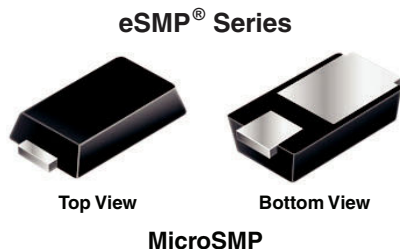




## Ultra Low $V_F$ Surface Mount Schottky Barrier Rectifiers



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 <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT	
Maximum instantaneous forward voltage	I <sub>F</sub> = 0.5 A	T <sub>J</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.23	-	V
	I <sub>F</sub> = 1.0 A			0.30	-	
	I <sub>F</sub> = 1.5 A			0.35	0.40	
	I <sub>F</sub> = 0.5 A	T <sub>J</sub> = 85 °C		0.16	-	
	I <sub>F</sub> = 1.0 A			0.24	-	
	I <sub>F</sub> = 1.5 A			0.30	0.35	
Maximum reverse current	Rated V <sub>R</sub>	T <sub>J</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	0.4	1.2	μA
		T <sub>J</sub> = 125 °C		12	30	mA
Typical junction capacitance	4.0 V, 1 MHz	C <sub>J</sub>	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<sub>J</sub> therefore must include forward and reverse power effects.

<sup>(1)</sup> Pulse test: 300 μs pulse width, 1 % duty cycle

<sup>(2)</sup> Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	MSS1P3U	UNIT
Typical thermal resistance	R <sub>θJA</sub> <sup>(1)</sup>	170	°C/W
	R <sub>θJM</sub> <sup>(1)</sup>	30	

**Note**

<sup>(1)</sup> Free air, mounted on recommended copper pad area. Thermal resistance R<sub>θJA</sub> - junction to ambient, R<sub>θJM</sub> - 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<sub>A</sub> = 25 °C unless otherwise noted)

