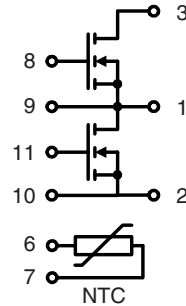


# Dual Power HiPerFET™ Module

Phaseleg Configuration

$V_{DSS} = 900\text{ V}$   
 $I_{D25} = 85\text{ A}$   
 $R_{DS(on)} = 76\text{ m}\Omega$



### MOSFET T1 + T2

| Symbol    | Conditions  | Maximum Ratings |   |
|-----------|---|-----------------|---|
| $V_{DSS}$ | $T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$ | 900             | V |
| $V_{GS}$  |   | $\pm 20$        | V |
| $I_{D25}$ | $T_C = 25^{\circ}\text{C}$                            | 85              | A |
| $I_{D80}$ | $T_C = 80^{\circ}\text{C}$                            | 65              | A |
| $I_{F25}$ | (diode) $T_C = 25^{\circ}\text{C}$                    | 85              | A |
| $I_{F80}$ | (diode) $T_C = 80^{\circ}\text{C}$                    | 65              | A |

### Features

- HiPerFET™ technology
  - low  $R_{DS(on)}$
  - unclamped inductive switching (UIS) capability
  - dv/dt ruggedness
  - fast intrinsic reverse diode
  - low gate charge
- thermistor for internal temperature measurement
- package
  - low inductive current path
  - screw connection to high current main terminals
  - use of non interchangeable connectors for auxiliary terminals possible
  - Kelvin source terminals for easy drive
  - isolated DCB ceramic base plate

| Symbol  | Conditions   | Characteristic Values<br>( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified) |      |                 |
|---|--|--|------|-----------------|
|   |  | min.   | typ. | max.            |
| $R_{DS(on)}$                                  | $V_{GS} = 10\text{ V}; I_D = I_{D80}$  |  |      | 76 m $\Omega$   |
| $V_{GS(th)}$                                  | $V_{DS} = 20\text{ V}; I_D = 30\text{ mA}$   | 3  |      | 5 V             |
| $I_{DSS}$                                     | $V_{DS} = 0.8 \cdot V_{DSS}; V_{GS} = 0\text{ V}; T_{VJ} = 25^{\circ}\text{C}$<br>$T_{VJ} = 125^{\circ}\text{C}$ |  | 1.5  | 0.4 mA<br>mA    |
| $I_{GSS}$                                     | $V_{GS} = \pm 20\text{ V}; V_{DS} = 0\text{ V}$  |  |      | 1 $\mu\text{A}$ |
| $Q_g$<br>$Q_{gs}$<br>$Q_{gd}$                 | } $V_{GS} = 10\text{ V}; V_{DS} = 450\text{ V}; I_D = 50\text{ A}$   |  | 960  | nC              |
|   |  |  | 225  | nC              |
|   |  |  | 430  | nC              |
| $t_{d(on)}$<br>$t_r$<br>$t_{d(off)}$<br>$t_f$ | } $V_{GS} = 10\text{ V}; V_{DS} = 0.5 \cdot V_{DSS};$<br>$I_D = I_{D80}; R_G = 0.47\ \Omega$                     |  | 150  | ns              |
|   |  |  | 180  | ns              |
|   |  |  | 330  | ns              |
|   |  |  | 140  | ns              |
| $V_F$   | (diode) $I_F = 90\text{ A}; V_{GS} = 0\text{ V}$   |  | 1.1  | 1.6 V           |
| $t_{rr}$                                      | (diode) $I_F = 90\text{ A}; -di/dt = 400\text{ A}/\mu\text{s}; V_{DS} = 100\text{ V}$                            |  | 250  | ns              |
| $R_{thJC}$<br>$R_{thJS}$                      | with heat transfer paste   |  | 0.12 | 0.08 K/W<br>K/W |

### Applications

- converters with high power density and high switching speed for
  - power supplies
  - induction heating

