

Si Abrupt Tuning Varactor Diode

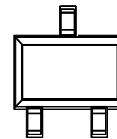
MA45400 Series

V2

Features

- Surface Mount Plastic Packages : SOT-23
- SPC Process for Superior C vs V and Q vs V Repeatability
- Lead-Free (RoHs Compliant) equivalents available with 260°C reflow compatibility

SOT-23



Description

M/A-COM's MA45400 series is a highly repeatable, UHCVD/ion-implanted, abrupt silicon tuning varactor in a cost effective surface mount package. This series of varactors is designed for general purpose tuning in the HF to UHF frequency bands. It is efficient for wide tuning across a 0-30V range. These diodes are offered with standard Sn/Pb plating, as well as 100% matte Sn plating on our RoHs compliant equivalent devices.

Application

M/A-COM's MA45400 series tuning varactor is useful for tuning applications in the HF through UHF ranges. Applications include VCO's and voltage tuned filters in radios, cable TV tuners and test instruments where low cost and excellent lot to lot repeatability are critical.

Absolute Maximum Ratings @ T_A=+25 °C (Unless Otherwise Noted)¹

| Parameter | Absolute Maximum |
|-----------------------|-------------------|
| Reverse Voltage | 30 V |
| Forward Current | 50 mA |
| Operating Temperature | -55 °C to +125 °C |
| Storage Temperature | -55 °C to +125 °C |

1. Operation of this device above any one of these parameters may cause permanent damage.
2. Please refer to application note M538 for surface mounting instructions

| Part Number | RoHs Compliant Part Number | Configuration | Package | Package Cp (pF) | Package Ls (nH) |
|----------------|----------------------------|----------------|---------|-----------------|-----------------|
| MA45436-287T | MAVR-045436-0287AT | Single | SOT-23 | 0.12 | 1.3 |
| MA45437-287T | MAVR-045437-0287AT | Single | SOT-23 | 0.12 | 1.3 |
| MA45438-287T | MAVR-045438-0287AT | Single | SOT-23 | 0.12 | 1.3 |
| MA45439-287T | MAVR-045439-0287AT | Single | SOT-23 | 0.12 | 1.3 |
| MA45440-287T | MAVR-045440-0287AT | Single | SOT-23 | 0.12 | 1.3 |
| MA45441-287T | MAVR-045441-0287AT | Single | SOT-23 | 0.12 | 1.3 |
| MA45445-287T | MAVR-045445-0287AT | Single | SOT-23 | 0.12 | 1.3 |
| MA45446-287T | MAVR-045446-0287AT | Single | SOT-23 | 0.12 | 1.3 |
| MA45436CK-287T | MAVR-045436-0287FT | Common Cathode | SOT-23 | 0.12 | 1.3 |
| MA45437CK-287T | MAVR-045437-0287FT | Common Cathode | SOT-23 | 0.12 | 1.3 |
| MA45438CK-287T | MAVR-045438-0287FT | Common Cathode | SOT-23 | 0.12 | 1.3 |
| MA45439CK-287T | MAVR-045439-0287FT | Common Cathode | SOT-23 | 0.12 | 1.3 |
| MA45440CK-287T | MAVR-045440-0287FT | Common Cathode | SOT-23 | 0.12 | 1.3 |
| MA45441CK-287T | MAVR-045441-0287FT | Common Cathode | SOT-23 | 0.12 | 1.3 |

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 Visit www.macom.com for additional data sheets and product information.

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Electrical Specifications @ T_A = +25 °C

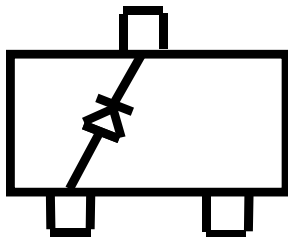
Breakdown Voltage @ I_R = 10μA, V_b = 30V Minimum

