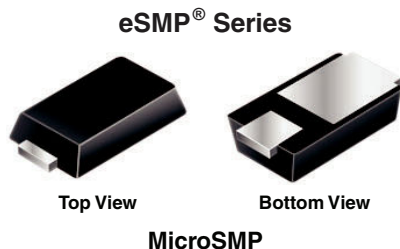




Ultra Low V_F Surface Mount Schottky Barrier Rectifiers



The ultra low V_F Schottky optimized for forward voltage drop with high reverse current trade-off.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
V_{RRM}	20 V, 30 V
I_{FSM}	30 A
V_F at $I_F = 1.5$ A	0.30 V
T_J max.	125 °C

APPLICATIONS

Application designed and qualified for hard disc driver where the V_F performance and size are required. HTIR is not a concern.

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	MSS1P2U	MSS1P3U	UNIT
Device marking code		12U	13U	
Maximum repetitive peak reverse voltage	V_{RRM}	20	30	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	1.0		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	30		A
Operating junction temperature range	T_J	- 55 to + 125		°C
Storage temperature range	T_{STG}	- 55 to + 150		°C

FEATURES

- Very low profile - typical height of 0.65 mm
- Ideal for automated placement
- Low forward voltage drop, low power losses
- Caution: High reverse leakage
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- 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, 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 1A whisker test

Polarity: Color band denotes the cathode end

MSS1P2U, MSS1P3U

Vishay General Semiconductor



ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT	
Maximum instantaneous forward voltage	$I_F = 0.5\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.23	-	V
	$I_F = 1.0\text{ A}$			0.30	-	
	$I_F = 1.5\text{ A}$			0.35	0.40	
	$I_F = 0.5\text{ A}$	$T_J = 85\text{ }^\circ\text{C}$		0.16	-	
	$I_F = 1.0\text{ A}$			0.24	-	
	$I_F = 1.5\text{ A}$			0.30	0.35	
Maximum reverse current	Rated V_R	$I_R^{(2)}$	$T_J = 25\text{ }^\circ\text{C}$	0.4	1.2	μA
			$T_J = 125\text{ }^\circ\text{C}$	12	30	mA
Typical junction capacitance	4.0 V, 1 MHz	C_J	68	-	pF	

Notes

- Reverse power dissipation and the possibility of thermal runaway must be considered when operating this device under any reverse voltage conditions. Calculations of T_J therefore must include forward and reverse power effects.

(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	MSS1P3U	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$	170	$^\circ\text{C/W}$
	$R_{\theta JM}^{(1)}$	30	

Note

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

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
MSS1P3U-M3/89A	0.006	89A	4500	7" diameter plastic tape and reel

