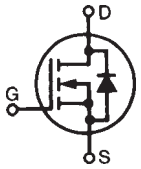
IXYS

High Voltage Power MOSFET

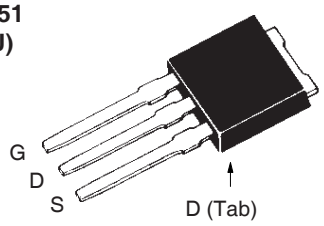
IXTU01N100
IXTY01N100

V_{DSS} = 1000V
I_{D25} = 100mA
$R_{DS(on)}$ ≤ 80Ω

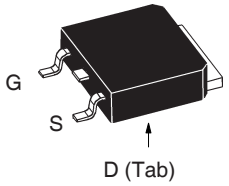
N-Channel Enhancement Mode



TO-251 (IXTU)



TO-252 (IXTY)



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	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_C = 25°C	100	mA
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	400	mA
P_D	T_C = 25°C	25	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
F_C	Mounting force	1.13 / 10	Nm/lb.in.
Weight	TO-251	0.40	g
	TO-252	0.35	g

Features

- International Standard Packages
- Fast Switching Times
- Avalanche Rated
- $R_{ds(on)}$ HDMOS™ Process
- Rugged Polysilicon Gate Cell structure

Advantages

- High Power Density
- Space Savings

Applications

- Level Shifting
- Triggers
- Solid State Relays
- Current Regulators

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 25μA	1000			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 25μA	2.0		4.5	V
I_{GSS}	V_{GS} = ± 20V, V_{DS} = 0V			±50	nA
I_{DSS}	V_{DS} = 0.8 • V_{DSS}, V_{GS} = 0V			10	μA
	T_J = 125°C			200	μA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 50mA, Note 1		60	80	Ω

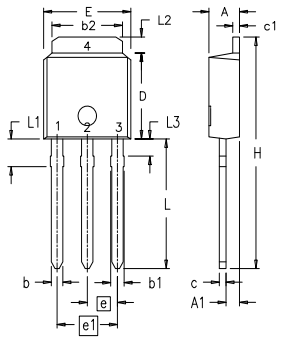
Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10V, I_D = 50mA, Note 1		0.16		S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		54.0		pF
C_{oss}			6.9		pF
C_{rss}			2.0		pF
$t_{d(on)}$	**Resistive Switching Times**		12		ns
t_r	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 50mA		12		ns
$t_{d(off)}$	R_G = 50Ω (External)		40		ns
t_f			28		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 50mA		6.9		nC
Q_{gs}			1.8		nC
Q_{gd}			3.0		nC
R_{thJC}				5	°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			100	mA
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			300	mA
V_{SD}	I_F = I_S, V_{GS} = 0V, Note 1			1.8	V
t_{rr}	I_F = 0.75A, -di/dt = 100A/µs, V_R = 25V			1.5	µs

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

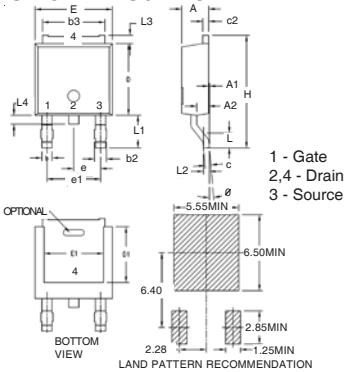
TO-251 Outline



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 AA Outline



1 - Gate
2,4 - Drain
3 - Source

SYM	INCHES MIN	MAX	MILLIMETERS MIN	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°

