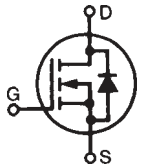
IXYS

High Voltage MOSFET IXTP05N100M

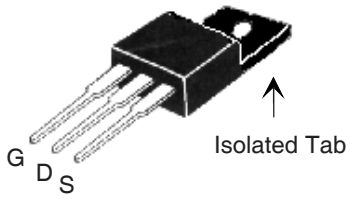
V_{DSS} = 1000V
I_{D25} = 700mA
$R_{DS(on)}$ ≤ 17Ω

(Electrically Isolated Tab)

N-Channel Enhancement Mode
Avalanche Rated



OVERMOLDED TO-220 (IXTP...M) OUTLINE



G = Gate D = Drain
S = Source

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} = 1 MΩ	1000	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	T_C = 25°C	700	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	25	W
T_J		- 55 ... +150	°C
T_{JM}		150	°C
T_{stg}		- 55 ... +150	°C
T_L	1.6 mm (0.062 in.) from case for 10 s	300	°C
T_{SOLD}	Plastic body for 10 s	260	°C
M_d	Mounting torque	1.13/10	Nm/lb.in.
Weight		2.5	g

Features

- Plastic overmolded tab for electrical isolation
- International standard package
- Avalanche rated
- Low package inductance
  - easy to drive and to protect

Advantages

- Easy to mount
- Space savings
- High power density

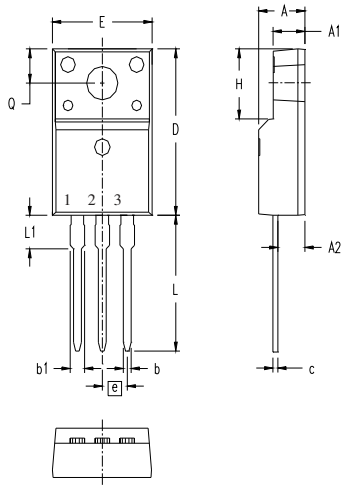
Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 250μA	1000			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 25μA	2.5		4.5	V
I_{GSS}	V_{GS} = ±30V, V_{DS} = 0V			±100	nA
I_{DSS}	$V_{DS} = V_{DSS}$			25	μA
	V_{GS} = 0V T_J = 125°C			500	μA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 375mA, Note 1		15	17	Ω

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}				5.0	°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 = 750mA, -di/dt = 100A/μs, V_R = 100V, V_{GS} = 0V		710		ns

ISOLATED TO-220 (IXTP...M)



Terminals: 1 - Gate
2 - Drain (Collector)
3 - Source (Emitter)

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.177	.193	4.50	4.90
A1	.092	.108	2.34	2.74
A2	.101	.117	2.56	2.96
b	.028	.035	0.70	0.90
b1	.050	.058	1.27	1.47
c	.018	.024	0.45	0.60
D	.617	.633	15.67	16.07
E	.392	.408	9.96	10.36
e	.100 BSC		2.54 BSC	
H	.255	.271	6.48	6.88
L	.499	.523	12.68	13.28
L1	.119	.135	3.03	3.43
ØP	.121	.129	3.08	3.28
Q	.126	.134	3.20	3.40

