



August 13, 2019

CURRENT PRICE: \$13.06
RATING: HOLD
PRICE TARGET: N/A
CURRENT YIELD: 1.8%

EPS Estimates

	DEC 18A	DEC 19E
1Q	\$0.28	(\$0.56)A
2Q	\$0.39	(\$0.47)A
3Q	\$0.16	(\$0.56)
4Q	(\$1.40)	\$0.01
	(\$1.01)	(\$1.58)

Trading Data

52-WEEK PRICE RANGE: \$27.83-\$12.41
 SHARES OUTSTANDING: 40.87(M)
 MARKET CAP: \$553.8(M)
 AVG. DAILY TRADING VOLUME: 0.70(M)
 S&P 500: 2,926

Valuation Data

BOOK VALUE: \$12.56
 PRICE TO BOOK: 1.04x
 DIVIDEND: \$0.24

COHU, Inc. (NSDQ: COHU)

Earnings hurt by Trade War

Highlights

- 2Q19 earnings of (\$0.47)/share vs. 2Q18's \$0.39/share
- Trade war impacts results-slows customers' orders
- Goal of reducing operating expenses by \$40 million/yr.
- Hoping for 2020 turnaround in semi industry
- 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 grow 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 3,400 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) Final test handlers, 2) Contactors, 3) Automated Test Equipment, and 4) PCB testing.

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.

COHU sells "pick & place" and "thermal sub-systems" used for burn-in and system level testing. This unit sells its Pyramid, Matrix, Eclipse, T-Core, Linx, and Solstice, 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.

The company sells "gravity feed", "test-in-strip", and "micro-electronic mechanical systems" (MEMS) test solutions. Test handlers 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.

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.

High performance products, for the test contactor markets, were 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 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.

Last year, Xcerra was purchased in a stock/debt deal and COHU believes Xcerra will help grow overall revenues.

COHU'S MANUFACTURING FACILITIES

- Malacca, Malaysia for test handlers
- Calamba City, Laguna, Philippines for contactors & device kits
- Osaka, Japan for contactor spring pings
- Wertheim Germany for flying probe testers
- Poway, CA, Kolbermoor, Germany, La Chaux-de-Fonds, Switzerland, Milipitas CA, & Norwood Ma are limited assembly and test sites
- Automated Test Equipment (ATE) manufacturing is outsourced to Jabil in Penang, Malaysia



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

Recent Earnings

COHU reported 2Q19 GAAP earnings of (\$0.47)/share vs. \$0.39/share during 2Q18. Earnings declined to weakening revenues, higher interest expense, and amortization/ restructuring charges related to the Xcerra acquisition when comparing the two quarters. Revenues weakened as many of COHU's customers lowered orders due to import restrictions placed upon Huawei by the Trump Administration. These restrictions negatively impacted Huawei's supply chain for smartphones affecting COHU's customers.

42% of 2Q19's orders were systems and 58% were recurring, as the mix continues to indicate softness over the near term. COHU stated utilization fell to 77% by end of 2Q19 from 80% during 1Q19.

When comparing 2Q19 to 2Q18, interest expense rose to \$5.28 million from \$11,000 due to new debt (\$534 million) used to finance the acquisition of Xcerra. Also, related to the Xcerra acquisition was an amortization of intangible assets charge (\$9.99 million) and a restructuring charge (\$8.55 million).



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SG&A expense rose to \$36.43 million from \$19.30 million and R&D expense increased to \$22.10 million from \$11.05 million, reflecting the inclusion of Xcerra's operations. Cost of sales increased to \$87.61 million from \$57.68 million. Gross profit margins improved decreased to 41.6% from 42.8%.

2Q19's non-GAAP earnings declined to \$0.02/share from \$0.64/share during 2Q18. Non-GAAP adjustments to GAAP adjustments included approximately \$3.7 million of stock based expense, and other items such as property, plant, equipment step-up cost) and restructuring expenses of approximately \$10 million.

2Q19's sales of \$150 million were at the low-end of prior company guidance due to the negative impact of export restrictions placed on Huawei and the effects on COHU's customers doing business with Huawei. Forward looking smartphone unit sales, for 2H19, were reduced by Huawei. This caused a late quarter reduction in COHU's RF and Flat Panel Display driver test sales as some companies pivot towards Chinese subcontractors.

While mobility was 29% of system orders ongoing softness appears in this segment. The automotive semiconductor market remains weak due to softness in the auto industry. However, longer term fundamentals remain strong with the increasing electrification of automobiles, industrial automation, and the deployment of 5G communications.

During 2Q19 COHU did an initial shipment of its complete solution for testing next-generation RD devices used in a global satellite network. Testers used for 4G RF power amplifiers are being used in the initial production of 5G devices coming out in new mobile products. COHU expects production this year for its RF power amplifier testers and expect 5G volumes to see substantial growth during 2H20.

COHU's PCB test business has experienced strong demand from its China customers supporting server/network equipment/telecommunication applications. There were soft conditions in Europe with automotive and industrial customers.

Our Thoughts

There is a bull argument to be made for COHU as the stock trades near its 52-week low. This comes from the potential growth of revenues based on the buildout of 5G, the mobility/IOT markets, and improvement in the industrial and automotive sectors. Since COHU plans to reduce operating expenses by \$40 million per year, any ramp up in revenues, could improve gross margins from 39%-41% towards the 45%-49% range. Under this scenario, positive earnings may materialize in 2020 or 2021, and accelerate the pay-down of debt incurred from the Xcerra acquisition, helping to mitigate the \$5 million quarterly interest payment.

