

# HiPerFET™ Power MOSFETs

## IXFH 80N085 IXFT 80N085

$$V_{DSS} = 85 \text{ V}$$

$$I_{D25} = 80 \text{ A}$$

$$R_{DS(on)} = 9 \text{ m}\Omega$$

N-Channel Enhancement Mode  
Avalanche Rated, High dv/dt

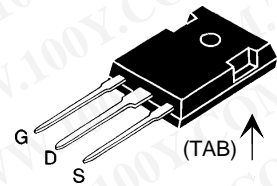
$$t_{rr} \leq 200 \text{ ns}$$

### Preliminary data sheet

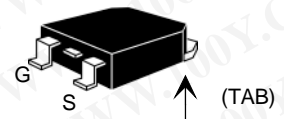


| Symbol       | Test Conditions   | Maximum Ratings |                  |
|--------------|---|-----------------|------------------|
| $V_{DSS}$    | $T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$   | 85              | V                |
| $V_{DGR}$    | $T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1 \text{ M}\Omega$  | 85              | V                |
| $V_{GS}$     | Continuous  | $\pm 20$        | V                |
| $V_{GSM}$    | Transient   | $\pm 30$        | V                |
| $I_{D25}$    | $T_C = 25^\circ\text{C}$  | 80              | A                |
| $I_{L(RMS)}$ | Lead current limit  | 75              | A                |
| $I_{DM}$     | $T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$  | 320             | A                |
| $I_{AR}$     | $T_C = 25^\circ\text{C}$  | 80              | A                |
| $E_{AR}$     | $T_C = 25^\circ\text{C}$  | 50              | mJ               |
| $E_{AS}$     |   | 2.5             | J                |
| dv/dt        | $I_S \leq I_{DM}$ , $di/dt \leq 100 \text{ A}/\mu\text{s}$ , $V_{DD} \leq V_{DSS}$ ,<br>$T_J \leq 150^\circ\text{C}$ , $R_G = 2 \Omega$ | 5               | V/ns             |
| $P_D$        | $T_C = 25^\circ\text{C}$  | 300             | W                |
| $T_J$        |   | -55 to +150     | $^\circ\text{C}$ |
| $T_{JM}$     |   | 150             | $^\circ\text{C}$ |
| $T_{stg}$    |   | -55 to +150     | $^\circ\text{C}$ |
| $T_L$        | 1.6 mm (0.063 in) from case for 10 s  | 300             | $^\circ\text{C}$ |
| $M_d$        | Mounting torque   | 1.13/10         | Nm/lb.in.        |
| Weight       | TO-247  | 6               | g                |
|              | TO-268  | 4               | g                |

### TO-247 AD (IXFH)



### TO-268 (IXFT) Case Style



G = Gate D = Drain  
S = Source TAB = Drain

| Symbol       | Test Conditions   | Characteristic Values<br>( $T_J = 25^\circ\text{C}$ , unless otherwise specified) |      |                      |
|--------------|---|---|------|----------------------|
|              |   | min.  | typ. | max.                 |
| $V_{DSS}$    | $V_{GS} = 0 \text{ V}$ , $I_D = 1 \text{ mA}$   | 85  |      | V                    |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$ , $I_D = 4 \text{ mA}$  | 2.0   |      | V                    |
| $I_{GSS}$    | $V_{GS} = \pm 20 \text{ V}_{DC}$ , $V_{DS} = 0$   |   |      | $\pm 100 \text{ nA}$ |
| $I_{DSS}$    | $V_{DS} = V_{DSS}$ ,<br>$V_{GS} = 0 \text{ V}$  | $T_J = 25^\circ\text{C}$  |      | 50 $\mu\text{A}$     |
|              |   | $T_J = 125^\circ\text{C}$   |      | 1 mA                 |
| $R_{DS(on)}$ | $V_{GS} = 10 \text{ V}$ , $I_D = 0.5 I_{D25}$<br>Pulse test, $t \leq 300 \mu\text{s}$ , duty cycle $d \leq 2\%$ |   |      | 9 m $\Omega$         |

### Features

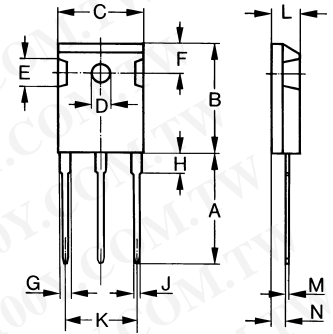
- International standard packages
- Low  $R_{DS(on)}$
- Rated for unclamped Inductive load switching (UIS)
- Molding epoxies meet UL 94 V-0 flammability classification

