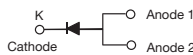




Ultrafast Avalanche Surface Mount Rectifiers



TO-277A (SMPC)



| PRIMARY CHARACTERISTICS | |
|-------------------------|---------------------|
| $I_{F(AV)}$ | 3.0 A |
| V_{RRM} | 200 V, 400 V, 600 V |
| I_{FSM} | 75 A |
| t_{rr} | 75 ns |
| E_{AS} | 20 mJ |
| V_F at $I_F = 3.0$ A | 1.13 V |
| T_J max. | 175 °C |

TYPICAL APPLICATIONS

For use in lighting, high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer, automotive, and telecommunication.

| MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted) | | | | | |
|-----------------------------------------------------------------------------------|-----------------------|---------------|-------|-------|------|
| PARAMETER | SYMBOL | AU3PD | AU3PG | AU3PJ | UNIT |
| Device marking code | | AU3D | AU3G | AU3J | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 200 | 400 | 600 | V |
| Maximum DC forward current (fig. 1) | $I_F^{(1)}$ | 3.0 | | | A |
| | $I_F^{(2)}$ | 1.7 | | | |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 45 | | | A |
| Non-repetitive avalanche energy at $T_J = 25$ °C | $I_{AS} = 2.5$ A max. | 20 | | | mJ |
| | $I_{AS} = 1.0$ A typ. | 30 | | | |
| Operating junction and storage temperature range | T_J, T_{STG} | - 55 to + 175 | | | °C |

Notes

(1) Mounted on 14 mm x 14 mm pad areas, 1 oz. FR4 PCB

(2) Free air, mounted on recommended pad area

FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Glass passivated chip junction
- Fast reverse recovery time
- Controlled avalanche characteristics
- Low leakage current
- 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

AU3PD, AU3PG, AU3PJ

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 | $I_F = 3.0\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$ | $V_F^{(1)}$ | 1.53 | 1.9 | V |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 1.13 | 1.4 | |
| Reverse current | Rated V_R | $T_A = 25\text{ }^\circ\text{C}$ | $I_R^{(2)}$ | 0.41 | 10 | μA |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 70 | 250 | |
| Maximum reverse recovery time | $I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $t_{rr} = 0.25\text{ A}$ | | t_{rr} | 66 | 75 | ns |
| Typical junction capacitance per diode | Rated $V_R = 4.0\text{ V}$, 1 MHz | | C_J | 72 | - | 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 | AU3PD | AU3PG | AU3PJ | UNIT |
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 85 | | | $^\circ\text{C/W}$ |
| | $R_{\theta JM}^{(2)}$ | 5 | | | |

Notes

(1) Free air, mounted on recommended PCB 1 oz. pad are; thermal resistance $R_{\theta JA}$ - junction to ambient(2) Units mounted on PCB with 14 mm x 14 mm copper pad areas; $R_{\theta JM}$ - junction to mount

| ORDERING INFORMATION (Example) | | | | |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| AU3PJ-M3/86A | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| AU3PJ-M3/87A | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |
| AU3PJHM3/86A ⁽¹⁾ | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| AU3PJHM3/86A ⁽¹⁾ | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

