

SanRex®

# TRIAC

## For High Power

**TG40E80**

$I_{T(RMS)} = 40A$ ,  $V_{DRM} = 800V$

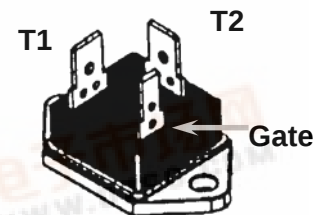
SanRex Triac **TG40E80** is specially designed use for high power AC switching application. Thanks to SanRex's new isolated diffusion technology, the Triac **TG40E80** features high dv/dt, dv/dt/c and very low on-state voltage. These benefits make this design an extremely reliable and efficient device for use in wide variety of applications.

### Features

- \* High Power
- \* High Surge Current
- \* Low On-State Voltage
- \* High Commutation Performance
- \* UL registered E76102

### Typical Applications

- \* Home Appliances
- \* Water Heaters
- \* Heater Controls
- \* Lighting Controls
- \* Temperature Controls



Isolated Fast-on Package



Internal schematic diagram

### < Maximum Ratings >

(Tj = 25°C unless otherwise noted)

| Symbol       | Item                                      | Conditions                                                    | Ratings     | Unit             |
|--------------|-------------------------------------------|---------------------------------------------------------------|-------------|------------------|
| $V_{DRM}$    | Repetitive Peak Off-state Voltage         |                                                               | 800         | V                |
| $I_{T(RMS)}$ | R.M.S. On-state Current                   | $T_c = 64^\circ C$                                            | 40          | A                |
| $I_{TSM}$    | Surge On-state Current                    | One cycle, 60Hz, Peak, non-repetitive                         | 420         | A                |
| $I^2 t$      | $I^2 t$ (for fusing)                      | Value for one cycle surge current                             | 730         | A <sup>2</sup> s |
| $P_{GM}$     | Peak Gate Power Dissipation               |                                                               | 10          | W                |
| $P_{G(AV)}$  | Average Gate Power Dissipation            |                                                               | 1           | W                |
| $I_{GM}$     | Peak Gate Current                         |                                                               | 3           | A                |
| $V_{GM}$     | Peak Gate Voltage                         |                                                               | 10          | V                |
| di/dt        | Critical Rate of Rise of On-State Current | $I_G = 100mA$ , $V_D = 1/2 V_{DRM}$ ,<br>$di_G/dt = 1A/\mu s$ | 50          | A/Fs             |
| Tj           | Operation Junction Temperature            |                                                               | -40 to +125 | °C               |
| Tstg         | Storage Temperature                       |                                                               | -40 to +150 | °C               |
| VISO         | Isolation Breakdown Voltage               | R.M.S. , A.C. 1 minute                                        | 2500        | V                |
|              | Mounting Torque (M4)                      | Recommended value 1.0 – 1.4 N*m                               | 1.5         | N*m              |
|              | Mass                                      | Typical Value                                                 | 23          | g                |

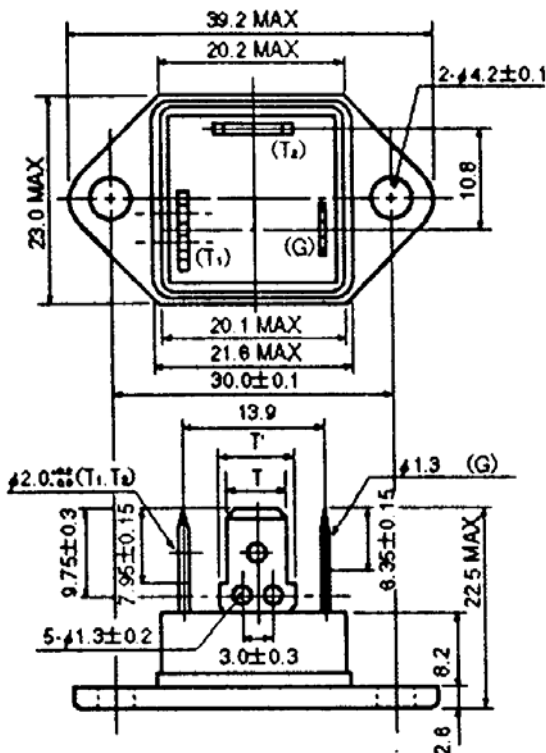
## TRIAC for High Power

## TG40E80

< Electrical Characteristics >

(Tj = 25°C unless otherwise noted)

| Symbol        | Item                                         | Conditions                                                                     | Ratings |      |      | Unit |
|---------------|----------------------------------------------|--------------------------------------------------------------------------------|---------|------|------|------|
|               |                                              |                                                                                | Min.    | Typ. | Max. |      |
| $I_{DRM}$     | Repetitive Peak Off-state Current            | $T_j = 125^\circ\text{C}$ , $V_D = V_{DRM}$                                    |         |      | 5    | mA   |
| $V_{TM}$      | Peak On-State Voltage                        | $I_T = 60\text{A}$ , Instant measurement                                       |         |      | 1.4  | V    |
| $I_{GT1+}$    | Gate Trigger Current                         | $V_D = 6\text{V}$ , $I_T = 1\text{A}$                                          |         |      | 50   | mA   |
| $I_{GT1-}$    |                                              |                                                                                |         |      | 50   | mA   |
| $I_{GT3+}$    |                                              |                                                                                |         |      | -    | mA   |
| $I_{GT3-}$    |                                              |                                                                                |         |      | 50   | mA   |
| $V_{GT1+}$    | Gate Trigger Voltage                         | $V_D = 6\text{V}$ , $I_T = 1\text{A}$                                          |         |      | 1.5  | V    |
| $V_{GT1-}$    |                                              |                                                                                |         |      | 1.5  | V    |
| $V_{GT3+}$    |                                              |                                                                                |         |      | -    | V    |
| $V_{GT3-}$    |                                              |                                                                                |         |      | 1.5  | V    |
| $V_{GD}$      | Non-Trigger Gate Voltage                     | $T_j = 125^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$                                | 0.2     |      |      | V    |
| $dv/dt$       | Critical Rate of Rise of Off-State Voltage   | $T_j = 125^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$ , Exponential wave             | 500     |      |      | V/Fs |
| $(dv/dt)_c$   | Critical Rate of Rise of Commutation Voltage | $T_j = 125^\circ\text{C}$ , $V_D = 2/3 V_{DRM}$ , $(di/dt)_c = 10\text{ A/ms}$ | 6       |      |      | V/Fs |
| $I_H$         | Holding Current                              |                                                                                |         | 30   |      | mA   |
| $R_{th(j-c)}$ | Thermal Resistance                           | Junction to case                                                               |         |      | 1.3  | °C/W |



T<sub>1</sub>: TAB250 (T=6.35, T'=8.25, t=0.8)

T<sub>2</sub>: TAB250 (T=6.35, T'=8.25, t=0.8)

G: TAB187 (T=4.75, T'=5.7, t=0.8)

\* Dimensions in millimeters