

## 4A, 50V - 1000V Glass Passivated Single-Phase Bridge Rectifier

### FEATURES

- Ideal for printed circuit board
- High case dielectric strength of 1500 V<sub>RMS</sub>
- High surge current capability
- UL Recognized File # E-326243
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

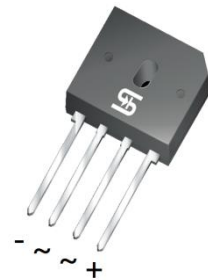
### APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- TV
- Monitor

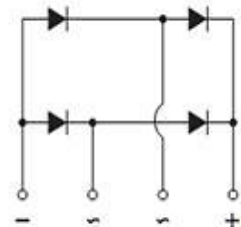
### MECHANICAL DATA

- Case: GBU
- Molding compound meets UL 94V-0 flammability rating
- Packing code with suffix "G" means green compound (halogen-free)
- Part no. with suffix "H" means AEC-Q101 qualified
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Polarity: As marked
- Weight: 4 g (approximately)

| KEY PARAMETERS |           |      |
|----------------|-----------|------|
| PARAMETER      | VALUE     | UNIT |
| $I_{F(AV)}$    | 4         | A    |
| $V_{RRM}$      | 50 - 1000 | V    |
| $I_{FSM}$      | 150       | A    |
| $T_{J\ MAX}$   | 150       | °C   |
| Package        | GBU       |      |
| Configuration  | Quad      |      |



GBU



### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| PARAMETER                                                                                      | SYMBOL                  | GBU 401 | GBU 402 | GBU 403 | GBU 404 | GBU 405 | GBU 406 | GBU 407 | UNIT |
|------------------------------------------------------------------------------------------------|-------------------------|---------|---------|---------|---------|---------|---------|---------|------|
| Marking code on the device                                                                     |                         | GBU 401 | GBU 402 | GBU 403 | GBU 404 | GBU 405 | GBU 406 | GBU 407 |      |
| Repetitive peak reverse voltage                                                                | $V_{RRM}$               | 50      | 100     | 200     | 400     | 600     | 800     | 1000    | V    |
| Reverse voltage, total rms value                                                               | $V_{R(RMS)}$            | 35      | 70      | 140     | 280     | 420     | 560     | 700     | V    |
| Maximum DC blocking voltage                                                                    | $V_{DC}$                | 50      | 100     | 200     | 400     | 600     | 800     | 1000    | V    |
| Forward current                                                                                | $I_{F(AV)}$             | 4       |         |         |         |         |         |         | A    |
| Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode) | $T_J=25^\circ\text{C}$  | 150     |         |         |         |         |         |         | A    |
|                                                                                                | $T_J=125^\circ\text{C}$ |         |         |         |         |         |         |         |      |
|                                                                                                |                         | 80      |         |         |         |         |         |         |      |

| ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25°C unless otherwise noted)                       |                       |                  |              |         |         |         |         |         |         |                  |
|-----------------------------------------------------------------------------------------------|-----------------------|------------------|--------------|---------|---------|---------|---------|---------|---------|------------------|
| PARAMETER                                                                                     |                       | SYMBOL           | GBU 401      | GBU 402 | GBU 403 | GBU 404 | GBU 405 | GBU 406 | GBU 407 | UNIT             |
| Surge peak forward current, 1.0 ms single half sine-wave superimposed on rated load per diode | T <sub>J</sub> =25°C  | I <sub>FSM</sub> | 280          |         |         |         |         |         |         | A                |
|                                                                                               | T <sub>J</sub> =125°C |                  | 260          |         |         |         |         |         |         |                  |
| Rating of fusing ( t<8.3ms)                                                                   |                       | I <sup>2</sup> t | 93           |         |         |         |         |         |         | A <sup>2</sup> s |
| Junction temperature                                                                          |                       | T <sub>J</sub>   | - 55 to +150 |         |         |         |         |         |         | °C               |
| Storage temperature                                                                           |                       | T <sub>STG</sub> | - 55 to +150 |         |         |         |         |         |         | °C               |

| <b>THERMAL PERFORMANCE</b>             |                 |       |                    |
|----------------------------------------|-----------------|-------|--------------------|
| PARAMETER                              | SYMBOL          | LIMIT | UNIT               |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 20    | $^\circ\text{C/W}$ |
| Junction-to-case thermal resistance    | $R_{\theta JC}$ | 4     | $^\circ\text{C/W}$ |

