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
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- **Halogen-free according to IEC 61249-2-21 definition**

RoHS COMPLIANT
HALOGEN FREE

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
V_{RRM}	30 V, 40 V
I_{FSM}	30 A
E_{AS}	10 mJ
V_F	0.40 V, 0.45 V
T_J max.	150 °C

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

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 1A whisker test

Polarity: Color band denotes the cathode end

TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, DC/DC converters and polarity protection applications.

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

PARAMETER	SYMBOL	SS1P3	SS1P4	UNIT
Device marking code		13	14	
Maximum repetitive peak reverse voltage	V_{RRM}	30	40	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
Non-repetitive avalanche energy at T_J = 25 °C, I_{AS} = 1.5 A, L = 10 mH	E_{AS}	10		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

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Maximum instantaneous forward voltage	I_F = 1.0 A	T_J = 25 °C	V_F (1)	0.50	0.53	V
		T_J = 125 °C		0.40	0.45	
Maximum reverse current at rated V_R		T_J = 25 °C	I_R (2)	150		μA
		T_J = 125 °C		15		mA
Typical junction capacitance	4.0 V, 1 MHz		C_J	80		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 specified)			
PARAMETER	SYMBOL	SS3P4	UNIT
Typical thermal resistance	$R_{\theta JA}$ (1)	105	°C/W
	$R_{\theta JL}$ (1)	15	
	$R_{\theta JC}$ (1)	25	

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
SS1P3-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel
SS1P3-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

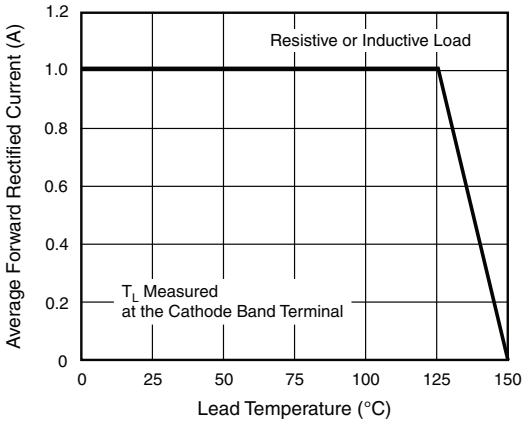

Fig. 1 - Maximum Forward Current Derating Curve

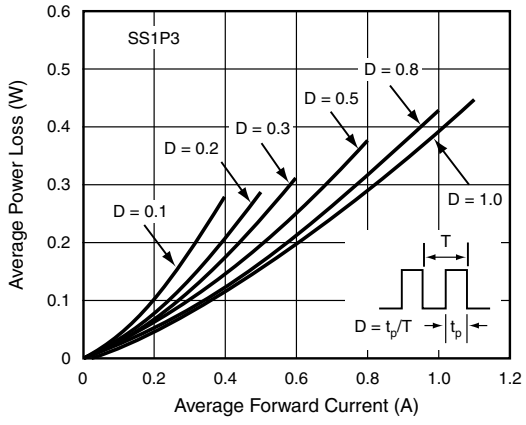

Fig. 2 - Forward Power Loss Characteristics

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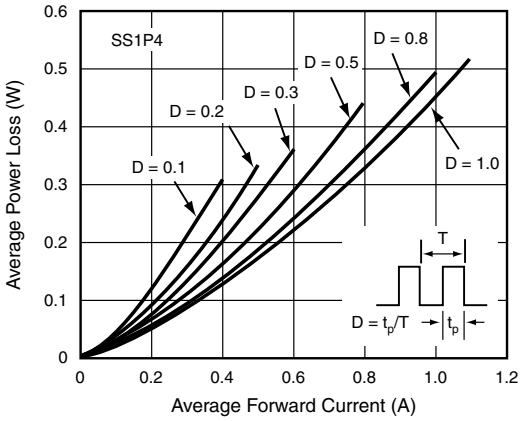


