

## Revenue and Margin Trump MU F2Q Expectations But Charges Crater Earnings: Raising Estimates, Reiterate Buy

Diluted Shares(mil):	1,016.0	Closing Price 3/21/13	FYE August	FY12 act	FY13	FY14
Market Cap(\$mil):	\$9,215	\$9.07	Revenue(\$mil)	\$8,234	\$8,306	\$9,718
Avg Volume(,000):	28,142		EPS	(\$1.04)	(\$0.33)	\$1.43
Net Cash/Share:	(\$1.40)	Recommendation/Target	Price/Sales	1.1	1.1	0.9
Tangible Book/Share	\$6.76	Buy/\$15	Price/EPS	NM	NM	6.3

Micron Technology is a leading supplier of DRAM, NAND and NOR semiconductor memory products.

**Summary:** MU exceeded revenue and margin expectations for February-ended F2Q due to better than expected DRAM supply from its Inotera joint-venture and favorable market prices for DRAM and NAND. However, these strengths were offset by charges of \$194M associated with pending acquisitions and divestitures resulting in a loss of (\$0.28) per share. I continue to believe MU is extremely well positioned to disproportionately benefit from a favorable market environment for DRAM and NAND suppliers with its pending acquisition of DRAM competitor Elpida and the restructuring of its Inotera joint-venture. I am raising my estimates, maintaining my 12-month target price of \$15 based on 1.5-times FY14 sales, and reiterate my Buy recommendation on the shares.

**F2Q Review:** MU revenue and margin was healthy enough last quarter for the company to deliver an EPS loss around (\$0.10) which would have beat consensus and approached both break-even and the high-end of the range of published estimates as I had expected. The strength came from a better than expected supply of DRAMs and, to a lesser extent, favorable market prices for both DRAM and NAND. Most of the upside came from the company's joint-venture DRAM manufacturer, Inotera, and the renegotiation with partner Nanya who decided to forego its half of output beginning January 1 resulting in an excess supply of PC-oriented DRAM. The good news was that this accounted for more bits shipped and a lower average cost per bit, since these are low-cost parts. The bad news was that PC-oriented DRAMs sell for lower prices, which lowered overall DRAM ASPs due to mix—and an ASP change of -10% that was much lower than the 'best-case' scenario I previewed that could have lead to a gain of a few points. NAND ASPs were pretty good at -1% sequentially, although once again lower than my 'best-case' scenario preview primarily due to a richer mix of SSDs that sell at lower ASPs per bit, albeit at comparable margins.

Unfortunately, all this upside was offset by charges. First, an operating expense charge of \$62M for the loss associated with the pending sale of its 200mm CMOS image sensor wafer fab in Italy. Second, a non-operating loss of \$120M from the Japanese yen hedge related to the pending acquisition of Elpida. The deal was negotiated in yen, Micron hedged the currency, the yen recently took a dive, the loss reflects half the savings from the lower purchase price, but the lower purchase price won't register on the balance sheet until the deal closes mid-year. Third, was a \$31M loss on partial redemption of 2014 converts that were refinanced with a \$600M offering due 2033. And fourth was a tax benefit of \$19M associated with non-US entities. The sum of 1, 2 and 3 minus 4 equals \$194M.

FYE August	2QF13					
	Estimate	Actual	EPS Impact	Guidance	Consensus	Range
DRAM Bits Shipped	25.0%	38.0%		+2-digit %		
DRAM ASP change	-20.0%	-10.0%				
DRAM Cost/bit change	-13.0%	-18.0%		-low 2-digit%		
NAND Bits Shipped	13.0%	13.0%		+low teen%		
NAND ASP Change	-7.0%	-1.0%				
NAND Cost/bit change	-8.0%	-5.0%		-hi 1-digit%		
Revenue (\$ mil)	1,853	2,078	\$0.21		1,920	1,820-2,120
Revenue Growth	1.1%	13.3%			4.7%	-0.7%+15.6%
Gross Margin	8.6%	17.6%				
Opn Expenses (\$ mil)	365	389	(\$0.02)	355-370		
Interest Income	(58)	(53)		(55-60)		
Minority Interest/non-opn	(20)	(219)	(\$0.20)	(20)		
Taxes (\$ mil)	15	(9)	\$0.03	10-15		
Diluted Shares (mil)	1,014.0	1,016.0		1,014.0		
EPS reported	(\$0.30)	(\$0.28)	\$0.02		(\$0.19)	(\$0.39)-\$0.03

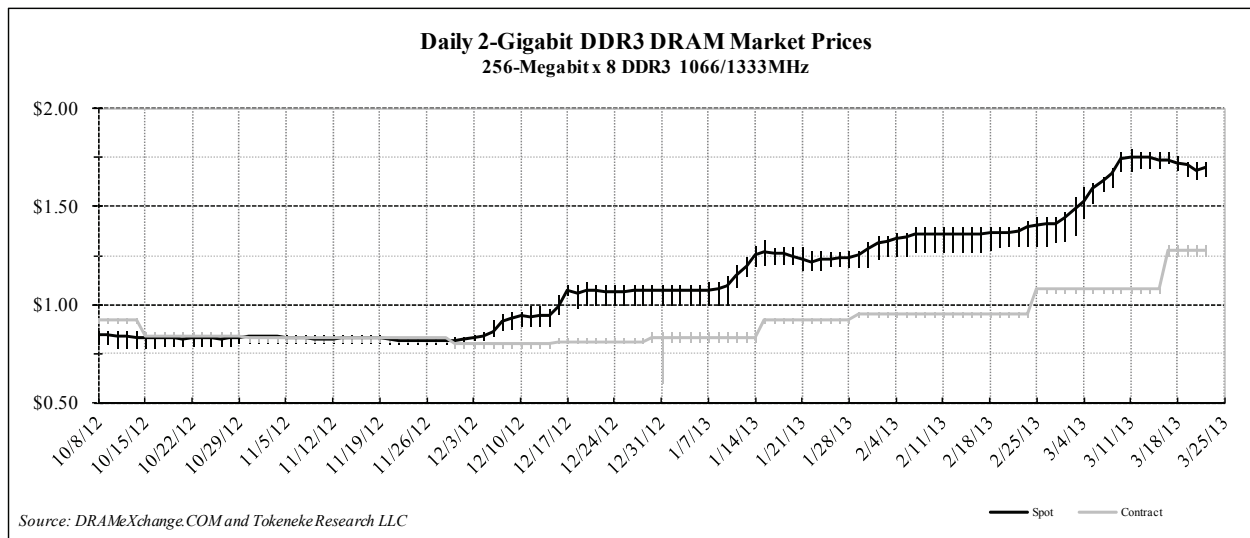
Gross margin grew by 600bps to 18% on cost savings, SG&A was lower than expected due to legal expenses, cash from operations totaled \$234M, cap ex was \$353M, depreciation at \$485M, and cash declined by \$43M to \$2,228M.

