IXTP2N60P Datasheet

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DiGi Electronics Part Number	IXTP2N60P-DG
Manufacturer	IXYS
Manufacturer Product Number	IXTP2N60P
Description	MOSFET N-CH 600V 2A TO220AB
Detailed Description	N-Channel 600 V 2A (Tc) 55W (Tc) Through Hole TO-220-3

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RFQ Email: Info@DiGi-Electronics.com

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Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
IXTP2N60P	IXYS
Series:	Product Status:
Polar™	Obsolete
FET Type:	Technology:
N-Channel	MOSFET (Metal Oxide)
Drain to Source Voltage (Vdss):	Current - Continuous Drain (Id) @ 25°C:
600 V	2A (Tc)
Drive Voltage (Max Rds On, Min Rds On):	Rds On (Max) @ Id, Vgs:
10V	5.1Ohm @ 1A, 10V
Vgs(th) (Max) @ Id:	Gate Charge (Qg) (Max) @ Vgs:
5V @ 250µA	7 nC @ 10 V
Vgs (Max):	Input Capacitance (Ciss) (Max) @ Vds:
±30V	240 pF @ 25 V
FET Feature:	Power Dissipation (Max):
-	55W (Tc)
Operating Temperature:	Mounting Type:
-55°C ~ 150°C (TJ)	Through Hole
Supplier Device Package:	Package / Case:
TO-220-3	TO-220-3
Base Product Number:	
IXTP2	

Environmental & Export classification

Moisture Sensitivity Level (MSL):	REACH Status:
1 (Unlimited)	REACH Unaffected
ECCN:	HTSUS:
EAR99	8541.29.0095

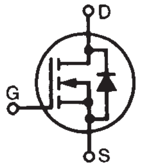
IXYS

Polar™ Power MOSFET

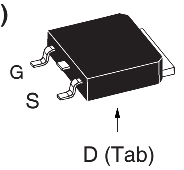
IXTY2N60P IXTP2N60P

V_{DSS} = 600V
I_{D25} = 2A
$R_{DS(on)}$ ≤ 5.1Ω

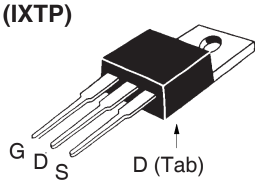
N-Channel Enhancement Mode
Avalanche Rated



TO-252 (IXTY)



TO-220 (IXTP)



G = Gate D = Drain
S = Source Tab = Drain

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	600	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	600	V
V_{GSS}	Continuous	±30	V
V_{GSM}	Transient	±40	V
I_{D25}	T_C = 25°C	2	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	4	A
I_A	T_C = 25°C	2	A
E_{AS}	T_C = 25°C	150	mJ
dv/dt	$I_S \le I_{DM}$, $V_{DD} \le V_{DSS}$, $T_J \le 150°C$	10	V/ns
P_D	T_C = 25°C	56	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	Maximum Lead Temperature for Soldering	300	°C
T_{SOLD}	1.6 mm (0.062in.) from Case for 10s	260	°C
M_d	Mounting Torque (TO-220)	1.13 / 10	Nm/lb.in
Weight	TO-252	0.35	g
	TO-220	3.00	g

Features

- International Standard Packages
- Low Q_G
- Avalanche Rated
- Low Package Inductance
- Fast Intrinsic Rectifier

Advantages

- High Power Density
- Easy to Mount
- Space Savings

Applications

- DC-DC Converters
- Switch-Mode and Resonant-Mode Power Supplies
- AC and DC Motor Drives
- Discharge Circircits in Lasers, Spark Igniters, RF Generators
- Robotics and Servo Controls

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	 Typ.	 Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 25µA	600			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250µA	3.0		5.0	V
I_{GSS}	V_{GS} = ±30V, V_{DS} = 0V			±50	nA
I_{DSS}	V_{DS} = V_{DSS}, V_{GS} = 0V			1	µA
	T_J = 125°C			50	µA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 0.5 • I_{D25}, Note 1			5.1	Ω

