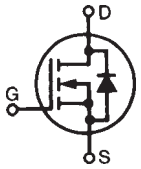
IXYS

High Voltage Power MOSFET

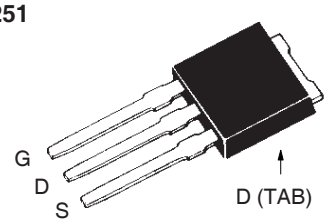
IXTU05N100
IXTY05N100

V_{DSS} = 1000V
I_{D25} = 750mA
$R_{DS(on)}$ ≤ 17Ω

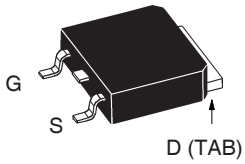
N-Channel Enhancement Mode
Avalanche Rated



TO-251



TO-252



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

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	1000	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	1000	V
V_{GSS}	Continuous	±30	V
V_{GSM}	Transient	±40	V
I_{D25}	T_C = 25°C	750	mA
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	3	A
I_A	T_C = 25°C	1	A
E_{AS}	T_C = 25°C	100	mJ
dv/dt	$I_S \le I_{DM}$, $V_{DD} \le V_{DSS}$, T_J =150°C	3	V/ns
P_D	T_C = 25°C	40	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
F_C	Mounting force	1.13 / 10	Nm/lb.in.
Weight	TO-251	0.40	g
	TO-252	0.35	g

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 250μA	1000			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250μA	2.5		4.5	V
I_{GSS}	V_{GS} = ± 30V, V_{DS} = 0V			±100	nA
I_{DSS}	$V_{DS} = V_{DSS}$			25	μA
	V_{GS} = 0V, T_J = 125°C			500	μA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 375mA, Note 1			17	Ω

Features

- International standard packages
- Fast switching times
- Avalanche Rated
- Rugged polysilicon gate cell structure
- Extended FBSOA

Applications

- Switch-mode and resonant-mode power supplies
- Flyback inverters
- DC choppers

Advantages

- High power density
- Space savings

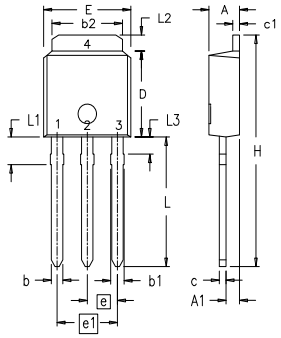
Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.
g_{fs}	V_{DS} = 20V, I_D = 500mA, Note 1	0.55	0.93	S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		260	pF
C_{oss}			22	pF
C_{rss}			8	pF
$t_{d(on)}$	**Resistive Switching Times**		11	ns
t_r	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 1A		19	ns
$t_{d(off)}$	R_G = 47Ω (External)		40	ns
t_f			28	ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 1A		7.8	nC
Q_{gs}			1.4	nC
Q_{gd}			4.1	nC
R_{thJC}				3.1 °C/W
R_{thCA}				110 °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			750 mA
I_{SM}	Repetitive, pulse width limited by T_{JM}			3 A
V_{SD}	I_F = I_S, V_{GS} = 0V, Note 1			1.5 V
t_{rr}	I_F = I_S, -di/dt = 100A/μs V_R = 100V, V_{GS} = 0V		710	ns

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

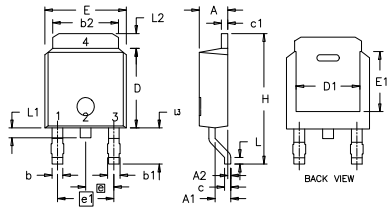
TO-251 (IXTU) Outline



1. Gate 2.Drain
3. Source 4.Drain

Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	2.19	2.38	.086	.094
A1	0.89	1.14	0.35	.045
b	0.64	0.89	.025	.035
b1	0.76	1.14	.030	.045
b2	5.21	5.46	.205	.215
c	0.46	0.58	.018	.023
c1	0.46	0.58	.018	.023
D	5.97	6.22	.235	.245
E	6.35	6.73	.250	.265
e	2.28	BSC	.090	BSC
e1	4.57	BSC	.180	BSC
H	17.02	17.78	.670	.700
L	8.89	9.65	.350	.380
L1	1.91	2.28	.075	.090
L2	0.89	1.27	.035	.050

