

## Surface-Mount ESD Capability Rectifiers

### eSMP® Series



**SMP (DO-220AA)**

Cathode  Anode

### FEATURES

- Very low profile - typical height of 1.0 mm
- Ideal for automated placement
- Oxide planar chip junction
- Low forward voltage drop
- Typical  $I_R$  less than 0.1  $\mu$ A
- ESD capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- 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



### TYPICAL APPLICATIONS

General purpose, power line polarity protection and rail-to-rail protection in consumer and industrial applications.

### MECHANICAL DATA

**Case:** SMP (DO-220AA)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

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

M3 suffix meets JESD 201 class 1A whisker test

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	0.7 A
$V_{RRM}$	100 V, 200 V, 400 V, 600 V
$I_{FSM}$	20 A
$I_R$	5 $\mu$ A
$V_F$ at $I_F = 1.0$ A	0.865 V
$T_J$ max.	175 °C
Package	SMP (DO-220AA)
Circuit configuration	Single

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)						
PARAMETER	SYMBOL	SE07PB	SE07PD	SE07PG	SE07PJ	UNIT
Device marking code		07B	07D	07G	07J	
Max. repetitive peak reverse voltage	$V_{RRM}$	100	200	400	600	V
Average forward current	$I_{F(AV)}$	1.0				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 ( $T_A = 25$ °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Max. instantaneous forward voltage	$I_F = 0.7$ A	$T_A = 25$ °C	$V_F$ <sup>(1)</sup>	0.965	1.05	V
		$T_A = 125$ °C		0.865	0.95	
Max. reverse current	Rated $V_R$	$T_A = 25$ °C	$I_R$ <sup>(2)</sup>	-	5.0	$\mu$ A
		$T_A = 125$ °C		3.7	50	
Typical junction capacitance	4.0 V, 1 MHz		$C_J$	5.0	-	pF

#### Notes

<sup>(1)</sup> Pulse test: 300  $\mu$ s pulse width, 1 % duty cycle

<sup>(2)</sup> Pulse test: Pulse width  $\leq$  40 ms

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

PARAMETER	SYMBOL	SE07PB	SE07PD	SE07PG	SE07PJ	UNIT
Typical thermal resistance	R <sub>θJA</sub> <sup>(1)</sup>	105				°C/W
	R <sub>θJL</sub> <sup>(1)</sup>	25				
	R <sub>θJC</sub> <sup>(1)</sup>	30				

**Note**

(1) Thermal resistance from junction to ambient and junction to lead mounted on PCB with 5.0 mm x 5.0 mm copper pad areas.  $R_{\theta JL}$  - is measured at the terminal of cathode band.  $R_{\theta JC}$  is measured at the top center of the body.

**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
JESD22-A114	Human body model (contact mode)	$C = 100\text{ pF}$ , $R = 1.5\text{ k}\Omega$	$V_C$	3B	$> 8\text{ kV}$
JESD22-A115	Machine model (contact mode)	$C = 200\text{ pF}$ , $R = 0\text{ }\Omega$		C	$> 400\text{ V}$
IEC 61000-4-2 <sup>(2)</sup>	Human body model (contact mode)	$C = 150\text{ pF}$ , $R = 330\text{ }\Omega$		4	$> 8\text{ kV}$
	Human body model (air-discharge mode) <sup>(1)</sup>	$C = 150\text{ pF}$ , $R = 330\text{ }\Omega$		4	$> 15\text{ kV}$

**Notes**

(1) Immunity to IEC 61000-4-2 air discharge mode has a typical performance  $> 30\text{ kV}$

(2) System ESD standard

**ORDERING INFORMATION** (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SE07PJ-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel
SE07PJ-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel

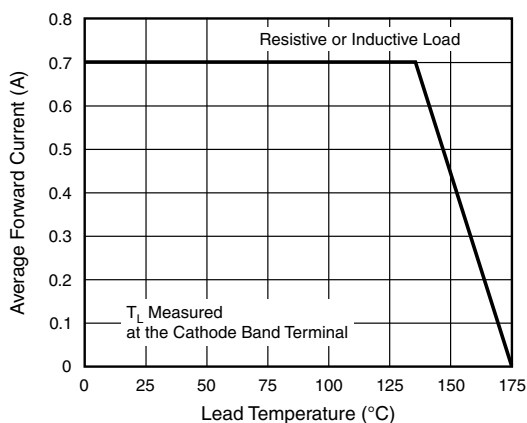
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Max. Forward Current Derating Curve

