

Si Abrupt Tuning Varactor Diode

MA45400 Series

V1

Features

- Surface Mount Plastic Packages : SOD-323, 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

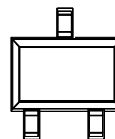
Description

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.

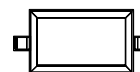
Application

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



SOD-323



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
MA45445CK-287T	MAVR-045445-0287FT	Common Cathode	SOT-23	0.12	1.3
MA45446CK-287T	MAVR-045446-0287FT	Common Cathode	SOT-23	0.12	1.3

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

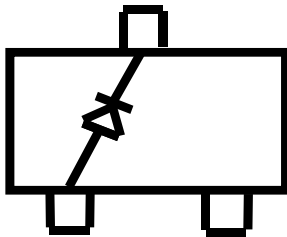
Breakdown Voltage @ $I_R = 10\mu\text{A}$, $V_b = 30\text{V}$ Minimum

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

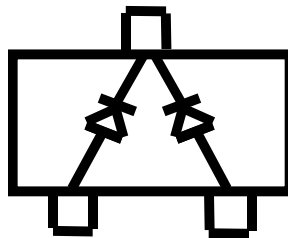
Part Number	Equivalent RoHs Compliant Part Number	Ct* (pF)			Capacitance Ratio	Q Minimum
		$V_R = 4.0\text{ V}$			C_{t0V}/C_{t30V}	$V_R = 4.0\text{ V}$
		Min.	Nom.	Max.	Typ.	MIN.
MA45436	MAVR-045436-XXXXXX	4.23	4.7	5.17	4.5	1800
MA45437	MAVR-045437-XXXXXX	5.04	5.6	6.16	4.5	1700
MA45438	MAVR-045438-XXXXXX	6.12	6.8	7.48	4.5	1600
MA45439	MAVR-045439-XXXXXX	7.38	8.2	9.02	4.5	1500
MA45440	MAVR-045440-XXXXXX	9	10	11	4.5	1300
MA45441	MAVR-045441-XXXXXX	10.8	12	13.2	4.6	1200
MA45445	MAVR-045445-XXXXXX	24.3	27	29.7	4.6	900
MA45446	MAVR-045446-XXXXXX	29.7	33	36.3	4.7	750

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

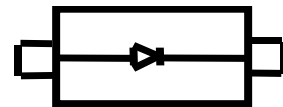
² Capacitance @ 1 MHz



SOT-23 Single
Configuration



SOT-23 Common
Cathode
Configuration



SOD-323 Single
Configuration

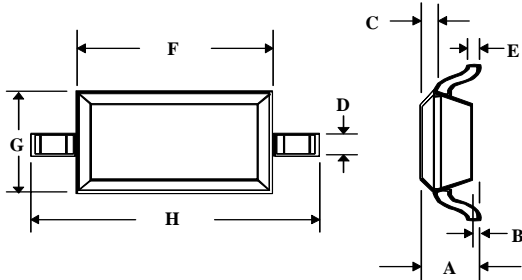
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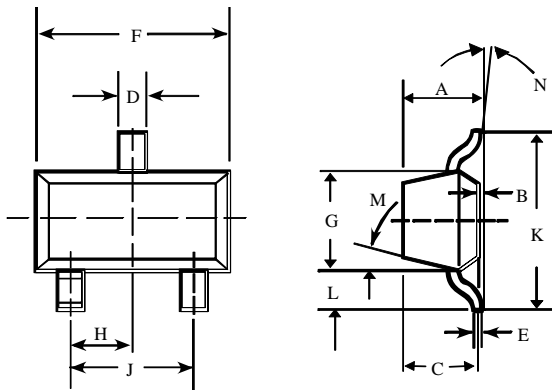
Case Styles

SOD-323 Case Style 1141



DIM.	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	—	0.043	—	1.1
B	—	0.004	—	0.1
C	—	0.008	—	0.2
D	0.010	0.016	0.25	0.4
E	0.003	0.006	0.08	0.15
F	0.063	0.075	1.6	1.9
G	0.045	0.057	1.15	1.45
H	0.091	0.106	2.3	2.7

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. ¹			
N	2° ... 30°			

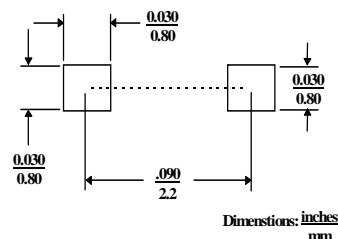
Mounting Information

The illustration indicates the recommended mounting pad configuration for the SC-79, SOT-23 and SOD-323 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.

SOD-323



SOT-23

