

## Single Phase Bridge (Power Modules), 25/35 A


**GBPC...A**

**GBPC...W**

### FEATURES

- Universal, 3 way terminals: push-on, wrap around or solder
- High thermal conductivity package, electrically insulated case
- Positive polarity symbol molded on the plastic case
- Center hole fixing
- Glass passivated diode chips
- Excellent power/volume ratio
- Nickel plated terminals solderable using lead (Pb)-free solder; Solder Alloy Sn/Ag/Cu (SAC305); Solder temperature 260 to 275 °C
- Wire lead version available
- UL E300359 approved 
- RoHS compliant
- Designed and qualified for industrial and consumer level


**RoHS**  
COMPLIANT

### PRODUCT SUMMARY

|       |         |
|-------|---------|
| $I_o$ | 25/35 A |
|-------|---------|

### DESCRIPTION/APPLICATIONS

A range of extremely compact, encapsulated single phase bridge rectifiers offering efficient and reliable operation. They are intended for use in general purpose and instrumentation applications

### MAJOR RATINGS AND CHARACTERISTICS

| SYMBOL    | CHARACTERISTICS | GBPC25      | GBPC35 | UNITS            |
|-----------|-----------------|-------------|--------|------------------|
| $I_o$     |                 | 25          | 35     | A                |
|           | $T_c$           | 60          | 55     | °C               |
| $I_{FSM}$ | 50 Hz           | 400         | 475    | A                |
|           | 60 Hz           | 420         | 500    |                  |
| $I^2t$    | 50 Hz           | 790         | 1130   | A <sup>2</sup> s |
|           | 60 Hz           | 725         | 1030   |                  |
| $V_{RRM}$ | Range           | 200 to 1200 |        | V                |
| $T_J$     |                 | - 55 to 150 |        | °C               |

**ELECTRICAL SPECIFICATIONS**

| <b>VOLTAGE RATINGS</b>                      |              |                                                                                    |                                                                                        |                                                                   |                                                                                       |
|---------------------------------------------|--------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| TYPE NUMBER                                 | VOLTAGE CODE | $V_{RRM}$ , MAXIMUM REPETITIVE PEAK AC REVERSE VOLTAGE<br>$T_J = T_J$ MAXIMUM<br>V | $V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK AC REVERSE VOLTAGE<br>$T_J = T_J$ MAXIMUM<br>V | $I_{RRM}$ MAXIMUM AT RATED $V_{RRM}$<br>$T_J = T_J$ MAXIMUM<br>mA | $I_{RRM}$ MAXIMUM DC REVERSE CURRENT AT<br>$T_J = 125^\circ\text{C}$<br>$\mu\text{A}$ |
| GBPC25/35..A <sup>(1)</sup><br>GBPC25/35..W | 02           | 200                                                                                | 275                                                                                    | 2                                                                 | 500                                                                                   |
|                                             | 04           | 400                                                                                | 500                                                                                    |                                                                   |                                                                                       |
|                                             | 06           | 600                                                                                | 725                                                                                    |                                                                   |                                                                                       |
|                                             | 08           | 800                                                                                | 900                                                                                    |                                                                   |                                                                                       |
|                                             | 10           | 1000                                                                               | 1100                                                                                   |                                                                   |                                                                                       |
|                                             | 12           | 1200                                                                               | 1300                                                                                   |                                                                   |                                                                                       |

