

High Current Density Surface Mount Glass-Passivated Fast Switching Rectifier

eSMP™ Series



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-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 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-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

PRIMARY 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 max.	150 °C

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

PARAMETER	TEST CONDITIONS	SYMBOL	RS1PB	RS1PD	RS1PG	RS1PJ	UNIT
Maximum instantaneous forward voltage ⁽¹⁾	$I_F = 1.0$ A	V_F	1.3				V
Maximum reverse current at rated V_R voltage ⁽²⁾	$T_A = 25$ °C $T_A = 125$ °C	I_R	1.0 60				μ A
Maximum reverse recovery time	$I_F = 0.5$ A, $I_R = 1.0$ A, $I_{rr} = 0.25$ A	t_{rr}	150			250	ns
Typical junction capacitance	4.0 V, 1 MHz	C_J	9				pF

Notes:

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

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

RS1PB thru RS1PJ

Vishay General Semiconductor



THERMAL CHARACTERISTICS (T _A = 25 °C, unless otherwise noted)						
PARAMETER	SYMBOL	RS1PB	RS1PD	RS1PG	RS1PJ	UNIT
Typical thermal resistance ⁽¹⁾	R _{θJA}	115				°C/W
	R _{θJL}	15				
	R _{θJC}	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
RS1PB-E3/84A	0.024	84A	3000	7" diameter plastic tape and reel
RS1PB-E3/85A	0.024	85A	10 000	13" diameter plastic tape and reel
RS1PBHE3/84A ⁽¹⁾	0.024	84A	3000	7" diameter plastic tape and reel
RS1PBHE3/85A ⁽¹⁾	0.024	85A	10 000	13" diameter plastic tape and reel

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

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

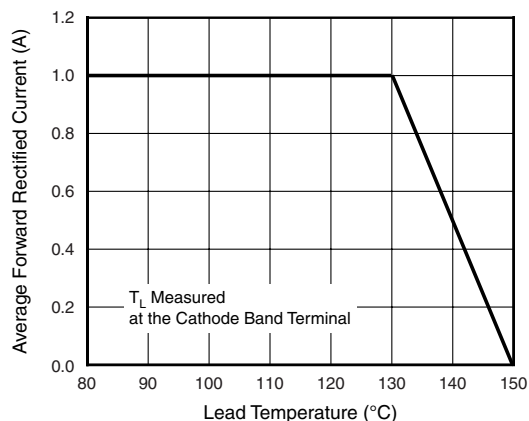


Figure 1. Maximum Forward Current Derating Curve

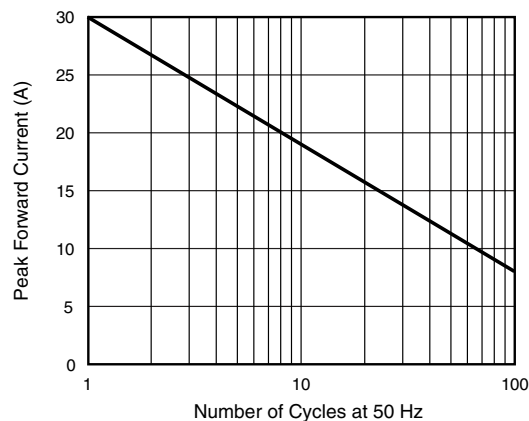


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

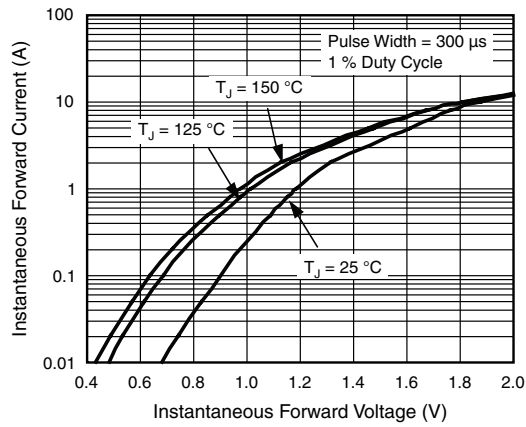


Figure 3. Typical Instantaneous Forward Characteristics

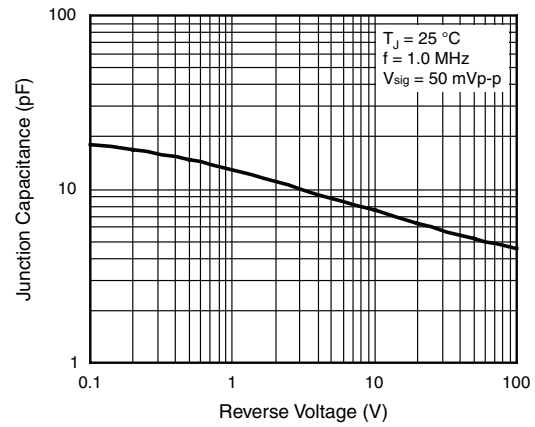


Figure 5. Typical Junction Capacitance

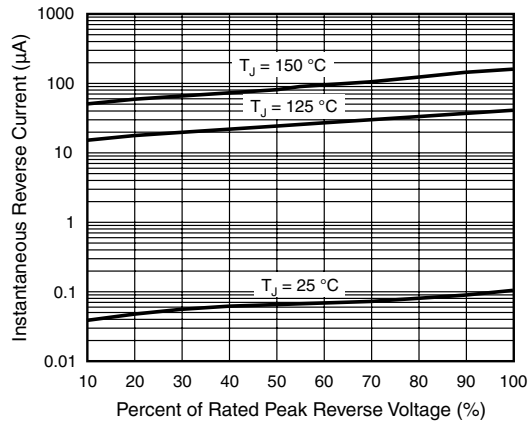


Figure 4. Typical Reverse Characteristics

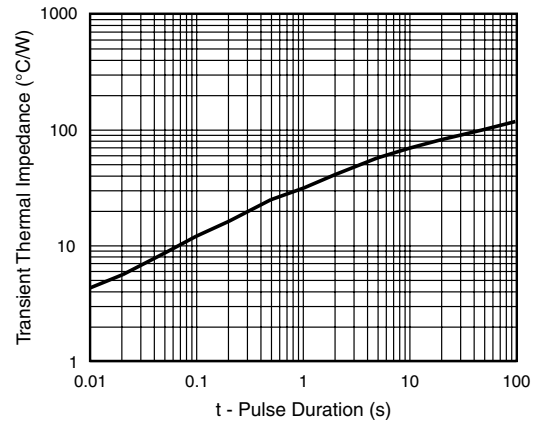


Figure 6. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)