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

Fig. 1. Output Characteristics @ 25ºC

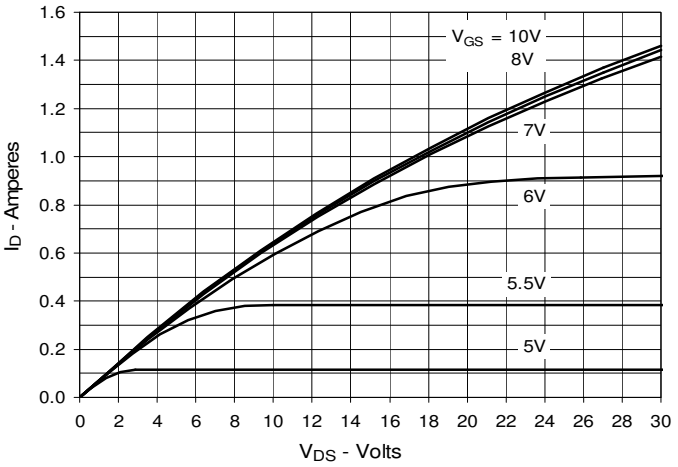


Fig. 2. Output Characteristics @ 125ºC

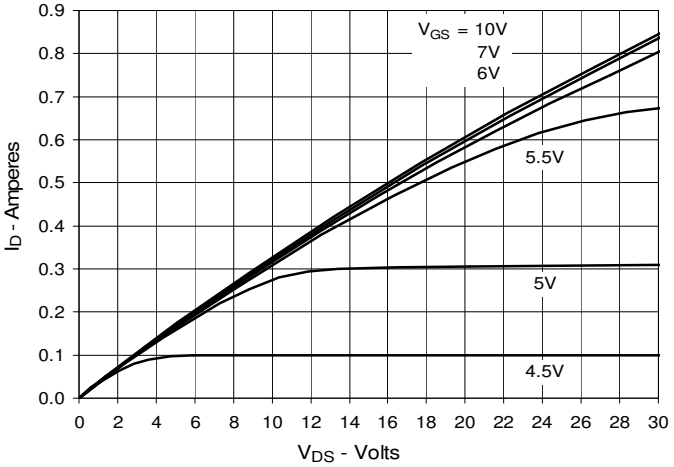


Fig. 3. $R_{DS(on)}$ Normalized to I_D = 375mA Value vs. Junction Temperature

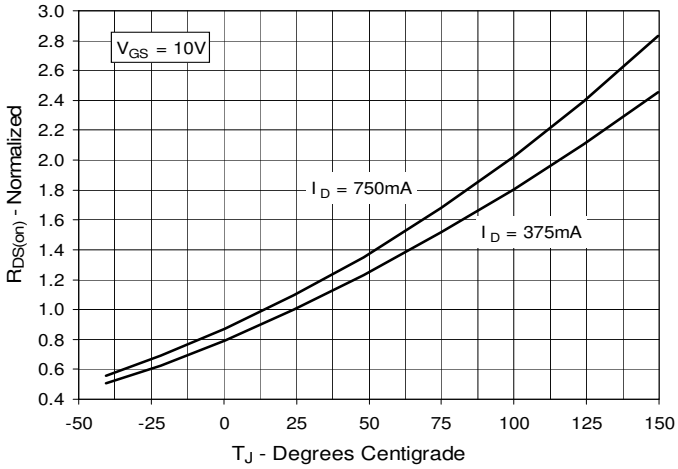


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 375mA Value vs. Drain Current

