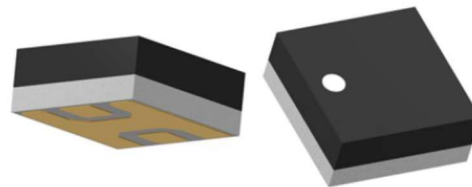


PIN Diode Shunt Switch Element

Rev. V1

Features

- Supports up to 35 W Power
- Low Insertion Loss:
 - <0.10 dB @ 1 GHz
 - <0.35 dB @ 6 GHz
 - <0.70 dB @ 10 GHz (with input tuning)
- High Isolation:
 - >40 dB @ 2 GHz
- RoHS* Compliant

(CM35)
non-hermetic

Description

A broadband, high linearity, medium power shunt switch element in a 4.06 x 4.06 mm thermally highly conductive Alumina Nitride surface mount package. This part is designed for reliable power switch applications up to 35 watts and with a frequency range from 1 MHz to 10 GHz (with input tuning).

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

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Breakdown Voltage (V_B)	$I_R = 10 \mu\text{A}$	V	200	—	—
Forward Voltage (V_F)	$I_F = 50 \text{ mA}$	mV	—	900	950
Insertion Loss (I_L)	$V_F = -40 \text{ V}, <2 \text{ GHz}$ $V_F = -40 \text{ V}, <6 \text{ GHz}$ $V_F = -40 \text{ V}, <10 \text{ GHz}$	dB	—	0.15 0.35 0.70	0.30 — —
Isolation (I_{SO})	$I_F = 100 \text{ mA}, <1 \text{ GHz}$ $I_F = 10 \text{ mA}, <6 \text{ GHz}$	dB	35 —	42 32	—
Input / Output Return Loss (R_L)	$V_F = -40 \text{ V}, <2 \text{ GHz}$ $V_F = -40 \text{ V}, <6 \text{ GHz}$ $V_F = -40 \text{ V}, <10 \text{ GHz}$	dB	25 — —	30 30 20	—
Minority Carrier Lifetime (T_L)	$I_F = 10 \text{ mA}, I_R = 6 \text{ mA}, @ 50\%$	ns	—	3000	—

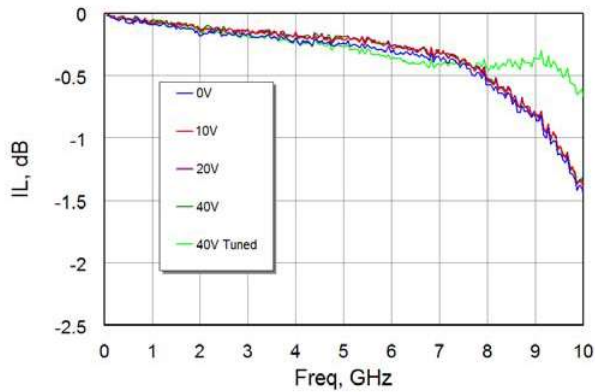
Absolute Maximum Ratings

Parameter	Absolute Maximum
Reverse Voltage	200 V
Forward Current	200 mA
Thermal Resistance	10°C/W
Junction Temperature	-40°C to +175°C
Storage Temperature	-55°C to +150°C
Assembly Temperature	+260°C, Per JEDEC STD-J-20C

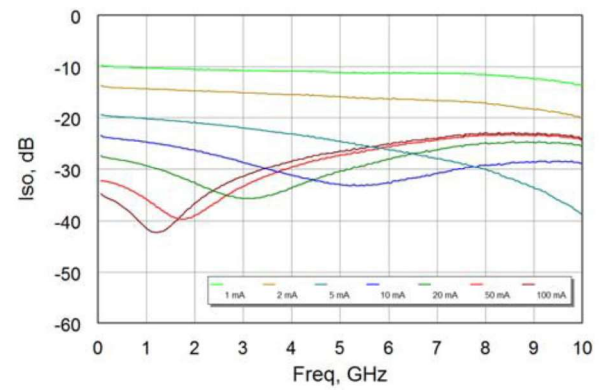
1 * Restrictions on Hazardous Substances, European Union Directive 2011/65/EU.

