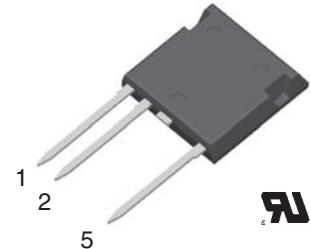
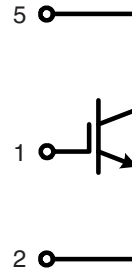


# High Voltage IGBT

in High Voltage  
ISOPLUS i4-PAC™

$$\begin{aligned} I_{C25} &= 32 \text{ A} \\ V_{CES} &= 2500 \text{ V} \\ V_{CE(sat)} &= 3.2 \text{ V} \\ t_f &= 250 \text{ ns} \end{aligned}$$



| IGBT      |                                                                            |                 |   |
|-----------|----------------------------------------------------------------------------|-----------------|---|
| Symbol    | Conditions                                                                 | Maximum Ratings |   |
| $V_{CES}$ | $T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$                      | 2500            | V |
| $V_{GES}$ |                                                                            | $\pm 20$        | V |
| $I_{C25}$ | $T_C = 25^{\circ}\text{C}$                                                 | 32              | A |
| $I_{C90}$ | $T_C = 90^{\circ}\text{C}$                                                 | 19              | A |
| $I_{CM}$  | $V_{GE} = \pm 15 \text{ V}; R_G = 47 \Omega; T_{VJ} = 125^{\circ}\text{C}$ | 70              | A |
| $V_{CEK}$ | RBSOA, Clamped inductive load; $L = 100 \mu\text{H}$                       | 1200            | V |
| $P_{tot}$ | $T_C = 25^{\circ}\text{C}$                                                 | 250             | W |

| Symbol                                                                 | Conditions                                                                                                                                      | Characteristic Values<br>( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified) |                                     |                                  |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------|----------------------------------|
|                                                                        |                                                                                                                                                 | min.                                                                                   | typ.                                | max.                             |
| $V_{CE(sat)}$                                                          | $I_C = 19 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$<br>$T_{VJ} = 125^{\circ}\text{C}$                                      |                                                                                        | 3.2<br>4.7                          | 3.9<br>V                         |
| $V_{GE(th)}$                                                           | $I_C = 1 \text{ mA}; V_{GE} = V_{CE}$                                                                                                           | 5                                                                                      |                                     | 8 V                              |
| $I_{CES}$                                                              | $V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$<br>$T_{VJ} = 125^{\circ}\text{C}$                                         |                                                                                        | 0.2                                 | 0.15 mA<br>mA                    |
| $I_{GES}$                                                              | $V_{CE} = 0 \text{ V}; V_{GE} = \pm 20 \text{ V}$                                                                                               |                                                                                        |                                     | 500 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>$V_{CE} = 1500 \text{ V}; I_C = 19 \text{ A}$<br>$V_{GE} = \pm 15 \text{ V}; R_G = 47 \Omega$ |                                                                                        | 100<br>50<br>600<br>250<br>15<br>30 | ns<br>ns<br>ns<br>ns<br>mJ<br>mJ |
| $C_{ies}$<br>$C_{oes}$<br>$C_{res}$                                    |                                                                                                                                                 |                                                                                        | 2.28<br>103<br>43                   | nF<br>pF<br>pF                   |
| $Q_{Gon}$                                                              |                                                                                                                                                 |                                                                                        | 142                                 | nC                               |
| $R_{thJC}$                                                             |                                                                                                                                                 |                                                                                        |                                     | 0.5 K/W                          |

## Features

- High Voltage IGBT
  - substitute for high voltage MOSFETs with significantly lower voltage drop and comparable switching speed
  - substitute for high voltage thyristors with voltage control of turn on & turn off
  - substitute for electromechanical trigger and discharge relays
- 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
  - UL registered E72873

