

## Silicon Abrupt Tuning Varactor Diodes

Rev. V1

### Features

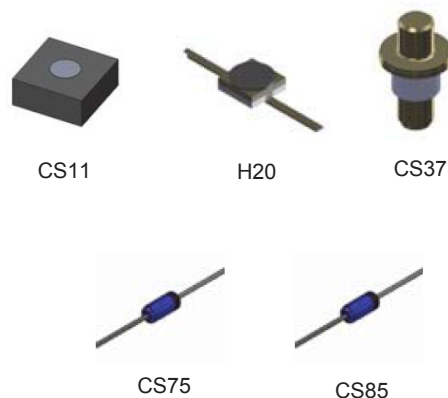
- Low Series Resistance
- High Q
- Extensive Selection of Capacitance Values
- RoHS\* Compliant

### Description

The MTV4090 Series tuning varactors are silicon abrupt junction devices. They offer the highest Q and lowest resistance available in 90 volt tuning devices.

A unique silicon passivation process assures greater stability, reliability, and low leakage currents at higher temperatures.

The MTV4090 Series tuning varactors are used for both narrow and wide band tuning through X-band. These devices are used in circuits requiring a high Q voltage variable capacitance such as tunable filters and amplifiers, voltage controlled oscillators, frequency synthesizers, and continuous phase shifters. They are also useful as frequency and phase modulators in communications applications.



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

Part Number	Reverse Voltage $V_B$ $I_R = 10 \mu\text{A}$	Junction Capacitance <sup>1</sup> $C_J$ $V_R = 4 \text{ V}, 1 \text{ MHz}$	Capacitance Ratio $C_R$ $C_{T0} / C_{T90}$	Quality Factor $Q$ $V_R = 4 \text{ V}, 50 \text{ MHz}$
	Minimum	Typical	Minimum	Minimum
MTV4090-01	90	0.8	8	1000
MTV4090-02	90	1.0	8	1000
MTV4090-03	90	1.2	8	900
MTV4090-04	90	1.4	8	900
MTV4090-05	90	1.6	8	850
MTV4090-06	90	1.8	8	850
MTV4090-07	90	2.2	8	850
MTV4090-08	90	2.7	8	850
MTV4090-09	90	3.3	8	800
MTV4090-10	90	3.6	8	800

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

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	Minimum	Typical	Minimum	Minimum
MTV4090-11	90	3.9	8	800
MTV4090-12	90	4.7	8	800
MTV4090-13	90	5.6	8	800
MTV4090-14	90	6.8	8	750
MTV4090-15	90	8.2	8	750
MTV4090-16	90	10.0	8	750

1. Total Capacitance ( $C_T$ ) values will vary depending upon the desired packaging type ( $C_J + \text{package} = C_T$ ).

### Absolute Maximum Ratings

Parameter	Absolute Maximum
Device Dissipation	250 mW
Operating Temperature	$-55^\circ\text{C}$ to $+150^\circ\text{C}$
Storage Temperature	$-65^\circ\text{C}$ to $+100^\circ\text{C}$

Package Style	Package Capacitance (pF)	Series Inductance (nH)
	Typical	Typical
CS11	0	0.12
H20	0.20	0.12
CS37	0.19	0.40
CS75	0.25	1.20
CS85	0.30	1.50

### Handling Procedures

Please observe the following precautions to avoid damage:

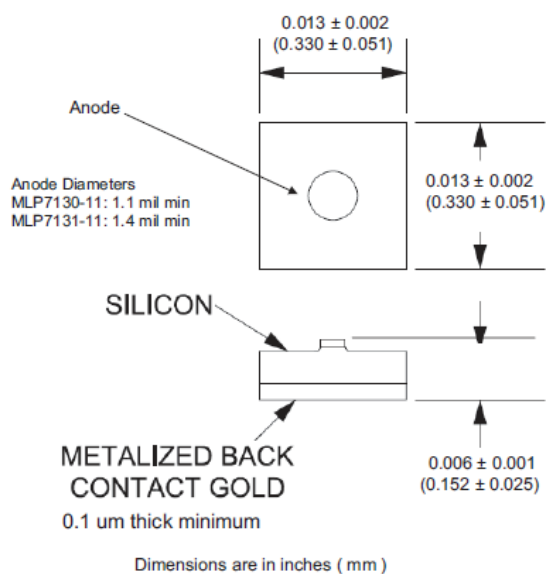
### Static Sensitivity

These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these HBM Class 0 devices.

