High Current Density Surface Mount Schottky Barrier Rectifiers

eSMP™ Series

DO-220AA (SMP)

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

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
- 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

TYPICAL APPLICATIONS

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

(Note: These devices are not AEC-Q101 qualified)

MECHANICAL DATA

Case: DO-220AA (SMP)

Molding compound meets UL 94 V-0 flammability rating.

Base P/N-M3 - halogen-free and RoHS compliant, 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

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 I_{AS} = 1.5 A, L = 10 mH, T_J = 25 °C	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

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

PARAMETER	TEST CONDITIONS		SYMBOL	SS1P3	SS1P4	UNIT
Maximum instantaneous forward voltage (1)	I_F = 1.0 A I_F = 1.0 A	T_J = 25 °C T_J = 125 °C	V_F	0.50 0.40	0.53 0.45	V
Maximum reverse current at rated V_R (2)		T_J = 25 °C T_J = 125 °C	I_R	150 15		µA mA
Typical junction capacitance	4.0 V, 1 MHz		C_J	70		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	SS1P3	SS1P4	UNIT
Typical thermal resistance (1)	$R_{\theta JA}$ $R_{\theta JL}$ $R_{\theta JC}$	105 15 25		°C/W

Note:

(1) Thermal resistance from junction to ambient and junction to lead mounted on P.C.B. 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 centre 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)

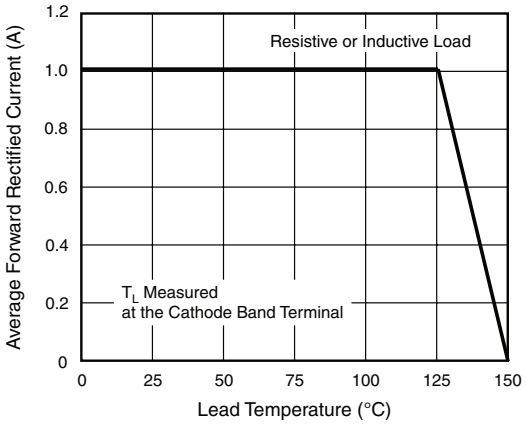


Figure 1. Maximum Forward Current Derating Curve

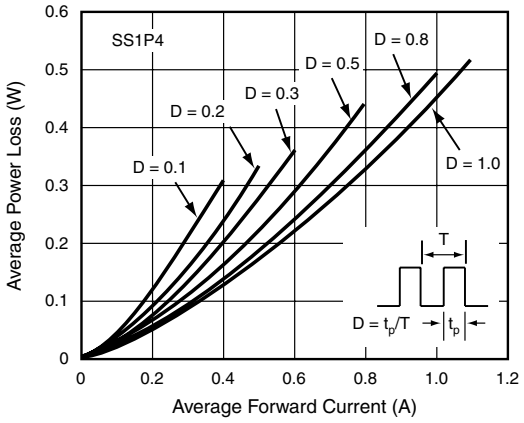


Figure 3. Forward Power Loss Characteristics

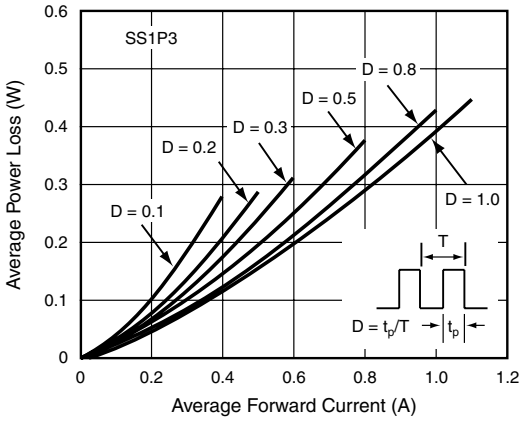


Figure 2. Forward Power Loss Characteristics

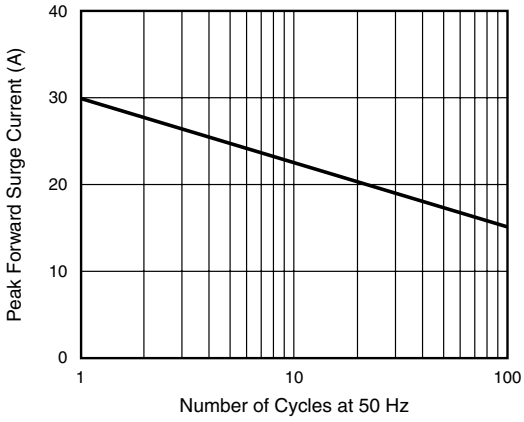


Figure 4. Typical Instantaneous Forward Characteristics

For technical questions within your region, please contact one of the following:
PDD-Americas@vishay.com, PDD-Asia@vishay.com, PDD-Europe@vishay.com