### Advantages

- Easy to mount
- Space savings
- High power density

| Symbol                    | Test Conditions  | Characteristic Values                               |      |      |
|---------------------------|--|---|------|------|
|                           |  | (T <sub>J</sub> = 25°C, unless otherwise specified) |      |      |
|                           |  | min.  | typ. | max. |
| <b>g<sub>fs</sub></b>     | V <sub>DS</sub> = 20 V; I <sub>D</sub> = 0.5 • I <sub>D25</sub> , pulse test   | 35  | 55   | S    |
| <b>C<sub>iss</sub></b>    | V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 25 V, f = 1 MHz   |   | 4800 | pF   |
| <b>C<sub>oss</sub></b>    |  |   | 1675 | pF   |
| <b>C<sub>rss</sub></b>    |  |   | 590  | pF   |
| <b>t<sub>d(on)</sub></b>  | V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 0.5 • V <sub>DSS</sub> , I <sub>D</sub> = 0.5 • I <sub>D25</sub><br>R <sub>G</sub> = 4.7 Ω (External), |   | 50   | ns   |
| <b>t<sub>r</sub></b>      |  |   | 75   | ns   |
| <b>t<sub>d(off)</sub></b> |  |   | 95   | ns   |
| <b>t<sub>f</sub></b>      |  |   | 31   | ns   |
| <b>Q<sub>g(on)</sub></b>  | V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 0.5 • V <sub>DSS</sub> , I <sub>D</sub> = 0.5 • I <sub>D25</sub>                                       |   | 180  | nC   |
| <b>Q<sub>gs</sub></b>     |  |   | 42   | nC   |
| <b>Q<sub>gd</sub></b>     |  |   | 75   | nC   |
| <b>R<sub>thJC</sub></b>   | (TO-247)   |   | 0.42 | K/W  |
| <b>R<sub>thCK</sub></b>   |  |   | 0.25 | K/W  |

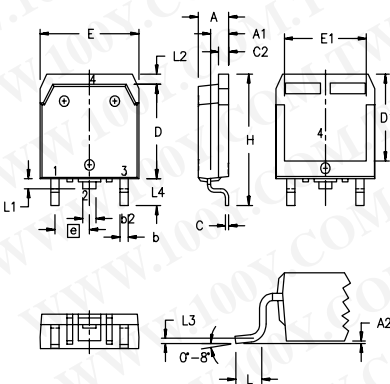
**TO-247 AD (IXFH) Outline**



| Dim. | Millimeter |       | Inches |       |
|------|------------|-------|--------|-------|
|      | Min.       | Max.  | Min.   | Max.  |
| A    | 19.81      | 20.32 | 0.780  | 0.800 |
| B    | 20.80      | 21.46 | 0.819  | 0.845 |
| C    | 15.75      | 16.26 | 0.610  | 0.640 |
| D    | 3.55       | 3.65  | 0.140  | 0.144 |
| E    | 4.32       | 5.49  | 0.170  | 0.216 |
| F    | 5.4        | 6.2   | 0.212  | 0.244 |
| G    | 1.65       | 2.13  | 0.065  | 0.084 |
| H    | -          | 4.5   | -      | 0.177 |
| J    | 1.0        | 1.4   | 0.040  | 0.055 |
| K    | 10.8       | 11.0  | 0.426  | 0.433 |
| L    | 4.7        | 5.3   | 0.185  | 0.209 |
| M    | 0.4        | 0.8   | 0.016  | 0.031 |
| N    | 1.5        | 2.49  | 0.087  | 0.102 |

| Symbol                | Test Conditions  | Characteristic Values                               |      |        |
|-----------------------|--|---|------|--------|
|                       |  | (T <sub>J</sub> = 25°C, unless otherwise specified) |      |        |
|                       |  | min.  | typ. | max.   |
| <b>I<sub>S</sub></b>  | V <sub>GS</sub> = 0 V  |   |      | 80 A   |
| <b>I<sub>SM</sub></b> | Repetitive; pulse width limited by T <sub>JM</sub>   |   |      | 320 A  |
| <b>V<sub>SD</sub></b> | I <sub>F</sub> = I <sub>S</sub> , V <sub>GS</sub> = 0 V,<br>Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 % |   |      | 1.5 V  |
| <b>t<sub>rr</sub></b> | I <sub>F</sub> = 25A, -di/dt = 100 A/μs, V <sub>R</sub> = 100 V  |   | 0.5  | 200 ns |
| <b>Q<sub>RM</sub></b> |  |   | 6    | μC     |
| <b>I<sub>RM</sub></b> |  |   |      |        |

**TO-268AA (D<sup>3</sup> PAK)**



| Dim.           | Millimeter |       | Inches   |      |
|----------------|------------|-------|----------|------|
|                | Min.       | Max.  | Min.     | Max. |
| A              | 4.9        | 5.1   | .193     | .201 |
| A <sub>1</sub> | 2.7        | 2.9   | .106     | .114 |
| A <sub>2</sub> | .02        | .25   | .001     | .010 |
| b              | 1.15       | 1.45  | .045     | .057 |
| b <sub>2</sub> | 1.9        | 2.1   | .75      | .83  |
| C              | .4         | .65   | .016     | .026 |
| D              | 13.80      | 14.00 | .543     | .551 |
| E              | 15.85      | 16.05 | .624     | .632 |
| E <sub>1</sub> | 13.3       | 13.6  | .524     | .535 |
| e              | 5.45 BSC   |       | .215 BSC |      |
| H              | 18.70      | 19.10 | .736     | .752 |
| L              | 2.40       | 2.70  | .094     | .106 |
| L1             | 1.20       | 1.40  | .047     | .055 |
| L2             | 1.00       | 1.15  | .039     | .045 |
| L3             | 0.25 BSC   |       | .010 BSC |      |
| L4             | 3.80       | 4.10  | .150     | .161 |

**Min. Recommended Footprint**

