Silicon Abrupt Tuning Varactor Diode

MAVR-0454xx Series
Rev. V10

Features

- Surface Mount Plastic Packages:
  SOT-23, SOT-323
- SPC Process for Superior Repeatability:
  C vs. V and Q vs. V
- RoHS* Compliant

Application

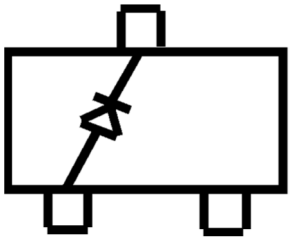
- ISM

Description

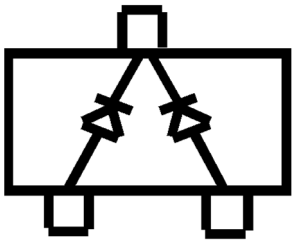
The MAVR-0454xx Series is a highly repeatable, UHCVD/ion-implanted, abrupt silicon tuning varactor in a cost effective surface mount package. This series of varactors is designed for general purpose tuning in the HF to UHF frequency bands. It is efficient for wide tuning across a 0 - 30 V range. These diodes are offered with 100% matte Sn plating.

This series of tuning varactors are 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.

Configuration: SOT-23, SOT-323



Single



Common Cathode

Ordering Information

Part #	Configuration	Package Cp (pF)	Package Ls (nH)
MAVR-045436-0287AT	Single	0.12	1.3
MAVR-045438-0287AT	Single	0.12	1.3
MAVR-045440-0287AT	Single	0.12	1.3
MAVR-045441-0287AT	Single	0.12	1.3
MAVR-045446-0287AT	Single	0.12	1.3
MAVR-045436-0287FT	Common Cathode	0.12	1.3
MAVR-045436-1146FT	Common Cathode	0.11	1.2
MAVR-045438-0287FT	Common Cathode	0.12	1.3
MAVR-045440-0287FT	Common Cathode	0.12	1.3
MAVR-045441-0287FT	Common Cathode	0.12	1.3
MAVR-045448-0287AT	Single	0.12	1.3

* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.

Electrical Specifications: T_A = +25°C

Breakdown Voltage @ I_R = 10 mA, V_B = 30 V min., Reverse Leakage Current @ V_R =24 V, I_R = 100 nA max.

Part Number[1]	Total Capacitance (pF)			Capacitance Ratio	Q Minimum
	V_R = 4 V, 1 MHz			C_T0 V / C_T30 V	V_R = 4 V
	Min.	Nom.	Max.	Typ.	Min.
MAVR-045436-0287AT MAVR-045436-0287FT MAVR-045436-1146FT	4.23	4.7	5.17	4.5	1800
MAVR-045438-0287AT MAVR-045438-0287FT	6.12	6.8	7.48	4.5	1600
MAVR-045440-0287AT MAVR-045440-0287FT	9	10	11	4.5	1300
MAVR-045441-0287AT MAVR-045441-0287FT	10.8	12	13.2	4.6	1200
MAVR-045446-0287AT	29.7	33	36.3	4.7	750
MAVR-045448-0287AT	42.3	47	51.7	4.7	400

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

Absolute Maximum Ratings[2,3]

@ T_A = +25°C

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

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

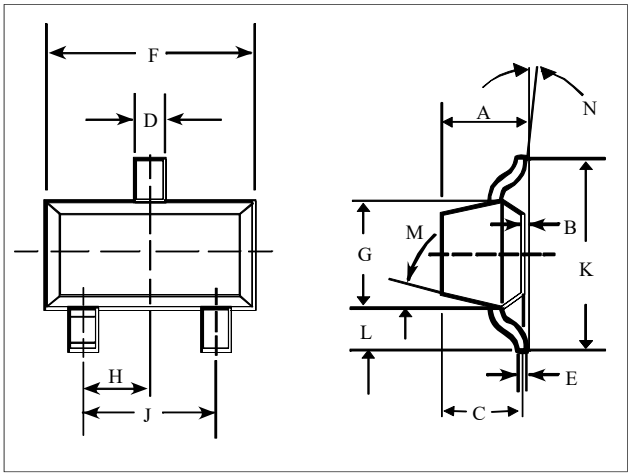
Mounting Information

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.

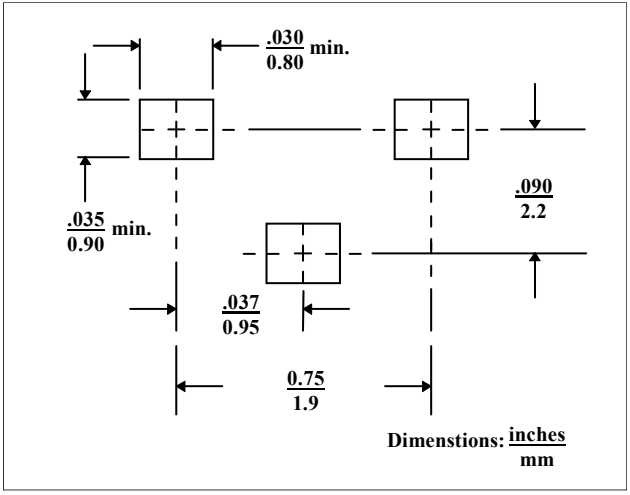
Permanent attachment is performed by a reflow soldering procedure during which the tab temperature does not exceed +275°C and the body temperature does not exceed +250°C, for standard models and +260°C for the RoHS compliant devices.

Please refer to Application Note M538 for surface mounting instructions.

SOT-23 (Case Style 287)

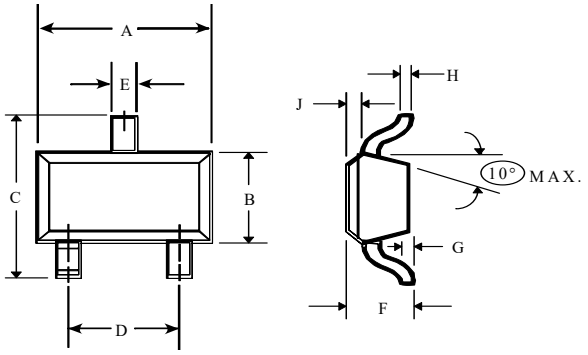


SOT-23



DIM.	INCHES		MILLIMETERS	
	Min.	Max.	Min.	Max.
A	¾	0.048	¾	1.22
B	¾	0.008	¾	0.20
C	¾	0.040	¾	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 typ.		0.95 typ.	
J	0.075 typ.		1.90 typ.	
K	¾	0.103	¾	2.60
L	¾	0.024	¾	0.60
DIM.	**GRADIENT**			
M	10° max.			
N	2° . . .30°			

SOT-323



Package Parasitics
Ls = 1.2 nH
Cp = 0.11 pF

SOT-323 (Case Style 1146)

DIM.	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	0.063	0.087	1.6	2.2
B	0.045	0.053	1.15	1.35
C	0.079	0.087	2.0	2.2
D	0.047	0.055	1.2	1.4
E	0.008	0.016	0.2	0.4
F	0.031	0.039	0.8	1.0
G	—	0.004	—	0.1
H	0.003	0.006	0.08 typ.	0.15
J	0.004	0.010	0.1	0.25

SOT-323