IXYS

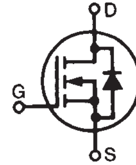
Preliminary Technical Information

High Voltage Power MOSFETs

IXTH03N400 IXTV03N400S

V_{DSS} = 4000V
I_{D25} = 300mA
$R_{DS(on)}$ ≤ 290Ω

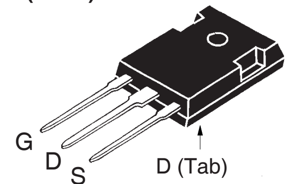
N-Channel Enhancement Mode
Fast Intrinsic Rectifier



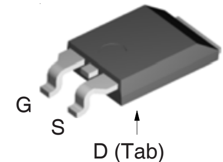
Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	4000	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	4000	V
V_{GSS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_C = 25°C	300	mA
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	800	mA
P_D	T_C = 25°C	130	W
T_J		- 55 ... +150	°C
T_{JM}		150	°C
T_{stg}		- 55 ... +150	°C
T_L	1.6mm (0.062 in.) from Case for 10s	300	°C
T_{SOLD}	Plastic Body for 10s	260	°C
M_d	Mounting Torque (TO-247)	1.13 / 10	Nm/lb.in.
F_C	Mounting Force (PLUS220)	11..65 / 25..14.6	N/lb.
Weight	PLUS220	4	g
	TO-247	6	g

Symbol	Test Conditions	Characteristic Values			
(T_J = 25°C, Unless Otherwise Specified)		Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 250µA	4000			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250µA	2.0		4.0	V
I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
I_{DSS}	V_{DS} = 0.8 • V_{DSS}, V_{GS} = 0V			10	µA
	T_J = 125°C			750	µA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 0.5 • I_{D25}, Note 1			290	Ω

TO-247 (IXTH)



PLUS220SMD (IXTV_S)



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

Features

- International Standard Packages
- Fast Intrinsic Rectifier
- Molding Epoxies meet UL 94 V-0 Flammability Classification

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- High Voltage Power Supplies
- Capacitor Discharge
- Pulse Circuits

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IXTH03N400
IXTV03N400S

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Min.	Typ.	Max.	
g_{fs}	V_{DS} = 50V, I_D = 100mA, Note 1	110	180		mS
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		435		pF
C_{oss}			19		pF
C_{rss}			6		pF
$t_{d(on)}$	**Resistive Switching Times**		17		ns
t_r	V_{GS} = 10V, V_{DS} = 250V, I_D = 150mA		16		ns
$t_{d(off)}$	R_G = 50Ω (External)		86		ns
t_f			58		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 1000V, I_D = 0.5 • I_{D25}		16.3		nC
Q_{gs}			1.9		nC
Q_{gd}			8.8		nC
R_{thJC}				0.96	°C/W
R_{thCS}			0.25		°C/W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Min.	Typ.	Max.	
I_S	V_{GS} = 0V			300	mA
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			1.2	A
V_{SD}	I_F = 300mA, V_{GS} = 0V, Note 1			3.0	V
t_{rr}	I_F = 1A, -di/dt = 100A/μs, V_R = 200V		2.8		μs

Note:

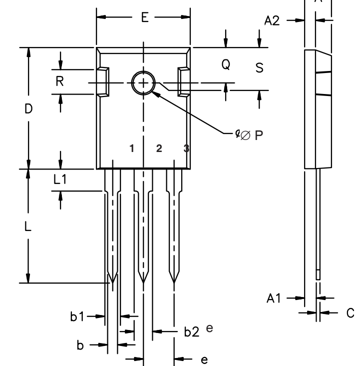
1. Pulse test, t ≤ 300μs, duty cycle, d ≤ 2%.

Additional provisions for lead to lead voltage isolation are required at V_{DS} > 1200V.

