

# Bridge Rectifiers (Glass Passivated)

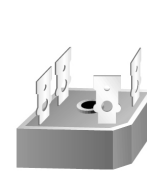
## GBPC 12, 15, 25, 35 SERIES

### Features

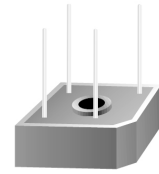
- Integrally Molded Heat-Sink Provided Very Low Thermal Resistance for Maximum Heat Dissipation
- Surge Overload Ratings from 300 A to 400 A
- Isolated Voltage from Case to Lead over 2500 V
- UL Certified, UL #E258596
- Terminals Finish Material
  - ◆ Silver (Solderable per MIL-STD-202, Method 208 for the wire type GBPC-W package)
  - ◆ Nickel for GBPC package
- Mounting Torque: 20 in-lbs Maximum
- These are Pb-Free Devices

### Suffix "W"

- Wire Lead Structure

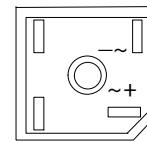


GBPC  
CASE 160AD

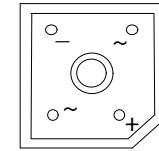


GBPC-W  
CASE 160AD

### PIN ASSIGNMENT



GBPC



GBPC-W

### ORDERING INFORMATION

See detailed ordering and shipping information on page 4 of this data sheet.

NOTE: Some of the devices on this data sheet have been **DISCONTINUED**. Please refer to the table on page 5.

# GBPC 12, 15, 25, 35 SERIES

## SPECIFICATIONS

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ , unless otherwise specified.) (Note 1)

| Symbol      | Parameter   | Value          |     |     |     |     |     |                  | Unit |
|-------------|---|----------------|-----|-----|-----|-----|-----|------------------|------|
|             |   | 005            | 01  | 02  | 04  | 06  | 08  | 10               |      |
| $V_{RRM}$   | Maximum Repetitive Reverse Voltage                            | 50             | 100 | 200 | 400 | 600 | 800 | 1000             | V    |
| $V_{RMS}$   | Maximum RMS Bridge Input Voltage                              | 35             | 70  | 140 | 280 | 420 | 560 | 700              | V    |
| $V_R$       | DC Reverse Voltage (Rated $V_R$ )                             | 50             | 100 | 200 | 400 | 600 | 800 | 1000             | V    |
| $I_{F(AV)}$ | Average Rectified Forward Current at $T_C = 55^\circ\text{C}$ | GBPC12         | 12  |     |     |     |     |                  | A    |
|             |   | GBPC15         | 15  |     |     |     |     |                  |      |
|             |   | GBPC25         | 25  |     |     |     |     |                  |      |
|             |   | GBPC35         | 35  |     |     |     |     |                  |      |
| $I_{FSM}$   | Non-Repetitive Peak Forward Surge Current                     | GBPC12, 15, 25 |     |     |     |     |     | 300              | A    |
|             | 8.3 ms Single Half-Sine-Wave                                  | GBPC35         |     |     |     |     |     | 400              | A    |
| $T_{STG}$   | Storage Temperature Range                                     | -55 to +150    |     |     |     |     |     | $^\circ\text{C}$ |      |
| $T_J$       | Operating Junction Temperature                                | -55 to +150    |     |     |     |     |     | $^\circ\text{C}$ |      |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

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

### THERMAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ , unless otherwise specified.)

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

2. With Heatsink.

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ , unless otherwise specified.)

| Symbol | Parameter   | Test Conditions           | Value     | Unit                   |
|--------|---|---------------------------|-----------|------------------------|
| $V_F$  | Forward Voltage Drop, per bridge                        | 6.0 A                     | 1.1 (Max) | V                      |
|        |   | 7.5 A                     |           |                        |
|        |   | 12.5 A                    |           |                        |
|        |   | 17.5 A                    |           |                        |
| $I_R$  | 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 $V_R = 4.0$ V, $f = 1.0$ MHz | GBPC12, 15, 25            | 180       | pF                     |
|        |   | GBPC35                    | 200       | pF                     |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