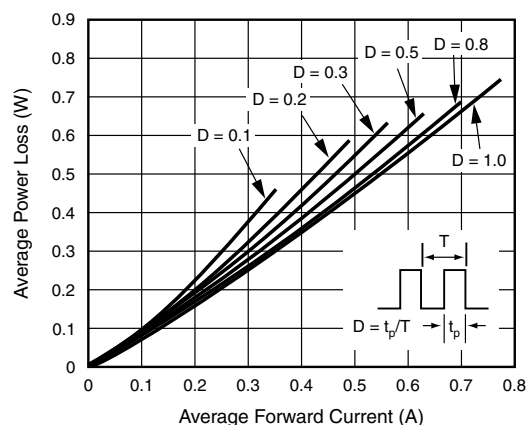


Fig. 2 - Forward Power Loss Characteristics

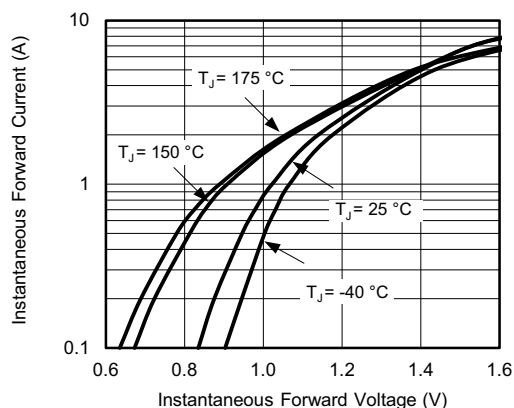


Fig. 3 - Typical Instantaneous Forward Characteristics

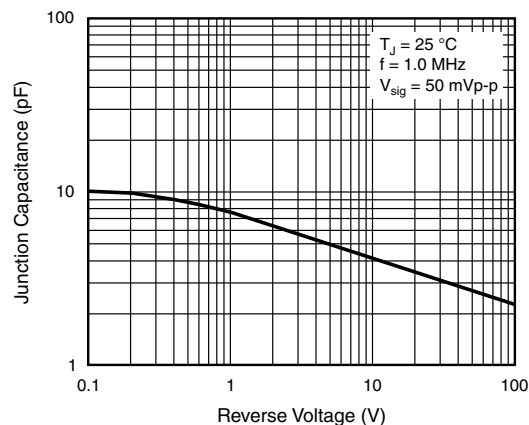


Fig. 5 - Typical Junction Capacitance

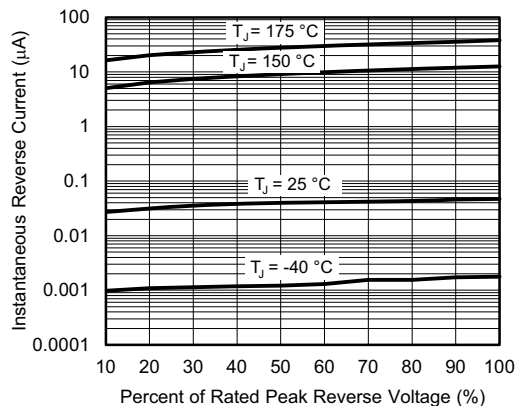
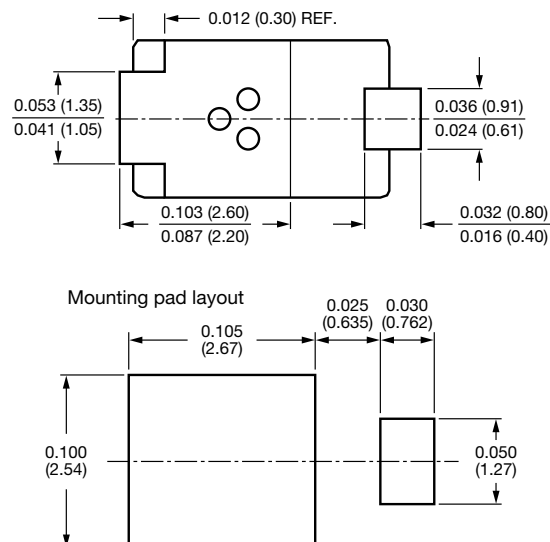
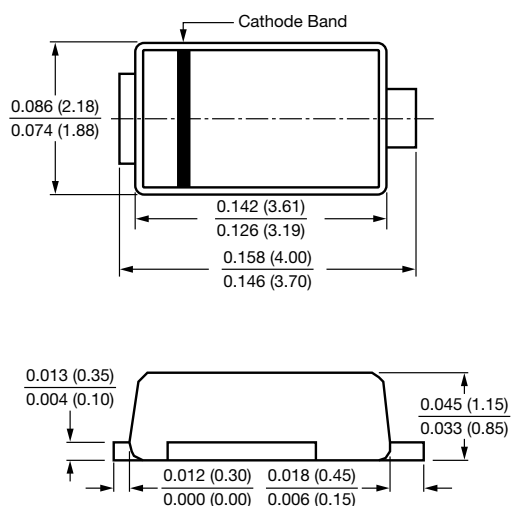


Fig. 4 - Typical Reverse Leakage Characteristics

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### SMP (DO-220AA)





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