

# Thyristor Modules

## ECO-PAC 2

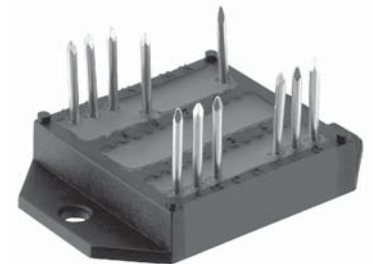
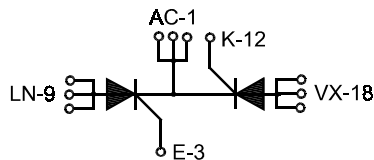
$$I_{TRMS} = 2 \times 180A$$

$$I_{TAVM} = 2 \times 105A$$

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

### Preliminary Data

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



| Symbol         | Conditions   | Maximum Ratings                  |                  |            |
|----------------|--|----------------------------------|------------------|------------|
| $I_{TRMS}$     |  | 180                              | A                |            |
| $I_{TAVM}$     | $T_C = 85^\circ C$ ; 180° sine   | 105                              | 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                                       | 2250                             | A                |            |
|                |  | 2400                             | 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                                       | 25300                            | A <sup>2</sup> s |            |
|                |  | 23900                            | 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                                      | 20000                            | A <sup>2</sup> s |            |
|                |  | 19100                            | A <sup>2</sup> s |            |
| $(di/dt)_{cr}$ | $T_{VJ} = 125^\circ C$ ;<br>$f = 50 Hz$ ; $t_p = 200 \mu s$ ;<br>$V_D = 2/3 V_{DRM}$ ;<br>$I_G = 0.45 A$<br>$di_G/dt = 0.45 A/\mu s$ ; | repetitive, $I_T = 250 A$        | 150              | A/ $\mu s$ |
|                |  | non repetitive, $I_T = I_{TAVM}$ | 500              | A/ $\mu s$ |
| $(dv/dt)_{cr}$ | $T_{VJ} = 125^\circ C$ ; $V_{DR} = 2/3 V_{DRM}$<br>$R_{GK} = \infty$ , 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 ... + 125    | °C         |
| $T_{VJM}$      |  |                                  | 125              | °C         |
| $T_{stg}$      |  |                                  | -40 ... + 125    | °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<br>(M4)  |                                  | 1.5 - 2.0        | Nm         |
|                |  |                                  | 14 - 18          | lb.in.     |
| <b>Weight</b>  | 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  |   | Characteristic Values |            |                      |
|------------|---|-----------------------|------------|----------------------|
| Symbol     | Conditions  | 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>  |