However, the biggest impediment to this scenario is the ongoing US/China trade war causing a slowdown in the business for many of its customers, which produce chips and integrated circuits, and thus, negatively affecting COHU's revenues. Until the dispute comes to a resolution it is probable the semiconductor/chip manufacturing business will see lackluster growth and cause COHU to generate flat to negative quarterly earnings going forward. Given the uncertainty, and timing, of trade talks between US/China, 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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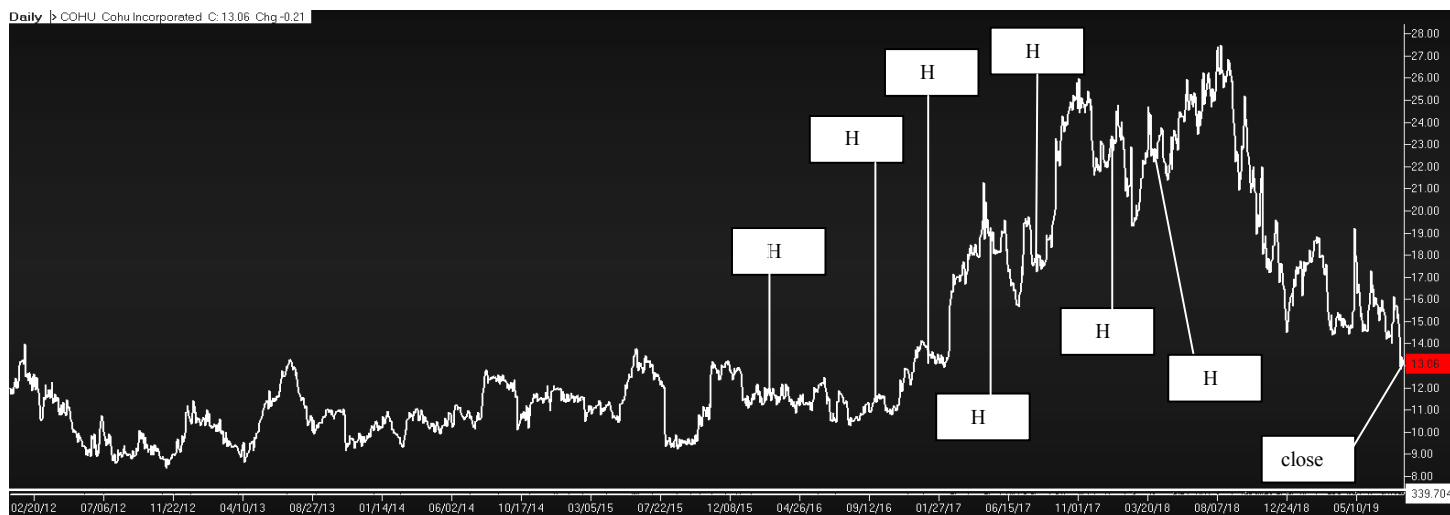
(dollars in figures, except for per share figures)

	1Q18	2Q18	3Q18	4Q18	2018	1Q19	2Q19	3Q19e	4Q19e	2019e
Revenues	\$95,150	\$99,817	\$86,164	\$170,637	\$451,768	\$147,809	\$150,011	\$143,841	\$149,119	\$590,780
Cost of Sales	55,599	58,316	51,786	128,718	292,460	93,394	87,605	84,866	87,903	353,768
Research & Development	11,775	11,051	11,088	22,520	56,434	22,733	22,108	22,159	21,836	88,836
Selling, general, & Administrative	17,763	16,652	16,511	45,766	96,754	38,286	36,428	35,421	35,128	145,263
Impairment of goodwill/assets										
Amort of purchased intangible assets				14,080	17,917	10,019	9,987			20,006
Restructuring charges				18,704	18,704	1,361	8,545			9,896
Gain on sale of facility										
Total costs/expenses	85,137	86,019	79,385	229,788	481,549	165,793	164,673	142,446	144,867	617,779
Gain/(loss) from Operations	10,013	13,798	6,779	-59,151	-29,781	-17,984	-14,662	1,395	4,252	-26,999
Interest expense				4,944	4,977	5,507	5,282	5,164	5,125	21,078
Interest & other, net	236	318	326	274	1,187	222	191	323	108	844
Foreign transaction gain (loss)				439	1,659	218	-546	253	219	144
Gain/(loss) from Cont. operations pre-tax	10,249	14,116	7,105	-63,382	-31,912	-23,051	-20,299	-3,193	-516	-47,059
Income tax/benefit	2,127	2,468	2,302	6,266	631	200	916	894	857	2,867
Gain/(loss) from Cont. operations	8,122	11,648	4,803	-57,116	-32,543	-22,851	-19,383	-2,299	311	-44,222
Discontinued operations										
Income from dis. Ops pre-tax				157	157	189	38	33	28	288
Income tax				38	38	25	14	12	9	60
Income (loss) from discontinued Ops.				119	119	164	24	21	19	228
Net Gain/(loss)	8,122	11,648	4,803	-56,997	-32,424	-22,687	-19,359	-2,278	330	-43,994
Net income (loss) attrib. Non-contrlling int.				243	243	44	36	42	45	167
Diluted earnings per share (GAAP)	\$0.28	\$0.39	\$0.16	(\$1.40)	(\$1.01)	(\$0.56)	(\$0.47)	(\$0.56)	\$0.01	(\$1.58)
Income from Discontinued Ops.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.01	\$0.00	\$0.00	\$0.00	\$0.01
Non-GAAP earnings per share	\$0.36	\$0.64	\$0.30	\$0.24	\$1.49	(\$0.03)	\$0.02	\$0.05	\$0.08	\$0.12



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Important Disclosures



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

Ratings-
BUY: B
HOLD: H
SELL: S

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