

Silicon Abrupt Tuning Varactor

MTV4045 Series Datasheet



Chip



H20



CS37



CS75



CS85



Features

- Large capacitance ratio
- High quality factor
- Low series resistance
- Available as chips or in a wide variety of packages
- RoHS Compliant

Applications

- Voltage controlled oscillators
- Voltage controlled filters
- Analog voltage controlled phase shifters

DESCRIPTION

Tuning varactors from the Aeroflex / Metelics MTV4045 series are available with typical capacitance at reverse voltage of 4 V from 0.4 pF up to 22 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. Contact the factory for specific package styles.

These rugged devices are capable of reliable operation in all military, commercial and industrial applications. They are RoHS compliant.

Environmental Capabilities

The MTV4045 family of silicon abrupt tuning varactors are capable of meeting the environmental requirements of MIL-STD-750 and MIL-STD-883.

ESD Rating

As are all semiconductor devices, tuning varactors are susceptible to damage from ESD events. Proper ESD prevention procedures should be followed. The ESD rating for these devices is Class 0 (HBM).



Electrical Specifications

$T_A = 25\text{ }^\circ\text{C}$ (unless otherwise noted)

Part Number	Reverse Voltage V_B $I_R = 10\ \mu\text{A}$	Total Capacitance* C_J $V_R = 4\ \text{V}, f = 1\ \text{MHz}$	Capacitance Ratio C_R C_{J0} / C_{J45}	Quality Factor Q $V_R = 4\ \text{V}, f = 50\ \text{MHz}$
	Minimum	Typical	Minimum	Minimum
MTV4045-01	45	0.4	7.0	3000
MTV4045-02	45	0.6	7.0	3000
MTV4045-03	45	0.8	7.0	2800
MTV4045-04	45	1.0	7.0	2800
MTV4045-05	45	1.2	7.0	2600
MTV4045-06	45	1.4	7.0	2400
MTV4045-07	45	1.6	7.0	2400
MTV4045-08	45	1.8	7.0	2300
MTV4045-09	45	2.2	7.0	2200
MTV4045-10	45	2.7	7.0	2200
MTV4045-11	45	3.3	7.0	2100
MTV4045-12	45	3.6	7.0	2000
MTV4045-13	45	3.9	7.0	2000
MTV4045-14	45	4.7	7.0	2000
MTV4045-15	45	5.6	7.0	1900
MTV4045-16	45	6.8	7.0	1800
MTV4045-17	45	8.2	7.0	1700
MTV4045-18	45	10	7.0	1600
MTV4045-19	45	12	7.0	1500
MTV4045-20	45	15	7.0	1400
MTV4045-21	45	18	7.0	1300
MTV4045-22	45	22	7.0	1200

* Total capacitance (C_T) is the sum of the diode's junction capacitance and the package capacitance. Consult the factory for package capacitance values.

