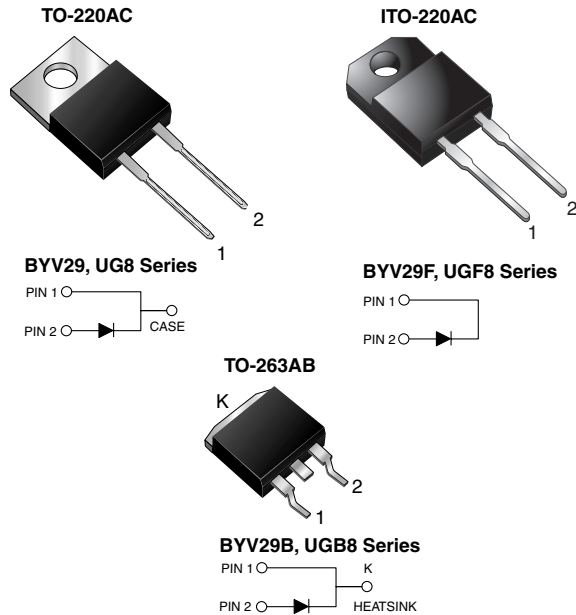


## Ultrafast Rectifier



### FEATURES

- Glass passivated chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 s (for TO-220AC and ITO-220AC package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, inverters, freewheeling diodes, dc-to-dc converters, and other power switching application.

### PRIMARY CHARACTERISTICS

|                    |              |
|--------------------|--------------|
| $I_{F(AV)}$        | 8.0 A        |
| $V_{RRM}$          | 300 V, 400 V |
| $I_{FSM}$          | 110 A        |
| $t_{tr}$           | 35 ns        |
| $V_F$              | 1.03 V       |
| $T_J \text{ max.}$ | 150 °C       |

### MECHANICAL DATA

**Case:** TO-220AC, ITO-220AC, TO-263AB

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 high reliability grade (AEC Q101 qualified), meets JESD 201 class 2 whisker test

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs maximum

### MAXIMUM RATINGS ( $T_C = 25 \text{ °C}$ unless otherwise noted)

| PARAMETER  | SYMBOL         | BYV29-300<br>UG8FT | BYV29-400<br>UG8GT | UNIT |
|--|----------------|--------------------|--------------------|------|
| Maximum repetitive peak reverse voltage  | $V_{RRM}$      | 300                | 400                | V    |
| Maximum working reverse voltage  | $V_{RWM}$      | 300                | 400                | V    |
| Maximum RMS voltage  | $V_{RMS}$      | 210                | 280                | V    |
| Maximum DC blocking voltage  | $V_{DC}$       | 300                | 400                | V    |
| Maximum average forward rectified current at $T_C = 100 \text{ °C}$                | $I_{F(AV)}$    | 8.0                |                    | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 110                |                    | A    |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | - 40 to + 150      |                    | °C   |
| Isolation voltage (ITO-220AC only) from terminal to heatsink $t = 1 \text{ min}$   | $V_{AC}$       | 1500               |                    | V    |

