

CONTENTS

- 3 Market Highlights**
- 4 Public Company Summary**
 - 5 Integrated Device Manufacturers (IDMs) & Foundries
 - 6 Fabless Semiconductor Manufacturers
 - 7 Semiconductor Equipment
 - 8 Electronic Design Automation & IP
- 9 Selected M&A Transactions**
- 10 Corporate Finance Services**
- 11 Contact**

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 an exceptional 2016 and a good first quarter, the semiconductor industry has slowed down somewhat; underperforming the S&P 500 over the last 3 months. However, the **Semiconductor & Semiconductor Equipment Index** still substantially outperformed the S&P 500 over 6, 12 and 24 months.

All sectors other than EDA were up slightly over the last 3 months with a median gain of +3.4% for the Fabless segment, +2.9% for the IDM&Foundry segment, and +2.8% for the Equipment segment, respectively, and a decrease of -5.7% for the EDA&IP segment, respectively. The individual sectors were still up between +34.1% and +61.6% compared to one year ago.

Within the IDM/Foundries segment, stock price changes over 3 months ranged from +28.9% (SK Hynix) to -20.6% (Renesas). Within the Fabless segment, NVIDIA increased an impressive +32.1% for the quarter and +207.5% over one year. Mellanox decreased the most with -15.0%. The Semiconductor Equipment segment has few winners, with Tokyo Electron leading the pack with a quarterly increase of

+23.3%. Largest decrease was SCREEN with -9.6%. The EDA/IP segment saw increases between +14.0% (Ansys) and -41.3% (Imagination Technologies – reeling from its Apple woes. The company announced in June that it was looking for a buyer).

Valuation momentum also slowed down: Other than for the Fabless segments with flat multiples, all sectors showed decreasing EBITDA multiples as well as revenue multiples. With the exception of the median EBITDA multiple in the Fabless segment, all other multiples are still substantially higher than 12 months ago.

Dealmaking has slowed down further in the second quarter. Chinese companies are continuing their acquisition of US targets, with Unic buying Xcerra and Total Force buying MEMSIC. The quarter also saw a rare semiconductor IPO, with X-Fab raising about \$450 million in April.

*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	2.9%	43.0%	1.3x	20.0x	18.1x
Fabless Semiconductor Manufacturers	3.4%	40.2%	1.3x	27.7x	14.4x
Semiconductor Equipment	2.8%	61.6%	1.1x	18.7x	18.1x
Electronic Design Automation & IP	(5.7%)	34.1%	2.3x	41.9x	25.6x

EV/REVENUE MULTIPLES

MARKET SECTOR	Median 6/30/17	LTM		NTM Median 6/30/17
		Median % Change		
		3 mo	12 mo	
Integrated Device Manufacturers (IDMs) & Foundries	2.8x	(4.1%)	33.1%	2.4x
Fabless Semiconductor Manufacturers	2.8x	0.1%	9.5%	2.8x
Semiconductor Equipment	3.3x	(4.8%)	51.7%	3.0x
Electronic Design Automation & IP	3.9x	(10.9%)	22.0%	3.7x

EV/EBITDA MULTIPLES

MARKET SECTOR	Median 6/30/17	Median % Change		NTM Median 6/30/17
		LTM EBITDA Multiples		
		3 mo	12 mo	
Integrated Device Manufacturers (IDMs) & Foundries	10.3x	(6.3%)	31.5%	7.6x
Fabless Semiconductor Manufacturers	15.9x	0.8%	(4.4%)	11.0x
Semiconductor Equipment	12.4x	(10.8%)	20.1%	10.0x
Electronic Design Automation & IP	21.0x	(3.7%)	27.8%	13.0x

INDICIES

	Price 6/30/17	% Change			
		3 mo	6 mo	12 mo	24 mo
S&P 500 Index	2,423.41	2.3%	8.2%	15.5%	17.5%
Dow Jones Industrial Average	21,349.63	3.0%	8.0%	19.1%	21.2%
NASDAQ Composite Index	6,140.42	3.8%	14.1%	26.8%	23.1%
Russell 2000 Index	1,415.36	2.4%	4.3%	22.9%	12.9%
S&P Composite 1500 Information Technology (Sector) Index	970.22	3.6%	15.8%	31.9%	35.4%
S&P Composite 1500 Semiconductor & Semiconductor Equipment (Industry) Index	758.07	1.7%	9.0%	35.8%	42.9%
S&P Composite 1500 - Semiconductors (Sub Ind) (30-APR-03) Index	724.54	1.4%	7.1%	32.8%	41.0%
S&P Composite 1500 - Semiconductor Equipment & Products (30-APR-03) Index	612.93	3.0%	22.8%	57.6%	57.3%