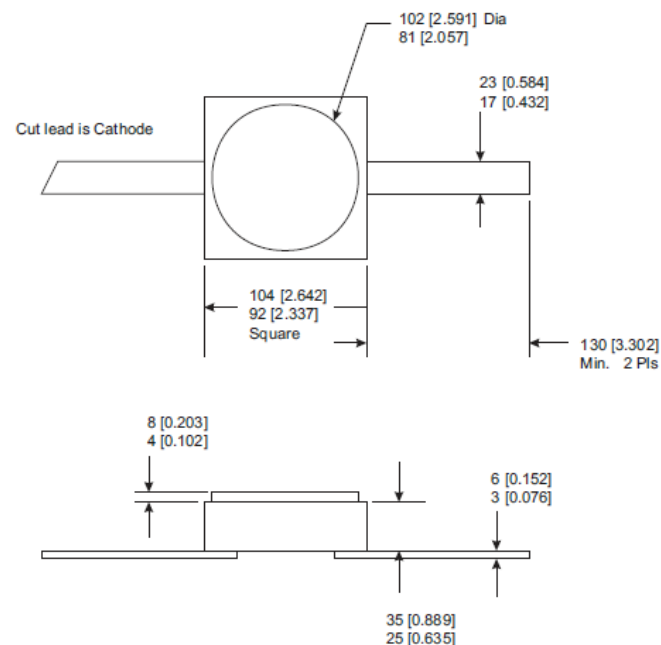
### Moisture Sensitivity

These electronic devices are rated MSL 1.

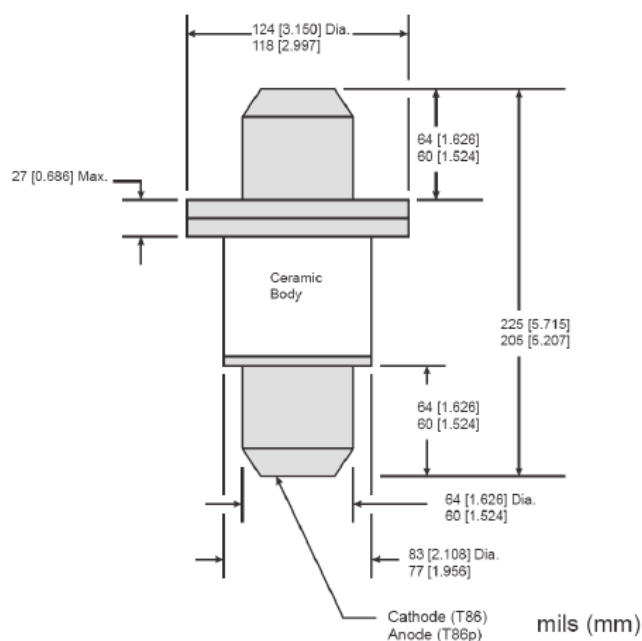
### Outline Drawing - CS11



### Outline Drawing - CS20 (H20)

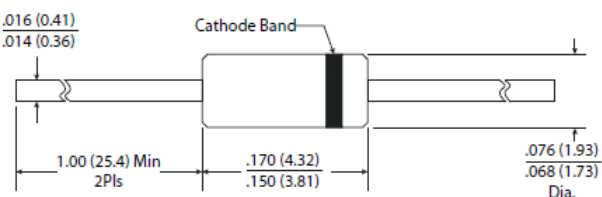


### Outline Drawing - CS37 (T86)

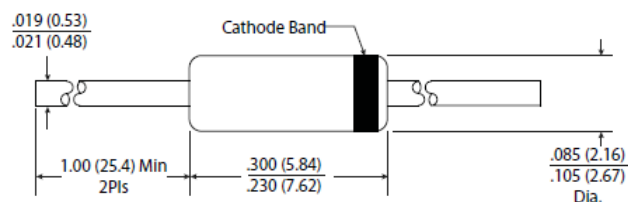


Package Capacitance ( $C_{PKG}$ ) = 0.17 pF

### Outline Drawing - CS75 (A15)



### Outline Drawing - CS85



Note: Dimensions are in inches (mm)

### Ordering Information

Example Part: MTV4090-01-XX, replace –XX with desired case style suffix	
-11	CS11 (C11), Silicon Die
-20	H20, Surface Mount, Ceramic Package
-37	CS37 (T86), Pill Package, Ceramic Body
-75	CS75 (A15), Glass Axial Leaded (Hermetic)
-85	CS85, Glass Axial Leaded

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