



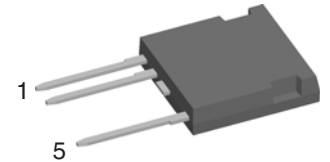
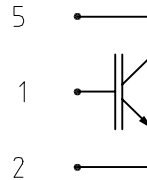
**THE DATASHEET OF  
IXBF9N160G**



# High Voltage BIMOSFET™

in High Voltage ISOPLUS i4-PAC™

Monolithic Bipolar MOS Transistor



$$I_{C25} = 7 \text{ A}$$

$$V_{CES} = 1600 \text{ V}$$

$$V_{CE(sat)} = 4.9 \text{ V}$$

$$t_f = 70 \text{ ns}$$

| IGBT                  |  |                             |
|-----------------------|--|-----------------------------|
| Symbol                | Conditions   | Maximum Ratings             |
| $V_{CES}$             | $T_{VJ} = 25^\circ\text{C to } 150^\circ\text{C}$  | 1600 V                      |
| $V_{GES}$             |  | $\pm 20$ V                  |
| $I_{C25}$             | $T_C = 25^\circ\text{C}$   | 7 A                         |
| $I_{C90}$             | $T_C = 90^\circ\text{C}$   | 4 A                         |
| $I_{CM}$<br>$V_{CEK}$ | $V_{GE} = 10/0 \text{ V}; R_G = 27 \Omega; T_{VJ} = 125^\circ\text{C}$<br>RBSOA, Clamped inductive load; $L = 100 \mu\text{H}$ | 12 A<br>$0.8 \cdot V_{CES}$ |
| $P_{tot}$             | $T_C = 25^\circ\text{C}$   | 70 W                        |

## Features

- High Voltage BIMOSFET™
  - substitute for high voltage MOSFETs with significantly lower voltage drop
  - MOSFET compatible control 10 V turn on gate voltage
  - fast switching for high frequency operation
  - reverse conduction capability
- 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

| Symbol  | Conditions  | Characteristic Values<br>( $T_{VJ} = 25^\circ\text{C}$ , unless otherwise specified) |                         |                      |    |
|---|---|--|-------------------------|----------------------|----|
|   |   | min.   | typ.                    | max.                 |    |
| $V_{CE(sat)}$                                 | $I_C = 5 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^\circ\text{C}$<br>$T_{VJ} = 125^\circ\text{C}$                                     |  | 4.9<br>5.6              | 7 V<br>V             |    |
| $V_{GE(th)}$                                  | $I_C = 0.5 \text{ mA}; V_{GE} = V_{CE}$   | 3.5  |                         | 5.5 V                |    |
| $I_{CES}$                                     | $V_{CE} = 0.8V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^\circ\text{C}$<br>$T_{VJ} = 125^\circ\text{C}$                                    |  | 0.1                     | 0.1 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>$t_f$ | Inductive load, $T_{VJ} = 125^\circ\text{C}$<br>$V_{CE} = 960 \text{ V}; I_C = 5 \text{ A}$<br>$V_{GE} = 10/0 \text{ V}; R_G = 27 \Omega$ |  | 140<br>200<br>120<br>70 | ns<br>ns<br>ns<br>ns |    |
| $C_{ies}$                                     |   | $V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; f = 1 \text{ MHz}$                     |                         | 550                  | pF |
| $Q_{Gon}$                                     |   | $V_{CE} = 600 \text{ V}; V_{GE} = 10 \text{ V}; I_C = 5 \text{ A}$                   |                         | 34                   | nC |
| $V_F$   |   | (reverse conduction); $I_F = 5 \text{ A}$  |                         | 3.6                  | V  |
| $R_{thJC}$                                    |   |  |                         | 1.75 KW              |    |

