

## GBPC 12, 15, 25, 35 SERIES Bridge Rectifiers (Glass Passivated)

### Features

- Integrally molded heat-sink provided very low thermal resistance for maximum heat dissipation.
- Surge Overload Ratings from 300 A to 400 A.
- Isolated voltage from case to lead over 2500 V.
- UL certified, UL #E258596
- Terminals Finish Material - Silver (Solderable per MIL-STD-202, Method 208 for the wire type GBPC-W package)  
- Nickel for GBPC package.

### Suffix “W”

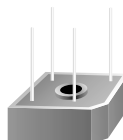
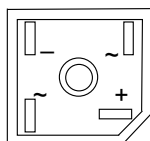
- Wire Lead Structure

### Suffix “M”

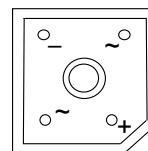
- Terminal Location Face to Face



GBPC



GBPC-W



## Ordering Informations

| Part Number | Marking    | Package | Packing Method |           |      |
|-------------|------------|---------|----------------|-----------|------|
| GBPC12005   | GBPC12005  | GBPC 4L | Bulk           |           |      |
| GBPC1201    | GBPC1201   |         |                |           |      |
| GBPC1202    | GBPC1202   |         |                |           |      |
| GBPC1204    | GBPC1204   |         |                |           |      |
| GBPC1206    | GBPC1206   |         |                |           |      |
| GBPC1208    | GBPC1208   |         |                |           |      |
| GBPC1210    | GBPC1210   |         |                |           |      |
| GBPC15005   | GBPC15005  |         |                |           |      |
| GBPC1501    | GBPC1501   |         |                |           |      |
| GBPC1502    | GBPC1502   |         |                |           |      |
| GBPC1504    | GBPC1504   |         |                |           |      |
| GBPC1506    | GBPC1506   |         |                |           |      |
| GBPC1508    | GBPC1508   |         |                |           |      |
| GBPC1510    | GBPC1510   |         |                |           |      |
| GBPC25005   | GBPC25005  |         |                |           |      |
| GBPC2501    | GBPC2501   |         |                |           |      |
| GBPC2502    | GBPC2502   |         |                |           |      |
| GBPC2504    | GBPC2504   |         |                |           |      |
| GBPC2506    | GBPC2506   |         |                |           |      |
| GBPC2508    | GBPC2508   |         |                |           |      |
| GBPC2510    | GBPC2510   |         |                |           |      |
| GBPC35005   | GBPC35005  |         |                |           |      |
| GBPC3501    | GBPC3501   |         |                |           |      |
| GBPC3502    | GBPC3502   |         |                |           |      |
| GBPC3504    | GBPC3504   |         |                |           |      |
| GBPC3506    | GBPC3506   |         |                |           |      |
| GBPC3508    | GBPC3508   |         |                |           |      |
| GBPC3510    | GBPC3510   |         |                |           |      |
| GBPC1201W   | GBPC1201W  |         |                | GBPC-W 4L | Bulk |
| GBPC1202W   | GBPC1202W  |         |                |           |      |
| GBPC1204W   | GBPC1204W  |         |                |           |      |
| GBPC1206W   | GBPC1206W  |         |                |           |      |
| GBPC1208W   | GBPC1208W  |         |                |           |      |
| GBPC1210W   | GBPC1210W  |         |                |           |      |
| GBPC15005W  | GBPC15005W |         |                |           |      |
| GBPC1501W   | GBPC1501W  |         |                |           |      |
| GBPC1502W   | GBPC1502W  |         |                |           |      |
| GBPC1504W   | GBPC1504W  |         |                |           |      |
| GBPC1506W   | GBPC1506W  |         |                |           |      |
| GBPC1508W   | GBPC1508W  |         |                |           |      |

