

Low V_F High Current Density Surface Mount Schottky Barrier Rectifiers


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-020C, LF max peak of 260 °C
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, free-wheeling, dc-to-dc converters, and polarity protection applications.

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}	30 V, 40 V
I_{FSM}	50 A
E_{AS}	11.25 mJ
V_F	0.35 V, 0.38 V
T_j max.	150 °C

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

PARAMETER	SYMBOL	SS1P3L	SS1P4L	UNIT
Device marking code		13L	14L	
Maximum repetitive peak reverse voltage	V_{RRM}	30	40	V
Maximum average forward rectified current (see Fig. 1) $T_L = 140$ °C $T_L = 135$ °C	$I_{F(AV)}$	1.0 1.5		A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	50		A
Non-repetitive avalanche energy at $I_{AS} = 1.5$ A, $L = 10$ mH, $T_j = 25$ °C	E_{AS}	11.25		mJ
Voltage rate of change (rated V_R)	dv/dt	10000		V/ μ s
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	SS1P3L	SS1P4L	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	0.45 0.35	0.48 0.38	V
Maximum reverse current at rated V_R ⁽¹⁾	$T_j = 25$ °C $T_j = 125$ °C	I_R	200 20	150 15	μ A mA
Typical junction capacitance	at 4.0 V, 1 MHz	C_J	110	130	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	SS1P3L	SS1P4L	UNIT
Typical thermal resistance ⁽¹⁾	$R_{\theta JA}$	105		$^{\circ}\text{C/W}$
	$R_{\theta JL}$	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
SS1P3L-E3/84A	0.024	84A	3000	7" Diameter Plastic Tape & Reel
SS1P3L-E3/85A	0.024	85A	10000	13" Diameter Plastic Tape & Reel