# UG(F,B)8FT & UG(F,B)8GT, BYV29(F,B)-300 & BYV29(F,B)-400

Vishay General Semiconductor



| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) |  |   |          |                      |                    |               |
|--|--|---|----------|----------------------|--------------------|---------------|
| PARAMETER  | TEST CONDITIONS  |   | SYMBOL   | BYV29-300<br>UG8FT   | BYV29-400<br>UG8GT | UNIT          |
| Maximum instantaneous forward voltage <sup>(1)</sup>   | $I_F = 8\text{ A}$<br>$I_F = 8\text{ A}$<br>$I_F = 20\text{ A}$  | $T_J = 25\text{ }^\circ\text{C}$<br>$T_J = 150\text{ }^\circ\text{C}$<br>$T_J = 25\text{ }^\circ\text{C}$ | $V_F$    | 1.25<br>1.03<br>1.40 |                    | V             |
| Maximum DC reverse current at $V_{RRM}$  |  | $T_C = 25\text{ }^\circ\text{C}$<br>$T_C = 100\text{ }^\circ\text{C}$                                     | $I_R$    | 10<br>350            |                    | $\mu\text{A}$ |
| Maximum reverse recovery time  | $I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$   |   | $t_{rr}$ | 35                   |                    | ns            |
| Maximum reverse recovery time  | $I_F = 1.0\text{ A}, dI/dt = 100\text{ A}/\mu\text{s}, V_R = 30\text{ V}, I_{rr} = 0.1 I_{RM}$           |   | $t_{rr}$ | 50                   |                    | ns            |
| Maximum reverse recovery current   | $I_F = 10\text{ A}, dI/dt = 50\text{ A}/\mu\text{s}, V_R = 30\text{ V}, T_C = 100\text{ }^\circ\text{C}$ |   | $I_{RM}$ | 5.5                  |                    | A             |
| Maximum recovered stored charged   | $I_F = 2\text{ A}, dI/dt = 20\text{ A}/\mu\text{s}, V_R = 30\text{ V}, I_{rr} = 0.1 I_{RM}$              |   | $Q_{rr}$ | 55                   |                    | nC            |

**Note:**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

| <b>THERMAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                 |              |                |                |                           |
|---|-----------------|--------------|----------------|----------------|---------------------------|
| PARAMETER   | SYMBOL          | BYV29<br>UG8 | BYV29F<br>UGF8 | BYV29B<br>UGB8 | UNIT                      |
| Typical thermal resistance from junction to case  | $R_{\theta JC}$ | 2.5          | 5.5            | 2.5            | $^\circ\text{C}/\text{W}$ |

| <b>ORDERING INFORMATION</b> (Example) |                                 |                 |              |               |               |
|---------------------------------------|---------------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE                               | PREFERRED P/N                   | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AC                              | BYV29-400-E3/45                 | 1.80            | 45           | 50/tube       | Tube          |
| ITO-220AC                             | BYV29F-400-E3/45                | 1.95            | 45           | 50/tube       | Tube          |
| TO-263AB                              | BYV29B-400-E3/45                | 1.77            | 45           | 50/tube       | Tube          |
| TO-263AB                              | BYV29B-400-E3/81                | 1.77            | 81           | 800/reel      | Tape and reel |
| TO-220AC                              | BYV29-400HE3/45 <sup>(1)</sup>  | 1.80            | 45           | 50/tube       | Tube          |
| ITO-220AC                             | BYV29F-400HE3/45 <sup>(1)</sup> | 1.95            | 45           | 50/tube       | Tube          |
| TO-263AB                              | BYV29B-400HE3/45 <sup>(1)</sup> | 1.77            | 45           | 50/tube       | Tube          |
| TO-263AB                              | BYV29B-400HE3/81 <sup>(1)</sup> | 1.77            | 81           | 800/reel      | Tape and reel |