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 yet contain some information supplied during a pre-production design evaluation. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

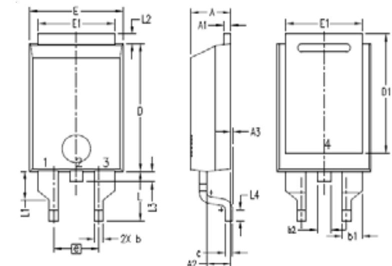
TO-247 Outline



Terminals: 1 - Gate 2 - Drain 3 - Source

Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches Max.
A	4.7	5.3	.185	.209
A_1	2.2	2.54	.087	.102
A_2	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b_1	1.65	2.13	.065	.084
b_2	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
∅P	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15 BSC		242 BSC	

PLUS220SMD Outline

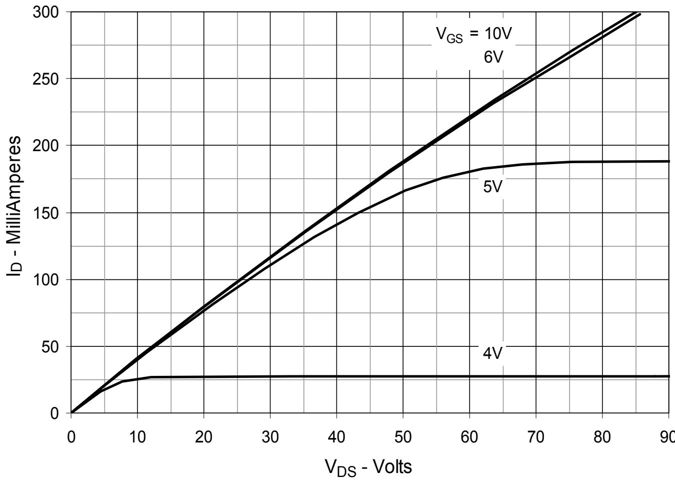


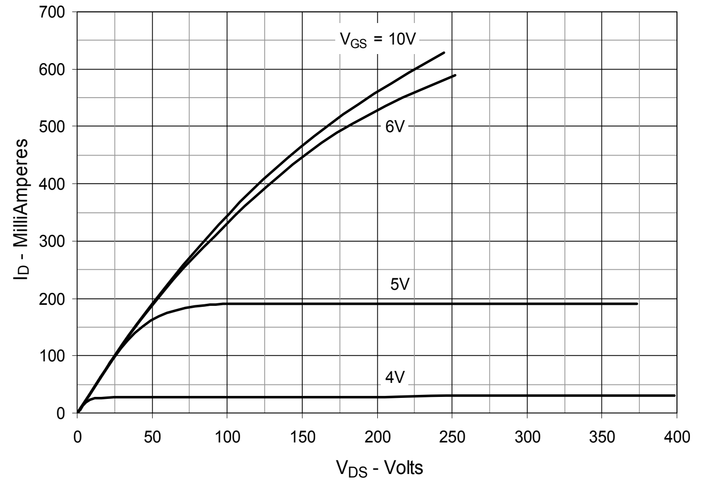
1. Gate
2,4. Drain
3. Source

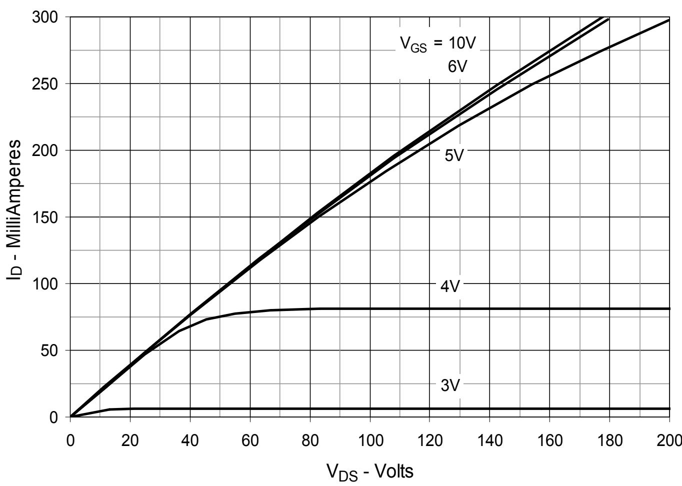
SYM	INCHES MIN	INCHES MAX	MILLIMETER MIN	MILLIMETER MAX
A	.169	.185	4.30	4.70
A1	.028	.035	0.70	0.90
