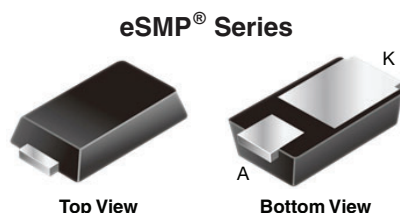


## Surface-Mount ESD Capability Rectifier



MicroSMP (DO-219AD)

Anode  Cathode

### FEATURES

- Very low profile - typical height of 0.65 mm
- Ideal for automated placement
- Oxide planar chip junction
- Low forward voltage drop, low leakage current
- ESD capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### LINKS TO ADDITIONAL RESOURCES



3D Models

### TYPICAL APPLICATIONS

General purpose, polarity protection, and rail-to-rail protection in both consumer and automotive applications.

### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	0.7 A
$V_{RRM}$	100 V, 200 V, 400 V, 600 V
$I_{FSM}$	20 A
$V_F$ at $I_F = 0.7$ A ( $T_A = 125$ °C)	0.83 V
$I_R$	1 $\mu$ A
$T_J$ max.	175 °C
Package	MicroSMP (DO-219AD)
Circuit configuration	Single

### MECHANICAL DATA

**Case:** MicroSMP (DO-219AD)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Base P/NHM3 - halogen-free, RoHS-compliant, and automotive grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** color band denotes the cathode end

### MAXIMUM RATINGS ( $T_A = 25$ °C, unless otherwise noted)

PARAMETER	SYMBOL	MSE07PB	MSE07PD	MSE07PG	MSE07PJ	UNIT
Device marking code		07B	07D	07G	07J	
Max. repetitive peak reverse voltage	$V_{RRM}$	100	200	400	600	V
Max. average forward rectified current (fig. 1)	$I_{F(AV)}$	0.7				A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	20				A
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +175				°C

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$ , unless otherwise noted)

PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 0.7\text{ A}$ $T_A = 25\text{ }^{\circ}\text{C}$	$V_F^{(1)}$	0.94	1.08	V
	$T_A = 125\text{ }^{\circ}\text{C}$		0.83	0.95	
Reverse current	Rated $V_R$ $T_A = 25\text{ }^{\circ}\text{C}$	$I_R^{(2)}$	-	1.0	$\mu\text{A}$
	$T_A = 125\text{ }^{\circ}\text{C}$		3.7	50	
Typical reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$	$t_{rr}$	780	-	ns
Typical junction capacitance	4.0 V, 1 MHz	$C_J$	5	-	pF

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: Pulse width  $\leq 40\text{ ms}$ **THERMAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$ , unless otherwise noted)

PARAMETER	SYMBOL	MSE07PB	MSE07PD	MSE07PG	MSE07PJ	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$	110				°C/W
	$R_{\theta JL}^{(1)}$	30				
	$R_{\theta JC}^{(1)}$	40				

**Note**(1) Thermal resistance from junction to ambient and junction to lead mounted on PCB with 6.0 mm x 6.0 mm copper pad areas.  $R_{\theta JL}$  is measured at the terminal of cathode band.**IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS**( $T_A = 25\text{ }^{\circ}\text{C}$ , unless otherwise noted)

STANDARD	TEST TYPE	TEST CONDITIONS	SYMBOL	CLASS	VALUE
AEC-Q101-001	Human body model (contact mode)	$C = 100\text{ pF}$ , $R = 1.5\text{ k}\Omega$	$V_C$	H3B	$> 8\text{ kV}$

**ORDERING INFORMATION** (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
MSE07PJ-M3/89A	0.006	89A	4500	7" diameter plastic tape and reel
MSE07PJHM3/89A <sup>(1)</sup>	0.006	89A	4500	7" diameter plastic tape and reel

