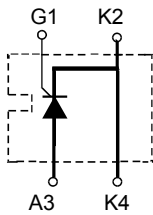
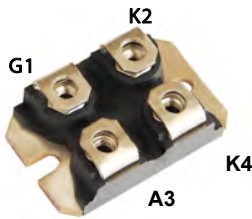
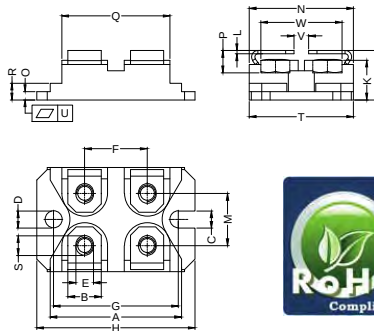


# STO150GK12S

## Single Thyristor Modules



Dimensions SOT-227



| Dim. | Millimeter |       | Dim. | Millimeter |       |
|------|------------|-------|------|------------|-------|
|      | Min.       | Max.  |      | Min.       | Max.  |
| A    | 31.30      | 31.62 | M    | 12.20      | 14.00 |
| B    | 7.80       | 8.20  | N    | 25.15      | 25.62 |
| C    | 4.09       | 4.29  | O    | 1.98       | 2.13  |
| D    | 4.09       | 4.29  | P    | 4.15       | 4.62  |
| E    | 4.09       | 4.29  | Q    | 25.90      | 26.30 |
| F    | 14.91      | 15.11 | R    | 3.94       | 4.42  |
| G    | 30.12      | 30.30 | S    | 4.45       | 4.85  |
| H    | 38.20      | 38.56 | T    | 24.59      | 25.07 |
| J    | 12.30      | 12.90 | U    | 0.05       | 0.10  |
| K    | 8.92       | 9.60  | V    | 3.00       | 4.80  |
| L    | 0.76       | 0.84  | W    | 19.81      | 21.08 |



| Type        | V <sub>RSM</sub><br>V <sub>DSM</sub><br>V | V <sub>RRM</sub><br>V <sub>DRM</sub><br>V |
|-------------|-------------------------------------------|-------------------------------------------|
| STO150GK12S | 1300                                      | 1200                                      |

| Symbol                                                  | Test Conditions                                                                                                                                                           |                                                    | Maximum Ratings                 | Unit             |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|---------------------------------|------------------|
| I <sub>TRMS</sub>                                       | T <sub>VJ</sub> = T <sub>VJM</sub>                                                                                                                                        |                                                    | 235                             | A                |
| I <sub>TAVM</sub>                                       | T <sub>C</sub> = 80°C; (180° sine)                                                                                                                                        |                                                    | 150                             |                  |
| I <sub>TSM</sub>                                        | T <sub>VJ</sub> = 45°C<br>V <sub>R</sub> = 0                                                                                                                              | t = 10ms (50Hz), sine<br>t = 8.3ms (60Hz), sine    | 2000<br>2150                    | A                |
|                                                         | T <sub>VJ</sub> = T <sub>VJM</sub><br>V <sub>R</sub> = 0                                                                                                                  | t = 10ms (50Hz), sine<br>t = 8.3ms (60Hz), sine    | 1750<br>1850                    |                  |
| I <sup>2</sup> <sub>t</sub>                             | T <sub>VJ</sub> = 45°C<br>V <sub>R</sub> = 0                                                                                                                              | t = 10ms (50Hz), sine<br>t = 8.3ms (60Hz), sine    | 20000<br>19400                  | A <sup>2</sup> s |
|                                                         | T <sub>VJ</sub> = T <sub>VJM</sub><br>V <sub>R</sub> = 0                                                                                                                  | t = 10ms (50Hz), sine<br>t = 8.3ms (60Hz), sine    | 15300<br>14400                  |                  |
| (di/dt) <sub>cr</sub>                                   | T <sub>VJ</sub> = T <sub>VJM</sub><br>f = 50Hz, t <sub>p</sub> = 200us<br>V <sub>D</sub> = 2/3 V <sub>DRM</sub><br>I <sub>G</sub> = 0.3A<br>di <sub>G</sub> /dt = 0.3A/us | repetitive, I <sub>T</sub> = 150A                  | 150                             | A/us             |
|                                                         |                                                                                                                                                                           | non repetitive, I <sub>T</sub> = I <sub>TAVM</sub> | 500                             |                  |
| (dv/dt) <sub>cr</sub>                                   | T <sub>VJ</sub> = T <sub>VJM</sub> ;<br>R <sub>GK</sub> = ∞; method 1 (linear voltage rise)                                                                               | V <sub>DR</sub> = 2/3 V <sub>DRM</sub>             | 1000                            | V/us             |
| P <sub>GM</sub><br>P <sub>GAVM</sub>                    | T <sub>VJ</sub> = T <sub>VJM</sub><br>I <sub>T</sub> = I <sub>TAVM</sub>                                                                                                  | t <sub>p</sub> = 30us<br>t <sub>p</sub> = 300us    | 10<br>5<br>0.5                  | W                |
| V <sub>RGM</sub>                                        |                                                                                                                                                                           |                                                    | 10                              |                  |
| T <sub>VJ</sub><br>T <sub>VJM</sub><br>T <sub>stg</sub> |                                                                                                                                                                           |                                                    | -40...+150<br>150<br>-40...+125 | °C               |
| V <sub>ISOL</sub>                                       | 50/60Hz, RMS<br>I <sub>ISOL</sub> ≤ 1mA                                                                                                                                   |                                                    | 2500                            | V~               |
| M <sub>d</sub>                                          | Mounting torque (M4)<br>Terminal connection torque (M4)                                                                                                                   |                                                    | 1.1-1.5/9-13<br>1.1-1.5/9-13    | Nm/lb.in.        |
| Weight                                                  | typical                                                                                                                                                                   |                                                    | 30                              | g                |

