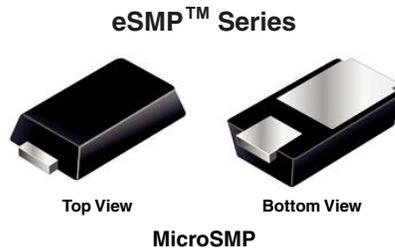




Surface Mount Ultrafast Rectifiers



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 μ A
T_J max.	175 °C

TYPICAL APPLICATIONS

For use in secondary rectification and freewheeling for ultrafast switching speeds ac-to-ac and dc-to-dc converters for commercial applications.

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
- Ultrafast recovery times for high frequency
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Solder dip 265 °C max. 10 s, per JESD 22-A111
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- **Halogen-free according to IEC 61249-2-21 definition**



RoHS
COMPLIANT
HALOGEN
FREE

MECHANICAL DATA

Case: MicroSMP

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free and RoHS compliant, commercial grade

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

M3 suffix meets JESD 201 class 1A whisker test

Polarity: Color band denotes the cathode end

MAXIMUM RATINGS ($T_A = 25$ °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			A
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

MUH1PB thru MUH1PD

Vishay General Semiconductor

ELECTRICAL CHARACTERISTICS (T _A = 25 °C, unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Maximum instantaneous forward voltage ⁽¹⁾	I _F = 0.5 A I _F = 1.0 A	T _A = 25 °C	V _F	0.90 1.0	- 1.05	V
	I _F = 0.5 A I _F = 1.0 A	T _A = 125 °C		0.72 0.82	- 0.90	
Maximum reverse current ⁽²⁾	Rated V _R	T _A = 25 °C T _A = 125 °C	I _R	- 3.0	1.0 15	μA
Maximum reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A	T _A = 25 °C	t _{rr}	19	25	ns
Typical reverse recovery time	I _F = 1.0 A, di/dt = 50 A/μs, V _R = 30 V, I _{rr} = 0.1 I _{RM}			29	40	
Typical softness factor (t _b /t _a)	I _F = 1.0 A, di/dt = 200 A/μs, V _R = 200 V	T _A = 125 °C	S	0.5	-	
Typical reverse recovery current			I _{RM}	3.4	4.6	A
Typical stored charge			Q _{rr}	45	-	nC
Typical junction capacitance	4.0 V, 1 MHz		C _J	10	-	pF

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	MUH1PB	MUH1PC	MUH1PD	UNIT
Typical thermal resistance ⁽¹⁾	R _{θJA} R _{θJM}		166 40		°C/W

Note

(1) Free air, mounted on recommended copper pad area. Thermal resistance R_{θJA} - from junction to ambient, R_{θJM} - 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

