

# Single Phase Bridge Rectifier, 25 A, 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 °C to 275 °C
- Wire lead version available
- UL E300359 approved 
- Designed and qualified for industrial and consumer level
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?999912](http://www.vishay.com/doc?999912)


RoHS  
COMPLIANT

## PRIMARY CHARACTERISTICS

|                       |                     |
|-----------------------|---------------------|
| $I_O$                 | 25 A, 35 A          |
| $V_{RRM}$             | 200 V to 1200 V     |
| Package               | GBPC...A, GBPC...W  |
| Circuit configuration | Single phase bridge |

## 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 | VALUES<br>GBPC25 | VALUES<br>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

### VOLTAGE RATINGS

| TYPE NUMBER                                                                                | VOLTAGE<br>CODE | $V_{RRM}$ , MAXIMUM<br>REPETITIVE PEAK AC<br>REVERSE VOLTAGE<br>$T_J = T_J$ MAXIMUM<br>V | $V_{RSM}$ , MAXIMUM<br>NON-REPETITIVE PEAK AC<br>REVERSE VOLTAGE<br>$T_J = T_J$ MAXIMUM<br>V | $I_{RRM}$ MAXIMUM<br>AT RATED $V_{RRM}$<br>$T_J = T_J$ MAXIMUM<br>mA | $I_{RRM}$ MAXIMUM<br>DC REVERSE<br>CURRENT<br>AT $T_J = 125$ °C<br>μA |
|--------------------------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------|
| VS-GBPC25..A <sup>(1)</sup><br>VS-GBPC35..A <sup>(1)</sup><br>VS-GBPC25..W<br>VS-GBPC35..W | 02              | 200                                                                                      | 275                                                                                          | 2                                                                    | 500                                                                   |
|                                                                                            | 04              | 400                                                                                      | 500                                                                                          |                                                                      |                                                                       |
|                                                                                            | 06              | 600                                                                                      | 725                                                                                          |                                                                      |                                                                       |
|                                                                                            | 08              | 800                                                                                      | 900                                                                                          |                                                                      |                                                                       |
|                                                                                            | 10              | 1000                                                                                     | 1100                                                                                         |                                                                      |                                                                       |
|                                                                                            | 12              | 1200                                                                                     | 1300                                                                                         |                                                                      |                                                                       |

### Note

<sup>(1)</sup> See Ordering Information table at the end of datasheet


**FORWARD CONDUCTION CONDUCTION**

| PARAMETER                                                 | SYMBOL              | TEST CONDITIONS                                                                                                                        |                                     |                                                 | VALUES<br>GBPC25 | VALUES<br>GBPC35 | UNITS               |  |
|-----------------------------------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------|------------------|------------------|---------------------|--|
| Maximum DC output current<br>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<br>non-repetitive forward current | I <sub>FSM</sub>    | t = 10 ms                                                                                                                              | No voltage<br>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><br>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<br>reapplied             |                                                 | 790              | 1130             | A <sup>2</sup> s    |  |
|                                                           |                     | t = 8.3 ms                                                                                                                             |                                     |                                                 | 725              | 1030             |                     |  |
|                                                           |                     | t = 10 ms                                                                                                                              | 100 % V <sub>RRM</sub><br>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              | 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                            | VALUES<br>GBPC25 | VALUES<br>GBPC35 | UNITS               |
|------------------------------------------------------------|-----------------------------------|--------------------------------------------|------------------|------------------|---------------------|
| Junction and storage temperature range                     | T <sub>J</sub> , T <sub>Stg</sub> |                                            | -55 to +150      |                  | °C                  |
| Maximum thermal resistance,<br>junction to case per bridge | R <sub>thJC</sub>                 | DC operation                               | 1.7              | 1.4              | K/W                 |
| Maximum thermal resistance,<br>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) |