## Electrical Characteristics

| Symbol       | Conditions               | Characteristic Values |      |          |
|--------------|--------------------------|-----------------------|------|----------|
|              |                          | min.                  | typ. | max.     |
| $R_{25}$     | $T = 25^{\circ}\text{C}$ |                       | 2200 | $\Omega$ |
| $B_{25/100}$ |                          |                       | 3560 | K        |

## Module

| Symbol     | Conditions                                     | Maximum Ratings |                    |
|------------|--|-----------------|--------------------|
| $T_{VJ}$   |  | -40...+150      | $^{\circ}\text{C}$ |
| $T_{stg}$  |  | -40...+125      | $^{\circ}\text{C}$ |
| $V_{ISOL}$ | $I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}$ | 3600            | V~                 |
| $M_d$      | Mounting torque (M6)                           | 2.25 - 2.75     | Nm                 |
|            | Terminal connection torque (M6)                | 4.5 - 5.5       | Nm                 |

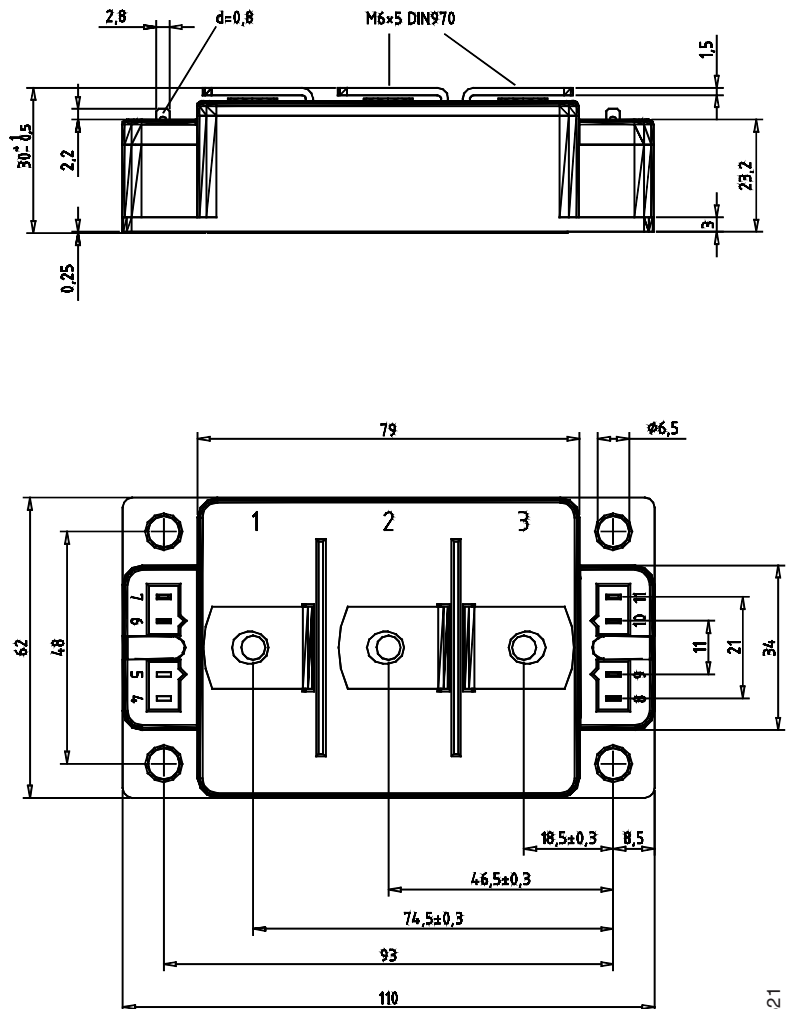
| Symbol | Conditions | Characteristic Values |      |      |
|--------|------------|-----------------------|------|------|
|        |            | min.                  | typ. | max. |
| Weight |            |                       | 250  | g    |

Dimensions in mm (1 mm = 0.0394")

### Optional accessories for modules

keyed twin plugs  
(UL758, style 1385, CSA class 5851, guide 460-1-1)

