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New Product

SS5P5, SS5P6

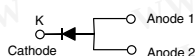
Vishay General Semiconductor

## High Current Density Surface Mount Schottky Barrier Rectifiers

### eSMP® Series



TO-277A (SMPC)



### 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     |

### TYPICAL APPLICATIONS

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

### 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
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition

AUTOMOTIVE  
GRADE  
Available



RoHS  
COMPLIANT  
HALOGEN  
FREE

### 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 automotive grade

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

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

### 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 <sub>F</sub> = 2.5 A | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.518 | -    | V    |
|                                       | I <sub>F</sub> = 5.0 A |                         |                               | 0.631 | 0.69 |      |
|                                       | I <sub>F</sub> = 2.5 A | T <sub>A</sub> = 125 °C |                               | 0.451 | -    |      |
|                                       | I <sub>F</sub> = 5.0 A |                         |                               | 0.560 | 0.62 |      |
| Maximum reverse current               | Rated V <sub>R</sub>   | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 8.4   | 150  | μA   |
|                                       |                        | T <sub>A</sub> = 125 °C |                               | 3.4   | 15   | mA   |
| Typical junction capacitance          | 4.0 V, 1 MHz           |                         | C <sub>J</sub>                | 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 <sub>θJA</sub> <sup>(1)</sup> | 65    |       | °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                      |
|-----------------------------|-----------------|--------------|---------------|------------------------------------|
| 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 |
| SS5P5HM3/86A <sup>(1)</sup> | 0.10            | 86A          | 1500          | 7" diameter plastic tape and reel  |
| SS5P5HM3/87A <sup>(1)</sup> | 0.10            | 87A          | 6500          | 13" diameter plastic tape and reel |

