

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
- Solder dip 260 °C, 40 s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



RoHS
COMPLIANT

TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, dc-to-dc converters, and polarity protection applications.

MECHANICAL DATA

Case: DO-214AC (SMA)

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC Q101 qualified), 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 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 | I_{FSM} | 8.3 ms 10 ms | 40 30 | | A |
| 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} | $T_J = 25\text{ }^\circ\text{C}$ $T_J = 100\text{ }^\circ\text{C}$ | I_R | | 500 10 | | μA 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 lead | $R_{\theta JL}$ | 25 | | | $^\circ\text{C/W}$ | |
| Maximum thermal resistance - junction ambient | $R_{\theta JA}$ | | 150 ⁽¹⁾ 125 ⁽²⁾ 100 ⁽³⁾ | | $^\circ\text{C/W}$ | |

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) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

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

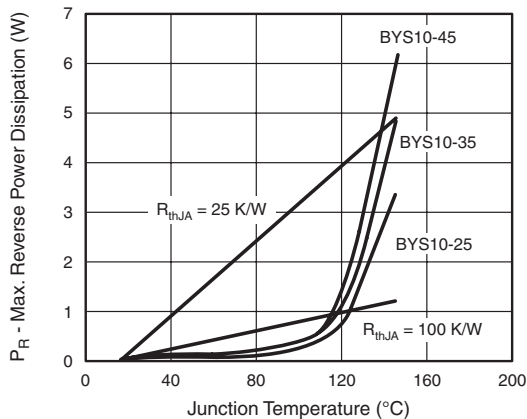


Figure 1. Max. Reverse Power Dissipation vs. Junction Temperature

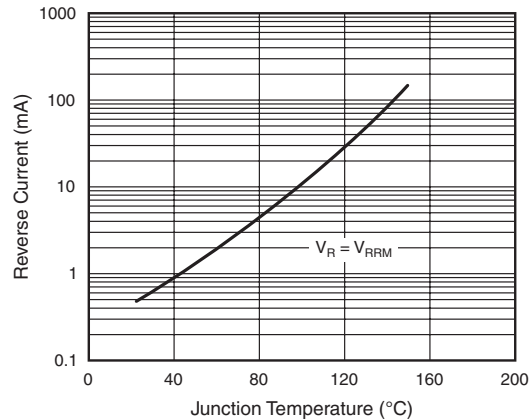


Figure 2. Max. Reverse Current vs. Junction Temperature

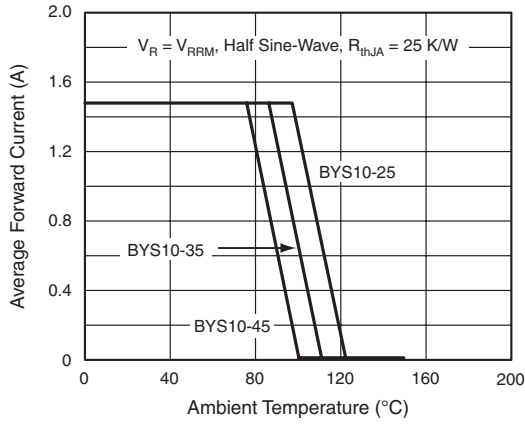


Figure 3. Max. Average Forward Current vs. Ambient Temperature

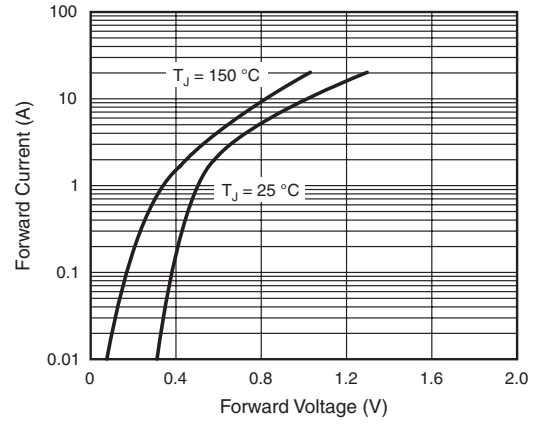


Figure 5. Max. Forward Current vs. Forward Voltage

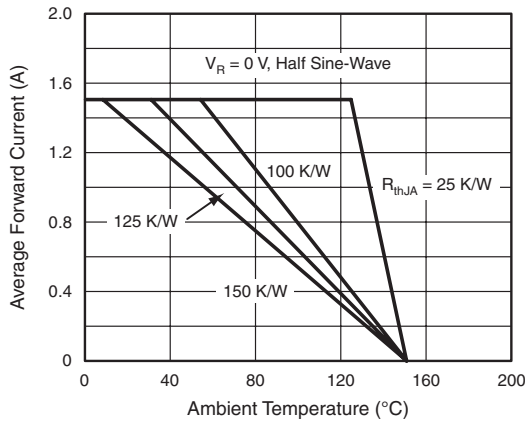


Figure 4. Max. Average Forward Current vs. Ambient Temperature

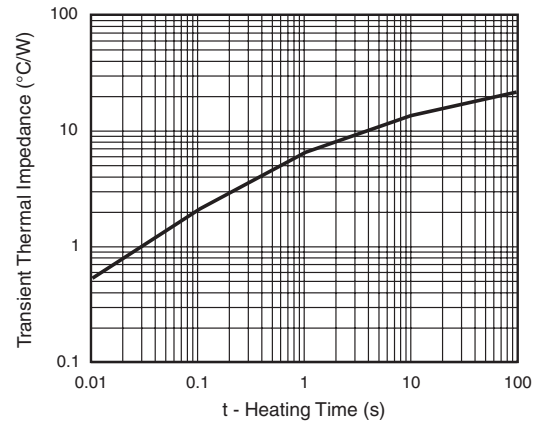
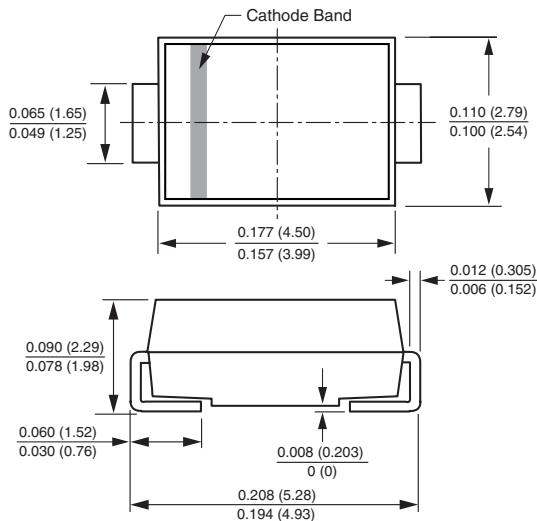


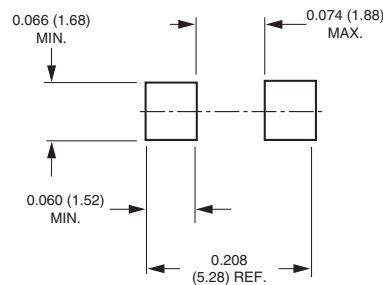
Figure 6. Diode Capacitance vs. Reverse Voltage

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout





Disclaimer

All product specifications and data are subject to change without notice.

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