- Type ZY180L with wire length 350mm  
– for pins 4 (yellow wire) and 5 (red wire)  
– for pins 11 (yellow wire) and 10 (red wire)
- Type ZY180R with wire length 350mm  
– for pins 7 (yellow wire) and 6 (red wire)  
– for pins 8 (yellow wire) and 9 (red wire)



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

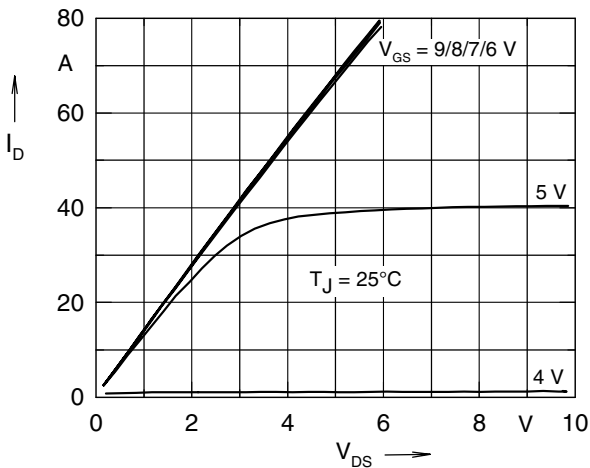


Fig. 1 Typical output characteristics

