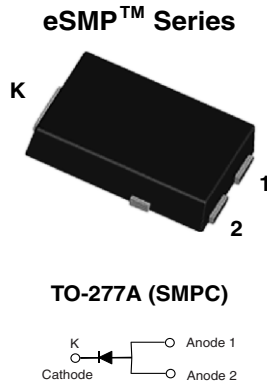


High Current Density Surface Mount Schottky Barrier Rectifiers



FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Guardring for overvoltage protection
- 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
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC
- **Halogen-free**



RoHS
COMPLIANT
HALOGEN
FREE

PRIMARY CHARACTERISTICS

| | |
|-----------------------|------------|
| $I_{F(AV)}$ | 12 A |
| V_{RRM} | 20 V, 30 V |
| I_{FSM} | 280 A |
| E_{AS} | 20 mJ |
| V_F at $I_F = 12$ A | 0.38 V |
| T_J max. | 150 °C |

TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, dc-to-dc converters, and polarity protection applications.

MECHANICAL DATA

Case: TO-277A (SMPC)

Molding compound meets UL 94V-0 flammability rating.

Base P/N-E3 - RoHS compliant, commercial grade

Base P/NHE3 - RoHS compliant, high reliability/automotive grade (AEC-Q101 qualified)

Base P/N-M3 - halogen-free and RoHS compliant, commercial grade

Base P/NHM3 - halogen-free and RoHS compliant, high reliability/automotive grade (AEC-Q101 qualified)

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 and M3 suffix meets JESD 201 class 1A whisker test, HE3 and HM3 suffix meets JESD 201 class 2 whisker test

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

| PARAMETER | SYMBOL | SS12P2L | SS12P3L | UNIT |
|---|----------------|---------------|---------|------|
| Device marking code | | S122 | S123 | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 20 | 30 | V |
| Maximum average forward rectified current (Fig. 1) | $I_{F(AV)}$ | 12 | | A |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 280 | | A |
| Non-repetitive avalanche energy at $I_{AS} = 2$ 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 ⁽¹⁾ | $I_F = 6\text{ A}$ $I_F = 12\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$ | V_F | 0.41 0.48 | - 0.56 | V |
| | $I_F = 6\text{ A}$ $I_F = 12\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ | | 0.30 0.38 | - 0.46 | |
| Maximum reverse current ⁽²⁾ | $V_R = 30\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$ $T_A = 125\text{ }^\circ\text{C}$ | I_R | 150 59 | 1000 120 | μA mA |
| Typical junction capacitance | 4.0 V, 1 MHz | | C_J | 930 | - | 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 noted) | | | | |
|---|--------------------------------|---------|---------|--------------------|
| PARAMETER | SYMBOL | SS12P2L | SS12P3L | UNIT |
| Typical thermal resistance | $R_{\theta JA}$ ⁽¹⁾ | | 60 | $^\circ\text{C/W}$ |
| | $R_{\theta JL}$ | | 3 | |

Note:

- (1) Units mounted on recommended P.C.B. 1 oz. pad layout

| ORDERING INFORMATION (Example) | | | | |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| SS12P3L-E3/86A | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| SS12P3L-E3/87A | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |
| SS12P3LHE3/86A ⁽¹⁾ | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| SS12P3LHE3/87A ⁽¹⁾ | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |
| SS12P3L-M3/86A | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| SS12P3L-M3/87A | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |
| SS12P3LHM3/86A ⁽¹⁾ | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| SS12P3LHM3/87A ⁽¹⁾ | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |

Note:

- (1) High reliability/automotive grade (AEC-Q101 qualified)



