



## Surface Mount Glass Passivated Junction Fast Switching Rectifier

### SUPERECTIFIER®



DO-214BA (GF1)

### 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                          |
| $T_J \text{ max.}$ | 175 °C                                          |
| Package            | DO-214BA (GF1)                                  |
| Diode variations   | Single                                          |

### TYPICAL APPLICATIONS

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

### 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
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



RoHS  
COMPLIANT

### 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:** 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

### MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ 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 $T_L = 120\text{ °C}$                 | $I_{F(AV)}$    | 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 $T_A = 55\text{ °C}$         | $I_{R(AV)}$    | 50            |       |       |       |       |       |       | $\mu\text{A}$ |
| 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 <sub>θJA</sub> <sup>(1)</sup> | 80    |       |       |       |       |       |       | °C/W |
|                            | R <sub>θJL</sub> <sup>(1)</sup> | 28    |       |       |       |       |       |       |      |

**Note**

<sup>(1)</sup> 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                      |
|-----------------------------|-----------------|------------------------|---------------|------------------------------------|
| RGF1J-E3/67A                | 0.104           | 67A                    | 1500          | 7" diameter plastic tape and reel  |
| RGF1J-E3/5CA                | 0.104           | 5CA                    | 6500          | 13" diameter plastic tape and reel |
| RGF1JHE3/67A <sup>(1)</sup> | 0.104           | 67A                    | 1500          | 7" diameter plastic tape and reel  |
| RGF1JHE3/5CA <sup>(1)</sup> | 0.104           | 5CA                    | 6500          | 13" diameter plastic tape and reel |

**Note**

<sup>(1)</sup> AEC-Q101 qualified

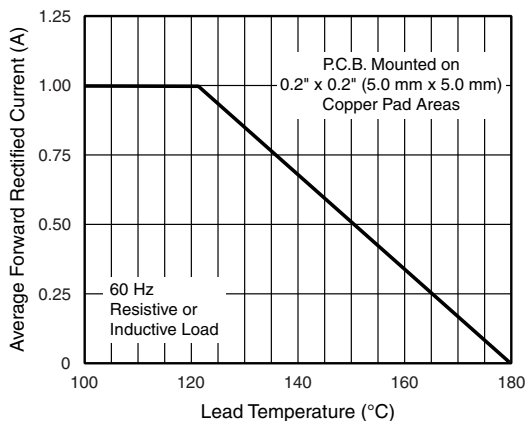
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