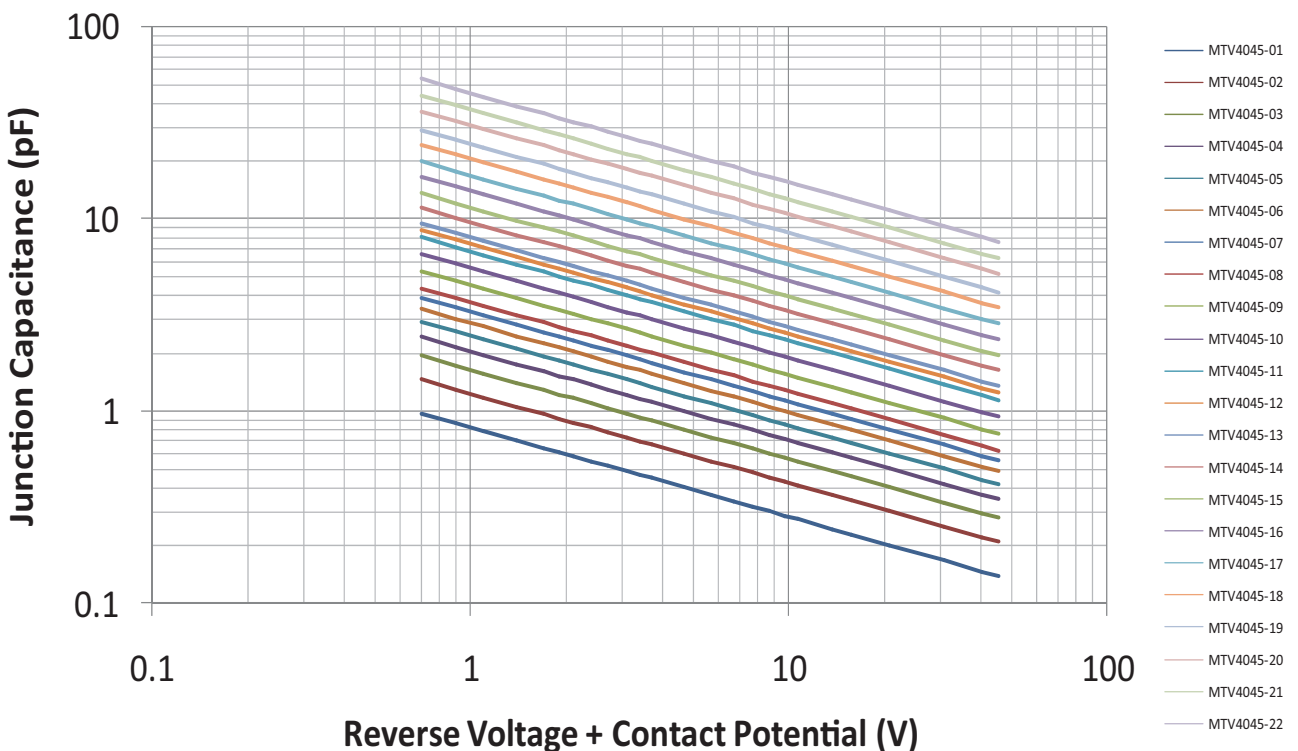
Absolute Maximum Ratings

$T_A = 25\text{ }^\circ\text{C}$, (Unless otherwise noted)


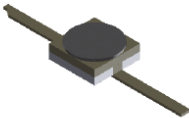



Parameter	Conditions	Absolute Maximum Value
Reverse DC Voltage		45 V
Forward Current		50 mA
Power Dissipation		250 mW
Operating Temperature		-55 °C to 150 °C
Storage Temperature		-65 °C to 200 °C

Typical Junction Capacitance vs. Reverse Voltage

$T_A = 25\text{ }^\circ\text{C}$, $f = 1\text{ MHz}$ (Unless otherwise noted)

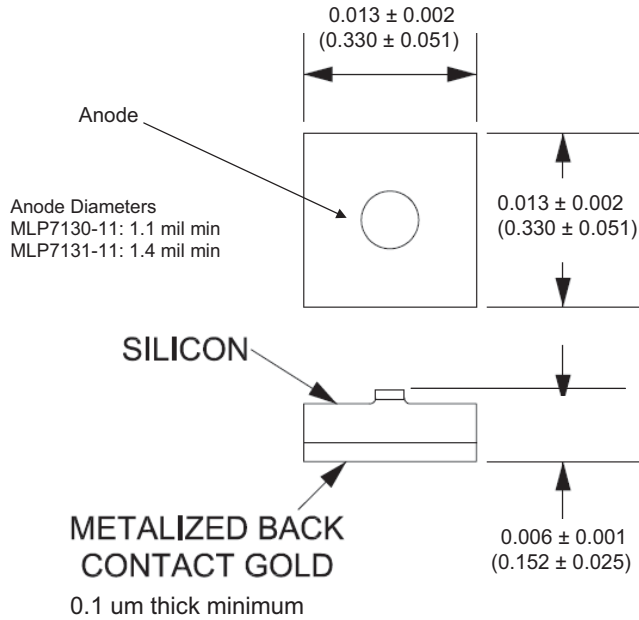


Package Styles

Package Style		Typical Package Capacitance (pF)	Typical Series Inductance (nH)
CS11		0	0.12
H20		0.2	0.45
CS37		0.19	0.4
CS75		0.25	1.2
CS85		0.3	1.5