RATINGS AND CHARACTERISTICS CURVES

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

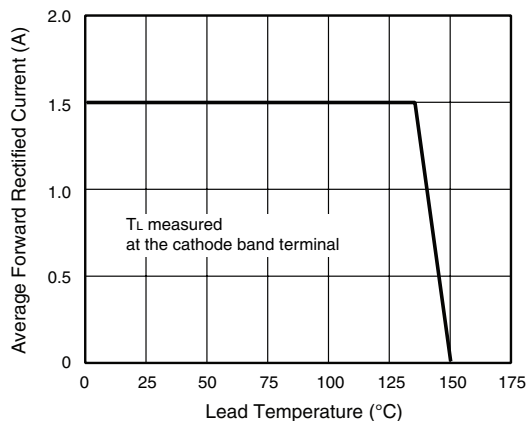


Figure 1. Maximum Forward Current Derating Curve

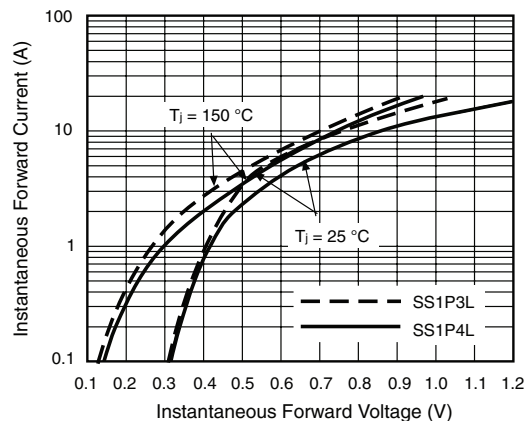


Figure 3. Typical Instantaneous Forward Characteristics

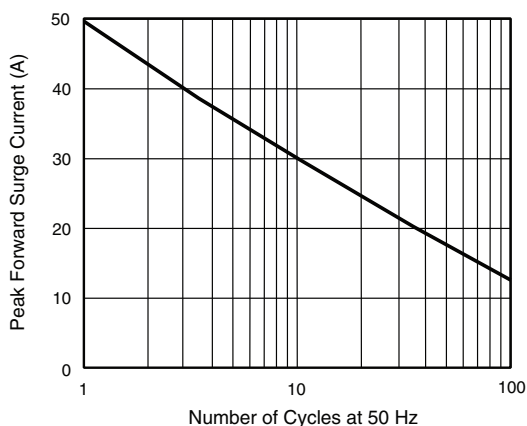


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

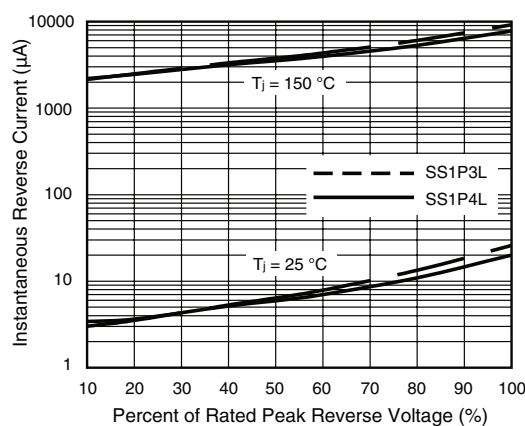


Figure 4. Typical Reverse Leakage Characteristics

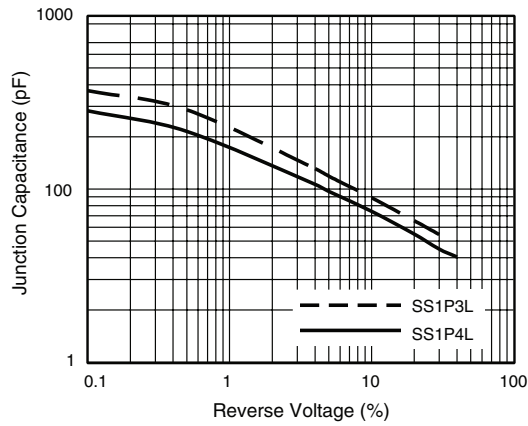


Figure 5. Typical Junction Capacitance

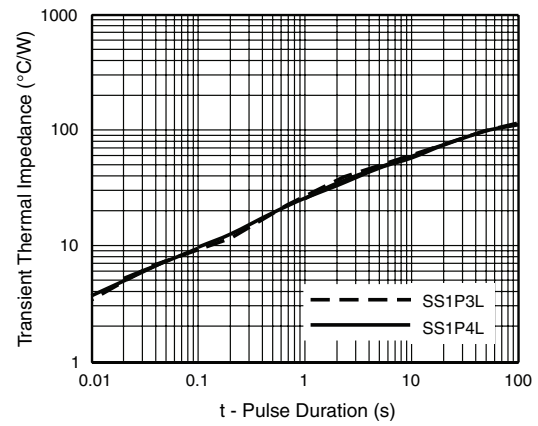
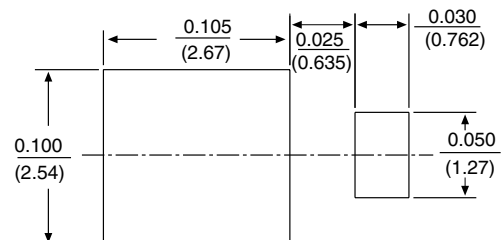
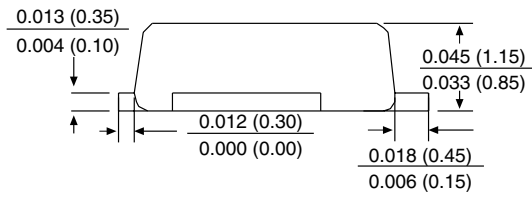
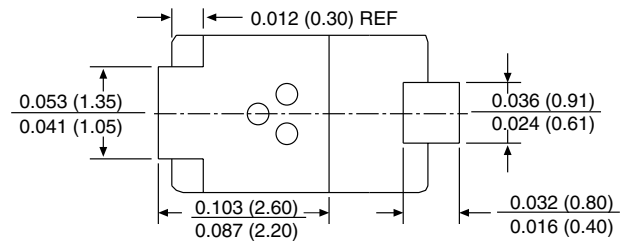
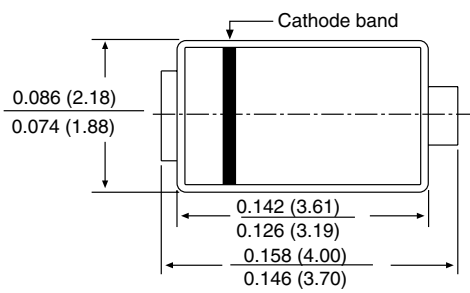


Figure 6. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)





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