

## High Current Density Surface Mount Schottky Barrier Rectifier

eSMP® Series



DO-220AA (SMP)

### PRIMARY CHARACTERISTICS

|                        |                |
|------------------------|----------------|
| $I_{F(AV)}$            | 1.0 A          |
| $V_{RRM}$              | 50 V, 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         |
| Package                | DO-220AA (SMP) |
| Diode variations       | Single         |

### 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 2 whisker test, HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** Color band denotes the cathode end

### 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 <sub>A</sub> = 25 °C unless otherwise noted) |                        |                         |                               |      |      |      |
|----------------------------------------------------------------------------|------------------------|-------------------------|-------------------------------|------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS        |                         | SYMBOL                        | TYP. | MAX. | UNIT |
| Maximum instantaneous forward voltage                                      | I <sub>F</sub> = 1.0 A | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.52 | 0.59 | V    |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 0.43 | 0.52 |      |
| Maximum reverse current                                                    | Rated V <sub>R</sub>   | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | -    | 100  | μA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 1.6  | 10   | mA   |
| Typical junction capacitance                                               | 4.0 V, 1 MHz           |                         | C <sub>J</sub>                | 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 <sub>A</sub> = 25 °c unless otherwise noted) |                                 |        |        |      |
|-------------------------------------------------------------------------|---------------------------------|--------|--------|------|
| PARAMETER                                                               | SYMBOL                          | SS1P5L | SS1P6L | 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.

| <b>ORDERING INFORMATION</b> (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)