**Note**

(1) See Ordering Information table at the end of datasheet

| FORWARD CONDUCTION                                     |                     |                                                                                                                                       |                                  |                                                 |        |        |                    |  |
|--------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------------------------|--------|--------|--------------------|--|
| PARAMETER                                              | SYMBOL              | TEST CONDITIONS                                                                                                                       |                                  |                                                 | GBPC25 | GBPC35 | UNITS              |  |
| Maximum DC output current at case temperature          | I <sub>O</sub>      | Resistive or inductive load                                                                                                           |                                  |                                                 | 25     | 35     | A                  |  |
|                                                        |                     | Capacitive load                                                                                                                       |                                  |                                                 | 20     | 28     |                    |  |
|                                                        |                     |                                                                                                                                       |                                  |                                                 | 60     | 55     | °C                 |  |
| Maximum peak, one-cycle non-repetitive forward current | I <sub>FSM</sub>    | t = 10 ms                                                                                                                             | No voltage reapplied             | Initial T <sub>J</sub> = T <sub>J</sub> maximum | 400    | 475    | A                  |  |
|                                                        |                     | t = 8.3 ms                                                                                                                            |                                  |                                                 | 420    | 500    |                    |  |
|                                                        |                     | t = 10 ms                                                                                                                             | 100 % V <sub>RRM</sub> reapplied |                                                 | 335    | 400    |                    |  |
|                                                        |                     | t = 8.3 ms                                                                                                                            |                                  |                                                 | 350    | 420    |                    |  |
| Maximum I <sup>2</sup> t for fusing                    | I <sup>2</sup> t    | t = 10 ms                                                                                                                             | No voltage reapplied             |                                                 | 790    | 1130   | A <sup>2</sup> s   |  |
|                                                        |                     | t = 8.3 ms                                                                                                                            |                                  |                                                 | 725    | 1030   |                    |  |
|                                                        |                     | t = 10 ms                                                                                                                             | 100 % V <sub>RRM</sub> reapplied |                                                 | 560    | 800    |                    |  |
|                                                        |                     | t = 8.3 ms                                                                                                                            |                                  |                                                 | 512    | 730    |                    |  |
| Maximum I <sup>2</sup> √t for fusing                   | I <sup>2</sup> √t   | I <sup>2</sup> t for time t <sub>x</sub> = I <sup>2</sup> √t × √t <sub>x</sub> ; 0.1 ≤ t <sub>x</sub> ≤ 10 ms, V <sub>RRM</sub> = 0 V |                                  |                                                 | 7.9    | 11.3   | kA <sup>2</sup> √s |  |
| Low level of threshold voltage                         | V <sub>F(TO)1</sub> | (16.7 % × π × I <sub>F(AV)</sub> ) < I < π × I <sub>F(AV)</sub> , T <sub>J</sub> maximum                                              |                                  |                                                 | 0.76   | 0.77   | V                  |  |
| High level of threshold voltage                        | V <sub>F(TO)2</sub> | (I > π × I <sub>F(AV)</sub> ), T <sub>J</sub> maximum                                                                                 |                                  |                                                 | 0.89   | 0.92   |                    |  |
| Low level forward slope resistance                     | r <sub>t1</sub>     | (16.7 % × π × I <sub>F(AV)</sub> ) < I < π × I <sub>F(AV)</sub> , T <sub>J</sub> maximum                                              |                                  |                                                 | 8.2    | 4.852  | mΩ                 |  |
| High level forward slope resistance                    | r <sub>t2</sub>     | (I > π × I <sub>F(AV)</sub> ), T <sub>J</sub> maximum                                                                                 |                                  |                                                 | 6.8    | 3.867  |                    |  |
| Maximum forward voltage drop                           | V <sub>FM</sub>     | T <sub>J</sub> = 25 °C, I <sub>FM</sub> = I <sub>Favg</sub> (arm)                                                                     |                                  |                                                 | 1.1    |        | V                  |  |
| Maximum DC reverse current                             | I <sub>RRM</sub>    | T <sub>J</sub> = 25 °C, per diode at V <sub>RRM</sub>                                                                                 |                                  |                                                 | 5.0    |        | μA                 |  |
| RMS isolation voltage base plate                       | V <sub>INS</sub>    | f = 50 Hz, t = 1 s                                                                                                                    |                                  |                                                 | 2700   |        | V                  |  |



| THERMAL AND MECHANICAL SPECIFICATIONS                   |                                   |                                            |             |        |                     |
|---------------------------------------------------------|-----------------------------------|--------------------------------------------|-------------|--------|---------------------|
| PARAMETER                                               | SYMBOL                            | TEST CONDITIONS                            | GBPC25      | GBPC35 | UNITS               |
| Junction and storage temperature range                  | T <sub>J</sub> , T <sub>Stg</sub> |                                            | - 55 to 150 |        | °C                  |
| Maximum thermal resistance, junction to case per bridge | R <sub>thJC</sub>                 | DC operation                               | 1.7         | 1.4    | K/W                 |
| Maximum thermal resistance, case to heatsink            | R <sub>thCS</sub>                 | Mounting surface, smooth, flat and greased | 0.2         |        |                     |
| Approximate weight                                      |                                   |                                            | 16          |        | g                   |
| Mounting torque ± 10 %                                  |                                   | Bridge to heatsink                         | 2.0         |        | N · m<br>(lbf · in) |