## Applications

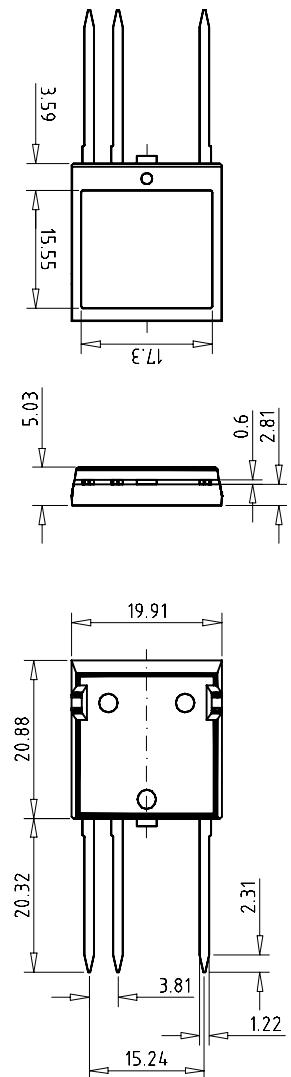
- switched mode power supplies
- DC-DC converters
- resonant converters
- laser generators, x ray generators
- discharge circuits

## Component

| Symbol     | Conditions                                     | Maximum Ratings |    |
|------------|------------------------------------------------|-----------------|----|
| $T_{VJ}$   |                                                | -55...+150      | °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. |
| $d_s, d_A$ | C pin - E pin          | 7.0                   |      | mm   |
| $d_s, d_A$ | pin - backside metal   | 5.5                   |      | mm   |
| $R_{thCH}$ | with heatsink compound |                       | 0.15 | K/W  |
| Weight     |                        |                       | 9    | g    |

