



## Surface-Mount Glass Passivated Junction Fast Switching Rectifier

Superectifier®



GF1 (DO-214BA)

Cathode  AnodeRoHS  
COMPLIANT

## FEATURES

- Superectifier structure for high reliability condition
- Ideal for automated placement
- Fast switching for high efficiency
- Low leakage current
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 250 °C
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHE3
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

## LINKS TO ADDITIONAL RESOURCES



3D Models

## TYPICAL APPLICATIONS

For use in fast switching rectification of power supply, inverters, converters, and freewheeling diodes for consumer, automotive, and telecommunication.

## MECHANICAL DATA

**Case:** GF1 (DO-214BA), molded epoxy over glass body  
Molding compound meets UL 94 V-0 flammability rating  
Base P/NHE3\_X - RoHS-compliant and AEC-Q101 qualified  
("X" denotes revision code e.g. A, B, ...)

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

HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** two bands indicate cathode end - 1<sup>st</sup> band denotes device type and 2<sup>nd</sup> band denotes repetitive peak reverse voltage rating

| PRIMARY CHARACTERISTICS |                                                 |
|-------------------------|-------------------------------------------------|
| $I_{F(AV)}$             | 1.0 A                                           |
| $V_{RRM}$               | 50 V, 100 V, 200 V, 400 V, 600 V, 800 V, 1000 V |
| $I_{FSM}$               | 30 A                                            |
| $V_F$                   | 1.3 V                                           |
| $t_{rr}$                | 150 ns, 250 ns, 500 ns                          |
| $T_J$ max.              | 175 °C                                          |
| Package                 | GF1 (DO-214BA)                                  |
| Circuit configuration   | Single                                          |

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                            |                |             |       |       |       |       |       |       |      |
|------------------------------------------------------------------------------------|----------------|-------------|-------|-------|-------|-------|-------|-------|------|
| PARAMETER                                                                          | SYMBOL         | RGF1A       | RGF1B | RGF1D | RGF1G | RGF1J | RGF1K | RGF1M | UNIT |
| Device marking code                                                                |                | RA          | RB    | RD    | RG    | RJ    | RK    | RM    |      |
| Maximum repetitive peak reverse voltage                                            | $V_{RRM}$      | 50          | 100   | 200   | 400   | 600   | 800   | 1000  | V    |
| Maximum RMS voltage                                                                | $V_{RMS}$      | 35          | 70    | 140   | 280   | 420   | 560   | 700   | V    |
| Maximum DC blocking voltage                                                        | $V_{DC}$       | 50          | 100   | 200   | 400   | 600   | 800   | 1000  | V    |
| Maximum average forward rectified current at $T_L = 120$ °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    |
| Maximum full load reverse current, full cycle average $T_A = 55$ °C                | $I_{R(AV)}$    | 50          |       |       |       |       |       |       | μA   |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | -65 to +175 |       |       |       |       |       |       | °C   |

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

| PARAMETER                                               | TEST CONDITIONS                                                          |  | SYMBOL          | RGF1A | RGF1B | RGF1D | RGF1G | RGF1J | RGF1K | RGF1M | UNIT |
|---------------------------------------------------------|--------------------------------------------------------------------------|--|-----------------|-------|-------|-------|-------|-------|-------|-------|------|
| Maximum instantaneous forward voltage                   | 1.0 A                                                                    |  | V <sub>F</sub>  | 1.3   |       |       |       |       |       |       | V    |
| Maximum DC reverse current at rated DC blocking voltage | T <sub>A</sub> = 25 °C                                                   |  | I <sub>R</sub>  | 5.0   |       |       |       |       |       |       | μA   |
|                                                         | T <sub>A</sub> = 125 °C                                                  |  |                 | 100   |       |       |       |       |       |       |      |
| Typical reverse recovery time                           | I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A |  | t <sub>rr</sub> | 150   |       |       |       | 250   | 500   |       | ns   |
| Typical junction capacitance                            | 4.0 V, 1 MHz                                                             |  | C <sub>J</sub>  | 8.5   |       |       |       |       |       |       | pF   |

