

HiPerFET™

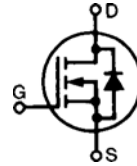
Power MOSFETs Q Class

IXFH/IXFT12N100Q
IXFH/IXFT10N100Q

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

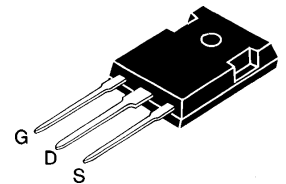
| V_{DSS} | I_{D25} | $R_{DS(on)}$ |
|-----------|-----------|---------------|
| 1000 V | 12 A | 1.05 Ω |
| 1000 V | 10 A | 1.20 Ω |

$$t_{rr} \leq 250 \text{ ns}$$

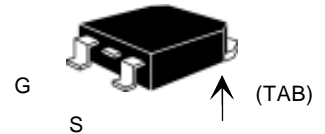


| Symbol | Test Conditions | Maximum Ratings | |
|-----------|---|-----------------|------------------|
| V_{DSS} | $T_J = 25^\circ\text{C}$ to 150°C | 1000 | V |
| V_{DGR} | $T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$ | 1000 | V |
| V_{GS} | Continuous | ± 20 | V |
| V_{GSM} | Transient | ± 30 | V |
| I_{D25} | $T_C = 25^\circ\text{C}$ | 12N100Q | 12 A |
| | | 10N100Q | 10 A |
| I_{DM} | $T_C = 25^\circ\text{C}$, pulse width limited by T_{JM} | 12N100Q | 48 A |
| | | 10N100Q | 40 A |
| I_{AR} | $T_C = 25^\circ\text{C}$ | 12N100Q | 12 A |
| | | 10N100Q | 10 A |
| E_{AR} | $T_C = 25^\circ\text{C}$ | 30 | mJ |
| dv/dt | $I_S \leq I_{DM}$, $di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 2 \Omega$ | 5 | V/ns |
| P_D | $T_C = 25^\circ\text{C}$ | 300 | W |
| T_J | | -55 ... +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 | $^\circ\text{C}$ |
| M_d | Mounting torque | 1.13/10 | Nm/lb.in. |
| Weight | | TO-247 AD | 6 g |
| | | TO-268 | 4 g |

TO-247 AD (IXFH)



TO-268 (D3) (IXFT)



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

| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | |
|--------------|---|---|------|----------------------|
| | | min. | typ. | max. |
| V_{DSS} | $V_{GS} = 0 \text{ V}$, $I_D = 3 \text{ mA}$ | 1000 | | V |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$, $I_D = 4 \text{ mA}$ | 2.5 | | 5.5 V |
| I_{GSS} | $V_{GS} = \pm 20 \text{ V}_{DC}$, $V_{DS} = 0$ | | | $\pm 100 \text{ nA}$ |
| I_{DSS} | $V_{DS} = 0.8 \cdot V_{DSS}$ $V_{GS} = 0 \text{ V}$ | $T_J = 25^\circ\text{C}$ | | 50 μA |
| | | $T_J = 125^\circ\text{C}$ | | 1 mA |
| $R_{DS(on)}$ | $V_{GS} = 10 \text{ V}$, $I_D = 0.5 I_{D25}$ Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2\%$ | 12N100Q | | 1.05 Ω |
| | | 10N100Q | | 1.20 Ω |

Features

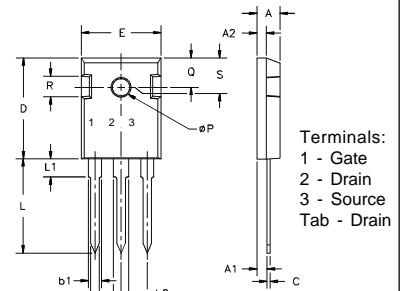
- IXYS advanced low Q_g process
- Low gate charge and capacitances
 - easier to drive
 - faster switching
- International standard packages
- Low $R_{DS(on)}$
- Unclamped Inductive Switching (UIS) rated
- Molding epoxies meet UL 94 V-0 flammability classification

