High Current Density Surface Mount Glass Passivated Fast Switching Rectifier

eSMP® Series

DO-220AA (SMP)

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
V_{RRM}	100 V, 200 V, 400 V, 600 V
I_{FSM}	30 A
t_{rr}	150 ns, 250 ns
I_R	1 µA
V_F	1.3 V
T_J max.	150 °C
Package	DO-220AA (SMP)
Diode variation	Single die

TYPICAL APPLICATIONS

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

FEATURES

AUTOMOTIVE GRADE Available

RoHS COMPLIANT HALOGEN FREE

- Very low profile - typical height of 1.0 mm
- Ideal for automated placement
- Glass passivated pellet 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
- AEC-Q101 qualified available
  - Automotive ordering code; base P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

MECHANICAL DATA

Case: DO-220AA (SMP)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade
Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified
Base P/NHM3_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified
("_X" denotes revision code e.g. A, B,.....)

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 and HM3 suffix 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	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	I_F = 1.0 A		V_F (1)	1.3				V
Maximum reverse current at rated V_R voltage		T_A = 25 °C	I_R (2)	1.0				µA
		T_A = 125 °C		60				
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 µs pulse width, 1 % duty cycle
(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	RS1PB	RS1PD	RS1PG	RS1PJ	UNIT
Typical thermal resistance	$R_{\theta JA}$ (1)	115				°C/W
	$R_{\theta JL}$ (1)	15				
	$R_{\theta JC}$ (1)	20				

Note

(1) Thermal resistance from junction to ambient and junction to lead mounted on PCB with 5.0 mm 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 center of the body

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
RS1PB-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel
RS1PB-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel
RS1PBHM3/84A (1)	0.024	84A	3000	7" diameter plastic tape and reel
RS1PBHM3/85A (1)	0.024	85A	10 000	13" diameter plastic tape and reel
RS1PBHM3/H (1)	0.024	H	3000	7" diameter plastic tape and reel
RS1PBHM3/I (1)	0.024	I	10 000	13" diameter plastic tape and reel