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

COMPANY	TICKER	Price 6/30/17	% 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		
Integrated Device Manufacturers (IDMs) & Foundries																		
Samsung Electronics Co. Ltd.	A005930	\$2,075.55	10.2%	67.9%	\$2,113.09	\$ 1,232.93	\$261,150	\$214,579	\$ 176,935	\$ 45,519	\$211,456	\$69,724	\$131.06	\$253.24	13.7x	8.6x	0.6x	
Intel Corporation	INTC	33.74	(5.6%)	2.9%	38.45	32.38	158,882	167,571	60,481	23,672	59,914	24,761	2.12	2.85	14.6x	12.7x	1.6x	
TSMC	2330	6.86	8.4%	36.1%	7.19	5.28	177,821	163,734	32,179	20,881	33,062	21,848	0.39	0.43	15.3x	13.9x	1.2x	
Texas Instruments Incorporated	TXN	76.93	(5.1%)	22.8%	84.65	60.46	76,647	76,956	13,764	5,953	14,416	6,426	3.48	4.08	20.5x	20.6x	2.2x	
Sony Corporation	6758	38.15	13.8%	31.1%	39.24	26.08	48,186	46,912	67,684	6,569	71,250	8,132	1.05	0.51	75.3x	103.3x	5.7x	
NXP Semiconductors N.V.	NXPI	109.45	5.5%	39.7%	109.98	75.04	36,879	41,384	9,485	2,657	8,976	3,198	0.58	6.22	20.0x	16.0x	0.7x	
SK Hynix Inc.	A000660	58.85	28.9%	109.4%	60.77	26.46	41,550	41,167	17,317	8,509	24,823	14,877	3.48	11.48	10.8x	5.0x	0.2x	
Micron Technology, Inc.	MU	29.86	3.1%	117.0%	32.96	11.50	33,145	41,334	17,401	7,039	22,798	12,962	(0.27)	4.69	13.1x	6.4x	0.1x	
Infineon Technologies AG	IFX	21.09	2.8%	46.4%	23.37	13.27	23,814	23,778	7,667	1,882	8,473	2,256	0.74	1.02	27.3x	20.9x	1.6x	
Skyworks Solutions, Inc.	SWKS	95.95	(2.2%)	51.6%	112.11	57.19	17,705	16,298	3,353	1,391	3,854	1,721	5.18	6.32	19.8x	15.9x	1.1x	
Renesas Electronics Corporation	6723	8.72	(20.6%)	54.6%	11.23	4.60	14,529	15,895	5,591	1,187	6,611	1,521	0.30	0.42	27.7x	20.4x	1.4x	
Microchip Technology Incorporated	MCHP	77.18	4.5%	52.0%	87.49	48.97	17,705	19,353	3,408	1,070	3,790	1,546	1.49	3.90	NM	18.7x	1.3x	
STMicroelectronics N.V.	STM	14.34	(6.9%)	146.2%	17.78	5.39	12,732	12,246	7,662	1,193	8,089	1,587	0.19	0.77	37.8x	21.3x	0.4x	
Maxim Integrated Products, Inc.	MXIM	44.90	(0.0%)	25.8%	49.70	34.80	12,686	11,522	2,260	814	2,387	960	0.79	2.11	25.8x	21.5x	1.8x	
Toshiba Corporation	6502	2.42	18.1%	(10.1%)	4.23	1.58	10,244	20,118	45,346	(7,521)	48,624	5,066	(1.75)	(2.05)	NM	NM	NM	
ON Semiconductor Corporation	ON	14.04	(8.9%)	59.2%	16.93	8.11	5,907	8,460	4,526	899	5,257	1,142	0.43	1.29	27.0x	11.6x	0.6x	
United Microelectronics Corporation	2303	0.49	20.4%	24.2%	0.50	0.37	5,923	7,170	4,963	1,891	5,008	1,965	0.02	0.02	18.2x	18.1x	NM	
Cypress Semiconductor Corporation	CY	13.65	(2.3%)	29.4%	14.98	9.63	4,497	5,578	2,036	159	2,241	448	(2.15)	0.72	NM	19.7x	2.0x	
Median			2.9%	43.0%											20.0x	18.1x	1.3x	

