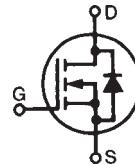


Polar™
Power MOSFET

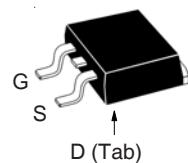
IXTA06N120P
IXTP06N120P

V_{DSS} = 1200V
I_{D25} = 0.6A
R_{DS(on)} ≤ 34Ω

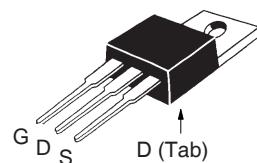
N-Channel Enhancement Mode
Avalanche Rated



TO-263 AA (IXTA)



TO-220AB (IXTP)



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

Symbol	Test Conditions	Maximum Ratings		
V _{DSS}	T _J = 25°C to 150°C	1200		V
V _{DGR}	T _J = 25°C to 150°C, R _{GS} = 1MΩ	1200		V
V _{GSS}	Continuous	±20		V
V _{GSM}	Transient	±30		V
I _{D25}	T _C = 25°C	0.6		A
I _{DM}	T _C = 25°C, Pulse Width Limited by T _{JM}	1.2		A
I _A	T _C = 25°C	0.6		A
E _{AS}	T _C = 25°C	50		mJ
dV/dt	I _S ≤ I _{DM} , V _{DD} ≤ V _{DSS} , T _J ≤ 150°C	10		V/ns
P _D	T _C = 25°C	42		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-263	2.5		g
	TO-220	3.0		g

Symbol	Test Conditions (T _J = 25°C Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV _{DSS}	V _{GS} = 0V, I _D = 250μA	1200		V
V _{GS(th)}	V _{DS} = V _{GS} , I _D = 50μA	2.0		4.0 V
I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±50 nA
I _{DSS}	V _{DS} = V _{DSS} , V _{GS} = 0V			3 μA
	T _J = 125°C			125 μA
R _{DS(on)}	V _{GS} = 10V, I _D = 0.5 • I _{D25} , Note 1	27	34	Ω

Features

- International Standard Packages
- Avalanche Rated
- Low Package Inductance

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

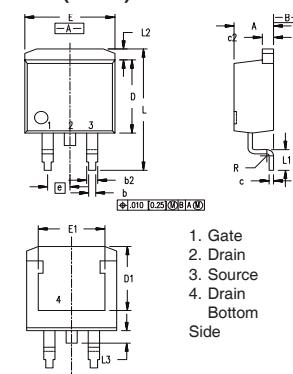
- High Voltage Switched-Mode and Resonant-Mode Power Supplies
- High Voltage Pulse Power Applications
- High Voltage Discharge Circuits in Lasers Pulsers, Spark Igniters, RF Generators
- High Voltage DC-DC Converters
- High Voltage DC-AC Inverters

Symbol	Test Conditions (T _J = 25°C, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	V _{DS} = 30V, I _D = 0.5 • I _{D25} , Note 1	0.28	0.45	S
C_{iss} C_{oss} C_{rss}	V _{GS} = 0V, V _{DS} = 25V, f = 1MHz	236 15 3.2		pF pF pF
t_{d(on)} t_r t_{d(off)} t_f	Resistive Switching Times V _{GS} = 10V, V _{DS} = 0.5 • V _{DSS} , I _D = 0.5 • I _{D25} , R _G = 50Ω (External)	19 37 35 34		ns ns ns ns
Q_{g(on)} Q_{gs} Q_{gd}	V _{GS} = 10V, V _{DS} = 0.5 • V _{DSS} , I _D = 0.5 • I _{D25}	13.3 2.4 7.8		nC nC nC
R_{thJC} R_{thCS}	(TO-220)	0.50	3.0	°C/W °C/W

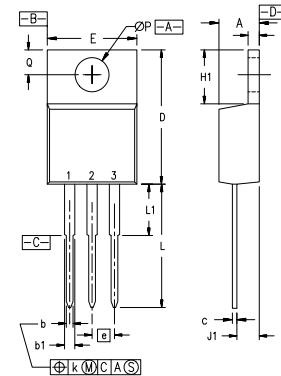
Source-Drain Diode

Symbol	Test Conditions (T _J = 25°C, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
I _s	V _{GS} = 0V		0.6	A
I _{sm}	Repetitive, Pulse Width Limited by T _{JM}		1.8	A
V _{SD}	I _F = I _S , V _{GS} = 0V, Note 1		1.5	V
t _{rr}	I _F = 0.6A, -di/dt = 100A/μs V _R = 100V, V _{GS} = 0V	900		ns

Note 1. Pulse test, t ≤ 300 μs; duty cycle, d ≤ 2%.