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

| PARAMETER                  | SYMBOL                | RGF1A | RGF1B | RGF1D | RGF1G | RGF1J | RGF1K | RGF1M | UNIT |
|----------------------------|-----------------------|-------|-------|-------|-------|-------|-------|-------|------|
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 80    |       |       |       |       |       |       | °C/W |
|                            | $R_{\theta JL}^{(1)}$ | 28    |       |       |       |       |       |       |      |

**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                      |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|
| RGF1JHE3_A/H <sup>(1)(2)</sup> | 0.104           | H                      | 1500          | 7" diameter plastic tape and reel  |
| RGF1JHE3_A/I <sup>(1)(2)</sup> | 0.104           | I                      | 6500          | 13" diameter plastic tape and reel |
| RGF1KHE3_B/H <sup>(1)(3)</sup> | 0.104           | H                      | 1500          | 7" diameter plastic tape and reel  |
| RGF1KHE3_B/I <sup>(1)(3)</sup> | 0.104           | I                      | 6500          | 13" diameter plastic tape and reel |

**Notes**

- (1) AEC-Q101 qualified  
 (2) \_A is applied for A to J class  
 (3) \_B is applied for K and M class

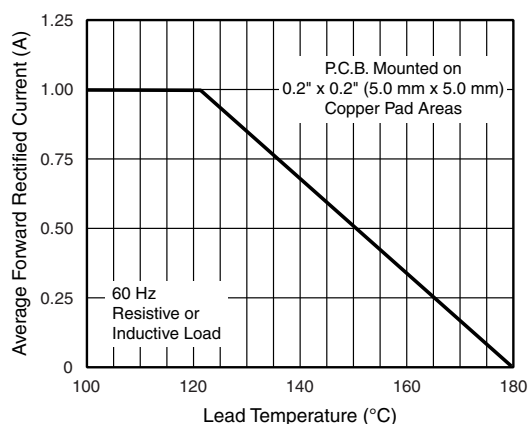
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

