

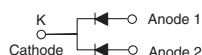


## High Current Density Surface Mount Schottky Barrier Rectifiers

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



**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

### PRIMARY CHARACTERISTICS

|                      |            |
|----------------------|------------|
| $I_{F(AV)}$          | 2 x 5.0 A  |
| $V_{RRM}$            | 30 V, 40 V |
| $I_{FSM}$            | 200 A      |
| $E_{AS}$             | 20 mJ      |
| $V_F$ at $I_F = 5$ A | 0.37 V     |
| $T_J$ max.           | 150 °C     |

### TYPICAL APPLICATIONS

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

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

| PARAMETER                                                                         | SYMBOL         | SS10P3C       | SS10P4C | UNIT |
|-----------------------------------------------------------------------------------|----------------|---------------|---------|------|
| Device marking code                                                               |                | S103C         | S104C   |      |
| Maximum repetitive peak reverse voltage                                           | $V_{RRM}$      | 30            | 40      | V    |
| Maximum average forward rectified current (fig. 1)                                | total device   | 10            |         | A    |
|                                                                                   | per diode      | 5.0           |         |      |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 200           |         | 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   |

**SS10P3C, SS10P4C**

Vishay General Semiconductor



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                        |                         |                               |      |      |      |
|----------------------------------------------------------------------------|------------------------|-------------------------|-------------------------------|------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS        |                         | SYMBOL                        | TYP. | MAX. | UNIT |
| Instantaneous forward voltage per diode                                    | I <sub>F</sub> = 2.5 A | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.40 | -    | V    |
|                                                                            | I <sub>F</sub> = 5.0 A |                         |                               | 0.45 | 0.53 |      |
|                                                                            | I <sub>F</sub> = 2.5 A | T <sub>A</sub> = 125 °C |                               | 0.29 | -    |      |
|                                                                            | I <sub>F</sub> = 5.0 A |                         |                               | 0.37 | 0.44 |      |
| Reverse current per diode                                                  | Rated V <sub>R</sub>   | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 56   | 550  | μA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 28   | 45   | mA   |
| Typical junction capacitance per diode                                     | 4.0 V, 1 MHz           |                         | C <sub>J</sub>                | 430  | -    | pF   |

**Notes**<sup>(1)</sup> Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle<sup>(2)</sup> Pulse test: Pulse width  $\leq 40\text{ ms}$ 

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise specified) |                                 |         |         |      |
|-----------------------------------------------------------------------------|---------------------------------|---------|---------|------|
| PARAMETER                                                                   | SYMBOL                          | SS10P3C | SS10P4C | UNIT |
| Typical thermal resistance per diode                                        | R <sub>θJA</sub> <sup>(1)</sup> | 60      |         | °C/W |
|                                                                             | R <sub>θJL</sub>                | 3       |         |      |

**Note**<sup>(1)</sup> 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                      |
| SS10P4C-M3/86A                        | 0.10            | 86A          | 1500          | 7" diameter plastic tape and reel  |
| SS10P4C-M3/87A                        | 0.10            | 87A          | 6500          | 13" diameter plastic tape and reel |
| SS10P4CHM3/86A <sup>(1)</sup>         | 0.10            | 86A          | 1500          | 7" diameter plastic tape and reel  |
| SS10P4CHM3/87A <sup>(1)</sup>         | 0.10            | 87A          | 6500          | 13" diameter plastic tape and reel |

