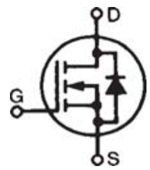
High Voltage Power MOSFET

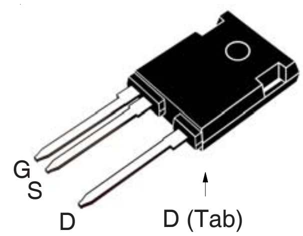
IXTH06N220P3HV

V_{DSS} = 2200V
I_{D25} = 0.60A
$R_{DS(on)}$ ≤ 80Ω

N-Channel Enhancement Mode



TO-247HV



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

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	2200	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	2200	V
V_{GSS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_C = 25°C	0.60	A
I_{D110}	T_C = 110°C	0.38	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	1.20	A
P_D	T_C = 25°C	104	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
M_d	Mounting Torque	1.13/10	Nm/lb.in
Weight		6	g

Features

- High Blocking Voltage
- High Voltage Package

Advantages

- Easy to Mount
- Space Savings
- High Power Density

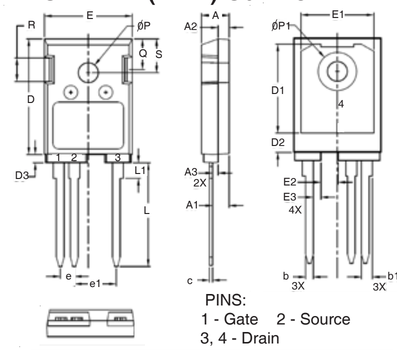
Applications

- High Voltage Power Supplies
- Capacitor Discharge Applications
- Pulse Circuits
- Laser and X-Ray Generation Systems

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 250µA	2200			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			200	µA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 0.30A, Note 1			80	Ω

Symbol	Test Conditions (TJ = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 60V, I_D = 0.30A, Note 1	0.24	0.40		S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		290		pF
C_{oss}			25		pF
C_{rss}			7		pF
$t_{d(on)}$	**Resistive Switching Times**		7		ns
t_r	V_{GS} = 10V, V_{DS} = 50V, I_D = 0.60A		18		ns
$t_{d(off)}$	R_G = 10Ω (External)		19		ns
t_f			19		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 1.1kV, I_D = 0.5 • I_{D25}		10.4		nC
Q_{gs}			1.3		nC
Q_{gd}			7.2		nC
R_{thJC}				1.2	°C/W
R_{thCS}			0.21		°C/W

TO-247HV (IXTH) Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.193	.201	4.90	5.10
A1	.114	.122	2.90	3.10
A2	.075	.083	1.90	2.10
A3	.035	.043	0.90	1.10
b	.053	.059	1.35	1.50
b1	.075	.083	1.90	2.10
c	.022	.030	0.55	0.75
D	.819	.843	20.80	21.40
D1	.638	.646	16.20	16.40
D2	.134	.146	3.40	3.70
D3	.055	.063	1.40	1.60
E	.622	.638	15.80	16.20
E1	.520	.528	13.20	13.40
E2	.118	.126	3.00	3.20
E3	.051	.059	1.30	1.50
e	.100 BSC		2.54 BSC	
e1	.300 BSC		7.62 BSC	
L	.732	.748	18.60	19.00
L1	.106	.118	2.70	3.00
øP	.138	.142	3.50	3.60
øP1	.272	.280	6.90	7.10
Q	.216	.224	5.50	5.70
R	.165	.169	4.20	4.30
S	.240	.248	6.10	6.30

Source-Drain Diode

Symbol	Test Conditions (TJ = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max	
I_S	V_{GS} = 0V, Note1			0.6	A
I_{SM}	Repetitive, pulse Width Limited by T_{JM}			1.2	A
V_{SD}	I_F = I_S, V_{GS} = 0V, Note 1			1.5	V
t_{rr}	I_F = 0.6A, -di/dt = 100A/μs		1.1		μs
Q_{RM}	V_R = 100V		6.4		μC
I_{RM}			11.6		A

