

Glass Passivated Single-Phase Bridge Rectifier



FEATURES

- UL recognition file number E54214
- Universal 3-way terminals: snap-on, wire wrap-around, or PCB mounting
- Typical I_R less than 0.3 μ A
- High surge current capability
- Low thermal resistance
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

TYPICAL APPLICATIONS

General purpose use in AC/DC bridge full wave rectification for power supply, home appliances, office equipment, industrial automation applications.

MECHANICAL DATA

Case: GBPC, GBPC-W

Molding compound meets UL 94 V-0 flammability rating Base P/N-E4 - RoHS-compliant, commercial grade

Terminals: Nickel plated on faston lugs or silver plated on wire leads, solderable per J-STD-002 and JESD22-B102. Suffix letter "W" added to indicate wire leads (e.g. GBPC12005W).

Polarity: As marked, positive lead by beveled corner

Mounting Torque: 20 inches-lbs. max.

PRIMARY CHARACTERISTICS

| Package | GBPC, GBPC-W |
|------------------|----------------------------|
| $I_{F(AV)}$ | 12 A, 15 A, 25 A, 35 A |
| V_{RRM} | 50 V to 1000 V |
| I_{FSM} | 200 A, 300 A, 300 A, 400 A |
| I_R | 5 μ A |
| V_F at I_F | 1.1 V |
| T_J max. | 150 °C |
| Diode variations | Quad |

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)

| PARAMETER | SYMBOL | GBPC12, 15, 25, 35 | | | | | | | UNIT |
|--|----------------|--------------------|-----|-----|-----|-----|-----|------|------------------|
| | | 005 | 01 | 02 | 04 | 06 | 08 | 10 | |
| 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 output current (Fig. 1) | $I_{F(AV)}$ | 12 | | | | | | | A |
| | | 15 | | | | | | | |
| | | 25 | | | | | | | |
| | | 35 | | | | | | | |
| Peak forward surge current single sine-wave superimposed on rated load | I_{FSM} | 200 | | | | | | | A |
| | | 300 | | | | | | | |
| | | 300 | | | | | | | |
| | | 400 | | | | | | | |
| Rating (non-repetitive, for t greater than 1 ms and less than 8.3 ms) for fusing | I^2t | 160 | | | | | | | A ² s |
| | | 375 | | | | | | | |
| | | 375 | | | | | | | |
| | | 660 | | | | | | | |
| RMS isolation voltage from case to leads | V_{ISO} | 2500 | | | | | | | V |
| Operating junction storage temperature range | T_J, T_{STG} | - 55 to + 150 | | | | | | | °C |



ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

| PARAMETER | TEST CONDITIONS | SYMBOL | GBPC12, 15, 25, 35 | | | | | | UNIT | |
|---|-------------------------|-------------------------|--------------------|-----|----|----|----|----|------|----|
| | | | 005 | 01 | 02 | 04 | 06 | 08 | | 10 |
| Maximum instantaneous forward drop per diode | GBPC12 | I _F = 6.0 A | V _F | 1.1 | | | | | | V |
| | GBPC15 | I _F = 7.5 A | | | | | | | | |
| | GBPC25 | I _F = 12.5 A | | | | | | | | |
| | GBPC35 | I _F = 17.5 A | | | | | | | | |
| Maximum reverse DC current at rated DC blocking voltage per diode | T _A = 25 °C | | I _R | 5.0 | | | | | | μA |
| | T _A = 125 °C | | | 500 | | | | | | |
| Typical junction capacitance per diode | 4 V, 1 MHz | | C _J | 300 | | | | | | pF |

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

| PARAMETER | SYMBOL | GBPC12, 15, 25, 35 | | | | | | UNIT | | |
|----------------------------|------------------|--------------------|---------------------------------|-----|----|----|----|------|----|------|
| | | 005 | 01 | 02 | 04 | 06 | 08 | | 10 | |
| Typical thermal resistance | GBPC12 to GBPC25 | | R _{θJC} ⁽¹⁾ | 1.9 | | | | | | °C/W |
| | GBPC35 | | | 1.4 | | | | | | |

Notes

⁽¹⁾ With heatsink

⁽²⁾ Bolt down on heatsink with silicone thermal compound between bridge and mounting surface for maximum heat transfer with #10 screw

ORDERING INFORMATION (Example)

| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|-----------------|-----------------|------------------------|---------------|---------------|
| GBPC1206-E4/51 | 15.79 | 51 | 100 | Paper box |
| GBPC1506-E4/51 | 15.79 | 51 | 100 | Paper box |
| GBPC2506-E4/51 | 15.79 | 51 | 100 | Paper box |
| GBPC3506-E4/51 | 15.79 | 51 | 100 | Paper box |
| GBPC1206W-E4/51 | 13.8 | 51 | 100 | Paper box |
| GBPC1506W-E4/51 | 13.8 | 51 | 100 | Paper box |
| GBPC2506W-E4/51 | 13.8 | 51 | 100 | Paper box |
| GBPC3506W-E4/51 | 13.8 | 51 | 100 | Paper box |



