

### SINGLE PHASE BRIDGE

### Power Modules

#### Features

- Universal, 3 way terminals:  
push-on, wrap around or solder
- High thermal conductivity package,  
electrically insulated case
- Polarity symbols are moulded on  
body of the plastic box
- Center hole fixing
- Glass passivated diode chips
- Excellent power/ volume ratio
- Nickel plated terminals suitable for High Temperature  
soldering at 250 - 260°C  
max. time 8 - 10 seconds
- Fast-On and Wire lead version available
- UL E 62320 approved

25 A  
35 A

#### Description

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

| Parameters       | GBPC25      | GBPC35 | Units            |
|------------------|-------------|--------|------------------|
| $I_O$            | 25          | 35     | A                |
| @ $T_C$          | 60          | 55     | °C               |
| $I_{FSM}$ @ 50Hz | 400         | 475    | A                |
| @ 60Hz           | 420         | 500    | A                |
| $I^2t$ @ 50Hz    | 790         | 1130   | A <sup>2</sup> s |
| @ 60Hz           | 725         | 1030   | A <sup>2</sup> s |
| $V_{RRM}$ range  | 200 to 1200 |        | V                |
| $T_J$            | -55 to 150  |        | °C               |



GBPC...A



GBPC...W

## GBPC.. Series

Bulletin I27505 rev. G 10/03

International  
IR Rectifier

### ELECTRICAL SPECIFICATIONS

#### Voltage Ratings

| Type number                         | Voltage Code | $V_{RRM}$ , max repetitive peak AC rev. voltage<br>$T_J = T_{Jmax}$ ,<br>V | $V_{RSM}$ , max non-repetitive peak AC rev. voltage<br>$T_J = T_{Jmax}$ ,<br>V | $I_{RRM}$ max.<br>@ rated $V_{RRM}$<br>$T_J = T_{Jmax}$ ,<br>mA | $I_{RRM}$ max.<br>D.C. rev. curr.<br>@ $T = 125^{\circ}C$<br>( $\mu A$ ) |
|-------------------------------------|--------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------|
| GBPC25/35..A<br>GBPC25/35..W<br>(*) | 02           | 200                                                                        | 275                                                                            | 2                                                               | 500                                                                      |
|                                     | 04           | 400                                                                        | 500                                                                            | 2                                                               | 500                                                                      |
|                                     | 06           | 600                                                                        | 725                                                                            | 2                                                               | 500                                                                      |
|                                     | 08           | 800                                                                        | 900                                                                            | 2                                                               | 500                                                                      |
|                                     | 10           | 1000                                                                       | 1100                                                                           | 2                                                               | 500                                                                      |
|                                     | 12           | 1200                                                                       | 1300                                                                           | 2                                                               | 500                                                                      |

(\*) please see Ordering Information Table - page 3

#### Forward Conduction

| Parameters                                                       | GBPC25 | GBPC35 | Units          | Conditions                                                                                      |
|------------------------------------------------------------------|--------|--------|----------------|-------------------------------------------------------------------------------------------------|
| $I_O$ Maximum DC output current                                  | 25     | 35     | A              | Resistive or inductive load                                                                     |
|                                                                  | 20     | 28     | A              | Capacitive load                                                                                 |
|                                                                  | 60     | 55     | $^{\circ}C$    |                                                                                                 |
| $I_{FSM}$ Maximum peak, one-cycle non-repetitive forward current | 400    | 475    | A              | $t = 10ms$ No voltage reinitial $T_J = T_{Jmax}$ .                                              |
|                                                                  | 420    | 500    |                | $t = 8.3ms$ reapplied                                                                           |
|                                                                  | 335    | 400    |                | $t = 10ms$ 100% $V_{RRM}$                                                                       |
|                                                                  | 350    | 420    |                | $t = 8.3ms$ reapplied                                                                           |
| $I^2t$ Maximum $I^2t$ for fusing                                 | 790    | 1130   | $A^2s$         | $t = 10ms$ No voltage                                                                           |
|                                                                  | 725    | 1030   |                | $t = 8.3ms$ reapplied                                                                           |
|                                                                  | 560    | 800    |                | $t = 10ms$ 100% $V_{RRM}$                                                                       |
|                                                                  | 512    | 730    |                | $t = 8.3ms$ reapplied                                                                           |
| $I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing                   | 7.9    | 11.3   | $KA^2\sqrt{s}$ | $I^2t$ for time $t_x = I^2\sqrt{t_x}/\sqrt{t_x}$ ;<br>$0.1 \leq t_x \leq 10ms$ , $V_{RRM} = 0V$ |
| $V_{F(TO)1}$ Low-level of threshold voltage                      | 0.76   | 0.77   | V              | $(16.7\% \times \pi \times I_{F(AV)}) < I < \pi \times I_{F(AV)}$ , @ $T_{Jmax}$ .              |
| $V_{F(TO)2}$ High-level of threshold voltage                     | 0.89   | 0.92   |                | $(I > \pi \times I_{F(AV)})$ , @ $T_{Jmax}$ .                                                   |
| $r_{t1}$ Low-level forward slope resistance                      | 8.2    | 4.852  | $m\Omega$      | $(16.7\% \times \pi \times I_{F(AV)}) < I < \pi \times I_{F(AV)}$ , @ $T_{Jmax}$ .              |
| $r_{t2}$ High-level forward slope resistance                     | 6.8    | 3.867  |                | $(I > \pi \times I_{F(AV)})$ , @ $T_{Jmax}$ .                                                   |
| $V_{FM}$ Maximum forward voltage drop                            | 1.1    | 1.1    | V              | $T_J = 25^{\circ}C$ , $I_{FM} = I_{Favg}(arm)$                                                  |
| $I_{RRM}$ Max. DC reverse current                                | 5.0    | 5.0    | $\mu A$        | $T_J = 25^{\circ}C$ , per diode at $V_{RRM}$                                                    |
| $V_{INS}$ RMS isolation voltage base plate                       | 2700   | 2700   | V              | $f = 50 Hz$ , $t = 1s$                                                                          |

