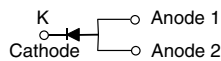


High Current Density Standard Avalanche Surface-Mount Rectifiers

eSMP® Series



SMPC (TO-277A)



LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

| PRIMARY CHARACTERISTICS | |
|-------------------------|------------------------------------|
| $I_{F(AV)}$ | 3.0 A |
| V_{RRM} | 200 V, 400 V, 600 V, 800 V, 1000 V |
| I_{FSM} | 70 A |
| E_{AS} | 20 mJ |
| V_F at $I_F = 3$ A | 0.90 V |
| T_J max. | 175 °C |
| Package | SMPC (TO-277A) |
| Circuit configuration | Single |

FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Glass passivated pellet chip junction
- 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 available
- Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

 AUTOMOTIVE
GRADE
Available

RoHS
COMPLIANT
HALOGEN
FREE

TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes for consumer, automotive and telecommunication.

MECHANICAL DATA

Case: SMPC (TO-277A)

Molding compound meets UL 94 V-0 flammability rating

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

Base P/NHM3_X - halogen-free, RoHS-compliant and AEC-Q101 qualified

("_X" denotes revision code e.g. A, B,.....)

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 ($T_A = 25$ °C unless otherwise noted) | | | | | | | |
|---|--------------------------|-------------|-------|-------|-------|-------|------|
| PARAMETER | SYMBOL | AS3PD | AS3PG | AS3PJ | AS3PK | AS3PM | UNIT |
| Device marking code | | AS3D | AS3G | AS3J | AS3K | AS3M | |
| Max. repetitive peak reverse voltage | V_{RRM} | 200 | 400 | 600 | 800 | 1000 | V |
| Max. DC forward current (fig. 1) | $I_F^{(1)}$ | 3.0 | | | | | A |
| | $I_F^{(2)}$ | 2.1 | | | | | |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 70 | | | | | A |
| Non-repetitive avalanche energy at $T_J = 25$ °C | $I_{AS} = 2.5$ A max. | 20 | | | | | mJ |
| | $I_{AS} = 1.0$ A typical | 30 | | | | | |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to +175 | | | | | °C |

Notes

(1) Mounted on 10 mm x 10 mm pad areas, 1 oz. FR4 PCB

(2) Free air, mounted on recommended copper pad area



| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | |
|--|--|-------------------------|-------------------------------|------|------|----|
| PARAMETER | TEST CONDITIONS | SYMBOL | TYP. | MAX. | UNIT | |
| Instantaneous forward voltage | I _F = 1.5 A | T _A = 25 °C | V _F ⁽¹⁾ | 0.92 | - | V |
| | I _F = 3.0 A | | | 1.00 | 1.10 | |
| | I _F = 1.5 A | T _A = 125 °C | | 0.81 | - | |
| | I _F = 3.0 A | | | 0.90 | 0.95 | |
| Reverse current | rated V _R | T _A = 25 °C | I _R ⁽²⁾ | 0.28 | 10 | µA |
| | | T _A = 125 °C | 62 | 150 | | |
| Typical reverse recovery time | I _F = 0.5 A, I _R = 1.0 A, I _{tr} = 0.25 A | t _{rr} | 1.2 | - | µs | |
| Typical junction capacitance per diode | 4.0 V, 1 MHz | C _J | 37 | - | pF | |

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | | |
|---|---------------------------------|-------|-------|-------|-------|-------|------|
| PARAMETER | SYMBOL | AS3PD | AS3PG | AS3PJ | AS3PK | AS3PM | UNIT |
| Typical thermal resistance | R _{θJA} ⁽¹⁾ | 80 | | | | | °C/W |
| | R _{θJM} ⁽²⁾ | 5 | | | | | |

Notes

(1) Free air, mounted on recommended PCB 1 oz. pad area; thermal resistance R_{θJA} - junction to ambient

(2) Units mounted on PCB with 10 mm x 10 mm copper pad areas, 1 oz. FR4 PCB; R_{θJM} - junction to mount

| ORDERING INFORMATION (Example) | | | | |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| AS3PJ-M3/86A | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| AS3PJ-M3/87A | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |
| AS3PJHM3_A/H ⁽¹⁾ | 0.10 | H | 1500 | 7" diameter plastic tape and reel |
| AS3PJHM3_A/I ⁽¹⁾ | 0.10 | I | 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)

