

Silicon SPST PIN Diode Switch Element

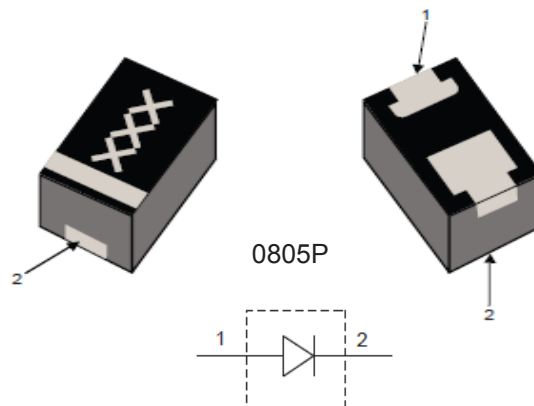
Rev. V1

Features

- Supports up to 60 W Power
- Broadband Performance up to 3 GHz
- Low Insertion Loss
- Medium Isolation
- RoHS* Compliant

Description

A broadband, high linearity, medium power series switch element in a 2.0 x 1.3 mm QFN package. This device is designed for WiMax, Wibro, WLAN, TD-SCDMA and other wireless infrastructure applications. It is also suited for 0.1 ~ 3 GHz applications with up to 60 watts of power.

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

Parameter	Test Conditions	Min.	Typ.	Max.	Units
Breakdown Voltage	$I_R = 10 \mu\text{A}$	500	—	—	V
Forward Voltage	$I_F = 50 \text{ mA}$	—	850	950	mV
Total Capacitance	$V_R = 50 \text{ V}, 1 \text{ MHz}$	—	0.20	0.25	pF
Series Resistance	$I_F = 100 \text{ mA}, 100 \text{ MHz}$	—	0.25	0.30	Ω
Lifetime	$I_F = 10 \text{ mA}, I_R = 6 \text{ mA}, 50\%$	—	1600	—	ns
I-Region	I-Layer	—	80	—	μm
Insertion Loss	$I_F = 50 \text{ mA}, <0.5 \text{ GHz}$ $I_F = 50 \text{ mA}, <2.0 \text{ GHz}$	—	0.1 0.1	0.2 0.2	dB
Return Loss	$I_F = 50 \text{ mA}, <0.5 \text{ GHz}$ $I_F = 50 \text{ mA}, <2.0 \text{ GHz}$	25 20	33 25	—	dB
Isolation	$V_R = 50 \text{ V}, <0.5 \text{ GHz}$ $V_R = 50 \text{ V}, <2.0 \text{ GHz}$	22 10	24 12	—	dB

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

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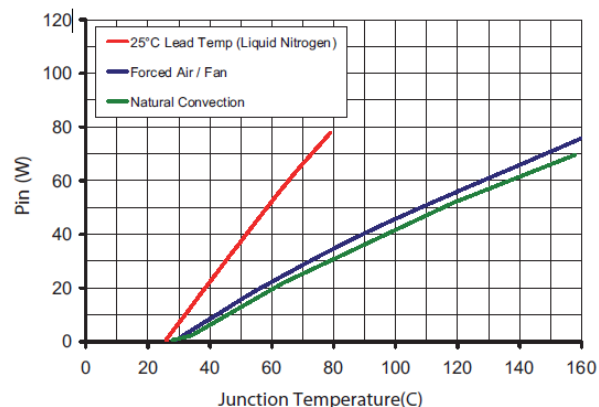
Absolute Maximum Ratings^{1,2}

Parameter	Absolute Maximum
Breakdown Voltage	500 V
Forward Current	500 mA
Thermal Resistance	10°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.

