



April 3, 2018

CURRENT PRICE: \$22.55
RATING: HOLD
PRICE TARGET: N/A
CURRENT YIELD: 1.1%

EPS Estimates

	DEC 17A	DEC 18E
1Q	\$0.24	\$0.35
2Q	\$0.37	\$0.45
3Q	\$0.30	\$0.45
4Q	\$0.23	\$0.28
	\$1.14	\$1.53

Trading Data

52-WEEK PRICE RANGE: **\$26.17-\$15.55**
 SHARES OUTSTANDING: **29.58(M)**
 MARKET CAP: **\$667.0(M)**
 AVG. DAILY TRADING VOLUME: **0.25(M)**
 S&P 500: **2,615**

Valuation Data

BOOK VALUE: **\$10.15**
 PRICE TO BOOK: **2.2x**
 DIVIDEND: **\$0.24**

COHU, Inc. (NSDQ: COHU)

4Q17 Earnings Results Improve

Highlights

- 4Q17 earnings of \$0.23/share vs. 4Q16's \$0.08/share
- Momentum in auto, mobility, and "IoT" increase sales
- Margin improvement due to sales mix & revenue growth
- COHU raises 1H18 revenue guidance
- Maintain HOLD rating

Investment Thesis

Use of integrated circuits throughout the world continues to accelerate as it finds its way into more products. A few decades integrated circuits were only associated with computers. However, their use has now spread into cellphones, automobiles, mobility items (i-Pads, Kindles, FitBit, etc.), communications, industrial robotics, solid state lighting (LED), and high speed memory. The current annual integrated circuit market is estimated to be \$11 billion with expectations of it growing to \$20 billion by 2020. One way for investors to invest in this growth area is through shares of COHU.

Company Summary

COHU is headquartered in the greater San Diego Metropolitan area (Poway CA) and has 1,600 employees. Formerly known as Cohu Electronics, the company changed its name to Cohu, Inc. in 1972 and was originally founded in 1947. The company develops, manufactures, sells, and services products used by the semiconductor industry to automate the testing of integrated circuits, wafer-level packages (WLPs) and light-emitting diodes (LEDs) found in many consumer products (i.e., cellphones, automobile sensors, computers, i-pads, automobile sensors, and other products). The company is comprised of four operating units: 1) Delta Design, 2) Rasco, 3) Ismeca, and 4) Integrated Test Solutions (ITS).

For Important Disclosure information regarding the Firm's rating system, valuation methods and potential conflicts of interest, please refer to the last two pages of this report.

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COMPANY PRODUCTS

COHU's products include semiconductor test handling and back-end finishing systems, micro-electronic mechanical systems (MEMS) test modules, thermal subsystems for burn-in and system level test of integrated circuits (ICs), and test contactors. COHU's products are used in the back-end of the semiconductor manufacturing process by global-semiconductor manufacturers and test sub-contractors to automate the testing of ICs. This testing determines the quality of performance of the ICs prior to shipment to customers.

The company is comprised of four operating units: 1) Delta Design, 2) Rasco, 3) Ismeca, and 4) ITS.

Delta sells "pick & place" and "thermal sub-systems" used for burn-in and system level testing. This unit sells its Pyramid, Matrix, Eclipse, T-Core, and Linx products to semiconductor manufacturers and test subcontractors. The ICs tested with COHU's products go into the mobile markets (phones, tablets, etc.), computing, the automotive area, and high-performance memory.

Rasco was purchased by COHU in 2008 and sells "gravity feed", "test-in-strip", and "micro-electronic mechanical systems" (MEMS) test solutions. Test handles sold by this unit include Jupiter, Saturn, and Jaguar. ICs tested by these products are used in mobile products, "internet of things", and magnetic and pressure sensors used in automotive applications.

Ismeca, purchased in 2013 by COHU, sells "current-based test handling" and "back-end finishing equipment". This unit's products include NY20 and NX32 used for IC testing, LEDs, discrete devices, and sensors. ICs tested by these handlers are used in mobile products, "internet of things", solid state lighting, portable wearable items (e.g. Apple Watches & Fitbit wrist bands), and cyber security.

ITS provides high performance products for the test contactor markets was created in 2014 to drive growth in this sector. Growth of the test contactor market has made it vital for COHU to supply an integrated solution for power semiconductor testing in automotive, industrial, and LED markets. The company designs, manufactures, sells, and provides support for various lines of test contractor solutions. These are consumable electro-mechanical assemblies connecting the device under test, inside COHU's test handlers, and the automotive test equipment.

