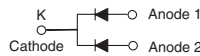


## High Current Density Surface Mount Schottky Barrier Rectifier

### eSMP® Series



### TO-277A (SMPC)



### FEATURES

- Very low profile - typical height of 1.1 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
- 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)

### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

**Case:** TO-277A (SMPC)

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 AEC-Q101 qualified

Base P/NHM3\_X - halogen-free, RoHS-compliant and AEC-Q101 qualified  
("X" denotes revision code e.g. A, B,.....)

**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

| PRIMARY CHARACTERISTICS |            |
|-------------------------|------------|
| $I_{F(AV)}$             | 2 x 4.0 A  |
| $V_{RRM}$               | 20 V, 30 V |
| $I_{FSM}$               | 120 A      |
| $E_{AS}$                | 20 mJ      |
| $V_F$ at $I_F = 4$ A    | 0.41 V     |
| $T_J$ max.              | 150 °C     |
| Package                 | TO-277A    |
| Diode variations        | Single     |

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                           |                |             |         |      |
|---|----------------|-------------|---------|------|
| PARAMETER   | SYMBOL         | SS8P2CL     | SS8P3CL | UNIT |
| Device marking code   |                | S82C        | S83C    |      |
| Maximum repetitive peak reverse voltage   | $V_{RRM}$      | 20          | 30      | V    |
| Maximum average forward rectified current (fig. 1)                                | total device   | 8.0         |         | A    |
|   | per diode      | 4.0         |         |      |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 120         |         | A    |
| Non-repetitive avalanche energy at 25 °C, $I_{AS} = 2$ A per diode                | $E_{AS}$       | 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          |
| Instantaneous forward voltage per diode  | $I_F = 2.0\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$  | $V_F^{(1)}$ | 0.42 | -    | V             |
|  | $I_F = 4.0\text{ A}$ |                                   |             | 0.50 | 0.54 |               |
|  | $I_F = 2.0\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ |             | 0.32 | -    |               |
|  | $I_F = 4.0\text{ A}$ |                                   |             | 0.41 | 0.45 |               |
| Reverse current per diode  | Rated $V_R$          | $T_A = 25\text{ }^\circ\text{C}$  | $I_R^{(2)}$ | 48   | 300  | $\mu\text{A}$ |
|  |                      | $T_A = 125\text{ }^\circ\text{C}$ |             | 19   | 30   | mA            |
| Typical junction capacitance per diode   | 4.0 V, 1 MHz         |                                   | $C_J$       | 250  | -    | 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 specified) |                       |        |        |                    |
|---|-----------------------|--------|--------|--------------------|
| PARAMETER   | SYMBOL                | SS8P2C | SS8P3C | UNIT               |
| Typical thermal resistance per diode  | $R_{\theta JA}^{(1)}$ | 60     |        | $^\circ\text{C/W}$ |
|   | $R_{\theta JL}$       | 3      |        |                    |

**Note**

- (1) Units mounted on recommended PCB 1 oz. pad layout

| <b>ORDERING INFORMATION</b> (Example) |                 |              |               |                                    |
|---------------------------------------|-----------------|--------------|---------------|------------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| SS8P3CL-M3/86A                        | 0.10            | 86A          | 1500          | 7" diameter plastic tape and reel  |
| SS8P3CL-M3/87A                        | 0.10            | 87A          | 6500          | 13" diameter plastic tape and reel |
| SS8P3CLHM3/86A <sup>(1)</sup>         | 0.10            | 86A          | 1500          | 7" diameter plastic tape and reel  |
| SS8P3CLHM3/87A <sup>(1)</sup>         | 0.10            | 87A          | 6500          | 13" diameter plastic tape and reel |
| SS8P3CLHM3_A/H <sup>(1)</sup>         | 0.10            | H            | 1500          | 7" diameter plastic tape and reel  |
| SS8P3CLHM3_A/I <sup>(1)</sup>         | 0.10            | I            | 6500          | 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)

