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Vishay General Semiconductor

Surface Mount Schottky Barrier Rectifier



DO-214AC (SMA)

| PRIMARY CHARACTERISTICS | | | | |
|-------------------------|----------------|--|--|--|
| I _{F(AV)} | 1.5 A | | | |
| V_{RRM} | 90 V | | | |
| I _{FSM} | 40 A | | | |
| V _F | 0.75 V | | | |
| T _J max. | 150 °C | | | |
| Package | DO-214AC (SMA) | | | |
| Diode variations | Single | | | |

FEATURES

- Low profile package
- Ideal for automated placement
- Guardring for overvoltage protection
- Low power losses, high efficiency
- Manualana and talahan Iaaaa
- 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
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

TYPICAL APPLICATIONS

For use in high frequency inverters, switching power supplies, freewheeling diodes, oring diode, DC/DC converters, and reverse battery protection.

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 and AEC-Q101 qualified Base P/NHE3_X - 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 suffix meets JESD 201 class 2 whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

| MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted) | | | | | |
|---|--------|-----------------------------------|-------------|------|--|
| PARAMETER | | SYMBOL | BYS11-90 | UNIT | |
| Device marking code | | | BYS109 | | |
| Maximum repetitive peak reverse voltage | | V_{RRM} | 90 | V | |
| Maximum average forward rectified current | | I _{F(AV)} | 1.5 | А | |
| Peak forward surge current single half sine-wave | 8.3 ms | , | 40 | ^ | |
| superimposed on rated load | 10 ms | IFSM | 30 | A | |
| Voltage rate of change (rated V _R) | | dV/dt | 10 000 | V/µs | |
| Junction and storage temperature range | | T _J , T _{STG} | -55 to +150 | °C | |



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| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | | |
|---|------------------|-------------------------|-----------------|-----|----------------|----------|------|
| PARAMETER | TEST CONDITIONS | | TEST CONDITIONS | | SYMBOL | BYS11-90 | UNIT |
| Maximum instantaneous forward voltage (1) | 1.0 A | | 1.0 A | | V _F | 750 | mV |
| Maximum DC reverse current (1) | V _{RRM} | T _J = 25 °C | I _R | 100 | μA | | |
| Maximum DC reverse current (**) | | T _J = 100 °C | | 1 | mA | | |

Note

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

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | |
|---|----------------------|----------|------|--|
| PARAMETER | SYMBOL | BYS11-90 | UNIT | |
| Maximum thermal resistance, junction to lead | | 25 | °C/W | |
| | R _{0JA} (1) | 150 | | |
| Maximum thermal resistance, junction to ambient | R _{0JA} (2) | 125 | °C/W | |
| | | 100 | | |

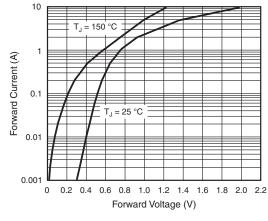
Notes

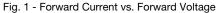
- (1) Mounted on epoxy-glass hard tissue
- (2) Mounted on epoxy-glass hard tissue, 50 mm² 35 μm Cu
- (3) Mounted on Al-oxide-ceramic (Al₂O₃), 50 mm² 35 μm Cu

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|--|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE | |
| BYS11-90-E3/TR | 0.064 | TR | 1800 | 7" diameter plastic tape and reel | |
| BYS11-90-E3/TR3 | 0.064 | TR3 | 7500 | 13" diameter plastic tape and reel | |
| BYS11-90HE3/TR (1) | 0.064 | TR | 1800 | 7" diameter plastic tape and reel | |
| BYS11-90HE3/TR3 (1) | 0.064 | TR3 | 7500 | 13" diameter plastic tape and reel | |
| BYS11-90HE3_A/H (1) | 0.064 | Н | 1800 | 7" diameter plastic tape and reel | |
| BYS11-90HE3_A/I (1) | 0.064 | I | 7500 | 13" diameter plastic tape and reel | |

Note

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





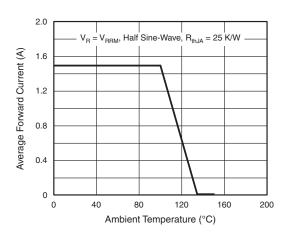


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

⁽¹⁾ AEC-Q101 qualified



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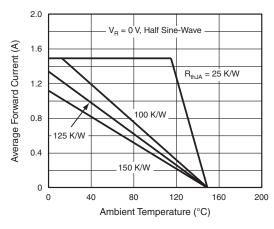


Fig. 3 - Max. Average Forward Current vs. Ambient Temperature

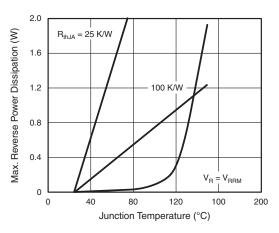


Fig. 5 - Max. Reverse Power Dissipation vs. Junction Temperature

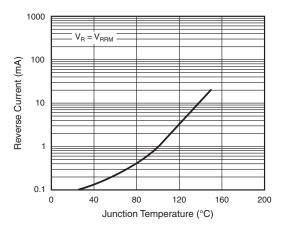


Fig. 4 - Reverse Current vs. Junction Temperature

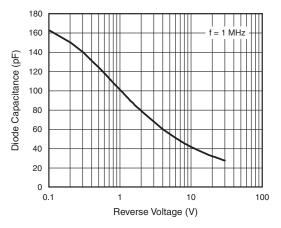
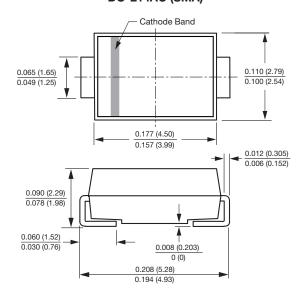
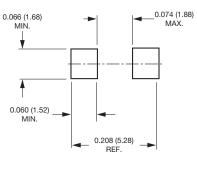


Fig. 6 - Diode Capacitance vs. Reverse Voltage

PACKAGE OUTLINE DIMENSIONS in inches (millimeters) DO-214AC (SMA)



Mounting Pad Layout





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