48.4%	18.0x
Rambus Inc.	RMBS	14.0x	11.8x	12.3x	18.2%	14.1%	10.3x
Imagination Technologies Group plc	IMG	30.7x	NM	NM	NM	NM	11.6x
PDF Solutions, Inc.	PDFS	41.5x	30.6x	24.9x	35.9%	66.6%	15.5x
<b>Median</b>		<b>23.6x</b>	<b>21.0x</b>	<b>17.7x</b>	<b>12.6%</b>	<b>25.8%</b>	<b>15.6x</b>

Source: Capital IQ. (\$ in '000, except per share)



ACQUIRER	TARGET	Date Announced	Headquarters		EV Announcement	LTM		EV / LTM		
			Buyer	Target		Revenue	EBITDA	Revenue	EBITDA	
<b>Selected Semiconductor Transactions (Announced in Q4)</b>										
Jiangsu Tongda Power Technology Co., Ltd.	Longjitaihe Industry Co., Ltd	7/22/2017	China	China	2,366,033	NA	NA	NA	NA	
Littelfuse, Inc.	IXYS Corporation	8/28/2017	United States	United States	701,680	325,027	44,570	2.2x	15.7x	
Canyon Bridge Capital Partners, Inc.; Canyon Bridge Fund I, LP	Imagination Technologies Group plc	9/22/2017	NA	United Kingdom	805,017	196,303	22,565	4.1x	35.7x	
Ultra Electronics Holdings plc	Sparton Corporation	7/7/2017	United Kingdom	United States	309,293	397,562	22,013	0.8x	14.1x	
BorgWarner Inc.	Sevcon, Inc.	7/17/2017	United States	United States	190,740	60,363	(9,085)	3.2x	NM	
White Elephant S.à r.l.	exceet Group SE	9/18/2017	Lux.	Lux.	78,054	168,523	5,537	0.5x	14.1x	
China Fortune-Tech Capital Co., Ltd	Semiconductor Technologies & Instruments Group	9/19/2017	China	Singapore	85,317	NA	NA	NA	NA	
II-VI Incorporated	Kaiam Laser Limited	8/7/2017	United States	United Kingdom	80,000	NA	NA	NA	NA	
Nidec-Read Corporation	SV Probe Pte. Ltd.	8/21/2017	Japan	Singapore	65,178	NA	NA	NA	NA	
Tallwood Venture Capital	MIPS Technologies, Inc.	9/22/2017	United States	United States	65,000	NA	NA	NA	NA	
Sigurd Microelectronics Corporation	Bloomeria Limited	7/5/2017	Taiwan	Singapore	53,338	NA	NA	NA	NA	
ARM Holdings plc	Simulity Labs Ltd.	7/3/2017	United Kingdom	United Kingdom	15,137	NA	NA	NA	NA	
<b>Median</b>								<b>2.2x</b>	<b>14.9x</b>	

Source: Capital IQ. (\$ in '000, except per share)

## CORPORATE FINANCE SERVICES

The sale of a company can represent the culmination of years of effort by its investors and management. With this in mind, Armanino guides our clients through the sale process, bringing to bear extensive structuring, preparation, negotiation, valuation and corporate finance experience and judgment to optimize value.

Our team has developed its expertise through many M&A, divestiture and strategic partnering transactions for closely-held businesses across most major technology sectors.

### **Corporate Finance Services include:**

- Sell-Side Representation
- Exit Planning
- Buy-Side Representation
- Special Situation M&A
- Purchaser Representative (SEC Reg 501)

The professionals in our practice have many years of business valuation and corporate finance experience with companies in every major industrial sector and size to deliver superior results for private technology companies in Silicon Valley.

### **SELL SIDE M&A ADVISORY**

We help companies pursuing a sale or merger involving all or part of their business, as well as organizations interested in partial divestitures of a division or assets. We provide end-to-end strategic advisory, introducing the company to potential acquirers and managing a rigorous process to optimize competition, achieve strategic valuations and successfully close transactions.

### **BUY SIDE M&A ADVISORY**

We represent clients pursuing strategic acquisitions, such as asset purchases, mergers, and intellectual property procurements. Our financial advisory includes market analyses, target identification, financial modeling, deal negotiations, preliminary due diligence and final negotiation of the definitive agreements.

### **SPECIAL SITUATION M&A**

Armanino is among Silicon Valley's most experienced restructuring specialists on behalf of investors, creditors, boards, and executive management of distressed technology companies, including monetizing assets such as intellectual property (IP) on an accelerated timeline.

### **PURCHASER REPRESENTATIVE SERVICES**

A Purchaser Representative may be necessary in merger and acquisition transactions where the consideration is not all cash, but includes securities that are not registered with the SEC.

## CONTACT

### CORPORATE FINANCE

*Sell-Side and Buy-Side Advisory, Special Situation M&A, Purchaser Representative*

**Gunther Hofmann, CFA, CVA**  
**Managing Director**

44 Montgomery Street, Suite 900  
San Francisco, CA 94104

[gunther.hofmann@armaninollp.com](mailto:gunther.hofmann@armaninollp.com)

+1 415 568 3298

### TRANSACTION ADVISORY

*Financial Due Diligence and other pre and post transaction support*

**John Dunican, CPA**  
**Partner**

12657 Alcosta Blvd., Suite 500  
San Ramon, CA 94583

[john.dunican@amllp.com](mailto:john.dunican@amllp.com)

+1 925 498 1902

### VALUATION

*Purchase Price Allocation, M&A Valuation, 409A Valuation, Gift & Estate Tax*

**Greg Ansel, ASA**  
**Partner**

12657 Alcosta Blvd., Suite 500  
San Ramon, CA 94583

[greg.ansel@armaninollp.com](mailto:greg.ansel@armaninollp.com)

+1 925 302 4107

### AUDIT

**Matthew Perreault, CPA**  
**Partner**

12657 Alcosta Blvd., Suite 500  
San Ramon, CA 94583

[mattt.perreault@armaninollp.com](mailto:mattt.perreault@armaninollp.com)

+1 925 790 2755

### TAX

**David Sordello, CPA**  
**Partner**

50 West Fernando Ave., Suite 500  
San Jose, CA 95113

[david.sordello@armaninollp.com](mailto:david.sordello@armaninollp.com)

+1 408 200 6403

### BUSINESS SYSTEMS, ERP

*Semiconductor Industry Solutions*

**Chris Moore**  
**Partner**

50 West Fernando Ave., Suite 500  
San Jose, CA 95113

[chris.moore@armaninollp.com](mailto:chris.moore@armaninollp.com)

+1 408 712 1893

**GENERAL:** [info@armaninollp.com](mailto:info@armaninollp.com), 925 790 2600