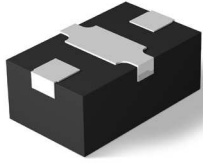


# MSWSS-040-30

## PIN DIODE SHUNT SWITCH ELEMENT



(2012)  
Non-Hermetic



### Description

Surface mount medium power series shunt switch. The shunt device is based on Metelics StripLine PIN™ which give broad band high isolation. This device can be surface mounted onto a PC board to give a low insertion loss and high isolation switch. The device can handle up to 20 watts of power. Hot switching will depend on the speed of switch driver.

### Features

- Surface mountable series shunt switch
- Low insertion loss <0.5 dB to 10 GHz
- High Isolation >40 dB typical out to 3 GHz

### Maximum Ratings

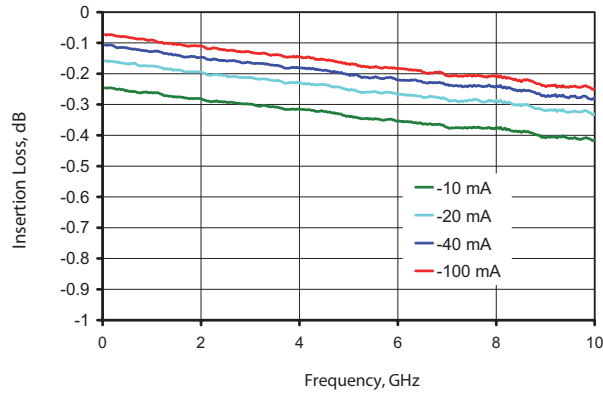
RATING	LIMITS	UNITS
$V_R$	500	V
$I_F$	500	mA
$\theta_{JC}$	30	°C/W
$T_J$	+150	°C
$T_{STG}$	-65 to +125	°C
$T_{SOLDER}$	+260 °C per JEDEC STD-J-20C	

### Electrical Characteristics, $T_c = +25\text{ °C}$

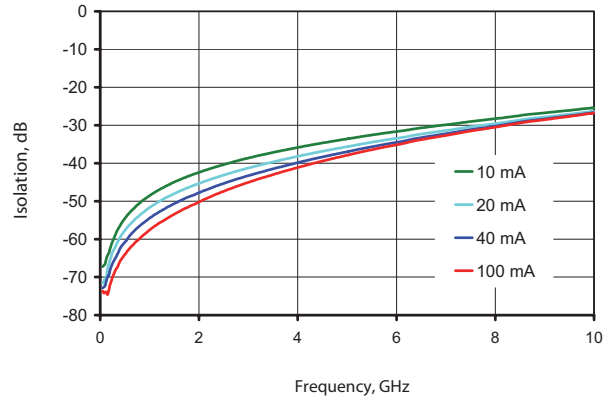
SYMBOL	TEST CONDITIONS		MIN	TYPICAL	MAX	UNITS		
$V_{BR}$	$I_R = 10\ \mu\text{A}$		500	—	—	V		
$I_R$	$V_R = 80\ \text{V}$		---	---	100	nA		
$V_F$	$I_F = 100\ \text{mA}$		---	900	---	V		
$C_J$	$V_R = 10\ \text{V}$	F = 1 MHz	Shunt	---	0.15	---	pF	
			Series	---	0.15	---		
$R_S$	$I_F = 100\ \text{mA}$	F = 100 MHz	Shunt	---	0.8	1.0	$\Omega$	
			Series	---	0.8	1.0		
$\tau$	$I_F = 10\ \text{mA}$	$I_R = 6\ \text{mA}$	50%	Shunt	---	2200	---	ns
				Series	---	1500	---	
W	I-layer		Shunt	---	80	---	$\mu\text{m}$	
			Series	---	80	---		
ORL/IRL	Bias = -50 mA		F < 8.0 GHz	23	28	---	dB	
$I_L$	Bias = -50 mA		F < 3.0 GHz	---	0.15	0.3	dB	
			F < 8.0 GHz	---	0.3	0.5		
$I_{so}$	Bias = 50 mA		F < 3.0 GHz	35	45	---	dB	
			F < 8.0 GHz	25	30	---		