EV/REVENUE MULTIPLES

COMPANY	TICKER	TTM					NTM
		Trailing		% Change			
		6/30/17	3 mo	12 mo	3 mo	12 mo	
Integrated Device Manufacturers (IDMs) & Foundries							
Samsung Electronics Co. Ltd.	A005930	1.2x	1.1x	0.7x	8.9%	66.7%	1.0x
Intel Corporation	INTC	2.8x	3.0x	2.9x	(7.2%)	(5.6%)	2.8x
TSMC	2330	5.1x	4.8x	4.6x	5.3%	10.2%	5.0x
Texas Instruments Incorporated	TXN	5.6x	6.1x	5.0x	(7.9%)	11.9%	5.3x
Sony Corporation	6758	0.7x	0.6x	0.4x	8.5%	63.8%	0.7x
NXP Semiconductors N.V.	NXPI	4.4x	4.5x	5.1x	(2.1%)	(13.6%)	4.6x
SK Hynix Inc.	A000660	2.4x	2.1x	1.3x	13.1%	81.6%	1.7x
Micron Technology, Inc.	MU	2.4x	2.8x	1.5x	(15.6%)	53.6%	1.8x
Infineon Technologies AG	IFX	3.1x	3.3x	2.3x	(5.0%)	35.1%	2.8x
Skyworks Solutions, Inc.	SWKS	4.9x	5.1x	3.2x	(5.2%)	51.9%	4.2x
Renesas Electronics Corporation	6723	2.8x	2.9x	1.2x	(3.2%)	142.4%	2.4x
Microchip Technology Incorporated	MCHP	5.7x	6.0x	5.0x	(5.7%)	12.8%	5.1x
STMicroelectronics N.V.	STM	1.6x	1.8x	0.7x	(11.7%)	128.3%	1.5x
Maxim Integrated Products, Inc.	MXIM	5.1x	5.2x	4.2x	(1.8%)	21.4%	4.8x
Toshiba Corporation	6502	0.4x	0.4x	0.4x	6.6%	26.1%	0.4x
ON Semiconductor Corporation	ON	1.9x	2.3x	1.3x	(19.7%)	45.4%	1.6x
United Microelectronics Corporation	2303	1.4x	1.2x	1.1x	15.7%	31.2%	1.4x
Cypress Semiconductor Corporation	CY	2.7x	3.0x	2.2x	(7.4%)	25.8%	2.5x
Median		2.8x	2.9x	1.9x	(4.1%)	33.1%	2.4x

