

SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

FORM S-8
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

ON SEMICONDUCTOR CORPORATION

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

36-3840979
(I.R.S. Employer
Identification No.)

5005 E. McDowell Road
Phoenix, AZ 85008
(Address of principal executive offices) (Zip code)

Options Granted Under the
CAMD 2004 Omnibus Incentive Compensation Plan, as amended,
CAMD 1995 Non-Employee Directors' Stock Option Plan, as amended,
CAMD 1995 Employee Stock Option Plan, as amended, and
Pursuant to Individual Agreements with each of Robert V. Dickinson, Daniel Hauck and Chih-Yu Lo
and Assumed by ON Semiconductor Corporation
(Full title of the plan)

George H. Cave, Esq.
ON Semiconductor Corporation
5005 E. McDowell Road
Phoenix, AZ 85008
(Name and address of agent for service)

Telephone number, including area code, of agent for service: (602) 244-5226

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer

Accelerated filer

Non-accelerated filer (do not check if a smaller reporting company)

Smaller reporting company

This registration statement shall hereafter become effective in accordance with Rule 462 promulgated under the Securities Act of 1933, as amended.

CALCULATION OF REGISTRATION FEE

Title of Securities to be Registered (1)	Amount to be Registered (2)	Proposed maximum offering price per share (3)	Proposed maximum aggregate offering price (3)	Amount of registration fee
Assumed Options Granted under the California Micro Devices Corporation 2004 Omnibus Incentive Compensation Plan, as amended Common Stock \$0.01 par value	2,140,221	\$7.30	\$15,623,613.30	\$1,113.96
Assumed Options Granted under the California Micro Devices Corporation 1995 Non-Employee Directors' Stock Option Plan, as amended Common Stock \$0.01 par value	10,659	\$8.38	\$89,322.42	\$6.37
Assumed Options Granted under the California Micro Devices Corporation 1995 Employee Stock Option Plan, as amended Common Stock \$0.01 par value	283,149	\$12.43	\$3,519,542.07	\$250.94
Assumed Options Granted under the Agreement between California Micro Devices Corporation and Robert V. Dickinson Common Stock \$0.01 par value	207,270	\$10.81	\$2,240,588.70	\$159.75
Assumed Options Granted under the Agreement between California Micro Devices Corporation and Daniel Hauck Common Stock \$0.01 par value	88,830	\$5.68	\$504,554.40	\$35.97
Assumed Options Granted under the Agreement between California Micro Devices Corporation and Chih-Yu Lo Common Stock \$0.01 par value	15,397	\$13.19	\$203,086.43	\$14.48
TOTAL	2,745,526		\$22,180,707.32	\$1,581.47

- (1) Represents Registrant's shares issuable under equity awards granted pursuant to the California Micro Devices Corporation plans and agreements listed above and assumed by the Registrant on January 27, 2010 pursuant to an Agreement and Plan of Merger by and among the Registrant, Pac-10 Acquisition Corporation, an indirect wholly owned subsidiary of the Registrant, and California Micro Devices Corporation.
- (2) Pursuant to Rule 416(a) under the Securities Act of 1933, as amended (the "Securities Act"), this Registration Statement on Form S-8 also covers any additional securities that may be offered or issued in connection with any stock split, stock dividend or similar transaction.
- (3) Estimated solely for the purpose of calculating the amount of the registration fee pursuant to Rule 457(h) under the Securities Act. The price per share and aggregate offering price are based upon the weighted average exercise price for outstanding options granted pursuant to the plans and schemes of California Micro Devices Corporation and assumed by the Registrant.

PART II
INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference

ON Semiconductor Corporation (the "Company") hereby incorporates by reference in this registration statement the following documents:

(a) The Company's annual report on Form 10-K filed pursuant to Sections 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), containing audited financial statements for the Company's fiscal year ended December 31, 2008, as filed with the Securities and Exchange Commission on February 27, 2009.

(b) All other reports filed pursuant to Section 13(a) or 15(d) of the Exchange Act since the end of the fiscal year covered by the Registrant document referred to in (a) above.

(c) The description of the Company's common stock included in its registration statement on Form 8-A12G, filed April 21, 2000, and any amendment or report that it has filed (or will file after the date of this registration statement and prior to the termination of this offering) for the purpose of updating such description, including its Current Report on Form 8-K filed with the SEC on May 21, 2009.

All documents subsequently filed by the Company pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act, prior to the filing of a post-effective amendment to this registration statement which indicates that all securities offered hereby have been sold or which deregisters all securities remaining unsold, shall be deemed to be incorporated by reference in this registration statement and to be a part hereof from the date of filing of such documents.

Item 4. Description of Securities

The class of securities to be offered is registered under Section 12 of the Exchange Act.

Item 5. Interests of Named Experts and Counsel

Not applicable.

