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Cree, Inc. (CREE-US)

Semiconductors & Semiconductor Equipment

- **We are downgrading our rating from Strong Buy to Neutral on CREE, with the recent run-up in the price, we now view the shares as fully valued.**
- **Business Performance trends remain flat, and we see further challenges going forward.**
- **LED lighting continues to face increasing competition and a challenging business environment.**
- **CREE's turnaround and Wolfspeed contribution will take some time.**

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Company Note

Cree, Inc. (CREE-US)

Semiconductors & Semiconductor Equipment

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Research Action:

Rating Downgrade	
Rating:	**Neutral**
Prior Rating:	**Strong Buy**
Price 01/22/2018:	**$36.69**
52 Week High / Low:	**$40.24 $20.50**
Key Data: (TTM as of Sep-17)	
Excess Cash per Share:	**$6.15**
Annual Dividend:	**$0.00**
Dividend Yield:	**0.00%**
Avg. Volume (30 Day):	**0.8M**
Shares Outstanding:	**98.1M**
Float:	**96.6M**
Equity MV:	**$3,600.6M**
Sales TTM:	**$1,407.8M**
Beta:	**1.03**
EBITDAR:	**$271.3M**
NOPAT:	**($38.3)M**
Total Invested Capital:	**$2,455.3M**
Return on Capital:	**-1.56%**
Cost of Capital:	**7.66%**
Economic Profit:	**($226.9)M**
Market Value Added:	**$1,483.7M**
Current Operations Value:	**-$500.4M**
Future Growth Value:	**$4,439.5M**

- **We are downgrading our rating from Strong Buy to Neutral on CREE, with the recent run-up in the price, we now view the shares as fully valued.** Increasing competition in the LED market and increasing needs for CapX will make it harder for CREE to generate a positive Return on Capital in the near future. Recent outlooks from industry peers continue to highlight a challenging lighting environment. The best thing that happened to Cree over the past year was that it was unable to sell its Wolfspeed division and it ended up becoming its strongest business driver. Increases in Wolfspeed's production capacity for Cree to capitalize on opportunities in electric vehicles and energy storage will not happen until late 2019. We believe the opportunity to generate greater Economic Profit in the near-term will continue to be challenging and there is limited opportunity for shareholder value creation in the near-term. We believe there is currently little upside from current levels.
- **Business Performance trends remain flat, and we see further challenges going forward.** For the 12 months ending September 2017, Net Sales Revenue declined 6.92% Y/Y from $1.51 billion to $1.41 billion. We forecast a slight increase of less than 1% to $1.42 billion over the NTM. Economic Operating Cash Flow (EBITDAR) declined 13.2% Y/Y from $312.5 million to $271.3 million over the LTM. We forecast an increase of 5.9% to $287.2 million over the NTM. Net Operating Profit After Tax (NOPAT) declined from a loss of ($0.08) million to a greater loss of ($38.3) million over the LTM. We forecast a further loss of ($13.2) million over the NTM. Return on Capital (ROC) declined from a -.03% to a -1.56% over the LTM. We believe it stays around -1.5% over the NTM. Economic Profit declined 16% from the loss of ($195.4) million to a loss of ($226.9) million over the LTM. We forecast an additional loss of ($221) million over the NTM.

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- **LED lighting continues to face increasing competition and a challenging business environment.** Cree's lighting product division, which is over 40% of revenue declined 19% Y/Y. Expectations are for a further decline of 20% over the NTM. Recent industry outlooks from lighting industry peers including Acuity Brands (AYI-US, Non-rated), Philips Lighting, and Zumtobel group all continue to highlight significant price competition in a challenging environment.
- **CREE's turnaround and Wolfspeed contribution will take some time.** CREE's new CEO, Gregg Lowe, has been well received and outlined a good growth story. CREE's share price had gained over 50% since he started in September when the stock was around $24 a share. Revenue declined slightly from 2016 and expectations are flat for 2018. Much optimism has been placed on Wolfspeed's capabilities and growth story. Unfortunately, right now the stock seems ahead of itself.