EV/EBITDA MULTIPLES

COMPANY	TICKER	TTM					NTM
		Trailing		% Change			
		6/30/17	3 mo	12 mo	3 mo	12 mo	
Integrated Device Manufacturers (IDMs) & Foundries							
Samsung Electronics Co. Ltd.	A005930	4.7x	4.6x	3.0x	3.2%	56.5%	3.1x
Intel Corporation	INTC	7.1x	7.7x	7.2x	(8.6%)	(1.2%)	6.8x
TSMC	2330	7.8x	7.6x	7.2x	3.8%	9.3%	7.5x
Texas Instruments Incorporated	TXN	12.9x	14.2x	12.2x	(9.1%)	6.2%	12.0x
Sony Corporation	6758	7.1x	8.3x	5.1x	(14.3%)	39.9%	5.8x
NXP Semiconductors N.V.	NXPI	15.6x	16.6x	19.0x	(6.2%)	(17.9%)	12.9x
SK Hynix Inc.	A000660	4.8x	4.7x	2.8x	3.8%	72.6%	2.8x
Micron Technology, Inc.	MU	5.9x	8.8x	5.3x	(33.5%)	10.4%	3.2x
Infineon Technologies AG	IFX	12.6x	13.5x	9.6x	(6.2%)	31.1%	10.5x
Skyworks Solutions, Inc.	SWKS	11.7x	12.3x	7.9x	(4.6%)	48.1%	9.5x
Renesas Electronics Corporation	6723	13.4x	13.8x	5.3x	(3.2%)	152.7%	10.5x
Microchip Technology Incorporated	MCHP	18.1x	19.9x	16.0x	(9.3%)	13.1%	12.5x
STMicroelectronics N.V.	STM	10.3x	12.5x	5.5x	(18.0%)	88.1%	7.7x
Maxim Integrated Products, Inc.	MXIM	14.2x	15.1x	13.2x	(6.3%)	7.5%	12.0x
Toshiba Corporation	6502	NM	NM	NM	NM	NM	4.0x
ON Semiconductor Corporation	ON	9.4x	12.5x	7.2x	(24.7%)	31.5%	7.4x
United Microelectronics Corporation	2303	3.8x	3.3x	2.9x	13.9%	32.7%	3.6x
Cypress Semiconductor Corporation	CY	35.1x	46.3x	19.2x	(24.3%)	82.5%	12.4x
Median		10.3x	12.5x	7.2x	(6.3%)	31.5%	7.6x

COMPANY	TICKER	Price 6/30/17	% 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		
Fabless Semiconductor Manufacturers																		
Broadcom Limited	AVGO	\$233.05	5.9%	50.0%	\$256.78	\$147.16	\$ 94,756	\$106,787	\$16,257	\$ 6,414	\$ 18,339	\$ 12,011	\$ (4.45)	\$15.69	NM	14.4x	0.9x	
QUALCOMM Incorporated	QCOM	55.22	(3.5%)	3.1%	71.62	51.05	81,584	83,529	23,243	7,881	22,274	8,446	3.81	4.24	18.4x	11.5x	1.5x	
NVIDIA Corporation	NVDA	144.56	32.1%	207.5%	168.50	46.03	86,013	82,015	7,542	2,444	8,393	2,788	1.08	2.91	48.5x	NM	NM	
Xilinx, Inc.	XLNX	64.32	11.1%	39.4%	68.55	44.95	15,956	14,086	2,349	762	2,501	826	2.05	2.28	27.7x	24.2x	2.7x	
Advanced Micro Devices, Inc.	AMD	12.48	(11.2%)	142.8%	15.55	4.82	11,794	12,259	4,424	(206)	4,956	381	(0.60)	0.07	NM	222.0x	35.5x	
MediaTek Inc.	2454	8.57	18.7%	13.2%	9.01	6.68	13,484	10,587	9,068	890	8,697	868	0.47	0.42	15.7x	13.9x	1.3x	
Marvell Technology Group Ltd.	MRVL	16.52	5.8%	73.3%	18.18	9.13	8,303	6,654	2,377	438	2,401	687	(1.51)	0.58	54.5x	NM	NM	
Microsemi Corporation	MSCC	46.80	(9.1%)	43.2%	57.97	30.68	5,404	7,245	1,760	520	1,856	660	(0.31)	3.82	24.7x	12.4x	0.8x	
Cirrus Logic, Inc.	CRUS	62.72	3.4%	61.7%	71.97	34.82	4,040	3,649	1,539	387	1,637	446	1.87	4.36	16.0x	14.4x	0.9x	
Silicon Laboratories Inc.	SLAB	68.35	(7.0%)	40.2%	78.45	45.94	2,894	2,605	715	114	766	161	1.45	2.93	41.0x	24.3x	1.9x	
Mellanox Technologies, Ltd.	MLNX	43.30	(15.0%)	(9.7%)	52.80	38.75	2,152	2,049	849	123	918	225	0.37	2.32	165.4x	17.0x	1.0x	
Silicon Motion Technology Corporation	SIMO	48.23	4.1%	0.9%	56.25	37.37	1,724	1,444	571	147	599	176	3.12	3.47	15.5x	12.3x	0.6x	
Himax Technologies, Inc.	HIMX	8.20	(5.9%)	(0.7%)	10.95	4.88	1,410	1,322	778	58	682	43	0.30	0.07	36.1x	35.7x	1.4x	
Median			3.4%	40.2%											27.7x	14.4x	1.3x	

