High Current Density Surface-Mount Schottky Barrier Rectifier

eSMP® Series

SMP (DO-220AA)

Cathode ○—◀—○ Anode

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 available
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE Available

RoHS COMPLIANT

HALOGEN FREE

LINKS TO ADDITIONAL RESOURCES

3D Models

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: SMP (DO-220AA)

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 2 whisker test, HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2.0 A
V_{RRM}	20 V, 30 V, 40 V
I_{FSM}	50 A
E_{AS}	11.25 mJ
V_F	0.50 V
T_J max.	150 °C
Package	SMP (DO-220AA)
Circuit configuration	Single

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

PARAMETER	SYMBOL	SS2P2	SS2P3	SS2P4	UNIT
Device marking code		22	23	24	
Maximum repetitive peak reverse voltage	V_{RRM}	20	30	40	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	2.0			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	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**	**TYP.**	**MAX.**	**UNIT**
Maximum instantaneous forward voltage	I_F = 2 A	T_J = 25 °C	V_F (1)	0.50	0.55	V
	I_F = 2 A	T_J = 125 °C		0.43	0.50	
Maximum reverse current at rated V_R voltage		T_J = 25 °C	I_R (2)	-	150	µA
		T_J = 125 °C		8	15	mA
Typical junction capacitance	4.0 V, 1 MHz		C_J	110		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**	**SS2P2**	**SS2P3**	**SS2P4**	**UNIT**
Typical thermal resistance	$R_{\theta JA}$ (1)	115			°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 6.0 mm x 6.0 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**
SS2P4-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel
SS2P4-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel
SS2P4HM3/84A (1)	0.024	84A	3000	7" diameter plastic tape and reel
SS2P4HM3/85A (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)

