# 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
- High forward surge capability
- Meets environmental standard MIL-S-19500
- Meets MSL level 1, per J-STD-020, LF maximum peak of 250 °C
- 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 frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer, automotive and telecommunication.

| PRIMARY CHARACTERISTICS | |
|---|---|
| $I_{F(AV)}$ | 1.0 A |
| $V_{RRM}$ | 50 V to 200 V |
| $I_{FSM}$ | 30 A |
| $t_{rr}$ | 50 ns |
| $V_F$ | 1.0 V |
| $T_J$ max. | 175 °C |

## MECHANICAL DATA

**Case:** DO-214BA, 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

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

| PARAMETER | SYMBOL | EGF1A | EGF1B | EGF1C | EGF1D | UNIT |
|---|---|---|---|---|---|---|
| Device marking code | | EA | EB | EC | ED | |
| Maximum repetitive peak reverse voltage | $V_{RRM}$ | 50 | 100 | 150 | 200 | V |
| Maximum RMS voltage | $V_{RMS}$ | 35 | 70 | 105 | 140 | V |
| Maximum DC blocking voltage | $V_{DC}$ | 50 | 100 | 150 | 200 | V |
| Maximum average forward rectified current at $T_L$ = 125 °C | $I_{F(AV)}$ | 1.0 | | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$ | 30 | | | | A |
| Operating junction and storage temperature range | $T_J$, $T_{STG}$ | - 65 to + 175 | | | | °C |


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| ELECTRICAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITIONS** | | **SYMBOL** | **EGF1A** | **EGF1B** | **EGF1C** | **EGF1D** | **UNIT** |
| Maximum instantaneous forward voltage | 1.0 A | | $V_F$ (1) | 1.0 | | | | V |
| Maximum DC reverse current at rated DC blocking voltage | | $T_A$ = 25 °C | $I_R$ (1) | 5.0 | | | | µA |
| | | $T_A$ = 125 °C | | 50 | | | | |
| Typical reverse recovery time | $I_F$ = 0.5 A, $I_R$ = 1.0 A, $I_{rr}$ = 0.25 A | | $t_{rr}$ | 50 | | | | ns |
| Typical junction capacitance | 4.0 V, 1 MHz | | $C_J$ | 15 | | | | pF |

**Note**

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

| THERMAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **EGF1A** | **EGF1B** | **EGF1C** | **EGF1D** | **UNIT** |
| Typical thermal resistance | $R_{\theta JA}$ (1) | 85 | | | | °C/W |
| | $R_{\theta JL}$ (1) | 30 | | | | |

**Note**

(1) Thermal resistance from junction to ambient and from junction to lead, PCB mounted on 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

| ORDERING INFORMATION (Example) | | | | |
|---|---|---|---|---|
| **PREFERRED P/N** | **UNIT WEIGHT (g)** | **PREFERRED PACKAGE CODE** | **BASE QUANTITY** | **DELIVERY MODE** |
| EGF1D-E3/67A | 0.104 | 67A | 1500 | 7" diameter plastic tape and reel |
| EGF1D-E3/5CA | 0.104 | 5CA | 6500 | 13" diameter plastic tape and reel |
| EGF1DHE3/67A (1) | 0.104 | 67A | 1500 | 7" diameter plastic tape and reel |
| EGF1DHE3/5CA (1) | 0.104 | 5CA | 6500 | 13" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

($T_A$ = 25 °C unless otherwise specified)

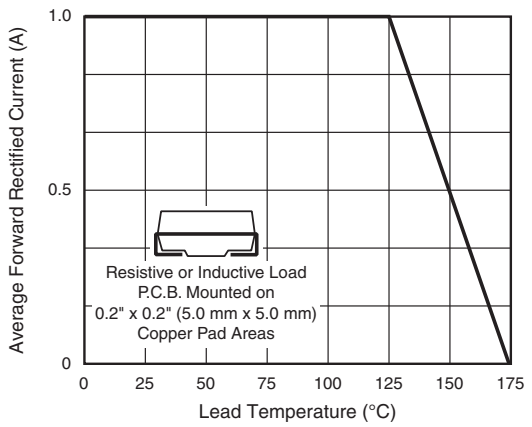



Fig. 1 - Maximum Forward Current Derating Curve

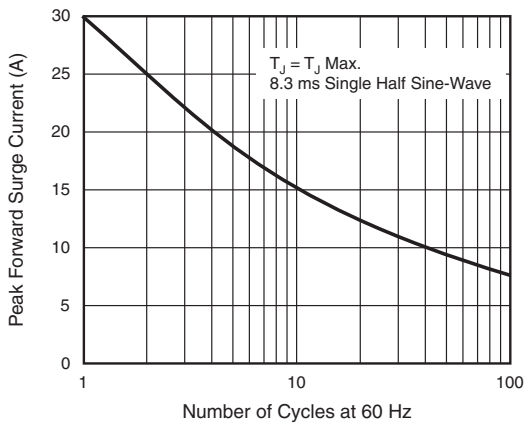



Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current



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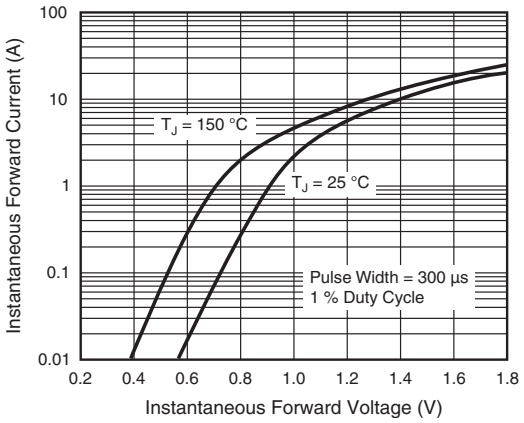



