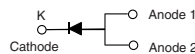


High Current Density Surface Mount Ultrafast High Voltage Rectifier

eSMP™ Series



TO-277A (SMPC)



| PRIMARY CHARACTERISTICS | |
|-------------------------|--------|
| $I_{F(AV)}$ | 6.0 A |
| V_{RRM} | 600 V |
| I_{FSM} | 80 A |
| t_{rr} | 25 ns |
| V_F at $I_F = 6.0$ A | 1.59 V |
| T_J max. | 175 °C |

TYPICAL APPLICATIONS

For use in high voltage, high frequency power factor corrections, switching mode power supplies, freewheeling diodes and secondary dc-to-dc rectification application.

FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Oxide planar chip junction
- Ultrafast recovery time
- Soft recovery characteristics
- Low switching losses, high efficiency
- High forward surge capability
- 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

MECHANICAL DATA

Case: TO-277A (SMPC)

Molding compound meets UL 94V-0 flammability rating.

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

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

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

E3 and M3 suffix meets JESD 201 class 1A whisker test

| MAXIMUM RATINGS ($T_C = 25$ °C unless otherwise noted) | | | |
|--|----------------|---------------|------|
| PARAMETER | SYMBOL | UH6PJ | UNIT |
| Device marking code | | H6PJ | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 600 | V |
| Maximum average forward rectified current (Fig. 1) | $I_{F(AV)}$ | 6.0 | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 80 | A |
| Operating junction and storage temperature range | T_J, T_{STG} | - 55 to + 175 | °C |



| ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | |
|--|--|---|----------|--------------|-----------|---------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage ⁽¹⁾ | $I_F = 3.0\text{ A}$ $I_F = 6.0\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$ | V_F | 1.98 2.45 | - 3.0 | V |
| | $I_F = 3.0\text{ A}$ $I_F = 6.0\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ | | 1.23 1.59 | - 1.8 | |
| Reverse current ⁽²⁾ | $V_R = 600\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$ $T_A = 125\text{ }^\circ\text{C}$ | I_R | - 28 | 10 200 | μA |
| Maximum reverse recovery time | $I_F = 0.5\text{ A}, I_R = 1.0\text{ A},$ $I_{rr} = 0.25\text{ A}$ | | t_{rr} | 20 | 25 | ns |
| | $I_F = 1.0\text{ A}, di/dt = 50\text{ A}/\mu\text{s},$ $V_R = 30\text{ V}, I_{rr} = 0.1 I_{RM}$ | | | 30 | 45 | |
| Typical softness factor (t_b/t_a) | | | S | 0.88 | - | - |
| Typical reverse recovery current | $I_F = 6\text{ A}, di/dt = 200\text{ A}/\mu\text{s},$ $V_R = 400\text{ V}, T_J = 125\text{ }^\circ\text{C}$ | | I_{RM} | 6.1 | - | A |
| Typical stored charge | | | Q_{rr} | 150 | - | nC |
| Typical forward recovery time | $I_F = 6\text{ A}, di/dt = 48\text{ A}/\mu\text{s},$ $V_F = 1.1 \times V_{F\text{ max.}}$ | | t_{fr} | 155 | - | ns |
| Typical junction capacitance | 4.0 V, 1 MHz | | C_J | 30 | - | 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 | UH6PJ | UNIT |
| Typical thermal resistance | $R_{\theta JA}$ ⁽¹⁾ | 90 | $^\circ\text{C}/\text{W}$ |
| | $R_{\theta JL}$ | 5 | |

Notes:

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

| ORDERING INFORMATION (Example) | | | | |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| UH6PJ-E3/86A | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| UH6PJ-E3/87A | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |
| UH6PJ-M3/86A | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| UH6PJ-M3/87A | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |

RATINGS AND CHARACTERISTICS CURVES

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

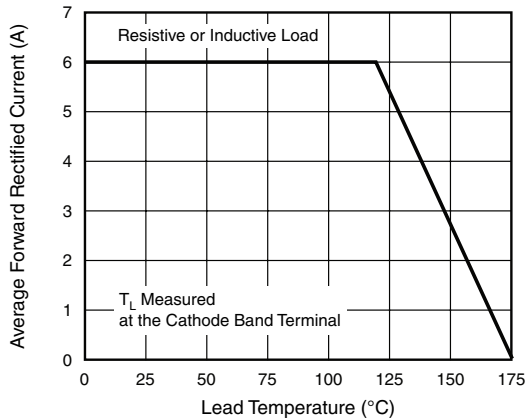


Figure 1. Maximum Forward Current Derating Curve

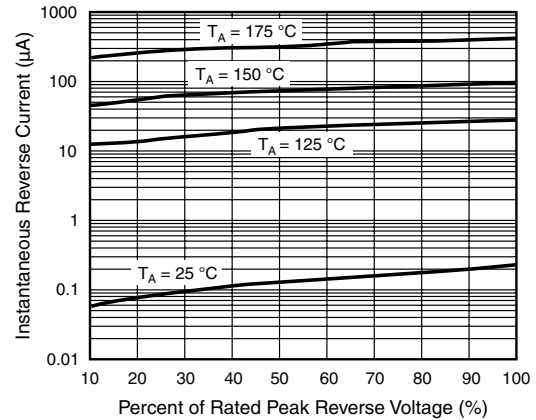


Figure 4. Typical Reverse Characteristics

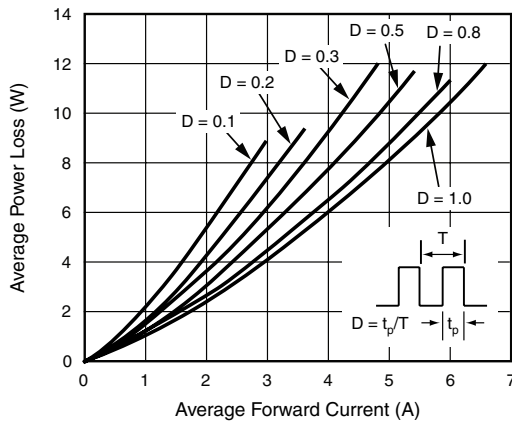


Figure 2. Forward Power Loss Characteristics

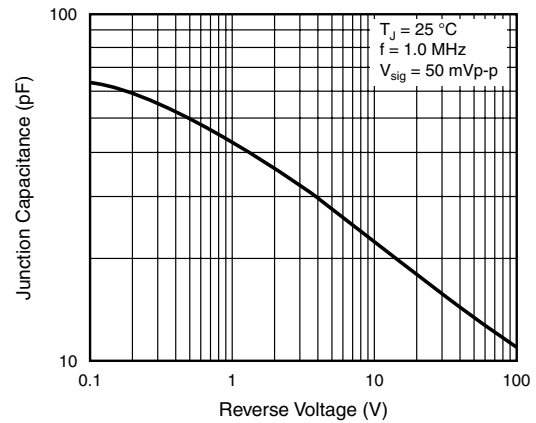


Figure 5. Typical Junction Capacitance

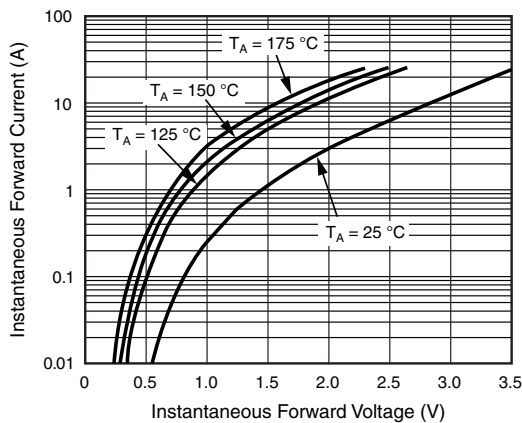
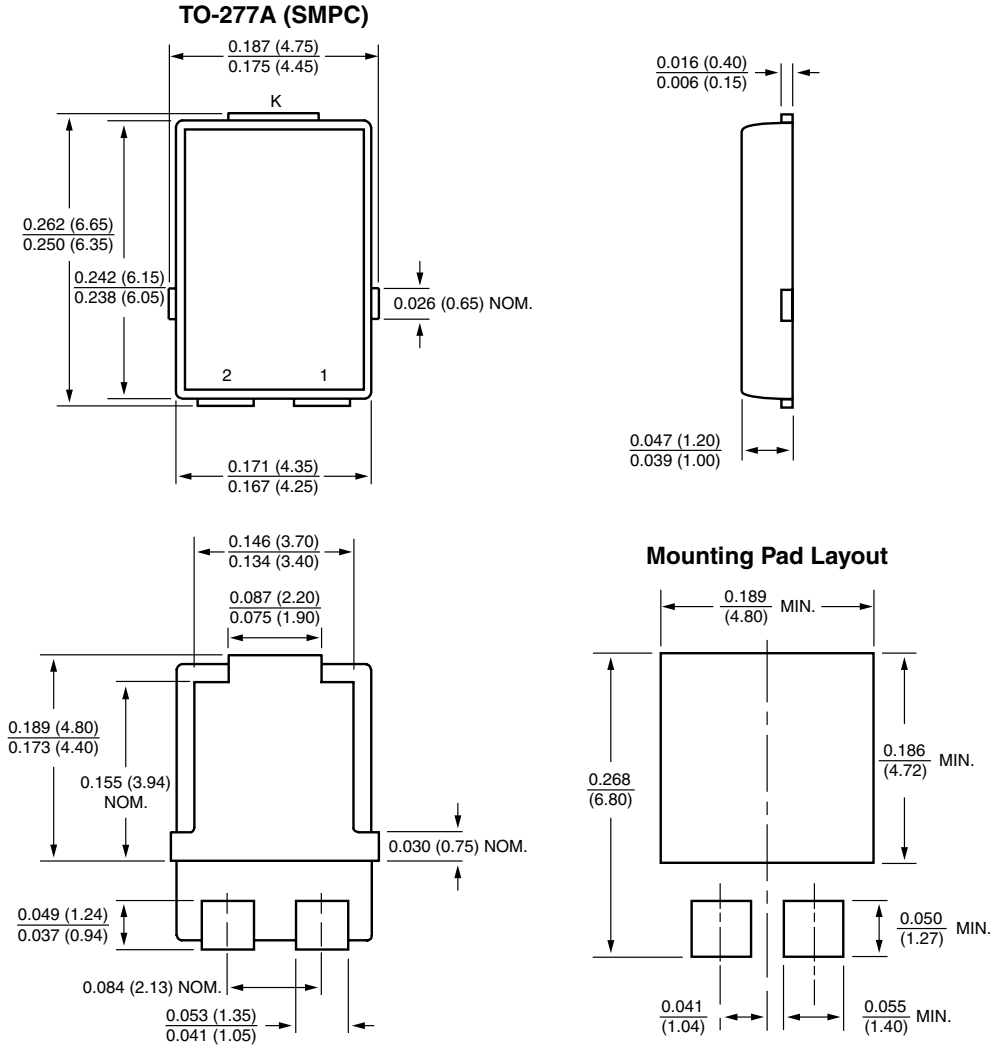


Figure 3. Typical Instantaneous Forward Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.