

Features

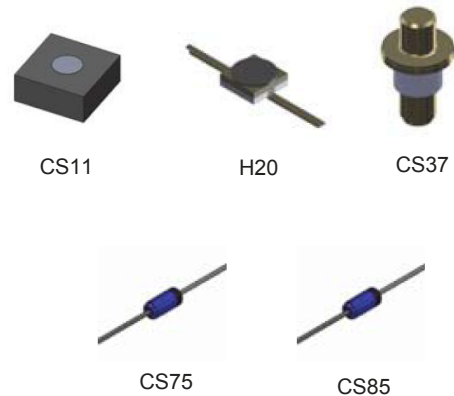
- Low Series Resistance
- High Q Factor
- Extensive Selection of Capacitance Values
- RoHS* Compliant

Description

The MTV4060 series are available with typical capacitance at reverse voltage of 4 V from 0.8 pF up to 15 pF. These silicon varactor diodes offer very high quality factor for low series resistance, very low leakage current and wide tuning range. These diodes are passivated with a high-reliability passivation for low leakage current and high reliability. The devices are available as unpackaged chips or in several package styles.

These rugged devices are capable of reliable operation in all military, commercial and industrial applications. Ideally suited for voltage controlled oscillators and filters and analog voltage controlled phase shifters.

The MTV4060 family of silicon abrupt tuning varactors are capable of meeting the environmental requirements of MIL-STD-750 and MIL-STD-883.



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

| Part Number | Reverse Voltage V_B $I_R = 10 \mu\text{A}$ | Junction Capacitance ¹ C_J $V_R = 4 \text{ V}, 1 \text{ MHz}$ | Capacitance Ratio C_R C_{T0} / C_{T60} | Quality Factor Q $V_R = 4 \text{ V}, 50 \text{ MHz}$ |
|-------------|----------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------------------|
| | Minimum | Typical | Minimum | Minimum |
| MTV4060-01 | 60 | 0.8 | 8 | 2100 |
| MTV4060-02 | 60 | 1.0 | 8 | 2100 |
| MTV4060-03 | 60 | 1.2 | 8 | 2100 |
| MTV4060-04 | 60 | 1.4 | 8 | 2000 |
| MTV4060-05 | 60 | 1.6 | 8 | 2000 |
| MTV4060-06 | 60 | 1.8 | 8 | 2000 |
| MTV4060-07 | 60 | 2.2 | 8 | 2000 |
| MTV4060-08 | 60 | 2.7 | 8 | 1900 |
| MTV4060-09 | 60 | 3.3 | 8 | 1800 |
| MTV4060-10 | 60 | 3.6 | 8 | 1700 |

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1

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

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|-------------|----------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------------------|
| | Minimum | Typical | Minimum | Minimum |
| MTV4060-11 | 60 | 3.9 | 8 | 1700 |
| MTV4060-12 | 60 | 4.7 | 8 | 1600 |
| MTV4060-13 | 60 | 5.6 | 8 | 1500 |
| MTV4060-14 | 60 | 6.8 | 8 | 1400 |
| MTV4060-15 | 60 | 8.2 | 8 | 1300 |
| MTV4060-16 | 60 | 10.0 | 8 | 1200 |
| MTV4060-17 | 60 | 12.0 | 8 | 1100 |
| MTV4060-18 | 60 | 15.0 | 8 | 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 |
|-----------------------|---------------------------------------------|
| Reverse DC Voltage | 60 V |
| Forward Current | 50 mA |
| Power Dissipation | 250 mW |
| Operating Temperature | -55°C to $+150^\circ\text{C}$ |
| Storage Temperature | -65°C to $+100^\circ\text{C}$ |

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.

