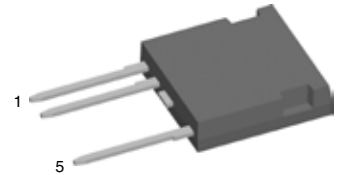
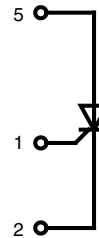


# High Voltage Phase Control Thyristor

## in High Voltage ISOPLUS i4-PAC™

$$\begin{aligned}
 V_{\text{DRM}} = V_{\text{RRM}} &= 2500 \text{ V} \\
 I_{\text{T(AV)}} &= 18 \text{ A} \\
 I_{\text{TSM}} &= 200 \text{ A}
 \end{aligned}$$

| $V_{\text{RSM}}$<br>$V_{\text{DSM}}$<br>V | $V_{\text{RRM}}$<br>$V_{\text{DRM}}$<br>V | Type         |
|---|---|--------------|
| 2500                                      | 2500                                      | CS 20-25mo1F |



### Thyristor

| Symbol                 | Conditions  | Maximum Ratings       |
|------------------------|---|-----------------------|
| $V_{\text{DRM / RRM}}$ |   | 2500 V                |
| $I_{\text{T(AV)}}$     | sine 180°; $T_{\text{C}} = 90^{\circ}\text{C}$  | 18 A                  |
| $I_{\text{T(AV)}}$     | square; $d = 1/3$ ; $T_{\text{C}} = 90^{\circ}\text{C}$   | 16 A                  |
| $I_{\text{TSM}}$       | sine 180°; $t = 10 \text{ ms}$ ; $V_{\text{R}} = 0 \text{ V}$ ; $T_{\text{VJ}} = 25^{\circ}\text{C}$  | 200 A                 |
| $(di/dt)_{\text{cr}}$  | $T_{\text{VJ}} = T_{\text{VJM}}$ repetitive, $I_{\text{T}} = 40 \text{ A}$<br>$f = 50 \text{ Hz}$ ; $t_{\text{p}} = 200 \mu\text{s}$                                    | 100 A/ $\mu\text{s}$  |
|                        | $V_{\text{D}} = 2/3 V_{\text{DRM}}$ non repetitive, $I_{\text{T}} = 20 \text{ A}$<br>$I_{\text{G}} = 0.45 \text{ A}$<br>$di_{\text{G}}/dt = 0.45 \text{ A}/\mu\text{s}$ | 250 A/ $\mu\text{s}$  |
| $(dv/dt)_{\text{cr}}$  | $T_{\text{VJ}} = T_{\text{VJM}}$ ; $V_{\text{D}} = 2/3 V_{\text{DRM}}$<br>$R_{\text{GK}} = \infty$ ; method 1 (linear voltage rise)                                     | 2500 V/ $\mu\text{s}$ |

| Symbol                       | Conditions  | Characteristic Values<br>( $T_{\text{VJ}} = 25^{\circ}\text{C}$ , unless otherwise specified) |      |      |               |
|------------------------------|---|---|------|------|---------------|
|                              |   | typ.  | max. |      |               |
| $V_{\text{T}}$               | $I_{\text{T}} = 20 \text{ A}$ ;   | $T_{\text{VJ}} = 25^{\circ}\text{C}$  | 1.3  | 1.5  | V             |
|                              |   | $T_{\text{VJ}} = 125^{\circ}\text{C}$   | 1.3  |      |               |
| $V_{\text{GT}}$              | $V_{\text{D}} = 6 \text{ V}$  |   |      | 2.3  | V             |
| $I_{\text{GT}}$              |   |   |      | 250  | mA            |
| $V_{\text{GD}}$              | $V_{\text{D}} = 2/3 V_{\text{DRM}}$ ;   | $T_{\text{VJ}} = T_{\text{VJM}}$  |      | 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>$I_{\text{G}} = 0.45 \text{ A}$ ; $di_{\text{G}}/dt = 0.45 \text{ A}/\mu\text{s}$ |   |      | 500  | mA            |
| $I_{\text{H}}$               | $V_{\text{D}} = 6 \text{ V}$ ; $R_{\text{GK}} = \infty$   |   |      | 150  | mA            |
| $t_{\text{gd}}$              | $V_{\text{D}} = 1/2 V_{\text{DRM}}$<br>$I_{\text{G}} = 0.45 \text{ A}$ ; $di_{\text{G}}/dt = 0.45 \text{ A}/\mu\text{s}$                            |   |      | 2    | $\mu\text{s}$ |
| $I_{\text{R}}, I_{\text{D}}$ | $V_{\text{R}} = V_{\text{RRM}}$ ; $V_{\text{D}} = V_{\text{DRM}}$ ;   | $T_{\text{VJ}} = 25^{\circ}\text{C}$  |      | 50   | $\mu\text{A}$ |
|                              |   | $T_{\text{VJ}} = 125^{\circ}\text{C}$   | 2    |      | mA            |
| $R_{\text{thJC}}$            | DC current  |   |      | 0.92 | K/W           |

