



**THE DATASHEET OF  
SS2P3LHM3/84A**



## Low $V_F$ High Current Density Surface Mount Schottky Barrier Rectifiers

### eSMP® Series


**SMP (DO-220AA)**

Cathode Anode

### DESIGN SUPPORT TOOLS

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| PRIMARY CHARACTERISTICS |                |
|-------------------------|----------------|
| $I_{F(AV)}$             | 2.0 A          |
| $V_{RRM}$               | 20 V, 30 V     |
| $I_{FSM}$               | 50 A           |
| $E_{AS}$                | 11.25 mJ       |
| $V_F$                   | 0.45 V         |
| $T_J$ max.              | 150 °C         |
| Package                 | SMP (DO-220AA) |
| Circuit configuration   | Single         |

### 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  
Available

**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

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

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         | SS2P2L      | SS2P3L | UNIT       |
| Device marking code   |                | 22L         | 23L    |            |
| Maximum repetitive peak reverse voltage   | $V_{RRM}$      | 20          | 30     | V          |
| Maximum average forward rectified current (fig. 1)                                | $I_{F(AV)}$    | 2.0         |        | A          |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 50          |        | A          |
| Non-repetitive avalanche energy at $I_{AS} = 1.5$ A, $L = 10$ mH, $T_J = 25$ °C   | $E_{AS}$       | 11.25       |        | mJ         |
| Voltage rate of change (rated $V_R$ )   | $dV/dt$        | 10 000      |        | V/ $\mu$ s |
| 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> = 2 A | T <sub>J</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.45 | 0.50 | V    |
|  | I <sub>F</sub> = 2 A | T <sub>J</sub> = 125 °C |                               | 0.38 | 0.45 |      |
| Maximum reverse current at rated V <sub>R</sub>                            |                      |                         | I <sub>R</sub> <sup>(2)</sup> | -    | 200  | μA   |
|  |                      |                         |                               | 9.0  | 20   | mA   |
| Typical junction capacitance   | 4.0 V, 1 MHz         |                         | C <sub>J</sub>                | 130  |      | pF   |

**Notes**

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                                 |        |        |      |
|---|---------------------------------|--------|--------|------|
| PARAMETER   | SYMBOL                          | SS2P2L | SS2P3L | UNIT |
| Typical thermal resistance  | R <sub>θJA</sub> <sup>(1)</sup> | 115    |        | °C/W |
|   | R <sub>θJL</sub> <sup>(1)</sup> | 15     |        |      |
|   | R <sub>θJC</sub> <sup>(1)</sup> | 20     |        |      |

**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<sub>θJL</sub> is measured at the terminal of cathode band. R<sub>θJC</sub> is measured at the top center of the body

| ORDERING INFORMATION (Example) |                 |                        |               |                                    |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| SS2P3L-M3/84A                  | 0.024           | 84A                    | 3000          | 7" diameter plastic tape and reel  |
| SS2P3L-M3/85A                  | 0.024           | 85A                    | 10 000        | 13" diameter plastic tape and reel |
| SS2P3LHM3/84A <sup>(1)</sup>   | 0.024           | 84A                    | 3000          | 7" diameter plastic tape and reel  |
| SS2P3LHM3/85A <sup>(1)</sup>   | 0.024           | 85A                    | 10 000        | 13" diameter plastic tape and reel |

