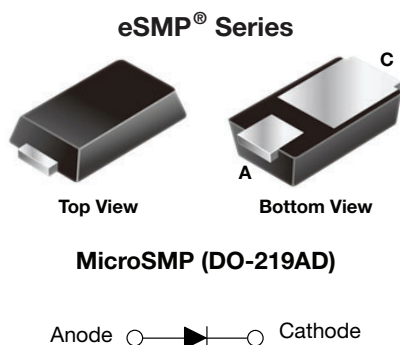


## Surface-Mount Fast Switching Rectifiers



### FEATURES

- Very low profile - typical height of 0.65 mm
- Ideal for automated placement
- Oxide planar chip junction
- Low forward voltage drop, low leakage current
- Low noise
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- 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 , snubber circuit of power supplies, inverters, converters, and freewheeling diodes for consumer, and telecommunication.

### MECHANICAL DATA

**Case:** MicroSMP (DO-219AD)

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 the cathode end

### LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
$V_{RRM}$	800 V
$I_{FSM}$	15 A
$t_{rr}$	250 ns
$V_F$ at $I_F = 1.0$ A	1.0 V
$I_R$	1 $\mu$ A
$T_J$ max.	175 °C
Package	MicroSMP (DO-219AD)
Circuit configuration	Single

MAXIMUM RATINGS ( $T_A = 25$ °C, unless otherwise noted)			
PARAMETER	SYMBOL	MRSE1PK	UNIT
Device marking code		RK	
Max. repetitive peak reverse voltage	$V_{RRM}$	800	V
Max. average forward rectified current (fig. 1)	$I_{F(AV)}$	1.0	A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	15	A
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +175	°C



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C, unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Max. instantaneous forward voltage	I <sub>F</sub> = 0.5 A	T <sub>J</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.91	-	V
	I <sub>F</sub> = 1.0 A			1.0	1.1	
	I <sub>F</sub> = 0.5 A	T <sub>J</sub> = 125 °C		0.8	-	
	I <sub>F</sub> = 1.0 A			0.9	0.98	
Maximum reverse current	Rated V <sub>R</sub>	T <sub>J</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	-	1.0	μA
		T <sub>J</sub> = 125 °C		3	50	
Maximum 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>	-	250	ns
Typical junction capacitance	4.0 V, 1 MHz		C <sub>J</sub>	7.5	-	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 ( $T_A = 25\text{ }^{\circ}\text{C}$ , unless otherwise noted)			
PARAMETER	SYMBOL	MRSE1PK	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)(2)}$	150	$^{\circ}\text{C/W}$
	$R_{\theta JM}^{(3)}$	9.3	

**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) Thermal resistance junction-to-ambient to follow JEDEC® 51-2A, device mounted on FR4 PCB, 2 oz., standard footprint

(3) Thermal resistance junction-to-mount to follow JEDEC 51-14 transient dual interface test method (TDIM)

**ORDERING INFORMATION TABLE**

Device code

<b>M</b>	<b>R</b>	<b>S</b>	<b>E</b>	<b>1</b>	<b>P</b>	<b>K</b>	<b>-</b>	<b>M3</b>
①	②	③	④	⑤	⑥	⑦		⑧

- 1** - Package type (M: Micro SMP)
- 2** - Faster recovery
- 3** - Vishay standard rectifier product
- 4** - Oxide planar chip technology
- 5** - Current rating (1 = 1A)
- 6** - eSMP
- 6** - Voltage rating (K = 800 V)
- 7** - Material / environmental category (M3 = halogen-free, RoHS-compliant, and termination lead (Pb)-free)

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
MRSE1PK-M3/I	0.006	I	16 000	13" diameter plastic tape and reel

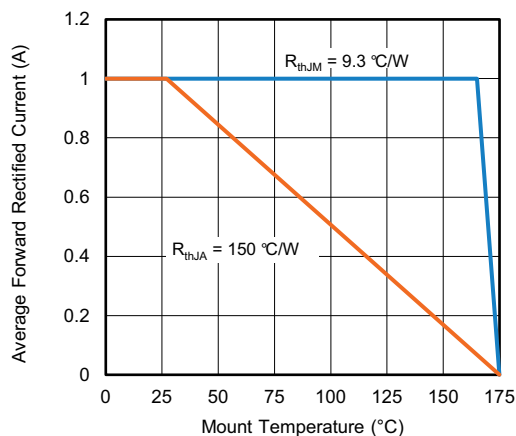
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