**Note**

(1) AEC-Q101 qualified



## RATINGS AND CHARACTERISTICS CURVES ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

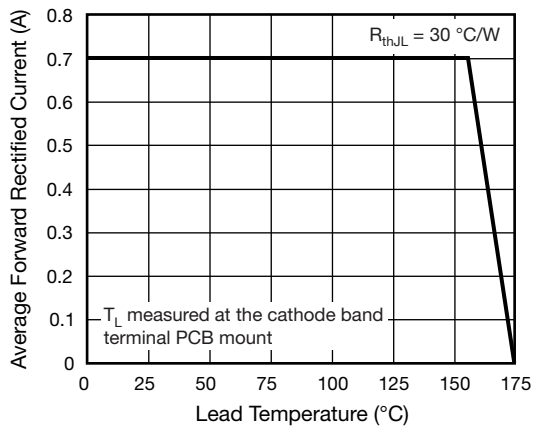


Fig. 1 - Forward Current Derating Curve

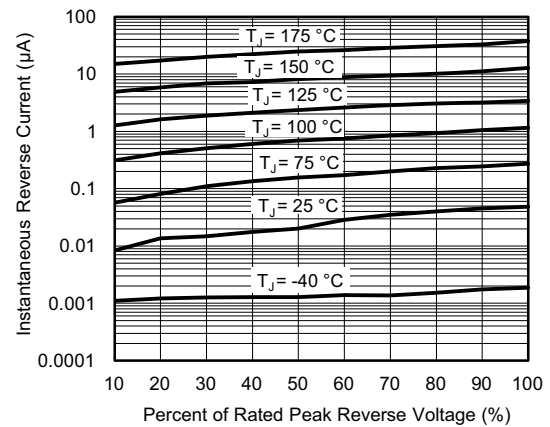


Fig. 4 - Typical Reverse Leakage Characteristics

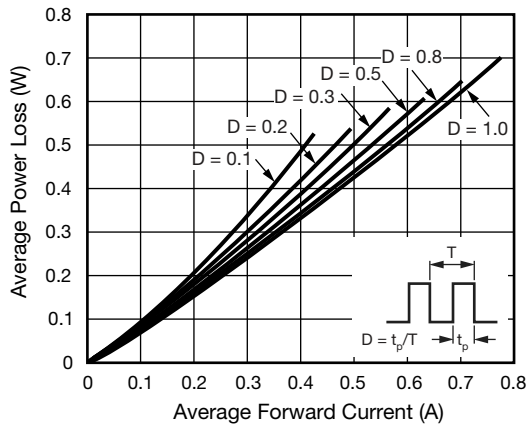


Fig. 2 - Forward Power Loss Characteristics

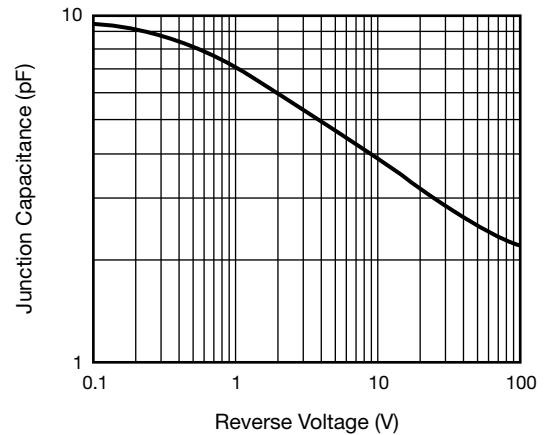


Fig. 5 - Typical Junction Capacitance

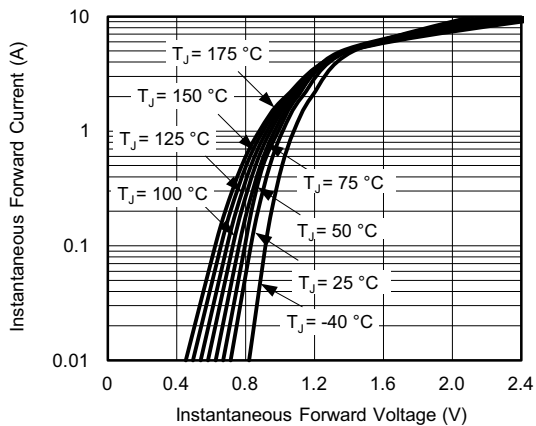


Fig. 3 - Typical Instantaneous Forward Characteristics

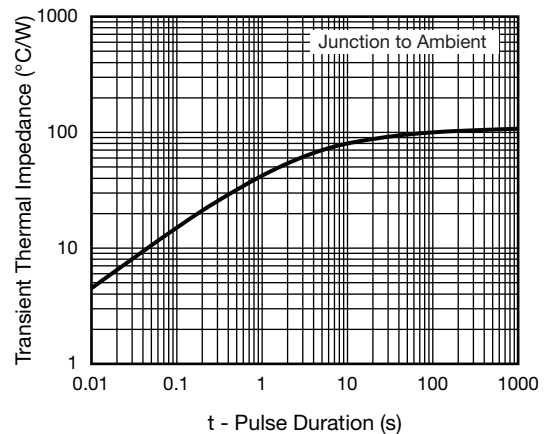
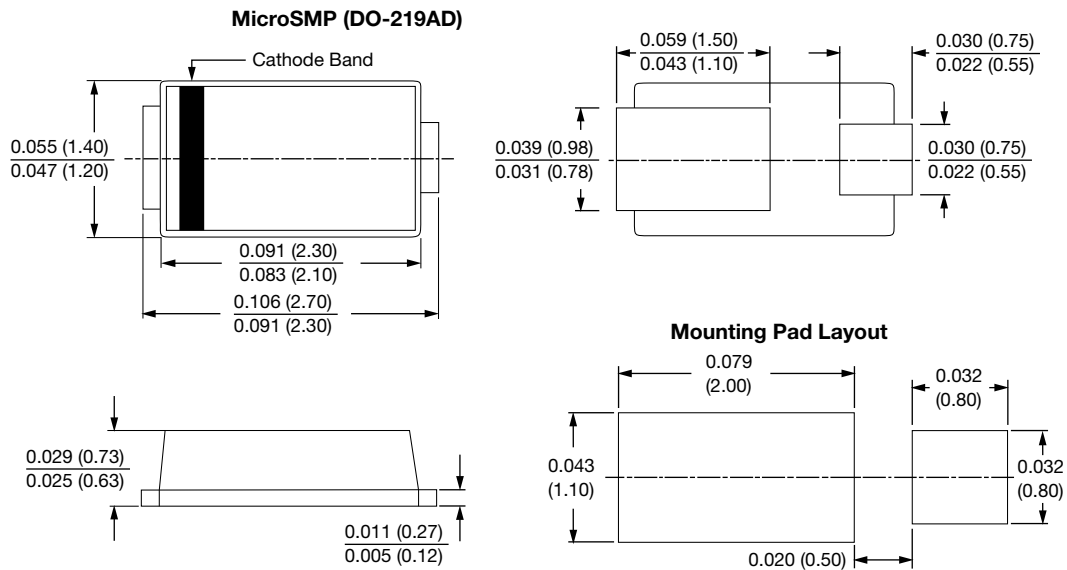


Fig. 6 - Typical Transient Thermal Impedance



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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