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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

Although cooling down a bit, the semiconductor industry still outperformed the S&P 500 over 3 months, with an increase of 5.3% for the **Semiconductor & Semiconductor Equipment Index**. The index substantially outperformed the S&P 500 over 6, 12 and 24 months.

Only the semiconductor equipment sector showed a strong performance with a median gain of 17.6% over 3 months. IDM/Foundries were up slightly with 0.7%, Fabless and EDA/IP were down slightly (-2.2% and -0.4%, respectively). All sectors were up more than 20% compared to one year ago.

Within the IDM/Foundries segment, stock price changes over 3 months ranged from +39.9% (STM; up 66.2% over one year!) to -26.7% (Toshiba). Within the Fabless segment, NVIDIA continued its strong performance (+55.8%), but AMD taking the lead with an increase of 64.1%. Both companies show impressive gains over one year: 219.7% (NVIDIA) and 280.5% (AMD), respectively. Himax is trailing with -29.7%. The Semiconductor Equipment segment saw changes ranging from 28.6% (ASM Pacific) to -2.8% (SCREEN). The EDA/IP segment saw increases between 39.5%

(Mentor Graphics; following the announcement of the acquisition by Siemens) and -3.2% (Imagination Tech).

Valuation momentum is slowing down, with both median revenue and EBITDA multiples decreasing in the Fabless segment and staying put in the IDM/Foundries segment. Only the tool segment showed both median revenue and EBITDA multiples increasing. In the EDA space, EBITDA multiples increased, but revenue multiples decreased slightly. Of course, this contrasts with the substantial multiple expansion over the last twelve months in all sectors.

More large transactions were announced this quarter, making 2016 a banner year for semiconductor M&A: Qualcomm announced the acquisition of NXP for \$46 billion (5.3x revenue and 19.6x EBITDA), Siemens is expanding in the software space with the acquisition of Mentor Graphics for \$4.3 billion (3.7x revenue and 23.2x EBITDA). Private Equity firm Apollo Global Management acquired an 80% stake in Lumileds Holding from Philips.

Gunther Hofmann, CFA, CVA, CEPA

MARKET SECTOR	Median % Change		PEG Ratio	Earnings Ratio	
	Price			LTM	2017E
	3 mo	12 mo	2017E	LTM	2017E
Integrated Device Manufacturers (IDMs) & Foundries	(1.9%)	24.5%	1.3x	25.3x	18.7x
Fabless Semiconductor Manufacturers	4.5%	30.1%	1.1x	25.9x	15.2x
Semiconductor Equipment	10.0%	27.2%	1.4x	22.7x	18.6x
Electronic Design Automation & IP	(0.1%)	23.2%	2.3x	39.3x	28.5x

EV/REVENUE MULTIPLES

MARKET SECTOR	Median 12/30/16	LTM Median % Change		NTM Median
		3 mo	12 mo	12/30/16
		Integrated Device Manufacturers (IDMs) & Foundries	2.6x	0.7%
Fabless Semiconductor Manufacturers	2.8x	(2.2%)	25.8%	2.5x
Semiconductor Equipment	3.2x	17.6%	28.7%	2.7x
Electronic Design Automation & IP	4.9x	(0.4%)	20.1%	4.0x

EV/EBITDA MULTIPLES

MARKET SECTOR	Median 12/30/16	Median % Change LTM EBITDA Multiples		NTM Median
		3 mo	12 mo	12/30/16
		Integrated Device Manufacturers (IDMs) & Foundries	11.2x	(0.4%)
Fabless Semiconductor Manufacturers	15.6x	(13.6%)	24.9%	10.0x
Semiconductor Equipment	13.1x	12.6%	31.4%	10.2x
Electronic Design Automation & IP	17.9x	10.9%	22.0%	13.8x

INDICIES	Price	% Change			
	12/30/16	3 mo	6 mo	12 mo	24 mo
S&P 500 Index	2,238.83	3.3%	6.7%	8.5%	7.6%
Dow Jones Industrial Average	19,762.60	7.9%	10.2%	12.3%	9.9%
NASDAQ Composite Index	5,383.12	1.3%	11.2%	6.3%	12.7%
Russell 2000 Index	1,357.13	8.4%	17.8%	18.0%	11.9%
S&P Composite 1500 Information Technology (Sector) Index	837.68	1.4%	13.9%	11.4%	16.2%
S&P Composite 1500 Semiconductor & Semiconductor Equipment (Industry) Index	695.46	5.3%	24.5%	25.7%	23.6%
S&P Composite 1500 - Semiconductors (Sub Ind) (30-APR-03) Index	676.80	4.5%	24.0%	23.8%	25.0%
S&P Composite 1500 - Semiconductor Equipment & Products (30-APR-03) Index	498.93	11.1%	28.3%	40.5%	15.7%

