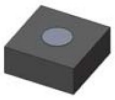
# MTV4090-x Series

## Silicon Abrupt Tuning Varactor Diodes

Rev. V1

### Features

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



CS11

H20

CS37

CS75

CS85

### 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°C

| Part Number | Reverse Voltage $V_B$ $I_R$ = 10 µA | Junction Capacitance[1] $C_J$ $V_R$ = 4 V, 1 MHz | Capacitance Ratio $C_R$ $C_T0$ / $C_T90$ | Quality Factor Q $V_R$ = 4 V, 50 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 ($C_J$ + package = $C_T$).

## Absolute Maximum Ratings

| Parameter | Absolute Maximum |
|---|---|
| Device Dissipation | 250 mW |
| Operating Temperature | -55°C to +150°C |
| Storage Temperature | -65°C to +100°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:

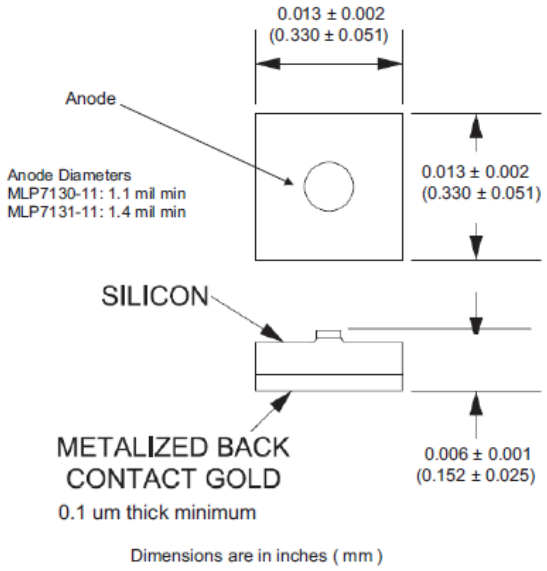
### Static Sensitivity

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

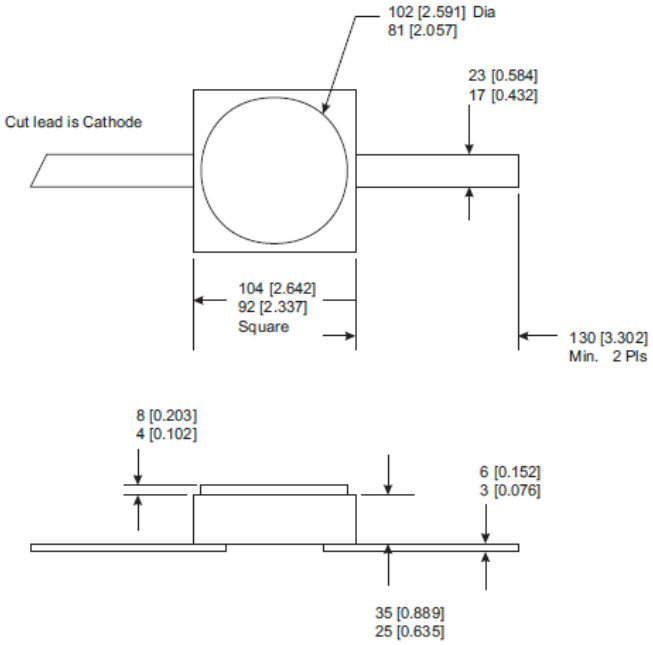
These electronic devices are rated MSL 1.

### Outline Drawing - CS11



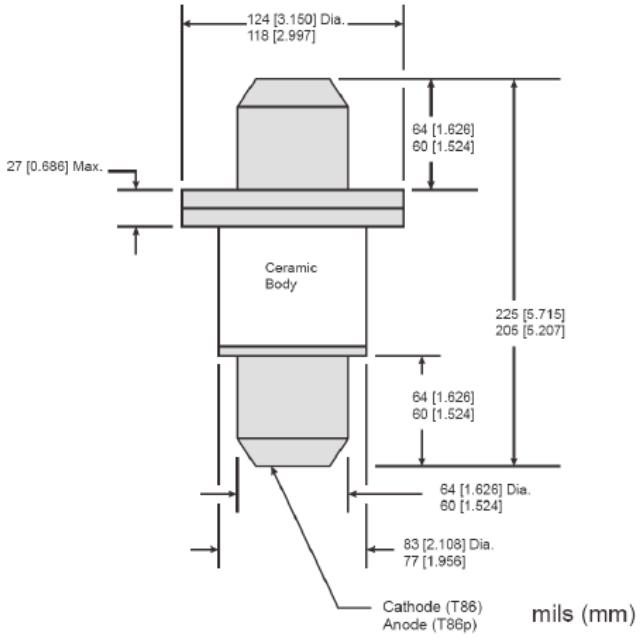

Dimensions are in inches ( mm )

### Outline Drawing - CS20 (H20)



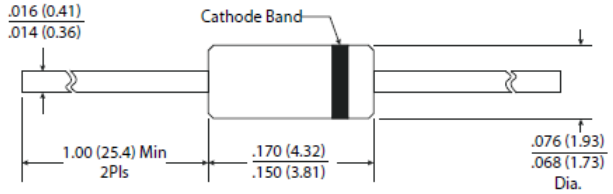

Package Capacitance ($C_{PKG}$) = 0.2 pF

### Outline Drawing - CS37 (T86)

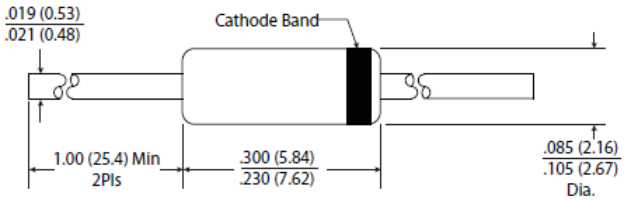



Package Capacitance ($C_{PKG}$) = 0.17 pF

### 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 |