

# HiPerFET™ Power MOSFET

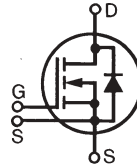
Single MOSFET Die

Preliminary data sheet

IXFE 36N100  
IXFE 34N100

| $V_{DSS}$ | $I_{D25}$ | $R_{DS(on)}$  |
|-----------|-----------|---------------|
| 1000 V    | 33 A      | 0.24 $\Omega$ |
| 1000 V    | 30 A      | 0.28 $\Omega$ |

$t_{rr} \leq 250$  ns



## Symbol Test Conditions

## Maximum Ratings

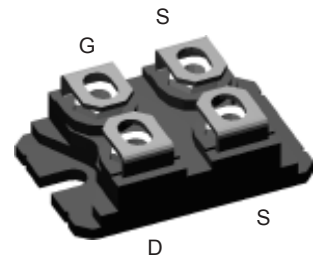
|            |                                                                                                                                  |                                      |                  |
|------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------|
| $V_{DSS}$  | $T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$                                                                                  | 1000                                 | V                |
| $V_{DGR}$  | $T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ , $R_{GS} = 1\text{M}\Omega$                                                     | 1000                                 | V                |
| $V_{GS}$   | Continuous                                                                                                                       | $\pm 20$                             | V                |
| $V_{GSM}$  | Transient                                                                                                                        | $\pm 30$                             | V                |
| $I_{D25}$  | $T_C = 25^\circ\text{C}$                                                                                                         | 36N100 33<br>34N100 30               | A                |
| $I_{DM}$   | $T_C = 25^\circ\text{C}$ ; Note 1                                                                                                | 36N100 144<br>34N100 136             | A                |
| $I_{AR}$   | $T_C = 25^\circ\text{C}$                                                                                                         | 36                                   | A                |
| $E_{AR}$   | $T_C = 25^\circ\text{C}$                                                                                                         | 64                                   | mJ               |
| $E_{AS}$   | $T_C = 25^\circ\text{C}$                                                                                                         | 4                                    | J                |
| $dv/dt$    | $I_S \leq I_{DM}$ , $di/dt \leq 100$ A/ $\mu\text{s}$ , $V_{DD} \leq V_{DSS}$<br>$T_J \leq 150^\circ\text{C}$ , $R_G = 2 \Omega$ | 5                                    | V/ns             |
| $P_D$      | $T_C = 25^\circ\text{C}$                                                                                                         | 580                                  | W                |
| $T_J$      |                                                                                                                                  | -55 ... +150                         | $^\circ\text{C}$ |
| $T_{JM}$   |                                                                                                                                  | 150                                  | $^\circ\text{C}$ |
| $T_{stg}$  |                                                                                                                                  | -55 ... +150                         | $^\circ\text{C}$ |
| $T_L$      | 1.6 mm (0.063 in) from case for 10 s                                                                                             | 300                                  | $^\circ\text{C}$ |
| $V_{ISOL}$ | 50/60 Hz, RMS $t = 1$ min<br>$I_{ISOL} \leq 1$ mA $t = 1$ s                                                                      | 2500<br>3000                         | V~<br>V~         |
| $M_d$      | Mounting torque<br>Terminal connection torque                                                                                    | 1.5/13 Nm/lb.in.<br>1.5/13 Nm/lb.in. |                  |
| Weight     |                                                                                                                                  | 19                                   | g                |

## Symbol Test Conditions ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)

## Characteristic Values

|              |                                        | Min.                                                  | Typ. | Max.                           |
|--------------|----------------------------------------|-------------------------------------------------------|------|--------------------------------|
| $V_{DSS}$    | $V_{GS} = 0$ V, $I_D = 3$ mA           | 1000                                                  |      | V                              |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$ , $I_D = 8$ mA       | 3.0                                                   |      | 5.5 V                          |
| $I_{GSS}$    | $V_{GS} = \pm 20$ V, $V_{DS} = 0$ V    |                                                       |      | $\pm 200$ nA                   |
| $I_{DSS}$    | $V_{DS} = V_{DSS}$<br>$V_{GS} = 0$ V   | $T_J = 25^\circ\text{C}$<br>$T_J = 125^\circ\text{C}$ |      | 100 $\mu\text{A}$<br>2 mA      |
| $R_{DS(on)}$ | $V_{GS} = 10$ V, $I_D = I_T$<br>Note 2 | 36N100<br>34N100                                      |      | 0.24 $\Omega$<br>0.28 $\Omega$ |

## ISOPLUS 227™ (IXFE)



G = Gate  
S = Source

D = Drain

Either Source terminal at miniBLOC can be used as Main or Kelvin Source

## Features

- Conforms to SOT-227B outline
- Low  $R_{DS(on)}$  HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
- Fast intrinsic Rectifier

## Applications

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- Temperature and lighting controls