| <b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |                                      |                                           |        |     |     |               |
|-------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------|--------|-----|-----|---------------|
| PARAMETER                                                                           |                                      | CONDITIONS                                | SYMBOL | TYP | MAX | UNIT          |
| Forward voltage per diode <sup>(1)</sup>                                            |                                      | $I_F = 2\text{A}, T_J = 25^\circ\text{C}$ | $V_F$  | -   | 1.0 | V             |
|                                                                                     |                                      | $I_F = 4\text{A}, T_J = 25^\circ\text{C}$ |        | -   | 1.1 | V             |
| Reverse current @ rated $V_R$ per diode <sup>(2)</sup>                              |                                      | $T_J = 25^\circ\text{C}$                  | $I_R$  | -   | 5   | $\mu\text{A}$ |
|                                                                                     |                                      | $T_J = 125^\circ\text{C}$                 |        | -   | 500 | $\mu\text{A}$ |
| Junction capacitance                                                                | GBU401<br>GBU402<br>GBU403<br>GBU404 | 1 MHz, $V_R = 4.0\text{V}$                | $C_J$  | 100 | -   | pF            |
|                                                                                     | GBU405<br>GBU406<br>GBU407           |                                           |        | 45  | -   | pF            |

**Notes:**

- Pulse test with  $PW = 0.3\text{ ms}$
- Pulse test with  $PW = 30\text{ ms}$

**ORDERING INFORMATION**

| PART NO.           | PART NO.<br>SUFFIX | PACKING<br>CODE | PACKING CODE<br>SUFFIX(*) | PACKAGE | PACKING   |
|--------------------|--------------------|-----------------|---------------------------|---------|-----------|
| GBU40x<br>(Note 1) | H                  | C2              | G                         | GBU     | 20 / Tube |
|                    |                    | D2              |                           |         | 20 / Tube |
|                    |                    | X0              |                           |         | Forming   |

**Note:**

1. "x" defines voltage from 50V (GBU401) to 1000V (GBU407)

\*: Optional available

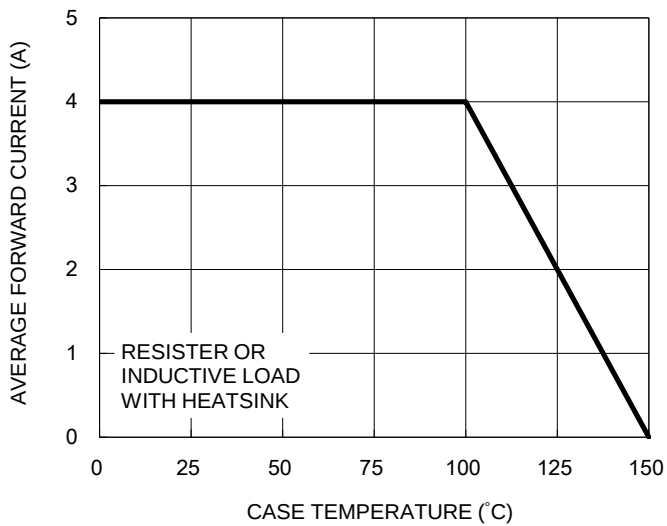
**EXAMPLE P/N**

| EXAMPLE P/N | PART NO. | PART NO.<br>SUFFIX | PACKING<br>CODE | PACKING CODE<br>SUFFIX | DESCRIPTION                          |
|-------------|----------|--------------------|-----------------|------------------------|--------------------------------------|
| GBU406HC2G  | GBU406   | H                  | C2              | G                      | AEC-Q101 qualified<br>Green compound |