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Investment Thesis

CREE is the leading vertically integrated provider of LED lighting and SiC power and RF solutions. We believe CREE's Wolfspeed division will benefit from strong demand in applications for electric storage and the growth of electric vehicles (EV's). In the near-term, the recent run-up in price leaves little opportunity for further upside while the challenging LED lighting environment adds to downside risk.

Company Overview

Cree, Inc. (CREE-US) is a market-leading developer and manufacturer of lighting-class light emitting diodes (LED), lighting products and semiconductors for lighting, power and radio-frequency (RF) applications. Cree is also a developer and manufacturer of semiconductors that enhance lighting, power and communication products by increasing their performance and energy efficiency. Cree's competitive advantage is its expertise in silicon carbide (SiC) and gallium nitride (GaN) that increase the power and light emission while producing less heat and using less energy than other materials or technologies. Cree increases lighting performance within multiple applications including general illumination, backlighting, displays, optimized power management and more effective wireless infrastructure for voice and data management.

Cree produces products for indoor and outdoor lighting, electric signs, video displays, transportation, inverters, power supplies, and wireless systems. Cree's products are used in architectural lighting applications, automobile dashboards and vehicle lighting, market tickers and lighted video billboards. Cree's customers range from lightbulb and lighting fixture manufacturers to defense-related federal agencies. Cree manufactures its products in both the U.S. and China.

CREE operates and reports revenue through the following business segments:

Lighting Products (48% of revenue) **-** includes LED chips, LED components and SiC materials.

Light Emitting Diodes (37% of revenue) - produces LED lighting systems and bulbs for the commercial, industrial and consumer markets.

Wolfspeed (formerly power and RF, 15% of revenue) - produces power and radio-frequency (RF) products for consumer, commercial and military applications.

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Mergers and Acquisition History:

In 2015 Cree bought Arkansas Power Electronics International Inc. a manufacturer of power modules and electronics applications for $13.8 million.

In 2015, Cree announced it would spin off Wolfspeed into a public company. However, in 2016 Cree changed its plans and entered a note to an agreement to sell Wolfspeed to German chip maker Infineon Technologies AG for $850 million. The U.S. Committee on Foreign Investment (CFIUS) block the sale, and the deal was terminated in February 2017. Wolfspeed has gone on to be Cree's most valuable business driver.

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Cree, Inc. (CREE-US) Semiconductors & Semiconductor Equipment

