

Surface-Mount Schottky Barrier Rectifiers

eSMP® Series



Top view Bottom view

SMF (DO-219AB)

Cathode Anode

FEATURES

- Low profile package
- Ideal for automated placement
- Low forward voltage drop, low power losses
- 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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

 AUTOMOTIVE
GRADE
Available

RoHS
COMPLIANT
HALOGEN
FREE

ADDITIONAL RESOURCES


[3D Models](#)

TYPICAL APPLICATIONS

For use in high frequency inverters, freewheeling, DC/DC converters, and polarity protection in commercial, industrial, and automotive applications.

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	1.0 A
V_{RRM}	40 V
I_{FSM}	40 A
V_F at $I_F = 1.0$ A ($T_A = 125$ °C)	0.37 V
T_J max. (AC mode)	150 °C
T_J max. (DC forward current)	175 °C
Package	SMF (DO-219AB)
Circuit configuration	Single

MECHANICAL DATA

Case: SMF (DO-219AB)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free, RoHS-compliant

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 and 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	SS1F4	UNIT
Device marking code		14	
Maximum repetitive peak reverse voltage	V_{RRM}	40	V
Maximum average forward rectified current (fig.1)	$I_{F(AV)}$ ⁽¹⁾	1.0	A
Peak forward surge current 8.3 ms single half sine-wave $T_{J(init)} = 25$ °C	I_{FSM}	40	A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C
Junction temperature in DC forward current without reverse bias	T_J	175	°C

Note

(1) 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	$I_F = 0.7\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.43	-	V
	$I_F = 1.0\text{ A}$			0.46	0.52	
	$I_F = 0.7\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.33	-	
	$I_F = 1.0\text{ A}$			0.37	0.43	
Reverse current	$V_R = 40\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	-	150	μA
		$T_A = 125\text{ }^\circ\text{C}$		7	25	mA
Typical junction capacitance	4.0 V, 1 MHz		C_J	85	-	pF

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
(2) Pulse test: Pulse width $\leq 5\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	SS1F4	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)(2)(3)}$	125	$^\circ\text{C/W}$
	$R_{\theta JM}^{(2)(3)}$	16.5	

Notes

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$
(2) Device mounted on FR4 PCB, 2 oz. standard footprint
(3) Thermal resistance $R_{\theta JA}$ - junction to ambient; $R_{\theta JM}$ - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SS1F4-M3/H	0.015	H	3000	7" diameter plastic tape and reel
SS1F4-M3/I	0.015	I	10 000	13" diameter plastic tape and reel
SS1F4HM3/H ⁽¹⁾	0.015	H	3000	7" diameter plastic tape and reel
SS1F4HM3/I ⁽¹⁾	0.015	I	10 000	13" diameter plastic tape and reel

