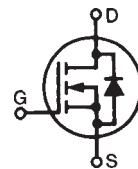


PolarHT™ Power MOSFET

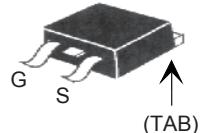
IXTA 75N10P
IXTP 75N10P
IXTQ 75N10P

V_{DSS} = 100 V
 I_{D25} = 75 A
 $R_{DS(on)}$ ≤ 25 mΩ

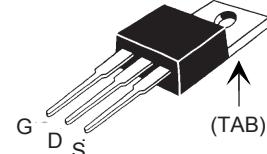
N-Channel Enhancement Mode
Avalanche Rated



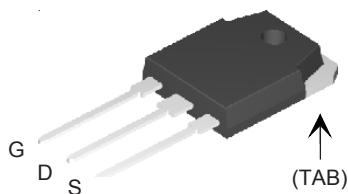
TO-263 (IXTA)



TO-220 (IXTP)



TO-3P (IXTQ)



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

Symbol	Test Conditions	Maximum Ratings		
V_{DSS}	$T_J = 25^\circ C$ to $175^\circ C$	100		V
V_{DGR}	$T_J = 25^\circ C$ to $175^\circ C$; $R_{GS} = 1 M\Omega$	100		V
V_{GS}	Continuous	±20		V
V_{GSM}	Transient	±30		V
I_{D25}	$T_c = 25^\circ C$	75		A
I_{DM}	$T_c = 25^\circ C$, pulse width limited by T_{JM}	200		A
I_{AR}	$T_c = 25^\circ C$	50		A
E_{AR}	$T_c = 25^\circ C$	30		mJ
E_{AS}	$T_c = 25^\circ C$	1.0		J
dv/dt	$I_s \leq I_{DM}$, $di/dt \leq 100 A/\mu s$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ C$, $R_G = 10 \Omega$	10		V/ns
P_D	$T_c = 25^\circ C$	360		W
T_J		-55 ... +175		°C
T_{JM}		175		°C
T_{stg}		-55 ... +175		°C
T_L	1.6 mm (0.062 in.) from case for 10 s	300		°C
T_{SOLD}	Plastic body for 10 s	260		°C
M_d	Mounting torque (TO-3P / TO-220)	1.13/10	Nm/lb.in.	
Weight	TO-3P TO-220 TO-263	5.5 4 3	g g g	

Symbol	Test Conditions ($T_J = 25^\circ C$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0 V$, $I_D = 250 \mu A$	100		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250 \mu A$	3.0		5.5 V
I_{GSS}	$V_{GS} = \pm 20 V_{DC}$, $V_{DS} = 0$		±100	nA
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0 V$		25 250	μA
$R_{DS(on)}$	$V_{GS} = 10 V$, $I_D = 0.5 I_{D25}$ Pulse test, $t \leq 300 \mu s$, duty cycle $d \leq 2 \%$	21	25	mΩ

Features

- International standard packages
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
 - easy to drive and to protect

Advantages

- Easy to mount
- Space savings
- High power density

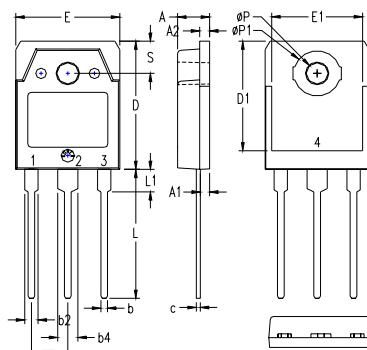
Symbol	Test Conditions	Characteristic Values			
		($T_J = 25^\circ C$, unless otherwise specified)	Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10 V$; $I_D = 0.5 I_{D25}$, pulse test	20	28	S	
C_{iss}		2250		pF	
C_{oss}	$V_{GS} = 0 V$, $V_{DS} = 25 V$, $f = 1 MHz$	890		pF	
C_{rss}		275		pF	
$t_{d(on)}$		27		ns	
t_r	$V_{GS} = 10 V$, $V_{DS} = 0.5 V_{DSS}$, $I_D = 0.5 I_{D25}$	53		ns	
$t_{d(off)}$	$R_G = 10 \Omega$ (External)	66		ns	
t_f		45		ns	
$Q_{g(on)}$		74		nC	
Q_{gs}	$V_{GS} = 10 V$, $V_{DS} = 0.5 V_{DSS}$, $I_D = 0.5 I_{D25}$	18		nC	
Q_{gd}		40		nC	
R_{thJC}				0.42°C/W	
R_{thCK}	(TO-3P) (TO-220)	0.21 0.25		°C/W °C/W	