Fig. 3 - Typical Instantaneous Forward Characteristics

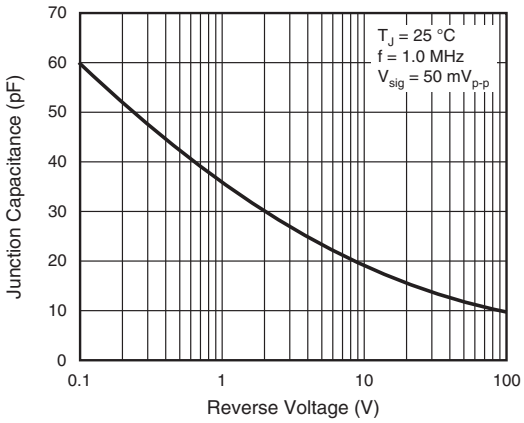



Fig. 5 - Typical Junction Capacitance

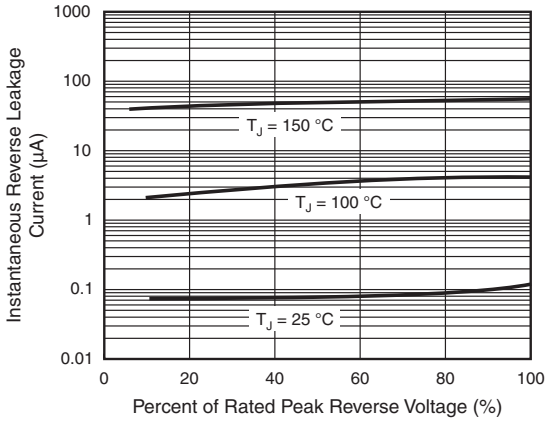



Fig. 4 - Typical Reverse Leakage Characteristics

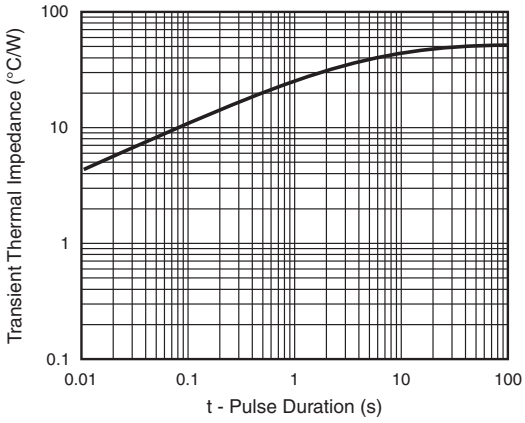
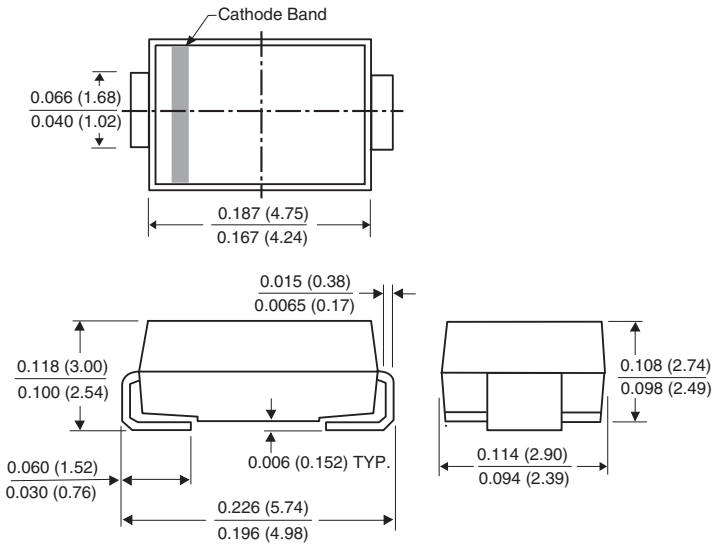


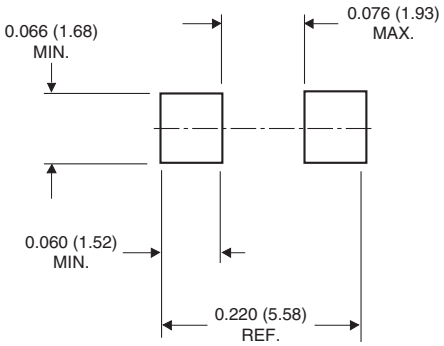

Fig. 6 - Typical Transient Thermal Impedance

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

### DO-214BA (GF1)




### Mounting Pad Layout






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