

Pin Diode Switch Element

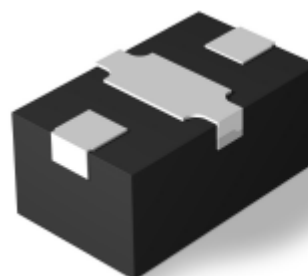
Rev. V1

Features

- Supports up to 20 W Power
- Low Insertion Loss: 0.2 dB up to 2.7 GHz
- High Isolation: 18 dB up to 2.7 GHz
- RoHS* Compliant

Description

A broadband medium power switch element in a 1.9 x 1.1 mm DFN package. This device is electrical series and thermal direct to ground (EST2G). This device is designed for wireless infrastructure applications and test instruments. It is also suited for other applications from 100 MHz up to 6 GHz.



(2012)
Plastic Molded DFN

Electrical Specifications: $T_C = +25^\circ\text{C}$ (unless otherwise specified)

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Breakdown Voltage (V_{BR})	$I_R = 10 \mu\text{A}$	V	100	—	—
Lifetime (t)	$I_F = 10 \text{ mA}$, $I_R = 6 \text{ mA}$, 10% / 90%	ns	—	50	—
Series Resistance (R_S)	$I_F = 100 \text{ mA}$, 50 MHz	Ω	—	1.2	—
Junction Capacitance (C_J)	$V_R = -10 \text{ V}$, 1 MHz	pF	—	0.08	—
Insertion Loss (I_L)	$I_F = 50 \text{ mA}$, 2.3 ~ 2.7 GHz $I_F = 50 \text{ mA}$, <6 GHz	dB	—	0.2 0.3	0.3 —
Input Return Loss (IR_L)	$I_F = 50 \text{ mA}$, 2.3 ~ 2.7 GHz $I_F = 50 \text{ mA}$, <6 GHz	dB	23 18	27 22	—
Isolation (I_{SO})	$V_R = -10 \text{ mA}$, 2.3 ~ 2.7 GHz $V_R = -10 \text{ mA}$, <6 GHz	dB	15 10	18 12	—

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

Pin Diode Switch Element

Rev. V1

Absolute Maximum Ratings^{1,2}

Parameter	Absolute Maximum
Breakdown Voltage (V_R)	100 V
Forward Current (I_F)	100 mA
Theta (θ_{JC})	65°C/W
Junction Temperature (T_J)	175°C
Storage Temperature (T_{STG})	-65°C to +150°C
Mounting Temperature (T_{MTG})	+260°C per JEDEC STD-J-20C

1. Exceeding any one or combination of these limits may cause permanent damage to this device.
2. MACOM does not recommend sustained operation near these survivability limits.

Handling Procedures

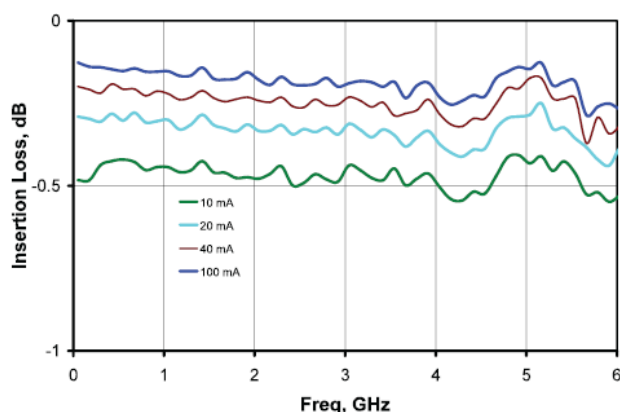
Please observe the following precautions to avoid damage:

Static Sensitivity

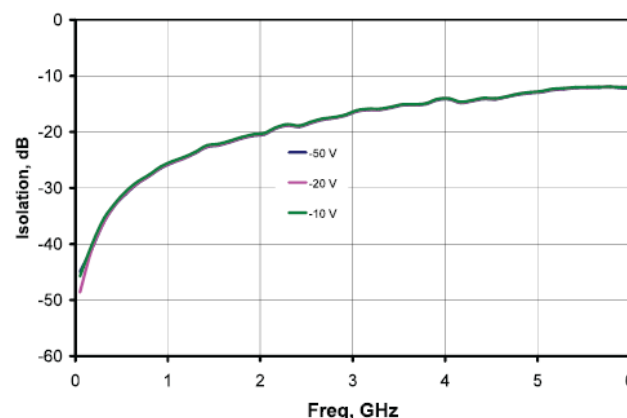
These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these Class 0 (HBM) devices.

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

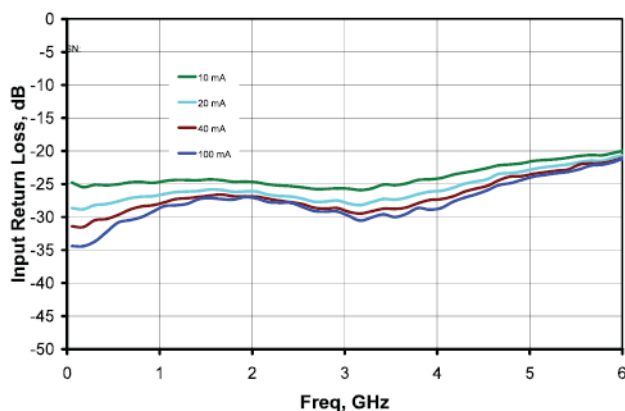
Insertion Loss



Isolation