**Note**<sup>(1)</sup> Automotive grade

## RATINGS AND CHARACTERISTICS CURVES

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

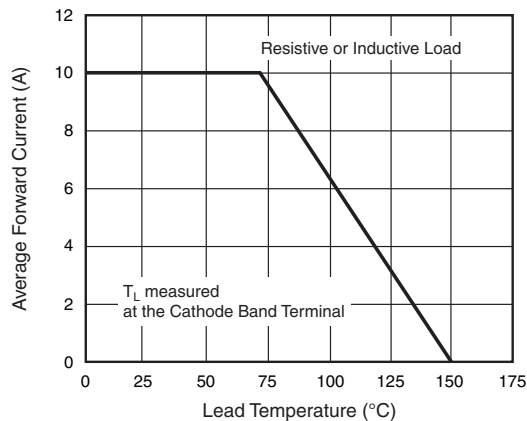


Fig. 1 - Maximum Forward Current Derating Curve

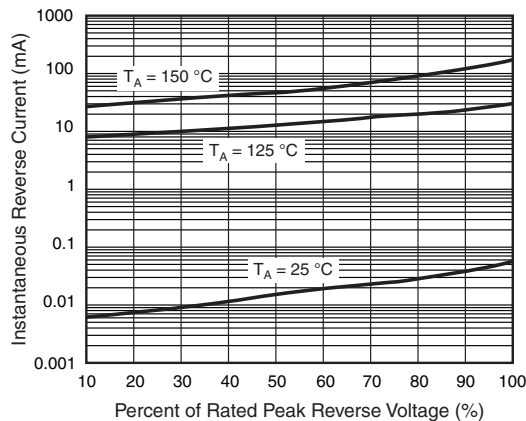


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

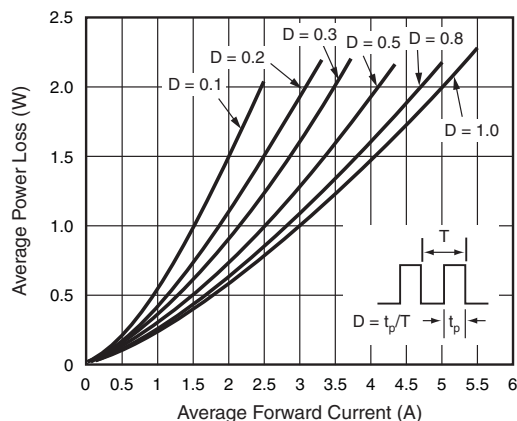


Fig. 2 - Forward Power Loss Characteristics Per Diode

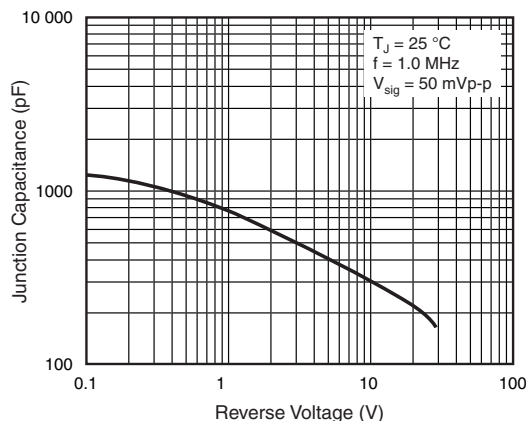


Fig. 5 - Typical Junction Capacitance Per Diode

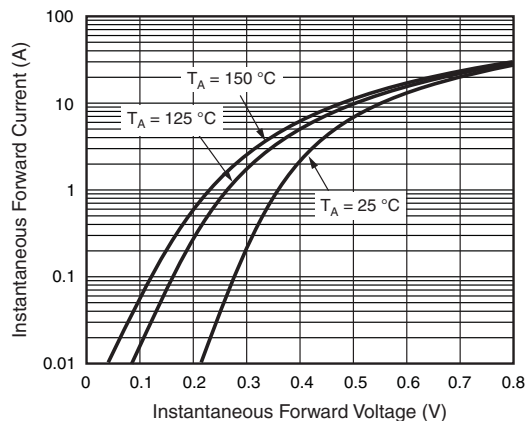


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

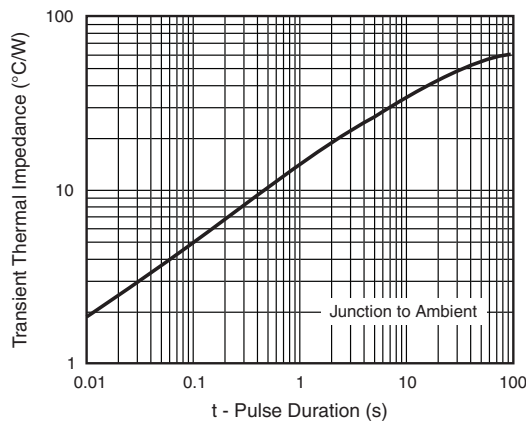
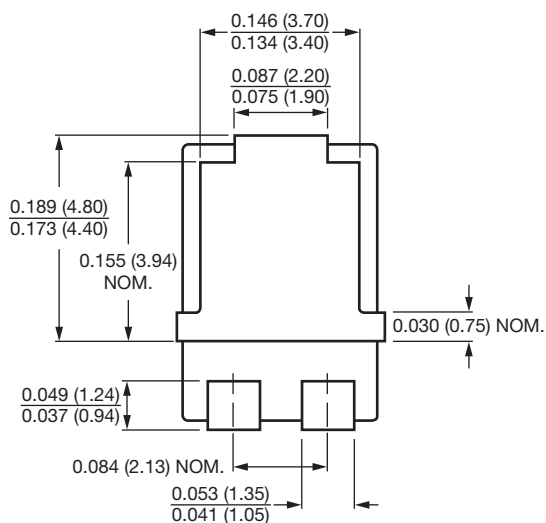
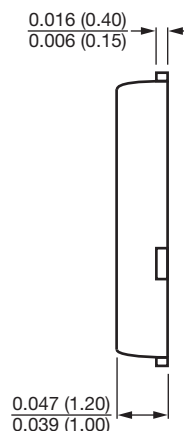
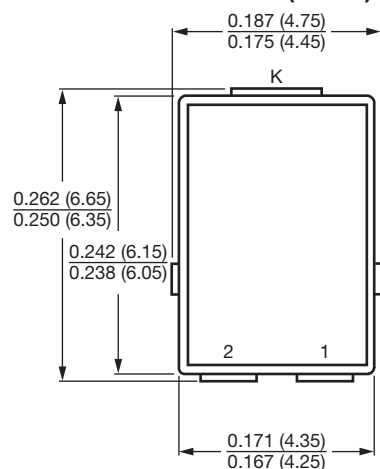
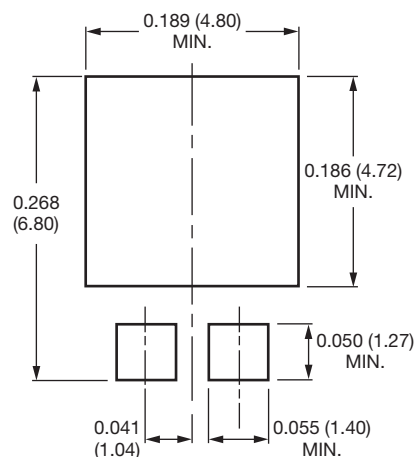


Fig. 6 - Typical Transient Thermal Impedance Per Diode

**SS10P3C, SS10P4C**

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**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)**TO-277A (SMPC)****Mounting Pad Layout**

Conform to JEDEC TO-277A



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