TO-263 (IXTA) Outline


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.06	4.83	.160	.190
b	0.51	0.99	.020	.039
b2	1.14	1.40	.045	.055
c	0.40	0.74	.016	.029
c2	1.14	1.40	.045	.055
D	8.64	9.65	.340	.380
D1	8.00	8.89	.320	.320
E	9.65	10.41	.380	.405
E1	6.22	8.13	.270	.320
e	2.54	BSC	.100	BSC
L	14.61	15.88	.575	.625
L1	2.29	2.79	.090	.110
L2	1.02	1.40	.040	.055
L3	1.27	1.78	.050	.070
L4	0	0.13	0	.005

TO-220 (IXTP) Outline


Pins: 1 - Gate
3 - Source

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	.038
L	.500	.550	12.70	13.97
L1	.110	.230	2.79	5.84
ØP	.139	.161	3.53	4.08
Q	.100	.125	2.54	3.18

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 7,157,338B2 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

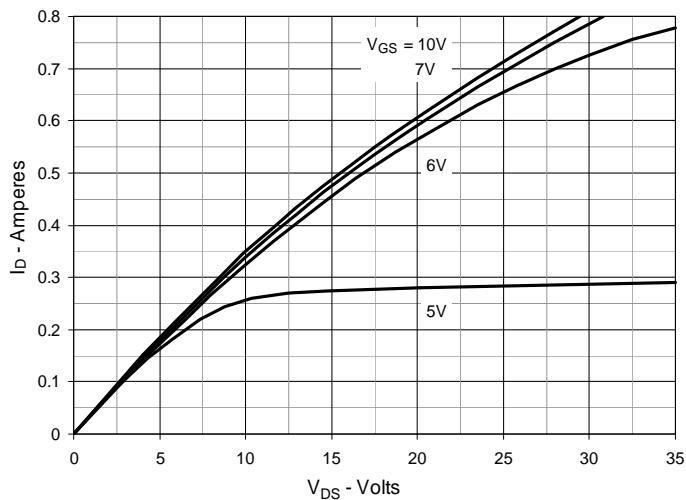
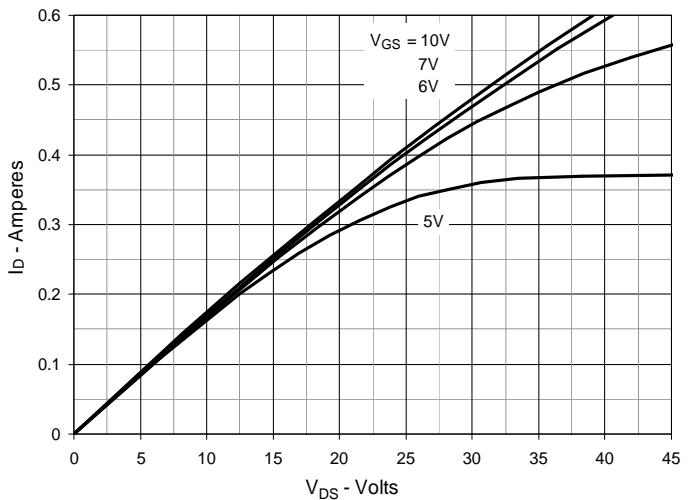
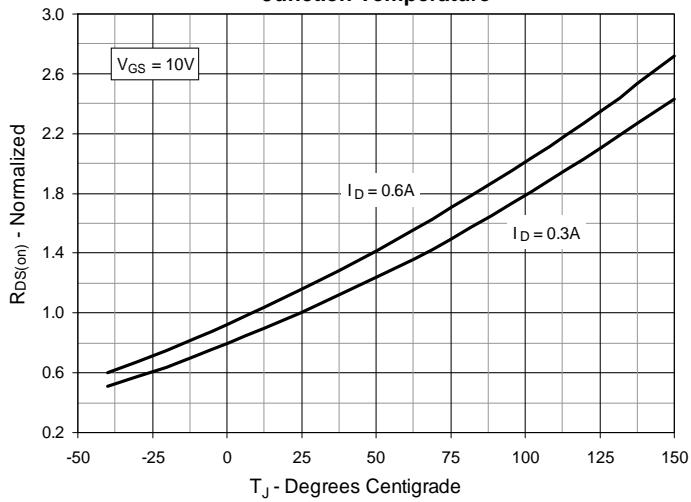
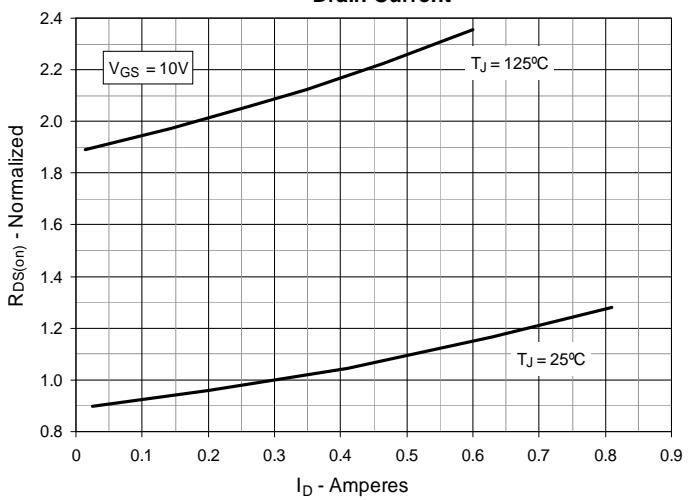
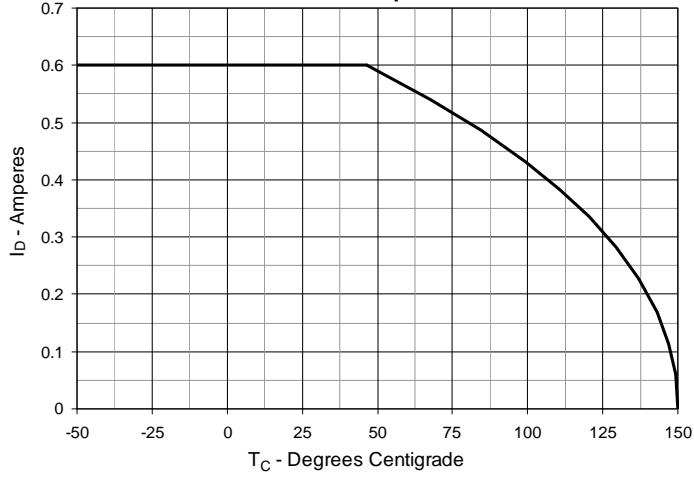
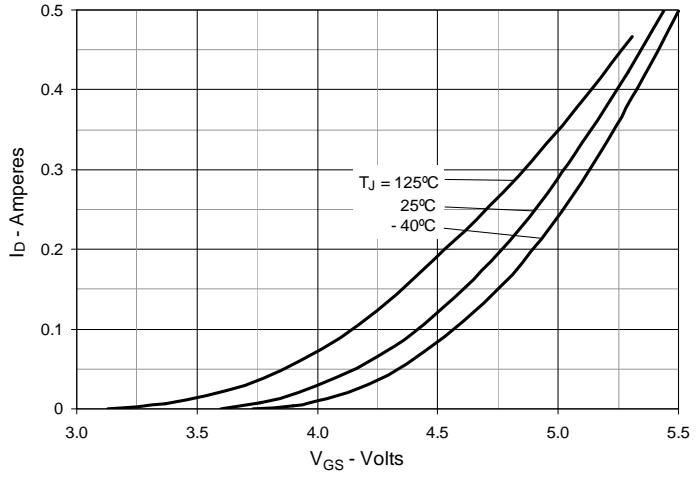
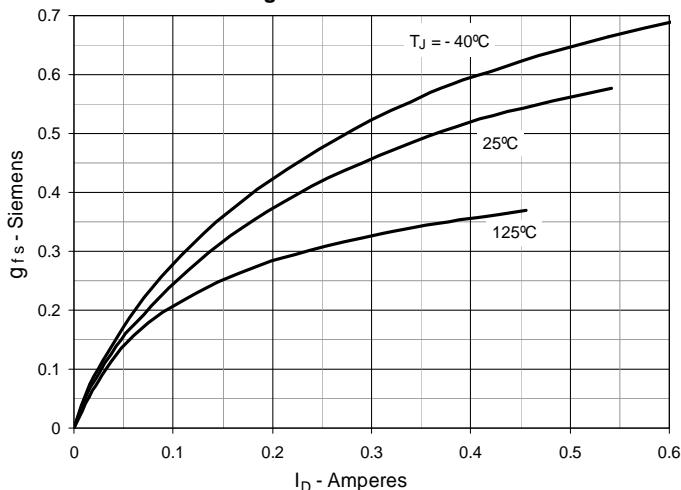
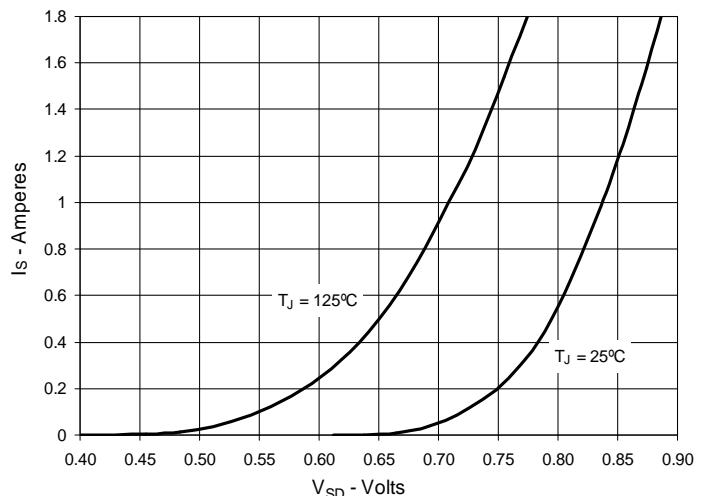
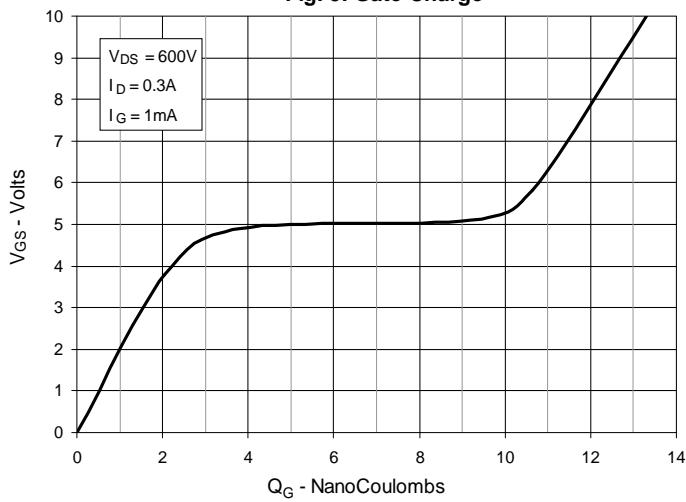
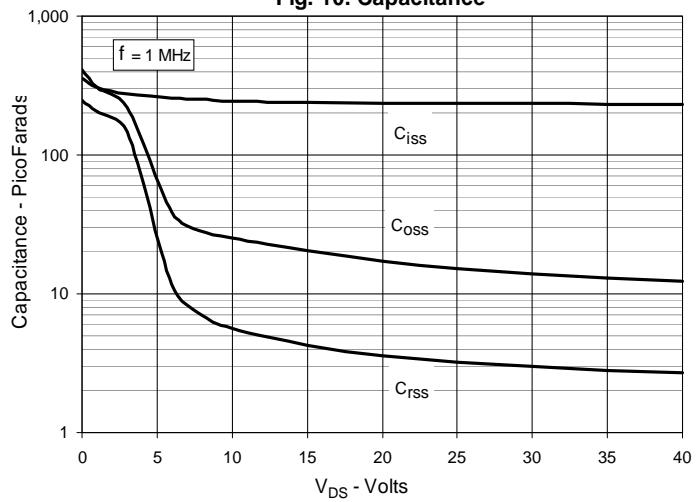
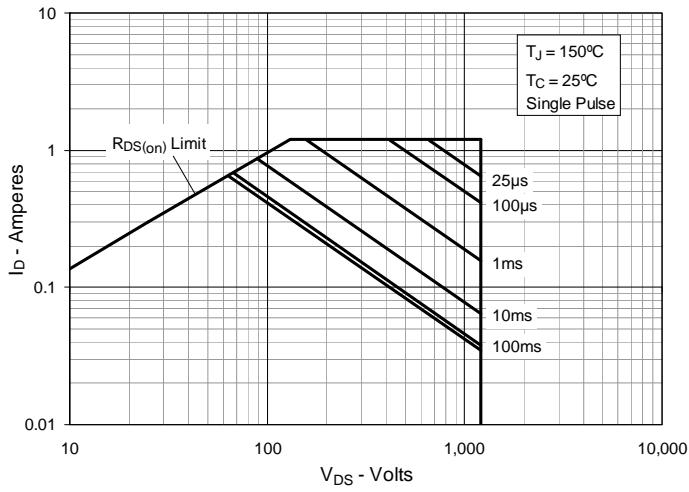
Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

Fig. 2. Output Characteristics @ $T_J = 125^\circ\text{C}$

Fig. 3. $R_{DS(on)}$ Normalized to $I_D = 0.3\text{A}$ Value vs. Junction Temperature

Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 0.3\text{A}$ Value vs. Drain Current

Fig. 5. Maximum Drain Current vs. Case Temperature

Fig. 6. Input Admittance


Fig. 7. Transconductance

Fig. 8. Forward Voltage Drop of Intrinsic Diode

Fig. 9. Gate Charge

Fig. 10. Capacitance

Fig. 11. Forward-Bias Safe Operating Area

Fig. 12. Maximum Transient Thermal Impedance