RATINGS AND CHARACTERISTICS CURVES

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

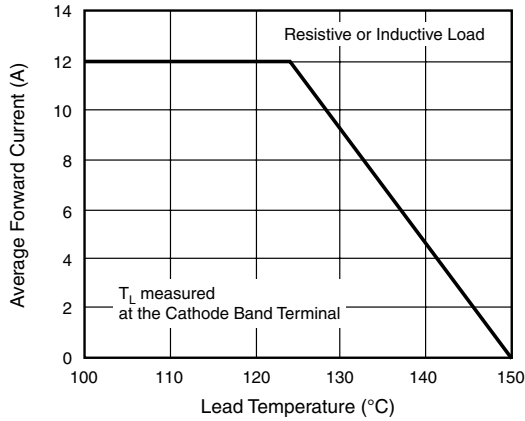


Figure 1. Maximum Forward Current Derating Curve

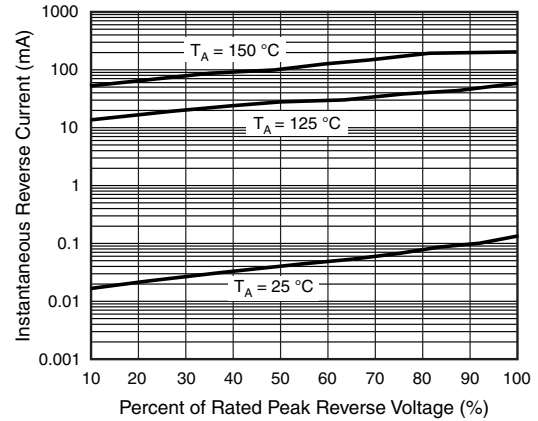


Figure 4. Typical Reverse Leakage Characteristics

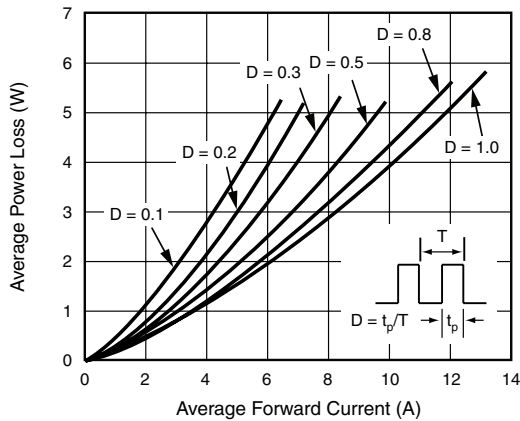


Figure 2. Forward Power Loss Characteristics

