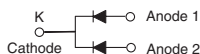


## High Current Density Surface Mount Schottky Barrier Rectifier

### 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)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### 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   |

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

| PARAMETER                               | TEST CONDITIONS        |                         | SYMBOL                        | TYP. | MAX. | UNIT |
|-----------------------------------------|------------------------|-------------------------|-------------------------------|------|------|------|
| Instantaneous forward voltage per diode | I <sub>F</sub> = 2.0 A | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.42 | -    | V    |
|                                         | I <sub>F</sub> = 4.0 A |                         |                               | 0.50 | 0.54 |      |
|                                         | I <sub>F</sub> = 2.0 A | T <sub>A</sub> = 125 °C |                               | 0.32 | -    |      |
|                                         | I <sub>F</sub> = 4.0 A |                         |                               | 0.41 | 0.45 |      |
| Reverse current per diode               | Rated V <sub>R</sub>   | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 48   | 300  | μA   |
|                                         |                        | T <sub>A</sub> = 125 °C |                               | 19   | 30   | mA   |
| Typical junction capacitance per diode  | 4.0 V, 1 MHz           |                         | C <sub>J</sub>                | 250  | -    | pF   |

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: Pulse width  $\leq 40\text{ ms}$ **THERMAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise specified)

| PARAMETER                            | SYMBOL                          | SS8P2C | SS8P3C | UNIT |
|--------------------------------------|---------------------------------|--------|--------|------|
| Typical thermal resistance per diode | R <sub>θJA</sub> <sup>(1)</sup> | 60     |        | °C/W |
|                                      | R <sub>θJL</sub>                | 3      |        |      |

