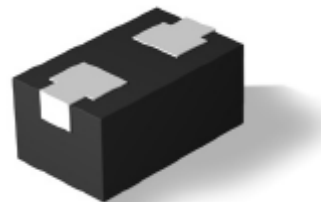


Silicon PIN Diode Switch Element

Rev. V1

Features

- Small Size (40 x 24 mils)
- Broadband Performance up to 3 GHz
- Supports up to 10 W Power
- Low Insertion Loss, 0.15 dB
- Cost effective choice for switch applications
- RoHS* Compliant



Description

The MSWSE-010-15S is a PIN diode switch element designed for medium incident power applications, up to 10 W CW. It has low insertion loss and medium isolation below 3 GHz.

0402 (Molded Plastic DFN Package)

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

Parameter	Test Conditions	Min.	Typ.	Max.	Units
Breakdown Voltage	$I_R = 10 \mu\text{A}$	200	—	—	V
Forward Voltage	$I_F = 50 \text{ mA}$	—	870	950	mV
Junction Capacitance	$V_R = -50 \text{ V}$, 1 MHz	—	0.13	—	pF
Total Capacitance	$V_R = -50 \text{ V}$, 1 MHz	—	0.17	0.22	pF
Series Resistance	$I_F = 30 \text{ mA}$, 500 MHz $I_F = 100 \text{ mA}$, 500 MHz	—	0.8 0.6	1.0 0.8	Ω
Lifetime	$I_F = 10 \text{ mA}$, $I_R = 6 \text{ mA}$, 50%	—	650	900	ns
I-Region	I-Layer	—	40	—	ns
Insertion Loss	$I_F = 50 \text{ mA}$, 1 GHz $I_F = 50 \text{ mA}$, 2 GHz	—	0.05 0.10	— 0.25	dB
Input Return Loss	$I_F = 50 \text{ mA}$, 1 GHz $I_F = 50 \text{ mA}$, 2 GHz	25 —	30 25	—	dB
Isolation	$V_R = 50 \text{ V}$, 1 GHz $V_R = 50 \text{ V}$, 2 GHz	15 —	20 15	—	dB

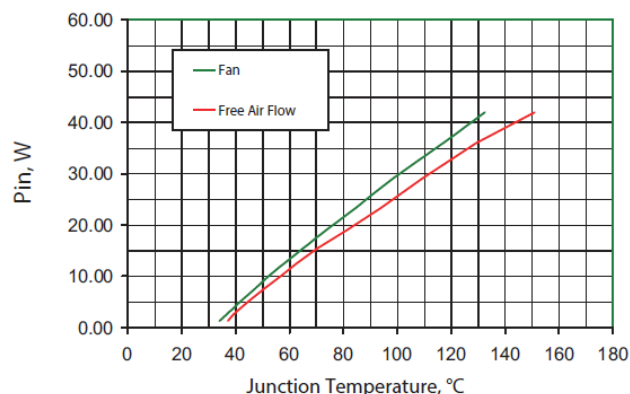
* Restrictions on Hazardous Substances, European Union Directive 2011/65/EU.

Absolute Maximum Ratings^{1,2}

Parameter	Absolute Maximum
Breakdown Voltage	200 V
Forward Current	200 mA
Thermal Resistance	35 W CW
Junction Temperature	+175°C
Storage Temperature	-55°C to +150°C
Solder Temperature	+260°C per JEDEC STD-J-20C

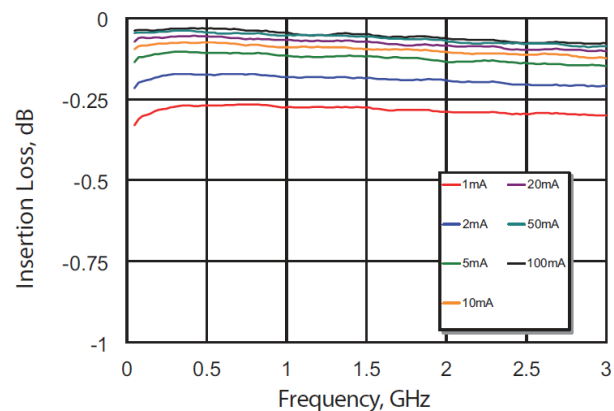
- Exceeding any one or combination of these limits may cause permanent damage to this device.
- MACOM does not recommend sustained operation near these survivability limits.

