Low V_F 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**

AUTOMOTIVE GRADE Available

RoHS COMPLIANT

HALOGEN FREE

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 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

TYPICAL APPLICATIONS

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

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 automotive grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 1A whisker test, 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	SS1P3L	SS1P4L	UNIT
Device marking code			13L	14L	
Maximum repetive peak reverse voltage		V_{RRM}	30	40	V
Maximum average forward rectified current (fig. 1)	T_L = 140 °C	$I_{F(AV)}$	1.0		A
	T_L = 135 °C		1.5		
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	10 000		V/µs
Operating junction and storage temperature range		T_J, T_{STG}	- 55 to + 150		°C

For technical questions within your region, please contact one of the following:
DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	SS1P3L	SS1P4L	UNIT
Maximum instantaneous forward voltage	I_F = 1.0 A	T_J = 25 °C	V_F (1)	0.45	0.48	V
	I_F = 1.0 A	T_J = 125 °C		0.35	0.38	
Maximum reverse current at rated V_R		T_J = 25 °C	I_R (2)	200	150	μA
		T_J = 125 °C		20	15	mA
Typical junction capacitance	4.0 V, 1 MHz		C_J	110	130	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	SS1P3L	SS1P4L	UNIT
Typical thermal resistance	$R_{\theta JA}$ (1)	105		°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
SS1P3L-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel
SS1P3L-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel
SS1P3LHM3/84A (1)	0.024	84A	3000	7" diameter plastic tape and reel
SS1P3LHM3/85A (1)	0.024	85A	10 000	13" diameter plastic tape and reel

Note

(1) Automotive grade

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

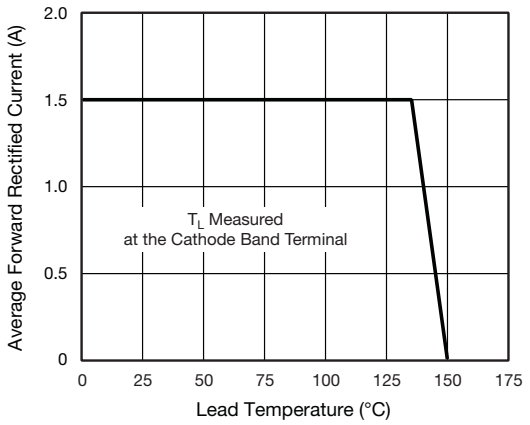

Fig. 1 - Maximum Forward Current Derating Curve

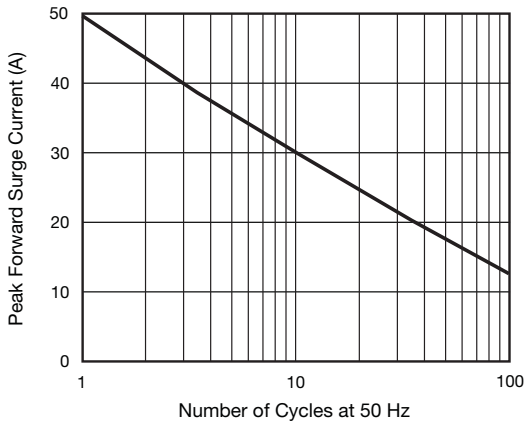

Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

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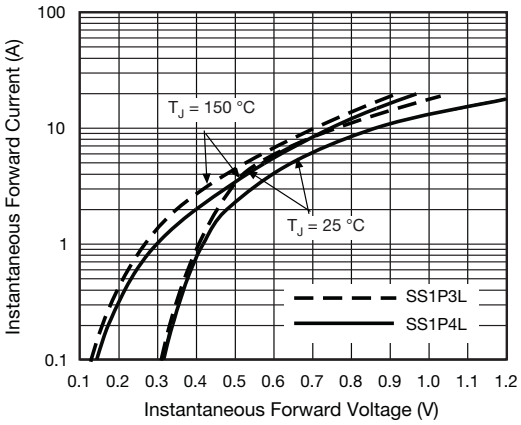


