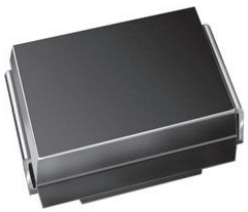
# Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier



**SMB (DO-214AA)**

Cathode ○—▶|—○ Anode

## LINKS TO ADDITIONAL RESOURCES

3D Models

| 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 |

## 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

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:** 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/µs |
| 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 | $T_A$ = 25 °C | $V_F$ (1) | 0.49 | 0.59 | V |
| | | $T_A$ = 125 °C | | 0.42 | 0.52 | |
| Reverse current | $V_R$ = 60 V | $T_A$ = 25 °C | $I_R$ (2) | - | 1200 | µA |
| | | $T_A$ = 125 °C | | 5 | 25 | mA |
| Typical junction capacitance | 4.0 V, 1 MHz | | $C_J$ | 358 | - | pF |

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

| THERMAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise specified) | | | |
|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **VSSB3L6S** | **UNIT** |
| Typical thermal resistance | $R_{\theta JA}$ (1) | 115 | °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 °C unless otherwise noted)

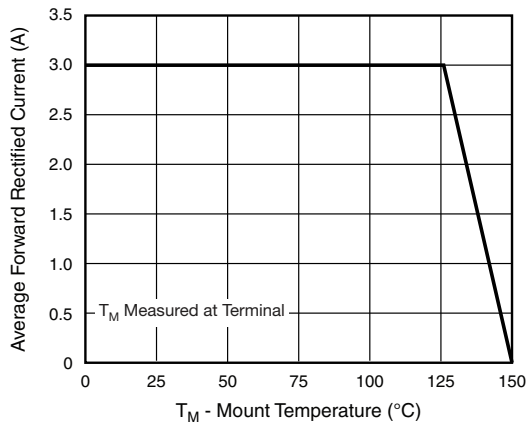



Fig. 1 - Maximum Forward Current Derating Curve

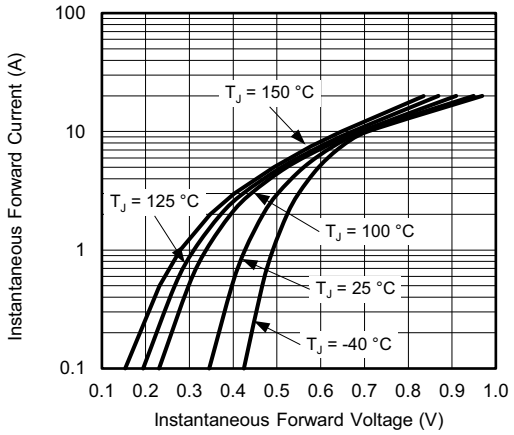



Fig. 3 - Typical Instantaneous Forward Characteristics

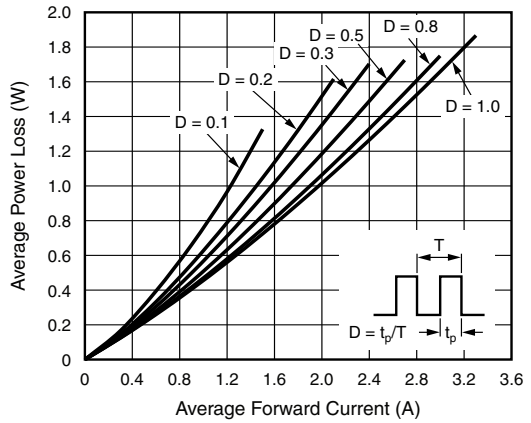



Fig. 2 - Forward Power Loss Characteristics

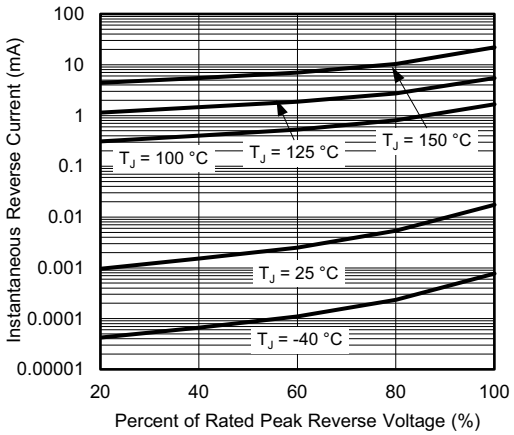



Fig. 4 - Typical Reverse Characteristics

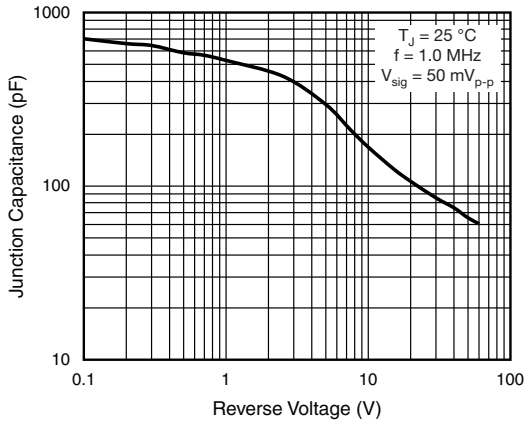



Fig. 5 - Typical Junction Capacitance

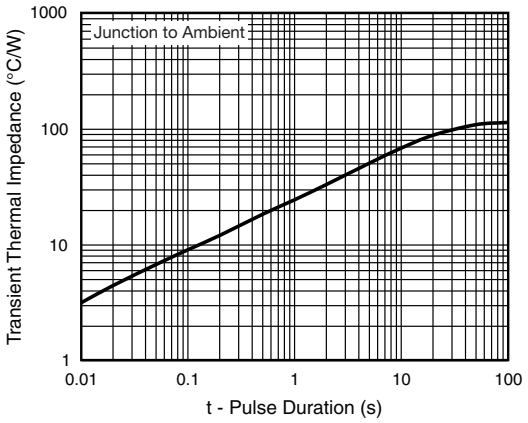
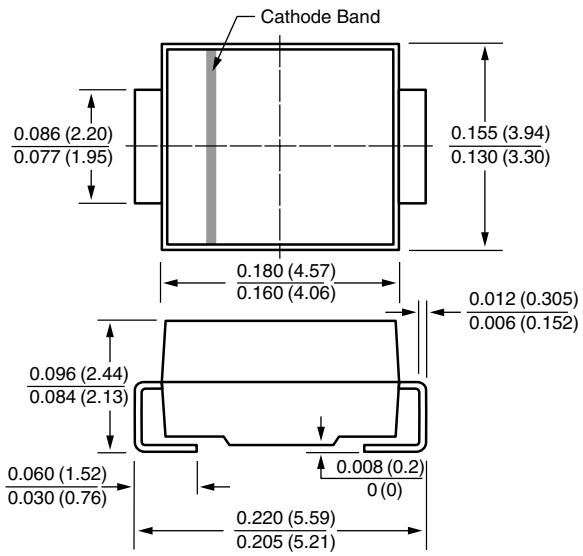


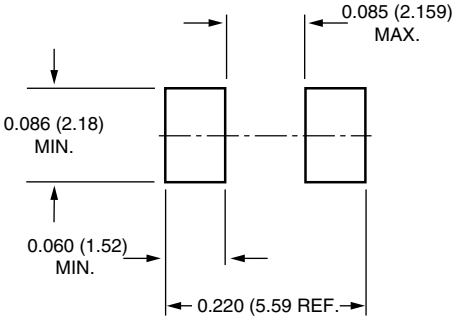

Fig. 6 - Typical Transient Thermal Impedance

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

### SMB (DO-214AA)




### Mounting Pad Layout



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