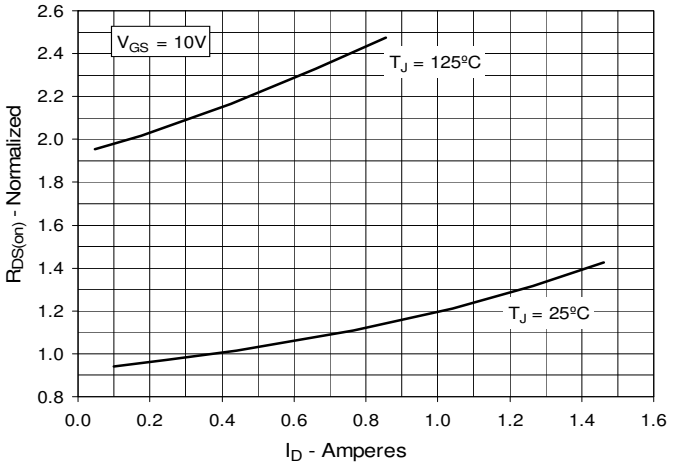


Fig. 5. Maximum Drain Current vs. Case Temperature

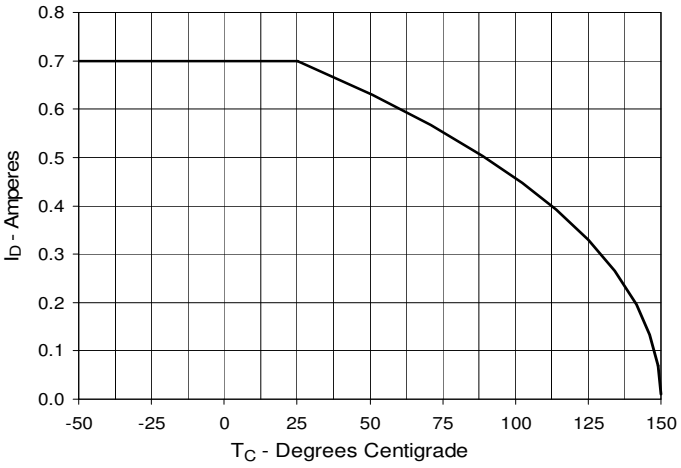


Fig. 6. Input Admittance

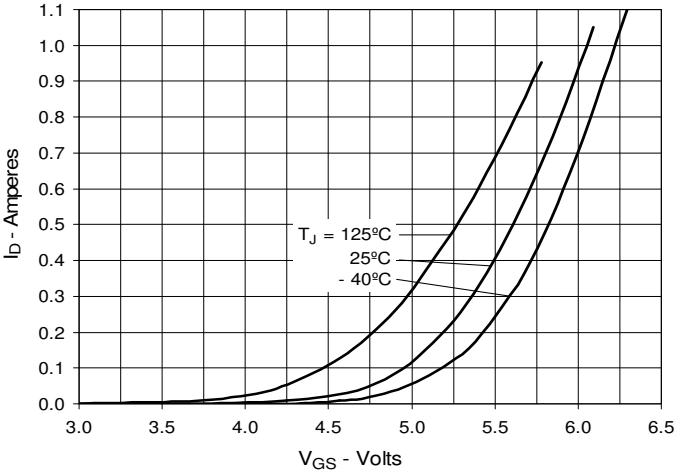


Fig. 7. Transconductance

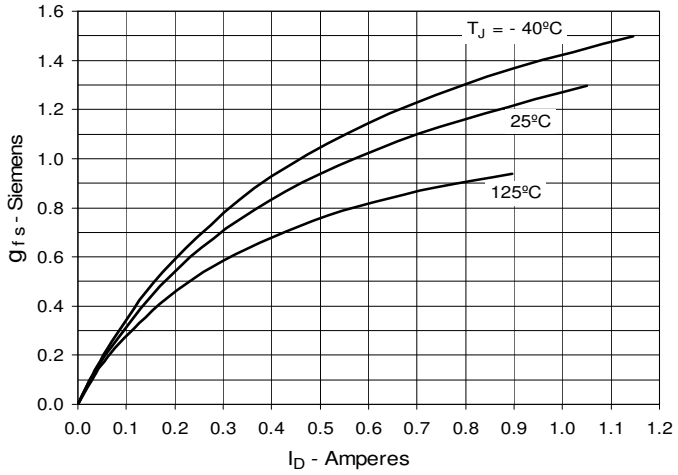


Fig. 8. Forward Voltage Drop of Intrinsic Diode

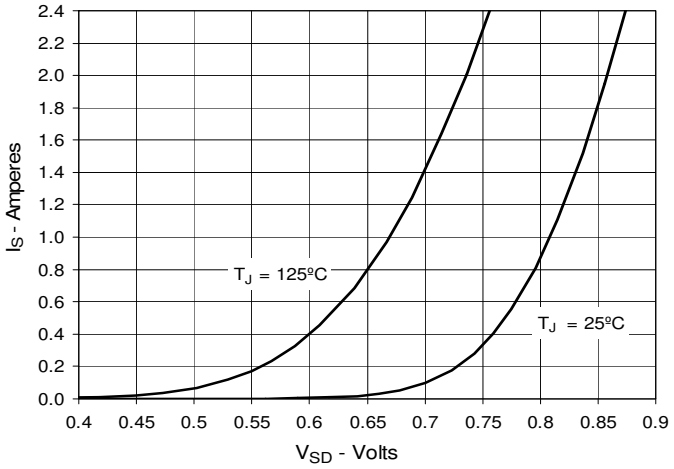


Fig. 9. Gate Charge

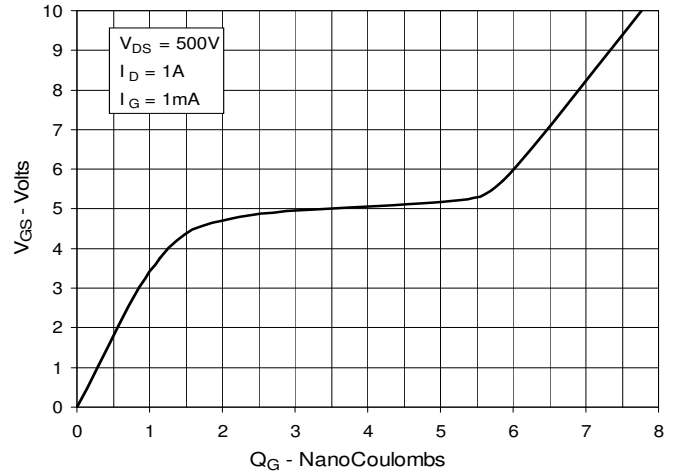


Fig. 10. Capacitance

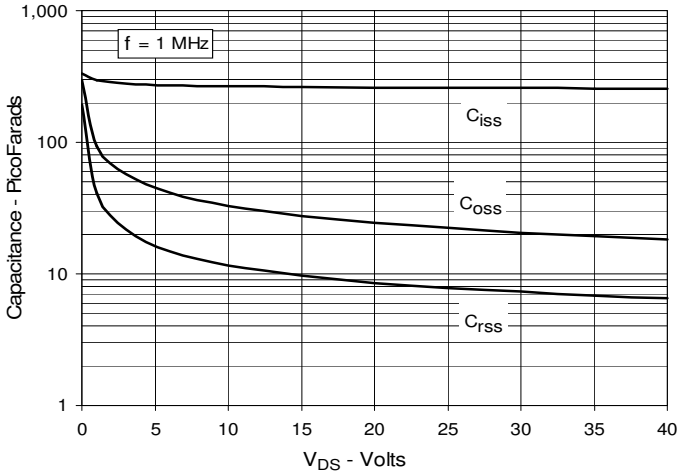


Fig. 11. Maximum Transient Thermal Impedance