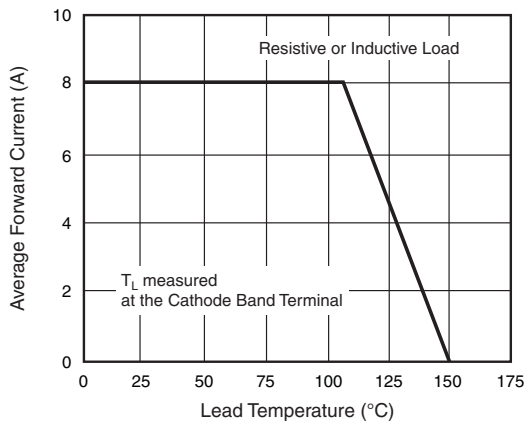


Fig. 1 - Maximum Forward Current Derating Curve

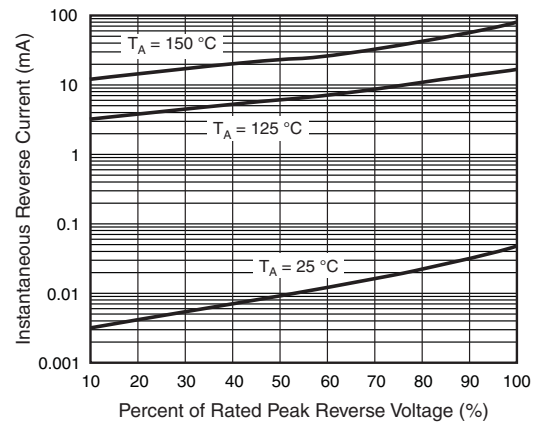


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

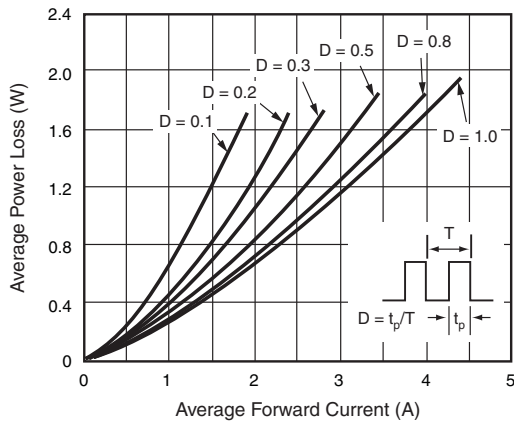


Fig. 2 - Forward Power Loss Characteristics Per Diode

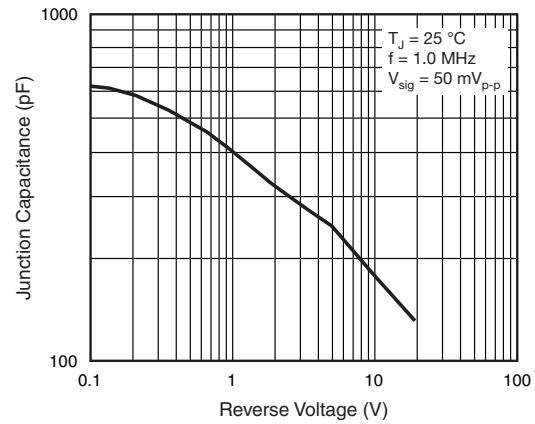


Fig. 5 - Typical Junction Capacitance Per Diode

