

Surface-Mount Schottky Barrier Rectifier


SMA (DO-214AC)

 Cathode  Anode

LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

| PRIMARY CHARACTERISTICS | |
|-------------------------|------------------|
| $I_{F(AV)}$ | 1.5 A |
| V_{RRM} | 25 V, 35 V, 45 V |
| I_{FSM} | 40 A |
| V_F | 0.50 V |
| $T_J \text{ max.}$ | 150 °C |
| Package | SMA (DO-214AC) |
| Circuit configuration | Single |

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 available
 - Automotive ordering code: base P/NHE3 or P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS COMPLIANT
 HALOGEN FREE
 Available

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
 Base P/N-M3 - halogen-free, RoHS-compliant, commercial grade
 Base P/NHE3_X - RoHS-compliant and AEC-Q101 qualified
 Base P/NHM3_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified
 ("X" denotes revision code e.g. A, B,)

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
 E3, M3, HE3, and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes the cathode end

| 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} | 40 | | A |
| | | | 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_A/H ⁽¹⁾ | 0.064 | H | 1800 | 7" diameter plastic tape and reel |
| BYS10-45HE3_A/I ⁽¹⁾ | 0.064 | I | 7500 | 13" diameter plastic tape and reel |
| BYS10-45-M3/TR | 0.064 | TR | 1800 | 7" diameter plastic tape and reel |
| BYS10-45-M3/TR3 | 0.064 | TR3 | 7500 | 13" diameter plastic tape and reel |
| BYS10-45HM3_A/H ⁽¹⁾ | 0.064 | H | 1800 | 7" diameter plastic tape and reel |
| BYS10-45HM3_A/I ⁽¹⁾ | 0.064 | I | 7500 | 13" diameter plastic tape and reel |