EV/REVENUE MULTIPLES

COMPANY	TICKER	TTM					NTM
		Trailing		% Change			
		6/30/17	3 mo	12 mo	3 mo	12 mo	
Fabless Semiconductor Manufacturers							
Broadcom Limited	AVGO	6.6x	6.5x	8.7x	1.2%	(24.7%)	5.8x
QUALCOMM Incorporated	QCOM	3.6x	3.6x	3.3x	0.1%	9.5%	3.8x
NVIDIA Corporation	NVDA	10.9x	8.7x	4.2x	24.4%	157.7%	9.8x
Xilinx, Inc.	XLNX	6.0x	5.5x	4.5x	8.7%	33.7%	5.6x
Advanced Micro Devices, Inc.	AMD	2.8x	3.1x	1.5x	(11.6%)	87.7%	2.5x
MediaTek Inc.	2454	1.2x	0.9x	1.2x	30.0%	(1.9%)	1.2x
Marvell Technology Group Ltd.	MRVL	2.8x	2.7x	0.9x	5.1%	215.9%	2.8x
Microsemi Corporation	MSCC	4.1x	4.5x	4.3x	(7.9%)	(4.9%)	3.9x
Cirrus Logic, Inc.	CRUS	2.4x	2.5x	2.0x	(5.3%)	18.1%	2.2x
Silicon Laboratories Inc.	SLAB	3.6x	4.1x	2.9x	(11.9%)	26.3%	3.4x
Mellanox Technologies, Ltd.	MLNX	2.4x	2.9x	3.2x	(15.4%)	(25.6%)	2.2x
Silicon Motion Technology Corporation	SIMO	2.5x	2.5x	3.8x	1.8%	(33.4%)	2.4x
Himax Technologies, Inc.	HIMX	1.7x	1.8x	2.1x	(5.6%)	(18.1%)	1.9x
Median		2.8x	3.1x	3.2x	0.1%	9.5%	2.8x

EV/EBITDA MULTIPLES

COMPANY	TICKER	TTM					NTM
		Trailing		% Change			
		6/30/17	3 mo	12 mo	3 mo	12 mo	
Fabless Semiconductor Manufacturers							
Broadcom Limited	AVGO	16.6x	17.1x	22.5x	(2.5%)	(26.1%)	8.9x
QUALCOMM Incorporated	QCOM	10.6x	10.0x	9.0x	6.2%	18.1%	9.9x
NVIDIA Corporation	NVDA	33.6x	28.3x	17.8x	18.5%	88.2%	29.4x
Xilinx, Inc.	XLNX	18.5x	16.6x	13.4x	11.3%	37.4%	17.0x
Advanced Micro Devices, Inc.	AMD	NM	NM	NM	NM	NM	32.2x
MediaTek Inc.	2454	11.9x	8.2x	9.2x	45.4%	29.7%	12.2x
Marvell Technology Group Ltd.	MRVL	15.2x	18.7x	11.8x	(18.8%)	29.2%	9.7x
Microsemi Corporation	MSCC	13.9x	16.9x	18.1x	(17.6%)	(23.2%)	11.0x
Cirrus Logic, Inc.	CRUS	9.4x	10.2x	9.8x	(7.6%)	(4.0%)	8.2x
Silicon Laboratories Inc.	SLAB	22.9x	27.5x	24.1x	(16.7%)	(4.8%)	16.2x
Mellanox Technologies, Ltd.	MLNX	16.6x	17.3x	19.2x	(3.8%)	(13.5%)	9.1x
Silicon Motion Technology Corporation	SIMO	9.8x	9.4x	15.9x	4.1%	(38.2%)	8.2x
Himax Technologies, Inc.	HIMX	22.7x	20.2x	32.9x	12.8%	(31.0%)	30.5x
Median		15.9x	17.0x	16.8x	0.8%	(4.4%)	11.0x

