

# Clamper/Damper Glass Passivated Fast Plastic Rectifier



## FEATURES

- Superrectifier structure for high reliability application
- Cavity-free glass-passivated junction
- Low forward voltage drop
- Typical  $I_R$  less than 0.1  $\mu\text{A}$
- High forward surge capability
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- 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  
Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

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

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 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 $\mu\text{A}$
$V_F$	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 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 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	$V_R = 1500\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R$	5.0	$\mu\text{A}$
		$T_J = 140\text{ }^\circ\text{C}$		200	
Maximum reverse recovery time	$I_F = 1.0\text{ A}$ , $I_R = 50\text{ mA}$ , $di/dt = 50\text{ mA}/\mu\text{s}$		$t_{rr}$	20	$\mu\text{s}$
Reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$	typical	$t_{rr}$	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
BY228GPHE3/54 (1)	1.28	54	1400	13" diameter paper tape and reel
BY228GPHE3/73 (1)	1.28	73	1000	Ammo pack packaging

**Note**

(1) AEC-Q101 qualified

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

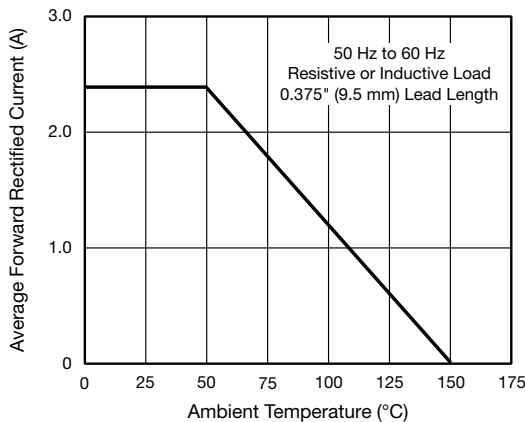


Fig. 1 - Forward Current Derating Curve

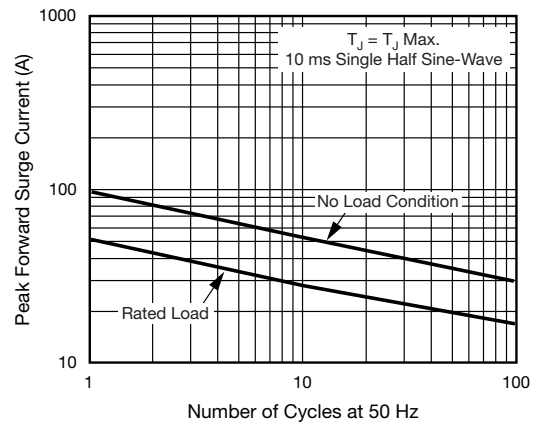


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

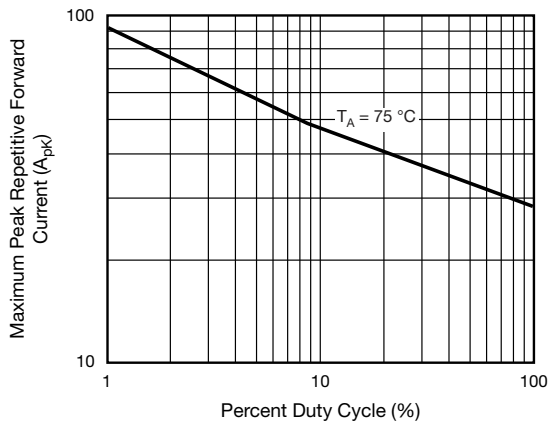


Fig. 3 - Maximum Peak Repetitive Forward Surge Current

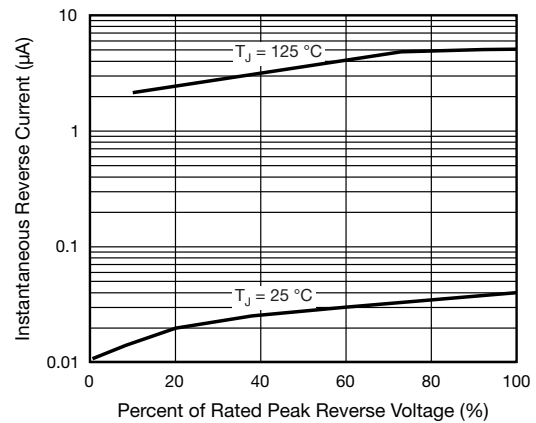


Fig. 5 - Typical Reverse Characteristics

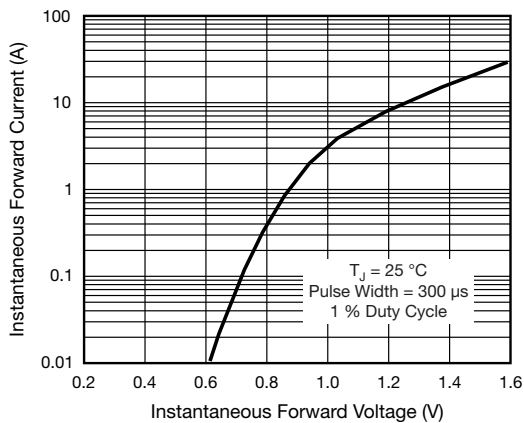


Fig. 4 - Typical Instantaneous Forward Characteristics

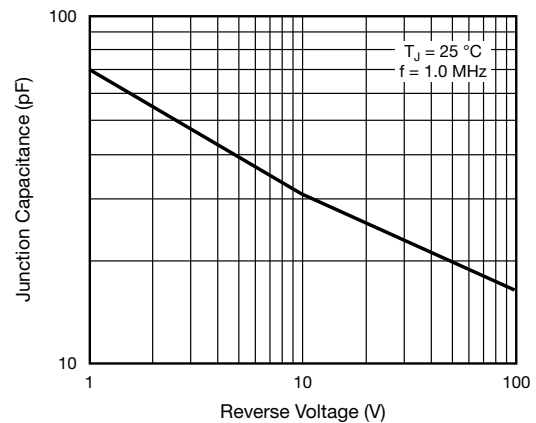
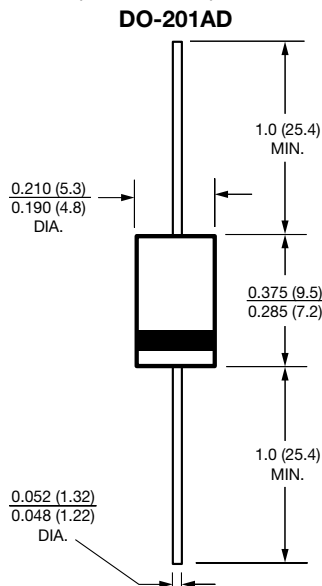


Fig. 6 - Typical Junction Capacitance

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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