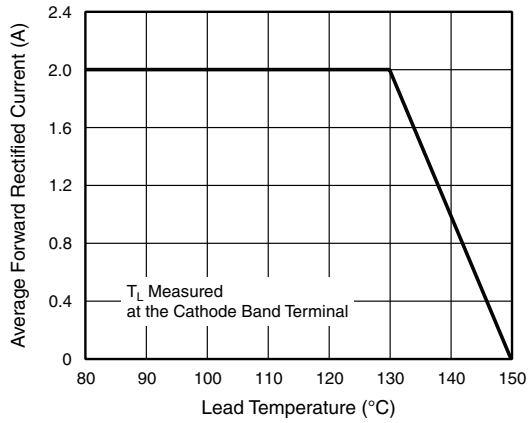


Fig. 1 - Forward Current Derating Curve

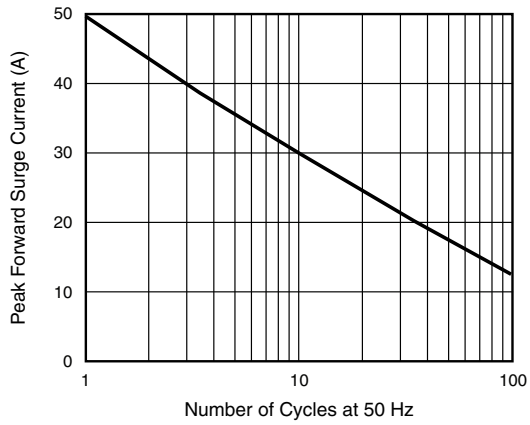


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

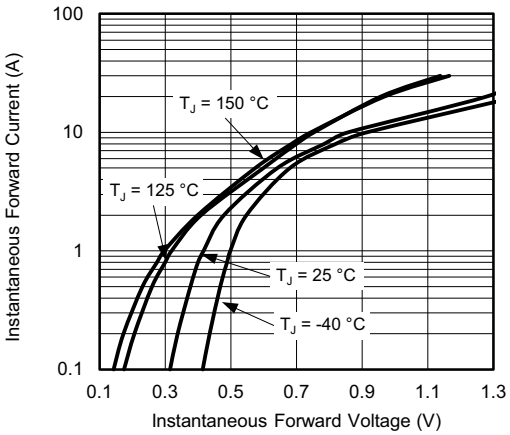


Fig. 3 - Typical Instantaneous Forward Characteristics

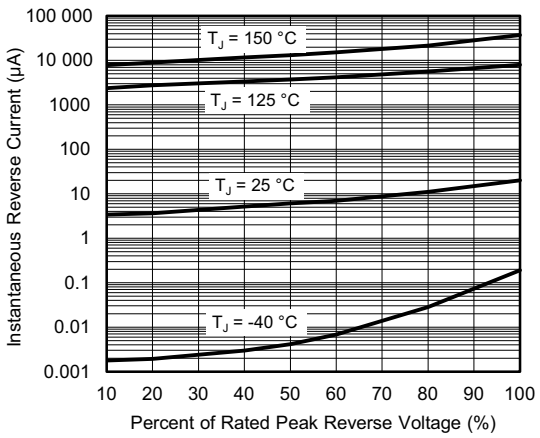


Fig. 4 - Typical Reverse Leakage Characteristics

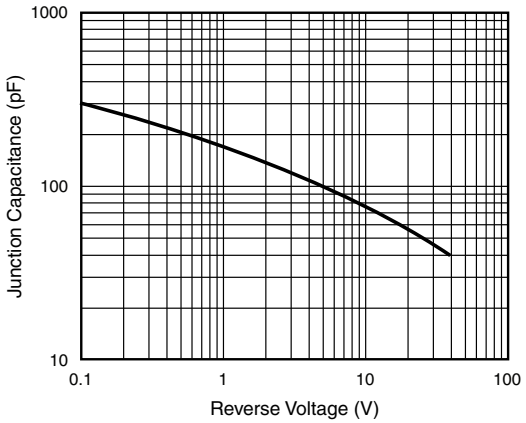


Fig. 5 - Typical Junction Capacitance

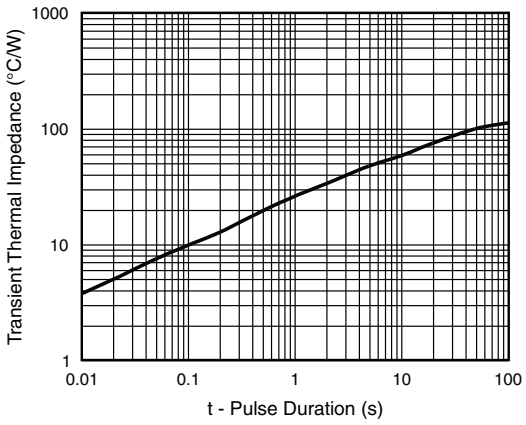
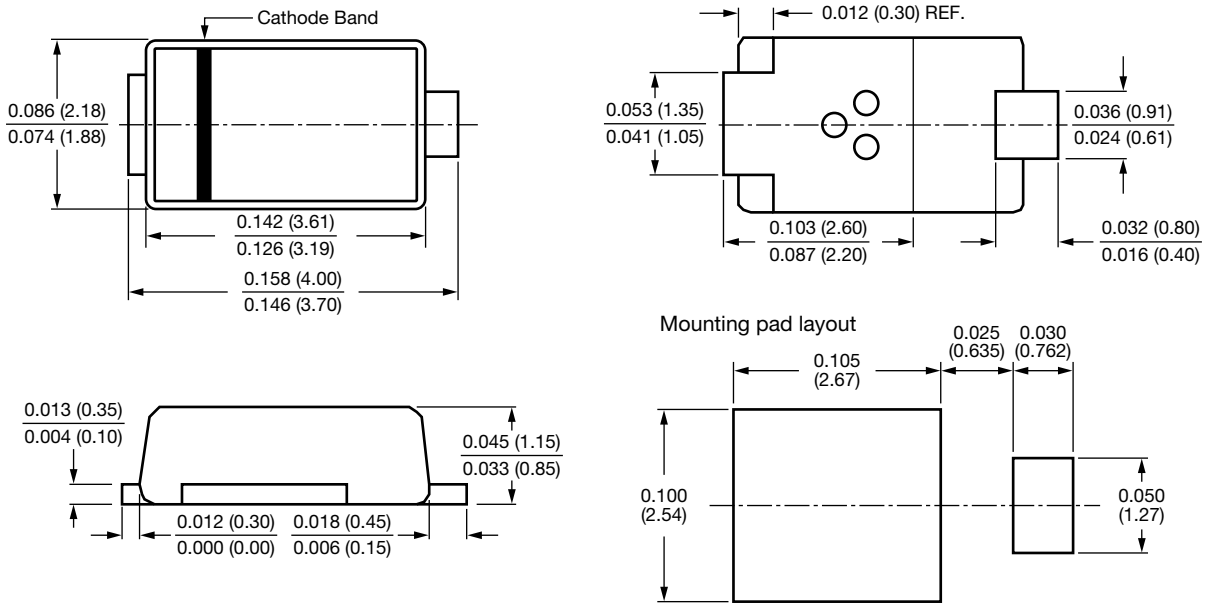


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMP (DO-220AA)



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