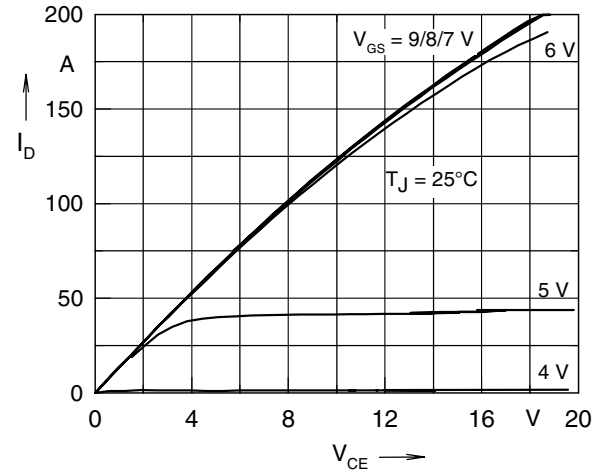


Fig. 2 Typical transfer characteristics

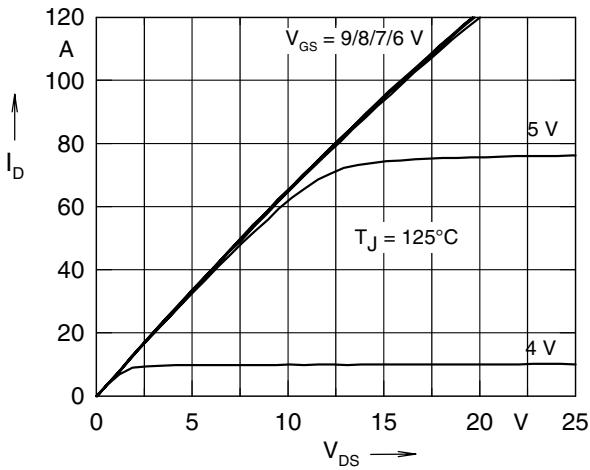


Fig. 3 Typical output characteristics

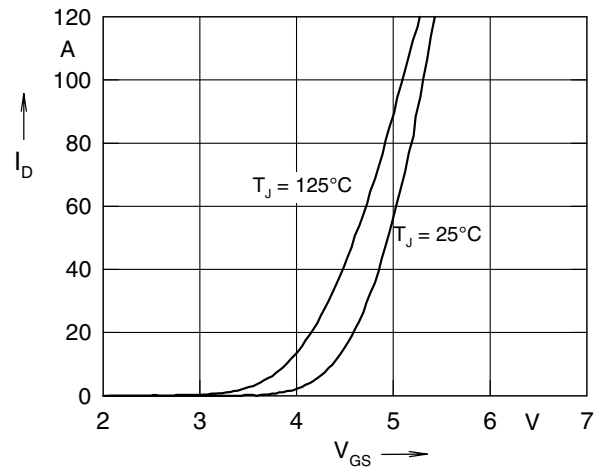


Fig. 4 Typical transfer characteristics

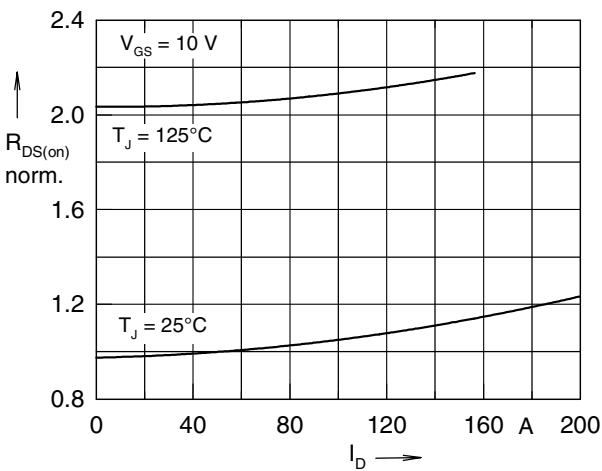


Fig. 5 Typical normalized  $R_{DS(on)}$  versus  $I_D$

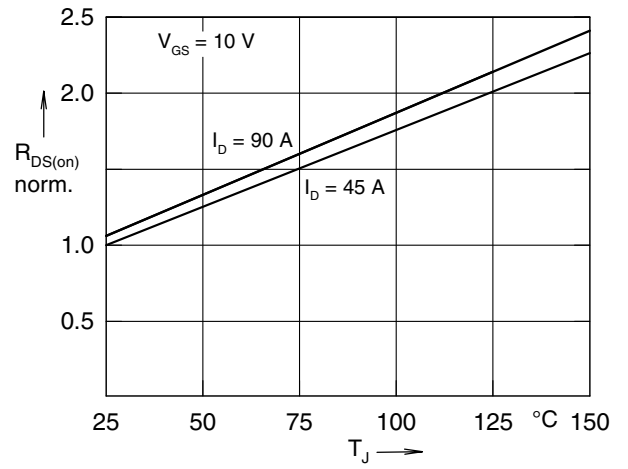


Fig. 6 Typical normalized  $R_{DS(on)}$  versus  $T_J$

