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, freewheelling, dc-to-dc converters, and polarity protection applications.

PRIMARY 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

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, HE3 suffix for high reliability grade (AEC Q101 qualified), meets JESD 201 class 2 whisker test

Polarity: Color band denotes the cathode end

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	SS2P2	SS2P3	SS2P4	UNIT
Device marking code		22	23	24	
Maximum repetive peak reverse voltage	V_{RRM}	20	30	40	V
Maximum average forward rectified current (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	10 000			V/µs
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 (1)	I_F = 2 A I_F = 2 A	T_J = 25 °C T_J = 125 °C	V_F	0.50 0.43	0.55 0.50	V
Maximum reverse current at rated V_R (2)		T_J = 25 °C T_J = 125 °C	I_R	- 8	150 15	µA mA
Typical junction capacitance	4.0 V, 1 MHz		C_J	110		pF

Notes:

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

(2) Pulse test: Pulse width ≤ 40 ms

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

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 and reel
SS2P4-E3/85A	0.024	85A	10 000	13" diameter plastic tape and reel
SS2P4HE3/84A (1)	0.024	84A	3000	7" diameter plastic tape and reel
SS2P4HE3/85A (1)	0.024	85A	10 000	13" diameter plastic tape and reel

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

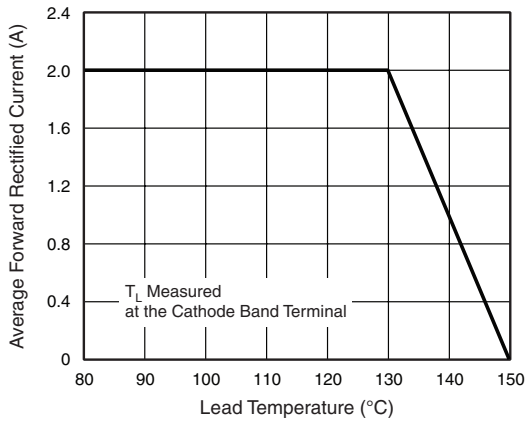


Figure 1. Forward Current Derating Curve

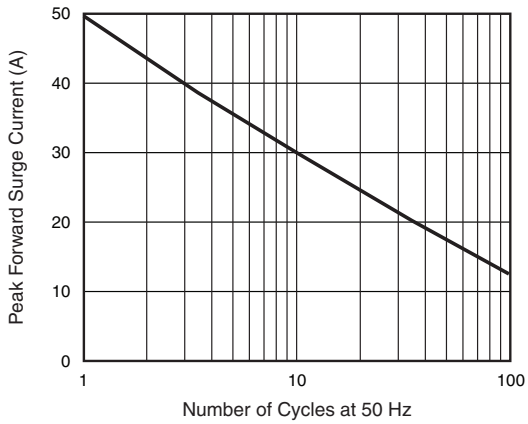


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

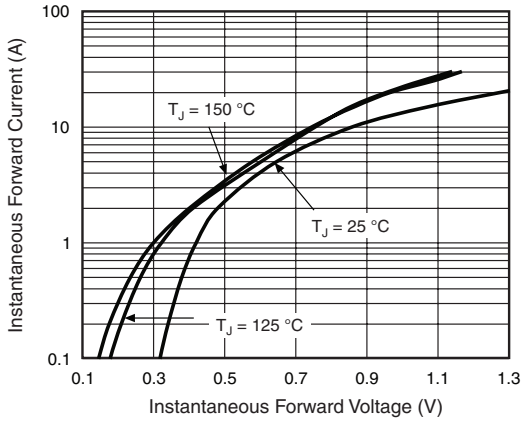


Figure 3. Typical Instantaneous Forward Characteristics

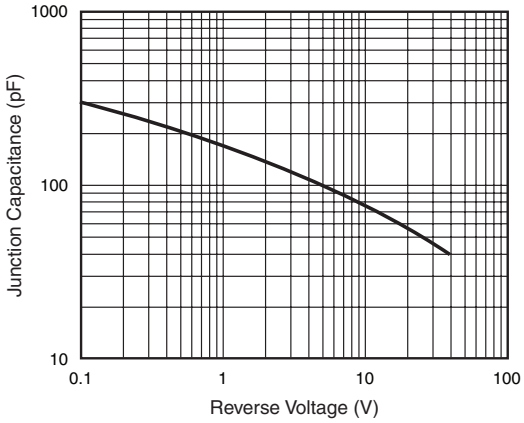


Figure 5. Typical Junction Capacitance

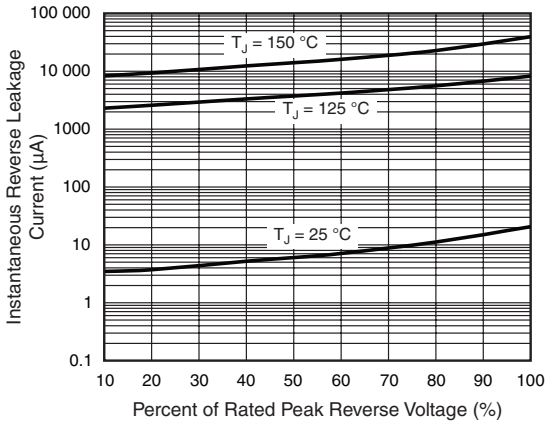


Figure 4. Typical Reverse Leakage Characteristics

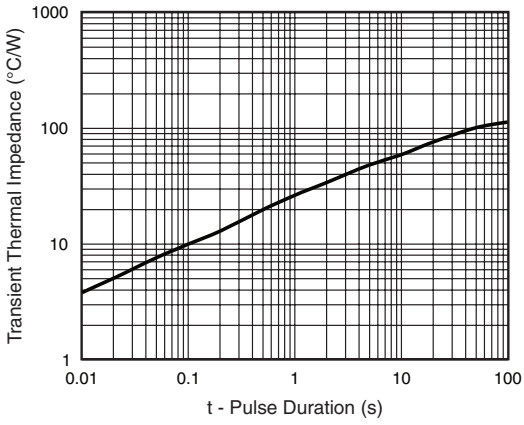
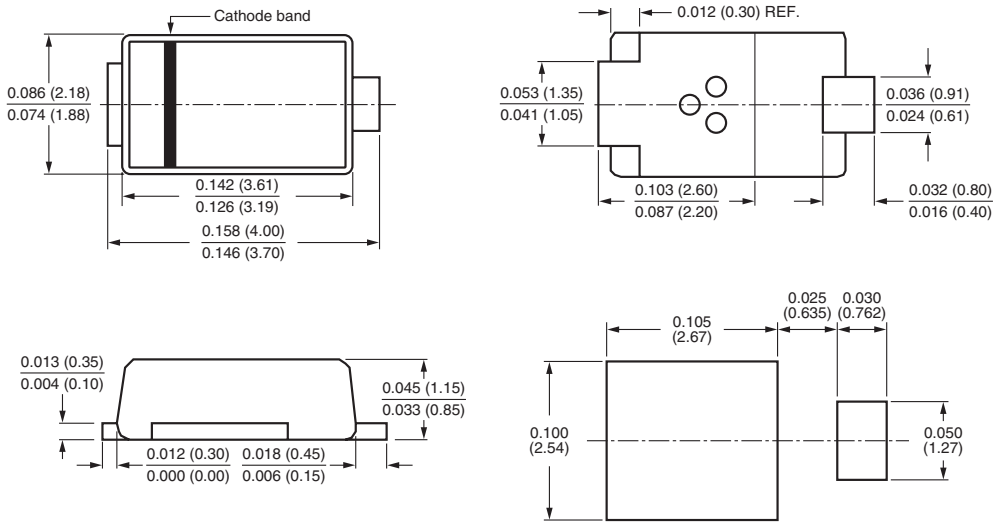


Figure 6. Typical Transient Thermal impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)



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