

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

SCHEDULE 13D

(Rule 13d-101)

INFORMATION TO BE INCLUDED IN STATEMENTS FILED PURSUANT
TO § 240.13d-1(a) AND AMENDMENTS THERETO FILED
PURSUANT TO § 240.13d-2(a)

UNDER THE SECURITIES EXCHANGE ACT OF 1934
(Amendment No. 5)*

AtriCure, Inc.

(Name of Issuer)

Common Stock, \$0.001 par value per share

(Title of Class of Securities)

04963C209

(CUSIP Number)

**Michael R. Murphy
Discovery Group I, LLC
191 North Wacker Drive
Suite 1685
Chicago, Illinois 60606
Telephone Number: (312) 265-9600**

(Name, Address and Telephone Number of Person
Authorized to Receive Notices and Communications)

May 30, 2013

(Date of Event which Requires Filing of this Statement)

If the filing person has previously filed a statement on Schedule 13G to report the acquisition that is the subject of this Schedule 13D, and is filing this schedule because of §§240.13d-1(e), 240.13d-1(f) or 240.13d-1(g), check the following box.

Note: Schedules filed in paper format shall include a signed original and five copies of the schedule, including all exhibits. See §240.13d-7 for other parties to whom copies are to be sent.

*The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter disclosures provided in a prior cover page.

The information required on the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

-
1. Names of Reporting Persons.
Discovery Equity Partners, L.P.
-
2. Check the Appropriate Box if a Member of a Group (See Instructions)
(a)
(b)
-
3. SEC Use Only
-
4. Source of Funds (See Instructions)
WC
-
5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)
-
6. Citizenship or Place of Organization
Illinois
-
7. Sole Voting Power
None.
-
8. Shared Voting Power
1,011,137
-
9. Sole Dispositive Power
None.
-
10. Shared Dispositive Power
1,011,137
-
11. Aggregate Amount Beneficially Owned by Each Reporting Person
1,011,137
-
12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)
-
13. Percent of Class Represented by Amount in Row (11)
4.8%
-
14. Type of Reporting Person (See Instructions)
PN
-

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

1. Names of Reporting Persons.

Discovery Group I, LLC

2. Check the Appropriate Box if a Member of a Group (See Instructions)

(a)

(b)

3. SEC Use Only

4. Source of Funds (See Instructions)

AF

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)

6. Citizenship or Place of Organization

Delaware

7. Sole Voting Power

None.

8. Shared Voting Power

1,011,137

9. Sole Dispositive Power

None.

10. Shared Dispositive Power

1,011,137

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

11. Aggregate Amount Beneficially Owned by Each Reporting Person

1,011,137

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row (11)

4.8%

14. Type of Reporting Person (See Instructions)

IA

-
1. Names of Reporting Persons.
Daniel J. Donoghue
-
2. Check the Appropriate Box if a Member of a Group (See Instructions)
(a) 0
(b) 0
-
3. SEC Use Only
-
4. Source of Funds (See Instructions)
AF
-
5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)
-
6. Citizenship or Place of Organization
United States of America
-
7. Sole Voting Power
None.
-
- Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With
8. Shared Voting Power
1,011,137
-
9. Sole Dispositive Power
None.
-
10. Shared Dispositive Power
1,011,137
-
11. Aggregate Amount Beneficially Owned by Each Reporting Person
1,011,137
-
12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)
-
13. Percent of Class Represented by Amount in Row (11)
4.8%
-
14. Type of Reporting Person (See Instructions)
IN
-

-
1. Names of Reporting Persons.
Michael R. Murphy
-
2. Check the Appropriate Box if a Member of a Group (See Instructions)
(a) 0
(b) 0
-
3. SEC Use Only
-
4. Source of Funds (See Instructions)
AF
-
5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)
-
6. Citizenship or Place of Organization
United States of America
-
7. Sole Voting Power
None.
-
- Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With
8. Shared Voting Power
1,011,137
9. Sole Dispositive Power
None.
-
10. Shared Dispositive Power
1,011,137
-
11. Aggregate Amount Beneficially Owned by Each Reporting Person
1,011,137
-
12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)
-
13. Percent of Class Represented by Amount in Row (11)
4.8%
-
14. Type of Reporting Person (See Instructions)
IN
-