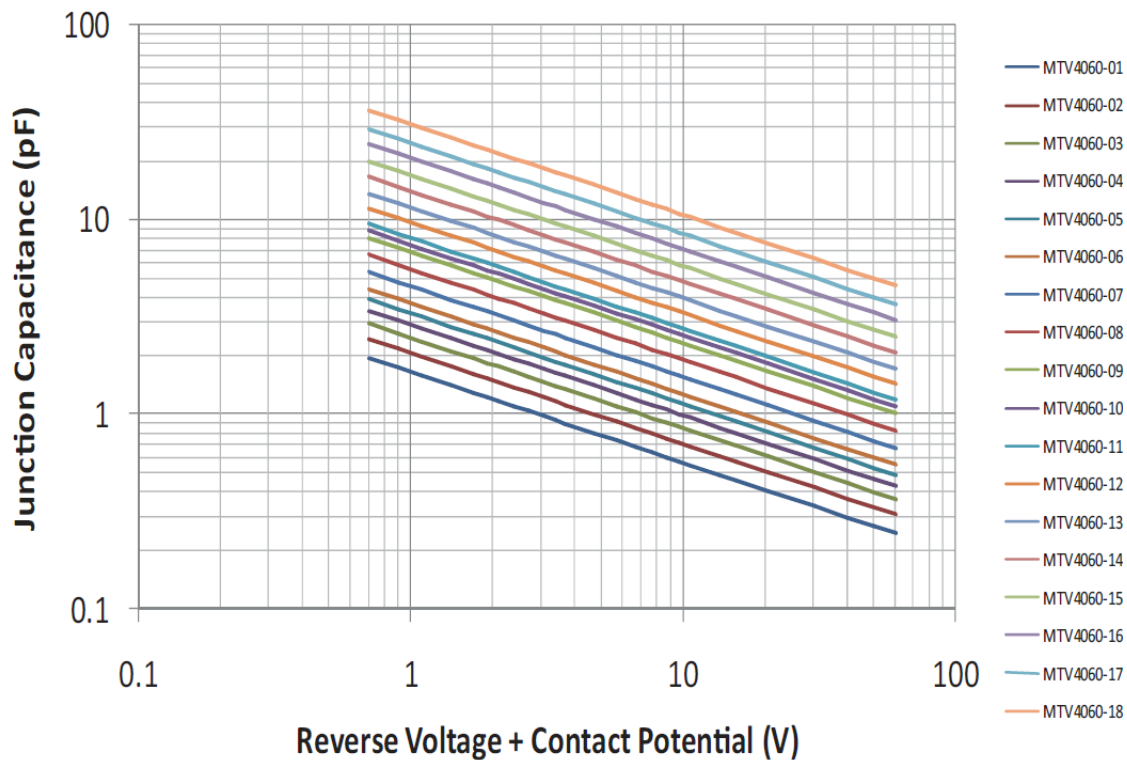
Moisture Sensitivity

These electronic devices are rated MSL 1.

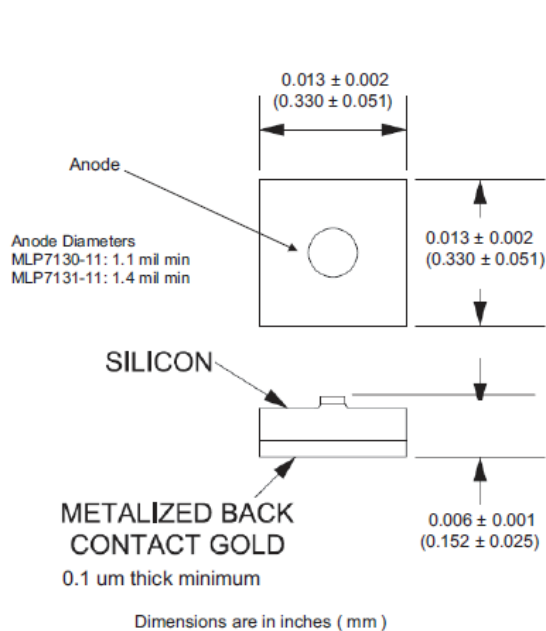
| Package Style | Package Capacitance (pF) | Series Inductance (nH) |
|---------------|--------------------------|------------------------|
| | Typical | Typical |
| CS11 | 0 | 0.12 |
| H20 | 0.20 | 0.12 |
| CS37 | 0.19 | 0.40 |
| CS75 | 0.25 | 1.20 |
| CS85 | 0.30 | 1.50 |

