

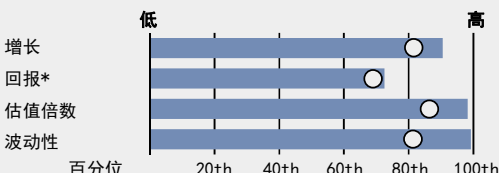


有望实现长期稳定的盈利增长；首次覆盖评为买入 (摘要)

建议理由

圣邦股份是中国第二大模拟半导体设计公司，在物联网、电动车和 AMOLED 领域拥有 2,000 多家客户和 1,000 种产品。我们预计圣邦将通过下列方式继续从海外同业手中赢得市场份额并实现盈利：1) 满足庞大的本地客户群的需求；2) 依靠其在国内市场上的差异化技术优势；3) 利用模拟半导体市场较为分散的特征（与规模更大的同业矽力杰相似）。我们认为该股股价尚未反映公司的长期增长潜力。我们首次覆盖圣邦股份给予买入评级，12 个月目标价格人民币 116 元，上涨空间 25%。

投资摘要



* 回报 - 资本回报率

投资摘要指标的全面描述请参见本报告的信息披露部分。

推动因素

圣邦自 2015 年以来大力投资于研发，2018 年 50 种新产品将实现上量（用于物联网的低功率电源管理芯片(PMIC)、电池 PMIC 和 AMOLED 驱动器）。我们预计 2017-21 年圣邦的收入年均复合增速将达到 23% 的强劲水平（2017 年预计同比增速为 17%），但仍低于矽力杰 2013-15 年间规模与之相似时 50% 的增速，归因于圣邦的研发投入密度较低以及产品结构有所不同。

估值

我们使用长期贴现市盈率以体现圣邦的长期增长潜力，由此得出 12 个月目标价格人民币 116 元：40 倍的 2018 年预期市盈率同业均值乘以 2021 年预期每股盈利并贴现回 2018 年，隐含的 2018 年预期市盈率为 57 倍。虽然目前圣邦股价隐含的 2018 年预期市盈率为 46 倍（基于我们的预测），而 A 股半导体同业均值为 40 倍，我们认为这一溢价与美国模拟半导体股票相对于半导体设计股票 30% 以上的溢价基本一致。尽管圣邦当前估值较高，我们认为隐含的 2018 年预期市盈率目标 57 倍有望实现，因为公司将：1) 利用其多元化产品组合；2) 实现产品结构改善；并且(3) 在分散的模拟半导体市场上攫取市场份额。

主要风险

1) 中国模拟半导体企业之间的竞争加剧。2) 新产品推出延迟。3) 由于高度依赖台积电而面临供应链风险。

* 全文翻译随后提供

所属投资名单

亚太买入名单

行业评级：中性

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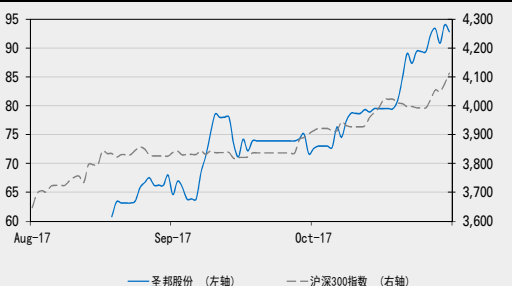
主要数据

当前

股价 (Rmb)	92.80
12个月目标价格 (Rmb)	116.00
市值 (Rmb mn / US\$ mn)	5,568.0 / 838.6
外资持股比例 (%)	--

	12/16	12/17E	12/18E	12/19E
每股盈利 (Rmb)	1.79	1.55	2.02	2.53
每股盈利增长 (%)	14.7	(13.6)	30.3	25.5
每股摊薄盈利 (Rmb)	1.79	1.55	2.02	2.53
每股基本盈利 (Rmb)	1.79	1.55	2.02	2.53
市盈率 (X)	NM	59.9	46.0	36.6
市净率 (X)	NM	7.4	6.4	5.6
EV/EBITDA (X)	--	50.9	41.3	31.9
股息收益率 (%)	NM	0.2	0.2	0.3
净资产回报率 (%)	33.4	18.2	14.9	16.3
CROCI (%)	175.4	33.9	22.6	27.1

股价走势图



股价表现 (%)	3个月	6个月	12个月
绝对	--	--	--
相对于沪深300指数	--	--	--

资料来源：公司数据、高盛研究预测、FactSet（股价为11/10/2017收盘价）

圣邦股份： 财务数据概要

损益表(Rmb mn)					资产负债表(Rmb mn)				
	12/16	12/17E	12/18E	12/19E		12/16	12/17E	12/18E	12/19E
主营业务收入	452.0	528.7	663.8	809.5	现金及等价物	257.5	290.6	382.9	500.6
主营业务成本	(270.1)	(303.0)	(392.6)	(473.5)	应收账款	39.7	46.5	58.3	71.1
销售、一般及管理费用	(98.0)	(126.5)	(151.2)	(184.4)	存货	57.8	64.8	84.0	101.3
研发费用	--	--	--	--	其它流动资产	7.5	423.5	423.5	423.5
其它营业收入/(支出)	0.0	0.0	0.0	0.0	流动资产	362.5	825.4	948.8	1,096.6
员工股票期权费用	--	--	--	--	固定资产净额	8.4	17.7	28.4	40.4
EBITDA	88.5	103.7	125.5	158.9	无形资产净额	14.4	8.0	7.2	6.5
折旧和摊销	(4.6)	(4.4)	(5.5)	(7.4)	长期投资	0.0	0.0	0.0	0.0
EBIT	83.9	99.3	120.0	151.6	其它长期资产	6.5	8.2	8.2	8.2
利息收入	10.3	7.7	8.7	11.5	资产合计	391.8	859.3	992.5	1,151.7
财务费用	0.0	(5.6)	0.0	0.0	应付账款	64.3	72.1	93.5	112.8
联营公司	0.0	0.0	0.0	0.0	短期贷款	1.0	0.0	0.0	0.0
其它	(3.8)	4.1	6.0	6.0	其它流动负债	28.5	(7.3)	(4.5)	(1.4)
税前利润	90.4	105.5	134.7	169.1	流动负债	93.8	64.9	89.0	111.4
所得税	(9.7)	(12.5)	(13.6)	(17.0)	长期贷款	0.0	0.0	0.0	0.0
少数股东损益	0.0	0.0	0.0	0.0	其它长期负债	35.4	37.9	37.9	37.9
优先股股息前净利润	80.7	93.0	121.1	152.0	长期负债	35.4	37.9	37.9	37.9
优先股息	0.0	0.0	0.0	0.0	负债合计	129.2	102.7	126.9	149.3
非经常性项目前净利润	80.7	93.0	121.1	152.0	优先股	0.0	0.0	0.0	0.0
税后非经常性损益	0.0	0.0	0.0	0.0	普通股权益	262.7	756.6	865.6	1,002.4
净利润	80.7	93.0	121.1	152.0	少数股东权益	0.0	0.0	0.0	0.0
每股基本盈利（非经常性项目前）(Rmb)	1.79	1.55	2.02	2.53	负债及股东权益合计	391.8	859.3	992.5	1,151.7
每股基本盈利（非经常性项目后）(Rmb)	1.79	1.55	2.02	2.53	每股净资产(Rmb)	5.84	12.61	14.43	16.71
每股摊薄盈利（非经常性项目后）(Rmb)	1.79	1.55	2.02	2.53					
不含员工股票期权费用的每股盈利(基本)	--	--	--	--	比率	12/16	12/17E	12/18E	12/19E
不含员工股票期权费用的每股盈利(摊薄)	--	--	--	--	GROCI (%)	175.4	33.9	22.6	27.1
每股股息(Rmb)	1.00	0.15	0.20	0.25	净资产回报率(%)	33.4	18.2	14.9	16.3
股息支付率(%)	55.8	10.0	10.0	10.0	总资产回报率(%)	22.4	14.9	13.1	14.2
自由现金流收益率(%)	--	1.4	1.8	2.3	平均运用资本回报率(%)	NM	38.6	23.9	28.8
增长率和利润率(%)	12/16	12/17E	12/18E	12/19E	存货周转天数	75.9	73.9	69.2	71.4
主营业务收入增长率	14.6	17.0	25.5	21.9	应收账款周转天数	27.5	29.7	28.8	29.2
EBITDA增长率	8.1	17.2	21.1	26.7	应付账款周转天数	83.8	82.2	77.0	79.5
EBIT增长率	7.3	18.3	20.9	26.3	净负债/股东权益(%)	(97.7)	(38.4)	(44.2)	(49.9)
净利润增长率	14.7	15.2	30.3	25.5	EBIT利息保障倍数(X)	NM	NM	NM	NM
每股盈利增长	14.7	(13.6)	30.3	25.5	估值	12/16	12/17E	12/18E	12/19E
毛利率	40.2	42.7	40.9	41.5	基本市盈率(X)	NM	59.9	46.0	36.6
EBITDA利润率	19.6	19.6	18.9	19.6	市净率(X)	NM	7.4	6.4	5.6
EBIT利润率	18.6	18.8	18.1	18.7	EV/EBITDA(X)	--	50.9	41.3	31.9
现金流量表(Rmb mn)	12/16	12/17E	12/18E	12/19E	企业价值/总投资现金(X)	--	10.3	9.7	9.0
优先股股息前净利润	80.7	93.0	121.1	152.0	股息收益率(%)	NM	0.2	0.2	0.3
折旧及摊销	4.6	4.4	5.5	7.4					
少数股东权益	0.0	0.0	0.0	0.0					
运营资本增减	(10.1)	(6.0)	(9.7)	(10.8)					
其它	2.6	0.0	0.0	0.0					
经营活动产生的现金流	77.7	91.4	116.9	148.5					
资本开支	(10.4)	(12.2)	(15.3)	(18.7)					
收购	0.0	0.0	0.0	0.0					
剥离	0.0	4.9	0.0	0.0					
其它	0.0	(415.2)	0.0	0.0					
投资活动产生的现金流	(10.4)	(422.5)	(15.3)	(18.7)					
支付股息的现金（普通股和优先股）	(40.0)	(45.0)	(9.3)	(12.1)					
借款增减	0.0	(1.0)	0.0	0.0					
普通股发行（回购）	0.0	414.3	0.0	0.0					
其它	15.3	(4.1)	0.0	0.0					
筹资活动产生的现金流	(24.8)	364.2	(9.3)	(12.1)					
总现金流	42.5	33.1	92.3	117.7					
					注：最后一个实际年度数据可能包括已公布和预测数据。				
					资料来源：公司数据、高盛研究预测				

