

Features

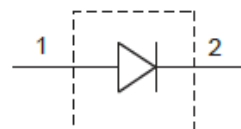
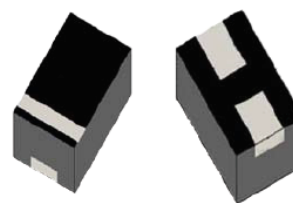
- Small Size (50 x 30 mils)
- Broadband Performance up to 1 GHz
- Supports up to 20 W Power
- Low Insertion Loss, 0.05 dB up to 1 GHz
- Cost effective choice for switch applications
- RoHS* Compliant

Applications

- ISM

Description

The MSWSE-020-05 is a SPST PIN diode switch element designed for medium incident power applications, up to 20 W CW. It has low insertion loss and medium isolation below 0.5 GHz.



0503 (Molded Plastic DFN Package)

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

Parameter	Test Conditions	Min.	Typ.	Max.	Units
Breakdown Voltage	$I_R = 10 \mu\text{A}$	250	—	—	V
Forward Voltage	$I_F = 50 \text{ mA}$	—	850	950	mV
Junction Capacitance	$V_R = -50 \text{ V}$, 1 MHz	—	0.53	0.65	pF
Total Capacitance	$V_R = -50 \text{ V}$, 1 MHz	—	0.55	—	pF
Series Resistance	$I_F = 10 \text{ mA}$, 500 MHz $I_F = 100 \text{ mA}$, 500 MHz	—	0.3 0.1	0.5 0.3	Ω
Lifetime	$I_F = 10 \text{ mA}$, $I_R = 6 \text{ mA}$, 50%	—	600	1000	ns
I-Region	I-Layer	—	15	—	μm
Insertion Loss	$I_F = 50 \text{ mA}$, 1 GHz	—	15.00 0.05	— 0.15	dB
Return Loss	$I_F = 50 \text{ mA}$, 0.5 GHz $I_F = 50 \text{ mA}$, 1.0 GHz	35 —	40 38	—	dB
Isolation	$V_R = 50 \text{ V}$, 0.5 GHz $V_R = 50 \text{ V}$, 1.0 GHz	11 —	14 8	—	dB

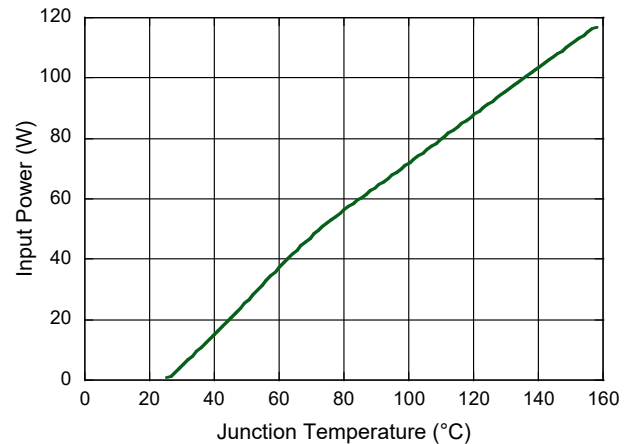
* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.

Absolute Maximum Ratings^{1,2}

Parameter	Absolute Maximum
Breakdown Voltage	250 V
Forward Current	500 mA
Thermal Resistance	15°C/W
Junction Temperature	+175°C
Storage Temperature	-55°C to +150°C
Solder Temperature	+260°C per JEDEC STD-J-20C

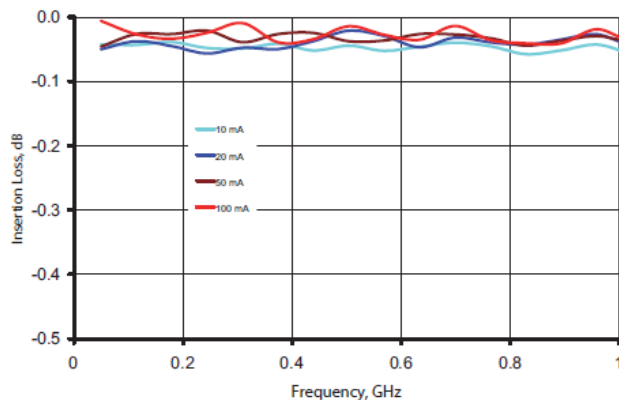
1. Exceeding any one or combination of these limits may cause permanent damage to this device.
2. MACOM does not recommend sustained operation near these survivability limits.