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

ADVANCE 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 = 25ºC

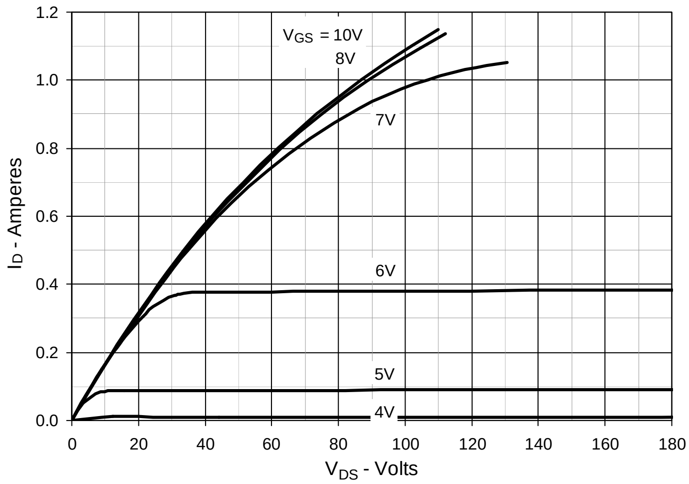


Fig. 2. Output Characteristics @ T_J = 125ºC

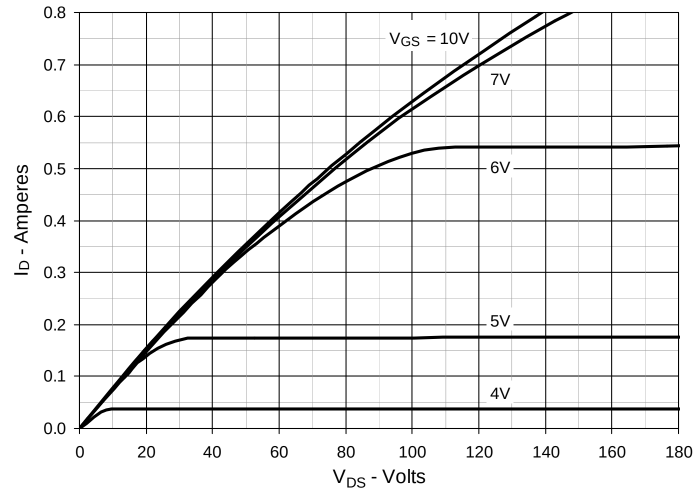


Fig. 3. $R_{DS(on)}$ Normalized to I_D = 0.3A Value vs. Junction Temperature

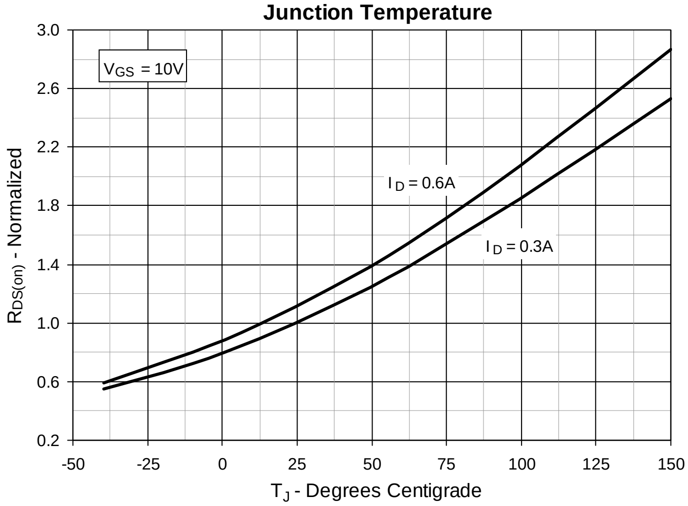


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 0.3A Value vs. Drain Current