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

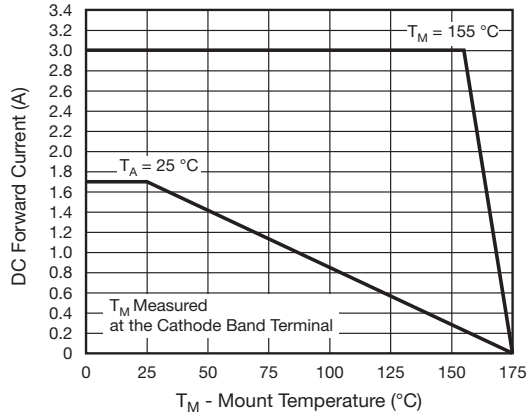


Fig. 1 - Maximum Forward Current Derating Curve

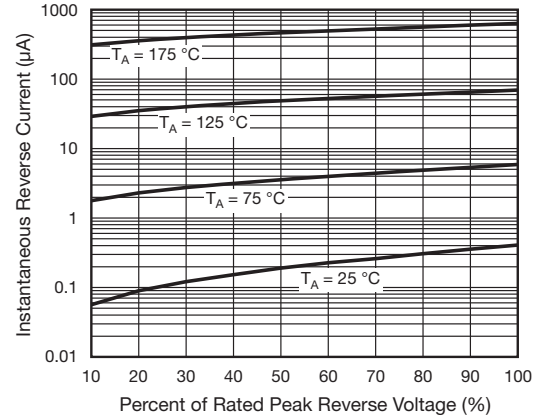


Fig. 4 - Typical Reverse Leakage Characteristics

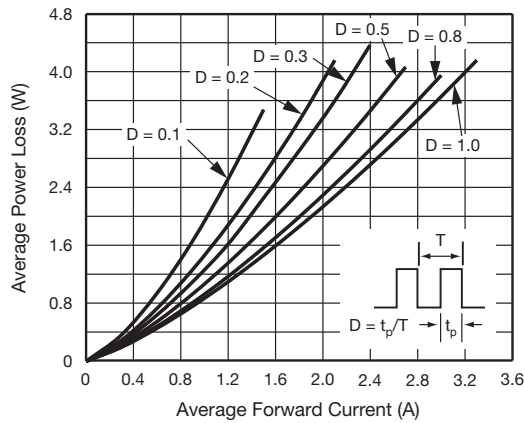


Fig. 2 - Average Power Loss Characteristics

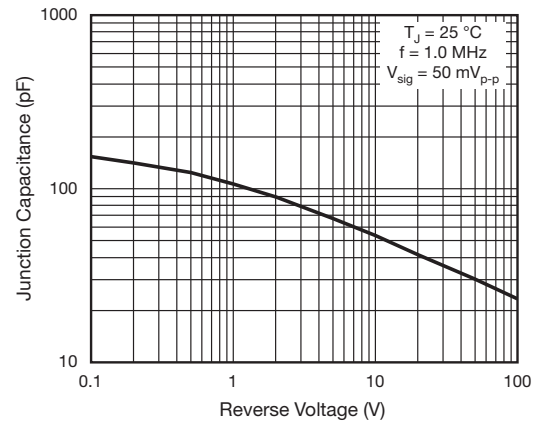


Fig. 5 - Typical Junction Capacitance

