

March 2017

## Cirrus Logic, INC: CRUS (Long)

John Garrity

**Sector:** Information Technology  
**Industry:** Semiconductors and Semiconductor Equipment  
**Current Price:** \$58.05  
**Target Price:** \$65.00

### Company Description:

Cirrus Logic, Inc. is a leader in high performance, low-power integrated circuits for audio and voice signal processing applications for mobile applications including smartphones, wearables, tablets, digital headsets, as well as other segments such as smart home, consumer, automotive, energy, and industrial markets. Cirrus Logic's products span the entire audio signal chain, from capture to playback, backed by more than 2,450 pending and issued patents worldwide. With a robust portfolio of low power products including smart codecs, digital signal processors, boosted amplifiers, and microelectromechanical microphones (MEMS) that are coupled with the essential tools, software, and associated algorithms, Cirrus Logic is well positioned to drive innovation and growth in the expanding market for voice and audio technology.

### Key Statistics:

Market Price: \$58.05  
Market Cap: \$3.75B  
WACC: 9.86%  
ROIC: 20.85%  
EBITDA Margin: 20.41%  
Ke: 10.05%

ROE: 23.42%  
Net Income:  
Margin: 10.57%  
P/E: 18.05 x  
Div. Yield: 3.42%  
Volume: 1,524,761

### Catalysts:

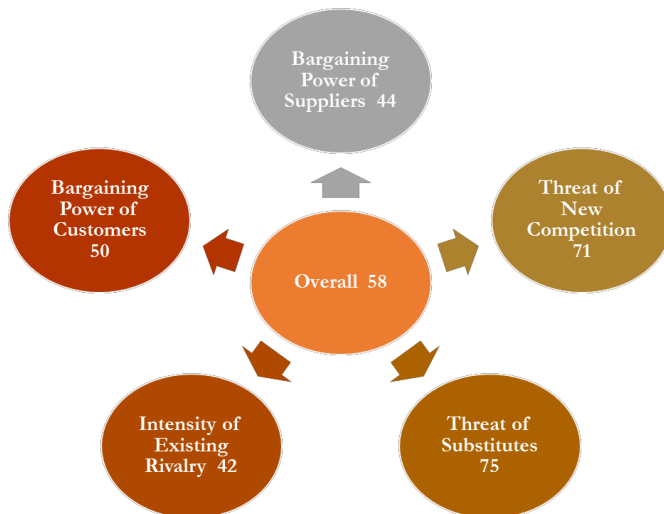
- > Apple's iPhone performance
- > New Products
- > Voice Biometrics
- > Active Noise Control
- > Third-party manufacturing
- > Earnings Report on April 19<sup>th</sup>



## Thesis:

Cirrus Logic, Inc. was incorporated in California in 1994, and became a public company in 1989. They were reincorporated in 1999 for the State of Delaware. Their primary engineering, sales and marketing, and administrative functions are located in Austin, Texas. Cirrus also has locations in the United States, U.K., Sweden, Spain, Australia, and the People’s Republic of China, Hong Kong, South Korea, Japan, Singapore, and Taiwan. Cirrus targets growing markets where they can leverage expertise and digital signal processing to solve complex problems. Cirrus focuses on building strong relationships with their customers to develop highly differentiated components. Often, Cirrus develops a design that can be expanded into additional products. This strategy gives Cirrus the opportunity to increase content over time with customers with new features, integration of other system components, and new components. There are many factors that would lead to substantial growth. As of the third quarter, Apple represented 66% of Cirrus’ revenue, which pushed past a billion dollars for the first time for the year 2016. Although Apple is a reliable customer, more diversification is needed. In addition, new products and new technologies could spur growth in the semiconductor industry. Voice biometrics is a growing market for many different sectors, and it allows people to interact with their devices via voice commands. Biometrics is certainly a growing market, but active noise cancellation (ANC) in headphones will be a more immediate catalyst. Samsung, a customer of Cirrus, anticipates this technology will cut out ambient noise by 20 decibels, which provides a competitive edge. These factors, including the earnings report expected to come out at the end of April, will significantly influence the value of Cirrus Logic, Inc.

