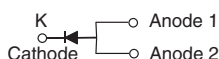


## High Current Density Surface Mount Schottky Barrier Rectifiers

### eSMP® Series



### SMPC (TO-277A)



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

### 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, 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)

### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

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

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

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

### DESIGN SUPPORT TOOLS

[click logo to get started](#)



### PRIMARY CHARACTERISTICS

|                        |                |
|------------------------|----------------|
| $I_{F(AV)}$            | 5.0 A          |
| $V_{RRM}$              | 50 V, 60 V     |
| $I_{FSM}$              | 150 A          |
| $E_{AS}$               | 20 mJ          |
| $V_F$ at $I_F = 5.0$ A | 0.560 V        |
| $T_J$ max.             | 150 °C         |
| Package                | SMPC (TO-277A) |
| Circuit configuration  | Single         |

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

| PARAMETER                                                                         | SYMBOL         | SS5P5       | SS5P6 | UNIT |
|-----------------------------------------------------------------------------------|----------------|-------------|-------|------|
| Device marking code                                                               |                | S55         | S56   |      |
| Maximum repetitive peak reverse voltage                                           | $V_{RRM}$      | 50          | 60    | V    |
| Maximum average forward rectified current (fig. 1)                                | $I_{F(AV)}$    | 5.0         |       | A    |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 150         |       | A    |
| Non-repetitive avalanche energy at $I_{AS} = 2.0$ A, $T_J = 25$ °C                | $E_{AS}$       | 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          |
|---------------------------------------|----------------------|-------------------------------------|-------|------|---------------|
| Maximum instantaneous forward voltage | $I_F = 2.5\text{ A}$ | $T_A = 25\text{ }^{\circ}\text{C}$  | 0.518 | -    | V             |
|                                       | $I_F = 5.0\text{ A}$ |                                     | 0.631 | 0.69 |               |
|                                       | $I_F = 2.5\text{ A}$ | $T_A = 125\text{ }^{\circ}\text{C}$ | 0.451 | -    |               |
|                                       | $I_F = 5.0\text{ A}$ |                                     | 0.560 | 0.62 |               |
| Maximum reverse current               | Rated $V_R$          | $T_A = 25\text{ }^{\circ}\text{C}$  | 8.4   | 150  | $\mu\text{A}$ |
|                                       |                      | $T_A = 125\text{ }^{\circ}\text{C}$ | 3.4   | 15   | mA            |
| Typical junction capacitance          | 4.0 V, 1 MHz         | $C_J$                               | 200   | -    | 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                | SS5P5 | SS5P6 | UNIT |
|----------------------------|-----------------------|-------|-------|------|
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 65    |       | °C/W |
|                            | $R_{\theta JL}$       | 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                      |
|-----------------------------|-----------------|--------------|---------------|------------------------------------|
| SS5P5-M3/86A                | 0.10            | 86A          | 1500          | 7" diameter plastic tape and reel  |
| SS5P5-M3/87A                | 0.10            | 87A          | 6500          | 13" diameter plastic tape and reel |
| SS5P5HM3_A/H <sup>(1)</sup> | 0.10            | H            | 1500          | 7" diameter plastic tape and reel  |
| SS5P5HM3_A/I <sup>(1)</sup> | 0.10            | I            | 6500          | 13" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified

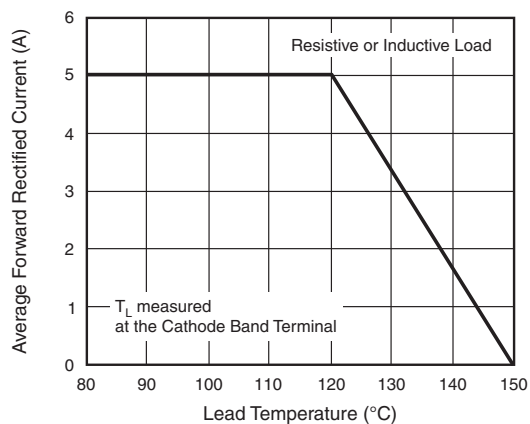
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise specified)