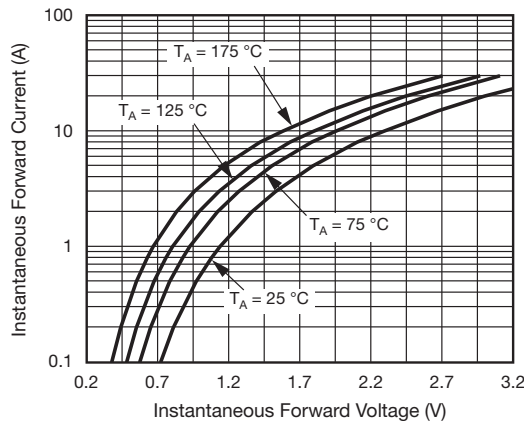


Fig. 3 - Typical Instantaneous Forward Characteristics

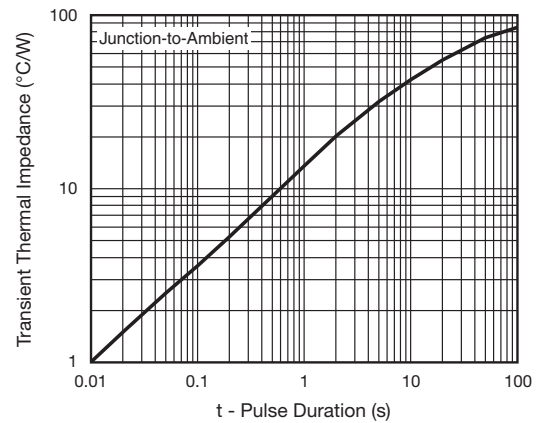


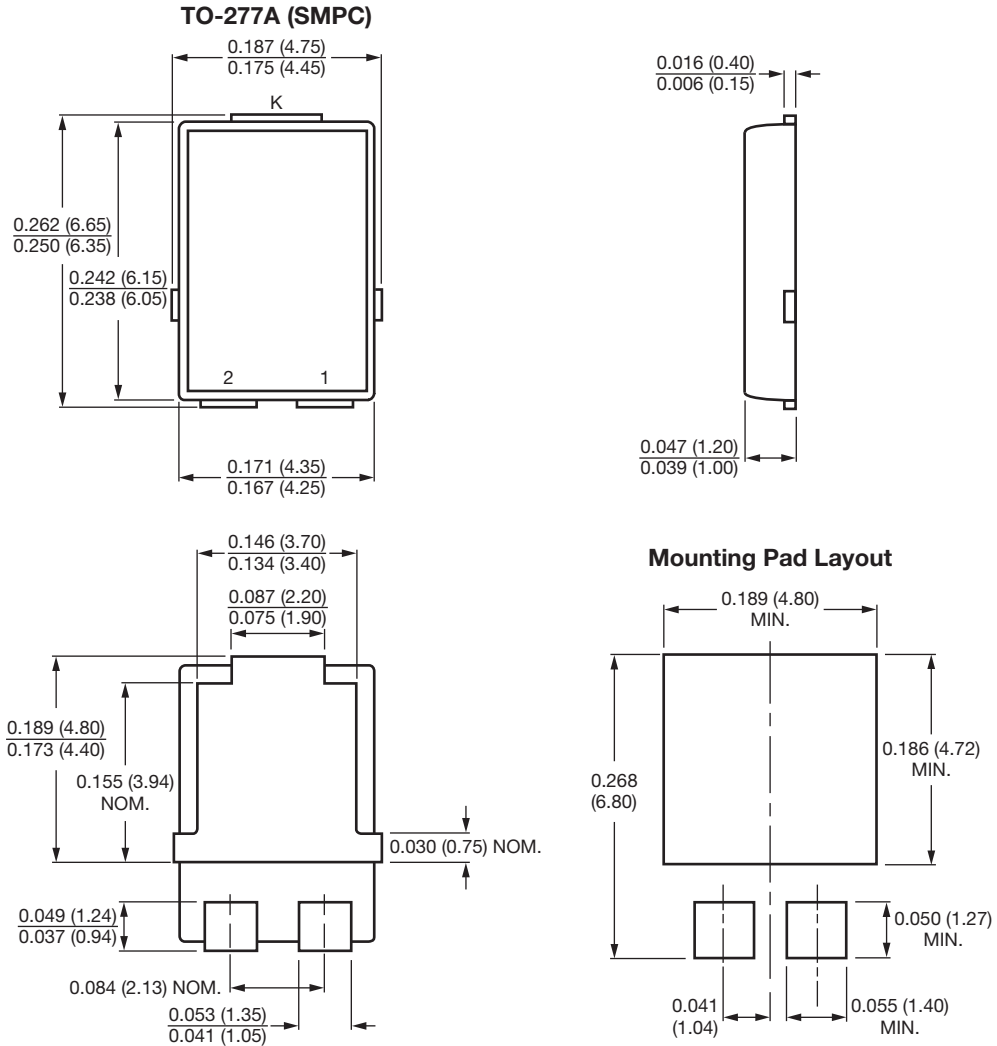
Fig. 6 - Typical Transient Thermal Impedance

AU3PD, AU3PG, AU3PJ

Vishay General Semiconductor



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC TO-277A



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