

## DESCRIPTION and APPLICATIONS

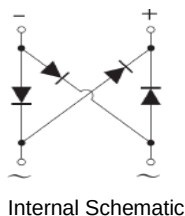
General purpose use in AC-to-DC bridge full wave rectification for Fast Charging, Switching Power Supply, USB PD, Adapter and 3-in-1 DTV Power Board, etc.

## FEATURES

- Surface mount bridge, small package;
- Ideal for printed circuit boards;
- Glass passivated chip junction;
- High forward current capability up to 5.0A;
- High surge current capability;
- High heat dissipation capability;
- Low profile package;
- Low forward voltage drop;
- Plastic package has Underwrites Laboratory Flammability Classification 94V-0;

## MECHANICAL DATA

- Case: HBS;
- Epoxy meets UL-94V-0 Flammability rating;
- Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102;
- High temperature soldering guaranteed:  
Solder Reflow 260°C, 10seconds;
- Polarity: As marked on body;
- Marking: Type number;

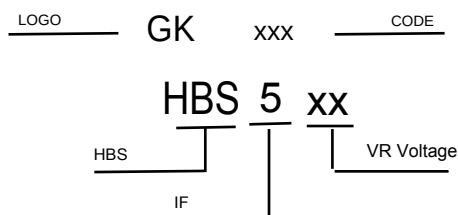
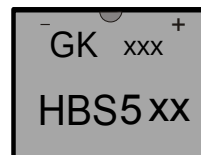


## VOLTAGE RANGE

200 to 1000 Volts

## CURRENT

5.0 Ampere



## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating 25°C ambient temperature unless otherwise specified.  
Single phase half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

| Parameter                                                                                                        | Symbols                                               | HBS502         | HBS504 | HBS506 | HBS508 | HBS510 | Units              |
|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|----------------|--------|--------|--------|--------|--------------------|
| Maximum Repetitive Peak Reverse Voltage                                                                          | $V_{RRM}$                                             | 200            | 400    | 600    | 800    | 1000   | V                  |
| Maximum RMS voltage                                                                                              | $V_{RMS}$                                             | 140            | 280    | 420    | 560    | 700    | V                  |
| Maximum DC Blocking Voltage                                                                                      | $V_{DC}$                                              | 200            | 400    | 600    | 800    | 1000   | V                  |
| Average Rectified Output Current                                                                                 | $I_O$                                                 | 5.0            |        |        |        |        | A                  |
| Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method)                | $I_{FSM}$                                             | 150            |        |        |        |        | A                  |
| $I^2t$ Rating for Fusing                                                                                         | $I^2t$                                                | 93             |        |        |        |        | A <sup>2</sup> S   |
| Maximum Forward Voltage at 1.0 A                                                                                 | $V_F$                                                 | 0.83 (typ.)    |        |        |        |        | V                  |
| Maximum Forward Voltage at 5.0 A                                                                                 | $V_F$                                                 | 1.0            |        |        |        |        | V                  |
| Maximum DC Reverse Current at Rated DC Blocking Voltage<br>@ $T_A=25^\circ\text{C}$<br>@ $T_A=125^\circ\text{C}$ | $I_R$                                                 | 5<br>100       |        |        |        |        | $\mu\text{A}$      |
| Typical Junction Capacitance ( Note1 )                                                                           | $C_j$                                                 | 38             |        |        |        |        | pF                 |
| Typical Thermal Resistance ( Note2 )                                                                             | $R_{\theta JA}$<br>$R_{\theta JC}$<br>$R_{\theta JL}$ | 69<br>12<br>12 |        |        |        |        | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range                                                                          | $T_j, T_{stg}$                                        | -55 ~ +150     |        |        |        |        | $^\circ\text{C}$   |

Note: 1. Measured at 1MHz and applied reverse voltage of 4 V D.C.

