



**September 23, 2016**

**CURRENT PRICE:** \$11.55  
**RATING:** HOLD  
**PRICE TARGET:** N/A  
**CURRENT YIELD:** 2.1%

**EPS Estimates**

	DEC 15A	DEC 16E
1Q	(\$0.11)	(\$0.07)A
2Q	\$0.15	\$0.10A
3Q	\$0.05	\$0.11
4Q	\$0.08	\$0.17
	<b>\$0.22</b>	<b>\$0.31</b>

**Trading Data**

52-WEEK PRICE RANGE: **\$13.43-\$9.31**  
SHARES OUTSTANDING: **27.4(M)**  
MARKET CAP: **\$316.5(M)**  
AVG. DAILY TRADING VOLUME: **0.90(M)**  
S&P 500: **2,164**

**Valuation Data**

BOOK VALUE: **\$9.02**  
PRICE TO BOOK: **1.28x**  
DIVIDEND: **\$0.24**

**COHU, Inc. (NSDQ: COHU)**

*Reports 2Q15 earnings*

**Highlights**

- 2Q16 earnings of \$0.10/share vs. 2Q15's \$0.15/share
- Slowdown in smartphone market & pickup in automotives
- New product development could lead to rising margins
- COHU expects revenue ramp up in 2016 & 2017
- 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.*



## 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 subcontractors 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'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", thus 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:

**GROWTH OF THE OVERALL SEMICONDUCTOR INDUSTRY.** In 2014 this industry grew 9.9% to \$336 billion, according to the Semiconductor Industry Association (SIA). COHU could piggy-back its own revenue growth with the semiconductor market as this sector grows into the future.

**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 to approximately ~\$250 million in size. To this end, the company recently announced it achieved a major milestone in this strategy after receiving its first customer order for its WLP probe product.

#### TRADING INFLUENCES ON COHU'S STOCK:

COHU's stock is very volatile, mirroring movements of semiconductor stocks. By modern day views, COHU would be viewed as a momentum, or growth stock, subject to potentially wide fluctuations in its share price. There are two things which tend to dictate the direction of COUH's share price movement. First, is the directional movement of semiconductor stocks. This occurs since COHU gets its orders from the semiconductor industry and as the anticipation of profits in this sector rises and falls, so do investor expectations regarding stocks in this sector. Thus both bullish and bearish Wall Street expectations associated with this sector drives the direction of trading in these stocks, as well as COHU's.

Second, is the amount of revenues generated on a quarterly basis. Being a small company, investors judge COHU's growth prospects upon increasing revenues on a quarter-to-quarter basis. Growing quarterly revenues, or new orders from COHU's customers, could be seen as positive and cause increased buying in its stock. Conversely, the opposite is true should revenues decline or customers delay/halt orders. Thus, management's forward guidance regarding expectations often times influences the direction of COHU's stock price movement.



## 2Q16 EARNINGS CONFERENCE CALL TAKEAWAYS

During the 2Q16 conference call COHU provided 3Q16 guidance of \$68 million in revenues due to seasonally strong demand for automotive and mobile RF market and some reduced demand from the computing and mobile processor test markets. Additionally, management expects gross margins of 35%, operating expenses of \$20 million, including \$450,000 related to its global expense reduction program efforts, and R&D expense similar to levels during 2Q16.

While revenues declined when comparing 2Q16 with 2Q15 (\$76.4 million from \$75.2 million), there was a 16% increase when compared sequentially with 1Q16's revenues. This occurred as measured test sub utilization over installed base rose 2% and also from a big Korean semiconductor manufacturer's order for COHU's eclipse pick & place handler product.

50% of 2Q16's revenues came from sales to the automotive/industrial area. Orders picked up following a slowdown created by mergers within this sector during the past year. COHU received a repeat order for the company's first customer design win for matrix pick & place handlers and potentially lead to market share gains in the future. Growing automotive trends continue to drive demand for COHU's handler technology and MEMS modules for testing sensors and could increase product demand.

