

## 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

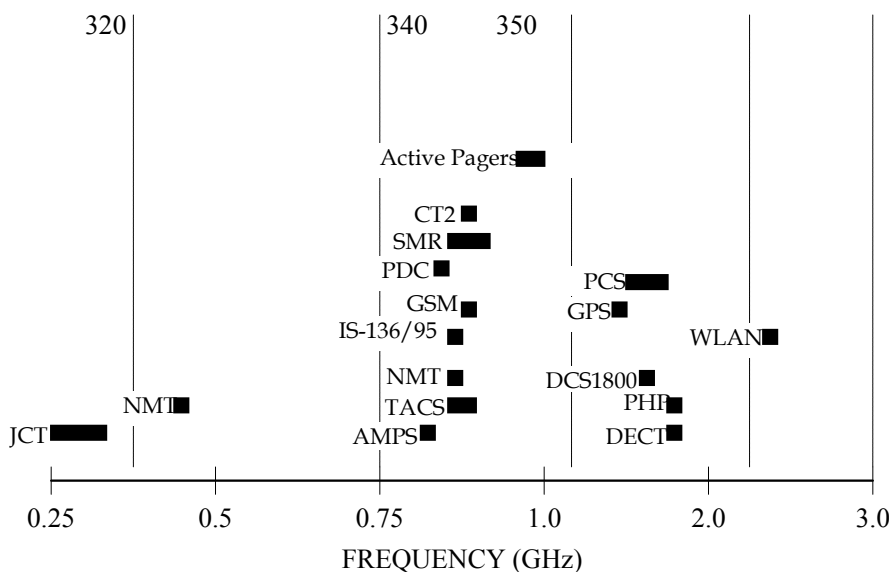


## Ordering Information<sup>1</sup>

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

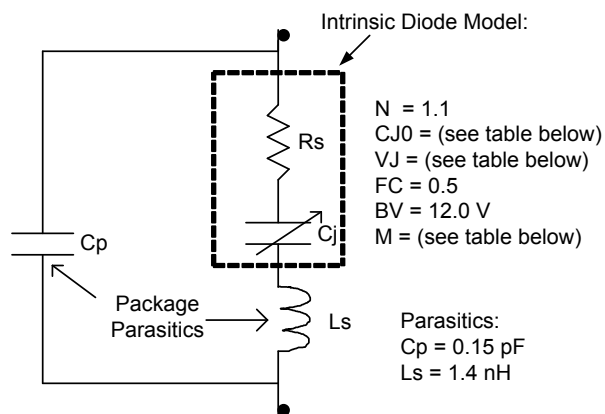
Electrical Specifications:  $T_A = +25\text{ }^\circ\text{C}$

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

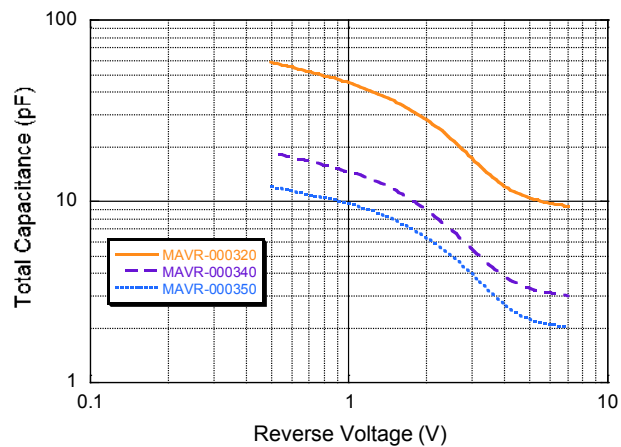
## Absolute Maximum Ratings<sup>3,4</sup>

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

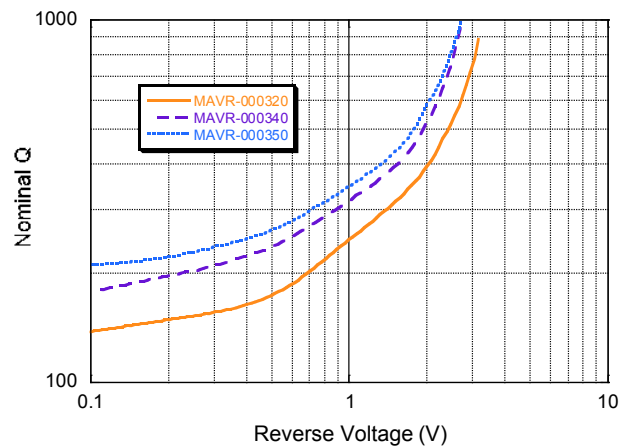
- Exceeding any one or combination of these limits may cause permanent damage to this device.
- MACOM does not recommend sustained operation near these survivability limits.

## Typical Performance Curves

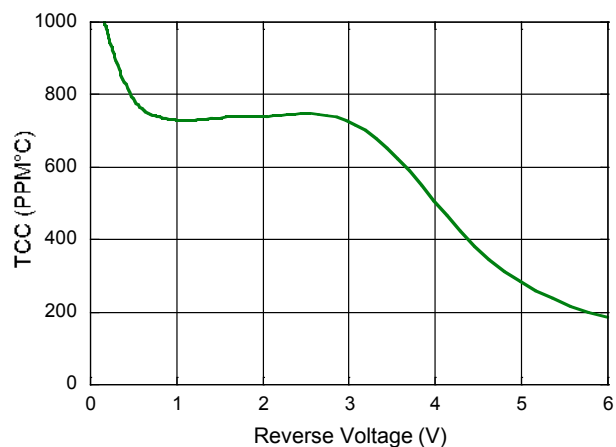
**Total Capacitance vs. Reverse Voltage at 1 MHz**



**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.

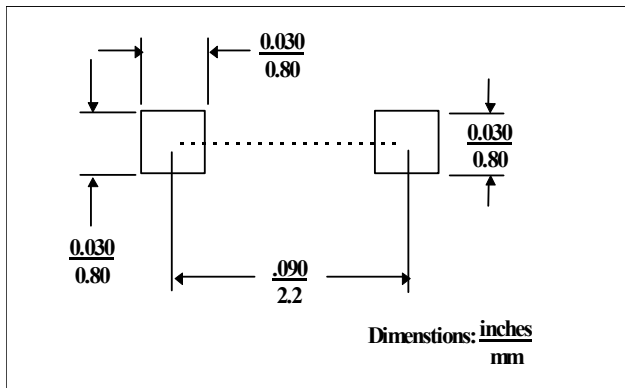
## Handling Procedures

Please observe the following precautions to avoid damage:

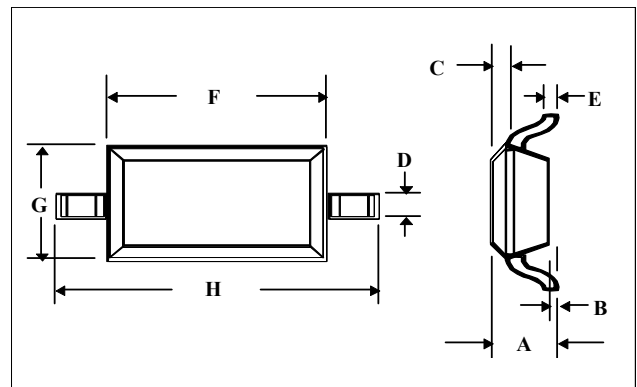
## Static Sensitivity

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

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