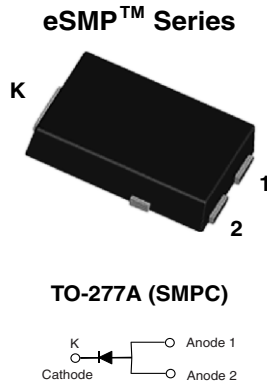


## High Current Density Surface Mount Schottky Barrier Rectifiers



### FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Guardring for overvoltage protection
- 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
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC
- **Halogen-free**



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	12 A
$V_{RRM}$	20 V, 30 V
$I_{FSM}$	280 A
$E_{AS}$	20 mJ
$V_F$ at $I_F = 12$ A	0.38 V
$T_J$ max.	150 °C

### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

Case: TO-277A (SMPC)

Molding compound meets UL 94V-0 flammability rating.

Base P/N-E3 - RoHS compliant, commercial grade  
 Base P/NHE3 - RoHS compliant, high reliability/automotive grade (AEC-Q101 qualified)

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

Base P/NHM3 - halogen-free and RoHS compliant, high reliability/automotive grade (AEC-Q101 qualified)

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 and M3 suffix meets JESD 201 class 1A whisker test, HE3 and HM3 suffix meets JESD 201 class 2 whisker test

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	SS12P2L	SS12P3L	UNIT
Device marking code		S122	S123	
Maximum repetitive peak reverse voltage	$V_{RRM}$	20	30	V
Maximum average forward rectified current (Fig. 1)	$I_{F(AV)}$	12		A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	280		A
Non-repetitive avalanche energy at $I_{AS} = 2$ A, $T_J = 25$ °C	$E_{AS}$	20		mJ
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150		°C

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	$I_F = 6\text{ A}$ $I_F = 12\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F$	0.41 0.48	- 0.56	V
	$I_F = 6\text{ A}$ $I_F = 12\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.30 0.38	- 0.46	
Maximum reverse current <sup>(2)</sup>	$V_R = 30\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$ $T_A = 125\text{ }^\circ\text{C}$	$I_R$	150 59	1000 120	$\mu\text{A}$ mA
Typical junction capacitance	4.0 V, 1 MHz		$C_J$	930	-	pF

**Notes:**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle  
(2) Pulse test: Pulse width  $\leq 40\text{ ms}$

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	SS12P2L	SS12P3L	UNIT
Typical thermal resistance	$R_{\theta JA}$ <sup>(1)</sup>	60		$^\circ\text{C/W}$
	$R_{\theta JL}$	3		

**Note:**

- (1) Units mounted on recommended P.C.B. 1 oz. pad layout

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SS12P3L-E3/86A	0.10	86A	1500	7" diameter plastic tape and reel
SS12P3L-E3/87A	0.10	87A	6500	13" diameter plastic tape and reel
SS12P3LHE3/86A <sup>(1)</sup>	0.10	86A	1500	7" diameter plastic tape and reel
SS12P3LHE3/87A <sup>(1)</sup>	0.10	87A	6500	13" diameter plastic tape and reel
SS12P3L-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
SS12P3L-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
SS12P3LHM3/86A <sup>(1)</sup>	0.10	86A	1500	7" diameter plastic tape and reel
SS12P3LHM3/87A <sup>(1)</sup>	0.10	87A	6500	13" diameter plastic tape and reel

**Note:**

- (1) High reliability/automotive grade (AEC-Q101 qualified)

