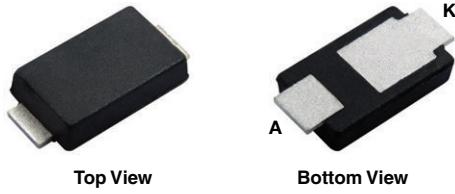


Surface-Mount ESD Capability Rectifiers

eSMP® Series


SMPA (DO-221BC)

Anode    Cathode

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


RoHS
COMPLIANT
HALOGEN
FREE

LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS

$I_{F(AV)}$	3.0 A
V_{RRM}	100 V, 200 V, 400 V, 600 V
I_{FSM}	32 A
V_F at $I_F = 3.0$ A ($T_A = 125$ °C)	1.00 V
I_R	5 μ A
T_J max.	175 °C
Package	SMPA (DO-221BC)
Circuit configuration	Single

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	SE30PAB	SE30PAD	SE30PAG	SE30PAJ	UNIT
Device marking code		30B	30D	30G	30J	
Maximum repetitive peak reverse voltage	V_{RRM}	100	200	400	600	V
Maximum DC forward current	I_F ⁽¹⁾	3.0				A
	I_F ⁽²⁾	1.4				
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	32				A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175				°C

Notes

(1) Mounted on 20 mm x 20 mm pad areas, 2 oz. FR4 PCB

(2) Free air, mounted on recommended copper pad area

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

PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	$I_F = 1.5 \text{ A}$	$T_A = 25^\circ\text{C}$	V_F ⁽¹⁾	0.98	-	V	
	$I_F = 3.0 \text{ A}$			1.07	1.16		
	$I_F = 1.5 \text{ A}$	$T_A = 125^\circ\text{C}$		0.88	-		
	$I_F = 3.0 \text{ A}$			1.00	1.10		
Reverse current	Rated V_R	$T_A = 25^\circ\text{C}$	I_R ⁽²⁾	-	5	μA	
		$T_A = 125^\circ\text{C}$		7	100		
Typical reverse recovery time	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$		t_{rr}	1.3	-	μs	
Typical junction capacitance	4.0 V, 1 MHz		C_J	13	-	pF	

Notes

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

(2) Pulse test: Pulse width $\leq 40 \text{ ms}$

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

PARAMETER	SYMBOL	SE30PAB	SE30PAD	SE30PAG	SE30PAJ	UNIT
Typical thermal resistance	R_{0JA} ⁽¹⁾	120			9	$^\circ\text{C/W}$
	R_{0JM} ⁽²⁾					

Notes

(1) Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance R_{0JA} - junction to ambient

(2) Mounted on 20 mm x 20 mm pad areas, 2 oz. FR4 PCB; R_{0JM} - 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	H3B	> 8 kV

ORDERING INFORMATION (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SE30PAJ-M3/I	0.033	I	14 000	13" diameter plastic tape and reel
SE30PAJHM3/I ⁽¹⁾	0.033	I	14 000	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

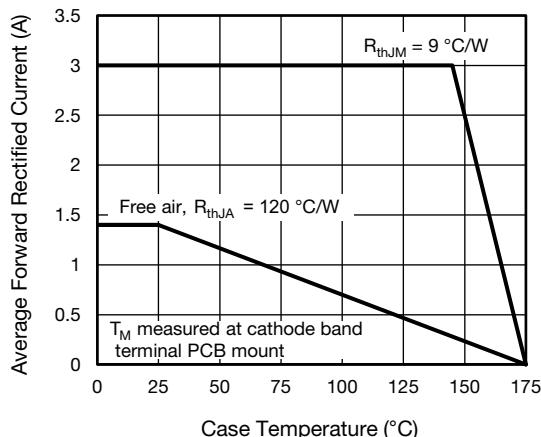
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