## Industry Outlook:



Markets for Cirrus products are highly competitive and according to the company, competition will only increase. No single company competes with Cirrus in all of their product lines, but competition in all markets is significant. Within portable audio, Cirrus is the leading integrated circuit (IC) supplier, with “end-to-end” solutions from capture to playback of audio; which include amplifiers, codecs, digital signal processors (DSPs), and MEMS. However, Cirrus expects additional completion in the domestic and international markets from both large and small IC manufacturers. The main factors of competition for Cirrus are the time to market, quality of hardware and

software, end-market systems expertise, price, product performance, quality and compatibility with standards. Life cycles for products in this industry vary greatly by product. Portable audio devices have shorter design cycles, so a competitor could take advantage of these short times and achieve “design wins” in the upcoming systems. At the same time, Cirrus is able to take advantage of the frequent opportunities to displace competitors.

## Products:

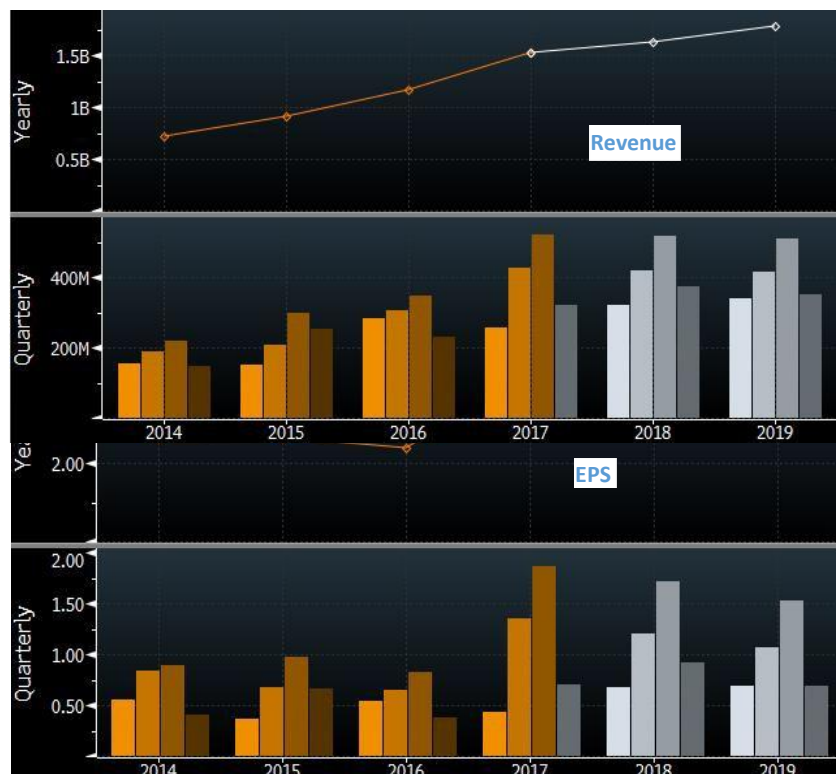
Cirrus currently outsources its manufacturing functions around the world who then make, package and test the products. Cirrus breaks down their products into two main categories; portable audio products and non-portable audio & other products. Portable audio products include analog audio converters, mixed-signal audio converters, and digital signal processing products. These products are used in many of today's mobile applications including smartphones, tablets, portable media players, wearables, and smart accessories like digital headsets and headphones. Included in these products are codecs, smart codecs, DSP's, and SoundClear® technology. Codecs are chips that combine analog-to-digital converters (ADC's) and digital-to-analog converters (DAC's) into a single IC. ADC's converts analog (real world signals like voice, audio, and video) into a digital signal which allows an electronic playback. DAC's perform the reverse function. Codecs allow for easy compression of video and audio files without losing any quality or information. Smart codecs are codecs that compress the important parts of a video or audio file and the irrelevant parts at different rates. This allows the user to compress less on certain parts of the file and compress more on the parts that do not require high quality. Ultimately, smart codecs allow the size of the file to be greatly reduced while maintaining quality. DSP's process digital signals in real time and improve the sound, images, in a fast time and transmit the signal for which the data can be displayed or transmitted to another type of signal. SoundClear® technology is a patented audio software that improves voice quality and speech recognition performance by eliminating noise and echo cancellation in mobile devices. SoundClear® also improves consumer audio applications and are pioneering the advancement of consumer devices where "simultaneous voice command and control are featured". Non-portable audio products provided by Cirrus are IC's that are utilized by applications in home theatre systems, computers, docking stations, game consoles, automotive entertainment systems, and TV's.