**NOR Lags:** NOR flash revenue declined seasonally by -14% on both units and ASPs from feature phone weakness and sales and costs are expected to be flat this quarter. 45nm is ramping and accounts for over 60% of high density.

**Dynamic RAMs:** DRAM sales grew by +24% to \$894M or 43% of total sales on +38% bit growth and a -10% decline in ASPs, while gross margin improved by 600 basis points due to a cost reduction of -18%—most of which was due to Inotera. A record 200M gigabit equivalents shipped: the 4Gb DDR3 in 30nm accounted for over half of bit sales last quarter and the device continues to ramp, DDR3 volumes surpassed DDR2 for the first time, DDR4 is sampling, RLD RAM continues to gain momentum, and Hybrid Memory Cube design activity is robust. 30nm bit cross-over to 42nm occurred last quarter, 25nm volume is expected 2H13, and 20nm samples are expected by year-end. Industry bit growth is expected at +20+30% this year as technological complexity stretches out advances. Networking bit shipments grew by +20% to account for 17% of DRAM sales and the 30nm mix is expected to increase as MU expands beyond traditional large OEMs to smaller customers and distributors. US LTE deployment and data center networking remain strong. MU claims low-power DDR2 design wins at two of the top five smartphone OEMs and is sampling low-power DDR3 parts to SoC partners as it shifts to smartphones and tablets from feature phones to blend the best of Elpida and Micron product and technology ahead of the combination.

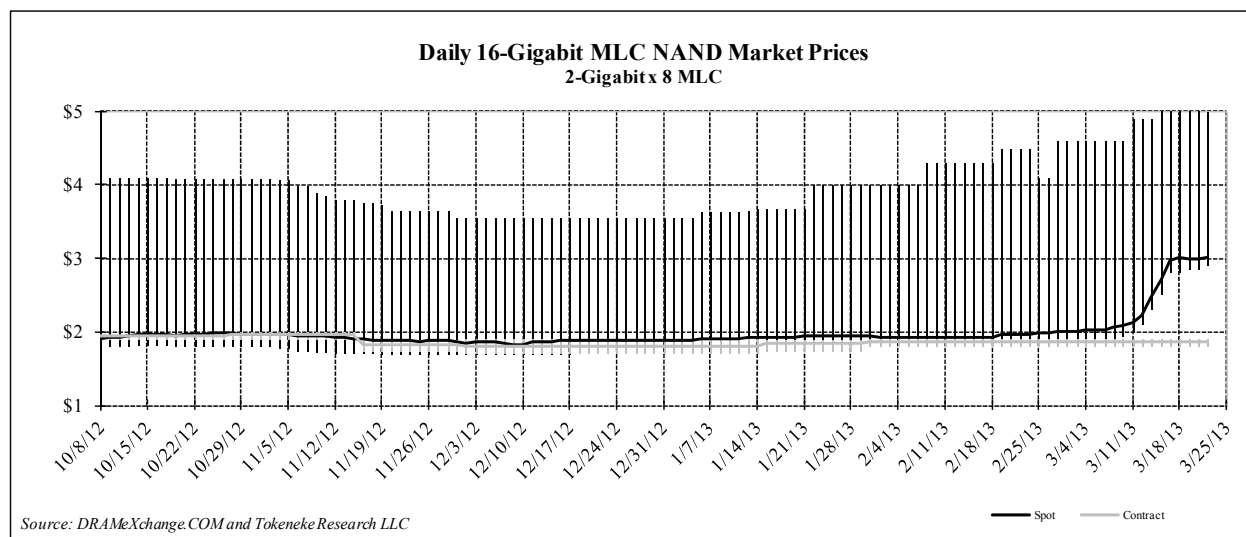
MU restructured its Inotera DRAM joint-venture supply agreement with partner Nanya that effectively doubled its wafer output effective January 1 by taking Nanya’s half. This accounted for the increase in DRAM bit output, lower cost, richer mix of PC-oriented product (to 18% of total sales from 13%), and lower ASPs last quarter. Inotera wafers to MU increased by +26% last quarter and there was no sharing of R&D costs with Nanya. Recall that the revised agreement for wafer costs is based on DRAM market prices rather than Inotera’s cost, and MU has the flexibility to manufacture product other than PC-oriented DRAMs there. Inotera has nearly completed its ramp of 30nm technology and will begin capital expenditures to support 20nm later this year for a ramp during 2014.

I am very bullish with respect to the pending acquisition of DRAM competitor Elpida out of Japan in terms of supplier consolidation. Micron will get Elpida’s market leadership in the high-growth mobile DRAM segment that Micron is currently underexposed to, and Micron’s memory supplier rank will rise from third to second behind only Samsung—leapfrogging Hynix. Management estimates the acquisition will increase wafer production capacity by 45% with only a 15% increase in depreciation, and MU is already taking steps to make 300mm fab capacity flexible to support either DRAM or NAND depending on market demand and margin optimization. Recall that Micron will pay \$750M in yen at the close for 100% of Elpida and \$334M in NT\$ for 89% of Elpida’s Rexchip joint-venture in Taiwan. Micron will then pay Elpida bondholders \$1.75B in yen over the next six years beginning at the end of 2014 with annual installments of \$250M, \$250M, \$250M, \$0M, \$375M and the last \$375M late-2019. Management continues to expect the deal to close 1H CY13: all country and regulatory approvals are complete, creditors voted in favor, and all that remains is Tokyo District Court and US Court in Delaware bankruptcy approvals.



**NAND Flash:** NAND flash sales grew by +8% to \$873M or 42% of total revenue as trade bit shipments increased by +13%, ASPs declined by only -1%, and costs dropped by -5%. The company shipped 1.1B gigabytes of trade NAND, MLC accounted for 80-85% of wafer production with the balance split between SLC and TLC, and 20nm TLC began shipping last quarter. Bit growth and cost reductions/margin improvements were driven by the transition to 20nm technology that is expected to cross-over older 25nm in terms of bits this quarter. Next-generations include both existing planar and new 3D cell structures. Flat ASPs reflect a balance between relatively stable industry-wide supply due to slowing technology advances and strong demand from smartphones, tablets and SSDs. MU expects

its NAND bit growth this calendar year to be at the high-end of industry forecasts of +30+40%. SSDs accounted for 20% of MU trade NAND sales, but totaled 40% including chip sales to other SSD manufacturers. MU SSD shipments grew by +40% to 1.3Mu with greater capacity per drive slightly lowering average ASP and cost per bit, albeit at similar margins. It doubled sales of enterprise-class drives off a low base offering PCIe, SATA and SAS interfaces, will ship its first 20nm SSD F3Q, and expects 2013 unit growth to exceed industry growth of +60+70%.



