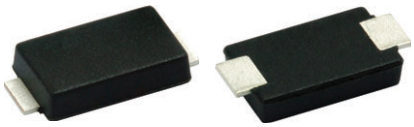
Surface-Mount ESD Capability Rectifiers

eSMP® Series



Top View Bottom View

SlimSMA (DO-221AC)

Cathode ○—▶|—○ Anode

FEATURES

- Very low profile - typical height of 0.95 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

AUTOMOTIVE GRADE Available

RoHS COMPLIANT

HALOGEN FREE

LINKS TO ADDITIONAL RESOURCES

3D Models

TYPICAL APPLICATIONS

General purpose, power line polarity protection, in both consumer and automotive applications.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2.0 A
V_{RRM}	100 V, 200 V, 400 V, 600 V
I_{FSM}	35 A
V_F at I_F = 2.0 A (T_A = 125 °C)	0.86 V
I_R	5 µA
T_J max.	175 °C
Package	SlimSMA (DO-221AC)
Circuit configuration	Single

MECHANICAL DATA

Case: SlimSMA (DO-221AC)
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 AEC-Q101 qualified

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	SE20AFB	SE20AFD	SE20AFG	SE20AFJ	UNIT
Device marking code		S2B	S2D	S2G	S2J	
Maximum repetitive peak reverse voltage	V_{RRM}	100	200	400	600	V
Maximum DC forward current	I_F (1)	2.0				A
	I_F (2)	1.3				
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	35				A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175				°C

Notes

(1) Mounted on 5.0 mm x 5.0 mm pad areas, 2 oz. FR4 PCB
(2) Free air, mounted on recommended copper pad area

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I_F = 1.0 A	T_A = 25 °C	V_F (1)	0.91	-	V
	I_F = 2.0 A			0.96	1.1	
	I_F = 1.0 A	T_A = 125 °C		0.79	-	
	I_F = 2.0 A			0.86	0.98	
Reverse current	Rated V_R	T_A = 25 °C	I_R (2)	-	5.0	µA
		T_A = 125 °C		8	100	
Typical reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	1.2	-	µs
Typical junction capacitance	4.0 V, 1 MHz		C_J	12	-	pF

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_A = 25 °c unless otherwise noted)						
PARAMETER	SYMBOL	SE20AFB	SE20AFD	SE20AFG	SE20AFJ	UNIT
Typical thermal resistance	$R_{\theta JA}$ (1)	125				°C/W
	$R_{\theta JM}$ (2)	12				

Notes

(1) Free air, mounted on recommended PCB, 1 oz. pad area; thermal resistance $R_{\theta JA}$ - junction to ambient

(2) Mounted on 5.0 mm x 5.0 mm pad areas, 2 oz. FR4 PCB; $R_{\theta JM}$ - junction to mount

IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS (T_A = 25 °C unless otherwise noted)					
STANDARD	TEST TYPE	TEST CONDITIONS	SYMBOL	CLASS	VALUE
AEC-Q101-001	Human body model (contact mode)	C = 100 pF, R = 1.5 kΩ	V_C	H3B	> 8 kV

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SE20AFJ-M3/6A	0.032	6A	3500	7" diameter plastic tape and reel
SE20AFJ-M3/6B	0.032	6B	14 000	13" diameter plastic tape and reel
SE20AFJHM3/6A (1)	0.032	6A	3500	7" diameter plastic tape and reel
SE20AFJHM3/6B (1)	0.032	6B	14 000	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

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RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

