BYG23M

Vishay General Semiconductor

Ultrafast Avalanche SMD Rectifier



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SMA (DO-214AC)



ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS | | | |
|-------------------------|----------------|--|--|
| I _{F(AV)} | 1.5 A | | |
| V _{RRM} | 1000 V | | |
| I _{FSM} | 30 A | | |
| I _R | 5.0 µA | | |
| t _{rr} | 75 ns | | |
| V _F | 1.7 V | | |
| 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 pellet chip junction
- Low reverse current
- High reverse voltage
- Ultra 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 <u>www.vishay.com/doc?99912</u>

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 | BYG23M | UNIT | |
| Device marking code | | BYG23M | | |
| Maximum repetitive peak reverse voltage | V _{RRM} | 1000 | V | |
| Average forward current at $T_A = 65 \text{ °C}$ | I _{F(AV)} | 1.5 | А | |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I _{FSM} | 30 | А | |
| Pulse energy in avalanche mode, non repetitive (inductive load switch off) $I_{(BR)R}$ = 1 A, T_J = 25 $^\circ C$ | E _R | 20 | mJ | |
| Operating junction and storage temperature range | T _J , T _{STG} | -55 to +150 | °C | |

Revision: 25-Feb-2020

Document Number: 88962

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| ELECTRICAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted) | | | | | | | |
|---|---|-------------------------|-------------------------------|------|--------|--------|------|
| PARAMETER | TEST CONDITIONS | | TEST CONDITIONS | | SYMBOL | BYG23M | UNIT |
| Minimum breakdown voltage | I _R = 100 μA | | V _{BR} | 1000 | V | | |
| Maximum instantaneous voltage | I _F = 1.0 A | T _J = 25 °C | V _F ⁽¹⁾ | 1.7 | N/ | | |
| | | T _J = 150 °C | | 1.35 | v | | |
| Maximum reverse current | $\mathcal{M} = \mathcal{M}$ | T _J = 25 °C | – I _R | 5 | μΑ | | |
| | $V_{R} = V_{RRM}$ | T _J = 125 °C | | 50 | | | |
| Maximum reverse recovery time | $I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$ | | t _{rr} | 75 | ns | | |

Note

SHAY

 $^{(1)}\,$ Pulse test: 300 μs pulse width, 1 % duty cycle

| THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted) | | | | | |
|--|---------------------------------|--------|------|--|--|
| PARAMETER | SYMBOL | BYG23M | UNIT | | |
| Typical thermal resistance, junction to case | $R_{	extsf{	heta}JC}$ | 25 | °C/W | | |
| | R _{0JA} ⁽¹⁾ | 150 | | | |
| Typical thermal resistance, junction to ambient | R _{0JA} ⁽²⁾ | 125 | °C/W | | |
| | R _{0JA} ⁽³⁾ | 100 | | | |

Notes

 $^{(1)}\,$ Mounted on epoxy-glass hard tissue, 17 mm^2 35 μm Cu

⁽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 | |
| BYG23M-E3/TR | 0.064 | TR | 1800 | 7" diameter plastic tape and reel | |
| BYG23M-E3/TR3 | 0.064 | TR3 | 7500 | 13" diameter plastic tape and reel | |
| BYG23MHE3_A/H ⁽¹⁾ | 0.064 | Н | 1800 | 7" diameter plastic tape and reel | |
| BYG23MHE3_A/I ⁽¹⁾ | 0.064 | I | 7500 | 13" diameter plastic tape and reel | |
| BYG23M-M3/TR | 0.064 | TR | 1800 | 7" diameter plastic tape and reel | |
| BYG23M-M3/TR3 | 0.064 | TR3 | 7500 | 13" diameter plastic tape and reel | |
| BYG23MHM3_A/H ⁽¹⁾ | 0.064 | Н | 1800 | 7" diameter plastic tape and reel | |
| BYG23MHM3_A/I ⁽¹⁾ | 0.064 | | 7500 | 13" diameter plastic tape and reel | |

Note

(1) AEC-Q101 qualified



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

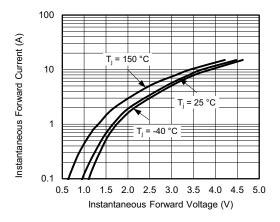


Fig. 1 - Max. Forward Current vs. Forward Voltage

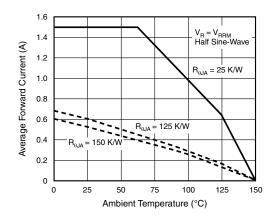


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

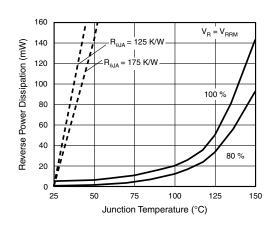


Fig. 3 - Max. Reverse Power Dissipation vs. Junction Temperature

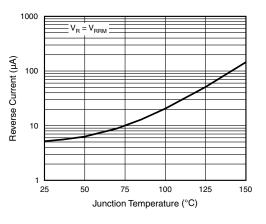


Fig. 4 - Reverse Current vs. Junction Temperature

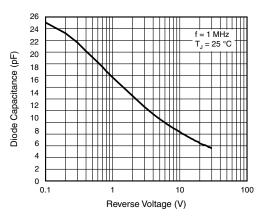


Fig. 5 - Diode Capacitance vs. Reverse Voltage

 Revision: 25-Feb-2020
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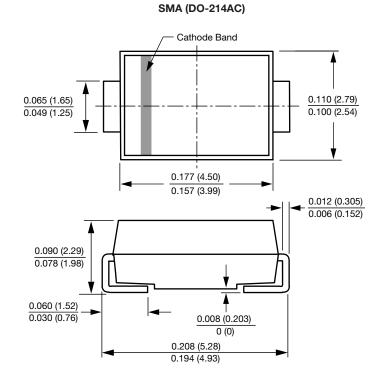
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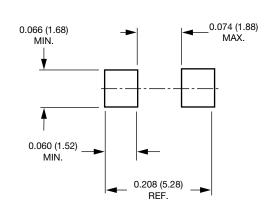
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

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Mounting Pad Layout

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