## Applications

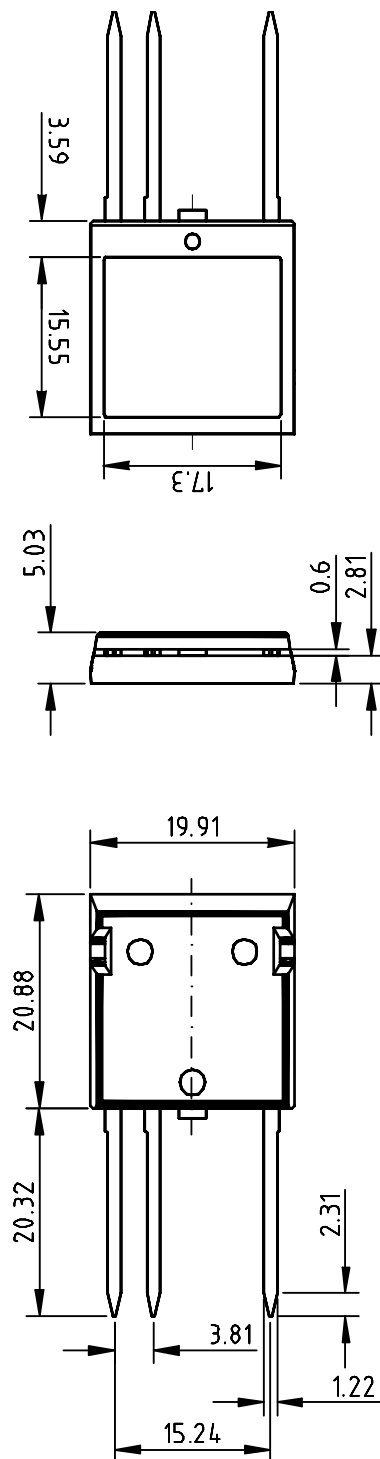
- switched mode power supplies
- DC-DC converters
- resonant converters
- lamp ballasts
- laser generators, x ray generators

**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. |
| $d_s, d_A$    | pin 2 - pin 5          | 7                     |      | mm   |
| $d_s, d_A$    | pin - backside metal   | 5.5                   |      | mm   |
| $R_{thCH}$    | with heatsink compound |                       | 0.15 | K/W  |
| <b>Weight</b> |                        |                       | 9    | g    |

Dimensions in mm (1 mm = 0.0394")