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

COMPANY	TICKER	Price 12/30/16	% 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	\$1,491.87	3.0%	39.6%	\$1,520.07	\$903.74	\$206,591	\$154,445	\$ 167,665	\$ 39,559	\$171,743	\$47,239	\$131.06	\$190.19	14.0x	9.5x	0.6x
Intel Corporation	INTC	36.27	(3.9%)	3.7%	38.36	27.68	171,884	181,944	57,927	22,790	60,692	23,566	2.12	2.80	17.0x	12.6x	1.5x
TSMC	2330	5.60	(3.9%)	29.6%	5.96	4.03	145,231	136,157	27,440	18,197	31,559	20,463	0.40	0.45	15.5x	13.3x	1.1x
Texas Instruments Incorporated	TXN	72.97	4.0%	29.9%	75.25	46.73	72,932	73,406	13,145	5,523	13,568	5,881	3.48	3.74	23.2x	21.7x	2.2x
Sony Corporation	6758	28.05	(13.7%)	12.7%	29.92	18.84	35,407	37,724	66,014	6,101	66,225	6,866	1.05	0.31	72.9x	103.4x	5.7x
NXP Semiconductors N.V.	NXPI	98.01	(3.9%)	14.3%	107.54	61.61	32,851	40,868	8,664	2,340	9,584	3,386	0.58	6.46	48.5x	16.1x	0.7x
SK Hynix Inc.	A000660	0.00	1.6%	41.9%	38.83	21.31	26,214	26,681	13,503	6,287	16,397	8,049	3.48	8.09	14.4x	5.4x	0.2x
Micron Technology, Inc.	MU	21.92	23.3%	54.8%	23.64	9.31	24,091	30,415	13,019	3,386	18,431	7,240	(0.27)	2.94	NM	8.7x	0.9x
Infineon Technologies AG	IFX	17.43	(2.4%)	18.3%	17.98	10.68	19,636	19,139	6,833	1,777	7,343	1,894	0.74	0.88	25.0x	21.2x	1.6x
Linear Technology Corporation	LLTC	62.35	5.2%	43.8%	64.42	37.33	14,986	13,465	1,456	704	1,555	765	2.02	2.26	30.7x	29.0x	2.8x
Skyworks Solutions, Inc.	SWKS	74.66	(1.9%)	(5.7%)	82.28	54.50	13,873	12,787	3,289	1,367	3,524	1,554	5.18	6.17	14.4x	16.0x	1.0x
Microchip Technology Incorporated	MCHP	64.15	3.2%	34.4%	66.81	39.01	13,858	16,472	2,769	824	3,497	1,201	1.49	3.90	249.7x	19.0x	1.3x
Renesas Electronics Corporation	6723	7.95	31.1%	24.5%	8.99	4.43	13,251	11,825	5,458	1,205	5,645	1,172	0.30	0.44	32.0x	21.6x	1.4x
Toshiba Corporation	6502	2.42	(26.7%)	17.0%	4.07	1.33	10,267	20,792	45,182	(3,223)	48,434	3,796	(1.75)	(0.50)	NM	NM	NM
Maxim Integrated Products, Inc.	MXIM	38.57	(3.4%)	0.4%	42.37	30.28	10,926	9,873	2,194	768	2,289	920	0.79	2.04	25.6x	22.3x	2.2x
STMicroelectronics N.V.	STM	11.37	39.3%	66.2%	11.51	4.73	9,808	9,434	6,368	892	7,196	1,151	0.19	0.65	201.4x	23.4x	0.4x
ON Semiconductor Corporation	ON	12.76	3.6%	28.2%	13.32	6.97	5,320	8,100	3,486	628	4,948	983	0.43	1.23	42.5x	12.5x	1.3x
United Microelectronics Corporation	2303	0.35	(4.6%)	(4.1%)	0.42	0.33	4,295	5,292	4,426	1,770	4,696	1,963	0.02	0.02	16.8x	18.4x	NM
Cypress Semiconductor Corporation	CY	11.44	(5.9%)	15.6%	12.48	6.30	3,692	4,827	1,843	303	2,117	366	(2.15)	0.67	NM	20.5x	1.4x
Median			(1.9%)	24.5%											25.3x	18.7x	1.3x