Financial Data

Report Basis Reported Period Ending	LTM 09/23/2012	LTM 09/29/2013	LTM 09/28/2014	LTM 09/27/2015	LTM 09/25/2016	LTM 09/24/2017	NTM 09/30/2018	5 Yr Average	3 Yr Average	Current Trend
Net Sales Revenue	$1,211.4	$1,461.2	$1,684.3	$1,656.8	$1,512.5	$1,407.8	$1,416.7	$1,544.5	$1,525.7	$1,412.2
Sales Growth	22.59%	20.62%	15.27%	-1.63%	-8.71%	-6.92%	0.63%	3.72%	-5.75%	-3.14%
Sales Growth Trend	14.45%	21.41%	17.41%	5.13%	-5.88%	-7.64%	-2.39%	6.09%	-2.80%	-5.01%
Operating Cash Flow (EBITDAR)	$356.9	$455.1	$491.9	$346.1	$312.5	$271.3	$287.2	$375.4	$310.0	$279.2
EBITDAR Margin	29.46%	31.14%	29.20%	20.89%	20.66%	19.27%	20.27%	24.23%	20.27%	19.77%
EBITDAR Growth	-5.35%	27.51%	8.09%	-29.64%	-9.70%	-13.21%	5.88%	-3.39%	-17.51%	-3.66%
Net Operating Profit Before Tax (NOPBT)	$58.7	$133.9	$136.1	($11.7)	($1.8)	($38.3)	($16.8)	$43.6	($17.3)	($27.5)
NOPBT Margin	4.85%	9.16%	8.08%	-0.71%	-0.12%	-2.72%	-1.18%	2.74%	-1.18%	-1.95%
NOPBT Growth	-57.27%	127.95%	1.65%	-108.62%	84.62%	-2023.73%	56.26%	-383.63%	-682.58%	-983.74%
Cash Operating Income Tax	$4.8	$26.7	$19.5	$0.0	$0.0	$0.0	($3.5)	$9.2	$0.0	($1.8)
Economic Tax Effective Rate	8.22%	19.92%	14.30%	0.00%	0.00%	0.00%	21.00%	6.84%	0.00%	10.50%
Net Operating Profit After Tax (NOPAT)	$53.9	$107.2	$116.6	$18.2	($0.8)	($38.3)	($13.2)	$40.6	($7.0)	($25.8)
NOPAT Margin	4.45%	7.34%	6.92%	1.10%	-0.05%	-2.72%	-0.94%	2.52%	-0.56%	-1.83%
NOPAT Growth	-53.85%	98.91%	8.77%	-84.38%	-104.20%	-4910.98%	65.44%	-998.38%	-1699.85%	-2422.77%
Cash & Equivalents	$816.3	$1,088.8	$1,104.8	$666.7	$628.1	$672.2	$656.1	$832.1	$655.6	$664.1
Total Assets	$2,802.6	$3,193.1	$3,352.7	$2,891.1	$2,752.8	$2,658.0	$2,594.5	$2,969.5	$2,767.3	$2,626.2
Non - Interest Bearing Liabilities (NIBLs)	$173.3	$264.0	$294.5	$247.2	$187.2	$261.2	$255.0	$250.9	$231.9	$258.1
Net Assets	$2,629.3	$2,929.1	$3,058.1	$2,643.9	$2,565.5	$2,391.9	$2,334.7	$2,717.7	$2,533.8	$2,363.3
Economic Asset Adjustments	$17.5	$40.5	$35.5	($1.1)	($21.8)	$63.4	$61.9	$23.3	$13.5	$62.7
Net Operating Assets	$2,646.8	$2,969.6	$3,093.7	$2,642.8	$2,543.7	$2,455.3	$2,396.6	$2,741.0	$2,547.2	$2,426.0
Debt & Debt Equivalents	$11.6	$12.7	$58.2	$216.8	$197.4	$154.0	$150.3	$127.8	$189.4	$152.1
Equity & Equivalents	$2,592.0	$2,880.8	$2,969.9	$2,388.9	$2,342.3	$2,211.1	$2,158.3	$2,558.6	$2,314.1	$2,184.7
Total Capital - Financing Sources	$2,603.6	$2,893.4	$3,028.1	$2,605.7	$2,539.6	$2,365.1	$2,308.5	$2,686.4	$2,503.5	$2,336.8
Capital Adjustments	$5.9	$27.9	$22.3	($11.0)	($32.2)	$50.5	$49.3	$11.5	$2.4	$49.9
Net Capital Financing Sources	$2,609.5	$2,921.3	$3,050.4	$2,594.8	$2,507.4	$2,415.5	$2,357.8	$2,697.9	$2,505.9	$2,386.7
Net Working Capital	$370.7	$452.4	$522.6	$504.1	$840.0	$371.1	$362.2	$538.1	$571.8	$366.7
Cost of Net Working Capital	$25.3	$32.0	$36.0	$37.4	$51.3	$46.4	$45.3	$40.6	$45.0	$45.8