**RATINGS AND CHARACTERISTICS CURVES**

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

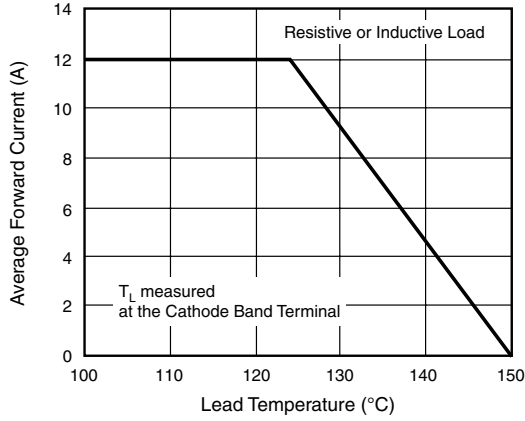


Figure 1. Maximum Forward Current Derating Curve

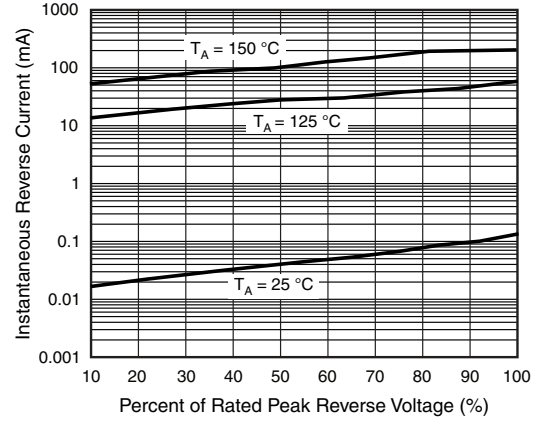


Figure 4. Typical Reverse Leakage Characteristics

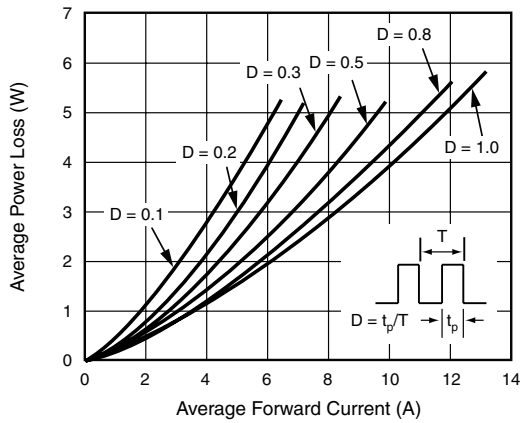


Figure 2. Forward Power Loss Characteristics

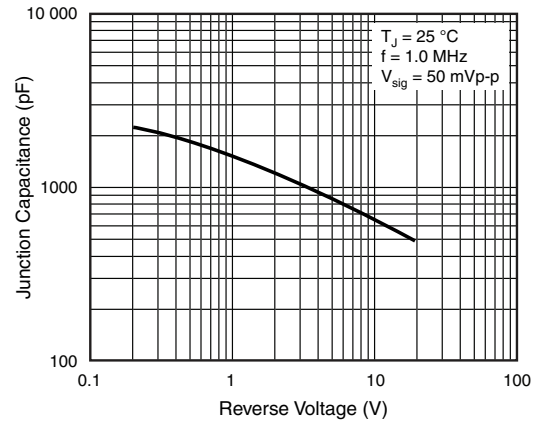


