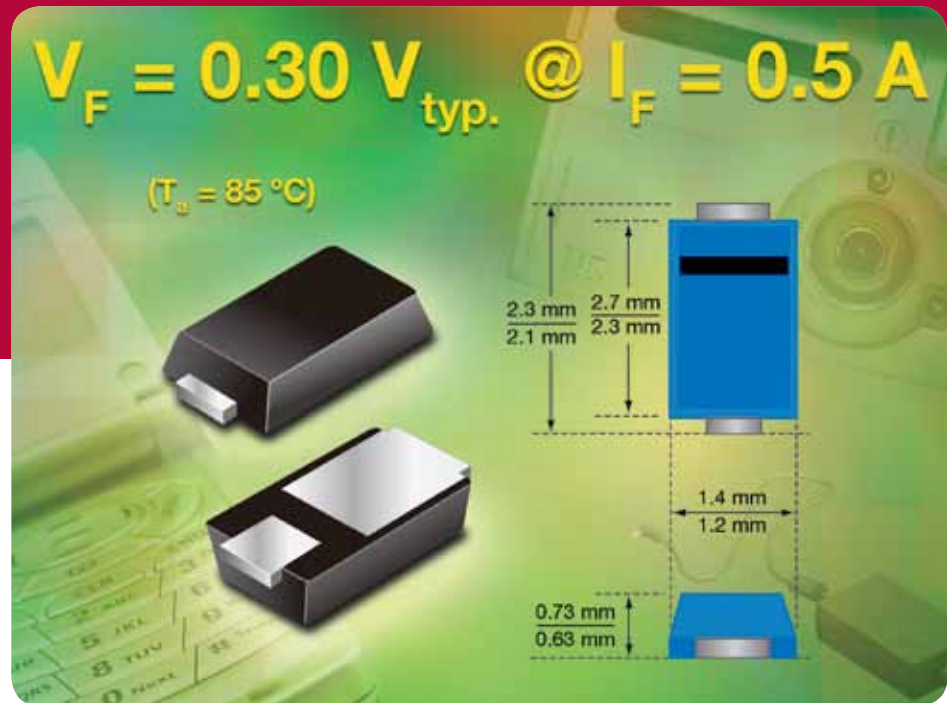




## SCHOTTKY RECTIFIERS IN eSMP™

MSS1P2U and MSS1P3U



### 1-A, 20-V and 30-V Ultra-Low- $V_F$ Schottky Barrier Rectifiers in Low-Profile Surface-Mount Package

#### KEY BENEFITS

- Feature ultra-low maximum forward voltage drops at  $I_F = 1.0$  A of 0.35 V at + 85 °C and 0.4 V at + 25 °C
- High-current-density performance up to 1 A in the miniature eSMP™ series MicroSMP package
- Measures only 2.5 mm by 1.3 mm, with a 0.65-mm profile
- Compliant to RoHS directive 2002/95/EC and in accordance with WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

#### APPLICATIONS

- Snubbers in LCD TVs and HDDs for notebook PCs
- Secondary rectifiers for miniature SMPS, adaptors, and chargers
- Polarity protection for GPS, MP3 players, PMPs, DSCs, and cell phones
- Polarity protection of power and signal lines
- Industrial systems

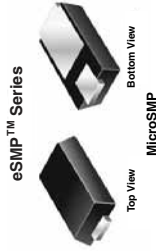
### Ultra Low $V_F$ Surface Mount Schottky Barrier Rectifiers

#### 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
- 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



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.

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	MSS1P2U	MSS1P3U
Device marking code		12U	13U
Maximum repetitive peak reverse voltage	$V_{RRM}$	20	30
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	

#### 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

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

#### Notes

- (1) Pulse test: 300  $\mu$ s pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width  $\leq 40$  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
Typical thermal resistance (1)	$R_{\theta JA}$ $R_{\theta JM}$	170 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
MSS1P3U-M389A	0.006	89A	4500

DELIVERY MODE	
7" diameter plastic tape and reel	

#### RATINGS AND CHARACTERISTICS CURVES

( $T_A = 25$  °C unless otherwise noted)

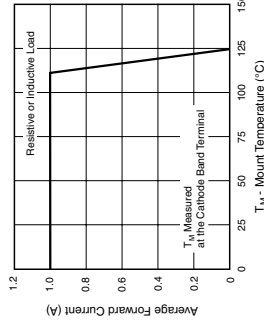


Figure 1. Maximum Forward Current Derating Curve

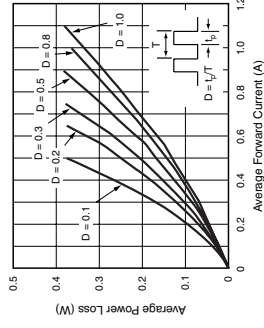


Figure 2. Forward Power Loss Characteristics

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