Fig. 1. Output Characteristics @ T_J = 25°C

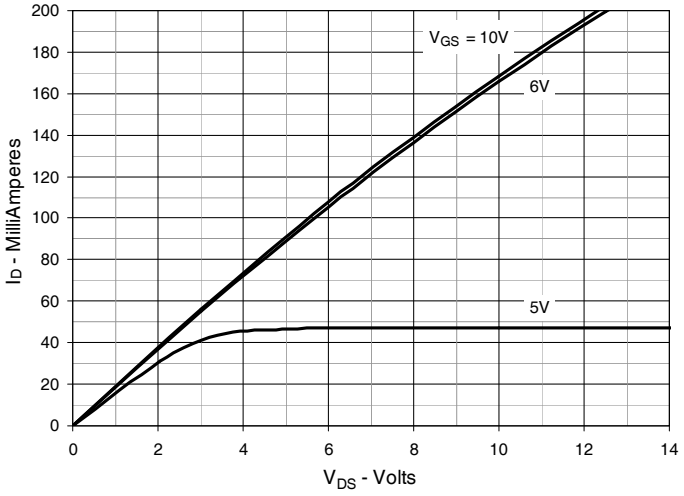


Fig. 2. ExtendedOutput Characteristics @ T_J = 25°C

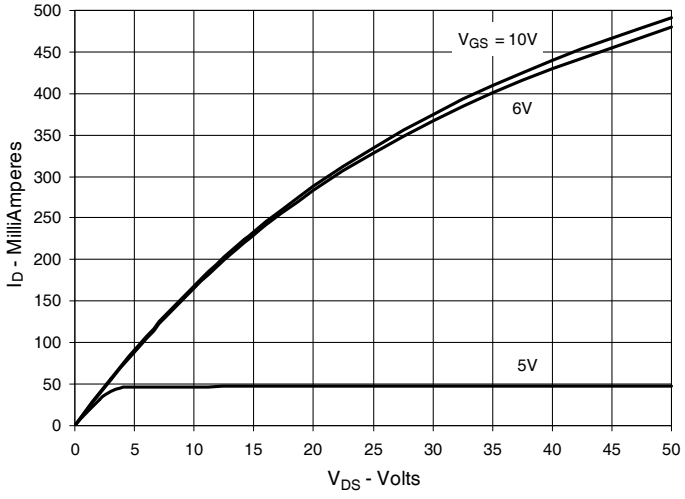


Fig. 2. Output Characteristics @ T_J = 125°C

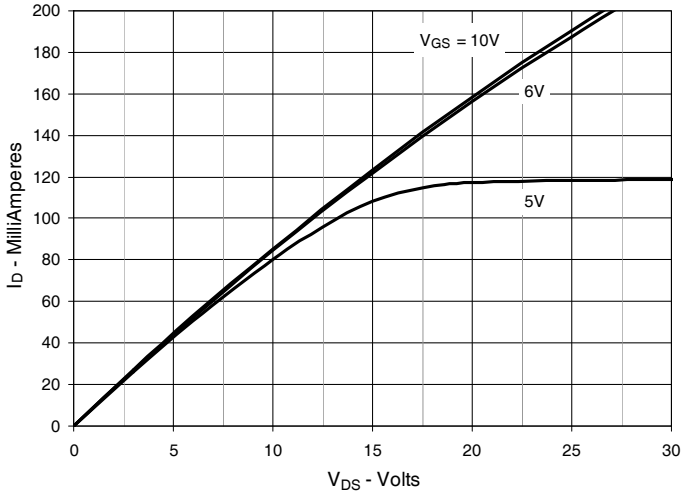


Fig. 3. $R_{DS(on)}$ Normalized to I_D = 50mA Value vs. Junction Temperature

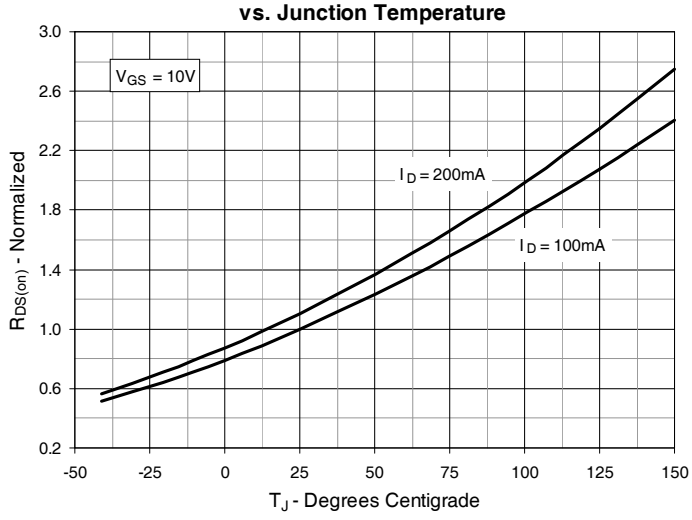


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 50mA Value vs. Drain Current