TO-252 (IXTY) Outline



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

Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	2.19	2.38	0.086	0.094
A1	0.89	1.14	0.035	0.045
A2	0	0.13	0	0.005
b	0.64	0.89	0.025	0.035
b1	0.76	1.14	0.030	0.045
b2	5.21	5.46	0.205	0.215
c	0.46	0.58	0.018	0.023
c1	0.46	0.58	0.018	0.023
D	5.97	6.22	0.235	0.245
D1	4.32	5.21	0.170	0.205
E	6.35	6.73	0.250	0.265
E1	4.32	5.21	0.170	0.205
e	2.28 BSC		0.090 BSC	
e1	4.57 BSC		0.180 BSC	
H	9.40	10.42	0.370	0.410
L	0.51	1.02	0.020	0.040
L1	0.64	1.02	0.025	0.040
L2	0.89	1.27	0.035	0.050
L3	2.54	2.92	0.100	0.115

Fig. 1. Output Characteristics @ 25ºC

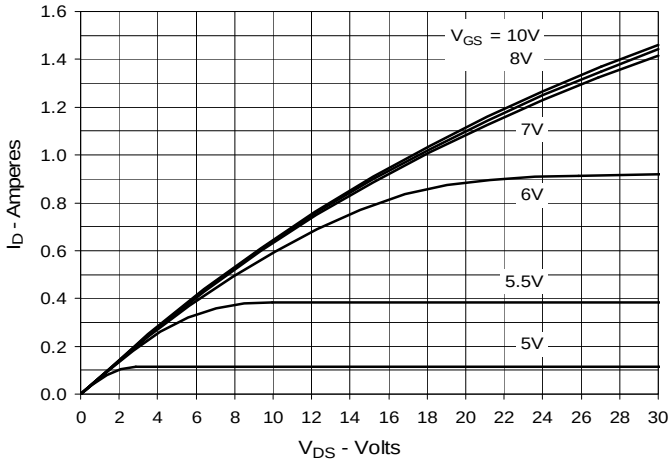


Fig. 2. Output Characteristics @ 125ºC

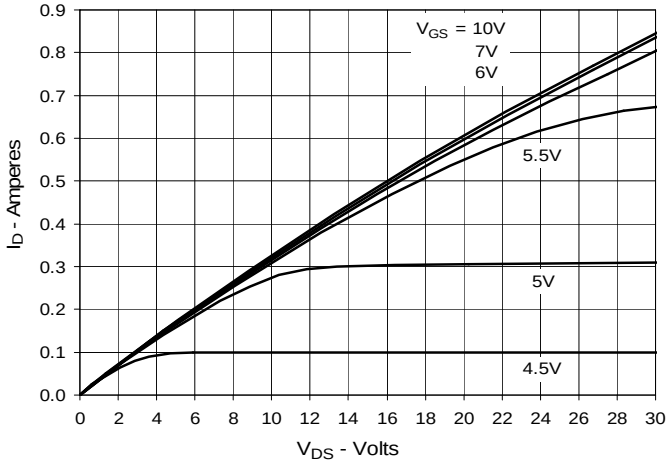


Fig. 3. $R_{DS(on)}$ Normalized to I_D = 375mA Value vs. Junction Temperature

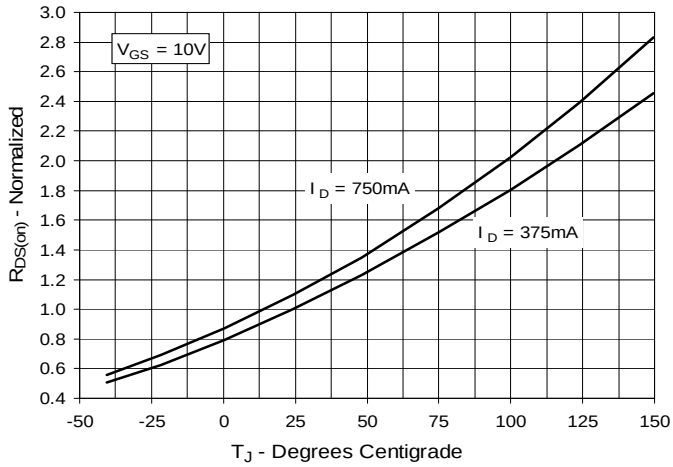


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 375mA Value vs. Drain Current

