

# Surface Mount Glass Passivated Ultrafast Rectifier

## SUPERECTIFIER®



DO-214BA (GF1)

## FEATURES

- Superectifier structure for high reliability condition
- Cavity-free glass-passivated junction
- Ideal for automated placement
- Ultrafast reverse recovery time
- Low switching losses, high efficiency
- Avalanche surge energy capability
- Meets environmental standard MIL-S-19500
- Meets MSL level 1, per J-STD-020, LF maximum peak of 250 °C
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

## PRIMARY CHARACTERISTICS

|                        |                |
|------------------------|----------------|
| $I_{F(AV)}$            | 1.0 A          |
| $V_{RRM}$              | 1300 V         |
| $I_{FSM}$              | 20 A           |
| $t_{rr}$               | 75 ns          |
| $E_{AS}$               | 15 mJ          |
| $V_F$ at $I_F = 1.0$ A | 3.0 V          |
| $T_J$ max.             | 150 °C         |
| Package                | DO-214BA (GF1) |
| Diode variations       | Single die     |

## TYPICAL APPLICATIONS

For use in high voltage rectification of photoflash application.

## MECHANICAL DATA

**Case:** DO-214BA, molded plastic 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

## MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)

| PARAMETER                                                                          | SYMBOL         | EGF1T         | UNIT |
|------------------------------------------------------------------------------------|----------------|---------------|------|
| Device marking code                                                                |                | ET            |      |
| Maximum repetitive peak reverse voltage                                            | $V_{RRM}$      | 1300          | V    |
| Maximum RMS voltage                                                                | $V_{RMS}$      | 910           | V    |
| Maximum DC blocking                                                                | $V_{DC}$       | 1300          | V    |
| Maximum average forward rectified current                                          | $I_{F(AV)}$    | 1.0           | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 20            | A    |
| Non-repetitive avalanche energy at $T_A = 25$ °C, $I_{AS} = 1$ A, $L = 30$ mH      | $E_{AS}$       | 15            | mJ   |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | - 55 to + 150 | °C   |

| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                                                                           |                                     |             |       |               |
|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-------------------------------------|-------------|-------|---------------|
| PARAMETER                                                                                      | TEST CONDITIONS                                                           |                                     | SYMBOL      | EGF1T | UNIT          |
| Maximum instantaneous forward voltage                                                          | 1.0 A                                                                     | $T_J = 25\text{ }^{\circ}\text{C}$  | $V_F^{(1)}$ | 3.0   | V             |
| Maximum DC reverse current                                                                     | $V_{RM}$                                                                  | $T_J = 25\text{ }^{\circ}\text{C}$  | $I_R^{(2)}$ | 5.0   | $\mu\text{A}$ |
|                                                                                                |                                                                           | $T_J = 125\text{ }^{\circ}\text{C}$ |             | 50    |               |
| Typical reverse recovery time                                                                  | $I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ ,<br>$I_{rr} = 0.25\text{ A}$ |                                     | $t_{rr}$    | 75    | ns            |
| Typical junction capacitance                                                                   | 4.0 V, 1 MHz                                                              |                                     | $C_J$       | 8.0   | pF            |

**Notes**

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

(2) Pulse test: Pulse width  $\leq 40\text{ ms}$

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                       |       |                      |
|---------------------------------------------------------------------------------------------|-----------------------|-------|----------------------|
| PARAMETER                                                                                   | SYMBOL                | EGF1T | UNIT                 |
| Typical thermal resistance                                                                  | $R_{\theta JA}^{(1)}$ | 50    | $^{\circ}\text{C/W}$ |
|                                                                                             | $R_{\theta JL}^{(1)}$ | 20    |                      |

**Note**

(1) Thermal resistance from junction to ambient and from junction to lead, PCB mounted on 0.95" x 0.95" (24 mm x 24 mm) copper pad areas

| <b>ORDERING INFORMATION</b> (Example) |                 |                        |               |                                    |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| EGF1T-E3/67A                          | 0.104           | 67A                    | 1500          | 7" diameter plastic tape and reel  |
| EGF1T-E3/5CA                          | 0.104           | 5CA                    | 6500          | 13" diameter plastic tape and reel |
| EGF1THE3/67A <sup>(1)</sup>           | 0.104           | 67A                    | 1500          | 7" diameter plastic tape and reel  |
| EGF1THE3/5CA <sup>(1)</sup>           | 0.104           | 5CA                    | 6500          | 13" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified

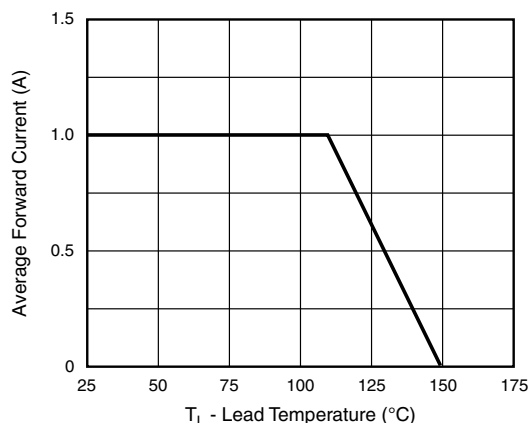
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