% of Revenue	2.09%	2.19%	2.14%	2.26%	3.39%	3.29%	3.20%	2.65%	2.98%	3.25%
Operational Capital	$948.5	$1,015.2	$1,171.2	$1,149.7	$1,223.6	$978.8	$955.4	$1,107.7	$1,117.4	$967.1
Cost of Operational Capital	$64.9	$76.3	$80.7	$84.6	$90.6	$84.4	$82.3	$83.3	$86.5	$83.3
% of Revenue	5.36%	5.22%	4.79%	5.11%	5.99%	5.99%	5.81%	5.42%	5.69%	5.90%
Productive Capital	$1,936.8	$1,984.1	$2,119.6	$2,099.3	$1,994.2	$1,864.7	$1,820.1	$2,012.4	$1,986.1	$1,842.4
Cost of Productive Capital	$131.1	$152.3	$151.4	$153.8	$156.2	$147.8	$144.3	$152.3	$152.6	$146.0
% of Revenue	10.82%	10.42%	8.99%	9.28%	10.33%	10.50%	10.18%	9.90%	10.04%	10.34%
Total Operating Capital	$1,891.1	$1,953.8	$2,073.0	$2,058.9	$1,991.2	$1,853.5	$1,809.2	$1,986.1	$1,967.9	$1,831.4
Cost of Total Operating Capital	$127.9	$149.3	$148.6	$150.6	$154.5	$147.3	$143.7	$150.1	$150.8	$145.5
% of Revenue	10.56%	10.22%	8.82%	9.09%	10.22%	10.46%	10.15%	9.76%	9.92%	10.30%
Non - Operating Capital	$755.7	$1,015.8	$1,020.6	$583.9	$552.5	$601.8	$587.4	$754.9	$579.4	$594.6
Cost of Non - Operating Capital	$44.5	$68.8	$75.1	$58.5	$43.4	$44.2	$43.2	$58.0	$48.7	$43.7
% of Revenue	3.67%	4.71%	4.46%	3.53%	2.87%	3.14%	3.05%	3.74%	3.18%	3.09%
Total Capital	$2,646.8	$2,969.6	$3,093.7	$2,642.8	$2,543.7	$2,455.3	$2,396.6	$2,741.0	$2,547.2	$2,426.0
Cost of Total Capital	$172.3	$218.1	$223.7	$209.1	$197.9	$191.5	$186.9	$208.0	$199.5	$189.2
% of Revenue	14.23%	14.93%	13.28%	12.62%	13.08%	13.60%	13.19%	13.50%	13.10%	13.40%
Cost of Capital (WACC)	6.64%	7.77%	7.38%	7.29%	7.63%	7.66%	7.66%	7.55%	7.53%	7.66%
Capital Structure										
Debt & Debt Equivalents	$11.6	$12.7	$58.2	$216.8	$197.4	$154.0	$150.3	$127.8	$189.4	$152.1
Debt & Debt Equivalents % of Market Value	0.35%	0.18%	1.17%	8.08%	7.27%	5.94%	5.94%	3.18%	7.11%	5.94%
Preferred Equity	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Preferred Equity % of Market Value	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Market Value of Common Equity	$3,267.7	$7,118.0	$4,935.9	$2,467.9	$2,518.2	$2,440.2	$2,381.9	$3,896.0	$2,475.4	$2,411.0
Common Equity % of Market Value	99.65%	99.82%	98.83%	91.92%	92.73%	94.06%	94.06%	96.82%	92.89%	94.06%
Total Economic Market Value (MV)	$3,279.3	$7,130.6	$4,994.1	$2,684.8	$2,715.6	$2,594.1	$2,532.1	$4,023.9	$2,664.8	$2,563.1
Total %	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Excess Cash	$755.7	$1,015.8	$1,020.6	$583.9	$552.5	$601.8	$587.4	$754.9	$579.4	$594.6
Economic Enterprise Value	$2,523.6	$6,114.9	$3,973.5	$2,100.9	$2,163.1	$1,992.4	$1,944.8	$3,269.0	$2,085.5	$1,968.6
Average Capital	$2,562.5	$2,765.4	$2,985.8	$2,822.6	$2,551.1	$2,461.5	$2,386.7	$2,717.3	$2,611.7	$2,424.1
Capital ∆	$93.8	$311.8	$129.1	($455.6)	($87.3)	($91.9)	($57.7)	($38.8)	($211.6)	($74.8)

