

# Bridge Rectifier

## **GBPC1504**

400V / 15A

# DATASHEET

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OEM – General Semiconductor

Source: General Semiconductor Databook 1998

# GBPC12, 15, 25 AND 35 SERIES

## GLASS PASSIVATED SINGLE-PHASE BRIDGE RECTIFIER

Reverse Voltage - 50 to 1000 Volts Current Voltage - 12.0 to 35.0 Amperes

GBPC - W Wire leads



GBPC - Standard



### FEATURES

- ◆ The plastic package has Underwriters Laboratory Flammability Classification 94V-0
- ◆ This series is UL recognized under component index, file number E54214
- ◆ Integrally molded heatsink provides very low thermal resistance for maximum heat dissipation
- ◆ Universal 3-way terminals; snap-on, wire wrap-around, or P.C.B. mounting
- ◆ High forward surge current capabilities
- ◆ Glass passivated chip junctions
- ◆ Typical  $I_R$  less than 0.3 $\mu$ A
- ◆ High temperature soldering guaranteed:  
260°C/10 seconds at 5lbs. (2.3 kg) tension

### MECHANICAL DATA

**Case:** Molded plastic with heatsink integrally mounted in the bridge encapsulation  
**Terminals:** Either plated 0.25" (6.35mm). Faston lugs or plated copper leads 0.040" (1.02mm) diameter. Suffix letter "W" added to indicate leads (e.g. GBPC12005W).  
**Mounting Position:** See NOTE 3  
**Polarity:** Polarity symbols molded on body  
**Mounting Torque:** 20 in. - lb. max. **Weight:** 0.53 ounce, 15 grams

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

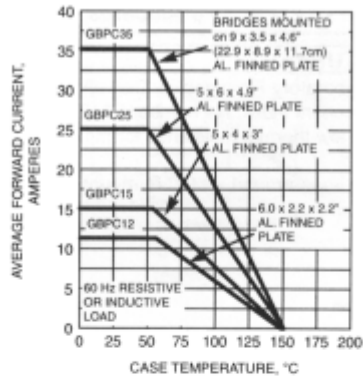
|   |  | GBPC12, 15, 25, 35 |     |     |     |                                  |     |     |      |                    |
|---|--|--------------------|-----|-----|-----|----------------------------------|-----|-----|------|--------------------|
|   |  | SYMBOLS            | 005 | 01  | 02  | 04                               | 06  | 08  | 10   | UNITS              |
| Maximum repetitive peak reverse voltage   |  | $V_{RRM}$          | 50  | 100 | 200 | 400                              | 600 | 800 | 1000 | Volts              |
| Maximum RMS voltage   |  | $V_{RMS}$          | 35  | 70  | 140 | 280                              | 420 | 560 | 700  | Volts              |
| Maximum DC blocking voltage   |  | $V_{DC}$           | 50  | 100 | 200 | 400                              | 600 | 800 | 1000 | Volts              |
| Maximum average forward rectified output current (SEE FIG. 1)                         | GBPC12<br>GBPC15<br>GBPC25<br>GBPC35   | $I_{(AV)}$         |     |     |     | 12.0<br>15.0<br>25.0<br>35.0     |     |     |      | Amps               |
| Peak forward surge current single sine-wave superimposed on rated load (JEDEC Method) | GBPC12<br>GBPC15<br>GBPC25<br>GBPC35   | $I_{FSM}$          |     |     |     | 200.0<br>300.0<br>300.0<br>400.0 |     |     |      | Amps               |
| Rating (non-repetitive, for t greater than 1ms and less than 8.3ms) for fusing        | GBPC12<br>GBPC15<br>GBPC25<br>GBPC35   | $I^2t$             |     |     |     | 160.0<br>375.0<br>375.0<br>660.0 |     |     |      | A <sup>2</sup> sec |
| Maximum instantaneous forward voltage drop per leg at                                 | GBPC12 $I_F=6.0A$<br>GBPC15 $I_F=7.5A$<br>GBPC25 $I_F=12.5A$<br>GBPC35 $I_F=17.5A$ | $V_F$              |     |     |     | 1.1                              |     |     |      | Volts              |
| Maximum reverse DC current at rated DC blocking voltage per leg                       | $T_A=25^\circ C$<br>$T_A=125^\circ C$  | $I_R$              |     |     |     | 5.0<br>500.0                     |     |     |      | $\mu A$            |
| RMS isolation voltage from case to leads  |  | $V_{ISO}$          |     |     |     | 2500.0                           |     |     |      | Volts              |
| Typical junction capacitance per leg (NOTE 1)   |  | $C_J$              |     |     |     | 300.0                            |     |     |      | pF                 |
| Typical thermal resistance per leg (NOTE 2)   | GBPC12-25<br>GBPC35  | $R_{\theta JC}$    |     |     |     | 1.9<br>1.4                       |     |     |      | °C/W               |
| Operating junction storage temperature range  |  | $T_J, T_{STG}$     |     |     |     | -55 to +150                      |     |     |      | °C                 |