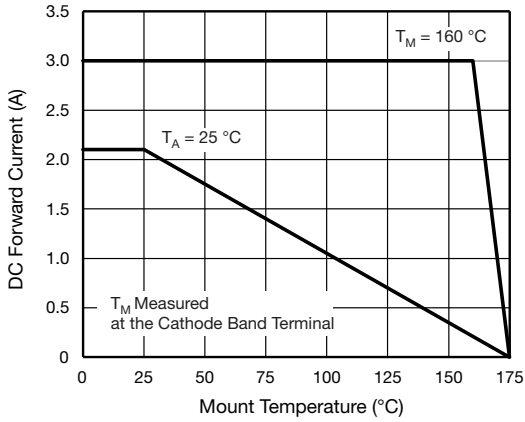


Fig. 1 - Maximum Forward Current Derating Curve

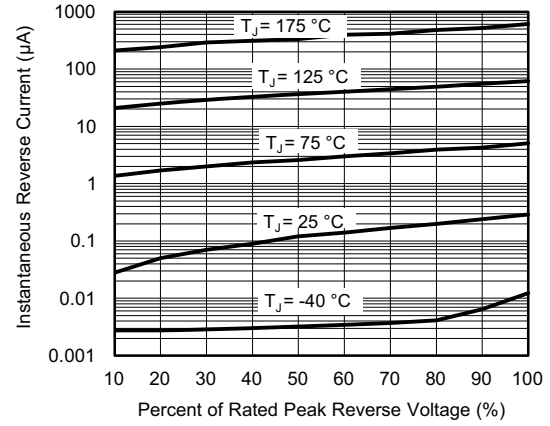


Fig. 4 - Typical Reverse Leakage Characteristics

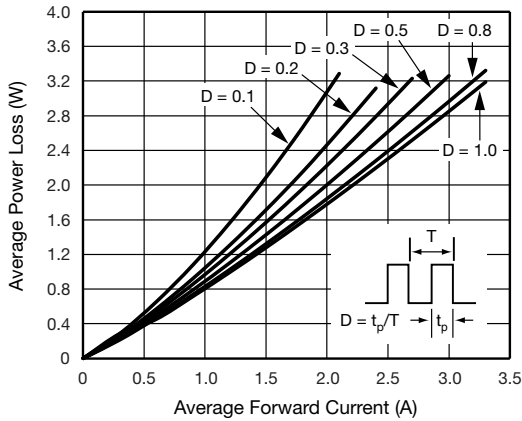


Fig. 2 - Forward Power Loss Characteristics

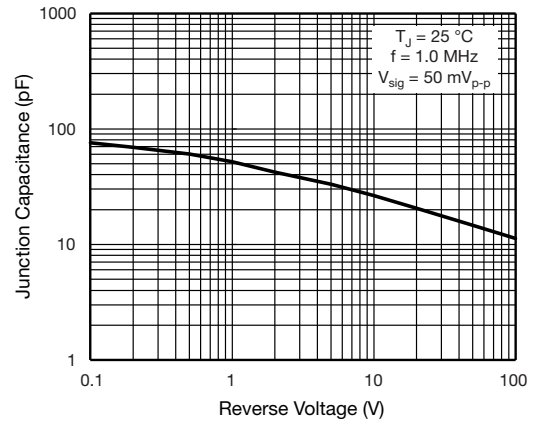