对此报告有贡献的人员

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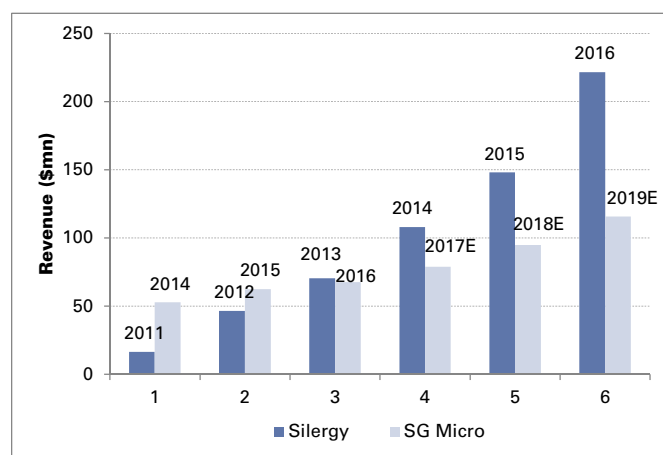
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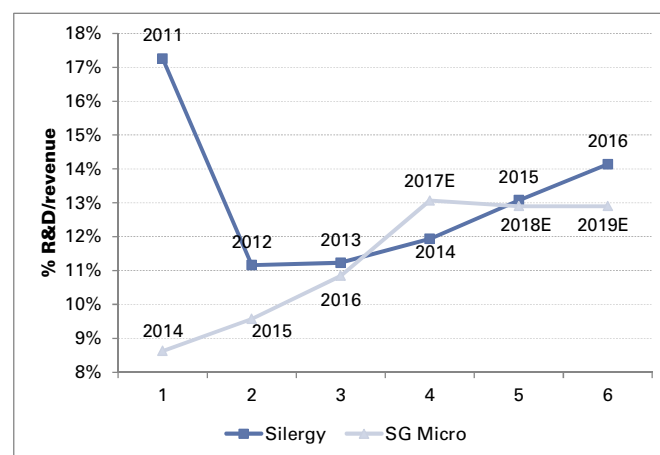
Prices in this report are based on the Nov. 09 2017 market close unless indicated otherwise.

Exhibit 1: We expect SG Micro to follow a similar growth pattern to Silergy in 2013 to 2016, at a similar scale
Annual revenues at SG Micro and Silergy



Source: Company data, Gao Hua Securities Research.

Exhibit 2: SG Micro has had lower R&D intensity than Silergy
% of R&D/revenue at SG Micro and Silergy



Source: Company data, Gao Hua Securities Research.

SG Micro: No. 2 player in China's analog device market

Founded in 2007 and based in Beijing, SG Micro specializes in analog IC design and sales. It has two main product lines: PMIC (power management IC) and signal chain, which are widely used in cell phones, TVs, digital cameras, computers, consumer electronics, automobile electronics, industrial automation, and IoT devices (e.g., sharing bikes). SG Micro has a diversified portfolio of over 1,000 products and over 2,000 customers. It competes mostly with global peers such as TI, ADI, and Maxim.

We are positive on SG Micro's growth outlook for the following four reasons.

- Compared with its overseas peers, SG Micro has many local customers to provide superior service and time-to-market design, enjoys abundant supply of junior engineers, and has a high valuation level in the A-share market to facilitate its potential acquisition of small local companies and attract talent.
- Analog is a fragmented market where smaller players can take share and remain profitable. Richtek and Silergy are such examples. For more on China's semiconductor design industry, see our report: *Design and Conquer – in both new and traditional markets; Buy SG Micro*, published on November 13, 2017. While SG Micro has less than 1% market share in PMIC and signal chains, it delivered a net income CAGR of 14.5% over 2012-2016. We expect SG Micro to continue the growth with a CAGR of 27% in 2017E-2021E driven by increased production and margin improvement from new products launches.
- SG Micro offers a relatively more differentiated technology and product portfolio than its Chinese peers. It leads in low power, high current, and high precision analog design. While most Chinese companies focus on PMIC, SG Micro has a niche position in signal chain products. The revenue breakup between PMIC and signal chain products is 57% and 43% as of 1H17, respectively.
- The Chairman and CEO of SG Micro, Dr. Zhang Shilong, has a track record in analog R&D over the past 20 years. He has previously worked as an engineer in top analog firms in the US, including Burr-Brown and TI, and was also recruited by the Chinese government through "the Thousand Talents Plan" (the Recruitment Program of Global Experts by China). To maintain its technology advantage over peers, we believe a low attrition rate of employees, especially senior engineers is critical in an analog semiconductor industry. SG Micro has had a very low employee turnover rate of below 5% since inception in 2007, which we believe is partially attributed to competitive salary package and the relatively generous employee stock compensation. As of 3Q17, 7% of total shares are owned by employees while 46% is owned by Dr. Zhang and shareholders acting in concert. We think having an experienced leader at the head of an experienced and stable team should stand SG Micro in good stead to gain analog market share from global competitors like TI, ADI and Maxim.

