MSS1P2U & MSS1P3U

Vishay General Semiconductor

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 A
V_{RRM}	20 V, 30 V
I_{FSM}	30 A
V_F at I_F = 1.0 A	0.30 V
T_J max.	125 °C

APPLICATIONS

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

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 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**	**MSS1P2U**	**MSS1P3U**	**UNIT**
Device marking code		12U	13U	
Maximum repetitive peak reverse voltage	V_{RRM}	20	30	V
Maximum average forward rectified current at T_M = 110 °C	I_F	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

For technical questions within your region, please contact one of the following:
PDD-Americas@vishay.com, PDD-Asia@vishay.com, PDD-Europe@vishay.com

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage (1)	I_F = 0.1 A I_F = 0.5 A I_F = 1.0 A	T_A = 25 °C	V_F	0.23 0.30 0.35	- - 0.40	V
	I_F = 0.1 A I_F = 0.5 A I_F = 1.0 A	T_A = 85 °C		0.16 0.24 0.30	- - 0.35	
Reverse current per diode (2)	V_R = 30 V	T_A = 25 °C T_A = 85 °C	I_R	0.4 12	1.2 30	mA
Typical junction capacitance	4.0 V, 1 MHz		C_J	68	-	pF

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

- 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.

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	MSS1P2U	MSS1P3U	UNIT
Typical thermal resistance (1)	$R_{\theta JA}$ $R_{\theta JM}$	170 30		°C/W

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 °C unless otherwise noted)

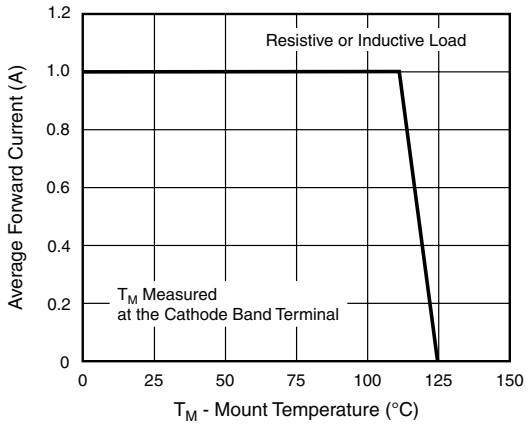

Figure 1. Maximum Forward Current Derating Curve

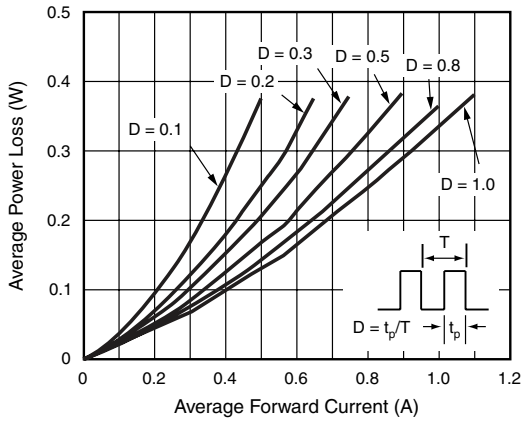

Figure 2. Forward Power Loss Characteristics

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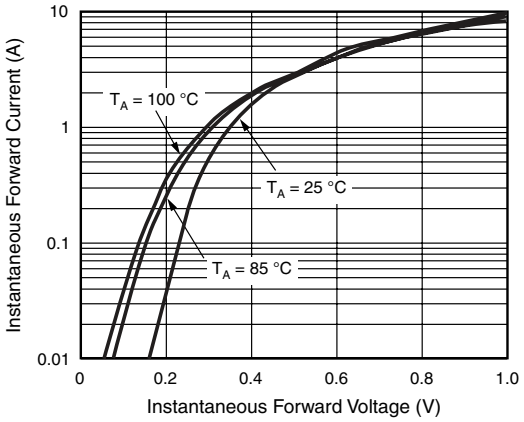


