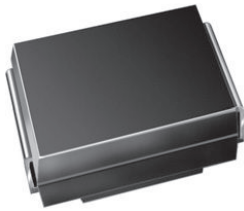


Surface-Mount TMBS[®] (Trench MOS Barrier Schottky) Rectifier


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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT
HALOGEN
FREE

LINKS TO ADDITIONAL RESOURCES



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

PRIMARY CHARACTERISTICS

| | |
|--|----------------|
| $I_{F(AV)}$ | 7.0 A |
| V_{RRM} | 45 V |
| I_{FSM} | 120 A |
| V_F at $I_F = 7.0$ A ($T_A = 125$ °C) | 0.40 V |
| T_J max. | 150 °C |
| Package | SMB (DO-214AA) |
| Circuit configuration | Single |

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

| PARAMETER | SYMBOL | VSSB7L45 | UNIT |
|---|----------------|-------------|------|
| Device marking code | | 7L45 | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 45 | V |
| Maximum DC forward current | $I_F^{(1)}$ | 7.0 | A |
| | $I_F^{(2)}$ | 3.8 | |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 120 | A |
| Operating junction and storage temperature range | T_J, T_{STG} | -40 to +150 | °C |

Notes

(1) Mounted on 3 cm x 3 cm pad areas, 2 oz. PCB

(2) Free air, mounted on recommended copper pad area



| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | |
|--|----------------------|-----------------------------------|-------------|------|------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage | $I_F = 3.5\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$ | $V_F^{(1)}$ | 0.43 | - | V |
| | $I_F = 7.0\text{ A}$ | | | 0.49 | 0.57 | |
| | $I_F = 3.5\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ | | 0.32 | - | |
| | $I_F = 7.0\text{ A}$ | | | 0.40 | 0.48 | |
| Reverse current | $V_R = 45\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$ | $I_R^{(2)}$ | - | 1.6 | mA |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 10 | 30 | |
| Typical junction capacitance | 4.0 V, 1 MHz | | C_J | 1068 | - | pF |

Notes(1) Pulse test: 300 μs pulse width, 1 % duty cycle(2) Pulse test: Pulse width $\leq 5\text{ ms}$

| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified) | | | |
|---|-----------------------|----------|--------------------|
| PARAMETER | SYMBOL | VSSB7L45 | UNIT |
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 90 | $^\circ\text{C/W}$ |
| | $R_{\theta JM}^{(2)}$ | 10 | |

Notes(1) Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance $R_{\theta JA}$ - junction to ambient(2) Units mounted on 3 cm x 3 cm Aluminum, 2 oz. pad area; thermal resistance $R_{\theta JM}$ - junction to mount

| ORDERING INFORMATION (Example) | | | | |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| VSSB7L45-M3/52T | 0.096 | 52T | 750 | 7" diameter plastic tape and reel |
| VSSB7L45-M3/5BT | 0.096 | 5BT | 3200 | 13" diameter plastic tape and reel |



RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

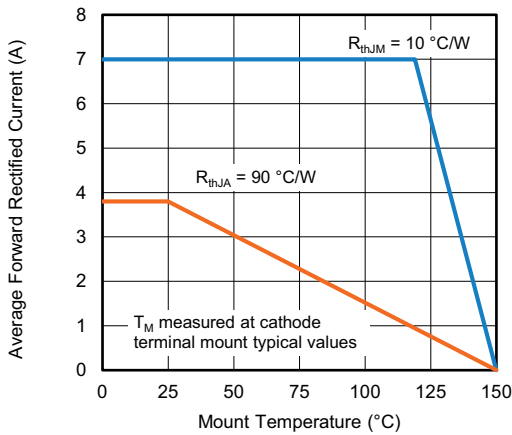


Fig. 1 - Maximum Forward Current Derating Curve

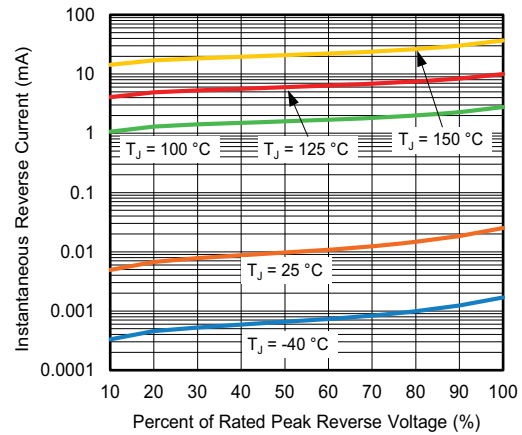


Fig. 4 - Typical Reverse Characteristics

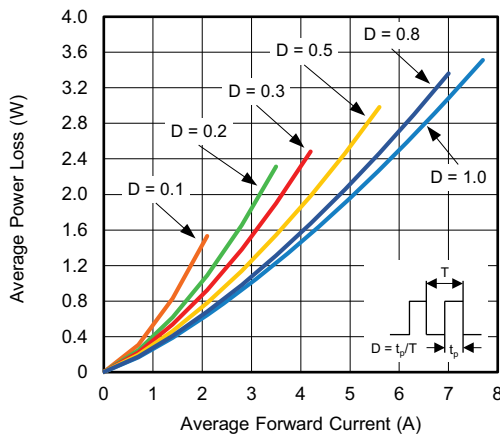


Fig. 2 - Forward Power Loss Characteristics

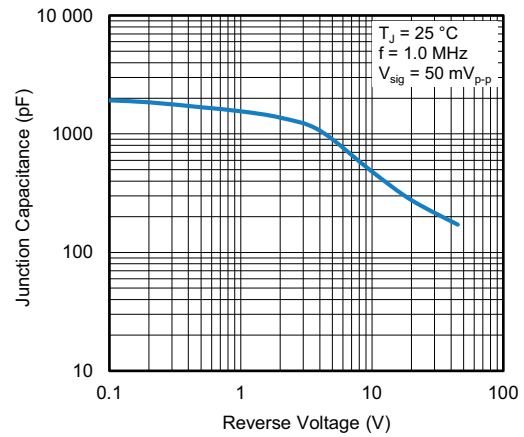


Fig. 5 - Typical Junction Capacitance

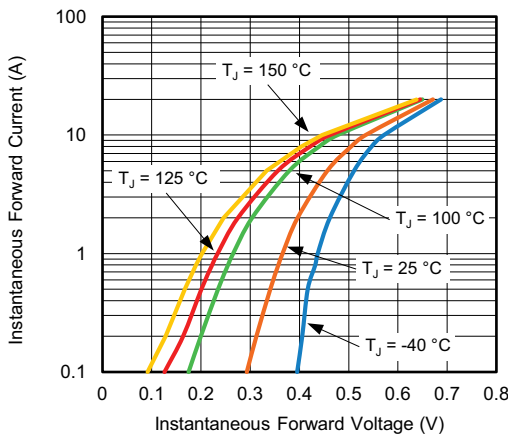


Fig. 3 - Typical Instantaneous Forward Characteristics

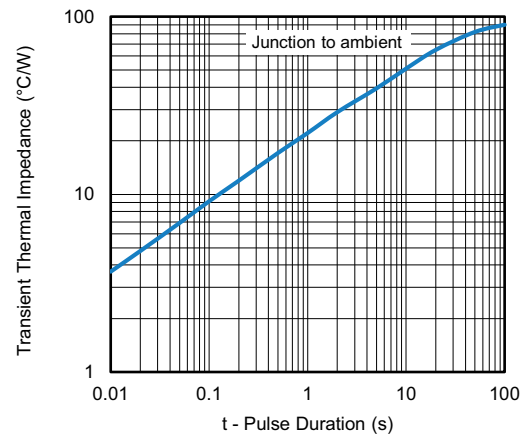
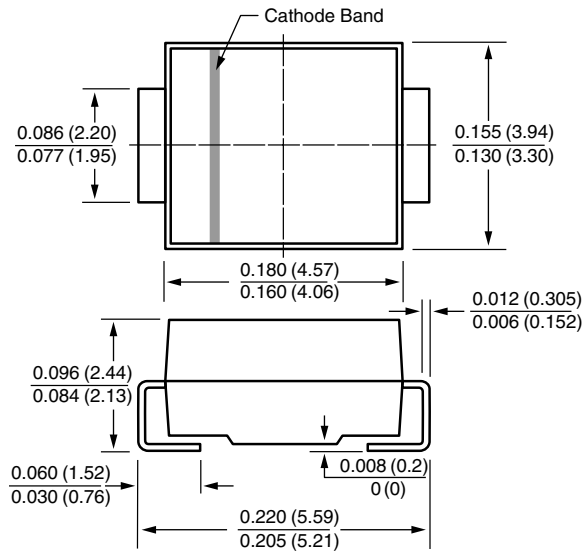


Fig. 6 - Typical Transient Thermal Impedance

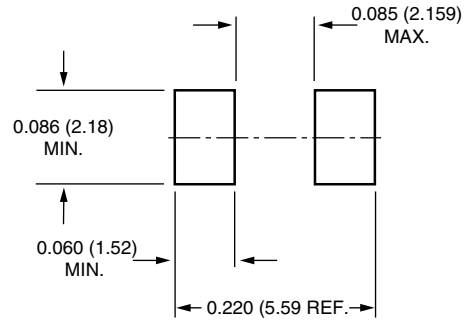


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMB (DO-214AA)



Mounting Pad Layout





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