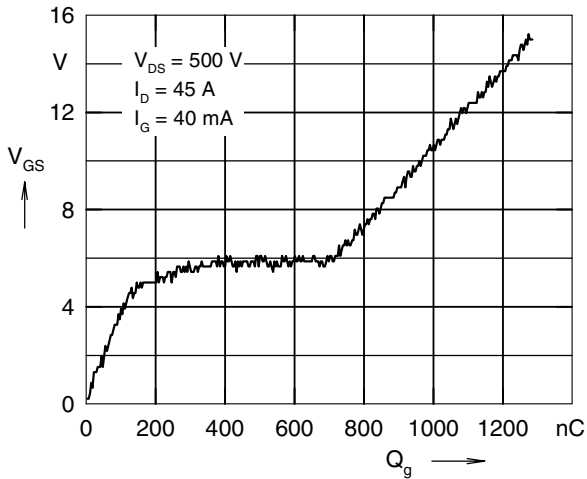


Fig. 7 Typical turn-on gate charge characteristics

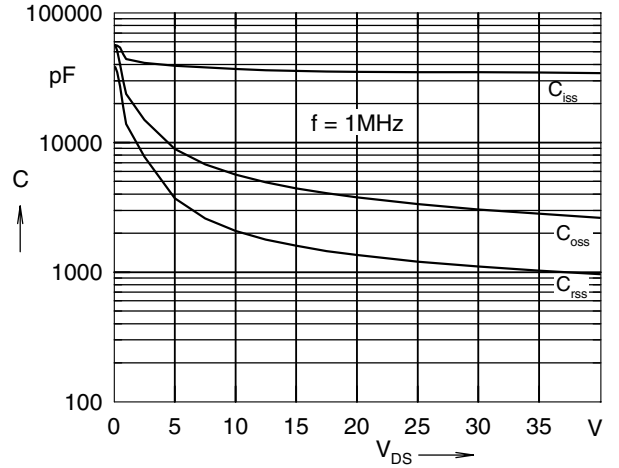


Fig. 8 Typical capacitances

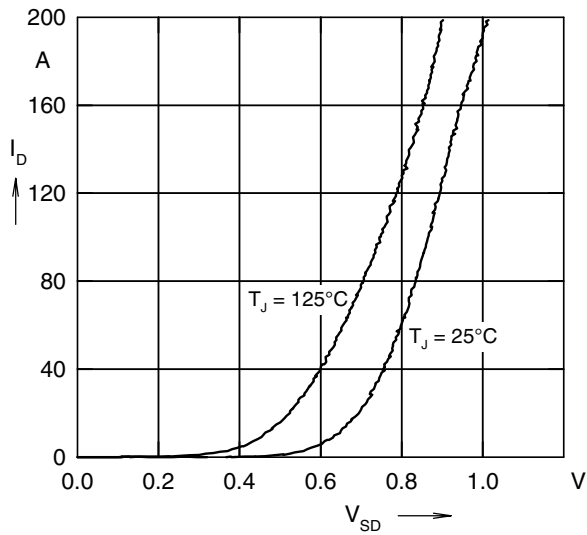


Fig. 9 Typical forward characteristics of diode

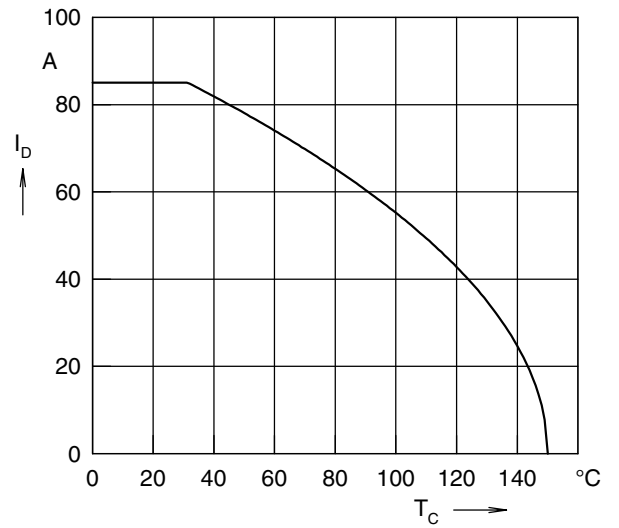


Fig. 10 Continuous drain current

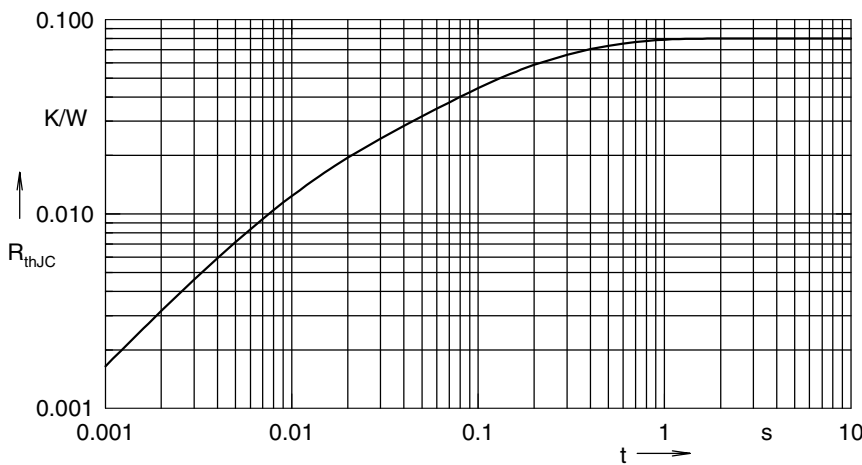


Fig. 11 Transient thermal resistance