

## High Current Density Surface Mount Schottky Barrier Rectifiers

eSMP® Series



DO-220AA (SMP)

### PRIMARY CHARACTERISTICS

|                        |              |
|------------------------|--------------|
| $I_{F(AV)}$            | 1.0 A        |
| $V_{RRM}$              | 50 V to 60 V |
| $I_{FSM}$              | 50 A         |
| $E_{AS}$               | 11.25 mJ     |
| $V_F$ at $I_F = 1.0$ A | 0.43 V       |
| $T_J$ max.             | 150 °C       |

### TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, DC/DC converters and polarity protection applications.

### FEATURES

- Very low profile - typical height of 1.0 mm
- Ideal for automated placement
- Low forward voltage drop, low power losses
- High efficiency
- Low thermal resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

AUTOMOTIVE  
GRADE



RoHS  
COMPLIANT  
HALOGEN  
FREE

### MECHANICAL DATA

**Case:** DO-220AA (SMP)

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 ( $T_A = 25$ °C unless otherwise noted)

| PARAMETER                                                                         | SYMBOL         | SS1P5L        | SS1P6L | UNIT |
|-----------------------------------------------------------------------------------|----------------|---------------|--------|------|
| Device marking code                                                               |                | 15L           | 15L    |      |
| Maximum repetitive peak reverse voltage                                           | $V_{RRM}$      | 50            | 60     | V    |
| Maximum average forward rectified current (fig. 1)                                | $I_{F(AV)}$    | 1.0           |        | A    |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 50            |        | 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          |
|---------------------------------------|----------------------|-------------|------|------|---------------|
| Maximum instantaneous forward voltage | $I_F = 1.0\text{ A}$ | $V_F^{(1)}$ | 0.52 | 0.59 | V             |
|                                       |                      |             | 0.43 | 0.52 |               |
| Maximum reverse current               | Rated $V_R$          | $I_R^{(2)}$ | -    | 100  | $\mu\text{A}$ |
|                                       |                      |             | 1.6  | 10   | mA            |
| Typical junction capacitance          | 4.0 V, 1 MHz         | $C_J$       | 80   | -    | pF            |

**Notes**(1) Pulse test: 300  $\mu\text{s}$  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                          | SE1P5B | SE1P6D | UNIT |
|----------------------------|---------------------------------|--------|--------|------|
| Typical thermal resistance | R <sub>θJA</sub> <sup>(1)</sup> | 125    |        | °C/W |
|                            | R <sub>θJL</sub> <sup>(1)</sup> | 25     |        |      |

**Note**(1) Thermal resistance from junction to ambient and junction to lead mounted on PCB with 5.0 mm x 5.0 mm copper pad areas.  $R_{\theta JL}$  - is measured at the terminal of cathode band.**ORDERING INFORMATION** (Example)

| PREFERRED P/N                | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
|------------------------------|-----------------|------------------------|---------------|------------------------------------|
| SS1P6L-M3/84A                | 0.024           | 84A                    | 3000          | 7" diameter plastic tape and reel  |
| SS1P6L-M3/85A                | 0.024           | 85A                    | 10 000        | 13" diameter plastic tape and reel |
| SS1P6LHM3/84A <sup>(1)</sup> | 0.024           | 84A                    | 3000          | 7" diameter plastic tape and reel  |
| SS1P6LHM3/85A <sup>(1)</sup> | 0.024           | 85A                    | 10 000        | 13" diameter plastic tape and reel |

**Note**

(1) Automotive grade

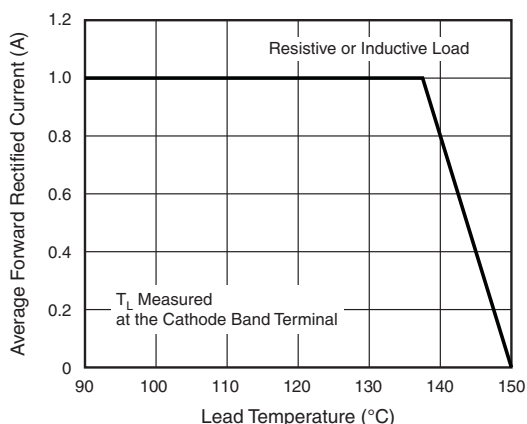
**RATINGS AND CHARACTERISTICS CURVES**( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

