

## Miniature Glass Passivated Junction Rectifier



### FEATURES

- Superrectifier structure for high reliability application
- Cavity-free glass-passivated junction
- Low forward voltage drop
- Low leakage current,  $I_R$  less than 1  $\mu\text{A}$
- High forward surge capability
- Meets environmental standard MIL-S-19500
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC


**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

For use in high voltage rectification of power supplies, inverters, converters and freewheeling diodes for both consumer and automotive applications.

### MECHANICAL DATA

**Case:** DO-204AC, 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

$I_{F(AV)}$	1.75 A
$V_{RRM}$	1250 V
$I_{FSM}$	50 A
$I_R$	5.0 $\mu\text{A}$
$V_F$ at $I_F = 5.0 \text{ A}$	1.5 V
$T_J$ max.	175 °C

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

PARAMETER	SYMBOL	BY127MGP	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	1250	V
Maximum RMS voltage	$V_{RMS}$	875	V
Maximum DC blocking voltage	$V_{DC}$	1250	V
Maximum average forward rectified current 0.375" (9.5 mm) lead length at $T_A = 55 \text{ °C}$	$I_{F(AV)}$	1.75	A
Peak forward surge current 8.3 ms single half sine wave superimposed on rated load	$I_{FSM}$	50	A
Maximum full load reverse current, full cycle average, 0.375" (9.5 mm) lead length at $T_A = 55 \text{ °C}$	$I_{R(AV)}$	100	$\mu\text{A}$
Operating junction and storage temperature range	$T_J, T_{STG}$	- 65 to + 175	°C

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER	TEST CONDITIONS	SYMBOL	BY127MGP	UNIT
Maximum instantaneous forward voltage	$I_F = 5.0\text{ A}$	$V_F^{(1)}$	1.5	V
Maximum reverse current	$V_R = 1250\text{ V}$   $T_A = 25\text{ }^\circ\text{C}$	$I_R$	5.0	$\mu\text{A}$
Typical reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $t_{rr} = 0.25\text{ A}$	$t_{rr}$	2.0	$\mu\text{s}$
Typical junction capacitance	4.0 V, 1 MHz	$C_J$	15	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	BY127MGP	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$	45	$^\circ\text{C/W}$
	$R_{\theta JL}^{(1)}$	20	

**Note**

(1) Thermal resistance from junction to ambient and from junction to lead at 0.375" (9.5 mm) lead length, P.C.B. mounted

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
BY127MGP-E3/54	0.425	54	4000	13" diameter paper tape and reel
BY127MGP-E3/73	0.425	73	2000	Ammo pack packaging
BY127MGPHE3/54 <sup>(1)</sup>	0.425	54	4000	13" diameter paper tape and reel
BY127MGPHE3/73 <sup>(1)</sup>	0.425	73	2000	Ammo pack packaging