Digital Signal Processor made by Cirrus Logic, Inc.

## Revenue:

Cirrus Logic generated over 1.2 billion dollars in sales over the 2016 fiscal year, and anticipates 1.5 billion in sales for 2017. In 2016, the Asian/Pacific geographic segment made up 1.1 billion of the 1.2 billion in sales, with North America being their second largest geographic segment with 73.9 million and Europe generated 18.4 million. China provides Cirrus with 70 percent of their revenue and only 6 percent in the United States. Eighty-five percent of the company's revenue came from portable audio products in 2016 with an increase of sales of 34 percent. Net income has been favorable in the recent years thanks to soaring revenues. In the calendar year 2015, Cirrus experienced a 182 percent

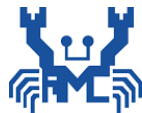


increase and 76 percent in 2016 in net income. This can be attributed to larger-than-expected demand for certain portable audio products. While sales increased 34 percent, operating expenses grew at only 8 percent. Even with the growth experienced over the past year, the company is expected to broaden the addressable market and drive future growth opportunities. CEO John Rhode said that many of their potential growth vectors, including digital headsets and mid-tier smartphones, are still in the early stages of development. With a complete audio signal chain, Cirrus believes that they are well-positioned to continue to be a leading provider of audio and voice technology. Cirrus beat earnings projections for all four quarters of 2016, and are in line for favorable earnings in the future. 2016 was a slower year for earnings according to Cirrus, whose yearly EPS were \$2.69 in 2014, \$2.67 in 2015, and \$2.4 in 2016, with an estimated 4.35 in 2017 according to Bloomberg.

## Competitors:

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In the semiconductor industry, Cirrus experiences a great deal of pressure from its competitors. The biggest competitors to Cirrus are NXP Semiconductors, Qualcomm Inc., Realtek Semiconductor Corp., and Texas Instruments among others. Cirrus expects competition will continue to increase, but no single company competes with the company in all of their product lines. Within portable audio products, Cirrus is the established leader in supplying IC's, including codecs, DSP's, and MEM's. Cirrus' ability to compete effectively while expanding the business will depend on the ability to recruit key engineering talent, execute on new products and developments, partnering with customers to use these products and developments, while providing cost effective versions of the existing products. Cirrus depends on developing new technologies which offer optimal sound with low power, so for the start of 2016, it upped research and development by \$71 million for a total of \$269 million. Cirrus has been investing into R&D at around 10 percent of sales, which has almost tripled since 2012.



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## Mergers and Acquisitions:

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Just as R&D is vital to the semiconductor industry, mergers and acquisitions are a natural part of this industry. In 2001, Cirrus announced that it would start focusing on semiconductors used in consumer entertainment devices. The company acquired private chip makers Peak Audio, LuxSonor, ShareWave, and Stream Machine. In 2003, Cirrus announced heavy job cuts and sold its chip testing to ChipPAC, which now supplies Cirrus with assembly, test, and packaging services. In 2005 Cirrus sold their digital video IC product line to Magnum Semiconductors for a minority stake in their business. The next year Cirrus acquired Caretta Integrated Circuits for \$10 million cash, and Apex Micro the year after for \$42 million cash. Apex Micro was a big win for Cirrus, as Apex already had 1,200 customers and \$20 million in annual sales. However, Caretta was shut down only a year after the acquisition for a \$12 million dollar loss. In April of 2014, Cirrus announced that it would purchase Wolfson Microelectronics for £278 million, or \$467 million with a combination of cash and \$225 in debt funding. CEO Jason Rhode says that Wolfson has a "rich history of audio innovation, a broad catalog of audio products and a first class customer list". The Wolfson acquisition strengthens Cirrus' ability to expand its customer base with highly differentiated end-to-end audio solutions for portable audio applications. After the merger, Cirrus restructured their corporate organization to focus on the international nature of the company's business activities.