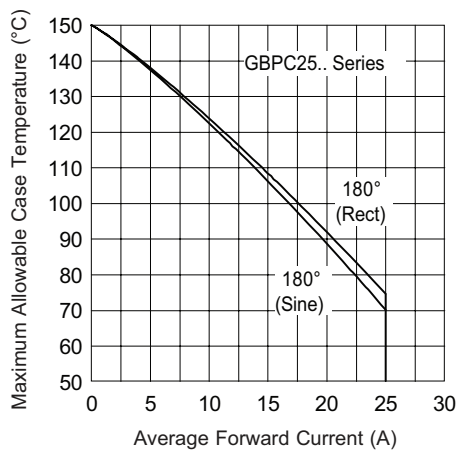


Fig. 1 - Current Ratings Characteristics

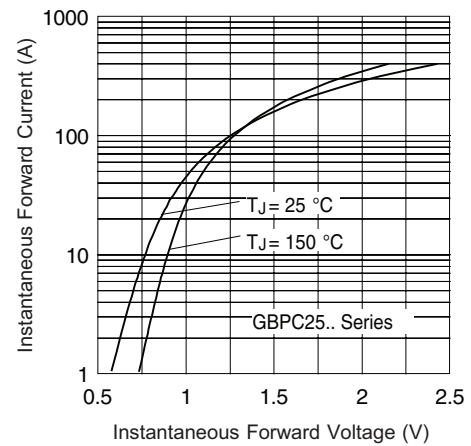


Fig. 2 - Forward Voltage Drop Characteristics

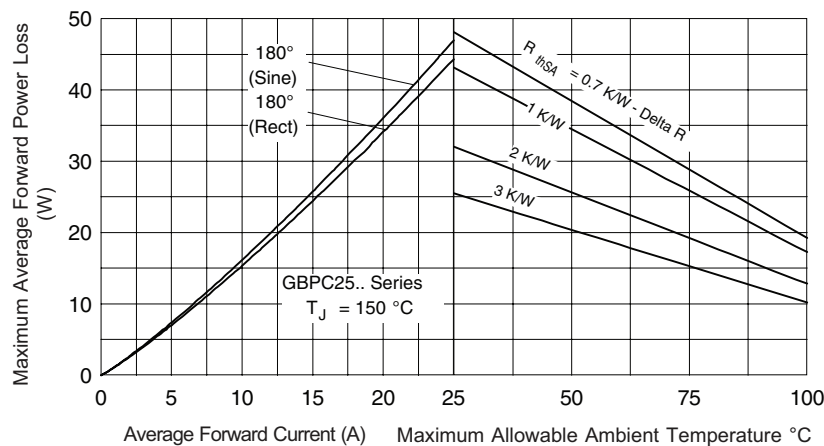


Fig. 3 - Total Power Loss Characteristics

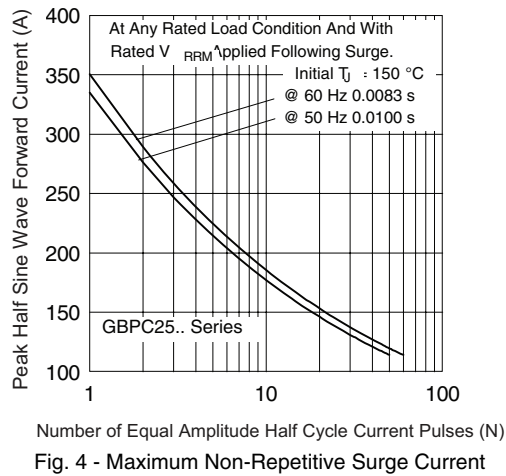


Fig. 4 - Maximum Non-Repetitive Surge Current

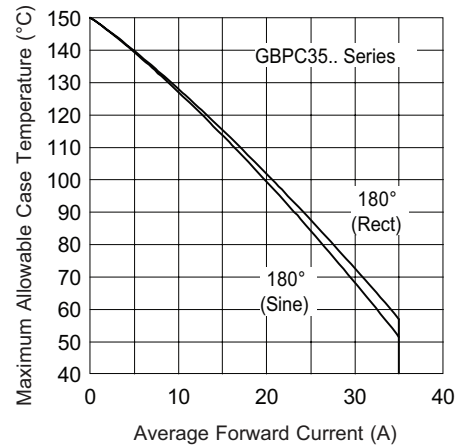


Fig. 6 - Current Ratings Characteristics

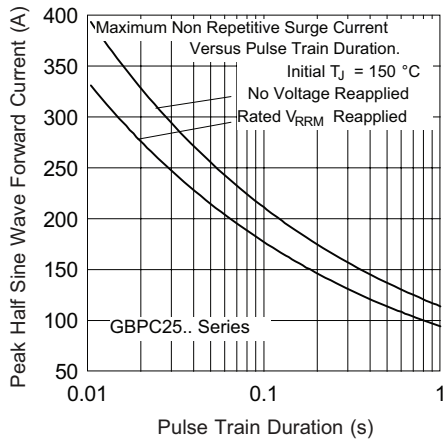


Fig. 5 - Maximum Non-Repetitive Surge Current

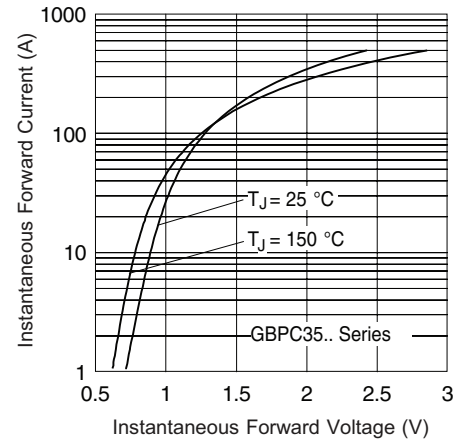


Fig. 7 - Forward Voltage Drop Characteristics

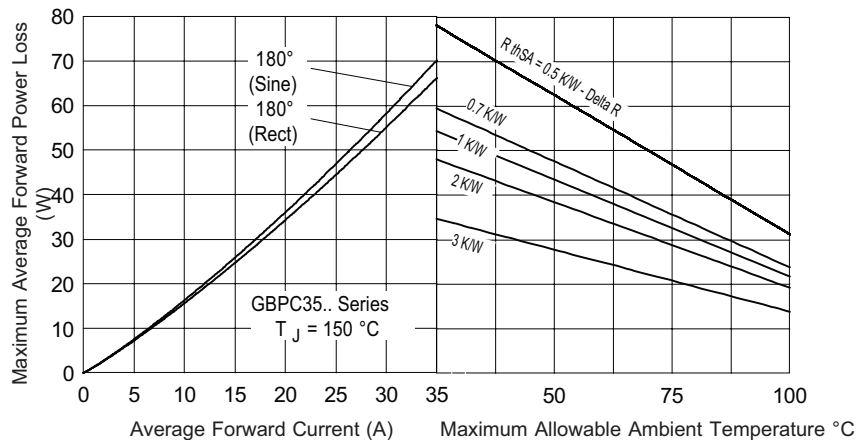


Fig. 8 - Total Power Loss Characteristics

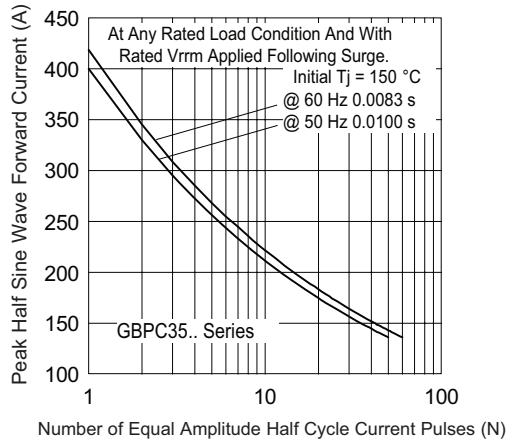