Typical Performance Curves

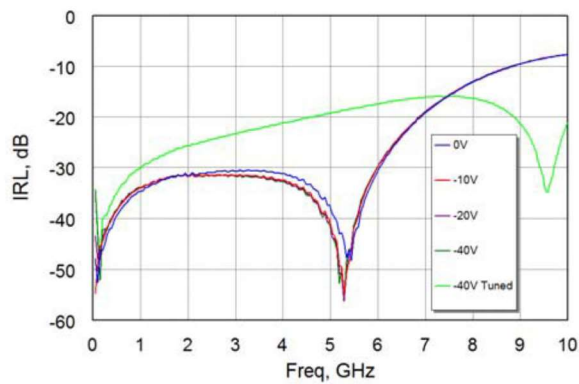
Insertion Loss



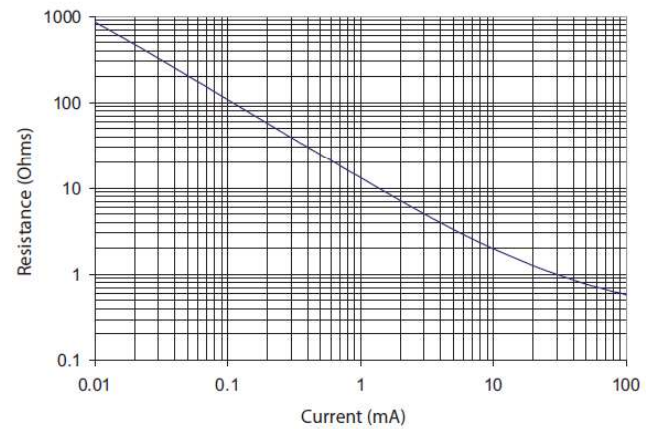
Isolation



Return Loss



Resistance vs. Bias Current @ 500 MHz

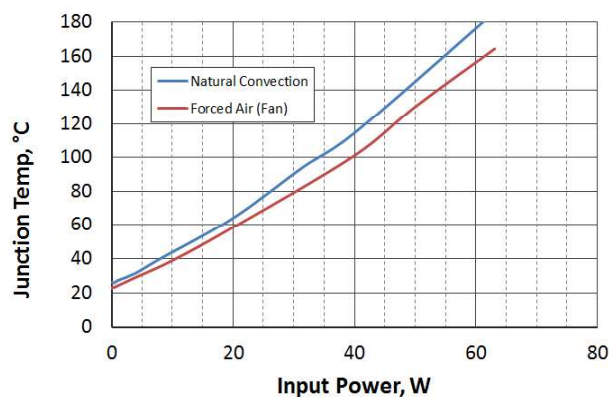


PIN Diode Shunt Switch Element

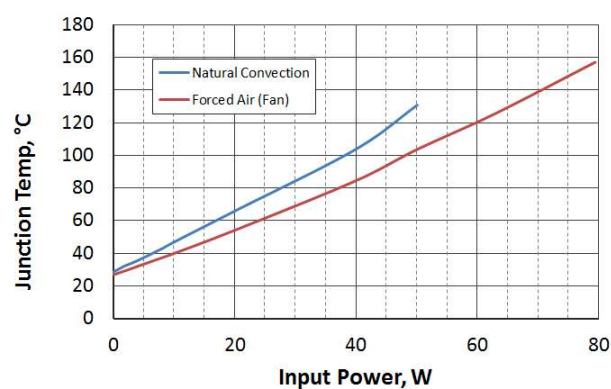
Rev. V1

Typical Performance Curves

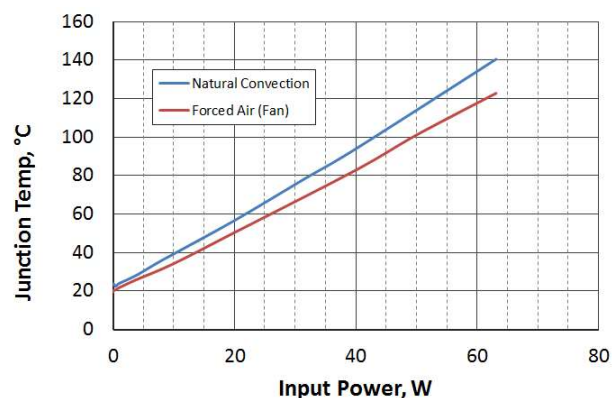
Junction Temperature vs. Input Power
PCB¹ Mounted on Heat Sink
 $T_A = 25^\circ\text{C}$, 1.3 GHz, 50 mA Bias



Junction Temperature vs. Input Power
PCB¹ Mounted on Heat Sink
 $T_A = 25^\circ\text{C}$, 1.3 GHz, 100 mA Bias

