

## Pin Diode Switch Element

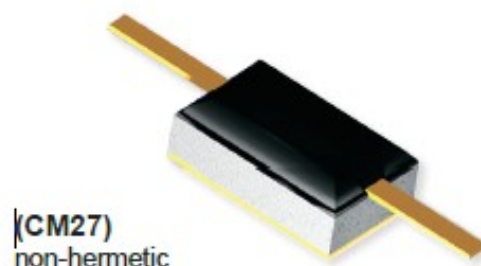
Rev. V1

### Features

- High Power Handling: 80 W @ 2 GHz or Less
- Low Insertion Loss:
  - <0.35 dB @ 2 GHz
  - <0.60 dB @ 6 GHz
- Medium Isolation:
  - >22 dB @ 2 GHz
  - >14 dB @ 6 GHz
- RoHS\* Compliant

### Description

The MEST2G-080-25-CM27 is a thermal to ground series diode switch element in a Alumina Nitride package. This part is designed for reliable high power switch application up to 80 watts. Usable up to 10 GHz.



### Electrical Specifications: $T_C = +25^\circ\text{C}$ (unless otherwise specified)

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Breakdown Voltage ( $V_{BR}$ )	$I_R = 10 \text{ mA}$ , single diode	V	500	—	—
Leakage Current ( $I_R$ )	$I_F = 100 \text{ V}$ , single diode	nA	—	40	100
Forward Voltage ( $V_F$ )	$I_F = 100 \text{ mA}$ , single diode	mV	—	0.93	1.05
Series Resistance ( $R_S$ )	$I_F = 100 \text{ mA}$ , single diode	$\Omega$	—	0.97	—
Junction Capacitance ( $C_J$ )	$V_R = 50 \text{ V}$ , 1 MHz, single diode	pF	—	0.09	—
Lifetime (t)	$I_F = 10 \text{ mA}$ , $I_R = 6 \text{ mA}$ , @ 50%	ns	—	1550	—
I-Region (w)	I-Layer, single diode	$\mu\text{m}$	—	80	—
Return Loss ( $R_L$ )	$I_F = 100 \text{ mA}$ , 2 GHz $I_F = 100 \text{ mA}$ , 6 GHz	dB	27 13	31 16	—
Insertion Loss ( $I_L$ )	$I_F = 100 \text{ mA}$ , 2 GHz $I_F = 100 \text{ mA}$ , 6 GHz	dB	—	0.20 0.45	0.35 0.60
Isolation ( $I_{SO}$ )	$V_R = 10 \text{ V}$ , 2 GHz $V_R = 10 \text{ V}$ , 6 GHz	dB	22 14	25 17	—

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

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

Parameter	Absolute Maximum
Breakdown Voltage ( $V_R$ )	500 V
Forward Current ( $I_F$ )	200 mA
Theta ( $\theta_{JC}$ )	10°C/W
Junction Temperature ( $T_J$ )	-40°C to +175°C
Storage Temperature ( $T_{STG}$ )	-55°C to +150°C
Mounting Temperature ( $T_{MTG}$ )	+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.

### Handling Procedures

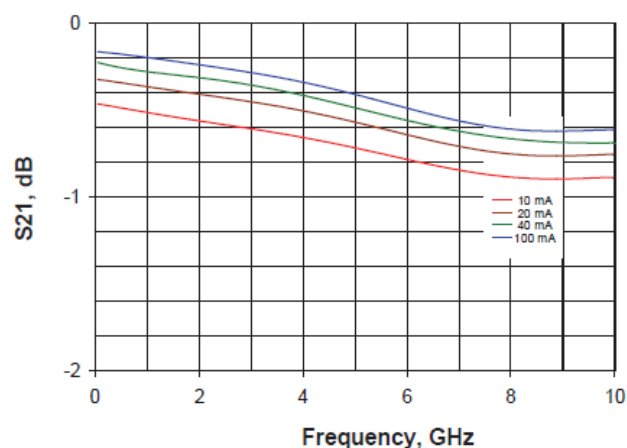
Please observe the following precautions to avoid damage:

