

Vishay General Semiconductor

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



SMA (DO-214AC)

Cathode O Anode

LINKS TO ADDITIONAL RESOURCES

3D Models

| PRIMARY CHARACTERISTICS | | | | |
|-------------------------|----------------|--|--|--|
| I _{F(AV)} | 2.0 A | | | |
| V _{RRM} | 100 V | | | |
| I _{FSM} | 60 A | | | |
| E _{AS} | 24 mJ | | | |
| V_F at I_F = 2.0 A | 0.56 V | | | |
| T _J max. | 150 °C | | | |
| Package | SMA (DO-214AC) | | | |
| Circuit configurations | 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 $^{\circ}\mathrm{C}$
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: SMA (DO-214AC) Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade

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

E3 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 | VSSA210 | UNIT | |
| Device marking code | | V2B | | |
| Maximum repetitive peak reverse voltage | V _{RRM} | 100 | V | |
| Maximum DC forward current | I _F ⁽¹⁾ | 2.0 | A | |
| | I _F ⁽²⁾ | 1.7 | | |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I _{FSM} | 60 | A | |
| Non-repetitive avalanche energy at $T_J = 25$ °C, L = 60 mH | E _{AS} | 24 | mJ | |
| Peak repetitive reverse current at t_p = 2 µs, 1 kHz, T_J = 38 °C ± 2 °C | I _{RRM} | 1.0 | А | |
| Operating junction and storage temperature range | T _J , T _{STG} | -40 to +150 | °C | |

Notes

⁽¹⁾ Mounted on 8 mm x 8 mm pad areas, 1 oz. FR4 PCB

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

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COMPLIANT

www.vishay.com

VSSA210

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| ELECTRICAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted) | | | | | | |
|---|-------------------------|-------------------------|-------------------------------|---------------|------|------|
| PARAMETER | TEST CO | ONDITIONS | SYMBOL | TYP. | MAX. | UNIT |
| Breakdown voltage | I _R = 1.0 mA | T _A = 25 °C | V _{BR} | 100 (minimum) | - | |
| Instantaneous forward voltage | I _F = 2.0 A | T _A = 25 °C | V _F ⁽¹⁾ | 0.61 | 0.70 | V |
| | $I_{\rm F} = 2.0 \rm A$ | T _A = 125 °C | | 0.56 | 0.65 | |
| Reverse current | V _B = 70 V | T _A = 25 °C | I _R ⁽²⁾ | 1.0 | - | μA |
| | $v_{\rm R} = 70$ v | T _A = 125 °C | | 0.95 | - | mA |
| | V _B = 100 V | T _A = 25 °C | | 3.5 | 150 | μA |
| | $v_{\rm R} = 100 v$ | T _A = 125 °C | | 2.2 | 15 | mA |
| Typical junction capacitance | 4.0 V, 1 MHz | | CJ | 175 | - | pF |

Notes

 $^{(1)}\,$ Pulse test: 300 μs pulse width, 1 % duty cycle

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

| THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted) | | | | |
|--|---------------------------------|---------|------|--|
| PARAMETER | SYMBOL | VSSA210 | UNIT | |
| Typical thermal resistance | R _{0JA} ⁽¹⁾ | 135 | °C/W | |
| | R _{0JM} ⁽²⁾ | 25 | C/ W | |

Notes

 $^{(1)}$ Free air, mounted on recommended PCB 1 oz. pad area. Thermal resistance $R_{\theta JA}$ - junction to ambient

 $^{(2)}$ Units mounted on PCB with 8 mm x 8 mm copper pad areas. $R_{\theta JM}$ - junction to mount

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|--|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE | |
| VSSA210-E3/61T | 0.064 | 61T | 1800 | 7" diameter plastic tape and reel | |
| VSSA210-E3/5AT | 0.064 | 5AT | 7500 | 13" diameter plastic tape and reel | |



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

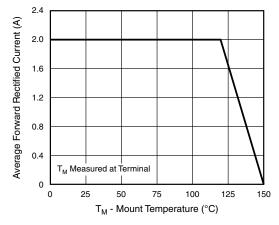


Fig. 1 - Maximum Forward Current Derating Curve

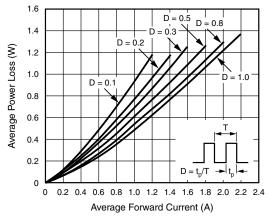


Fig. 2 - Forward Power Loss Characteristics

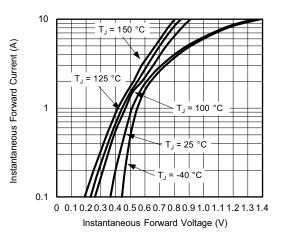


Fig. 3 - Typical Instantaneous Forward Characteristics

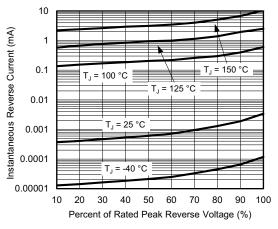


Fig. 4 - Typical Reverse Characteristics

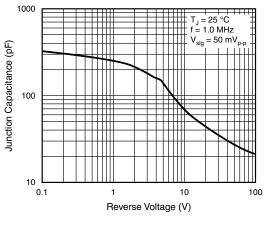


Fig. 5 - Typical Junction Capacitance

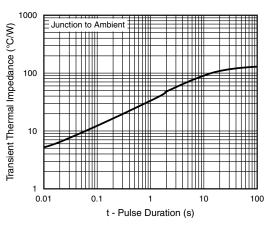


Fig. 6 - Typical Transient Thermal Impedance

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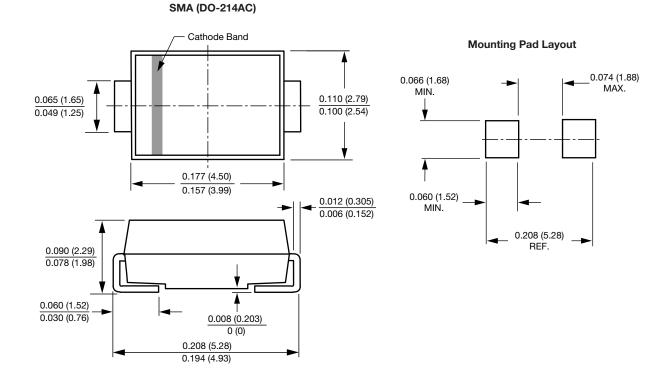
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

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