

# High Current Density Surface Mount Schottky Barrier Rectifier

High Barrier Technology for Improved High Temperature Performance

## 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  
- Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

AUTOMOTIVE  
GRADE  
Available



RoHS  
COMPLIANT  
HALOGEN  
FREE

## DESIGN SUPPORT TOOLS

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**3D**  
Models  
Available

## TYPICAL APPLICATIONS

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2.0 A
$V_{RRM}$	50 V, 60 V
$I_{FSM}$	50 A
$V_F$ at $I_F = 2.0$ A ( $T_A = 125$ °C)	0.59 V
$T_{Jmax.}$	175 °C
Package	SMP (DO-220AA)
Circuit configuration	Single

## MECHANICAL DATA

**Case:** SMP (DO-220AA)

Molding compound meets UL 94 V-0 flammability rating

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

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

**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 the cathode end

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	SS2PH5	SS2PH6	UNIT
Device marking code		2H5	2H6	
Maximum repetitive peak reverse voltage	$V_{RRM}$	50	60	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$ <sup>(1)</sup>	2.0		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	50		A
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +175		°C

### Note

(1) Free air, mounted on recommended copper pad area

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 1.0\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.63	-	V
				$I_F = 2.0\text{ A}$	0.72	
	$I_F = 1.0\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.52	-	
				$I_F = 2.0\text{ A}$	0.59	
Reverse current at rated $V_R$			$I_R^{(2)}$	0.2	2.0	$\mu\text{A}$
				$T_A = 125\text{ }^\circ\text{C}$	0.13	1.0
Typical junction capacitance	4.0 V, 1 MHz		$C_J$	93	-	pF

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle  
 (2) Pulse test: Pulse width  $\leq 5\text{ ms}$

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	SS2PH5	SS2PH6	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$	130		$^\circ\text{C/W}$
	$R_{\theta JM}^{(1)}$	20		

**Note**

- (1) Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance  $R_{\theta JA}$  - junction to ambient,  $R_{\theta JM}$  - junction to mount

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SS2PH6-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel
SS2PH6-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel
SS2PH6HM3/84A <sup>(1)</sup>	0.024	84A	3000	7" diameter plastic tape and reel
SS2PH6HM3/85A <sup>(1)</sup>	0.024	85A	10 000	13" diameter plastic tape and reel

**Note**

- (1) AEC-Q101 qualified

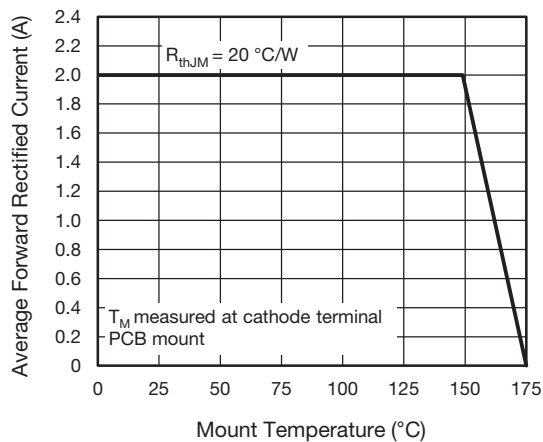
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)