**Note**

- (1) Automotive grade

**RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)**

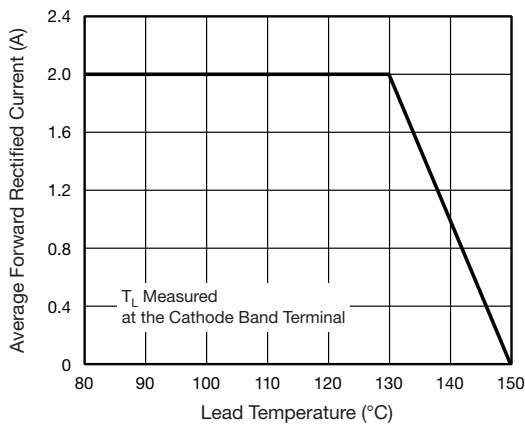


Fig. 1 - Forward Current Derating Curve

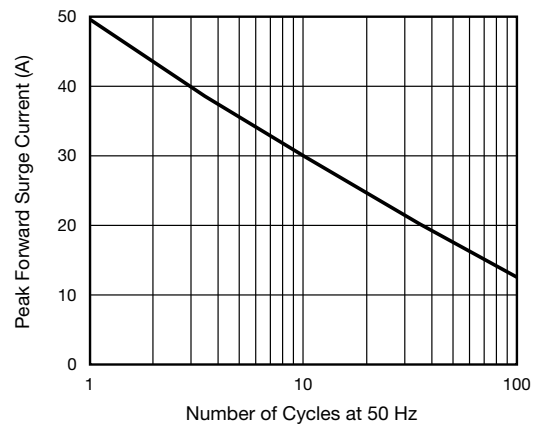


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

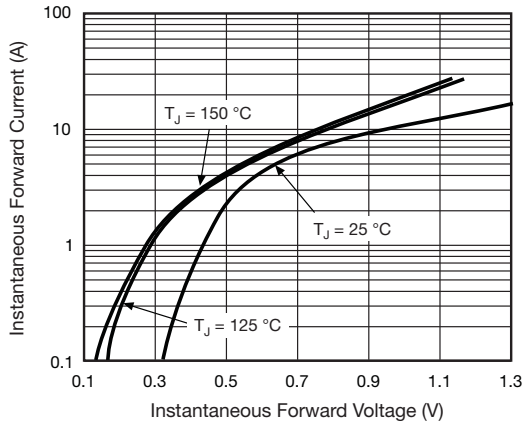


Fig. 3 - Typical Instantaneous Forward Characteristics

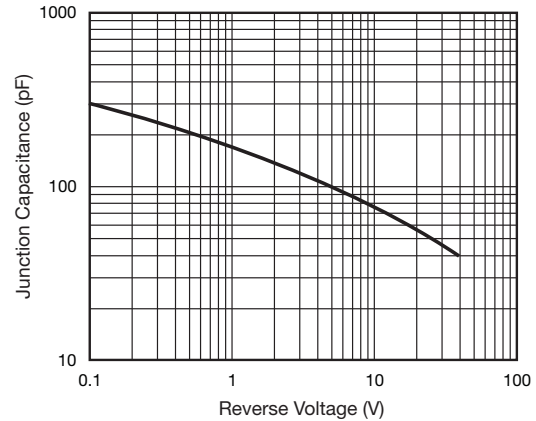


Fig. 5 - Typical Junction Capacitance

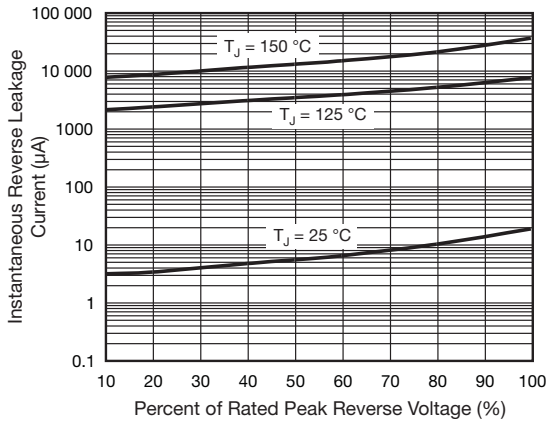


Fig. 4 - Typical Reverse Leakage Characteristics

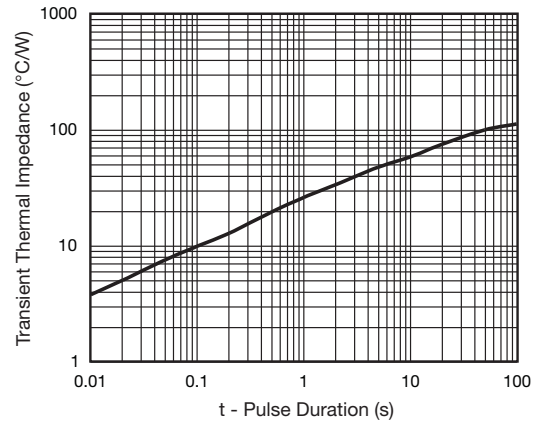
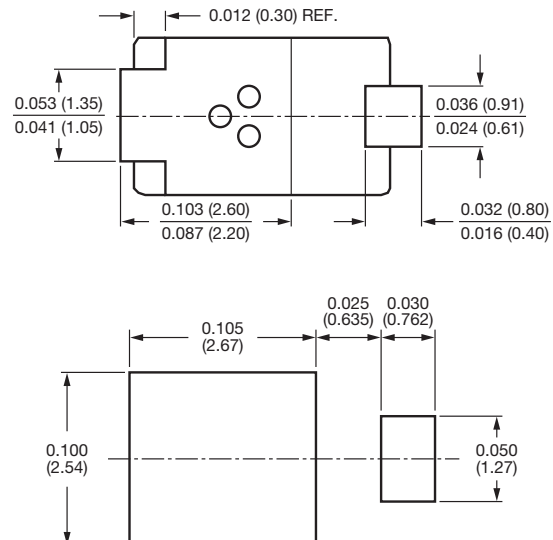
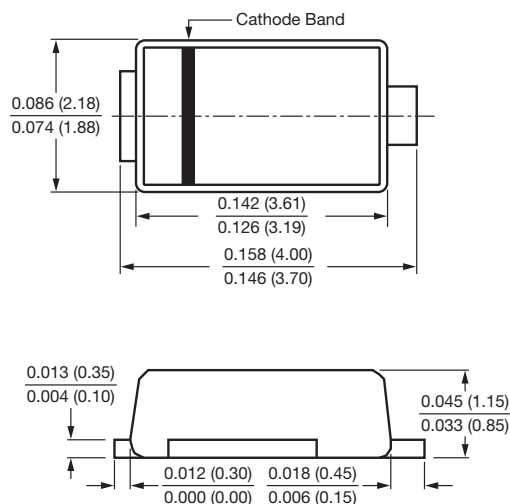


Fig. 6 - Typical Transient Thermal Impedance

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**SMP (DO-220AA)**





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