Item 6. Indemnification of Directors and Officers

Section 102(b)(7) of the Delaware General Corporation Law ("DGCL") authorizes a corporation to provide in its certificate of incorporation that a director of the corporation shall not be personally liable to the corporation or its stockholders for monetary damages for breach of the director's fiduciary duty. While this statute does not change the directors' duty of care, it enables corporations to limit available relief to equitable remedies such as injunction or rescission. The statute has no effect on a director's duty of loyalty or liability for acts or omissions not in good faith or involving intentional misconduct or knowing violations of law, illegal payment of dividends or stock redemptions or repurchases, or for any transaction from which the director derives an improper personal benefit. Article Sixteenth of the Company's Amended and Restated Certificate of Incorporation eliminates the personal liability of each of its directors to the full extent permitted by the DGCL Section 102(b)(7), as it may be amended or supplemented.

Subsection (a) of Section 145 of the DGCL empowers a corporation to indemnify any present or former director, officer, employee or agent of the corporation, or any individual serving at the corporation's request as a director, officer, employee or agent of another enterprise, who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation), against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with such action, suit or proceeding provided that such person acted in good faith and in a manner he or she reasonably

believed to be in, or not opposed to, the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe his or her conduct was unlawful.

Subsection (b) of Section 145 empowers a corporation to indemnify any present or former director, officer, employee or agent of the corporation, or any individual serving at the corporation's request as a director, officer, employee or agent of another enterprise, who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation, against expenses (including attorneys' fees) actually and reasonably incurred by the person in connection with the defense or settlement of such action or suit provided that such director, officer, employee or agent acted in good faith and in a manner reasonably believed to be in, or not opposed to, the best interests of the corporation, except that no indemnification may be made in respect of any claim, issue or matter as to which such director, officer, employee or agent shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all of the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

Section 145 further provides that to the extent a director or officer has been successful on the merits or otherwise in the defense of any action, suit or proceeding referred to in subsections (a) and (b) or in the defense of any claim, issue or matter therein, he or she shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by him or her in connection therewith and that indemnification and advancement of expenses provided by or granted pursuant to Section 145 shall not be deemed exclusive of any other rights to which the indemnified party may be entitled.

Article Eleventh of the Company's Amended and Restated Certificate of Incorporation provides that the Company shall indemnify all persons whom it may indemnify pursuant to Section 145 of the DGCL, to the full extent permitted by Section 145 of the DGCL, as amended from time to time.

Section 145(g) of the DGCL permits a corporation to purchase and maintain insurance on behalf of a director, officer, employee or agent of the corporation, or that was or is serving at the request of the corporation as a director, officer, employee or agent for another enterprise, against any liability asserted against such person and incurred by such person in any such capacity, whether or not the corporation would otherwise have the power to indemnify such person against liability. The Company carries insurance policies that cover the Company and its individual directors and officers against certain liabilities, including liabilities under the Securities Act. Employment agreements with certain of our officers, entitle the particular officer to the same directors and officers' liability insurance coverage that the Company provides generally to its other directors and officers as such policies may be amended from time to time.

Item 7. Exemption From Registration Claimed

Not applicable.

Item 8. Exhibits

See Exhibit Index.

Item 9. Undertakings

The undersigned registrant hereby undertakes:

- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
 - (i) To include any prospectus required by Section 10(a)(3) of the Securities Act;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement;

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement; provided, however, that paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed by the registrant pursuant to Section 13 or Section 15(d) of the Exchange Act that are incorporated by reference in the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Phoenix, State of Arizona, on February 5, 2010.

ON SEMICONDUCTOR CORPORATION

By: /s/ Keith D. Jackson
Keith D. Jackson
President and Chief Executive Officer

POWER OF ATTORNEY

The officers and directors of ON Semiconductor Corporation, whose signatures appear below, hereby constitute and appoint Keith D. Jackson and Donald A. Colvin, and each of them, their true and lawful attorneys and agents, with full power of substitution, each with power to act alone, to sign and execute on behalf of the undersigned any amendment or amendments to this registration statement on Form S-8, and each of the undersigned does hereby ratify and confirm all that each of said attorney and agent, or their or his substitutes, shall do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement has been signed by the following persons in the capacities indicated on February 5, 2010.

Signature	Title
<u>/s/ Keith D. Jackson</u> Keith D. Jackson	President, Chief Executive Officer and Director (Principal Executive Officer)
<u>/s/ Donald A. Colvin</u> Donald A. Colvin	Executive Vice President, Chief Financial Officer and Treasurer (Principal Financial Officer and Principal Accounting Officer)
<u>/s/ J. Daniel McCranie</u> J. Daniel McCranie	Chairman of the Board of Directors
<u>/s/ Francis P. Barton</u> Francis P. Barton	Director
<u>/s/ Curtis J. Crawford</u> Curtis J. Crawford	Director
<u>/s/ Emmanuel T. Hernandez</u> Emmanuel T. Hernandez	Director
<u>/s/ Phillip D. Hester</u> Phillip D. Hester	Director
<u>/s/ Daryl Ostrander</u> Daryl Ostrander	Director
<u>/s/ Robert H. Smith</u> Robert H. Smith	Director

