

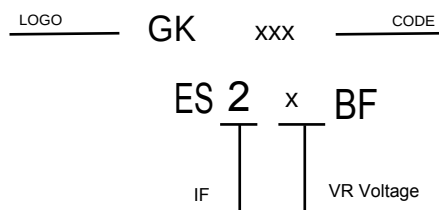
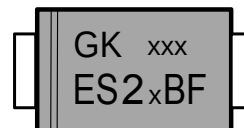
## FEATURES

- \* Ideal for surface mount applications
- \* Easy pick and place
- \* Built-in strain relief
- \* Fast switching speed

## MECHANICAL DATA

- \* Case: Molded plastic
- \* Epoxy: UL 94V-0 rate flame retardant
- \* Metallurgically bonded construction
- \* Polarity: Color band denotes cathode end
- \* Mounting position: Any

**VOLTAGE RANGE**  
50 to 600 Volts  
**CURRENT**  
2.0 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%.

| TYPE NUMBER                                                                                        | ES2ABF     | ES2BBF | ES2CBF | ES2DBF | ES2EBF | ES2GBF | ES2JBF | UNITS |
|----------------------------------------------------------------------------------------------------|------------|--------|--------|--------|--------|--------|--------|-------|
| Maximum Recurrent Peak Reverse Voltage                                                             | 50         | 100    | 150    | 200    | 300    | 400    | 600    | V     |
| Maximum RMS Voltage                                                                                | 35         | 70     | 105    | 140    | 210    | 280    | 420    | V     |
| Maximum DC Blocking Voltage                                                                        | 50         | 100    | 150    | 200    | 300    | 400    | 600    | V     |
| Maximum Average Forward Rectified Current                                                          | 2.0        |        |        |        |        |        |        | A     |
| Peak Forward Surge Current, 8.3 ms single half sine-wave superimposed on rated load (JEDEC method) | 60         |        |        |        |        |        |        | A     |
| Maximum Instantaneous Forward Voltage at 2.0A                                                      | 0.95       |        |        |        | 1.25   |        | 1.70   | V     |
| Maximum DC Reverse Current<br>Ta=25°C                                                              | 5.0        |        |        |        |        |        |        | μA    |
| at Rated DC Blocking Voltage<br>Ta=100°C                                                           | 500        |        |        |        |        |        |        | μA    |
| Maximum Reverse Recovery Time (Note 1)                                                             | 35         |        |        |        |        |        |        | nS    |
| Typical Junction Capacitance (Note 2)                                                              | 60         |        |        |        |        |        |        | pF    |
| Operating and Storage Temperature Range Tj, Tstg                                                   | -65 — +150 |        |        |        |        |        |        | °C    |

### NOTES:

- Reverse Recovery Time test condition: IF=0.5A, IR=1.0A, IRR=0.25A
- Measured at 1MHz and applied reverse voltage of 4.0V D.C.

## RATING AND CHARACTERISTIC CURVES

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

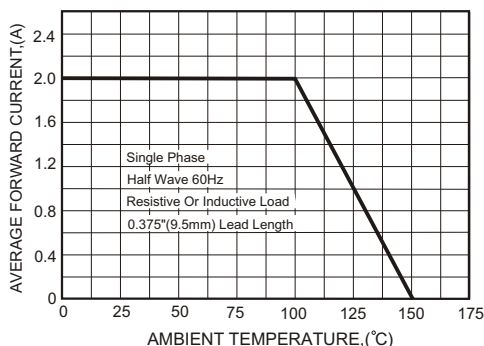
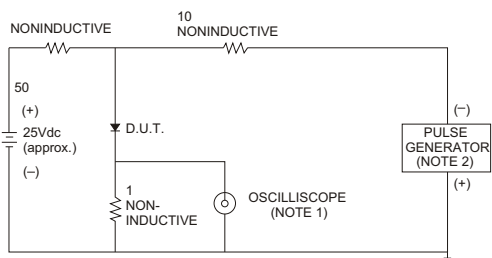


FIG.3- TEST CIRCUIT DIAGRAM AND REVERSE RECOVERY TIME CHARACTERISTICS



NOTES: 1. Rise Time= 7ns max., Input Impedance= 1 megohm, 22pF.  
2. Rise Time= 10ns max., Source Impedance= 50 ohms.