COHU completed its acquisition of Kita Manufacturing Co. LTD, a Japanese based company for \$15 million. Kita had 2016 revenues of \$17 million and designs, manufactures, and sells spring probe contacts used in final test contactors, probe cards, PCB test boards, and connectors sold to worldwide customers. COHU believes Kita's products, and customer base, will help grow overall revenues.

COHU'S MANUFACTURING FACILITIES

- Poway, CA : 338,000 square feet (sold/leased back)
- Kolbermoor, Germany: 40,000 square feet (owned)
- Malacca, Malaysia: 50,000 square feet (leased)
- Calamba City, Laguna, Philippines: 51,000 square feet (leased)
- La Chaux-de-Fonds, Switzerland: 34,000 square feet (leased)
- Suzhou, China: 6,000 square feet (leased)



SEMICONDUCTOR INDUSTRY'S USE OF COHU PRODUCTS:

Back-end testing includes the final test of an IC by manufacturers, or subcontractors, before end use in cellphones, computers, tablets, wearable internet products, solid state lighting products, automotive vehicles, and cybersecurity items. COHU provides test handling equipment to automate test the final test of ICs, reducing the likelihood of faulty product shipment by semiconductor manufacturers.

The problem for IC manufacturers is the more functions a chip is asked to perform, the more heat it generates which could potentially shut-down the IC and its ability to do its programmed tasks. COHU's thermal-control products controls/lowers the temperature of these multi-function chips during the testing process, solving the "heat problem", allowing the manufacturer to produce more ICs for sales to its customers. The more chips making it through the testing period is known as "increasing yield" and increases sales/profits for IC manufacturers.

MANAGEMENT'S OPERATING GOALS

1) Increase market share in the ~\$940 million test handling market. COHU plans to leverage its leading "handler" market position, broad product portfolio, and thermal control technology to optimize test yield and increase its market share. 2) Expand total available market to ~\$2 billion with expansion into Wafer Level Package (WLP) probe and test contacting. 3) Continuously lowering product costs and expand COHU's gross margins by moving more of its manufacturing to Asia 4) Hit its 3-5 year financial targets of \$400 million in annual revenues, non-GAAP gross margins of 40%, and 17% adjusted EBITDA.

REVENUE/PROFIT GROWTH OPPORTUNITIES:

COHU's success is directly tied to the semi-conductor industry and the proliferating use of integrated circuits/chips in various consumer products such as cell phones, i-pads, computing products, automobiles/vehicles, consumer products, and the growing connectivity of individuals into the internet. This provides three potential sources of revenue growth for COHU:

COHU COULD EXPAND MARKET SHARE IN ITS CORE MARKETS. Increasing its share in growing segments (mobility/automotive/LED), from optimizing test yields of ICs through new technologies, such as COHU's active thermal control/vision inspection.

EXPAND TOTAL AVAILABLBE MARKET TO ~\$2 BILLION FROM INCREASED SALES INTO TEST CONTACTING & WLP PROBE MARKETS. COHU introduced its new business unit, ITS, in 2014 to help increase revenues in the ~\$650 million test contactor market. The company's test handlers include test contactors which until recently only focused on selling the test handler. COHU's new strategy is to focus on selling both the handlers and test contactors and believes this could increase its market share of the test contractor market.



Additionally, 20% of semiconductors remain as WLPs and are not subject to traditional IC assembly and final test. These WLPs are only visually inspected and cannot be tested by traditional “test-handlers” and automated test equipment. However, COHU is developing products to test WLPs, and solve this issue, which potentially opens up an additional revenue stream in a market estimated at approximately ~\$250 million in size.

Towards this goal of expanding market share, COHU is constantly developing new products for its customers testing needs. One new product is “PANTHER”, a prober for test/inspection of singulated wafer-level chip scale packages and bumped dies. Another is “SOLSTICE” a solution for system level test automation. “AQUILAE” is a new vision inspection module for enhanced micro-crack detection on wafer-level chip scale packages.

A recent new product roll-out, “ECLIPSE XTA”, has begun to generate additional revenues for COHU. The Eclipse XTA delivers a scalable performance for testing a wide range of semiconductors, from analog ICs to high performance mobile processors, during fully automated semiconductor test operation. The acceptance of this product by a large automotive semiconductor leader and new customer in Korea could add 2-3 points to COHU’s handler market share.

RECENT DEVELOPMENTS

COHU announced it had secured a major European automotive customer for its MATRIX tri-temperature pick-and-place handler combined with its multi-beam test contactors. Management believes this agreement will help COHU meet its 2018 goal of increasing its market share in the handler business by 2-3 points

New products have been rolled out to COHU’s customers during the past few months as the company seeks to grow revenues. One new product is “PANTHER”, a prober for test/inspection of singulated wafer-level chip scale packages and bumped dies. Another new product is “SOLSTICE” a solution for system level test automation. “AQUILAE” is a new vision inspection module for enhanced micro-crack detection on wafer-level chip scale packages.

