# RGF1A, RGF1B, RGF1D, RGF1G, RGF1J, RGF1K, RGF1M

## Surface-Mount Glass Passivated Junction Fast Switching Rectifier

**Superectifier®**

**GF1 (DO-214BA)**

Cathode ○—▶|—○ Anode

### LINKS TO ADDITIONAL RESOURCES

3D Models

| 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 |

### FEATURES

RoHS COMPLIANT

- 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

### 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 and HE3 suffix meet 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

**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 |


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| ELECTRICAL CHARACTERISTICS ($T_A$ = 25 °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 °C | $I_R$ | 5.0 | | | | | | | μA |
| | $T_A$ = 125 °C | | 100 | | | | | | | |
| Typical reverse recovery time | $I_F$ = 0.5 A, $I_R$ = 1.0 A, $I_{rr}$ = 0.25 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 °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 |
| 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_A/H (1)(2) | 0.104 | H | 1500 | 7" diameter plastic tape and reel |
| RGF1JHE3_A/I (1)(2) | 0.104 | I | 6500 | 13" diameter plastic tape and reel |
| RGF1KHE3_B/H (1)(3) | 0.104 | H | 1500 | 7" diameter plastic tape and reel |
| RGF1KHE3_B/I (1)(3) | 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 °C unless otherwise noted)

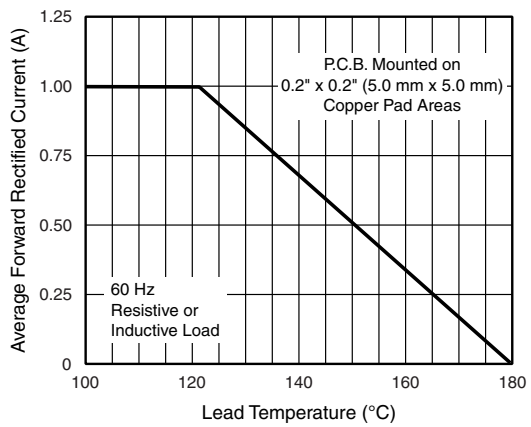


Fig. 1 - Forward Current Derating Curve

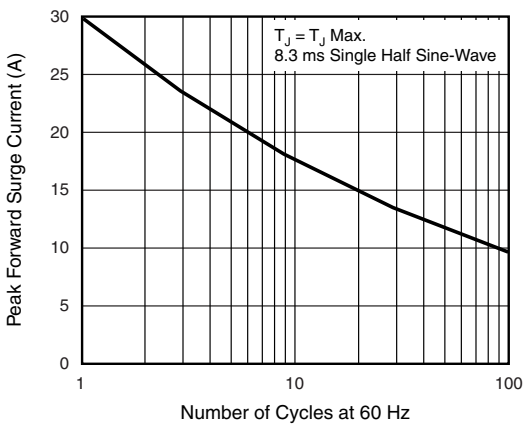


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current


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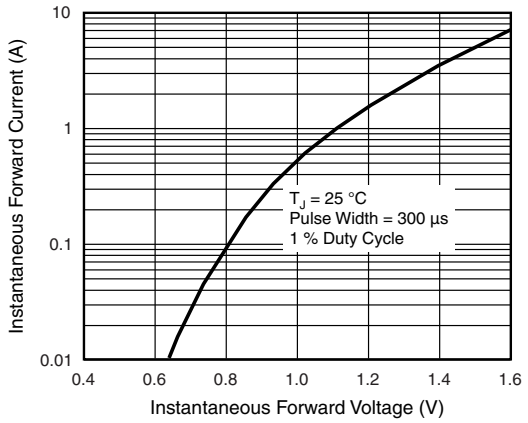



