

MSE1PB, MSE1PD, MSE1PG, MSE1PJ

Vishay General Semiconductor

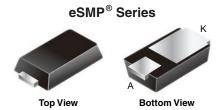
AUTOMOTIVE

RoHS

COMPLIANT HALOGEN

FREE

Surface-Mount ESD Capability Rectifier



MicroSMP (DO-219AD)



LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS					
I _{F(AV)}	1.0 A				
V _{RRM}	100 V, 200 V, 400 V, 600 V				
I _{FSM}	20 A				
V _F at I _F = 1.0 A	0.925 V				
I _R	1 μΑ				
T _J max.	175 °C				
Package	MicroSMP (DO-219AD)				
Circuit configuration	Single				

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
- ESD capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
 - Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

TYPICAL APPLICATIONS

General purpose, polarity protection, and rail-to-rail protection in both consumer and automotive applications.

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

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	MSE1PB	MSE1PD	MSE1PG	MSE1PJ	UNIT	
Device marking code		SB	SD	SG	SJ		
Max. repetitive peak reverse voltage	V _{RRM}	100 200 400 600				V	
Max. average forward rectified current (fig. 1)	I _{F(AV)}	1.0				Α	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	20			Α		
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +175				°C	



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C, unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
	I _F = 0.5 A	T _A = 25 °C	V _F ⁽¹⁾	0.940	-	V	
Max. instantaneous forward voltage	$I_F = 1.0 A$	1A = 25 C		1.016	1.1		
	I _F = 0.5 A	T _Δ = 125 °C		0.834	-		
	I _F = 1.0 A	1A = 125 C		0.925	0.98		
Max. reverse current	Rated V _R	T _A = 25 °C	I _R ⁽²⁾	-	1.0	μA	
wax. reverse current	nateu v _R	T _A = 125 °C		3.7	50		
Typical reverse recovery time	I _F = 0.5 A, I _R	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$		780	-	ns	
Typical junction capacitance	4.0 V, 1 MHz	4.0 V, 1 MHz		5	-	рF	

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T _A = 25 °C, unless otherwise noted)						
PARAMETER SYMBOL MSE1PB MSE1PD MSE1PG MSE1PJ UNI						
	R _{0JA} (1)	110				°C/W
Typical thermal resistance	R _{0JL} (1)	30				
	R ₀ JC (1)		4	0		

Note

⁽¹⁾ Thermal resistance from junction to ambient and junction to lead mounted on PCB with 6.0 mm x 6.0 mm copper pad areas. R_{θJL} is measured at the terminal of cathode band.

IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS ($T_A = 25 ^{\circ}\text{C}$, unless otherwise noted)							
STANDARD	TEST TYPE	TEST CONDITIONS	SYMBOL	CLASS	VALUE		
AEC-Q101-001	Human body model (contact mode)	C = 100 pF, R = 1.5 k Ω		H3B	> 8 kV		
AEC-Q101-002	Machine model (contact mode)	C = 200 pF, R = 0 Ω	1	M4	> 400 V		
JESD22-A114	Human body model (contact mode)	C = 100 pF, R = 1.5 k Ω] ,,	3B	> 8 kV		
JESD22-A115	Machine model (contact mode)	C = 200 pF, R = 0 Ω	V _C	С	> 400 V		
IEC 61000-4-2 (2)	Human body model (contact mode)	C = 150 pF, R = 330 Ω]	4	> 8 kV		
1EC 61000-4-2 (=)	Human body model (air-discharge mode) (1)	C = 150 pF, R = 330 Ω	1	4	> 15 kV		

Notes

(1) Immunity to IEC 61000-4-2 air discharge mode has a typical performance > 30 kV

⁽²⁾ System ESD standard

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
MSE1PJ-M3/89A	0.006	89A	4500	7" diameter plastic tape and reel		
MSE1PJHM3/89A (1)	0.006	89A	4500	7" diameter plastic tape and reel		
MSE1PGHM3/I (1)	0.006	I	16 000	13" diameter plastic tape and reel		

Note

(1) AEC-Q101 qualified

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RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

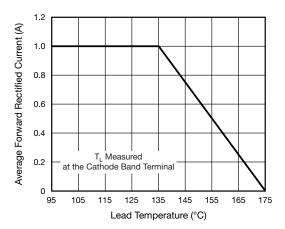


Fig. 1 - Forward Current Derating Curve

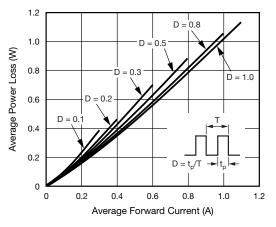


Fig. 2 - Forward Power Loss Characteristics

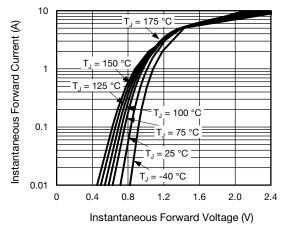


Fig. 3 - Typical Instantaneous Forward Characteristics

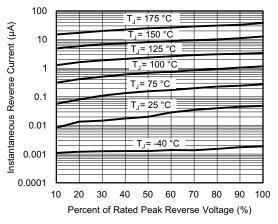


Fig. 4 - Typical Reverse Leakage Characteristics

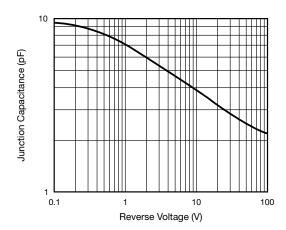


Fig. 5 - Typical Junction Capacitance

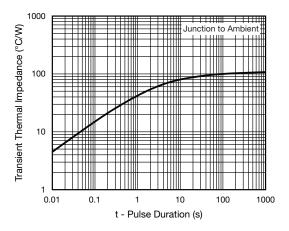
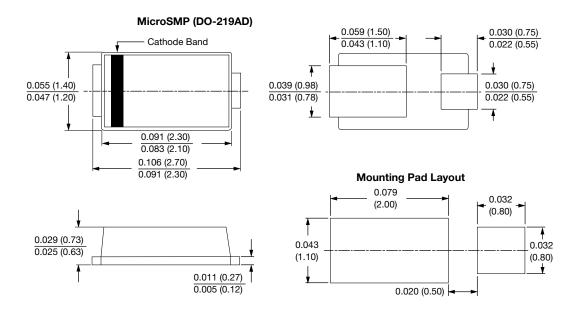


Fig. 6 - Typical Transient Thermal Impedance

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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