Fig. 3 - Typical Instantaneous Forward Characteristics

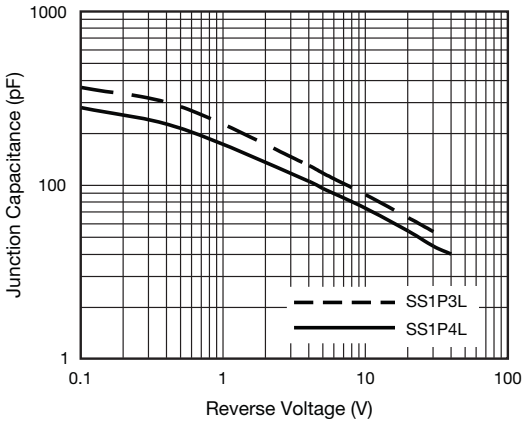


Fig. 5 - Typical Junction Capacitance

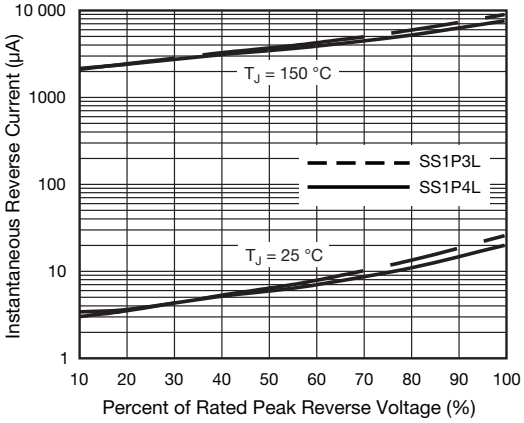


Fig. 4 - Typical Reverse Leakage Characteristics

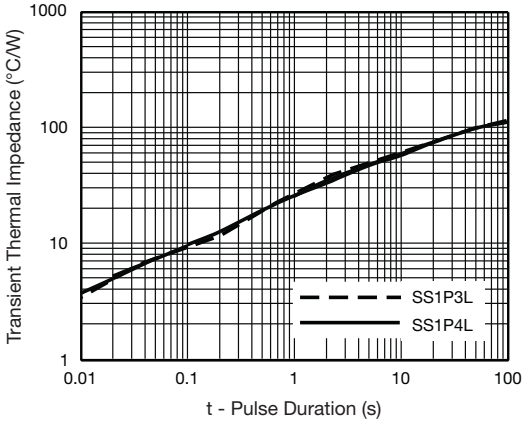
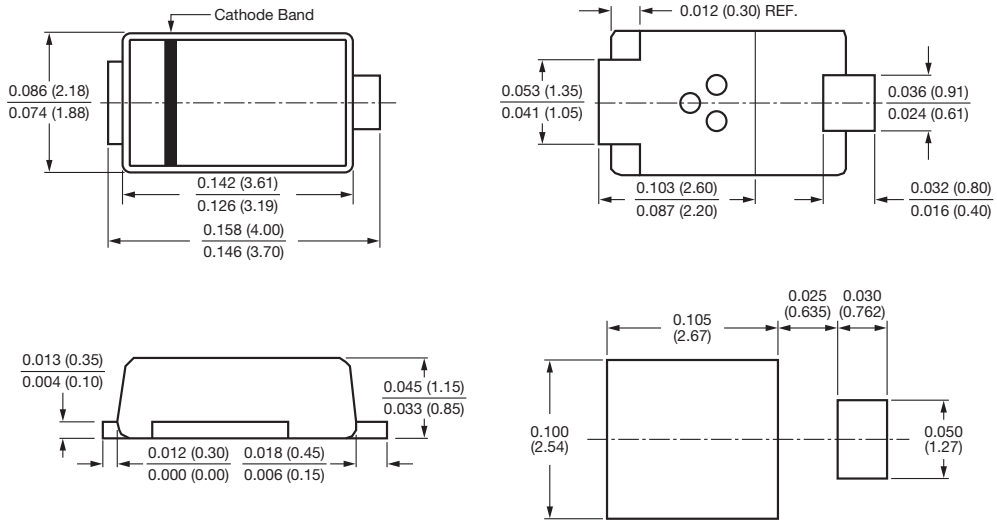


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)



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