**Ordering Informations** (continued)

| Part Number | Marking    | Package   | Packing Method |
|-------------|------------|-----------|----------------|
| GBPC1510W   | GBPC1510W  | GBPC-W 4L | Bulk           |
| GBPC25005W  | GBPC25005W |           |                |
| GBPC2501W   | GBPC2501W  |           |                |
| GBPC2502W   | GBPC2502W  |           |                |
| GBPC2504W   | GBPC2504W  |           |                |
| GBPC2506W   | GBPC2506W  |           |                |
| GBPC2508W   | GBPC2508W  |           |                |
| GBPC2510W   | GBPC2510W  |           |                |
| GBPC35005W  | GBPC35005W |           |                |
| GBPC3501W   | GBPC3501W  |           |                |
| GBPC3502W   | GBPC3502W  |           |                |
| GBPC3504W   | GBPC3504W  |           |                |
| GBPC3506W   | GBPC3506W  |           |                |
| GBPC3508W   | GBPC3508W  |           |                |
| GBPC3510W   | GBPC3510W  |           |                |

**Absolute Maximum Ratings**<sup>(1)</sup>

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol             | Parameter                                                  |                | Value       |     |     |     |     |     |      | Units |
|--------------------|------------------------------------------------------------|----------------|-------------|-----|-----|-----|-----|-----|------|-------|
|                    |                                                            |                | 005         | 01  | 02  | 04  | 06  | 08  | 10   |       |
| V <sub>RRM</sub>   | Maximum Repetitive Reverse Voltage                         |                | 50          | 100 | 200 | 400 | 600 | 800 | 1000 | V     |
| V <sub>RMS</sub>   | Maximum RMS Bridge Input Voltage                           |                | 35          | 70  | 140 | 280 | 420 | 560 | 700  | V     |
| V <sub>R</sub>     | DC Reverse Voltage (Rated V <sub>R</sub> )                 |                | 50          | 100 | 200 | 400 | 600 | 800 | 1000 | V     |
| I <sub>F(AV)</sub> | Average Rectified Forward Current at T <sub>C</sub> = 55°C | GBPC12         | 12          |     |     |     |     |     |      | A     |
|                    |                                                            | GBPC15         | 15          |     |     |     |     |     |      |       |
|                    |                                                            | GBPC25         | 25          |     |     |     |     |     |      |       |
|                    |                                                            | GBPC35         | 35          |     |     |     |     |     |      |       |
| I <sub>FSM</sub>   | Non-Repetitive Peak Forward Surge Current                  | GBPC12, 15, 25 | 300         |     |     |     |     |     |      | A     |
|                    | 8.3ms Single Half-Sine-Wave                                | GBPC35         | 400         |     |     |     |     |     |      | A     |
| T <sub>STG</sub>   | Storage Temperature Range                                  |                | -55 to +150 |     |     |     |     |     |      | °C    |
| T <sub>J</sub>     | Operating Junction Temperature                             |                | -55 to +150 |     |     |     |     |     |      | °C    |

**Note:**

1. These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

## Thermal Characteristics

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol          | Parameter                                           | Value | Units              |
|-----------------|-----------------------------------------------------|-------|--------------------|
| $P_D$           | Power Dissipation                                   | 83.3  | W                  |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case <sup>(2)</sup> | 1.5   | $^\circ\text{C/W}$ |

**Note:**

2. With Heatsink.

## Electrical Characteristics

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol | Parameter                                                    | Test Conditions           | Value     | Units                  |
|--------|--------------------------------------------------------------|---------------------------|-----------|------------------------|
| $V_F$  | Forward Voltage Drop, per bridge                             | 6.0 A GBPC12              | 1.1 (Max) | V                      |
|        |                                                              | 7.5 A GBPC15              |           |                        |
|        |                                                              | 12.5 A GBPC25             |           |                        |
|        |                                                              | 17.5 A GBPC35             |           |                        |
| $I_R$  | Reverse Current, per element at Rated $V_R$                  | $T_A = 25^\circ\text{C}$  | 5.0 (Max) | $\mu\text{A}$          |
|        |                                                              | $T_A = 125^\circ\text{C}$ | 500 (Max) | $\mu\text{A}$          |
| $I^2t$ | Rating for Fusing $t < 8.35$ ms                              | GBPC12, 15, 25            | 375       | $\text{A}^2\text{Sec}$ |
|        |                                                              | GBPC35                    | 660       | $\text{A}^2\text{Sec}$ |
| $C_T$  | Total Capacitance, per leg<br>$V_R = 4.0$ V<br>$f = 1.0$ MHz | GBPC12, 15, 25            | 180       | pF                     |
|        |                                                              | GBPC35                    | 200       | pF                     |

