

# Clamper/Damper Glass Passivated Fast Plastic Rectifier



## FEATURES

- Superectifier structure for high reliability application
- Cavity-free glass-passivated junction
- Low forward voltage drop
- Typical  $I_R$  less than 0.1  $\mu A$
- High forward surge capability
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

## TYPICAL APPLICATIONS

For use in high voltage rectification of power supplies, inverters, converters and freewheeling diodes specially designed for clamping circuits, horizontal deflection systems and damper applications.

## MECHANICAL DATA

**Case:** DO-201AD, molded epoxy over glass body  
Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS-compliant, commercial grade

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

E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** Color band denotes cathode end

| PRIMARY CHARACTERISTICS |             |
|-------------------------|-------------|
| $I_{F(AV)}$             | 2.5 A       |
| $V_{RRM}$               | 1500 V      |
| $I_{FSM}$               | 50 A        |
| $t_{rr}$                | 2000 ns     |
| $I_R$                   | 5.0 $\mu A$ |
| $V_F$                   | 1.6 V       |
| $T_J$ max.              | 150 °C      |
| Package                 | DO-201AD    |
| Diode variation         | Single die  |

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                                   |             |             |      |
|-------------------------------------------------------------------------------------------|-------------|-------------|------|
| PARAMETER                                                                                 | SYMBOL      | BY228GP     | UNIT |
| Maximum non repetitive peak reverse voltage                                               | $V_{RSM}$   | 1650        | V    |
| Maximum repetitive peak reverse voltage                                                   | $V_{RRM}$   | 1500        | V    |
| Maximum RMS voltage                                                                       | $V_{RMS}$   | 1050        | V    |
| Maximum DC blocking voltage                                                               | $V_{DC}$    | 1500        | V    |
| Maximum average forward rectified current<br>0.375" (9.5 mm) lead length at $T_A = 50$ °C | $I_{F(AV)}$ | 2.5         | A    |
| Peak forward surge current 10 ms single half<br>sine-wave superimposed on rated load      | $I_{FSM}$   | 50          | A    |
| Working peak forward current at $T_A = 75$ °C                                             | $I_{FWM}$   | 5.0         | A    |
| Peak repetitive forward surge current at $T_A = 75$ °C                                    | $I_{FRM}$   | 10          | A    |
| Operating junction temperature range                                                      | $T_J$       | -65 to +150 | °C   |
| Storage temperature range                                                                 | $T_{STG}$   | -65 to +200 | °C   |

| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                                                                                     |             |         |               |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------|---------|---------------|
| PARAMETER                                                                                      | TEST CONDITIONS                                                                     | SYMBOL      | BY228GP | UNIT          |
| Maximum instantaneous forward voltage                                                          | $I_F = 2.5\text{ A}$                                                                | $V_F^{(1)}$ | 1.6     | V             |
| Maximum reverse current                                                                        | $V_R = 1500\text{ V}$                                                               | $I_R$       | 5.0     | $\mu\text{A}$ |
|                                                                                                |                                                                                     |             | 200     |               |
| Maximum reverse recovery time                                                                  | $I_F = 1.0\text{ A}$ , $I_R = 50\text{ mA}$ ,<br>$dI/dt = 50\text{ mA}/\mu\text{s}$ | $t_{rr}$    | 20      | $\mu\text{s}$ |
| Reverse recovery time                                                                          | $I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ ,<br>$I_{rr} = 0.25\text{ A}$           | typical     | 0.5     | $\mu\text{s}$ |
|                                                                                                |                                                                                     | maximum     | 2.0     |               |
| Maximum forward recovery time                                                                  | $I_F = 5.0\text{ A}$ with $t_r = 0.1\text{ }\mu\text{s}$                            | $t_{fr}$    | 1.0     | $\mu\text{s}$ |
| Typical junction capacitance                                                                   | 4.0 V, 1 MHz                                                                        | $C_J$       | 40      | pF            |

**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                | BY228GP | UNIT                        |
| Typical thermal resistance                                                                  | $R_{\theta JA}^{(1)}$ | 20      | $^{\circ}\text{C}/\text{W}$ |

**Note**

(1) Thermal resistance from junction to ambient at 0.375" (9.5 mm) lead length, PCB mounted

| <b>ORDERING INFORMATION</b> (Example) |                 |                        |               |                                  |
|---------------------------------------|-----------------|------------------------|---------------|----------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                    |
| BY228GP-E3/54                         | 1.28            | 54                     | 1400          | 13" diameter paper tape and reel |
| BY228GP-E3/73                         | 1.28            | 73                     | 1000          | Ammo pack packaging              |

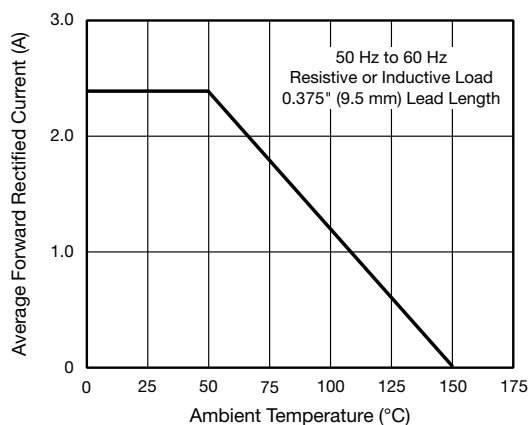
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

