

Semiconductors

Overweight

Company	Rating	TP (KRW)
Samsung Electronics	BUY	1,800,000

Samsung Electronics bets on 14nm FinFET

Samsung Electronics and Globalfoundries announce 'One design, multi sourcing' cooperation

On April 18, Samsung Electronics (Samsung) and Globalfoundries announced a strategic partnership for 14nm FinFET, a next-generation logic technology. Samsung will provides proprietary 14nm FinFET technology licenses to Globalfoundries, thereby reinforcing 'one design, multi sourcing' competitiveness. Through the partnership, Globalfoundries' New York fab should use the same technology as Samsung's Hwasung S3 line (mass-production at end-2014) and the Texas Austin fab. And, we expect 14nm FinFET production capacity to increase significantly. Accordingly, Samsung should start mass-production of 14nm FinFET at end-2014, which should increase foundry competition with TSMC.

Samsung system LSI's bet on 14nm FinFET

Samsung and Globalfoundries, along with IBM, have formed 'Common Platform' to cooperate in 14nm FinFET technology process development. Specifically, Samsung has developed 14nm FinFET, following 128Mb SRAM, which is applied in the proprietary 14nm FinFET technology. Of note, Samsung mainly produces application processors (AP) at the 28/32nm process. Samsung believes the next-generation 20nm process has lower competitiveness compared to present 28nm process in terms of performance improvement, so it is proceeding straight to 14nm FinFET. If mass production of this technology is adopted faster than TSMC by end-2014, we believe Samsung system LSI's bet should succeed.

Apple's AP to return to Samsung at 14nm after TSMC at 20nm

Apple is expected to source next-generation A8 AP from TSMC after 3Q14. Samsung has exclusively provided iPhone AP since the first model, but TSMC will provide chips after increasing 20nm process capacity. As such, the next iPhone model (expected to roll out in September) should adopt a 20nm AP, so Samsung's system LSI sales to Apple should fall. But as Samsung ramps up 14nm FinFET by yearend and cooperates with Globalfoundries, Samsung is more likely to supply 14nm AP to Apple from 2015. Overall, 14nm FinFET competitiveness should benefit Samsung's system LSI earnings and, more importantly, should catalyze share price upward.

FinFET output to fuel foundry competition among TSMC, Samsung and Intel in 2015

In the foundry market, competition has heated up as Samsung and Intel actively pursued TSMC. And, the leadership battle is fierce for next-gen semiconductors based on FinFET technology. TSMC, the foundry leader, is scheduled to apply FinFET technology at 16nm in early-2015. Common Platform is targeting 14nm mass production and foundry output by end-2014. Meanwhile, Intel has applied FinFET technology on the 22nm Ivybridge CPU since 2012. And following Haswell in 2013, Intel will start mass production of Broadwell at 14nm in 2014. Based on CPU production technology, Intel plans to utilize 14nm FinFET for the foundry business following 22nm FinFET.

Table 1	I. Global ranking	g by foundry			(USD mn, %)
Rank	Company	Country	Sales (2013)	Sales growth	Market share
1	TSMC	Taiwan	19,850	17%	47%
2	Globalfoundries	U.S	4,261	6%	10%
3	UMC	Taiwan	3,959	6%	9%
4	Samsung	Korea	3,950	15%	9%
5	SMIC	China	1,973	28%	5%
6	Powerchip	Taiwan	1,175	88%	3%
7	Vanguard	Taiwan	713	23%	2%
8	Huahong Grace	China	710	5%	2%
9	Dongbu	Korea	570	6%	1%
10	Tower Jazz	Israel	509	-20%	1%

Source: IC Insights, Korea Investment & Securities



Source: Company data, Korea Investment & Securities

Table 2. Samsung and Apple's AP portfolio

Release Year	AP	Tech node	Makers	CPU	Core	Speed	Adopted model
2010	A4	45nm	Samsung	A8 x 1	Single	1.0Ghz	iPhone 4
2011	A5	45nm	Samsung	A9 x 2	Dual	1.0Ghz	iPhone 4S
2012	A6	32nm	Samsung	A9 x 2	Dual	1.3Ghz	iPhone 5
2013	A7	28nm	Samsung	A15 x 2	Dual	1.3Ghz	iPhone 5S
2014	A8	20nm	TSMC	A15 x 2	Dual	1.3Ghz	iPhone 6
2015	A9	14nm FF	Samsung / Globalfoundries	NA	NA	NA	iPhone 7

Source: Company data, Korea Investment & Securities









Note: TSMC's customers include AMD, Qualcomm, Broadcom, nVidia, Mediatek and TI Source: Korea Investment & Securities

Note: TSMC's customers include AMD, Qualcomm, Broadcom, nVidia, Mediatek and TI Source: Korea Investment & Securities

