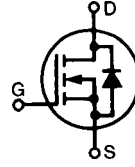


# IXTH 13N110

## MegaMOS™ FET

N-Channel Enhancement Mode



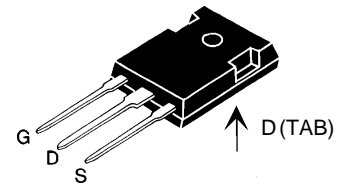
$$V_{DSS} = 1100 \text{ V}$$

$$I_{D25} = 13 \text{ A}$$

$$R_{DS(on)} = 0.92 \text{ } \Omega$$

| Symbol  | Test Conditions  | Maximum Ratings |                  |
|---|--|-----------------|------------------|
| $V_{DSS}$   | $T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$                                | 1100            | V                |
| $V_{DGR}$   | $T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1 \text{ M}\Omega$ | 1100            | V                |
| $V_{GS}$  | Continuous   | $\pm 20$        | V                |
| $V_{GSM}$   | Transient  | $\pm 30$        | V                |
| $I_{D25}$   | $T_C = 25^\circ\text{C}$   | 13              | A                |
| $I_{DM}$  | $T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$                     | 52              | A                |
| $P_D$   | $T_C = 25^\circ\text{C}$   | 360             | W                |
| $T_J$   |  | -55 ... +150    | $^\circ\text{C}$ |
| $T_{JM}$  |  | 150             | $^\circ\text{C}$ |
| $T_{stg}$   |  | -55 ... +150    | $^\circ\text{C}$ |
| $M_d$   | Mounting torque  | 1.13/10         | Nm/lb.in.        |
| <b>Weight</b>   |  | 6               | g                |
| Maximum lead temperature for soldering<br>1.6 mm (0.062 in.) from case for 10 s |  | 300             | $^\circ\text{C}$ |

TO-247 AD



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

### Features

- International standard package JEDEC TO-247 AD
- Low  $R_{DS(on)}$  HDMOS™ process
- Rugged polysilicon gate cell structure
- Fast switching times

### Applications

- Switch-mode and resonant-mode power supplies
- Motor controls
- Uninterruptible Power Supplies (UPS)
- DC choppers

### Advantages

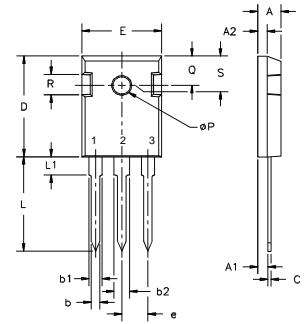
- Easy to mount with 1 screw (isolated mounting screw hole)
- Space savings
- High power density

| Symbol       | Test Conditions   | Characteristic Values<br>( $T_J = 25^\circ\text{C}$ , unless otherwise specified) |      |  |
|--------------|---|---|------|--|
|              |   | min.  | typ. | max.   |
| $V_{DSS}$    | $V_{GS} = 0 \text{ V}$ , $I_D = 3 \text{ mA}$   | 1100  |      | V  |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$ , $I_D = 250 \text{ } \mu\text{A}$  | 2   |      | 4.5 V  |
| $I_{GSS}$    | $V_{GS} = \pm 20 \text{ V}_{DC}$ , $V_{DS} = 0$   |   |      | $\pm 100 \text{ nA}$                         |
| $I_{DSS}$    | $V_{DS} = 0.8 \cdot V_{DSS}$<br>$V_{GS} = 0 \text{ V}$  |   |      | $500 \text{ } \mu\text{A}$<br>$3 \text{ mA}$ |
| $R_{DS(on)}$ | $V_{GS} = 10 \text{ V}$ , $I_D = 0.5 \cdot I_{D25}$<br>Pulse test, $t \leq 300 \text{ } \mu\text{s}$ , duty cycle $d \leq 2 \%$ | 0.80  | 0.92 | $\Omega$                                     |

| Symbol       | Test Conditions   | Characteristic Values<br>( $T_J = 25^\circ\text{C}$ , unless otherwise specified) |      |      |
|--------------|---|---|------|------|
|              |   | min.  | typ. | max. |
| $g_{fs}$     | $V_{DS} = 10\text{ V}; I_D = 6.5\text{ A}$ , pulse test   |   | 10   | S    |
| $C_{iss}$    | } $V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$   |   | 5650 | pF   |
| $C_{oss}$    |   |   | 400  | pF   |
| $C_{rss}$    |   |   | 150  | pF   |
| $t_{d(on)}$  | } $V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 I_{D25}$<br>$R_G = 1\ \Omega$ , (External) |   | 24   | ns   |
| $t_r$        |   |   | 21   | ns   |
| $t_{d(off)}$ |   |   | 80   | ns   |
| $t_f$        |   |   | 36   | ns   |
| $Q_{g(on)}$  | } $V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 I_{D25}$                                   |   | 195  | nC   |
| $Q_{gs}$     |   |   | 28   | nC   |
| $Q_{gd}$     |   |   | 85   | nC   |
| $R_{thJC}$   |   |   | 0.35 | K/W  |
| $R_{thCK}$   |   | 0.25  |      | K/W  |

**Source-Drain Diode**

| Symbol   | Test Conditions   | Characteristic Values<br>( $T_J = 25^\circ\text{C}$ , unless otherwise specified) |      |       |
|----------|---|---|------|-------|
|          |   | min.  | typ. | max.  |
| $I_S$    | $V_{GS} = 0\text{ V}$   |   |      | 13 A  |
| $I_{SM}$ | Repetitive; pulse width limited by $T_{JM}$   |   |      | 52 A  |
| $V_{SD}$ | $I_F = I_S, V_{GS} = 0\text{ V}$ ,<br>Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $d \leq 2\%$ |   |      | 1.5 V |
| $t_{rr}$ | $I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$                                    |   | 850  | ns    |

**TO-247 AD 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 <sub>1</sub> | 2.2        | 2.54  | .087   | .102  |
| A <sub>2</sub> | 2.2        | 2.6   | .059   | .098  |
| b              | 1.0        | 1.4   | .040   | .055  |
| b <sub>1</sub> | 1.65       | 2.13  | .065   | .084  |
| b <sub>2</sub> | 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  |
| L1             |            | 4.50  |        | .177  |
| ØP             | 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   |