

# High Voltage MOSFET

N-Channel Enhancement Mode  
Avalanche Energy Rated

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

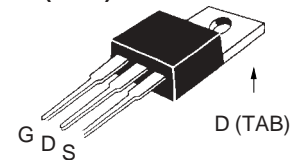
$V_{DSS} = 800 \text{ V}$   
 $I_{D25} = 750 \text{ mA}$   
 $R_{DS(on)} = 11 \text{ } \Omega$

Preliminary Data

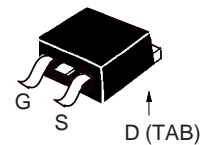


Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	800	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1 \text{ M}\Omega$	800	V
$V_{GS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	750	mA
$I_{DM}$	$T_C = 25^\circ\text{C}$ , 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
$dv/dt$	$I_S \leq I_{DM}$ , $di/dt \leq 100 \text{ A}/\mu\text{s}$ , $V_{DD} \leq V_{DSS}$ , $T_J \leq 150^\circ\text{C}$ , $R_G = 47 \text{ } \Omega$	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 1.6 mm (0.062 in.) from case for 10 s		300	$^\circ\text{C}$

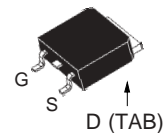
TO-220AB (IXTP)



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

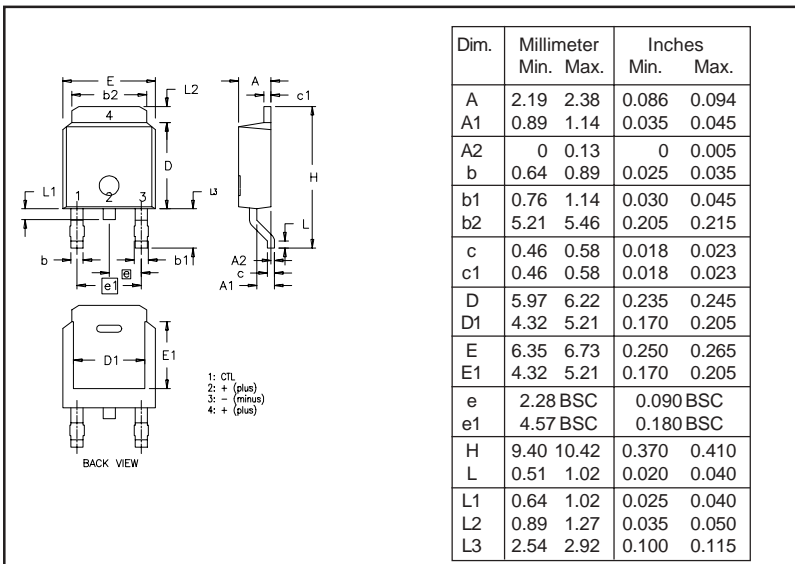
Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{DSS}$	$V_{GS} = 0 \text{ V}$ , $I_D = 250 \text{ } \mu\text{A}$	800		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 25 \text{ } \mu\text{A}$	2.5		V
$I_{GSS}$	$V_{GS} = \pm 20 \text{ V}_{DC}$ , $V_{DS} = 0$			$\pm 100 \text{ nA}$
$I_{DSS}$	$V_{DS} = V_{DSS}$ , $V_{GS} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$		25 $\mu\text{A}$
		$T_J = 125^\circ\text{C}$		500 $\mu\text{A}$
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$ , $I_D = 500 \text{ mA}$ 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
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 1\text{ A}$ $R_G = 47\Omega, \text{ (External)}$		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

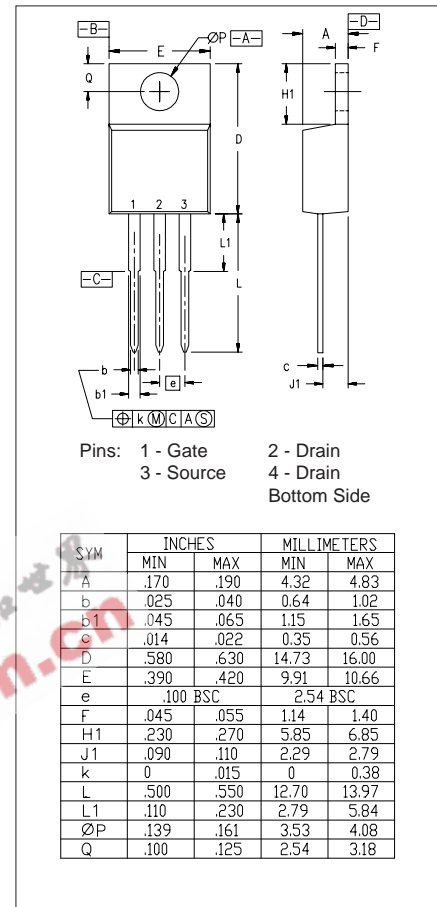
### Source-Drain Diode

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
$V_{SD}$	$I_F = I_S, V_{GS} = 0\text{ V},$ 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

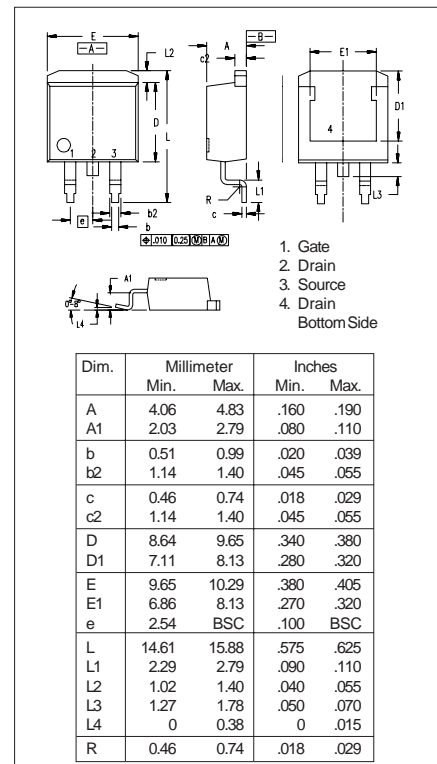
### TO-252 AA Outline



### TO-220 AD Dimensions



### TO-263 AA Outline



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