

SCHEDULE 13G

Amendment No. 2  
ON Semiconductor Corporation  
Common Stock  
Cusip #682189105

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Item 1: Reporting Person - FMR Corp.  
Item 4: Delaware  
Item 5: 2,407,672  
Item 6: 0  
Item 7: 47,291,273  
Item 8: 0  
Item 9: 47,291,273  
Item 11: 14.330%  
Item 12: HC

Cusip #682189105  
Item 1: Reporting Person - Edward C. Johnson 3d  
Item 4: United States of America  
Item 5: 0  
Item 6: 0  
Item 7: 47,291,273  
Item 8: 0  
Item 9: 47,291,273  
Item 11: 14.330%  
Item 12: IN

SCHEDULE 13G - TO BE INCLUDED IN  
STATEMENTS  
FILED PURSUANT TO RULE 13d-1(b) or 13d-2(b)

Item 1(a). Name of Issuer:  
ON Semiconductor Corporation

Item 1(b). Name of Issuer's Principal Executive Offices:  
5005 East McDowell Road  
Phoenix, AZ 85008

Item 2(a). Name of Person Filing:  
FMR Corp.

Item 2(b). Address or Principal Business Office or, if None,  
Residence:  
82 Devonshire Street, Boston,  
Massachusetts 02109

Item 2(c). Citizenship:  
Not applicable

Item 2(d). Title of Class of Securities:  
Common Stock

Item 2(e). CUSIP Number:  
682189105

Item 3. This statement is filed pursuant to Rule 13d-1(b) or 13d-2(b) and the person filing, FMR Corp., is a parent holding company in accordance with Section 240.13d-1(b)(ii)(G). (Note: See Item 7).

Item 4. Ownership

(a) Amount Beneficially Owned: 47,291,273

(b) Percent of Class: 14.330%

(c) Number of shares as to which such person has:

(i) sole power to vote or to direct the vote: 2,407,672

(ii) shared power to vote or to direct the vote: 0

(iii) sole power to dispose or to direct the disposition of: 47,291,273

(iv) shared power to dispose or to direct the disposition of: 0

Item 5. Ownership of Five Percent or Less of a Class.

Not applicable.

Item 6. Ownership of More than Five Percent on Behalf of Another Person.

Various persons have the right to receive or the power to direct the receipt of dividends from, or the proceeds from the sale of, the Common Stock of ON Semiconductor Corporation. The interest of one person, Fidelity Leveraged Co Stock Fund, an investment company registered under the Investment Company Act of 1940, in the Common Stock of ON Semiconductor Corporation, amounted to 17,876,600 shares or 5.417% of the total outstanding Common Stock at December 31, 2006.

Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on By the Parent Holding Company.

See attached Exhibit A.

Item 8. Identification and Classification of Members of the Group.

Not applicable. See attached Exhibit A.

Item 9. Notice of Dissolution of Group.

Not applicable.

Item 10. Certification.

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were acquired in the ordinary course of business and were not acquired for the purpose of and do not have the effect of changing or influencing the control of the issuer of such securities and were not acquired in connection with or as a participant in any transaction having such purpose or effect.

Signature

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

February 14, 2007  
Date

/s/Eric D. Roiter  
Signature

Eric D, Roiter  
Duly authorized under Power of Attorney  
dated December 30, 1997 by and on behalf of FMR Corp. and  
its direct and indirect subsidiaries

Pursuant to the instructions in Item 7 of Schedule 13G, Fidelity Management & Research Company ("Fidelity"), 82 Devonshire Street, Boston, Massachusetts 02109, a wholly-owned subsidiary of FMR Corp. and an investment adviser registered under Section 203 of the Investment Advisers Act of 1940, is the beneficial owner of 44,883,601 shares or 13.600% of the Common Stock outstanding of ON Semiconductor Corporation ("the Company") as a result of acting as investment adviser to various investment companies registered under Section 8 of the Investment Company Act of 1940. The number of shares of Common Stock of ON Semiconductor Corporation owned by the investment companies at December 31, 2006 included 3,864,460 shares of Common Stock resulting from the assumed conversion of \$37,930,000 principal amount of ON SEMICONDUCTOR CV 0% 4/15/24 (101.8849 shares of Common Stock for each \$1,000 principal amount of debenture). The number of shares of Common Stock of ON Semiconductor Corporation owned by the investment companies at December 31, 2006 included 714,285 shares of Common Stock resulting from the assumed conversion of \$5,000,000 principal amount of ON SEMI CV 1.875 12/15/25 144A (142.8571 shares of Common Stock for each \$1,000 principal amount of debenture).

The ownership of one investment company, Fidelity Leveraged Co Stock Fund, amounted to 17,876,600 shares or 5.417% of the Common Stock outstanding. Fidelity Leveraged Co Stock Fund has its principal business office at 82 Devonshire Street, Boston, Massachusetts 02109.

Edward C. Johnson 3d and FMR Corp., through its control of Fidelity, and the funds each has sole power to dispose of the 44,883,601 shares owned by the Funds.