# GBPC 12, 15, 25, 35 SERIES

## TYPICAL PERFORMANCE CHARACTERISTICS

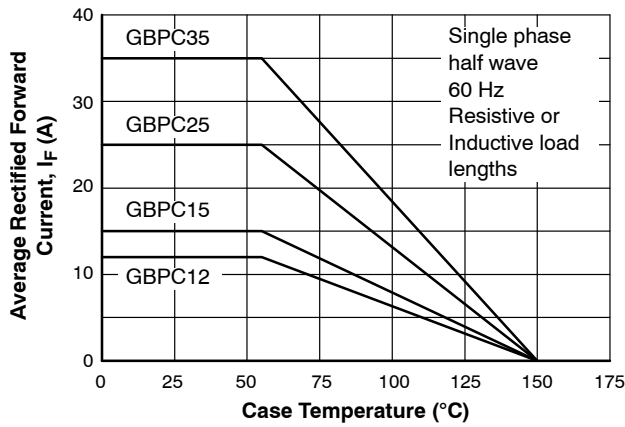


Figure 1. Forward Current Derating Curve

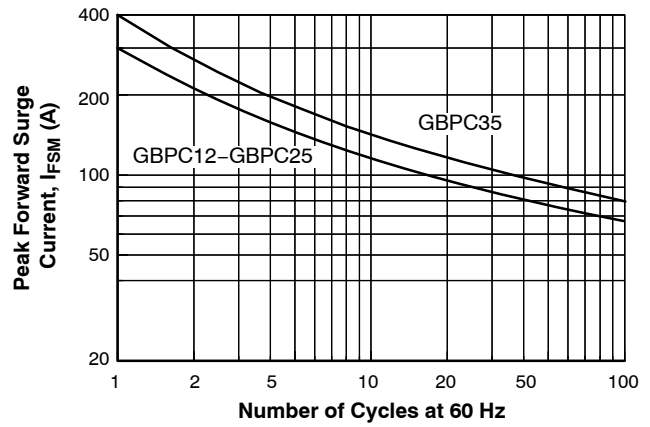


Figure 2. Non-Repetitive Surge Current

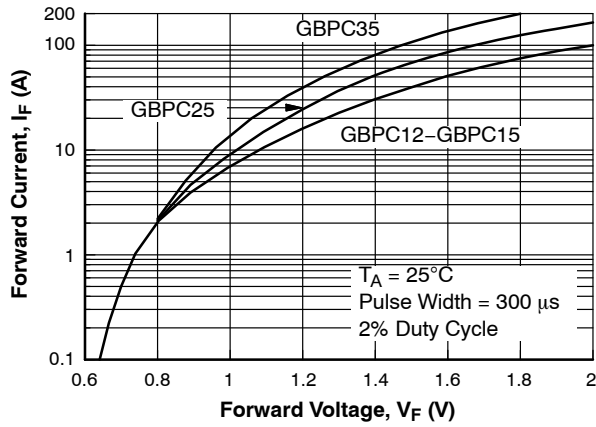


Figure 3. Forward Voltage Characteristics

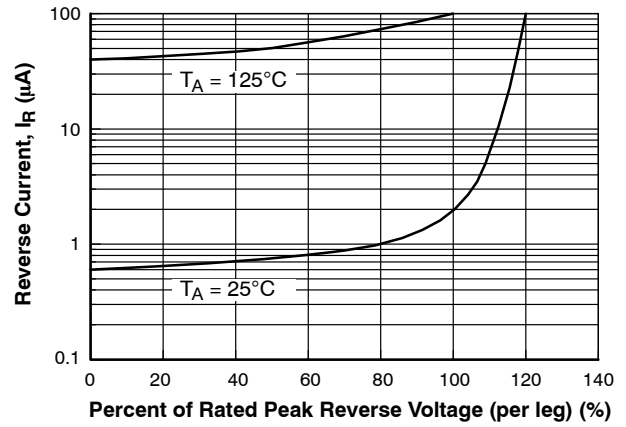


Figure 4. Reverse Current vs. Reverse Voltage

## GBPC 12, 15, 25, 35 SERIES

### ORDERING INFORMATION

| Part Number | Marking    | Package              | Packing Method |                        |  |
|-------------|------------|----------------------|----------------|------------------------|--|
| GBPC12005   | GBPC12005  | GBPC 4L<br>(Pb-Free) | Bulk           |                        |  |
| GBPC1201    | GBPC1201   |                      |                |                        |  |
| GBPC1202    | GBPC1202   |                      |                |                        |  |
| GBPC1204    | GBPC1204   |                      |                |                        |  |
| GBPC1206    | GBPC1206   |                      |                |                        |  |
| 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<br>(Pb-Free) |  |
| GBPC1204W   | GBPC1204W  |                      |                |                        |  |
| GBPC1206W   | GBPC1206W  |                      |                |                        |  |
| GBPC1208W   | GBPC1208W  |                      |                |                        |  |
| GBPC1210W   | GBPC1210W  |                      |                |                        |  |
| GBPC15005W  | GBPC15005W |                      |                |                        |  |
| GBPC1501W   | GBPC1501W  |                      |                |                        |  |
| GBPC1502W   | GBPC1502W  |                      |                |                        |  |
| GBPC1504W   | GBPC1504W  |                      |                |                        |  |
| GBPC1506W   | GBPC1506W  |                      |                |                        |  |
| GBPC1508W   | GBPC1508W  |                      |                |                        |  |