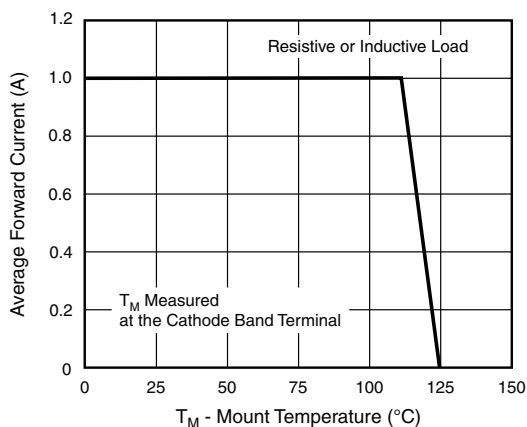


Fig. 1 - Maximum Forward Current Derating Curve

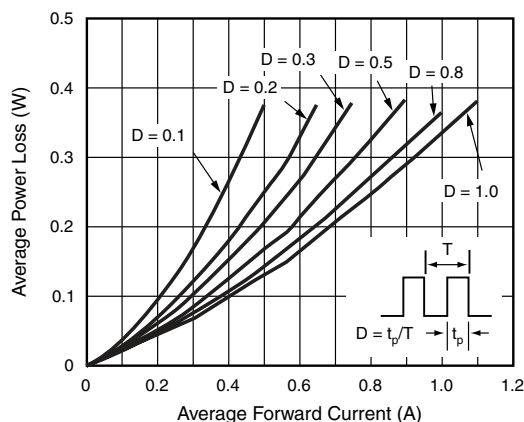


Fig. 2 - Forward Power Loss Characteristics

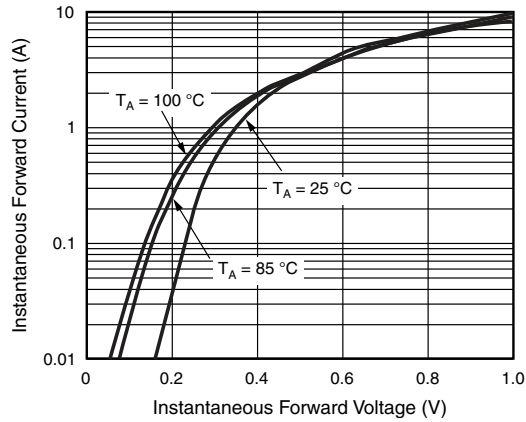


Fig. 3 - Typical Instantaneous Forward Characteristics

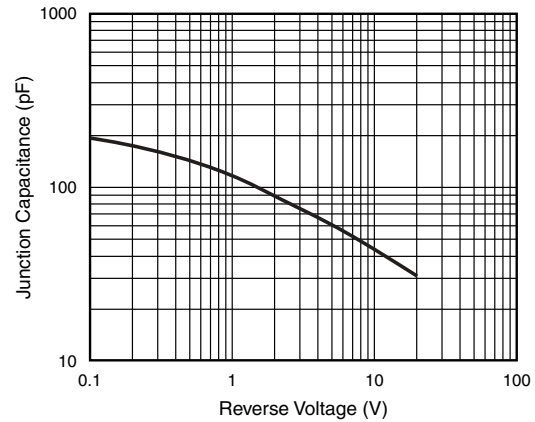


Fig. 5 - Typical Junction Capacitance

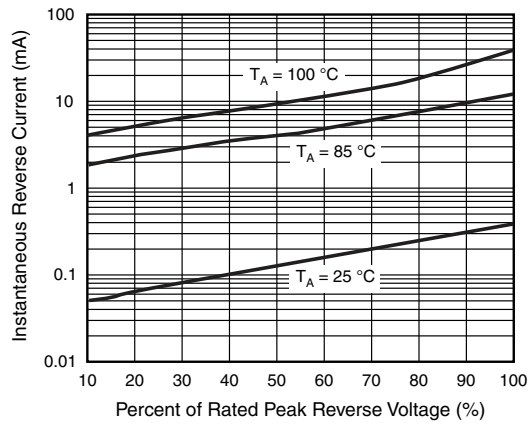


Fig. 4 - Typical Reverse Characteristics

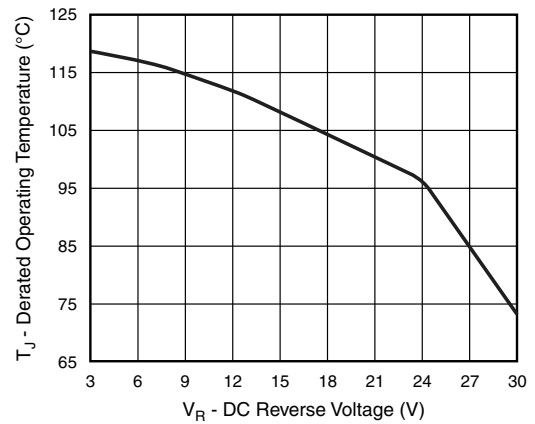
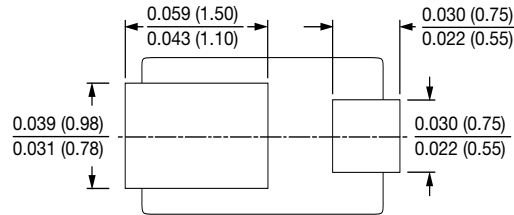
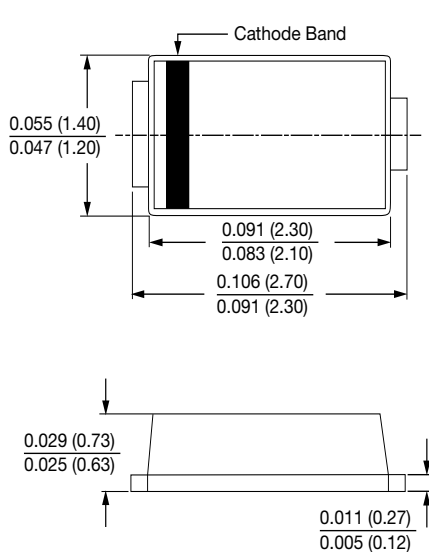


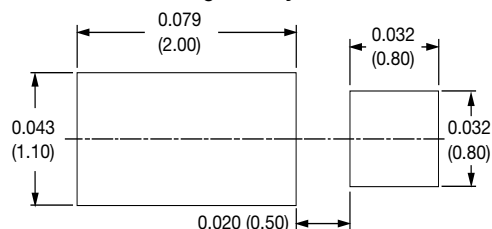
Fig. 6 - Typical Operating Temperature Derating

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**MicroSMP**



**Mounting Pad Layout**





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