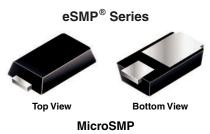
New Product

MUH1PB thru MUH1PD

Vishay General Semiconductor

Surface Mount Ultrafast Rectifiers



PRIMARY CHARACTERISTICS					
I _{F(AV)}	1.0 A				
V _{RRM}	100 V, 150 V, 200 V				
I _{FSM}	10 A				
t _{rr}	25 ns				
V_F at I_F = 1.0 A	0.82 V				
I _R	1 µA				
T _J max.	175 °C				

TYPICAL APPLICATIONS

For use in secondary rectification and freewheeling for ultrafast switching speeds AC/AC and DC/DC converters.

FEATURES

- Very low profile typical height of 0.65 mm
- · Ideal for automated placement
- Oxide planar chip junction
- Low forward voltage drop, low power losses
- · Ultrafast recovery times for high frequency
- Meets MSL level 1, per J-STD-020C, LF maximum peak of 260 °C
- AEC-Q101 qualified
- · Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition

MECHANICAL DATA

Case: MicroSMP

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 ($T_A = 25 \text{ °C}$ unless otherwise noted)						
PARAMETER	SYMBOL	MUH1PB	MUH1PC	MUH1PD	UNIT	
Device marking code		HB	HC	HD		
Maximum repetitive peak reverse voltage	V _{RRM}	100	150	200	V	
Maximum average forward rectified current (fig. 1)	I _{F(AV)}	1.0			А	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	10			A	
Operating junction and storage temperature range	T _J , T _{STG}	- 55 to + 175			°C	

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RoHS COMPLIANT HALOGEN FREE





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ELECTRICAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Maximum instantaneous forward voltage	I _F = 0.5 A	T _A = 25 °C		0.90	-	
	I _F = 1.0 A	1 _A = 25 C	V _F ⁽¹⁾	1.0	1.05	v
	I _F = 0.5 A	- T _A = 125 °C	VF ()	0.72	-	v
	I _F = 1.0 A			0.82	0.90	
Maximum reverse current	Rated V _B	T _A = 25 °C	I _R ⁽²⁾	-	1.0	
	naleu V _R	T _A = 125 °C		3.0	15	μΑ
Maximum reverse recovery time	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$	T 05 %C		19	25	
Typical reverse recovery time	$ I_{F} = 1.0 \text{ A}, \text{ dI/dt} = 50 \text{ A/}\mu\text{s}, \\ V_{R} = 30 \text{ V}, I_{rr} = 0.1 \text{ I}_{RM} $	- T _A = 25 °C	t _{rr} -	29	40	— ns
Typical softness factor (t _b /t _a)		S	S	0.5	-	
Typical reverse recovery current	$I_F = 1.0 \text{ A}, \text{ dl/dt} = 200 \text{ A/}\mu\text{s},$ $V_B = 200 \text{ V}$	T _A = 125 °C	I _{RM}	3.4	4.6	Α
Typical stored charge			Q _{rr}	45	-	nC
Typical junction capacitance	4.0 V, 1 MHz	•	CJ	10	-	pF

Notes

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

⁽²⁾ Pulse test: Pulse width \leq 40 ms

THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER	SYMBOL	MUH1PB	MUH1PC	MUH1PD	UNIT
Typical thermal resistance	R _{0JA} ⁽¹⁾	166			°C/W
	R _{θJM} ⁽¹⁾	40			

Note

⁽¹⁾ Free air, mounted on recommended copper pad area. Thermal resistance R_{0JA} - from junction to ambient, R_{0JM} - and junction to mount

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
MUH1PD-M3/89A	0.006	89A	4500	7" diameter plastic tape and reel		
MUH1PDHM3/89A ⁽¹⁾	0.006	89A	4500	7" diameter plastic tape and reel		

Note

⁽¹⁾ Automotive grade

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

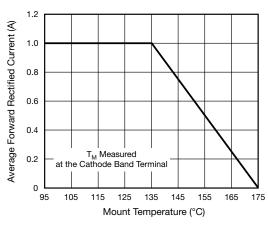


Fig. 1 - Maximum Forward Current Derating Curve

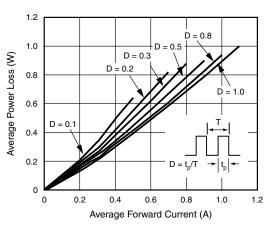


Fig. 2 - Forward Power Loss Characteristics

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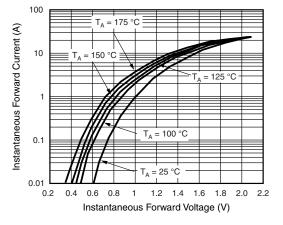


Fig. 3 - Typical Instantaneous Forward Characteristics

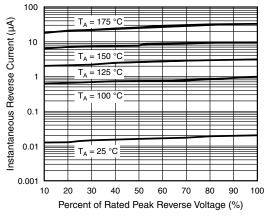


Fig. 4 - Typical Reverse Characteristics

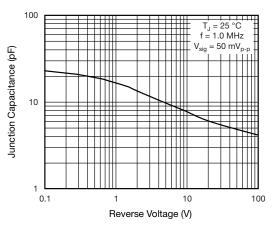


Fig. 5 - Typical Junction Capacitance

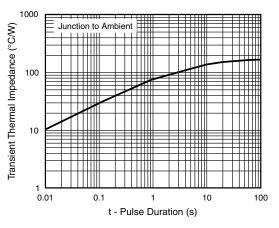
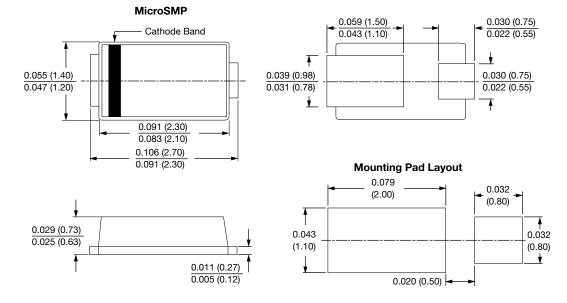


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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