## GBPC 12, 15, 25, 35 SERIES

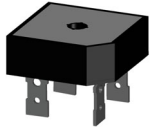
### ORDERING INFORMATION (continued)

| Part Number | Marking   | Package                | Packing Method |
|-------------|-----------|------------------------|----------------|
| GBPC1510W   | GBPC1510W | GBPC-W 4L<br>(Pb-Free) | Bulk           |
| GBPC2501W   | GBPC2501W |                        |                |
| GBPC2502W   | GBPC2502W |                        |                |
| GBPC2504W   | GBPC2504W |                        |                |
| GBPC2506W   | GBPC2506W |                        |                |
| GBPC2508W   | GBPC2508W |                        |                |
| GBPC2510W   | GBPC2510W |                        |                |
| GBPC3501W   | GBPC3501W |                        |                |
| GBPC3502W   | GBPC3502W |                        |                |
| GBPC3504W   | GBPC3504W |                        |                |
| GBPC3506W   | GBPC3506W |                        |                |
| GBPC3508W   | GBPC3508W |                        |                |
| GBPC3510W   | GBPC3510W |                        |                |

### DISCONTINUED (Note 3)

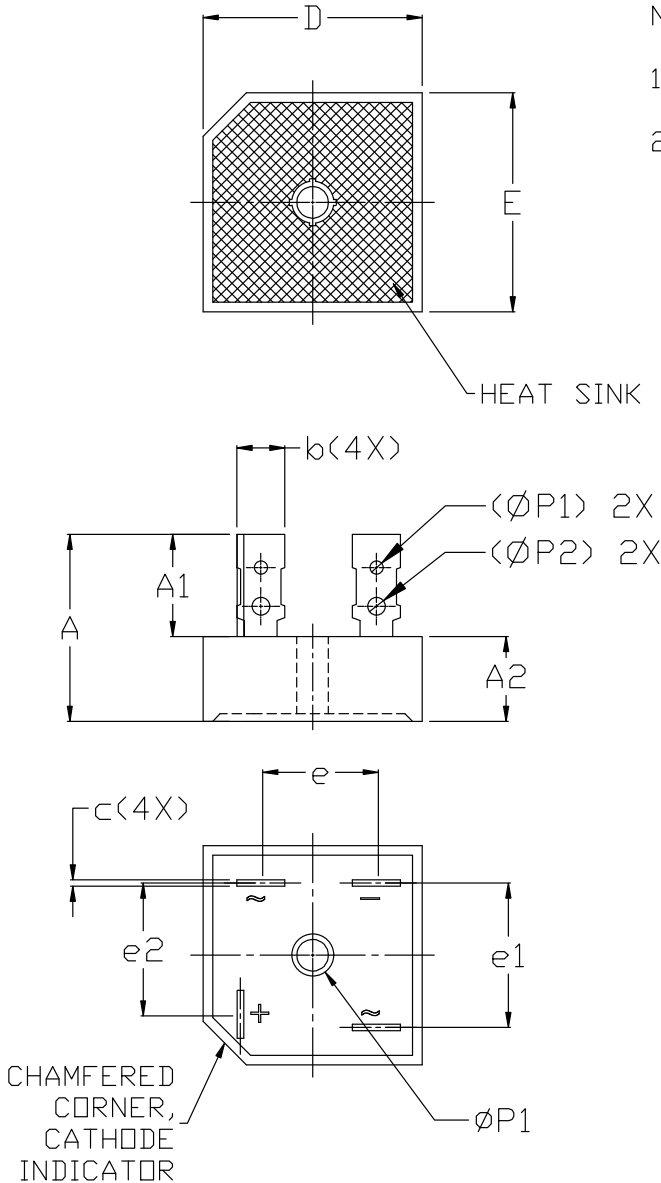
|            |            |                        |      |
|------------|------------|------------------------|------|
| GBPC1208   | GBPC1208   | GBPC 4L<br>(Pb-Free)   | Bulk |
| GBPC1202W  | GBPC1202W  | GBPC-W 4L<br>(Pb-Free) |      |
| GBPC25005W | GBPC25005W |                        |      |
| GBPC35005W | GBPC35005W |                        |      |

3. **DISCONTINUED:** These devices are not recommended for new design. Please contact your **onsemi** representative for information. The most current information on these devices may be available on [www.onsemi.com](http://www.onsemi.com).



