

SE10PB, SE10PD, SE10PG, SE10PJ

Vishay General Semiconductor

AUTOMOTIVE

RoHS

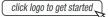
COMPLIANT HALOGEN

FREE

Surface Mount ESD Capability Rectifiers



DESIGN SUPPORT TOOLS





PRIMARY CHARACTERISTICS					
I _{F(AV)} 1.0 A					
V _{RRM}	100 V, 200 V, 400 V, 600 V				
I _R	5 μΑ				
V _F at I _F = 1.0 A	0.86 V				
T _J max.	175 °C				
Package	SMP (DO-220AA)				
Circuit configuration	Single				

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 μA
- 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 <u>www.vishav.com/doc?99912</u>

TYPICAL APPLICATIONS

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

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

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	SE10PB	SE10PD	SE10PG	SE10PJ	UNIT
Device marking code		10B	10D	10G	10J	
Max. repetitive peak reverse voltage	V_{RRM}	100	200	400	600	V
Average forward current	I _{F(AV)}	1.0				Α
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	25				А
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +175				°C



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Max. instantaneous	I _F = 1.0 A	T _A = 25 °C T _A = 125 °C	V _F ⁽¹⁾	0.960	1.05	V	
forward voltage		T _A = 125 °C		0.860	0.95		
Max. reverse current	Rated V _R	T _A = 25 °C T _A = 125 °C	I _R ⁽²⁾	-	5.0	μΑ	
Max. reverse current		T _A = 125 °C		4.8	50		
Max. reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A		t _{rr}	780	-	ns	
Typical junction capacitance	4.0 V, 1 MH	-lz	CJ	7.0	=	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 SE10PB SE10PD SE10PG SE10PJ UNI					UNIT	
	R _{0JA} (1)	105				°C/W	
Typical thermal resistance	R _{θJL} ⁽¹⁾	25					
	R ₀ JC (1)	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_{0JL} is measured at the terminal of cathode band. R_{0JC} is measured at the top center of the body.

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)	$C = 100 \text{ pF}, R = 1.5 \text{ k}\Omega$		H3B	> 8 kV		
AEC-Q101-002	Machine model (contact mode)	C = 200 pF, R = 0 Ω	-	M4	> 400 V		
JESD22-A114	Human body model (contact mode)	$C = 100 \text{ pF}, R = 1.5 \text{ k}\Omega$	V	3B	> 8 kV		
JESD22-A115	Machine model (contact mode)	$C = 200 \text{ pF}, R = 0 \Omega$	V_{C}	С	> 400 V		
IEC 61000-4-2 ⁽²⁾	Human body model (contact mode)	C = 150 pF, R = 330 Ω		4	> 8 kV		
	Human body model (air-discharge mode) (1)	C = 150 pF, R = 330 Ω		4	> 15 kV		

Notes

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

⁽²⁾ System ESD standard

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
SE10PJ-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel		
SE10PJ-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel		
SE10PJHM3/84A (1)	0.024	84A	3000	7" diameter plastic tape and reel		
SE10PJHM3/85A (1)	0.024	85A	10 000	13" diameter plastic tape and reel		

Note

(1) Automotive grade

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

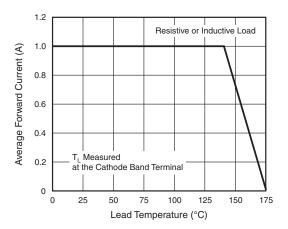


Fig. 1 - Max. Forward Current Derating Curve

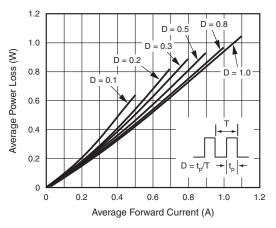


Fig. 2 - Forward Power Loss Characteristics

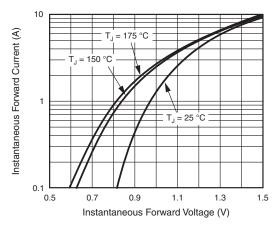


Fig. 3 - Forward Power Loss Characteristics

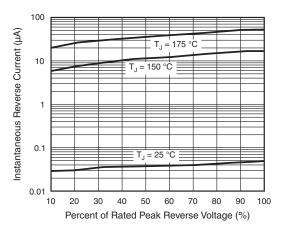


Fig. 4 - Typical Instantaneous Forward Characteristics

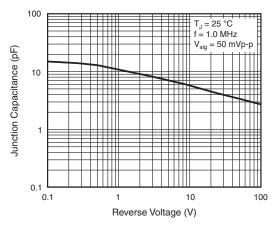


Fig. 5 - Typical Instantaneous Forward Characteristics

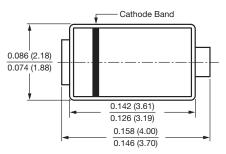


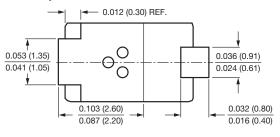
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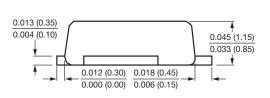
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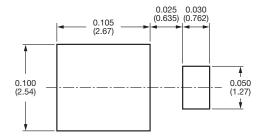
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMP (DO-220AA)











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