Fig. 3 - Forward Power Loss Characteristics

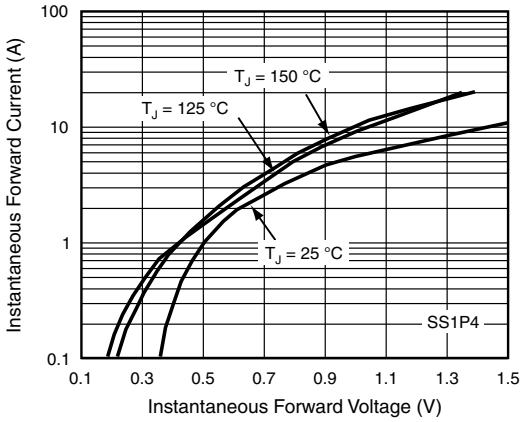


Fig. 6 - Typical Instantaneous Forward Characteristics

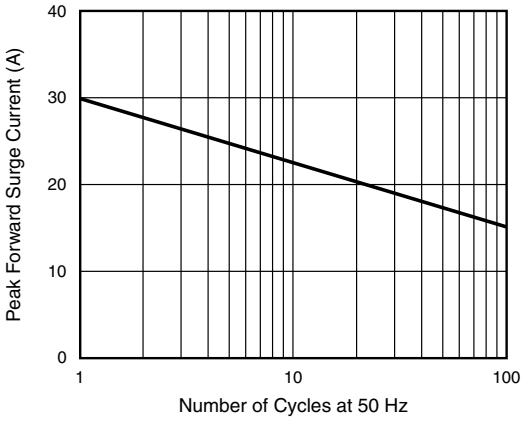


Fig. 4 - Typical Instantaneous Forward Characteristics

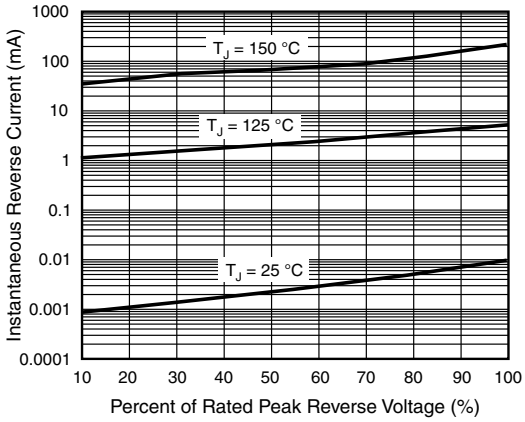


Fig. 7 - Typical Reverse Leakage Characteristics

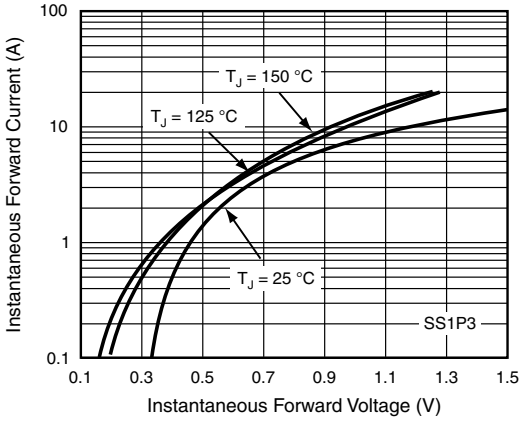


Fig. 5 - Typical Instantaneous Forward Characteristics

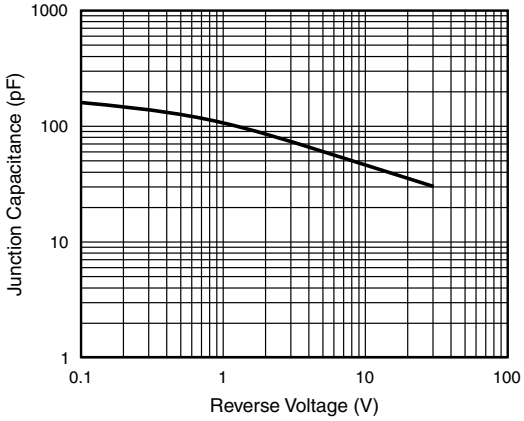


Fig. 8 - Typical Junction Capacitance

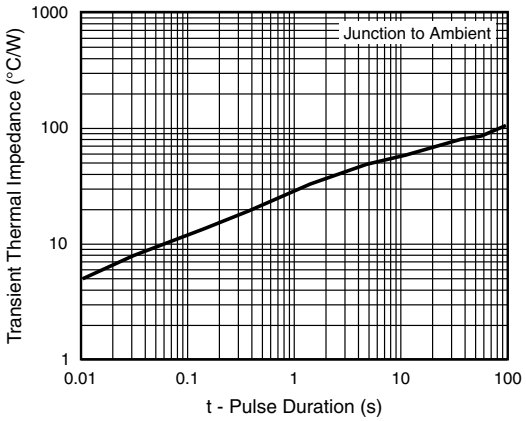
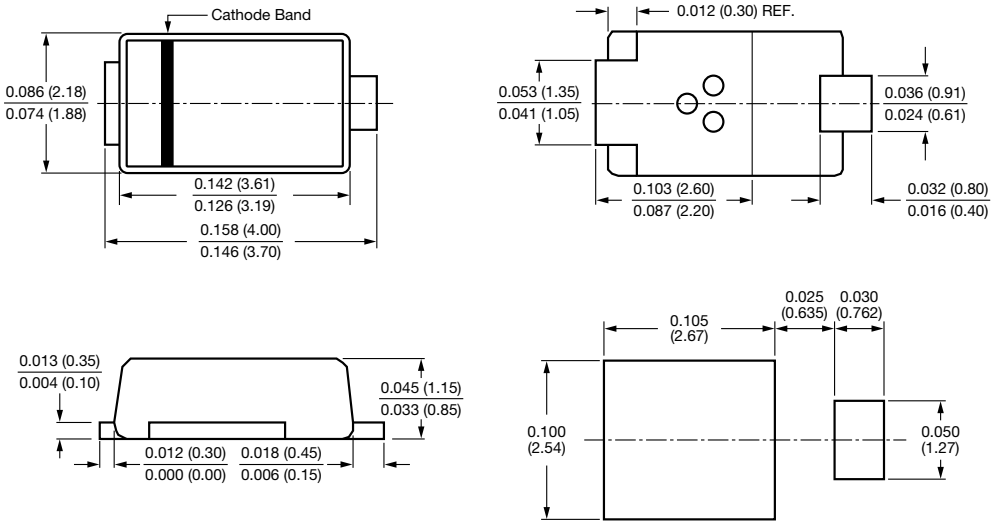


Fig. 9 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)



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