



**THE DATASHEET OF
RGF1J-E3/5CA**





Surface Mount Glass Passivated Junction Fast Switching Rectifier

Superectifier®



GF1 (DO-214BA)

FEATURES

- Superrectifier 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



RoHS COMPLIANT

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/N-E3 - RoHS-compliant, commercial grade
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

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: two bands indicate cathode end - 1st band denotes device type and 2nd 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 |
| $T_J \text{ max.}$ | 175 °C |
| Package | GF1 (DO-214BA) |
| Diode variations | Single |

| 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 | | | | | | | 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_F | 1.3 | | | | | | | | V |
| Maximum DC reverse current at rated DC blocking voltage | $T_A = 25\text{ }^\circ\text{C}$ | I_R | 5.0 | | | | | | | | μA |
| | $T_A = 125\text{ }^\circ\text{C}$ | | 100 | | | | | | | | |
| Typical reverse recovery time | $I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $t_{rr} = 0.25\text{ A}$ | t_{rr} | 150 | | | 250 | | 500 | | ns | |
| Typical junction capacitance | 4.0 V, 1 MHz | C_J | 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 | | | | | | | | $^\circ\text{C/W}$ |
| | $R_{\theta JL}^{(1)}$ | 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 |
|---------------------|-----------------|------------------------|---------------|------------------------------------|
| 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 |
| RGF1KHE3_A/I (1)(2) | 0.104 | I | 6500 | 13" diameter plastic tape and reel |