A2	.098	.118	2.50	3.00
A3	.000	.010	0.00	0.25
b	.035	.047	0.90	1.20
b1	.080	.095	2.03	2.41
b2	.054	.064	1.37	1.63
c	.028	.035	0.70	0.90
D	.551	.591	14.00	15.00
D1	.512	.539	13.00	13.70
E	.394	.433	10.00	11.00
E1	.331	.346	8.40	8.80
e	.200BSC		5.08 BSC	
L	.209	.228	5.30	5.80
L1	.118	.138	3.00	3.50
L2	.035	.051	0.90	1.30
L3	.047	.059	1.20	1.50
L4	.039	.059	1.00	1.50

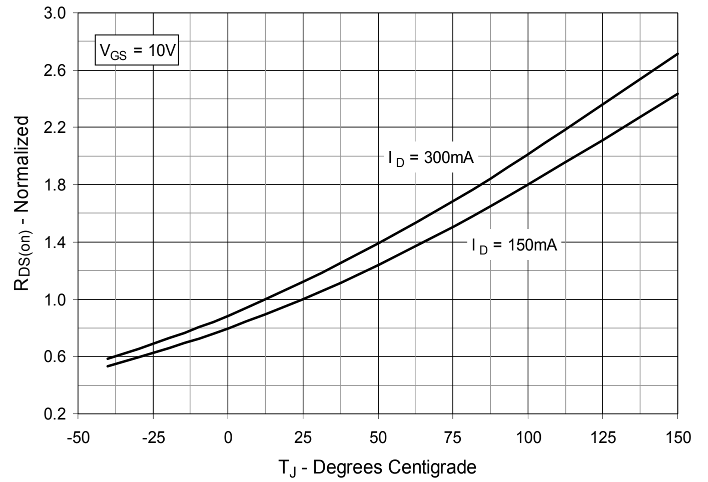
IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

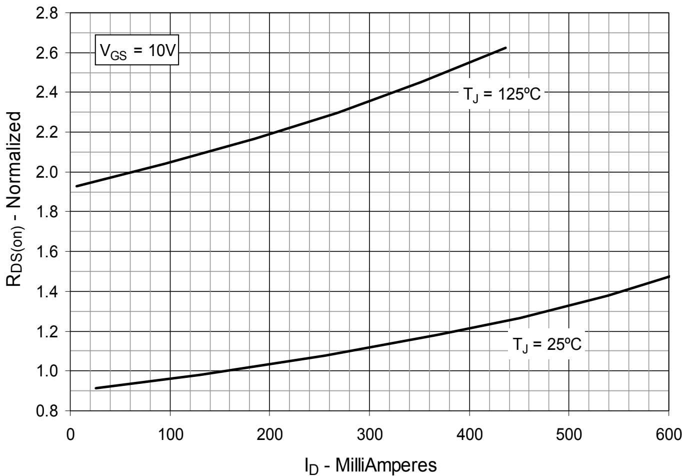
IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: 4,835,592 4,860,072 4,881,106 4,931,844 5,017,508 5,034,796 5,049,961 5,063,307 5,187,117 5,237,481 5,381,025 5,486,715 6,162,665 6,259,123 B1 6,306,728 B1 6,404,065 B1 6,534,343 6,583,505 6,683,344 6,710,405 B2 6,710,463 6,727,585 6,759,692 6,771,478 B2 7,005,734 B2 7,063,975 B2 7,071,537 7,157,338B2