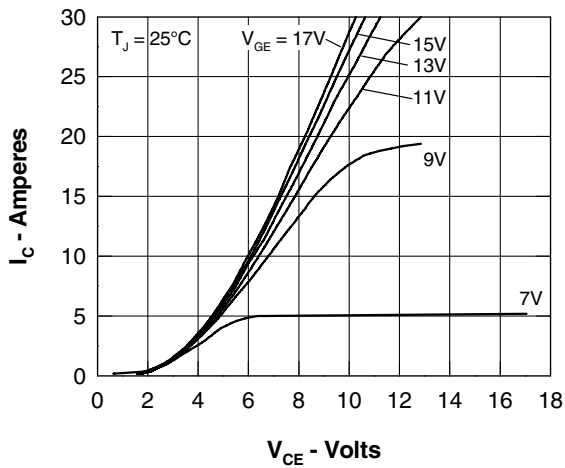


Fig. 1 Typ. Output Characteristics

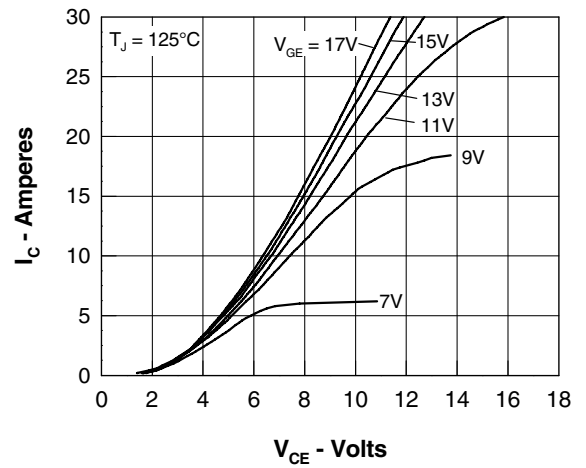


Fig. 2 Typ. Output Characteristics

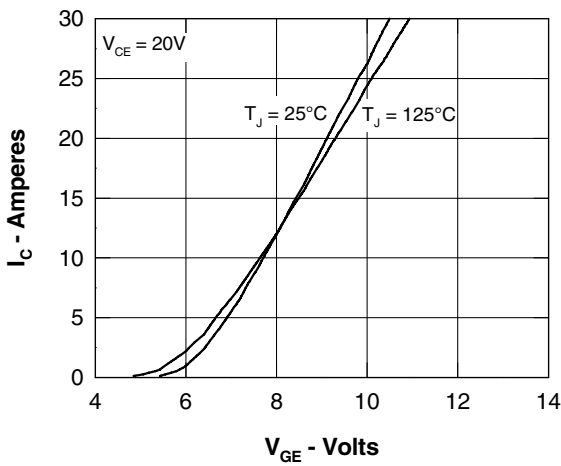


Fig. 3 Typ. Transfer Characteristics

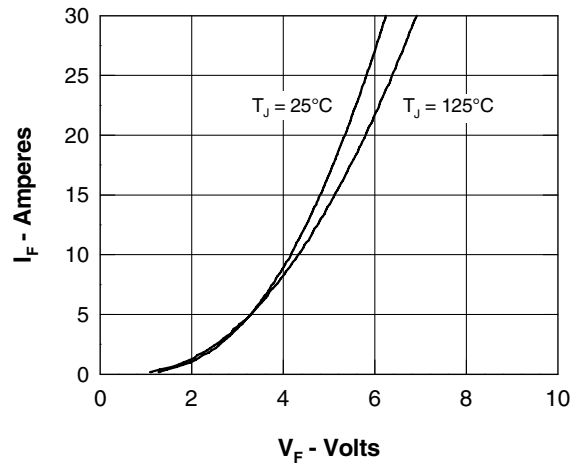


Fig. 4 Typ. Characteristics of Reverse Conduction

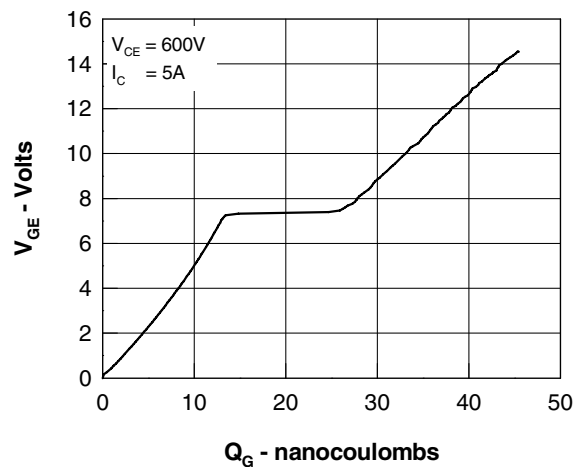