Notes

- (1) AEC-Q101 qualified
- (2) _A is only applied for K and M class

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

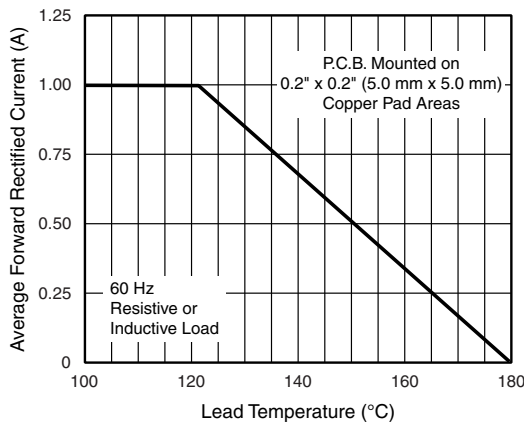


Fig. 1 - Forward Current Derating Curve

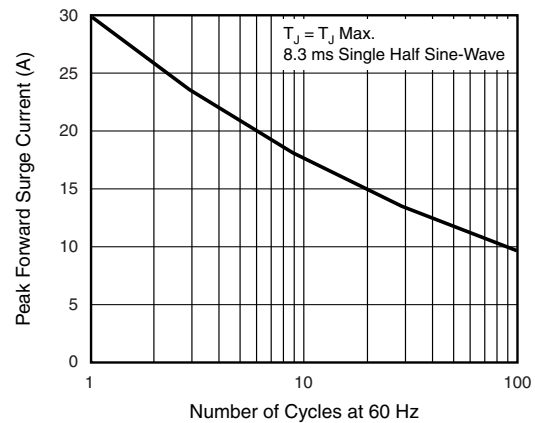


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

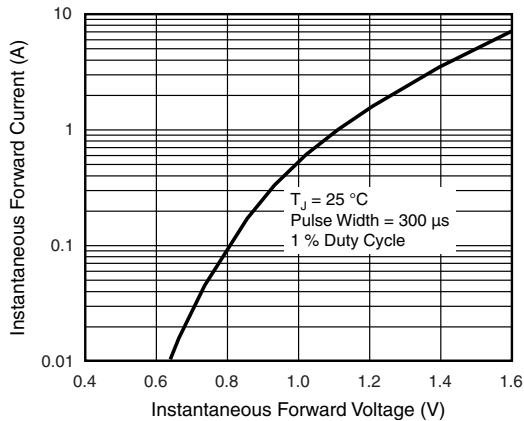


Fig. 3 - Typical Instantaneous Forward Characteristics

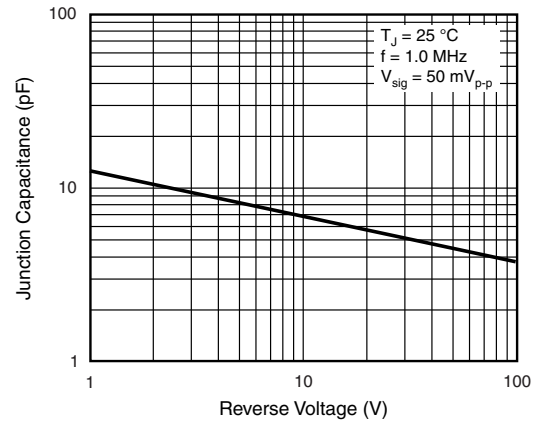


Fig. 5 - Typical Junction Capacitance

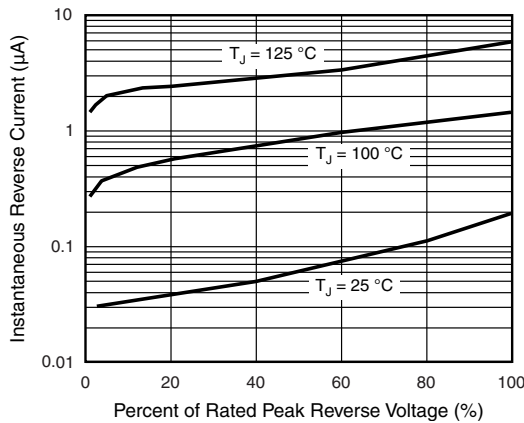


Fig. 4 - Typical Reverse Characteristics

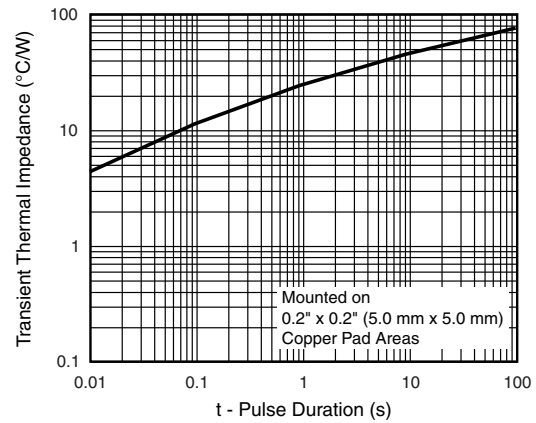
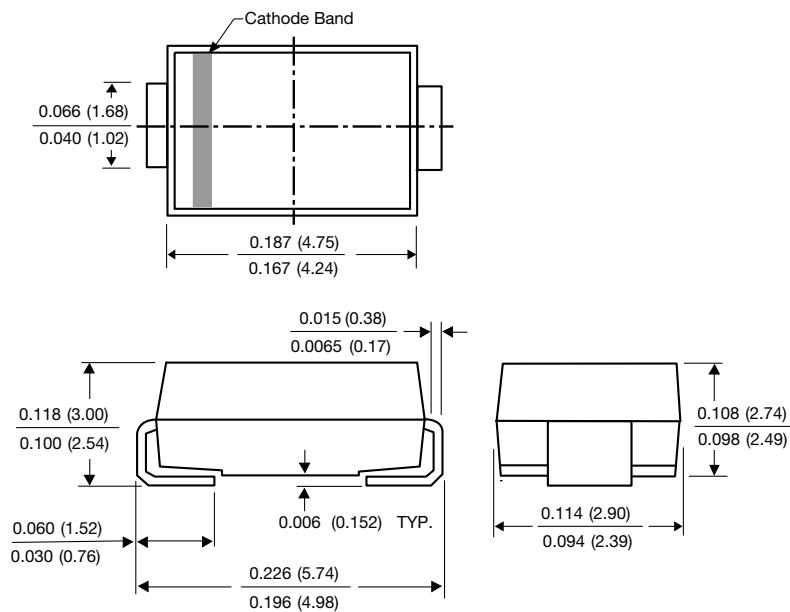


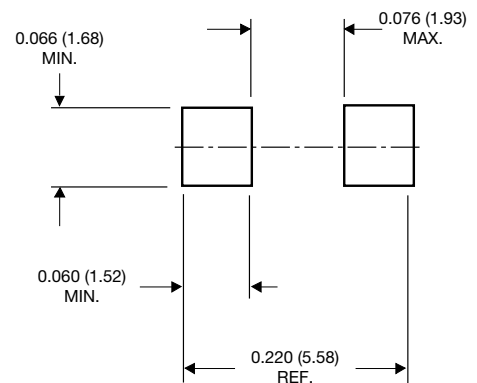
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

GF1 (DO-214BA)



Mounting Pad Layout





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