Junction Temperature vs. Input Power Mounted on Heatsink $T_A = 25^\circ\text{C}$, 1.3 GHz

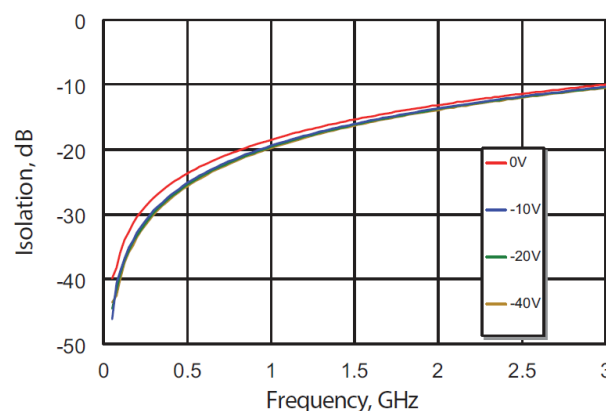


Typical RF Performance Curves @ +25°C

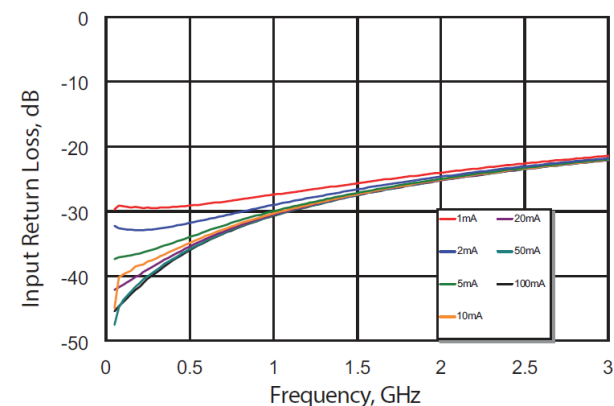
Insertion Loss



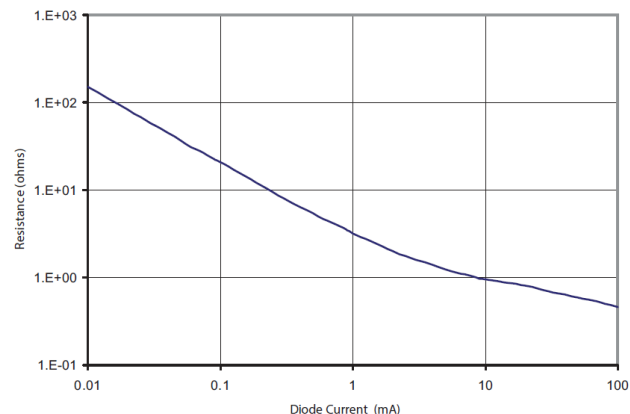
Isolation



