

Fast Avalanche SMD Rectifier


SMA (DO-214AC)

 Cathode  Anode

ADDITIONAL RESOURCES


[3D Models](#)

| PRIMARY CHARACTERISTICS | |
|-------------------------|---------------------|
| $I_{F(AV)}$ | 1.5 A |
| V_{RRM} | 200 V, 400 V, 600 V |
| I_{FSM} | 30 A |
| I_R | 1.0 μ A |
| V_F | 1.25 V |
| t_{rr} | 140 ns |
| E_R | 20 mJ |
| T_J max. | 150 °C |
| Package | SMA (DO-214AC) |
| Circuit configuration | Single |

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated junction
- Low reverse current
- Soft recovery characteristics
- Fast reverse recovery time
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
- Automotive ordering code P/NHE3 or P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT
HALOGEN
FREE

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: 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, and 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 meet 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 | BYG24D | BYG24G | BYG24J | UNIT |
| Device marking code | | BYG24D | BYG24G | BYG24J | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 200 | 400 | 600 | V |
| Average forward current at $T_A = 65\text{ °C}$ | $I_{F(AV)}$ | 1.5 | | | A |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 30 | | | A |
| Pulse energy in avalanche mode, non repetitive (inductive load switch off) $I_{(BR)R} = 1\text{ A}$, $T_J = 25\text{ °C}$ | E_R | 20 | | | mJ |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to +150 | | | °C |



| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | |
|--|--|-----------------------------------|-------------|--------|--------|---------------|
| PARAMETER | TEST CONDITIONS | SYMBOL | BYG24D | BYG24G | BYG24J | UNIT |
| Minimum breakdown voltage | $I_R = 100\text{ }\mu\text{A}$ | V_{BR} | 200 | 400 | 600 | V |
| Maximum instantaneous forward voltage | $I_F = 1\text{ A}$ | $T_J = 25\text{ }^\circ\text{C}$ | $V_F^{(1)}$ | 1.15 | | V |
| | $I_F = 1.5\text{ A}$ | | | 1.25 | | |
| Maximum reverse current | $V_R = V_{RRM}$ | $T_J = 25\text{ }^\circ\text{C}$ | 1 | | I_R | μA |
| | | $T_J = 100\text{ }^\circ\text{C}$ | 10 | | | |
| Maximum reverse recovery time | $I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$ | t_{rr} | 140 | | | ns |

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 | BYG24D | BYG24G | BYG24J | UNIT | |
| Junction to case | $R_{\theta JC}$ | 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 | | | | |

Notes

(1) Mounted on epoxy-glass hard tissue 35 μm x 17 mm^2 cooper area per electrode

(2) Mounted on epoxy-glass hard tissue 35 μm x 50 mm^2 cooper area per electrode

| ORDERING INFORMATION (Example) | | | | |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| BYG24D-E3/TR | 0.064 | TR | 1800 | 7" diameter plastic tape and reel |
| BYG24D-E3/TR3 | 0.064 | TR3 | 7500 | 13" diameter plastic tape and reel |
| BYG24DHE3_A/H ⁽¹⁾ | 0.064 | H | 1800 | 7" diameter plastic tape and reel |
| BYG24DHE3_A/I ⁽¹⁾ | 0.064 | I | 7500 | 13" diameter plastic tape and reel |
| BYG24D-M3/TR | 0.064 | TR | 1800 | 7" diameter plastic tape and reel |
| BYG24D-M3/TR3 | 0.064 | TR3 | 7500 | 13" diameter plastic tape and reel |
| BYG24DHM3_A/H ⁽¹⁾ | 0.064 | H | 1800 | 7" diameter plastic tape and reel |
| BYG24DHM3_A/I ⁽¹⁾ | 0.064 | I | 7500 | 13" diameter plastic tape and reel |