COMPANY	TICKER	EV/REVENUE MULTIPLES					NTM
		TTM		% Change		NTM	
		Trailing		3 mo	12 mo		
Integrated Device Manufacturers (IDMs) & Foundries							
Samsung Electronics Co. Ltd.	A005930	0.9x	0.8x	0.7x	16.2%	37.6%	0.9x
Intel Corporation	INTC	3.1x	3.3x	3.0x	(6.2%)	4.9%	3.0x
TSMC	2330	5.0x	5.1x	4.0x	(2.9%)	25.3%	4.3x
Texas Instruments Incorporated	TXN	5.6x	5.5x	4.5x	0.8%	25.1%	5.4x
Sony Corporation	6758	0.6x	0.5x	0.5x	9.7%	26.5%	0.6x
NXP Semiconductors N.V.	NXPI	4.7x	5.5x	3.8x	(14.0%)	25.8%	4.3x
SK Hynix Inc.	A000660	2.0x	1.7x	1.2x	14.2%	70.9%	1.6x
Micron Technology, Inc.	MU	2.3x	1.9x	1.3x	24.6%	80.5%	1.7x
Infineon Technologies AG	IFX	2.8x	2.7x	2.6x	1.9%	8.6%	2.6x
Linear Technology Corporation	LLTC	9.2x	9.2x	6.3x	0.4%	46.6%	8.7x
Skyworks Solutions, Inc.	SWKS	3.9x	4.0x	4.3x	(2.5%)	(10.1%)	3.6x
Microchip Technology Incorporated	MCHP	5.9x	6.6x	4.8x	(10.0%)	23.0%	4.7x
Renesas Electronics Corporation	6723	2.2x	1.3x	1.6x	66.6%	38.2%	2.1x
Toshiba Corporation	6502	0.5x	0.5x	0.4x	(0.2%)	12.9%	0.4x
Maxim Integrated Products, Inc.	MXIM	4.5x	4.7x	4.5x	(4.0%)	(0.1%)	4.3x
STMicroelectronics N.V.	STM	1.5x	1.0x	0.8x	51.0%	84.5%	1.3x
ON Semiconductor Corporation	ON	2.3x	2.3x	1.4x	(0.5%)	64.2%	1.6x
United Microelectronics Corporation	2303	1.2x	1.2x	1.1x	0.7%	13.8%	1.1x
Cypress Semiconductor Corporation	CY	2.6x	2.5x	2.8x	2.8%	(5.1%)	2.3x
Median		2.6x	2.5x	2.6x	0.7%	25.3%	2.3x

COMPANY	TICKER	EV/EBITDA MULTIPLES					NTM
		TTM		% Change		NTM	
		Trailing		3 mo	12 mo		
Integrated Device Manufacturers (IDMs) & Foundries							
Samsung Electronics Co. Ltd.	A005930	3.9x	3.2x	2.9x	20.2%	33.4%	3.3x
Intel Corporation	INTC	8.0x	8.4x	7.1x	(5.1%)	12.7%	7.7x
TSMC	2330	7.7x	7.8x	6.1x	(2.0%)	25.5%	6.7x
Texas Instruments Incorporated	TXN	13.3x	13.4x	10.9x	(0.7%)	21.5%	12.5x
Sony Corporation	6758	7.1x	6.5x	4.5x	10.1%	59.5%	5.5x
NXP Semiconductors N.V.	NXPI	17.4x	20.9x	13.1x	(16.8%)	32.4%	12.1x
SK Hynix Inc.	A000660	4.6x	3.9x	2.3x	18.5%	99.2%	3.3x
Micron Technology, Inc.	MU	9.2x	6.5x	3.7x	40.9%	145.8%	4.2x
Infineon Technologies AG	IFX	11.4x	11.1x	11.3x	3.3%	1.5%	10.1x
Linear Technology Corporation	LLTC	19.1x	19.1x	12.8x	(0.1%)	49.4%	17.6x
Skyworks Solutions, Inc.	SWKS	9.3x	9.7x	11.5x	(3.9%)	(19.1%)	8.2x
Microchip Technology Incorporated	MCHP	20.0x	22.6x	14.7x	(11.5%)	35.9%	13.7x
Renesas Electronics Corporation	6723	11.3x	6.2x	6.3x	81.3%	78.5%	10.1x
Toshiba Corporation	6502	NM	NM	17.1x	NM	NM	5.5x
Maxim Integrated Products, Inc.	MXIM	13.7x	14.5x	14.0x	(5.9%)	(2.5%)	10.7x
STMicroelectronics N.V.	STM	11.1x	7.4x	5.8x	49.9%	91.2%	8.2x
ON Semiconductor Corporation	ON	12.9x	13.1x	8.0x	(1.9%)	61.9%	8.2x
United Microelectronics Corporation	2303	3.1x	3.1x	2.7x	(0.1%)	15.6%	2.7x
Cypress Semiconductor Corporation	CY	16.5x	30.1x	75.8x	(45.1%)	(78.2%)	13.2x
Median		11.2x	9.1x	8.0x	(0.4%)	32.9%	8.2x

