IXYS

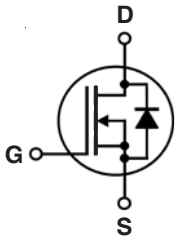
Preliminary Technical Information

High Voltage Depletion Mode MOSFET

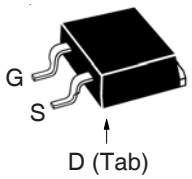
IXTA08N100D2HV

V_{DSX} = 1000V
$I_{D(on)}$ ≥ 800mA
$R_{DS(on)}$ ≤ 21Ω

N-Channel



TO-263HV



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

Symbol	Test Conditions	Maximum Ratings	
V_{DSX}	T_J = 25°C to 150°C	1000	V
V_{DGX}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	1000	V
V_{GSX}	Continuous	±20	V
V_{GSM}	Transient	±30	V
P_D	T_C = 25°C	60	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	10..65 / 22..14.6	N/lb
Weight		2.5	g

Features

- High Voltage Package
- Normally ON Mode
- International Standard Package
- Molding Epoxies Meet UL 94 V-0 Flammability Classification

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- Audio Amplifiers
- Start-up Circuits
- Protection Circuits
- Ramp Generators
- Current Regulators
- Active Loads

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSX}	V_{GS} = - 5V, I_D = 25μA	1000			V
$V_{GS(off)}$	V_{DS} = 25V, I_D = 25μA	- 2.0		- 4.0	V
I_{GSX}	V_{GS} = ±20V, V_{DS} = 0V			±50	nA
$I_{DSX(off)}$	V_{DS} = V_{DSX}, V_{GS} = - 5V			1	μA
	T_J = 125°C			15	μA
$R_{DS(on)}$	V_{GS} = 0V, I_D = 400mA, Note 1			21	Ω
$I_{D(on)}$	V_{GS} = 0V, V_{DS} = 50V, Note 1	800			mA

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 30V, I_D = 400mA, Note 1	330	560		mS
C_{iss}	V_{GS} = -10V, V_{DS} = 25V, f = 1MHz		325		pF
C_{oss}			24		pF
C_{rss}			6.5		pF
$t_{d(on)}$	**Resistive Switching Times**		28		ns
t_r	V_{GS} = ±5V, V_{DS} = 500V, I_D = 400mA		57		ns
$t_{d(off)}$	R_G = 10Ω (External)		34		ns
t_f			48		ns
$Q_{g(on)}$	V_{GS} = ±5V, V_{DS} = 500V, I_D = 400mA		14.6		nC
Q_{gs}			1.2		nC
Q_{gd}			8.3		nC
R_{thJC}				2.08	°C/W

Safe-Operating-Area Specification

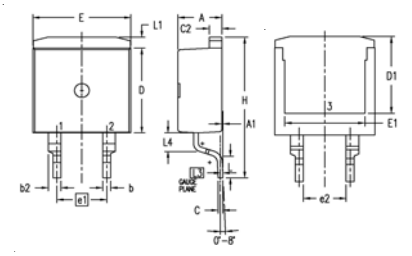
Symbol	Test Conditions	Characteristic Values Min.	Typ.	Max.	
SOA	V_{DS} = 800V, I_D = 45mA, T_C = 75°C, Tp = 5s	36			W

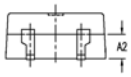
Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
V_{SD}	I_F = 800mA, V_{GS} = -10V, Note 1		0.8	1.3	V
t_{rr}	I_F = 800mA, -di/dt = 100A/μs		1.03		μs
I_{RM}	V_R = 100V, V_{GS} = -10V		7.40		A
Q_{RM}			3.80		μC