Our 12-month target price of Rmb 116 is based on long-term discounted P/E of 40X, derived from 2018 average Wind consensus P/E of A-share semiconductor design peers, applied on 2021E EPS and discounted back to 2018E using a peer average COE of 11.3%, implying a 2018E P/E of 57X. SG Micro is trading at a 46.5X 2018E GHe P/E, vs. China A-share peer (Wind consensus) average of 40X. We note that analog stocks often enjoy a valuation premium over other semiconductor companies due to analog's diversified product and customer bases. For example, in the US, analog stocks have over 30% higher 2018E P/E and 600bps lower growth rate than other semiconductor design (Exhibit 3). Hence, SG Micro's valuation premium over other A-share semiconductor stocks is justified in our view. We believe the stock will trade further up to our implied target multiple of 57X 2018E P/E given its diversified portfolio, improving product mix with higher margins and continually increasing market share while retaining its technological advantage.

We initiate SG Micro with a Buy rating and upside potential of 23%.

Exhibit 3: Our P/E premium of SG Micro over its A-share peer is largely consistent with the P/E premium of over 30% of analog stocks over other semiconductor design stocks in US SG Micro's peer comparison table

	Ticker	Ratings	Market price	Target price	EPS CAGR 2017-19E	Trading P/E 2017E 2018E		Trading P/B 2017E 2018E	
A Share Analog									
SG Micro (Rmb)	300661.SZ	Buy	94	116	28%	60.6	46.5	7.45	6.51
					TP implied 2018E P/E		57.4		
A Share Other Semiconductor									
Allwinners	300458.SZ	Not Covered	31	NA	9%	50.9	40.5	4.72	4.36
Goodix	603160.SS	Neutral	115	125	20%	48.6	37.1	14.56	11.08
Goke Microelectronics	300672.SZ	Not Covered	71	NA	48%	88.5	44.5	8.58	7.48
SinoWealth	300327.SZ	Not Covered	36	NA	40%	51.1	35.5	9.28	7.97
GigaDevice	603986.SS	Not Covered	163	NA	49%	69.8	42.5	17.26	12.66
Average					33%	61.8	40.0	10.9	8.7
Median					40%	51.1	40.5	9.28	8.0
US Analog									
Maxim (US\$)	MXIM	Neutral	54	53	20%	25.4	20.0	7.04	6.78
Texas Instruments (US\$)	TXN	Sell	97	85	8%	21.5	20.0	8.65	8.61
Analog Devices (US\$)	ADI	Neutral	90	93	n.a.	34.8	17.6	3.13	3.02
Monolithic Power (US\$)	MPWR	Not Covered	120	NA	23%	41.4	33.1	9.80	8.50
Average					17%	30.8	22.7	7.2	6.7
Median					20%	30.1	20.0	7.85	7.6
US Other Semiconductor									
Intel (US\$)	INTC	Neutral	46	42	4%	15.5	15.5	3.12	2.84
Xilinx (US\$)	XLNX	Neutral	71	72	15%	30.3	26.7	8.22	8.34
Broadcom (US\$)	AVGO	Not Rated	266	NA	16%	18.8	15.5	5.09	4.57
Skyworks (US\$)	SWKS	Neutral	111	108	25%	18.6	14.6	5.10	4.21
Qorvo (US\$)	QRVO	Neutral	79	70	33%	20.2	16.8	2.12	1.98
Microchip (US\$)	MCHP	Neutral	91	94	21%	25.0	17.4	6.52	5.68
Marvel (US\$)	MRVL	Neutral	20	18	64%	49.6	21.0	2.57	2.58
Cypress (US\$)	CY	Not Covered	17	NA	26%	19.6	14.1	3.00	2.81
Synaptics (US\$)	SYNA	Not Covered	41	NA	-1%	8.5	9.5	1.77	1.73
Cavium (US\$)	CAVM	Not Covered	76	NA	25%	27.1	21.3	6.93	5.67
Average					23%	23.3	17.2	4.4	4.0
Median					23%	19.9	16.2	4.10	3.5

Note: ADI's EPS CAGR is not included as growth is distorted by its acquisition of Linear Technology in 2017.
Pricing as of November 09, 2017

Source: Wind, Bloomberg, Goldman Sachs Global Investment Research, Gao Hua Securities Research.

Key risks to our view include:

- 1) Intensified competition among Chinese analog companies:** We are aware of several sizable Chinese analog names, and while the market is fragmented, we view the potential increase in competition as a key risk.
- 2) Delay in new products launch:** SG Micro's new products should have higher gross margin, if the launch delays or sell-through is below our expectations, the margin recovery road (to global peers' average level) will be challenging.
- 3) Supply chain management risk:** TSMC provides 99% of wafer supply to SG Micro, and SG Micro's new products with better cost structure will also rely on TSMC's advanced technology. Although SG Micro is actively looking to cooperate with other suppliers, any capacity issue from TSMC could potentially cause problems for the company's normal operation given the high reliance on wafer supply from TSMC.

Product overview: A diversified portfolio of PMIC and signal chains

SG Micro has two main product lines, namely PMIC and signal chains, representing 60% and 40% of its total revenues in 1H17E, respectively. The company has a diversified portfolio of over 1,000 products. According to Gartner, PMIC had US\$10.2bn TAM in 2016, similar to signal chain TAM of US\$10.3bn, but signal chain products tend to have a longer life cycle and more stable margins. Often, a young analog company can ramp up a PMIC business faster than a signal chain business. SG Micro has accumulated technology and new designs in its PMIC business in the past two years and expects its PMIC business growth to surpass that of signal chain in 2017-2019. The company expects its revenue mix of PMIC to increase to 70% in 2018 from 60% in 1H17.

Exhibit 4: SG Micro generated 60% and 40% of its total revenues from PMIC and signal chains in 1H17, respectively
Introduction of signal chain and PMIC products

Product types and Descriptions	Signal Chain Products				PMIC
	Operational Amplifiers (OpAmps)	Comparator	Audio/Video Driver	Analog Switch	
	A DC-coupled high-gain electronic voltage amplifier that can magnify the voltage and/or the current of an input signal to a high-power output. It needs an external power source.	Considered as a special set of OpAmps: a device that compares two voltages or currents and outputs a digital signal indicating which is greater or lesser.	An IC which provides an interface function between a microprocessor, microcontroller, ASIC or general-purpose peripheral interface and a particular type of audio or video device.	A device that can conduct analog or digital signals in either direction when on and isolates the switched terminals when off.	ICs for managing power requirements of the host system which refer to a wide range of chips. At the most basic level, PMICs take an input current/voltage and transform it to a required output to deliver the necessary power (no more and no less) for running a semiconductor.
What are good qualities?	High efficiency of converting external power to output gain, in order to guzzle less power and enable appliances to run cooler.	Tradeoff between high speed and low power depending on the needs of applications	High speed, high current drive and low noise, in order to output a high-quality analog signal that carries the data with high fidelity and power. A well-designed, high-performance interface IC can enable higher data rates and/or longer cable lengths.	High speed and low power consumption	1) High performance, in order to meet the high frequency requirements of advanced chips like microprocessors and graphics; 2) High efficiency, in order to minimize the dissipation of heat; 3) High precision, in order to deliver the necessary very low voltages required by advanced nodes transistors.
SGMicro Products	Nano Power OpAmps Micro Power OpAmps Application-Specific OpAmps High Speed OpAmps High Precision OpAmps Low Noise OpAmps	Nano Power Comparators High Speed Comparators	Headphone Drivers Audio Drivers Audio Power Amplifiers Video Drivers Click-Pop Noise Suppressors	Analog Switches Complex Switches	LDOs DC/DC Converters LED Drivers Load Switches OVP ICs µP Supervisory Circuits Li-Ion Battery Chargers MOSFET Drivers

Source: Company data, Gao Hua Securities Research.

Diversified customer base and limited direct competition in China

SG Micro sells most of its products through distributors to over 2,000 diversified end-customers; it sells directly only to ZTE. SG Micro's distributor partners are well known in China and include Beigaozhi, Colorbeam, Linpo, Kei Kong, etc. The top-five distributors contribute around 62% of revenue. While SG Micro works directly with end-customers for design-in, its distributors fill the orders and handle logistics.