## Cash Flow Analysis:

Since the acquisition of Wolfson showed a negative change to cash, Cirrus has seen their cash balance increase by \$45 million in 2015 and \$92 million in 2016.

Fiscal year is April-March. All values USD millions.

	2012	2013	2014	2015	2016	5-year trend
Net Operating Cash Flow	83.2M	160.82M	228.04M	163.51M	155.28M	
Net Operating Cash Flow Growth	-	93.31%	41.79%	-28.30%	-5.03%	
Net Operating Cash Flow / Sales	19.49%	19.86%	31.92%	17.84%	13.28%	

This is despite a negative growth in free cash flow in the same periods. Cirrus has a strong net operating cash flow even with the acquisition of Wolfson. The year after the acquisition, Cirrus experienced a negative net operating cash flow growth mostly attributable to the heavy dip in net income. However, Cirrus has experienced a strong net operating cash flow over sales. This gives an important sign on the company's ability to turn revenues into cash. In the recent years, Cirrus has spent a considerable amount on capital expenditures, due to the fact that they are in the process of becoming a more global company. The slowdown of purchased investments has actually had a positive impact on net investing cash flow. In 2015, the company reported a loss of \$324 million that year, mostly due to a \$444 million loss from net assets from acquisitions. Cirrus has been selling of investments to combat this, and had their first positive year for net investing cash flow since 2012. Cirrus' net financing cash flow generally stays slightly negative, except in 2015 when the company issued \$224 million in long-term debt. The financing cash flow hangs around the negatives because the company believes in repurchasing stock as an alternative to paying dividends, as well as paying off much of their debt. Cirrus had a D/E ratio of .238 in 2015, and it is currently .091. This is a great sign for investors because it signals that Cirrus thinks their stock is undervalued, and gives future stockholders a vote of confidence that there won't be a flooding of their shares.

## Conclusion:

Cirrus Logic, Inc. has seen the ups and downs of the electronic era, but since 2011 the company's revenue has grown at a CAGR of 23.6 percent and net income has grown at a CAGR of 24.8 percent, which shows that they are beginning to become more profitable. During this same time, number of shares have decreased 4 percent. In a long-term perspective, Cirrus has the sound financial standing for a company that is heavily investing in R&D, under constant competitive pressure, and actively seeking companies to acquire. What will make this stock a true growth stock are the short-term catalysts including voice biometrics, relationship with Apple, and their ability to continue to roll out effective new products. Cirrus does face considerable competition from many different companies, but the fact that no other company competes with Cirrus in all their product lines, coupled with their vision for a more diverse product, geographical, and financial portfolio gives them more breathing room than the market currently views. In this industry product development can take a few years, and Cirrus has proven to be reliable to its customers. It has only been around 10 years that Cirrus has been making IC's, codecs, DSP's, and their new product SoundClear®. The demand for higher quality audio and applications, as well as the introduction of digital headsets have companies like Apple and Samsung very excited to work with Cirrus. As the amount of new products by Cirrus Logic increases, their ability to grow will be shown by the increase in stock price.