## Advantages

- Low cost
- Easy to mount
- Space savings
- High power density

| Symbol       | Test Conditions                                                                                | Characteristic Values |      |      |
|--------------|------------------------------------------------------------------------------------------------|-----------------------|------|------|
|              |                                                                                                | Min.                  | Typ. | Max. |
| $g_{fs}$     | $V_{DS} = 15 \text{ V}; I_D = I_T$ , Note 3                                                    | 18                    | 40   | S    |
| $C_{iss}$    | $V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$                               |                       | 9200 | pF   |
| $C_{oss}$    |                                                                                                |                       | 1200 | pF   |
| $C_{rss}$    |                                                                                                |                       | 300  | pF   |
| $t_{d(on)}$  | $V_{GS} = 10 \text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = I_T$<br>$R_G = 1 \Omega$ (External), |                       | 41   | ns   |
| $t_r$        |                                                                                                |                       | 65   | ns   |
| $t_{d(off)}$ |                                                                                                |                       | 110  | ns   |
| $t_f$        |                                                                                                |                       | 30   | ns   |
| $Q_{g(on)}$  | $V_{GS} = 10 \text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = I_T$                                 |                       | 380  | nC   |
| $Q_{gs}$     |                                                                                                |                       | 65   | nC   |
| $Q_{gd}$     |                                                                                                |                       | 185  | nC   |
| $R_{thJC}$   |                                                                                                |                       | 0.22 | K/W  |
| $R_{thCK}$   |                                                                                                |                       | 0.07 | K/W  |

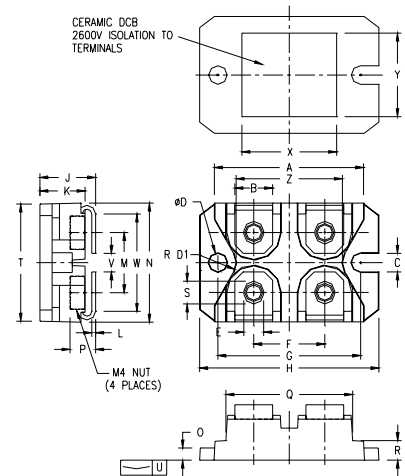
### Source-Drain Diode

( $T_J = 25^\circ\text{C}$ , unless otherwise specified)

| Symbol   | Test Conditions                                                                                       | Characteristic Values                                                            |                |                           |
|----------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------|---------------------------|
|          |                                                                                                       | Min.                                                                             | Typ.           | Max.                      |
| $I_S$    | $V_{GS} = 0$                                                                                          | 36N100<br>34N100                                                                 |                | 36<br>34 A                |
| $I_{SM}$ | Repetitive;<br>pulse width limited by $T_{JM}$                                                        | 36N100<br>34N100                                                                 |                | 144<br>136 A              |
| $V_{SD}$ | $I_F = I_S, V_{GS} = 0 \text{ V}$ ,<br>Pulse test, $t \leq 300 \mu\text{s}$ , duty cycle $d \leq 2\%$ |                                                                                  |                | 1.3 V                     |
| $t_{rr}$ | $I_F = I_S, -di/dt = 100 \text{ A}/\mu\text{s}, V_R = 100 \text{ V}$                                  | $T_J = 25^\circ\text{C}$<br>$T_J = 25^\circ\text{C}$<br>$T_J = 25^\circ\text{C}$ | 180<br>30<br>2 | ns<br>ns<br>$\mu\text{C}$ |
| $Q_{RM}$ |                                                                                                       |                                                                                  | 8              | A                         |
| $I_{RM}$ |                                                                                                       |                                                                                  |                |                           |

- Notes:
1. Pulse width limited by  $T_{JM}$ .
  2. Pulse test,  $t \leq 300 \text{ ms}$ , duty cycle  $d \leq 2\%$ .
  3.  $I_T$  Test current:  
IXFE36N100:  $I_T = 18 \text{ A}$   
IXFE34N100:  $I_T = 17 \text{ A}$

### ISOPLUS-227 B



| SYM | INCHES |       | MILLIMETERS |       |
|-----|--------|-------|-------------|-------|
|     | MIN    | MAX   | MIN         | MAX   |
| A   | 1.240  | 1.270 | 31.50       | 32.26 |
| B   | .310   | .330  | 7.87        | 8.38  |
| C   | .155   | .165  | 3.94        | 4.19  |
| D   | .155   | .165  | 3.94        | 4.19  |
| D1  | .150   | .157  | 3.81        | 3.98  |
| E   | .160   | .168  | 4.06        | 4.27  |
| F   | .587   | .595  | 14.91       | 15.11 |
| G   | 1.186  | 1.193 | 30.12       | 30.30 |
| H   | 1.489  | 1.505 | 37.80       | 38.23 |
| J   | .465   | .481  | 11.81       | 12.22 |
| K   | .370   | .380  | 9.40        | 9.65  |
| L   | .030   | .033  | 0.76        | 0.84  |
| M   | .496   | .506  | 12.60       | 12.85 |
| N   | .990   | 1.001 | 25.15       | 25.42 |
| O   | .100   | .105  | 2.54        | 2.67  |
| P   | .195   | .235  | 4.95        | 5.97  |
| Q   | 1.045  | 1.059 | 26.54       | 26.90 |
| R   | .160   | .170  | 4.06        | 4.32  |
| S   | .186   | .191  | 4.72        | 4.85  |
| T   | .968   | .987  | 24.59       | 25.07 |
| U   | -.001  | .002  | -0.03       | 0.05  |
| V   | .130   | .160  | 3.30        | 4.06  |
| W   | .780   | .830  | 19.81       | 21.08 |
| X   | .770   | .810  | 19.56       | 20.57 |
| Y   | .680   | .720  | 17.27       | 18.29 |
| Z   | .885   | .892  | 22.48       | 22.66 |

Please see IXFN36N100 data sheet for characteristic curves.