



# High Current Density Surface Mount Schottky Barrier Rectifiers

eSMP™ Series



DO-220AA (SMP)

### FEATURES

- Very low profile - typical height of 1.0 mm
- Ideal for automated placement
- Low forward voltage drop, low power losses
- High efficiency
- Low thermal resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



RoHS COMPLIANT

### TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, dc-to-dc converters, and polarity protection applications.

(Note: These devices are not Q101 qualified.)

### MECHANICAL DATA

Case: DO-220AA (SMP)

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test

Polarity: Color band denotes the cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1 A
$V_{RRM}$	30 V, 40 V
$I_{FSM}$	30 A
$E_{AS}$	10 mJ
$V_F$	0.40 V, 0.45 V
$T_J$ max.	150 °C

MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)				
PARAMETER	SYMBOL	SS1P3	SS1P4	UNIT
Device marking code		13	14	
Maximum repetitive peak reverse voltage	$V_{RRM}$	30	40	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	$I_{FSM}$	30		A
Non-repetitive avalanche energy at $I_{AS} = 1.5\text{ A}$ , $L = 10\text{ mH}$ , $T_J = 25\text{ °C}$	$E_{AS}$	10		mJ
Voltage rate of change (rated $V_R$ )	$dV/dt$	10 000		V/ $\mu$ s
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150		°C

ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ °C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	SS1P3	SS1P4	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	$I_F = 1.0\text{ A}$	$T_J = 25\text{ °C}$	$V_F$	0.50	0.53	V
	$I_F = 1.0\text{ A}$	$T_J = 125\text{ °C}$				
Maximum reverse current at rated $V_R$ <sup>(2)</sup>			$I_R$	150		$\mu$ A
				15		mA
Typical junction capacitance	4.0 V, 1 MHz		$C_J$	70		pF

Notes:

(1) Pulse test: 300  $\mu$ s pulse width, 1 % duty cycle

(2) Pulse test: Pulse width  $\leq$  40 ms

# SS1P3 & SS1P4

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THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	SS1P3	SS1P4	UNIT
Typical thermal resistance <sup>(1)</sup>	R <sub>θJA</sub>	105		°C/W
	R <sub>θJL</sub>	15		
	R <sub>θJC</sub>	25		

**Note:**

(1) Thermal resistance from junction to ambient and junction to lead mounted on P.C.B. with 5.0 x 5.0 mm copper pad areas R<sub>θJL</sub> is measured at the terminal of cathode band. R<sub>θJC</sub> is measured at the top centre of the body

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SS1P3-E3/84A	0.024	84A	3000	7" diameter plastic tape and reel
SS1P3-E3/85A	0.024	85A	10 000	13" diameter plastic tape and reel

## RATINGS AND CHARACTERISTICS CURVES

(T<sub>A</sub> = 25 °C unless otherwise noted)