EXHIBIT INDEX

<u>Exhibit Number</u>	<u>Description</u>	<u>Form</u>	<u>Exhibit</u>	<u>Filing Date</u>	<u>Filed Herewith</u>
4.1	Amended and Restated Certificate of Incorporation of ON Semiconductor Corporation	10-Q	3.1	May 7, 2008	
4.2	Amended and Restated Bylaws of ON Semiconductor Corporation	8-K	3.1	November 19, 2007	
4.3	Specimen of share certificate of Common Stock, \$.01 par value, ON Semiconductor Corporation	10-K	4.1	December 31, 2003	
5.1	Legal Opinion of DLA Piper LLP (US)				X
23.1	Consent of PricewaterhouseCoopers LLC				X
23.2	Consent of DLA Piper LLP (US) (included in Exhibit 5.1)				X
24	Power of Attorney (included in signature pages to this registration statement)				X
99.1	California Micro Devices Corporation's 1995 Employee Stock Option Plan	*S-8	4.1	September 2, 2003	
99.2	California Micro Devices Corporation's 1995 Non-Employee Directors' Stock Option Plan	*S-8	4.1	September 2, 2003	
99.3	California Micro Devices Corporation's 2004 Omnibus Incentive Compensation Plan	*8-K	10.34	July 6, 2009	
99.4	Non-Statutory Stock Option Agreement between California Micro Devices Corporation and Robert Dickinson	*10-Q	2	August 14, 2001	
99.5	Non-Statutory Stock Option Agreement between California Micro Devices Corporation and Daniel Hauck	*S-8	4.1	May 11, 2009	
99.6	Non-Statutory Stock Option Agreement between California Micro Devices Corporation Chih-Yu Lo	*S-8	4.2	May 11, 2009	

* References for Exhibits 99.1 through 99.6 are to filings made by California Micro Devices Corporation.

February 5, 2010

ON Semiconductor Corporation
5005 E. McDowell Road
Phoenix, AZ 85008

Ladies and Gentlemen:

We have acted as legal counsel for ON Semiconductor Corporation, a Delaware corporation (the "Company"), in connection with a Registration Statement on Form S-8 (the "Registration Statement") under the Securities Act of 1933, as amended (the "Securities Act"), for the registration of up to 2,745,526 shares of the Common Stock, \$0.01 par value, of the Company (the "Shares"), which may be issued upon the exercise of options granted under the California Micro Devices Corporation 2004 Omnibus Incentive Compensation Plan, the California Micro Devices Corporation 1995 Non-Employee Directors' Stock Option Plan, the California Micro Devices Corporation 1995 Employee Stock Option Plan, and under non-plan agreements between California Micro Devices Corporation and three individuals, which have been assumed by the Company (collectively, the "Assumed Awards") in accordance with the terms of the Agreement and Plan of Merger, dated December 14, 2009, by and among the Company, Pac-10 Acquisition Corporation, a wholly-owned indirect subsidiary of the Company, and California Micro Devices Corporation (the "Merger Agreement").

We have examined all instruments, documents and records which we deemed relevant and necessary for the basis of our opinion hereinafter expressed. In such examination, we have assumed the genuineness of all signatures and the authenticity of all documents submitted to us as originals and the conformity to the originals of all documents submitted to us as copies. We are admitted to practice only in the State of Arizona and we express no opinion concerning any law other than the law of the State of Arizona, the corporation laws of the State of Delaware and the federal law of the United States. As to matters of Delaware corporation law, we have based our opinion solely upon our examination of such laws and the rules and regulations of the authorities administering such laws, all as reported in standard, unofficial compilations. We have not obtained opinions of counsel licensed to practice in jurisdictions other than the State of Arizona.

Based on such examination, we are of the opinion that the Shares that may be issued upon the exercise of the Assumed Awards are duly authorized and, when issued against receipt of the consideration therefor in accordance with the provisions of the applicable plan, the Merger Agreement and the award agreements evidencing the Assumed Awards, will be validly issued, fully paid and nonassessable.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement referred to above and the use of our name wherever it appears in said Registration Statement. In giving this consent, we do not admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act, the rules and regulations of the Securities and Exchange Commission promulgated thereunder or Item 509 of Regulation S-K.

This opinion letter is given to you solely for use in connection with the issuance of the Shares in accordance with the Registration Statement and is not to be relied on for any other purpose. Our opinion is expressly limited to the matters set forth above, and we render no opinion, whether by implication or otherwise, as to any other matters relating to the Company, the Shares or the Registration Statement.

Very truly yours,

/s/ DLA Piper LLP (US)

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in this Registration Statement on Form S-8 of our report dated February 26, 2009 relating to the financial statements, financial statement schedule and the effectiveness of internal control over financial reporting, which appears in ON Semiconductor Corporation's Annual Report on Form 10-K for the year ended December 31, 2008.

/s/ PricewaterhouseCoopers LLP

Phoenix, AZ
February 5, 2010