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

COMPANY	TICKER	Price 12/30/16	% 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																		
QUALCOMM Incorporated	QCOM	\$ 65.20	(4.8%)	29.3%	\$ 71.62	\$ 42.24	\$ 96,293	\$ 89,392	\$23,554	\$ 8,240	\$ 23,976	\$ 9,323	\$ 3.81	\$ 4.65	17.1x	12.5x	1.4x	
Broadcom Limited	AVGO	176.77	2.5%	19.9%	183.99	114.25	70,528	84,057	13,240	5,011	16,557	8,945	(4.45)	14.80	NM	15.2x	1.0x	
NVIDIA Corporation	NVDA	106.74	55.8%	219.7%	119.93	24.75	57,533	53,875	6,138	1,756	7,924	2,684	1.08	2.91	54.6x	NM	NM	
Xilinx, Inc.	XLNX	60.37	11.1%	26.2%	62.24	40.44	15,244	13,340	2,291	766	2,414	751	2.05	2.29	27.0x	26.1x	2.9x	
MediaTek Inc.	2454	6.68	(12.6%)	(11.3%)	8.18	5.92	10,518	7,776	8,287	935	8,878	936	0.47	0.50	14.7x	14.3x	1.0x	
Advanced Micro Devices, Inc.	AMD	11.34	64.1%	280.5%	12.42	1.75	10,511	10,885	4,124	(304)	4,412	151	(0.60)	0.06	NM	243.9x	39.0x	
Marvell Technology Group Ltd.	MRVL	13.87	4.5%	58.3%	15.00	7.40	7,045	5,394	2,438	226	2,297	542	(1.59)	0.58	67.4x	NM	NM	
Microsemi Corporation	MSCC	53.97	28.6%	61.6%	57.32	28.91	6,233	8,222	1,655	423	1,814	625	(0.31)	3.82	NM	13.5x	1.1x	
Cirrus Logic, Inc.	CRUS	56.54	6.4%	84.2%	60.00	25.09	3,602	3,513	1,268	272	1,610	419	1.87	4.36	24.9x	12.7x	0.8x	
Silicon Laboratories Inc.	SLAB	65.00	10.5%	30.1%	68.95	36.56	2,714	2,507	675	92	726	140	1.45	2.88	58.1x	24.8x	2.0x	
Mellanox Technologies, Ltd.	MLNX	40.90	(5.4%)	(3.7%)	55.80	37.54	1,993	1,950	813	135	938	261	0.37	2.99	38.5x	16.9x	1.1x	
Silicon Motion Technology Corporation	SIMO	42.48	(18.0%)	32.2%	56.25	27.35	1,498	1,264	510	130	591	164	3.12	3.73	15.4x	12.0x	0.6x	
Himax Technologies, Inc.	HIMX	6.04	(29.7%)	(27.5%)	12.00	5.85	1,039	1,029	777	75	821	88	0.30	0.23	20.3x	35.2x	1.4x	
Median			4.5%	30.1%											25.9x	15.2x	1.1x	

