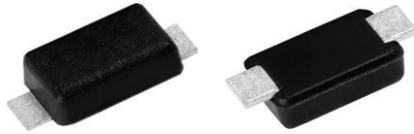


## Surface-Mount Fast Switching Rectifiers

### eSMP® Series



Top view

Bottom view

### SMF (DO-219AB)

Cathode  Anode

### LINKS TO ADDITIONAL RESOURCES



3D Models

### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	1 A
$V_{RRM}$	200 V, 400 V, 600 V, 800 V, 1000 V
$I_{FSM}$	30 A
$I_R$	0.07 $\mu$ A
$V_F$ at $I_F = 1$ A	0.88 V
$T_J$ max.	150 °C
Package	SMF (DO-219AB)
Circuit configuration	Single

### FEATURES

- Glass passivated pellet chip junction
- Ideal for automated placement
- Meets MSL level 1, per J-STD-020; LF maximum peak of 260 °C
- Wave and reflow solderable
- Compatible to SOD-123W package case outline
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters, and freewheeling diodes for consumer, and telecommunication.

### MECHANICAL DATA

**Case:** SMF (DO-219AB)

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

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

M3 suffix meets JESD 201 class 2 whisker test

**Polarity:** color band denotes cathode end

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

PARAMETER	SYMBOL	RS1FD	RS1FG	RS1FJ	RS1FK	RS1FM	UNIT
Device marking code		RSD	RSG	RSJ	RSK	RSM	
Max. repetitive peak reverse voltage	$V_{RRM}$	200	400	600	800	1000	V
Max. DC forward current (see fig. 1)	$I_F^{(1)}$	1					A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	30					A
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +150					°C

#### Note

(1) Free air, mounted on recommended PCB, 2 oz. pad area



ELECTRICAL CHARACTERISTICS (T <sub>J</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I <sub>F</sub> = 1.0 A	T <sub>J</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	1.0	1.25	V
		T <sub>J</sub> = 125 °C		0.88	1.15	
	I <sub>F</sub> = 2.0 A	T <sub>J</sub> = 25 °C		1.1	-	
		T <sub>J</sub> = 125 °C		0.99	-	
Reverse current	Rated V <sub>R</sub>	T <sub>J</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	0.07	5.0	μA
		T <sub>J</sub> = 125 °C		10.8	200	
Typical reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A		t <sub>rr</sub>	-	500	ns
Typical junction capacitance	4.0 V, 1 MHz		C <sub>J</sub>	5.0	-	pF

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle  
 (2) Pulse test: pulse width  $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °c unless otherwise noted)							
PARAMETER	SYMBOL	RS1FD	RS1FG	RS1FJ	RS1FK	RS1FM	UNIT
Typical thermal resistance	R <sub>θJA</sub> <sup>(1)(2)</sup>	130					°C/W
	R <sub>θJM</sub> <sup>(1)</sup>	20					

**Notes**

- (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  
 (2) The heat generated must be less than the thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
RS1FM-M3/H	0.0143	H	3000	7" diameter plastic tape and reel
RS1FM-M3/I	0.0143	I	10 000	13" diameter plastic tape and reel



