

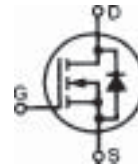
# High Voltage MOSFET

N-Channel Enhancement Mode  
Avalanche Energy Rated

**IXTA 1N80**  
**IXTP 1N80**  
**IXTY 1N80**

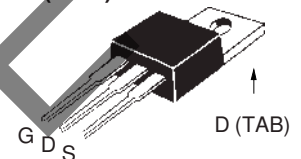
$V_{DSS} = 800 \text{ V}$   
 $I_{D25} = 750 \text{ mA}$   
 $R_{DS(on)} = 11 \text{ } \Omega$

Preliminary Data

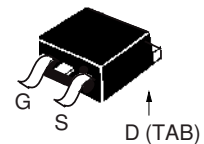


| Symbol  | Test Conditions   | Maximum Ratings |                  |
|---|---|-----------------|------------------|
| $V_{DSS}$   | $T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$   | 800             | V                |
| $V_{DGR}$   | $T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1 \text{ M}\Omega$  | 800             | V                |
| $V_{GS}$  | Continuous  | $\pm 20$        | V                |
| $V_{GSM}$   | Transient   | $\pm 30$        | V                |
| $I_{D25}$   | $T_C = 25^\circ\text{C}$  | 750             | mA               |
| $I_{DM}$  | $T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$  | 3               | A                |
| $I_{AR}$  |   | 1.0             | A                |
| $E_{AR}$  | $T_C = 25^\circ\text{C}$  | 5               | mJ               |
| $E_{AS}$  | $T_C = 25^\circ\text{C}$  | 100             | mJ               |
| $dv/dt$   | $I_S \leq I_{DM}$ , $di/dt \leq 100 \text{ A}/\mu\text{s}$ , $V_{DD} \leq V_{DSS}$ ,<br>$T_J \leq 150^\circ\text{C}$ , $R_G = 47 \text{ } \Omega$ | 3               | V/ns             |
| $P_D$   | $T_C = 25^\circ\text{C}$  | 40              | 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.        |
| Weight  | TO-220  | 4               | g                |
|   | TO-252  | 0.8             | g                |
|   | TO-263  | 3               | g                |
| Maximum lead temperature for soldering<br>1.6 mm (0.062 in.) from case for 10 s |   | 300             | $^\circ\text{C}$ |

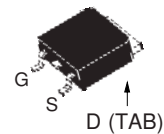
TO-220AB (IXTP)



TO-263 AA (IXTA)



TO-252 AA (IXTY)



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

## Features

- International standard packages
- High voltage, Low  $R_{DS(on)}$  HDMOS™ process
- Rugged polysilicon gate cell structure
- Fast switching times

## Applications

- Switch-mode and resonant-mode power supplies
- Flyback inverters
- DC choppers
- High frequency matching

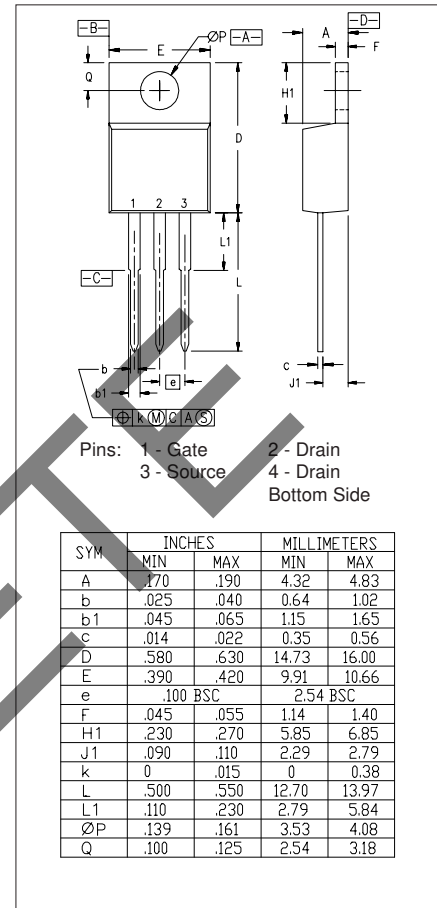
## Advantages

- Space savings
- High power density

| Symbol       | Test Conditions  | Characteristic Values<br>( $T_J = 25^\circ\text{C}$ , unless otherwise specified) |      |                      |
|--------------|--|---|------|----------------------|
|              |  | min.  | typ. | max.                 |
| $V_{DSS}$    | $V_{GS} = 0 \text{ V}$ , $I_D = 250 \text{ } \mu\text{A}$  | 800   |      | V                    |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$ , $I_D = 25 \text{ } \mu\text{A}$  | 2.5   |      | V                    |
| $I_{GSS}$    | $V_{GS} = \pm 20 \text{ V}_{DC}$ , $V_{DS} = 0$  |   |      | $\pm 100 \text{ nA}$ |
| $I_{DSS}$    | $V_{DS} = V_{DSS}$ ,<br>$V_{GS} = 0 \text{ V}$   | $T_J = 25^\circ\text{C}$  |      | 25 $\mu\text{A}$     |
|              |  | $T_J = 125^\circ\text{C}$   |      | 500 $\mu\text{A}$    |
| $R_{DS(on)}$ | $V_{GS} = 10 \text{ V}$ , $I_D = 500 \text{ mA}$<br>Pulse test, $t \leq 300 \text{ } \mu\text{s}$ , duty cycle $d \leq 2 \%$ | 9.5   | 11   | $\Omega$             |