2. Mounted on glass epoxy PC board with 4×1.5"×1.5" ( 3.81×3.81 cm ) copper pad.

## RATING AND CHARACTERISTIC CURVES

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

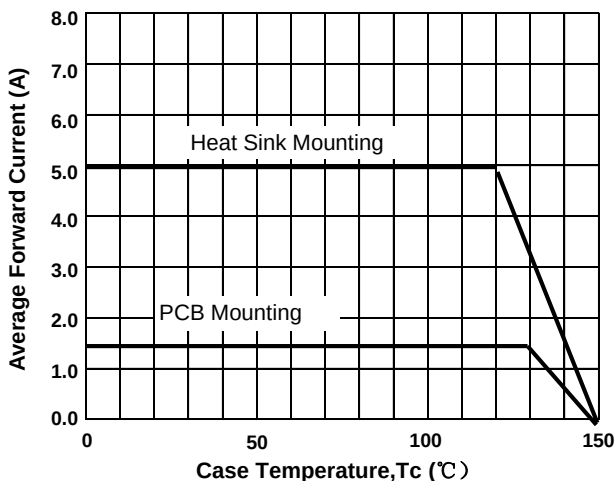


FIG.2-TYPICAL FORWARD CHARACTERISTICS PER DIODE

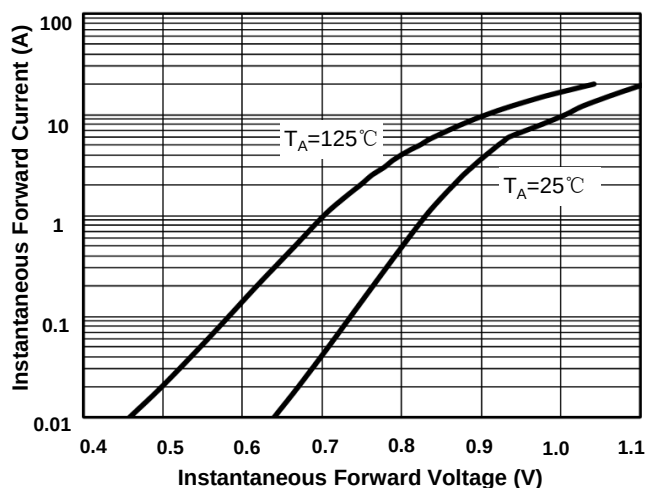


FIG.3 - TYPICAL REVERSE CHARACTERISTICS

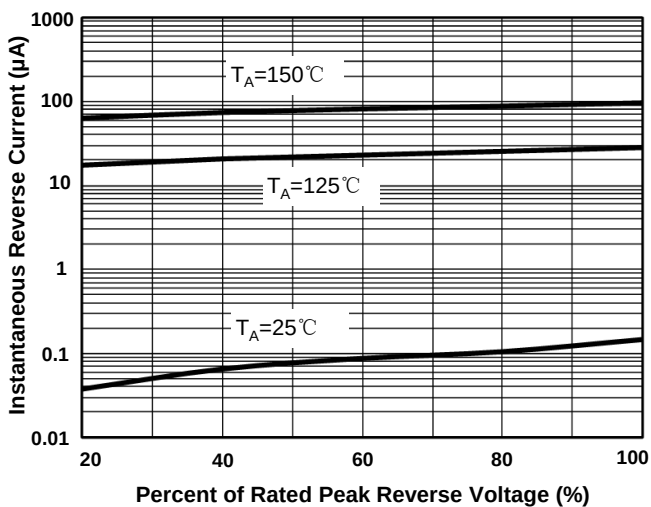


FIG.4-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT PER DIODE

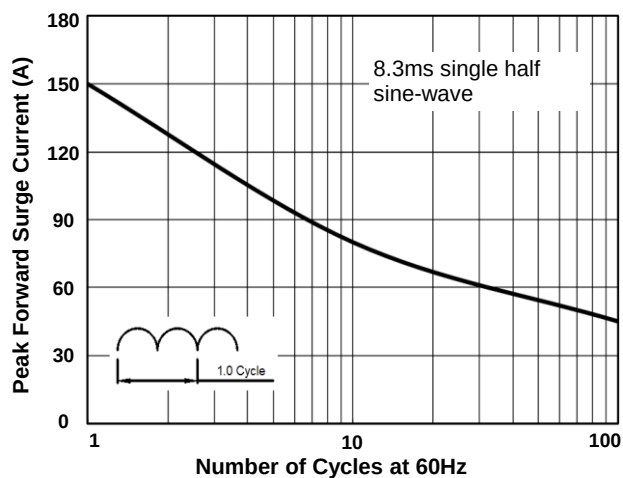
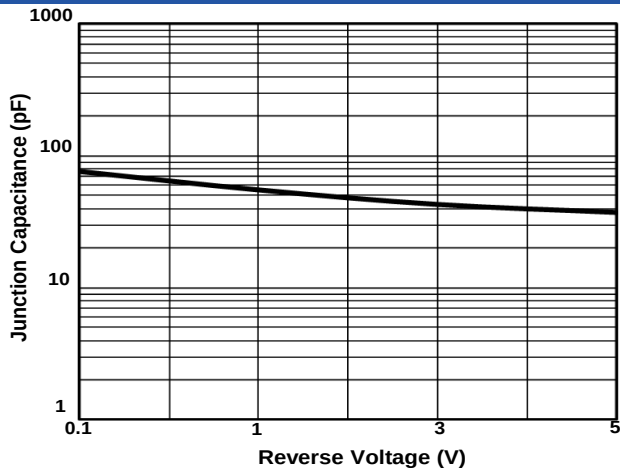
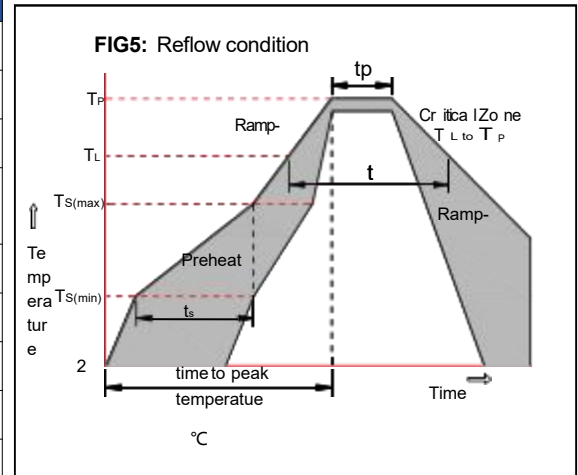


FIG.5 Typical Junction Capacitance per Diode



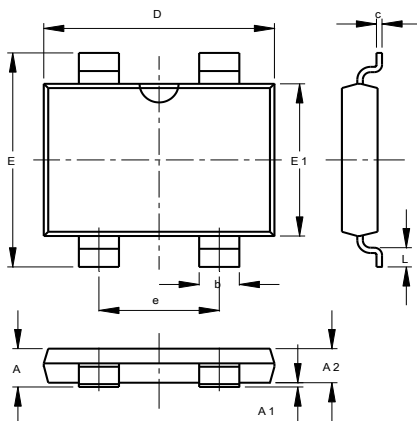
## Soldering parameters

| Reflow Condition                                        |                                   | Pb-Free assembly<br>(see as below) |
|---------------------------------------------------------|-----------------------------------|------------------------------------|
| Pre Heat                                                | -Temperature Min ( $T_{s(min)}$ ) | +150°C                             |
|                                                         | -Temperature Max( $T_{s(max)}$ )  | +200°C                             |
|                                                         | -Time (Min to Max) (ts)           | 60-180 secs.                       |
| Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak) |                                   | 3°C/sec. Max                       |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                    |                                   | 3°C/sec. Max                       |
| Reflow                                                  | -Temperature( $T_L$ )(Liquid us)  | +217°C                             |
|                                                         | -Temperature( $t_L$ )             | 60-150 secs.                       |
| Peak Temp ( $T_P$ )                                     |                                   | +260(+0/-5)°C                      |
| Time within 5°C of actual Peak Temp ( $t_p$ )           |                                   | 30 secs. Max                       |
| Ramp-down Rate                                          |                                   | 6°C/sec. Max                       |
| Time 25°C to Peak Temp ( $T_P$ )                        |                                   | 8 min. Max                         |
| Do not exceed                                           |                                   | +260°C                             |

