

Ultrafast Avalanche SMD Rectifier


DO-214AC (SMA)

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated junction
- Low reverse current
- Low forward voltage
- Soft recovery characteristic
- Ultra fast reverse recovery time
- 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

PRIMARY CHARACTERISTICS

| | |
|-------------|---------------|
| $I_{F(AV)}$ | 2 A |
| V_{RRM} | 50 V to 200 V |
| I_{FSM} | 35 A |
| I_R | 1.0 μ A |
| V_F | 1.1 V |
| t_{rr} | 25 ns |
| E_R | 20 mJ |
| T_J max. | 150 °C |

TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer, automotive and telecommunication.

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 highreliability grade (AEC Q101 qualified), 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 | BYG22A | BYG22B | BYG22D | UNIT |
|--|----------------|---------------|--------|--------|------|
| Device marking code | | BYG22A | BYG22B | BYG22D | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 50 | 100 | 200 | V |
| Average forward current | $I_{F(AV)}$ | 2.0 | | | A |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 35 | | | A |
| Pulse energy in avalanche mode, non repetitive (inductive load switch off) $I_{(BR)R} = 1$ A, $T_J = 25$ °C | E_R | 20 | | | mJ |
| Operating junction and storage temperature range | T_J, T_{STG} | - 55 to + 150 | | | °C |



| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | | |
|--|--|---|-----------------|--------|------------|--------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | BYG22A | BYG22B | BYG22D | UNIT |
| Maximum instantaneous forward voltage ⁽¹⁾ | I _F = 1.0 A I _F = 2.0 A | T _J = 25 °C | V _F | | 1.0 1.1 | | V |
| Maximum reverse current | V _R = V _{RRM} | T _J = 25 °C T _J = 100 °C | I _R | | 1 10 | | μA |
| Maximum reverse recovery time | I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A | | t _{rr} | | 25 | | ns |

Note:

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

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | |
|---|------------------|--------|--|--------|------|--|
| PARAMETER | SYMBOL | BYG22A | BYG22B | BYG22D | UNIT | |
| Maximum thermal resistance - junction lead T _L = const. | R _{θJL} | | 25 | | °C/W | |
| Maximum thermal resistance - junction ambient | R _{θJA} | | 150 ⁽¹⁾ 125 ⁽²⁾ 100 ⁽³⁾ | | °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) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| BYG22A-E3/TR | 0.064 | TR | 1800 | 7" diameter plastic tape and reel |
| BYG22A-E3/TR3 | 0.064 | TR3 | 7500 | 13" diameter plastic tape and reel |
| BYG22AHE3/TR ⁽¹⁾ | 0.064 | TR | 1800 | 7" diameter plastic tape and reel |
| BYG22AHE3/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 °C unless otherwise noted)