Source: Company Data, Financial statements and Tigress Research

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Cree, Inc. (CREE-US)

Semiconductors & Semiconductor Equipment

Financial Analysis

Report Basis	LTM	LTM	LTM	LTM	LTM	LTM	NTM	5 Yr	3 Yr	Current
Reported Period Ending	**09/23/2012**	**09/29/2013**	**09/28/2014**	**09/27/2015**	**09/25/2016**	**09/24/2017**	**09/30/2018**	**Average**	**Average**	**Trend**
Return on Market Value (NOPAT / MV)	**1.64%**	**1.50%**	**2.34%**	**0.68%**	**-0.03%**	**-1.48%**	**-1.44%**	**0.60%**	**-0.28%**	**-1.46%**
Return on Enterprise Value (NOPAT / EV)	**2.14%**	**1.75%**	**2.94%**	**0.87%**	**-0.04%**	**-1.92%**	**-1.88%**	**0.72%**	**-0.36%**	**-1.90%**
Return on Capital (NOPAT / Average Capital)	**2.10%**	**3.88%**	**3.91%**	**0.65%**	**-0.03%**	**-1.56%**	**-1.52%**	**1.37%**	**-0.31%**	**-1.54%**
Cost of Capital (WACC)	**6.64%**	**7.77%**	**7.38%**	**7.29%**	**7.63%**	**7.66%**	**7.66%**	**7.55%**	**7.53%**	**7.66%**
Economic Return Spread	**-4.54%**	**-3.89%**	**-3.47%**	**-6.64%**	**-7.66%**	**-9.22%**	**-9.00%**	**-6.18%**	**-7.84%**	**-9.11%**
Capital Charge	**$170.2**	**$214.8**	**$220.3**	**$205.7**	**$194.7**	**$188.5**	**$184.0**	**$204.8**	**$196.3**	**$186.3**
Economic Profit (EP)	**($116.3)**	**($107.5)**	**($103.7)**	**($187.5)**	**($195.4)**	**($226.9)**	**($221.5)**	**($164.2)**	**($203.3)**	**($224.2)**
Economic Profit Improvment (EPI)	**($62.1)**	**$8.8**	**$3.9**	**($83.9)**	**($7.9)**	**($31.4)**	**$5.4**	**($22.1)**	**($41.1)**	**($13.0)**
EP Growth	*-114.40%*	*7.55%*	*3.60%*	*-80.88%*	*-4.21%*	*-16.09%*	*2.39%*	*-18.01%*	*-33.73%*	*-6.85%*
Economic Profit Margin on Sales	*-9.60%*	*-7.36%*	*-6.16%*	*-11.32%*	*-12.92%*	*-16.12%*	*-15.63%*	*-10.77%*	*-13.45%*	*-15.87%*
Economic Profit Per Share	**($1.01)**	**($0.92)**	**($0.86)**	**($1.66)**	**($1.92)**	**($2.30)**	**($2.25)**	**($1.53)**	**($1.96)**	**($2.28)**
GAAP Earnings Per Share	**$0.41**	**$0.87**	**$0.87**	**($0.94)**	**$0.04**	**($1.22)**	**$0.19**	**($0.08)**	**($0.71)**	**($0.51)**
Excess Cash Per Share	**$6.54**	**$8.50**	**$8.53**	**$5.64**	**$5.49**	**$6.15**	**$6.01**	**$6.86**	**$5.76**	**$6.08**
Performance Drivers										
Sales Growth	22.59%	20.62%	15.27%	-1.63%	-8.71%	-6.92%	0.63%	3.72%	-5.75%	-3.14%
Sales Growth Trend (ROC Sales Growth)	14.45%	21.41%	17.41%	5.13%	-5.88%	-7.64%	-2.39%	6.09%	-2.80%	-5.01%
EBITDAR Margin	29.46%	31.14%	29.20%	20.89%	20.66%	19.27%	20.27%	24.23%	20.27%	19.77%
EBITDAR Growth	-5.35%	27.51%	8.09%	-29.64%	-9.70%	-13.21%	5.88%	-3.39%	-17.51%	-3.66%
NOPBT Margin	4.85%	9.16%	8.08%	-0.71%	-0.12%	-2.72%	-1.18%	2.74%	-1.18%	-1.95%