Source-Drain Diode

Characteristic Values
($T_J = 25^\circ C$, unless otherwise specified)

Symbol	Test Conditions	Min.	Typ.	Max.
I_s	$V_{GS} = 0 V$			75 A
I_{SM}	Repetitive			200 A
V_{SD}	$I_F = I_s$, $V_{GS} = 0 V$, Pulse test, $t \leq 300 \mu s$, duty cycle $d \leq 2\%$			1.5 V
t_{rr}	$I_F = 25 A$ $-di/dt = 100 A/\mu s$	120		ns
Q_{RM}	$V_R = 50 V$		2.0	μC

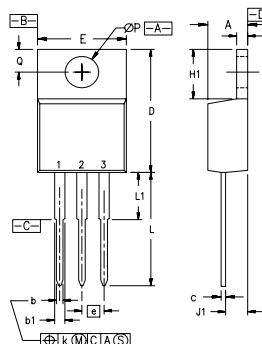
TO-3P (IXTQ) Outline



1 - GATE
2 - DRAIN (COLLECTOR)
3 - SOURCE (EMITTER)
4 - DRAIN (COLLECTOR)

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.185	.193	4.70	4.90
A1	.051	.059	1.30	1.50
A2	.057	.065	1.45	1.65
b	.035	.045	0.90	1.15
b2	.075	.087	1.90	2.20
b4	.114	.126	2.90	3.20
c	.022	.031	0.55	0.80
D	.780	.799	19.80	20.30
D1	.665	.677	16.90	17.20
E	.610	.622	15.50	15.80
E1	.531	.539	13.50	13.70
e	.215 BSC		5.45 BSC	
L	.779	.795	19.80	20.20
L1	.134	.142	3.40	3.60
$\emptyset P$	.126	.134	3.20	3.40
$\emptyset P1$	.272	.280	6.90	7.10
S	.193	.201	4.90	5.10

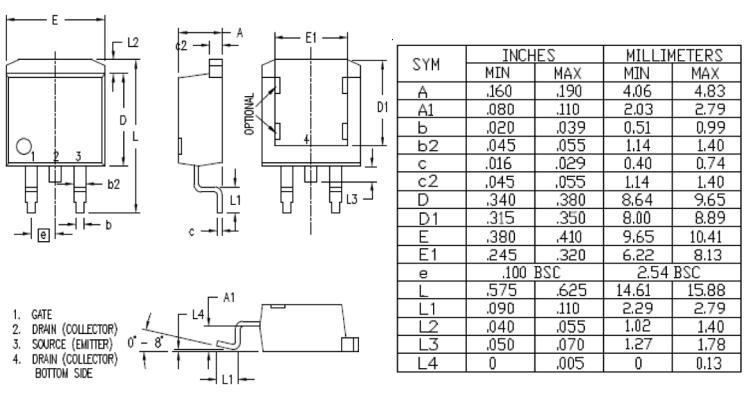
TO-220 (IXTP) Outline



Pins: 1 - Gate
3 - Source
2 - Drain
4 - Drain

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.170	.190	4.32	4.83
b	.025	.040	0.64	1.02
b1	.045	.065	1.15	1.65
c	.014	.022	0.35	0.56
D	.580	.630	14.73	16.00
E	.390	.420	9.91	10.66
e	.100 BSC		2.54 BSC	
F	.045	.055	1.14	1.40
H1	.230	.270	5.85	6.85
J1	.090	.110	2.29	2.79
k	0	.015	0	0.38
L	.500	.550	12.70	13.97
L1	.110	.230	2.79	5.84
$\emptyset P$	.139	.161	3.53	4.08
Q	.100	.125	2.54	3.18

TO-263 (IXTA) Outline



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

IXYS MOSFETs and IGBTs are covered by 4,835,592 4,931,844 5,049,961 5,237,481 6,162,665 6,404,065 B1 6,683,344 6,727,585 one or more of the following U.S. patents: 4,850,072 5,017,508 5,063,307 5,381,025 6,259,123 B1 6,534,343 6,710,405B2 6,759,692 4,881,106 5,034,796 5,187,117 5,486,715 6,306,728 B1 6,583,505 6,710,463 6,771,478 B2