COMPANY	TICKER	EV/REVENUE MULTIPLES					NTM
		TTM		% Change		NTM	
		Trailing		3 mo	12 mo		
Fabless Semiconductor Manufacturers							
QUALCOMM Incorporated	QCOM	3.8x	4.2x	2.7x	(9.4%)	38.2%	3.7x
Broadcom Limited	AVGO	6.3x	7.6x	6.3x	(16.6%)	1.1%	5.1x
NVIDIA Corporation	NVDA	8.8x	6.1x	3.0x	43.7%	191.0%	6.8x
Xilinx, Inc.	XLNX	5.8x	5.3x	4.7x	10.1%	23.2%	5.5x
MediaTek Inc.	2454	0.9x	1.1x	1.3x	(13.2%)	(30.0%)	0.9x
Advanced Micro Devices, Inc.	AMD	2.6x	1.9x	0.9x	37.1%	191.6%	2.5x
Marvell Technology Group Ltd.	MRVL	2.2x	2.1x	0.8x	5.2%	194.4%	2.3x
Microsemi Corporation	MSCC	5.0x	4.5x	3.2x	11.3%	57.6%	4.5x
Cirrus Logic, Inc.	CRUS	2.8x	2.8x	1.7x	(2.2%)	60.6%	2.2x
Silicon Laboratories Inc.	SLAB	3.7x	3.5x	3.0x	6.6%	25.8%	3.5x
Mellanox Technologies, Ltd.	MLNX	2.4x	2.7x	2.4x	(12.0%)	(0.7%)	2.1x
Silicon Motion Technology Corporation	SIMO	2.5x	3.6x	2.7x	(31.1%)	(7.6%)	2.1x
Himax Technologies, Inc.	HIMX	1.3x	2.0x	2.0x	(33.4%)	(34.1%)	1.3x
Median		2.8x	3.5x	2.7x	(2.2%)	25.8%	2.5x

COMPANY	TICKER	EV/EBITDA MULTIPLES					NTM
		TTM		% Change		NTM	
		Trailing		3 mo	12 mo		
Fabless Semiconductor Manufacturers							
QUALCOMM Incorporated	QCOM	10.8x	12.5x	8.0x	(13.0%)	35.5%	9.6x
Broadcom Limited	AVGO	16.8x	20.3x	15.5x	(17.3%)	8.5%	9.4x
NVIDIA Corporation	NVDA	30.7x	24.3x	13.5x	26.4%	126.7%	20.1x
Xilinx, Inc.	XLNX	17.4x	15.9x	13.6x	9.4%	27.9%	17.8x
MediaTek Inc.	2454	8.3x	9.1x	7.6x	(8.2%)	9.6%	8.3x
Advanced Micro Devices, Inc.	AMD	NM	NM	NM	NM	NM	72.3x
Marvell Technology Group Ltd.	MRVL	23.9x	39.8x	10.0x	(40.0%)	139.5%	10.0x
Microsemi Corporation	MSCC	19.4x	18.0x	13.1x	7.8%	47.8%	13.2x
Cirrus Logic, Inc.	CRUS	12.9x	15.0x	8.9x	(14.1%)	44.5%	8.4x
Silicon Laboratories Inc.	SLAB	27.1x	27.4x	22.3x	(1.1%)	21.9%	17.9x
Mellanox Technologies, Ltd.	MLNX	14.5x	17.8x	13.7x	(18.8%)	5.7%	7.5x
Silicon Motion Technology Corporation	SIMO	9.7x	14.4x	11.0x	(32.4%)	(11.4%)	7.7x
Himax Technologies, Inc.	HIMX	13.8x	25.4x	25.2x	(45.5%)	(45.2%)	11.7x
Median		15.6x	17.9x	13.3x	(13.6%)	24.9%	10.0x

