

Surface-Mount Standard Rectifiers

eSMP® Series



Top view

Bottom view

SMF (DO-219AB)

Cathode  Anode

LINKS TO ADDITIONAL RESOURCES



3D Models


RoHS
COMPLIANT
HALOGEN
FREE

FEATURES

- Low profile package
- 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
- Wave and reflow solderable
- AEC-Q101 qualified available
- Automotive ordering code: base P/NHM3
- Compatible to SOD-123W package case outline
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

General purpose, power line polarity protection, in commercial, industrial, and automotive applications.

MECHANICAL DATA

Case: SMF (DO-219AB)

Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - for, halogen-free, and RoHS-compliant

Base P/NHM3 - for halogen-free, RoHS-compliant, and AEC-Q101 qualified

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes the cathode end

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2.0 A
V_{RRM}	200 V, 400 V, 600 V
I_{FSM}	35 A
V_F at $I_F = 2.0$ A ($T_A = 125$ °C)	0.85 V
I_R	5 μ A
T_J max.	175 °C
Package	SMF (DO-219AB)
Circuit configuration	Single

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)

PARAMETER	SYMBOL	SE20FD	SE20FG	SE20FJ	UNIT
Device marking code		CD	CG	CJ	
Maximum repetitive peak reverse voltage	V_{RRM}	200	400	600	V
Maximum DC forward current	$I_{F(AV)}^{(1)}$	2.0			A
	$I_{F(AV)}^{(2)}$	1.7			
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 10 mm x 10 mm pad areas, 2 oz. FR4 PCB

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

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

PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 2.0\text{ A}$	$T_A = 25\text{ }^{\circ}\text{C}$	$V_F^{(1)}$	0.96	1.10	V
		$T_A = 125\text{ }^{\circ}\text{C}$		0.85	1.00	
Reverse current	Rated V_R	$T_A = 25\text{ }^{\circ}\text{C}$	$I_R^{(2)}$	-	5	μA
		$T_A = 125\text{ }^{\circ}\text{C}$		7.6	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}	920	-	ns
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** ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	SE20FD	SE20FG	SE20FJ	UNIT
Typical thermal resistance	R _{θJA} ⁽¹⁾	130			°C/W
	R _{θJM} ⁽¹⁾	20			

Note(1) Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance $R_{\theta JA}$ - junction to ambient; $R_{\theta JM}$ - junction to mount**IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS**($T_A = 25\text{ }^{\circ}\text{C}$ 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	$> 8\text{ kV}$

ORDERING INFORMATION (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SE20FJ-M3/H	0.015	H	3000	7" diameter plastic tape and reel
SE20FJ-M3/I	0.015	I	10 000	13" diameter plastic tape and reel
SE20FJHM3/H ⁽¹⁾	0.015	H	3000	7" diameter plastic tape and reel
SE20FJHM3/I ⁽¹⁾	0.015	I	10 000	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified



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

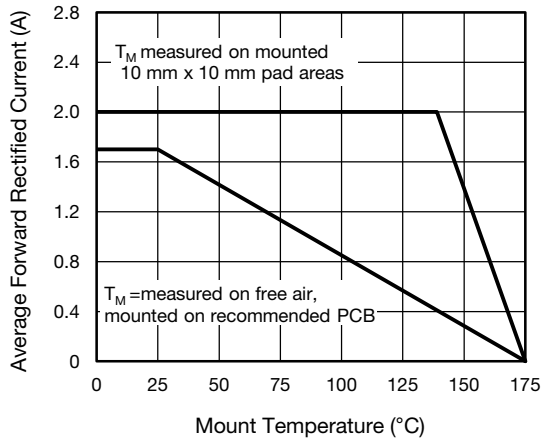


Fig. 1 - Maximum Forward Current Derating Curve

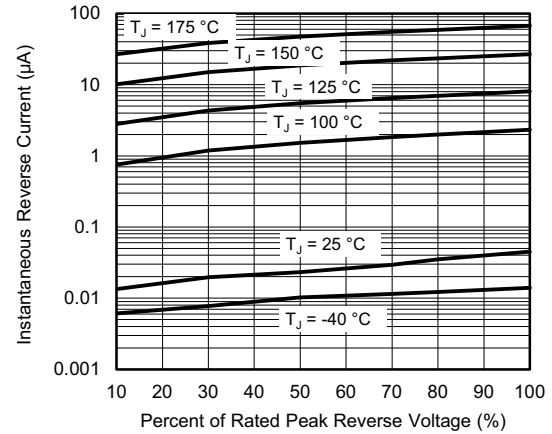


Fig. 4 - Typical Reverse Leakage Characteristics

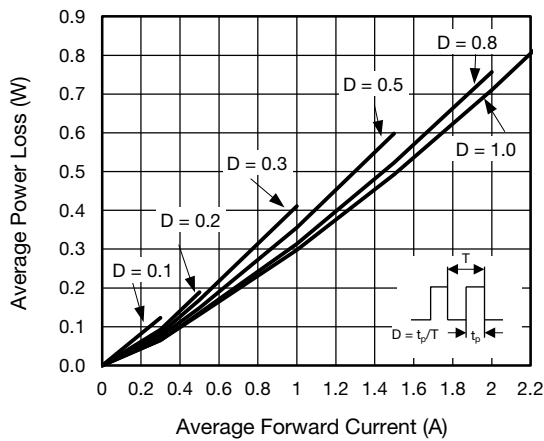


Fig. 2 - Average Power Loss Characteristics

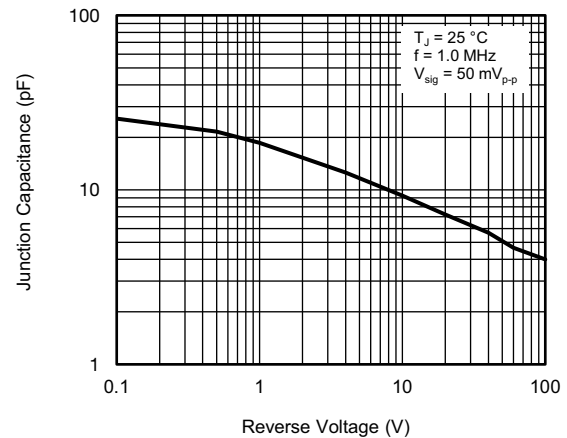


Fig. 5 - Typical Junction Capacitance

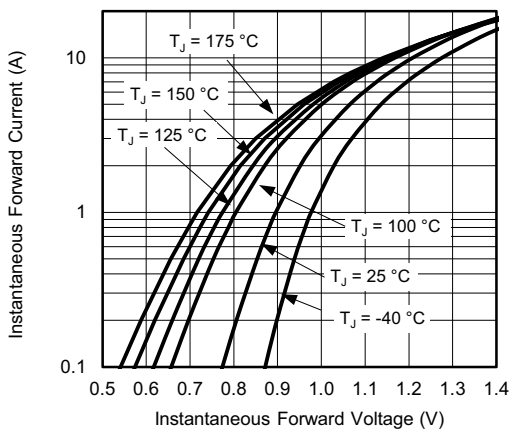


Fig. 3 - Typical Instantaneous Forward Characteristics

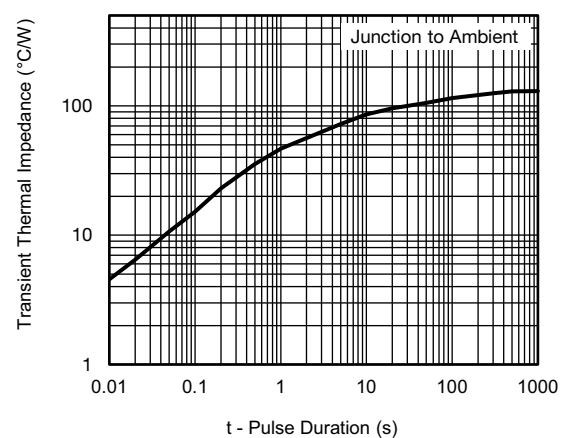
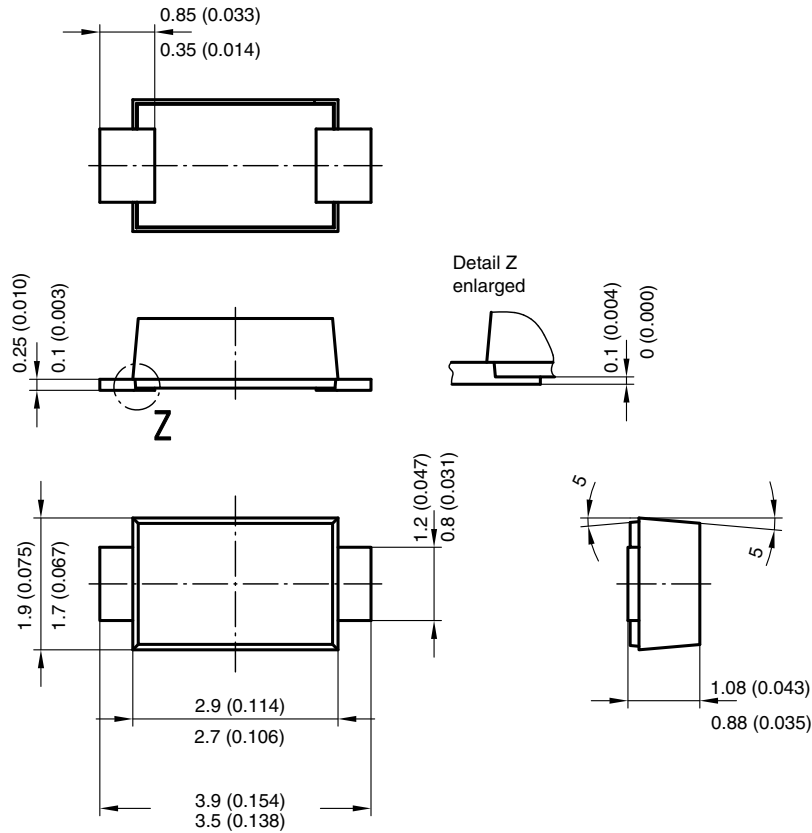


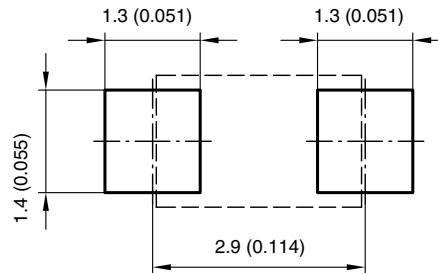
Fig. 6 - Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in millimeters (inches)



Foot print recommendation:



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17247



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