### Thermal and Mechanical Specifications

| Parameters                                        | GBPC25     | GBPC35 | Units | Conditions                                 |
|---------------------------------------------------|------------|--------|-------|--------------------------------------------|
| $T_J$ Junction temperature range                  | -55 to 150 |        | °C    |                                            |
| $T_{stg}$ Storage temperature range               | -55 to 150 |        | °C    |                                            |
| $R_{thJC}$ Max. thermal resistance junct. to case | 1.7        | 1.4    | K/W   | DC operation per bridge                    |
| $R_{thCS}$ Max. thermal resist., case to heatsink | 0.2        |        | K/W   | Mounting surface, smooth, flat and greased |
| wt Approximate weight                             | 16         |        | g     |                                            |
| T Mounting Torque $\pm 10\%$                      | 2.0        |        | Nm    | Bridge to heatsink                         |

### Ordering Information Table

| Device Code |                                                                                                                    |           |          |
|-------------|--------------------------------------------------------------------------------------------------------------------|-----------|----------|
| <b>GBPC</b> | <b>35</b>                                                                                                          | <b>12</b> | <b>A</b> |
| 1           | 2                                                                                                                  | 3         | 4        |
| <b>1</b>    | Circuit configuration:<br>Single phase bridge coding                                                               |           |          |
| <b>2</b>    | Current rating code: <span style="border: 1px solid black; padding: 2px;">25 = 25A (Avg)<br/>35 = 35A (Avg)</span> |           |          |
| <b>3</b>    | Voltage Code: code x 100 = $V_{RRM}$                                                                               |           |          |
| <b>4</b>    | Diode bridge rectifier:<br>A = Standard Fast-on Terminal<br>W = Wire Lead                                          |           |          |

### Outline Table

| GBPC...A                          | GBPC...W |
|-----------------------------------|----------|
|                                   |          |
|                                   |          |
| All dimensions are in millimeters |          |