**Note**

(1) Automotive grade



## RATINGS AND CHARACTERISTICS CURVES

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

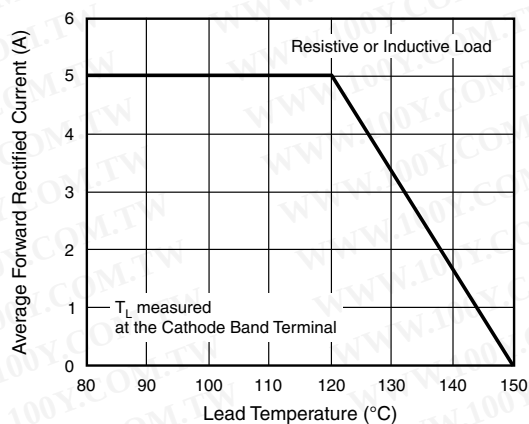


Fig. 1 - Maximum Forward Current Derating Curve

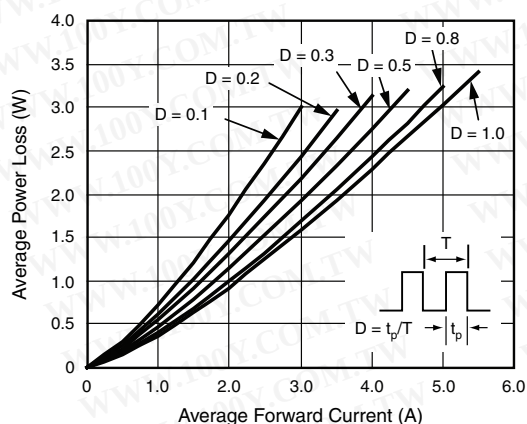


Fig. 2 - Forward Power Loss Characteristics

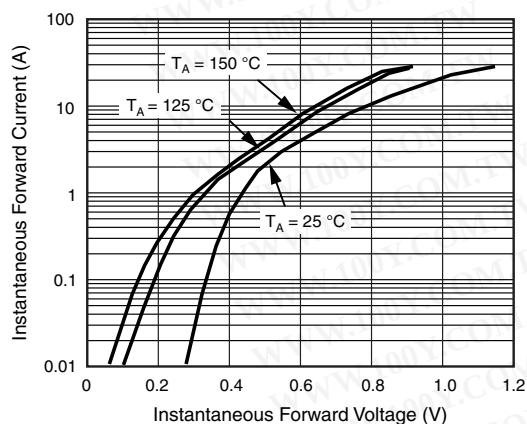


Fig. 3 - Typical Instantaneous Forward Characteristics

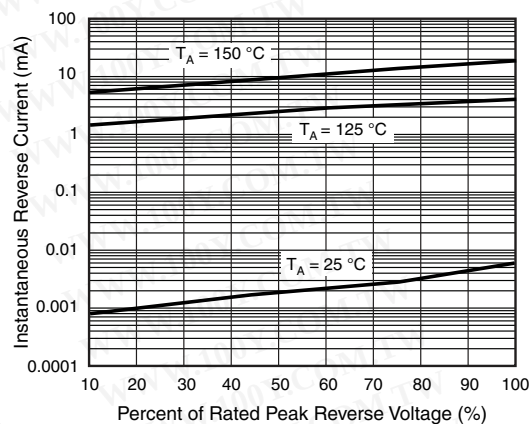


Fig. 4 - Typical Reverse Characteristics

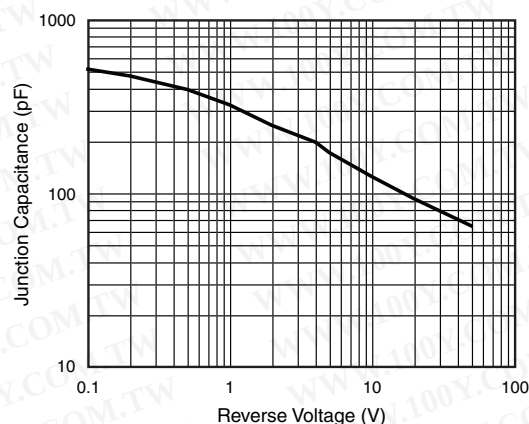


Fig. 5 - Typical Junction Capacitance

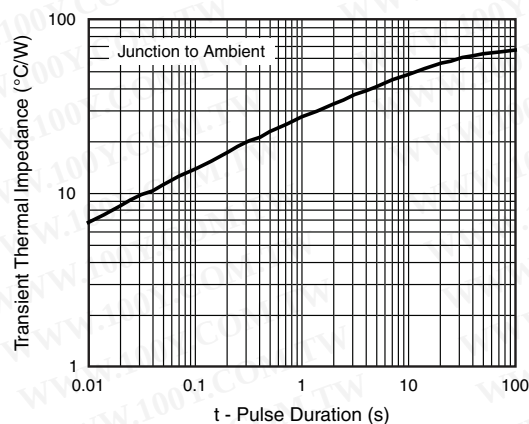
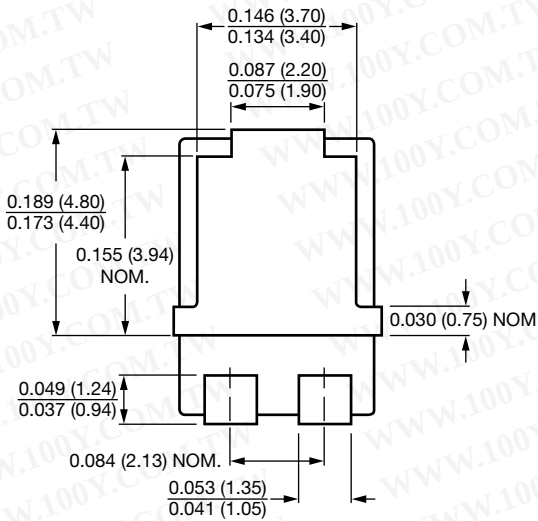
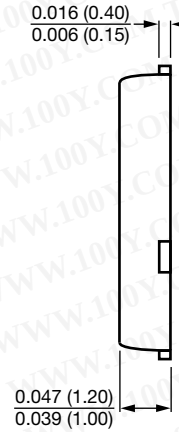
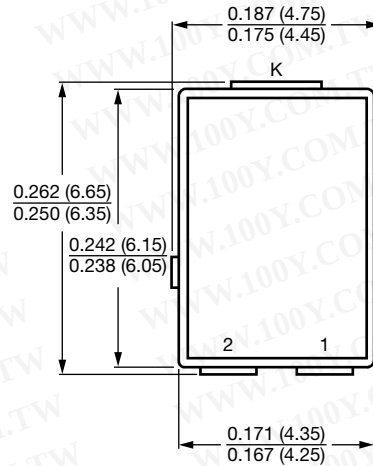


Fig. 6 - Typical Transient Thermal Impedance

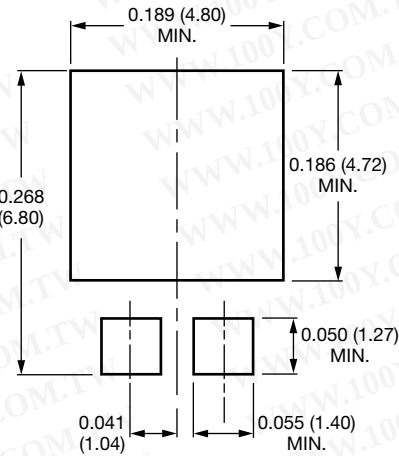


**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**TO-277A (SMPC)**



**Mounting Pad Layout**



Conform to JEDEC TO-277A





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