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

TO-263HV Outline





PIN: 1 - Gate
2 - Source
3 - Drain

SYM	INCHES MIN	INCHES MAX	MILLIMETER MIN	MILLIMETER MAX
A	.170	.185	4.30	4.70
A1	.000	.008	0.00	0.20
A2	.091	.098	2.30	2.50
b	.028	.035	0.70	0.90
b2	.046	.054	1.18	1.38
C	.018	.024	0.45	0.60
C2	.049	.055	1.25	1.40
D	.354	.370	9.00	9.40
D1	.311	.327	7.90	8.30
E	.386	.402	9.80	10.20
E1	.307	.323	7.80	8.20
e1	.200 BSC		5.08 BSC	
(e2)	.163	.174	4.13	4.43
H	.591	.614	15.00	15.60
L	.079	.102	2.00	2.60
L1	.039	.055	1.00	1.40
L3	.010 BSC		0.254 BSC	
(L4)	.071	.087	1.80	2.20

PRELIMINARY TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

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

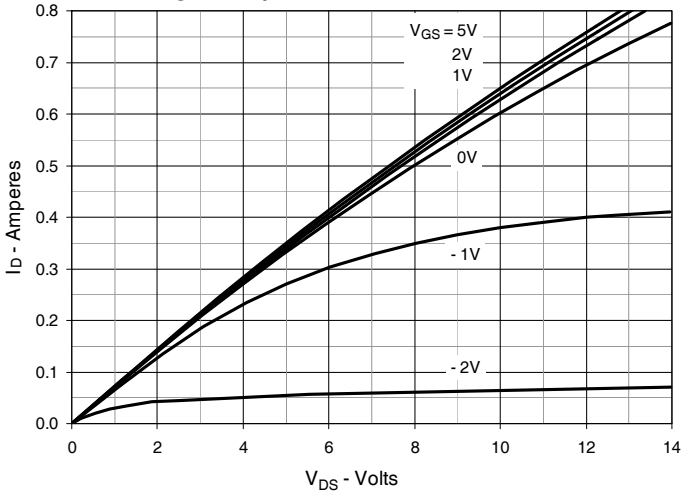


Fig. 2. Extended Output Characteristics @ T_J = 25°C

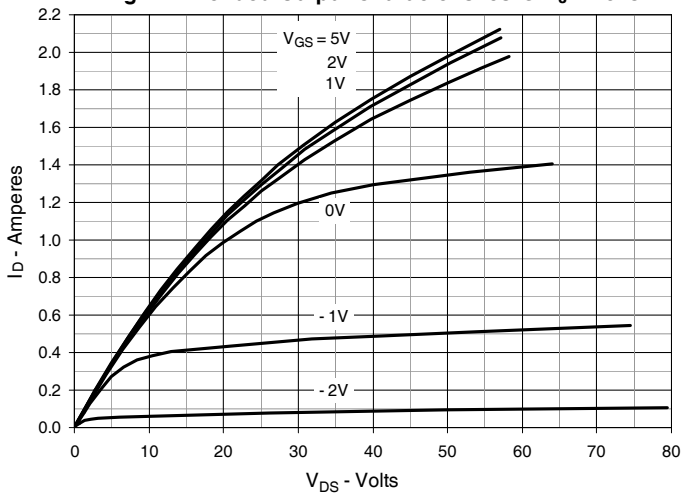


