



DIVISION OF  
CORPORATION FINANCE

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

April 18, 2014

Via E-mail

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

**Re: SunEdison Semiconductor, Inc.  
Amendment No. 5 to Registration Statement on Form S-1  
Filed April 15, 2014  
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.

Unaudited Pro Forma As Adjusted Consolidated Balance Sheet, Page 52

1. Please refer to adjustment (H). Please reconcile the adjustment to long-term debt reflected here to the amount reflected in the footnote H (\$198.0 million). Further, revise the explanation in footnote G to explain how the adjustment impacts the long-term debt and current portion of long-term debt.
2. Please refer to adjustment (I). Please explain to us where the pro forma balance sheet reflects the \$10.4 million adjustment to long-term debt detailed in the footnote.
3. Please refer to adjustment (J). Please reconcile between the adjustment presented here (\$305.9 million) and the adjustment to cash and cash equivalents discussed in the footnote for adjustment J (\$133.4 million). Further, it appears that other adjustments also impact the cash and cash equivalents line but are not referenced on the pro forma balance sheet. Please revise or advise.

Notes to the Combined Financial Statements, page F-8

Note 13 - Related Party Transactions, page F-37

4. We note your response to comment 1. Please revise to disclose the amount of related party expenses charged to you by SunEdison. Refer to Rule 4-08.k of Regulation S-X.

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.

Shaker Sadasivam  
SunEdison Semiconductor, Inc.  
April 18, 2014  
Page 3

You may contact Gary Newberry, Staff Accountant, at (202) 551-3761 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) 551-3625 with any other questions.

Sincerely,

/s/ Mary Beth Breslin for

Amanda Ravitz  
Assistant Director

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