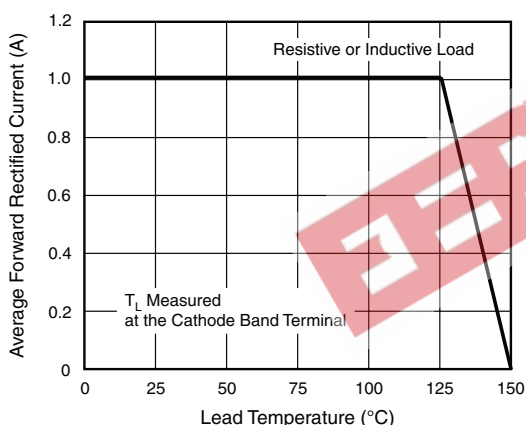


Figure 1. Maximum Forward Current Derating Curve

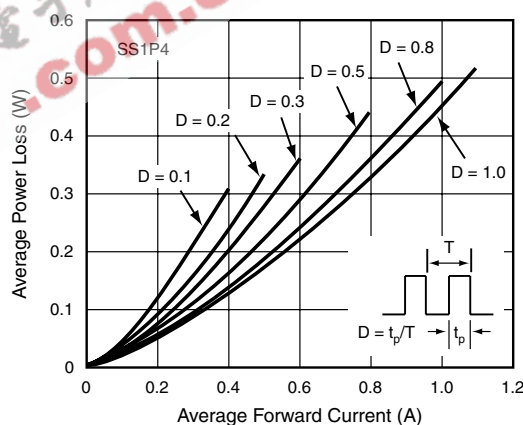


Figure 3. Forward Power Loss Characteristics

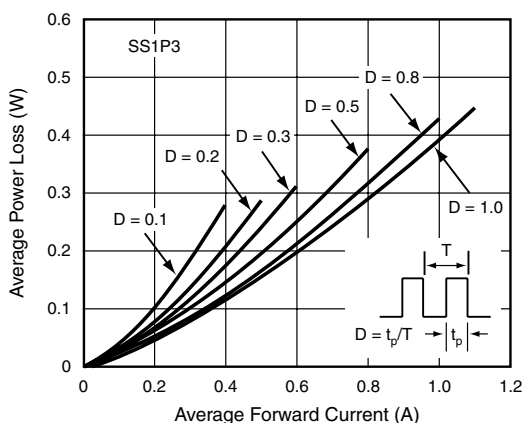


Figure 2. Forward Power Loss Characteristics

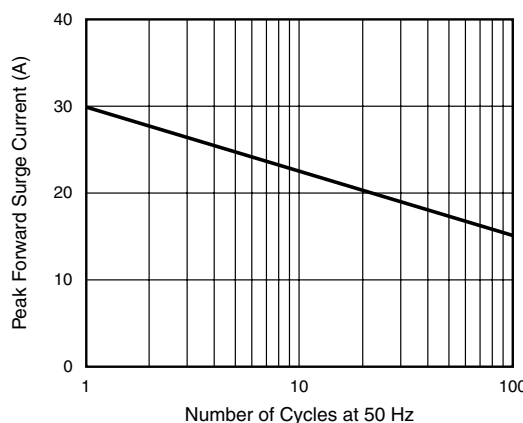


Figure 4. Typical Instantaneous Forward Characteristics

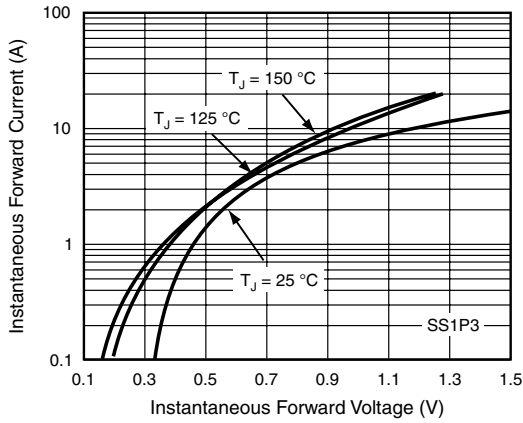


Figure 5. Typical Instantaneous Forward Characteristics

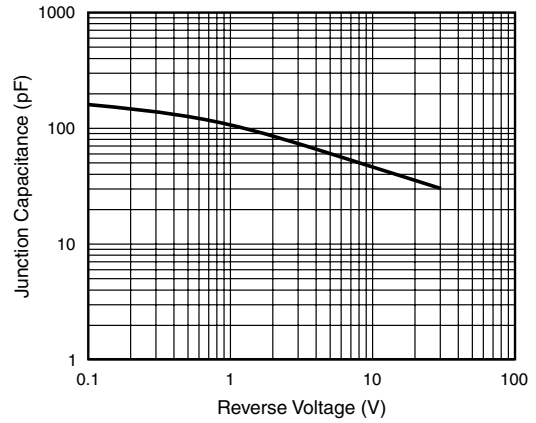


Figure 8. Typical Junction Capacitance

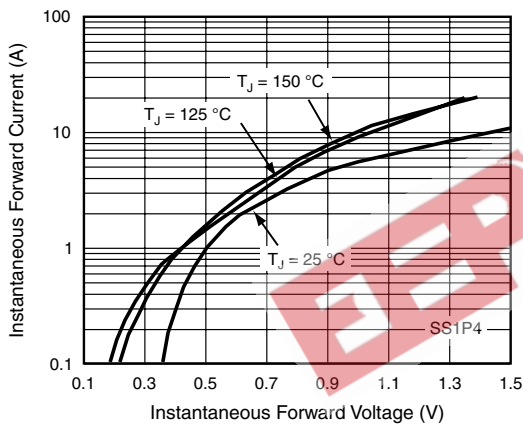


Figure 6. Typical Instantaneous Forward Characteristics