## Typical Performance Characteristics

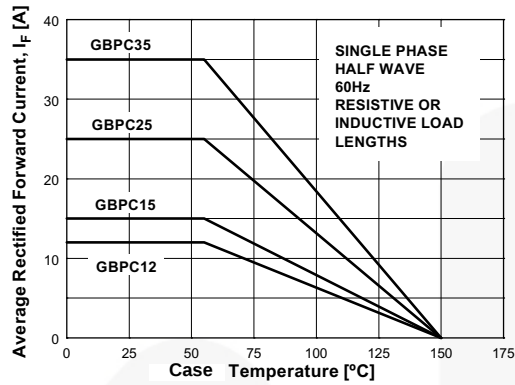


Figure 1. Forward Current Derating Curve

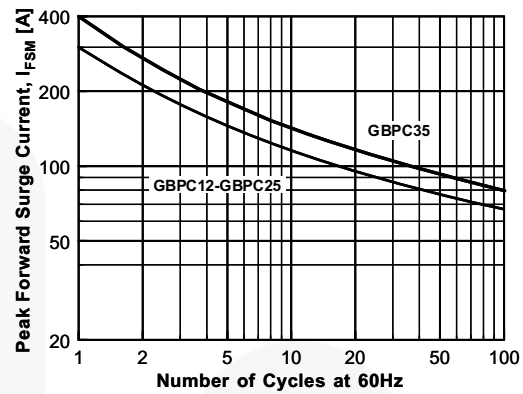


Figure 2. Non-Repetitive Surge Current

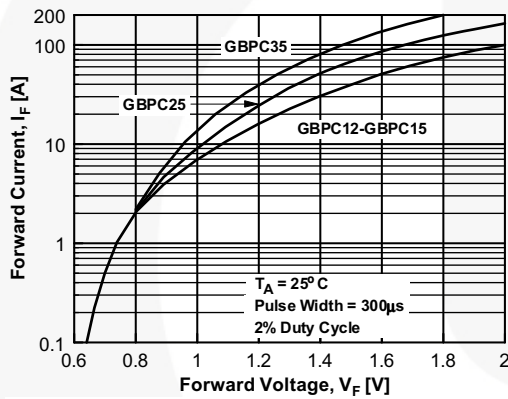


Figure 3. Forward Voltage Characteristics

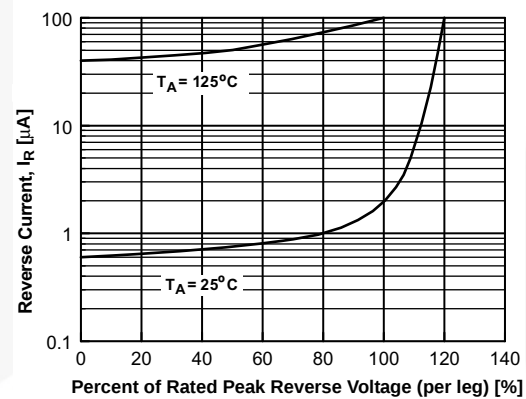
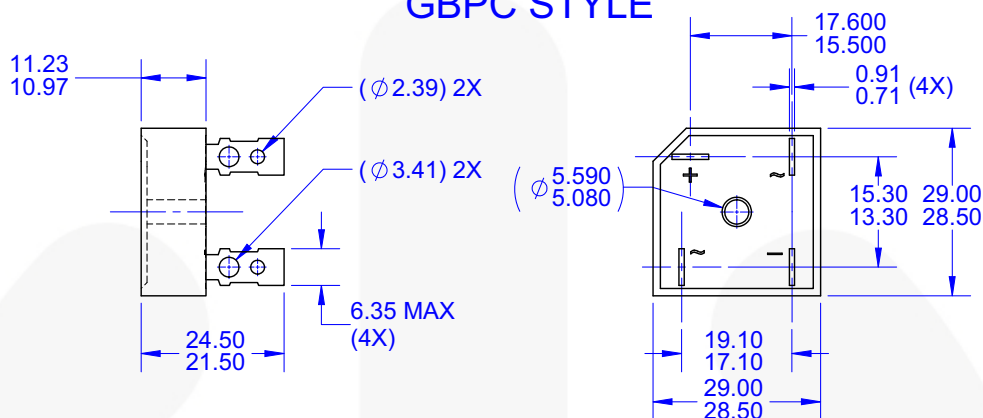