**Management Guidance:** F3Q10 DRAM bit production is expected to be up by a couple percent, ASPs QTD have been up in the mid-single-digits, and costs per bit are expected to drop in the mid- to high-single-digit percentage range as the company continues to roll out its 30nm 4Gb DDR3 device. NAND bit production is expected to grow in the mid- to high-single-digits percentage, ASPs QTD are down in the mid-single-digits, and cost per bit is expected to drop in the high-single-digit percentage range with the transition to 20nm. SGA is expected at \$135-145M, R&D at \$225-235M, interest expense of \$50-60M, taxes at \$0-10M, minority interest costs of \$20M, share count of 1,017M, and depreciation and amortization of \$480-490M. Cap ex for FY13 remains at \$1.6-1.9B.

**Raising Estimates:** My earnings model incorporates management guidance for operating costs, and then breaks down revenue and COGS by DRAM, NAND, NOR and other products. For DRAM and NAND I make assumptions for bit growth, ASP changes, and manufacturing cost per bit changes on a quarterly basis. For NOR and other I assume relatively flat revenue and gross margin. My assumptions are specified on Page 7.

FYE August \$ in millions	3QF13		FY13		FY14	
	Previous	Update	Previous	Update	Previous	Update
Total Revenue	2,052	2,140	7,877	8,306	9,175	9,718
Revenue Growth	10.7%	3.0%	-4.3%	0.9%	16.5%	17.0%
Gross Margin	16.4%	23.0%	14.5%	20.9%	28.0%	34.3%
Operating Expenses	375	370	1,494	1,453	1,520	1,540
Non-Operating Items	(78)	(75)	(339)	(587)	(292)	(300)
Taxes	15	10	58	24	60	40
Diluted Shares (mil)	1,014.0	1,017.0	1,013.9	1,015.9	1,014.0	1,017.0
Diluted EPS	(\$0.13)	\$0.04	(\$0.74)	(\$0.33)	\$0.67	\$1.43

**Reiterate Buy:** I am maintaining my Buy recommendation and 12-month target price of \$15 based on 1.5-times sales applied to expected FY14 revenue, which is consistent with its peers. MU shares continue to trade well below average historical trailing price-sales and price-book ratios, as well as lower than average price-sales ratios relative to two separate peer groups identified on Page 8. I continue to believe there is a significantly favorable risk-reward opportunity in MU shares at current price levels with upside potential significantly more likely than downside risk.

Revenue, 27 estimates	3QF13	FY13	FY14	Diluted EPS	3QF13	FY13	FY14
Tokeneke-revised	2,140	8,306	9,718	Tokeneke-revised	\$0.04	(\$0.33)	\$1.43
Tokeneke-previous	2,052	7,877	9,175	Tokeneke-previous	(\$0.13)	(\$0.74)	\$0.67
Consensus-previous	2,120	8,270	10,220	Consensus-previous	(\$0.07)	(\$0.49)	\$0.64
High Estimate-previous	2,400	9,830	15,280	High Estimate-previous	\$0.18	\$0.18	\$1.69
Low Estimate-previous	1,930	7,710	8,600	Low Estimate-previous	(\$0.34)	(\$1.00)	\$0.18

—Dan K. Scovel  
Semiconductor Analyst

**Micron Technology**

8000 South Federal Way, PO Box 6, Boise, ID 83716

208-368-4000

**Income Statement**

www.micron.com

dollars in millions, except per share data, \* restated  
fiscal year ends August