**Sirectifier®**

# STO150GK12S

## Single Thyristor Modules

| Symbol     | Test Conditions                                                                                               | Characteristic Values    | Unit             |
|------------|---------------------------------------------------------------------------------------------------------------|--------------------------|------------------|
| $I_R, I_D$ | $T_{VJ}=T_{VJM}; V_R=V_{RRM}; V_D=V_{DRM}$                                                                    | $\leq 10$                | mA               |
| $V_T$      | $I_T=450A; T_{VJ}=25^{\circ}C$                                                                                | $\leq 1.45$              | V                |
| $V_{TO}$   | For power-loss calculations only                                                                              | $\leq 0.80$              | V                |
| $r_T$      |                                                                                                               | $\leq 3.8$               | m $\Omega$       |
| $V_{GT}$   | $V_D=6V; T_{VJ}=25^{\circ}C$<br>$T_{VJ}=-40^{\circ}C$                                                         | $\leq 1.5$<br>$\leq 1.6$ | V                |
| $I_{GT}$   | $V_D=6V; T_{VJ}=25^{\circ}C$<br>$T_{VJ}=-40^{\circ}C$                                                         | $\leq 150$<br>$\leq 200$ | mA               |
| $V_{GD}$   | $T_{VJ}=T_{VJM}; V_D=2/3V_{DRM}$                                                                              | $\leq 0.2$               | V                |
| $I_{GD}$   |                                                                                                               | $\leq 5$                 | mA               |
| $I_L$      | $T_{VJ}=25^{\circ}C; t_p=10\mu s$<br>$I_G=0.3A; di/dt=0.3A/\mu s$                                             | $\leq 450$               |                  |
| $I_H$      | $T_{VJ}=25^{\circ}C; V_D=6V; R_{GK}=\infty$                                                                   | $\leq 200$               |                  |
| $t_{gd}$   | $T_{VJ}=25^{\circ}C; V_D=1/2V_{DRM}$<br>$I_G=0.3A; di/dt=0.3A/\mu s$                                          | $\leq 2$                 | $\mu s$          |
| $t_q$      | $T_{VJ}=T_{VJM}; I_T=20A; t_p=200\mu s; di/dt=-10A/\mu s$ typ.<br>$V_R=100V; dv/dt=15V/\mu s; V_D=2/3V_{DRM}$ | $\leq 150$               |                  |
| $R_{thJC}$ | DC current                                                                                                    | $\leq 0.20$              | K/W              |
| $R_{thCH}$ | DC current                                                                                                    | $\leq 0.10$              |                  |
| $d_s$      | Creeping distance on surface                                                                                  | $\leq 8$                 | mm               |
| $d_A$      | Creepage distance in air                                                                                      | $\leq 4$                 |                  |
| $a$        | Max. allowable acceleration                                                                                   | $\leq 50$                | m/s <sup>2</sup> |

### FEATURES

- \*Thyristor controller for AC for mains frequency
- \*International standard package SOT-227B (ISOTOP compatible)
- \*Isolation voltage 2500V~
- \*Glass passivated chips
- \*UL File NO. E310749
- \*RoHS compliant

### APPLICATIONS

- \*Switching and control of single and three phase AC Softstart
- \*AC motor controller
- \*Solid states switches
- \*Light and temperature control

### ADVANTAGES

- \*Easy to mount with two screws
- \*Space and weight savings
- \*Improved temperature and power cycling
- \*High power density