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

COMPANY	TICKER	Price 12/30/16	% 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	\$ 112.58	2.5%	22.7%	\$113.11	\$ 74.46	\$ 48,576	\$ 46,811	\$ 6,673	\$ 2,167	\$ 7,854	\$ 2,444	\$ 3.84	\$ 4.36	33.3x	28.5x	1.4x	
Applied Materials, Inc.	AMAT	32.27	7.0%	70.2%	33.68	15.44	34,741	34,335	10,825	2,539	12,582	3,447	1.54	2.65	21.0x	14.4x	0.7x	
Lam Research Corporation	LRCX	105.73	11.6%	31.9%	110.35	63.10	17,216	14,333	5,918	1,411	7,219	2,055	5.22	9.28	21.0x	13.2x	1.1x	
KLA-Tencor Corporation	KLAC	78.68	12.9%	12.9%	83.23	62.33	12,299	12,823	3,093	1,130	3,362	1,257	4.49	5.76	15.8x	16.1x	0.8x	
Tokyo Electron Limited	8035	94.60	7.9%	55.8%	96.96	51.09	15,520	13,333	6,672	1,326	6,913	1,537	4.09	5.56	23.1x	18.6x	2.0x	
Teradyne, Inc.	TER	25.40	17.7%	19.6%	26.59	17.34	5,111	4,215	1,692	362	1,757	477	(0.21)	1.66	NM	18.1x	1.4x	
ASM Pacific Technology Limited	522	10.59	28.6%	34.7%	10.68	6.44	4,325	4,283	1,761	290	1,968	366	0.46	0.64	29.5x	21.8x	0.7x	
Disco Corporation	6146	121.28	3.3%	27.2%	123.25	74.69	4,347	3,789	1,249	334	1,142	320	5.72	5.78	22.2x	26.4x	3.6x	
ASM International NV	ASM	45.01	10.0%	13.5%	45.85	33.89	2,701	2,318	641	121	683	154	2.33	2.78	31.1x	18.8x	2.4x	
MKS Instruments, Inc.	MKSI	59.40	19.4%	61.7%	61.30	30.67	3,183	3,414	1,063	204	1,536	370	1.94	4.07	37.8x	16.5x	1.1x	
Entegris, Inc.	ENTG	17.90	2.8%	32.2%	18.95	10.37	2,530	2,727	1,134	243	1,182	275	0.68	1.09	28.5x	20.1x	1.8x	
SCREEN Holdings Co., Ltd.	7735	62.10	(2.8%)	66.8%	62.87	32.63	2,933	2,815	2,626	297	2,499	351	3.53	4.50	17.3x	15.0x	1.7x	
ULVAC, Inc.	6728	30.66	3.7%	7.3%	34.39	20.09	1,513	1,637	1,899	254	1,820	259	3.30	3.56	9.5x	13.0x	2.6x	
Advantest Corporation	6857	16.86	25.5%	100.9%	17.16	7.85	2,952	2,520	1,500	184	1,428	215	0.31	0.63	34.2x	27.6x	3.7x	
Median			10.0%	27.2%											22.7x	18.6x	1.4x	

EV/REVENUE MULTIPLES

COMPANY	TICKER	TTM					NTM
		Trailing		% Change		12/30/16	
		3 mo	12 mo	3 mo	12 mo		
Semiconductor Equipment							
ASML Holding N.V.	ASML	7.0x	6.6x	5.5x	6.7%	28.7%	6.0x
Applied Materials, Inc.	AMAT	3.2x	3.3x	2.2x	(3.9%)	43.4%	2.7x
Lam Research Corporation	LRCX	2.4x	2.2x	1.9x	11.5%	28.7%	2.0x
KLA-Tencor Corporation	KLAC	4.1x	3.8x	4.2x	8.0%	(0.7%)	3.8x
Tokyo Electron Limited	8035	2.3x	1.9x	1.4x	23.3%	61.7%	1.9x
Teradyne, Inc.	TER	2.5x	2.0x	2.2x	22.9%	15.5%	2.4x
ASM Pacific Technology Limited	522	2.4x	2.0x	1.9x	20.4%	30.9%	2.2x
Disco Corporation	6146	3.5x	3.0x	2.9x	17.6%	21.4%	3.3x
ASM International NV	ASM	3.9x	3.2x	2.8x	20.8%	37.2%	3.4x
MKS Instruments, Inc.	MKSI	3.2x	3.3x	1.9x	(2.9%)	73.4%	2.2x
Entegris, Inc.	ENTG	2.4x	2.5x	2.1x	(2.0%)	15.2%	2.3x
SCREEN Holdings Co., Ltd.	7735	1.2x	1.1x	0.9x	11.3%	40.3%	1.1x
ULVAC, Inc.	6728	1.0x	0.9x	1.1x	12.0%	(7.5%)	0.9x
Advantest Corporation	6857	1.9x	1.2x	0.8x	59.8%	144.9%	1.8x
Median		3.2x	3.0x	2.2x	17.6%	28.7%	2.7x