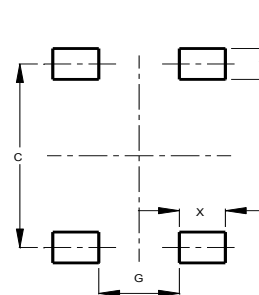


## Package Dimensions & Suggested Pad Layout

HBS

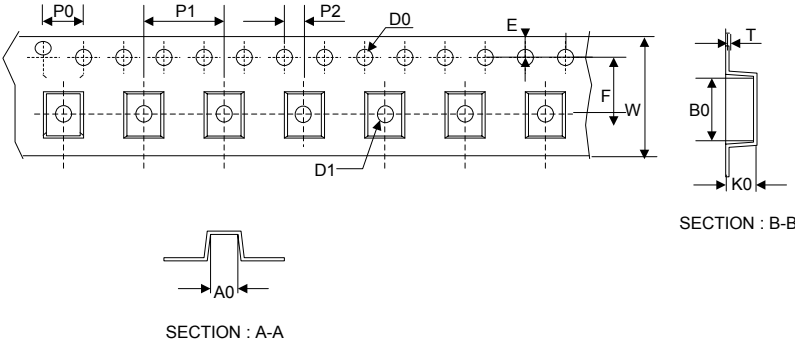
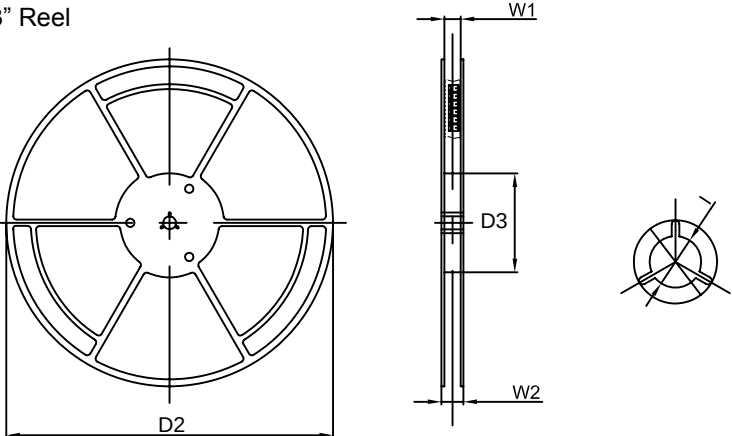


| HBS                  |       |       |     |
|----------------------|-------|-------|-----|
| Dim                  | Min   | Max   | Typ |
| A                    | 1.45  | 1.80  | —   |
| A1                   | 0.00  | 0.20  | —   |
| A2                   | 1.45  | 1.65  | —   |
| b                    | 1.70  | 1.90  | —   |
| c                    | 0.15  | 0.35  | —   |
| D                    | 10.05 | 10.35 | —   |
| E                    | 9.75  | 10.05 | —   |
| E1                   | 6.85  | 7.15  | —   |
| e                    | 5.25  | 5.60  | —   |
| L                    | 0.45  | 0.95  | —   |
| All Dimensions in mm |       |       |     |



| Dimensions | Value<br>(in mm) |
|------------|------------------|
| C          | 8.92             |
| G          | 3.50             |
| X          | 2.00             |
| Y          | 1.50             |

## Tape & reel specification

| Tape                                                                               |  | Symbol            | Dimension (mm) |
|------------------------------------------------------------------------------------|--|-------------------|----------------|
|   |  | P0                | 4.00±0.20      |
|                                                                                    |  | P1                | 12.00±0.20     |
|                                                                                    |  | P2                | 2.00±0.20      |
|                                                                                    |  | D0                | 1.55±0.15      |
|                                                                                    |  | D1                | 1.55±0.20      |
|                                                                                    |  | E                 | 1.75±0.20      |
|                                                                                    |  | F                 | 11.50±0.20     |
|                                                                                    |  | W                 | 24.00±0.20     |
|                                                                                    |  | A0                | 11.40±0.20     |
|                                                                                    |  | B0                | 11.20±0.20     |
|                                                                                    |  | K0                | 2.20±0.20      |
|                                                                                    |  | T                 | 0.30±0.10      |
|                                                                                    |  | D2                | 330.0±5.0      |
|                                                                                    |  | D3                | 100.0±4.0      |
|                                                                                    |  | W1                | 24.0±5.0       |
| 13" Reel                                                                           |  | W2                | 27.0±5.0       |
|  |  | I                 | 13.0±2.0       |
|                                                                                    |  | Quantity: 2500PCS |                |