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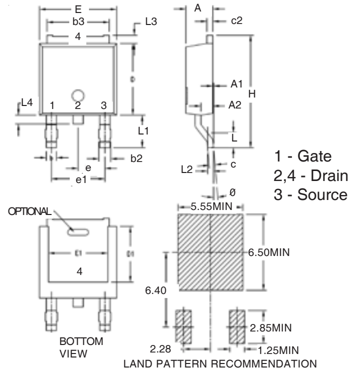
Symbol	Test Conditions ($T_J = 25°C$, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max	
g_{fs}	$V_{DS} = 20V$, $I_D = 0.5 \bullet I_{D25}$, Note 1	1.4	2.2		S
C_{iss}	$V_{GS} = 0V$, $V_{DS} = 25V$, f = 1MHz		240		pF
C_{oss}			28		pF
C_{rss}			3.5		pF
$Q_{g(on)}$	$V_{GS} = 10V$, $V_{DS} = 0.5 \bullet V_{DSS}$, $I_D = 0.5 \bullet I_{D25}$		7.0		nC
Q_{gs}			2.5		nC
Q_{gd}			2.1		nC
$t_{d(on)}$	**Resistive Switching Times** $V_{GS} = 10V$, $V_{DS} = 0.5 \bullet V_{DSS}$, $I_D = 0.5 \bullet I_{D25}$ $R_G = 50\Omega$ (External)		28		ns
t_r			20		ns
$t_{d(off)}$			60		ns
t_f			23		ns
R_{thJC}				2.25	°C/W
R_{thCS}	TO-220		0.50		°C/W

Source-Drain Diode

Symbol	Test Conditions ($T_J = 25°C$, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max	
I_S	$V_{GS} = 0V$			2	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			6	A
V_{SD}	$I_F = I_S$, $V_{GS} = 0V$, Note 1			1.5	V
t_{rr}	$I_F = 2A$, $-di/dt = 100A/\mu s$, $V_R = 100V$		400		ns

Note 1. Pulse test, $t \leq 300\mu s$, duty cycle, $d \leq 2\%$.

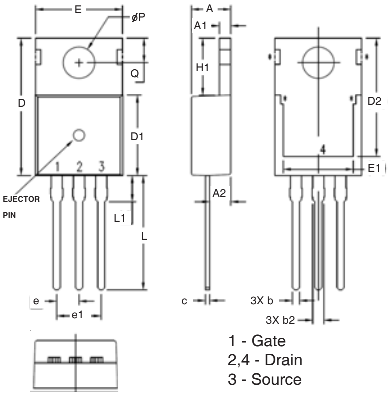
TO-252 AA Outline



1 - Gate
2,4 - Drain
3 - Source

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.086	.094	2.19	2.38
A1	0	.005	0	0.12
A2	.038	.046	0.97	1.17
b	.025	.035	0.64	0.89
b2	.030	.045	0.76	1.14
b3	.200	.215	5.08	5.46
c	.018	.024	0.46	0.61
c2	.018	.023	0.46	0.58
D	.235	.245	5.97	6.22
D1	.180	.205	4.57	5.21
E	.250	.265	6.35	6.73
E1	.170	.205	4.32	5.21
e	.090 BSC		2.28 BSC	
e1	.180 BSC		4.57 BSC	
H	.370	.410	9.40	10.42
L	.055	.070	1.40	1.78
L1	.100	.115	2.54	2.92
L2	.020 BSC		0.50 BSC	
L3	.025	.040	0.64	1.02
L4	.025	.040	0.64	1.02
θ	0°	10°	0°	10°

TO-220 Outline



1 - Gate
2,4 - Drain
3 - Source

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.169	.185	4.30	4.70
A1	.047	.055	1.20	1.40
A2	.079	.106	2.00	2.70
b	.024	.039	0.60	1.00
b2	.045	.057	1.15	1.45
c	.014	.026	0.35	0.65
D	.587	.626	14.90	15.90
D1	.335	.370	8.50	9.40
(D2)	.500	.531	12.70	13.50
E	.382	.406	9.70	10.30
(E1)	.283	.323	7.20	8.20
e	.100 BSC		2.54 BSC	
e1	.200 BSC		5.08 BSC	
H1	.244	.268	6.20	6.80
L	.492	.547	12.50	13.90
L1	.110	.154	2.80	3.90
ØP	.134	.150	3.40	3.80
Q	.106	.126	2.70	3.20

IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

Fig. 1. Output Characteristics @ $T_J = 25^oC$

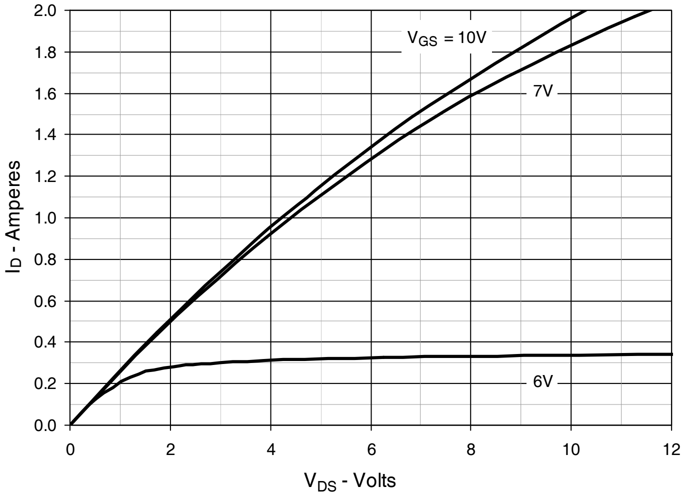


Fig. 2. Extended Output Characteristics @ $T_J = 25^oC$

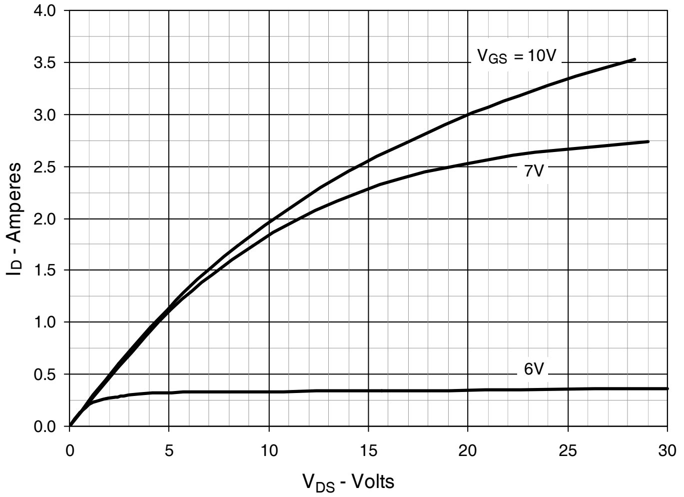


Fig. 3. Output Characteristics @ $T_J = 125^oC$

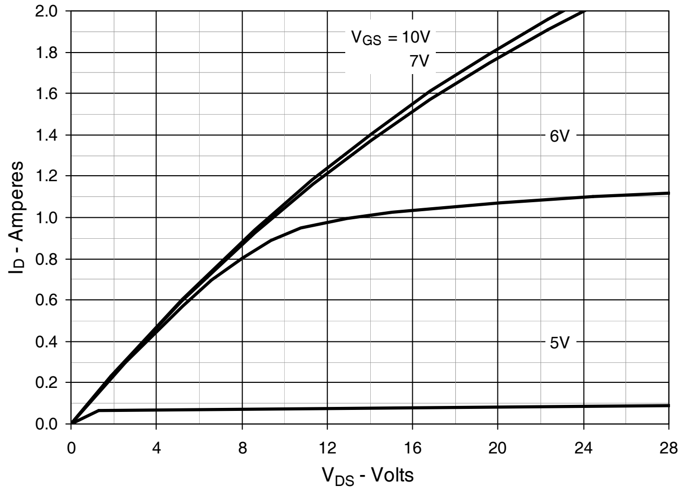


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 1A Value vs. Junction Temperature