	FY09	FY10	FY2012 act				FY12	FY2013 est				FY13	FY2014				FY14
			Q1	Q2*	Q3	Q4		Q1A*	Q2A	Q3	Q4		Q1	Q2	Q3	Q4	
Total Revenue	4,803	8,482	2,090	2,009	2,172	1,963	8,234	1,834	2,078	2,140	2,254	8,306	2,358	2,389	2,460	2,512	9,718
COGS	5,243	5,768	1,785	1,799	1,938	1,744	7,266	1,617	1,712	1,649	1,595	6,573	1,581	1,580	1,604	1,615	6,381
Gross Profit	(440)	2,714	305	210	234	219	968	217	366	491	659	1,733	777	809	856	897	3,338
SG&A	354	528	151	174	156	139	620	119	123	140	150	532	155	155	155	155	620
R&D	647	624	230	222	231	235	918	224	214	230	230	898	230	230	230	230	920
Restructuring	70	(10)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	165	(17)	6	18	38	(15)	47	(29)	52	-	-	23	-	-	-	-	-
Operating Expenses	1,236	1,125	387	414	425	359	1,585	314	389	370	380	1,453	385	385	385	385	1,540
Operating Income	(1,676)	1,589	(82)	(204)	(191)	(140)	(617)	(97)	(23)	121	279	280	392	424	471	512	1,798
Interest Income	(160)	(160)	(33)	(33)	(53)	(52)	(171)	(54)	(53)	(55)	(55)	(217)	(55)	(55)	(55)	(55)	(220)
Other Non-Opn Inc.	(16)	491	-	37	1	(4)	34	(59)	(159)	-	-	(218)	-	-	-	-	-
Tax Expense	1	(19)	(2)	9	(38)	14	(17)	13	(9)	10	10	24	10	10	10	10	40
Minority Interest	(29)	(89)	(74)	(73)	(115)	(33)	(295)	(52)	(60)	(20)	(20)	(152)	(20)	(20)	(20)	(20)	(80)
Net Income	(1,882)	1,850	(187)	(282)	(320)	(243)	(1,032)	(275)	(286)	36	194	(331)	307	339	386	427	1,458
EPS-basic	(\$2.35)	\$2.08	(\$0.19)	(\$0.29)	(\$0.32)	(\$0.24)	(\$1.04)	(\$0.27)	(\$0.28)	\$0.04	\$0.19	(\$0.33)	\$0.30	\$0.33	\$0.38	\$0.42	\$1.43
Shares-basic	800.7	887.5	981.4	982.8	987.3	1,015.1	991.2	1,013.7	1,016.0	1,017.0	1,017.0	1,015.9	1,017.0	1,017.0	1,017.0	1,017.0	1,017.0
EPS-diluted	(\$2.35)	\$1.85	(\$0.19)	(\$0.29)	(\$0.32)	(\$0.24)	(\$1.04)	(\$0.27)	(\$0.28)	\$0.04	\$0.19	(\$0.33)	\$0.30	\$0.33	\$0.38	\$0.42	\$1.43
Shares-diluted	800.7	1,050.7	981.4	982.8	987.3	1,013.1	991.2	1,013.7	1,016.0	1,017.0	1,017.0	1,015.9	1,017.0	1,017.0	1,017.0	1,017.0	1,017.0
EPS-pro forma	(\$2.20)	\$1.35															
<b>Margin Analysis</b>																	
Gross Margin	-9.2%	32.0%	14.6%	10.5%	10.8%	11.2%	11.8%	11.8%	17.6%	23.0%	29.2%	20.9%	32.9%	33.9%	34.8%	35.7%	34.3%
SG&A	7.4%	6.2%	7.2%	8.7%	7.2%	7.1%	7.5%	6.5%	5.9%	6.5%	6.7%	6.4%	6.6%	6.5%	6.3%	6.2%	6.4%
R&D	13.5%	7.4%	11.0%	11.1%	10.6%	12.0%	11.1%	12.2%	10.3%	10.7%	10.2%	10.8%	9.8%	9.6%	9.4%	9.2%	9.5%
Operating Expense	25.7%	13.3%	18.5%	20.6%	19.6%	18.3%	19.2%	17.1%	18.7%	17.3%	16.9%	17.5%	16.3%	16.1%	15.7%	15.3%	15.8%
Operating Income	-34.9%	18.7%	-3.9%	-10.2%	-8.8%	-7.1%	-7.5%	-5.3%	-1.1%	5.7%	12.4%	3.4%	16.6%	17.7%	19.1%	20.4%	18.5%
Interest/Other Income	-3.7%	3.9%	-1.6%	0.2%	-2.4%	-2.9%	-1.7%	-6.2%	-10.2%	-2.6%	-2.4%	-5.2%	-2.3%	-2.3%	-2.2%	-2.2%	-2.3%
Tax Rate	-0.1%	-1.0%	1.7%	-4.5%	15.6%	-7.1%	2.3%	-6.2%	3.8%	15.1%	4.5%	-15.5%	3.0%	2.7%	2.4%	2.2%	2.5%
Net Income	-39.2%	21.8%	-8.9%	-14.0%	-14.7%	-12.4%	-12.5%	-15.0%	-13.8%	1.7%	8.6%	-4.0%	13.0%	14.2%	15.7%	17.0%	15.0%
<b>Qtr-to-Qtr Growth</b>																	
Revenue			-2.3%	-3.9%	8.1%	-9.6%		-6.6%	13.3%	3.0%	5.3%		4.6%	1.3%	3.0%	2.1%	
Operating Expenses			4.0%	7.0%	2.7%	-15.5%		-12.5%	23.9%	-4.9%	2.7%		1.3%	0.0%	0.0%	0.0%	
Operating Income			60.8%	148.8%	-6.4%	-26.7%		-30.7%	-76.3%	-628%	130%		40.5%	8.1%	11.0%	8.7%	
Net Income			38.5%	50.8%	13.5%	-24.1%		13.2%	4.0%	-113%	433%		58.2%	10.4%	13.8%	10.6%	
EPS			40.0%	50.6%	13.0%	-26.0%		13.1%	3.8%	-113%	433%		58.2%	10.4%	13.8%	10.6%	
<b>Year-to-Year Growth</b>																	
Revenue	-17.8%	76.6%	-7.2%	-11%	1.5%	-8.3%	-6.3%	-12.2%	3%	-1.5%	14.8%	0.9%	28.6%	15%	14.9%	11.4%	17.0%
Operating Expenses	-19.7%	-9.0%	189%	61.7%	76.3%	-3.5%	58.0%	-18.9%	-6.0%	-12.9%	5.8%	-8.3%	22.6%	-1.0%	4.1%	1.3%	6.0%
Operating Income	5.1%	-195%	-121%	-214%	-181%	175%	-182%	18.3%	-88.7%	-164%	-299%	-145%	-504%	-1942%	288%	83.4%	541%
Net Income	16.2%	-198%	-221%	-492%	-527%	80.0%	-718%	47.1%	1.4%	-111%	-180%	-68.0%	-212%	-218%	960%	120%	-541%
EPS	12.2%	-179%	-227%	-513%	-550%	76.3%	-728%	42.4%	-1.9%	-111%	-179%	-68.7%	-211%	-218%	960%	120%	-540%