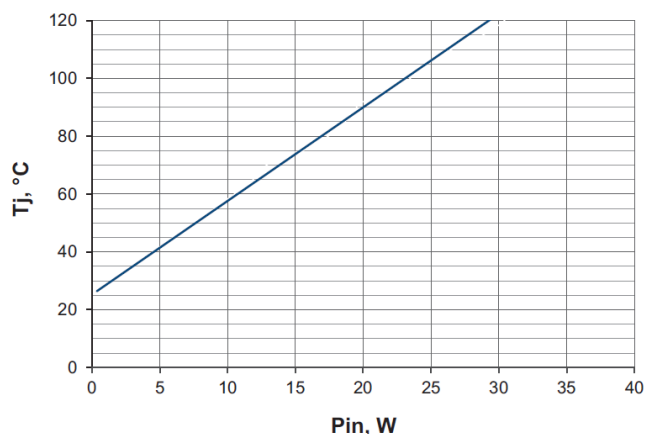
Input Return Loss



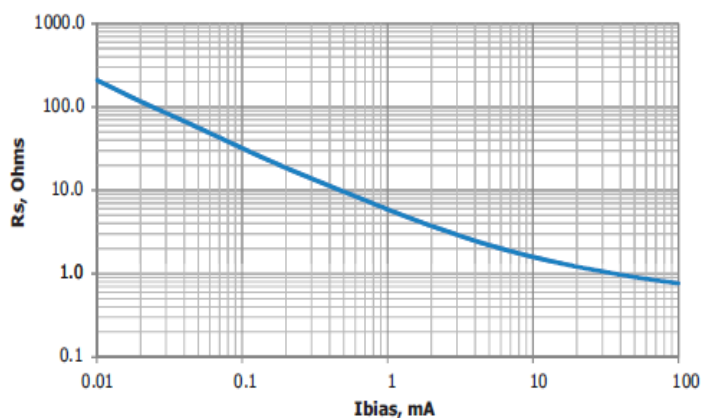
Pin Diode Switch Element

Rev. V1

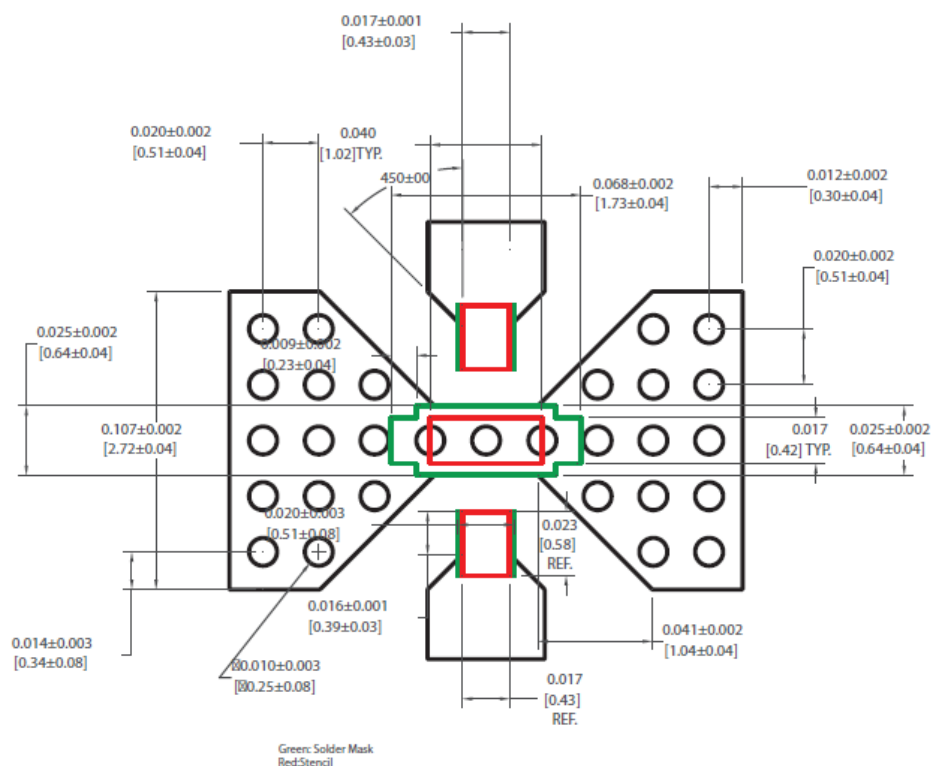
Junction Temperature vs. P_{IN}
(Mounted on Heat Sink @ +25°C, 1.3 GHz, 100 mA Bias)