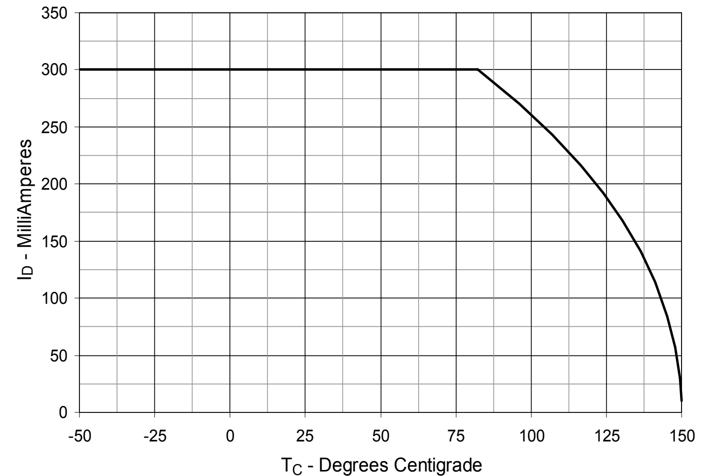












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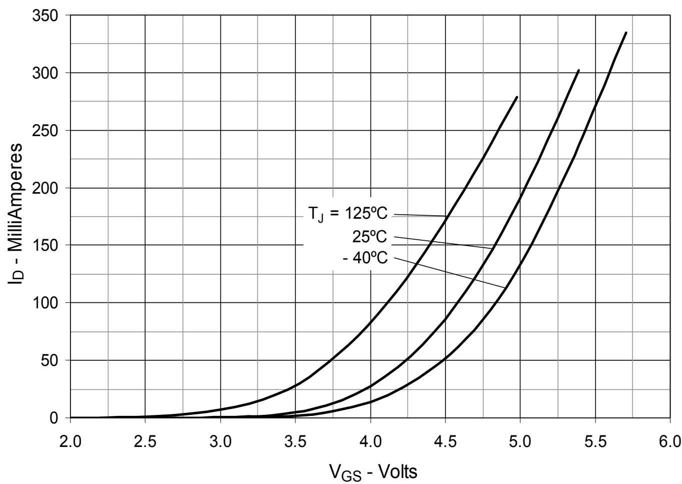