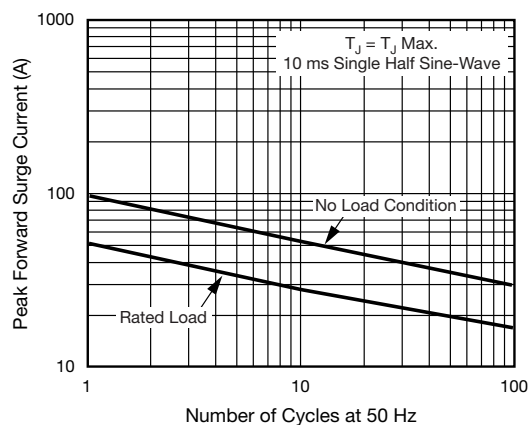


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

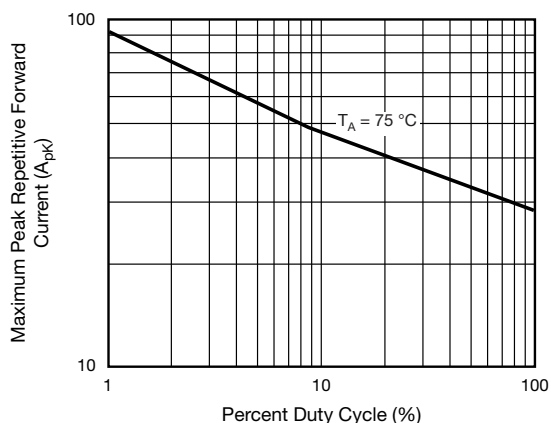


Fig. 3 - Maximum Peak Repetitive Forward Surge Current

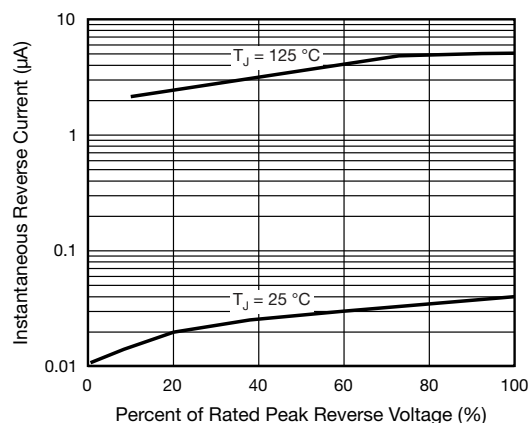


Fig. 5 - Typical Reverse Characteristics

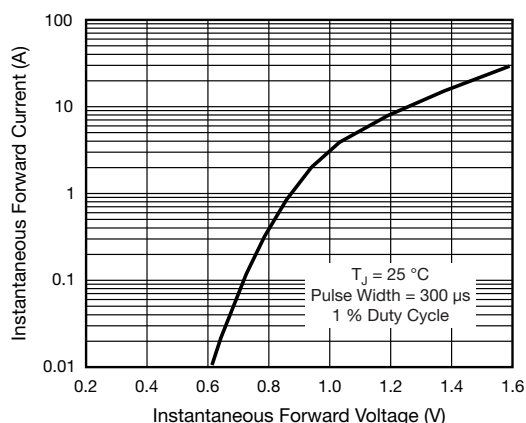


Fig. 4 - Typical Instantaneous Forward Characteristics

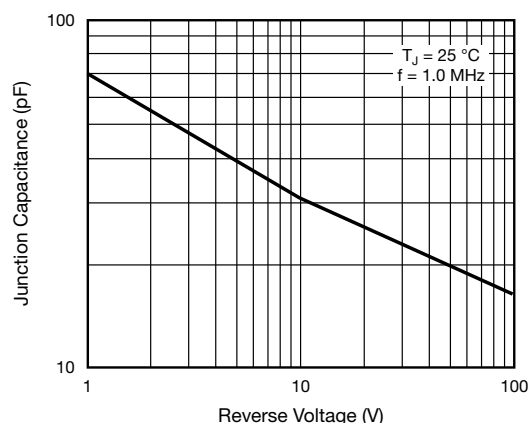
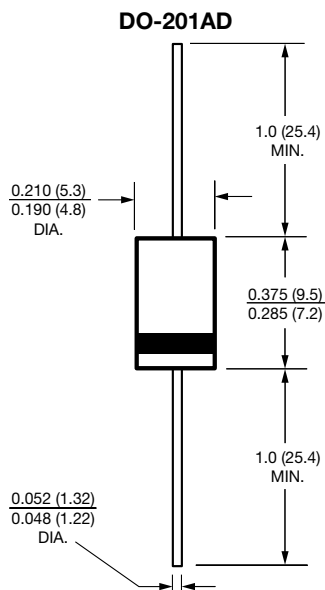


Fig. 6 - Typical Junction Capacitance

### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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