

Low VF Current Density Surface Mount Schottky Barrier Rectifiers

Major Ratings and Characteristics

$I_{F(AV)}$	1 A
V_{RRM}	30 V, 40 V
I_{FSM}	45 A
E_{AS}	11.25 mJ
V_F	0.35 V, 0.38 V
T_j max.	150 °C



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
- AEC-Q 101 qualified

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 (E3 Suffix) leads, solderable per J-STD-002B and MIL-STD-750, Method 2026

Polarity: Color band denotes the cathode end

Maximum Ratings

$T_A = 25\text{ °C}$, unless otherwise specified

Parameter	Symbol	SS1P3L	SS1P4L	Unit
Device marking code		13L	14L	
Maximum repetitive peak reverse voltage	V_{RRM}	30	40	V
RMS reverse voltage	V_{RWM}	21	28	V
DC blocking voltage	V_R	30	40	V
Maximum average forward rectified current see Fig. 1 $T_L = 140\text{ °C}$ $T_L = 135\text{ °C}$	$I_{F(AV)}$	1.0 1.5		A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	45		A
Non-repetitive avalanche energy at $I_{AS} = 1.5\text{ A}$, $L = 10\text{ mH}$, $T_J = 25\text{ °C}$	E_{AS}	11.25		mJ
Voltage rate of change (rated V_R)	dv/dt	10000		V/us
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 specified

Parameter	Test Conditions	Symbol	SS1P3L	SS1P4L	Unit
Maximum instantaneous forward voltage ⁽¹⁾	at $I_F = 1.0\text{ A}$, $T_J = 25\text{ }^\circ\text{C}$ at $I_F = 1.0\text{ A}$, $T_J = 125\text{ }^\circ\text{C}$	V_F	0.45 0.35	0.48 0.38	V
Maximum reverse current at rated V_R ⁽¹⁾	$T_J = 25\text{ }^\circ\text{C}$ $T_J = 125\text{ }^\circ\text{C}$	I_R	200 20	150 15	μA mA
Typical junction capacitance	at 4.0 V, 1 MHz	C_J	110	130	pF

Note:

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

Thermal Characteristics

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

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 5.0mm 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

Ratings and Characteristics Curves

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

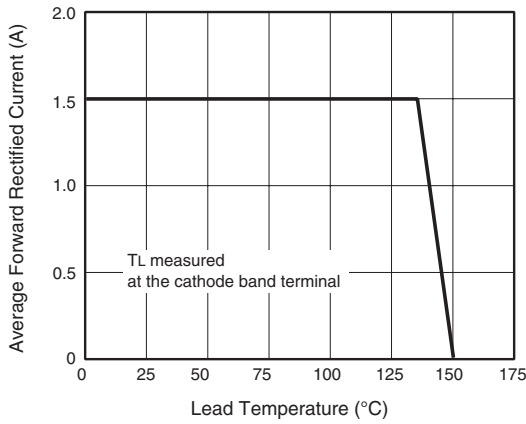


Figure 1. Maximum Forward Current Derating Curve

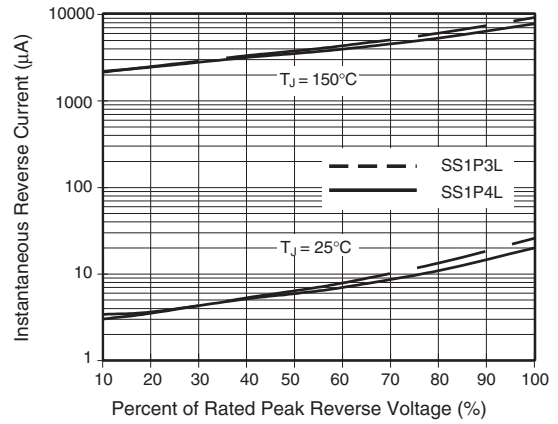


Figure 4. Typical Reverse Leakage Characteristics

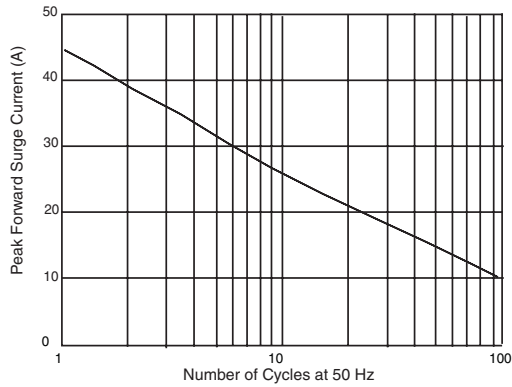


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

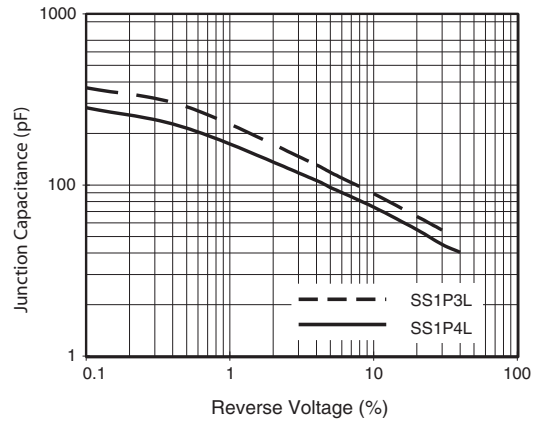


Figure 5. Typical Junction Capacitance

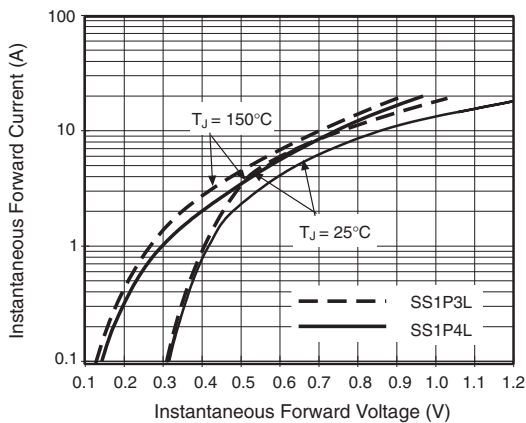


Figure 3. Typical Instantaneous Forward Characteristics

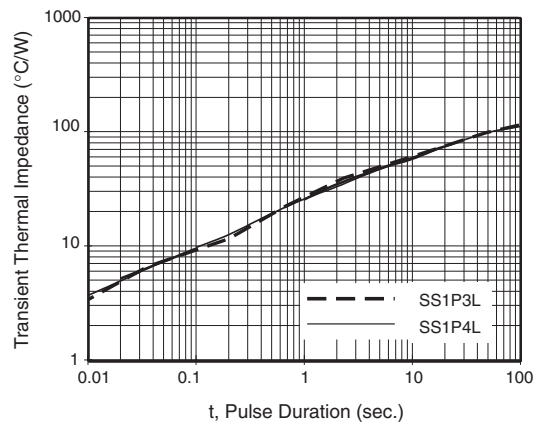


Figure 6. Typical Transient Thermal Impedance

Package Dimensions in Inches (millimeters)

DO-220AA (SMP)