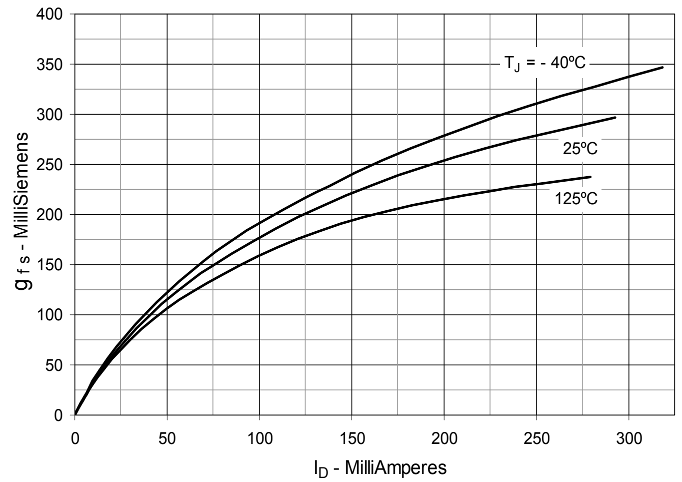

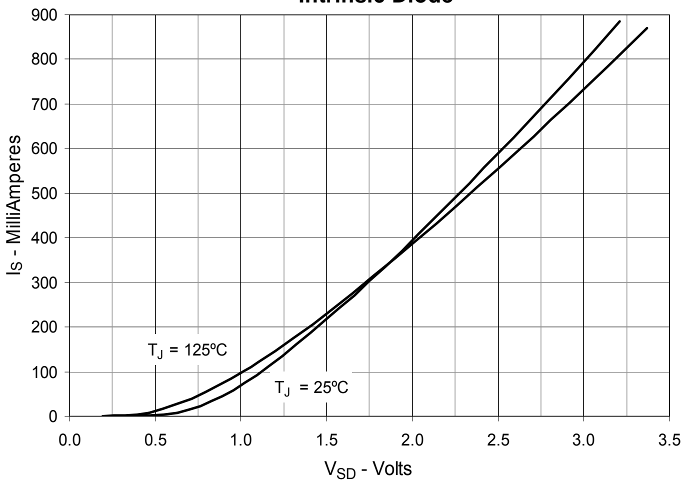

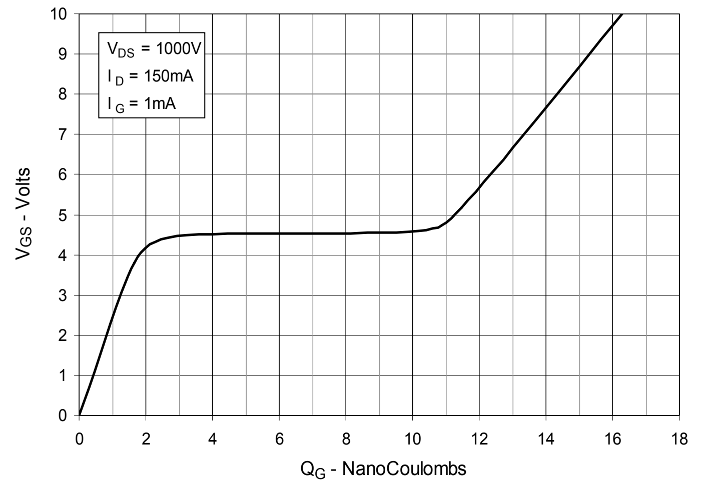

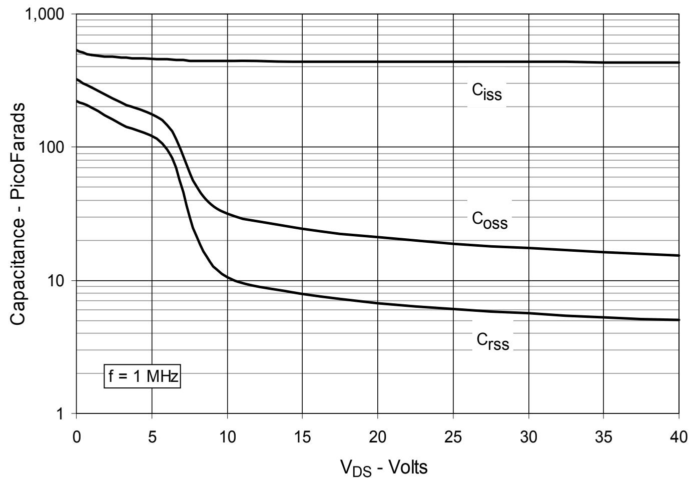

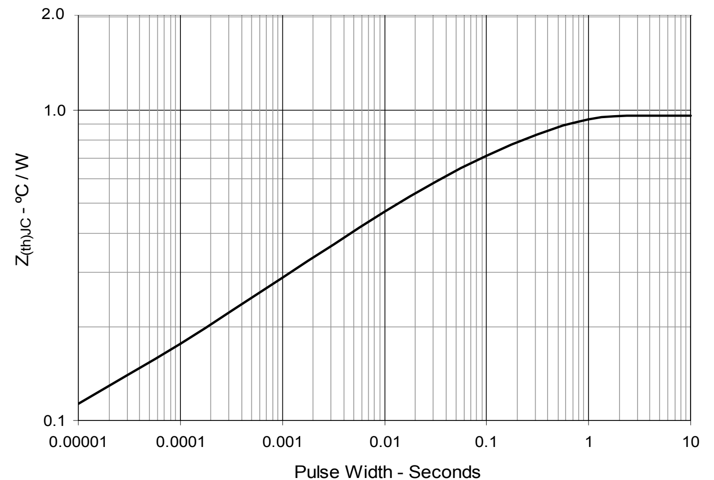

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