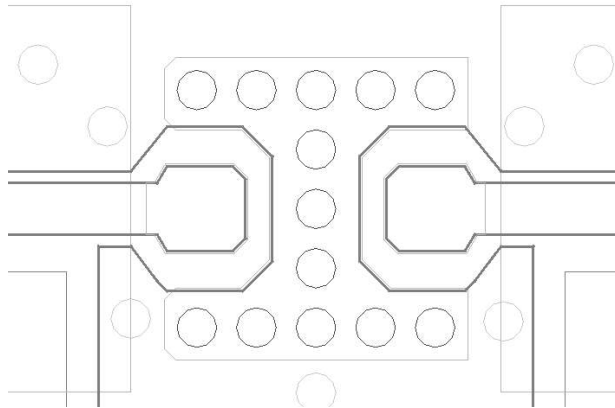


Junction Temperature vs. Input Power
PCB¹ Mounted on Heat Sink
 $T_A = 25^\circ\text{C}$, 1.3 GHz, 200 mA Bias



1. 20 mils Rogers RO4350B with 1 oz. copper clad and copper plated thru 10 mil diameter vias under package thermal ground.

Printed Circuit Board Layout

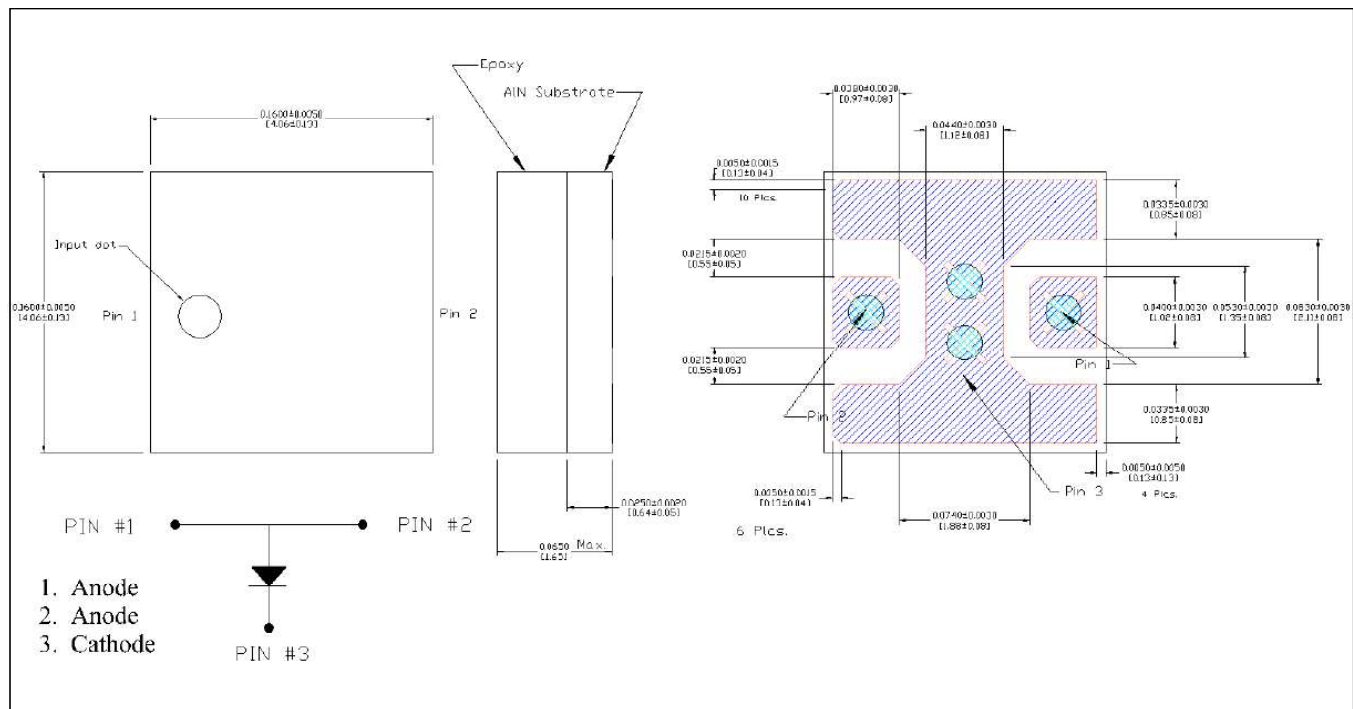


For RF ground and thermal vias use copper filled and plated over 10 mil diameter vias on 17 mil centers.

Solder mask should provide 60 μm clearance between copper pad and solder mask. Rounded package pads should have matching rounded solder mask openings. On the outer edges of package, use 100 μm clearance.

For the solder paste stencil design, use circles or squares such that only get 60 to 80% solder paste coverage.

Outline (CM35)



MACOM Technology Solutions Inc. All rights reserved.

Information in this document is provided in connection with MACOM 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.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

MACOM:

[MSWSHC-050-10-CM35](#)