

SE20AFB, SE20AFD, SE20AFG, SE20AFJ

Vishay General Semiconductor

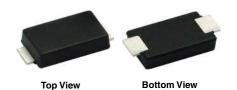
COMPLIANT

HALOGEN

FREE

Surface Mount ESD Capability Rectifiers

SlimSMA



DO-221AC

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 μΑ				
T _J max.	175 °C				
Package	DO-221AC (SlimSMA)				
Diode variations	Single die				

TYPICAL APPLICATIONS

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

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

MECHANICAL DATA

Case: DO-221AC (SlimSMA)

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				Α
Waximum Do forward current	I _F ⁽²⁾	1.3				
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	35			А	
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 C	ONDITIONS	SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	I _F = 1.0 A	T _A = 25 °C		0.91	-	V	
	I _F = 2.0 A		V _E (1)	0.96	1.1		
	I _F = 1.0 A	T _A = 125 °C	V _F (·)	0.79	-		
	I _F = 2.0 A			0.86	0.98		
Reverse current	Rated V _R	T _A = 25 °C	I _R ⁽²⁾	1 (2)	-	5.0	
	nateu v _R	T _A = 125 °C	'R (-)	8	100	μΑ	
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		CJ	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 SE20AFG SE20AFJ UNIT						UNIT
Typical thermal resistance		125			°C/W	
Typical thermal resistance	R _{0JM} (2)	12				C/VV

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_{0,IM} - junction to mount

IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS ($T_A = 25~^{\circ}\text{C}$ 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	НЗВ	> 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)

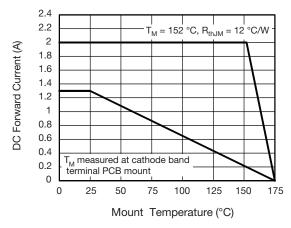


Fig. 1 - Maximum Forward Current Derating Curve

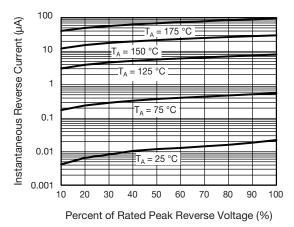


Fig. 4 - Typical Reverse Leakage Characteristics

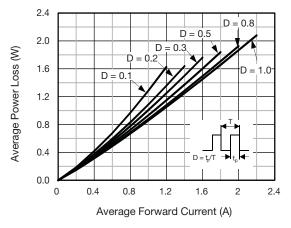


Fig. 2 - Forward Power Loss Characteristics

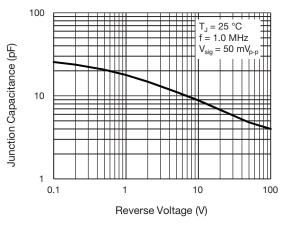


Fig. 5 - Typical Junction Capacitance

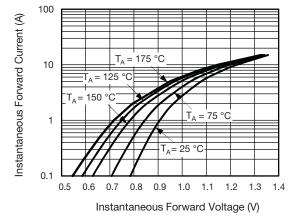


Fig. 3 - Typical Instantaneous Forward Characteristics

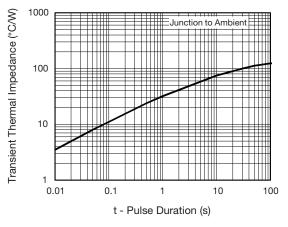


Fig. 6 - Typical Junction Capacitance

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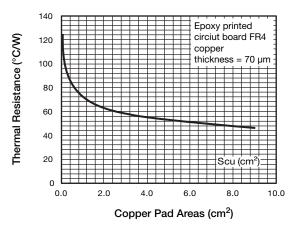
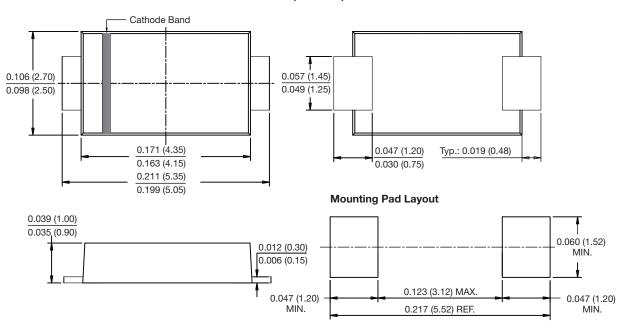


Fig. 7 - Thermal Resistance Junction to Ambient vs. Copper Pad Areas

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-221AC (SlimSMA)





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