**Micron Technology****Financial Summary**

dollars in millions

Fiscal year ends August

	FY09	FY10	FY11	FY12	2QF12	3QF12	4QF12	1QF13	2QF13
<b>Assets</b>									
Cash and equivalents	1,485	2,913	2,160	2,559	2,094	2,325	2,559	2,271	2,228
Net accounts receivable	<u>798</u>	<u>1,531</u>	<u>1,497</u>	<u>1,289</u>	<u>1,241</u>	<u>1,333</u>	<u>1,289</u>	<u>1,139</u>	<u>1,226</u>
<b>Quick Assets</b>	2,283	4,444	3,657	3,848	3,335	3,658	3,848	3,410	3,454
Inventory	987	1,770	2,080	1,812	2,081	1,894	1,812	1,831	1,721
Other	<u>74</u>	<u>119</u>	<u>95</u>	<u>98</u>	<u>243</u>	<u>78</u>	<u>98</u>	<u>74</u>	<u>189</u>
<b>Current Assets</b>	3,344	6,333	5,832	5,758	5,659	5,630	5,758	5,315	5,364
Property, plant and eqt, net	7,089	6,601	7,555	7,103	7,357	7,158	7,103	7,199	6,973
Goodwill and intangibles	344	323	414	371	400	386	371	359	359
Long-term equities	315	335	535	374	335	361	374	527	546
Other	<u>367</u>	<u>1,101</u>	<u>416</u>	<u>722</u>	<u>388</u>	<u>781</u>	<u>722</u>	<u>667</u>	<u>670</u>
<b>Total Assets</b>	11,459	14,693	14,752	14,328	14,139	14,316	14,328	14,067	13,912
<b>Liabilities and Shareholders Equity</b>									
Current portion L-T debt	424	712	140	224	150	262	224	266	350
Accounts payable	1,037	1,509	1,830	1,641	1,457	1,547	1,641	1,584	1,498
Deferred Income	209	298	443	248	364	247	248	227	227
Other/Eqt Purchase Contract	<u>222</u>	<u>183</u>	<u>67</u>	<u>130</u>	<u>131</u>	<u>121</u>	<u>130</u>	<u>61</u>	<u>42</u>
<b>Current Liabilities</b>	1,892	2,702	2,480	2,243	2,102	2,177	2,243	2,138	2,117
Long-term debt	2,379	1,648	1,861	3,038	2,165	2,936	3,038	3,169	3,301
Other	<u>249</u>	<u>527</u>	<u>559</u>	<u>630</u>	<u>513</u>	<u>717</u>	<u>630</u>	<u>574</u>	<u>534</u>
<b>Total Liabilities</b>	4,520	4,877	4,900	5,911	4,780	5,830	5,911	5,881	5,952
Minority Interest	1,986	1,796	1,382	717	1,373	675	717	717	729
Common stock	7,342	8,446	8,610	8,920	8,658	8,791	8,920	9,063	7,231
Retained earnings	(2,385)	(536)	(370)	(1,402)	(839)	(1,159)	(1,402)	(1,677)	
Other	<u>(4)</u>	<u>110</u>	<u>230</u>	<u>182</u>	<u>167</u>	<u>179</u>	<u>182</u>	<u>83</u>	
<b>Total MU Shareholders Equity</b>	4,953	8,020	8,470	7,700	7,986	7,811	7,700	7,469	7,231
<b>Total Liabilities and Equity</b>	11,459	14,693	14,752	14,328	14,139	14,316	14,328	14,067	13,912
<b>Sales and Income</b>									
Revenue	4,803	8,482	8,788	8,234	2,009	2,172	1,963	1,834	2,078
COGS	5,242	5,768	7,030	7,266	1,799	1,938	1,744	1,617	1,712
Net income	(439)	1,850	167	(1,032)	(282)	(320)	(243)	(275)	(286)
<b>Other</b>									
Capital Expenditures	632	1,036	2,878	1,871	429	324	372	538	353
Depreciation and Amortization	2,139	2,005	2,162	2,222	586	546	509	485	485
Shares (weighted average diluted)	800.7	1,050.7	1,007.5	991.2	982.8	987.3	1,013.1	1,013.7	1,016.0
Employees (units)	18,200	25,900	26,100	27,400			27,400		
Cash Flow from Operations	1,206	3,096	2,484	2,114	574	782	450	236	234
<b>Ratios</b>									
<b>Liquidity</b>									
Quick Ratio	1.21	1.64	1.47	1.72	1.59	1.68	1.72	1.59	1.63
Current Ratio	1.77	2.34	2.35	2.57	2.69	2.59	2.57	2.49	2.53
<b>Leverage</b>									
Debt Ratio	0.39	0.33	0.33	0.41	0.34	0.41	0.41	0.42	0.43
Long-term Debt/Capital	0.23	0.15	0.16	0.26	0.19	0.26	0.26	0.27	0.28
<b>Asset Management</b>									
Fixed Asset Turnover	0.6	1.2	1.2	1.1	1.08	1.20	1.10	1.03	1.17
Total Asset Turnover	0.4	0.6	0.6	0.6	0.57	0.61	0.55	0.52	0.59
Receivables DSO	60	65	61	56	56	55	59	56	53
Inventory Days	68	110	107	90	104	88	94	102	90
Inventory Turnover	4.6	4.2	3.7	3.7	3.44	3.90	3.76	3.55	3.86
Annual Revenue/Employee									
<b>Profitability</b>									
Gross Margin	-9.1%	32.0%	20.0%	11.8%	10.5%	10.8%	11.2%	11.8%	17.6%
Net Margin	-9.1%	21.8%	1.9%	-12.5%	-14.0%	-14.7%	-12.4%	-15.0%	-13.8%
Return on Assets	-3.5%	14.1%	1.1%	-7.1%	-8.0%	-9.0%	-6.8%	-7.7%	-8.2%
Return on Equity	-7.9%	28.5%	2.0%	-12.8%	-13.9%	-16.2%	-12.5%	-14.5%	-15.6%
<b>Per Share Data</b>									
Book Value/Share	\$6.19	\$7.63	\$8.41	\$7.77	\$8.13	\$7.91	\$7.60	\$7.37	\$7.12
Tangible Book Value/Share	\$5.76	\$7.33	\$8.00	\$7.39	\$7.72	\$7.52	\$7.23	\$7.01	\$6.76
Cash/Share (gross)	\$1.85	\$2.77	\$2.14	\$2.58	\$2.13	\$2.35	\$2.53	\$2.24	\$2.19
Cash/Share (net)	(\$1.65)	\$0.53	\$0.16	(\$0.71)	(\$0.22)	(\$0.88)	(\$0.69)	(\$1.15)	(\$1.40)
Earnings/Share	(\$0.55)	\$1.76	\$0.17	(\$1.04)	(\$0.29)	(\$0.32)	(\$0.24)	(\$0.27)	(\$0.28)

