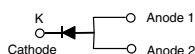


High Current Density Surface Mount Schottky Rectifier

eSMP® Series



TO-277A (SMPC)



FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Guardring for overvoltage protection
- High barrier technology, $T_J = 175\text{ °C}$ maximum
- Low leakage current
- 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

PRIMARY CHARACTERISTICS

| | |
|------------------------------|-------------------|
| $I_{F(AV)}$ | 10 A |
| V_{RRM} | 45 V |
| I_{FSM} | 200 A |
| E_{AS} | 20 mJ |
| V_F at $I_F = 10\text{ A}$ | 0.56 V |
| I_R | 5.5 μA |
| T_J max. | 175 °C |

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

TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters or polarity protection application.

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)

| PARAMETER | SYMBOL | SS10PH45 | UNIT |
|---|----------------|---------------|------|
| Device marking code | | 10H45 | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 45 | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | 10 | A |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 200 | A |
| Non-repetitive avalanche energy at $I_{AS} = 2\text{ A}$, $T_J = 25\text{ °C}$ | E_{AS} | 20 | mJ |
| Operating junction and storage temperature range | T_J, T_{STG} | - 55 to + 175 | °C |

SS10PH45

Vishay General Semiconductor



| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | |
|---|---------------------|-----------------------------------|-------------|------|------|---------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage | $I_F = 5\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$ | $V_F^{(1)}$ | 0.54 | - | V |
| | $I_F = 10\text{ A}$ | | | 0.64 | 0.72 | |
| | $I_F = 5\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ | | 0.45 | - | |
| | $I_F = 10\text{ A}$ | | | 0.56 | 0.64 | |
| Reverse current | Rated V_R | $T_A = 25\text{ }^\circ\text{C}$ | $I_R^{(2)}$ | 5.5 | 80 | μA |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 3.9 | 10 | mA |
| Typical junction capacitance | 4.0 V, 1 MHz | | C_J | 400 | - | pF |

Notes(1) Pulse test: 300 μs 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 | SS10PH45 | 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

| ORDERING INFORMATION (Example) | | | | |
|--------------------------------|-----------------|--------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| SS10PH45-M3/86A | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| SS10PH45-M3/87A | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |
| SS10PH45HM3/86A ⁽¹⁾ | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| SS10PH45HM3/87A ⁽¹⁾ | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |