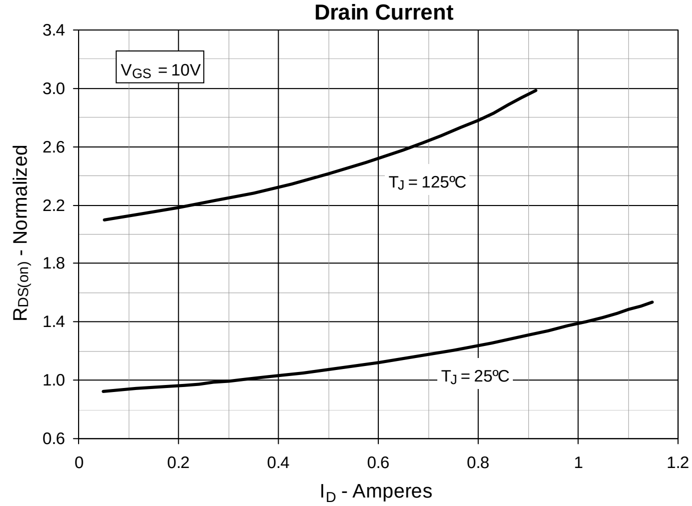


Fig. 5. Maximum Drain Current vs. Case Temperature

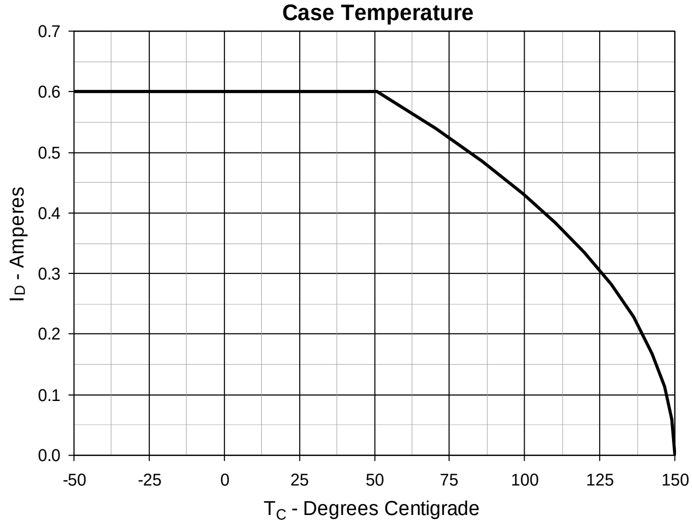


Fig. 6. Input Admittance

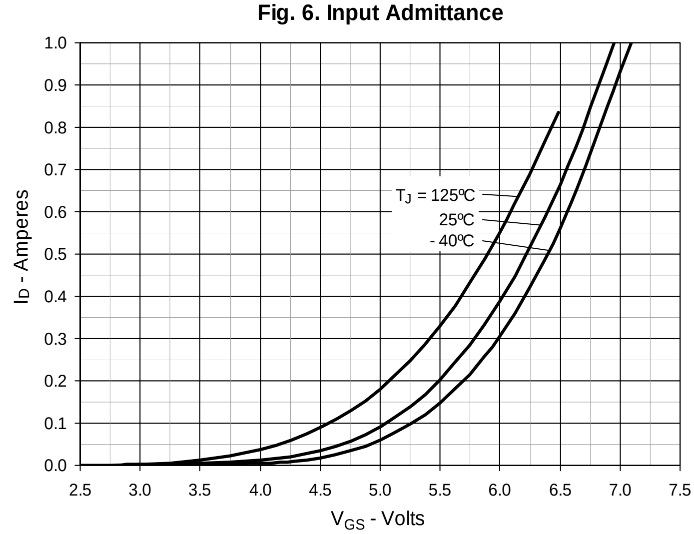


Fig. 7. Transconductance

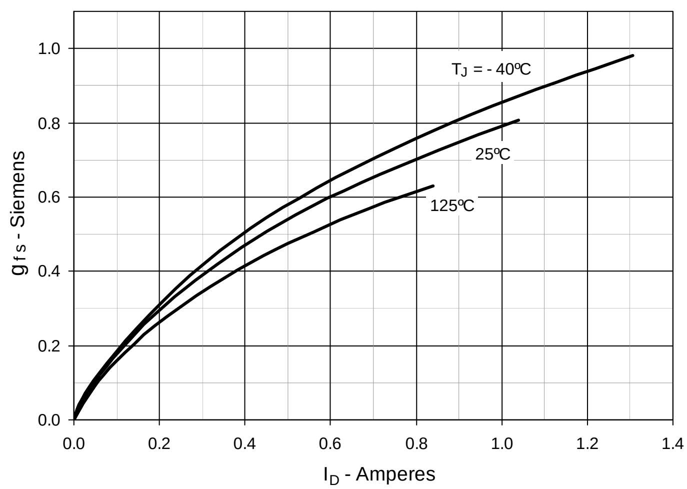


