



UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549

DIVISION OF  
CORPORATION FINANCE

October 4, 2013

Via E-mail

Shaker Sadasivam  
President and Chief Executive Officer  
SunEdison Semiconductor, Inc.  
501 Pearl Drive  
St. Peters, Missouri 63376

**Re: SunEdison Semiconductor, Inc.  
Registration Statement on Form S-1  
Filed September 9, 2013  
File No. 333-191052**

Dear Mr. Sadasivam:

We have reviewed your registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

Registration Statement

1. Please supplementally provide us with copies of all written communications, as defined in Rule 405 under the Securities Act, that you, or anyone authorized to do so on your behalf, present to potential investors in reliance on Section 5(d) of the Securities Act, whether or not they retain copies of the communications. Similarly, please supplementally provide us with any research reports about you that are published or distributed in reliance upon Section 2(a)(3) of the Securities Act of 1933 added by Section 105(a) of the Jumpstart Our Business Startups Act by any broker or dealer that is participating or will participate in your offering.

Prospectus Cover

2. Please remove from the front prospectus cover the designation "Joint Book-Running Managers." If this designation is appropriate for your prospectus, you may include the

designation in another section of your document where you can also explain its significance to investors.

Our Company, page 1

3. We note your disclosure naming your largest customers as Samsung, TSMC and STMicroelectronics. Please tell us the objective criteria you used to determine which customers to highlight in the Summary and whether you have named all of your customers that satisfy these criteria.
4. Please provide us objective support for your statements regarding your leadership, market position, market share growth and similar statements throughout the prospectus.

Structure and Formation of Our Company, page 5

5. Please revise to indicate the reason why you are undertaking the separation and offering at this time.
6. We note the disclosure that you expect to use a portion of offering proceeds and to incur indebtedness in order to finance a cash payment that you will make to SunEdison upon separation. Expand your summary, and other sections of your document as appropriate, to disclose the nature and amount of the cash payment to SunEdison, as well as the reasons for the payment and your decision to incur significant indebtedness in order to finance the payment. Also, on page 8 and wherever you discuss the use of proceeds from this offering, please quantify the portion of the total consideration you will pay SunEdison with offering proceeds and the portion that will be paid with proceeds from incurring indebtedness.
7. Please expand the disclosure in the fifth bullet point to disclose when the third-party debt was incurred and the other information required by instruction 4 to Item 504 of Regulation S-K. Also, given your disclosure on page 117 regarding the services that the underwriters have provided, to the extent the existing debt is held by underwriters or their affiliates please revise to identify the underwriter and specify the amount of offering proceeds that will be used to repay the indebtedness to each underwriter.

Industry and Market Data, page 31

8. We note the disclaimers in the last two sentences on this page. Please revise the disclosure to remove the disclaimers.
9. We note the statements and supporting reports identified on page 32. Please provide us with copies of these reports. Where your disclosure cites market and industry data other than the statements supported on page 32, such as in the last paragraph on page 1,

throughout page 2, and in the first paragraph on page 50, please provide us with copies of the sources of this data. Clearly mark the relevant sections of the reports that support the data you have included in the prospectus and the page number of your prospectus where such data has been used. Also tell us whether the data was commissioned for use in connection with the registration statement.

Capitalization, page 35

10. Revise to remove the caption relating to cash and cash equivalents from your presentation of capitalization.

Unaudited Pro Forma Consolidated Financial Statements, page 39

11. We note that the pro forma financial statements show the effects of multiple transactions, including the contribution of the capital stock of SunEdison's semiconductor materials business, borrowings under a new senior secured term loan, a new revolving credit facility and repayment of certain existing third party indebtedness. Please revise the introductory paragraph to provide a more detailed description of the various transactions reflected in the pro forma presentation. Refer to Rule 11-02(b)(2) of Regulation S-X.
12. For each of the transactions for which you are presenting pro forma information, please explain to us why you concluded pro forma presentation is appropriate under Rule 11-01(a) of Regulation S-X.
13. In order to provide investors with greater insight into the effects of the various transactions for which you are reflecting pro forma information, revise the presentation to separately present each of the significant transactions, including at a minimum, separate columns reflecting each of (1) the spinoff of the semiconductor materials business and (2) the financing transactions.

Notes to Unaudited Pro Forma Consolidated Financial Statements, page 44

14. We note your adjustments (2) and (6) presented here regarding the effects of a new five-year term loan. We also note the disclosures on page 64 that state you have no commitment for such loan at this time. Rule 11-02(b)(6) of Regulation S-X requires that pro form adjustments give effect to events that are factually supportable. Please tell us how you intend to ensure that this adjustment meets the factually supportable criteria prior to requesting effectiveness on this registration statement.
15. If the financing transactions will result in significant changes to your long-term debt, then please disclose the future maturities of pro forma long-term debt in a note to the pro forma statements.

Management Discussion and Analysis of Financial Condition and Results of Operations, page 49

Liquidity, page 63

16. We note your disclosures here that all of the cash and cash equivalents were held by your foreign subsidiaries. We further note your disclosure on page F-32 that you consider your undistributed earnings of all but one of your foreign subsidiaries to be permanently reinvested. Please revise your discussion of liquidity and capital resources to specifically address in greater detail how the location of the cash (at your foreign subsidiaries) may impact your liquidity. In this regard, discuss the amount of foreign earnings that you do not consider to be permanently reinvested and the related cash amounts at that subsidiary that will be available for use to pay domestic expenses.