Fig. 3. Output Characteristics @ T_J = 125°C

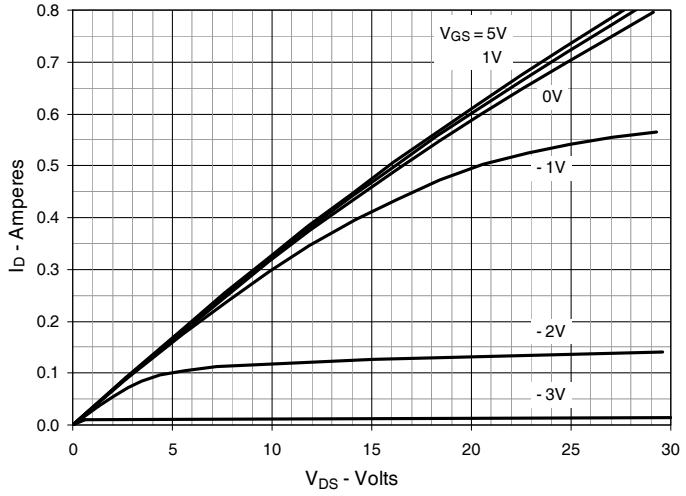


Fig. 4. Drain Current @ T_J = 25°C

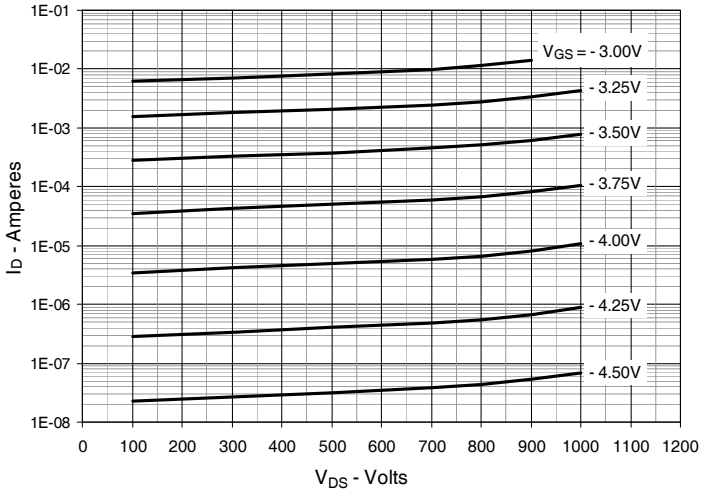


Fig. 5. Drain Current @ T_J = 100°C

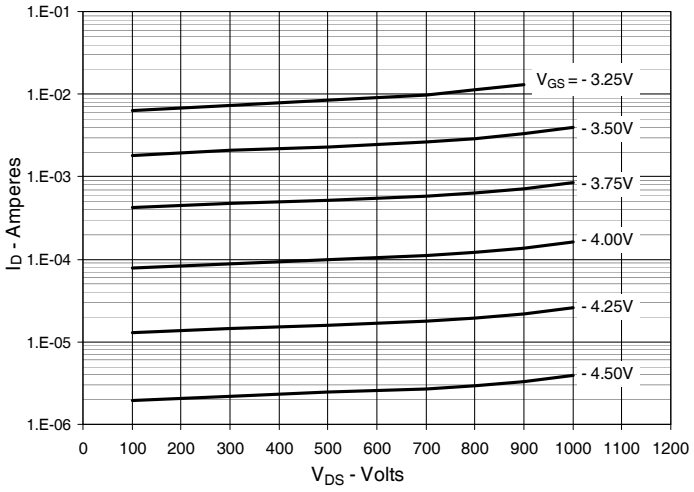


Fig. 6. Dynamic Resistance vs. Gate Voltage

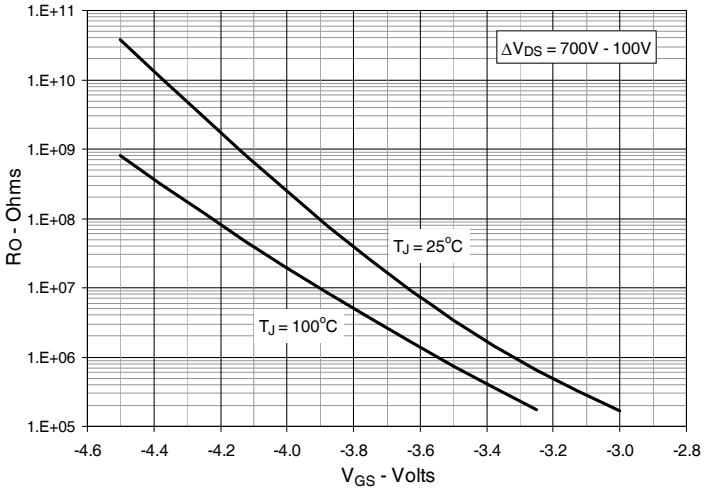


Fig. 7. Normalized $R_{DS(on)}$ vs. Junction Temperature

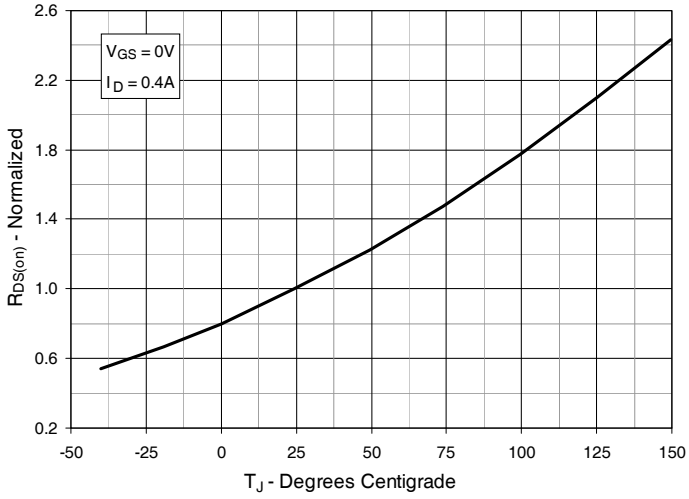