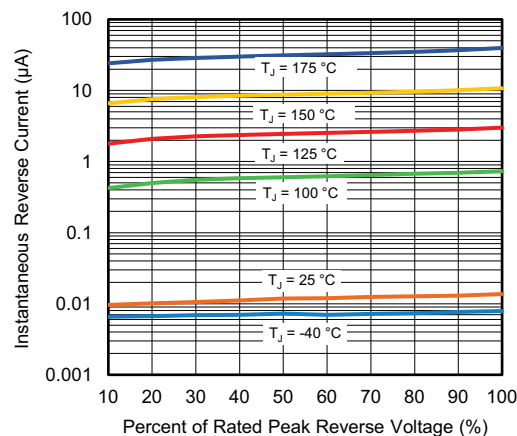


Fig. 4 - Typical Reverse Leakage Characteristics

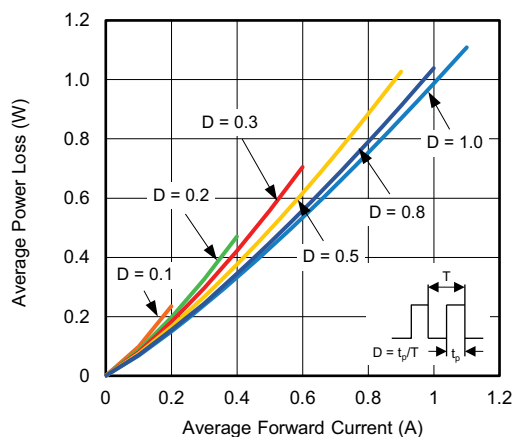


Fig. 2 - Forward Power Loss Characteristics

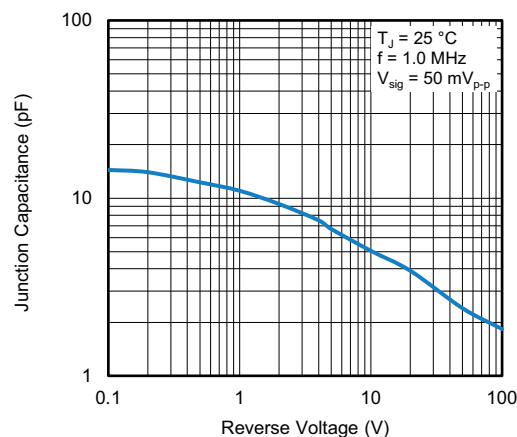


Fig. 5 - Typical Junction Capacitance

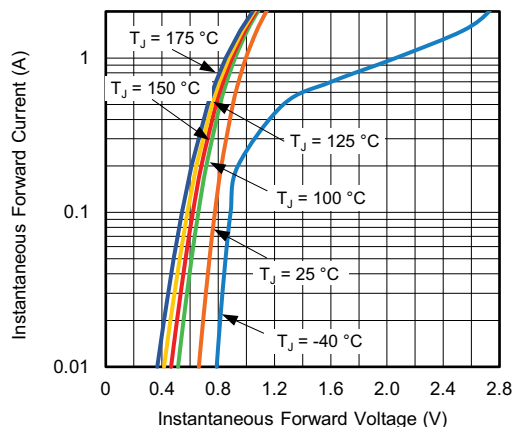


Fig. 3 - Typical Instantaneous Forward Characteristics

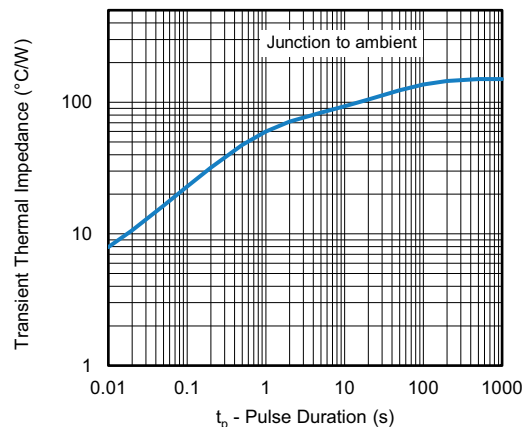
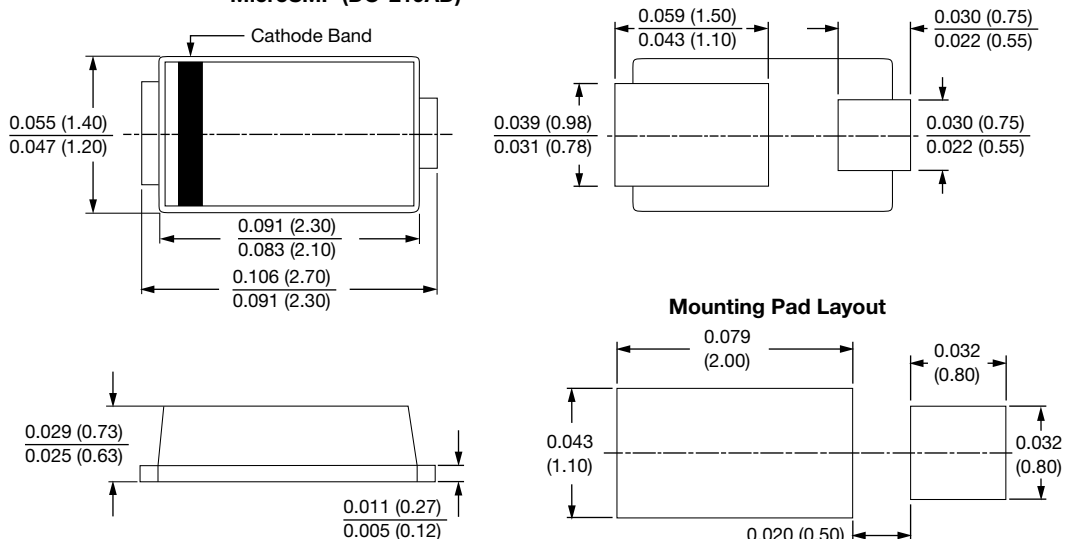


Fig. 6 - Typical Transient Thermal Impedance



**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**MicroSMP (DO-219AD)**





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