Members of the family of Edward C. Johnson 3d, Chairman of FMR Corp., are the predominant owners, directly or through trusts, of Series B shares of common stock of FMR Corp., representing 49% of the voting power of FMR Corp. The Johnson family group and all other Series B shareholders have entered into a shareholders' voting agreement under which all Series B shares will be voted in accordance with the majority vote of Series B shares. Accordingly, through their ownership of voting common stock and the execution of the shareholders' voting agreement, members of the Johnson family may be deemed, under the Investment Company Act of 1940, to form a controlling group with respect to FMR Corp.

Neither FMR Corp. nor Edward C. Johnson 3d, Chairman of FMR Corp., has the sole power to vote or direct the voting of the shares owned directly by the Fidelity Funds, which power resides with the Funds' Boards of Trustees. Fidelity carries out the voting of the shares under written guidelines established by the Funds' Boards of Trustees.

Pyramis Global Advisors Trust Company ("PGATC"), 53 State Street, Boston, Massachusetts, 02109, an indirect wholly-owned subsidiary of FMR Corp. and a bank as defined in Section 3(a)(6) of the Securities Exchange Act of 1934, is the beneficial owner of 7,132 shares or 0.002% of the outstanding Common Stock of the ON Semiconductor Corporation as a result of its serving as investment manager of institutional accounts owning such shares. The number of shares of Common Stock of ON Semiconductor Corporation owned by the institutional accounts at December 31, 2006 included 7,132 shares of Common Stock resulting from the assumed conversion of \$70,000 principal amount of ON SEMICONDUCTOR CV 0% 4/15/24 (101.8849 shares of Common Stock for each \$1,000 principal amount of debenture).

Edward C. Johnson 3d and FMR Corp., through its control of Pyramis Global Advisors Trust Company, each has sole dispositive power over 7,132 shares and sole power to vote or to direct the voting of 7,132 shares of Common Stock owned by the institutional accounts managed by PGATC as reported above.

Fidelity International Limited ("FIL"), Pembroke Hall, 42 Crow Lane, Hamilton, Bermuda, and various foreign-based subsidiaries provide investment advisory and management services to a number of non-U.S. investment companies and certain institutional investors. FIL, which is a qualified institution under section 240.13d-1(b)(1) pursuant to an SEC No-Action letter dated October 5, 2000, is the beneficial owner of 2,400,540 shares or 0.727% of the Common Stock outstanding of the Company. The number of shares of Common Stock of ON Semiconductor Corporation owned by the institutional account(s) at December 31, 2006 included 780,439 shares of Common Stock resulting from the assumed conversion of \$7,660,000 principal amount of ON SEMICONDUCTOR CV 0% 4/15/24 (101.8849 shares of Common Stock for each \$1,000 principal amount of debenture). The number of shares of Common Stock of ON Semiconductor Corporation owned by the institutional account(s) at December 31, 2006 included 178,571 shares of Common Stock resulting from the assumed conversion of \$1,250,000 principal amount of ON SEMI CV 1.875 12/15/25 144A (142.8571 shares of Common Stock for each \$1,000 principal amount of debenture).

Partnerships controlled predominantly by members of the family of Edward C. Johnson 3d, Chairman of FMR Corp. and FIL, or trusts for their benefit, own shares of FIL voting stock with the right to cast approximately 47% of the total votes which may be cast by all holders of FIL voting stock. FMR Corp. and FIL are separate and independent corporate entities, and their Boards of Directors are generally composed of different individuals.

FMR Corp. and FIL are of the view that they are not acting as a "group" for purposes of Section 13(d) under the Securities Exchange Act of 1934 (the "1934" Act) and that they are not otherwise required to attribute to each other the "beneficial ownership" of securities "beneficially owned" by the other corporation within the meaning of Rule 13d-3 promulgated under the 1934 Act. Therefore, they are of the view that the shares held by the other corporation need not be aggregated for purposes of Section 13(d). However, FMR Corp. is making this filing on a voluntary basis as if all of the shares are beneficially owned by FMR Corp. and FIL on a joint basis.

SCHEDULE 13G - TO BE INCLUDED IN  
STATEMENTS

FILED PURSUANT TO RULE 13d-1(b) or 13d-2(b)  
RULE 13d-1(f)(1) AGREEMENT

The undersigned persons, on February 14, 2007, agree and consent to the joint filing on their behalf of this Schedule 13G in connection with their beneficial ownership of the Common Stock of ON Semiconductor Corporation at December 31, 2006.

FMR Corp.

By /s/ Eric D. Roiter  
Eric D. Roiter

Duly authorized under Power of Attorney dated  
December 30, 1997, by and on behalf of FMR Corp. and its  
direct and indirect subsidiaries

Edward C. Johnson 3d

By /s/ Eric D. Roiter  
Eric D. Roiter

Duly authorized under Power of Attorney dated  
December 30, 1997, by and on behalf of Edward C. Johnson  
3d

Fidelity Management & Research Company

By /s/ Eric D. Roiter  
Eric D. Roiter

Senior V.P. and General Counsel

Fidelity Leveraged Co Stock Fund

By /s/ Eric D. Roiter  
Eric D. Roiter  
Secretary