Figure 5. Typical Junction Capacitance

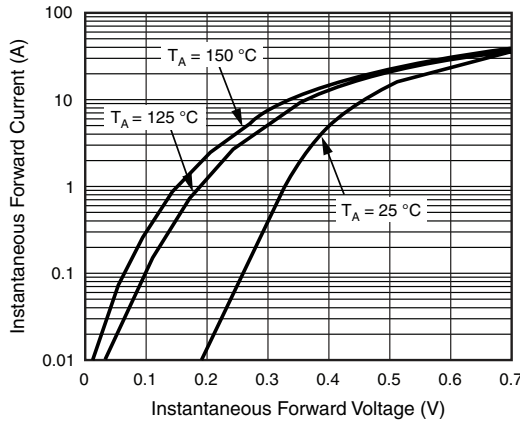


Figure 3. Typical Instantaneous Forward Characteristics

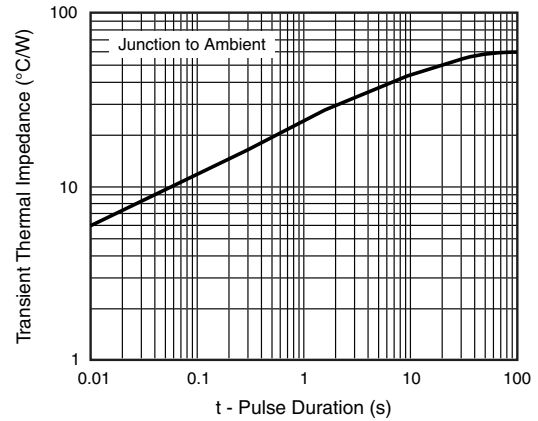


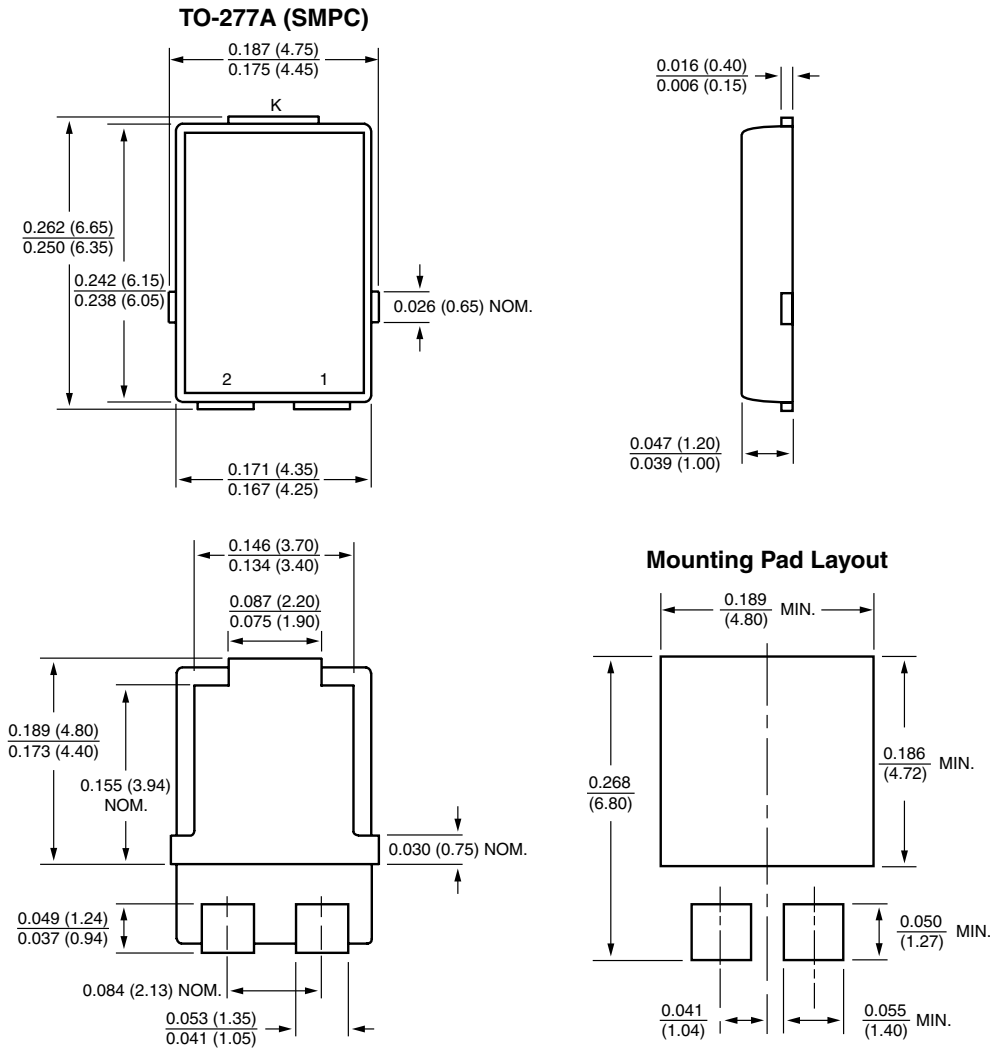
Figure 6. Typical Transient Thermal Impedance

# SS12P2L & SS12P3L

Vishay General Semiconductor



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC TO-277A



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