**Note**

(1) AEC-Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

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

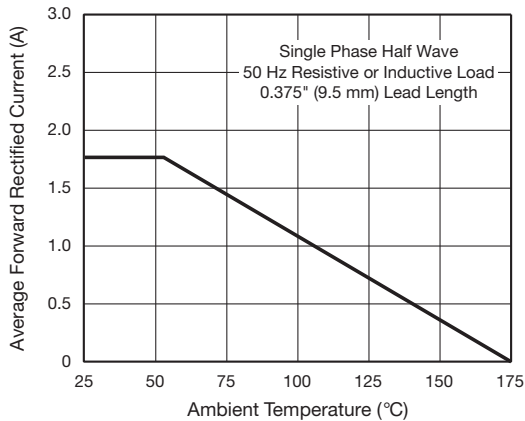


Fig. 1 - Forward Current Derating Curve

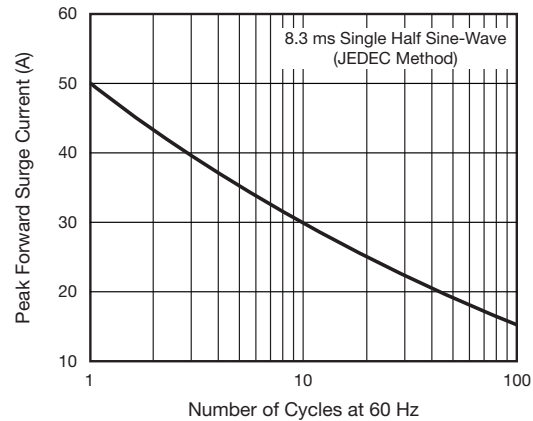


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

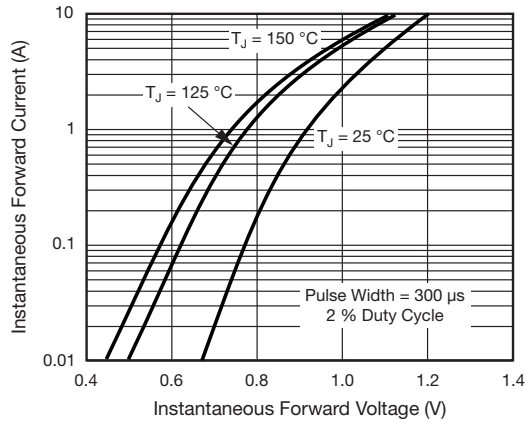


Fig. 3 - Typical Instantaneous Forward Characteristics

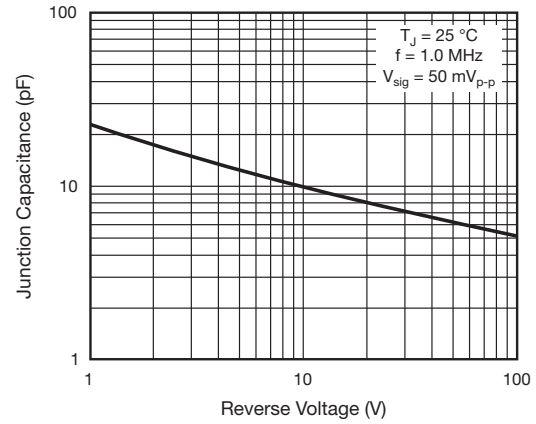


Fig. 5 - Typical Junction Capacitance

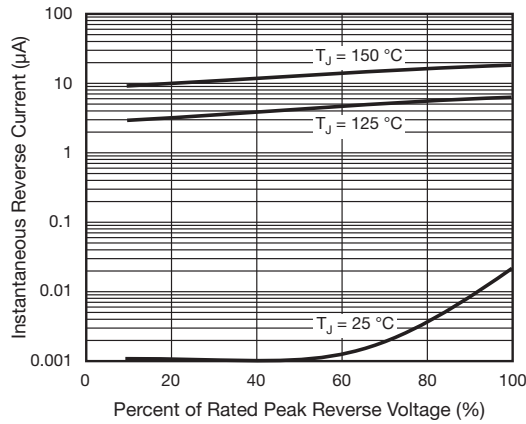


Fig. 4 - Typical Reverse Characteristics

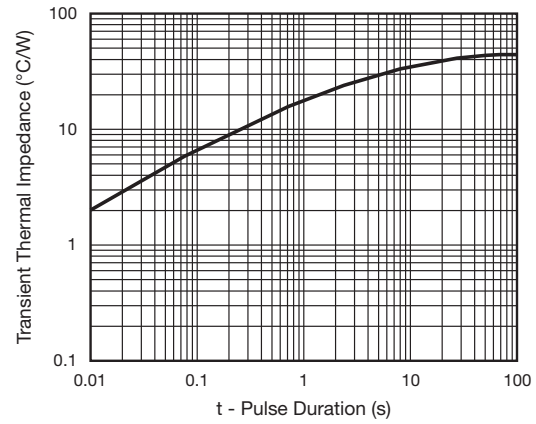
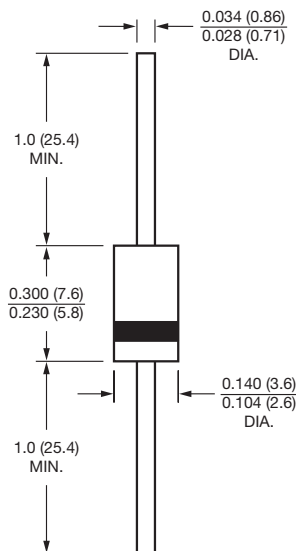


Fig. 6 - Typical Transient Thermal Impedance

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

**DO-204AC (DO-15)**




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