Fig. 8. $R_{DS(on)}$ Normalized to I_D = 0.4A Value vs. Drain Current

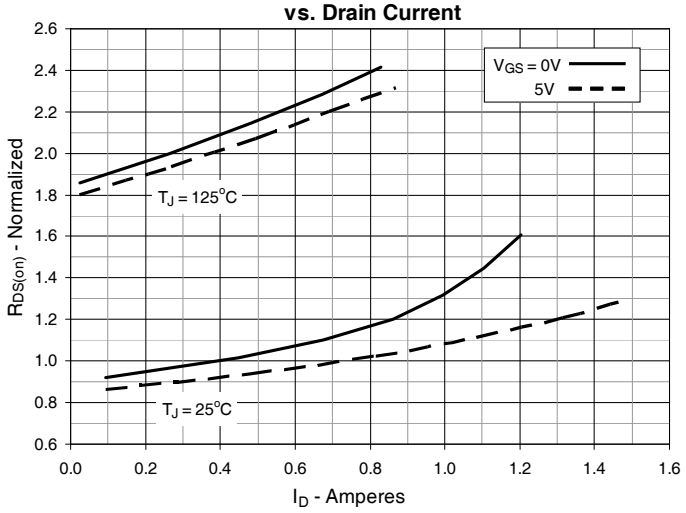


Fig. 9. Input Admittance

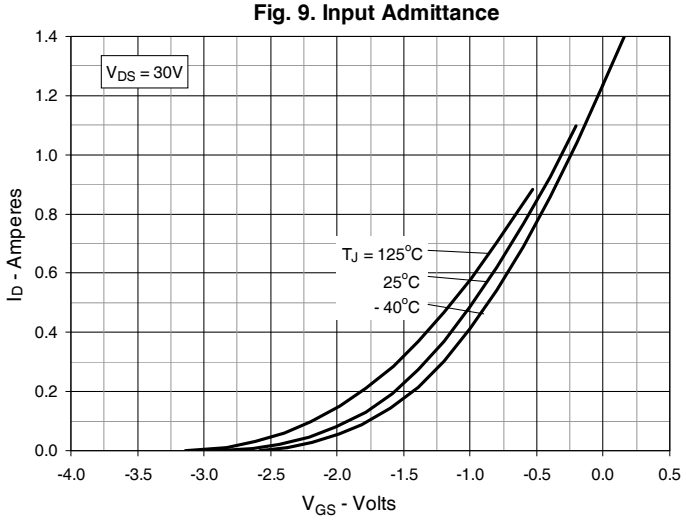


Fig. 10. Transconductance

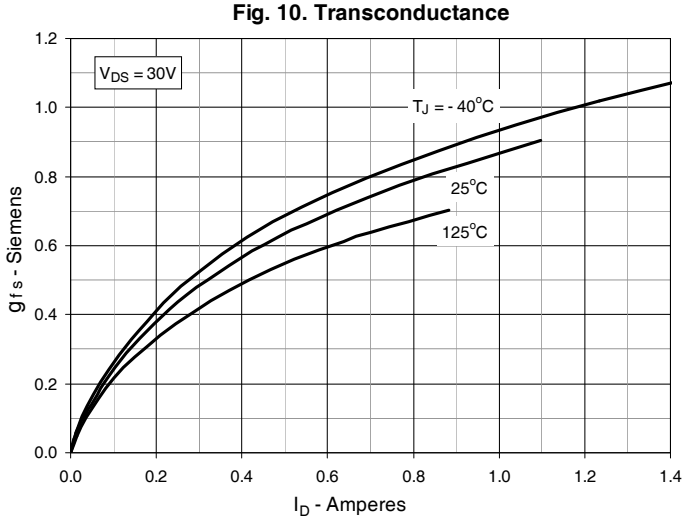


Fig. 11. Breakdown and Threshold Voltages vs. Junction Temperature

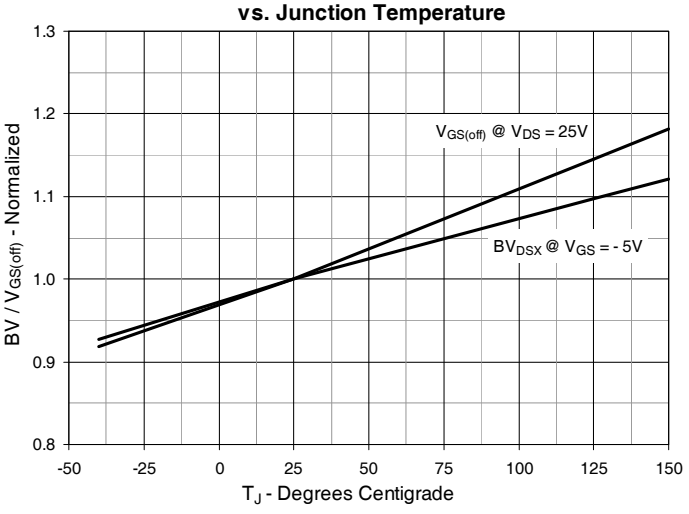


Fig. 12. Forward Voltage Drop of Intrinsic Diode

