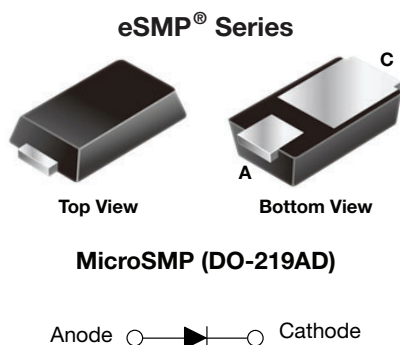


Surface-Mount Fast Switching Rectifiers



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



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



3D Models

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 μ 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 _A = 25 °C, unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Max. instantaneous forward voltage	I _F = 0.5 A	T _J = 25 °C	V _F ⁽¹⁾	0.91	-	V
	I _F = 1.0 A			1.0	1.1	
	I _F = 0.5 A	T _J = 125 °C		0.8	-	
	I _F = 1.0 A			0.9	0.98	
Maximum reverse current	Rated V _R	T _J = 25 °C	I _R ⁽²⁾	-	1.0	μA
		T _J = 125 °C		3	50	
Maximum reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A		t _{rr}	-	250	ns
Typical junction capacitance	4.0 V, 1 MHz		C _J	7.5	-	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	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

M	R	S	E	1	P	K	-	M3
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

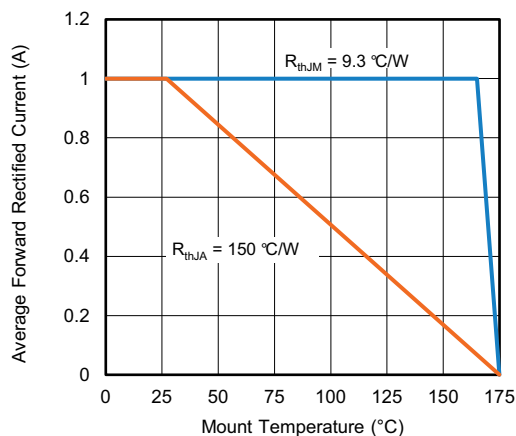
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