The smartphone sector represents 40% of SG Micro's total revenues today, but it is aiming for the smartphones, consumer, and auto/industrials/medical sectors to represent around 30% each in the near future.

SG Micro sources 99% of its wafers from TSMC, the world's leading foundry, and relies on JCET, TongFu, and Unisem for packaging and testing.

Exhibit 5: SG Micro has a wide range of distributors and customers

SG Micro's supply chain, distributors, and end-customers

Suppliers		Competitors	Distributors	Customers				
Foundry	Packaging /testing	PMIC /Signal Chain	PMIC /Signal Chain	Smartphone	Consumer	Industrial	Medical Equipment	Automobile
TSMC UMC	JCET TongFu Micro Chengdu Unisem	TI ADI Maxim Silergy MPS	Beigaozhi Colorbeam Linpo Kei Kong Newdery Cyberlink Wei Keng Cogobuy Mingzhixin Bonstate	ZTE BOE Lenovo Xiaomi Gionee Coolpad Huaqin	Changhong Jiuzhou Skyworth Konka Haier Hissen ZTE HUMAX PBI	Hikvision Dahua Jinghui Gaobiao	Yuyue Jiu'an (Andon) Contec Medical	Hangsheng TTE

Source: Company data, Gao Hua Securities Research.

In analog, SG Micro competes mostly with overseas companies (such as TI, ADI, and Maxim); it competes with Silergy in the standard DC/DC converter market. Its gross margins are lower than most of its peers due to its new entrant status in the China market and lack of cost advantages. Chinese analog companies, Silergy, SG Micro, and FineMade are fabless design companies that purchase wafers as well as packaging and testing services, which are more expensive than internal productions at most overseas IDM (integrated design manufacturing) peers. Despite its high-margin signal chain products, SG Micro has lower margins than Silergy because Silergy has a proprietary wafer manufacturing process that can reduce PMIC wafer cost by 20% relative to TSMC's generic process. However, SG Micro has said that TSMC has recently launched an 180nm analog process that offers a similar cost structure as Silergy's in-house process; we expect the cost structure to improve over the next two years, assuming Silergy's cost structure remains in a steady state. In addition, SG Micro indicated that its new products tend to have higher margins so that, as its new product increases in the mix, its margin should improve gradually into 2018 and 2019. We expect around 100bps improvement in gross margins through 2019E (vs 3Q17).

Exhibit 6: In terms of development stage, SG Micro is similar to where Silergy stood at 2013
Peer comparison of global analog companies

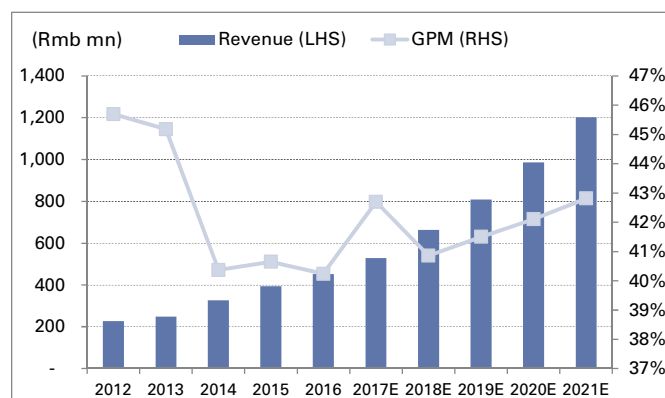
Revenue (mn US\$)	2012	2013	2014	2015	2016	Revenue growth	2012	2013	2014	2015	2016
Silergy	46.3	70.3	108.0	148.1	221.5	Silergy	184.4%	51.7%	53.6%	37.1%	49.6%
FineMade	n.a.	n.a.	41.4	43.3	49.3	FineMade	n.a.	n.a.	n.a.	4.4%	13.9%
SGMicro	35.7	40.3	52.6	62.5	67.7	SGMicro	n.a.	12.9%	30.6%	18.7%	8.3%
OnBright	67.3	91.8	98.4	99.7	113.5	OnBright	31.5%	36.4%	7.2%	1.3%	13.8%
Maxim	2,403.5	2,441.5	2,453.7	2,306.9	2,194.7	Maxim	-2.8%	1.6%	0.5%	-6.0%	-4.9%
TI	12,825.0	12,205.0	13,045.0	13,000.0	13,370.0	TI	-6.6%	-4.8%	6.9%	-0.3%	2.8%
ADI	2,701.1	2,633.7	2,864.8	3,435.1	3,421.4	ADI	-9.8%	-2.5%	8.8%	19.9%	-0.4%
MPWR	213.8	238.1	282.5	333.1	388.7	MPWR	8.8%	11.4%	18.7%	17.9%	16.7%
Gross Margin	2012	2013	2014	2015	2016	R&D % of revenue	2012	2013	2014	2015	2016
Silergy	52.3%	48.2%	45.5%	46.4%	47.6%	Silergy	11.2%	11.2%	11.9%	13.1%	14.1%
FineMade	n.a.	n.a.	30.5%	29.4%	27.8%	FineMade	n.a.	n.a.	8.9%	0.3%	8.7%
SGMicro	45.4%	44.9%	40.1%	40.3%	39.9%	SGMicro	7.4%	7.9%	8.6%	9.6%	10.8%
OnBright	50.4%	50.1%	48.6%	49.7%	50.3%	OnBright	15.4%	15.3%	16.3%	18.2%	18.0%
Maxim	60.4%	61.3%	56.4%	55.1%	56.7%	Maxim	23.0%	21.9%	22.7%	22.6%	21.3%
TI	49.7%	52.1%	56.9%	58.2%	61.6%	TI	14.6%	12.5%	10.4%	9.8%	10.2%
ADI	64.5%	64.3%	63.9%	65.8%	65.1%	ADI	19.0%	19.5%	19.5%	18.6%	19.1%
MPWR	52.9%	53.7%	54.0%	54.1%	54.3%	MPWR	22.8%	20.9%	20.7%	19.8%	18.9%
OP Margin	2012	2013	2014	2015	2016	SG&A % of revenue	2012	2013	2014	2015	2016
Silergy	29.1%	25.6%	23.3%	25.0%	20.2%	Silergy	23.2%	22.6%	22.1%	12.4%	13.3%
FineMade	n.a.	n.a.	12.4%	11.3%	11.9%	FineMade	n.a.	n.a.	15.3%	14.9%	14.2%
SGMicro	21.4%	20.7%	18.8%	18.2%	17.1%	SGMicro	22.0%	22.1%	20.0%	20.4%	21.2%
OnBright	20.1%	22.2%	21.3%	20.7%	22.3%	OnBright	30.4%	27.8%	27.3%	29.0%	9.9%
Maxim	22.3%	24.1%	17.2%	10.3%	14.3%	Maxim	13.4%	13.3%	13.2%	13.4%	13.2%
TI	15.4%	23.2%	30.3%	32.9%	35.9%	TI	14.1%	15.2%	14.1%	13.4%	13.2%
ADI	30.5%	28.6%	26.3%	24.2%	30.0%	ADI	14.7%	15.0%	15.9%	13.9%	13.5%
MPWR	8.1%	10.0%	12.5%	12.3%	14.0%	MPWR	23.4%	22.9%	23.6%	21.7%	21.4%
ROE	2012	2013	2014	2015	2016	Net Margin	2012	2013	2014	2015	2016
Silergy	n.a.	28.5%	25.8%	29.6%	23.0%	Silergy	28.3%	25.4%	24.5%	25.6%	20.6%
FineMade	n.a.	n.a.	n.a.	12.9%	15.4%	FineMade	n.a.	n.a.	10.0%	10.2%	11.8%
SGMicro	n.a.	29.3%	34.1%	34.8%	33.4%	SGMicro	20.9%	19.4%	18.5%	17.9%	18.0%
OnBright	21.5%	28.4%	25.4%	22.7%	25.5%	OnBright	17.7%	19.8%	20.5%	19.3%	20.5%
Maxim	15.3%	18.0%	14.4%	8.7%	10.3%	Maxim	16.1%	18.6%	14.5%	8.9%	10.4%
TI	15.8%	19.5%	26.2%	29.0%	34.8%	TI	13.7%	17.7%	21.6%	23.0%	26.9%
ADI	16.4%	15.1%	13.3%	14.2%	16.8%	ADI	24.1%	25.6%	22.0%	20.3%	25.2%
MPWR	6.3%	7.9%	10.6%	9.8%	13.2%	MPWR	7.4%	9.6%	12.6%	10.6%	13.6%

Source: Company data, Gao Hua Securities Research.