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

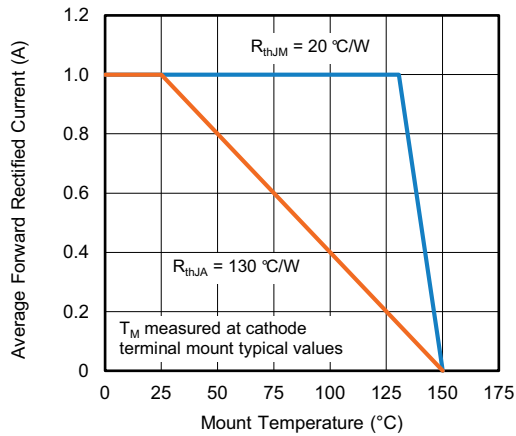


Fig. 1 - Max. Forward Current Derating Curve

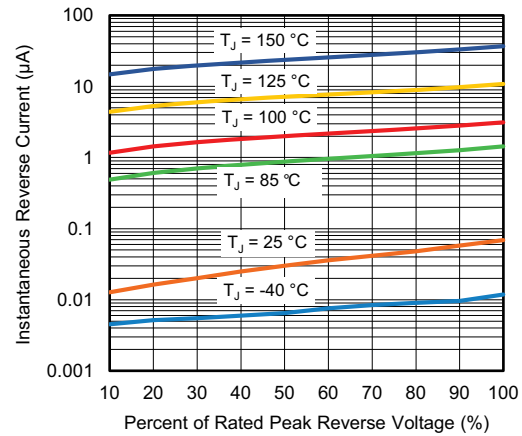


Fig. 4 - Typical Reverse Characteristics

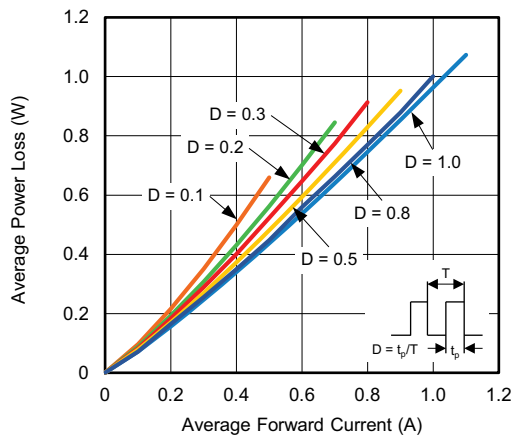


Fig. 2 - Forward Power Loss Characteristics

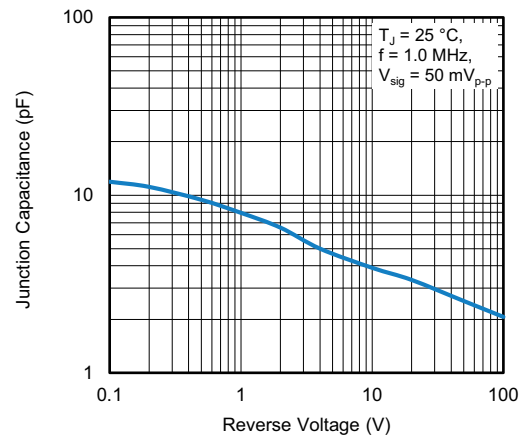


Fig. 5 - Typical Junction Capacitance

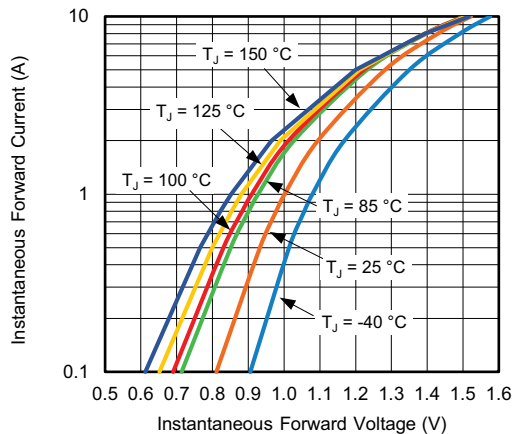


Fig. 3 - Typical Instantaneous Forward Characteristics

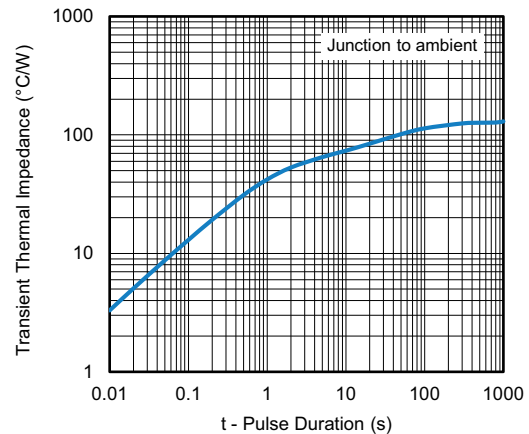
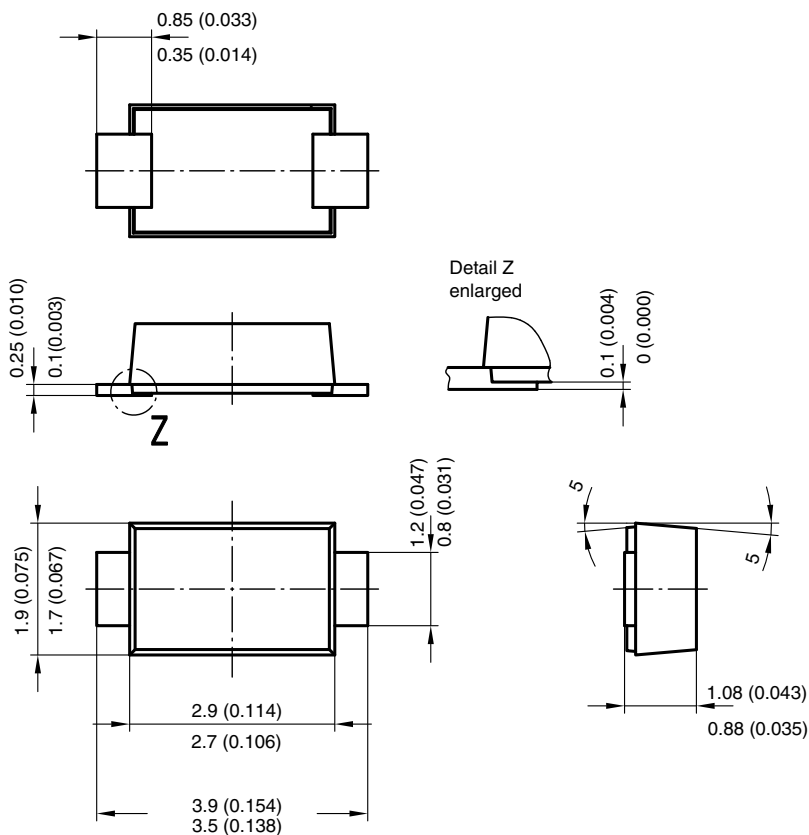


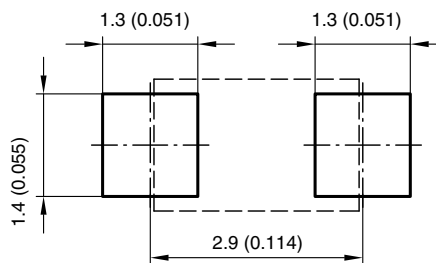
Fig. 6 - Typical Transient Thermal Impedance



## PACKAGE OUTLINE DIMENSIONS in millimeters (inches)



Foot print recommendation:



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Rev. 3 - Date: 13. March 2007  
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17247



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