

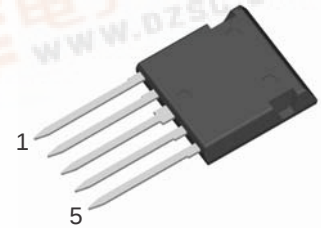
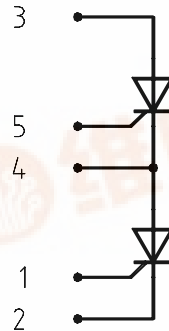
## Phase Control Thyristors

-Phaseleg Topology-  
in ISOPLUS i4-PAC™

$$\begin{aligned} V_{\text{DRM}} = V_{\text{RRM}} &= 1200 \text{ V} \\ I_{\text{T(AV)}} &= 21 \text{ A} \\ I_{\text{TSM}} &= 300 \text{ A} \end{aligned}$$

### Preliminary Data

| $V_{\text{RSM}}$ | $V_{\text{RRM}}$ | Type        |
|------------------|------------------|-------------|
| $V_{\text{DSM}}$ | $V_{\text{DRM}}$ |             |
| V                | V                |             |
| 1300             | 1200             | FCC 21-12io |



### Thyristors

| Symbol                           | Conditions                                                                                                                             | Maximum Ratings |                  |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------|
| $V_{\text{DRM}}, V_{\text{RRM}}$ |                                                                                                                                        | 1200            | V                |
| $I_{\text{T(AV)}}$               | sine 180°; $T_{\text{C}} = 90^{\circ}\text{C}$                                                                                         | 21              | A                |
| $I_{\text{T(AV)}}$               | square; $d = 1/3$ ; $T_{\text{C}} = 90^{\circ}\text{C}$                                                                                | 20              | A                |
| $I_{\text{TSM}}$                 | sine 180°; $t = 10 \text{ ms}$ ; $V_{\text{R}} = 0 \text{ V}$ ; $T_{\text{VJ}} = 25^{\circ}\text{C}$                                   | 300             | A                |
| $(di/dt)_{\text{cr}}$            | $T_{\text{VJ}} = T_{\text{VJM}}$ ; repetitive, $I_{\text{T}} = 40 \text{ A}$<br>$f = 50 \text{ Hz}$ ; $t_{\text{p}} = 200 \mu\text{s}$ | 150             | A/ $\mu\text{s}$ |
|                                  | $V_{\text{D}} = 2/3 V_{\text{DRM}}$<br>$I_{\text{G}} = 0.3 \text{ A}$<br>$di_{\text{G}}/dt = 0.3 \text{ A}/\mu\text{s}$                | 500             | A/ $\mu\text{s}$ |
| $(dv/dt)_{\text{cr}}$            | $T_{\text{VJ}} = T_{\text{VJM}}$ ; $V_{\text{DR}} = 2/3 V_{\text{DRM}}$<br>$R_{\text{GK}} = \infty$ ; method 1 (linear voltage rise)   | 1000            | V/ $\mu\text{s}$ |

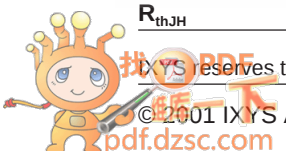
| Symbol                       | Conditions                                                                                                                                            | Characteristic Values<br>( $T_{\text{VJ}} = 25^{\circ}\text{C}$ , unless otherwise specified) |      |                        |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------|------------------------|
|                              |                                                                                                                                                       | min.                                                                                          | typ. | max.                   |
| $V_{\text{T}}$               | $I_{\text{T}} = 30 \text{ A}$ ; $T_{\text{VJ}} = 25^{\circ}\text{C}$<br>$T_{\text{VJ}} = 125^{\circ}\text{C}$                                         |                                                                                               | 1.3  | 1.3 V                  |
| $V_{\text{GT}}$              | $V_{\text{D}} = 6 \text{ V}$                                                                                                                          |                                                                                               |      | 1.4 V                  |
| $I_{\text{GT}}$              |                                                                                                                                                       |                                                                                               |      | 55 mA                  |
| $V_{\text{GD}}$              | $T_{\text{VJ}} = T_{\text{VJM}}$ ; $V_{\text{D}} = 2/3 V_{\text{DRM}}$                                                                                |                                                                                               |      | 0.2 V                  |
| $I_{\text{GD}}$              |                                                                                                                                                       |                                                                                               |      | 5 mA                   |
| $I_{\text{L}}$               | $t_{\text{p}} = 10 \mu\text{s}$ ; $V_{\text{D}} = 6 \text{ V}$<br>$I_{\text{G}} = 0.3 \text{ A}$ ; $di_{\text{G}}/dt = 0.3 \text{ A}/\mu\text{s}$     |                                                                                               |      | 150 mA                 |
| $I_{\text{H}}$               | $V_{\text{D}} = 6 \text{ V}$ ; $R_{\text{GK}} = \infty$                                                                                               |                                                                                               |      | 100 mA                 |
| $t_{\text{gd}}$              | $V_{\text{D}} = 1/2 V_{\text{DRM}}$ ; $V_{\text{D}} = 6 \text{ V}$<br>$I_{\text{G}} = 0.3 \text{ A}$ ; $di_{\text{G}}/dt = 0.3 \text{ A}/\mu\text{s}$ |                                                                                               |      | 2 $\mu\text{s}$        |
| $I_{\text{R}}, I_{\text{D}}$ | $V_{\text{R}} = V_{\text{RRM}}$ ; $V_{\text{D}} = V_{\text{DRM}}$ ; $T_{\text{VJ}} = 25^{\circ}\text{C}$<br>$T_{\text{VJ}} = 125^{\circ}\text{C}$     |                                                                                               | 0.5  | 50 $\mu\text{A}$<br>mA |
| $R_{\text{thJC}}$            | DC current                                                                                                                                            |                                                                                               |      | 1.0 K/W                |
| $R_{\text{thJH}}$            |                                                                                                                                                       |                                                                                               | 1.32 | K/W                    |

### Features

- Thyristor
  - for line frequency
  - chip technology for long term stability
- ISOPLUS i4-PAC™ package
  - isolated back surface
  - UL registered E 72873
  - low coupling capacity between pins and heatsink
  - enlarged creepage towards heatsink
  - application friendly pinout
  - high reliability
  - industry standard outline

### Applications

- controlled rectifiers
  - power supplies
  - drives
- AC switches



**Component**

| Symbol     | Conditions                                     | Maximum Ratings |    |
|------------|------------------------------------------------|-----------------|----|
| $T_{VJ}$   |                                                | -40...+125      | °C |
| $T_{stg}$  |                                                | -55...+125      | °C |
| $V_{ISOL}$ | $I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}$ | 2500            | V~ |
| $F_c$      | mounting force with clip                       | 20...120        | N  |

| Symbol     | Conditions                                                          | Characteristic Values |      |      |
|------------|---------------------------------------------------------------------|-----------------------|------|------|
|            |                                                                     | min.                  | typ. | max. |
| $C_p$      | coupling capacity between shorted pins and mounting tab in the case |                       | 40   | pF   |
| $d_s, d_A$ | pin - pin                                                           | 1.7                   |      | mm   |
| $d_s, d_A$ | pin - backside metal                                                | 5.5                   |      | mm   |
| Weight     |                                                                     |                       | 9    | g    |

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