Earnings analysis: EPS CAGR of 27% in 2017E-2020E

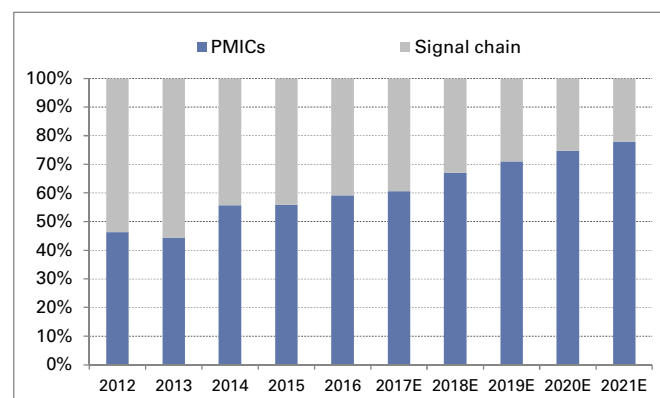
Revenue and profitability: Given its lower R&D intensity and improving product mix, we expect SG Micro's revenue growth to accelerate to 26% in 2018 from 17% yoy in 2017E, and achieve a 23% CAGR in 2017E-2021E, below Silergy's organic growth CAGR of 50% when it was operating in a similar scale in 2013-2015. In 2013-15, Silergy benefited from the rapid growth of the SSD module business mainly driven by the company's focus on PMIC that has a large TAM and a quick ramp-up with the right end-application. Looking forward, SG Micro plans to drive its growth through PMIC design-in for IoT, innovative devices (e.g., sharing bikes and Segway) and battery. SG Micro's GPM increased to 45% in 1H17 due to a temporary reduction of low-margin smartphone business in the portfolio mix, but returned to 41% in 3Q17. The company expects its GPM to improve gradually as the mix of new products increases in the portfolio through 2018E-2021E. We expect its GPM to improve by 2ppt to 43% in 2021E from 41% 2018E and help drive its EPS growth at 27% CAGR in 2017E-2020E.

Exhibit 7: We expect SG Micro to maintain stable growth with improving margin from 2017E-2021E
SG Micro's revenue and gross profit margin



Source: Company data, Gao Hua Securities Research.

Exhibit 8: We expect SG Micro's PMICs will outgrow signal chain in the next few years
SG Micro's revenue mix



Source: Company data, Gao Hua Securities Research.

We expect SG Micro's OPEX as a % of revenue to stay stable at c.23% in 2017E-2021E given its aim to continuously expand its product lines to narrow the gap with global leader TI, and its net margin to improve to 19.9% in 2021E from 17.6% in 2017E driven by GPM improvement and better net interest income. We expect SG Micro's ROE to improve moderately to 18.7% in 2021E, from 14.9% in 2018E, driven by continuous market share gains and net margin recovery.

Balance sheet: SG Micro has a strong balance sheet. It has a very short cash conversion cycle which averaged at 20 days in 2014-2016, below that of Silergy and On Bright at 92 and 107 days, respectively. SG Micro's inventory days were shorter (average of 90 days vs. 103 and 95 days at Silergy and On Bright) and its payable days were much longer (average of 96 days vs. 34 and 65 days at Silergy and On Bright). We attribute SG Micro's short cash conversion to its superior supply chain management at its packaging partners and expect its cash conversion cycle to remain healthy. Although our earnings model does not factor in any potential M&A in the future, we believe that the strong net cash position of over Rmb800mn by 2021E could potentially provide solid support for SG Micro to acquire small and private Chinese analog houses of good quality (in our discussion with SG Micro management, the company indicated its interest in this approach as a potential future strategy).

Capex: We also believe SG Micro will maintain its capex at a low level as it has done in the past given the nature of the fabless analog business model where the focus is on OPEX. We also note that the company has also not indicated any capex plans or initiatives in the near future. We

forecast SG Micro's capex to sales ratio to stay at around 2% and free cash flow to grow at a CAGR of 25% in 2017E-2021E.

Dividends: We also assume a dividend payout ratio of 10% in 2017E-2019E, in line with the management's guidance (there is no past comparison as the company was only listed this year).

Leverage/debt: SG Micro has zero debt as of 3Q17. While we do not rule out the possibility of the company leveraging up in the short to medium term, we believe SG Micro has limited requirement of raising funds in the next few years given the abundant cash at hand.

Exhibit 9: We expect SG Micro's revenue growth to accelerate in 2018 reaping benefits of high investment in R&D in 2015-2017

SG Micro's income statement, 2014-2019E

Income statement (Rmb mn)	2014	2015	2016	2017E	2018E	2019E
Total sales/revenues	326	394	452	529	664	809
yoy %	31%	21%	15%	17%	26%	22%
COGS	(194)	(234)	(270)	(303)	(393)	(474)
Gross profit	132	160	182	226	271	336
yoy %	17%	22%	13%	24%	20%	24%
gross margin %	40.4%	40.7%	40.2%	42.7%	40.9%	41.5%
Total operating expense	(66)	(82)	(98)	(126)	(151)	(184)
EBITDA	68	82	88	104	125	159
EBITDA margin %	20.7%	20.7%	19.6%	19.6%	18.9%	19.6%
EBIT (operating profit)	65	78	84	99	120	152
EBIT margin %	20.0%	19.8%	18.6%	18.8%	18.1%	18.7%
Pre-tax profit (income before tax)	69	80	90	105	135	169
Pre-tax margin %	28%	16%	13%	17%	28%	25%
Net income	60	70	81	93	121	152
yoy %	25%	17%	15%	15%	30%	25%
EPS - basic (Rmb)	1.33	1.56	1.79	1.55	2.02	2.53
EPS - fully diluted (Rmb)	1.33	1.56	1.79	1.55	2.02	2.53
Common dividends declared	(36)	(40)	(45)	(9)	(12)	(15)
Dividends per share (Rmb)	0.80	0.89	1.00	0.15	0.20	0.25
Fully diluted shares outstanding (mn)	45	45	45	60	60	60

Source: Company data, Gao Hua Securities Research.

Exhibit 10: We expect SG Micro's free cash flow to grow at 17%-27% in 2017E-2019E

SG Micro's cash flow statement, 2014-2019E

Cash flow statement (Rmb mn)	2014	2015	2016	2017E	2018E	2019E
Income pre-preferred share dividends	60	70	81	93	121	152
Minority interest add-back	-	-	-	-	-	-
Depreciation and amortization add-back	2	4	5	4	5	7
(Increase)/decrease in working capital :	12	(6)	(10)	(6)	(10)	(11)
Accounts receivable	7	(11)	(11)	(7)	(12)	(13)
Inventory	(20)	3	(3)	(7)	(19)	(17)
Accounts payable	25	2	5	8	21	19
Other operating cash flow items	0	8	3	-	-	-
Cash flow from operations	74	75	78	91	117	149
Capital expenditure	(7)	(13)	(10)	(12)	(15)	(19)
(Acquisitions)/divestitures	-	0	-	5	-	-
Investments	-	-	-	-	-	-
Other investment cash flow items	-	-	-	(415)	-	-
Cash flow from investing	(7)	(13)	(10)	(423)	(15)	(19)
Dividends paid (common and preferred)	(40)	(36)	(40)	(45)	(9)	(12)
Share repurchase/issue (change in common stock)	-	-	-	414	-	-
Increase/(decrease) in short-term debt	1	-	-	(1)	-	-
Increase/(decrease) in long-term debt	-	-	-	-	-	-
Increase/(decrease) in preferred shares	-	-	-	-	-	-
Change in minority interest	-	-	-	-	-	-
Other financing cash flow items	7	2	2	(4)	-	-
Cash flow from financing	(32)	(34)	(38)	364	(9)	(12)
Total cash flow	36	37	43	33	92	118
Free cash flow (Rmb mn)	61	69	78	91	110	140
yoy %	16%	13%	14%	17%	20%	27%

Source: Company data, Gao Hua Securities Research.