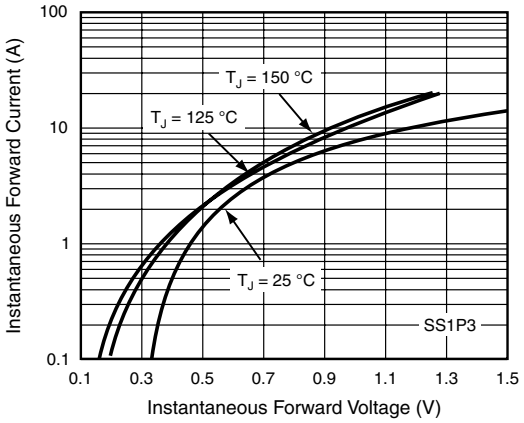


Figure 5. Typical Instantaneous Forward Characteristics

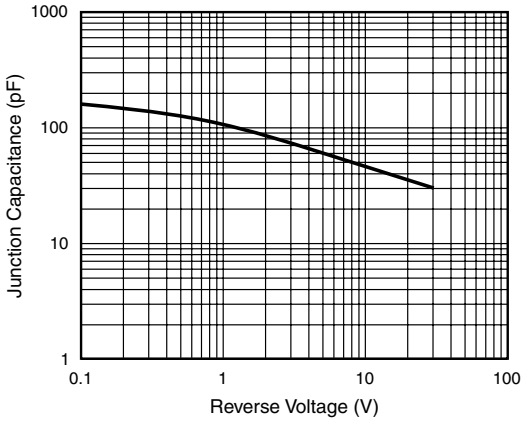


Figure 8. Typical Junction Capacitance

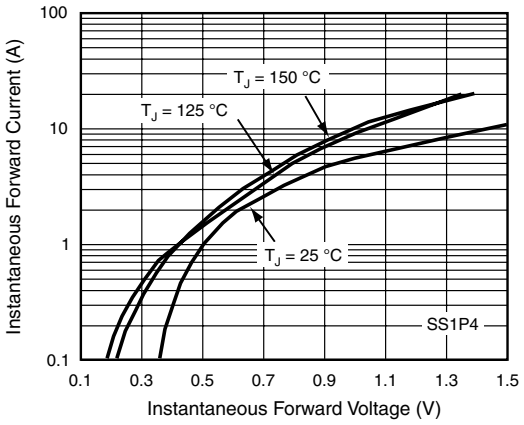


Figure 6. Typical Instantaneous Forward Characteristics

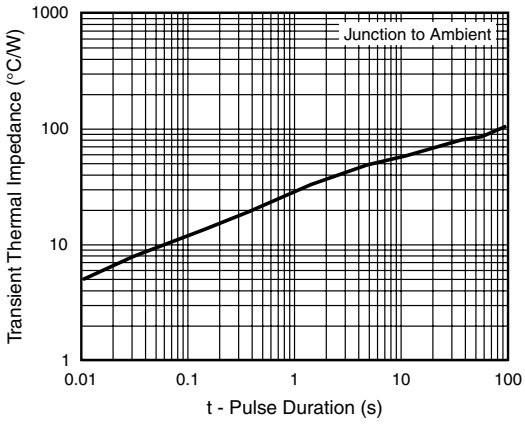


Figure 9. Typical Transient Thermal Impedance

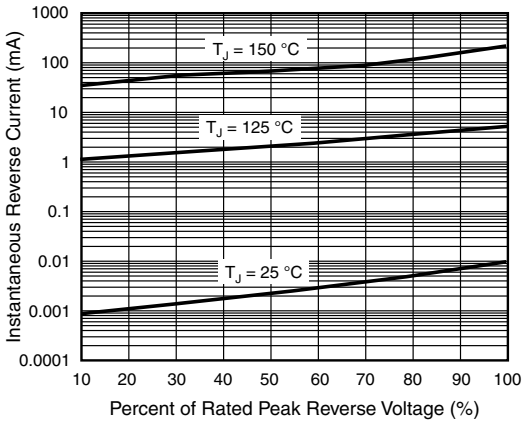
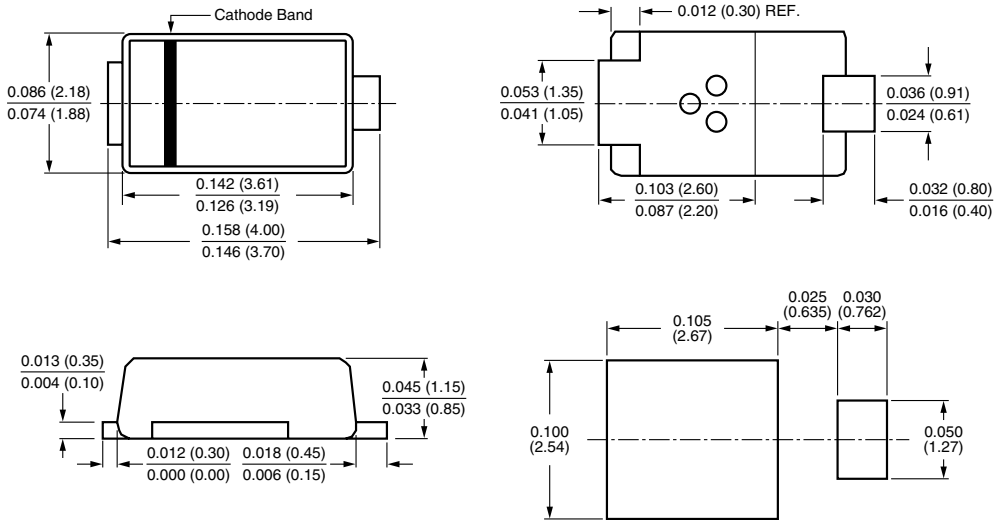


Figure 7. Typical Reverse Leakage Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)



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