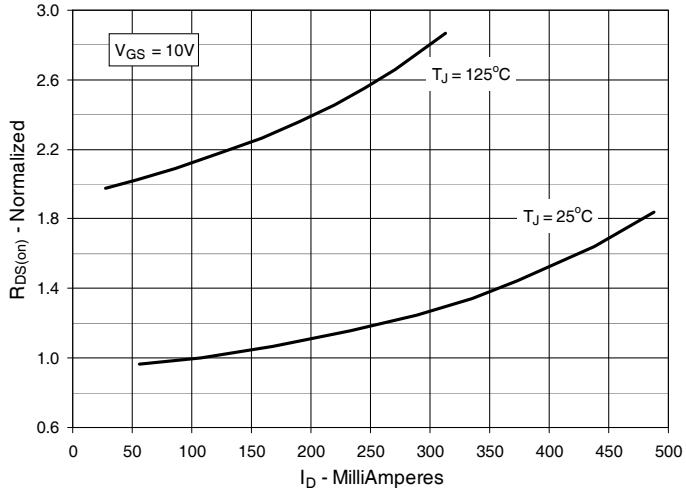


Fig. 5. Maximum Drain Current vs. Case Temperature

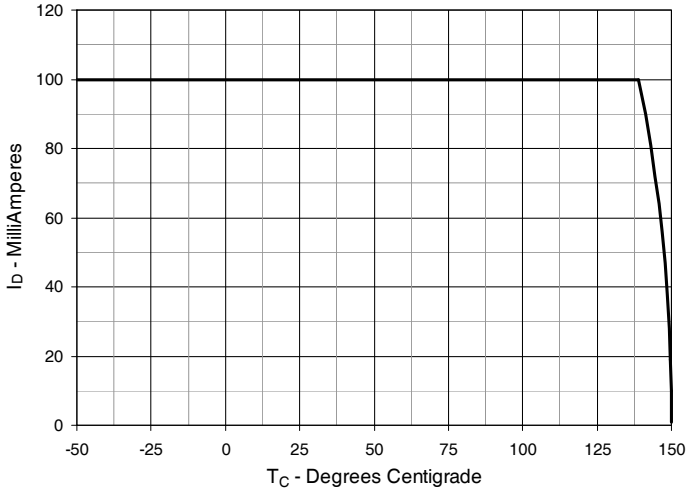


Fig. 7. Input Admittance

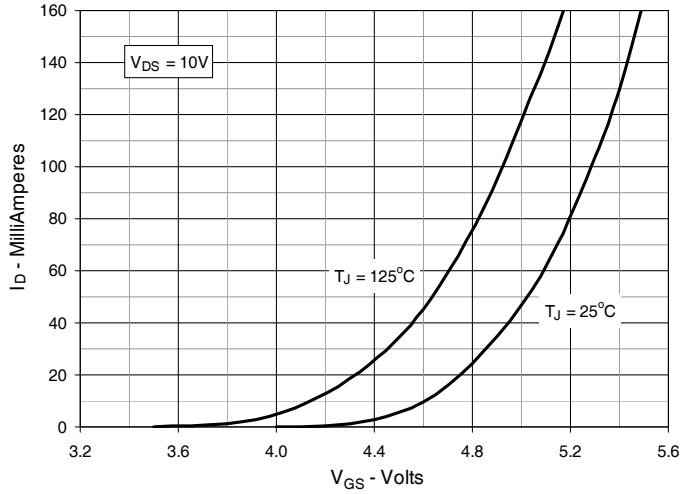


Fig. 8. Transconductance

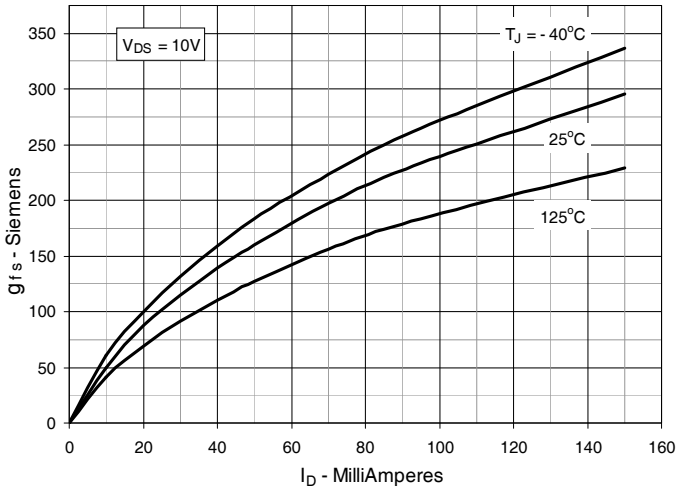


