High Voltage Ultrafast Avalanche SMD Rectifiers

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

MECHANICAL DATA
Case: SMA (DO-214AC)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade
Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 2 whisker test
Polarity: color band denotes the cathode end

TYPICAL APPLICATIONS
For use in high voltage, high frequency rectification specially suited for freewheeling, clamping, snubbing in power supply, ignition drive of HID, UHP and industrial ballast and snubber for PDP TV power supply application.

ADDITIONAL RESOURCES

3D Models

PRIMARY CHARACTERISTICS

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<thead>
<tr>
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<th>UNIT</th>
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<td>Device marking code</td>
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MAXIMUM RATINGS (T_C = 25 °C unless otherwise noted)

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Note
- Free air, mounted on recommended copper pad area
### ELECTRICAL CHARACTERISTICS

**PARAMETER**  | **TEST CONDITIONS**  | **SYMBOL**  | **TYP.**  | **MAX.**  | **UNIT**
--- | --- | --- | --- | --- | ---
Instantaneous forward voltage (1)  | \( I_F = 1.0 \, \text{A} \) | \( V_F \) | 1.74 | 1.9 | V
Reverse current (2)  | \( V_R = 1300 \, \text{V} \) | \( I_R \) | - | 5.0 | \( \mu \text{A} \)
Maximum reverse recovery time  | \( I_F = 0.5 \, \text{A}, I_R = 1.0 \, \text{A}, I_F = 0.25 \, \text{A} \) | \( T_A = 25 \, \text{°C} \) | \( t_{rr} \) | 65 | 75 | ns
Forward recovery time  | \( I_F = 1.5 \, \text{A}, dI/dt = 12 \, \text{A/μs}, \ V_F = 1.1 \times V_F \text{ max.} \) | \( T_A = 25 \, \text{°C} \) | \( t_{fr} \) | 620 | - | ns
Peak forward voltage  | \( V_F \) | 9.0 | - | V
Typical junction capacitance  | 4.0 V, 1 MHz | \( C_J \) | 9.0 | - | pF

**Notes**

(1) Pulse test: 300 μs pulse width, 1 % duty cycle
(2) Pulse test: Pulse width ≤ 40 ms

### THERMAL CHARACTERISTICS

**PARAMETER**  | **SYMBOL**  | **BYG23T**  | **UNIT**
--- | --- | --- | ---
Typical thermal resistance (1)  | \( R_{\theta JA} \) | 120 | °C/W
| \( R_{\theta JM} \) | 20 | °C/W

**Note**

(1) Free air, mounted on recommended PCB 1 oz. pad area. Thermal resistance \( R_{\theta JA} \) - junction to ambient, \( R_{\theta JM} \) - junction to mount

### ORDERING INFORMATION

| PREFERRED P/N  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|--- | --- | --- | --- | ---
| BYG23T-M3/TR  | 0.064 | TR | 1800 | 7” diameter plastic tape and reel |
| BYG23T-M3/TR3  | 0.064 | TR3 | 7500 | 13” diameter plastic tape and reel |
RATINGS AND CHARACTERISTICS CURVES \(T_A = 25 \, ^\circ\text{C}\) unless otherwise noted

- **Fig. 1** - Max. Forward Current Derating Curve
- **Fig. 2** - Forward Power Loss Characteristics
- **Fig. 3** - Typical Instantaneous Forward Characteristics
- **Fig. 4** - Typical Reverse Characteristics
- **Fig. 5** - Typical Junction Capacitance
- **Fig. 6** - Typical Transient Thermal Impedance
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)

Mounting Pad Layout

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

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