### Static Sensitivity

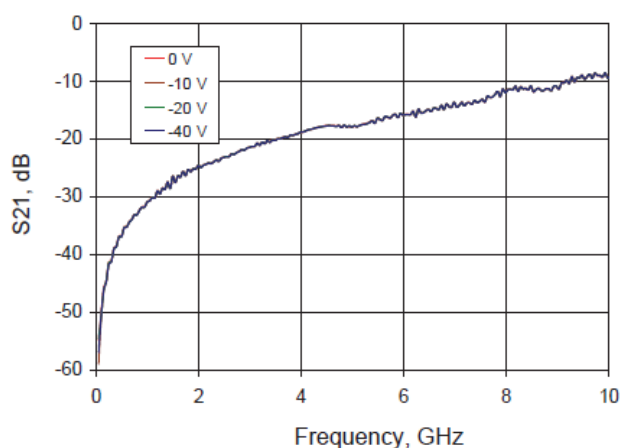
These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these Class 0 (HBM) devices.

### Typical Performance Curves: $T_A = 25^\circ\text{C}$ , -10 dBm Small Signal

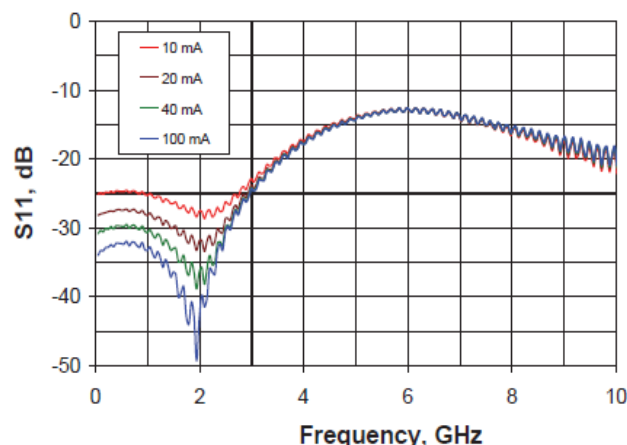
**Insertion Loss**



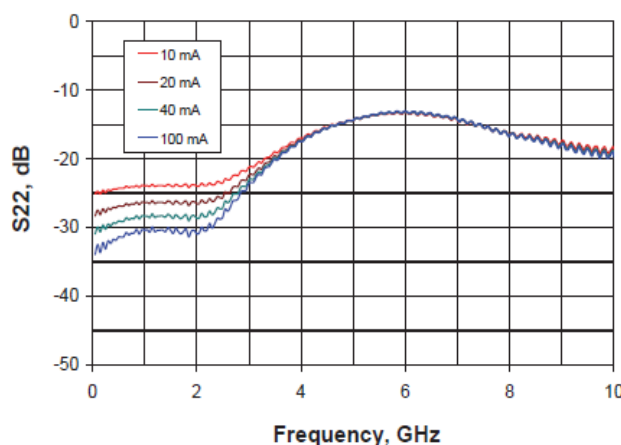
**Isolation**



**Input Return Loss**



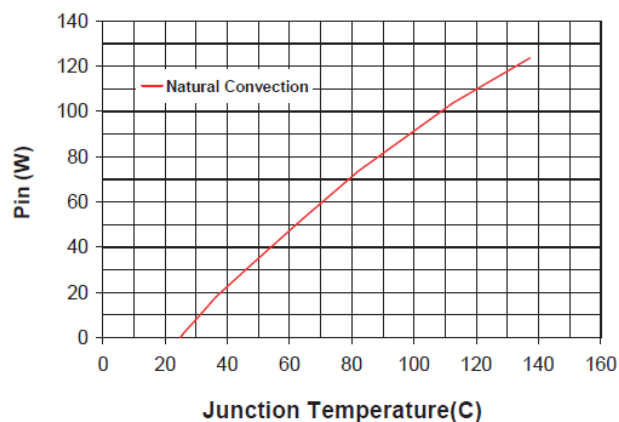
