

Si Abrupt Tuning Varactor Diode

Rev. V4

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

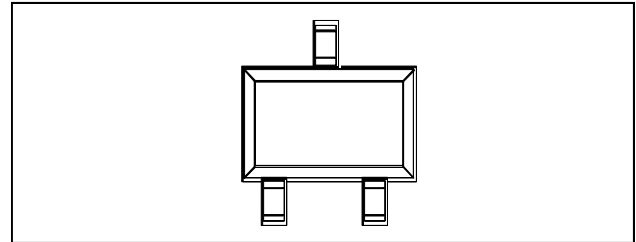
Description

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.

SOT-23



Absolute Maximum Ratings^{1,2} @ T_A=+25 °C (Unless Otherwise Noted)

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
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
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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Electrical Specifications @ $T_A = +25\text{ }^\circ\text{C}$

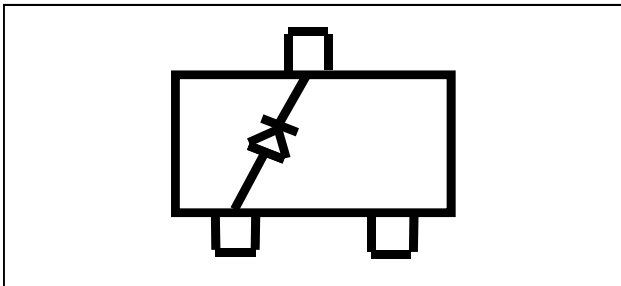
Breakdown Voltage @ $I_R = 10\text{ }\mu\text{A}$, $V_b = 30\text{V}$ Minimum

Reverse Leakage Current @ $V_R = 24\text{V}$, $I_R = 100\text{ nA}$ Maximum

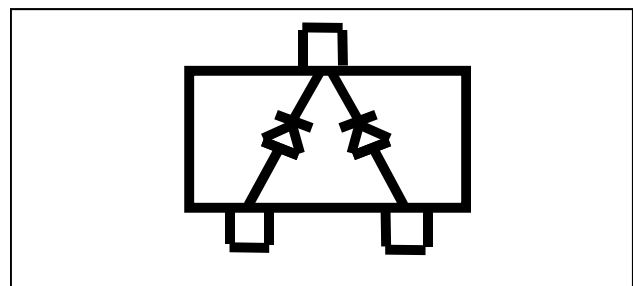
Part Number ¹	Equivalent RoHS Compliant Part Number ¹	Ct ² (pF)			Capacitance Ratio	Q Minimum
		$V_R = 4.0\text{ V}$			C_{t0V}/C_{t30V}	$V_R = 4.0\text{ V}$
		Min.	Nom.	Max.	Typ.	Min.
MA45436-287T MA45436CK-287T	MAVR-045436-0287AT MAVR-045436-0287FT	4.23	4.7	5.17	4.5	1800
MA45438-287T MA45438CK-287T	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

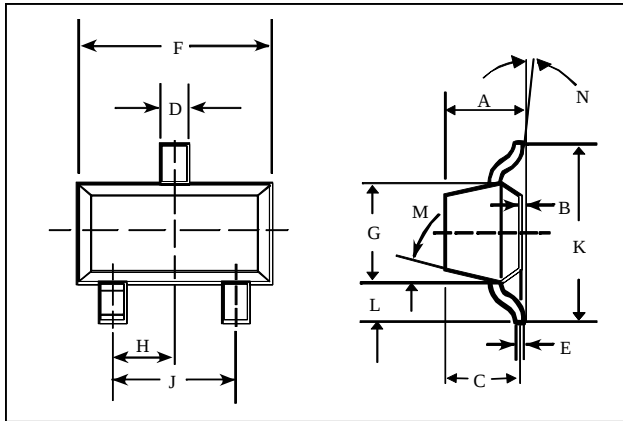


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Case Styles

SOT-23 (Case Style 287)



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.

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°			

SOT-23