Note

(1) Automotive grade

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

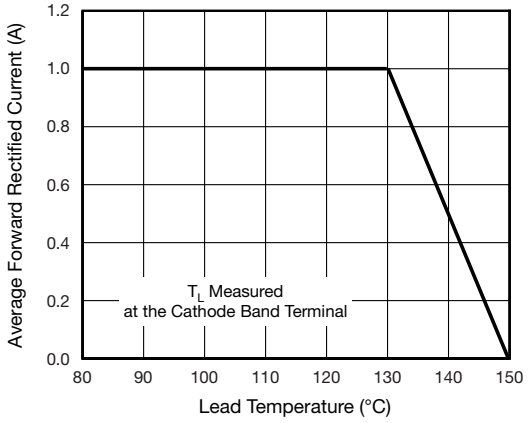


Fig. 1 - Maximum Forward Current Derating Curve

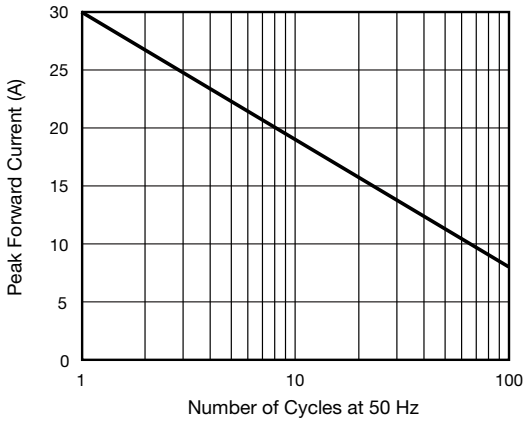


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

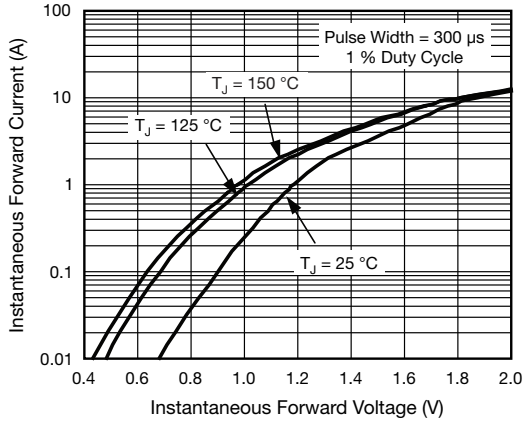


Fig. 3 - Typical Instantaneous Forward Characteristics

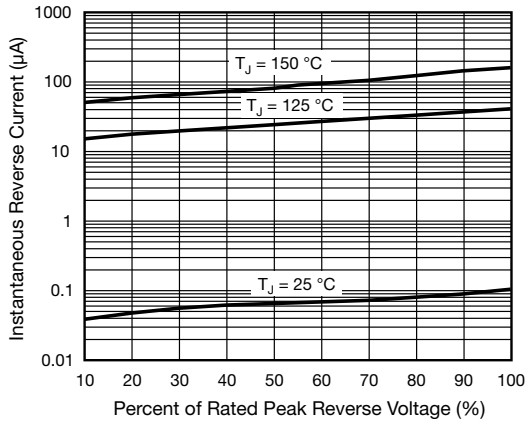


Fig. 4 - Typical Reverse Characteristics

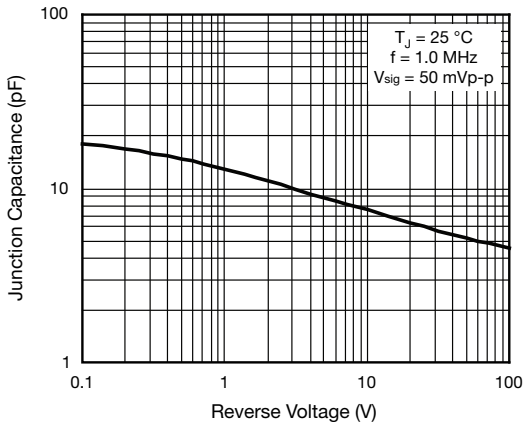


Fig. 5 - Typical Junction Capacitance

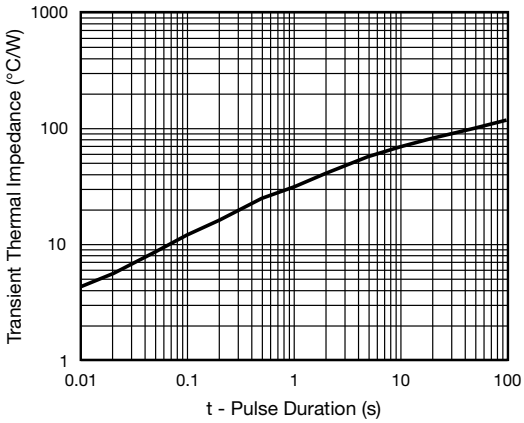
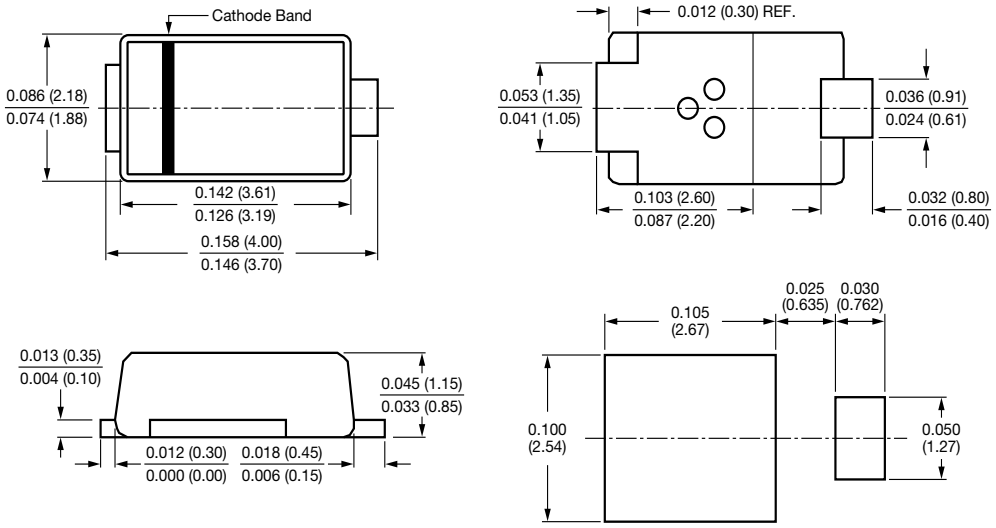


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)



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