

Surface Mount Glass Passivated Junction Fast Switching Rectifier


DO-214BA (GF1)

* Glass-plastic encapsulation technique is covered by patent No. 3,996,602, brazed-lead assembly by Patent No. 3,930,306 and lead forming by Patent No. 5,151,846

Patented*

FEATURES

- Superectifier structure for high reliability condition
- Patented glass-plastic encapsulation technique
- Ideal for automated placement
- Fast switching for high efficiency
- Low leakage current
- High forward surge capability
- Meets environmental standard MIL-S-19500
- Meets MSL level 1, per J-STD-020, LF maximum peak of 250 °C
- Solder dip 260 °C, 40 s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC


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: DO-214BA, molded epoxy over glass body
Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC Q101 qualified), 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 to 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 |

| 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 |
| Max. 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 °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 T _A = 125 °C | I _R | 5.0 100 | | | | | | | μA |
| 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 ⁽¹⁾ | R _{θJA} R _{θJL} | | | | | 80 | | | | | °C/W |
| | | | | | | 28 | | | | | |

Note:

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

| ORDERING INFORMATION (Example) | | | | |
|--------------------------------|-----------------|-----------------------|---------------|-----------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | REFERRED 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 |
| RGF1JHE3/67A ⁽¹⁾ | 0.104 | 67A | 1500 | 7" diameter plastic tape and reel |
| RGF1JHE3/5CA ⁽¹⁾ | 0.104 | 5CA | 6500 | 13" diameter plastic tape and |

