

Surface Mount Glass Passivated Ultrafast Rectifier

Superectifier®


GF1 (DO-214BA)

RoHS
COMPLIANT

FEATURES

- Superrectifier structure for high reliability condition
- Cavity-free glass-passivated junction
- Ideal for automated placement
- Ultrafast reverse recovery time
- Low switching losses, high efficiency
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 250 °C
- AEC-Q101 qualified
 - Automotive ordering code: base P/NHE3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer, 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: color band denotes cathode end

| PRIMARY CHARACTERISTICS | |
|-------------------------|---------------------------|
| $I_{F(AV)}$ | 1.0 A |
| V_{RRM} | 50 V, 100 V, 150 V, 200 V |
| I_{FSM} | 30 A |
| t_{rr} | 50 ns |
| V_F | 1.0 V |
| $T_J \text{ max.}$ | 175 °C |
| Package | GF1 (DO-214BA) |
| Diode variations | Single |

| MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted) | | | | | | |
|--|----------------|-------------|-------|-------|-------|------|
| PARAMETER | SYMBOL | EGF1A | EGF1B | EGF1C | EGF1D | UNIT |
| Device marking code | | EA | EB | EC | ED | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 50 | 100 | 150 | 200 | V |
| Maximum RMS voltage | V_{RMS} | 35 | 70 | 105 | 140 | V |
| Maximum DC blocking voltage | V_{DC} | 50 | 100 | 150 | 200 | V |
| Maximum average forward rectified current at $T_L = 125\text{ °C}$ | $I_{F(AV)}$ | 1.0 | | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 30 | | | | A |
| 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 | EGF1A | EGF1B | EGF1C | EGF1D | UNIT |
| Maximum instantaneous forward voltage | 1.0 A | V _F ⁽¹⁾ | 1.0 | | | | V |
| Maximum DC reverse current at rated DC blocking voltage | T _A = 25 °C | I _R ⁽¹⁾ | 5.0 | | | | μA |
| | T _A = 125 °C | | 50 | | | | |
| Typical reverse recovery time | I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A | t _{rr} | 50 | | | | ns |
| Typical junction capacitance | 4.0 V, 1 MHz | C _J | 15 | | | | pF |

Note

⁽¹⁾ Pulse test: 300 μs pulse width, 1 % duty cycle

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | | |
|---|---------------------------------|-------|-------|-------|-------|------|--|
| PARAMETER | SYMBOL | EGF1A | EGF1B | EGF1C | EGF1D | UNIT | |
| Typical thermal resistance | R _{θJA} ⁽¹⁾ | 85 | | | | °C/W | |
| | R _{θJL} ⁽¹⁾ | 30 | | | | | |

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 |
| EGF1D-E3/67A | 0.104 | 67A | 1500 | 7" diameter plastic tape and reel |
| EGF1D-E3/5CA | 0.104 | 5CA | 6500 | 13" diameter plastic tape and reel |
| EGF1DHE3_A/I ⁽¹⁾ | 0.104 | I | 6500 | 13" diameter plastic tape and reel |

Note

⁽¹⁾ AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise specified)