# STO150GK12S

## Single Thyristor Modules

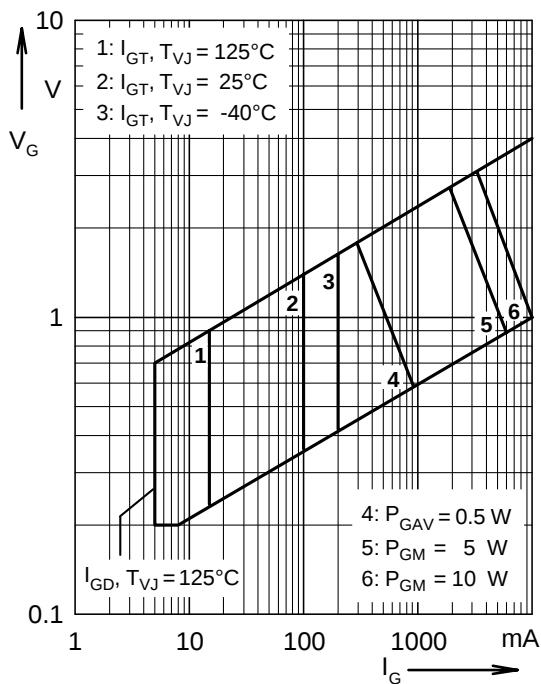


Fig. 1 Gate trigger characteristics

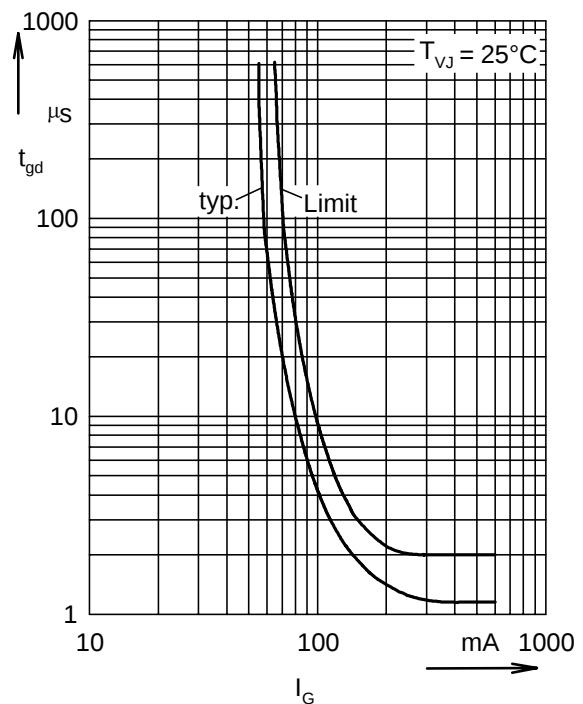


Fig. 2 Gate trigger delay time

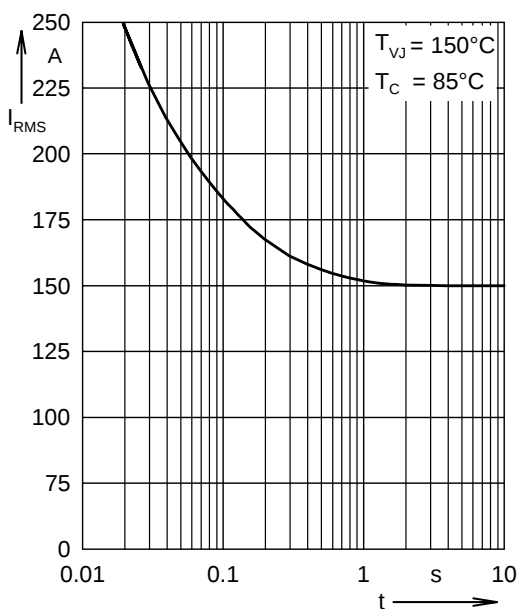


Fig.3 Rated RMS current versus time (360° conduction)

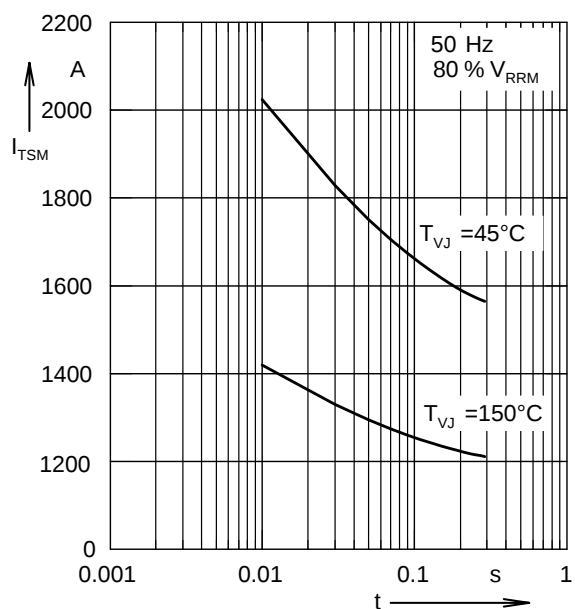


Fig.4 Surge overload current