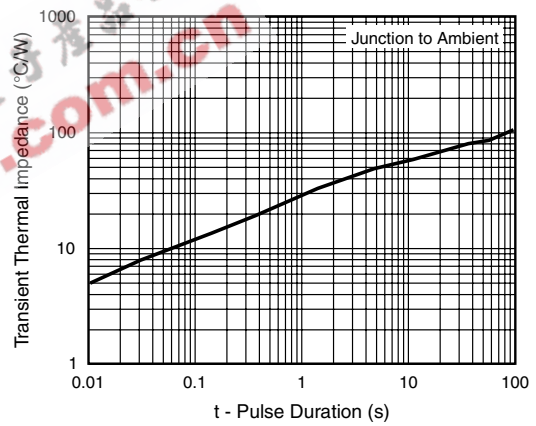


Figure 9. Typical Transient Thermal Impedance

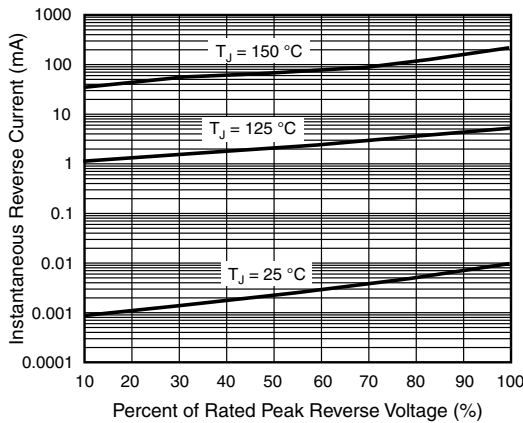


Figure 7. Typical Reverse Leakage Characteristics

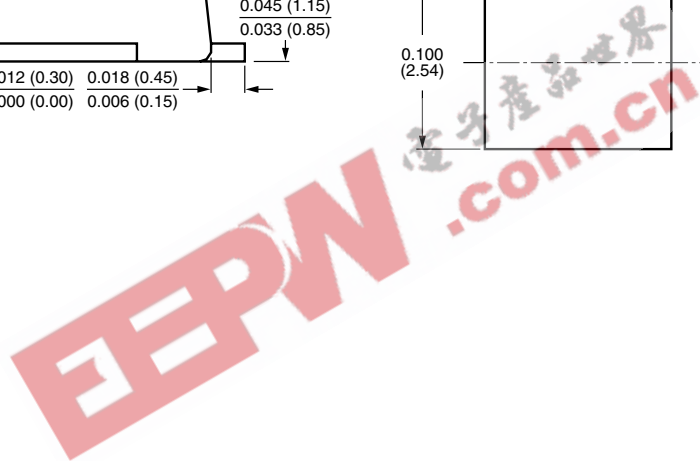
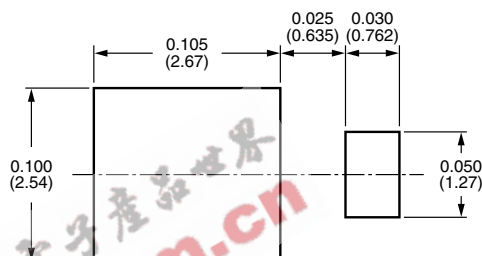
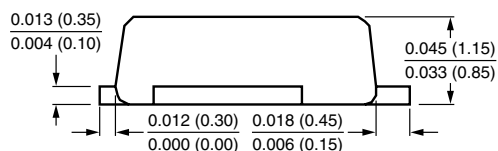
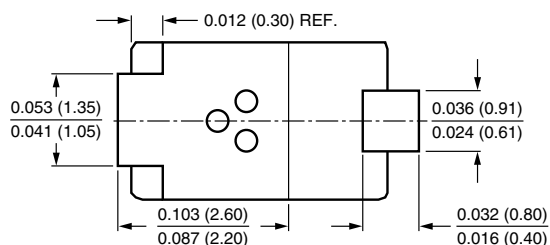
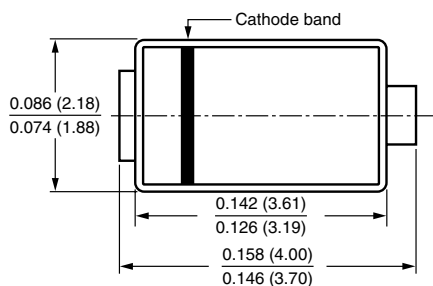
# SS1P3 & SS1P4

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## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### DO-220AA (SMP)





### Disclaimer

All product specifications and data are subject to change without notice.

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