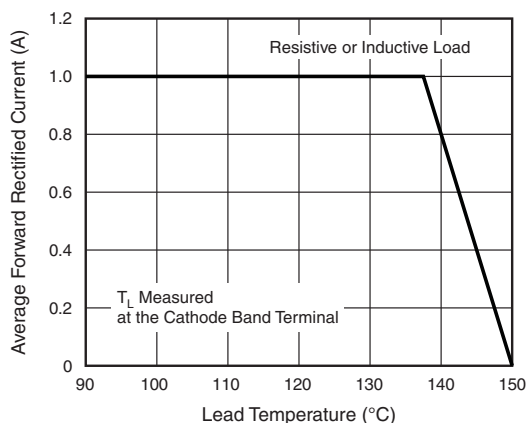


Fig. 1 - Maximum Forward Current Derating Curve

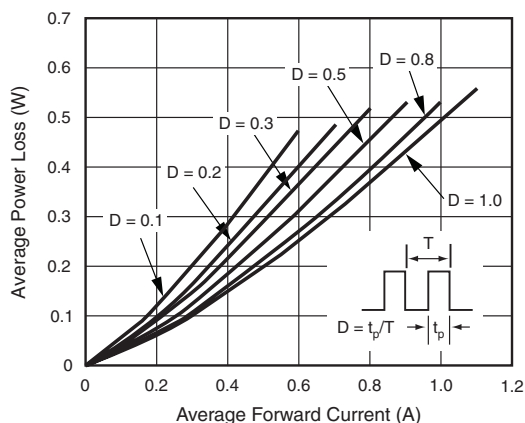


Fig. 2 - Forward Power Loss Characteristics

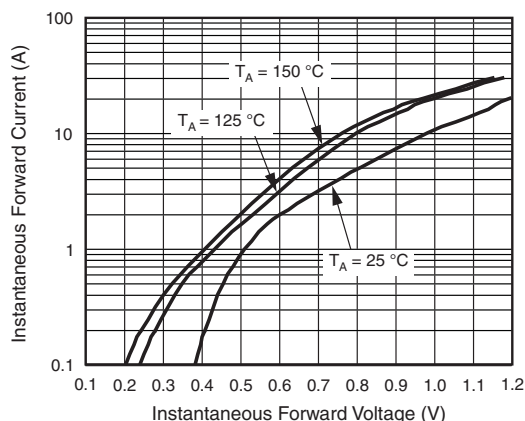


Fig. 3 - Typical Instantaneous Forward Characteristics

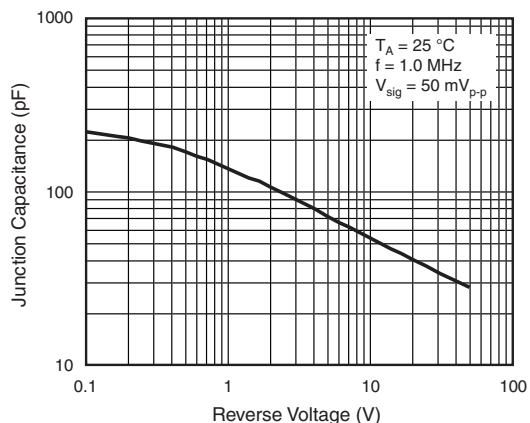


Fig. 5 - Typical Junction to Capacitance

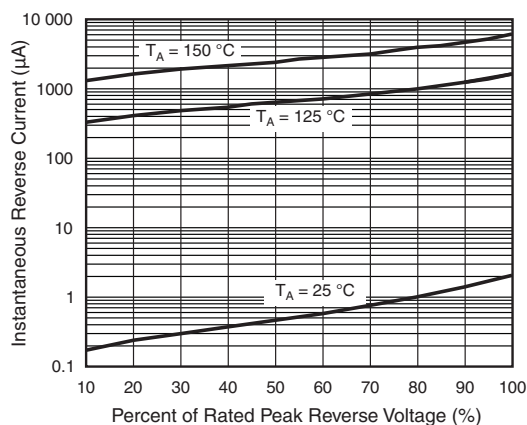


Fig. 4 - Typical Reverse Leakage Characteristics

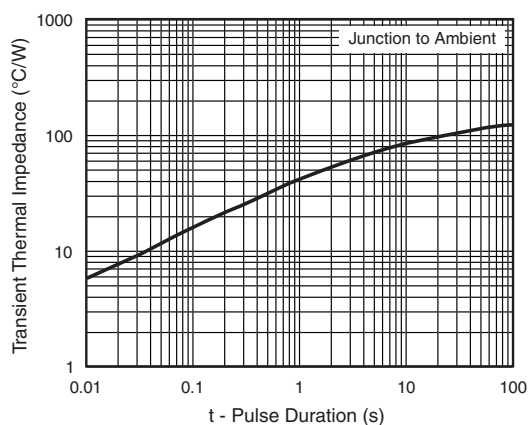
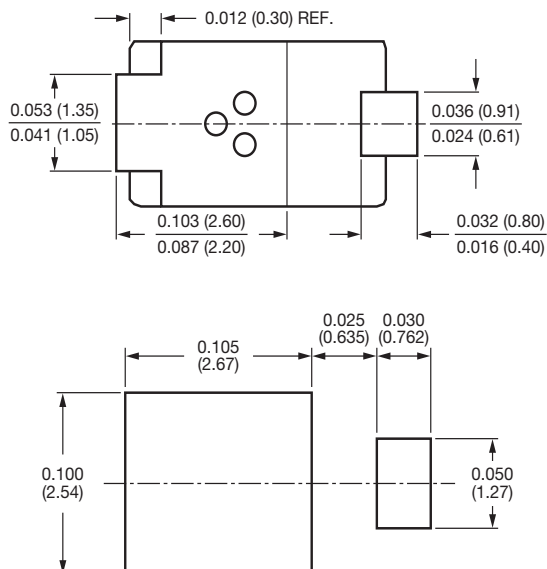
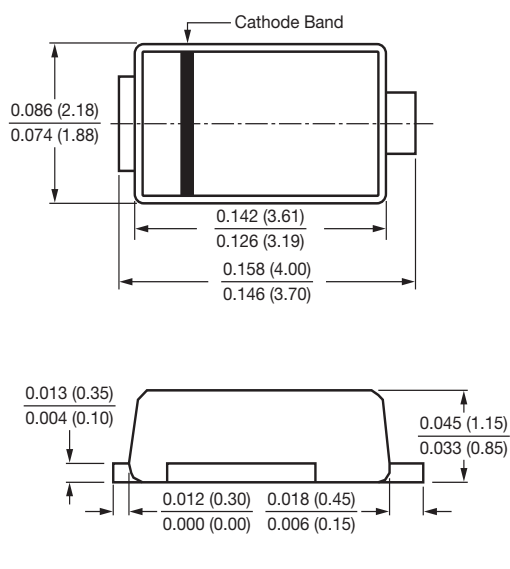


Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### DO-220AA (SMP)





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