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

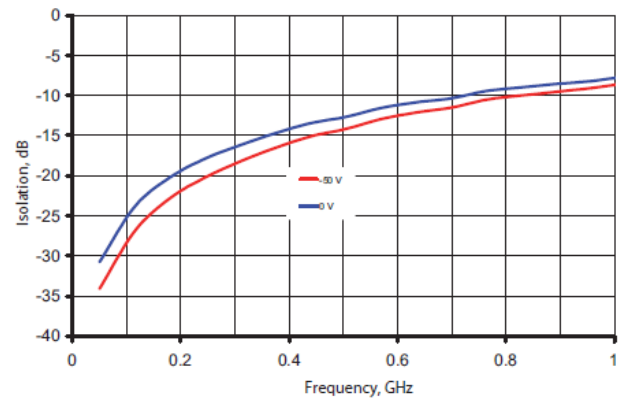


Typical RF Performance Curves @ +25°C

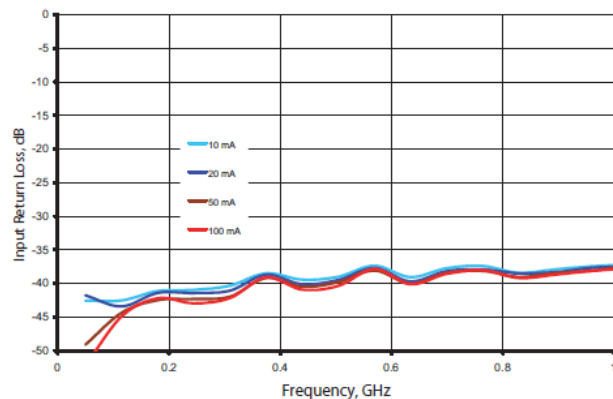
Insertion Loss



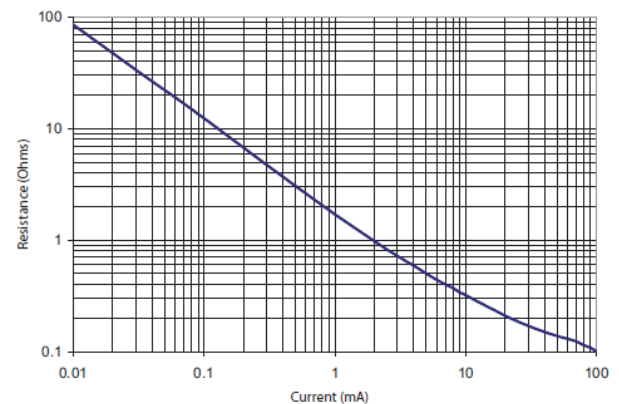
Isolation



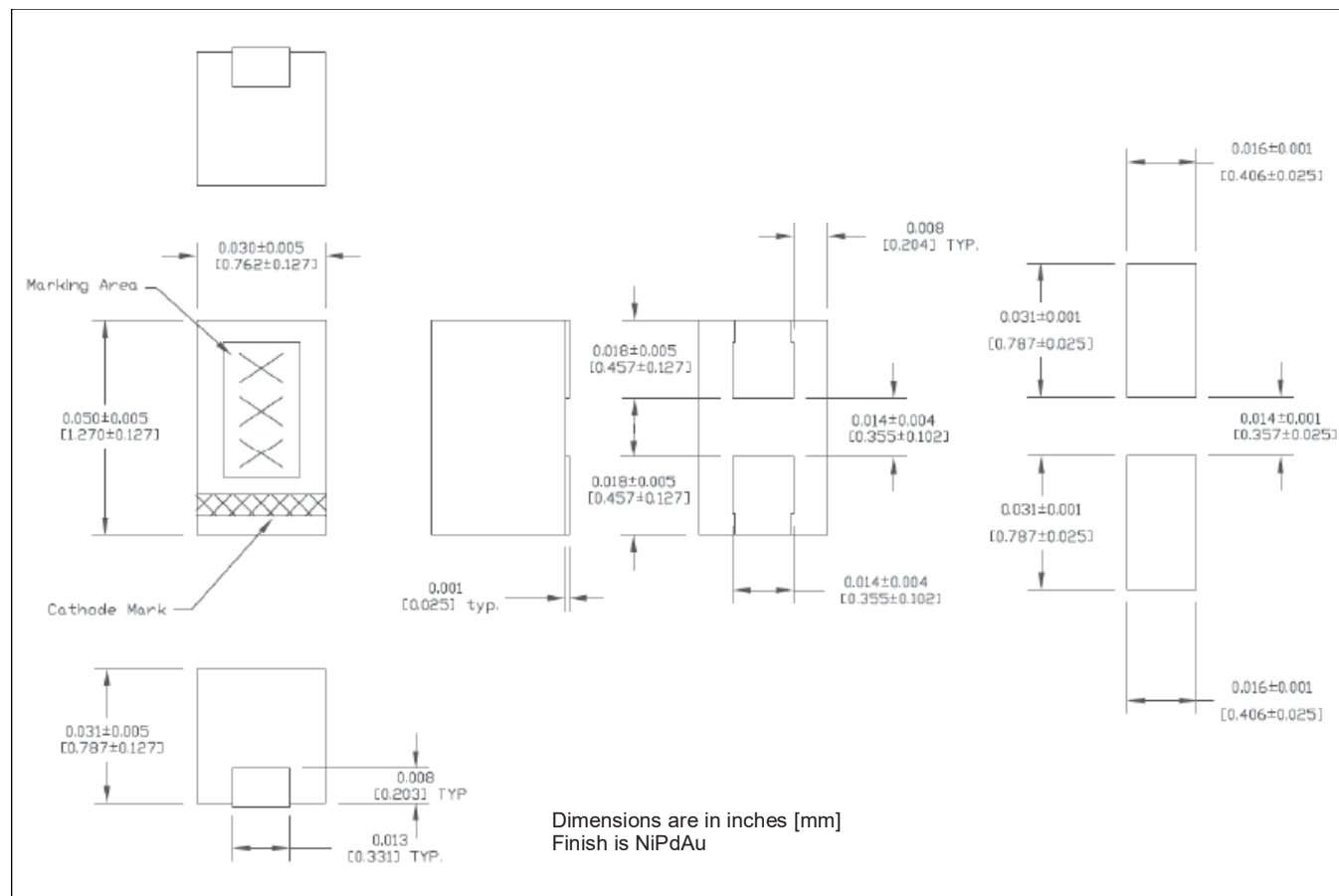
Input Return Loss



Series Resistance vs. Current



Package Outline (0503) & PCB Layout



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