

Surface Mount Schottky Barrier Rectifier


DO-214AC (SMA)

FEATURES

- Low profile package
- Ideal for automated placement
- Guardring for overvoltage protection
- Low power losses, high efficiency
- Very low switching losses
- High surge capability
- 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


RoHS
COMPLIANT

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: DO-214AC (SMA)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

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

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes the cathode end

| PRIMARY CHARACTERISTICS | |
|-------------------------|--------------|
| $I_{F(AV)}$ | 1.5 A |
| V_{RRM} | 25 V to 45 V |
| I_{FSM} | 40 A |
| V_F | 0.50 V |
| $T_J \text{ max.}$ | 150 °C |

| MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted) | | | | | |
|---|----------------|---------------|----------|----------|------|
| PARAMETER | SYMBOL | BYS10-25 | BYS10-35 | BYS10-45 | UNIT |
| Device marking code | | BYS 025 | BYS 035 | BYS 045 | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 25 | 35 | 45 | V |
| Maximum average forward rectified current | $I_{F(AV)}$ | 1.5 | | | A |
| Peak forward surge current single half sine-wave superimposed on rated load | 8.3 ms | 40 | | | A |
| | 10 ms | 30 | | | |
| Junction and storage temperature range | T_J, T_{STG} | - 65 to + 150 | | | °C |



| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | | |
|--|-----------------|-----------------------------------|--------|----------|----------|----------|---------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | BYS10-25 | BYS10-35 | BYS10-45 | UNIT |
| Maximum instantaneous forward voltage ⁽¹⁾ | 1.0 A | | V_F | 500 | | | mV |
| Maximum DC reverse current ⁽¹⁾ | V_{RRM} | $T_J = 25\text{ }^\circ\text{C}$ | I_R | 500 | | | μA |
| | | $T_J = 100\text{ }^\circ\text{C}$ | | 10 | | | mA |

Note

⁽¹⁾ Pulse test: 300 μs pulse width, 1 % duty cycle

| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | |
|---|--------------------------------|----------|----------|----------|--------------------|--|
| PARAMETER | SYMBOL | BYS10-25 | BYS10-35 | BYS10-45 | UNIT | |
| Maximum thermal resistance, junction to lead | $R_{\theta JL}$ | 25 | | | $^\circ\text{C/W}$ | |
| Maximum thermal resistance, junction to ambient | $R_{\theta JA}$ ⁽¹⁾ | 150 | | | $^\circ\text{C/W}$ | |
| | $R_{\theta JA}$ ⁽²⁾ | 125 | | | | |
| | $R_{\theta JA}$ ⁽³⁾ | 100 | | | | |

Notes

- ⁽¹⁾ Mounted on epoxy-glass hard tissue
- ⁽²⁾ Mounted on epoxy-glass hard tissue, 50 mm² 35 μm Cu
- ⁽³⁾ Mounted on Al-oxide-ceramic (Al₂O₃), 50 mm² 35 μm Cu

| ORDERING INFORMATION (Example) | | | | |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| BYS10-45-E3/TR | 0.064 | TR | 1800 | 7" diameter plastic tape and reel |
| BYS10-45-E3/TR3 | 0.064 | TR3 | 7500 | 13" diameter plastic tape and reel |
| BYS10-45HE3/TR ⁽¹⁾ | 0.064 | TR | 1800 | 7" diameter plastic tape and reel |
| BYS10-45HE3/TR3 ⁽¹⁾ | 0.064 | TR3 | 7500 | 13" diameter plastic tape and reel |