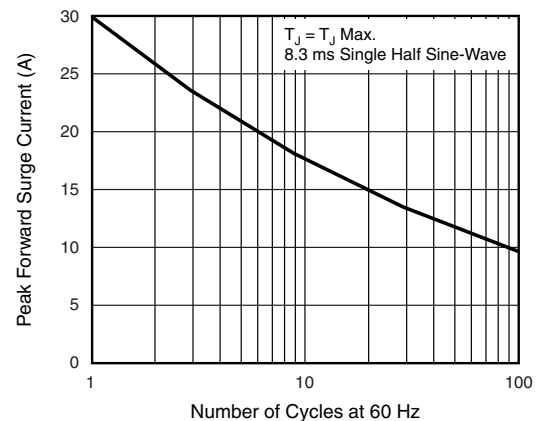


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

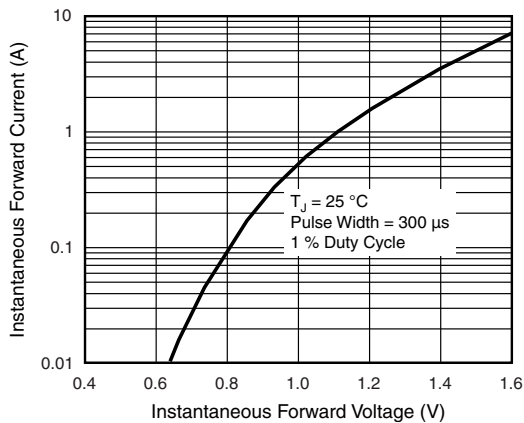


Fig. 3 - Typical Instantaneous Forward Characteristics

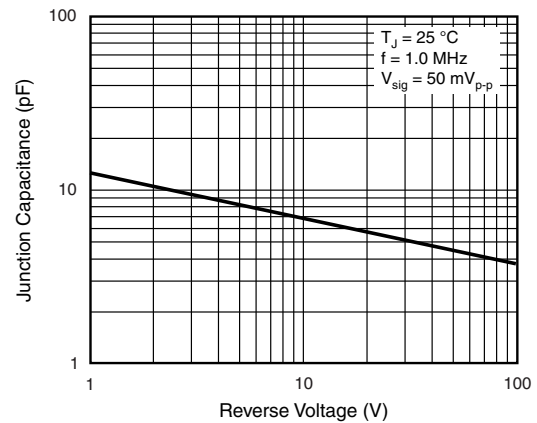


Fig. 5 - Typical Junction Capacitance

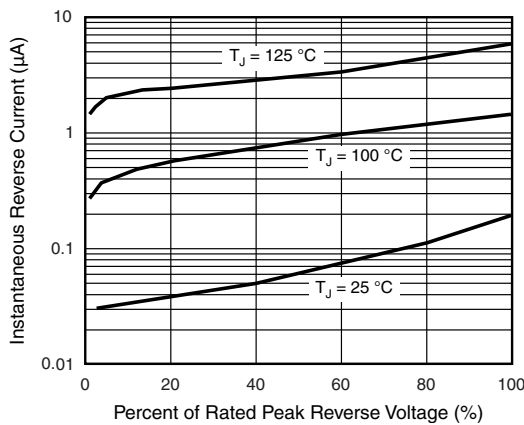


Fig. 4 - Typical Reverse Characteristics

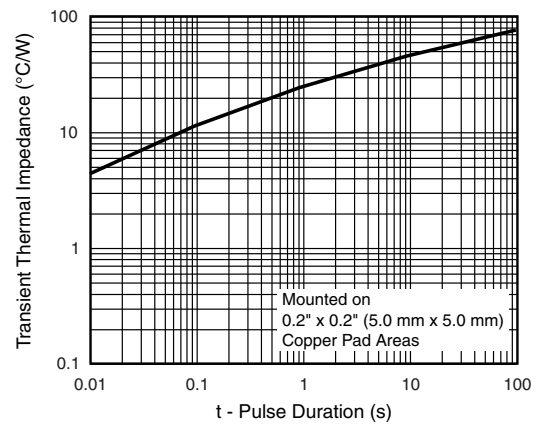
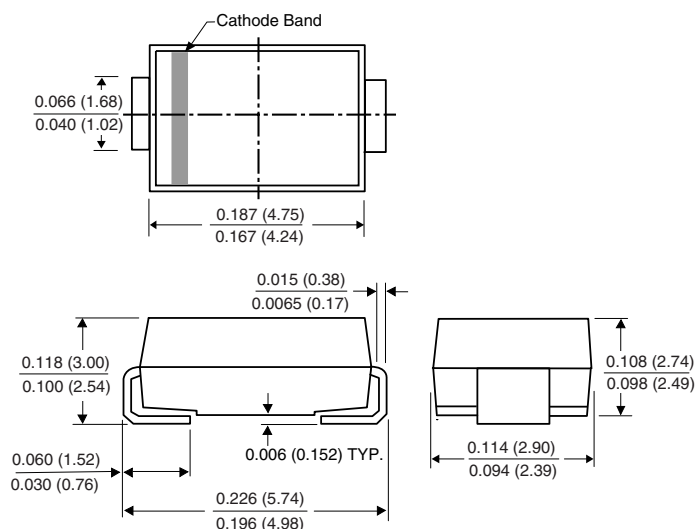


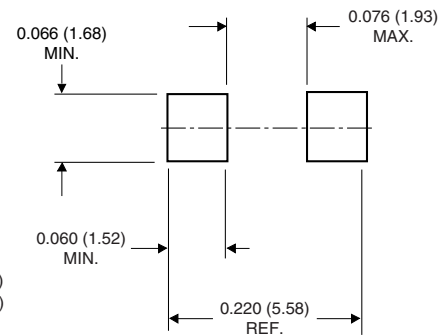
Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### DO-214BA (GF1)



### Mounting Pad Layout





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