The company announced a major Korean customer has qualified COHU’s new Eclipse XTA handler. This revenue was expected to appear in COHU’s 2Q18 results, however, management now feels these additional revenue streams will be reflected during 1Q18’s results. As a result, COHU raised its 1Q18 revenue guidance to \$93 million and raised non-GAAP gross margin expectations to 43%-43.5%. Overall, management expects 10% growth during 1H18 vs. 1H17.



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Recent Earnings

COHU reported 4Q17 GAAP earnings of \$0.23/share vs. \$0.08/share during 4Q16. The increased results were due to higher revenues and gross profit margins. Revenues rose to \$84.1 million, from \$70.6 million, because of strength in the applications processor segment, continued momentum in the automotive sector for power management and MEMS sensors, and higher demand for COHU's handlers in the computing segment. Gross profit margins rose to 42.1% from 37.1% because of the company's sales mix including higher than forecasted recurring sales. EBIT rose to \$4.7 million from \$3.1 million and continuing operations income increased to \$6.9 million from \$2.3 million.

Total operating expenses rose 17.5% to \$79.4 million from \$67.6 million. This occurred due to higher cost of sales (\$49.7 million vs. \$45.2 million), research and development (\$11.9 million vs. \$10.1 million), and SG&A expense (\$17.9 million vs. \$12.3 million). Operating expenses' increase resulted mainly from higher spending to support sales efforts with a large Korean customer. This effort was for the acceptance of COHU's new Eclipse XTA handler by this customer which could generate sales of approximately \$93 million. The new tax bill recently passed by the US Congress created a net tax benefit, to GAAP results, of approximately \$2 million during 4Q17.

4Q17 non-GAAP earnings rose to \$0.28/share from \$0.24/share during 4Q16. COHU's FY17 GAAP earnings increased to \$1.14/share from \$0.12/share during FY16 and FY17's non-GAAP earnings improved to \$1.54/share from 0.68/share during FY16.

Our Thoughts

COHU continued to show earnings improvement as earnings were propelled by an increase in revenues, reflecting higher customer demand. The company reported 4Q17 GAAP earnings of \$0.23/share vs. \$0.08/share during 4Q16 and 4Q17 non-GAAP earnings rose to \$0.28/share from \$0.24/share during 4Q16. The improved results were due to higher revenues and gross profit margins. Revenues rose to \$84.1 million, from \$70.6 million, because of strength in the applications processor segment, continued momentum in the automotive sector for power management and MEMS sensors, and higher demand for COHU's handlers in the computing segment. Gross profit margins rose to 42.1% from 37.1% because of the sales mix including higher than forecasted recurring sales. Additionally, management provided positive forward guidance for 1H18, expecting revenues to grow by 10%, due to increased customer orders and the recent roll outs of new products such as "Panther", "Aquilae", and the "Eclipse XTA" handler.

While the forward operating fundamentals appear positive for COHU we are concerned about the very crowded trade in technology stocks. Recent volatility in the stock market, and especially tech stocks, has shown this sector is at risk to the downside when large waves of sell orders hit the markets. We believe the recent sell-off in technology may not yet be over. Thus, under such a scenario, investors may want to wait for lower potential entry points into COHU's stock. Our rating on this stock is a HOLD.



Risks

There are no guarantees COHU will be able to grow future earnings. Declining customer orders, increasing commodity prices, and rising operating costs could negatively affect the company's profits. Economic slowdowns, downturns in the semiconductor industry, and political change in Europe and Asia could have adverse effects on earnings. Currency fluctuations could influence earnings. New products from competitors, or changing industry trends/technology, are risks for COHU's ability to sell its products. Negative equity markets, rising interest rates, terrorist attacks, and failure to comply with the Sarbanes Oxley Act could cause a decline in COHU's share price. Given the relatively small amount of daily trading activity in COHU's stock, any increase in trading volume could significantly accelerate the volatility of its share price movement.

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COHU, Inc.