Note

⁽¹⁾ AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

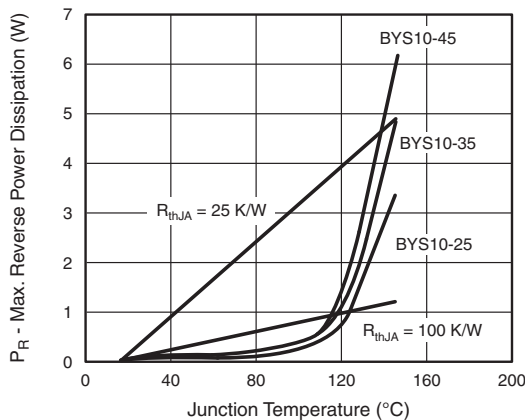


Fig. 1 - Max. Reverse Power Dissipation vs. Junction Temperature

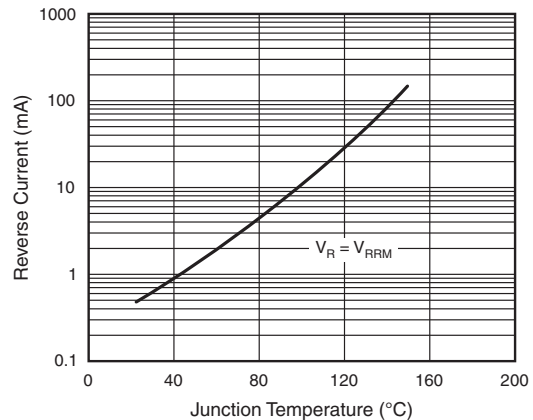


Fig. 2 - Max. Reverse Current vs. Junction Temperature

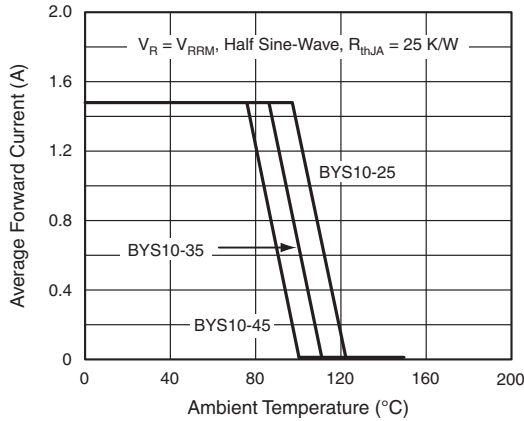


Fig. 3 - Max. Average Forward Current vs. Ambient Temperature

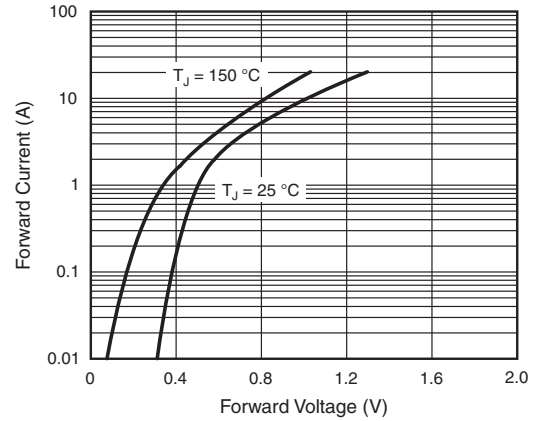


Fig. 5 - Max. Forward Current vs. Forward Voltage

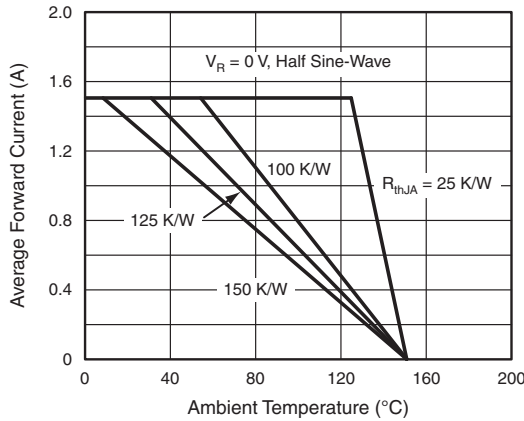


Fig. 4 - Max. Average Forward Current vs. Ambient Temperature

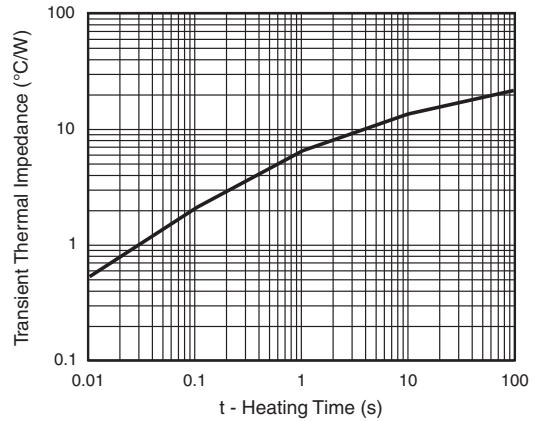
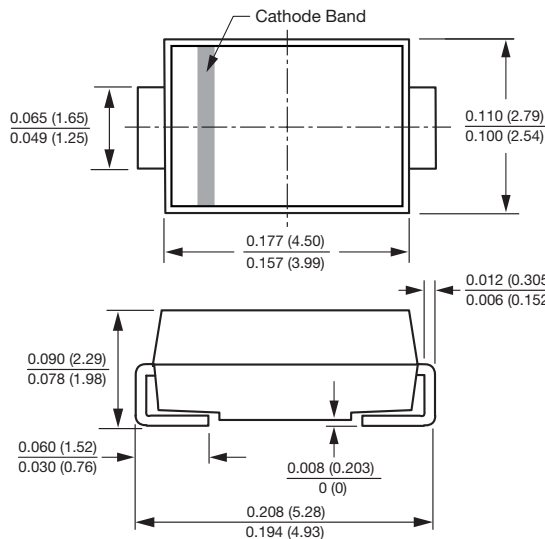


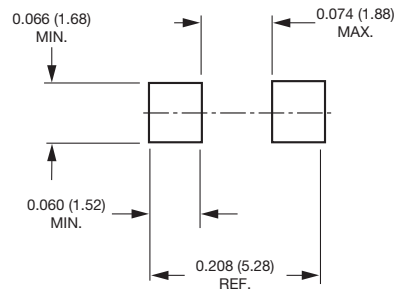
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout





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