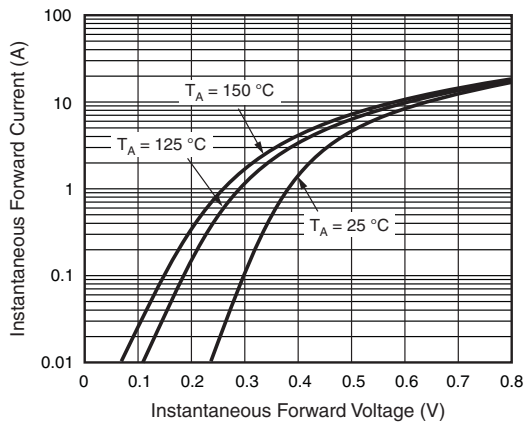


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

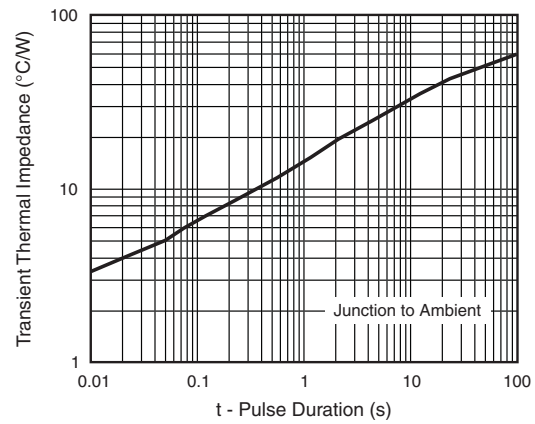
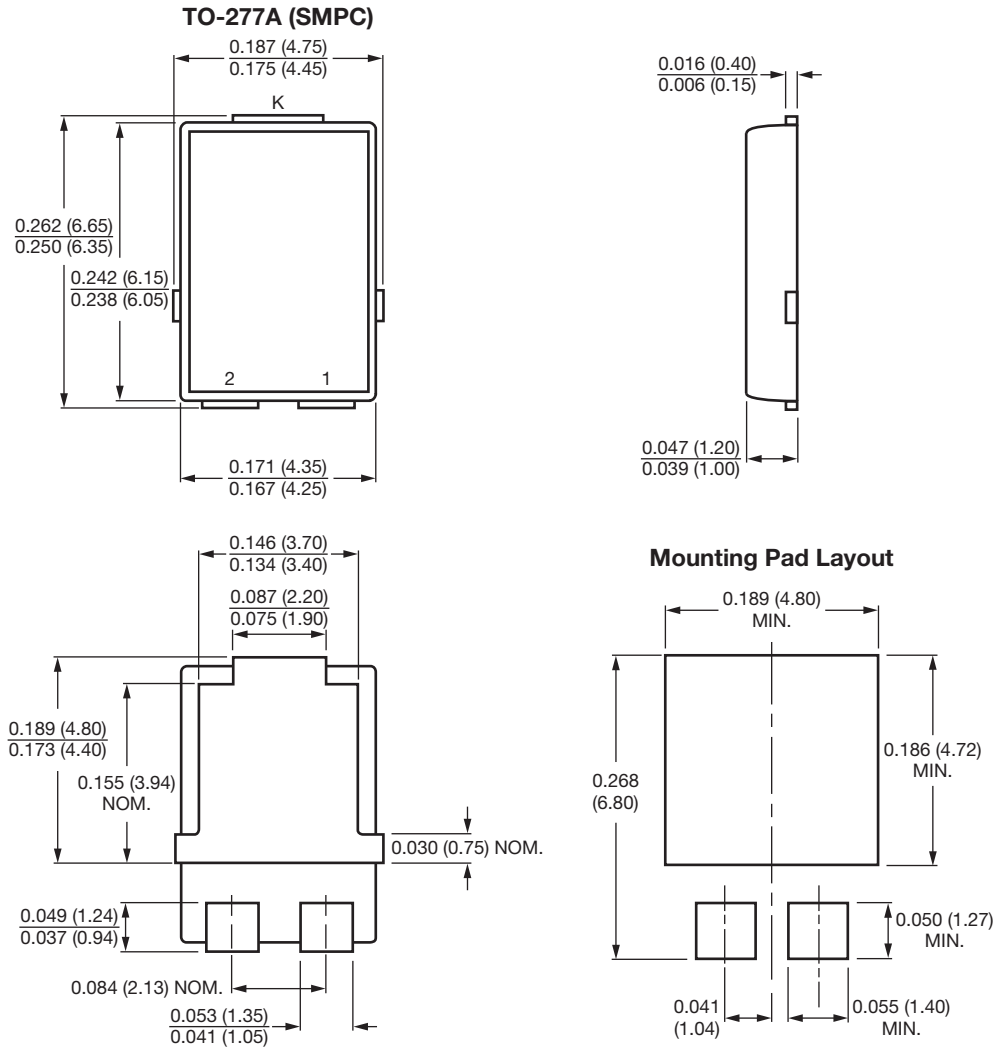


Fig. 6 - Typical Transient Thermal Impedance Per Diode



### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC® TO-277A



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