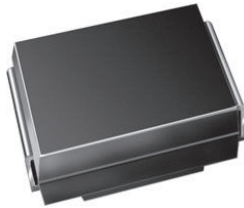


# Surface-Mount TMBS<sup>®</sup> (Trench MOS Barrier Schottky) Rectifier


**SMB (DO-214AA)**

 Cathode  Anode

## FEATURES

- Low profile package
- Ideal for automated placement
- Trench MOS Schottky technology
- Low power losses, high efficiency
- Low forward voltage drop
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Not recommended for PCB bottom side wave mounting
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


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

## LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS |                |
|-------------------------|----------------|
| $I_{F(AV)}$             | 3.0 A          |
| $V_{RRM}$               | 60 V           |
| $I_{FSM}$               | 80 A           |
| $V_F$ at $I_F = 3.0$ A  | 0.42 V         |
| $T_J$ max.              | 150 °C         |
| Package                 | SMB (DO-214AA) |
| Circuit configuration   | Single         |

## TYPICAL APPLICATIONS

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

## MECHANICAL DATA

**Case:** SMB (DO-214AA)

Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 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         | VSSB3L6S    | UNIT       |
|---|----------------|-------------|------------|
| Device marking code   |                | 3L6         |            |
| Maximum repetitive peak reverse voltage   | $V_{RRM}$      | 60          | V          |
| Maximum DC forward current  | $I_F^{(1)}$    | 3.0         | A          |
|   | $I_F^{(2)}$    | 2.6         |            |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 80          | A          |
| 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         |

### 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 | $I_F = 3.0$ A   | $V_F^{(1)}$ | $T_A = 25$ °C  | 0.49 | 0.59 | V       |
|                               |                 |             | $T_A = 125$ °C | 0.42 | 0.52 |         |
| Reverse current               | $V_R = 60$ V    | $I_R^{(2)}$ | $T_A = 25$ °C  | -    | 1200 | $\mu$ A |
|                               |                 |             | $T_A = 125$ °C | 5    | 25   | mA      |
| Typical junction capacitance  | 4.0 V, 1 MHz    | $C_J$       | 358            | -    | pF   |         |

### Notes

(1) Pulse test: 300  $\mu$ s pulse width, 1 % duty cycle

(2) Pulse test: Pulse width  $\leq$  40 ms

**THERMAL CHARACTERISTICS** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise specified)

| PARAMETER                  | SYMBOL                | VSSB3L6S | UNIT               |
|----------------------------|-----------------------|----------|--------------------|
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 115      | $^\circ\text{C/W}$ |
|                            | $R_{\theta JM}^{(2)}$ | 13       |                    |

**Notes**

- (1) Free air, mounted on recommended PCB, 1 oz. pad area; thermal resistance  $R_{\theta JA}$  - junction to ambient  
 (2) Mounted on 10 mm x 10 mm pad areas, 1 oz. FR4 PCB;  $R_{\theta JM}$  - junction to mount

**ORDERING INFORMATION** (Example)

| PREFERRED P/N   | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
|-----------------|-----------------|------------------------|---------------|------------------------------------|
| VSSB3L6S-M3/52T | 0.096           | 52T                    | 750           | 7" diameter plastic tape and reel  |
| VSSB3L6S-M3/5BT | 0.096           | 5BT                    | 3200          | 13" diameter plastic tape and reel |

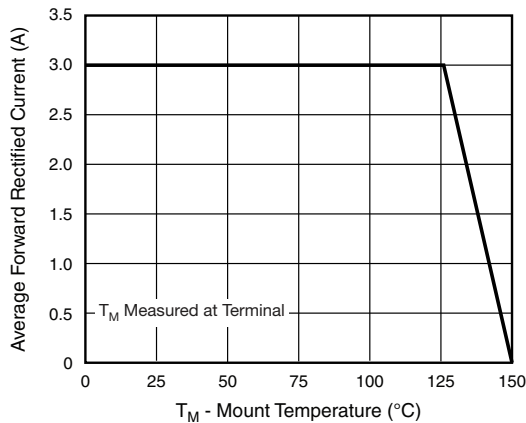
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

