

Vishay General Semiconductor

AUTOMOTIVE

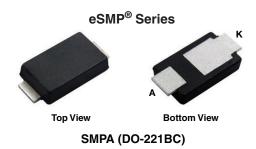
RoHS

COMPLIANT

HALOGEN

FREE

Surface-Mount ESD Capability Rectifiers





LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS					
I _{F(AV)}	5.0 A				
V_{RRM}	100 V, 200 V, 400 V, 600 V				
I _{FSM}	42 A				
V_F at $I_F = 5.0$ A ($T_A = 125$ °C)	0.95 V				
I _R	10 μA				
T _J max.	175 °C				
Package	SMPA (DO-221BC)				
Circuit configuration	Single				

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
- Not recommended for PCB bottom side wave mounting
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: SMPA (DO-221BC)

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 2 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	SE50PAB	SE50PAD	SE50PAG	SE50PAJ	UNIT
Device marking code		50B	50D	50G	50J	
Maximum repetitive peak reverse voltage	V_{RRM}	100	200	400	600	V
Maximum DC forward current	I _F ⁽¹⁾	5.0				А
Maximum DC forward current	I _F ⁽²⁾	1.6				
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	42				Α
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +175				°C

Notes

- (1) Mounted on 30 mm x 30 mm pad areas, aluminum 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 = 2.5 A	T 05 °C		0.94	=	V
	I _F = 5.0 A	T _A = 25 °C	V _F ⁽¹⁾	1.03	1.16	
	I _F = 2.5 A	T _A = 125 °C	VF ('')	0.84	=	
	I _F = 5.0 A			0.95	1.10	
Reverse current	Dated V	T _A = 25 °C	1 (2)	-	10	μΑ
	Rated V _R	T _A = 125 °C	I _R ⁽²⁾	13	150	
Typical reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A		t _{rr}	2.0	-	μs
Typical junction capacitance	4.0 V, 1 MHz		CJ	32	-	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 SE50PAB SE50PAG SE50PAJ UNIT						UNIT
Typical thermal registeres		115			°C/W	
Typical thermal resistance	R _{0JM} (2)	7			C/VV	

Notes

 $^{(1)}$ Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance $R_{\theta JA}$ - junction to ambient

⁽²⁾ Mounted on 30 mm x 30 mm pad areas aluminum PCB; $R_{\theta JM}$ - 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 pF, R = 1.5 kΩ	V_{C}	НЗВ	> 8 kV	

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
SE50PAJ-M3/I	0.033	1	14 000	13" diameter plastic tape and reel		
SE50PAJHM3/H (1)	0.033	Н	3500	7" diameter plastic tape and reel		
SE50PAJHM3/I (1)	0.033	1	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)

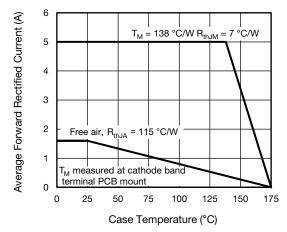


Fig. 1 - Maximum Forward Current Derating Curve

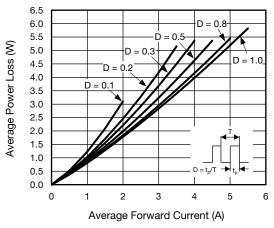


Fig. 2 - Forward Power Loss Characteristics

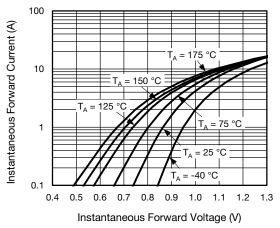


Fig. 3 - Typical Instantaneous Forward Characteristics

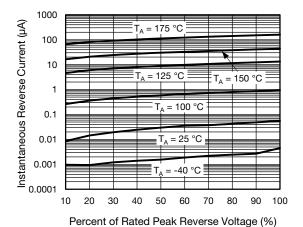


Fig. 4 - Typical Reverse Leakage Characteristics

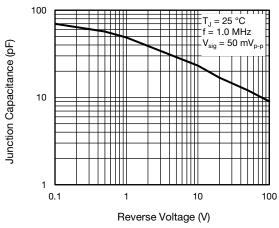


Fig. 5 - Typical Junction Capacitance

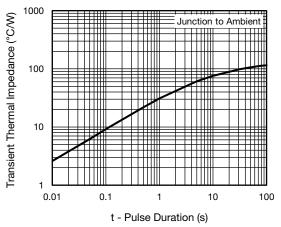
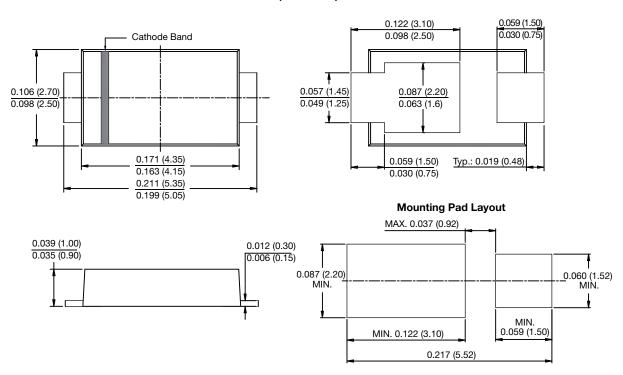


Fig. 6 - Typical Transient Thermal Impedances

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMPA (DO-221BC)







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