Fig. 1 - Maximum Forward Current Derating Curve

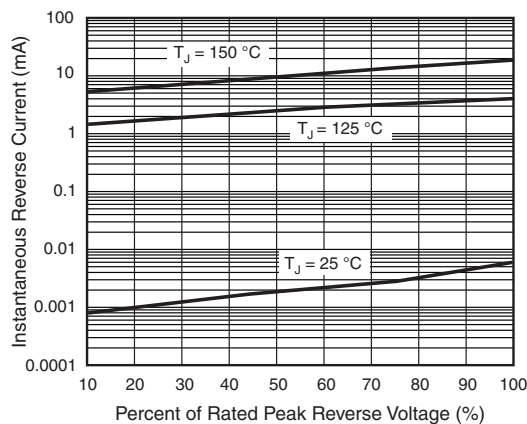


Fig. 4 - Typical Reverse Characteristics

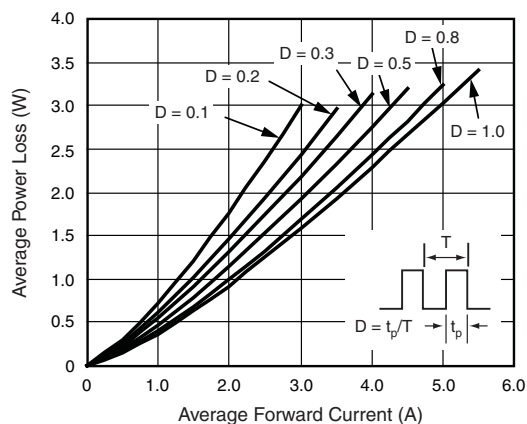


Fig. 2 - Forward Power Loss Characteristics

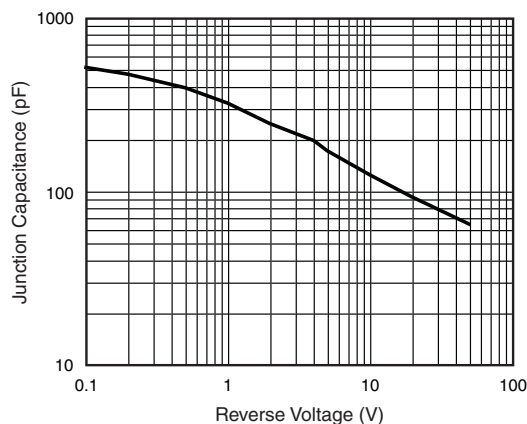


Fig. 5 - Typical Junction Capacitance

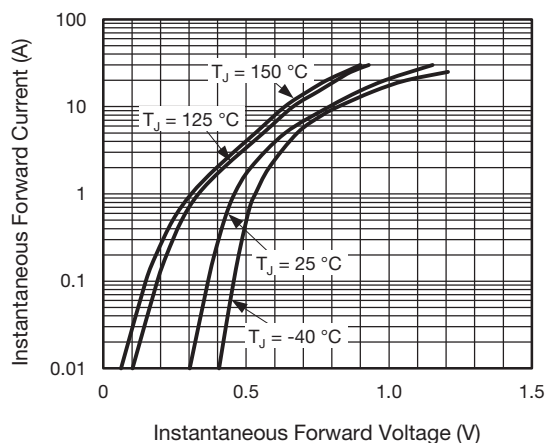