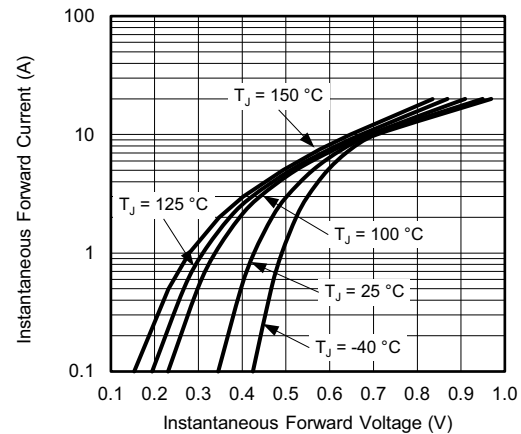


Fig. 3 - Typical Instantaneous Forward Characteristics

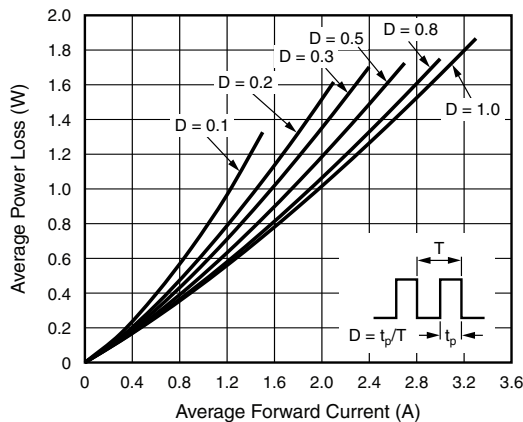


Fig. 2 - Forward Power Loss Characteristics

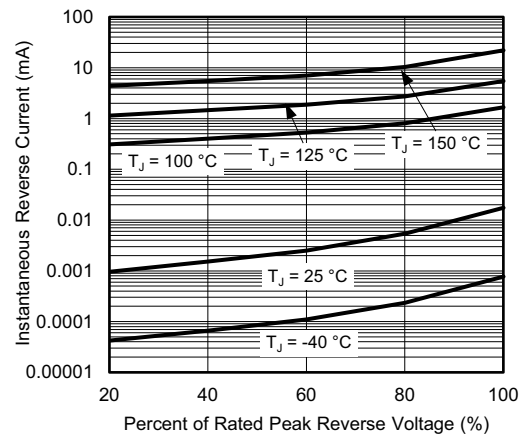


Fig. 4 - Typical Reverse Characteristics

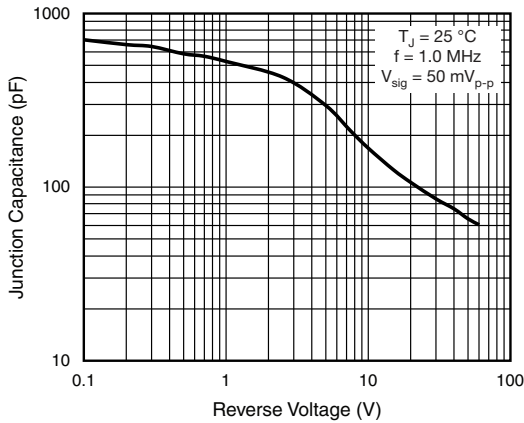


Fig. 5 - Typical Junction Capacitance

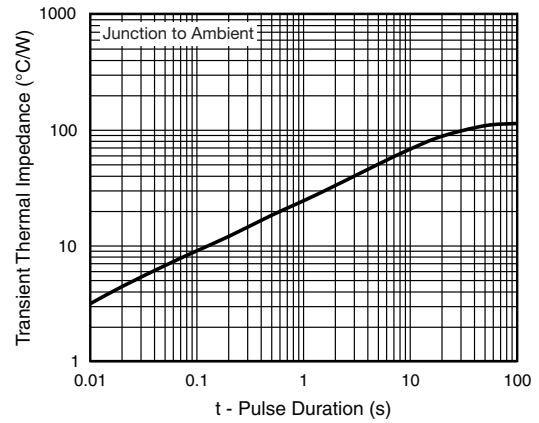
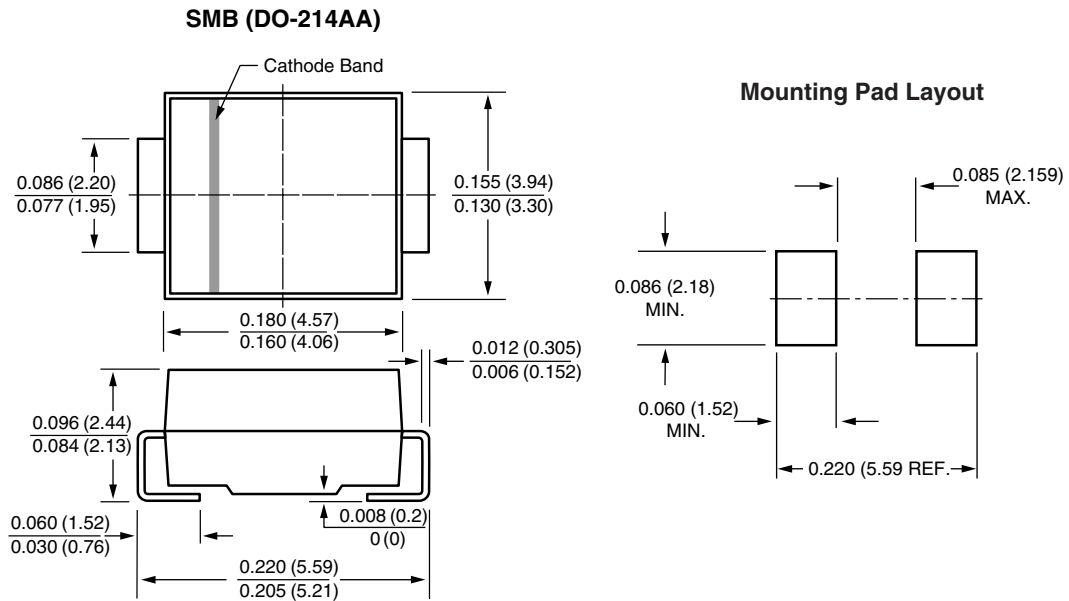


Fig. 6 - Typical Transient Thermal Impedance

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





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