Figure 3. Typical Instantaneous Forward Characteristics

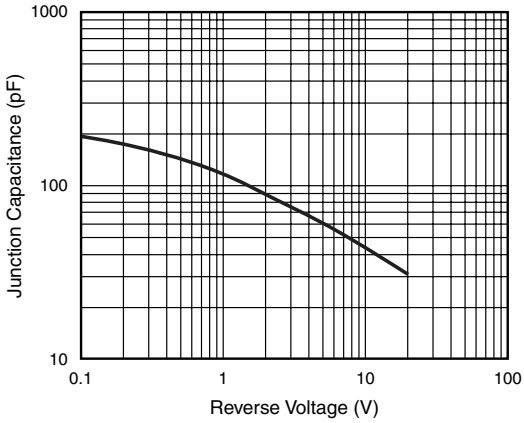


Figure 5. Typical Junction Capacitance

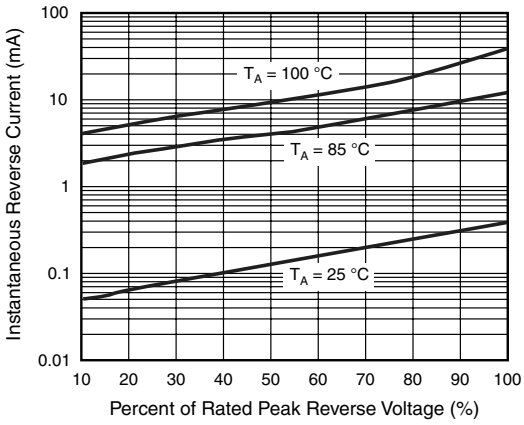


Figure 4. Typical Reverse Characteristics

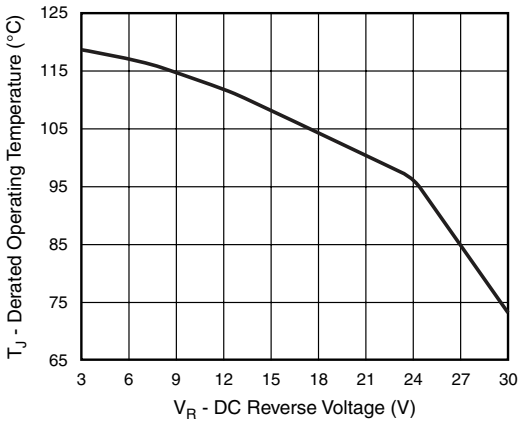
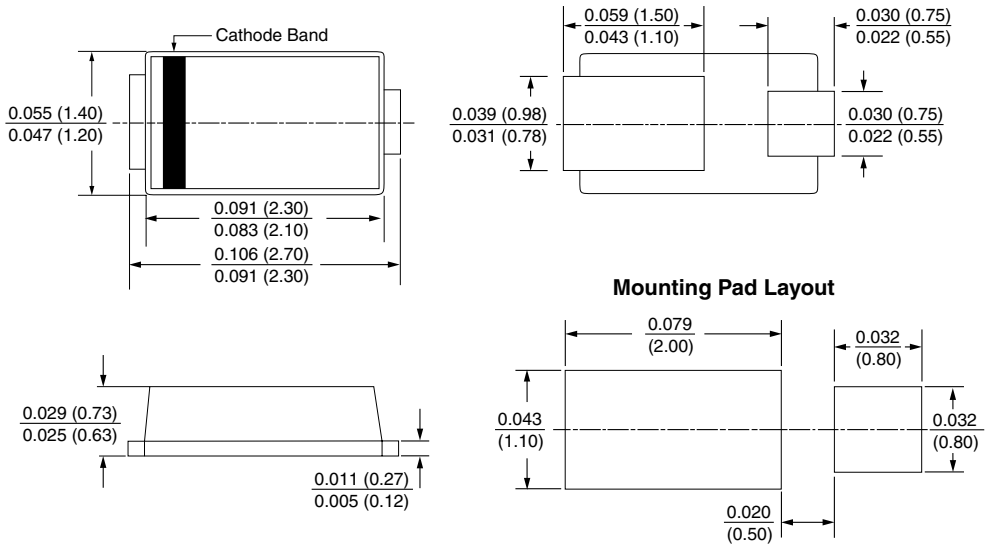


Figure 6. Typical Operating Temperature Derating

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

MicroSMP



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