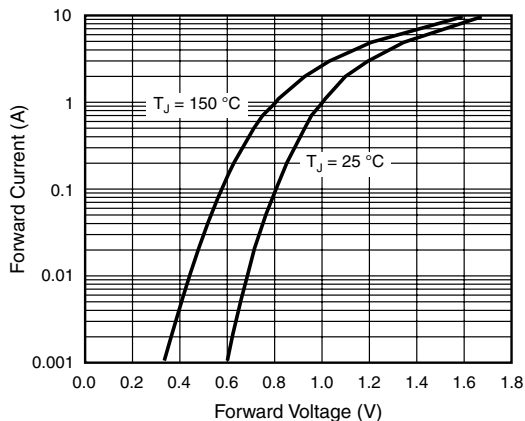


Figure 1. Forward Current vs. Forward Voltage

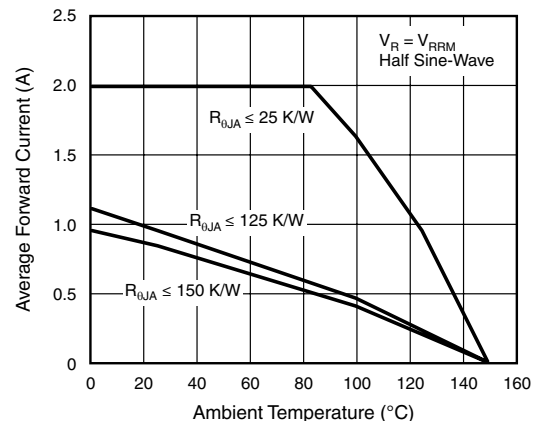


Figure 2. Max. Average Forward Current vs. Ambient Temperature

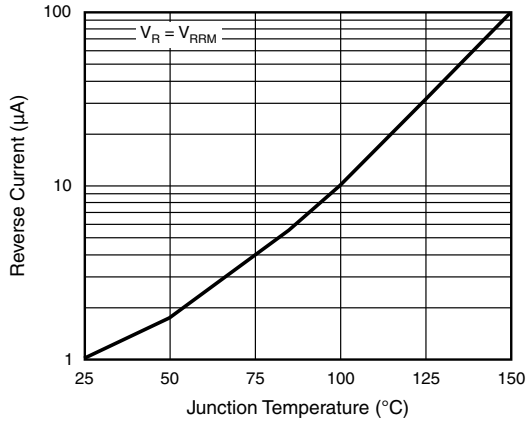


Figure 3. Reverse Current vs. Junction Temperature

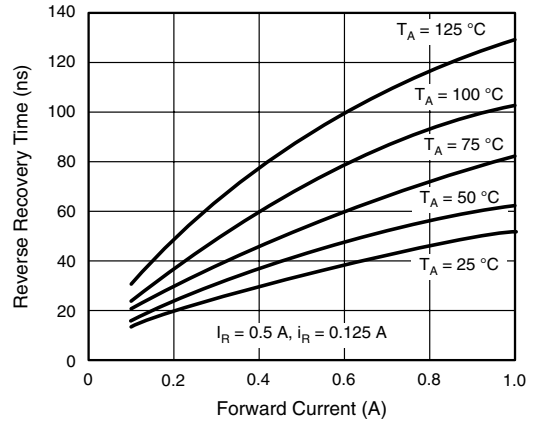


Figure 6. Max. Reverse Recovery Time vs. Forward Current

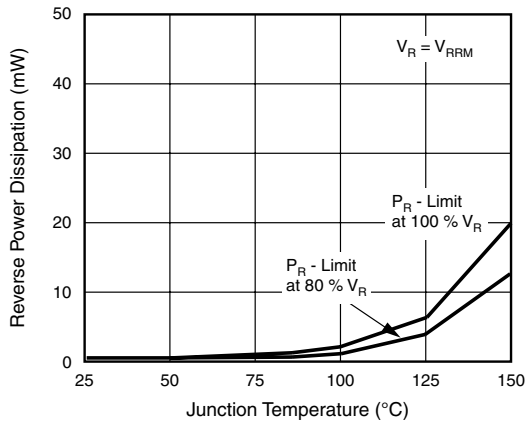


Figure 4. Max. Reverse Power Dissipation vs. Junction Temperature

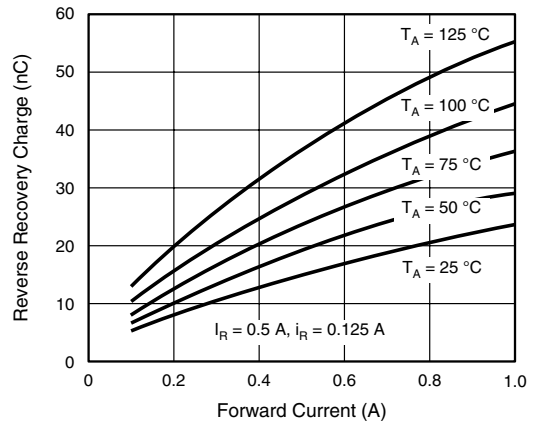


Figure 7. Max. Reverse Recovery Charge vs. Forward Current

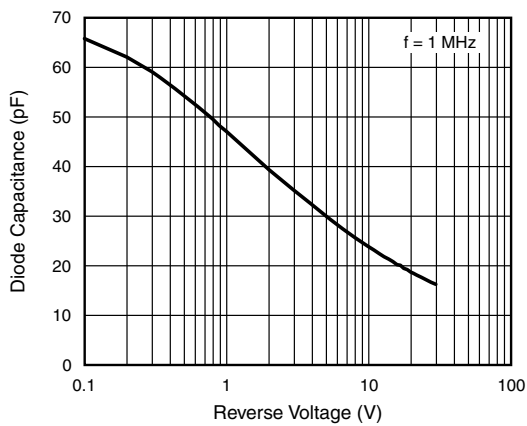


Figure 5. Diode Capacitance vs. Reverse Voltage

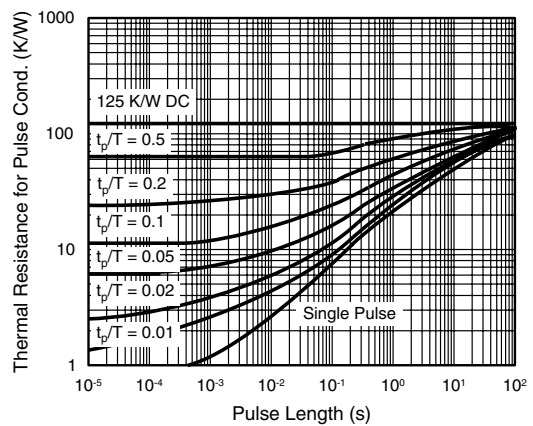
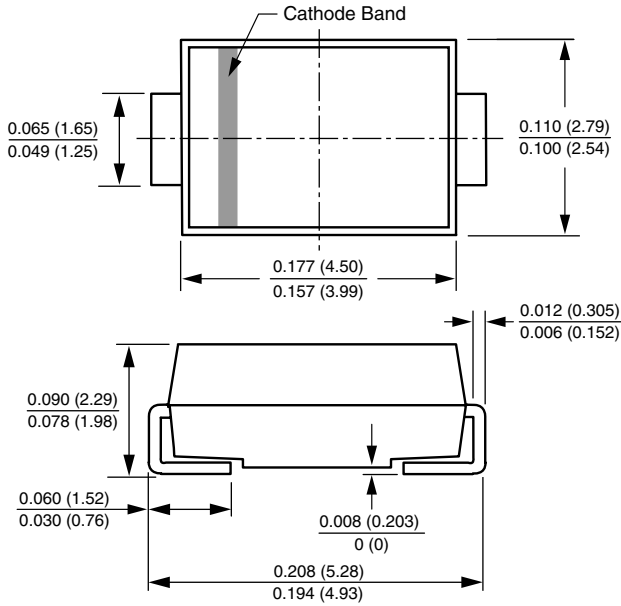


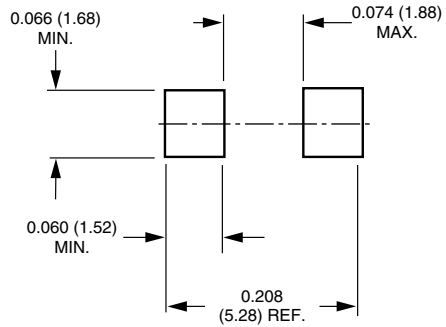
Figure 8. Thermal Response

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout





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

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