Item 1. Security and Issuer

This Amendment No. 5 to Schedule 13D (“**Amendment No. 5**”) relates to the Common Stock, \$0.001 par value per share (the “**Common Stock**”), of AtriCure, Inc., a Delaware corporation (the “**Company**”), which has its principal executive offices at 6217 Centre Park Drive, West Chester, Ohio 45069. This Amendment No. 5 amends and supplements, as set forth below, the information contained in items 1, 3, 5 and 6 of the Schedule 13D filed by the Reporting Persons with respect to the Company on September 10, 2010, as amended by Amendment No. 1 thereto filed by the Reporting Persons with respect to the Company on September 27, 2010, Amendment No. 2 thereto filed by the Reporting Persons with respect to the Company on December 19, 2012, Amendment No. 3 thereto filed by the Reporting Persons with respect to the Company on February 15, 2013, and Amendment No. 4 thereto filed by the Reporting Persons with respect to the Company on March 26, 2013 (as so amended, the “**Schedule 13D**”). All capitalized terms used herein but not defined herein have the meanings set forth in the Schedule 13D. Except as amended by this Amendment No. 5, all information contained in the Schedule 13D is, after reasonable inquiry and to the best of the Reporting Persons’ knowledge and belief, true, complete and correct as of the date of this Amendment No. 5.

Item 3. Source and Amount of Funds or Other Consideration

Item 3 of the Schedule 13D is hereby amended to read in its entirety as follows:

The total purchase price for the 1,011,137 shares of Common Stock beneficially owned by the Reporting Persons as of May 31, 2013 was approximately \$8,495,355. The source of such funds was the assets of Discovery Equity Partners, including proceeds of margin loans under margin loan facilities maintained in the ordinary course of business by Discovery Equity Partners with a broker on customary terms and conditions. Discovery Equity Partners is the legal owner of all of the Common Stock beneficially owned by Discovery Group and Messrs. Donoghue and Murphy.

Item 5. Interest in Securities of the Issuer

Item 5 of the Schedule 13D is hereby amended to read in its entirety as follows:

The information concerning percentages of ownership set forth below is based on 20,931,827 shares of Common Stock outstanding as of April 26, 2013 as reported in the Company’s most recent Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2013.

Discovery Equity Partners beneficially owns 1,011,137 shares of Common Stock as of May 31, 2013, which represents 4.8% of the outstanding Common Stock.

Discovery Group beneficially owns 1,011,137 shares of Common Stock as of May 31, 2013, which represents 4.8% of the outstanding Common Stock.

Mr. Donoghue beneficially owns 1,011,137 shares of Common Stock as of May 31, 2013, which represents 4.8% of the outstanding Common Stock.

Mr. Murphy beneficially owns 1,011,137 shares of Common Stock as of May 31, 2013, which represents 4.8% of the outstanding Common Stock.

Discovery Group is the sole general partner of Discovery Equity Partners. Messrs. Donoghue and Murphy are the sole managing members of Discovery Group. As a consequence, Discovery Group and Messrs. Donoghue and Murphy may be deemed to share beneficial ownership of all of the shares of Common Stock owned by Discovery Equity Partners.

The transactions in Common Stock effected by the Reporting Persons during the past 60 days are set out in Exhibit 1 hereto.

The Reporting Persons ceased to be beneficial owners of more than five percent of the Common Stock on May 23, 2013.

No person other than Discovery Equity Partners is known to any Reporting Person to have the right to receive or the power to direct the receipt of dividends from, or the proceeds from the sale of, any of the shares of Common Stock reported herein.

Item 6. Contracts, Arrangements, Understandings or Relationships with Respect to Securities of the Issuer

Item 6 of the Schedule 13D is hereby amended to read in its entirety as follows:

There are no contracts, arrangements, understandings or relationships (legal or otherwise) between or among any of the Reporting Persons and any other person with respect to any securities of the Company other than the governing documents of Discovery Group and Discovery Equity Partners, the margin loan facilities referred to under Item 3 above, the Joint Filing Agreements of the Reporting Persons with respect to the Schedule 13D that were included as exhibits thereto, the Joint Filing Agreement of the Reporting Persons with respect to this Amendment No. 5 included as Exhibit 2 to this Amendment No. 5, and the Powers of Attorney granted by Messrs. Donoghue and Murphy with respect to reports under Section 13 of the Securities Exchange Act of 1934, as amended, which Powers of Attorney are included as Exhibit 3 and Exhibit 4, respectively, to this Amendment No. 5.

Item 7. Material to Be Filed as Exhibits

Exhibit 1: List of transactions effected by the Reporting Persons in the Company's Common Stock during the 60-day period preceding this filing.

Exhibit 2: Joint Filing Agreement dated as of June 3, 2013, by and among Discovery Equity Partners; Discovery Group; Daniel J. Donoghue; and Michael R. Murphy.

Exhibit 3: Power of Attorney of Daniel J. Donoghue, dated as of April 28, 2008.

Exhibit 4: Power of Attorney of Michael R. Murphy, dated as of April 28, 2008.

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.