**Note:**

(1) Automotive grade AEC Q101 qualified



**RATINGS AND CHARACTERISTICS CURVES**

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

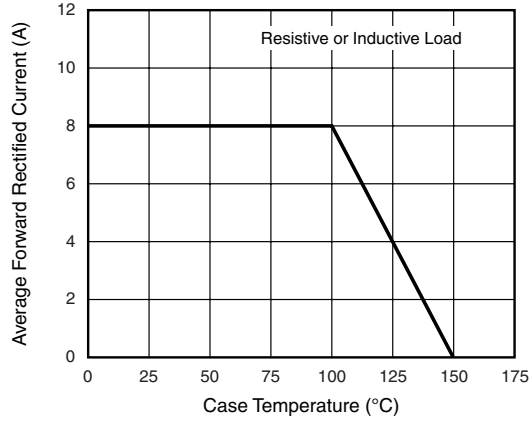


Figure 1. Maximum Forward Current Derating Curve

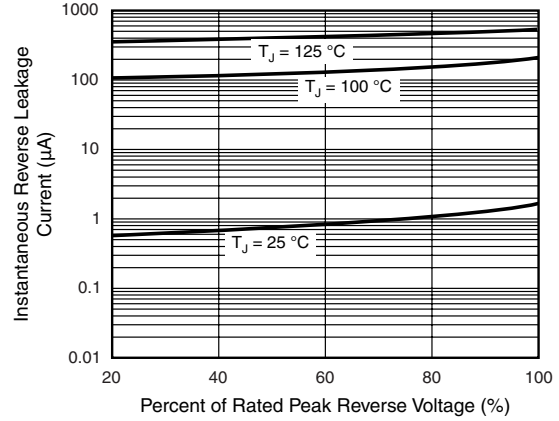


Figure 4. Typical Reverse Leakage Characteristics

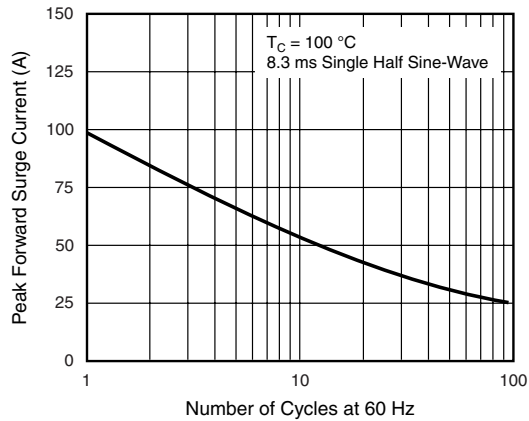


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

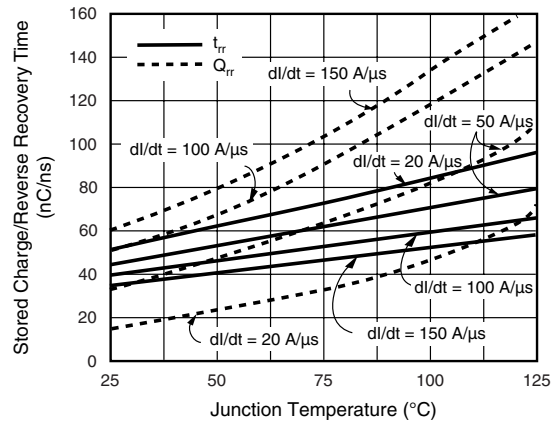


Figure 5. Reverse Switching Characteristics Per Leg

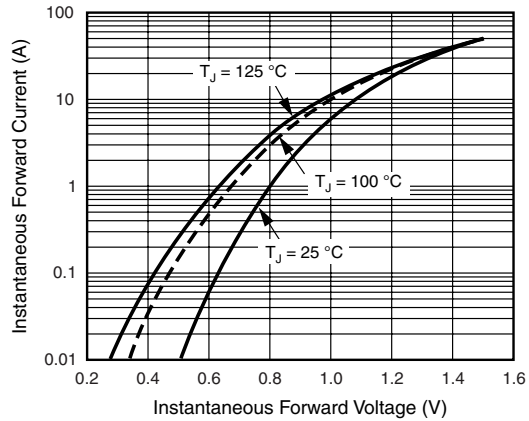


Figure 3. Typical Instantaneous Forward Characteristics

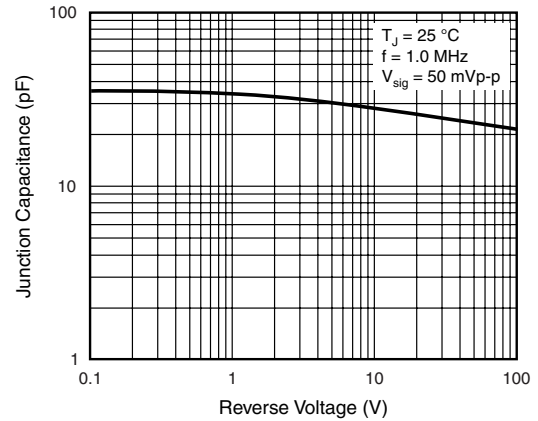


Figure 6. Typical Junction Capacitance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





## Disclaimer

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

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.