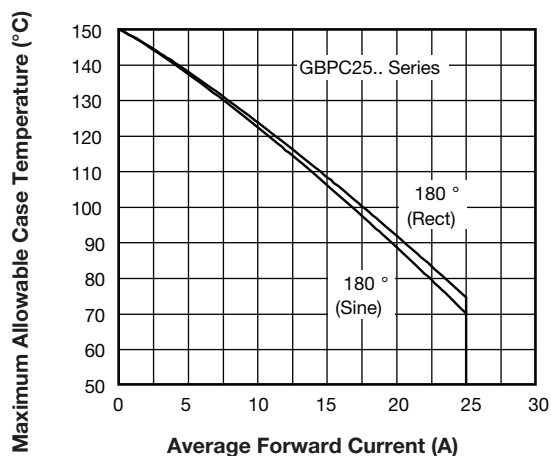


Fig. 1 - Current Ratings Characteristics

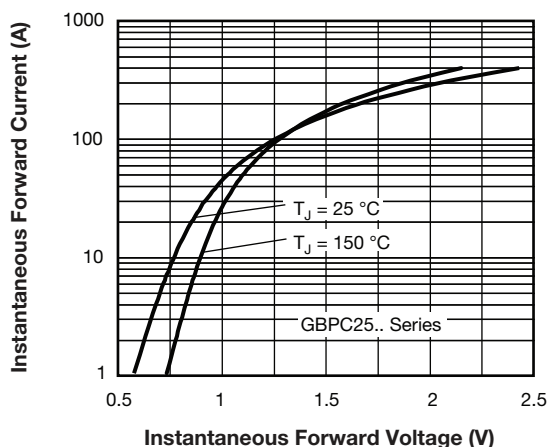


Fig. 2 - Forward Voltage Drop Characteristics

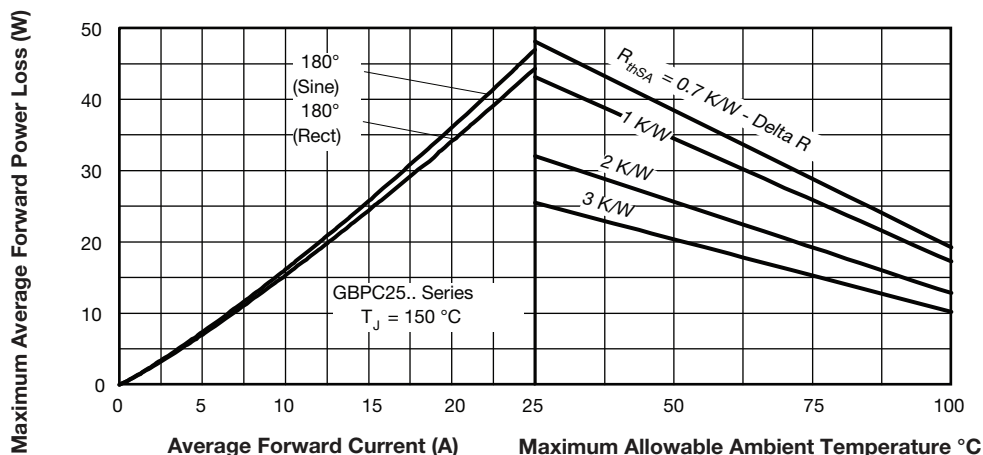


Fig. 3 - Total Power Loss Characteristics

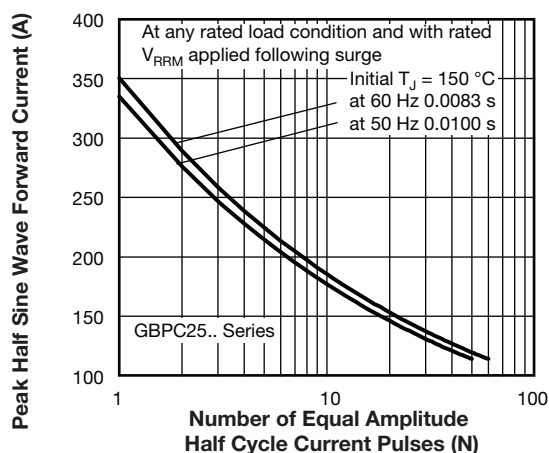


Fig. 4 - Maximum Non-Repetitive Surge Current

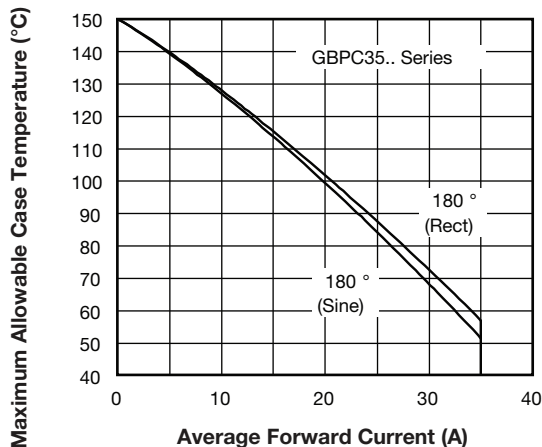


Fig. 6 - Current Ratings Characteristics

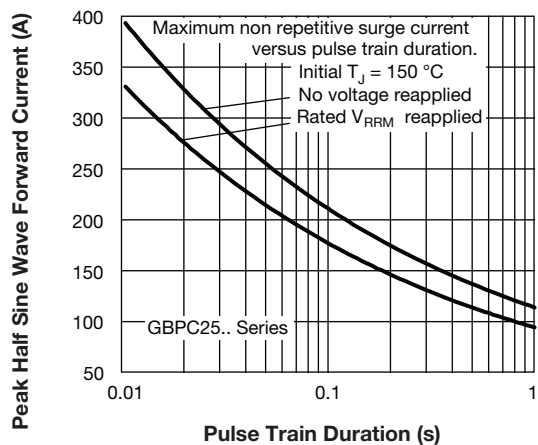


Fig. 5 - Maximum Non-Repetitive Surge Current

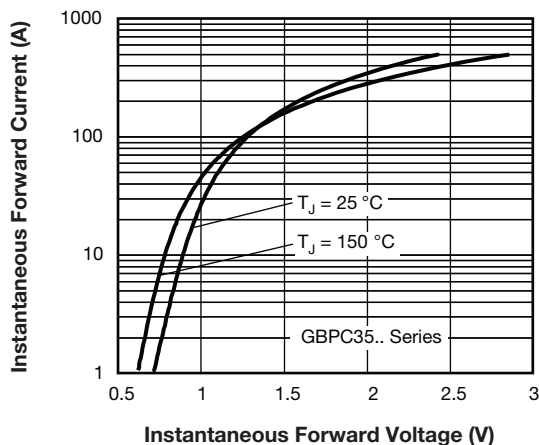


Fig. 7 - Forward Voltage Drop Characteristics