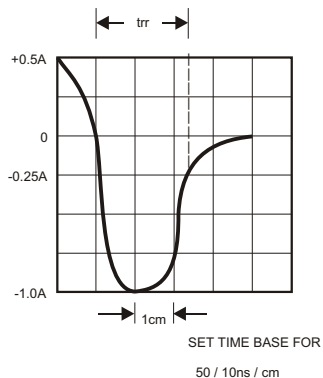


FIG.5 - TYPICAL REVERSE CHARACTERISTICS

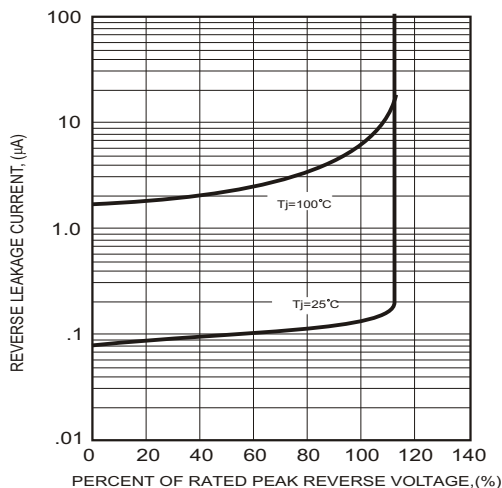


FIG.2-TYPICAL FORWARD CHARACTERISTICS

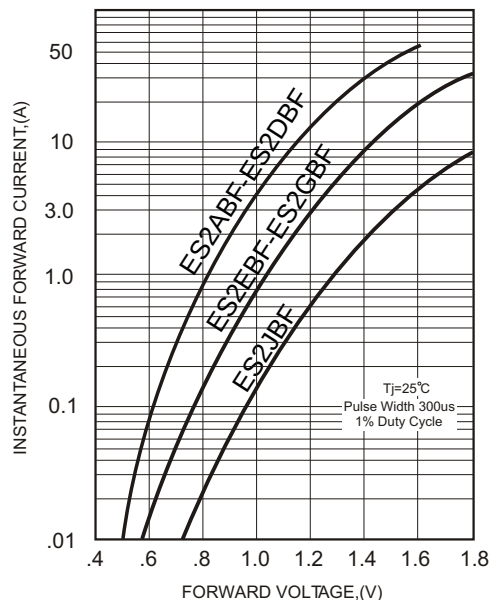


FIG.4-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

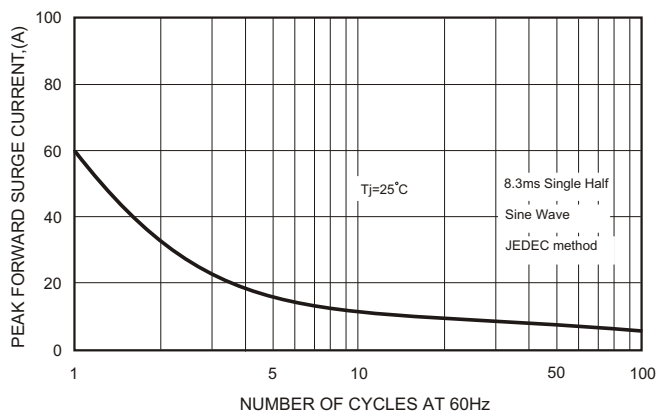
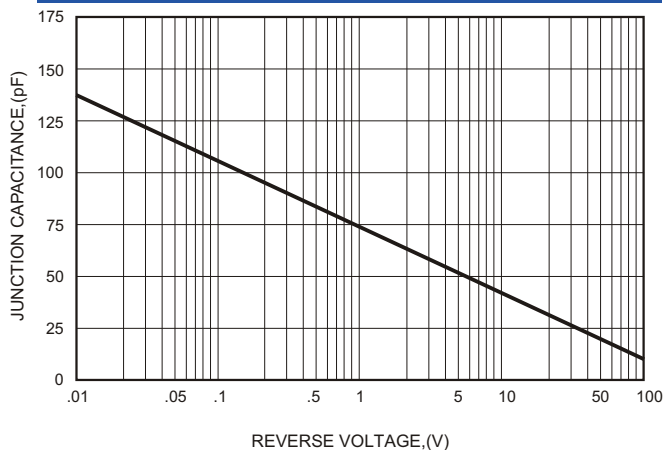
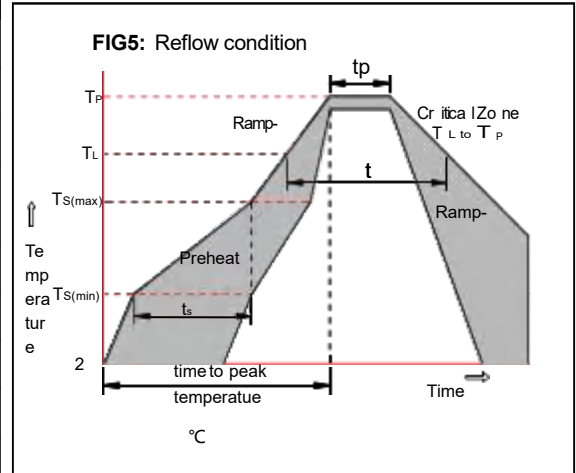


