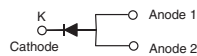


High Current Density Surface Mount Glass Passivated Rectifiers

eSMP® Series


TO-277A (SMPC)


FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Glass passivated chip junction
- Low forward voltage drop
- High 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: 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 AEC-Q101 qualified

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

| PRIMARY CHARACTERISTICS | |
|-------------------------|---|
| $I_{F(AV)}$ | 4.0 A |
| V_{RRM} | 100 V, 200 V, 400 V, 600 V, 800 V, 1000 V |
| I_{FSM} | 100 A |
| I_R | 10 μ A |
| V_F at $I_F = 4$ A | 0.860 V |
| T_J max. | 150 °C |
| Package | TO-277A (SMPC) |
| Diode variations | Single die |

| MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted) | | | | | | | | |
|---|----------------|-------------|------|------|------|------|------|------|
| PARAMETER | SYMBOL | S4PB | S4PD | S4PG | S4PJ | S4PK | S4PM | UNIT |
| Device marking code | | S4PB | S4PD | S4PG | S4PJ | S4PK | S4PM | |
| Max. repetitive peak reverse voltage | V_{RRM} | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| Average forward current | $I_{F(AV)}$ | 4.0 | | | | | | A |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 100 | | | | | | A |
| 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 | |
| Instantaneous forward voltage | $I_F = 2.0\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$ | $V_F^{(1)}$ | 0.897 | - | V |
| | $I_F = 4.0\text{ A}$ | | | 0.958 | 1.10 | |
| | $I_F = 2.0\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ | | 0.783 | - | |
| | $I_F = 4.0\text{ A}$ | | | 0.860 | 0.95 | |
| Reverse current | Rated V_R | $T_A = 25\text{ }^\circ\text{C}$ | $I_R^{(2)}$ | - | 10 | μA |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 55 | 100 | |
| Max. reverse recovery time | $I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$ | t_{rr} | 2.5 | - | μs | |
| 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 specified) | | | | | | | | | |
|---|-----------------------|------|------|------|------|------|------|------|--------------------|
| PARAMETER | SYMBOL | S4PB | S4PD | S4PG | S4PJ | S4PK | S4PM | UNIT | |
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 60 | | | | | | | $^\circ\text{C/W}$ |
| | $R_{\theta JL}$ | 4 | | | | | | | |

Note

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

| ORDERING INFORMATION (Example) | | | | |
|---------------------------------------|-----------------|--------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| S4PJ-M3/86A | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| S4PJ-M3/87A | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |
| S4PJHM3/86A ⁽¹⁾ | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| S4PJHM3/87A ⁽¹⁾ | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |
| S4PJHM3_A/H ⁽¹⁾ | 0.10 | H | 1500 | 7" diameter plastic tape and reel |
| S4PJHM3_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)