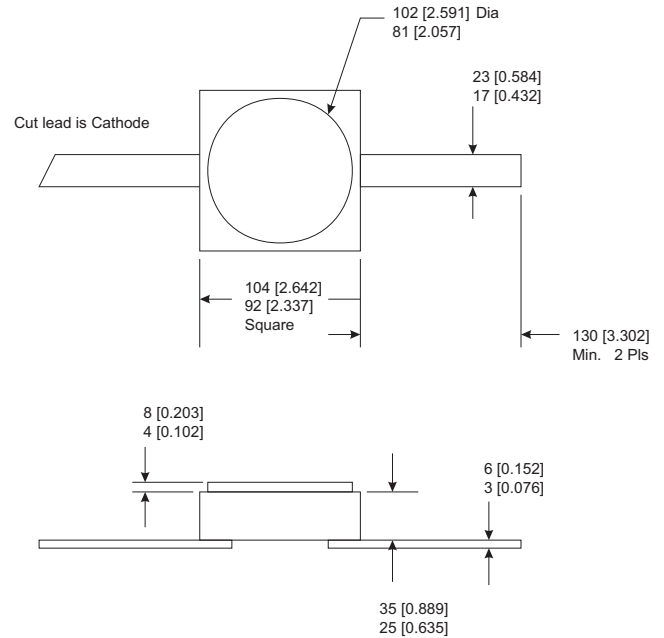
Consult factory for more package options.

CS11 (C11)

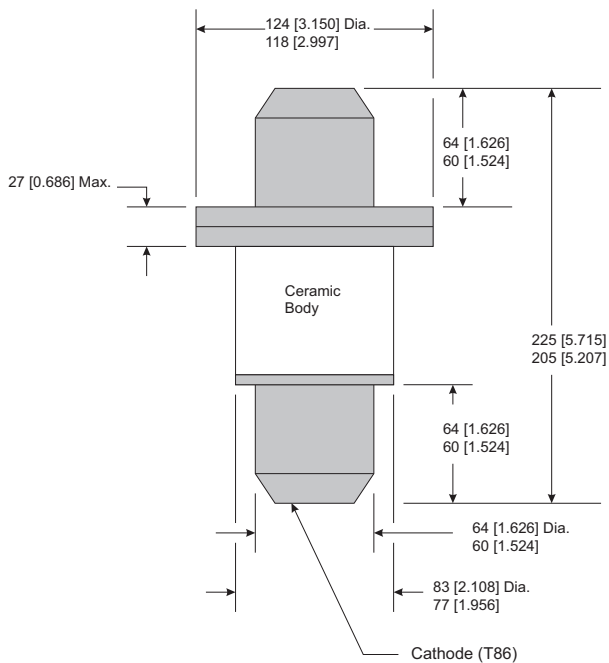


Dimensions are in inches (mm)

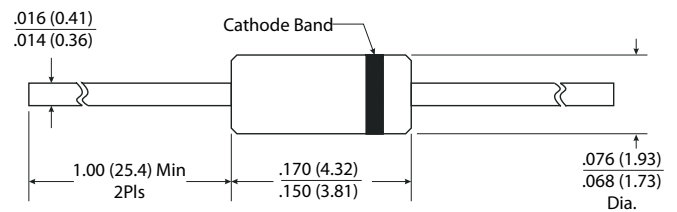
CS20 (H20)



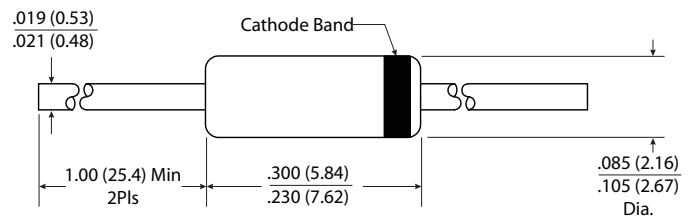
CS37 (T86)



CS75 (A15)



CS85



Note: Dimensions are in inches (mm)

Ordering Information

Example Part: MTV4045-10-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

Consult factory for more package options.

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