**GBPC4 28.75x28.75x11.10, MODEL 1**  
CASE 160AD  
ISSUE C

DATE 15 NOV 2023



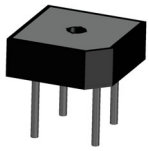
NOTES:

1. DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5-2018.
2. ALL DIMENSION ARE IN MILLIMETERS.

| DIM              | MILLIMETERS |        |        |
|------------------|-------------|--------|--------|
|                  | MIN.        | NOM.   | MAX.   |
| A                | 21.500      | 23.000 | 24.500 |
| A1               | 13.270 REF  |        |        |
| A2               | 10.970      | 11.100 | 11.230 |
| $\varnothing P$  | 5.080       | 5.335  | 5.590  |
| $\varnothing P1$ | 1.780 REF   |        |        |
| $\varnothing P2$ | 2.360 REF   |        |        |
| D                | 28.500      | 28.750 | 29.000 |
| E                | 28.500      | 28.750 | 29.000 |
| b                | 6.350 TYP   |        |        |
| c                | 0.760       | 0.810  | 0.860  |
| e                | 13.300      | 14.300 | 15.300 |
| e1               | 17.100      | 18.100 | 19.100 |
| e2               | 15.500      | 16.550 | 17.600 |

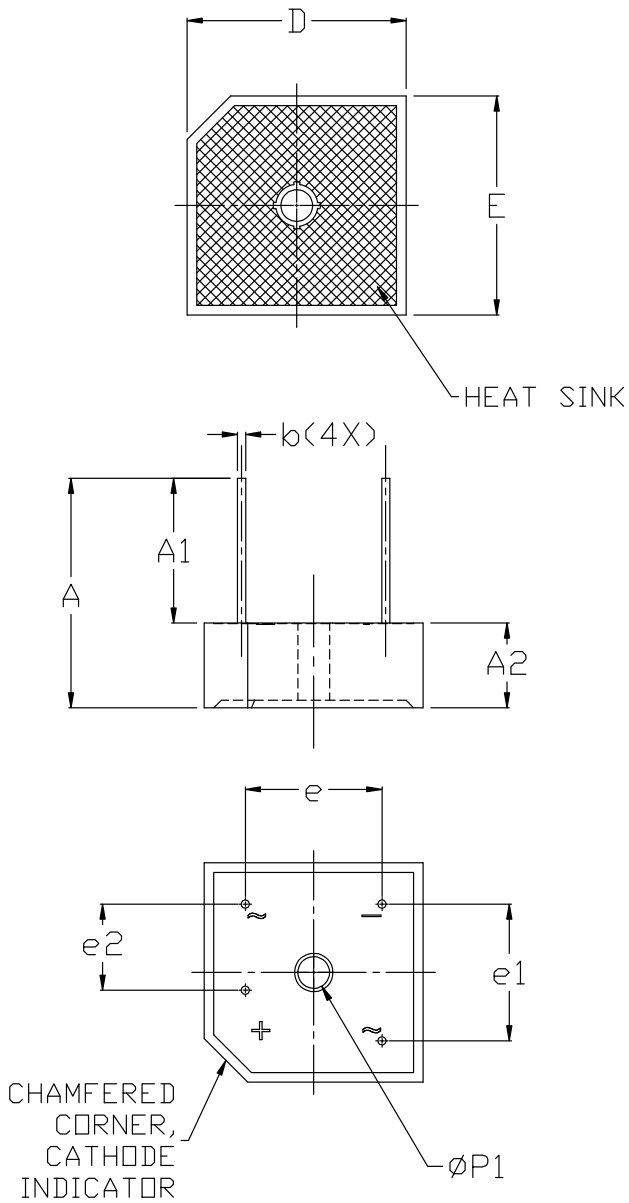
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| <b>DESCRIPTION:</b>     | <b>GBPC4 28.75x28.75x11.10, MODEL 1</b> | <b>PAGE 1 OF 2</b>   |

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**GBPC4 28.75x28.75x11.10, MODEL 2**  
CASE 160AD  
ISSUE C

DATE 15 NOV 2023



NOTES:

1. DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5-2018.
2. ALL DIMENSION ARE IN MILLIMETERS.

| DIM | MILLIMETERS |        |        |
|-----|-------------|--------|--------|
|     | MIN.        | NOM.   | MAX.   |
| A   | 30.500      | ---    | ---    |
| A1  | 19.270 REF  |        |        |
| A2  | 10.970      | 11.100 | 11.230 |
| ØP  | 5.080       | 5.335  | 5.590  |
| D   | 28.500      | 28.750 | 29.000 |
| E   | 28.500      | 28.750 | 29.000 |
| b   | 0.970       | 1.020  | 1.070  |
| e   | 17.100      | 18.100 | 19.100 |
| e1  | 17.100      | 18.100 | 19.100 |
| e2  | 10.400      | 11.400 | 12.400 |

|                         |   |  |
|-------------------------|---|--|
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