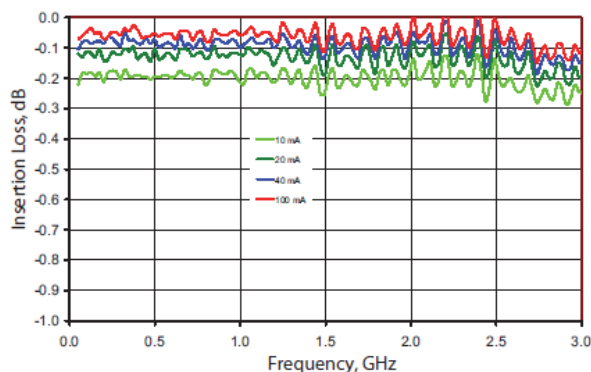
Junction Temperature vs. Input Power

Backside of Board $T_A = 25^\circ\text{C}$, Board Thickness 20 mil
PCB Mounted on Heat Sink @ 1.3 GHz

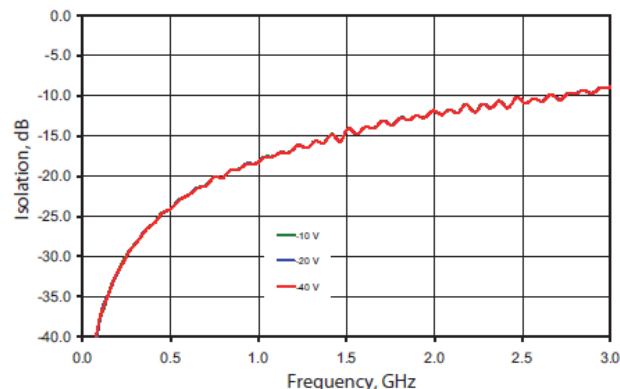


Typical RF Performance Curves @ +25°C

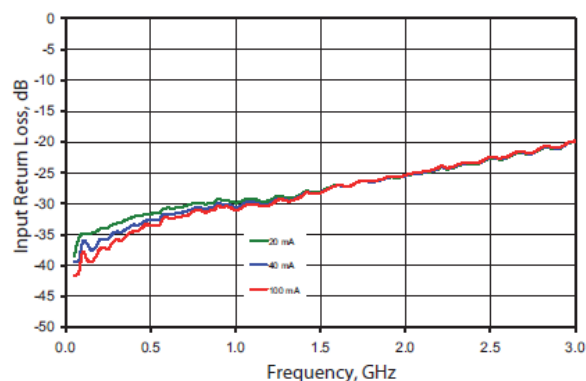
Insertion Loss



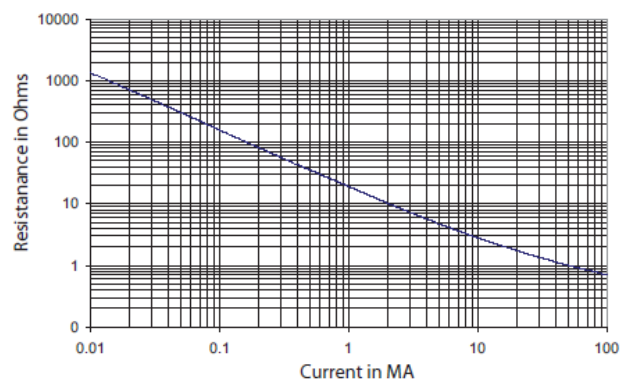