Table 3. Coverage valuation

Recommendation & TP				Earnings & Valuation								
Company				Sales	OP	NP	EPS	BPS	PE	PB	ROE	EV/EBITDA
				(W bn)	(W bn)	(W bn)	(KRW)	(KRW)	(X)	(X)	(%)	(X)
Samsung	Recommendation	BUY	2012A	201,104	29,049	23,185	154,020	731,458	9.9	2.1	21.6	4.9
Electronics	TP (KRW)	1,800,000	2013A	228,693	36,785	29,821	197,841	892,045	6.9	1.5	22.8	3.4
(005930)	Price (Apr 17, KRW)	1,370,000	2014F	236,938	35,721	29,863	197,795	1,044,635	6.9	1.3	19.0	3.2
	Market cap. (W bn)	201,800	2015F	248,564	37,206	31,509	208,694	1,202,737	6.6	1.1	17.1	2.9
			2016F	258,507	40,185	34,169	226,315	1,373,715	6.1	1.0	16.1	2.6

Source : Korea Investment & Securities

Glossary

• FinFET : FinFET is a 3D transistor technology, which can overcome limitations of the present planar transistor. The technology taps double-gate, which resembles a fish's fin. FinFET technology can suppress power leakage, enabling performance improvements at half of the voltage levels of current planar transistors. In particular, FinFET technology is power-efficient for SoCs for mobile devices.

Semiconductors

Changes t	o recommendation	and price	target
-----------	------------------	-----------	--------

Company (Code)	Date	Recommendation	Price target
Samsung Electronics (005930)	04-25-12	BUY	W1,950,000
	06-18-12	BUY	W1,700,000
	11-15-12	BUY	W1,850,000
	01-09-13	BUY	W2,000,000
	07-28-13	BUY	W1,800,000
	10-27-13	BUY	W2,000,000
	01-08-14	BUY	W1,800,000
			2,500,000
r			2,000,000
how how have	Munner	man	1,500,000
		-	1,000,000
		_	500,000
Apr-12 Aug-12 De	ec-12 Apr-13 Au	ig-13 Dec-13 Apr-1	4

- Guide to Korea Investment & Securities Co., Ltd. stock ratings based on absolute 12-month forward share price performance
 - BUY: Expected to give a return of +15% or more
 - Hold: Expected to give a return between -15% and 15%
 - Underweight: Expected to give a return of -15% or less
 - · Korea Investment & Securities does not offer target prices for stocks with Hold or Underweight ratings.

Guide to Korea Investment & Securities Co., Ltd. sector ratings for the next 12 months

- Overweight: Recommend increasing the sector's weighting in the portfolio compared to its respective weighting in the Kospi (Kosdaq) based on market capitalization.
- Neutral: Recommend maintaining the sector's weighting in the portfolio in line with its respective weighting in the Kospi (Kosdaq) based on market capitalization.
 Underweight: Recommend reducing the sector's weighting in the portfolio compared to its respective weighting in the Kospi (Kosdaq) based on market
- capitalization.

Analyst Certification

I/We, as the research analyst/analysts who prepared this report, do hereby certify that the views expressed in this research report accurately reflect my/our personal views about the subject securities and issuers discussed in this report. I/We do hereby also certify that no part of my/our compensation was, is, or will be directly or indirectly related to the specific recommendations or views contained in this research report.

Important Disclosures

As of the end of the month immediately preceding the date of publication of the research report or the public appearance (or the end of the second most recent month if the publication date is less than 10 calendar days after the end of the most recent month), Korea Investment & Securities Co., Ltd., or its affiliates does not own 1% or more of any class of common equity securities of Samsung Electronics.

There is no actual, material conflict of interest of the research analyst or Korea Investment & Securities Co., Ltd., or its affiliates known at the time of publication of the research report or at the time of the public appearance.

Korea Investment & Securities Co., Ltd., or its affiliates has not managed or co-managed a public offering of securities for Samsung Electronics in the past 12 months;

Korea Investment & Securities Co., Ltd., or its affiliates has not received compensation for investment banking services from Samsung Electronics in the past 12 months; Korea Investment & Securities Co., Ltd., or its affiliates does not expect to receive or intend to seek compensation for investment banking services from Samsung Electronics in the next 3 months.

Korea Investment & Securities Co., Ltd., or its affiliates was not making a market in Samsung Electronics's securities at the time that the research report was published.

Korea Investment & Securities Co., Ltd. does not own over 1% of Samsung Electronics shares as of April 17, 2014. Korea Investment & Securities Co., Ltd. has not provided this report to various third parties. Neither the analyst/analysts who prepared this report nor their associates own any shares of the company/companies covered in this report as of April 17, 2014. Korea Investment & Securities Co., Ltd. has issued ELW with underlying stocks of Samsung Electronics and is the liquidity provider.

Prepared by: Won Seo

This report was written by Korea Investment & Securities Co., Ltd. to help its clients invest in securities. This material is copyrighted and may not be copied, redistributed, forwarded or altered in any way without the consent of Korea Investment & Securities Co., Ltd. This report has been prepared by Korea Investment & Securities Co., Ltd. and is provided for information purposes only. Under no circumstances is it to be used or considered as an offer to sell, or a solicitation of any offer to buy. We make no representation as to its accuracy or completeness and it should not be relied upon as such. The company accepts no liability whatsoever for any direct or consequential loss arising from any use of this report or its contents. The final investment decision is based on the client's judgment, and this report cannot be used as evidence in any legal dispute related to investment decisions.