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

COMPANY	TICKER	Price 6/30/17	% 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		
Semiconductor Equipment																		
ASML Holding N.V.	ASML	\$130.18	(2.2%)	32.6%	\$142.56	\$ 95.31	\$ 55,969	\$ 55,398	\$ 8,449	\$ 2,922	\$ 9,926	\$ 3,028	\$ 3.84	\$ 4.84	NM	29.9x	1.5x	
Applied Materials, Inc.	AMAT	41.31	6.2%	72.3%	47.86	23.49	44,393	43,151	12,942	3,516	14,512	4,343	1.54	3.11	17.1x	14.3x	0.7x	
Lam Research Corporation	LRCX	141.43	9.9%	68.2%	167.05	80.68	22,814	19,630	7,215	1,976	8,675	2,562	5.22	9.86	18.0x	13.7x	0.9x	
Tokyo Electron Limited	8035	134.95	23.3%	61.6%	151.33	71.54	22,143	19,338	7,119	1,554	8,757	2,125	4.09	5.73	21.6x	18.1x	1.4x	
KLA-Tencor Corporation	KLAC	91.51	(4.3%)	24.9%	109.59	66.88	14,345	14,597	3,461	1,355	3,760	1,464	4.49	5.89	15.3x	16.6x	1.0x	
Teradyne, Inc.	TER	30.03	(2.9%)	52.5%	36.59	18.87	5,974	5,110	1,779	449	1,973	549	(0.21)	1.89	NM	18.9x	1.5x	
ASM Pacific Technology Limited	522	13.51	0.1%	89.1%	15.67	7.15	5,517	5,416	1,940	377	2,266	409	0.46	0.76	22.9x	21.6x	0.7x	
Disco Corporation	6146	159.52	3.8%	78.3%	180.18	77.62	5,722	5,111	1,195	333	1,420	449	5.72	5.98	26.7x	24.2x	3.3x	
ASM International NV	ASM	58.17	2.8%	50.3%	65.24	36.75	3,460	3,028	685	214	820	189	2.33	4.08	18.7x	16.3x	1.1x	
MKS Instruments, Inc.	MKSI	67.30	(2.3%)	56.3%	88.40	41.34	3,642	3,793	1,549	348	1,748	455	1.94	4.93	24.1x	16.3x	1.0x	
Entegris, Inc.	ENTG	21.95	(4.6%)	51.7%	27.20	13.97	3,110	3,279	1,226	285	1,298	314	0.68	1.16	27.4x	20.9x	1.7x	
SCREEN Holdings Co., Ltd.	7735	66.76	(9.6%)	24.0%	79.49	46.47	3,135	2,858	2,673	348	2,820	393	3.53	4.67	14.6x	14.0x	1.3x	
ULVAC, Inc.	6728	48.07	0.8%	58.5%	57.33	21.48	2,369	2,409	1,905	279	1,972	350	3.30	3.94	11.7x	11.3x	2.3x	
Advantest Corporation	6857	17.11	(8.9%)	54.8%	19.88	9.09	3,025	2,575	1,388	167	1,579	230	0.31	0.66	26.0x	26.0x	3.5x	
Median			2.8%	61.6%											18.7x	18.1x	1.1x	

EV/REVENUE MULTIPLES

COMPANY	TICKER	TTM					NTM
		Trailing		% Change		6/30/17	
		3 mo	12 mo	3 mo	12 mo		
Semiconductor Equipment							
ASML Holding N.V.	ASML	6.6x	7.7x	6.0x	(15.3%)	9.6%	5.6x
Applied Materials, Inc.	AMAT	3.3x	3.5x	2.8x	(4.1%)	19.0%	3.0x
Lam Research Corporation	LRCX	2.7x	2.8x	1.9x	(2.9%)	40.7%	2.3x
Tokyo Electron Limited	8035	2.7x	2.4x	1.8x	10.9%	54.1%	2.2x
KLA-Tencor Corporation	KLAC	4.2x	4.7x	4.3x	(10.6%)	(2.9%)	3.9x
Teradyne, Inc.	TER	2.9x	3.1x	1.9x	(6.2%)	51.7%	2.6x
ASM Pacific Technology Limited	522	2.8x	3.0x	1.8x	(5.4%)	57.1%	2.4x
Disco Corporation	6146	4.3x	4.2x	2.1x	2.0%	101.1%	3.6x
ASM International NV	ASM	4.4x	4.6x	2.7x	(4.8%)	66.0%	3.7x
MKS Instruments, Inc.	MKSI	2.4x	3.0x	2.1x	(18.7%)	17.6%	2.2x
Entegris, Inc.	ENTG	2.7x	2.9x	2.2x	(8.2%)	23.6%	2.5x
SCREEN Holdings Co., Ltd.	7735	1.1x	1.2x	1.0x	(13.8%)	3.2%	1.0x
ULVAC, Inc.	6728	1.3x	1.4x	1.0x	(7.9%)	31.9%	1.2x
Advantest Corporation	6857	1.9x	2.1x	1.0x	(10.7%)	91.0%	1.6x
Median		3.3x	3.5x	2.1x	(4.8%)	51.7%	3.0x