Fig. 1 - Typical Forward Current Derating Curve

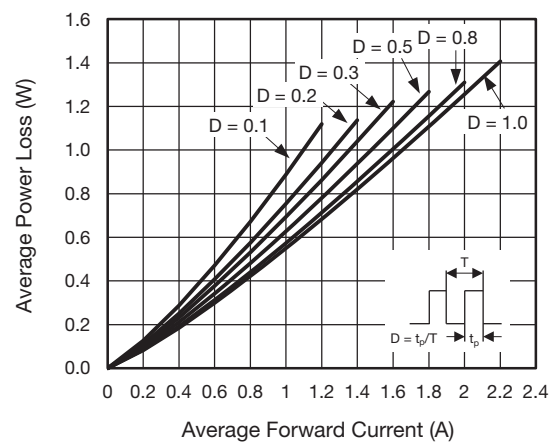


Fig. 2 - Forward Power Loss Characteristics

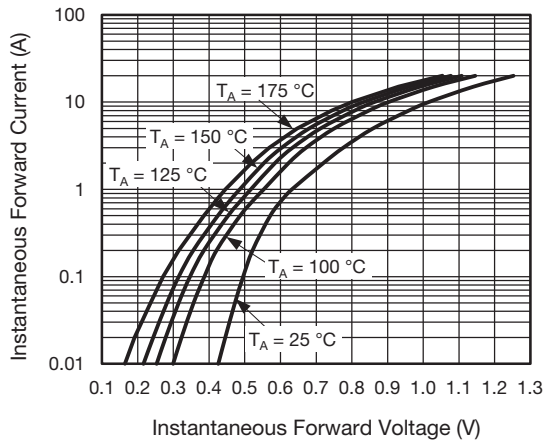


Fig. 3 - Typical Instantaneous Forward Characteristics

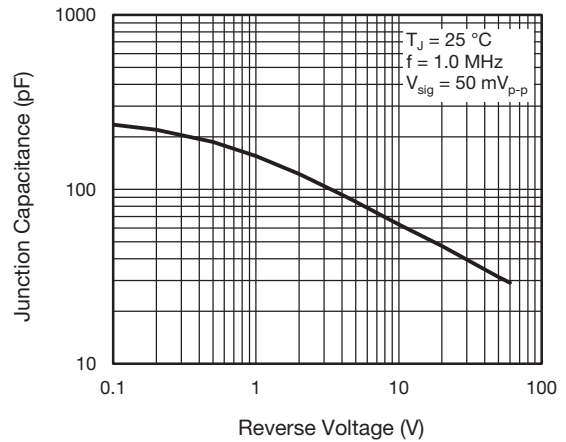


Fig. 5 - Typical Junction Capacitance

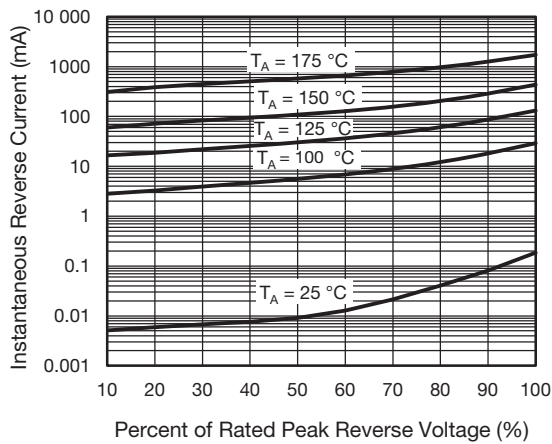


Fig. 4 - Typical Reverse Leakage Characteristics

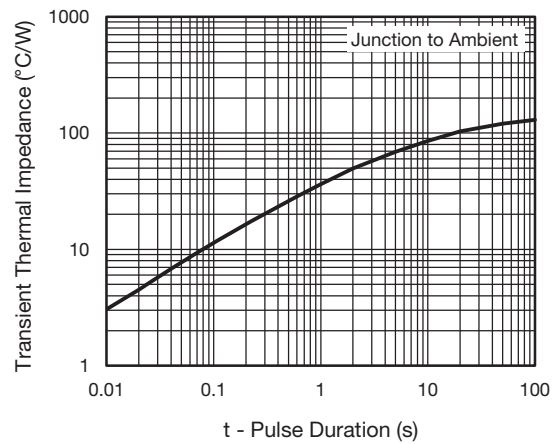
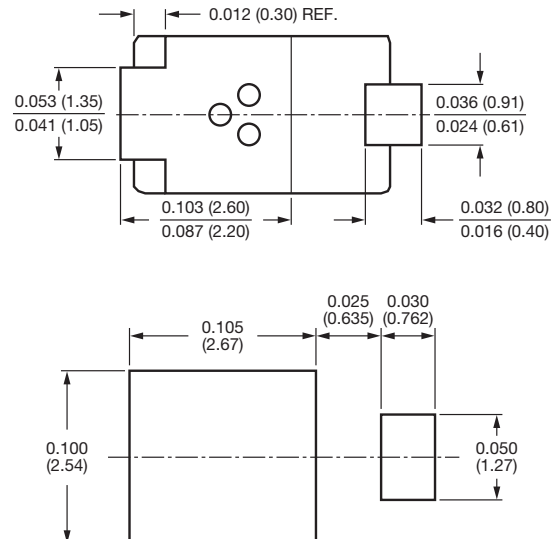
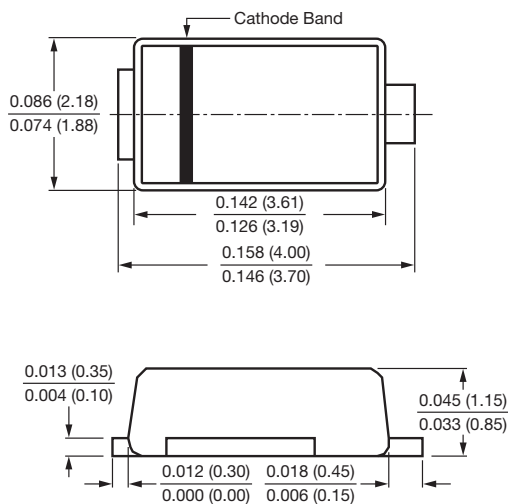


Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### SMP (DO-220AA)





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