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

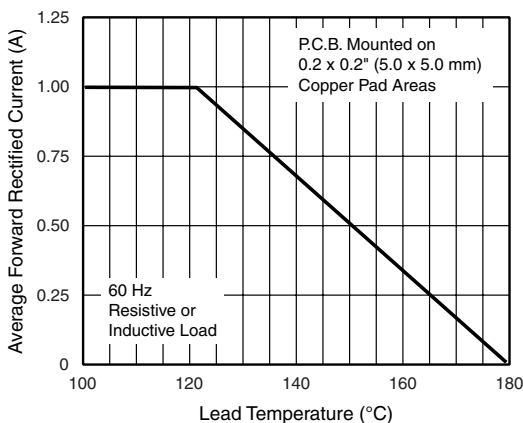


Figure 1. Forward Current Derating Curve

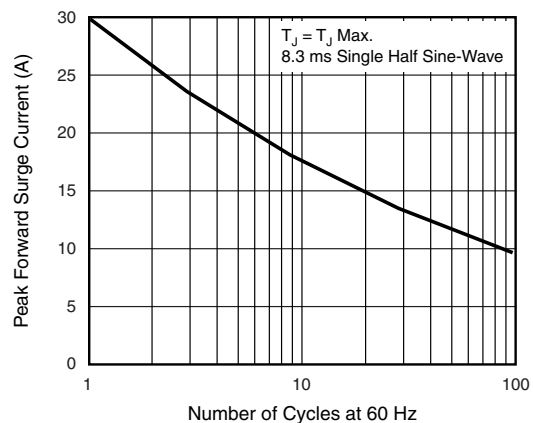


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

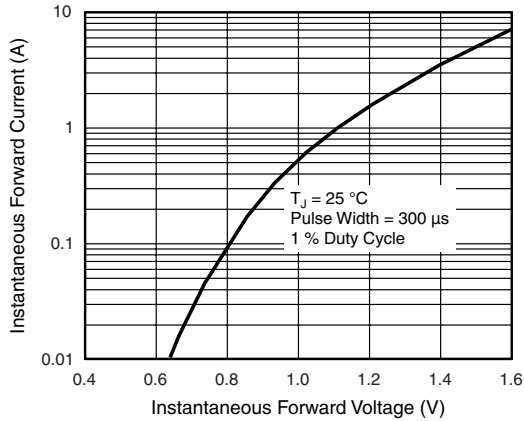


Figure 3. Typical Instantaneous Forward Characteristics

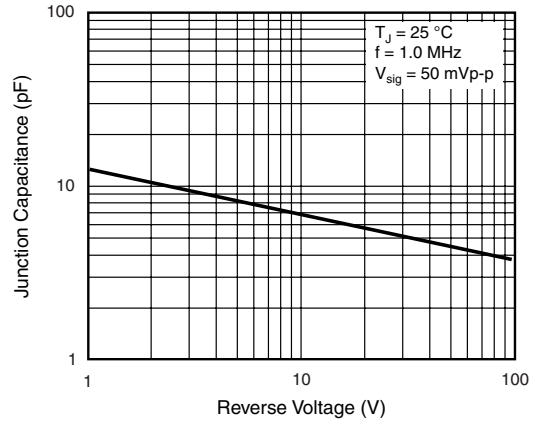


Figure 5. Typical Junction Capacitance

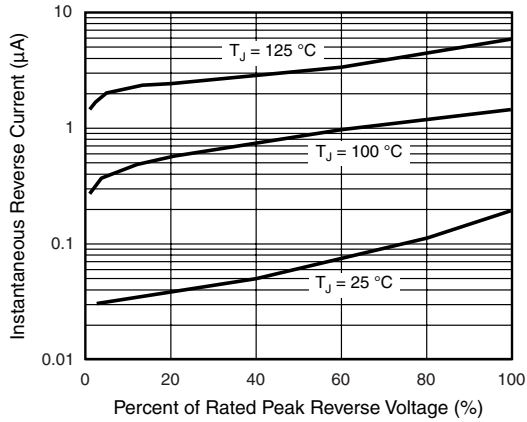


Figure 4. Typical Reverse Characteristics

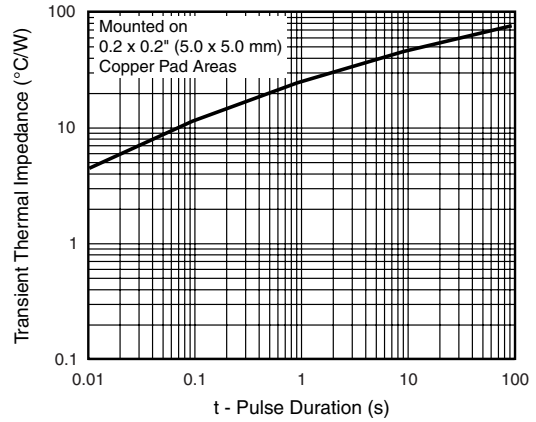
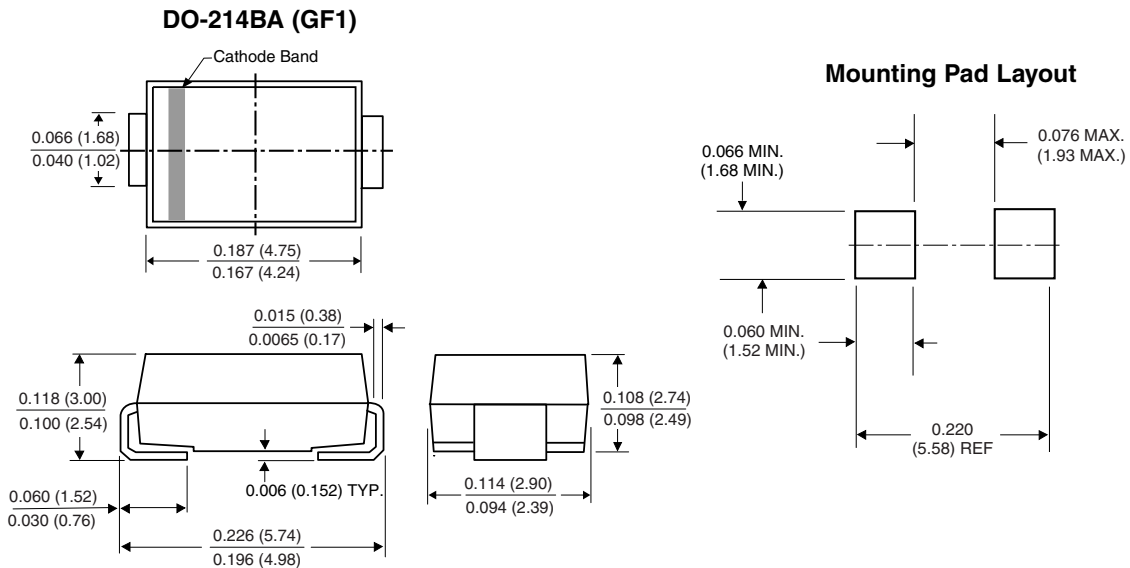


Figure 6. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.