Exhibit 11: SG Micro has a strong balance sheet

SG Micro's balance sheet, 2014-2019E

Balance sheet (Rmb mn)	2014	2015	2016	2017E	2018E	2019E
Cash and equivalents	178	215	258	291	383	501
Net receivables	17	28	40	46	58	71
Inventory/stocks	58	55	58	65	84	101
Other current assets	7	6	7	424	424	424
Current assets	259	304	363	825	949	1,097
Gross PP&E/Fixed assets	8	13	17	29	44	63
Less accumulated depreciation	(4)	(6)	(8)	(11)	(16)	(22)
Net PP&E/Fixed assets	5	7	8	18	28	40
Gross intangibles	12	18	21	16	16	16
Accumulated amortization	(3)	(4)	(6)	(8)	(9)	(9)
Net intangibles	10	14	14	8	7	6
Total investments	-	-	-	-	-	-
Other long-term assets	4	4	7	8	8	8
Total assets	278	329	392	859	993	1,152
Accounts payable	58	60	64	72	93	113
Short-term debt and current portion of long-term de	1	1	1	-	-	-
Other current liabilities	15	20	28	(7)	(4)	(1)
Current liabilities	74	80	94	65	89	111
Long-term debt	-	-	-	-	-	-
Other long-term liabilities/creditors	20	28	35	38	38	38
Total long-term liabilities	20	28	35	38	38	38
Total liabilities	93	109	129	103	127	149
Common stock (includes par value, capital surplus,	106	112	115	530	530	530
Retained earnings	82	106	138	222	331	468
Other common equity	(3)	2	9	5	5	5
Total common equity	184	220	263	757	866	1,002
Minority interest (balance sheet)	-	-	-	-	-	-
Total shareholders funds/equity	184	220	263	757	866	1,002
Total liabilities and equity	278	329	392	859	993	1,152
Other balance sheet items	2014	2015	2016	2017E	2018E	2019E
Net receivable days	19	26	32	32	32	32
Inventory days	108	85	78	78	78	78
Net payable days	108	93	87	87	87	87
Cash conversion days	19	18	23	23	23	23
Book value per share (Rmb)	4	5	6	13	14	17
Net working capital (Rmb mn)	185	224	269	761	860	985
Net debt (Rmb mn)	(177)	(214)	(257)	(291)	(383)	(501)
Cash dividend payout	60%	57%	56%	10%	10%	10%
ROE	34.1%	34.8%	33.4%	18.2%	14.9%	16.3%

Source: Company data, Gao Hua Securities Research.

Analog firm trading at a premium; expect further rerating

We initiate SG Micro with a Buy rating and a 12-month target price of Rmb116. We value our A-share China fabless companies using a long-term discounted P/E methodology in order to capture long-term growth. For SG Micro, we apply its A-share peers' average 2018E P/E of 40X to 2021E EPS and discount it back to 2018 using a peer average cost of equity of 11.3%, as shown in Exhibit 12. Our target price of Rmb116 implies a 2018E P/E of 57X and 23% upside potential.

SG Micro is trading at a GHe P/E of 46.5X 2018E, vs. China A-share peer (Wind consensus) average of 40X. We note that analog stocks often enjoy a valuation premium over other semiconductor companies due to analog's diversified product and customer bases. For example, in the United States, analog stocks are trading at a 30% premium to the average 2018E P/E for other semiconductor design firms while posting a growth rate that is 600 bps lower (Exhibit 3). Hence, we believe SG Micro's valuation premium over other A-share semiconductor stocks is justified.

We believe our implied 2018E P/E of 57X should be achievable in the next 12 months based on the following reasons:

- 1) We expect its new PMIC products with higher ASP to boost the earnings growth from 2017 after significant investment in R&D since 2015; the company is shifting its business toward new applications with high margins, such as automobiles, medical equipment, industrial controls, and IoT from its current high exposure to smartphone (40%-45% of total revenues).
- 2) As one of China's leading analog brands, SG Micro benefits from the trend of adopting "Made in China" products by customers like Huawei and ZTE, which we believe will help it gain market share from global competitors (namely TI, ADI and Maxim).
- 3) We believe the company can maintain its technology advantage given its strong design team. SG Micro continues to attract top engineers by offering competitive pay package and has a low turnover rate (below 5% since inception in 2007). A stable team is crucial for an analog company compared to a logic design house; analog design houses require more years of apprenticeship before a new analog professional can become productive.

Exhibit 12: Our 40X long-term discounted P/E is derived from peers' average 2018E consensus P/E

SG Micro's peers P/E consensus comparison

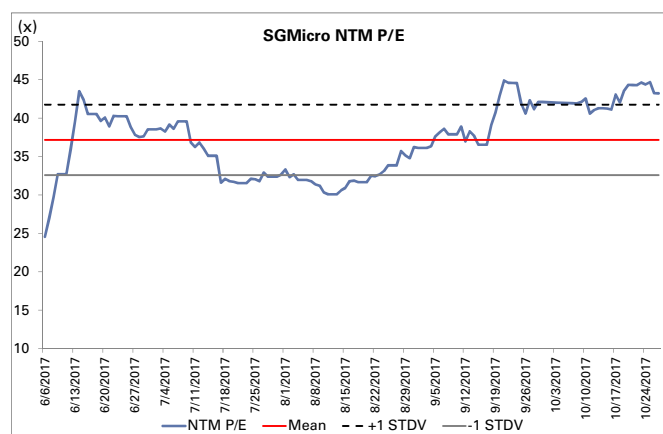
Company	Ticker	MV	P/E				ROE	COE delevered
		(US\$ mn)	2016	2017E	2018E	2019E	2018E	(YTD)
Fabless								
Allwinners	300458.SZ	1,560	69	51	41	28	11%	12.6%
Goodix	603160.SS	7,910	61	44	36	31	27%	11.7%
Goke Microelectronics	300672.SZ	1,202	155	89	45	38	13%	n.a.
SinoWealth	300327.SZ	1,137	70	51	36	24	20%	9.5%
SG Micro	300661.SZ	867	71	60	46	37	24%	10.4%
GigaDevice	603986.SS	5,010	187	70	43	33	30%	12.6%
Average		2,948	102	61	40	32	21%	11.3%
St. dev.		2,880	55	16	4	5	8%	1.4%

Note: All estimates for the above companies including SG Micro are from Wind.

Source: Wind.

Exhibit 13: SG Micro's average NTM P/E since listing is 37X

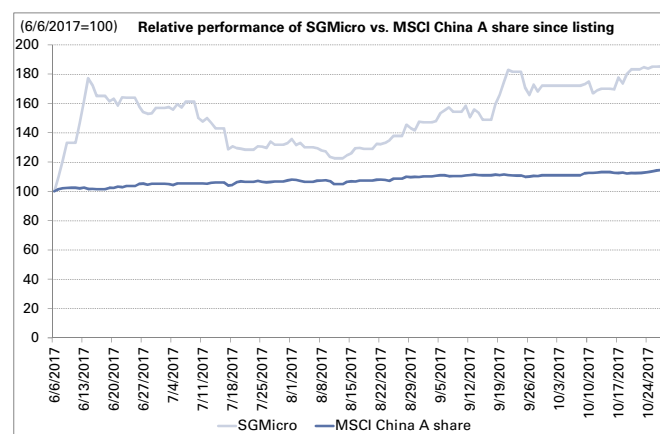
SG Micro's NTM consensus P/E



Source: Wind.