Figure 4. Reverse Current vs. Reverse Voltage

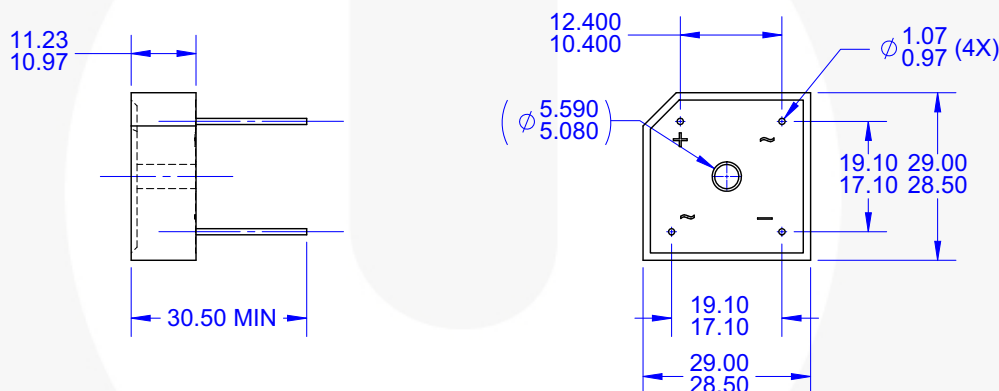
## Physical Dimension

## GBPC

## GBPC STYLE



## GBPC-W STYLE



## NOTES:

- A. THIS PACKAGE DOES NOT CONFORM TO ANY STANDARDS.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.
- D. FAIRCHILD SEMICONDUCTOR
- E. DRAWING FILE NAME: MKT-GBPC04A REV3

Figure 5. 4-TERMINAL, COMBINATION GBPC AND GBPC-W (ACTIVE)

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| EcoSPARK®                                                                         | MegaBuck™                                      | SmartMax™                                                                         | TriFault Detect™                                                                    |
| EfficientMax™                                                                     | MICROCOUPLER™                                  | SMART START™                                                                      | TRUECURRENT®*                                                                       |
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|  | MicroPak™                                      | SPM®                                                                              |  |
| Fairchild®                                                                        | MicroPak2™                                     | STEALTH™                                                                          | UHC®                                                                                |
| Fairchild Semiconductor®                                                          | MillerDrive™                                   | SuperFET™                                                                         | Ultra FRFET™                                                                        |
| FACT Quiet Series™                                                                | MotionMax™                                     | SuperSOT™-3                                                                       | UniFET™                                                                             |
| FACT®                                                                             | mWSaver®                                       | SuperSOT™-6                                                                       | VCX™                                                                                |
| FAST®                                                                             | OptoHiT™                                       | SuperSOT™-8                                                                       | VisualMax™                                                                          |
| FastvCore™                                                                        | OPTOLOGIC®                                     | SupreMOS®                                                                         | VoltagePlus™                                                                        |
| FETBench™                                                                         | OPTOPLANAR®                                    | SyncFET™                                                                          | XS™                                                                                 |
| FPS™                                                                              |                                                |                                                                                   |                                                                                     |

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