Series Resistance vs. Current



Printed Circuit Board Layout (Soldering Footprint)^{3,4,5,6,7}



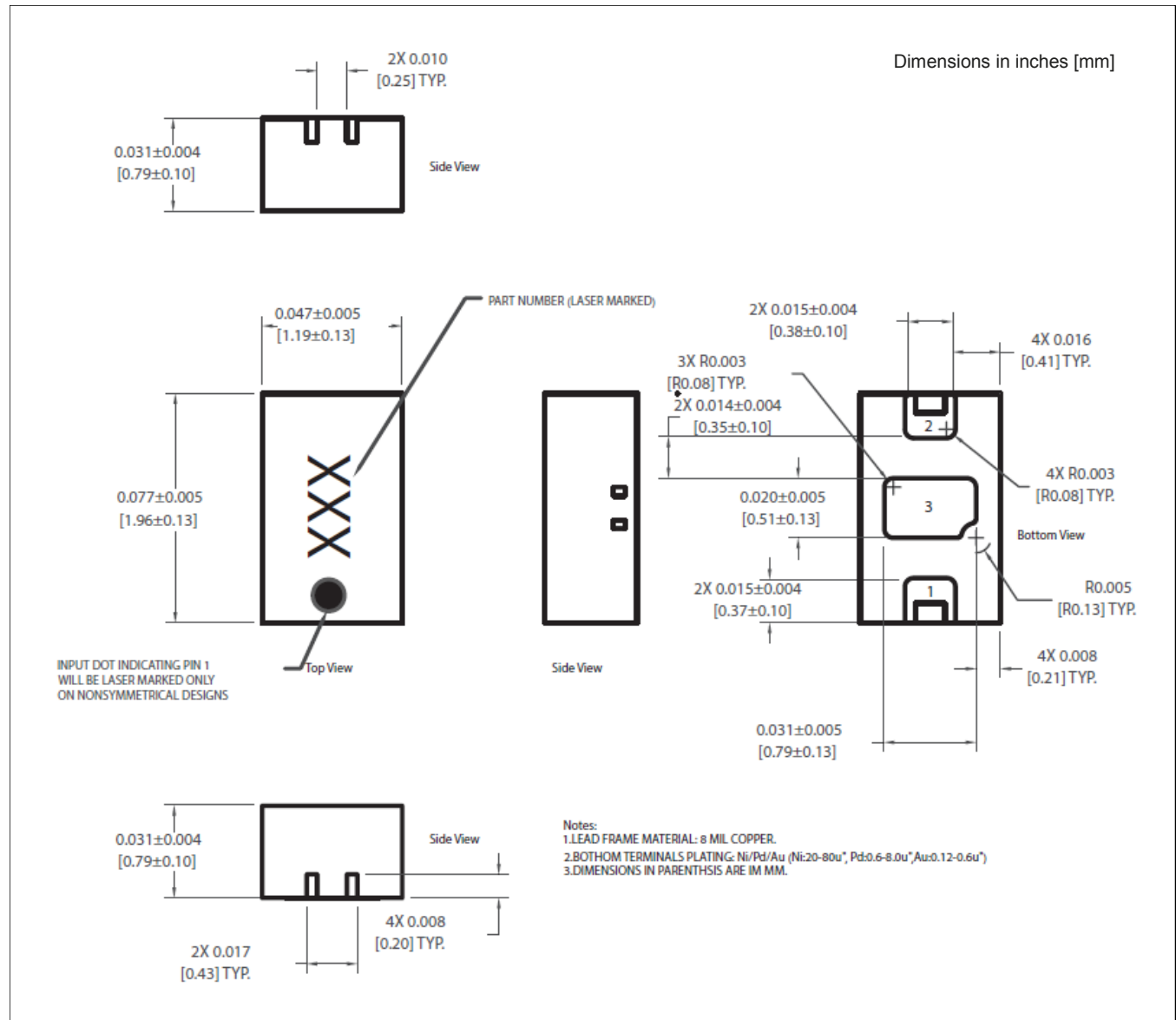
3. Unless otherwise specified: Tolerance ±0.10 mm
4. If possible, use copper filled vias underneath pin 3 for better thermals; otherwise, use vias that are plated through, filled and plated over.
5. Solder mask should provide a 60 µm clearance between copper pad and soldermask. Rounded package pads should have matching rounded solder mask openings.
6. Use circles or squares for thermal land stencil such that there is only 50% to 80% solder paste coverage
7. 20 mils Rogers RO4350B with 1 oz. copper clad and 10 mil diameter plated thru vias on 20 mil centers underneath package.

M/A-COM Technology Solutions Inc. (MACOM) and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice. Visit www.macom.com for additional data sheets and product information.

Pin Diode Switch Element

Rev. V1

Package Outline



M/A-COM Technology Solutions Inc. All rights reserved.

Information in this document is provided in connection with M/A-COM Technology Solutions Inc ("MACOM") products. These materials are provided by MACOM as a service to its customers and may be used for informational purposes only. Except as provided in MACOM's Terms and Conditions of Sale for such products or in any separate agreement related to this document, MACOM assumes no liability whatsoever. MACOM assumes no responsibility for errors or omissions in these materials. MACOM may make changes to specifications and product descriptions at any time, without notice. MACOM makes no commitment to update the information and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to its specifications and product descriptions. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, CONSEQUENTIAL OR INCIDENTAL DAMAGES, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. MACOM FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. MACOM SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS, WHICH MAY RESULT FROM THE USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.