Typical Performance Curve:

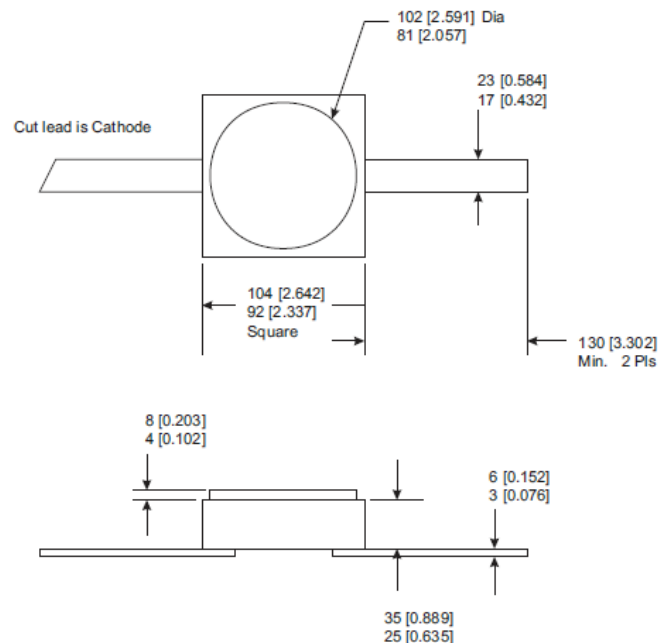
Junction Capacitance vs. Reverse Voltage



Outline Drawing - CS11

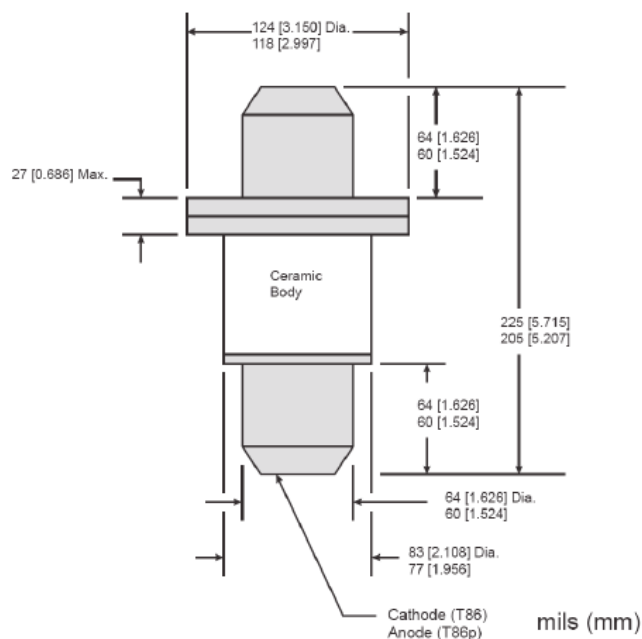


Outline Drawing - CS20 (H20)



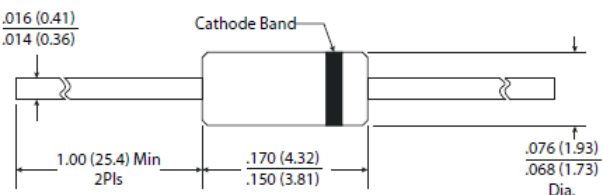
Package Capacitance (C_{PKG}) = 0.2 pF

Outline Drawing - CS37 (T86)

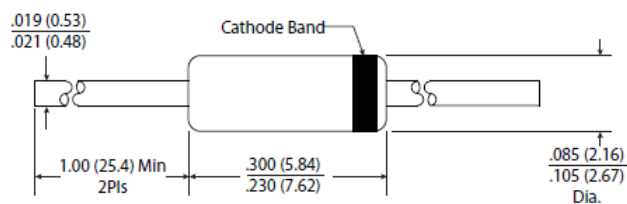


Package Capacitance (C_{PKG}) = 0.17 pF

Outline Drawing - CS75 (A15)



Outline Drawing - CS85



Note: Dimensions are in inches (mm)

Ordering Information

| Example Part: MTV4060-01-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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