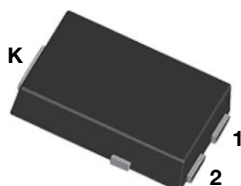


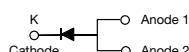


High Current Density Surface Mount Ultrafast High Voltage Rectifier

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 | 1.3 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/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
- 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 ($T_C = 25$ °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 °C unless otherwise noted) | | | | | | |
|--|---|-------------------------|-------------------------------|------|------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage | I _F = 3.0 A | T _A = 25 °C | V _F ⁽¹⁾ | 1.6 | - | V |
| | I _F = 6.0 A | | | 1.9 | 3.0 | |
| | I _F = 3.0 A | T _A = 125 °C | | 1.1 | - | |
| | I _F = 6.0 A | | | 1.3 | 1.8 | |
| Reverse current | V _R = 600 V | T _A = 25 °C | I _R ⁽²⁾ | - | 10 | μA |
| | | T _A = 125 °C | | 46 | 200 | |
| Maximum reverse recovery time | I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A | | t _{rr} | 23 | 25 | ns |
| | I _F = 1.0 A, dI/dt = 50 A/μs, V _R = 30 V, I _{rr} = 0.1 I _{RM} | | | 33 | 45 | |
| Typical softness factor (t _b /t _a) | I _F = 6 A, dI/dt = 200 A/μs, V _R = 400 V, T _J = 125 °C | | S | 0.3 | - | - |
| Typical reverse recovery current | | | I _{RM} | 6.5 | - | A |
| Typical stored charge | | | Q _{rr} | 150 | - | nC |
| Typical forward recovery time | I _F = 6 A, dI/dt = 48 A/μs, V _F = 1.1 x V _F max. | | t _{fr} | 150 | - | 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 | $^{\circ}\text{C}/\text{W}$ |
| | $R_{\theta JL}^{(2)}$ | 5 | |

Notes

(1) Units mounted on recommended PCB 1 oz. pad layout

(2) With heatsink

| ORDERING INFORMATION (Example) | | | | |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| 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 |
| UH6PJHM3/86A ⁽¹⁾ | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| UH6PJHM3/87A ⁽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)