### Cirrus Logic, Inc. (CRUS)

## CENTER FOR GLOBAL FINANCIAL STUDIES

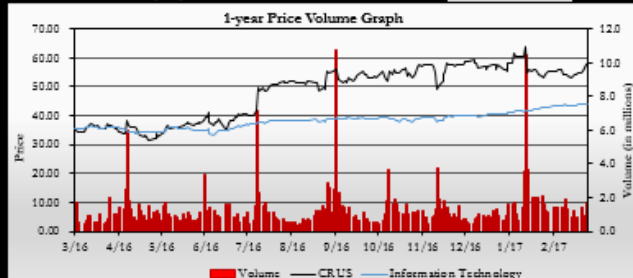
**BULLISH**

Analysis by John Garrity Jr  
3/19/2017

Current Price: **\$58.43**  
Dividend Yield: **0.3%**

Intrinsic Value: **\$74.45**  
Target Price: **\$84.32**

Target 1 year Return: **44.61%**  
Probability of Price Increase: **100%**



**Description**  
Cirrus Logic, Inc., a fabless semiconductor company, develops, manufactures, and markets analog and mixed-signal integrated circuits (ICs) for a range of consumer and industrial markets.

**General Information**  
Sector: Information Technology  
Industry: Semiconductors and Semiconductor Equipment  
Last Guidance: November 3, 2015  
Next earnings date: April 19, 2017  
Estimated Country Risk Premium: 6.25%  
Effective Tax rate: 40%  
Effective Operating Tax rate: 42%

Market Data	
Market Capitalization	\$3,753.07
Daily volume (mil)	1.52
Shares outstanding (mil)	64.23
Diluted shares outstanding (mil)	66.14
% shares held by institutions	14%
% shares held by investments Managers	78%
% shares held by hedge funds	6%
% shares held by insiders	0.48%
Short interest	6.24%
Days to cover short interest	2.85
52 week high	\$64.16
52-week low	\$31.00
Levered Beta	0.28
Volatility	46.43%

Quarter ending	Past Earning Surprises	EBITDA	Peers
12/26/2015	Revenue: 0.25%	-12.40%	Xilinx, Inc.
3/26/2016	-0.09%	-4.82%	Synaptics Incorporated
6/25/2016	7.16%	-5.59%	Skyworks Solutions, Inc.
9/24/2016	6.75%	2.22%	Maxim Integrated Products, Inc.
12/24/2016	4.31%	-0.69%	Microchip Technology Incorporated
Mean	3.80%	-4.26%	Silicon Laboratories Inc.
Standard error	1.6%	2.5%	Cypress Semiconductor Corporation
			Texas Instruments Incorporated

Management	Position	Total compensations grow	Total return to shareholders
Rhode, Jason	Chief Executive Officer, Pre	12.06% per annum over 6y	1.93% per annum over 6y
Case, Thurman	Chief Financial Officer, Pri	5.34% per annum over 6y	1.93% per annum over 6y
Thomas, Gregory	Vice President, Corporate Se	2.63% per annum over 6y	1.93% per annum over 6y
Brannan, Andrew	Vice President of Worldwide	-15.5% per annum over 2y	32.77% per annum over 2y
Anderson, Scott	Senior Vice President and Ge	2.12% per annum over 6y	1.93% per annum over 6y
Kaller, Roy	Vice President of Quality an	N/M	N/M

Profitability	CRUS (LTM)	CRUS (5 years historical av	Industry (LTM)
ROIC	25.3%	56.19%	9.78%
NOPAT Margin	22%	27.11%	16.4%
Revenue/Invested Capital	1.15	2.07	0.60
ROE	26.4%	43.44%	10.76%
Adjusted net margin	22%	26.93%	15.3%
Revenue/Adjusted Book Value	1.21	1.61	0.70

Invested Funds	CRUS (LTM)	CRUS (5 years historical av	Industry (LTM)
Total Cash/Total Capital	16.8%	17.4%	39%
Estimated Operating Cash/Total Capital	6.4%	6.0%	N/A
Non-cash working Capital/Total Capital	10.1%	9.9%	8%
Invested Capital/Total Capital	69.9%	66.8%	55%

Capital Structure	CRUS (LTM)	CRUS (5 years historical av	Industry (LTM)
Total Debt/Common Equity (LTM)	0.04	0.05	0.13
Cost of Existing Debt	2.70%	5.78%	3.32%
Estimated Cost of new Borrowing	4.58%	4.70%	3.32%
CGFS Risk Rating	CC	CC	BB
Unlevered Beta (LTM)	0.26	0.62	1.24
WACC	5.38%	7.84%	11.19%