Micron Technology

Sales Analysis

	FY09	FY10	FY11	FY12	FY2011				FY2012				FY2013	
					1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q
<b>Product Type</b>														
<b>Revenue</b>														
DRAM	2,422	5,052	3,620	3,178	1,009	950	883	778	778	729	875	796	720	894
NAND	1,857	2,555	3,193	3,627	753	812	770	858	909	934	948	836	803	873
NOR	0	451	1,547	977	422	392	360	373	287	228	228	234	228	187
Other	524	424	428	452	68	103	126	131	116	118	121	97	83	125
Total	4,803	8,482	8,788	8,234	2,252	2,257	2,139	2,140	2,090	2,009	2,172	1,963	1,834	2,078
<b>Revenue Percent</b>														
DRAM	50.4%	59.6%	41.2%	38.6%	44.8%	42.1%	41.3%	36.4%	37.2%	36.3%	40.3%	40.6%	39.3%	43.0%
NAND	38.7%	30.1%	36.3%	44.0%	33.4%	36.0%	36.0%	40.1%	43.5%	46.5%	43.6%	42.6%	43.8%	42.0%
NOR	0.0%	5.3%	17.6%	11.9%	18.7%	17.4%	16.8%	17.4%	13.7%	11.3%	10.5%	11.9%	12.4%	9.0%
Other	10.9%	5.0%	4.9%	5.5%	3.0%	4.6%	5.9%	6.1%	5.6%	5.9%	5.6%	4.9%	4.5%	6.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
<b>Growth</b>														
DRAM		108.6%	-28.3%	-12.2%	-18.5%	-5.8%	-7.1%	-11.9%	0.0%	-6.3%	20.0%	-9.0%	-9.5%	24.1%
NAND		37.6%	25.0%	13.6%	-2.4%	7.8%	-5.2%	11.4%	5.9%	2.8%	1.5%	-11.8%	-3.9%	8.7%
NOR			243.0%	-36.8%	13.7%	-7.1%	-8.2%	3.6%	-23.1%	-20.6%	0.0%	2.6%	-2.6%	-18.0%
Other		-19.1%	0.9%	5.6%	-39.8%	51.5%	22.3%	4.0%	-11.5%	1.7%	2.5%	-19.8%	-14.4%	50.2%
Total		76.6%	3.6%	-6.3%	-9.7%	0.2%	-5.2%	0.0%	-2.3%	-3.9%	8.1%	-9.6%	-6.6%	13.3%
<b>DRAM</b>														
bit sales growth		69.0%	19.0%	59.0%	5.0%	23.0%	-1.0%	6.0%	14.0%	21.0%	12.0%	-9.0%	2.0%	38.0%
ASP change	-52.0%	28.0%	-39.0%	-45.0%	-23.0%	-23.0%	1.0%	-28.0%	-12.0%	-16.0%	7.0%	0.0%	-11.0%	-10.0%
cost/bit change		-35.0%	-23.0%	-32.0%	-10.0%	-10.0%	-4.0%	-12.0%	-10.0%	-14.0%	-4.0%	-1.0%	-5.0%	-18.0%
<b>NAND (trade)</b>														
bit sales growth		44.0%	50.0%	164.0%	20.0%	20.0%	5.0%	47.0%	21.0%	36.0%	68.0%	6.0%	-10.0%	13.0%
ASP change	-52.0%	26.0%	-12.0%	-55.0%	-20.0%	-12.0%	15.0%	-26.0%	-11.0%	-23.0%	-39.0%	-5.0%	8.0%	-1.0%
cost/bit change		-31.0%	2.0%	-54.0%	-12.0%	-13.0%	12.0%	-28.0%	-16.0%	-18.0%	-29.0%	-5.0%	2.0%	-5.0%
<b>Product Lines</b>														
<b>DSG (DRAM)</b>														
Revenue	2,100	4,638	3,155	2,691	903	841	774	637	656	608	750	677	600	756
Operating Profit	(902)	1,269	457	(442)	225	51	109	72	(139)	(109)	(76)	(118)	-112	(46)
Operating Margin	-43.0%	27.4%	14.5%	-16.4%	24.9%	6.1%	14.1%	11.3%	-21.2%	-17.9%	-10.1%	-17.4%	-18.7%	-6.1%
<b>NSG (NAND)</b>														
Revenue	1,747	2,113	2,244	2,853	502	552	505	685	683	734	760	676	617	713
Operating Profit	(573)	240	102	198	57	72	68	(95)	94	97	(1)	8	12	64
Operating Margin	-32.8%	11.4%	4.5%	6.9%	11.4%	13.0%	13.5%	-13.9%	13.8%	13.2%	-0.1%	1.2%	1.9%	9.0%
<b>WSG (Wireless)</b>														
Revenue	247	778	1,959	1,184	511	510	493	445	373	307	276	228	263	213
Operating Profit	(63)	(23)	20	(370)	56	10	10	(56)	(58)	(129)	(103)	(80)	-64	(87)
Operating Margin	-25.5%	-3.0%	1.0%	-31.3%	11.0%	2.0%	2.0%	-12.6%	-15.5%	-42.0%	-37.3%	-35.1%	-24.3%	-40.8%
<b>ESG (Embedded)</b>														
Revenue	178	521	1,002	1,054	266	252	241	243	262	242	265	285	278	282
Operating Profit	37	152	237	156	78	58	55	46	38	15	32	71	78	65
Operating Margin	20.8%	29.2%	23.7%	14.8%	29.3%	23.0%	22.8%	18.9%	14.5%	6.2%	12.1%	24.9%	28.1%	23.0%
<b>Other</b>														
Revenue	531	432	428	452	70	102	126	130	116	118	121	97	76	114
Operating Profit	(49)	(61)	(103)	(103)	(26)	(12)	(5)	(18)	(17)	(22)	(43)	(21)	(71)	(19)
Operating Margin	-11.3%	-14.3%	-22.8%		-37.1%	-11.8%	-4.0%	-13.8%	-14.7%	-18.6%	-35.5%	-21.6%	-93.4%	-16.7%
Total	4,803	8,482	8,788	8,234	2,252	2,257	2,139	2,140	2,090	2,009	2,172	1,963	1,834	2,078
Operating Profit	(1,501)	1,589	755	(561)	390	179	237	(51)	(82)	(148)	(191)	(140)	(157)	(23)
<b>End Market</b>														
Computer		45%	30%	25%	30.0%	30.0%	30.0%							
Consumer			15%	20%										
Mobile			25%	15%	25.0%	25.0%	25.0%							
Networking/Storage			15%	10%										
SSD				10%										
<b>Territory</b>														
China	1,242	3,294	2,983	2,936		33.9%				35.7%				
US	928	1,403	1,363	1,262		15.5%				15.3%				
Asia-Pacific	990	1,090	1,518	1,241		17.3%				15.1%				
Taiwan	447	711	744	1,022		8.5%				12.4%				
Europe	470	777	924	827		10.5%				10.0%				
Malaysia	542	817	737	546		8.4%				6.6%				
ROW	184	390	519	400		5.9%				4.9%				
Total	4,803	8,482	8,788	8,234		100.0%				100.0%				
<b>Other</b>														
<b>Customer</b>														
Intel (NAND)	20%	9%	10%	12%	209	202	218	250	261	255	300	168	148	
HP (DRAM)		13%	9%											
Apple														
<b>Image Sensors</b>														
Aptina Revenue	70	372	349	372	59	82	104	104	94	99	99	80	61	
Aptina COGS	60	385	358	395	67	90	102	99	94	99	99	103	81	
<b>DRAM</b>														
DDR-3 DRAM Rev %		37%	51%		25.0%	35.0%	35.0%	37.0%	43%	45%	48%	47%	49%	
DDR-2 DRAM Rev %		40%	25%											
Specialty DRAM Rev %														
DDR-3 Total Rev %	7%	22%	21%	20%										
DDR-2 Total Rev %	22%	24%	10%	9%										
Sp DRAM Total Rev %	21%	14%	10%	10%										
Inotera DRAM prod %	4%	23%	33%	46%	25.0%	35.0%	35.0%	37.0%	43%	45%	48%	47%	49%	