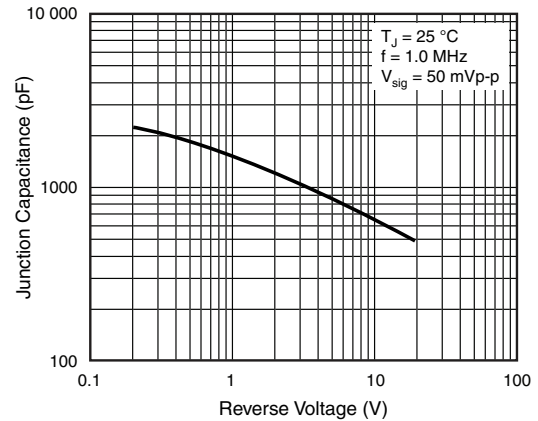


Figure 5. Typical Junction Capacitance

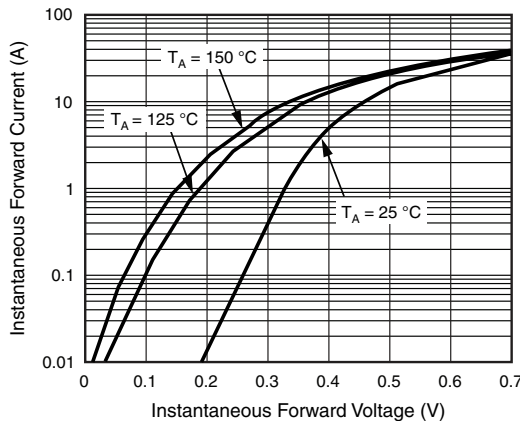


Figure 3. Typical Instantaneous Forward Characteristics

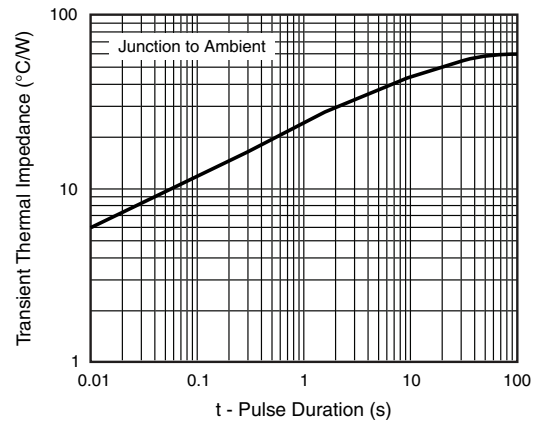
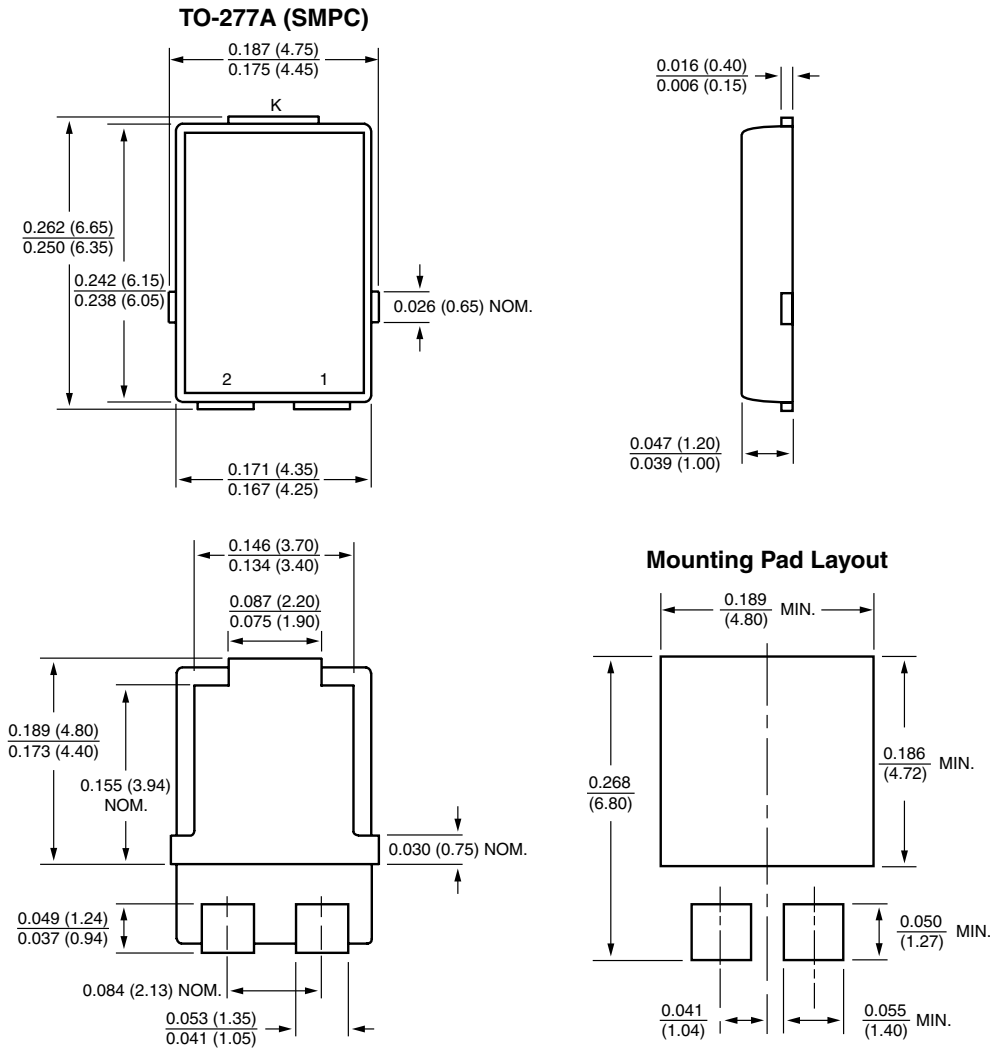


Figure 6. Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC TO-277A



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