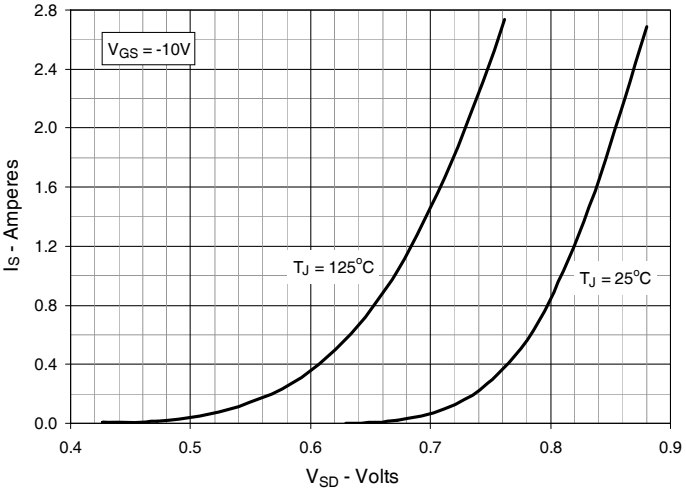


Fig. 13. Capacitance

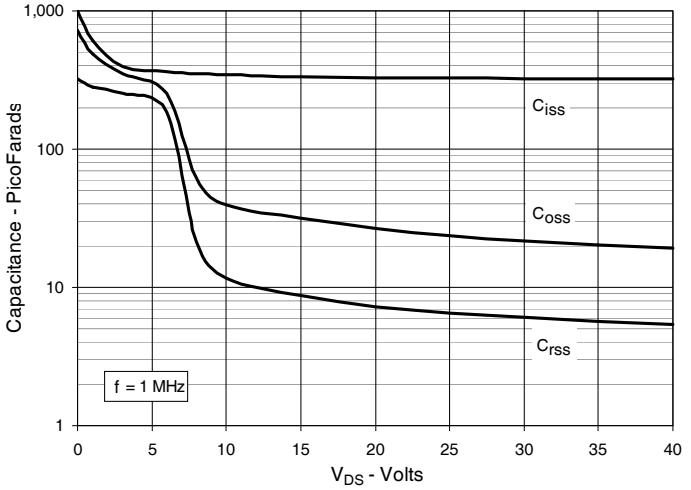


Fig. 14. Gate Charge

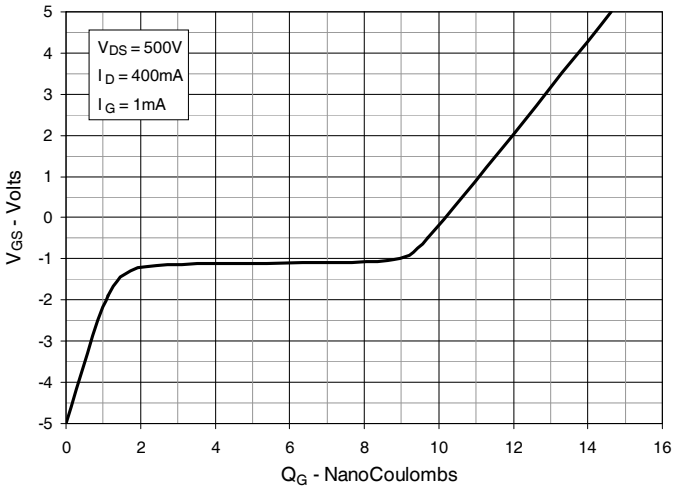


Fig. 15. Forward-Bias Safe Operating Area @ T_C = 25°C

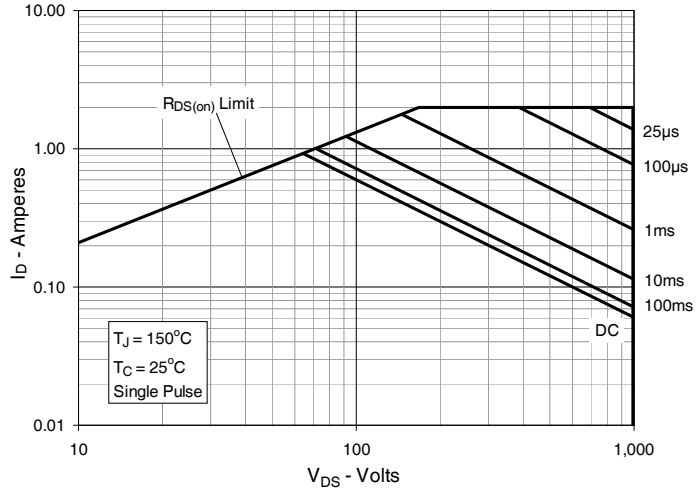


Fig. 16. Forward-Bias Safe Operating Area @ T_C = 75°C

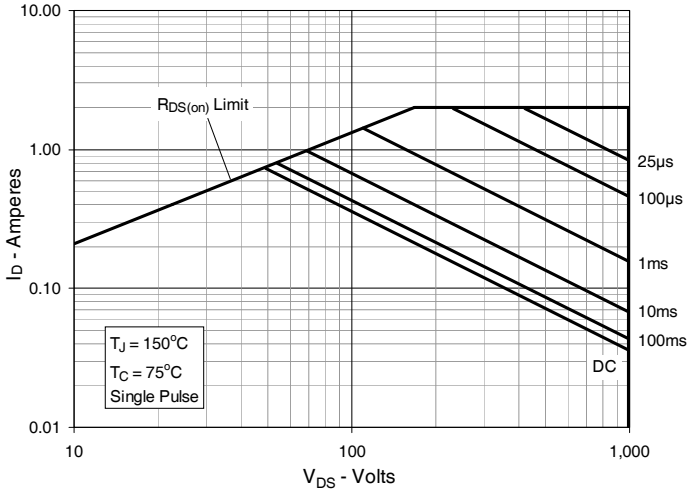


Fig. 17. Maximum Transient Thermal Impedance