

# IGBT phaseleg

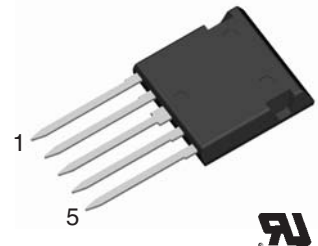
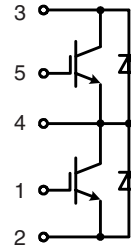
in ISOPLUS i4-PAC™

$$I_{C25} = 40 \text{ A}$$

$$V_{CES} = 600 \text{ V}$$

$$V_{CE(sat) \text{ typ.}} = 1.8 \text{ V}$$

Preliminary data



| IGBTs                 |                                                                                                                                    |                 |               |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------|
| Symbol                | Conditions                                                                                                                         | Maximum Ratings |               |
| $V_{CES}$             | $T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$                                                                              | 600             | V             |
| $V_{GES}$             |                                                                                                                                    | $\pm 20$        | V             |
| $I_{C25}$             | $T_C = 25^{\circ}\text{C}$                                                                                                         | 40              | A             |
| $I_{C90}$             | $T_C = 90^{\circ}\text{C}$                                                                                                         | 25              | A             |
| $I_{CM}$<br>$V_{CEK}$ | $V_{GE} = \pm 15 \text{ V}; R_G = 33 \Omega; T_{VJ} = 125^{\circ}\text{C}$<br>RBSOA, Clamped inductive load; $L = 100 \mu\text{H}$ | 60<br>$V_{CES}$ | A             |
| $t_{SC}$<br>(SCSOA)   | $V_{CE} = V_{CES}; V_{GE} = \pm 15 \text{ V}; R_G = 33 \Omega; T_{VJ} = 125^{\circ}\text{C}$<br>non-repetitive                     | 10              | $\mu\text{s}$ |
| $P_{tot}$             | $T_C = 25^{\circ}\text{C}$                                                                                                         | 125             | W             |

| Symbol                                                                 | Conditions                                                                                                                                     | Characteristic Values<br>( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified) |                                     |                                  |
|------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------|----------------------------------|
|                                                                        |                                                                                                                                                | min.                                                                                   | typ.                                | max.                             |
| $V_{CE(sat)}$                                                          | $I_C = 25 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$<br>$T_{VJ} = 125^{\circ}\text{C}$                                     |                                                                                        | 1.8<br>2.0                          | 2.2<br>V                         |
| $V_{GE(th)}$                                                           | $I_C = 0.7 \text{ mA}; V_{GE} = V_{CE}$                                                                                                        | 4.5                                                                                    |                                     | 6.5 V                            |
| $I_{CES}$                                                              | $V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$<br>$T_{VJ} = 125^{\circ}\text{C}$                                        |                                                                                        | 0.6                                 | 0.6 mA<br>mA                     |
| $I_{GES}$                                                              | $V_{CE} = 0 \text{ V}; V_{GE} = \pm 20 \text{ V}$                                                                                              |                                                                                        |                                     | 200 nA                           |
| $t_{d(on)}$<br>$t_r$<br>$t_{d(off)}$<br>$t_f$<br>$E_{on}$<br>$E_{off}$ | Inductive load, $T_{VJ} = 125^{\circ}\text{C}$<br>$V_{CE} = 300 \text{ V}; I_C = 25 \text{ A}$<br>$V_{GE} = \pm 15 \text{ V}; R_G = 33 \Omega$ |                                                                                        | 50<br>50<br>270<br>40<br>1.2<br>0.8 | ns<br>ns<br>ns<br>ns<br>mJ<br>mJ |
| $C_{ies}$                                                              |                                                                                                                                                |                                                                                        | 1.6                                 | nF                               |
| $Q_{Gon}$                                                              |                                                                                                                                                |                                                                                        | 95                                  | nC                               |
| $R_{thJC}$<br>$R_{thJH}$                                               |                                                                                                                                                |                                                                                        | 2                                   | 1 K/W<br>K/W                     |
|                                                                        |                                                                                                                                                |                                                                                        |                                     |                                  |
|                                                                        |                                                                                                                                                |                                                                                        |                                     |                                  |

## Features

- NPT IGBT
  - low saturation voltage
  - positive temperature coefficient for easy paralleling
  - fast switching
- HiPerFRED™ diode
  - optimized fast and soft reverse recovery
  - low operating forward voltage
  - low leakage current
- ISOPLUS i4-PAC™ package
  - isolated back surface
  - low coupling capacity between pins and heatsink
  - enlarged creepage towards heatsink
  - application friendly pinout
  - low inductive current path
  - high reliability
  - industry standard outline
  - UL registered E 72873

## Applications

- single phaseleg
  - buck-boost chopper
- H bridge
  - power supplies
  - induction heating
  - four quadrant DC drives
  - controlled rectifier
- three phase bridge
  - AC drives
  - controlled rectifier

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

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