

## Silicon Abrupt Tuning Varactor Diodes

Rev. V1

### Features

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

### Description

The MTV4030 Series tuning varactors are silicon abrupt junction devices. They offer the highest Q and lowest resistance available in 30 volt tuning devices.

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

The MTV4030 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 $C_R$ $C_{T0} / C_{T30}$	Quality Factor $Q$ $V_R = 4 \text{ V}, 50 \text{ MHz}$
	Minimum	Typical	Minimum	Minimum
MTV4030-01	30	0.4	5	5000
MTV4030-02	30	0.6	5	5000
MTV4030-03	30	0.8	5	4800
MTV4030-04	30	1.0	5	4800
MTV4030-05	30	1.2	5	4600
MTV4030-06	30	1.4	5	4400
MTV4030-07	30	1.6	5	4400
MTV4030-08	30	1.8	5	4200
MTV4030-09	30	2.2	5	4000
MTV4030-10	30	2.7	5	3800

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

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	Minimum	Typical	Minimum	Minimum
MTV4030-11	30	3.3	5	3600
MTV4030-12	30	3.6	5	3400
MTV4030-13	30	3.9	5	3400
MTV4030-14	30	4.7	5	3200
MTV4030-15	30	5.6	5	3000
MTV4030-16	30	6.8	5	2800
MTV4030-17	30	8.2	5	2600
MTV4030-18	30	10.0	5	2400
MTV4030-19	30	12.0	5	2200
MTV4030-20	30	15.0	5	2000
MTV4030-21	30	18.0	5	1800
MTV4030-22	30	22.0	5	1600
MTV4030-23	30	27.0	5	1400
MTV4030-24	30	33.0	5	1400
MTV4030-25	30	39.0	5	1200
MTV4030-26	30	47.0	5	1000

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:

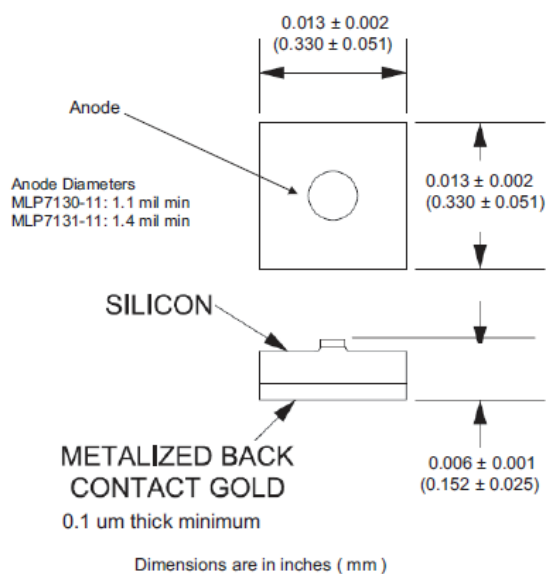
### Static Sensitivity

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.

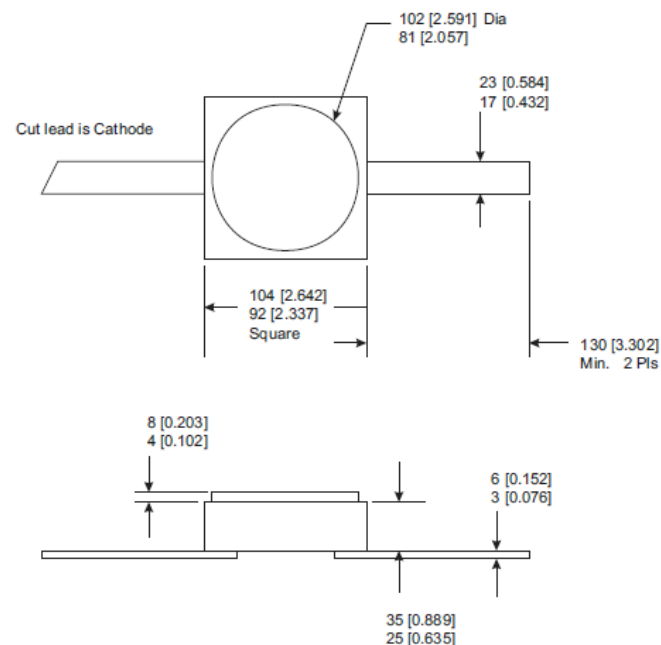
### Moisture Sensitivity

These electronic devices are rated MSL 1.

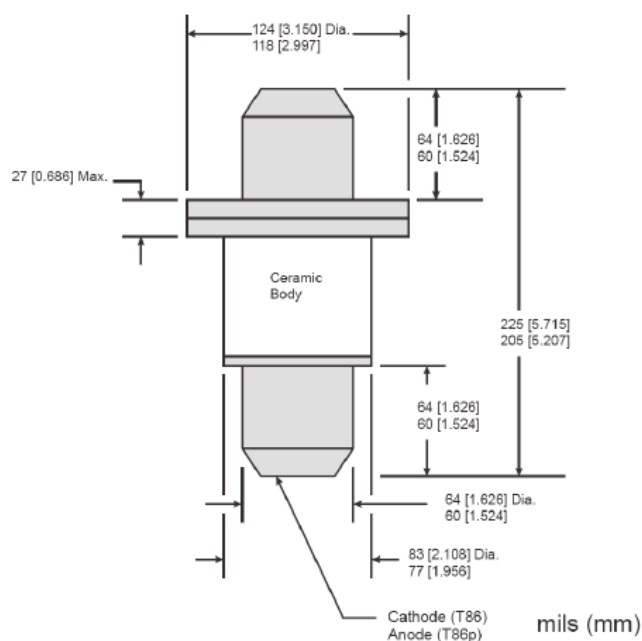
### Outline Drawing - CS11



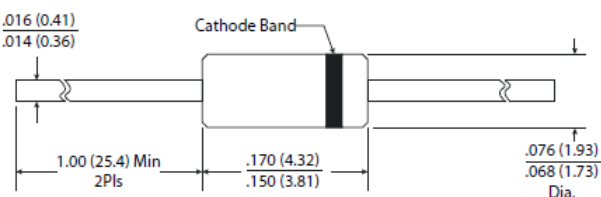
### Outline Drawing - CS20 (H20)



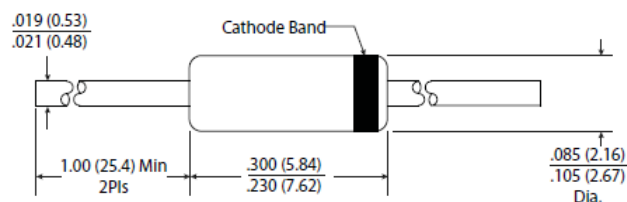
### Outline Drawing - CS37 (T86)


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

### Outline Drawing - CS75 (A15)



### Outline Drawing - CS85



Note: Dimensions are in inches (mm)

### Ordering Information

Example Part: MTV4030-01-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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