

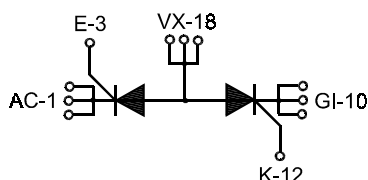
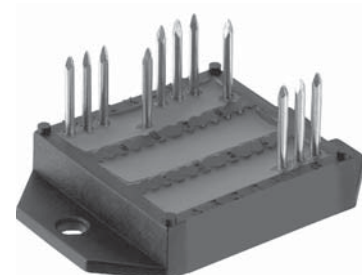
# Thyristor Modules

## ECO-PAC 2

$$\begin{aligned} I_{TRMS} &= 2 \times 180 \text{ A} \\ I_{TAVM} &= 2 \times 105 \text{ A} \\ V_{RRM} &= 800 - 1800 \text{ V} \end{aligned}$$

## Preliminary Data

| $V_{RSM}$<br>$V_{DSM}$<br>$V$ | $V_{RRM}$<br>$V_{DRM}$<br>$V$ | Typ             |
|-------------------------------|-------------------------------|-----------------|
| 900                           | 800                           | VCA 105 - 08io7 |
| 1300                          | 1200                          | VCA 105 - 12io7 |
| 1500                          | 1400                          | VCA 105 - 14io7 |
| 1700                          | 1600                          | VCA 105 - 16io7 |
| 1900                          | 1800                          | VCA 105 - 18io7 |



| Symbol         | Conditions                                                                                                                                                                                               | Maximum Ratings     |                  |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------|
| $I_{TRMS}$     |                                                                                                                                                                                                          | 180                 | A                |
| $I_{TAVM}$     | $T_C = 85^\circ\text{C}$ ; 180° sine                                                                                                                                                                     | 105                 | A                |
| $I_{TSM}$      | $T_{VJ} = 45^\circ\text{C}$ ; $V_R = 0 \text{ V}$ ; $t = 10 \text{ ms}$ (50 Hz), sine                                                                                                                    | 2250                | A                |
|                | $t = 8.3 \text{ ms}$ (60 Hz), sine                                                                                                                                                                       | 2400                | A                |
|                | $T_{VJ} = 125^\circ\text{C}$ ; $V_R = 0 \text{ V}$ ; $t = 10 \text{ ms}$ (50 Hz), sine                                                                                                                   | 2000                | A                |
|                | $t = 8.3 \text{ ms}$ (60 Hz), sine                                                                                                                                                                       | 2150                | A                |
| $I^2dt$        | $T_{VJ} = 45^\circ\text{C}$ ; $V_R = 0 \text{ V}$ ; $t = 10 \text{ ms}$ (50 Hz), sine                                                                                                                    | 25300               | A <sup>2</sup> s |
|                | $t = 8.3 \text{ ms}$ (60 Hz), sine                                                                                                                                                                       | 23900               | A <sup>2</sup> s |
|                | $T_{VJ} = 125^\circ\text{C}$ ; $V_R = 0 \text{ V}$ ; $t = 10 \text{ ms}$ (50 Hz), sine                                                                                                                   | 20000               | A <sup>2</sup> s |
|                | $t = 8.3 \text{ ms}$ (60 Hz), sine                                                                                                                                                                       | 19100               | A <sup>2</sup> s |
| $(di/dt)_{cr}$ | $T_{VJ} = 125^\circ\text{C}$ ; $f = 50 \text{ Hz}$ ; $t_p = 200 \mu\text{s}$ ; $V_D = 2/3 V_{DRM}$ ; $I_G = 0.45 \text{ A}$ ; $di_G/dt = 0.45 \text{ A}/\mu\text{s}$ ; repetitive, $I_T = 250 \text{ A}$ | 150                 | A/ $\mu\text{s}$ |
|                | non repetitive, $I_T = I_{TAVM}$                                                                                                                                                                         | 500                 | A/ $\mu\text{s}$ |
| $(dv/dt)_{cr}$ | $T_{VJ} = 125^\circ\text{C}$ ; $V_{DR} = 2/3 V_{DRM}$ ; $R_{GK} = \infty$ , method 1 (linear voltage rise)                                                                                               | 1000                | V/ $\mu\text{s}$ |
| $P_{GM}$       | $T_{VJ} = 125^\circ\text{C}$ ; $t_p = 30 \text{ ms}$                                                                                                                                                     | $\leq 10$           | W                |
|                | $I_T = I_{TAVM}$ ; $t_p = 300 \text{ ms}$                                                                                                                                                                | $\leq 5$            | W                |
| $P_{GAVM}$     |                                                                                                                                                                                                          | 0.5                 | W                |
| $V_{RGM}$      |                                                                                                                                                                                                          | 10                  | V                |
| $T_{VJ}$       |                                                                                                                                                                                                          | -40 ... + 125       | °C               |
| $T_{VJM}$      |                                                                                                                                                                                                          | 125                 | °C               |
| $T_{stg}$      |                                                                                                                                                                                                          | -40 ... + 125       | °C               |
| $V_{ISOL}$     | 50/60 Hz, RMS                                                                                                                                                                                            | $t = 1 \text{ min}$ | 3000 V ~         |
|                | $I_{ISOL} \leq 1 \text{ mA}$                                                                                                                                                                             | $t = 1 \text{ s}$   | 3600 V ~         |
| $M_d$          | Mounting torque (M4)                                                                                                                                                                                     | 1.5 - 2.0           | Nm               |
|                |                                                                                                                                                                                                          | 14 - 18             | lb.in.           |
| Weight         | typ.                                                                                                                                                                                                     | 26                  | g                |

## 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

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

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

## Component

| Symbol     | Conditions                                                                                                             | Characteristic Values |            |                      |
|------------|------------------------------------------------------------------------------------------------------------------------|-----------------------|------------|----------------------|
|            |                                                                                                                        | min.                  | typ.       | max.                 |
| $I_D, I_R$ | $T_{VJ} = 125^\circ\text{C}; V_R = V_{RRM}; V_D = V_{DRM}$                                                             |                       |            | 5 mA                 |
| $V_T$      | $I_T = 300 \text{ A}; T_{VJ} = 25^\circ\text{C}$                                                                       |                       |            | 1.5 V                |
| $V_{TO}$   | For power-loss calculations only                                                                                       |                       |            | 0.8 V                |
| $r_T$      |                                                                                                                        |                       |            | 2.4 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>$T_{VJ} = -40^\circ\text{C}$                                         |                       |            | 150 mA<br>200 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                |
| $I_L$      | $T_{VJ} = 25^\circ\text{C}; t_p = 10 \text{ ms}$<br>$I_G = 0.45 \text{ A}; di_G/dt = 0.45 \text{ A}/\mu\text{s}$       |                       |            | 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>$I_G = 0.45 \text{ A}; di_G/dt = 0.45 \text{ A}/\mu\text{s}$ |                       |            | 2 μs                 |
| $R_{thJC}$ | per Thyristor; DC<br>per module                                                                                        |                       |            | 0.26 K/W<br>0.13 K/W |
| $R_{thCH}$ | per Thyristor; DC<br>per module                                                                                        |                       | 0,2<br>0,1 | K/W<br>K/W           |
| $d_s$      | 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")

