

Polar™ Power MOSFET
IXTA7N60PM
IXTP7N60PM

$V_{DSS} = 600V$

$I_{D25} = 4A$

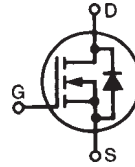
$R_{DS(on)} \leq 1.1\Omega$

(Electrically Isolated Tab)

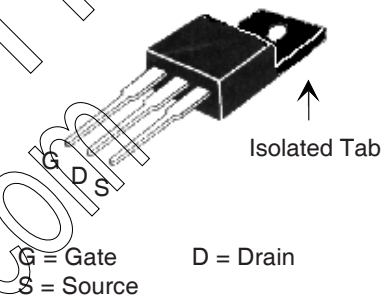
N-Channel Enhancement Mode

Avalanche Rated

Fast Intrinsic Diode


**OVERMOLDED TO-220
(IXTP...M) OUTLINE**

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ C$ to $150^\circ C$	600	V
V_{DGR}	$T_J = 25^\circ C$ to $150^\circ C$, $R_{GS} = 1 M\Omega$	600	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	$T_C = 25^\circ C$	4	A
I_{DM}	$T_C = 25^\circ C$, pulse width limited by T_{JM}	14	A
I_A	$T_C = 25^\circ C$	7	A
E_{AS}	$T_C = 25^\circ C$	400	mJ
dv/dt	$I_S \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J = 150^\circ C$	10	V/ns
P_D	$T_C = 25^\circ C$	41	W
T_J		-55 ... +150	$^\circ C$
T_{JM}		(150)	$^\circ C$
T_{stg}		-55 ... +150	$^\circ C$
T_L	1.6 mm (0.062 in.) from case for 10 s	300	$^\circ C$
T_{SOLD}	Plastic body for 10 s	260	$^\circ C$
M_d	Mounting torque	1.13/10	Nm/lb.in.
Weight		2.5	g


Features

- Plastic overmolded tab for electrical isolation
- International standard package
- Avalanche rated
- Low package inductance
 - easy to drive and to protect

Advantages

- Easy to mount
- Space savings

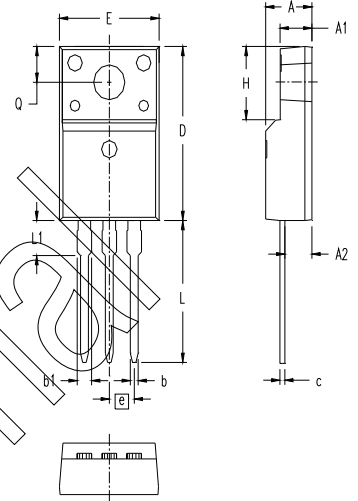
Applications

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- AC motor drives
- Uninterruptible power supplies
- High speed power switching applications

Symbol	Test Conditions ($T_J = 25^\circ C$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0V$, $I_D = 250\mu A$	600		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 100\mu A$	3.0		5.5 V
I_{GSS}	$V_{GS} = \pm 30V$, $V_{DS} = 0V$			± 100 nA
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0V$ $T_J = 125^\circ C$			5 μA 50 μA
$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 3.5A$, Note 1			1.1 Ω

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10\text{V}, I_D = 3.5\text{A}$, Note 1	4	7	S
C_{iss}	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$		1180	pF
C_{oss}			110	pF
C_{rss}			11	pF
$t_{d(on)}$	Resistive Switching Times			
t_r	$V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 7\text{A}$		20	ns
$t_{d(off)}$			27	ns
t_f	$R_G = 18\Omega$ (External)		65	ns
			26	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 3.5\text{A}$		20	nC
Q_{gs}			7	nC
Q_{gd}			7	nC
R_{thJC}				3.0°C/W

ISOLATED TO-220 (IXTP...M)



Terminals: 1 - Gate
2 - Drain (Collector)
3 - Source (Emitter)

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.177	.193	4.50	4.90
A1	.092	.108	2.34	2.74
A2	.101	.117	2.56	2.96
b	.028	.035	0.70	0.90
b1	.050	.058	1.27	1.47
c	.018	.024	0.45	0.60
D	.617	.633	15.67	16.07
E	.392	.408	9.96	10.36
e	.100 BSC		2.54 BSC	
H	.255	.271	6.48	6.88
L	.499	.523	12.68	13.28
L1	.119	.135	3.03	3.43
$\varnothing P$.121	.129	3.08	3.28
Q	.126	.134	3.20	3.40

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		Min.	Typ.	Max.
I_S	$V_{GS} = 0\text{V}$		7	A
I_{SM}	Repetitive, pulse width limited by T_{JM}		28	A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{V}$, Note 1		3.5	V
t_{rr}	$I_F = 7\text{A}, -di/dt = 100\text{A}/\mu\text{s}, V_R = 100\text{V}, V_{GS} = 0\text{V}$		500	ns

Notes: 1. Pulse test, $t \leq 300 \mu\text{s}$; duty cycle, $d \leq 2\%$.