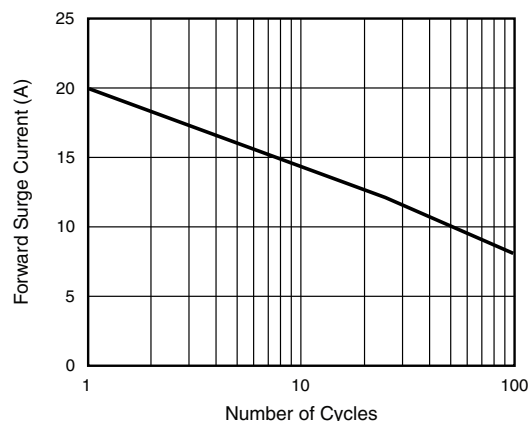


Fig. 2 - Maximum Non-Repetitive Forward Surge Current

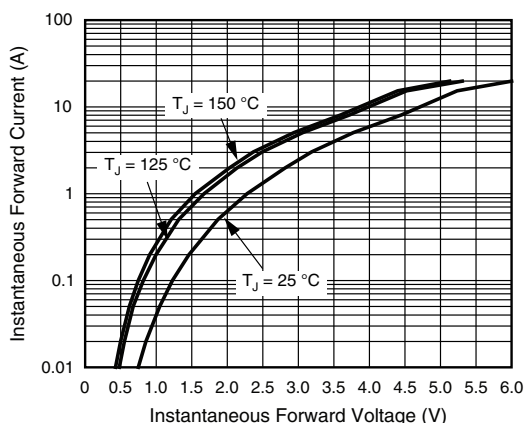


Fig. 3 - Typical Instantaneous Forward Characteristics

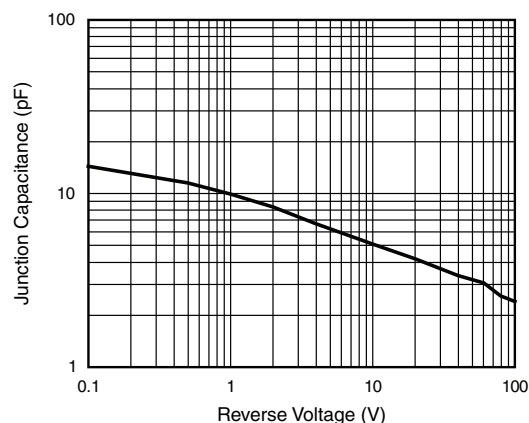


Fig. 5 - Typical Junction Capacitance Per Leg

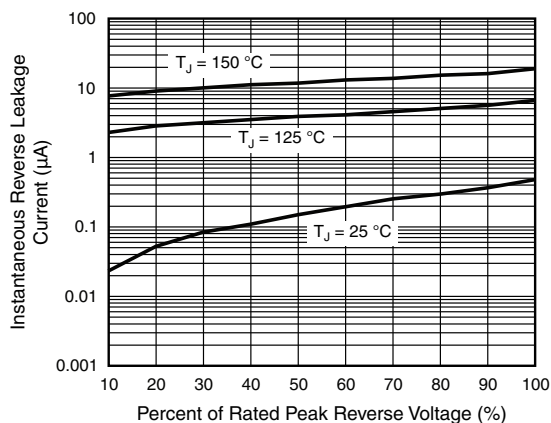


Fig. 4 - Typical Reverse Leakage Characteristics

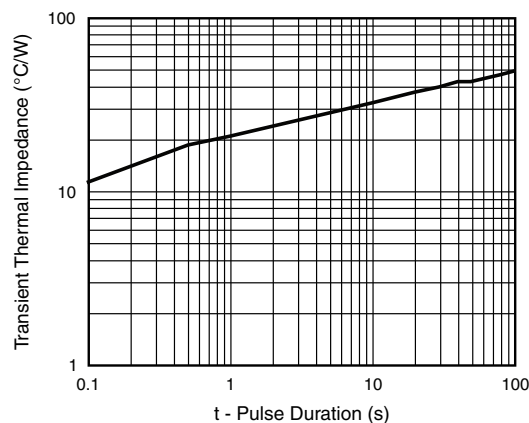
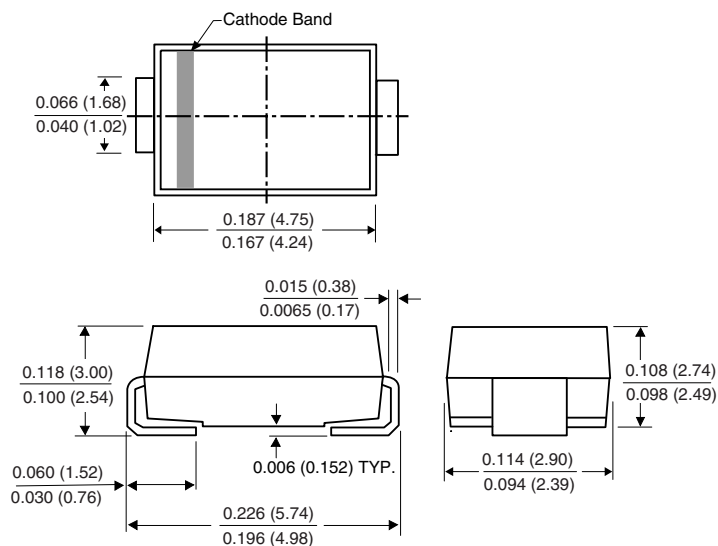


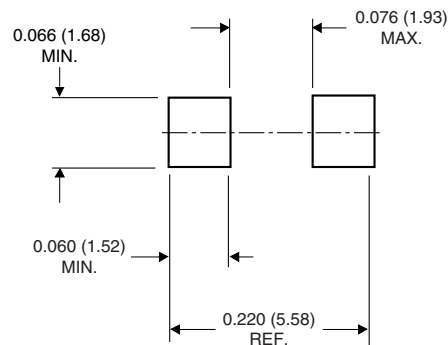
Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### DO-214BA (GF1)



### Mounting Pad Layout





## Disclaimer

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