FIG.6-TYPICAL JUNCTION CAPACITANCE



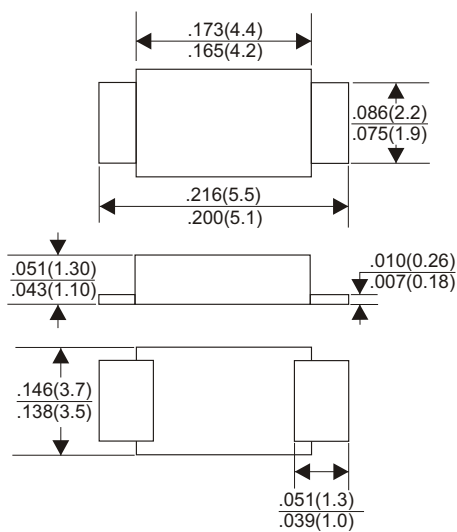
## Soldering parameters

| 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                            |

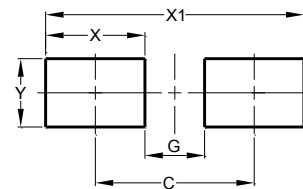


## Package Dimensions & Suggested Pad Layout

### SMBF

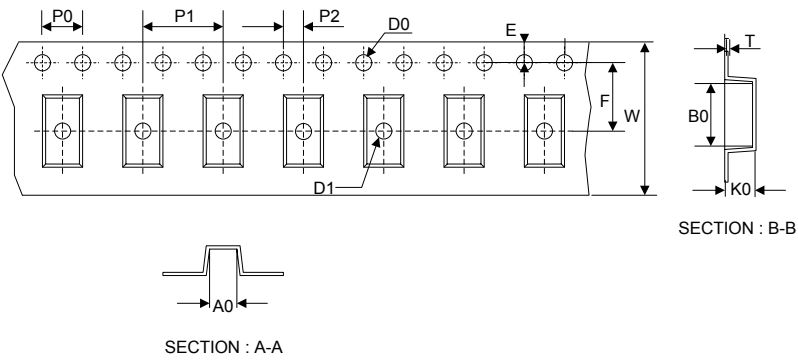
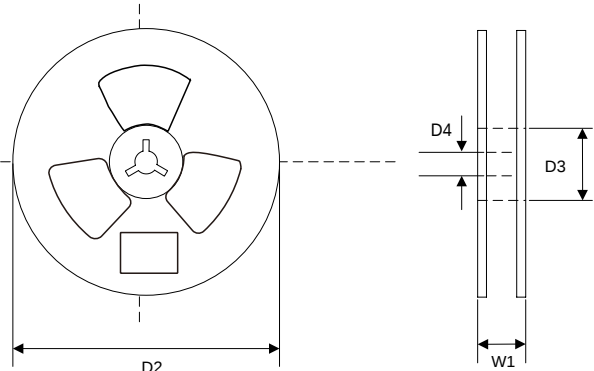


Dimensions in inches and (millimeters)



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 4.60          |
| G          | 2.50          |
| X          | 2.10          |
| X1         | 6.70          |
| Y          | 2.50          |

## Tape & reel specification

| Tape                                                                                                                        |  | Symbol            | Dimension (mm) |
|-----------------------------------------------------------------------------------------------------------------------------|--|-------------------|----------------|
|  <p>SECTION : A-A</p> <p>SECTION : B-B</p> |  | P0                | 4.00±0.20      |
|                                                                                                                             |  | P1                | 8.00±0.20      |
|                                                                                                                             |  | P2                | 2.00±0.20      |
|                                                                                                                             |  | D0                | 1.55±0.15      |
|                                                                                                                             |  | D1                | 1.55±0.15      |
|                                                                                                                             |  | E                 | 1.75±0.20      |
|                                                                                                                             |  | F                 | 5.50±0.05      |
|                                                                                                                             |  | W                 | 12.00±0.10     |
|                                                                                                                             |  | A0                | 2.93±0.25      |
|                                                                                                                             |  | B0                | 5.00±0.25      |
|                                                                                                                             |  | K0                | 1.45±0.20      |
|                                                                                                                             |  | T                 | 0.25±0.10      |
| 13" Reel                                                                                                                    |  | D2                | 330.0±5.0      |
|                                           |  | D3                | 73.0Min.       |
|                                                                                                                             |  | D4                | 14.0±2.5       |
|                                                                                                                             |  | W1                | 16.0±2.5       |
|                                                                                                                             |  | Quantity: 5000PCS |                |