Fig. 9. Forward Voltage Drop of Intrinsic Diode

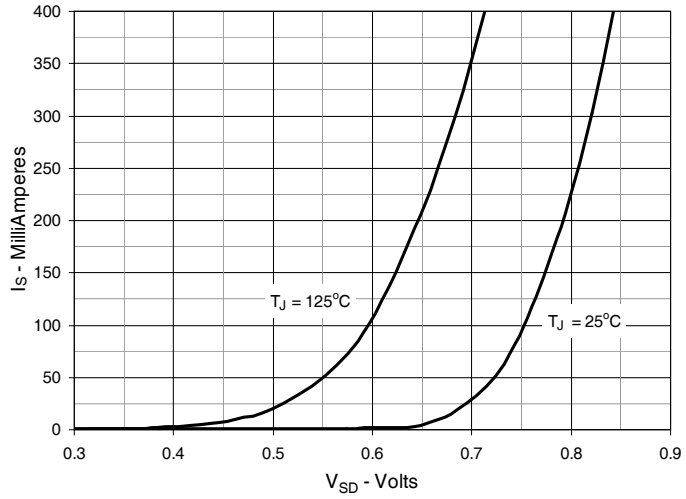


Fig. 10. Gate Charge

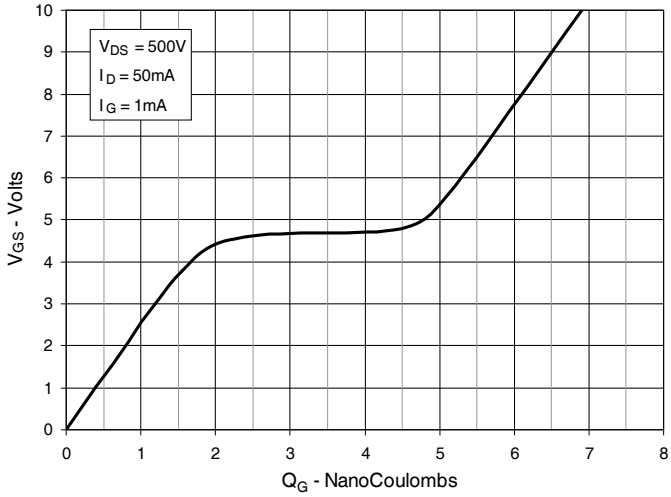


Fig. 11. Capacitance

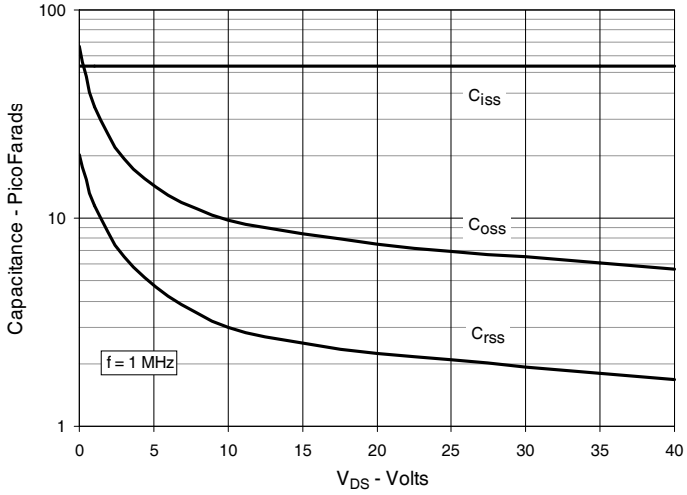


Fig. 12. Maximum Transient Thermal Impedance