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



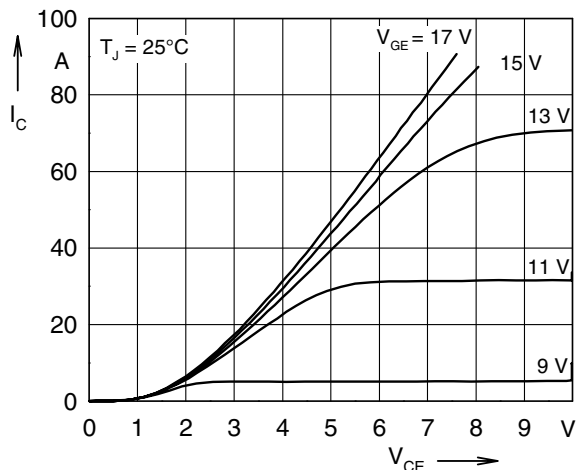


Fig. 1 Typ. Output Characteristics

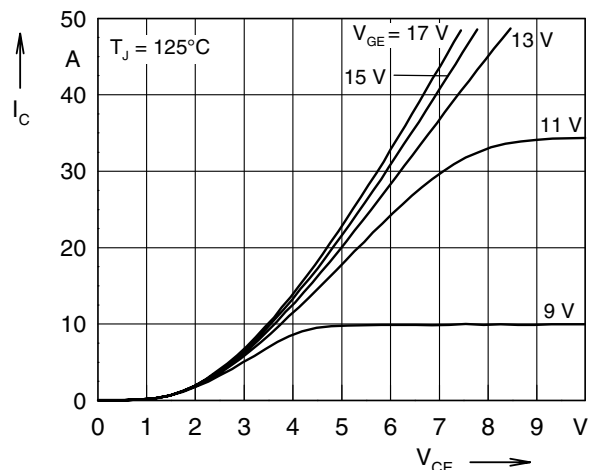


Fig. 2 Typ. Output Characteristics

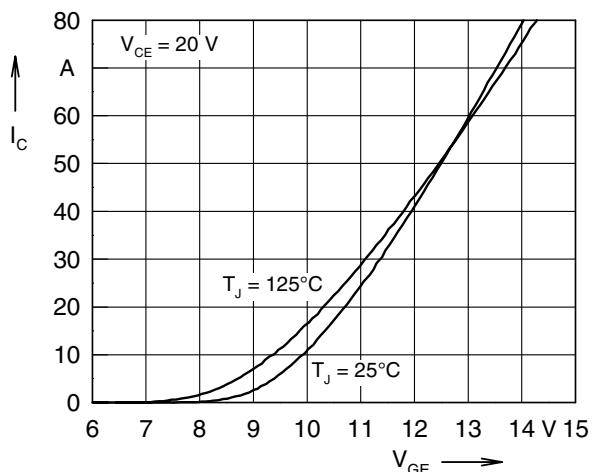


Fig. 3 Typ. Transfer Characteristics

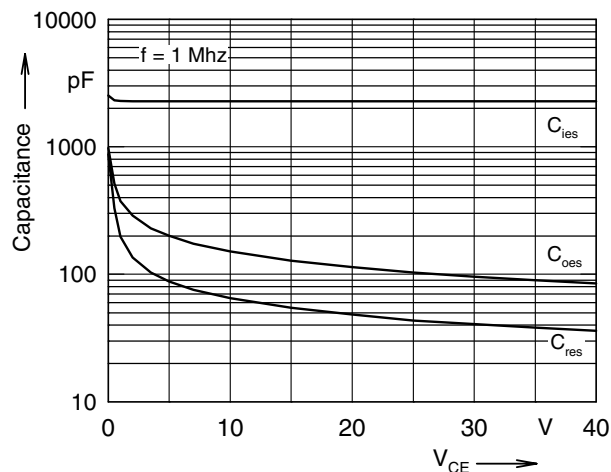


Fig. 4 Capacitance curves

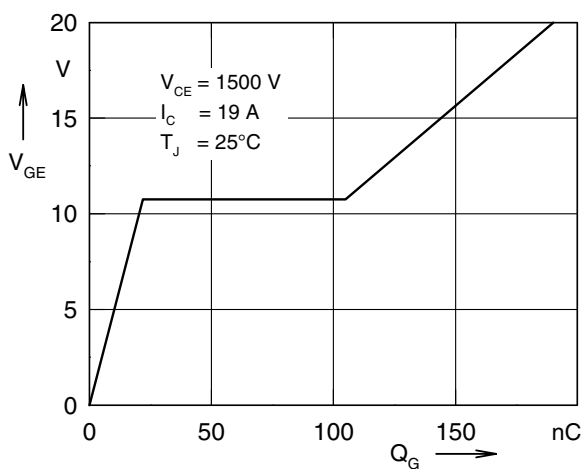