Fig. 9 - Maximum Non-Repetitive Surge Current

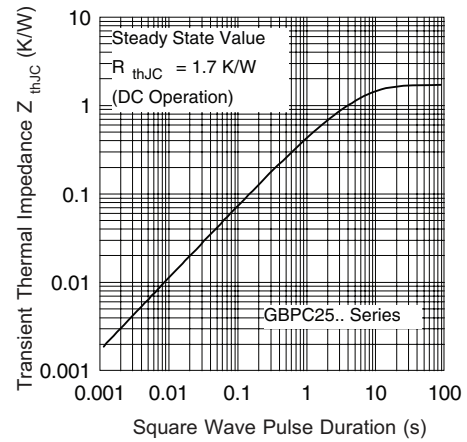


Fig. 11 - Thermal Impedance  $Z_{thJC}$  Characteristic

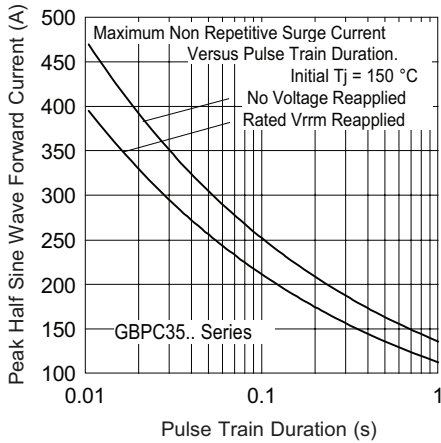


Fig. 10 - Maximum Non-Repetitive Surge Current

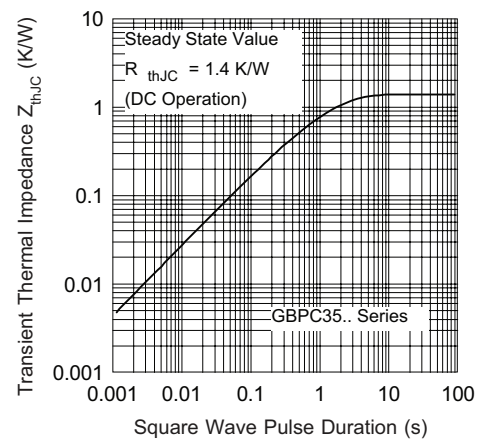


Fig. 12 - Thermal Impedance  $Z_{thJC}$  Characteristic

### ORDERING INFORMATION TABLE

Device code

|      |    |    |   |
|------|----|----|---|
| GBPC | 35 | 12 | A |
| 1    | 2  | 3  | 4 |

**1** - Circuit configuration:  
Single phase bridge coding

**2** - Current rating code

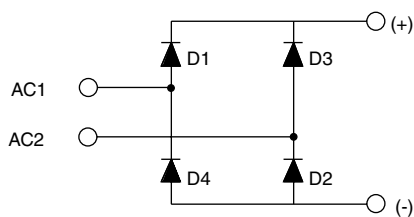
**3** - Voltage code  $\times 100 = V_{RRM}$

**4** - Diode bridge rectifier:

- A = Standard fast-on terminal
- W = Wire lead