### Features

- high voltage thyristor
  - for line frequency
  - chip technology for long term stability
- ISOPLUS i4-PAC™
  - high voltage package
  - isolated back surface
  - enlarged creepage towards heatsink
  - enlarged creepage between high voltage pins
  - application friendly pinout
  - high reliability
  - industry standard outline

### Applications

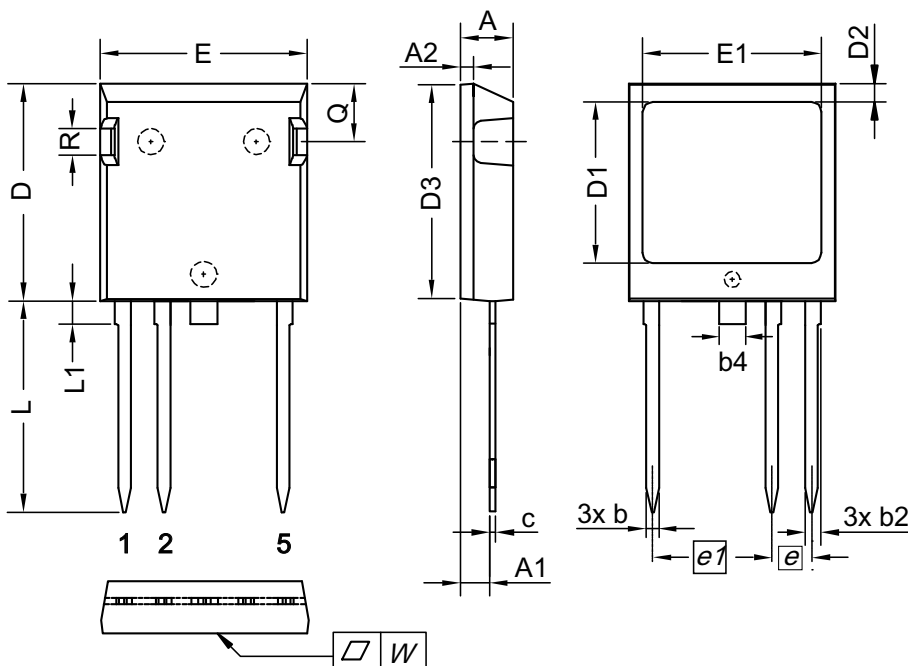
- controlled rectifiers
  - power supplies
  - drives
- AC switches
- capacitor discharge control
  - flash tubes
  - X-ray and laser generators

| 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.     |
| $d_s, d_A$    | A pin - K pin          | 7                     | mm       |
|               | pin - backside metal   | 5.5                   | mm       |
| $R_{thCH}$    | with heatsink compound |                       | 0.15 K/W |
| <b>Weight</b> |                        |                       | 5.5 g    |

Dimensions in mm (1 mm = 0.0394")



| Dim. | Millimeter |       | Inches    |       |
|------|------------|-------|-----------|-------|
|      | min        | max   | min       | max   |
| A    | 4.83       | 5.21  | 0.190     | 0.205 |
| A1   | 2.59       | 3.00  | 0.102     | 0.118 |
| A2   | 1.17       | 2.16  | 0.046     | 0.085 |
| b    | 1.14       | 1.40  | 0.045     | 0.055 |
| b2   | 1.47       | 1.73  | 0.058     | 0.068 |
| b4   | 2.54       | 2.79  | 0.100     | 0.110 |
| c    | 0.51       | 0.74  | 0.020     | 0.029 |
| D    | 20.80      | 21.34 | 0.819     | 0.840 |
| D1   | 14.99      | 15.75 | 0.590     | 0.620 |
| D2   | 1.65       | 2.03  | 0.065     | 0.080 |
| D3   | 20.30      | 20.70 | 0.799     | 0.815 |
| E    | 19.56      | 20.29 | 0.770     | 0.799 |
| E1   | 16.76      | 17.53 | 0.660     | 0.690 |
| e    | 3.81 BSC   |       | 0.150 BSC |       |
| e1   | 11.43 BSC  |       | 0.450 BSC |       |
| L    | 19.81      | 21.34 | 0.780     | 0.840 |
| L1   | 2.11       | 2.59  | 0.083     | 0.102 |
| Q    | 5.33       | 6.20  | 0.210     | 0.244 |
| R    | 2.54       | 4.57  | 0.100     | 0.180 |
| W    | -          | 0.10  | -         | 0.004 |

Die konvexe Form des Substrates ist typ. < 0.05 mm über der Kunststoffoberfläche der Bauteilunterseite  
 The convexbow of substrate is typ. < 0.05 mm over plastic surface level of device bottom side

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