**NOTES:**

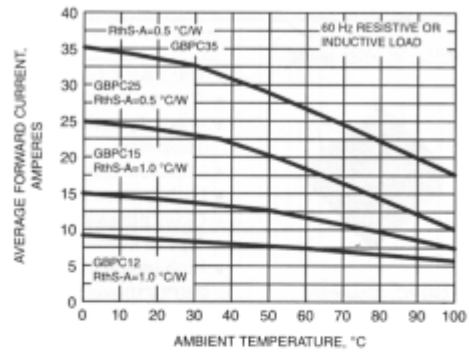
- (1) Measured at 1.0 MHz and applied reverse voltage of 4.0 Volts
- (2) Thermal resistance from junction to case per leg
- (3) Bolt down on heat-sink with silicone thermal compound between bridge and mounting surface for maximum heat transfer efficiency with #10 screw

**RATINGS AND CHARACTERISTICS CURVES GBPC12, 15, 25 AND 35 SERIES**

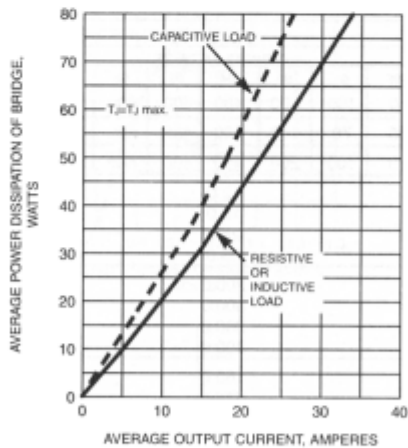
**FIG. 1 - MAXIMUM OUTPUT RECTIFIED CURRENT**



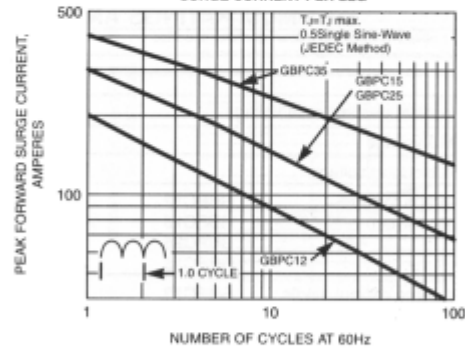
**FIG. 2 - MAXIMUM OUTPUT RECTIFIED CURRENT**