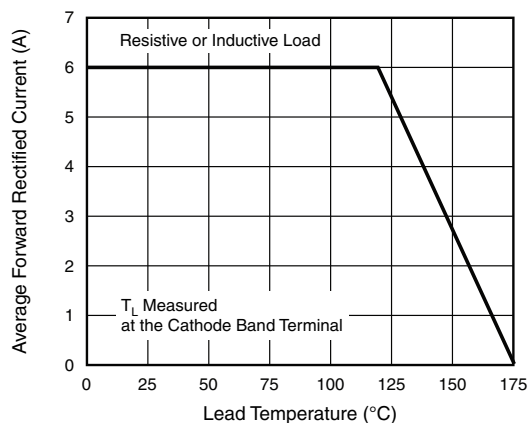


Fig. 1 - Maximum Forward Current Derating Curve

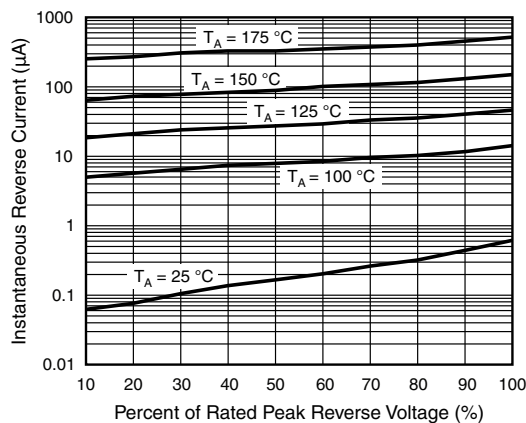


Fig. 4 - Typical Reverse Characteristics

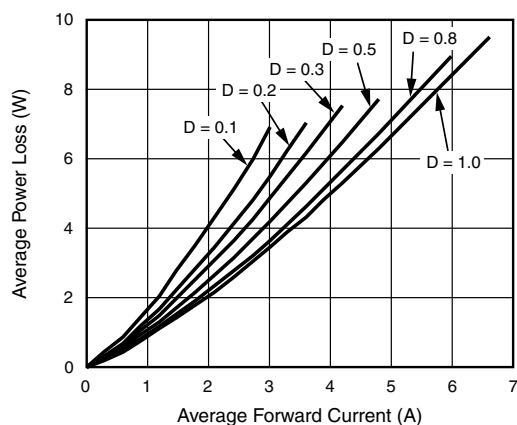


Fig. 2 - Forward Power Loss Characteristics

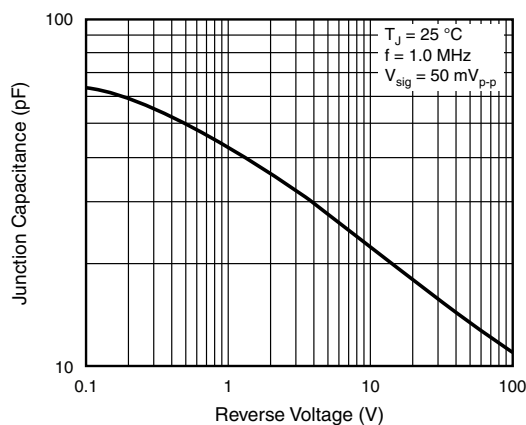


Fig. 5 - Typical Junction Capacitance

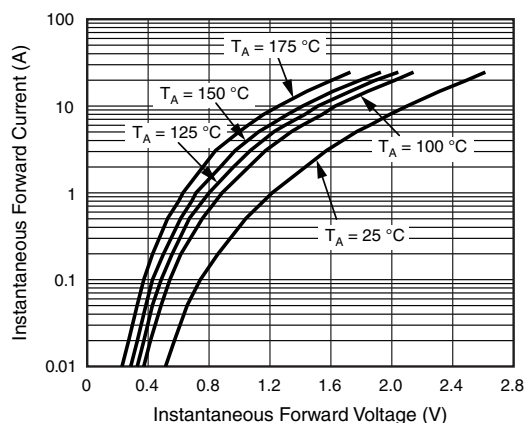
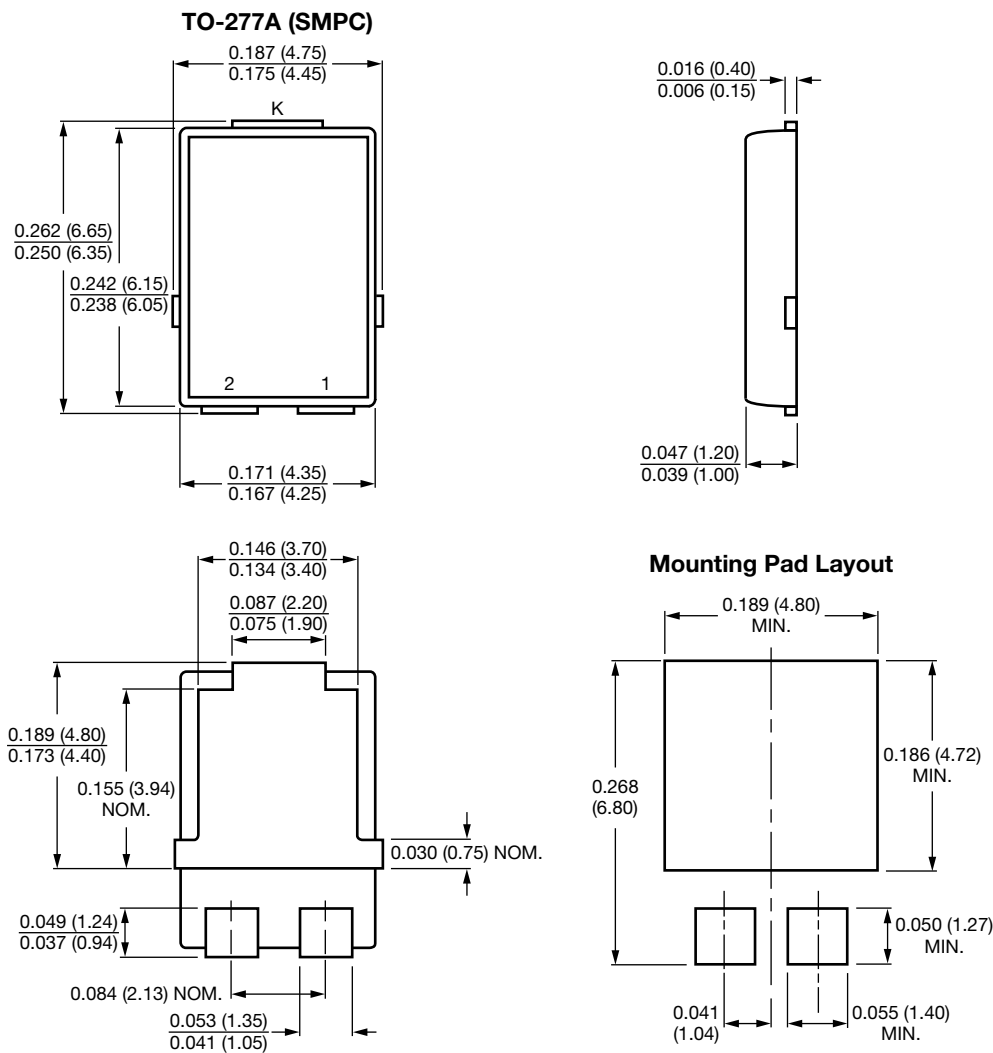


Fig. 3 - Typical Instantaneous Forward Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

Conform to JEDEC TO-277A



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