EV/EBITDA MULTIPLES

COMPANY	TICKER	TTM					NTM
		Trailing		% Change		12/30/16	
		3 mo	12 mo	3 mo	12 mo		
Semiconductor Equipment							
ASML Holding N.V.	ASML	21.6x	20.8x	16.3x	3.6%	32.4%	19.2x
Applied Materials, Inc.	AMAT	13.5x	15.0x	10.3x	(9.8%)	31.4%	10.0x
Lam Research Corporation	LRCX	10.2x	9.0x	8.1x	12.6%	25.1%	7.0x
KLA-Tencor Corporation	KLAC	11.3x	10.9x	14.1x	4.3%	(19.4%)	10.2x
Tokyo Electron Limited	8035	11.6x	9.6x	6.7x	21.3%	73.9%	8.7x
Teradyne, Inc.	TER	11.7x	9.0x	9.6x	29.2%	21.7%	8.8x
ASM Pacific Technology Limited	522	14.7x	14.3x	12.6x	3.2%	17.1%	11.7x
Disco Corporation	6146	13.1x	11.0x	9.9x	19.5%	32.2%	11.9x
ASM International NV	ASM	14.5x	12.3x	9.5x	17.8%	51.7%	15.0x
MKS Instruments, Inc.	MKSI	16.8x	17.3x	7.9x	(3.2%)	112.5%	9.2x
Entegris, Inc.	ENTG	11.3x	11.6x	9.6x	(2.9%)	17.7%	9.9x
SCREEN Holdings Co., Ltd.	7735	10.9x	9.7x	8.5x	12.9%	27.8%	8.0x
ULVAC, Inc.	6728	7.3x	6.8x	9.2x	7.9%	(20.5%)	6.3x
Advantest Corporation	6857	15.8x	9.9x	6.7x	59.6%	136.5%	11.7x
Median		13.1x	11.0x	9.9x	12.6%	31.4%	10.2x

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

COMPANY	TICKER	Price 12/30/16	% 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	\$ 58.86	(0.8%)	27.6%	\$ 62.00	\$ 39.26	\$ 8,835	\$ 7,923	\$ 2,423	\$ 445	\$ 2,585	\$ 713	\$ 1.73	\$ 3.24	34.0x	21.8x	2.3x	
Ansys, Inc.	ANSS	92.49	(0.1%)	(1.3%)	98.99	80.51	8,003	7,165	969	448	1,028	516	2.99	3.74	31.4x	28.4x	2.3x	
Cadence Design Systems, Inc.	CDNS	25.22	(1.2%)	18.9%	28.00	18.32	7,231	7,391	1,788	408	1,889	572	0.70	1.38	30.6x	23.0x	2.2x	
Mentor Graphics Corporation	MENT	36.89	39.5%	NA	37.03	16.10	4,040	4,057	1,142	180	1,228	294	0.81	1.69	44.5x	NM	NM	
Rambus Inc.	RMBS	13.77	10.2%	16.0%	14.50	10.66	1,521	1,533	316	105	386	119	0.06	0.23	67.9x	57.6x	6.9x	
Imagination Technologies Group Plc	IMG	3.11	(3.2%)	55.8%	3.39	1.25	869	920	153	(51)	181	52	(0.32)	0.09	NM	40.9x	4.1x	
PDF Solutions, Inc.	PDFS	22.55	24.1%	101.9%	24.44	8.70	710	591	103	19	122	34	0.28	0.75	80.6x	28.6x	1.6x	
Median			(0.1%)	23.2%												39.3x	28.5x	2.3x

COMPANY	TICKER	EV/REVENUE MULTIPLES						NTM
		TTM		% Change		NTM		
		Trailing						
		12/30/16	3 mo	12 mo	3 mo	12 mo		
Electronic Design Automation & IP								
Synopsys, Inc.	SNPS	3.3x	3.4x	2.8x	(4.9%)	17.7%	3.1x	
Ansys, Inc.	ANSS	7.4x	7.5x	8.0x	(1.8%)	(7.6%)	7.0x	
Cadence Design Systems, Inc.	CDNS	4.1x	4.2x	3.5x	(1.5%)	17.0%	3.9x	
Mentor Graphics Corporation	MENT	3.6x	2.6x	1.7x	38.7%	107.5%	3.3x	
Rambus Inc.	RMBS	4.9x	4.3x	4.0x	14.1%	20.1%	4.0x	
Imagination Technologies Group Plc	IMG	6.0x	6.0x	2.4x	(0.4%)	149.2%	5.1x	
PDF Solutions, Inc.	PDFS	5.7x	4.5x	2.2x	27.9%	155.1%	4.9x	
Median		4.9x	4.3x	2.8x	(0.4%)	20.1%	4.0x	