Note

- (1) AEC-Q101 qualified

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

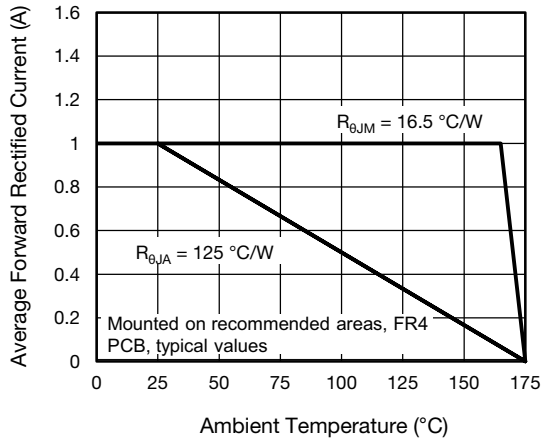


Fig. 1 - Maximum Forward Current Derating Curve

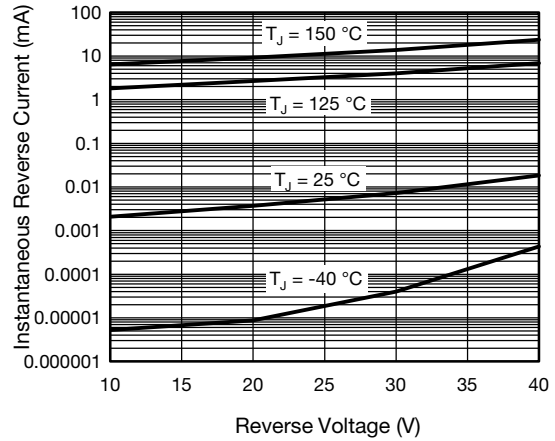


Fig. 4 - Typical Reverse Leakage Characteristics

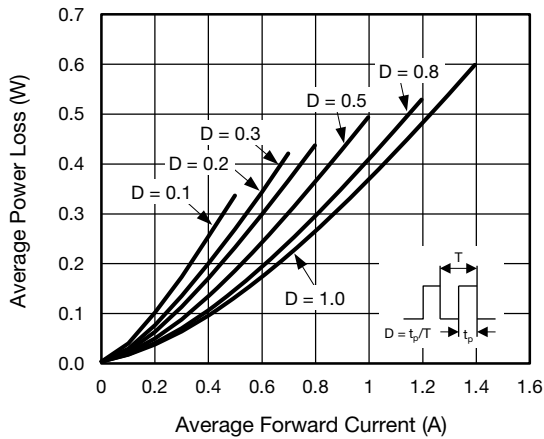


Fig. 2 - Average Power Loss Characteristics

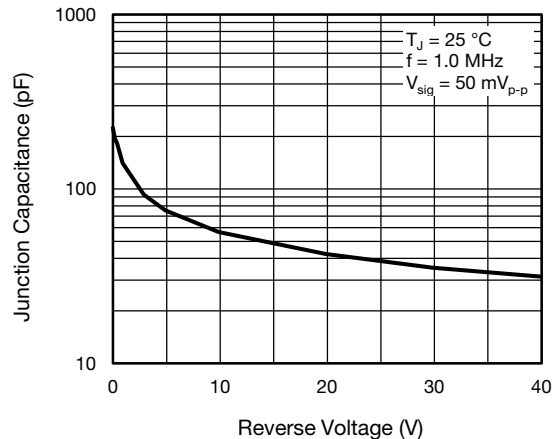


Fig. 5 - Typical Junction Capacitance

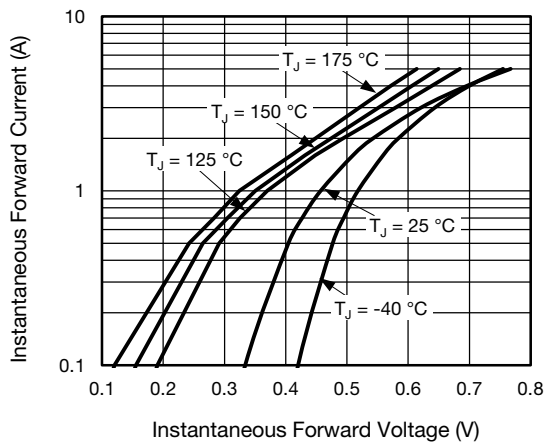


Fig. 3 - Typical Instantaneous Forward Characteristics

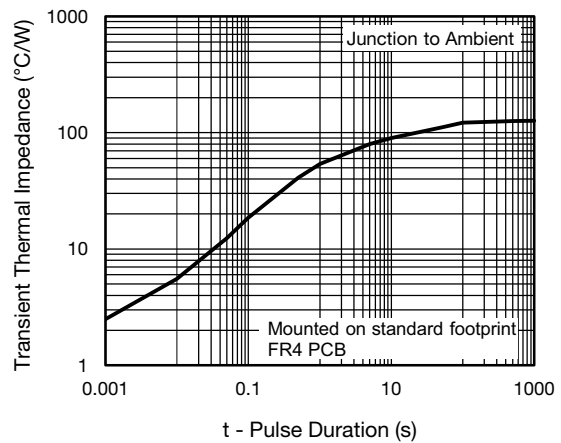
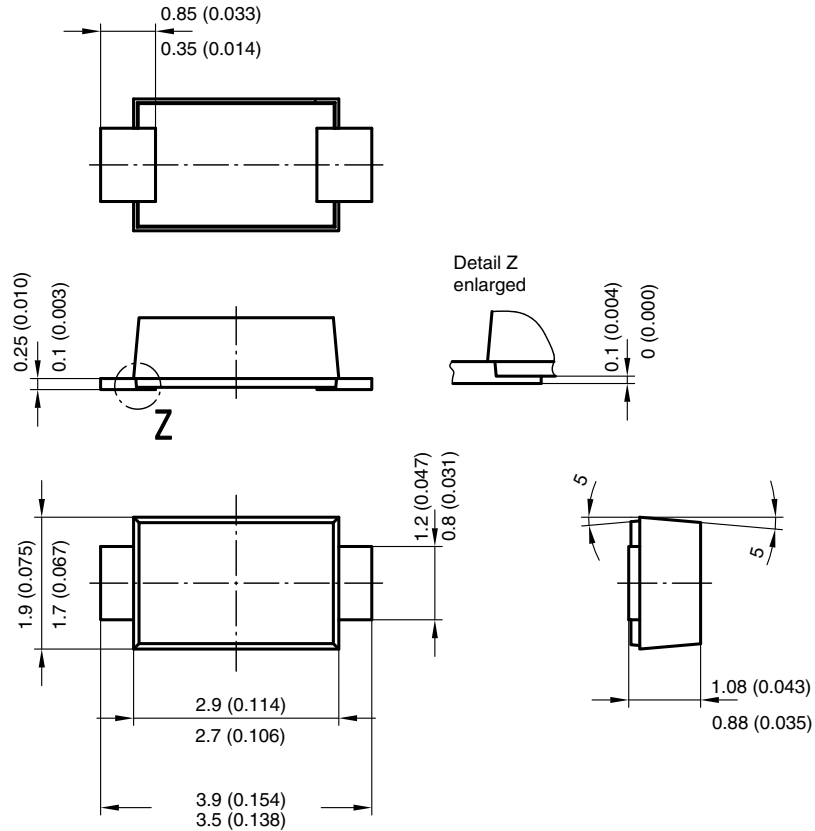


Fig. 6 - Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in millimeters (inches)



Foot print recommendation:



Created - Date: 15. February 2005
 Rev. 3 - Date: 13. March 2007
 Document no.: S8-V-3915.01-001 (4)
 17247



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