## Micron Technology

## Financial Model

dollars in millions

fiscal year ends August

	FY2012 act				FY2013 est				FY2014			
	1Q	2Q	3Q	4Q	1QA	2QA	3Q	4Q	1Q	2Q	3Q	4Q
<b>DRAM</b>												
Bits Sold	14.0%	21.0%	12.0%	-9.0%	2.0%	38.4%	2.0%	6.5%	6.5%	6.5%	6.5%	6.5%
ASP change	-12.0%	<b>-21.5%</b>	7.0%	0.0%	-11.9%	-9.7%	5.0%	5.0%	0.0%	-5.0%	-5.0%	-5.0%
Revenue	778	729	875	796	715.3	893.9	957.4	1,070.6	1,140.2	1,153.6	1,167.2	1,180.9
Royalties (included)												
Revenue growth					-10.1%	25.0%						
Cost/bit change	-10.0%	-14.0%	-4.0%	-1.0%	-5.0%	-20.5%	-7.5%	0.0%	-7.0%	-7.0%	-7.0%	-7.0%
Gross Margin	<b>-1.3%</b>	<b>-11.6%</b>	<b>-1.7%</b>	<b>-0.7%</b>	-8.1%	0.0%	12.8%	18.5%	26.8%	28.9%	31.0%	33.1%
Gross Profit												
COGS	787.8	813.9	889.6	801.5	773.5	894.3	834.6	872.9	835.0	820.7	805.6	789.5
<b>NAND</b>												
Bits Sold	21.0%	<b>33.0%</b>	<b>66.0%</b>	<b>-7.0%</b>	-10.6%	9.8%	8.0%	9.0%	9.0%	9.0%	9.0%	9.0%
ASP change	-11.0%	-23.0%	-39.0%	-5.0%	8.0%	-1.5%	-5.0%	0.0%	-5.0%	-5.0%	-5.0%	-5.0%
Revenue	909.0	934.0	948.0	836.0	807.2	873.0	895.7	976.3	1,011.0	1,046.8	1,084.0	1,122.5
Revenue growth					-3.4%							
Cost/bit change	-16.0%	-18.0%	-29.0%	-5.0%	2.0%	-10.0%	-5.0%	-5.0%	-5.0%	-5.0%	-5.0%	-5.0%
Gross Margin	26.0%	14.4%	-9.9%	<b>17.0%</b>	23.8%	34.2%	33.8%	40.5%	40.2%	39.8%	39.5%	39.1%
<b>gm est</b>	<b>26.0%</b>	<b>14.4%</b>	<b>-9.9%</b>	<b>17.0%</b>								
Gross Profit	235.9	134.9	(94.3)	142.1	614.8	574.7	592.6	580.6	604.8	629.9	656.1	683.3
COGS	673.1	799.1	1,042.3	693.9	614.8	574.7	592.6	580.6	604.8	629.9	656.1	683.3
<b>DRAM, NAND Subtotal</b>												
Revenue	1,687.0	1,663.0	1,823.0	1,632.0	1,522.5	1,766.9	1,853.1	2,046.9	2,151.2	2,200.5	2,251.2	2,303.4
Gross Profit												
Gross Margin												
Adjusted Gross Profit												
Adjusted Gross Margin												
COGS	1460.9	1613.0	1931.9	1495.4	1388.3	1469.0	1427.2	1453.5	1439.8	1450.6	1461.6	1472.8
<b>NOR</b>												
Revenue	287	228	228	234	220	187.0	187.0	187.0	187.0	168.3	188.5	188.5
Gross Margin	35.0%	35.0%	35.0%	35.0%	37.0%	37.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%
COGS	186.6	148.2	148.2	152.1	138.7	117.8	121.6	121.6	121.6	109.4	122.5	122.5
<b>Other</b>												
Revenue	116	118	121	97	91.7	125.0	100.0	20.0	20.0	20.0	20.0	20.0
Gross Margin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
COGS	116.0	118.0	121.0	97.0	91.7	125.0	100.0	20.0	20.0	20.0	20.0	20.0
<b>TOTAL</b>												
Revenue	2,090.0	2,009.0	2,172.0	1,963.0	1,834.3	2,078.9	2,140.1	2,253.9	2,358.2	2,388.8	2,459.7	2,511.9
Royalty												
COGS	1,763.5	1,879.2	2,201.1	1,744.5	1,618.6	1,711.8	1,648.7	1,595.0	1,581.4	1,580.0	1,604.1	1,615.3
Gross Profit	326.5	129.8	(29.1)	218.5	215.6	367.2	491.4	658.9	776.8	808.7	855.5	896.6
Gross Margin	15.6%	6.5%	-1.3%	11.1%	11.8%	17.7%	23.0%	29.2%	32.9%	33.9%	34.8%	35.7%
<b>Reported</b>												
Revenue	2,090	2,009	2,172	1,963	1834.0	2078.0						
COGS	1,785	1,799	1,938	1,744	1617.0	1712.0						
Gross Margin	14.6%	10.5%	10.8%	11.2%	11.8%	17.6%						
Adjusted COGS												
Adjusted Gross Margin												

Dan K. Scovel, Tokeneke Research LLC, 203-554-4621, dscovel@tokenekeresearch.com

3/22/13

**Micron Technology**

**Valuation**

**Relative Valuation**

Company	Ticker	Price 3/21/2013	52-Week		CY EPS				CY P/E				Diluted Shares(mil)	CAP (\$ mil)	Price-Sales			FY Ends
			Low	High	2011	2012	2013	2014	2011	2012	2013	2014			TTM	Cur FY	Nxt FY	
Micron Technology *	MU	9.07	5.16	9.75	-0.19	-1.12	0.25	1.55	NM	NM	36.3	5.9	1,016	9,215	1.1	1.1	0.9	Aug
Advanced Micro Devices	AMD	2.64	1.81	8.35	0.51	-0.16	-0.32	-0.05	5.2	NM	NM	NM	747	1,972	0.4	0.4	0.4	Dec
Freescale	FSL	14.52	7.63	16.36	0.98	-0.08	0.44	1.29	14.8	NM	33.0	11.3	251	3,645	0.9	0.9	0.8	Dec
Intel *	INTC	21.04	19.23	29.27	2.50	2.24	1.91	2.24	8.4	9.4	11.0	9.4	5,095	107,199	2.0	2.0	1.9	Dec
STMicroelectronics	STM	7.89	4.51	9.09	0.42	-0.33	0.06	0.59	18.8	NM	NM	13.4	888	7,006	0.8	0.8	0.8	Dec-ADR
Texas Instruments*	TXN	34.29	26.06	35.73	2.19	1.64	1.79	2.22	15.7	20.9	19.2	15.4	1,124	38,542	3.0	3.2	3.0	Dec
Average									12.6	15.2	21.1	12.4			1.4	1.5	1.4	