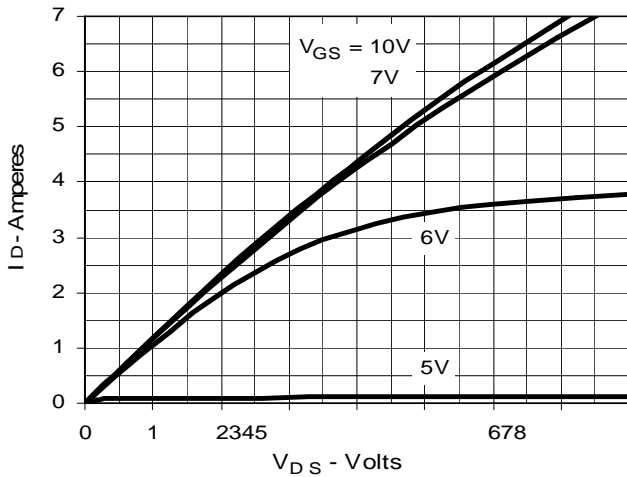
PRELIMINARY TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from data gathered during objective characterizations of preliminary engineering lots; but also may contain some information supplied during a pre-production design evaluation. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

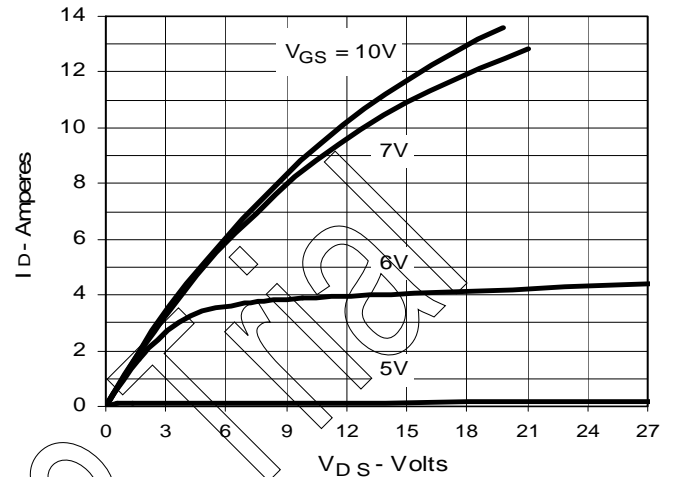
IXYS reserves the right to change limits, test conditions, and dimensions.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:	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	7,005,734 B2	7,157,338 B2
	4,850,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692	7,063,975 B2	
	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	7,071,537	

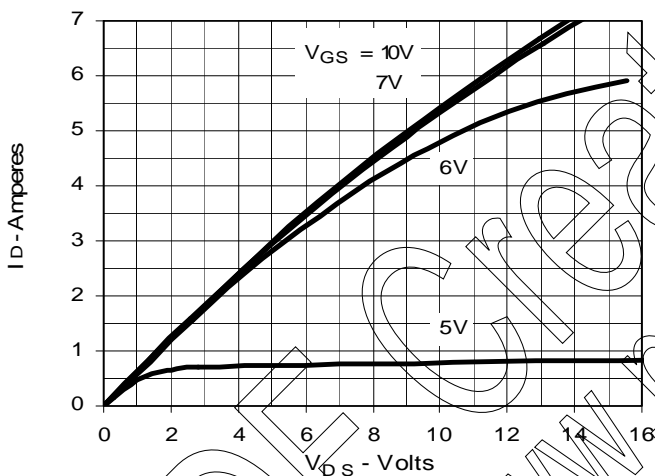
**Fig. 1. Output Characteristics
@ 25°C**



