High Current Density Surface Mount Glass-Passivated Rectifiers

eSMP™ Series

DO-220AA (SMP)

FEATURES

- Very low profile - typical height of 1.0 mm
- Ideal for automated placement
- Glass passivated chip junction
- Low forward voltage drop
- 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

General purpose, polarity protection, and rail-to-rail protection in both consumer and automotive applications.

MAJOR RATINGS AND CHARACTERISTICS	
$I_{F(AV)}$	1 A
V_{RRM}	100 V to 1000 V
I_R	1 µA
V_F	0.95 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-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

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

PARAMETER	SYMBOL	S1PB	S1PD	S1PG	S1PJ	S1PK	S1PM	UNIT
Device marking code		SB	SD	SG	SJ	SK	SM	
Maximum repetitive peak reverse voltage	V_{RRM}	100	200	400	600	800	1000	V
Maximum RMS voltage	V_{RMS}	70	140	280	420	560	700	V
Maximum DC blocking voltage	V_{DC}	100	200	400	600	800	1000	V
Average forward current	$I_{F(AV)}$	1.0						A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	30						A
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**	**S1PB**	**S1PD**	**S1PG**	**S1PJ**	**S1PK**	**S1PM**	**UNIT**
Maximum instantaneous forward voltage (1)	at I_F = 1.0 A, T_j = 25 °C at I_F = 1.0 A, T_j = 125 °C	V_F	1.1 0.95						V
Maximum reverse current (1)	at rated V_R T_j = 25 °C T_j = 125 °C	I_R	1.0 50				1.0 100		µA
Typical reverse recovery time	at = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A	t_{rr}	1.8						µs
Typical junction capacitance time	at 4.0 V, 1 MHz	C_J	6.0						pF

Note:

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

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)								
PARAMETER	**SYMBOL**	**S1PB**	**S1PD**	**S1PG**	**S1PJ**	**S1PK**	**S1PM**	**UNIT**
Typical thermal resistance (1)	$R_{\theta JA}$ $R_{\theta JL}$ $R_{\theta JC}$	105 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. $R_{\theta JC}$ 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**
S1PJ-E3/84A	0.024	84A	3000	7" Diameter Plastic Tape & Reel
S1PJ-E3/85A	0.024	85A	10000	13" Diameter Plastic Tape & Reel
S1PJHE3/84A (1)	0.024	84A	3000	7" Diameter Plastic Tape & Reel
S1PJHE3/85A (1)	0.024	85A	10000	13" Diameter Plastic Tape & Reel

