



## Fast Avalanche SMD Rectifier



DO-214AC (SMA)

### FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated pellet chip 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
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



RoHS  
COMPLIANT  
HALOGEN  
FREE

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

### 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)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 2 whisker test, 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         | 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   |



| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |   |                                  |                                   |        |        |               |
|--|---|----------------------------------|-----------------------------------|--------|--------|---------------|
| PARAMETER  | TEST CONDITIONS   | SYMBOL                           | BYG24D                            | BYG24G | BYG24J | UNIT          |
| Minimum breakdown voltage  | $I_R = 100\ \mu\text{A}$  | $V_{BR}$                         | 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  | $V_R = V_{RRM}$   | $I_R$                            | $T_J = 25\text{ }^\circ\text{C}$  |        | 1      | $\mu\text{A}$ |
|  |   |                                  | $T_J = 100\text{ }^\circ\text{C}$ |        | 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  $\mu\text{s}$  pulse width, 1 % duty cycle

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ 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  $\mu\text{m}$  x 17  $\text{mm}^2$  cooper area per electrode
- (2) Mounted on epoxy-glass hard tissue 35  $\mu\text{m}$  x 50  $\text{mm}^2$  cooper area per electrode

| <b>ORDERING INFORMATION</b> (Example) |                 |                        |               |                                    |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| 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/TR (1)                      | 0.064           | TR                     | 1800          | 7" diameter plastic tape and reel  |
| BYG24DHM3/TR3 (1)                     | 0.064           | TR3                    | 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)

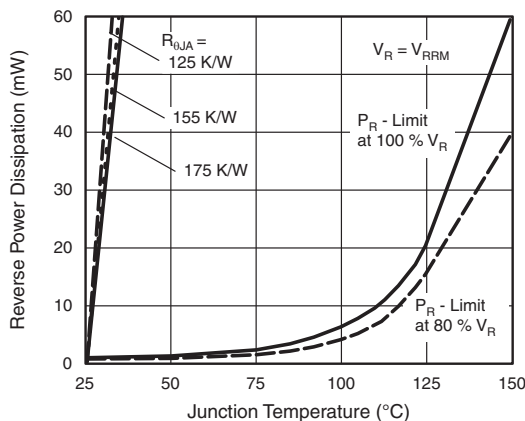


Fig. 1 - Max. Reverse Power Dissipation vs. Junction Temperature

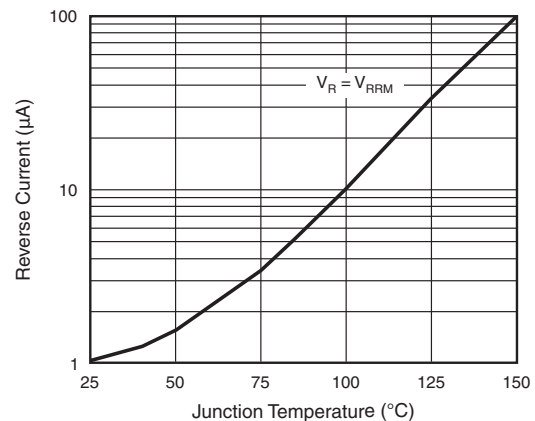


Fig. 2 - Reverse Current vs. Junction Temperature

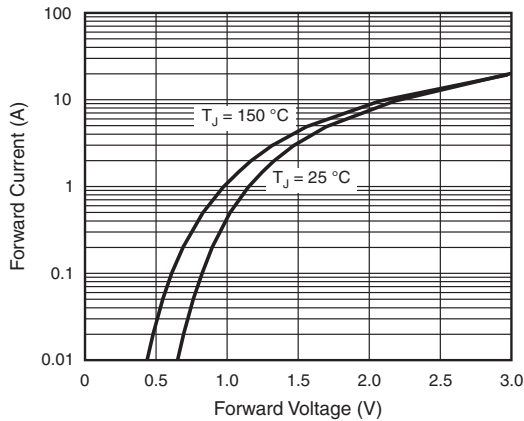


Fig. 3 - Forward Current vs. Forward Voltage

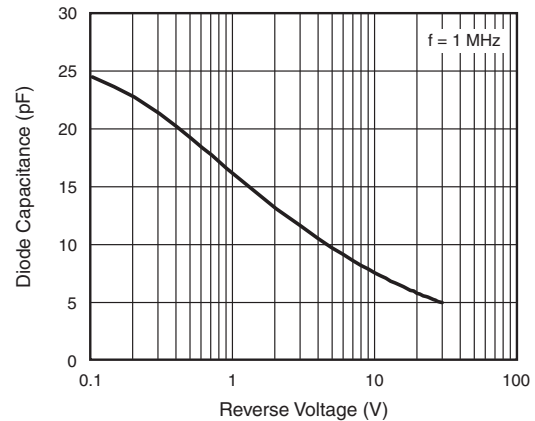


Fig. 5 - Diode Capacitance vs. Reverse Voltage

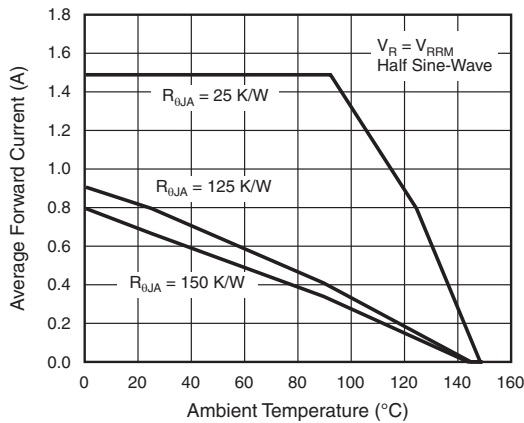
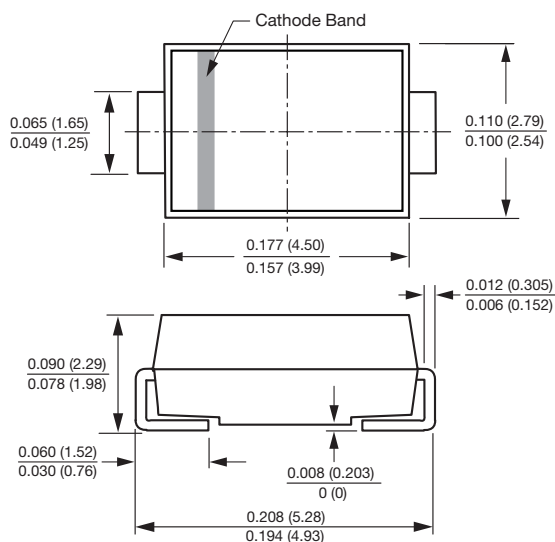


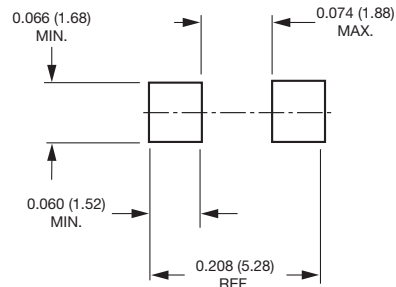
Fig. 4 - Average Forward Current vs. Ambient Temperature

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### DO-214AC (SMA)



### Mounting Pad Layout





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