Fig. 8. Forward Voltage Drop of Intrinsic Diode

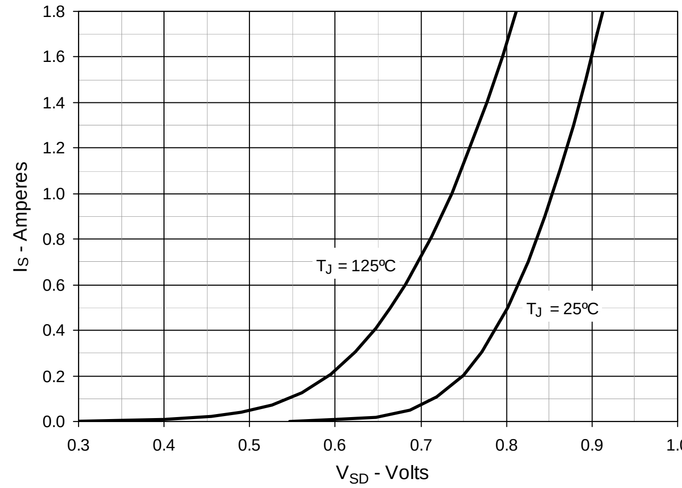


Fig. 9. Gate Charge

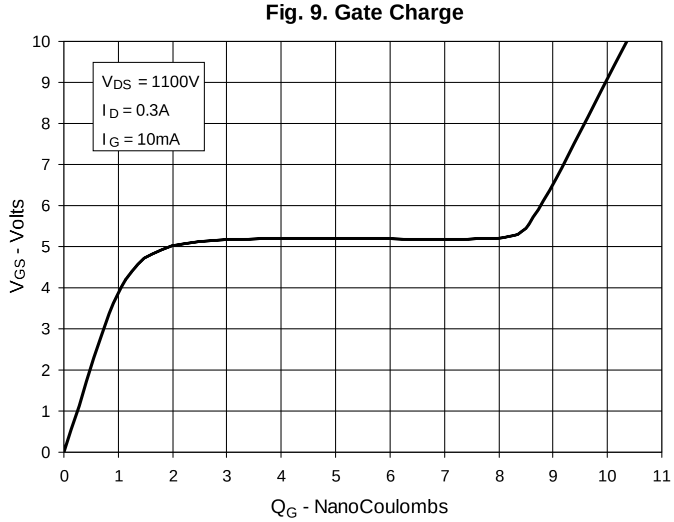


Fig. 10. Capacitance

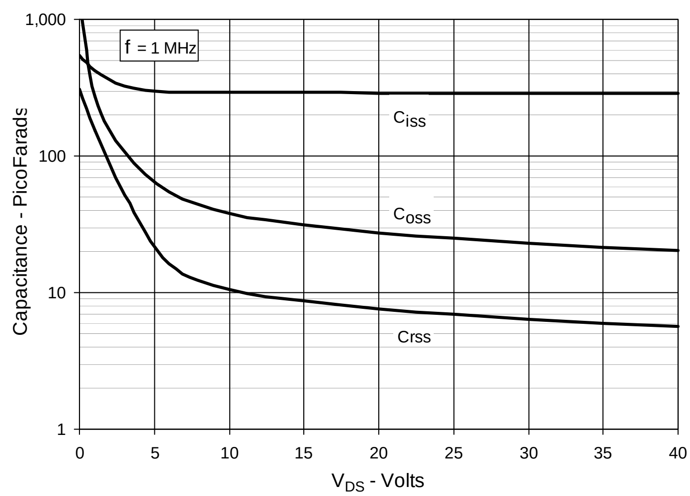


Fig. 11. Maximum Transient Thermal Impedance