Advantages

- Easy to mount
- Space savings
- High power density

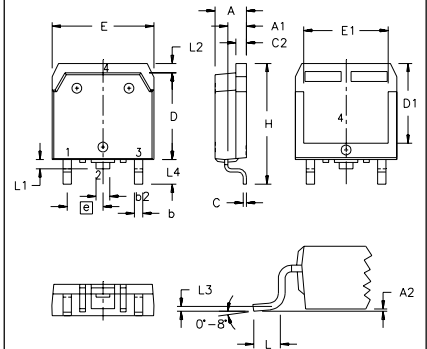
| Symbol | Test Conditions | Characteristic Values ($T_j = 25^\circ\text{C}$, unless otherwise specified) | | |
|--------------|--|---|------|----------|
| | | min. | typ. | max. |
| g_{fs} | $V_{DS} = 15\text{ V}; I_D = 0.5 \cdot I_{D25}$, pulse test | 4 | 10 | S |
| C_{iss} | $V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$ | | 2900 | pF |
| C_{oss} | | | 315 | pF |
| C_{rss} | | | 50 | pF |
| $t_{d(on)}$ | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 2\ \Omega$ (External), | | 20 | ns |
| t_r | | | 23 | ns |
| $t_{d(off)}$ | | | 40 | ns |
| t_f | | | 15 | ns |
| $Q_{g(on)}$ | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ | | 90 | nC |
| Q_{gs} | | | 30 | nC |
| Q_{gd} | | | 40 | nC |
| R_{thJC} | (TO-247) | | | 0.42 K/W |
| R_{thCK} | | | 0.25 | K/W |

| Source-Drain Diode | | Characteristic Values ($T_j = 25^\circ\text{C}$, unless otherwise specified) | | |
|--------------------|---|---|------|---------------|
| Symbol | Test Conditions | min. | typ. | max. |
| I_S | $V_{GS} = 0\text{ V}$ | | | 12 A |
| I_{SM} | Repetitive; pulse width limited by T_{JM} | | | 48 A |
| V_{SD} | $I_F = I_S, V_{GS} = 0\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$ | | | 1.5 V |
| t_{rr} | $I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$ | | 200 | ns |
| Q_{RM} | | | 0.6 | μC |
| I_{RM} | | | 7 | A |

TO-247 AD (IXFH) Outline


Terminals:
 1 - Gate
 2 - Drain
 3 - Source
 Tab - Drain

| Dim. | Millimeter | | Inches | |
|----------------|------------|-------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.7 | 5.3 | .185 | .209 |
| A ₁ | 2.2 | 2.54 | .087 | .102 |
| A ₂ | 2.2 | 2.6 | .087 | .102 |
| b | 1.0 | 1.4 | .040 | .055 |
| b ₁ | 1.65 | 2.13 | .065 | .084 |
| b ₂ | 2.87 | 3.12 | .113 | .123 |
| C | .4 | .8 | .016 | .031 |
| D | 20.80 | 21.46 | .819 | .845 |
| E | 15.75 | 16.26 | .610 | .640 |
| e | 5.20 | 5.72 | 0.205 | 0.225 |
| L | 19.81 | 20.32 | .780 | .800 |
| L ₁ | | 4.50 | | .177 |
| ∅P | 3.55 | 3.65 | .140 | .144 |
| Q | 5.89 | 6.40 | 0.232 | 0.252 |
| R | 4.32 | 5.49 | .170 | .216 |
| S | 6.15 | BSC | .242 | BSC |

TO-268 Outline


| SYM | INCHES | | MILLIMETERS | |
|----------------|--------|------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | .193 | .201 | 4.90 | 5.10 |
| A ₁ | .106 | .114 | 2.70 | 2.90 |
| A ₂ | .001 | .010 | 0.02 | 0.25 |
| b | .045 | .057 | 1.15 | 1.45 |
| b ₂ | .075 | .083 | 1.90 | 2.10 |
| C | .016 | .026 | 0.40 | 0.65 |
| C ₂ | .057 | .063 | 1.45 | 1.60 |
| D | 54.3 | 55.1 | 13.80 | 14.00 |
| D ₁ | 48.8 | 50.0 | 12.40 | 12.70 |
| E | 62.4 | 63.2 | 15.85 | 16.05 |
| E ₁ | 52.4 | 53.5 | 13.30 | 13.60 |
| e | .215 | BSC | 5.45 | BSC |
| H | .736 | .752 | 18.70 | 19.10 |
| L | .094 | .106 | 2.40 | 2.70 |
| L ₁ | .047 | .055 | 1.20 | 1.40 |
| L ₂ | .039 | .045 | 1.00 | 1.15 |
| L ₃ | .010 | BSC | 0.25 | BSC |
| L ₄ | .150 | .161 | 3.80 | 4.10 |

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