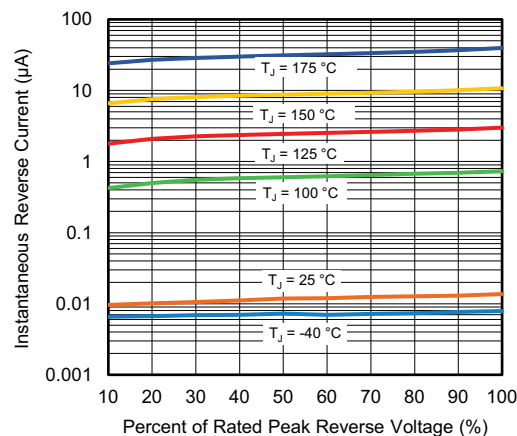


Fig. 4 - Typical Reverse Leakage Characteristics

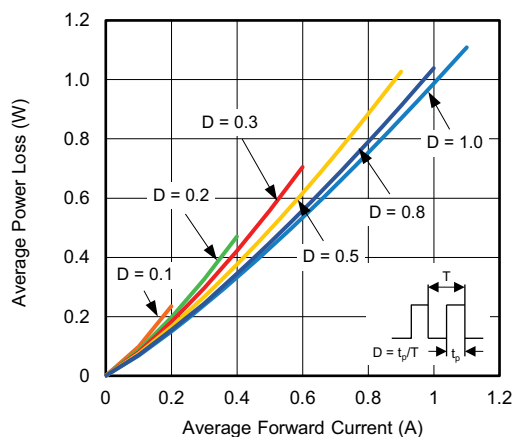


Fig. 2 - Forward Power Loss Characteristics

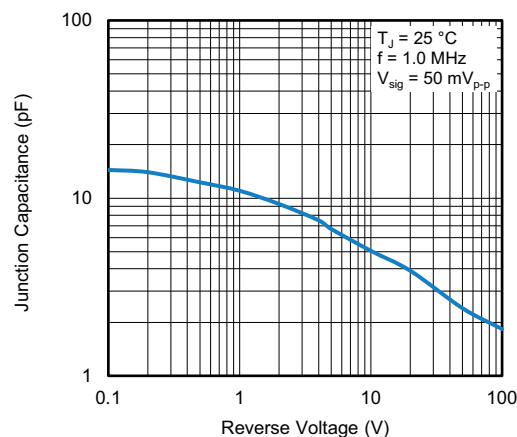


Fig. 5 - Typical Junction Capacitance

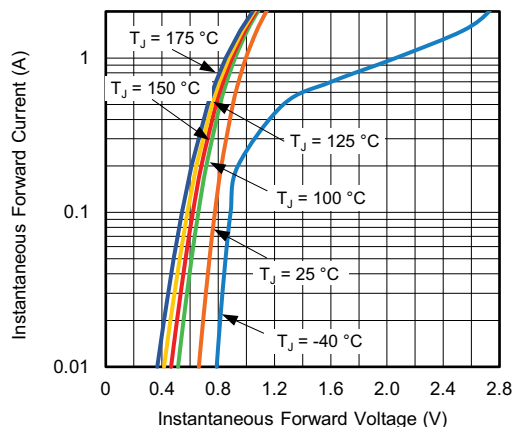


Fig. 3 - Typical Instantaneous Forward Characteristics

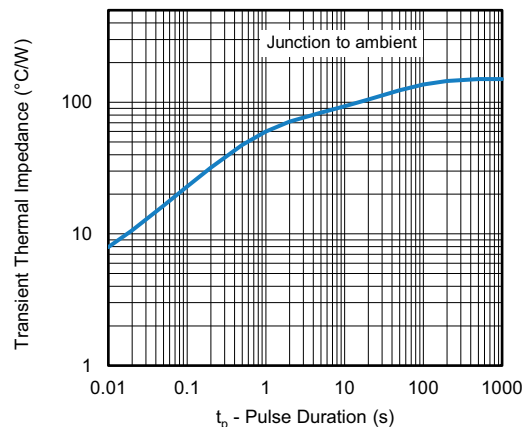
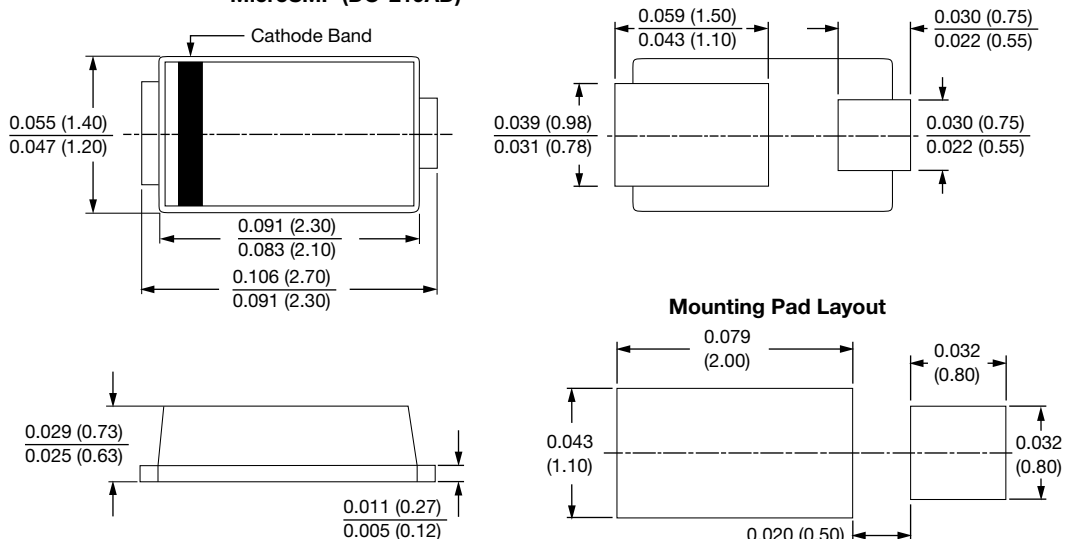


Fig. 6 - Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

MicroSMP (DO-219AD)





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