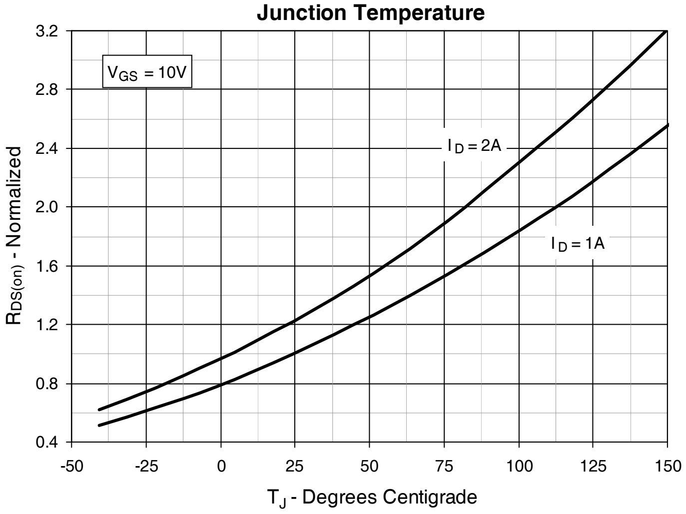


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 1A Value vs. Drain Current

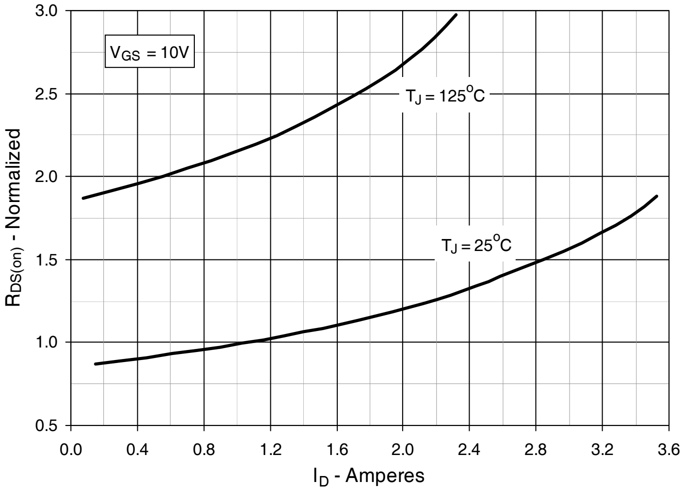


Fig. 6. Maximum Drain Current vs. Case Temperature

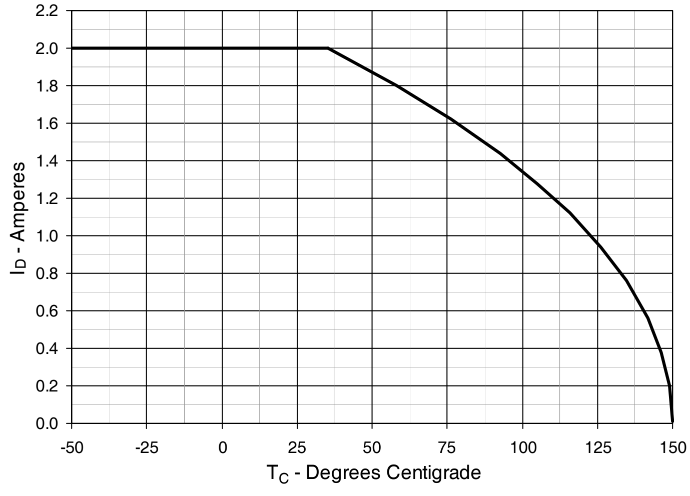


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Fig. 7. Input Admittance

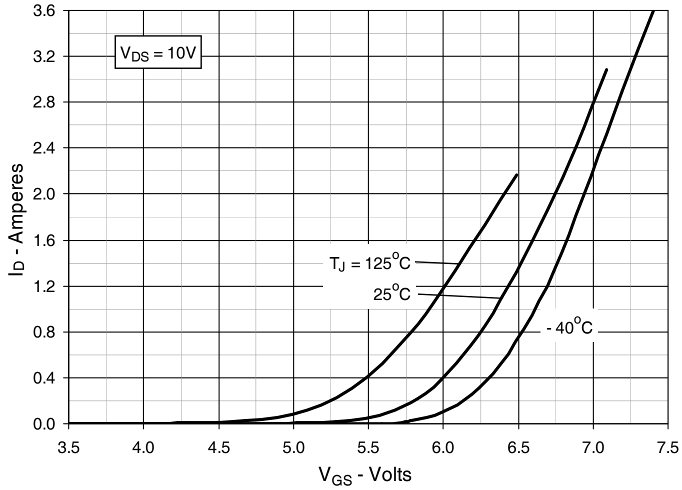


Fig. 8. Transconductance