35% of revenues came from the mobility/communications area and COHU saw strong demand for its turret products. The first volume sales for the new generation NY32 turret platform orders came from large European and Japanese based customers and replaced one of COHU's older generation systems. Orders from a new customer, which merged with an old customer, increased COHU's turret market share. Management maintains its 2013 turret acquisition has been instrumental in key synergies and growing sales. COHU is currently developing integrated system level test platforms, combining the company's thermal and automation capabilities, and potentially could generate an additional \$5 million-\$10 million in sales during 2017. This could extend COHU's product offerings beyond traditional final testing of mobile processors.

The recent slowdown in smartphone sales will negatively impact revenues for COHU's thermal subsystems over the short run. Management was uncertain of the duration but noted smartphone demand announcements from Apple (AAPL-\$112.71) and Samsung (SSNLF-\$1550.00) will drive this market going forward.

10% of revenues came from the solid state lighting area. COHU has received repeat product orders from its customers. The company's contact business experienced an 18% increase in sequential quarterly orders and gained traction in digital/analog power in RF applications.

Management said several new products, currently being evaluated by customers, could be converted, over the next year, into higher margin revenues. Expectations are for double digit growth in test contactors and project \$15 million-\$30 million of incremental revenues from COHU's wafer level package and system level test platforms beginning in 1H17.



# EQUITY RESEARCH

## Recent Earnings

COHU reported 2Q16 GAAP earnings of \$0.10/share vs. \$0.15/share during 2Q15. The decline was due to an increase in operating costs and a 2Q16 higher tax, were partly offset by higher revenues. Operating revenues rose to \$76.4 million from \$75.2 million due to increases in customer orders, mainly from automotive sector, for COHU's handler products. 50% of revenues came from the automotive/industrial sector, 35% from mobility/communications, and 10% from solid state lighting.

Total operating costs were \$73.0 million, vs. \$71.1 million, as cost of sales increased (\$49.7 million vs. \$49.5 million), SG&A (\$15.0 million vs. \$13.8 million), and R&D expense (\$8.3 million vs. \$7.7 million). The rise in operating expenses caused operating income to decline to \$3.36 million from \$4.16 million, and EBITDA fell to \$3.42 million from \$4.16 million. Income from continuing operations dropped to \$2.66 million from \$3.89 million as income taxes rose to \$761,000 from \$277,000.

2Q16's non-GAAP earnings decreased to \$0.22/share from \$0.27/share during 2Q15 as income from continuing operations fell to \$5.9 million from \$7.2 million. The GAAP to non-GAAP adjustments include \$1.7 million of stock based compensation expense, \$1.8 million of purchased intangible amortization expense, and \$276,000 of restructuring expenses.

## Our Thoughts

COHU reported 2Q16 GAAP earnings of \$0.10/share vs. \$0.15/share during 2Q15. The decline was due to an increase in operating costs, partly offset by higher revenues, and a higher tax rate for 2Q16. Operating revenues rose to \$76.4 million from \$75.2 million due to increases in customer orders, mainly from automotive sector, for COHU's handler products.

