MSD7xx Series

Step Recovery Diode

Rev. V1

Features

- Low Transition Time
- High Efficiency
- High Cutoff Frequency
- High Reliability
- RoHS* Compliant

Bare Die

Beam Lead Chips

Ceramic Microwave Pill

Ceramic Epoxy SMT

Ceramic Hermetic SMT

Plastic SMT

Description

The MSD7xx Series of step recovery diodes are designed with epitaxial silicon which provides high output power and efficiency in harmonic generator applications. These diodes are manufactured using a proven diode fabrication process for high reproducibility. A unique silicon dioxide passivation process assures greater stability reliability and low leakage currents at high temperatures.

These diodes are available in various package outlines with capacitance ranges for each of the 4 voltage ratings.

This rugged device is capable of reliable operation in all military, commercial and industrial applications.

Electrical Specifications @ T_A = 25°C:
Voltage Breakdown (V_B) = 15 V min. @ 10 µA
Lifetime (T_L) = 8 ns min. and Transition Time (T_T) = 60 ps max. @ I_F 6 mA / I_R 10 mA

Model	Junction Capacitance (C_J) @ 6 V, 1 MHz	Series Resistance (R_S) @ 25 mA	Thermal Resistance (θ_{JC}) Pulsed
	Minimum	Maximum	Maximum
	pF	Ω	°C/W
MSD700	0.2 - 0.4	1.20	125
MSD701	0.4 - 0.6	1.00	100
MSD702	0.6 - 0.8	0.70	100
MSD703	0.8 - 1.0	0.50	75
MSD704	1.0 - 1.4	0.40	75
MSD705	1.4 - 2.0	0.30	60
MSD706	2.0 - 3.0	0.25	60

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

Electrical Specifications @ T_A = 25°C:
Voltage Breakdown (V_B) = 20 V min. @ 10 µA
Lifetime (T_L) = 11 ns min. and Transition Time (T_T) = 70 ps max. @ I_F 6 mA / I_R 10 mA

Model	Junction Capacitance (C_J) @ 6 V, 1 MHz	Series Resistance (R_S) @ 25 mA	Thermal Resistance (θ_{JC}) Pulsed
	Minimum	Maximum	Maximum
	pF	Ω	°C/W
MSD710	0.2 - 0.4	1.00	100
MSD711	0.4 - 0.6	0.70	75
MSD712	0.6 - 0.8	0.60	75
MSD713	0.8 - 1.0	0.50	75
MSD714	1.0 - 1.4	0.40	75
MSD715	1.4 - 2.0	0.30	60
MSD716	2.0 - 3.0	0.25	60

Electrical Specifications @ T_A = 25°C:
Voltage Breakdown (V_B) = 30 V min. @ 10 µA
Lifetime (T_L) = 17 ns min. and Transition Time (T_T) = 100 ps max. @ I_F 6 mA / I_R 10 mA

Model	Junction Capacitance (C_J) @ 6 V, 1 MHz	Series Resistance (R_S) @ 25 mA	Thermal Resistance (θ_{JC}) Pulsed
	Minimum	Maximum	Maximum
	pF	Ω	°C/W
MSD720	0.2 - 0.4	0.80	75
MSD721	0.4 - 0.6	0.60	60
MSD722	0.6 - 0.8	0.50	60
MSD723	0.8 - 1.0	0.40	60
MSD724	1.0 - 1.4	0.30	60
MSD725	1.4 - 2.0	0.25	50
MSD726	2.0 - 3.0	0.20	50

Electrical Specifications @ T_A = 25°C:
Voltage Breakdown (V_B) = 15 V min. @ 10 µA
Lifetime (T_L) = 8 ns min. and Transition Time (T_T) = 60 ps max. @ I_F 6 mA / I_R 10 mA

Model	Junction Capacitance (C_J) @ 6 V, 1 MHz	Series Resistance (R_S) @ 25 mA	Thermal Resistance (θ_{JC}) Pulsed
	Minimum	Maximum	Maximum
	pF	Ω	°C/W
MSD730	0.2 - 0.4	0.80	50
MSD731	0.4 - 0.6	0.60	50
MSD732	0.6 - 0.8	0.50	50
MSD733	0.8 - 1.0	0.40	50
MSD734	1.0 - 1.4	0.30	50
MSD735	1.4 - 2.0	0.25	40
MSD736	2.0 - 3.0	0.20	40

Absolute Maximum Ratings

Parameter	Absolute Maximum
Junction Temperature	+150°C
Operating Temperature	-55°C to +150°C
Storage Temperature	-65°C to +200°C

Environmental Capabilities

The MSD7xx Series of step recovery diodes are capable of meeting the environmental requirements of MIL-STD-750 and MIL-STD-883.

ESD & Moisture Sensitivity Level Rating

These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD prevention procedures should be followed. The ESD rating for this device is Class 0 (HBM).

Assembly Instructions

Die attach of the MSD7xx SRD chip diodes may be accomplished with eutectic solders, such as 80 Au / 20 Sn, or conductive epoxy. The leads of the beam lead device may be attached to a hybrid circuit using thermo compression bonding or conductive epoxy.