

FORM 4

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

| OMB APPROVAL | |
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| OMB Number: | 3235-0287 |
| Estimated average burden hours per response: | 0.5 |

Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. See Instruction 1(b).

STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934 or Section 30(h) of the Investment Company Act of 1940

| | | | | | | | | |
|--|-----------|--------------|--|--|--|--|--|--|
| 1. Name and Address of Reporting Person* | | | 2. Issuer Name and Ticker or Trading Symbol | | | 5. Relationship of Reporting Person(s) to Issuer (Check all applicable) | | |
| <u>Xiao Deming</u> | | | <u>MONOLITHIC POWER SYSTEMS INC</u> | | | <input type="checkbox"/> Director 10% Owner <input checked="" type="checkbox"/> Officer (give title below) Other (specify below) <u>Pres. of MPS Asia Operations</u> | | |
| (Last) | (First) | (Middle) | 3. Date of Earliest Transaction (Month/Day/Year) | | | | | |
| <u>79 GREAT OAKS BLVD</u> | | | <u>08/27/2012</u> | | | | | |
| (Street) | | | 4. If Amendment, Date of Original Filed (Month/Day/Year) | | | 6. Individual or Joint/Group Filing (Check Applicable Line) | | |
| <u>SAN JOSE</u> | <u>CA</u> | <u>95119</u> | | | | <input checked="" type="checkbox"/> Form filed by One Reporting Person <input type="checkbox"/> Form filed by More than One Reporting Person | | |
| (City) | (State) | (Zip) | | | | | | |

Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned

| 1. Title of Security (Instr. 3) | 2. Transaction Date (Month/Day/Year) | 2A. Deemed Execution Date, if any (Month/Day/Year) | 3. Transaction Code (Instr. 8) | | 4. Securities Acquired (A) or Disposed Of (D) (Instr. 3, 4 and 5) | | | 5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4) | 6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4) | 7. Nature of Indirect Beneficial Ownership (Instr. 4) |
|---------------------------------|--------------------------------------|--|--------------------------------|---|---|------------|-------------------------|---|--|---|
| | | | Code | V | Amount | (A) or (D) | Price | | | |
| Common Stock | 08/27/2012 | | M ⁽¹⁾ | | 23,760 | A | \$10.91 | 148,960 | D | |
| Common Stock | 08/27/2012 | | S ⁽¹⁾ | | 23,760 | D | \$23.002 ⁽²⁾ | 125,200 | D | |
| Common Stock | | | | | | | | 10,228 | I | by Spouse |

Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)

| 1. Title of Derivative Security (Instr. 3) | 2. Conversion or Exercise Price of Derivative Security | 3. Transaction Date (Month/Day/Year) | 3A. Deemed Execution Date, if any (Month/Day/Year) | 4. Transaction Code (Instr. 8) | | 5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5) | | 6. Date Exercisable and Expiration Date (Month/Day/Year) | | 7. Title and Amount of Securities Underlying Derivative Security (Instr. 3 and 4) | 8. Price of Derivative Security (Instr. 5) | 9. Number of derivative Securities Beneficially Owned Following Reported Transaction(s) (Instr. 4) | 10. Ownership Form: Direct (D) or Indirect (I) (Instr. 4) | 11. Nature of Indirect Beneficial Ownership (Instr. 4) | |
|--|--|--------------------------------------|--|--------------------------------|---|--|--------|--|-----------------|---|--|--|---|--|-------|
| | | | | Code | V | (A) | (D) | Date Exercisable | Expiration Date | | | | | | Title |
| Incentive Stock Option (right to buy) | \$10.91 | 08/27/2012 | | M ⁽¹⁾ | | | 23,760 | 12/01/2005 | 12/07/2014 | Common Stock | 23,760 | \$0.0 | 46,936 | D | |

Explanation of Responses:

- 1. In accordance with the reporting person's 10b5-1 trading plan.
- 2. The price is the weighted average sale price for the transactions reported on this line. The prices for the transactions reported on this line range from \$23.00 to \$23.04. The reporting person undertakes to provide, upon request by the staff of the Securities and Exchange Commission, the issuer, or a security holder of the issuer, full information regarding the number of shares sold at each separate price.

By: Saria Tseng For: Deming Xiao 08/29/2012

** Signature of Reporting Person Date

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

* If the form is filed by more than one reporting person, see Instruction 4 (b)(v).

** Intentional misstatements or omissions of facts constitute Federal Criminal Violations See 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, see Instruction 6 for procedure.

Persons who respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB Number.