**Note**

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

**ORDERING INFORMATION** (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)

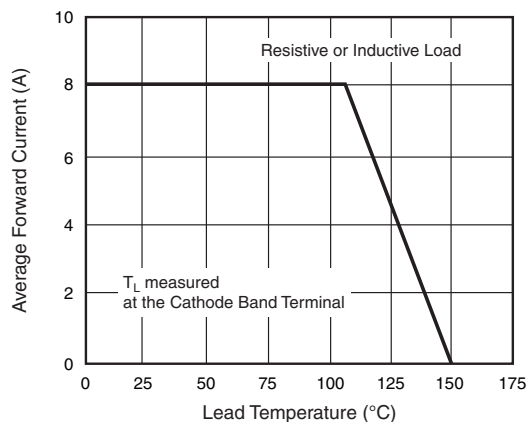


Fig. 1 - Maximum Forward Current Derating Curve

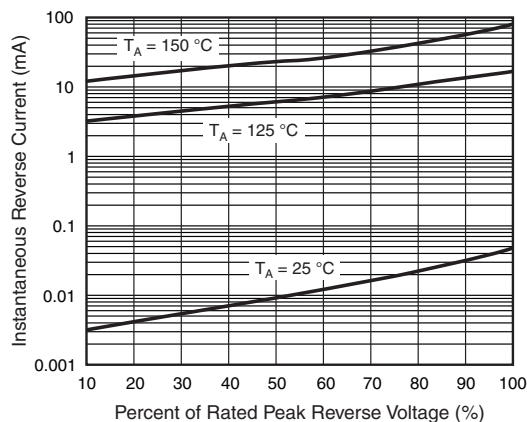


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

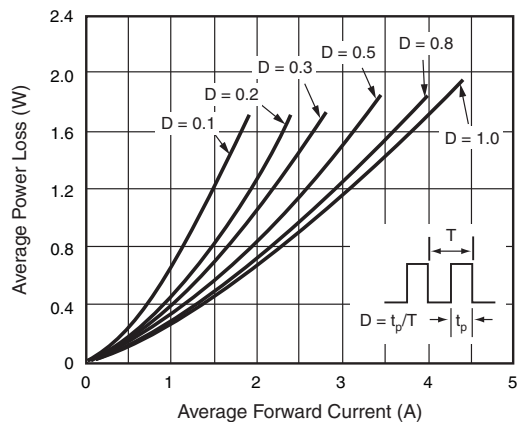


Fig. 2 - Forward Power Loss Characteristics Per Diode

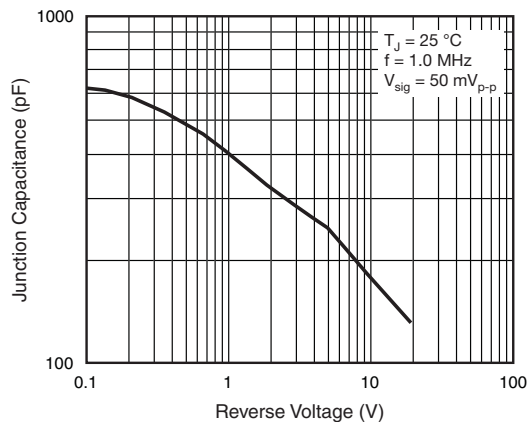


Fig. 5 - Typical Junction Capacitance Per Diode

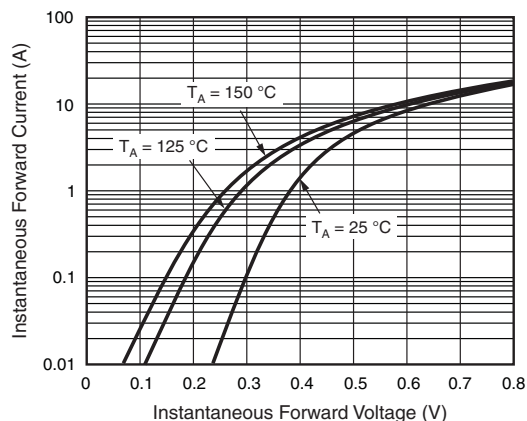


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

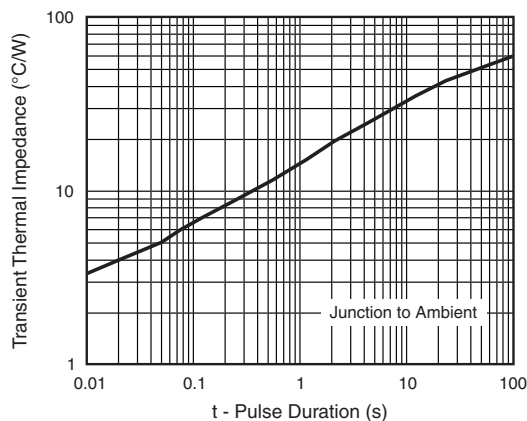
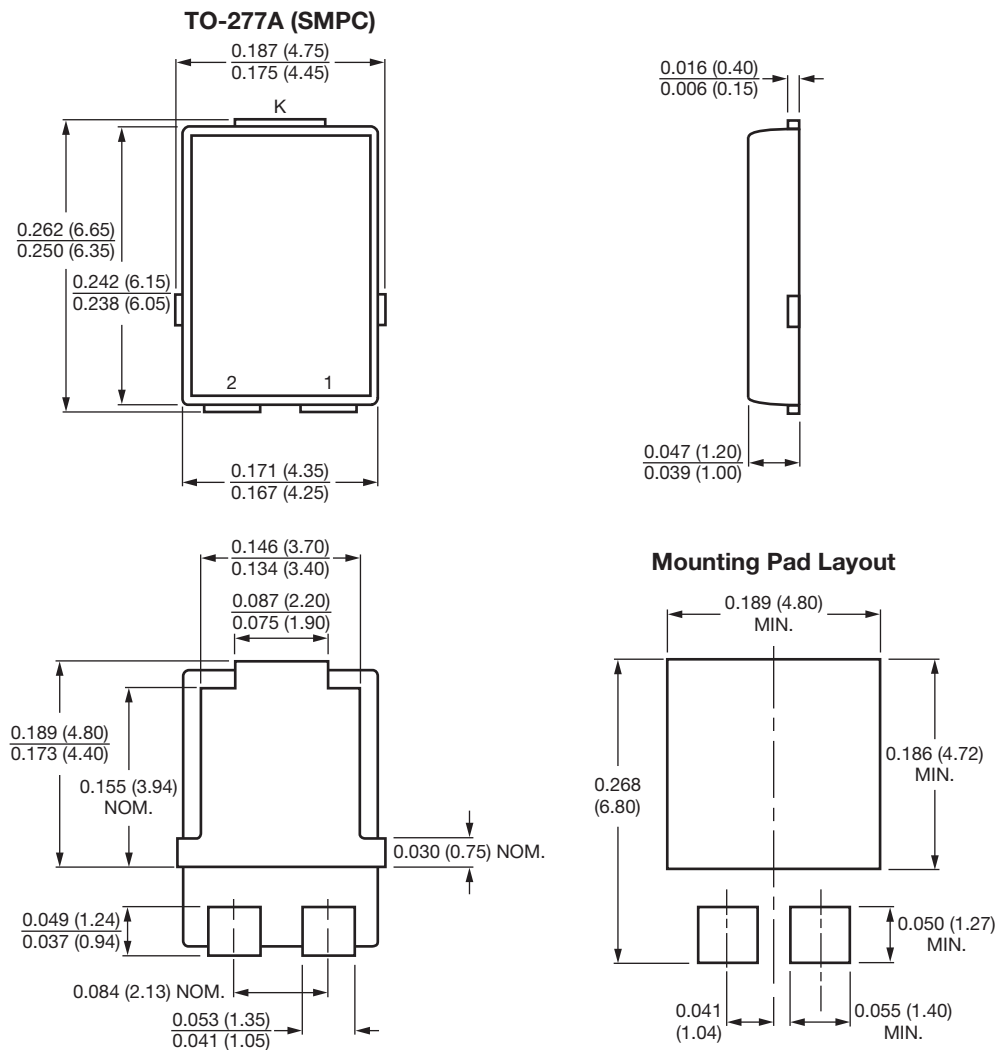


Fig. 6 - Typical Transient Thermal Impedance Per Diode



**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)



Conform to JEDEC® TO-277A



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