

Features

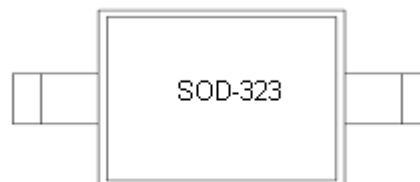
- Lead-Free Surface Mount Package (SOD-323)
- High Capacitance Ratio at Low Voltages
- High Q at Low Voltages
- SPC Process for Superior C-V Repeatability
- Tape and Reel Packaging
- Designed for Commercial Wireless Applications
- RoHS* Compliant with 260°C. Reflow Capability

Description

The MAVR-0003 series are ion-implanted, hyperabrupt junction, silicon tuning varactors offered in a SOD-323 surface mount packages. This series of varactors is designed for high capacitance ratio and low voltage operation. Each varactor type has a better than 3:1 capacitance ratio between 0.5 V and 3.0 V.

The MAVR-0003 series tuning varactors are useful for wide band tuning and low phase noise applications where the supply voltage is limited to 5 volts or less. These varactors have been specifically designed to cover wireless application bands up to the 2.4 GHz WLAN band. Applications include VCOs and voltage tuned filters.

Package Style

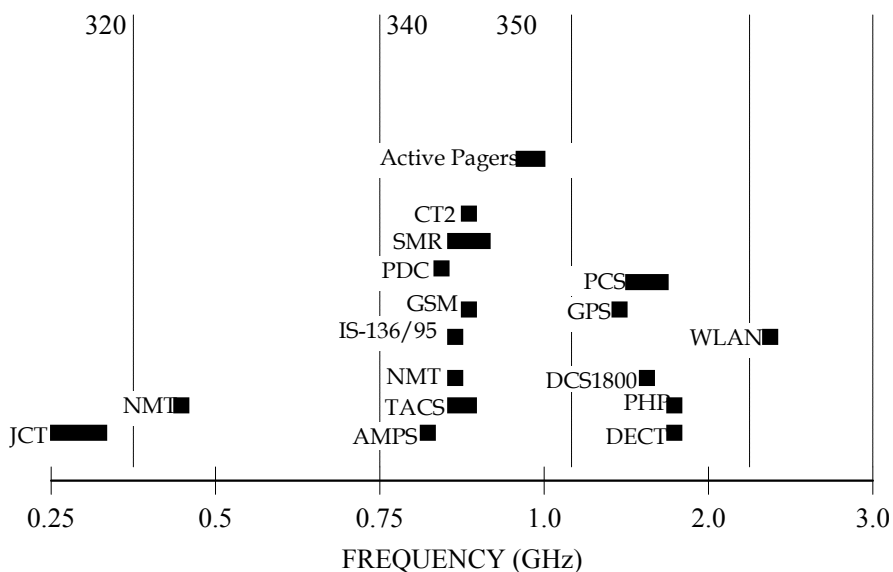


Ordering Information¹

Part Number	Package
MAVR-000320-11410T	SOD-323
MAVR-000340-11410T	SOD-323
MAVR-000350-11410T	SOD-323

1. Reference Application Note [M513](#) for reel size information.
2. The prefix defines package style, configuration and packaging information. Contact representative for complete part identification.

Typical Device Selection by Frequency



*Restrictions on Hazardous Substances, European Union Directive 2011/65/EU.

MAVR-0003 Series



Varactor Diodes, Si Hyperabrupt
Low-Voltage / Wide Band

Rev. V2

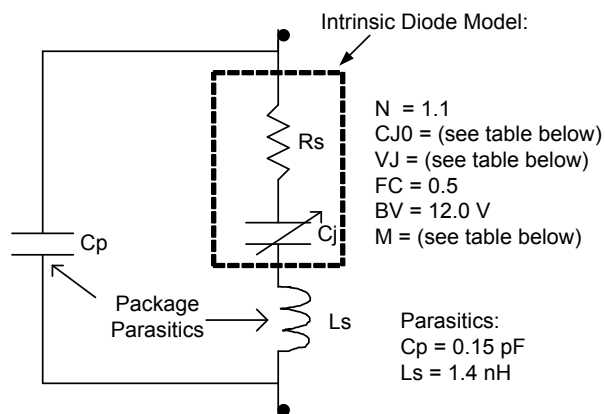
Electrical Specifications: $T_A = +25\text{ }^\circ\text{C}$

Breakdown Voltage @ $I_R = 10\text{ mA}$, $V_b = 12\text{ V}$ Minimum

Reverse Leakage Current @ $V_R = 10\text{ V}$, $I_R = 100\text{ nA}$ Maximum

Part Number	$C_T @ 1\text{ MHz}$				Capacitance Ratio	Q Factor @ 50 MHz
	VR = 0.5 V (pF)			VR = 3.0 V (pF)	CT 0.5 / CT 3.0	VR = 2.0 V
	Min.	Nom.	Max.	Max.	Typ.	Min.
MAVR-000320	48.0	58.0	63.0	19.0	3.2	300
MAVR-000340	15.0	18.5	21.0	6.5	3.2	350
MAVR-000350	9.5	11.8	13.5	4.5	3.2	400

Spice Model



Part Number	C_{J0} (pF)	V_J (V)	M
MAVR-000320	77.4	11.71	6.51
MAVR-000340	25.3	14.25	7.41
MAVR-000350	15.7	14.55	7.26

