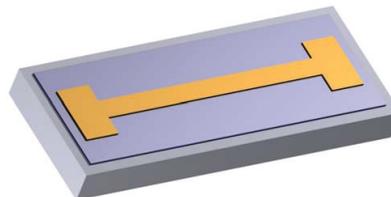


### Features

- Supports up to 40 Watts Power
- Low Insertion Loss 0.38 dB typical at 10 GHz
- High Isolation 55 dB typical at 40 GHz
- RoHS\* Compliant



### Description

A broadband medium power PIN diode is designed as a 50  $\Omega$  microstrip when biased at zero or a negative voltage. The device has extremely high isolation from 50 MHz to 40 GHz and can achieve switching speeds <250 ns.

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

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Breakdown Voltage	$I_R = 10 \mu\text{A}$	V	200	—	—
Series Resistance	$I_F = 100 \text{ mA}$ , 500 MHz	$\Omega$	—	0.6	—
Minority Carrier Lifetime	$I_F = 10 \text{ mA}$ , $I_R = 6 \text{ mA}$ , 10% / 90%	ns	—	4000	—
Insertion Loss	$V_R = -40 \text{ V}$ , 10 GHz $V_R = -40 \text{ V}$ , <40 GHz	dB	—	0.38 1.35	0.65 —
Input Return Loss	10 GHz <40 GHz	dB	17 —	21 12	—
Isolation	$I_F = 100 \text{ V}$ , 10 GHz, $I_F = 100 \text{ V}$ , <40 GHz	dB	50 —	58 50	—

### Absolute Maximum Ratings

Parameter	Absolute Maximum
Reverse Voltage	200 V
Forward Current	100 mA
Thermal Resistance	65°C/W
Junction Temperature	+150°C
Storage Temperature	-65°C to +125°C
Assembly Temperature	+260°C, per JEDEC STD-J-20C

### Ordering Information

Part Number	Package
MMSPN050-C54	bulk

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

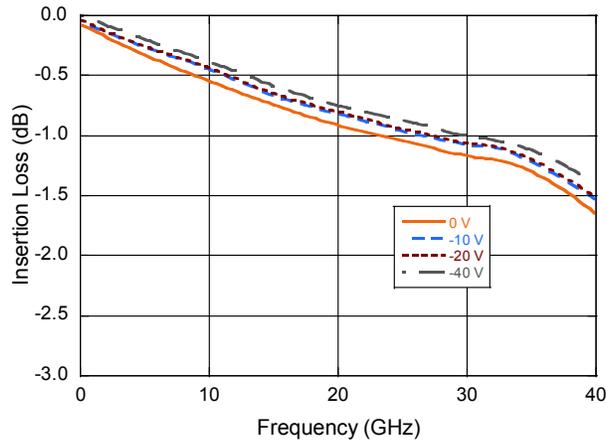
1

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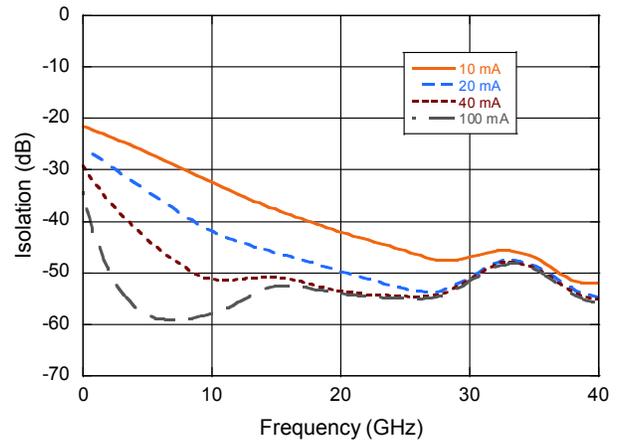
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### Typical Performance Curves: $T_A = +25^\circ\text{C}$ , $Z_O = 50 \Omega$ , -10 dBm Small Signal

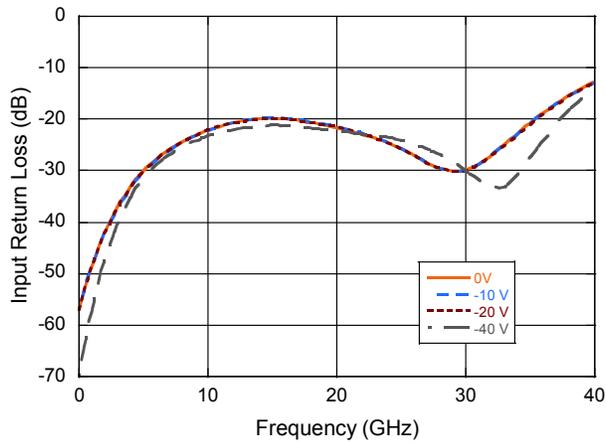
**Insertion Loss**



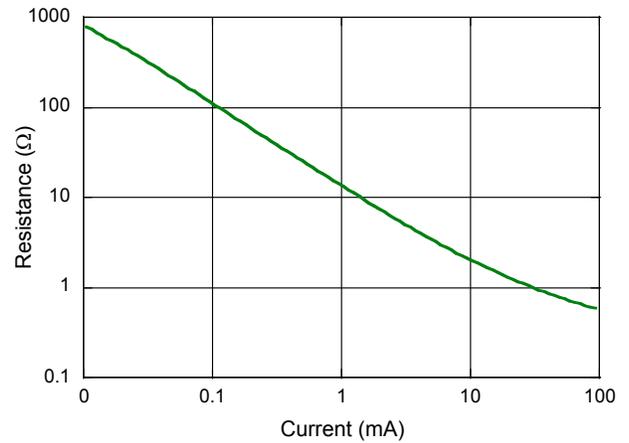
**Isolation**



**Input Return Loss**

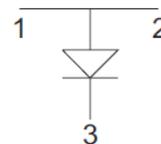
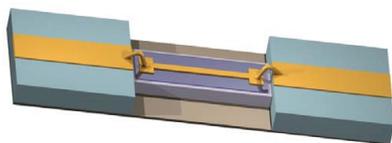


**Resistance vs. Current @ 500 MHz**



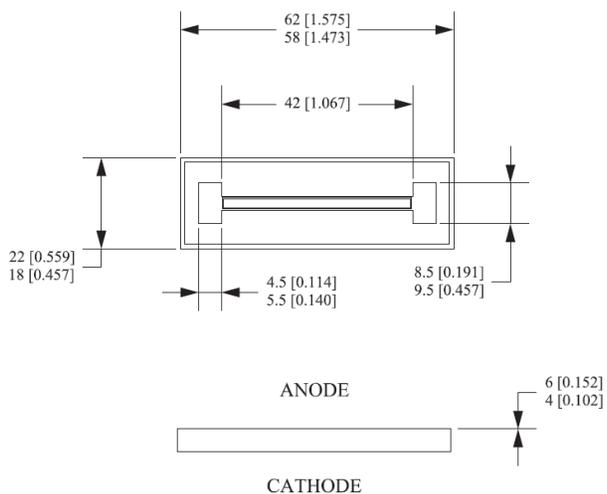
### Recommended Assembly for Best Thermals

### Electrical Schematic



For best isolation and to minimize coupling between the input and output, keep the bond wire height to a minimum.

### Outline Drawing (C54)



Dimensions in mils [mm]

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