Company	Ticker	Price 3/21/2013	52-Week		CY EPS				CY P/E				Diluted Shares(mil)	CAP (\$ mil)	Price-Sales			FY Ends
			Low	High	2011	2012	2013	2014	2011	2012	2013	2014			TTM	Cur FY	Nxt FY	
Micron Technology *	MU	9.07	5.16	9.75	-0.19	-1.12	0.25	1.55	NM	NM	36.3	5.9	1,016	9,215	1.1	1.1	0.9	Aug
Atmel	ATML	6.62	4.37	10.64	0.92	0.33	0.30	0.53	7.2	20.1	22.1	12.5	444	2,939	2.1	2.1	1.9	Dec
Spansion	CODE	12.09	9.42	14.54	0.85	0.99	1.13	1.68	14.2	12.2	10.7	7.2	62	744	0.8	0.8	0.7	Dec
Cypress Semiconductor	CY	11.01	8.70	17.41	1.25	0.55	0.48	0.83	8.8	20.0	22.9	13.3	157	1,732	2.3	2.3	2.0	Dec
GSI Technology	GSIT	6.60	4.04	6.91	0.31	0.13	0.11	0.21	21.3	50.8	60.0	31.4	28	185	2.7	2.8	2.5	Mar
Integrated Silicon Solutions	ISSI	9.39	8.18	11.50	1.11	0.85	1.01	1.24	8.5	11.0	9.3	7.6	29	273	1.0	0.9	0.8	Sep
Netlist	NLST	0.64	0.61	3.75	-0.22	-0.35	-0.40	-0.27	NM	NM	NM	NM	28	18	0.4	0.5	0.6	Dec
SanDisk	SNDK	54.63	30.99	55.53	4.66	2.37	3.70	4.15	11.7	23.1	14.8	13.2	244	13,341	2.6	2.4	2.2	Dec
STEC	STEC	4.89	3.95	9.80	0.67	-1.03	-1.45	-1.11	7.3	NM	NM	NM	47	229	1.4	2.0	1.4	Dec
Average									11.3	22.9	23.3	14.2			1.6	1.7	1.5	

\* Tokeneke estimate  
Source: consensus as of 3/19/13

**Historical Valuation**

Company	Ticker	Price 3/21/2013	Trailing 12-month								
			Price/Earnings		Price/Sales		Price/Book				
			Current	Historical*	Current	Historical*	Current	Historical*			
Micron Technology	MU	6.79	NM		1.1		1.3				
			<b>Average</b>	47.0	<b>Average</b>	2.3	<b>Average</b>	2.3			
			<b>High</b>	568.0	<b>High</b>	9.0	<b>High</b>	9.8			
			<b>Low</b>	4.3	<b>Low</b>	0.3	<b>Low</b>	0.6			

\* weekly since 1990

### **The Company**

Tokeneke Research is an independent research firm specializing in semiconductor industry business issues, providing fundamental research focused on US equities across all market capitalizations within the sector to investors. The company was founded in 2005 and is based in Connecticut.

### **The Offering**

- *Monthly Newsletter*: A summarized review of noteworthy industry business developments, sales statistics, and sector equity market performance, as well as a near-term and annual outlook for sector business fundamentals and share prices. This report typically includes two pages of text and a handful of recurring charts and tables. It is intended for relatively broad-based distribution.
- *Industry Reports*: Publications offering insight and perspective to industry-wide, multi-year forecast updates; periodic sub-sector product type and end-market reviews; fundamental and valuation perspectives on sector equity relationships; and industry introductory overview. These are more detailed reports with varying shelf-lives, and are intended for narrow distribution to interested clients.
- *Company Reports*: Fundamental equity research including earnings estimates and customized valuation analysis.
- *Consulting*: Special projects of limited or extended duration, as well as periodic access of varying frequency.

Publications are distributed via email in .pdf format, unless otherwise requested. Client confidentiality and customized research exclusivity accommodated. Rates vary with the nature, duration, and terms of offerings.

### **My Background**

I have an electrical engineering background, nearly 12 years of semiconductor industry experience, and was on Wall Street for nearly eight years where I was selected as the Best On The Street semiconductor analyst for 2002 by The Wall Street Journal, and third-rated Best of the Best across all sectors.

I obtained my undergraduate BS degree in electrical engineering from the University of Washington, and my MBA from Santa Clara University. My industry experience consists of nearly 12 years in various technical sales and marketing roles at four different semiconductor firms located in Silicon Valley beginning with Advanced Micro Devices in 1984, followed by two small start-up companies, and ending at Cirrus Logic where I supported the firm's Japanese market development. I joined Fahnstock & Co. as a senior semiconductor analyst in 1996 and was recruited by Needham & Co. in April 2000.

My formal coverage list as a sell-side analyst included the following equities: AMD, ALSC, ALTR, ARTI, ATML, CUBE, CY, ESST, GNSS, INTC, ISSI, LSI, MOSY, MU, OIIM, OVTI, RMTR, SIII, SMSC, STEC, SVTG, TDFX, TSRA, TXN, and ZRAN.

**—Dan K. Scovel**  
*Semiconductor Analyst*

### **Tokeneke Research LLC**

**Rowayton, CT 06853**

[dscovel@tokenekereseearch.com](mailto:dscovel@tokenekereseearch.com)

[www.tokenekereseearch.com](http://www.tokenekereseearch.com)

203-554-4621

Copyright © 2013 Tokeneke Research LLC. All rights reserved. This report is for information purposes only and does not constitute a solicitation or an offer to buy or sell any security or to participate in any investment or trading strategy. Opinions expressed in this report reflect the judgment of Tokeneke Research LLC on the topics addressed as of the date of the report, and are subject to change without notice. Tokeneke Research LLC makes every effort to use reliable and comprehensive information but makes no representation that the information in this report is accurate or complete, nor does it undertake to update or revise this report at any time of for any reason. This report contains forward-looking statements that involve risks and uncertainties, both known and unknown, as well as assumptions that, if they do not fully materialize or prove incorrect, could cause actual results to differ materially from those expressed or implied by such forward-looking statements. Actual results and trends may differ materially from historical results or those projected in any such forward-looking statements depending on a variety of factors. This report does not provide individually tailored investment advice and has been prepared without regard to the specific individual financial situation, objectives and needs of those who receive it. Securities discussed in this report may not be suitable for the reader. Tokeneke Research LLC and/or Dan Scovel may have a long or short position in the securities of a company or companies mentioned in this report and, at any time, may change that position. Tokeneke Research LLC accepts no liability whatsoever for any loss or damage of any kind arising out of the use of any part, or all, of this report. All company and product names mentioned in this report may be trademarks or registered trademarks of their respective holders and are used for identification purposes only. Reproduction or distribution of this report, even for internal distribution, is strictly prohibited unless specifically authorized by Tokeneke Research LLC