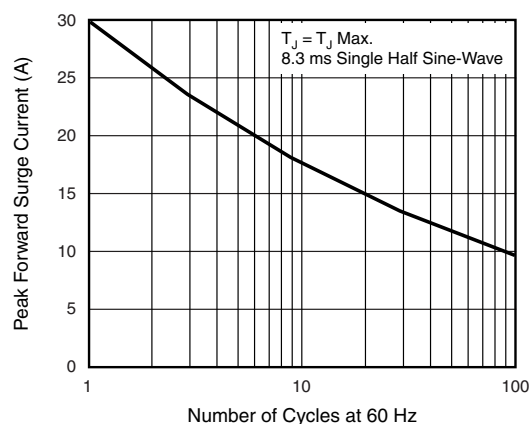


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

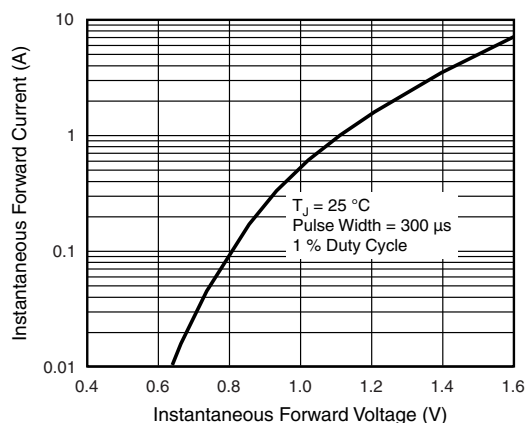


Fig. 3 - Typical Instantaneous Forward Characteristics

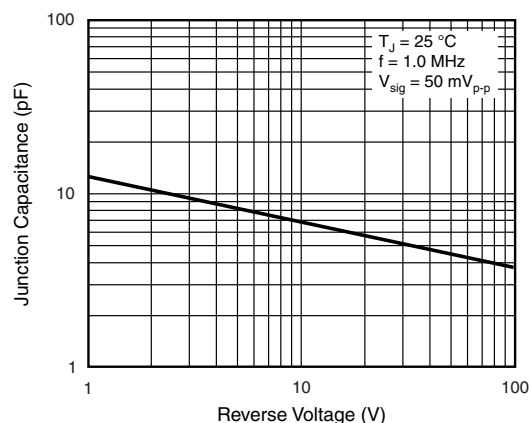


Fig. 5 - Typical Junction Capacitance

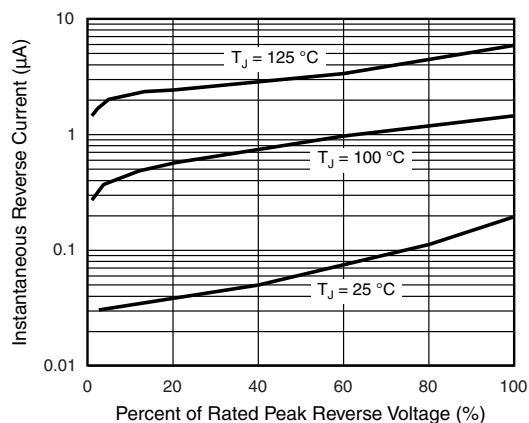


Fig. 4 - Typical Reverse Characteristics

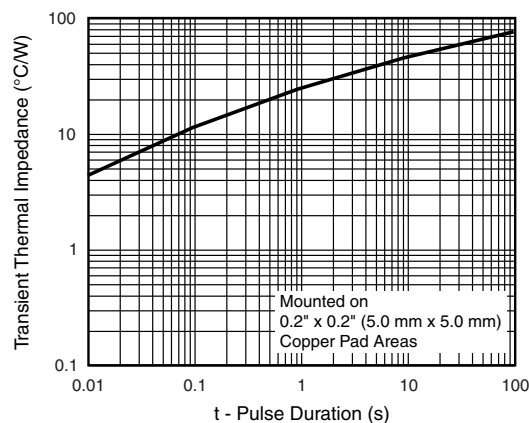
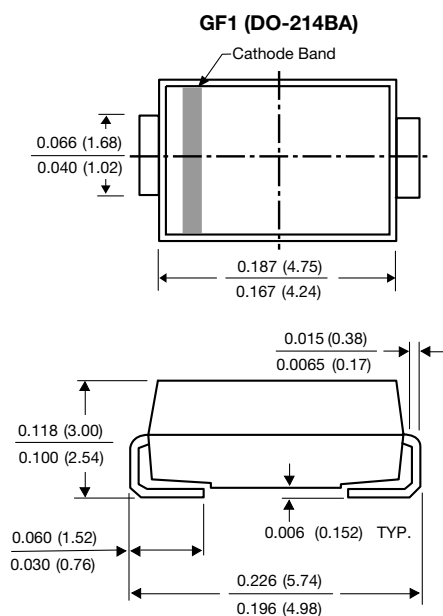
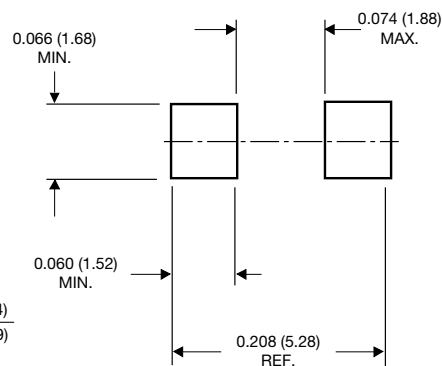


Fig. 6 - Typical Transient Thermal Impedance

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)**Mounting Pad Layout**



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