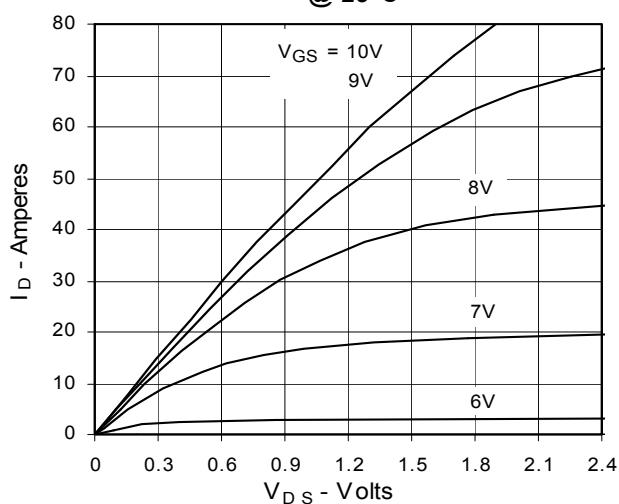
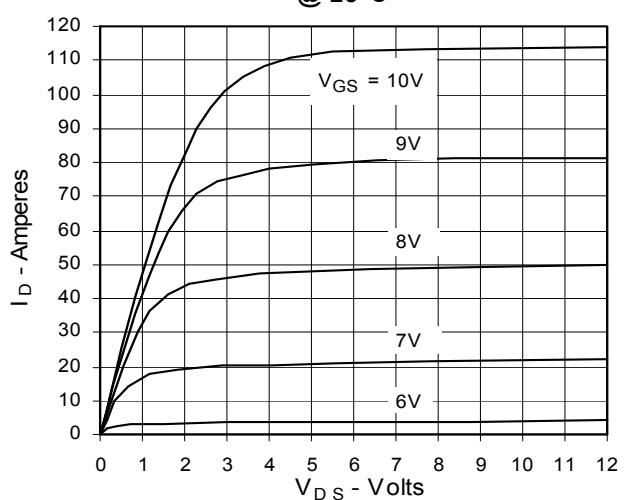
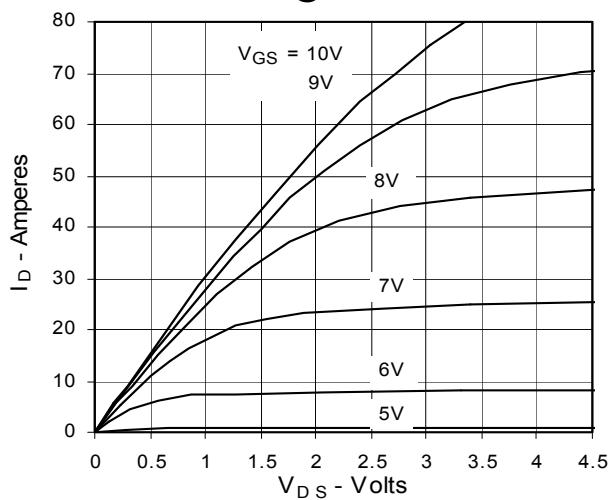
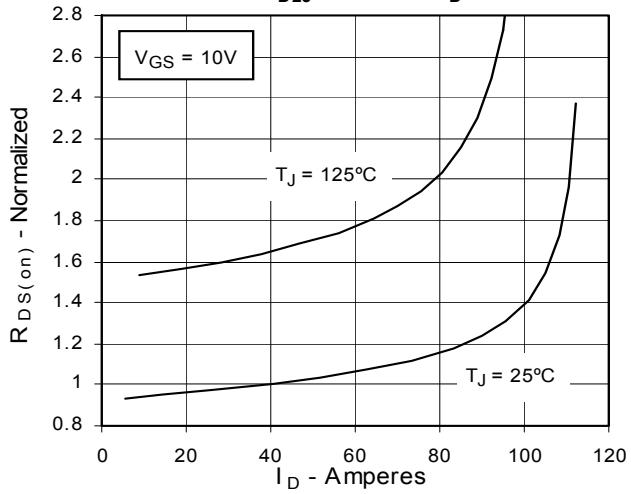
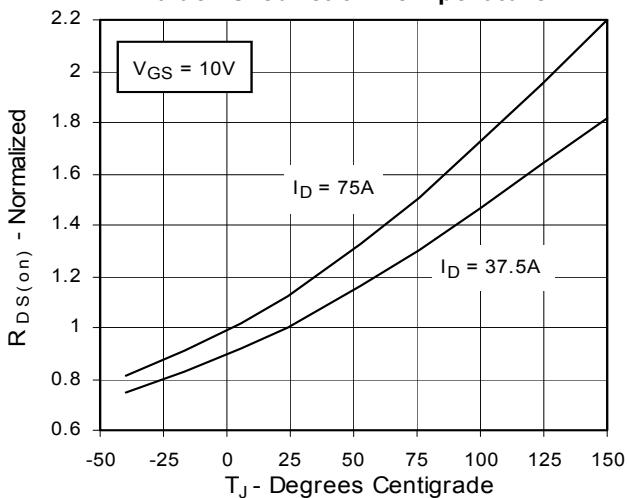
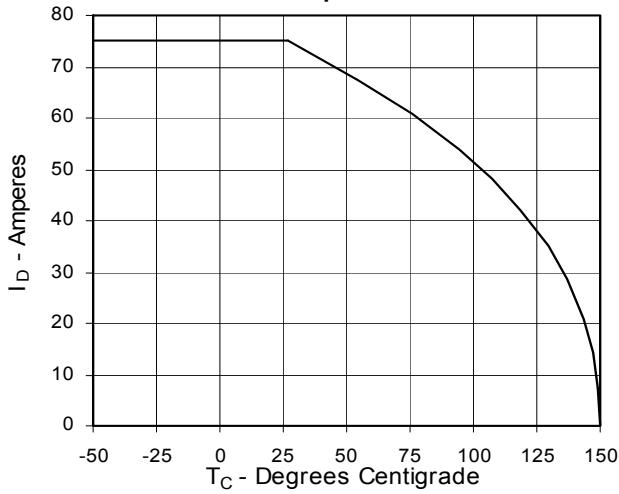
Fig. 1. Output Characteristics
@ 25°C