**FIG. 3 - MAXIMUM POWER DISSIPATION**

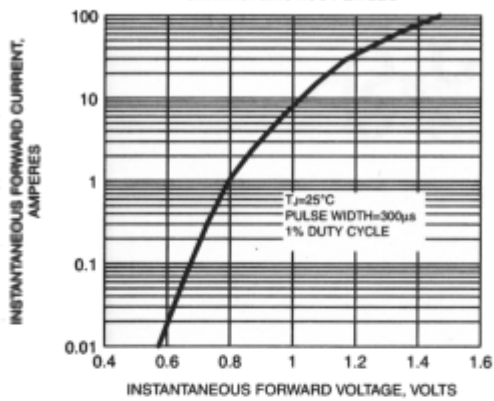


**FIG. 4 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT PER LEG**

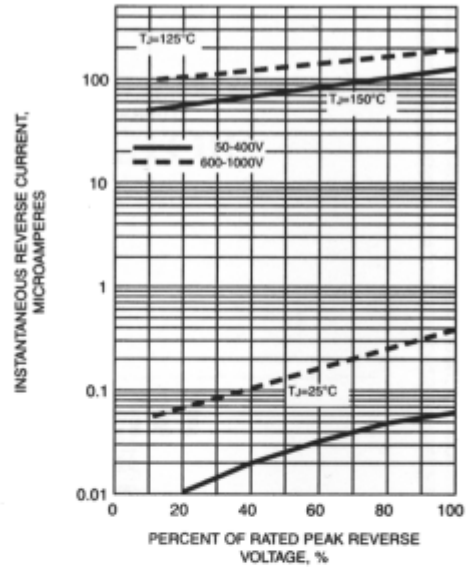


**RATINGS AND CHARACTERISTICS CURVES GBPC12, 15, 25 AND 35 SERIES**

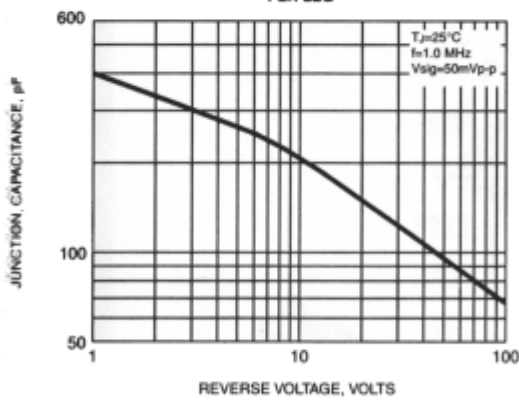
**FIG. 5 - TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS PER LEG**



**FIG. 6 - TYPICAL REVERSE LEAKAGE CHARACTERISTICS PER LEG**



**FIG. 7 - TYPICAL JUNCTION CAPACITANCE PER LEG**



**FIG. 8 - TYPICAL TRANSIENT THERMAL IMPEDANCE PER LEG**

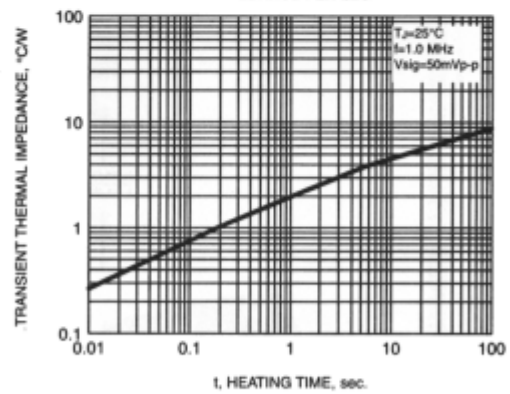


FIG. 9

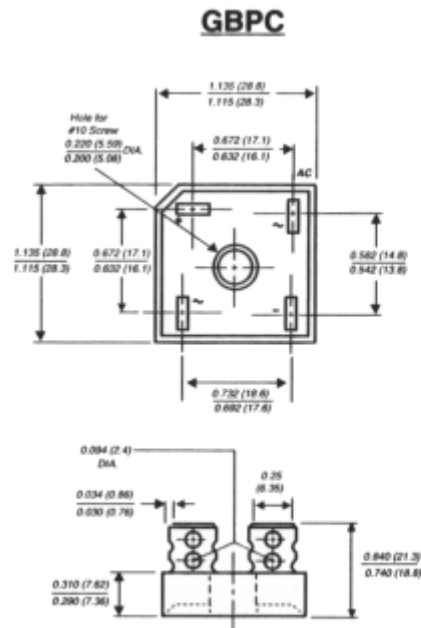
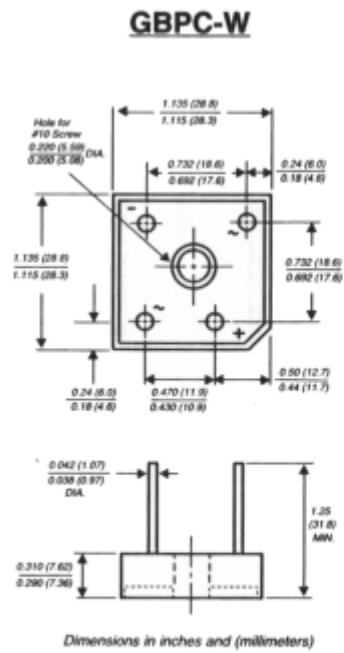


FIG. 10



**NOTES:**

- (1) Corrosion resistant terminals designed with 0.25" female quick connectors for wrap or snap-on
- (2) A thin film of silicone thermal compound is recommended between the bridge case and mounting surface for improved thermal conduction