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

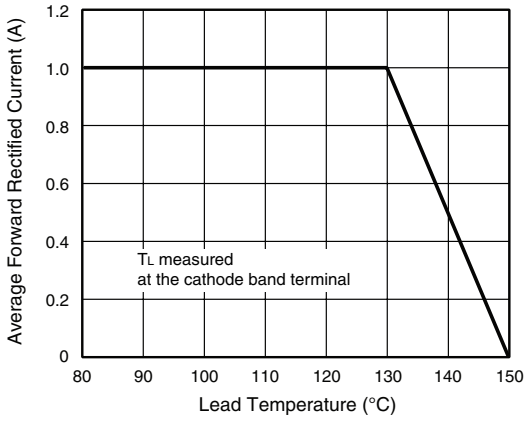


Figure 1. Maximum Forward Current Derating Curve

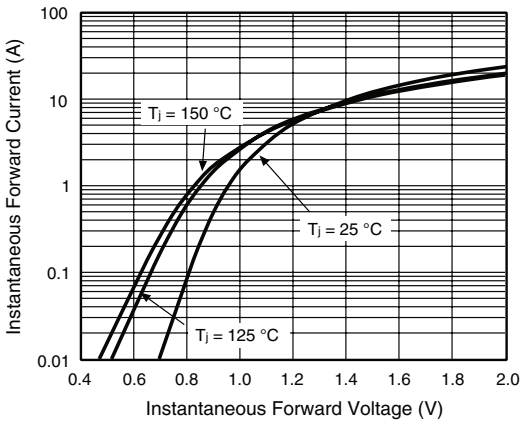


Figure 4. Typical Instantaneous Forward Characteristics

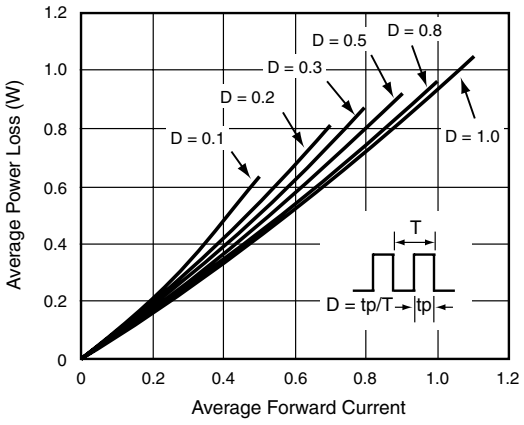


Figure 2. Forward Power Loss Characteristics

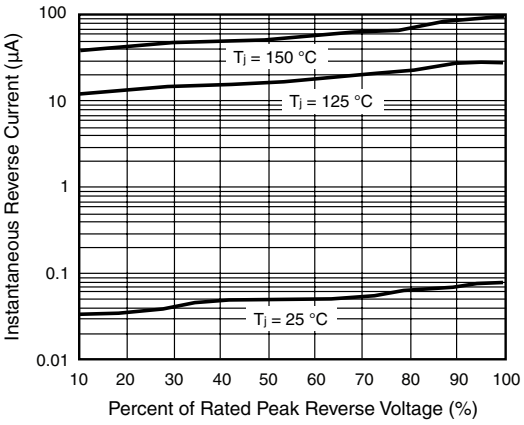


Figure 5. Typical Reverse Leakage Characteristics

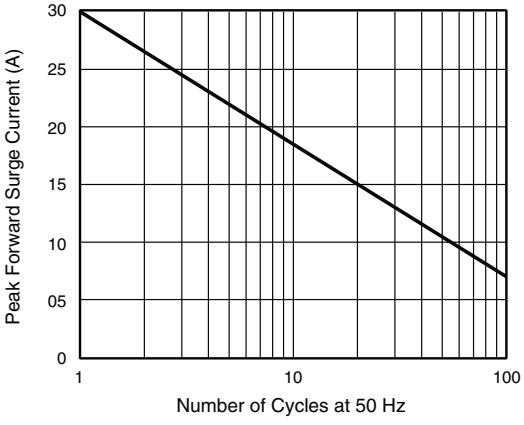


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current

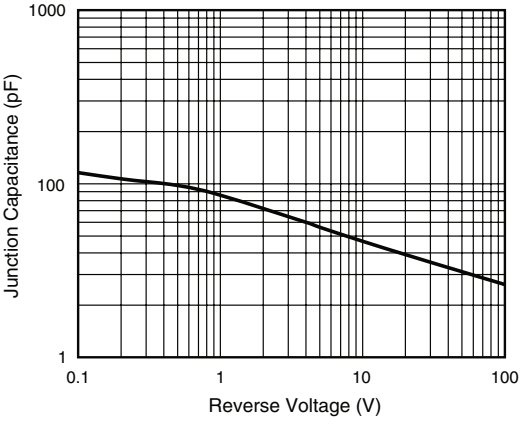


Figure 6. Typical Junction Capacitance

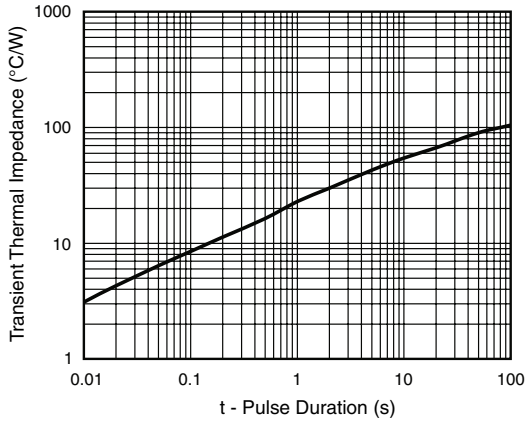
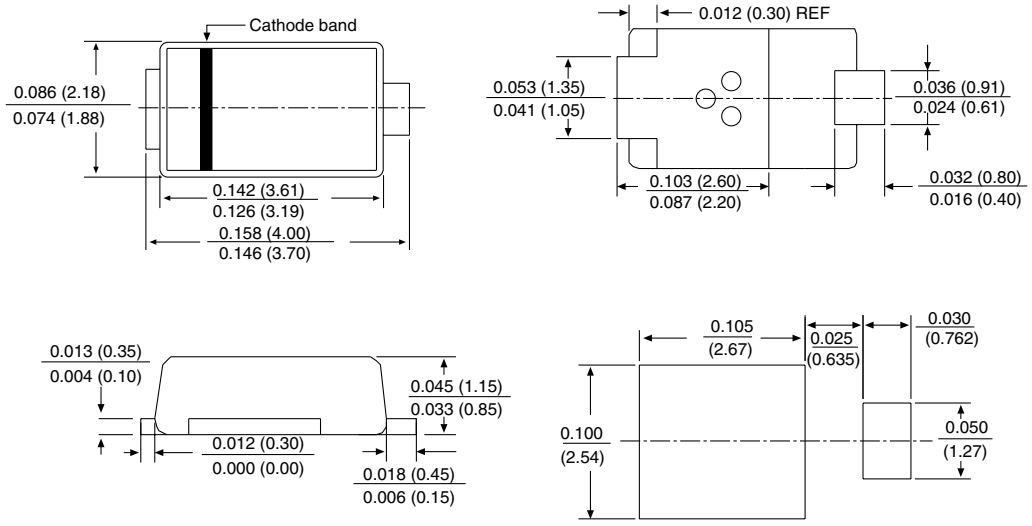


Figure 7. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)



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