Critical Accounting Policies, page 67

17. We note your disclosures here regarding your revenue recognition, including your disclosure that you defer revenue when pricing is not fixed or determinable. Please expand your disclosures here to discuss in greater detail the situations in which the pricing may not be fixed or determinable, or situations where significant judgment is necessary to determine if the price is fixed or determinable.
18. We note your disclosures here regarding your estimates relating to the valuation of inventory. Please expand the disclosures to explain how you develop your “assumptions of future demand and market conditions.” Discuss how accurate your assumptions of future demand and market conditions have been in the past.

Market Risk, page 73

19. Please provide quantitative disclosures about market risk for your foreign currency contracts as required by Item 305(a) of Regulation S-K.

Proprietary Information and Intellectual Property, page 84

20. Please disclose the duration of your material patents.
21. Please expand to clarify how you determined which intellectual property will be transferred to you and which will be kept by SunEdison upon separation, and briefly describe the nature of the intellectual property that will be transferred to you.

Certain Relationships and Related Party Transactions, page 99

Tax Matters Agreement, page 101

22. Please disclose the terms of any tax sharing agreements you have with SunEdison, Inc. with regard to your net operating losses, carryover or carryback items and liability sharing arrangements for open tax examinations.

Description of Capital Stock, page 104

23. We note your disclosure that the description of capital stock is “subject to the applicable provisions of the DGCL.” This appears to be an inappropriate qualification of your disclosure to state law. Please revise accordingly.

Underwriting, page 115

24. Please expand the disclosure in the first two paragraphs on page 117 to disclose which underwriters or their affiliates have provided services to SunEdison and disclose the amount of the fees and commissions that they received for their services.
25. To the extent the new senior credit facility that you intend to enter into for purposes of financing the payment to be made to SunEdison upon separation will be with the underwriters or their affiliates, please revise to disclose the terms of the arrangement, including any fees, costs or other amounts payable to the underwriters or their affiliates.

Notes to Audited December 31, 2012 and 2011 Combined Financial Statements, page F-8

Note 2 – Summary of Significant Accounting Policies, page F-9

Contingencies, F-13

26. Please further clarify your policy in which you record “at least the minimum estimated liability for a loss contingency,” given the requirements of paragraph 450-20-30-1 of the FASB Accounting Standards Codification.

Note 3 - Restructuring, Impairment and Other Charges, page F-14

27. We note the 2011 restructuring charge includes \$182.9 million relating to a purchase obligation that you either cancelled or were not able to fulfill. Please tell us more about how you evaluated the initial charge that you recorded in 2011. Discuss any cancellation terms that existed with the suppliers and provide us with a summary of how the \$182.9 million charge was calculated. Explain your basis for recording the charge at that time, citing any authoritative literature you considered in concluding the charge was

appropriate. Supplement your discussion with a summary of the events that occurred from the time you determined the \$182.9 million charge was appropriate to the time you reached your settlements with Evonik Industries AG and Evonik Degussa SpA.

28. Further to the above, please tell us more about the \$31.7 million gain you recorded in 2012 upon receiving the chlorosilanes plant. Discuss how the provision for the construction and operation of the plant was considered when determining the fiscal year 2011 restructuring charge.

Note 8 – Accumulated Other Comprehensive Loss, page F-22

29. Please provide an analysis of the changes in these components for fiscal year 2011 and 2012.

Note 12 – Income Taxes, page F-32

30. Please separately present any material components included in the line item “effect of foreign operations (including valuation allowance).” Refer to Rule 4-08(h)(2) of Regulation S-X.
31. We note that during the first six months of 2013, you determined that the undistributed earnings of one of your foreign wholly owned subsidiaries would be remitted to the United States in the foreseeable future, but the remaining foreign earnings are considered permanently reinvested. Please explain to us in greater detail the circumstances that occurred in the first six months of 2013 that caused you to change your conclusions regarding the foreign earnings of one of your subsidiaries. Please also provide us with additional details that support your determination that the foreign earnings of the remaining subsidiaries are considered permanently reinvested. In this regard, we note that your domestic entity has incurred significant losses before income taxes while your foreign subsidiaries together have realized significant income before income taxes. Refer to FASB ASC 740-30-25-17 and 18.

Note 13 – Related Party Transaction, page F-35

32. Please explain the nature of the accounts receivable, affiliate balance of \$89.1 million, given that net sales, affiliate in 2012 is \$6.8 million. Tell us the terms and manner of settlement for these receivables. Refer to paragraph 850-10-50-1d of the FASB Accounting Standards Codification.

Exhibit 5.1

33. Please file as an exhibit a dated opinion from counsel.

Shaker Sadasivam  
SunEdison Semiconductor, Inc.  
October 4, 2013  
Page 7

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes the information the Securities Act of 1933 and all applicable Securities Act rules require. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

Notwithstanding our comments, in the event you request acceleration of the effective date of the pending registration statement please provide a written statement from the company acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Please refer to Rules 460 and 461 regarding requests for acceleration. We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

You may contact Gary Newberry, Staff Accountant, at (202) 551-3664 or Kevin Vaughn, Accounting Branch Chief, at (202) 551-3643 if you have questions regarding comments on the financial statements and related matters. Please contact Tom Jones at (202) 551-3602 or Mary Beth Breslin, Senior Attorney, at (202) 551-3525 with any other questions.

Sincerely,

/s/ Mary Beth Breslin for

Amanda Ravitz  
Assistant Director

cc (via e-mail): Dennis M. Myers