Exhibit 14: It has outperformed the index since listing in June 2017

SG Micro's relative performance vs. MSCI China A share



Source: Wind.

Exhibit 15: Greater China technology and telecom coverage comparison table

GS semiconductor	Ticker	Ratings	Market Price	Target Price	Market cap US\$ mn	Trading P/E		PEG	Trading P/B		ROE	
						2017E	2018E		2017E	2018E	2017E	2018E
SG Micro (Rmb)	300661.SZ	Buy	94	116	867	60.6	46.5	1.5	7.5	6.5	18.2%	14.9%
Goodix (Rmb)	603160.SS	Neutral	115	125	7,910	48.6	37.1	1.1	14.6	11.1	33.6%	33.9%
Hua Hong (HK\$)	1347.HK	Buy	14.88	16.90	1,980	14.6	12.7	0.8	1.3	1.2	8.9%	9.6%
MediaTek (NT\$)	2454.TW	Buy	331.00	356.00	17,222	27.5	16.5	0.2	2.0	1.9	7.5%	11.5%
Silergy (NT\$)	6415.TW	Buy	678.00	636.00	1,723	28.5	22.5	0.9	5.6	4.7	22.0%	22.8%
TSMC (NT\$)	2330.TW	Neutral	241.00	213.00	206,811	18.3	17.0	2.3	4.1	3.7	23.5%	22.9%
TSMC-ADR (US\$)	TSM	Neutral	41.64	35.10	215,730	19.1	17.8	2.5	4.3	4.3	23.5%	22.9%
UMC (NT\$)	2303.TW	Neutral	15.70	14.10	6,747	20.2	18.0	1.5	0.9	0.9	4.4%	4.9%
UMC-ADR(US\$)	UMC	Neutral	2.58	2.30	6,694	20.1	18.0	1.5	0.9	0.9	4.4%	4.9%
SMIC (US\$)	SMI	Sell	8.76	4.60	7,400	37.0	25	0.6	1.7	1.6	4.9%	6.5%
SMIC-H shares (HK\$)	0981.HK	Sell	14.16	7.20	8,463	38.3	26.3	0.6	1.7	1.6	4.9%	6.5%
Parade (NT\$)	4966.TWO	Neutral	557.00	515.00	1,408	21.3	19.8	2.6	4.9	4.4	25.5%	24.4%
Average						29.5	23.1	1.3	4.1	3.6	15.1%	15.5%
Median						24.4	18.9	1.3	3.0	2.8	13.5%	13.2%
STD						14.1	9.7	0.8	3.9	3.0	10.4%	9.6%

Note: Prices as of November 09, 2017 market close.

Source: Wind, Datastream, Gao Hua Securities Research.

Introducing M&A rank for SG Micro

Across our global coverage, we examine stocks using an M&A framework, considering both qualitative factors and quantitative factors (which may vary across sectors and regions) to incorporate the potential that certain companies could be acquired. We then assign an M&A rank as a means of scoring companies under our rated coverage from 1 to 3, with 1 representing high (30%-50%) probability of the company becoming an acquisition target, 2 representing medium (15%-30%) probability and 3 representing low (0%-15%) probability. For companies ranked 1 or 2, in line with our standard departmental guidelines we incorporate an M&A component into our target price. M&A rank of 3 is considered immaterial and therefore does not factor into our price target, and may or may not be discussed in research.

In the Asia technology sector, we examine companies' potential as M&A targets based on the assessment of **(1) impediments**, such as shareholder structure/preferences, industry regulations/government policies, and takeover defense that could prevent a transaction from occurring, **(2) qualitative factors**, including: (i) attractiveness of technology, (ii) attractiveness of customers, (iii) cost synergy potential, (iv) other/intangible value; and **(3) quantitative factors**, including (i) market cap, and (ii) valuations. For details of our Asia technology M&A framework, see our report *Pan Asia: Technology: Navigating the noise (6): Introduce M&A framework, update roadmap*, dated July 4, 2016 for details.

Shareholder structure and potential impediments

We gauge whether there are any impediments to M&A, because if there are, a company is unlikely to become an M&A target even if it ranks 1 or 2 on qualitative/quantitative criteria.

When assessing potential impediments we take into consideration:

(1) Major shareholder preferences: We assume that shareholders with a 20% or greater stake have a significant influence, or a blocking stake, and take into account any potential actions by major shareholders in the event of a possible acquisition by a third party (hostile or otherwise), or if they have announced a preference to raise their stake in the company;

(2) Regulatory and or government policy impediments; and

(3) Possible takeover defense measures such as a poison pill.

We assign a "No" qualification if one or more of the three considerations above are applicable and a "Yes" qualification if these considerations do not apply.

Qualitative assessment criteria

1) Technology: We look at whether or not a company has attractive technology capable of generating future value, as well as its technological capabilities and intellectual property rights. We assign a rank of "3" if its technology is unattractive or moderately attractive, "2" if it is attractive and "1" if it is very attractive.

2) Customer base: We look at whether or not a company has an attractive customer base and product applications. We also take customer retention and end-market exposure (including sales channels) into account. We assign a rank of "3" if its customer base and product applications are unattractive or moderately attractive, "2" if they are attractive and "1" if they are very attractive.

3) Cost synergies: We look at prospects for growth in business scale and scope for profit margin/ yield improvement via acquisition of an M&A target company. We assign a rank of "3" if there is low or some possibility of synergies, "2" if there is high possibility, and "1" if there is very high possibility.

4) Other: We look at whether or not a target company possesses attractive assets, including brand strength, outstanding management/employees, and intangible assets. We assign a rank of “3” if they are unattractive or moderately attractive, “2” if they are attractive, and “1” if they are very attractive.

Quantitative assessment criteria

1) Market cap: We rank the companies in four tiers based on the assumption that the smaller a company is, the easier it is to acquire. We also take regional qualities (such as differing market cap ranges between regions) into account.

2) Valuation: We look at whether a target company’s three-year average P/E and EV/DACF are below the industry/peer average for the same period, as we believe companies trading at a discount to peers are more likely to be acquired.

We assign a rank of “3” if the company appears overvalued relative to its respective industry peer group or largely in line with the peer average, “2” if its valuation is discounted, and “1” if its valuation is significantly discounted. We take into account differing valuation multiple ranges between the companies depending on their region and their peers.

Within this framework, we assign an M&A rank of ‘3’ to SG Micro

Our M&A rank of ‘3’ for SG Micro mainly reflects its protective shareholding structure (nearly **46%** held by **Chairman Mr. Zhang Shilong and other shareholders acting in concert**). Moreover, as Mr. Zhang has laid out a very long-term vision/plan for the company, we believe he is likely to retain a controlling stake as long as possible. Also, we believe the company is more likely to be an acquirer rather than a target as the former would be a good way to quickly expand product lines to compete with global peers, and the company also indicated that it could consider acquisitions as a strategy.

Exhibit 16: We assign an M&A rank of ‘3’ to SG Micro
SG Micro’s M&A score summary

Company name	Shareholders' structure				Qualitative score (1-3)				Quantitative score (1-3)		Total score	M&A Rank
	% of free float	Shareholders' intention	No regulatory barrier	No anti-takeover measure	Technology	Customer base	Cost synergy	Other intangible asset	Market cap	Valuation unlocking		
SG Micro	25%	No	Yes	Yes	2	3	2	3	2	3	2.5	3

Source: Gao Hua Securities Research.