Fig. 3 - Typical Instantaneous Forward Characteristics

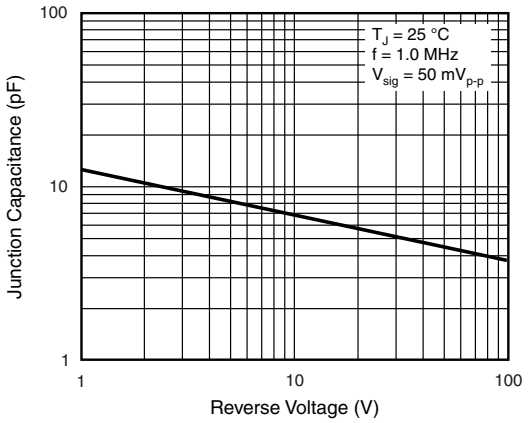



Fig. 5 - Typical Junction Capacitance

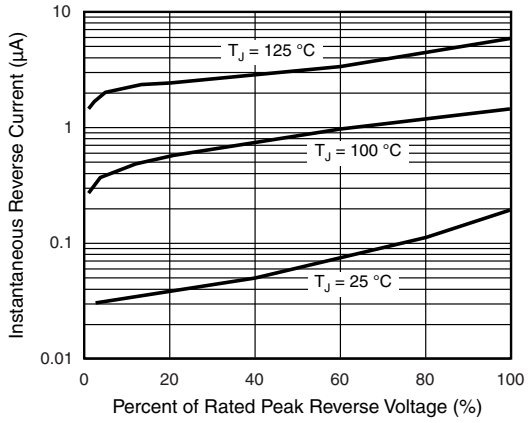



Fig. 4 - Typical Reverse Characteristics

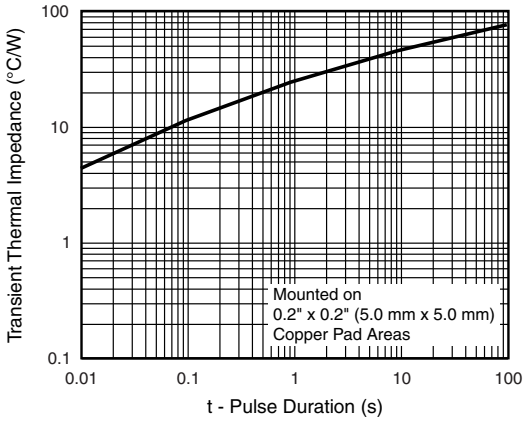
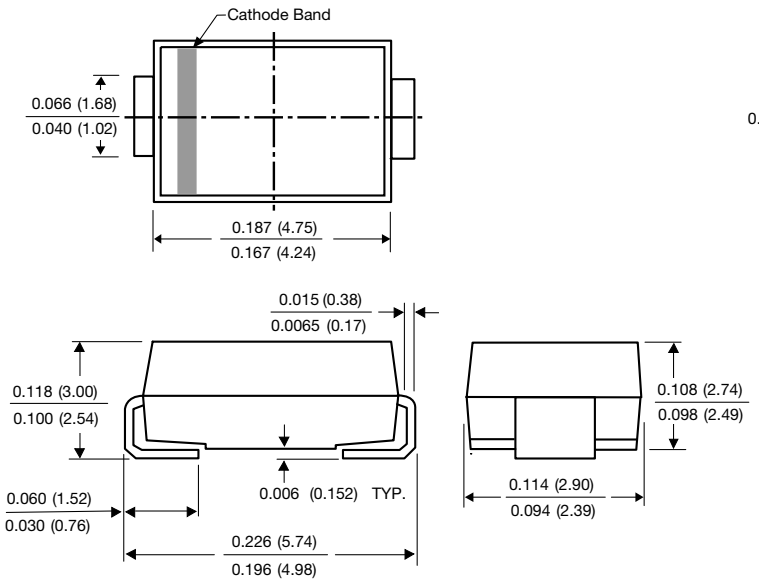


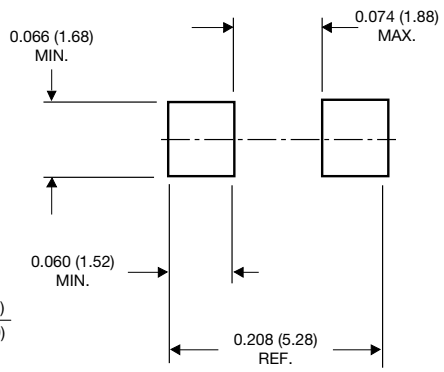

Fig. 6 - Typical Transient Thermal Impedance

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

**GF1 (DO-214BA)**




**Mounting Pad Layout**





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