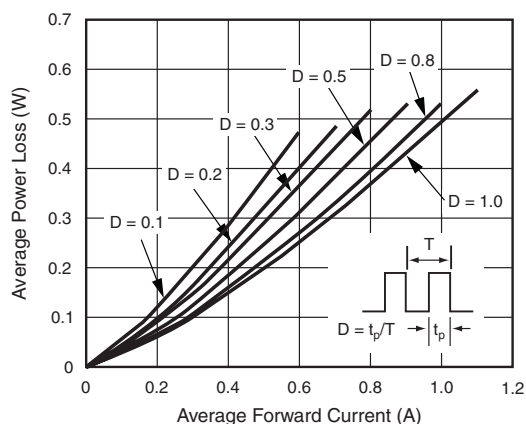


Fig. 2 - Forward Power Loss Characteristics

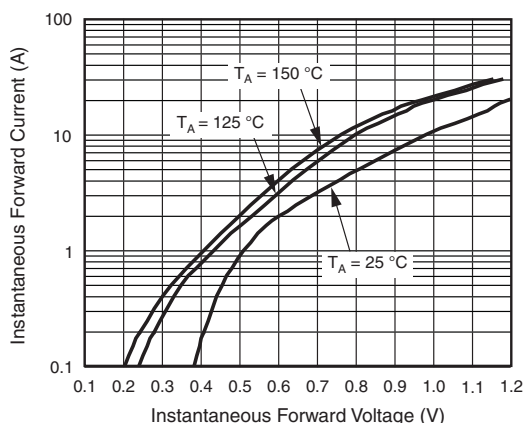


Fig. 3 - Typical Instantaneous Forward Characteristics

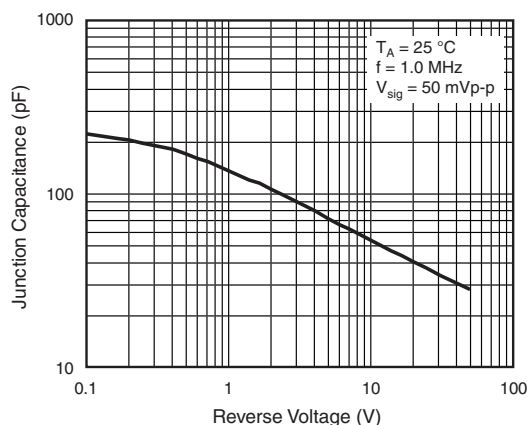


Fig. 5 - Typical Junction to Capacitance

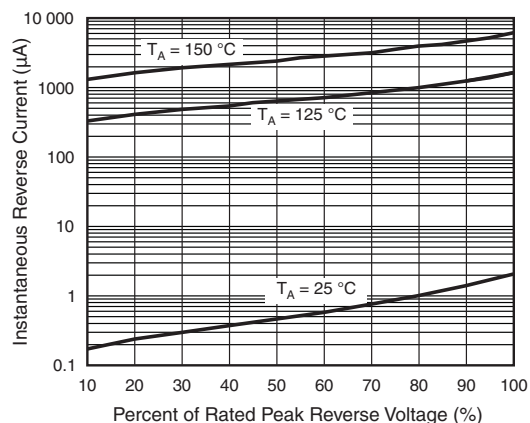


Fig. 4 - Typical Reverse Leakage Characteristics

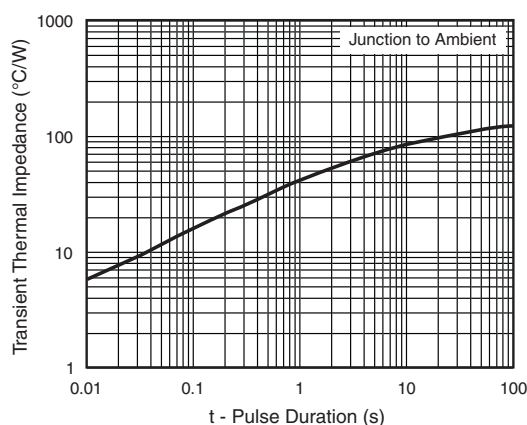
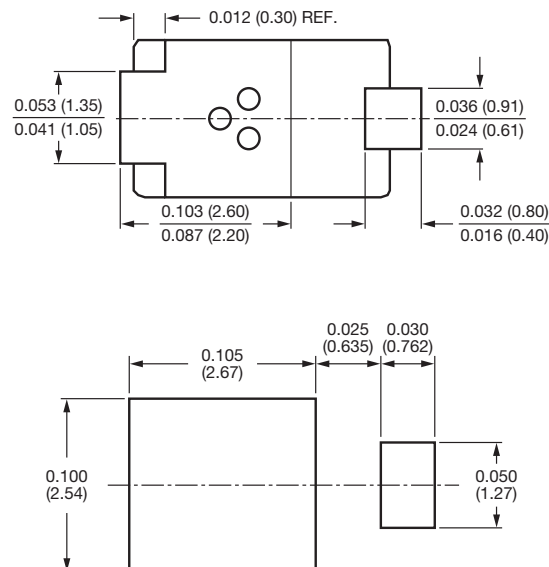
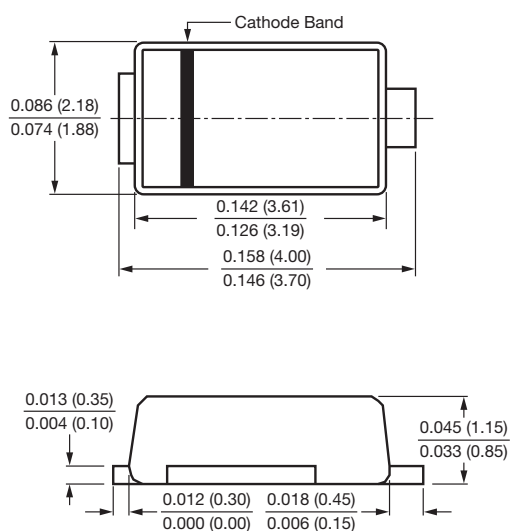


Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### DO-220AA (SMP)





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