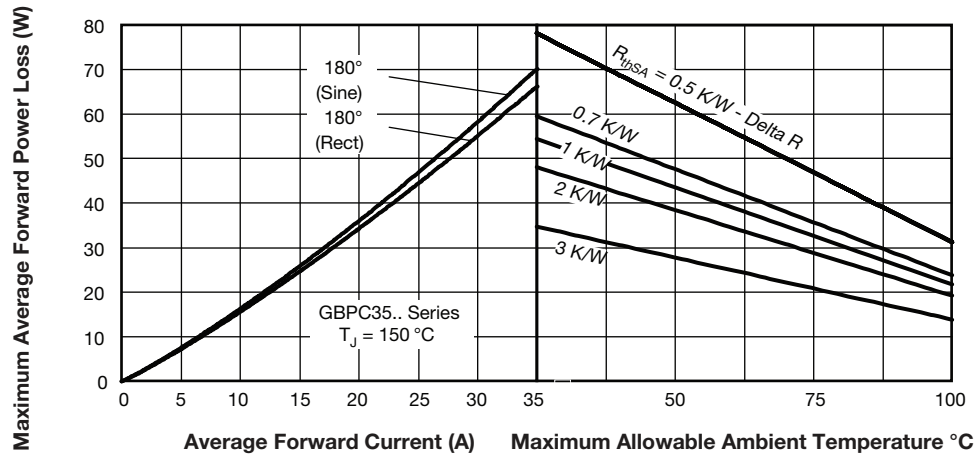


Fig. 8 - Total Power Loss Characteristics

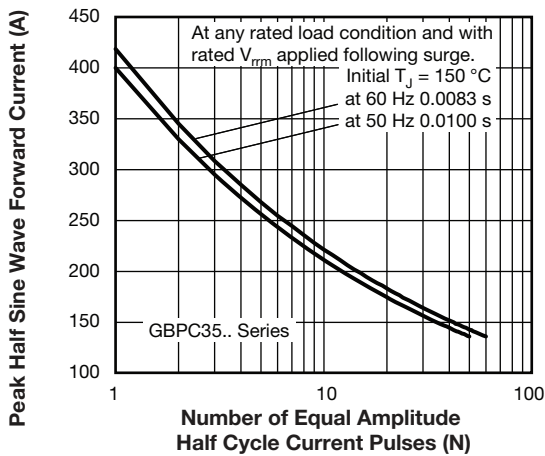


Fig. 9 - Maximum Non-Repetitive Surge Current

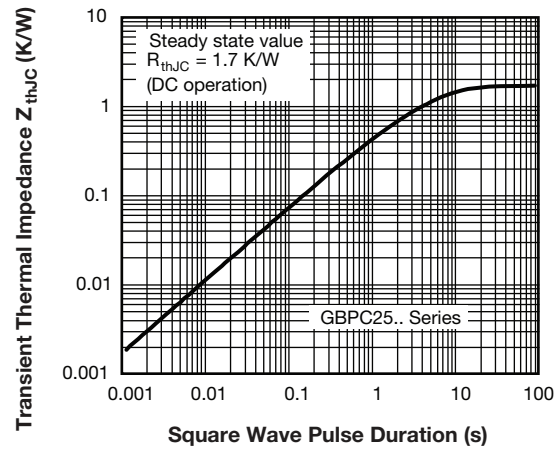


Fig. 11 - Thermal Impedance  $Z_{thJC}$  Characteristic

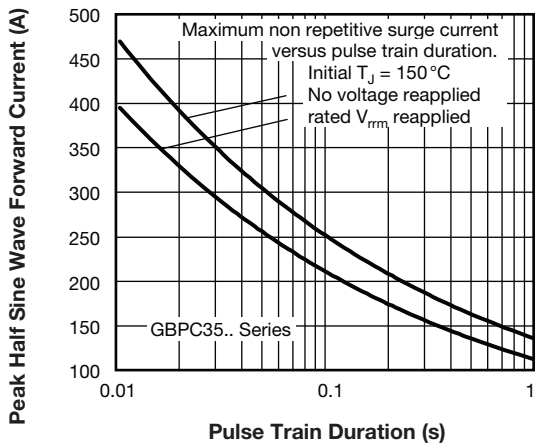


Fig. 10 - Maximum Non-Repetitive Surge Current

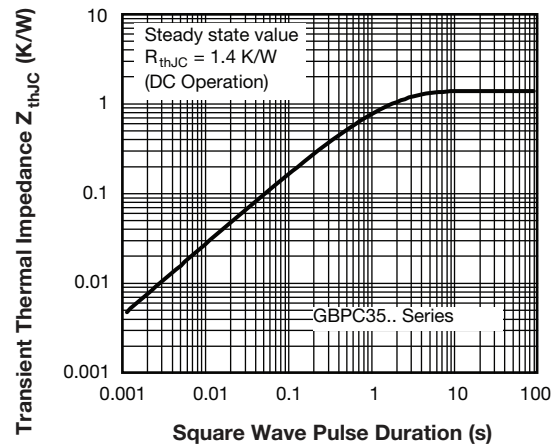


Fig. 12 - Thermal Impedance  $Z_{thJC}$  Characteristic

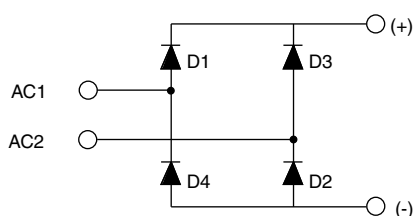


## ORDERING INFORMATION TABLE

| Device code | VS-                                                  | GBPC | 35 | 12 | A |