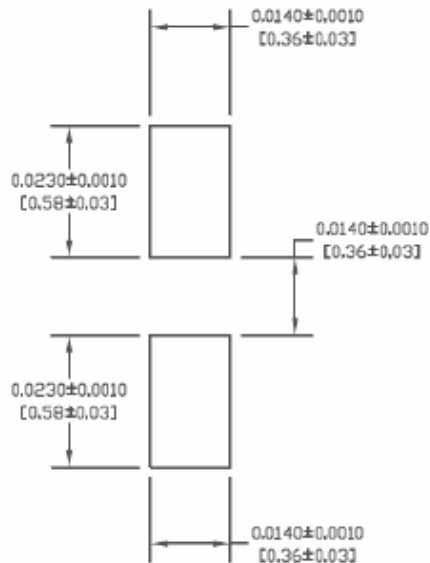
Input Return Loss



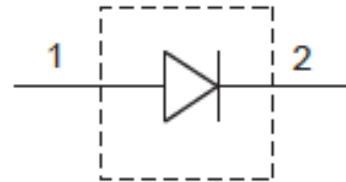
Series Resistance vs. Current



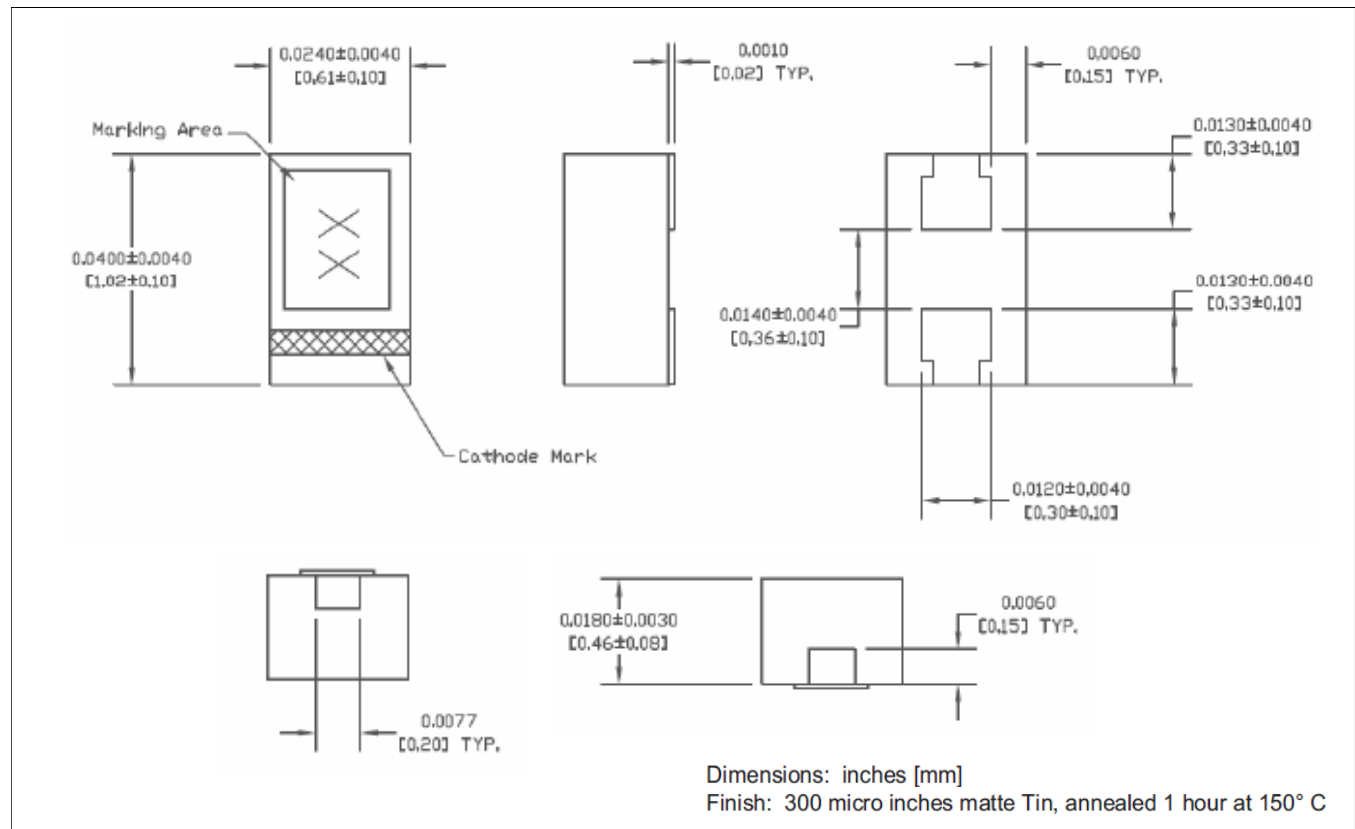
PCB Layout



Schematic



Outline (0402)



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