

MSE07PB, MSE07PD, MSE07PG, MSE07PJ

Vishay General Semiconductor

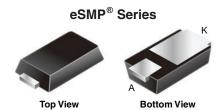
AUTOMOTIVE

RoHS

COMPLIANT HALOGEN

FREE

Surface-Mount ESD Capability Rectifier



MicroSMP (DO-219AD)



LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS					
I _{F(AV)}	0.7 A				
V _{RRM}	100 V, 200 V, 400 V, 600 V				
I _{FSM}	20 A				
V_F at $I_F = 0.7$ A $(T_A = 125 ^{\circ}C)$	0.83 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
- 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 automotive grade

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

M3 suffix meets JESD 201 class 1A whisker test, 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	MSE07PB	MSE07PD	MSE07PG	MSE07PJ	UNIT	
Device marking code		07B	07D	07G	07J		
Max. repetitive peak reverse voltage	V_{RRM}	100 200 400 600		600	V		
Max. average forward rectified current (fig. 1)	I _{F(AV)}	0.7				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	
Instantaneous forward voltage	I _E = 0.7 A	T _A = 25 °C	V _F ⁽¹⁾	0.94	1.08	V	
	I _F = 0.7 A	T _A = 125 °C		0.83	0.95		
Reverse current	Rated V _R	T _A = 25 °C	I _R ⁽²⁾	-	1.0	μA	
neverse current		T _A = 125 °C		3.7	50		
Typical reverse recovery time	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$		t _{rr}	780	-	ns	
Typical junction capacitance	4.0 V, 1 MHz		CJ	5	-	pF	

Notes

 $^{(1)}$ Pulse test: 300 μs pulse width, 1 % duty cycle

 $^{(2)}$ Pulse test: Pulse width \leq 40 ms

THERMAL CHARACTERISTICS (T _A = 25 °C, unless otherwise noted)						
PARAMETER	SYMBOL MSE07PB MSE07PD MSE07PG MSE07PJ UNIT					
	R _{0JA} (1)	110				
Typical thermal resistance	R _{0JL} (1)	30				°C/W
	R ₀ JC (1)		2	10		

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. $R_{\theta JL}$ is measured at the terminal of cathode band.

IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS						
(T _A = 25 °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 kΩ	V _C	H3B	> 8 kV	

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
MSE07PJ-M3/89A	0.006	89A	4500	7" diameter plastic tape and reel		
MSE07PJHM3/89A (1)	0.006	89A	4500	7" 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)

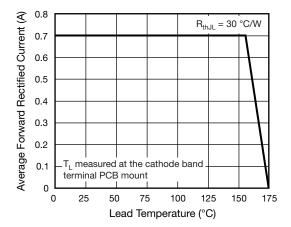


Fig. 1 - Forward Current Derating Curve

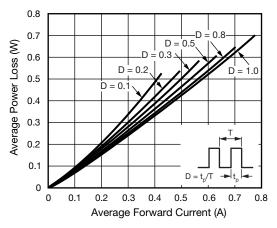


Fig. 2 - Forward Power Loss Characteristics

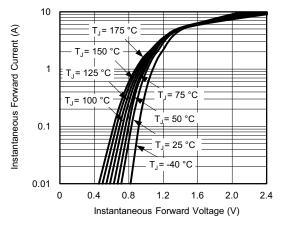


Fig. 3 - Typical Instantaneous Forward Characteristics

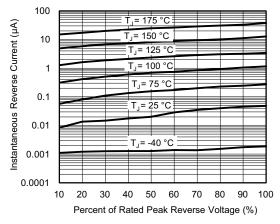


Fig. 4 - Typical Reverse Leakage Characteristics

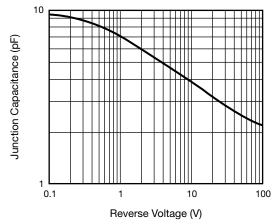


Fig. 5 - Typical Junction Capacitance

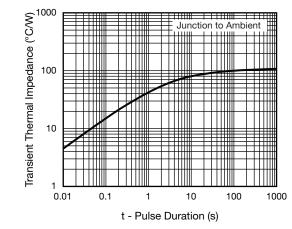
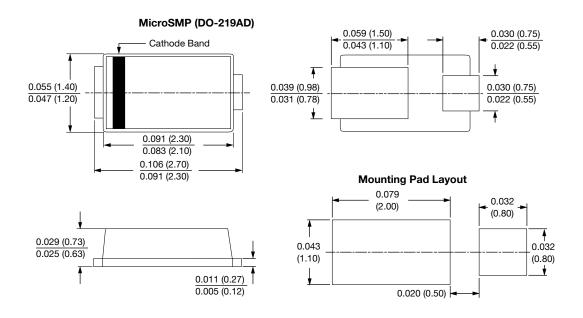


Fig. 6 - Typical Transient Thermal Impedance

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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