NOPBT Growth	-57.27%	127.95%	1.65%	-108.62%	84.62%	-2023.73%	56.26%	-383.63%	-682.58%	-983.74%
NOPAT Margin	4.45%	7.34%	6.92%	1.10%	-0.05%	-2.72%	-0.94%	2.52%	-0.56%	-1.83%
NOPAT Growth	-53.85%	98.91%	8.77%	-84.38%	-104.20%	-4910.98%	65.44%	-998.38%	-1699.85%	-2422.77%
Economic Profit Margin on Sales (EP / Sales)	-9.60%	-7.36%	-6.16%	-11.32%	-12.92%	-16.12%	-15.63%	-10.77%	-13.45%	-15.87%
Economic Profit Growth	-114.40%	7.55%	3.60%	-80.88%	-4.21%	-16.09%	2.39%	-18.01%	-33.73%	-6.85%
Economic Return Spread (ROC-WACC)	-4.54%	-3.89%	-3.47%	-6.64%	-7.66%	-9.22%	-9.18%	-6.18%	-7.84%	-9.20%
Economic Return Ratio (ROC / WACC)	31.67%	49.93%	52.94%	8.85%	-0.39%	-20.33%	-19.84%	18.20%	-3.96%	-20.09%
Economic Profit Momentum (ΔEP/Capital)	-2.38%	0.30%	0.13%	-3.23%	-0.31%	-1.30%	0.23%	-0.88%	-1.62%	-0.54%
Economic Profit Momentum Margin (ΔEP/Sales)	-5.12%	0.60%	0.23%	-5.06%	-0.52%	-2.23%	0.38%	-1.40%	-2.61%	-0.93%
Capital Growth	3.73%	11.95%	4.42%	-14.94%	-3.37%	-3.66%	-2.39%	-1.12%	-7.32%	-3.03%
Capital Turns	0.46X	0.50X	0.55X	0.64X	0.60X	0.58X	0.60X	0.58X	0.61X	0.59X
EVC Acceleration Margin	*-6.28%*	*0.72%*	*0.26%*	*-4.98%*	*-0.48%*	*-2.08%*	*0.39%*	*-1.56%*	*-2.66%*	*-0.85%*
EVC Acceleration Spread	*-2.68%*	*0.34%*	*0.14%*	*-2.81%*	*-0.28%*	*-1.23%*	*0.22%*	*-0.93%*	*-1.51%*	*-0.50%*
Risk Factors										
Free Cash Flow (NOPAT - Δ Capital)	($39.9)	($204.6)	($12.5)	$473.8	$86.6	$53.6	$44.5	$79.4	$204.7	$49.0
Free Cash Flow Rate (FCF / Capital)	-1.53%	-7.00%	-0.41%	18.26%	3.45%	2.22%	1.89%	3.30%	7.98%	2.05%
Free Cash Flow Yield (FCF / MV)	-1.22%	-2.87%	-0.25%	17.65%	3.19%	2.06%	1.76%	3.96%	7.63%	1.91%
Total Debt / Total Capital	0.44%	0.43%	1.91%	8.36%	7.87%	6.37%	6.37%	4.99%	7.53%	6.37%
Total Debt / EBITDAR	3.25%	2.79%	11.83%	62.65%	63.15%	56.76%	52.32%	39.44%	60.85%	54.54%
Excess Cash	$755.7	$1,015.8	$1,020.6	$583.9	$552.5	$601.8	$0.0	$754.9	$579.4	$300.9
Financial Leverage ((Total Debt - Excess Cash) /	-22.69%	-14.07%	-19.27%	-13.67%	-13.08%	-17.26%	5.94%	-15.47%	-14.67%	-5.66%
Pension Leverage (Net Pension Liability / MV)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Equity Risk Index (S&P 500 = 1.00)	1.06	1.06	1.20	1.21	1.21	1.19	1.19	1.17	1.21	1.19
Stock Price Volatility	7.06	6.38	6.67	5.74	5.59	5.19	5.19	5.91	5.51	5.19
Sales Index (NL Sales)	7.10	7.29	7.43	7.41	7.32	7.25	7.26	7.34	7.33	7.25
Market Value Index (NL Market Value)	8.10	8.87	8.52	7.90	7.91	7.86	7.84	8.21	7.89	7.85
Size Index (NL Sales: MV)	7.60	8.08	7.97	7.65	7.61	7.56	7.55	7.78	7.61	7.55
Beta	1.09	1.09	1.30	1.31	1.32	1.29	1.29	1.26	1.31	1.29