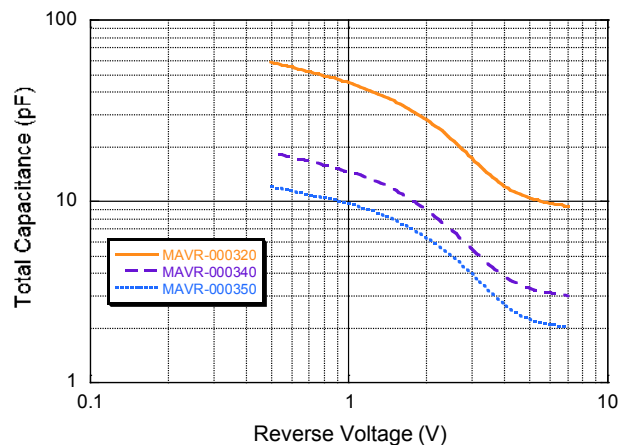
Absolute Maximum Ratings^{3,4}

Parameter	Absolute Maximum
Reverse Voltage	12 V
Forward Current	50 mA
Total Power Dissipation	250 mW
Operating Temperature	-65°C to +125°C
Storage Temperature	-65°C to +150°C

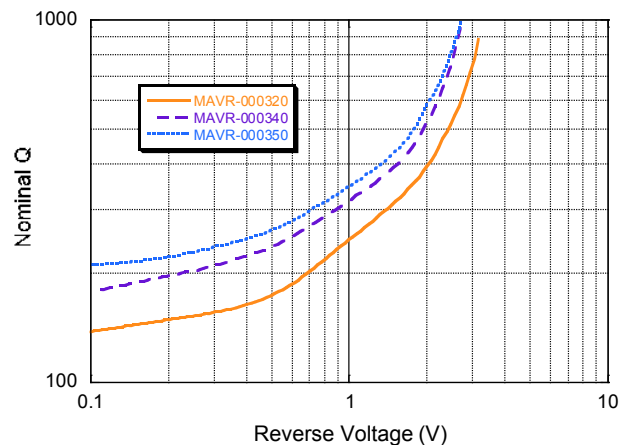
- Exceeding any one or combination of these limits may cause permanent damage to this device.
- MACOM does not recommend sustained operation near these survivability limits.

Typical Performance Curves

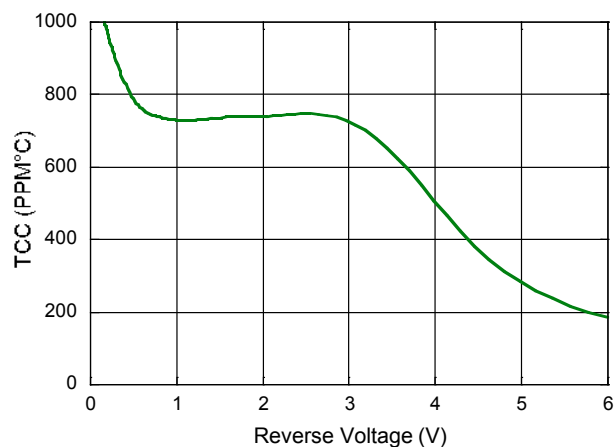
Total Capacitance vs. Reverse Voltage at 1 MHz



Nominal Q at 50 MHz vs. Reverse Voltage



Nominal Change in Capacitance with temperature



Mounting Information

The illustration indicates the recommended mounting pad configuration for the SOD-323 package. 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.

Please refer to Application Note [M538](#) for surface mounting instructions.

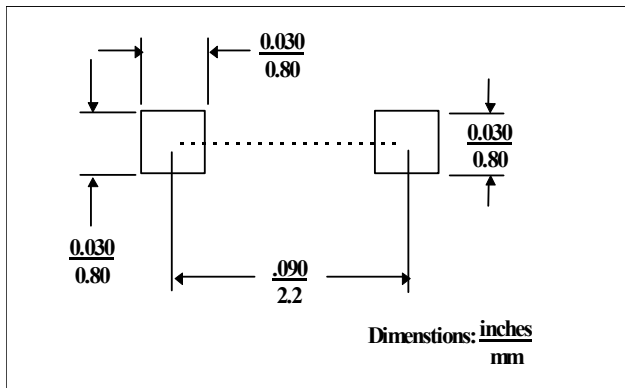
Handling Procedures

Please observe the following precautions to avoid damage:

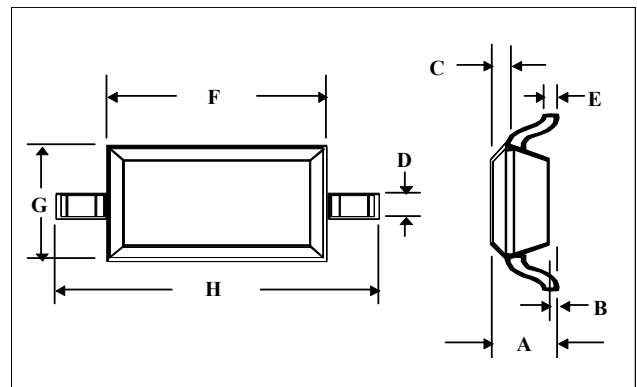
Static Sensitivity

These devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

SOD-323 (Case Style 1141)



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	0.41
E	0.003	0.006	0.07	0.15
F	0.063	0.075	1.6	1.9
G	0.045	0.057	1.14	1.45
H	0.091	0.106	2.3	2.7