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

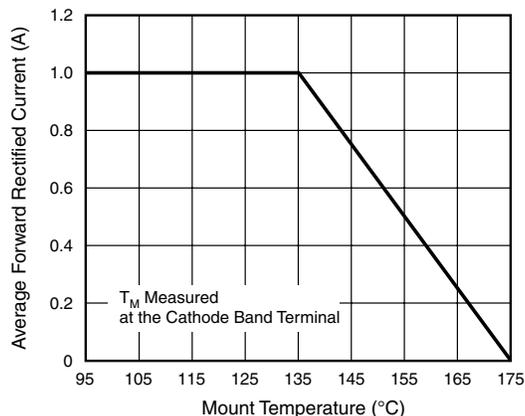


Figure 1. Maximum Forward Current Derating Curve

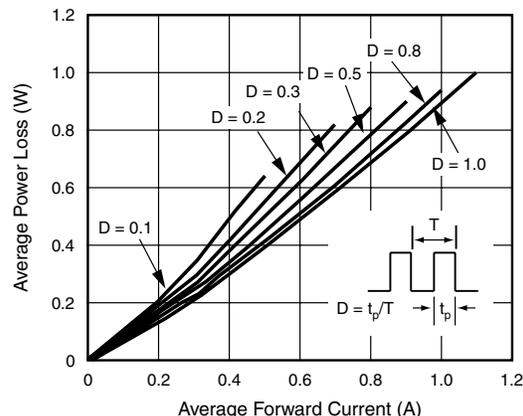


Figure 2. Forward Power Loss Characteristics

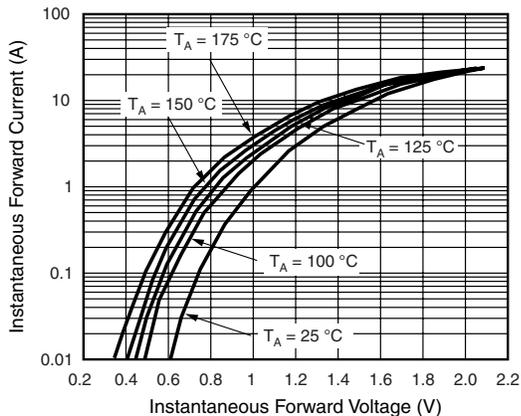


Figure 3. Typical Instantaneous Forward Characteristics

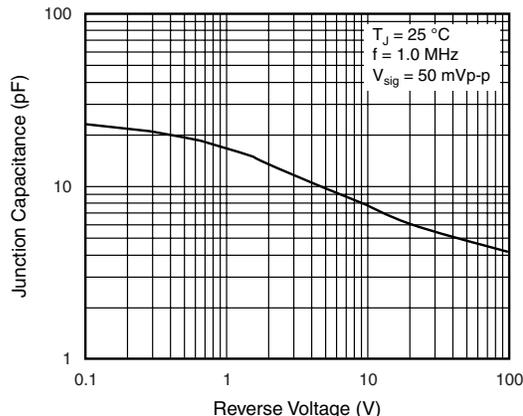


Figure 5. Typical Junction Capacitance

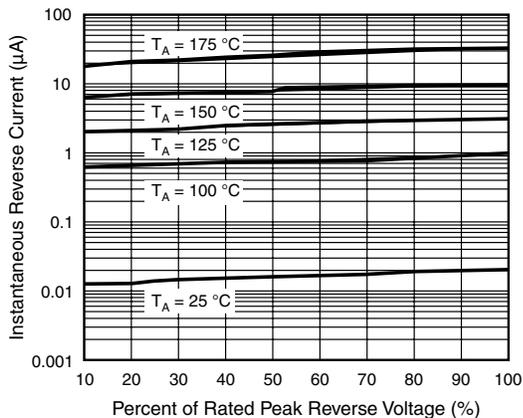


Figure 4. Typical Reverse Characteristics

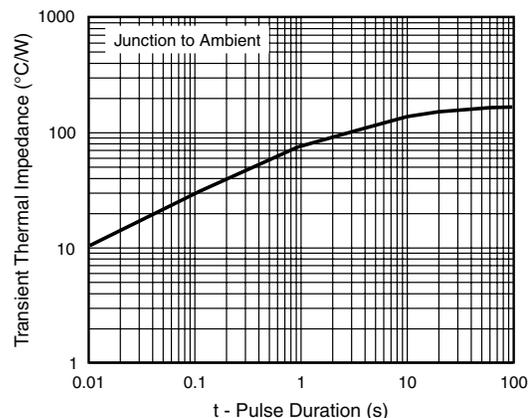
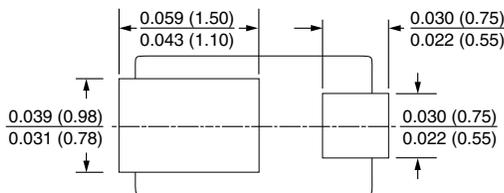
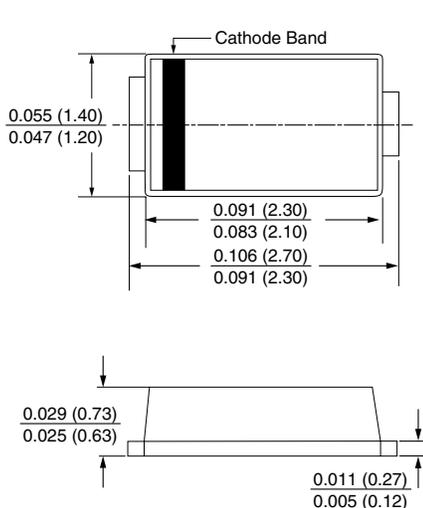


Figure 6. Typical Transient Thermal Impedance

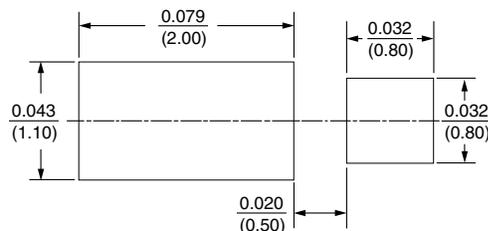
www.DataSheet4U.com

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

MicroSMP



Mounting Pad Layout





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