Fig. 2. Extended Output Characteristics
@ 25°C

Fig. 3. Output Characteristics
@ 125°C

Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. I_D

Fig. 4. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Junction Temperature

Fig. 6. Drain Current vs. Case Temperature


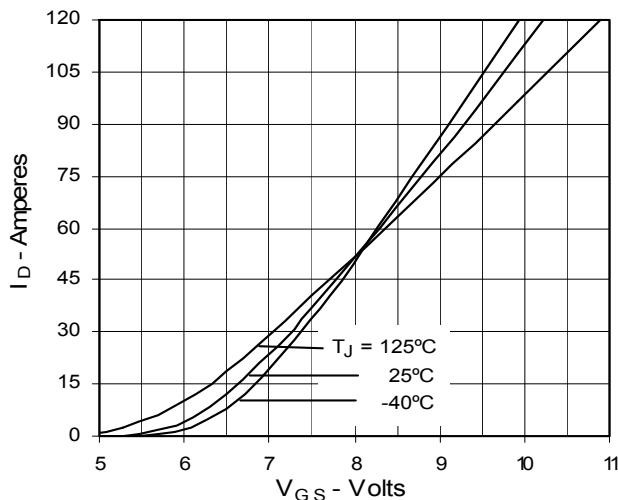
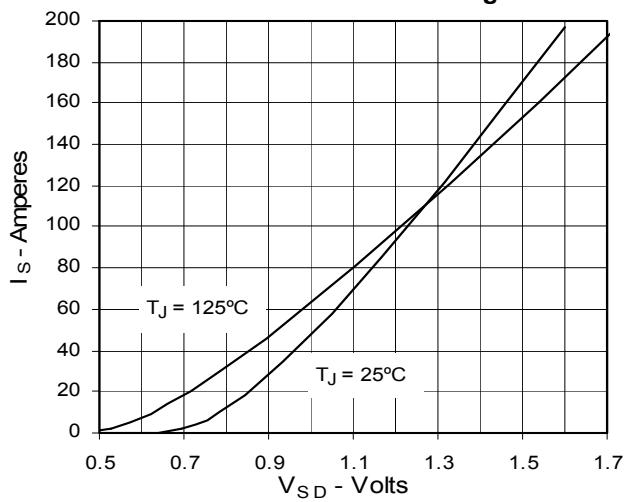
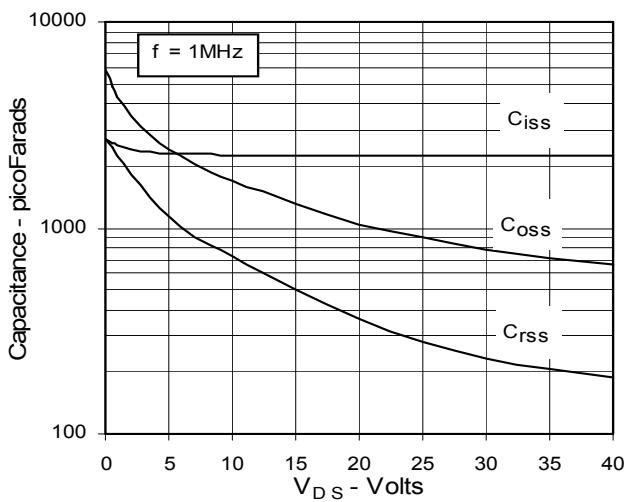