## GBPC.. Series

Bulletin I27505 rev. G 10/03

International  
**IR** Rectifier

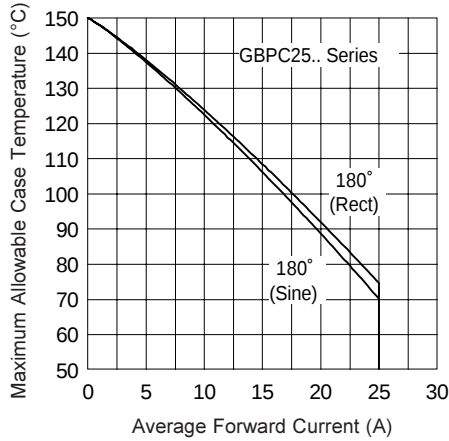


Fig. 1 - Current Ratings Characteristics

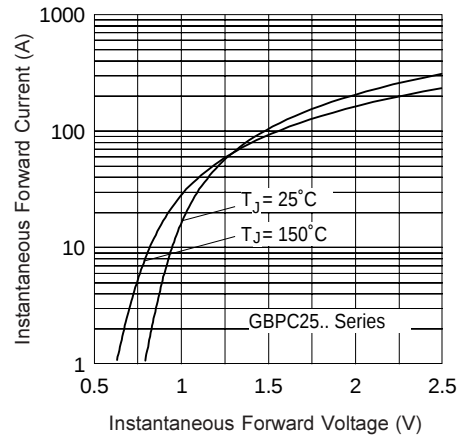


Fig. 2 - Forward Voltage Drop Characteristics

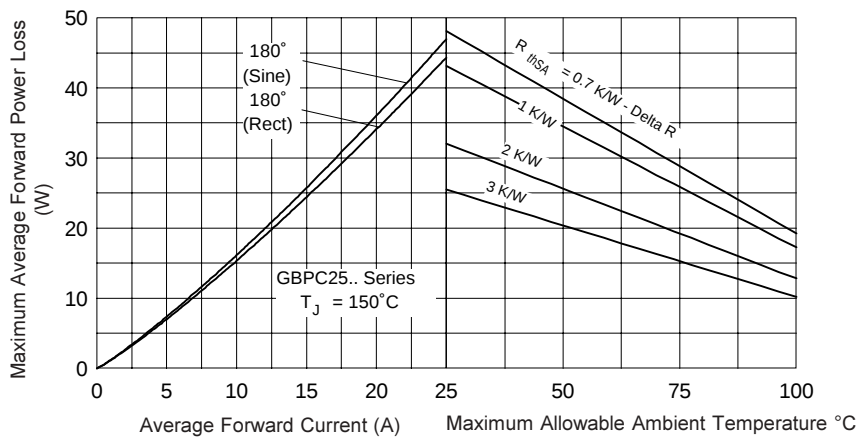


Fig. 3 - Total Power Loss Characteristics

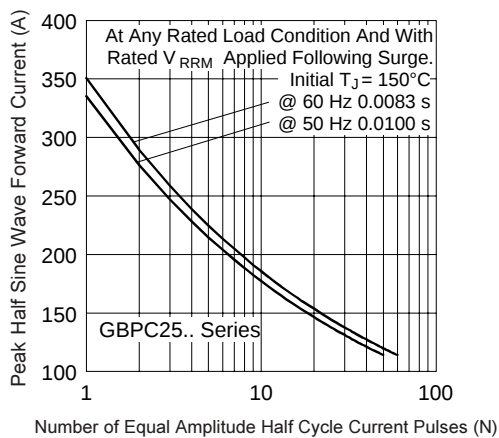


Fig. 4 - Maximum Non-Repetitive Surge Current

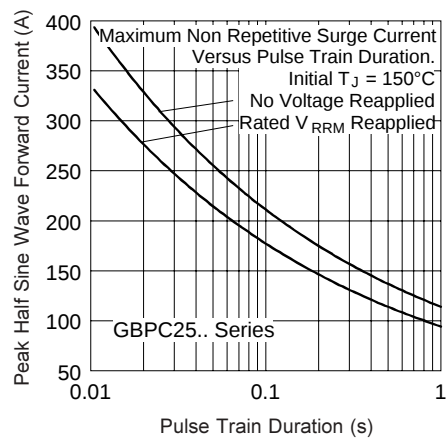


Fig. 5 - Maximum Non-Repetitive Surge Current

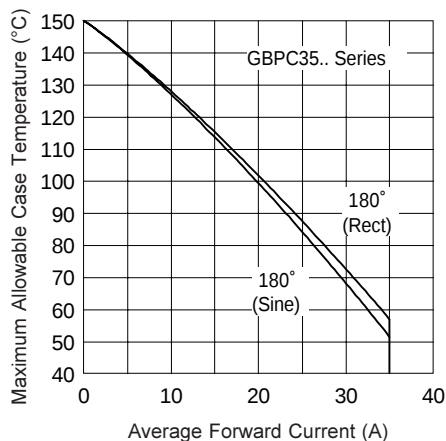


Fig. 6 - Current Ratings Characteristics

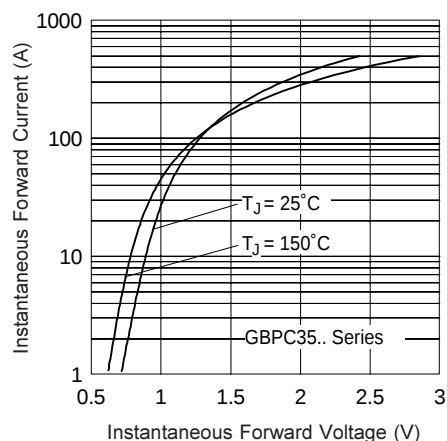


Fig. 7 - Forward Voltage Drop Characteristics

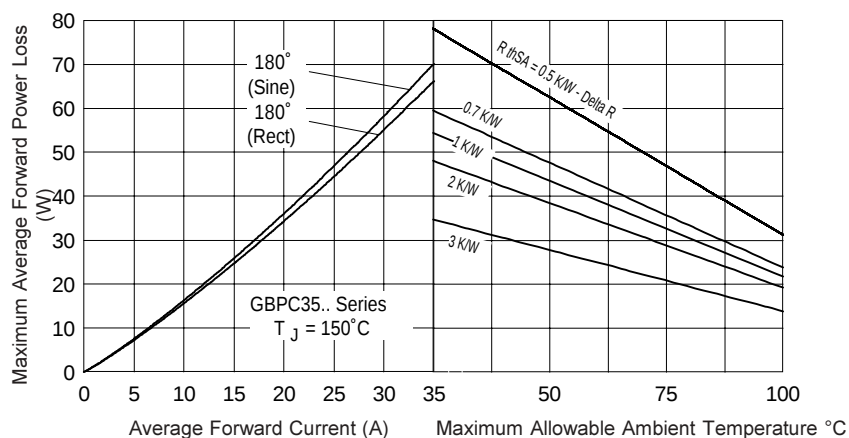


Fig. 8 - Total Power Loss Characteristics

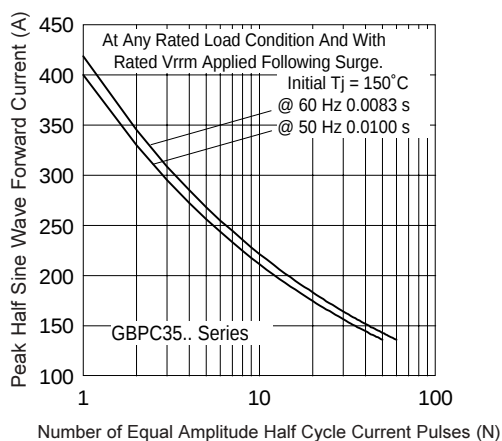


