

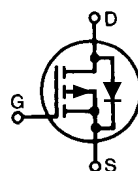
**Standard Power MOSFET**
**IXTH 36P10**

 P-Channel Enhancement Mode  
 Avalanche Rated

$$V_{DSS} = -100 \text{ V}$$

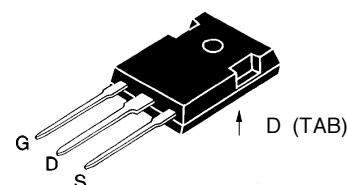
$$I_{D25} = -36 \text{ A}$$

$$R_{DS(on)} = 75 \text{ m}\Omega$$



| Symbol        | Test Conditions   | Maximum Ratings |                  |
|---------------|---|-----------------|------------------|
| $V_{DSS}$     | $T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$                                 | -100            | V                |
| $V_{DGR}$     | $T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1 \text{ M}\Omega$  | -100            | V                |
| $V_{GS}$      | Continuous  | $\pm 20$        | V                |
| $V_{GSM}$     | Transient   | $\pm 30$        | V                |
| $I_{D25}$     | $T_C = 25^\circ\text{C}$  | -36             | A                |
| $I_{DM}$      | $T_C = 25^\circ\text{C}$ , pulse width limited by $T_J$                         | -144            | A                |
| $I_{AR}$      | $T_C = 25^\circ\text{C}$  | -36             | A                |
| $E_{AR}$      | $T_C = 25^\circ\text{C}$  | 30              | mJ               |
| $P_D$         | $T_C = 25^\circ\text{C}$  | 180             | W                |
| $T_J$         |   | -55 ... +150    | $^\circ\text{C}$ |
| $T_{JM}$      |   | 150             | $^\circ\text{C}$ |
| $T_{stg}$     |   | -55 ... +150    | $^\circ\text{C}$ |
| $T_L$         | Maximum lead temperature for soldering<br>1.6 mm (0.062 in.) from case for 10 s | 300             | $^\circ\text{C}$ |
| $M_d$         | Mounting torque   | 1.13/10         | Nm/lb.in.        |
| <b>Weight</b> |   | 6               | g                |

TO-247 AD


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

**Features**

- International standard package JEDEC TO-247 AD
- Low  $R_{DS(on)}$  HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Low package inductance (<5 nH)  
- easy to drive and to protect

**Applications**

- High side switching
- Push-pull amplifiers
- DC choppers
- Automatic test equipment

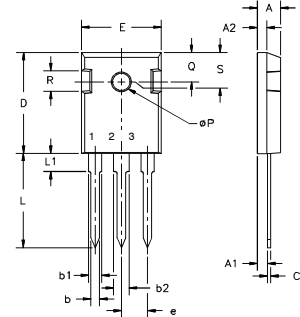
**Advantages**

- 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.                 |
| $V_{DSS}$    | $V_{GS} = 0 \text{ V}$ , $I_D = -250 \mu\text{A}$ | -100  |      | V                    |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$ , $I_D = -250 \mu\text{A}$      | -3.0  |      | V                    |
| $I_{GSS}$    | $V_{GS} = \pm 20 \text{ V}_{DC}$ , $V_{DS} = 0$   |   |      | $\pm 100 \text{ nA}$ |
| $I_{DSS}$    | $V_{DS} = 0.8 V_{DSS}$                            |   |      | -25 $\mu\text{A}$    |
|              | $V_{GS} = 0 \text{ V}$                            |   |      | -1 mA                |
| $R_{DS(on)}$ | $V_{GS} = -10 \text{ V}$ , $I_D = 0.5 I_{D25}$    |   |      | 75 m $\Omega$        |

| 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> = -10 V; I <sub>D</sub> = I <sub>D25</sub> , pulse test  | 6   | 12   | S    |
| <b>C<sub>iss</sub></b>    | V <sub>GS</sub> = 0 V, V <sub>DS</sub> = -25 V, f = 1 MHz  |   | 2800 | pF   |
| <b>C<sub>oss</sub></b>    |  |   | 1100 | pF   |
| <b>C<sub>rss</sub></b>    |  |   | 490  | 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) |   | 35   | ns   |
| <b>t<sub>r</sub></b>      |  |   | 37   | ns   |
| <b>t<sub>d(off)</sub></b> |  |   | 65   | ns   |
| <b>t<sub>f</sub></b>      |  |   | 28   | 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>                                      |   | 95   | nC   |
| <b>Q<sub>gs</sub></b>     |  |   | 27   | nC   |
| <b>Q<sub>gd</sub></b>     |  |   | 40   | nC   |
| <b>R<sub>thJC</sub></b>   |  |   | 0.65 | K/W  |
| <b>R<sub>thCS</sub></b>   |  | 0.25  |      | K/W  |

### 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  |
| ∅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   |

### Source-Drain Diode

| 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  |   |      | -36 A  |
| <b>I<sub>SM</sub></b> | Repetitive; pulse width limited by T <sub>JM</sub>   |   |      | -144 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 % |   |      | -3 V   |
| <b>t<sub>rr</sub></b> | I <sub>F</sub> = I <sub>S</sub> , di/dt = 100 A/μs, V <sub>R</sub> = -50 V                             | 180   |      | ns     |