

## 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-020C, LF max peak of 260 °C
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

**Case:** DO-220AA (SMP)

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

**Polarity:** Color band denotes the cathode end

MAJOR RATINGS AND CHARACTERISTICS	
$I_{F(AV)}$	2 A
$V_{RRM}$	20 V, 30 V, 40 V
$I_{FSM}$	50 A
$E_{AS}$	11.25 mJ
$V_F$	0.50 V
$T_j$ max.	150 °C

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)					
PARAMETER	SYMBOL	SS2P2	SS2P3	SS2P4	UNIT
Device marking code		22	23	24	
Maximum repetitive peak reverse voltage	$V_{RRM}$	20	30	40	V
Maximum average forward rectified current (see Fig. 1)	$I_{F(AV)}$	2.0			A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	50			A
Non-repetitive avalanche energy at $I_{AS} = 1.5$ A, $L = 10$ mH, $T_j = 25$ °C	$E_{AS}$	11.25			mJ
Voltage rate of change (rated $V_R$ )	dv/dt	10000			V/us
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150			°C

ELECTRICAL CHARACTERISTICS ( $T_A = 25$ °C unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	TYP	MAX.	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	at $I_F = 2$ A, $T_j = 25$ °C at $I_F = 2$ A, $T_j = 125$ °C	$V_F$	0.50 0.43	0.55 0.50	V
Maximum reverse current at rated $V_R$ <sup>(1)</sup>	$T_j = 25$ °C $T_j = 125$ °C	$I_R$	- 8	150 15	$\mu$ A mA
Typical junction capacitance	at 4.0 V, 1 MHz	$C_J$	110		pF

**Note:**

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



THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	SS2P2	SS2P3	SS2P4	UNIT
Typical thermal resistance <sup>(1)</sup>	$R_{\theta JA}$		115		$^\circ\text{C/W}$
	$R_{\theta JL}$		15		
	$R_{\theta JC}$		20		

**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.  $R_{\theta JL}$  is measured at the terminal of cathode band.  $R_{\theta JC}$  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
SS2P4-E3/84A	0.024	84A	3000	7" Diameter Plastic Tape & Reel
SS2P4-E3/85A	0.024	85A	10000	13" Diameter Plastic Tape & Reel
SS2P4HE3/84A <sup>(1)</sup>	0.024	84A	3000	7" Diameter Plastic Tape & Reel
SS2P4HE3/85A <sup>(1)</sup>	0.024	85A	10000	13" Diameter Plastic Tape & Reel

**Note:**

(1) Automotive grade AEC Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES**

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

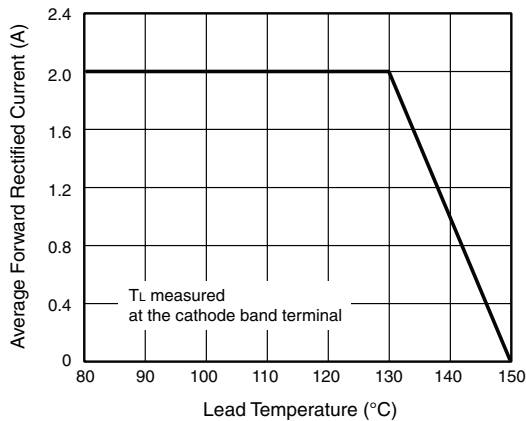


Figure 1. Forward Current Derating Curve

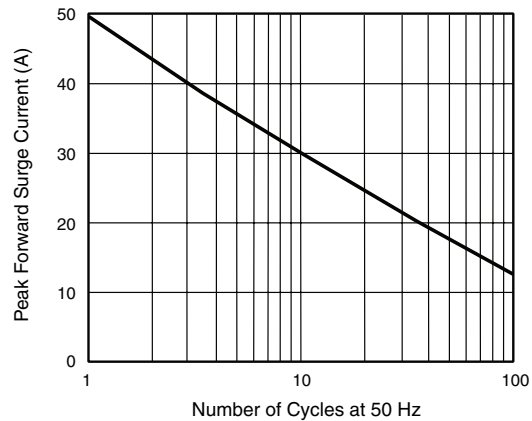


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

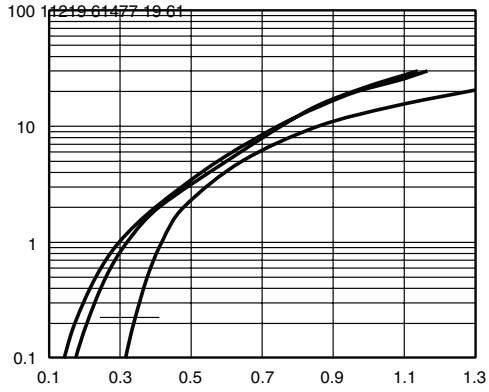


Figure 3. Typical Instantaneous Forward Characteristics

Figure 4. Typical Reverse Leakage Characteristics

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



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