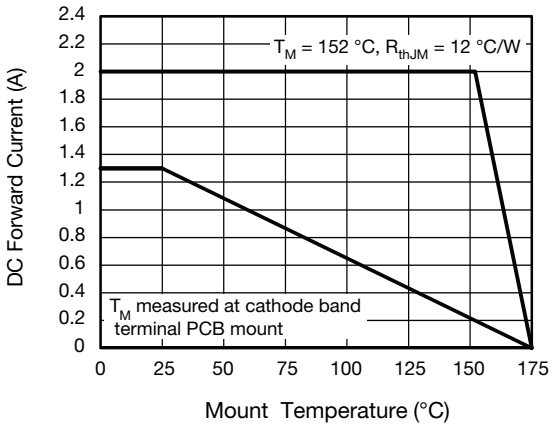

Fig. 1 - Maximum Forward Current Derating Curve

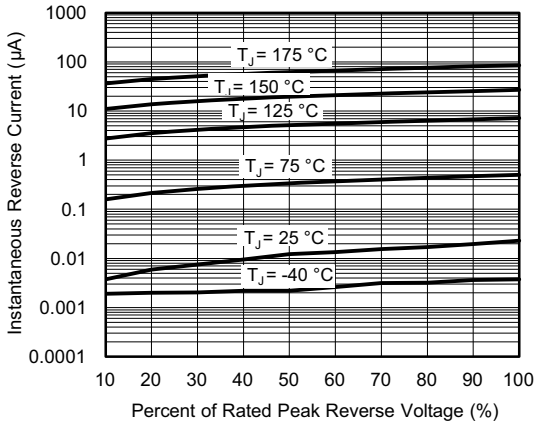

Fig. 4 - Typical Reverse Leakage Characteristics

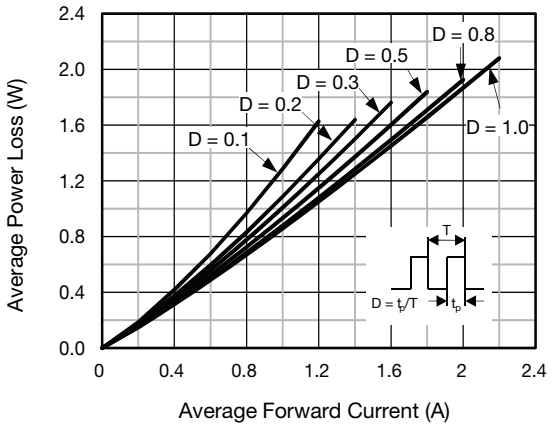

Fig. 2 - Forward Power Loss Characteristics

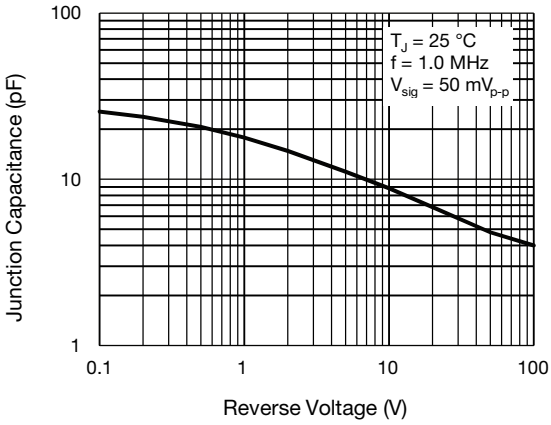

Fig. 5 - Typical Junction Capacitance

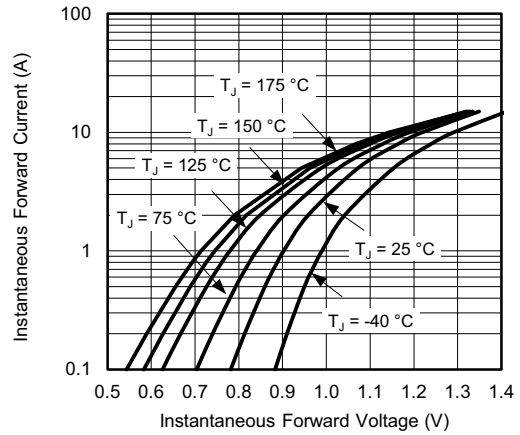

Fig. 3 - Typical Instantaneous Forward Characteristics