Fig. 5 Typ. Gate Charge characteristics

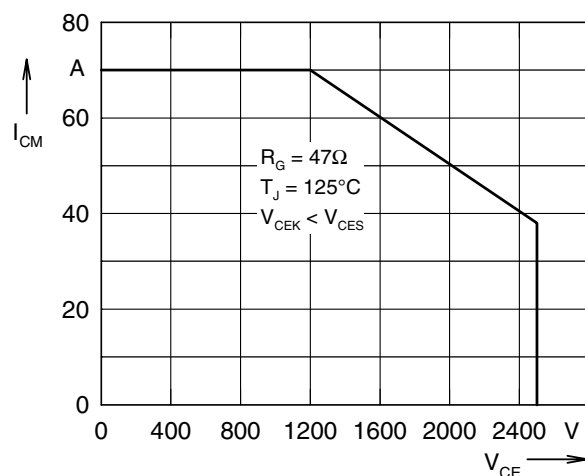
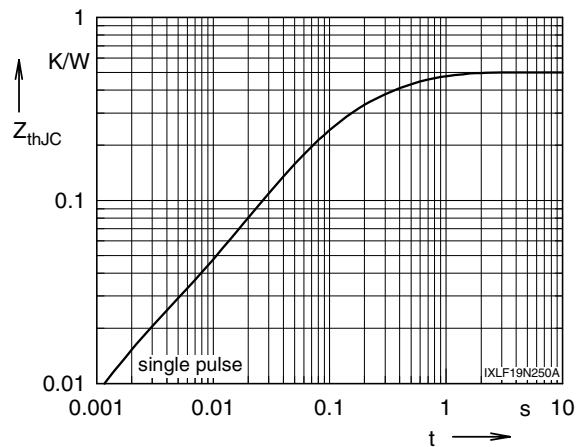
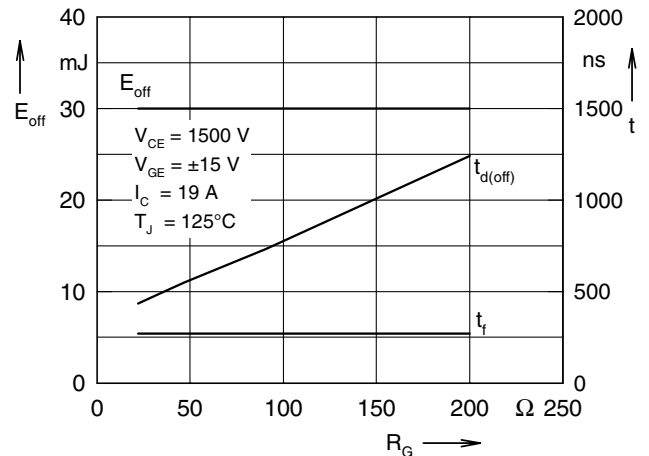
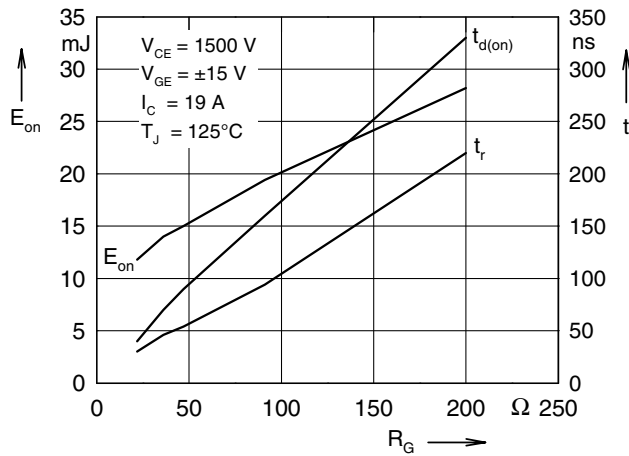
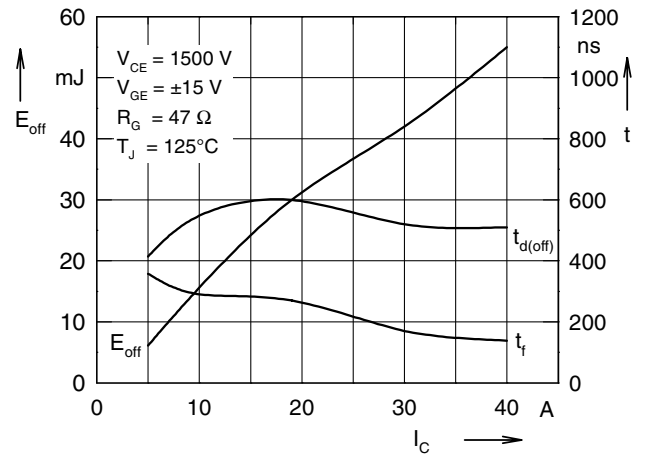
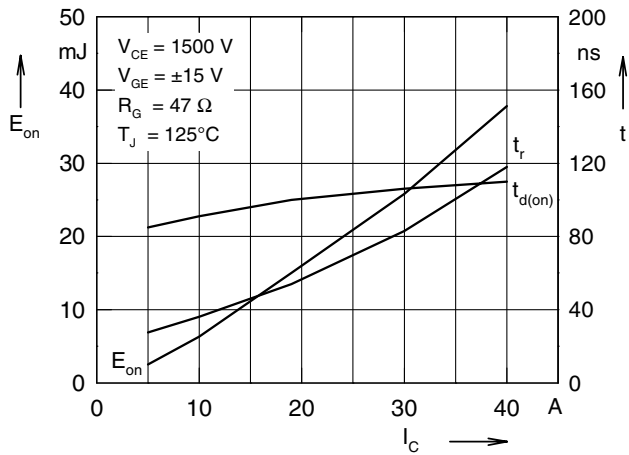


Fig. 6 Reverse Biased Safe Operating Area RBSOA





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