EV/EBITDA MULTIPLES

COMPANY	TICKER	TTM					NTM
		Trailing		% Change		6/30/17	
		3 mo	12 mo	3 mo	12 mo		
Semiconductor Equipment							
ASML Holding N.V.	ASML	19.0x	23.6x	18.9x	(19.8%)	0.1%	18.3x
Applied Materials, Inc.	AMAT	12.3x	13.8x	13.2x	(10.8%)	(7.0%)	9.9x
Lam Research Corporation	LRCX	9.9x	11.0x	8.3x	(9.9%)	20.1%	7.7x
Tokyo Electron Limited	8035	12.4x	12.0x	8.5x	3.3%	45.7%	9.1x
KLA-Tencor Corporation	KLAC	10.8x	12.3x	13.2x	(12.6%)	(18.4%)	10.0x
Teradyne, Inc.	TER	11.4x	12.8x	7.9x	(10.9%)	44.5%	9.3x
ASM Pacific Technology Limited	522	14.4x	16.9x	12.8x	(14.9%)	12.3%	13.2x
Disco Corporation	6146	15.4x	15.8x	7.4x	(2.5%)	107.8%	11.4x
ASM International NV	ASM	14.2x	14.6x	9.1x	(2.8%)	55.8%	16.0x
MKS Instruments, Inc.	MKSI	10.9x	14.4x	10.3x	(24.3%)	5.3%	8.3x
Entegris, Inc.	ENTG	11.5x	13.0x	10.2x	(11.5%)	12.5%	10.4x
SCREEN Holdings Co., Ltd.	7735	8.2x	10.1x	9.4x	(18.9%)	(12.8%)	7.3x
ULVAC, Inc.	6728	8.6x	9.8x	7.0x	(11.9%)	23.7%	6.9x
Advantest Corporation	6857	15.5x	16.1x	9.2x	(4.0%)	68.7%	11.2x
Median		12.4x	13.8x	9.1x	(10.8%)	20.1%	10.0x

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

COMPANY	TICKER	Price 6/30/17	% 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		
Electronic Design Automation & IP																		
Synopsys, Inc.	SNPS	\$ 72.93	1.0%	34.9%	\$ 76.57	\$ 53.02	\$ 10,962	\$ 10,248	\$ 2,582	\$ 497	\$ 2,695	\$ 711	\$ 1.73	\$ 3.28	40.7x	21.9x	2.3x	
Ansys, Inc.	ANSS	121.68	14.0%	34.1%	129.85	82.28	10,404	9,537	1,016	455	1,064	513	2.99	3.79	39.3x	28.4x	2.3x	
Cadence Design Systems, Inc.	CDNS	33.49	6.8%	37.8%	35.69	23.83	9,364	9,510	1,845	408	1,945	627	0.70	1.38	43.0x	22.8x	2.2x	
Rambus Inc.	RMBS	11.43	(12.3%)	NA	14.50	11.39	1,277	1,255	361	106	391	134	0.06	0.11	NM	55.3x	6.6x	
Imagination Technologies Group Plc	IMG	1.99	(41.3%)	(22.9%)	3.86	0.99	562	615	161	(51)	189	56	(0.32)	0.08	NM	16.3x	NM	
PDF Solutions, Inc.	PDFS	16.45	(26.8%)	17.6%	24.44	13.48	529	414	107	14	118	36	0.28	0.58	71.9x	29.0x	1.6x	
Median			(5.7%)	34.1%											41.9x	25.6x	2.3x	