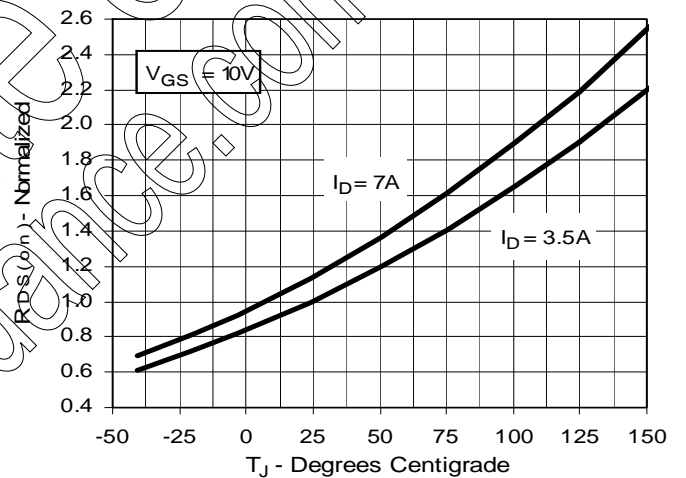
**Fig. 2. Extended Output Characteristics
@ 25°C**



**Fig. 3. Output Characteristics
@ 125°C**



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



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

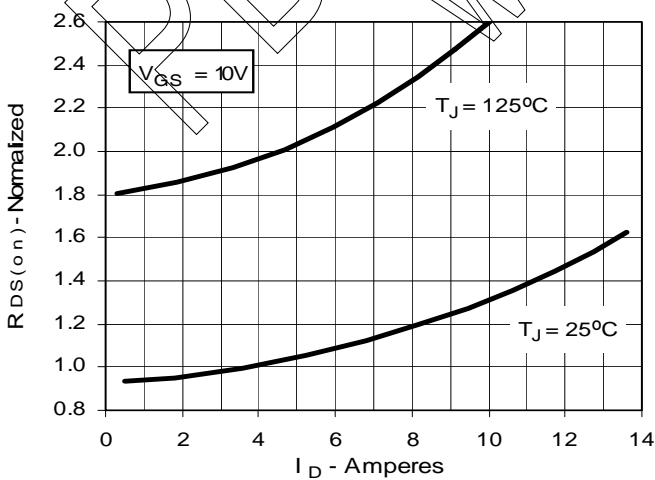


Fig. 6. Drain Current vs. Case Temperature

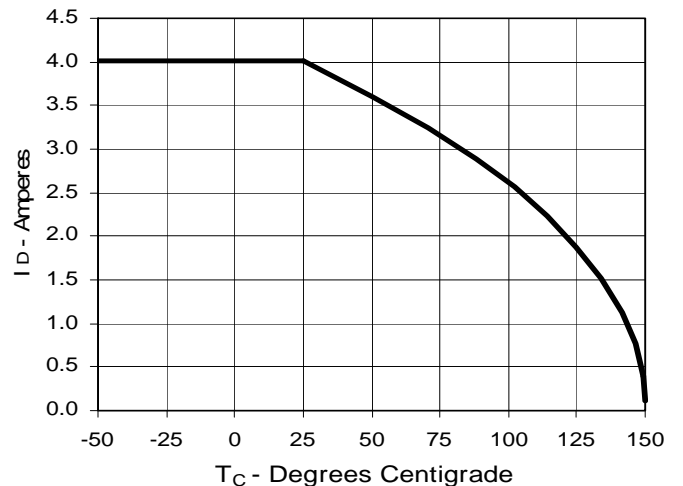