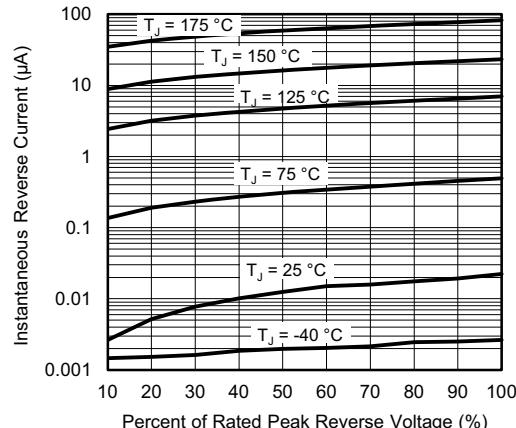


Fig. 4 - Typical Reverse Leakage Characteristics

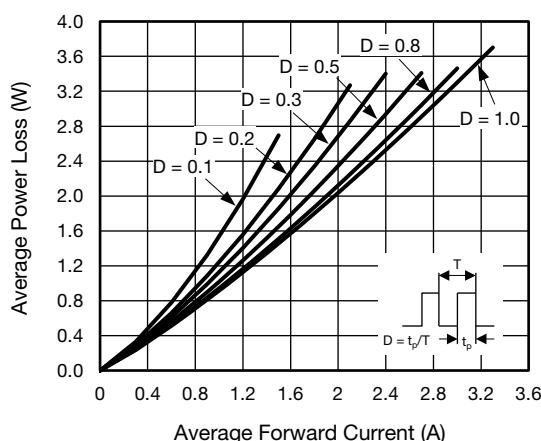


Fig. 2 - Forward Power Loss Characteristics

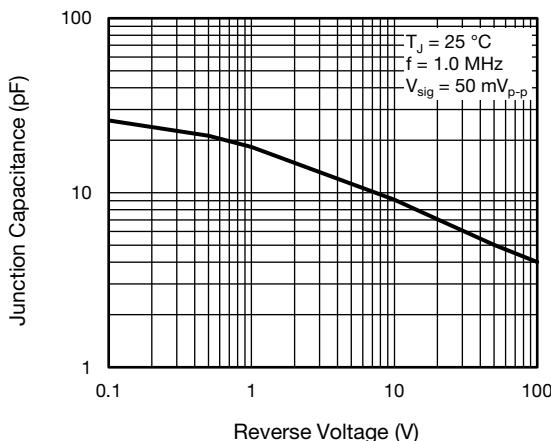


Fig. 5 - Typical Junction Capacitance

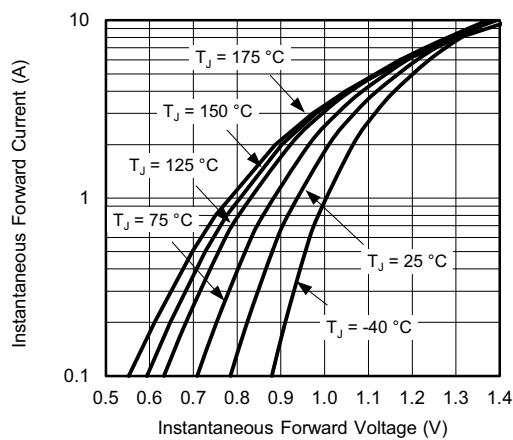


Fig. 3 - Typical Instantaneous Forward Characteristics

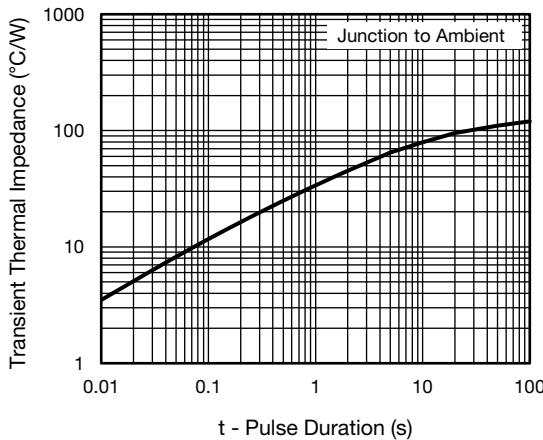
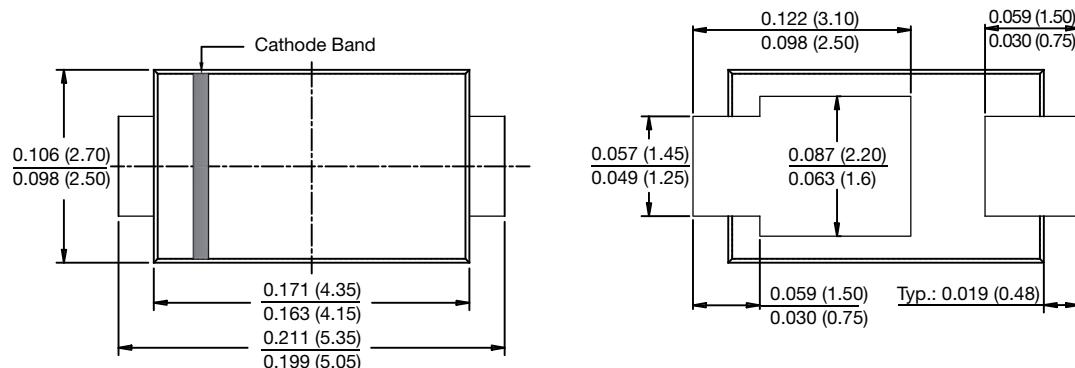
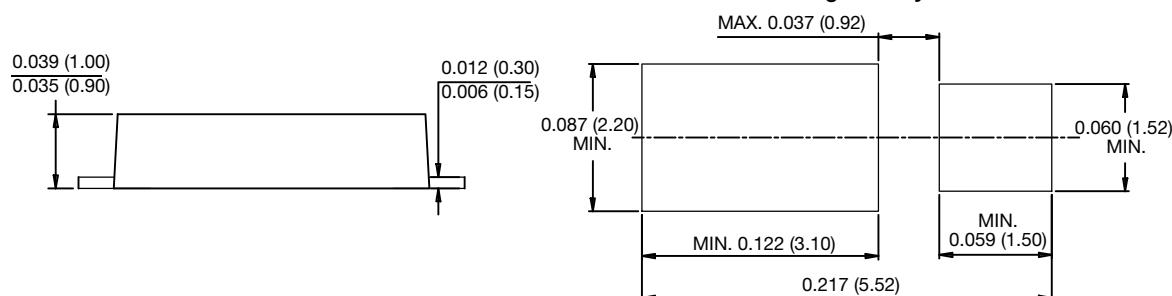


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMPA (DO-221BC)

Mounting Pad Layout


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