| Symbol       | Test Conditions  | Characteristic Values  |      |      |
|--------------|--|--|------|------|
|              |  | $(T_J = 25^\circ\text{C}, \text{ unless otherwise specified})$ |      |      |
|              |  | min.   | typ. | max. |
| $g_{fs}$     | $V_{DS} = 20\text{ V}; I_D = 500\text{ mA}, \text{ pulse test}$  | 0.7  | 0.8  | S    |
| $C_{iss}$    | $V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$  |  | 220  | pF   |
| $C_{oss}$    |  |  | 23   | pF   |
| $C_{rss}$    |  |  | 4    | pF   |
| $t_{d(on)}$  | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 1\text{ A}$<br>$R_G = 47\Omega, \text{ (External)}$ |  | 11   | ns   |
| $t_r$        |  |  | 19   | ns   |
| $t_{d(off)}$ |  |  | 40   | ns   |
| $t_f$        |  |  | 28   | ns   |
| $Q_{G(on)}$  | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 1\text{ A}$   |  | 8.5  | nC   |
| $Q_{GS}$     |  |  | 2.5  | nC   |
| $Q_{GD}$     |  |  | 4.5  | nC   |
| $R_{thJC}$   |  |  | 3.1  | K/W  |
| $R_{thCK}$   | (IXTP)   | 0.50   |      | K/W  |

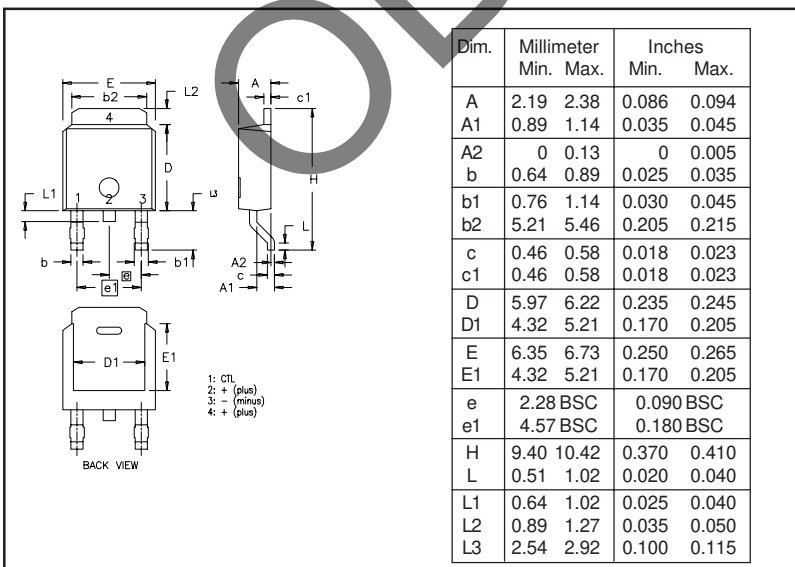
### TO-220 AD Dimensions



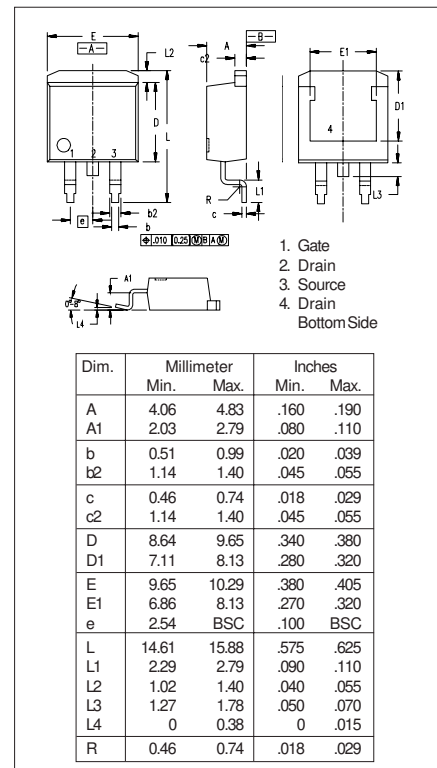
### Source-Drain Diode

| Symbol   | Test Conditions  | Characteristic Values  |      |        |
|----------|--|--|------|--------|
|          |  | $(T_J = 25^\circ\text{C}, \text{ unless otherwise specified})$ |      |        |
|          |  | min.   | typ. | max.   |
| $I_S$    | $V_{GS} = 0\text{ V}$  |  |      | 750 mA |
| $I_{SM}$ | Repetitive; pulse width limited by $T_{JM}$  |  |      | 3 A    |
| $V_{SD}$ | $I_F = I_S, V_{GS} = 0\text{ V},$<br>Pulse test, $t \leq 300\ \mu\text{s}, \text{ duty cycle } d \leq 2\%$ | 1.8  |      | 2 V    |
| $t_{rr}$ | $I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$   | 710  |      | ns     |

### TO-252 AA Outline



### TO-263 AA Outline



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