Fig. 7. Input Admittance

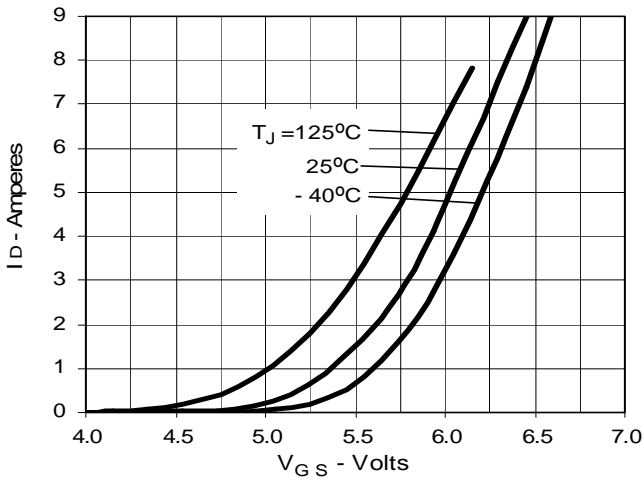


Fig. 8. Transconductance

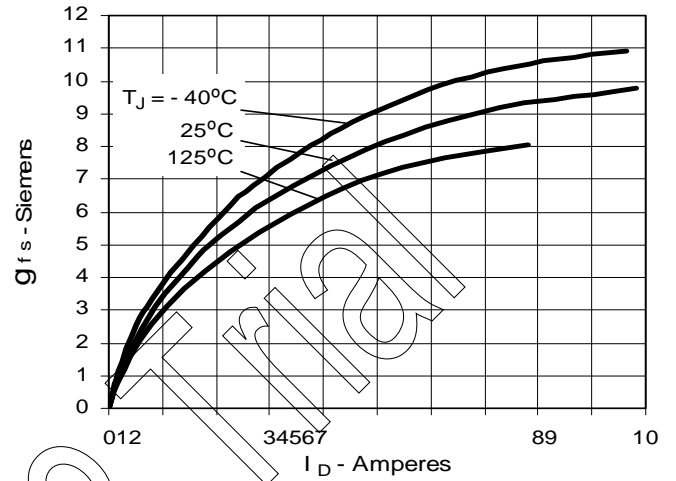


Fig. 9. Source Current vs. Source-To-Drain Voltage

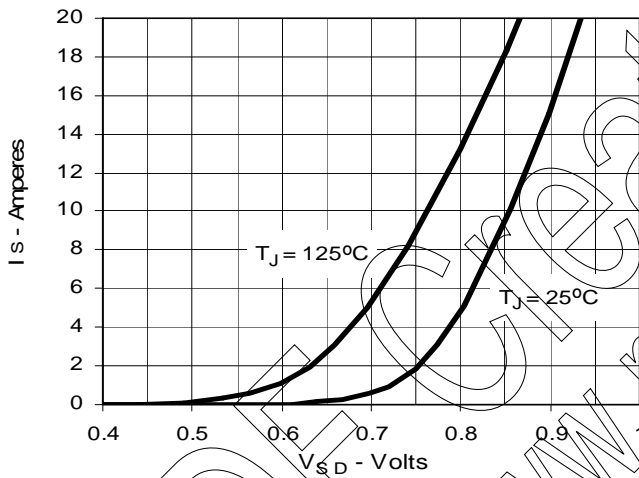


Fig. 10. Gate Charge

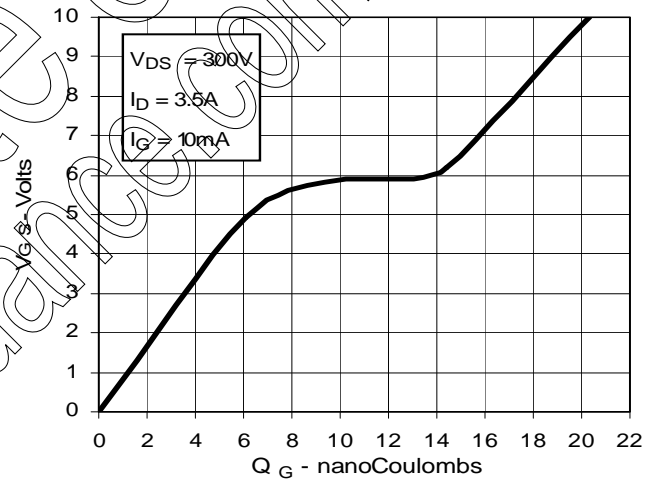


Fig. 11. Capacitance

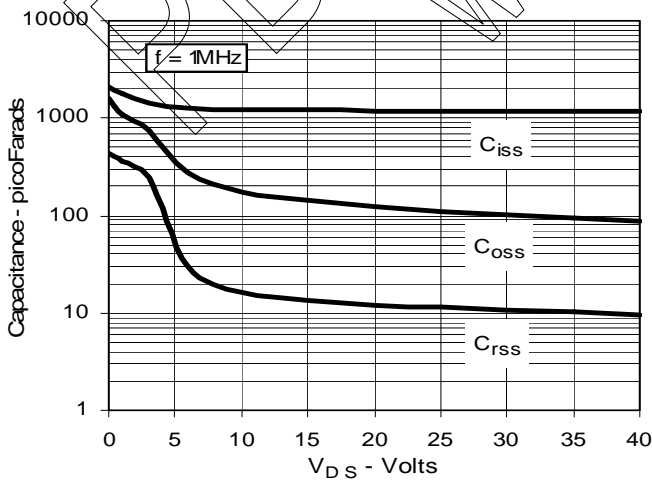


Fig. 12. Maximum Transient Thermal Impedance