Key risks to our investment thesis

We identify the following downside risks:

- 1) Intensified competition among Chinese analog companies:** We are aware of several sizable Chinese analog names, and although the market is fragmented, we view the potential increase competition will be the key risk. For example, Silergy is the Chinese leader and focuses on DC/DC PMICs; On Bright focuses on AC/DC PMIC; 3PEAK strives to develop high-end signal-chain products; FineMade makes PMICs for LED and battery applications, etc. Thus, if Silergy (or other companies that are currently focusing on PMICs) also start to produce signal chain products, we believe the competition may intensify.
- 2) Delay in new products launch:** SG Micro's new products should have higher gross margin, if the launch delays or sell-through is below our expectations, the margin recovery (to global peers' average level) road will be challenging.
- 3) Supply chain management risk:** TSMC provides 99% of wafer supply to SG Micro, and SG Micro's new products with better cost structure will also rely on TSMC's advanced technology. Although SG Micro is actively looking to cooperate with other suppliers, any capacity issue from TSMC could potentially cause problems for the company's normal operation given the high reliance on wafer supply from TSMC.
- 4) Greater than expected employee turnover:** High-level engineers and engineer managers are very sought after in China. Any slowdown in the growth of the company and decline in employee stock compensation can potentially negatively impact the employee turnover especially among senior engineers.

Appendices

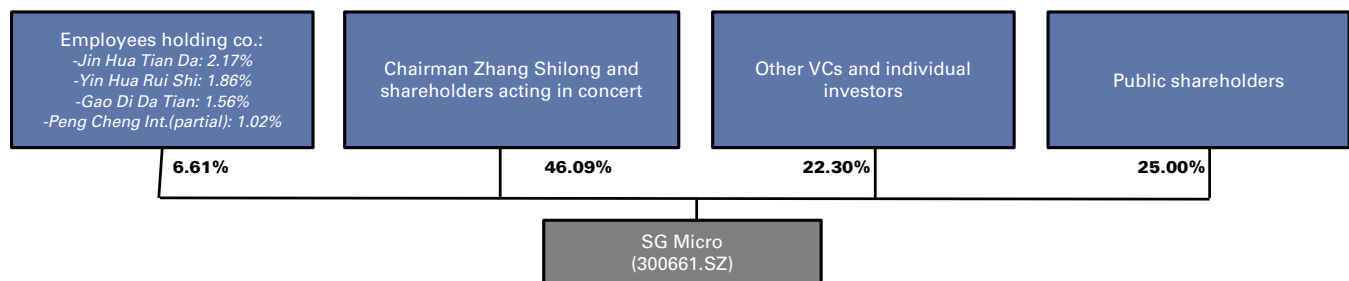


Ownership structure

SG Micro has a strong founder and offers generous stock compensation to employees. Currently, 1) founder Dr. Zhang and shareholders acting in concert and 2) employees own around 46.1% and 7% of total shares, respectively.

Exhibit 17: Chairman Dr. Zhang Shilong and shareholders acting in concert own 46.1% of SG Micro's shares

SG Micro's shareholding structure as of 3Q17



Source: Company data, Gao Hua Securities Research.

Main applications of SG Micro's products

Exhibit 18: SG Micro's PMIC and signal chain products have been widely used in various applications

Product types and Descriptions	Signal Chain Products				PMIC
	Operational Amplifiers (OpAmps)	Comparator	Audio/Video Driver	Analog Switch	
	A DC-coupled high-gain electronic voltage amplifier that can magnify the voltage and/or the current of an input signal to a high-power output. It needs an external power source.	Considered as a special set of OpAmps: a device that compares two voltages or currents and outputs a digital signal indicating which is greater or lesser.	An IC which provides an interface function between a microprocessor, microcontroller, ASIC or general-purpose peripheral interface and a particular type of audio or video device.	A device that can conduct analog or digital signals in either direction when on and isolates the switched terminals when off.	ICs for managing power requirements of the host system which refer to a wide range of chips. At the most basic level, PMICs take an input current/voltage and transform it to a required output to deliver the necessary power (no more and no less) for running a semiconductor.
Products and Applications	#Nano Power OpAmps Toll Booth Tags Wearable Products Temperature Measurement Battery Powered System #Micro Power OpAmps ASIC Input or Output Amplifier Sensor Interface Piezo Electric Transducer Amplifier Medical Instrumentation Mobile Communication Audio Output Portable Systems Smoke Detectors Phones Notebook PC PCMCIA Cards Battery-Powered Equipment #Application-Specific OpAmps TFT-LCD Drive Circuits Electronic Notebooks Electronic Games Touch-Screen Displays Wireless LANs Office Automation Personal Communication Devices Portable Instrumentation A/D Converter Buffer Active Filters #High Speed OpAmps Video Line Driver Video-on-Demand Set-Top Boxes Surveillance Video Systems CCD Imaging Systems Digital Cameras	#Nano Power Comparators RC Timers Window Detectors IR Receiver Multivibrators Alarm and Monitoring Circuits #High Speed Comparators Line Receivers Battery-Powered Systems Threshold Detectors/Discriminators 3V/5V Systems Zero-Crossing Detectors Sampling Circuits #High Precision OpAmps Temperature Measurements Pressure Sensors Precision Current Sensing Electronic Scales Strain Gauge Amplifiers Medical Instrumentation Thermocouple Amplifiers Handheld Test Equipment #Low Noise OpAmps Sensors Audio Active Filters A/D Converters Communications Test Equipment Cellular and Cordless Phones Laptops and PDAs Photodiode Amplification Battery-Powered Instrumentation	#Headphone Drivers Headphone Amplifier Microphone Preamplifier Notebooks Mobile Phone & PDAs GPS #Audio Drivers Set-Top Box LCD TV Blue-Ray DVD-Players Home Theater in a Box #Audio Power Amplifiers Mobile Phones, PDAs, MP4s, PMPs Portable and Desktop Computers Desktops Audio System Multimedia Monitors #Video Drivers Video Amplifiers Cable and Satellite Set-Top Boxes Video-on-Demand Personal Video Recorders DVD Players SDTVs Other Portable Products #Click-Pop Noise Suppressors Mobile Phones Portable Gaming Consoles Portable Media Players Notebooks Logic IC #Small Logic Series products	#Analog Switches Routes Signals for USB 2.0 Full-Speed Portable Instrumentation Battery-Operated Equipment Computer Peripherals Cell Phones, PDAs, MP3s #Complex Switches SD/SDIO and MMC Two Port MUX PC VGA Video MUX/Video Systems Audio and Video Signal Routing #Load Switches Motherboard USB Power Switch USB Device Power Switch Hot-Plug Power Supplies Load Switch #OVP ICs Smart Phones, Mobile Phones Low-Power Handheld Devices #µP Supervisory Circuits Battery-Powered Computers/Controllers Automotive Medical Equipment Embedded Controllers Critical µP Monitoring Set-Top Boxes Computers #Li-Ion Battery Chargers Mobile Phones & PDAs etc. Stand-Alone Chargers #MOSFET Drivers	#Low-dropout (LDO) volt. regulator Battery-Powered Equipments Communication Equipments Audio/Video Equipments <i>For examples:</i> Telephones PCMCIA Cards Modems & Wireless LAN MP3 Players #DC/DC Converters PDA, Pocket PC and Smart Phones USB Powered Modems CPUs and DSPs PC Cards and Notebooks Digital Cameras DSP Core Supplies Distributed Power Systems Battery Chargers Flat Panel TVs Set-Top Boxes Pre-Regulator for Linear Regulators Cigarette Lighter Powered Devices DVD/PVR Devices Single-Cell Li Battery Powered Products Personal Medical Products LCD Bias GaAs Bias for RF Power Amps Sensor Supply in Portable Instruments Bipolar Amplifier Supply Keypad Backlight White LED Torch, Flash for Cell Phones, DSCs and Camcorders Generic Lighting, Flash & Strobe Applications General Purpose High Current Boost

Source: Company data, Gao Hua Securities Research.

信息披露附录

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每项指标的准确计算方式可能随着财务年度、行业和所属地区的不同而有所变化，但标准方法如下：

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