



## FEATURES

- \* Low forward voltage drop
- \* High current capability
- \* High reliability
- \* High surge current capability

## MECHANICAL DATA

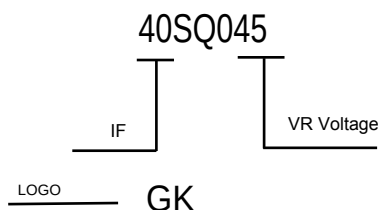
- \* Case: Molded plastic
- \* Epoxy: UL 94V-0 rate flame retardant
- \* Lead: Axial leads, solderable per MIL-STD-202, method 208 guaranteed
- \* Polarity: Color band denotes cathode end
- \* Mounting position: Any
- \* Weight: 1.65 grams

## VOLTAGE RANGE

45.0 Volts

## CURRENT

40.0 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         | 40SQ045                    | Units         |
|------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------|---------------|
| Maximum repetitive peak reverse voltage                                                                                | $V_{RRM}$       | 45                         | Volts         |
| Maximum RMS voltage                                                                                                    | $V_{RMS}$       | 32                         | Volts         |
| Maximum DC blocking voltage                                                                                            | $V_{DC}$        | 45                         | Volts         |
| Maximum average forward rectified current<br>0.375"(9.5mm) lead length(see fig.1)                                      | $I_{(AV)}$      | 40.0                       | Amps          |
| Peak forward surge current 8.3ms single half<br>sine-wave superimposed on rated load<br>(JEDEC method at rated $T_J$ ) | $I_{FSM}$       | 450                        | Amps          |
| Maximum instantaneous forward voltage<br>at 40.0 A(Note 1 )                                                            | $V_F$           | 0.55                       | Volts         |
| Maximum instantaneous reverse<br>current at rated DC blocking<br>voltage(Note 1)                                       | $I_R$           | $T_A=25^{\circ}C$<br>0.2   | mA            |
|                                                                                                                        |                 | $T_A=100^{\circ}C$<br>20   |               |
| Typical thermal resistance (Note 2)                                                                                    | $R_{\theta JC}$ | 1.0                        | $^{\circ}C/W$ |
|                                                                                                                        | $R_{\theta JA}$ | 45                         |               |
| Operating junction temperature range<br>at reduced reverse voltage $V_R \leq 80\% V_{RRM}$<br>in DC forward model      | $T_J$           | -55 to +150<br>-55 to +200 | $^{\circ}C$   |
| Storage temperature range                                                                                              | $T_{STG}$       | -55 to +150                | $^{\circ}C$   |

**Notes:** 1.Pulse test: 300μ s pulse width,1% duty cycle

2.Thermal resistance from junction to case, Thermal resistance from junction to lead,  
Thermal resistance from junction to ambient

## RATING AND CHARACTERISTIC CURVES

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

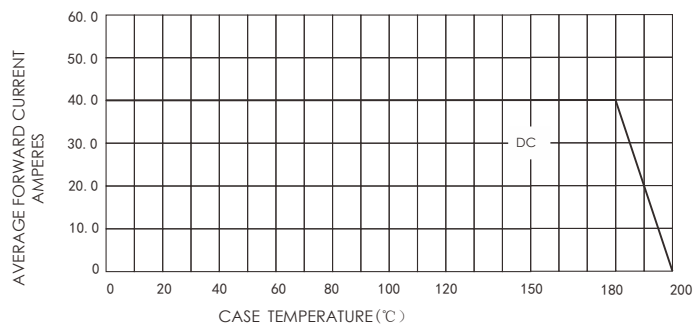


FIG.2-TYPICAL FORWARD CHARACTERISTICS

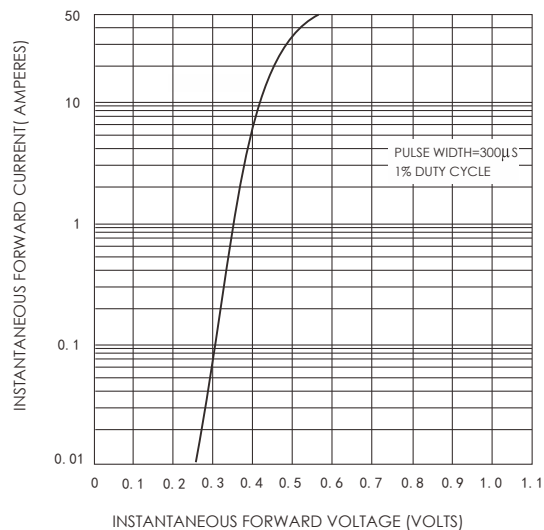


FIG.3-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

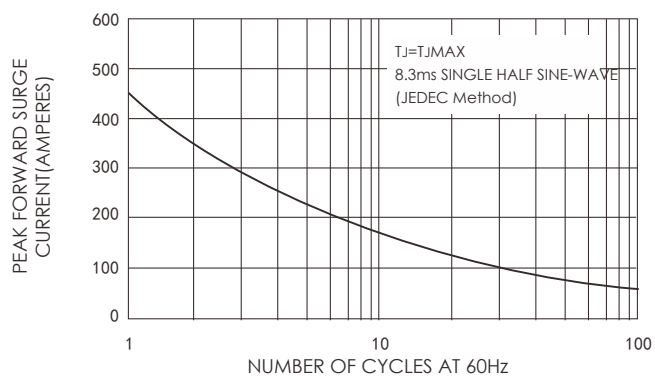
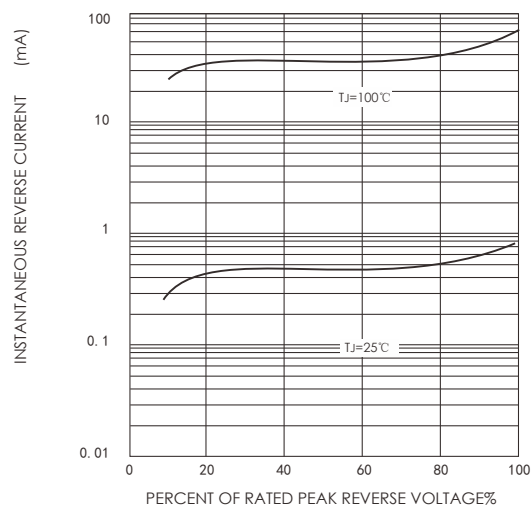
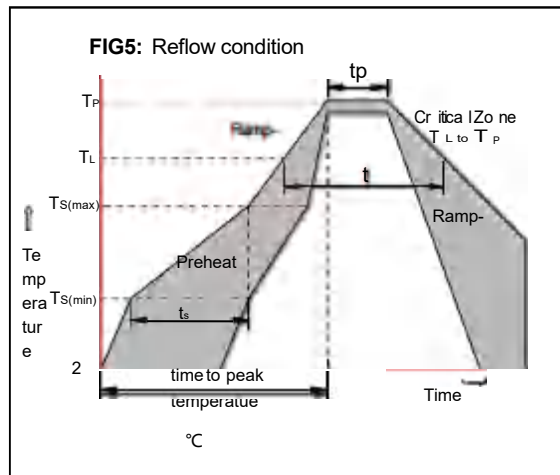


FIG.4 - TYPICAL REVERSE CHARACTERISTICS



## 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