Reverse Leakage Current @ V_R = 24V, I_R = 100 nA Maximum

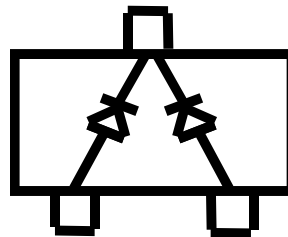
| Part Number | Equivalent RoHs Compliant Part Number | Ct* (pF) | | | Capacitance Ratio | Q Minimum |
|--------------------------------|------------------------------------------|------------------------|------|------|-------------------------------------|------------------------|
| | | V _R = 4.0 V | | | C _{t0V} /C _{t30V} | V _R = 4.0 V |
| | | Min. | Nom. | Max. | Typ. | MIN. |
| MA45436-287T MA45436CK-287T | MAVR-045436-0287AT MAVR-045436-0287FT | 4.23 | 4.7 | 5.17 | 4.5 | 1800 |
| MA45437-287T MA45437CK-287T | MAVR-045437-0287AT MAVR-045437-0287FT | 5.04 | 5.6 | 6.16 | 4.5 | 1700 |
| MA45438-287T MA45438CK-287T | MAVR-045438-0287AT MAVR-045438-0287FT | 6.12 | 6.8 | 7.48 | 4.5 | 1600 |
| MA45439-287T MA45439CK-287T | MAVR-045439-0287AT MAVR-045439-0287FT | 7.38 | 8.2 | 9.02 | 4.5 | 1500 |
| MA45440-287T MA45440CK-287T | MAVR-045440-0287AT MAVR-045440-0287FT | 9 | 10 | 11 | 4.5 | 1300 |
| MA45441-287T MA45441CK-287T | MAVR-045441-0287AT MAVR-045441-0287FT | 10.8 | 12 | 13.2 | 4.6 | 1200 |
| MA45445-287T | MAVR-045445-0287AT | 24.3 | 27 | 29.7 | 4.6 | 900 |
| MA45446-287T | MAVR-045446-0287AT | 29.7 | 33 | 36.3 | 4.7 | 750 |

¹ The suffix defines package style, configuration and packaging information. Contact representative for complete part identification.

² Capacitance @ 1 MHz



SOT-23 Single Configuration



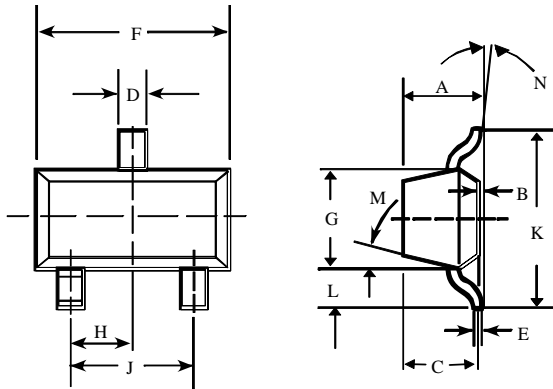
SOT-23 Common Cathode Configuration

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Case Styles

SOT-23 Case Style 287



| DIM. | INCHES | | MILLIMETERS | |
|-------------|-----------------------|-------|--------------|------|
| | MIN. | MAX. | MIN. | MAX. |
| A | — | 0.048 | — | 1.22 |
| B | — | 0.008 | — | 0.20 |
| C | — | 0.040 | — | 1.00 |
| D | 0.013 | 0.020 | 0.35 | 0.50 |
| E | 0.003 | 0.006 | 0.08 | 0.15 |
| F | 0.110 | 0.119 | 2.80 | 3.00 |
| G | 0.047 | 0.056 | 1.20 | 1.40 |
| H | 0.037 typical | | 0.95 typical | |
| J | 0.075 typical | | 1.90 typical | |
| K | — | 0.103 | — | 2.60 |
| L | — | 0.024 | — | 0.60 |
| DIM. | GRADIENT | | | |
| M | 10° max. [†] | | | |
| N | 2° . . . 30° | | | |

Mounting Information

The illustration indicates the recommended mounting pad configuration for the SOT-23 packages. Solder paste containing flux should be screened onto the pads to a thickness of 0.005- 0.007 inches. The plastic package is placed in position, firmly adhering to the solder paste.

Permanent attachment is performed by a reflow soldering procedure during which the tab temperature does not exceed +275 °C and the body temperature does not exceed +250 °C, for standard models and +260 °C for the RoHS compliant devices.

Please refer to Application Note M538 for surface mounting instructions.

SOT-23