COMPANY	TICKER	EV/EBITDA MULTIPLES						NTM
		TTM		% Change		NTM		
		Trailing						
		12/30/16	3 mo	12 mo	3 mo	12 mo		
Electronic Design Automation & IP								
Synopsys, Inc.	SNPS	17.8x	19.5x	15.1x	(8.7%)	18.1%	11.1x	
Ansys, Inc.	ANSS	16.0x	16.4x	17.5x	(2.7%)	(8.8%)	13.9x	
Cadence Design Systems, Inc.	CDNS	18.1x	17.7x	14.9x	2.4%	21.3%	12.9x	
Mentor Graphics Corporation	MENT	22.0x	18.1x	7.5x	21.8%	192.5%	13.8x	
Rambus Inc.	RMBS	14.7x	12.3x	11.9x	19.4%	22.7%	12.9x	
Imagination Technologies Group Plc	IMG	NM	NM	NM	NM	NM	17.8x	
PDF Solutions, Inc.	PDFS	31.7x	24.9x	8.3x	27.1%	283.7%	17.5x	
Median		17.9x	17.9x	13.4x	10.9%	22.0%	13.8x	

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

ACQUIRER	TARGET	Date Announced	Headquarters		Enterprise Value Announcement	LTM		Enterprise Value / LTM		
			Buyer	Target		Revenue	EBITDA	Revenue	EBITDA	
Selected Semiconductor Transactions (Announced in Q4)										
HC SemiTek Corporation	Concord Opto Electric Tech (Quanzhou) Co., Ltd.	10/17/2016	China	China	244,916	NA	NA	NA	NA	
QUALCOMM Incorporated	NXP Semiconductors N.V.	10/27/2016	US	Netherlands	46,077,315	8,664,000	2,349,000	5.3x	19.6x	
Canyon Bridge Capital Partners, Inc.	Lattice Semiconductor Corporation	11/3/2016	US	US	1,303,026	410,140	43,535	3.2x	29.9x	
Belden Inc.	Digi International Inc.	11/11/2016	US	US	225,031	203,005	22,095	1.1x	10.2x	
Siemens Industry, Inc.	Mentor Graphics Corporation	11/14/2016	US	US	4,281,267	1,141,766	184,234	3.7x	23.2x	
MACOM Technology Solutions Holdings, Inc.	Applied Micro Circuits Corporation	11/21/2016	US	US	651,202	165,008	(25,679)	3.9x	NM	
Apollo Global Management, LLC	Lumileds Holding B.V.	12/12/2016	US	Netherlands	2,000,000	2,000,000	NA	1.0x	NA	
Teledyne Technologies Incorporated	e2v Technologies plc	12/12/2016	BVI	UK	782,985	290,911	62,332	2.7x	12.6x	
Median								3.2x	19.6x	

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

ACQUIRER	TARGET	Date		Headquarters		Enterprise Value	LTM		Enterprise Value / LTM		
		Announced	Closed	Buyer	Target	Close	Revenue	EBITDA	Revenue	EBITDA	
Selected Semiconductor Transactions (Closed in Q4)											
Dassault Systemes Deutschland GmbH	CST - Computer Simulation Technology AG	7/21/2016	10/3/2016	Germany	Germany	246,678	51,714	NA	4.8x	NA	
ChipMOS TECHNOLOGIES INC.	ChipMOS TECHNOLOGIES (Bermuda) LTD.	1/21/2016	10/31/2016	Taiwan	Taiwan	681,334	589,596	167,193	1.2x	4.1x	
NSIG Finland S.à r.l	Okmetic Oyj	4/1/2016	11/8/2016	Finland	Finland	171,433	93,808	23,912	1.8x	7.2x	
E-Town Capital; Chipone Technology (beijing) Co.,Ltd.	Integrated Memory Logic Limited	6/2/2016	11/9/2016	NA	US	136,000	NA	NA	NA	NA	
ASML Holding N.V.	Hermes Microvision, Inc.	6/16/2016	11/22/2016	Netherlands	Taiwan	2,820,355	187,171	71,873	15.1x	39.2x	
GWafers Singapore Pte. Ltd.	SunEdison Semiconductor Limited	8/17/2016	12/2/2016	Singapore	US	675,188	743,900	(27,100)	0.9x	NM	
Micron Semiconductor Taiwan Co. Ltd.	Inotera Memories, Inc.	12/14/2015	12/6/2016	Taiwan	Taiwan	6,179,476	2,120,519	1,365,920	2.9x	4.5x	
Inphi Corporation	ClariPhy Communications, Inc.	11/1/2016	12/12/2016	US	US	300,000	NA	NA	NA	NA	
Various	Actions Semiconductor Co., Ltd.	5/20/2016	12/16/2016	NA	China	103,601	50,889	(18,224)	NM	NM	
Median									2.4x	5.8x	

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

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.

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- Exit Planning
- Buy-Side Representation
- Intellectual Property and Patents Sales
- 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.

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