RATINGS AND CHARACTERISTICS CURVES

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

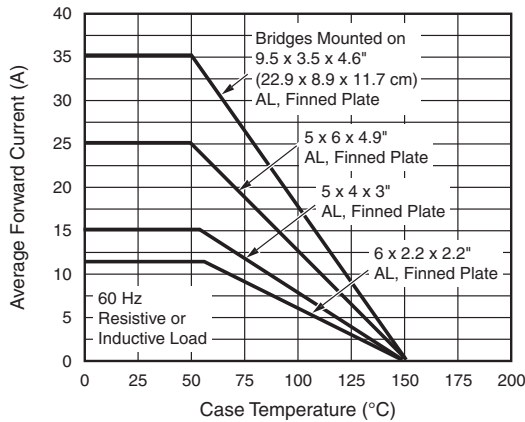


Fig. 1 - Maximum Output Rectified Current

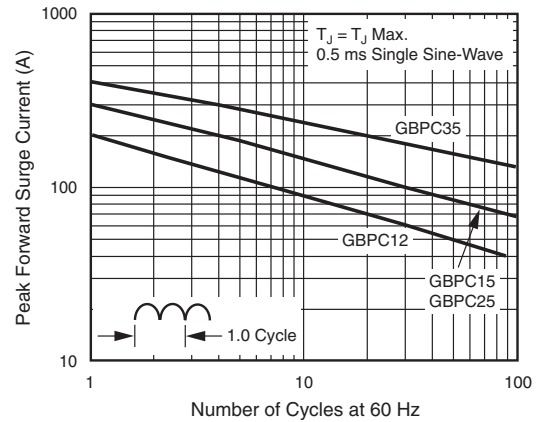


Fig. 4 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

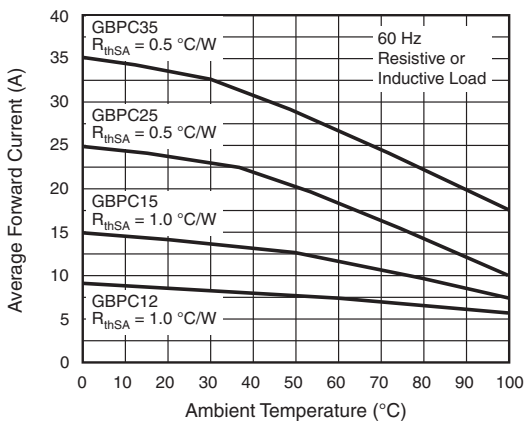


Fig. 2 - Maximum Output Rectified Current

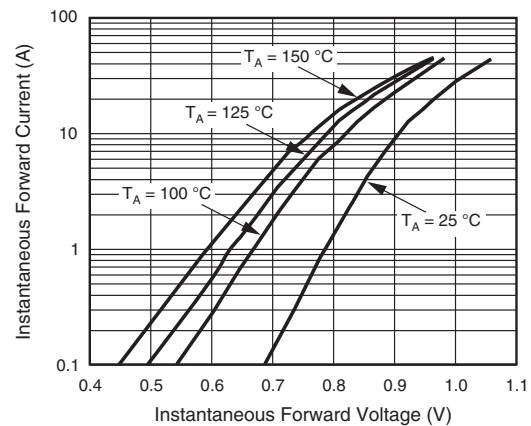


Fig. 5 - Typical Instantaneous Forward Characteristics Per Diode

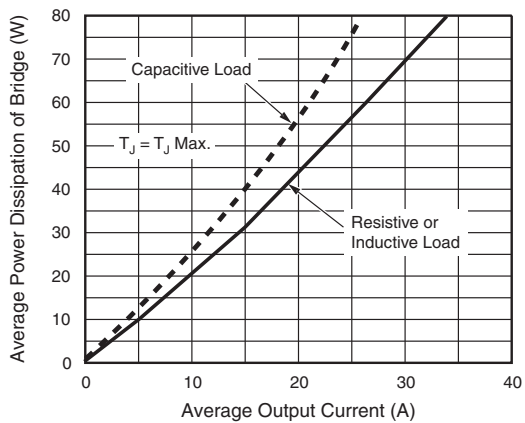


Fig. 3 - Maximum Power Dissipation

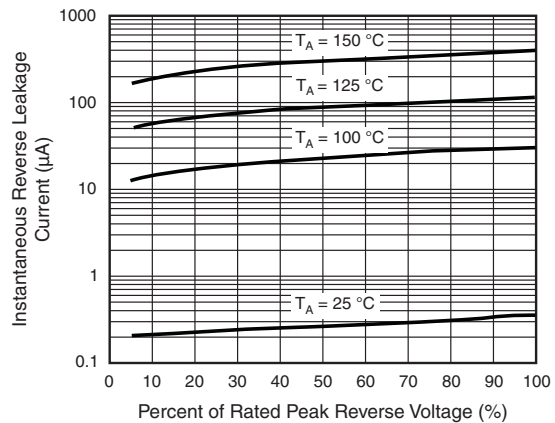


Fig. 6 - Typical Reverse Leakage Characteristics Per Diode



Fig. 7 - Typical Junction Capacitance Per Diode



Fig. 8 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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