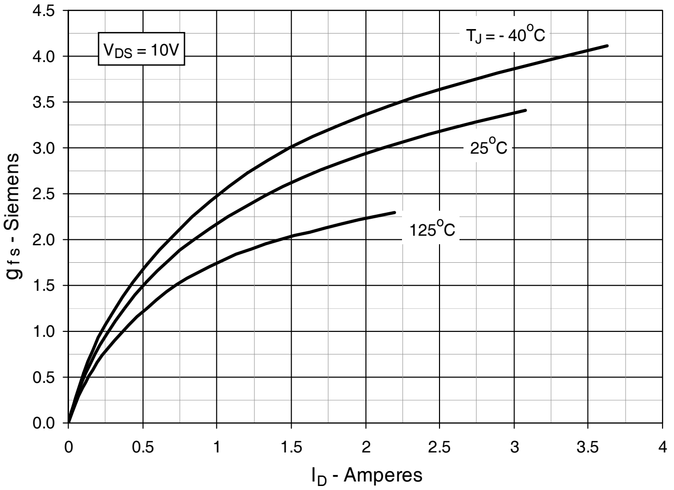


Fig. 9. Forward Voltage Drop of Intrinsic Diode

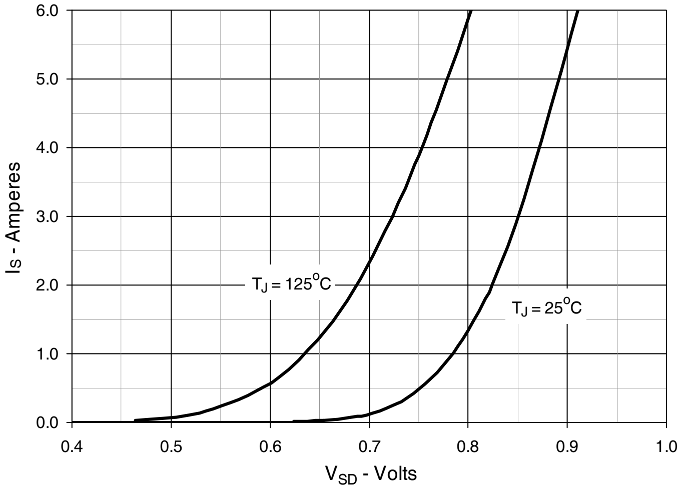


Fig. 10. Gate Charge

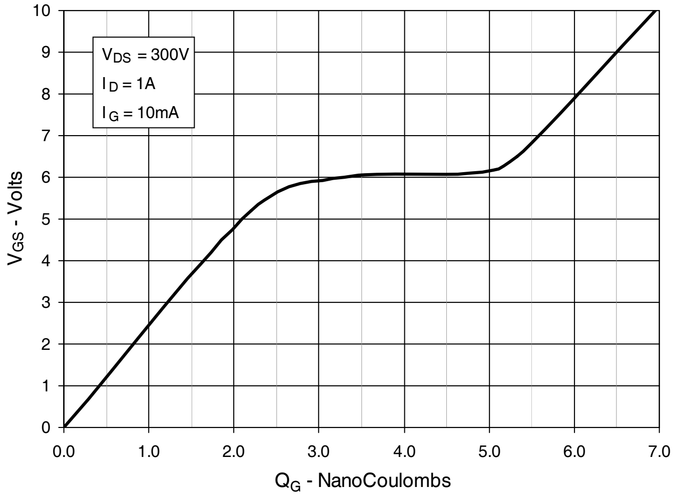


Fig. 11. Capacitance

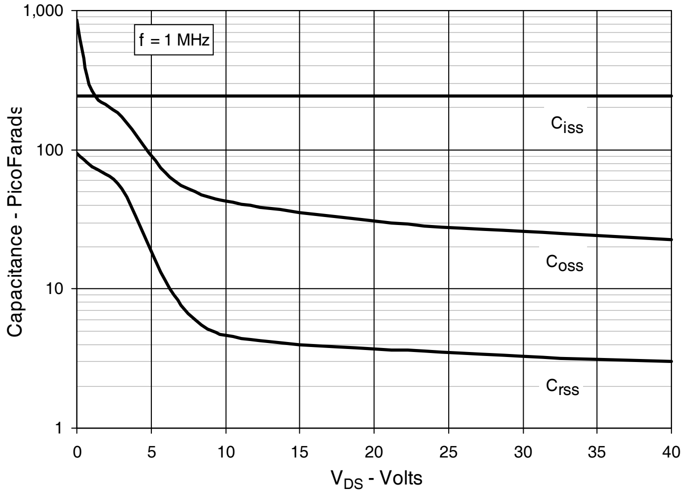
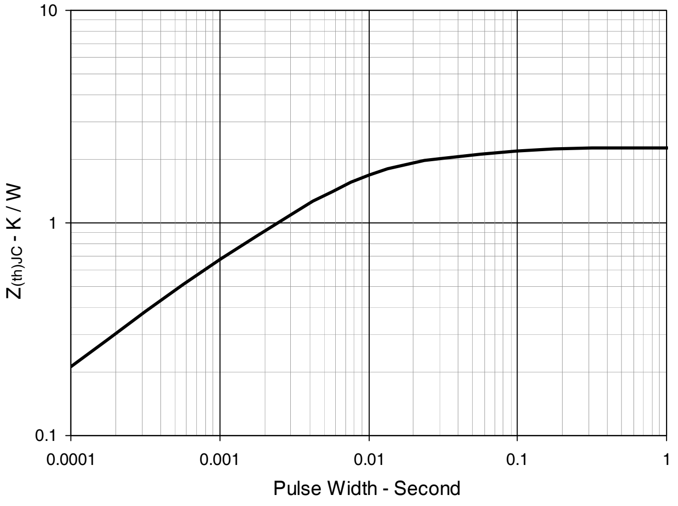


Fig. 12. Maximum Transient Thermal Impedance



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