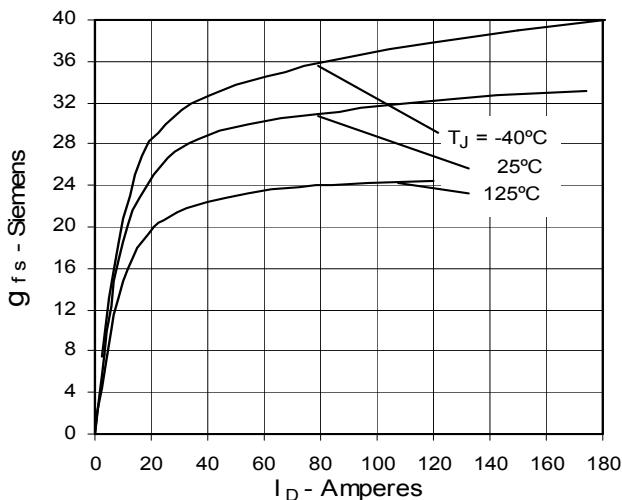
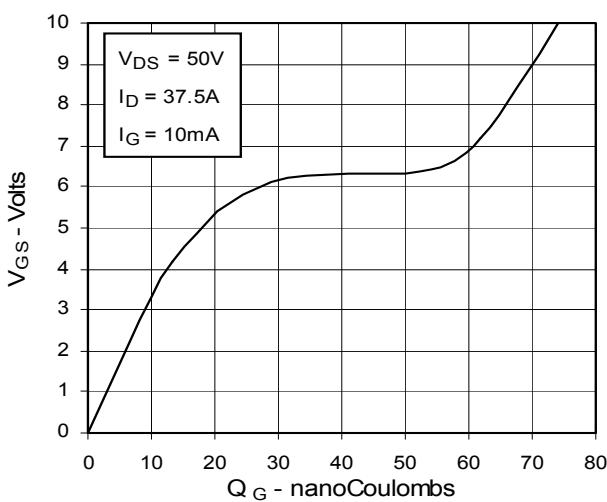
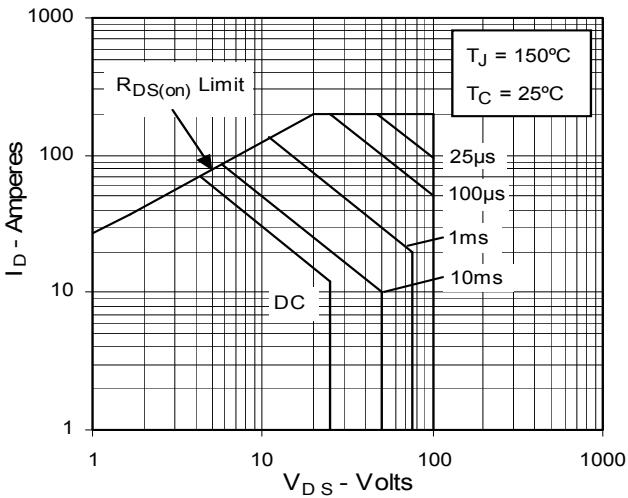
Fig. 7. Input Admittance

**Fig. 9. Source Current vs.
Source-To-Drain Voltage**

Fig. 11. Capacitance

Fig. 8. Transconductance

Fig. 10. Gate Charge

**Fig. 12. Forward-Bias
Safe Operating Area**


Fig. 13. Maximum Transient Thermal Resistance