RATINGS AND CHARACTERISTICS CURVES

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

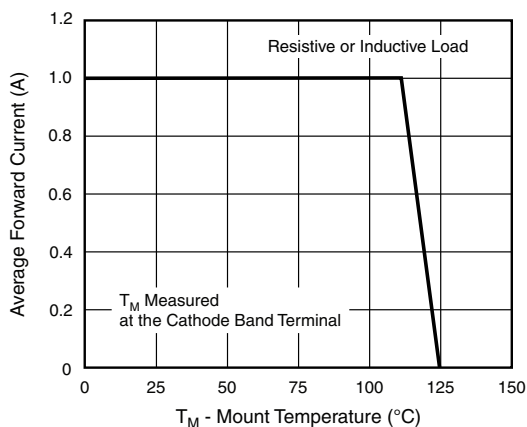


Fig. 1 - Maximum Forward Current Derating Curve

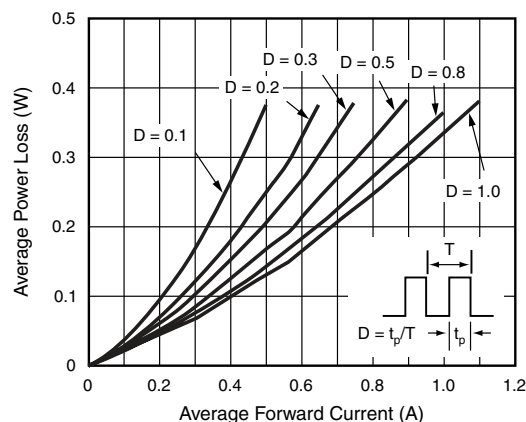


Fig. 2 - Forward Power Loss Characteristics

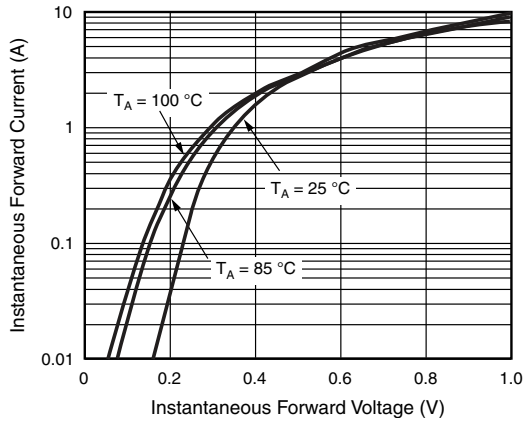


Fig. 3 - Typical Instantaneous Forward Characteristics

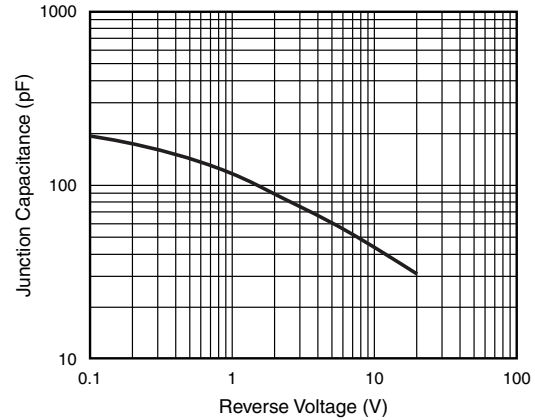


Fig. 5 - Typical Junction Capacitance

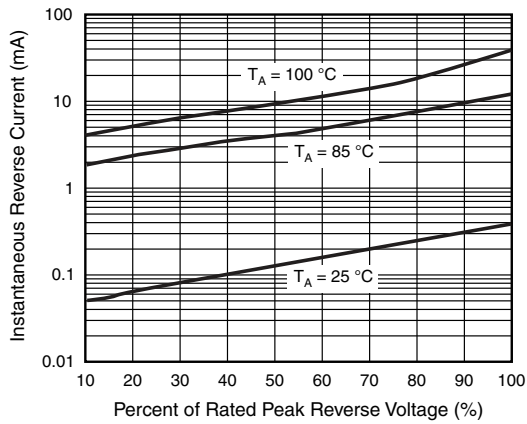


Fig. 4 - Typical Reverse Characteristics

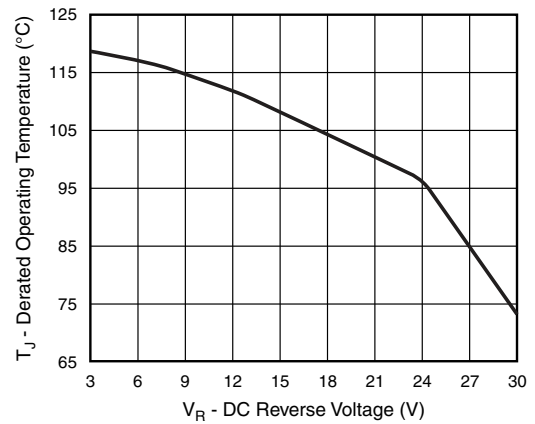
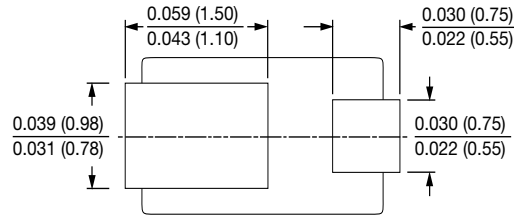
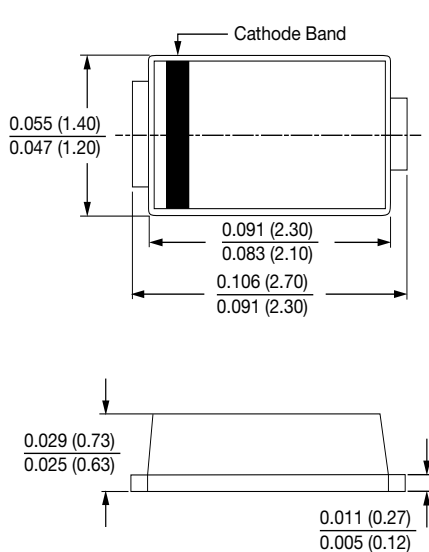


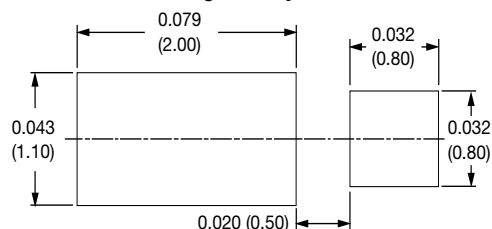
Fig. 6 - Typical Operating Temperature Derating

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

MicroSMP



Mounting Pad Layout





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