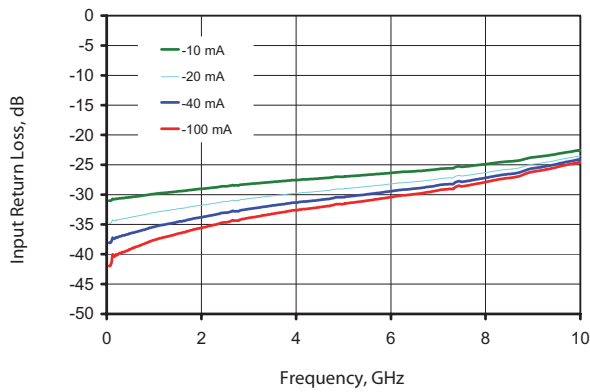
## Insertion Loss



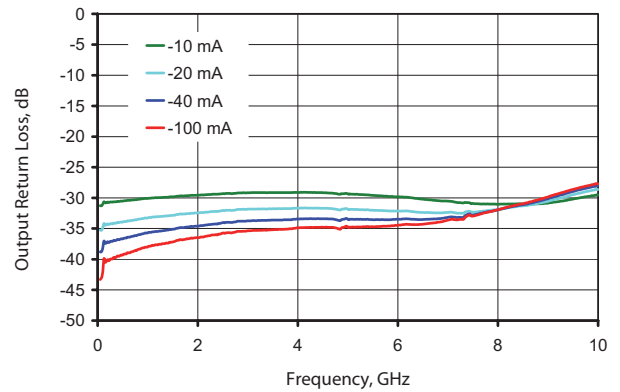
## Isolation



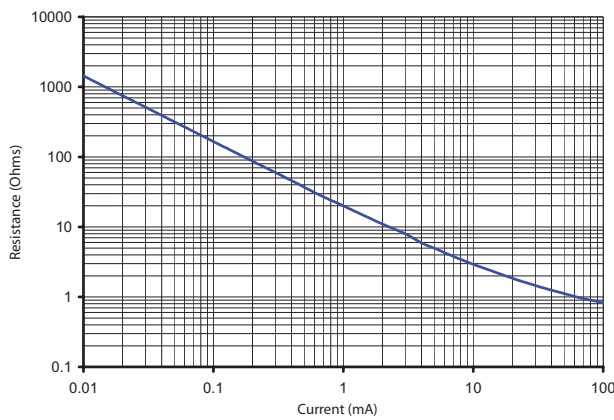
## Input Return Loss



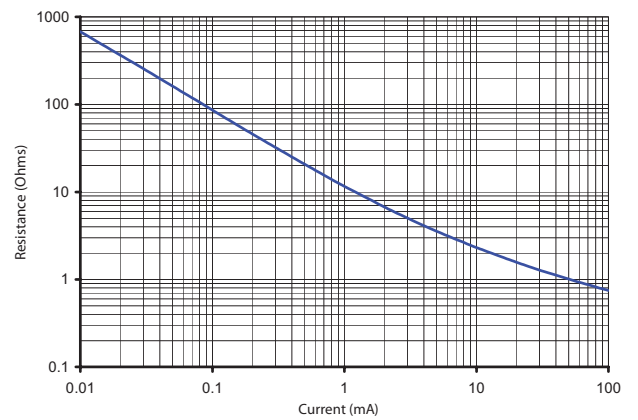
## Output Return Loss



## R vs I Series Diode



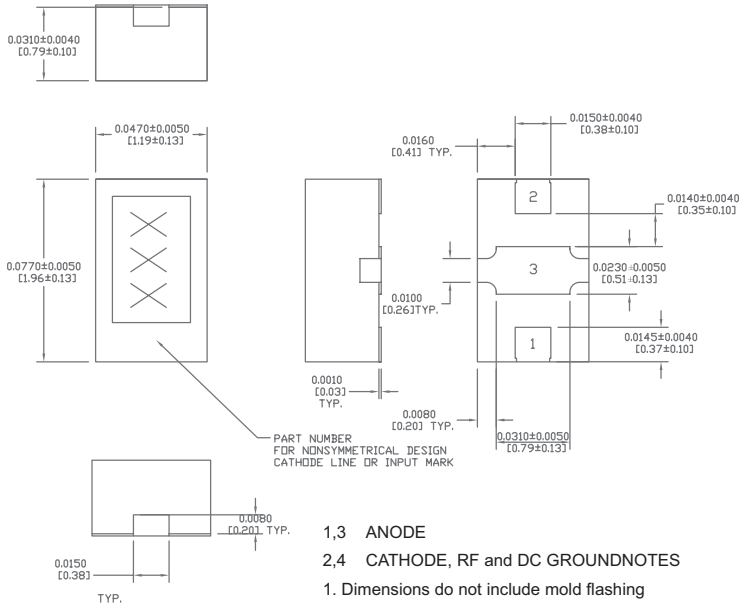
## R vs I Shunt Diode



# MSWSS-040-30

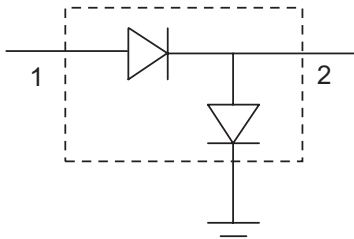


## Package Outline (2012)

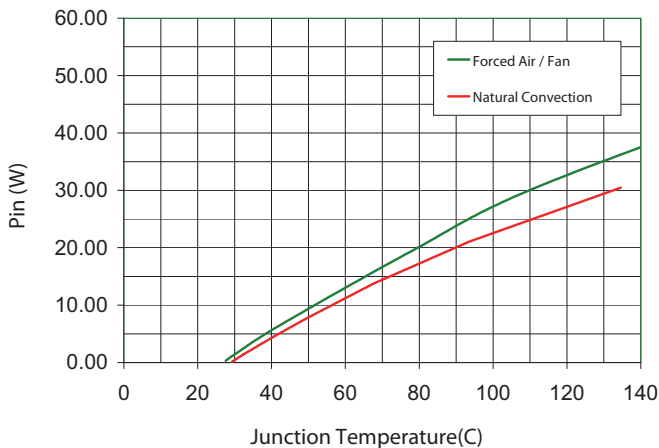


Dimensions: inches [mm]

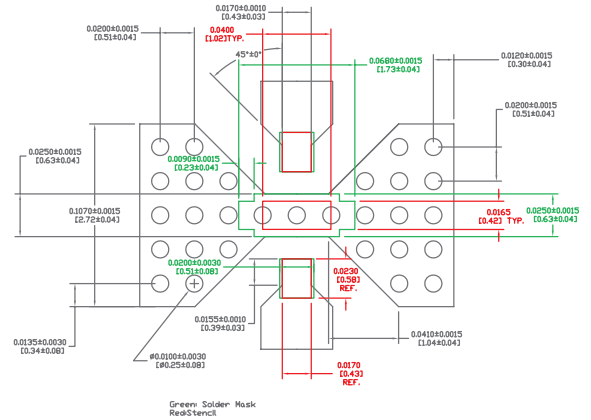
## Electrical Schematic



## Junction Temperature vs Pin Mounted on Heatsink 25°C Amb 1.3 GHz



## PCB Layout



**NOTE:** If possible, use copper filled vias underneath pin 3 for better thermals; otherwise, use vias that are plated through, filled and plated over.

Solder mask should provide a 60 um clearance between copper pad and soldermask. Rounded pkg pads should have matching rounded solder mask openings.

Use circles or squares for the thermal land stencil such that only get 50% to 80% solder paste coverage.

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