TFP Adjusted Beta	1.06	1.06	1.20	1.21	1.21	1.19	1.19	1.17	1.21	1.19
Stock Price Volatility	7.06	6.38	6.67	5.74	5.59	5.19	5.19	5.91	5.51	5.19
Valuation Measures										
Total Economic Market Value (MV)	$3,279.3	$7,130.6	$4,994.1	$2,684.8	$2,715.6	$2,594.1	$2,532.1	$4,023.9	$2,664.8	$2,563.1
Economic Enterprise Value	$2,523.6	$6,114.9	$3,973.5	$2,100.9	$2,163.1	$1,992.4	$1,944.8	$3,269.0	$2,085.5	$1,968.6
Equity Market Value	$3,267.7	$7,118.0	$4,935.9	$2,467.9	$2,518.2	$2,440.2	$2,381.9	$3,896.0	$2,475.4	$2,411.0
Total Capital	$2,646.8	$2,969.6	$3,093.7	$2,642.8	$2,543.7	$2,455.3	$2,396.6	$2,741.0	$2,547.2	$2,426.0
Market Value Created MVC (MV - Capital)	$632.5	$4,161.0	$1,900.5	$42.0	$171.9	$138.8	$135.5	$1,282.9	$117.6	$137.2
MVC Margin (MVC / Sales)	52.21%	284.76%	112.83%	2.53%	11.37%	9.86%	9.57%	83.06%	7.71%	9.71%
MVC Spread (MVC / Capital)	23.90%	140.12%	61.43%	1.59%	6.76%	5.65%	5.65%	46.80%	4.62%	5.65%
Current EVC Value (EP / WACC)	($1,751.1)	($1,384.7)	($1,405.1)	($2,572.6)	($2,561.1)	($2,961.9)	($2,891.1)	($2,176.4)	($2,700.8)	($2,926.5)
Current Operations Value COV	$811.5	$1,380.6	$1,580.7	$249.9	($10.0)	($500.4)	($504.5)	$540.8	($89.1)	($502.4)
Current Operations Value Per Share	$7.08	$11.84	$13.10	$2.21	($0.10)	($5.08)	($4.58)	$4.91	($0.85)	($4.82)
Future Growth Value (MVC - EVA Value)	$2,467.8	$5,750.0	$3,413.4	$2,434.8	$2,725.6	$3,094.6	$3,036.6	$3,483.0	$2,753.9	$3,065.6
Future Growth Value Reliance (FGV / MV)	75.25%	80.64%	68.35%	90.69%	100.37%	119.29%	119.92%	86.56%	103.34%	119.60%
Share Price	$24.45	$63.83	$48.48	$27.00	$23.90	$25.35	$25.35	$37.71	$25.42	$25.35
Dividend Yield	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%				
Total Shareholder Return (TTM)	-28.00%	161.06%	-24.05%	-44.31%	-11.48%	6.07%	0.00%	48.77%	-32.60%	-0.26%
MV to IC Ratio	1.24X	2.40X	1.61X	1.02X	1.07X	1.06X	1.06X	1.47X	1.05X	1.06X
EV / EBITDAR Multiple	7.07X	13.44X	8.08X	6.07X	6.92X	7.34X	6.77X	8.71X	6.73X	7.05X
EV / NOPBIT Multiple	42.96X	45.67X	29.19X	-178.99X	-1198.43X	-51.98X	-115.99X	74.93X	-120.61X	-71.45X
EV / NOPAT Multiple	46.81X	57.02X	34.07X	115.32X	-2827.71X	-51.98X	-146.82X	80.52X	-299.63X	-76.33X
EV / EP Multiple	-21.69X	-56.86X	-38.33X	-11.20X	-11.07X	-8.78X	-8.78X	-19.91X	-10.26X	-8.78X
Future Growth Value (% of MV)	75.25%	80.64%	68.35%	90.69%	100.37%	119.29%	119.92%	86.56%	103.34%	119.60%
Current Operations Value (% of MV)	24.75%	19.36%	31.65%	9.31%	-0.37%	-19.29%	-19.92%	13.44%	-3.34%	-19.60%
Market Value (COV + FGV %)	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Basic Shares Outstanding	114.7	116.6	120.6	113.0	101.8	98.5	110.1	110.1	104.4	104.3