June 3, 2013

Date

DISCOVERY GROUP I, LLC,
for itself and as general partner of
DISCOVERY EQUITY PARTNERS, L.P.

By: Michael R. Murphy*

Signature

Michael R. Murphy, Managing Member

Name/Title

Daniel J. Donoghue*

Signature

Daniel J. Donoghue

Name/Title

Michael R. Murphy*

Signature

Michael R. Murphy

Name/Title

*By: /s/ Mark Buckley

Mark Buckley

Attorney-in-Fact for Daniel J. Donoghue

Attorney-in-Fact for Michael R. Murphy

Exhibit Index

- | | |
|-----------|--|
| Exhibit 1 | List of transactions effected by the Reporting Persons in the Company's Common Stock during the 60-day period preceding this filing. |
| Exhibit 2 | Joint Filing Agreement dated as of June 3, 2013, by and among Discovery Equity Partners; Discovery Group; Daniel J. Donoghue; and Michael R. Murphy. |
| Exhibit 3 | Power of Attorney of Daniel J. Donoghue, dated as of April 28, 2008. |
| Exhibit 4 | Power of Attorney of Michael R. Murphy, dated as of April 28, 2008. |

TRANSACTIONS DURING PAST 60 DAYS

The Reporting Persons engaged in the following transactions in shares of Common Stock of the Company during the past 60 days. Such transactions involved the sale of shares on the NASDAQ Global Market. Certain of the prices reported below reflect the weighted average sale price of the shares of Common Stock sold on the relevant date. The Reporting Persons hereby undertake to provide upon request to the SEC staff full information regarding the number of shares and prices at which each transaction was effected.

Date	Type	Price		Shares
4/3/2013	Sale	\$ 8.1677	1	17300
4/4/2013	Sale	\$ 8.1500		2500
4/9/2013	Sale	\$ 8.1083	2	3000
4/10/2013	Sale	\$ 8.1836	3	11000
4/11/2013	Sale	\$ 8.2851	4	1239
4/22/2013	Sale	\$ 8.0000		1055
4/24/2013	Sale	\$ 8.0008	5	2400
4/30/2013	Sale	\$ 8.1751	6	7715
5/2/2013	Sale	\$ 8.0644	7	3400
5/3/2013	Sale	\$ 8.3108	8	19298
5/6/2013	Sale	\$ 8.4905	9	10300
5/7/2013	Sale	\$ 8.7206	10	5000
5/8/2013	Sale	\$ 9.1635	11	16500
5/9/2013	Sale	\$ 9.2006	12	10000
5/10/2013	Sale	\$ 9.4686	13	7000
5/13/2013	Sale	\$ 9.3516	14	1140
5/14/2013	Sale	\$ 9.3000		2500
5/15/2013	Sale	\$ 9.0050	15	1700
5/16/2013	Sale	\$ 9.2073	16	19537
5/17/2013	Sale	\$ 9.0827	17	3200
5/20/2013	Sale	\$ 9.1791	18	5465
5/22/2013	Sale	\$ 9.1057	19	15056
5/23/2013	Sale	\$ 9.1912	20	8601
5/24/2013	Sale	\$ 9.3180	21	3065
5/28/2013	Sale	\$ 9.6359	22	5600
5/29/2013	Sale	\$ 9.3068	23	6000
5/30/2013	Sale	\$ 9.0553	24	7300
5/31/2013	Sale	\$ 9.0219	25	5500

¹ This transaction was executed in multiple trades at prices ranging from \$8.15 – 8.23.

² This transaction was executed in multiple trades at prices ranging from \$8.10 – 8.13.

³ This transaction was executed in multiple trades at prices ranging from \$8.06 – 8.35.

⁴ This transaction was executed in multiple trades at prices ranging from \$8.27 – 8.29.

⁵ This transaction was executed in multiple trades at prices ranging from \$8.00 – 8.01.

⁶ This transaction was executed in multiple trades at prices ranging from \$8.09 – 8.35.

⁷ This transaction was executed in multiple trades at prices ranging from \$8.06 – 8.08.

⁸ This transaction was executed in multiple trades at prices ranging from \$8.15 – 8.45.

⁹ This transaction was executed in multiple trades at prices ranging from \$8.42 – 8.57.

¹⁰ Due to incomplete data available to the Reporting Persons, the Reporting Persons are reporting the average price of transactions effected on this date.

¹¹ This transaction was executed in multiple trades at prices ranging from \$8.95 – 9.51.

¹² This transaction was executed in multiple trades at prices ranging from \$9.18 – 9.35.

¹³ This transaction was executed in multiple trades at prices ranging from \$9.38 – 9.53.

