# Silicon PIN Diode Switch Element



## MSWSE-050-10

Rev. V2

#### Features

- Supports up to 50 W Power
- Low Insertion Loss
- Medium Isolation
- RoHS\* Compliant

### Applications

• ISM

### 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  $0.1 \sim 3$  GHz applications with up to 50 watts of power.





Parameter	Test Conditions	Min.	Тур.	Max.	Units
Breakdown Voltage	I <sub>R</sub> = 10 μA	500	_	—	V
Forward Voltage	I <sub>F</sub> = 50 mA	—	850	950	mV
Total Capacitance	V <sub>R</sub> = 50 V, 1 MHz	—	0.53	0.65	pF
Series Resistance	I <sub>F</sub> = 100 mA, 500 MHz	—	0.4	0.6	Ω
Lifetime	l <sub>F</sub> = 10 mA, l <sub>R</sub> = 6 mA , 50%	_	3200	_	ns
I-Region	I-Layer	—	80	—	μm
Insertion Loss	I <sub>F</sub> = 50 mA, <0.5 GHz I <sub>F</sub> = 50 mA, <1.0 GHz	—	0.1 0.1	0.2 0.2	dB
Isolation	V <sub>R</sub> = 50 V, <0.5 GHz V <sub>R</sub> = 50 V, <1.0 GHz	12 —	15 10	_	dB

### Electrical Specifications: T<sub>A</sub> = +25°C

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

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### Absolute Maximum Ratings<sup>1,2</sup>

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

MACOM does not recommend sustained operation near these survivability limits.

### Typical RF Performance Curves @ +25°C

#### Insertion Loss



#### Input Return Loss



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#### Junction Temperature vs. Input Power Backside of Board T<sub>A</sub> = 25°C, Board Thickness 62 mils



Isolation



#### Series Resistance vs. Current, 500 MHz



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