Source: Company Data, Financial statements and Tigress Research

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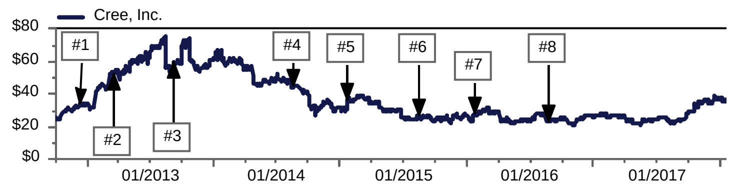
Cree, Inc. (CREE-US) — Semiconductors & Semiconductor Equipment

Ratings History

Cree, Inc. (CREE-US)

Item #	Date	Research Action	Rating	Price
#8	08/23/2016	Reiterate Rating	Strong Buy	$23.82
#7	01/22/2016	Reiterate Rating	Strong Buy	$28.03
#6	08/14/2015	Reiterate Rating	Strong Buy	$27.00
#5	01/22/2015	Reiterate Rating	Strong Buy	$36.61
#4	08/19/2014	Reiterate Rating	Strong Buy	$45.53
#3	09/10/2013	Upgrade	Strong Buy	$60.04
#2	03/15/2013	Downgrade	Buy	$52.65
#1	12/11/2012	Initiation of Coverage	Strong Buy	$34.69



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We employ proprietary quantitative valuation models combined with dynamic fundamental analysis based on the principles of Economic Profit to formulate timely and insightful investment ratings, analysis, strategies, and recommendations.

We make key adjustments to reported financial data eliminating GAAP-based accounting distortions and measuring all companies on a cash operating basis.

Our proprietary research framework is a multi-factor model that scores and ranks companies based on their risk-adjusted ability to create Economic Profit relative to their current market value focusing on three key components:

Business Performance: Measuring economic profitability, growth and operating efficiency.

Risk: Measuring business sustainability, volatility, strength, and consistency.

Valuation: Linking business performance to market value. Measuring value created relative to capital employed and enterprise multiples of economic profit and cash flow.

We score and rank 24 key measurements of performance, risk, and value into relative market and industry investment recommendations.

For more information on our research methodology, please review the Tigress Investment Research Guide to Company Valuation and Analysis.

Glossary of Key Terms and Measures

Excess Cash per Share: Excess Cash per Share is the amount of excess cash divided by basic shares outstanding. Excess Cash consists of all cash and short-term securities less operating cash needed to run the business. Operating Cash is 5% of TTM net sales revenue.

EBITDAR: Earnings Before Interest, Taxes, Depreciation, Amortization, and Restructuring and Rent Costs. This is especially important when comparing companies that use a significant amount of leased assets like restaurants and retailers.

NOPAT: Net Operating Profit after Tax represents a company's after-tax cash operating profit excluding financing costs.

Total Invested Capital: Total Invested Capital the total cash investment that shareholders and debt holders have made during the life of the company.

Return on Capital: Return on Capital equals NOPAT divided by Total Invested Capital. It is a key measure of operating efficiency. ROC quantifies how well a company generates cash flow relative to the capital invested in its business.

Cost of Capital: Is the proportionately weighted cost of each category of capital – common equity, preferred equity and debt.

Economic Profit: Economic Profit is the net operating income after tax less the opportunity cost of the total capital invested. It is the most important driver of shareholder value.

Current Operations Value: Current Operations Value is the portion of market value based on the discounted present value of the current earnings stream assuming it remains constant forever.

Future Growth Value: Future Growth Value is the portion of market value based on un-earned Economic Profit

For more information on the key terms and measures, please review the Tigress Investment Research Guide to Company Valuation and Analysis.

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Rating Distribution (01/22/2018)

Rating:	Meaning:	Companies Under Coverage #	Companies Under Coverage %	Relationship Companies Under Coverage* #	Relationship Companies Under Coverage* %
Strong Buy:	Expect significant price gains in the price of the stock relative to its industry peer group and general market over the next 12 months.	15	13%	1	15%
Buy:	Expect out-performance for the price of the stock relative to its industry peer group and general market over the next 12 months.	52	44%	5	70%
Neutral:	Expect little or no outperformance opportunity over the next 12 months.	45	38%	1	15%
Underperform:	Expect underperformance for the price of the stock relative to its industry peer group and general market over the next 12 months.	5	4%	0	0%
Sell:	Expect price decline or significant relative market and industry underperformance over the next 12 months.	0	0%	0	0%
Not Rated	No Current Research Rating	NA	NA	65	NA
	Total	117	100%	72	100%

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