Fig. 5 - Typical Junction Capacitance

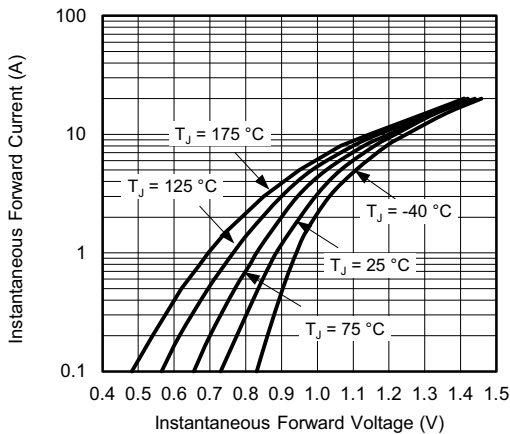


Fig. 3 - Typical Instantaneous Forward Characteristics

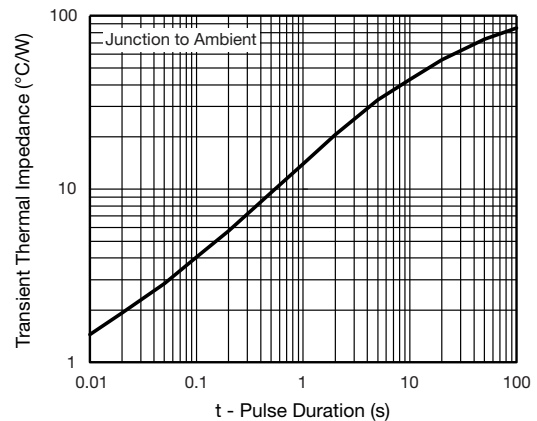
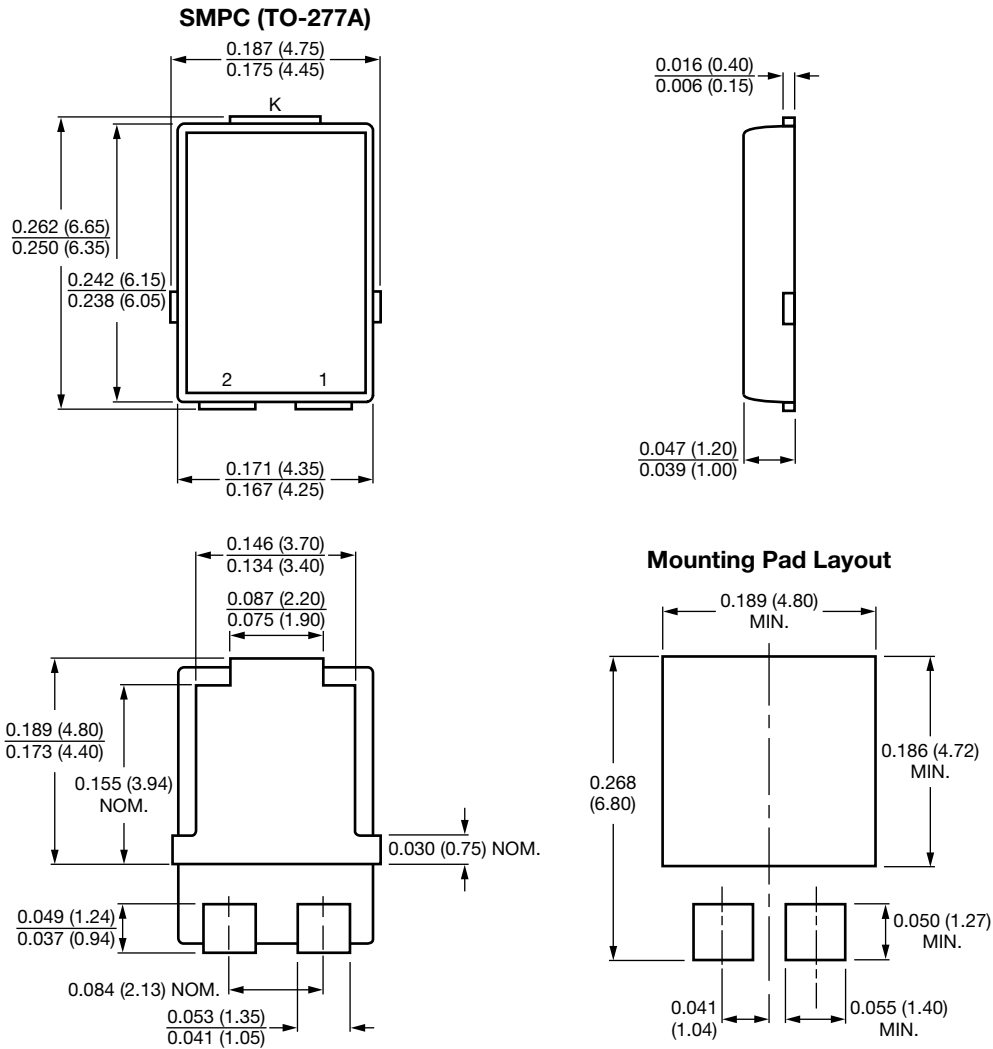


Fig. 6 - Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC® TO-277A



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