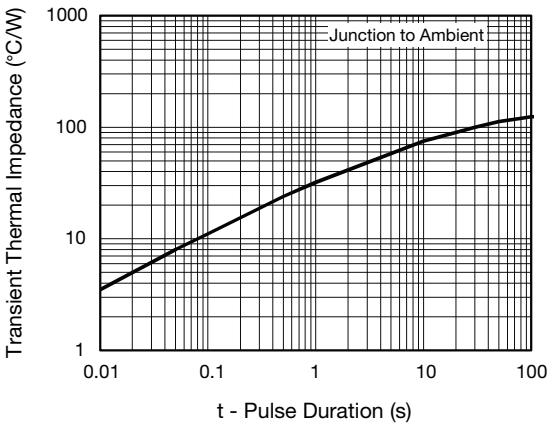

Fig. 6 - Typical Junction Capacitance

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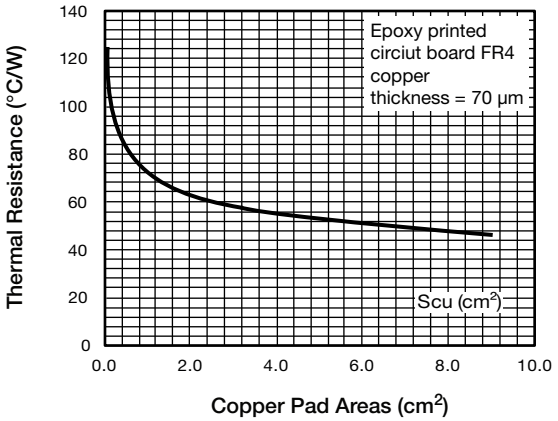
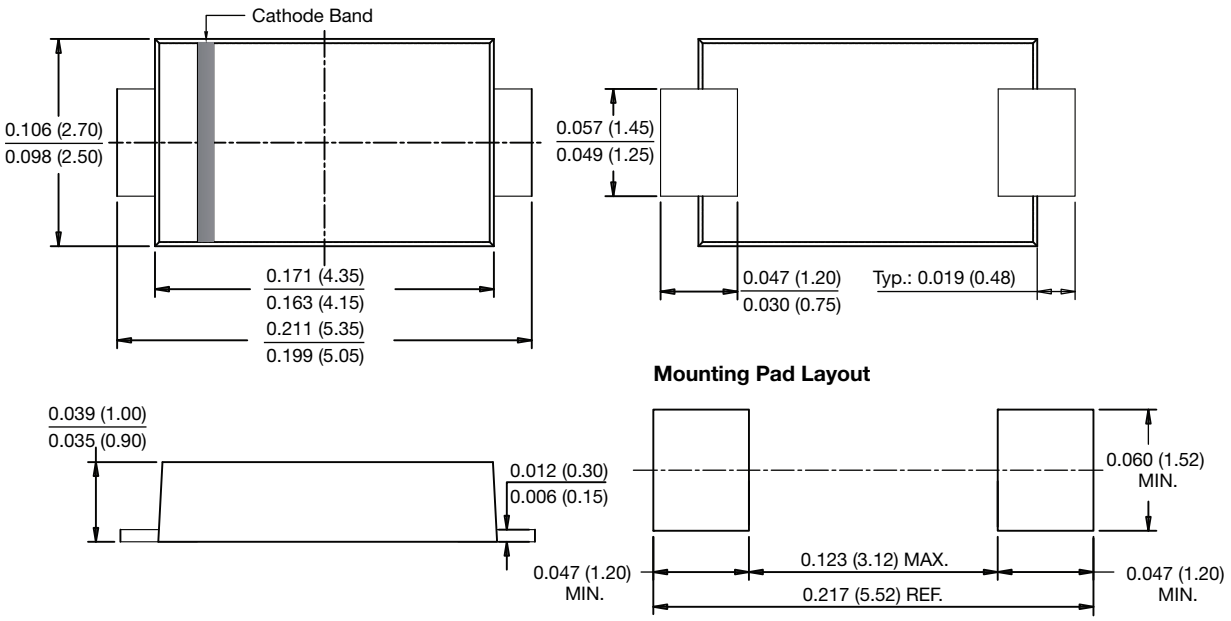


Fig. 7 - Thermal Resistance Junction to Ambient vs. Copper Pad Areas

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SlimSMA (DO-221AC)



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