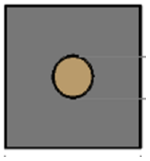
MMP7020 - MMP7036 Series

Fast Switching, Low Power, Silicon PIN Diodes

Rev. V1

Features

- Fast Switching
- Low Series Resistance
- Low Junction Capacitance
- Low Thermal Resistance
- RoHS* Compliant



Consult Factory for other package styles.

Description

The MMP7020 - 36 Series of PIN diodes are fast switching, low series resistance, low capacitance PIN diode chips. These diodes are also available packaged in several other package styles. The low junction capacitance, thin I-layer and low series resistances combine to produce outstanding insertion loss, isolation and switching time. The low thermal resistance enables these devices to safely handle moderately high power signals in high frequency switching applications. This rugged device is capable of reliable operation in all military, commercial and industrial applications.

This series of PIN diodes are designed to be used in moderate peak and average power switch applications which operate at high frequencies and require low switching time. These diodes performs exceptionally well from UHF through microwave frequencies.

Environmental Capabilities

The MMP7020 - 36 Series of PIN diodes are capable of meeting the environmental requirements of MIL-STD-750 and MIL-STD-883.

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.

Electrical Specifications: T_A = +25°C, Fast Switching, Low Power

Model	Reverse Voltage Breakdown (V_{BR})	Junction Capacitance (C_J)	Minority Carrier Lifetime (T_L)	Theta (θ_{JC})	Switching Speed (TS)	Series Resistance @ 75 mA (R_S)	Series Resistance @ 20 mA (R_S)
	V	pF	ns	°C/W	ns	Ω	Ω
	Min.	Max.	Typ.	Max.	Max.	Max.	Typ.
MMP7020-11	70	0.05	60	80	5	0.9	1.2
MMP7021-11		0.10		70		0.7	1.0
MMP7022-11		0.15		60		0.6	0.9
MMP7023-11		0.20		55		0.5	0.7
MMP7024-11		0.25		50		0.45	0.5

1. Reverse Breakdown Voltage measured at 10 µa.
2. Junction Capacitance measured at -10 V, 1 MHz.
3. Minority Carrier lifetime measured with I_F = 10 mA, I_R = 6 mA.
4. RF Switching speed measured from 90% to 10% and 10% to 90% transmission. Drive output = +20 mA and -4 V, 200 mA spike with a rise time of 2 ns.
5. Series Resistance is measured at 1 GHz using transmission loss techniques.

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

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	V	pF	ns	°C/W	ns	Ω	Ω
	Min.	Max.	Typ.	Max.	Max.	Max.	Typ.
MMP7025-11	100	0.03	100	90	10	1.2	1.9
MMP7026-11		0.07		80		0.9	1.5
MMP7027-11		0.10		70		0.7	1.2
MMP7028-11		0.15		60		0.6	1.0
MMP7029-11		0.20		55		0.5	0.9
MMP7030-11		0.30		50	15	0.45	0.8
MMP7031-11	200	0.03	225	90	15	1.9	3.0
MMP7032-11		0.07		80		1.2	2.2
MMP7033-11		0.10		70		0.9	1.6
MMP7034-11		0.15		60		0.8	1.0
MMP7035-11		0.20		55		0.7	0.8
MMP7036-11		0.30		50		0.6	0.7

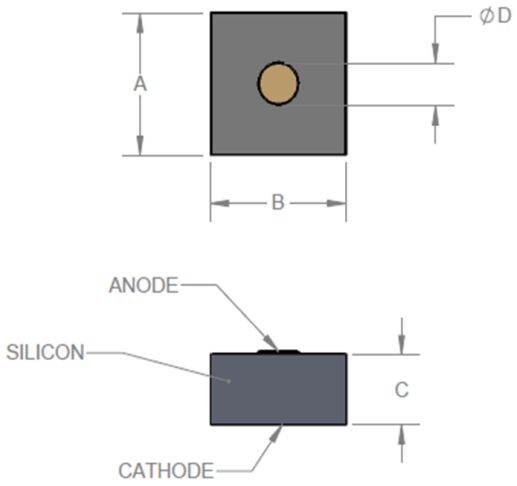
Absolute Maximum Ratings

Parameter	Absolute Maximum
Operating Temperature	-55°C to +150°C
Storage Temperature	-65°C to +200°C
Assembly Temperature	<300°C for 5 seconds

Assembly Instructions

Die attach of the MMP7020-11 - MMP7036-11 silicon PIN diode chips may be accomplished with conductive epoxy or a eutectic solder such as Au (80%)/Sn(20%) or Au(88%)/Ge(12%). Electrical connection to the cathode may be made with a Au wire or ribbon, utilizing thermo compression or thermosonic bonding. Care should be exercised to not employ excessive pressure or ultrasonic energy while wire/ribbon bonding to avoid physical damage to the die.

CS11



Dimensions (inches)

Dimension	Min.	Nom.	Max.
A	0.012	0.013	0.014
B	0.012	0.013	0.014
C	0.004	0.005	0.006
D	0.003	0.004	0.005