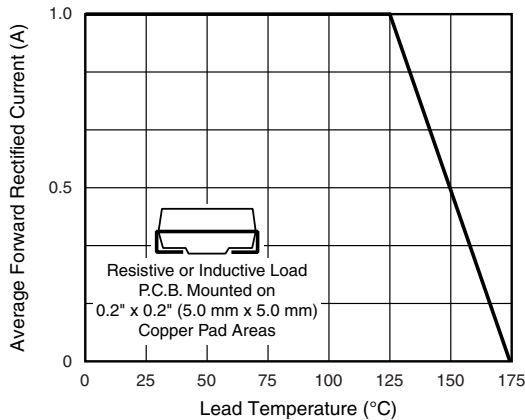


Fig. 1 - Maximum Forward Current Derating Curve

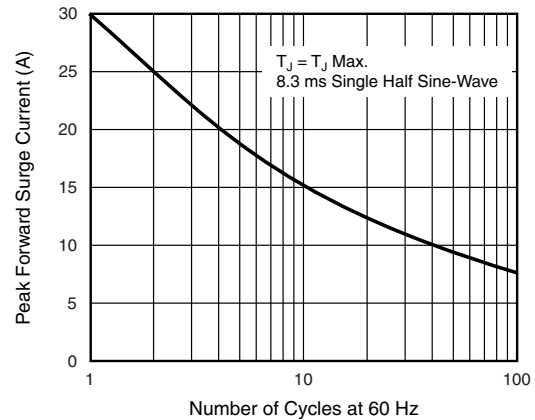


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

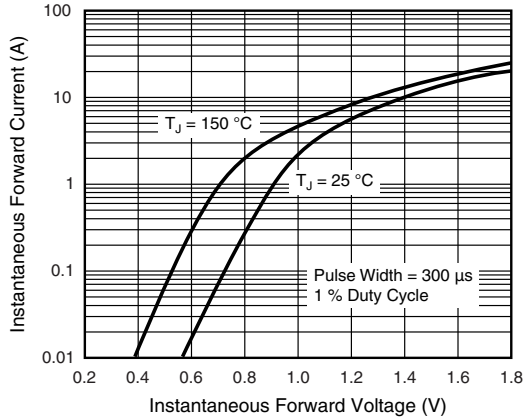


Fig. 3 - Typical Instantaneous Forward Characteristics

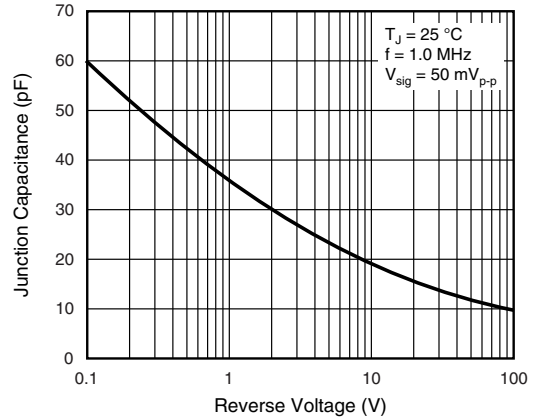


Fig. 5 - Typical Junction Capacitance

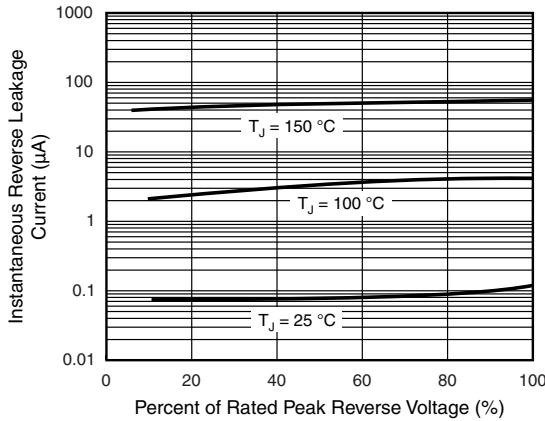


Fig. 4 - Typical Reverse Leakage Characteristics

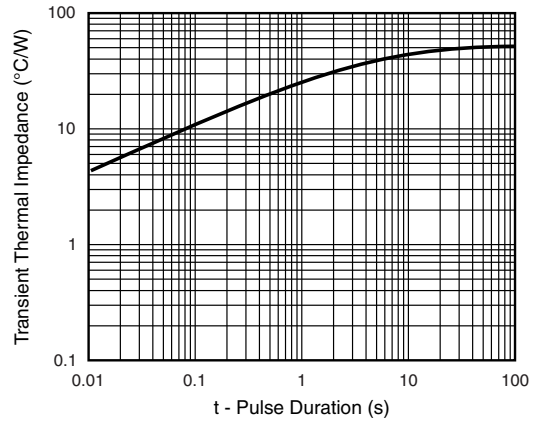
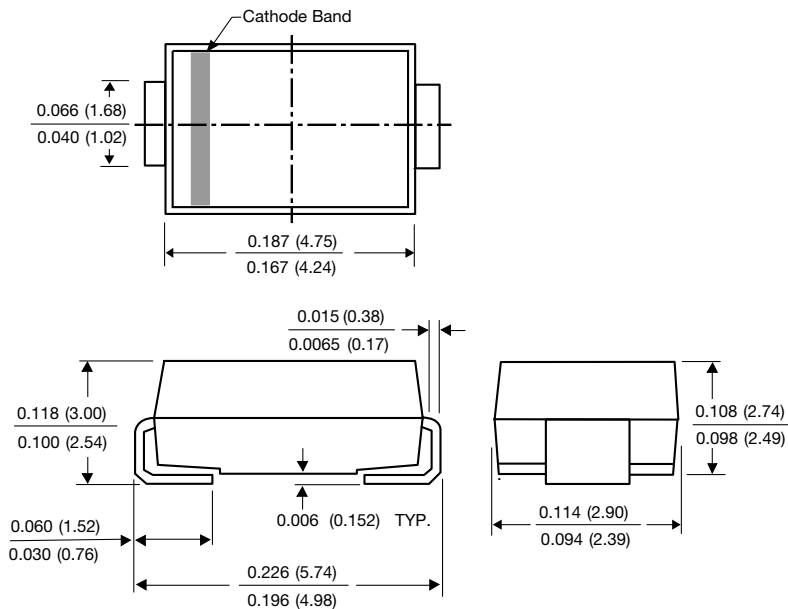


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

GF1 (DO-214BA)





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