Fig. 3 - Typical Instantaneous Forward Characteristics

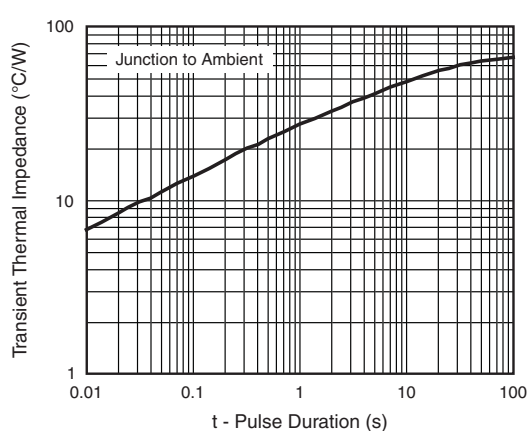
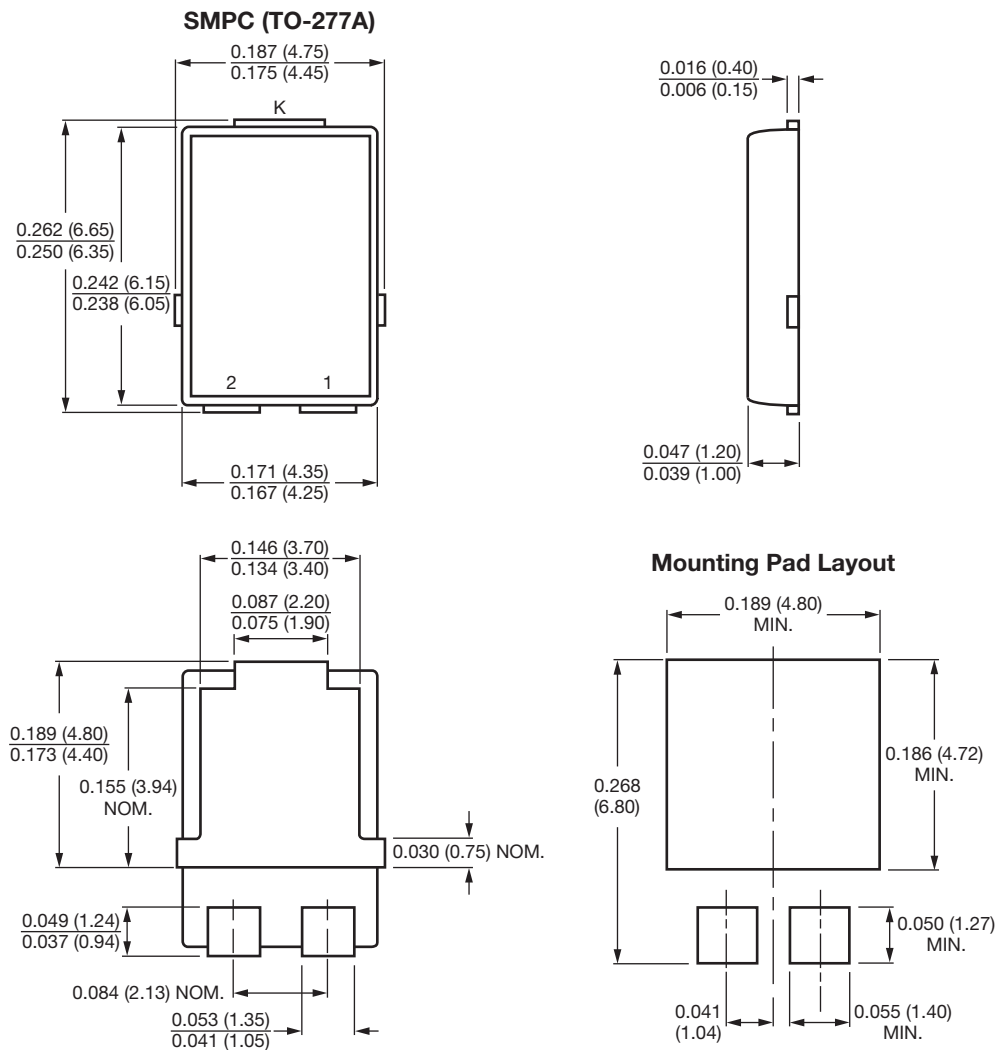


Fig. 6 - Typical Transient Thermal Impedance



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



Conform to JEDEC® TO-277A



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