COMPANY	TICKER	EV/REVENUE MULTIPLES						NTM
		TTM			% Change		NTM	
		Trailing	3 mo	12 mo	3 mo	12 mo		
Electronic Design Automation & IP								
Synopsys, Inc.	SNPS	4.0x	4.1x	3.2x	(2.6%)	22.6%	3.8x	
Ansys, Inc.	ANSS	9.4x	8.4x	7.5x	11.9%	25.3%	9.0x	
Cadence Design Systems, Inc.	CDNS	5.2x	4.9x	4.1x	4.2%	26.3%	4.9x	
Rambus Inc.	RMBS	3.5x	4.3x	4.3x	(19.2%)	(18.6%)	3.2x	
Imagination Technologies Group Plc	IMG	3.8x	6.5x	3.4x	(41.2%)	11.7%	3.2x	
PDF Solutions, Inc.	PDFS	3.9x	5.6x	3.2x	(30.9%)	21.4%	3.5x	
Median		3.9x	5.3x	3.8x	(10.9%)	22.0%	3.7x	

COMPANY	TICKER	EV/EBITDA MULTIPLES						NTM
		TTM			% Change		NTM	
		Trailing	3 mo	12 mo	3 mo	12 mo		
Electronic Design Automation & IP								
Synopsys, Inc.	SNPS	20.6x	21.4x	18.4x	(3.7%)	12.1%	14.4x	
Ansys, Inc.	ANSS	21.0x	18.6x	16.4x	12.7%	27.8%	18.6x	
Cadence Design Systems, Inc.	CDNS	23.3x	22.2x	16.5x	5.1%	40.8%	15.2x	
Rambus Inc.	RMBS	11.8x	14.5x	12.2x	(18.2%)	(2.8%)	9.3x	
Imagination Technologies Group Plc	IMG	NM	NM	NM	NM	NM	11.0x	
PDF Solutions, Inc.	PDFS	30.6x	35.6x	17.6x	(14.1%)	74.0%	11.5x	
Median		21.0x	21.4x	16.5x	(3.7%)	27.8%	13.0x	

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

ACQUIRER	TARGET	Date Announced	Headquarters		EV Announcement	LTM		EV / LTM		
			Buyer	Target		Revenue	EBITDA	Revenue	EBITDA	
Selected Semiconductor Transactions (Announced in Q2)										
Jinglong Industry and Commerce Group Co., Ltd.	JA Solar Holdings Co., Ltd.	6/6/2017	China	China	\$ 891,828	\$ 2,349,972	\$ 226,839	0.4x	3.9x	
Unic Capital Management Co., Ltd.	Xcerra Corporation	4/10/2017	China	United States	463,141	333,680	14,907	1.4x	31.1x	
Zhejiang Wansheng Co., Ltd.	Jiangxin Zhiben (Shanghai) Technology Co., Ltd.	5/25/2017	China	China	545,995	NA	NA	NA	NA	
Synaptics Incorporated	Conexant Systems Inc.	6/12/2017	United States	United States	343,353	NA	NA	NA	NA	
Xinyu Zhongyu Gaopeng Xiangyun Investment Partnership Enterprise (Limited Partnership)	Telink Semiconductor Co, Ltd	4/12/2017	China	China	326,441	NA	NA	NA	NA	
Total Force Limited	MEMSIC, Inc.	4/14/2017	Hong Kong	United States	230,000	NA	NA	NA	NA	
WT Microelectronics Co., Ltd.	Maxtek Technology Co., Ltd.	4/6/2017	Taiwan	Taiwan	139,103	410,472	3,299	0.3x	42.2x	
Shenzhen Longood Intelligent Electric Co., Ltd	Shenzhen Juntian Hengxun Technology Co., Ltd.	6/22/2017	China	China	158,031	17,151	NA	9.2x	NA	
Synaptics Incorporated	Marvell International Ltd., Multimedia Solutions Business	6/12/2017	United States	United States	95,000	94,100	NA	1.0x	NA	
Eugene Technology Inc.	AIXTRON, Inc., ALD/CVD Memory Product line	5/25/2017	United States	United States	55,000	NA	NA	NA	NA	
Median								1.0x	31.1x	

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.

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