

# Thyristor Modules

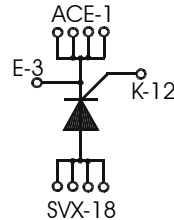
## ECO-PAC 2

$$I_{TRMS} = 280A$$

$$I_{TAVM} = 180A$$

$$V_{RRM} = 800-1800 V$$

| $V_{RSM}$      | $V_{RRM}$      | Typ             |
|----------------|----------------|-----------------|
| $V_{DSM}$<br>V | $V_{DRM}$<br>V |                 |
| 900            | 800            | VCO 180 - 08io7 |
| 1300           | 1200           | VCO 180 - 12io7 |
| 1500           | 1400           | VCO 180 - 14io7 |
| 1700           | 1600           | VCO 180 - 16io7 |
| 1900           | 1800           | VCO 180 - 18io7 |



| Symbol         | Conditions   | Maximum Ratings                  |                  |
|----------------|--|----------------------------------|------------------|
| $I_{TRMS}$     |  | 280                              | A                |
| $I_{TAVM}$     | $T_C = 90^\circ C; T_{VJ} = 130^\circ C; 180^\circ$ sine   | 180                              | A                |
| $I_{TSM}$      | $T_{VJ} = 45^\circ C; V_R = 0 V;$<br>$t = 10 ms$ (50 Hz), sine<br>$t = 8.3 ms$ (60 Hz), sine   | 4500                             | A                |
|                |  | 4900                             | A                |
| $I^2dt$        | $T_{VJ} = 125^\circ C; V_R = 0 V;$<br>$t = 10 ms$ (50 Hz), sine<br>$t = 8.3 ms$ (60 Hz), sine  | 3800                             | A                |
|                |  | 4200                             | A                |
| $I^2dt$        | $T_{VJ} = 45^\circ C; V_R = 0 V;$<br>$t = 10 ms$ (50 Hz), sine<br>$t = 8.3 ms$ (60 Hz), sine   | 101000                           | A <sup>2</sup> s |
|                |  | 99500                            | A <sup>2</sup> s |
| $I^2dt$        | $T_{VJ} = 125^\circ C; V_R = 0 V;$<br>$t = 10 ms$ (50 Hz), sine<br>$t = 8.3 ms$ (60 Hz), sine  | 72000                            | A <sup>2</sup> s |
|                |  | 73000                            | A <sup>2</sup> s |
| $(di/dt)_{cr}$ | $T_{VJ} = 125^\circ C;$<br>$f = 50 Hz; t_p = 200 \mu s;$<br>$V_D = \frac{2}{3}V_{DRM};$<br>$I_G = 0.5 A$<br>$di_G/dt = 0.5 A/\mu s;$ | repetitive, $I_T = 250 A$        | 150 A/ $\mu s$   |
|                |  | non repetitive, $I_T = I_{TAVM}$ | 500 A/ $\mu s$   |
| $(dv/dt)_{cr}$ | $T_{VJ} = 125^\circ C; V_{DR} = \frac{2}{3}V_{DRM}$<br>$R_{GK} = \infty, \text{method 1 (linear voltage rise)}$                      | 1000                             | V/ $\mu s$       |
| $P_{GM}$       | $T_{VJ} = 125^\circ C;$<br>$I_T = I_{TAVM};$   | $t_p = 30 ms$                    | $\leq 10$ W      |
|                |  | $t_p = 300 ms$                   | $\leq 5$ W       |
| $P_{GAVM}$     |  | 0.5                              | W                |
| $V_{RGM}$      |  | 10                               | V                |
| $T_{VJ}$       |  | -40 ... +130                     | $^\circ C$       |
| $T_{VJM}$      | for 10 sec   | 150                              | $^\circ C$       |
| $T_{stg}$      |  | -40 ... +125                     | $^\circ C$       |
| $V_{ISOL}$     | 50/60 Hz, RMS<br>$I_{ISOL} \leq 1 mA$  | $t = 1 min$                      | 3000 V ~         |
|                |  | $t = 1 s$                        | 3600 V ~         |
| $M_d$          | Mounting torque (M4)   | 1.5 - 2.0                        | Nm               |
|                |  | 14 - 18                          | lb.in.           |
| Weight         | typ.   | 24                               | g                |

Data according to IEC 60747 refer to a single thyristor unless otherwise stated

IXYS reserves the right to change limits, test conditions and dimensions.

### Features

- Isolation voltage 3600 V~
- Planar glass passivated chips
- Low forward voltage drop
- Leads suitable for PC board soldering

### Applications

- DC motor control
- Light and temperature control
- Softstart AC motor controller
- Solid state switches

### Advantages

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

**Component**

| Symbol     | Conditions   | Characteristic Values |      |                     |
|------------|--|-----------------------|------|---------------------|
|            |  | min.                  | typ. | max.                |
| $I_D, I_R$ | $T_{VJ} = 125^\circ\text{C}; V_R = V_{RRM}; V_D = V_{DRM}$   |                       |      | 10 mA               |
| $V_T$      | $I_T = 200 \text{ A}; T_{VJ} = 25^\circ\text{C}$   |                       |      | 1.1 V               |
| $V_{TO}$   | For power-loss calculations only   |                       |      | 0.75 V              |
| $r_T$      |  |                       |      | 1.23 mΩ             |
| $V_{GT}$   | $V_D = 6 \text{ V}; T_{VJ} = 25^\circ\text{C}$<br>$T_{VJ} = -40^\circ\text{C}$                                       |                       |      | 1.5 V<br>1.6 V      |
| $I_{GT}$   | $V_D = 6 \text{ V}; T_{VJ} = 25^\circ\text{C}$<br>$T_{VJ} = -40^\circ\text{C}$                                       |                       |      | 300 mA<br>400 mA    |
| $V_{GD}$   | $T_{VJ} = 125^\circ\text{C}; V_D = \frac{2}{3} V_{DRM}$  |                       |      | 0.2 V               |
| $I_{GD}$   | $T_{VJ} = 125^\circ\text{C}; V_D = \frac{2}{3} V_{DRM}$  |                       |      | 10 mA               |
| $I_L$      | $T_{VJ} = 25^\circ\text{C}; t_p = 10 \mu\text{s}$<br>$I_G = 0.5 \text{ A}; di_G/dt = 0.5 \text{ A}/\mu\text{s}$      |                       |      | 450 mA              |
| $I_H$      | $T_{VJ} = 25^\circ\text{C}; V_D = 6 \text{ V}; R_{GK} = \infty$  |                       |      | 200 mA              |
| $t_{gd}$   | $T_{VJ} = 25^\circ\text{C}; V_D = \frac{1}{2} V_{DRM}$<br>$I_G = 0.5 \text{ A}; di_G/dt = 0.5 \text{ A}/\mu\text{s}$ |                       |      | 2 μs                |
| $R_{thJC}$ | per Thyristor; DC  |                       |      | 0.17 KW             |
| $R_{thJH}$ | per Thyristor; DC; typ.  | 0,23                  |      | KW                  |
| $d_s$      | Creeping distance on surface   |                       |      | 11.2 mm             |
| $d_A$      | Creeping distance in air   |                       |      | 5.0 mm              |
| $a$        | Max. allowable acceleration  |                       |      | 50 m/s <sup>2</sup> |

**Dimensions in mm (1 mm = 0.0394")**