This earnings report, and news of slowing smart phone sales, put downward pressure on this stock. Management stated the reduced demand for computing/mobile processor tests (via declines in smartphone demand) was offset by strength in automotives, solid-state lighting, and mobile RF with turret handlers. We anticipate future news regarding COHU's ability to attain new customers, grow revenues, and smartphone sales trends will continue to dictate the direction of COHU's stock. Given the recent news on smart phone demand, reports of slowing US auto sales, and volatility in the equity markets, we continue to rate COHU 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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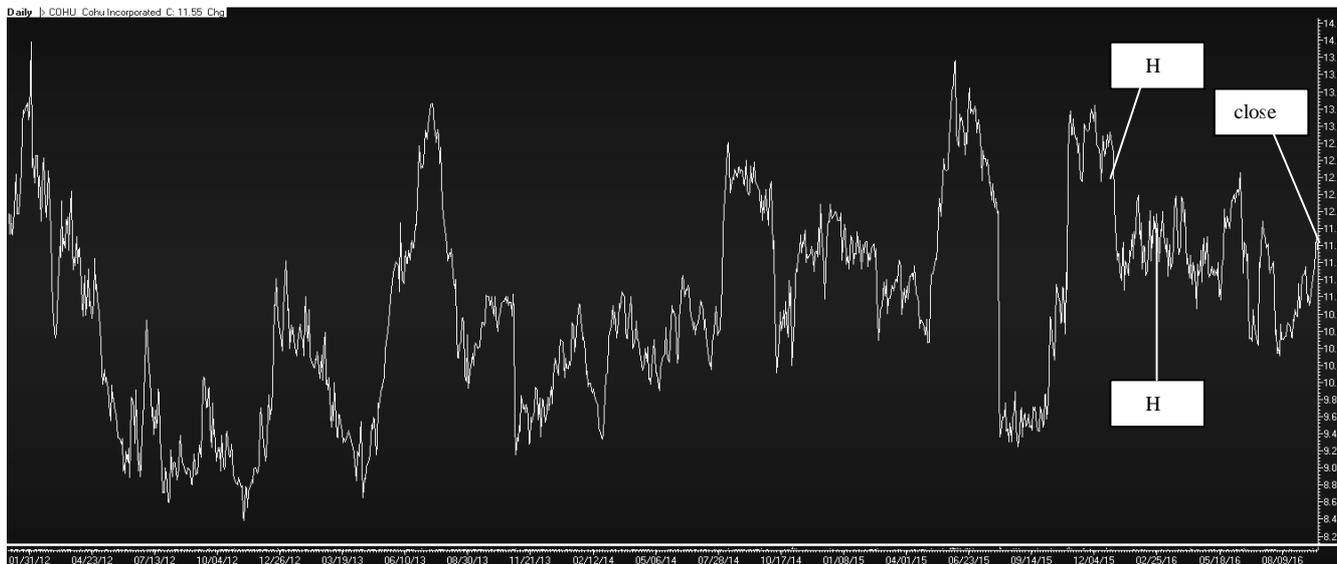
COHU, Inc.  
(dollars in figures, except for per share figures)

	1Q15	2Q15	3Q15	4Q15	FY15	1Q16	2Q16	3Q16e	4Q16e	FY16e
Revenues	\$68,068	\$75,211	\$67,512	\$63,484	\$269,654	\$65,778	\$76,353	\$76,154	\$85,664	\$303,949
Cost of Sales	46,039	49,509	44,718	43,087	180,616	46,337	49,669	50,261	57,395	203,662
Research & Development	9,629	7,731	8,605	8,206	33,107	7,803	8,305	8,243	8,315	32,666
Selling, general, & Administrative	13,835	13,811	11,923	13,134	51,170	13,370	15,015	13,663	13,814	55,862
Impairment of goodwill/assets										
Gain on sale of facility				3,198	3,198					
Total costs/expenses	69,773	71,051	65,246	61,259	261,695	\$67,510	72,989	72,167	79,524	292,190
Gain/(loss) from Operations	-1,705	4,160	2,266	2,225	7,959	-1,732	3,364	3,987	6,140	11,759
Interest & other, net	6	4	9	25	44	43	59	6	14	122
Gain/(loss) from Cont. operations pre-tax	-1,699	4,164	2,275	2,250	8,003	-1,689	3,423	3,993	6,154	11,881
Income tax/benefit	1,041	277	940	40	2,211	222	761	998	1,539	3,520
Gain/(loss) from Cont. operations	-2,740	3,887	1,335	2,290	5,792	-1,911	2,662	2,995	4,615	8,361
Discontinued operations										
Income from dis. Ops pre-tax		-3,959	-222	-341	-5,536		-55	-192	-218	
Income tax					6					
Income from dis. Ops		-3,959	-222	-341	-5,542		-55	-192	-218	
Net Gain/(loss)	-2,740	-72	\$1,113	1,949	250	-1,911	2,607	2,803	4,397	7,225
Income from Discontinued Ops.	(\$0.11)	(\$0.15)	(\$0.01)	(\$0.01)	(\$0.21)			(\$0.01)	(\$0.01)	(\$0.04)
Diluted earnings per share (GAAP)	(\$0.11)	\$0.15	\$0.04	\$0.08	\$0.22	(\$0.07)	\$0.10	\$0.11	\$0.17	\$0.31
Non-GAAP earnings per share	\$0.03	\$0.27	\$0.17	\$0.09	\$0.58	\$0.06	\$0.22	\$0.15	\$0.12	\$0.55



# EQUITY RESEARCH

## Important Disclosures



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

Ratings-  
BUY: B  
HOLD: H  
SELL: S

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