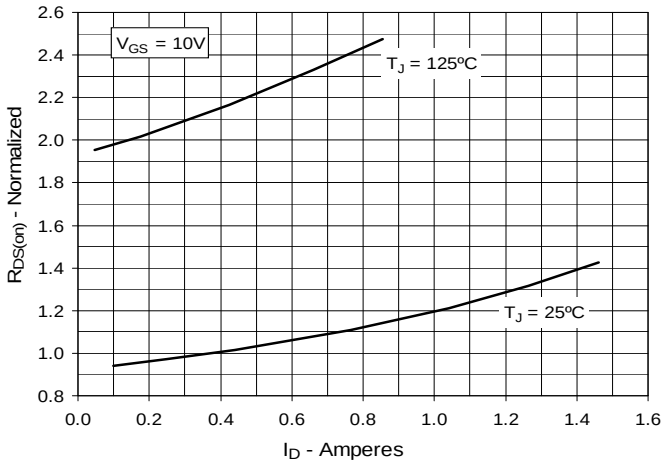


Fig. 5. Maximum Drain Current vs. Case Temperature

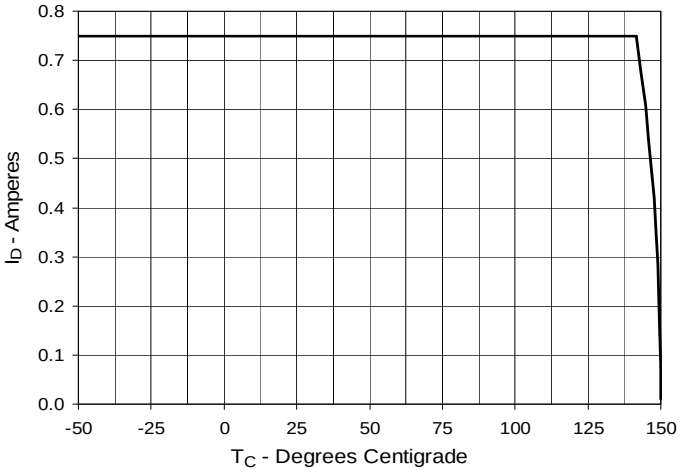


Fig. 6. Input Admittance

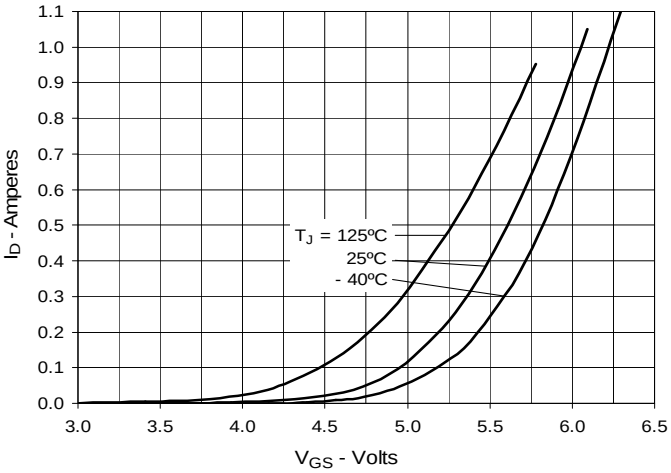


Fig. 7. Transconductance

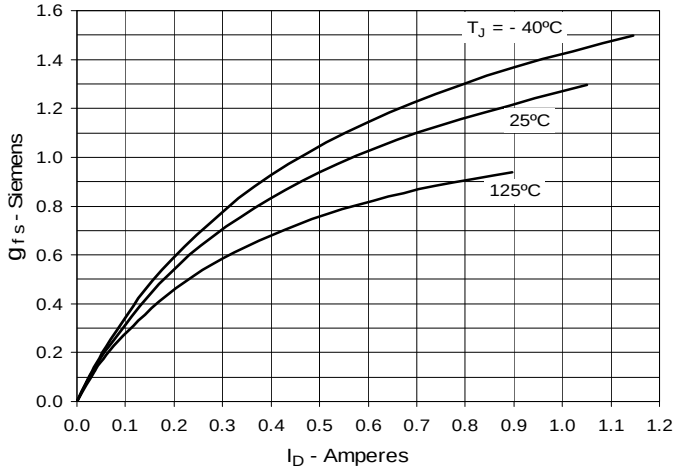


Fig. 8. Forward Voltage Drop of Intrinsic Diode