Isolation



Input Return Loss



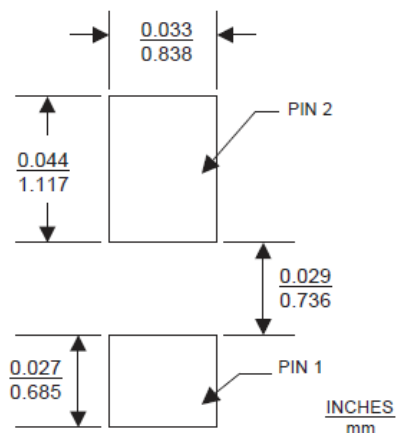
Series Resistance vs. Current, 500 MHz



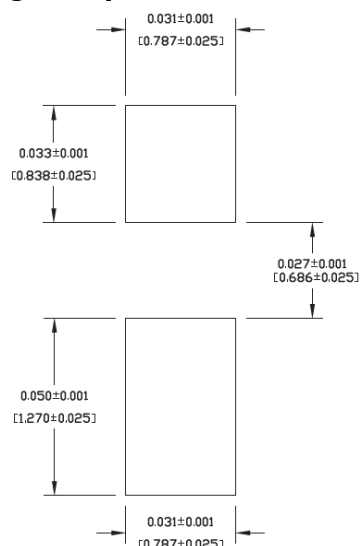
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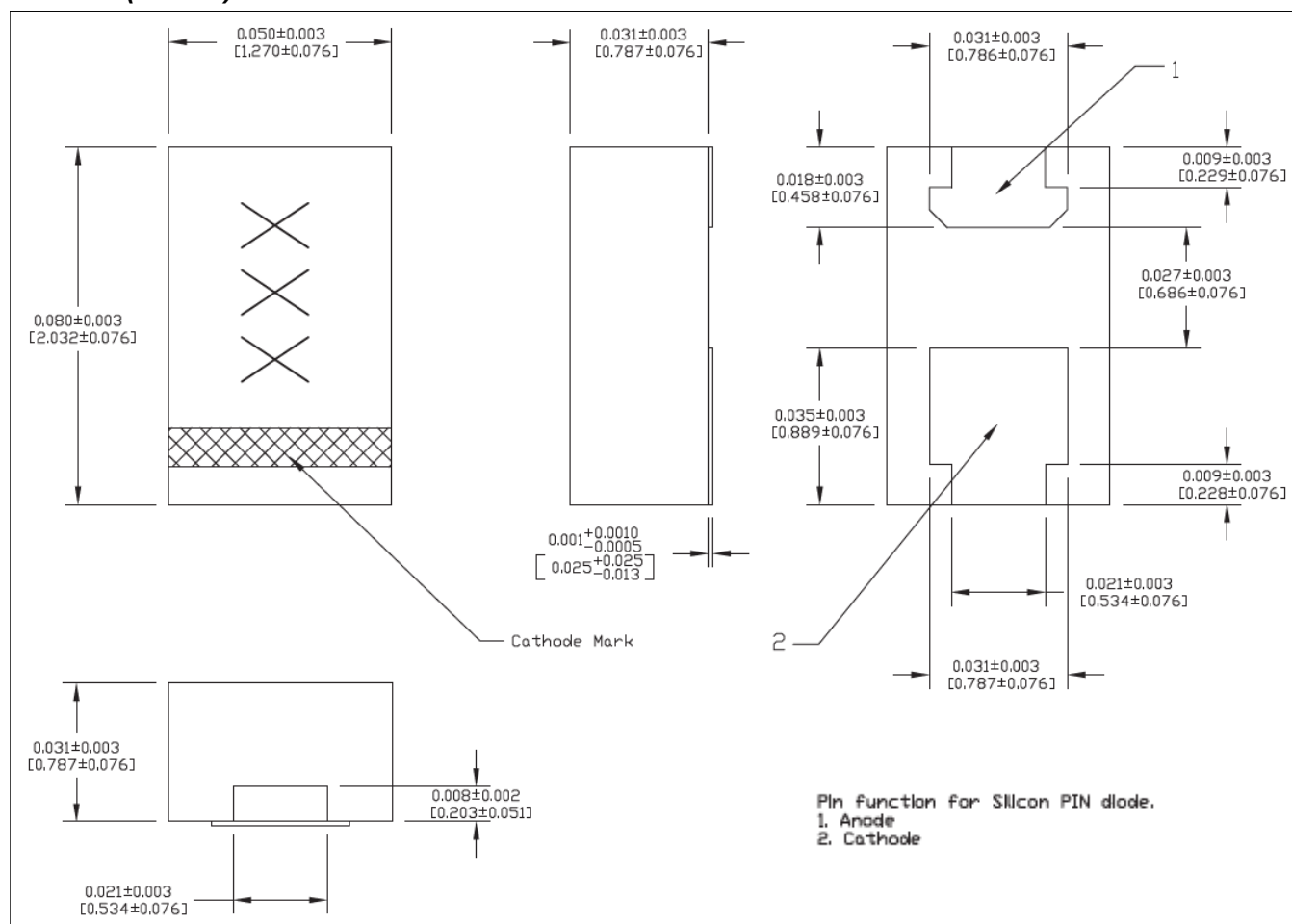
PCB Layout



Soldering Footprint



Outline (0805P)



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