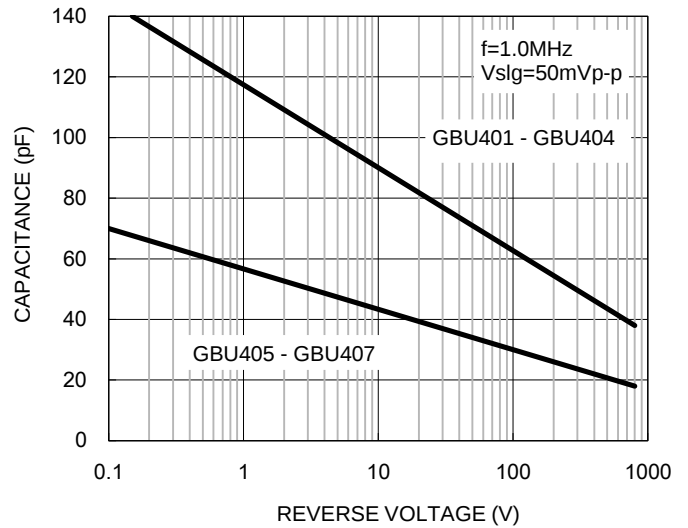
## CHARACTERISTICS CURVES

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

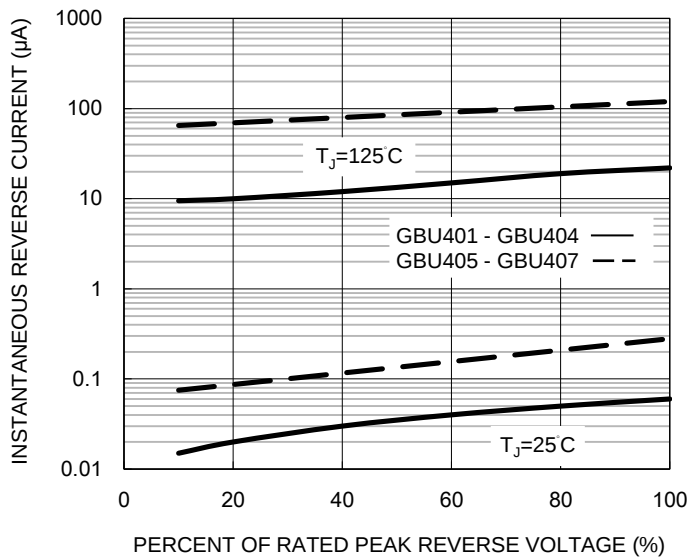
**Fig.1 Forward Current Derating Curve**



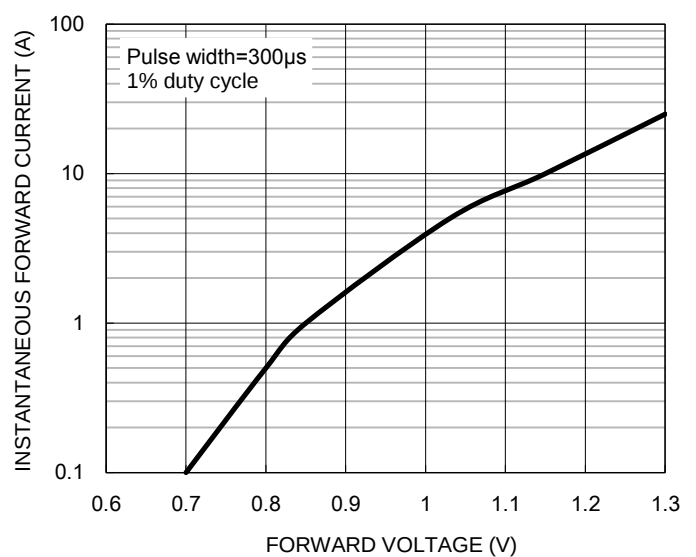
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



## CHARACTERISTICS CURVES

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**Fig.5 Maximum Non-repetitive Forward Surge Current**



## PACKAGE OUTLINE DIMENSIONS



| DIM. | Unit (mm) |       | Unit (inch) |       |
|------|-----------|-------|-------------|-------|
|      | Min       | Max   | Min         | Max   |
| A    | 21.80     | 22.30 | 0.858       | 0.878 |
| B    | 3.50      | 4.10  | 0.138       | 0.161 |
| C    | 7.40      | 7.90  | 0.291       | 0.311 |
| D    | 1.65      | 2.16  | 0.065       | 0.085 |
| E    | 2.16      | 2.54  | 0.085       | 0.100 |
| F    | 1.65      | 2.03  | 0.065       | 0.080 |
| G    | 1.52      | 2.03  | 0.060       | 0.080 |
| H    | 1.02      | 1.27  | 0.040       | 0.050 |
| I    | 4.83      | 5.33  | 0.190       | 0.210 |
| J    | 3.30      | 3.56  | 0.130       | 0.140 |
| K    | 18.30     | 18.80 | 0.720       | 0.740 |
| L    | 17.50     | 18.00 | 0.689       | 0.709 |
| M    | 1.90      | 2.16  | 0.075       | 0.085 |
| N    | 0.46      | 0.56  | 0.018       | 0.022 |

## MARKING DIAGRAM



P/N = Marking Code  
G = Green Compound  
YWW = Date Code  
F = Factory Code

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