Note

(1) Automotive grade

RATINGS AND CHARACTERISTICS CURVES

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

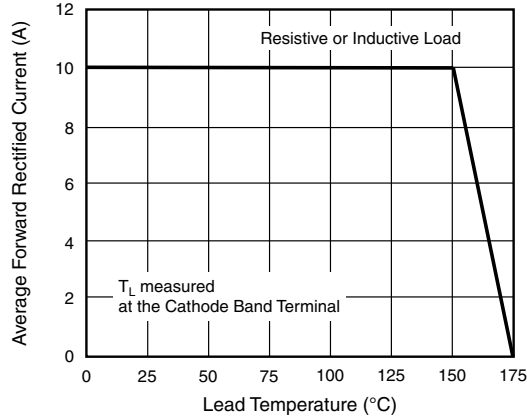


Fig. 1 - Maximum Forward Current Derating Curve

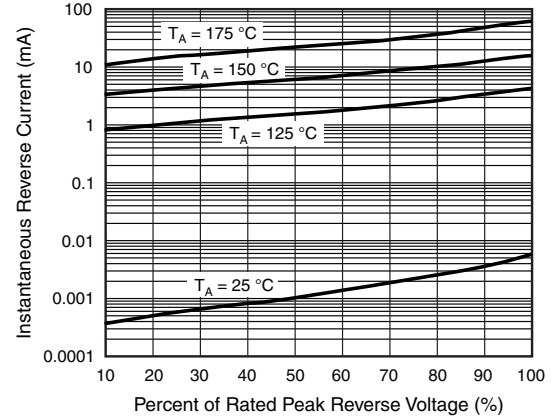


Fig. 4 - Typical Reverse Leakage Characteristics

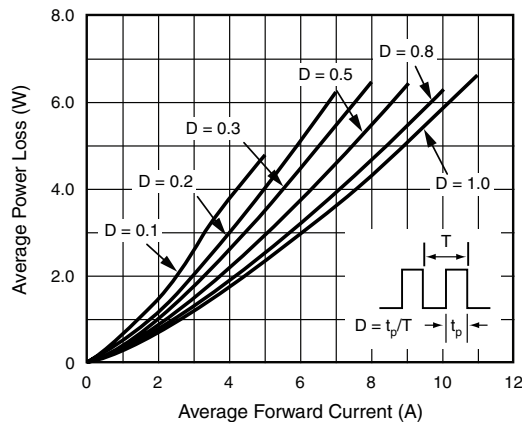


Fig. 2 - Forward Power Loss Characteristics

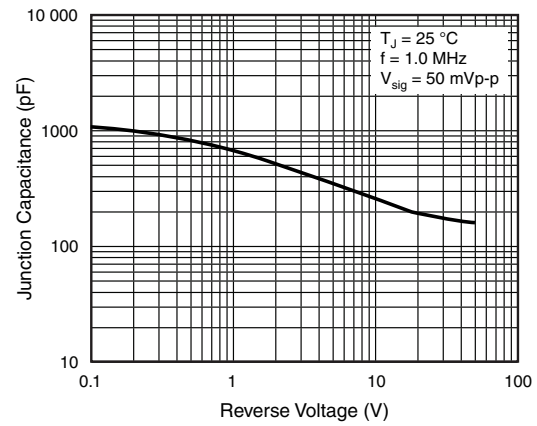


Fig. 5 - Typical Junction Capacitance

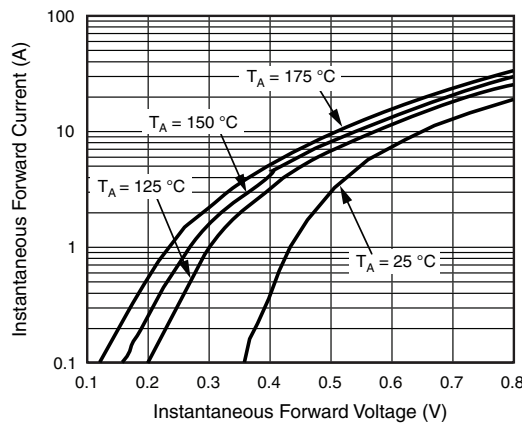


Fig. 3 - Typical Instantaneous Forward Characteristics

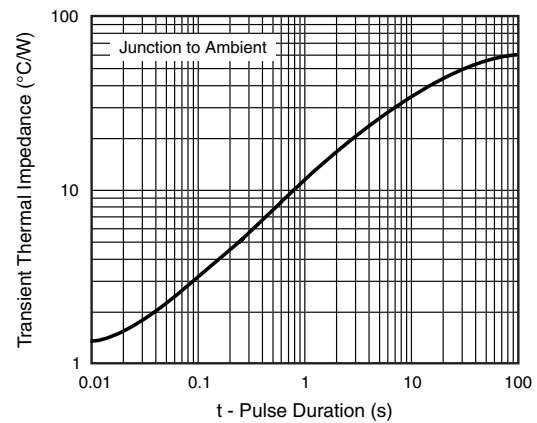


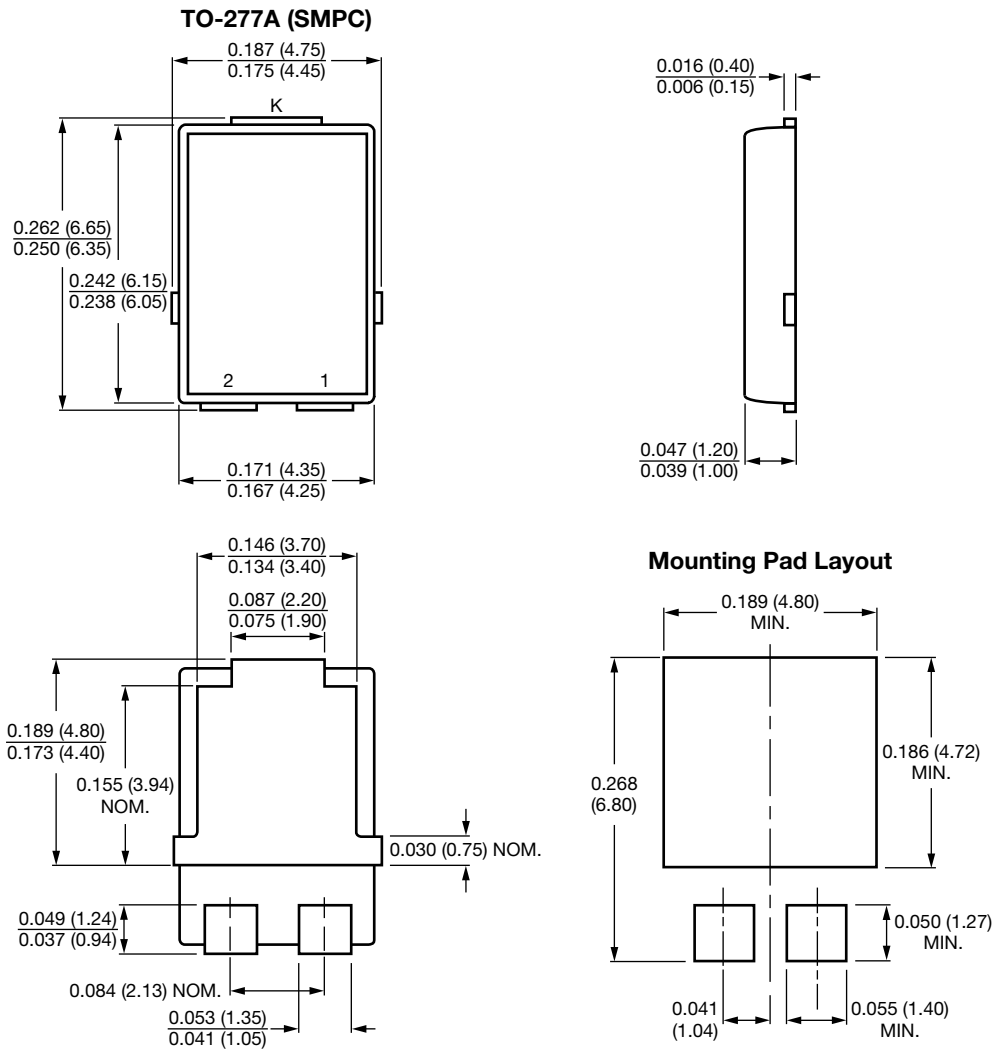
Fig. 6 - Typical Transient Thermal Impedance

SS10PH45

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC TO-277A



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