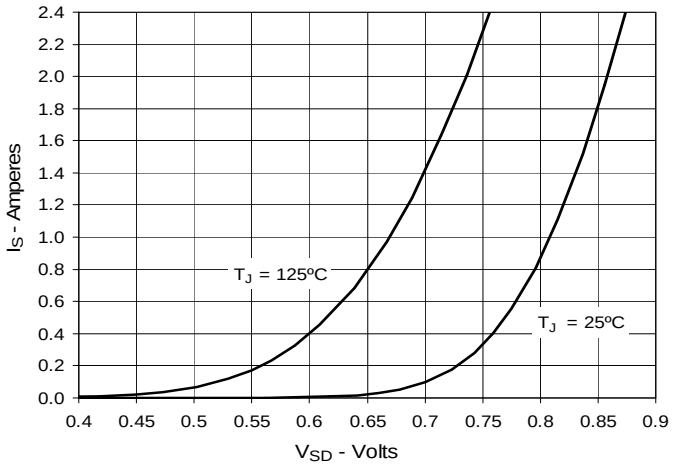


Fig. 9. Gate Charge

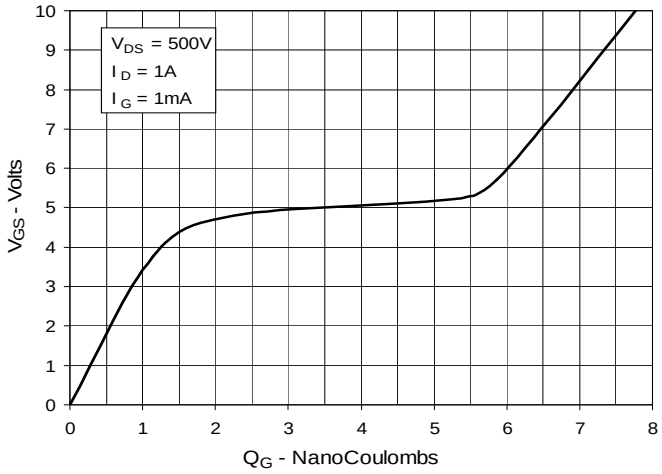


Fig. 10. Capacitance

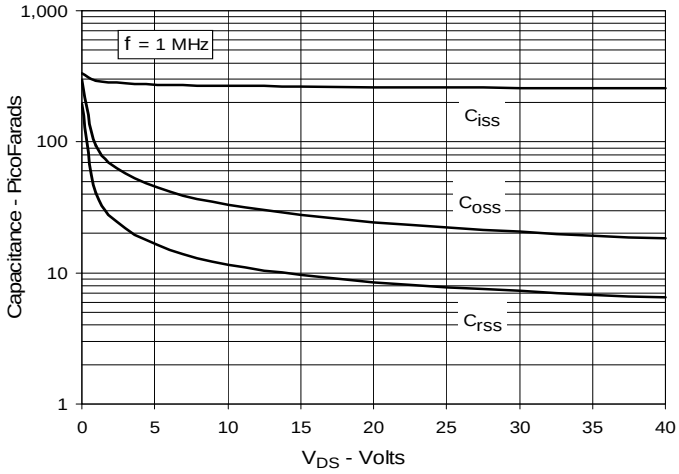
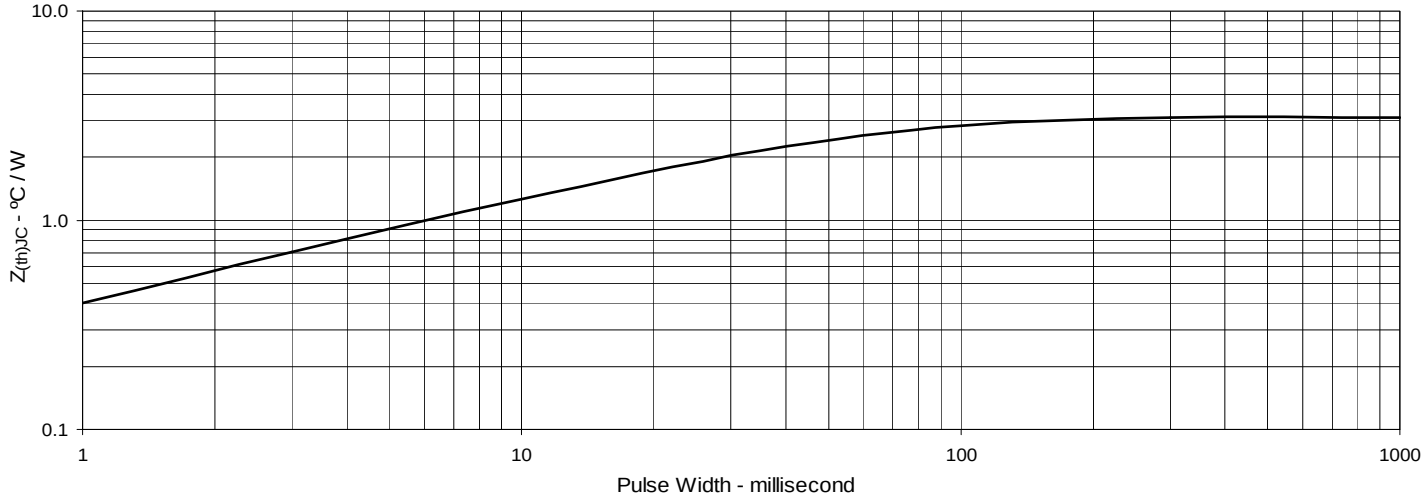


Fig. 11. Maximum Transient Thermal Impedance



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