25 = 25 A (average)  
35 = 35 A (average)

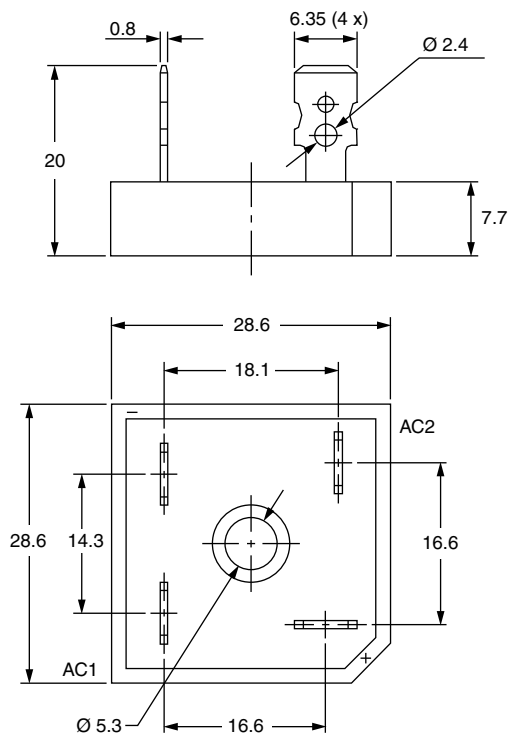
## CIRCUIT CONFIGURATION



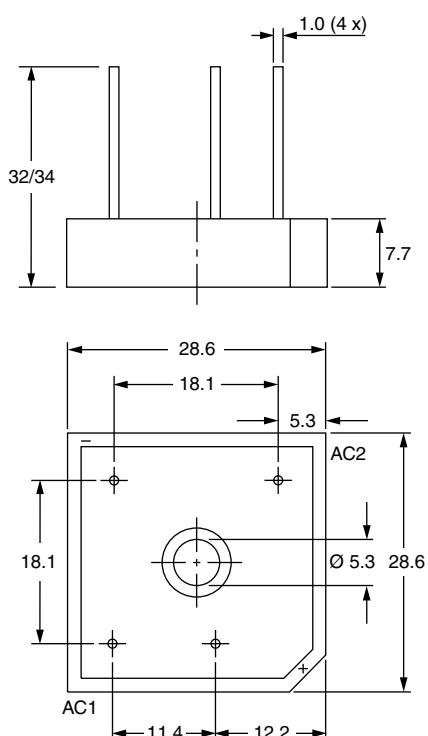
| LINKS TO RELATED DOCUMENTS |                                                                               |
|----------------------------|-------------------------------------------------------------------------------|
| Dimensions                 | <a href="http://www.vishay.com/doc?95331">http://www.vishay.com/doc?95331</a> |

## GBPC

### DIMENSIONS FOR GBPC...A in millimeters



### DIMENSIONS FOR GBPC...W in millimeters





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**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

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