Fig. 9 - Maximum Non-Repetitive Surge Current

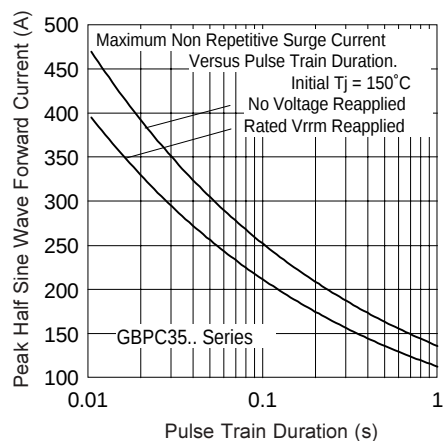


Fig. 10 - Maximum Non-Repetitive Surge Current

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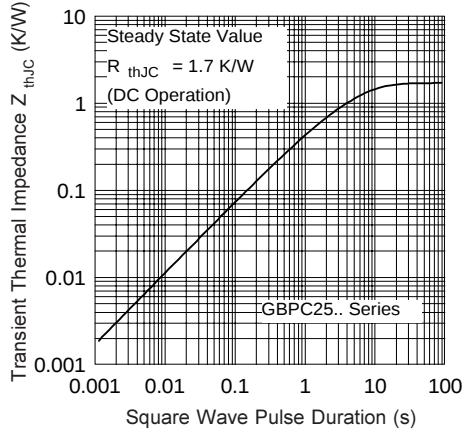


Fig. 11 - Thermal Impedance  $Z_{thJC}$  Characteristic

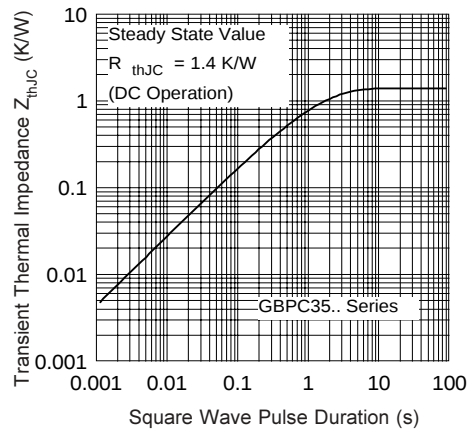


Fig. 12 - Thermal Impedance  $Z_{thJC}$  Characteristic

Data and specifications subject to change without notice.  
This product has been designed and qualified for Industrial and Consumer Level.  
Qualification Standards can be found on IR's Web site.

International  
**IR** Rectifier

**IR WORLD HEADQUARTERS:** 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105  
TAC Fax: (310) 252-7309  
Visit us at [www.irf.com](http://www.irf.com) for sales contact information. 03/03