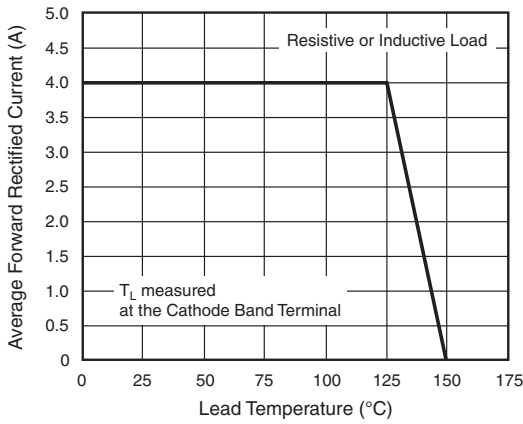


Fig. 1 - Maximum Forward Current Derating Curve

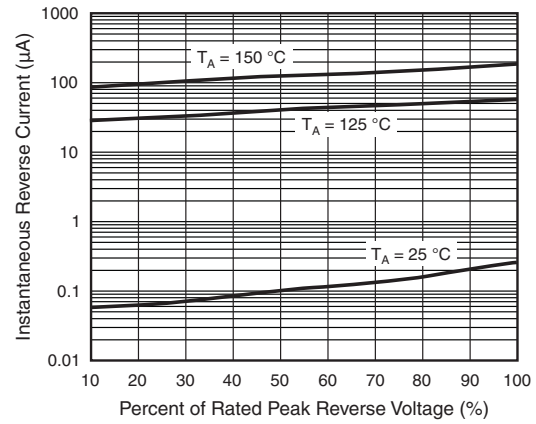


Fig. 4 - Typical Reverse Leakage Characteristics

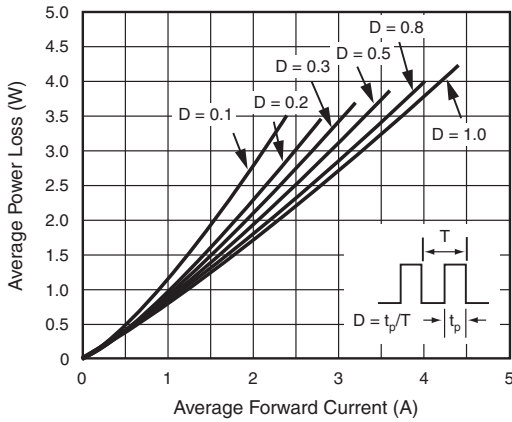


Fig. 2 - Forward Power Loss Characteristics

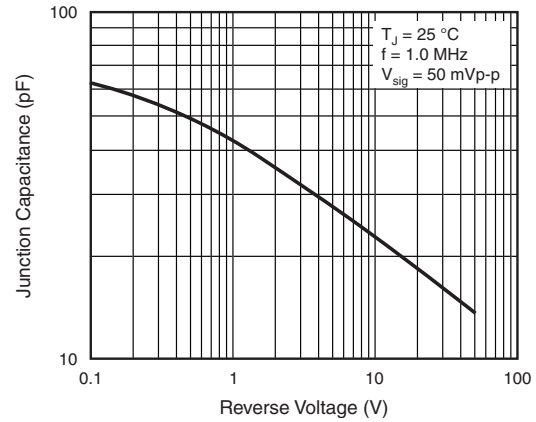


Fig. 5 - Typical Junction Capacitance

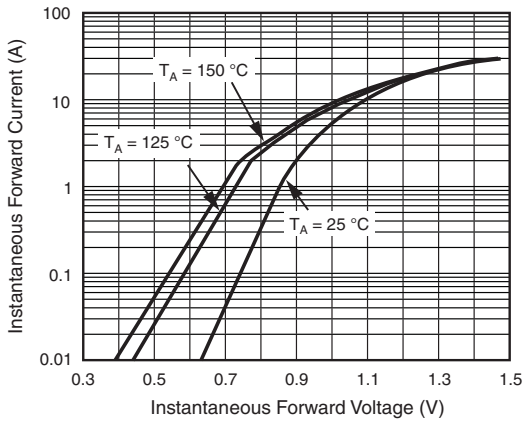


Fig. 3 - Typical Instantaneous Forward Characteristics

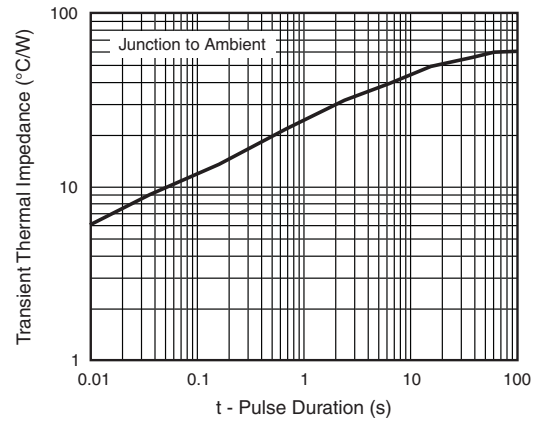
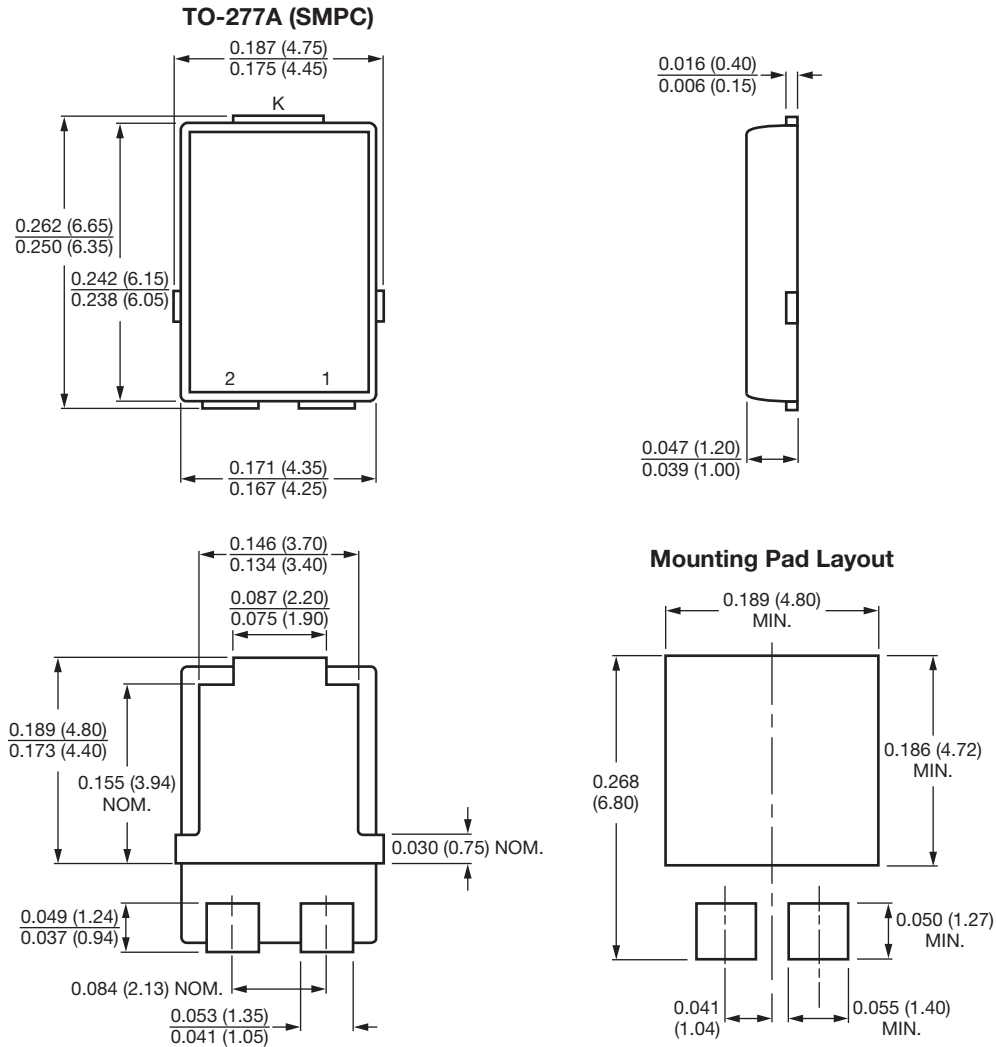


Fig. 6 - Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC® TO-277A



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- Консультации по применению компонента;
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- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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