Fig. 5 Typ. Gate Charge characteristics

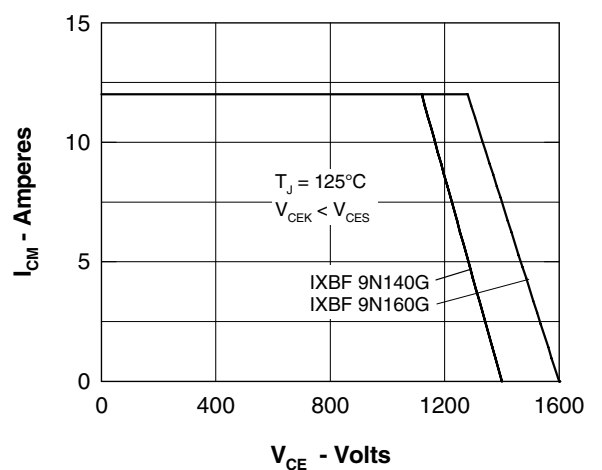


Fig. 6 Reverse Biased Safe Operating Area RBSOA

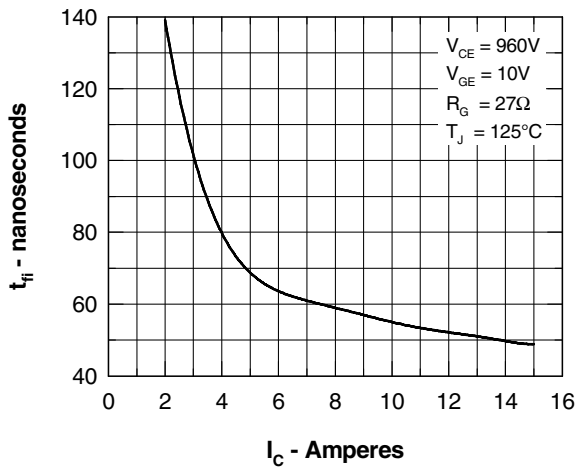


Fig. 7 Typ. Fall Time

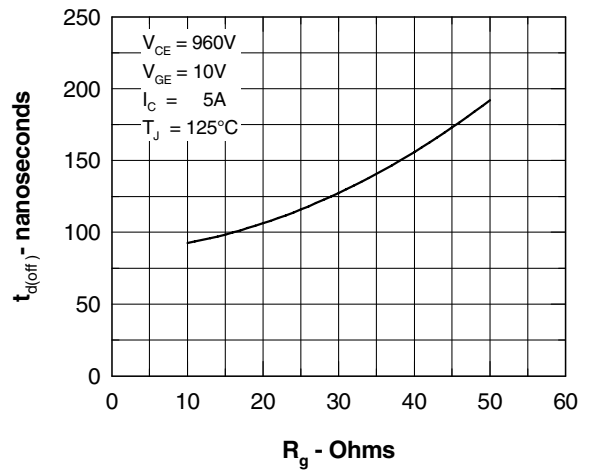


Fig. 8 Typ. Turn Off Delay Time

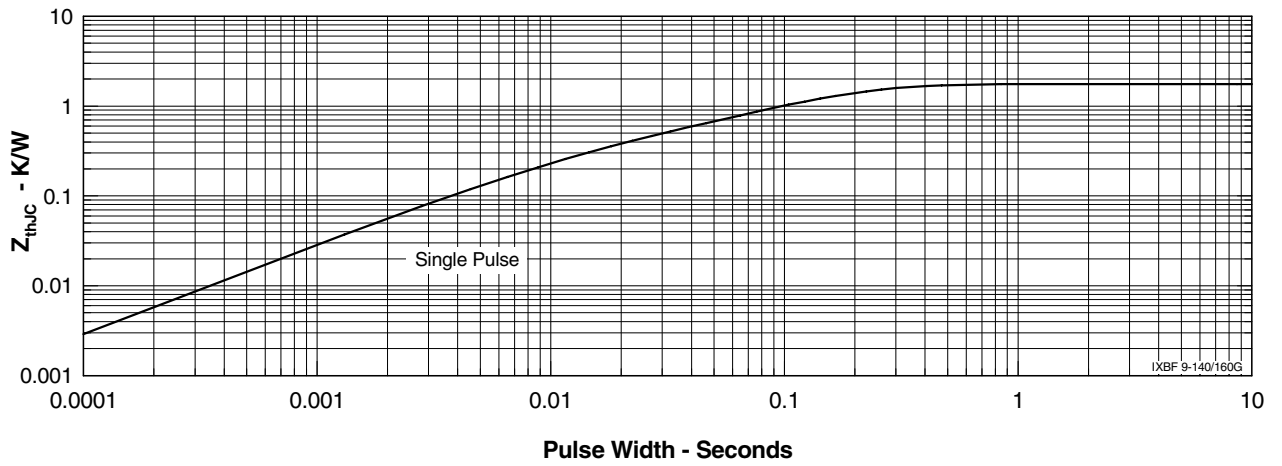


Fig. 9 Typ. Transient Thermal Impedance



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