Note

(1) AEC-Q101 qualified

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

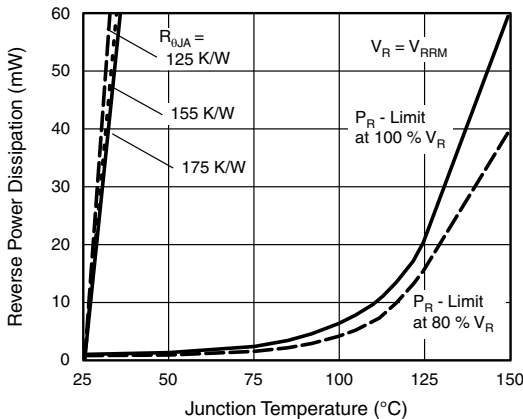


Fig. 1 - Max. Reverse Power Dissipation vs. Junction Temperature

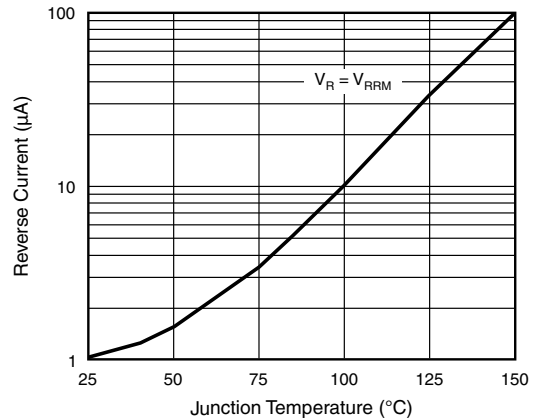


Fig. 2 - Reverse Current vs. Junction Temperature

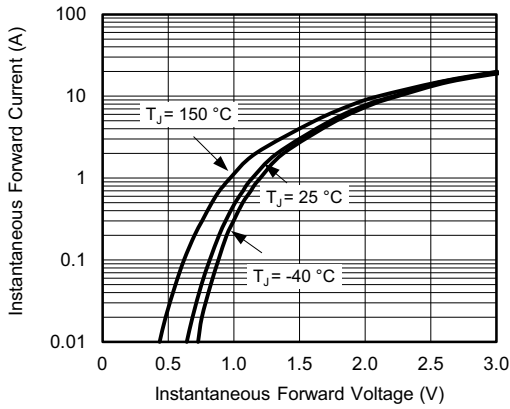


Fig. 3 - Forward Current vs. Forward Voltage

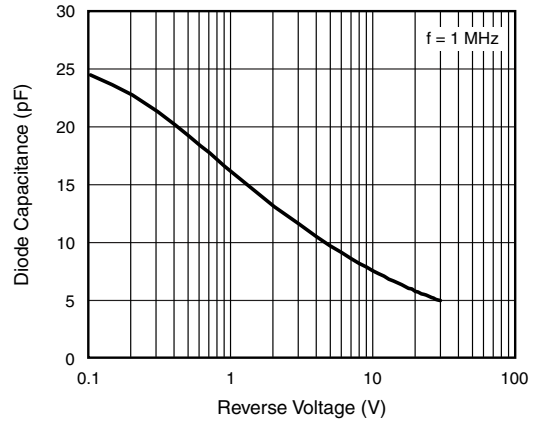


Fig. 5 - Diode Capacitance vs. Reverse Voltage

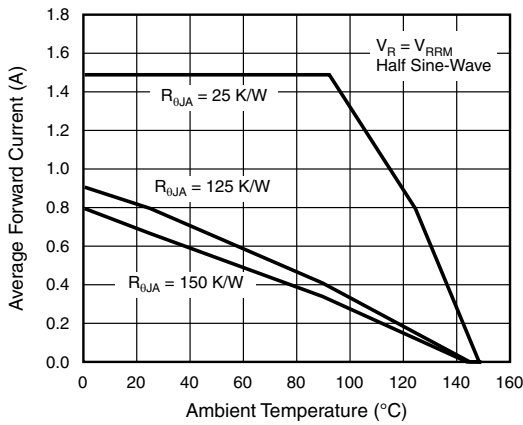
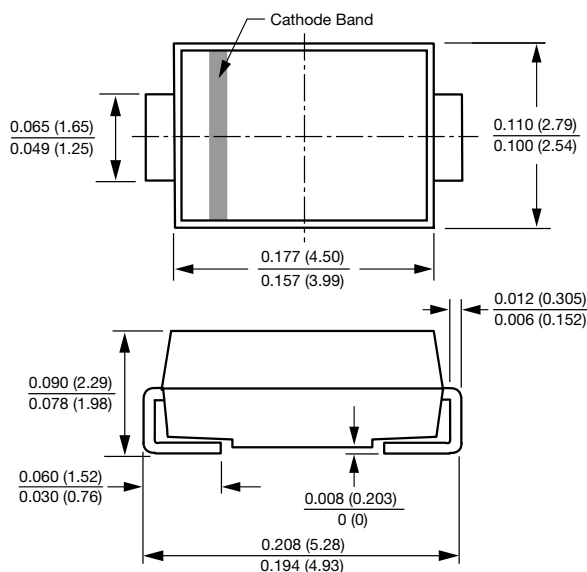


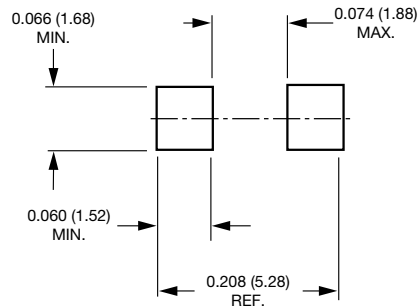
Fig. 4 - Average Forward Current vs. Ambient Temperature

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)



Mounting Pad Layout





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