

## 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  $\mu\text{A}$
- 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](http://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 $\mu\text{A}$            |
| $V_F$ 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 <sup>2</sup> 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               |



| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ 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                            | $I_F = 6.0\text{ A}$  | $V_F$              | 1.1 |    |    |    |    |      | V             |
|  | GBPC15                            | $I_F = 7.5\text{ A}$  |                    |     |    |    |    |    |      |               |
|  | GBPC25                            | $I_F = 12.5\text{ A}$ |                    |     |    |    |    |    |      |               |
|  | GBPC35                            | $I_F = 17.5\text{ A}$ |                    |     |    |    |    |    |      |               |
| Maximum reverse DC current at rated DC blocking voltage per diode                            | $T_A = 25\text{ }^\circ\text{C}$  |                       | $I_R$              | 5.0 |    |    |    |    |      | $\mu\text{A}$ |
|  | $T_A = 125\text{ }^\circ\text{C}$ |                       |                    | 500 |    |    |    |    |      |               |
| Typical junction capacitance per diode   | 4 V, 1 MHz                        |                       | $C_J$              | 300 |    |    |    |    |      | pF            |

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                  |                    |                       |     |    |    |    |      |    |                    |
|---|------------------|--------------------|-----------------------|-----|----|----|----|------|----|--------------------|
| PARAMETER   | SYMBOL           | GBPC12, 15, 25, 35 |                       |     |    |    |    | UNIT |    |                    |
|   |                  | 005                | 01                    | 02  | 04 | 06 | 08 |      | 10 |                    |
| Typical thermal resistance  | GBPC12 to GBPC25 |                    | $R_{\theta JC}^{(1)}$ | 1.9 |    |    |    |      |    | $^\circ\text{C/W}$ |
|   | GBPC35           |                    |                       | 1.4 |    |    |    |      |    |                    |

**Notes**<sup>(1)</sup> With heatsink<sup>(2)</sup> Bolt down on heatsink with silicone thermal compound between bridge and mounting surface for maximum heat transfer with #10 screw

| <b>ORDERING INFORMATION</b> (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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Тел: +7 (812) 336 43 04 (многоканальный)  
Email: org@lifeelectronics.ru