|-------------|------------------------------------------------------|------|----|----|---|
|             | 1                                                    | 2    | 3  | 4  | 5 |
| 1           | Vishay Semiconductors product                        |      |    |    |   |
| 2           | Circuit configuration:<br>Single phase bridge coding |      |    |    |   |
| 3           | Current rating code                                  |      |    |    |   |
| 4           | Voltage code x 100 = $V_{RRM}$                       |      |    |    |   |
| 5           | Diode bridge rectifier:                              |      |    |    |   |
|             | • A = standard fast-on terminal                      |      |    |    |   |
|             | • W = wire lead                                      |      |    |    |   |

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

## CIRCUIT CONFIGURATION



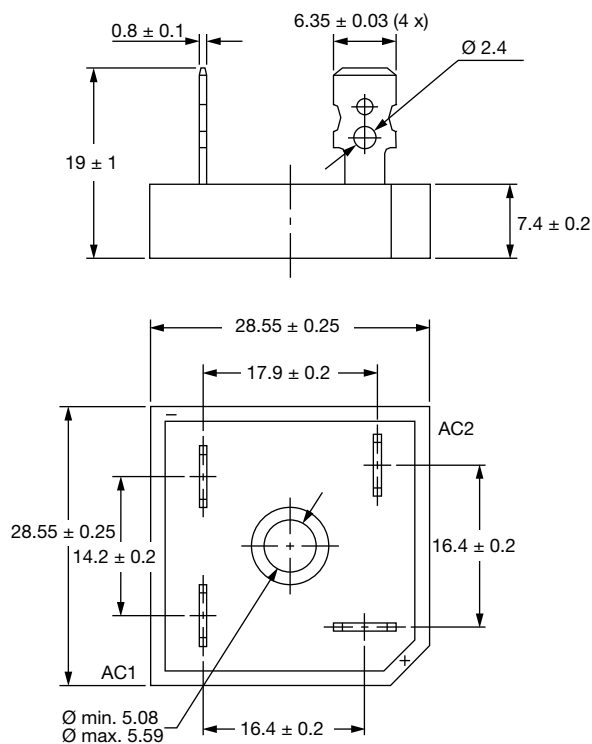
### LINKS TO RELATED DOCUMENTS

Dimensions

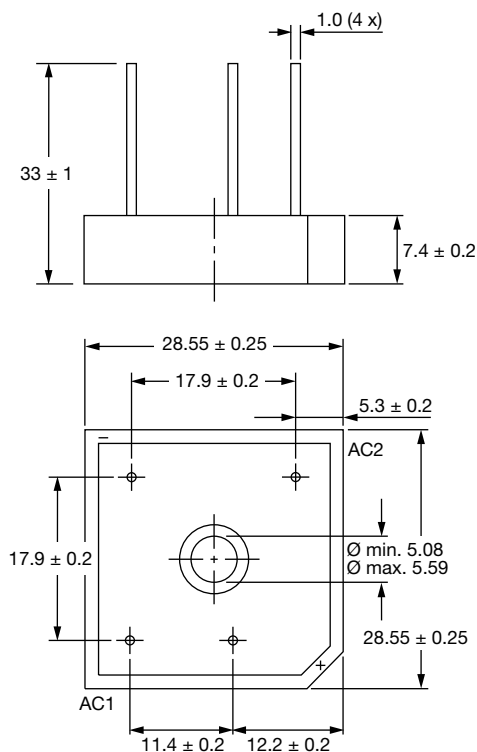
[www.vishay.com/doc?95331](http://www.vishay.com/doc?95331)

**GBPC**

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



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





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