Note

⁽¹⁾AEC-Q101 qualified



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

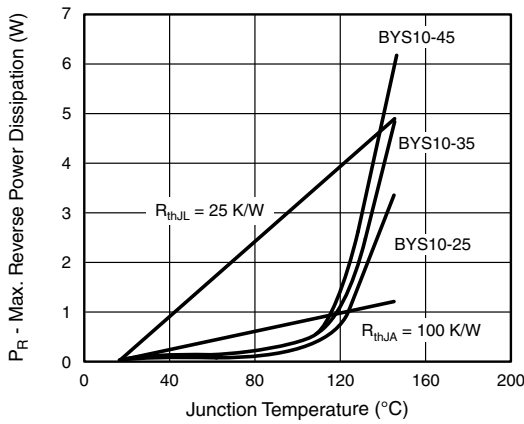


Fig. 1 - Max. Reverse Power Dissipation vs. Junction Temperature

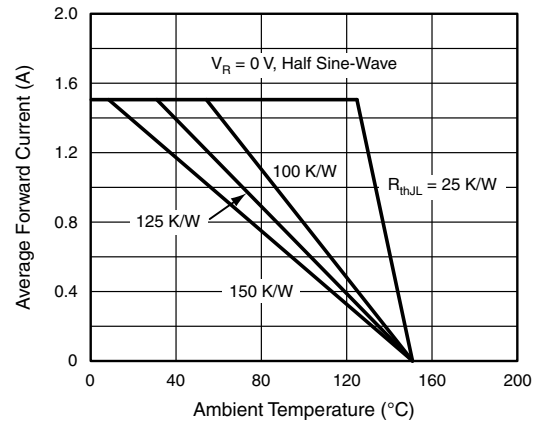


Fig. 4 - Max. Average Forward Current vs. Ambient Temperature

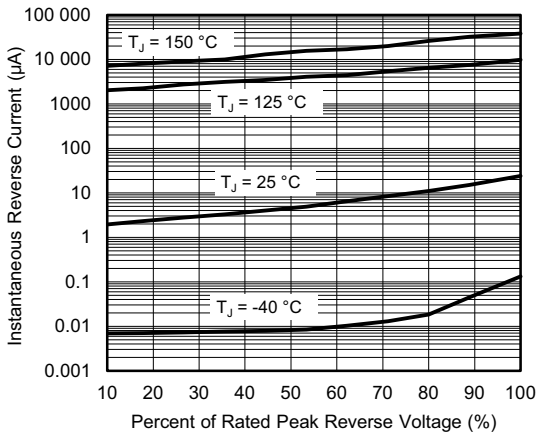


Fig. 2 - Typical Reverse Characteristics

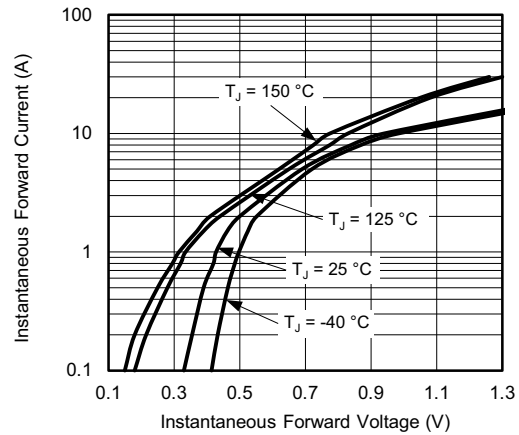


Fig. 5 - Typical Instantaneous Forward Characteristics

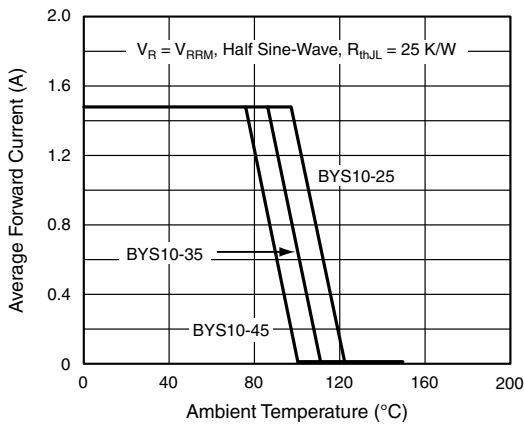


Fig. 3 - Max. Average Forward Current vs. Ambient Temperature

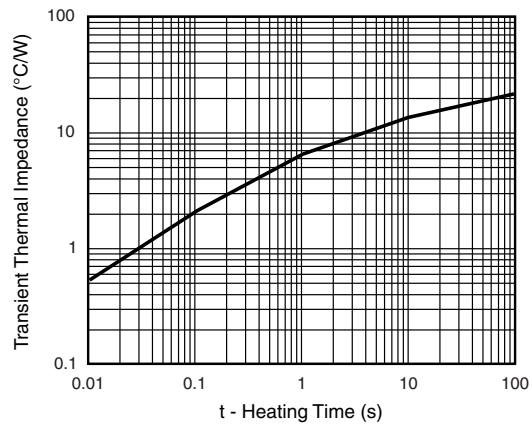
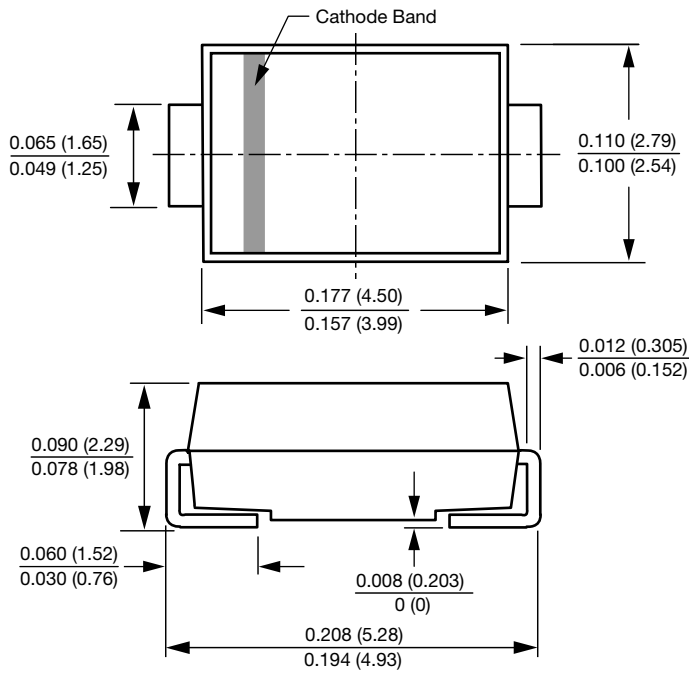


Fig. 6 - Typical Transient Thermal Impedance

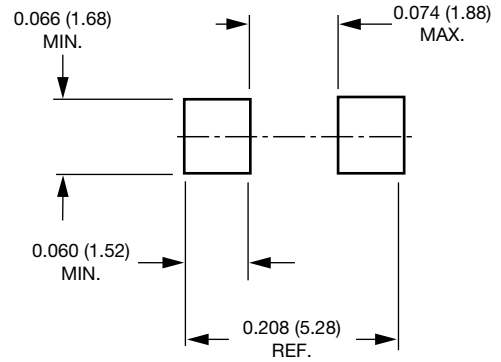


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)



Mounting Pad Layout





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