

High Current Density Surface Mount Glass-Passivated Fast Switching Rectifier



DO-220AA (SMP)

FEATURES

- Very low profile - typical height of 1.0 mm
- Ideal for automated placement
- Glass passivated chip junction
- Fast switching for high efficiency
- Low thermal resistance
- High forward surge capability
- Meets MSL level 1, per J-STD-020C
- Solder Dip 260 °C, 40 seconds
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC


TYPICAL APPLICATIONS

For use in fast switching rectification of power supply, inverters, converters, and freewheeling diodes for consumer, automotive and Telecommunication.

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	
$I_{F(AV)}$	1 A
V_{RRM}	100 V, 200 V, 400 V, 600 V
I_{FSM}	30 A
t_{rr}	150 ns, 250 ns
I_R	1 μ A
$T_j \text{ max.}$	150 °C

MAXIMUM RATINGS ($T_A = 25 \text{ }^\circ\text{C}$, unless otherwise noted)						
PARAMETER	SYMBOL	RS1PB	RS1PD	RS1PG	RS1PJ	UNIT
Device marking code		RB	RD	RG	RJ	
Maximum repetitive peak reverse voltage	V_{RRM}	100	200	400	600	V
Maximum average forward rectified current (see 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
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 150				°C

ELECTRICAL CHARACTERISTICS ($T_A = 25 \text{ }^\circ\text{C}$, unless otherwise noted)							
PARAMETER	TEST CONDITION	SYMBOLS	RS1PB	RS1PD	RS1PG	RS1PJ	UNITS
Maximum instantaneous forward voltage ⁽¹⁾	at = 1.0 A	V_F	1.3				V
Maximum reverse current at rated V_R ⁽¹⁾ voltage	$T_A = 25 \text{ }^\circ\text{C}$ $T_A = 125 \text{ }^\circ\text{C}$	I_R	1.0 60				μ A
Maximum reverse recovery time	at $I_F = 0.5 \text{ A}$, $I_R = 1.0 \text{ A}$, $I_{rr} = 0.25 \text{ A}$	t_{rr}	150			250	ns
Typical junction capacitance	at 4.0 V, 1 MHz	C_J	9				pF

Note:

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

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise noted)						
PARAMETER	SYMBOL	RS1PB	RS1PD	RS1PG	RS1PJ	UNIT
Typical thermal resistance ⁽¹⁾	$R_{\theta JA}$	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				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
RS1PB-E3/84A	0.024	84A	3000	7" Diameter Plastic Tape & Reel
RS1PB-E3/85A	0.024	85A	10000	13" Diameter Plastic Tape & Reel

RATINGS AND CHARACTERISTICS CURVES

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

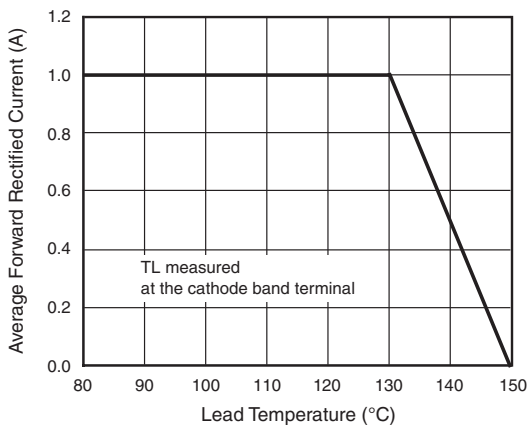


Figure 1. Maximum Forward Current Derating Curve

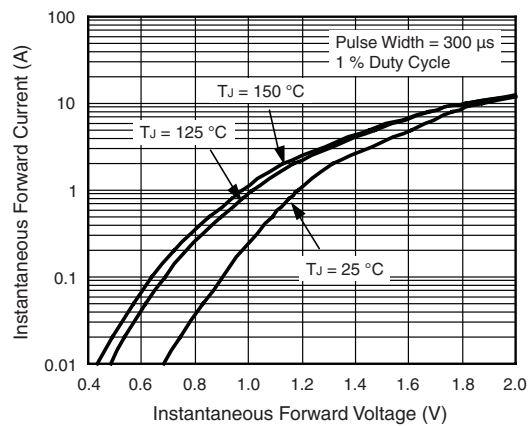


Figure 3. Typical Instantaneous Forward Characteristics

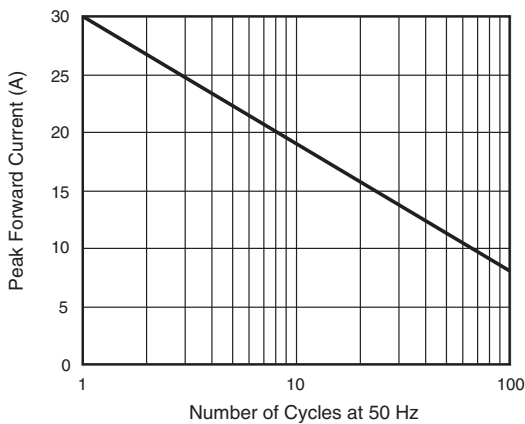


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

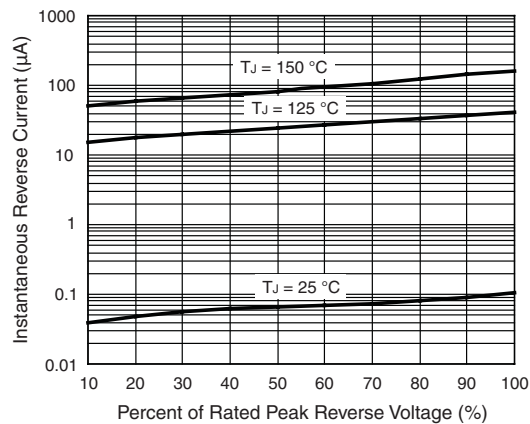


Figure 4. Typical Reverse Characteristics

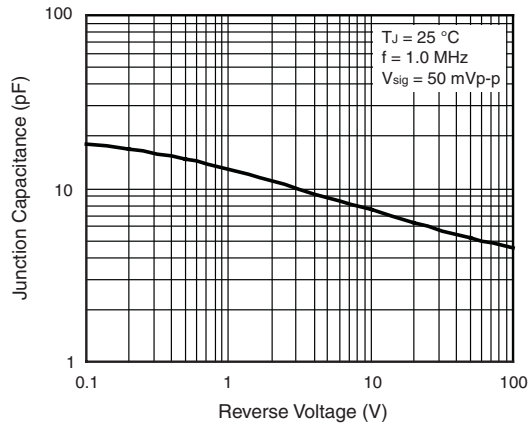


Figure 5. Typical Junction Capacitance

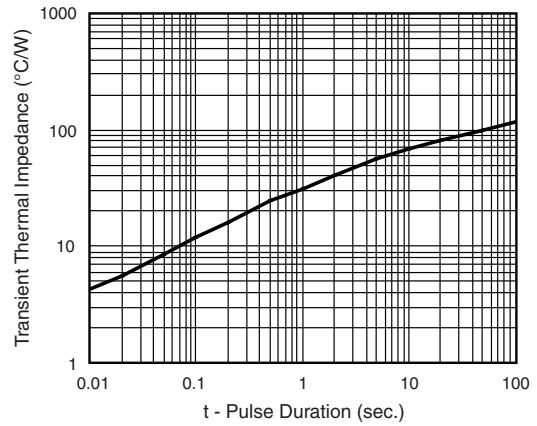


Figure 6. Typical Transient Thermal Impedance

PACKAGE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)