¹⁴ This transaction was executed in multiple trades at prices ranging from \$9.30 – 9.40.

¹⁵ This transaction was executed in multiple trades at prices ranging from \$9.00 – 9.05.

¹⁶ This transaction was executed in multiple trades at prices ranging from \$9.07 – 9.34.

¹⁷ This transaction was executed in multiple trades at prices ranging from \$9.07 – 9.21.

¹⁸ This transaction was executed in multiple trades at prices ranging from \$9.17 – 9.20.

¹⁹ This transaction was executed in multiple trades at prices ranging from \$9.06 – 9.15.

²⁰ This transaction was executed in multiple trades at prices ranging from \$9.15 – 9.30.

²¹ This transaction was executed in multiple trades at prices ranging from \$9.30 – 9.33.

²² This transaction was executed in multiple trades at prices ranging from \$9.44 – 9.71.

²³ Due to incomplete data available to the Reporting Persons, the Reporting Persons are reporting the average price of transactions effected on this date.

²⁴ Due to incomplete data available to the Reporting Persons, the Reporting Persons are reporting the average price of transactions effected on this date.

²⁵ This transaction was executed in multiple trades at prices ranging from \$9.00 – 9.06.

JOINT FILING AGREEMENT

The undersigned hereby agree to the joint filing of Amendment No. 5 to the Schedule 13D to which this Agreement is attached.

Dated: June 3, 2013

DISCOVERY GROUP I, LLC,
for itself and as general partner of
DISCOVERY EQUITY PARTNERS, L.P.

By Michael R. Murphy*

Michael R. Murphy
Managing Member

Daniel J. Donoghue*

Daniel J. Donoghue

Michael R. Murphy*

Michael R. Murphy

*By: /s/ Mark Buckley

Mark Buckley
Attorney-in-Fact for Daniel J. Donoghue
Attorney-in-Fact for Michael R. Murphy

POWER OF ATTORNEY

The undersigned, Daniel J. Donoghue, hereby appoints Mark Buckley his true and lawful attorney-in-fact and agent, with full power to execute and file with the United States Securities and Exchange Commission and any stock exchange or similar authority, for and on his behalf in any and all capacities, any and all reports required to be filed pursuant to Section 13 of the Securities Exchange Act of 1934 and the rules thereunder on Schedule 13D or 13G, any and all amendments to such reports, with all exhibits, and any other forms or documents as may be necessary in connection with the filing of such reports with the United States Securities and Exchange Commission and any stock exchange or similar authority, granting unto said attorney full power and authority to do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to complete, as fully as the undersigned might or could do in person.

This Power of Attorney shall remain in full force and effect until revoked by the undersigned in a signed writing delivered to the foregoing attorney-in-fact and agent.

IN WITNESS WHEREOF the undersigned has caused this Power of Attorney to be executed this 28th day of April, 2008.

/s/ Daniel J. Donoghue
_____ Daniel J. Donoghue

STATE OF ILLINOIS)
) SS.
COUNTY OF COOK)

I, Kareema M. Cruz, a Notary Public in and for the County of Cook, State of Illinois, DO HEREBY CERTIFY that Daniel J. Donoghue, who is personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that he signed and delivered the said instrument as his own free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal, this 28th day of April, 2008.

/s/ Kareema M. Cruz
_____ Notary Public

POWER OF ATTORNEY

The undersigned, Michael R. Murphy, hereby appoints Mark Buckley his true and lawful attorney-in-fact and agent, with full power to execute and file with the United States Securities and Exchange Commission and any stock exchange or similar authority, for and on his behalf in any and all capacities, any and all reports required to be filed pursuant to Section 13 of the Securities Exchange Act of 1934 and the rules thereunder on Schedule 13D or 13G, any and all amendments to such reports, with all exhibits, and any other forms or documents as may be necessary in connection with the filing of such reports with the United States Securities and Exchange Commission and any stock exchange or similar authority, granting unto said attorney full power and authority to do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to complete, as fully as the undersigned might or could do in person.

This Power of Attorney shall remain in full force and effect until revoked by the undersigned in a signed writing delivered to the foregoing attorney-in-fact and agent.

IN WITNESS WHEREOF the undersigned has caused this Power of Attorney to be executed this 28th day of April, 2008.

/s/ Michael R. Murphy
Michael R. Murphy

STATE OF ILLINOIS)
) SS.
COUNTY OF COOK)

I, Kareema M. Cruz, a Notary Public in and for the County of Cook, State of Illinois, DO HEREBY CERTIFY that Michael R. Murphy, who is personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that he signed and delivered the said instrument as his own free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal, this 28th day of April, 2008.

/s/ Kareema M. Cruz
Notary Public