**Output Return Loss**



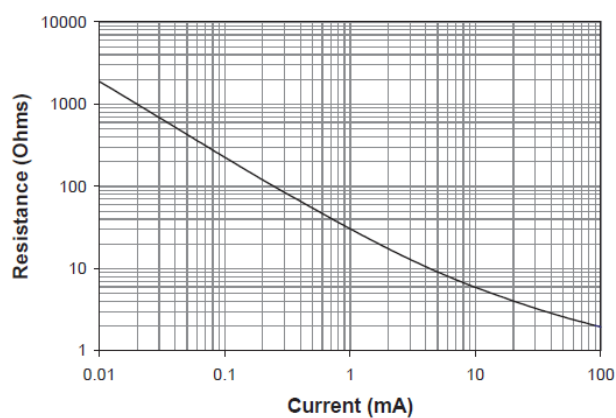
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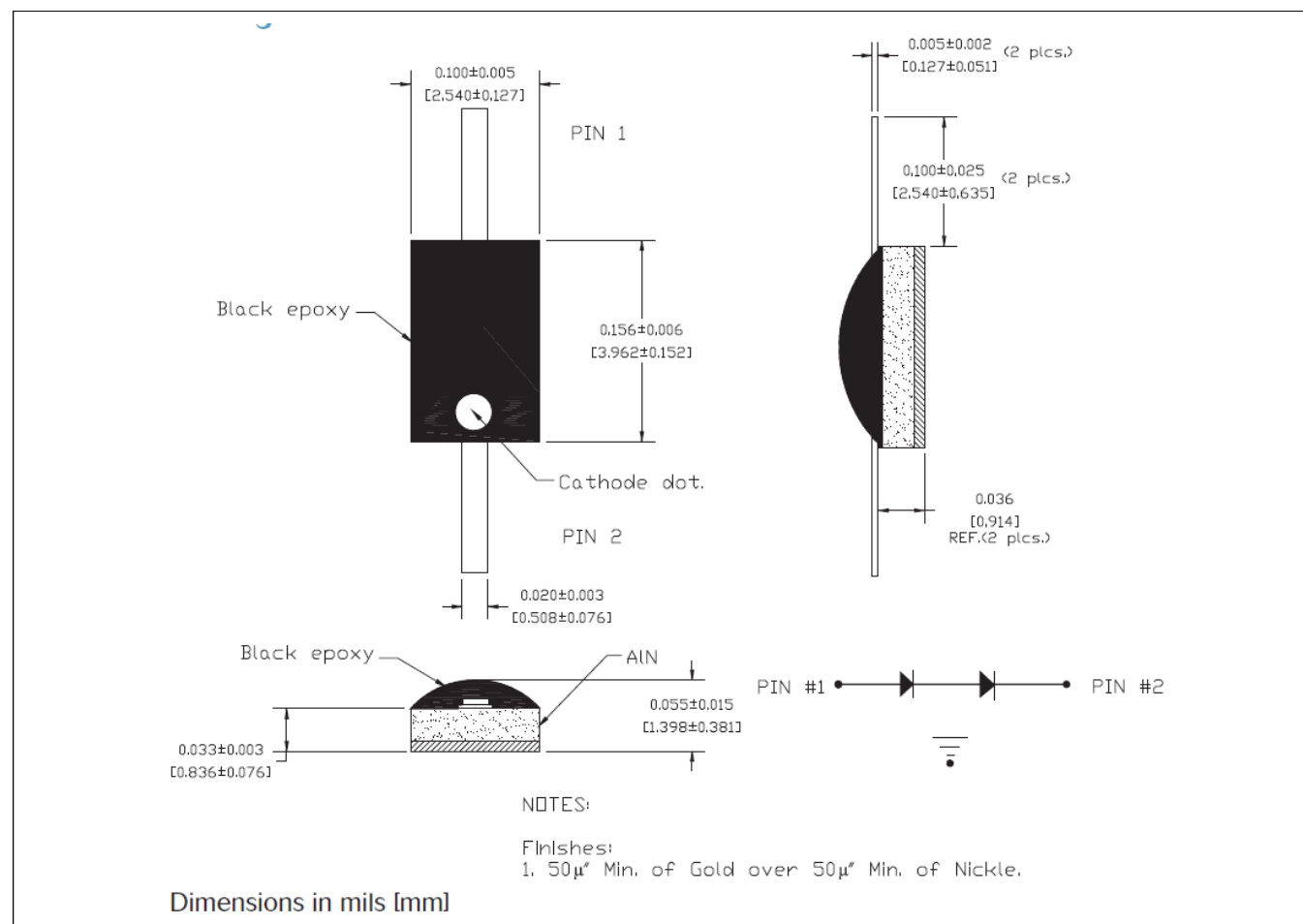
**Junction Temperature vs.  $P_{IN}$**   
(Mounted on Heat Sink @  $T_A = +25^\circ\text{C}$ , 1.3 GHz)



**Resistance vs. Current, 500 MHz**  
For Two Diodes in Series



## Package Outline (CM27)



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