(dollars in figures, except for per share figures)

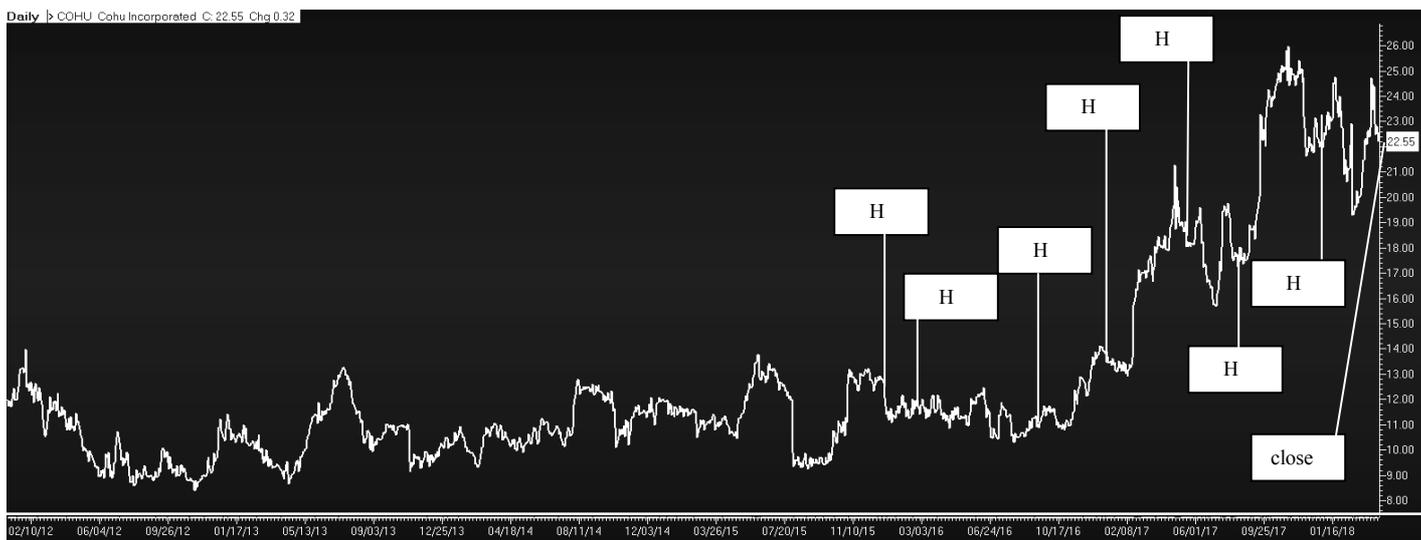
	1Q17	2Q17	3Q17	4Q17	2017	1Q18e	2Q18e	3Q18e	4Q18e	2018e
Revenues	\$81,097	\$93,866	\$93,651	\$84,090	\$352,704	\$93,188	\$99,258	\$99,459	\$82,736	\$374,641
Cost of Sales	48,841	56,736	56,742	49,667	211,986	53,583	57,073	57,186	47,983	215,825
Research & Development	9,776	9,466	9,609	11,886	40,737	12,106	12,243	12,453	12,428	49,230
Selling, general, & Administrative	14,460	16,020	16,882	17,871	65,233	13,687	13,924	13,965	12,417	43,993
Impairment of goodwill/assets						1,500				1,500
Gain on sale of facility										
Total costs/expenses	73,077	82,222	83,233	79,424	317,956	80,876	83,240	83,604	72,828	320,548
Gain/(loss) from Operations	8,020	11,644	10,418	4,666	34,748	12,312	16,018	15,855	9,908	54,093
Interest & other, net	101	142	174	200	617	109	137	166	194	606
Gain/(loss) from Cont. operations pre-tax	8,121	11,786	10,592	4,866	35,365	12,421	16,155	16,021	10,102	54,699
Income tax/benefit	1,358	1,078	1,837	2,029	2,244	2,112	2,748	2,724	1,725	9,309
Gain/(loss) from Cont. operations	6,763	10,708	8,755	6,895	331,121	10,309	13,407	13,927	8,377	46,020
Discontinued operations										
Income from dis. Ops pre-tax		-278			-278					
Income tax										
Income(loss) from discontinued ops		-278			-278					
Net Gain/(loss)	6,763	10,430	8,755	6,895	32,843	10,309	13,407	13,927	8,377	46,020
Income from Discontinued Ops.	\$0.00	(\$0.01)	\$0.00	\$0.00	(\$0.01)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Diluted earnings per share (GAAP)	\$0.24	\$0.37	\$0.30	\$0.23	\$1.14	\$0.35	\$0.45	\$0.45	\$0.28	\$1.53
Non-GAAP earnings per share	\$0.35	\$0.48	\$0.43	\$0.28	\$1.54	\$0.44	\$0.55	\$0.49	\$0.33	\$1.81



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Important Disclosures

Daily | COHU Cohn Incorporated C: 22.55 Chg 0.32



12/31/15 \$12.07 initiate with HOLD rating

Ratings-

BUY: B

HOLD: H

SELL: S

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