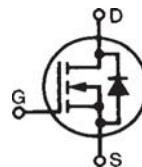


High Voltage Power MOSFET

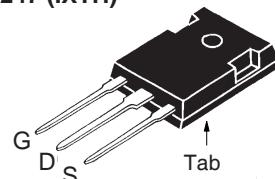
IXTH1R4N250P3

V_{DSS} = 2500V
I_{D25} = 1.4A
R_{DS(on)} ≤ 28Ω

N-Channel Enhancement Mode
Fast Intrinsic Diode



TO-247 (IXTH)



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

Symbol	Test Conditions	Maximum Ratings	
V _{DSS}	T _J = 25°C to 150°C	2500	V
V _{DGR}	T _J = 25°C to 150°C, R _{GS} = 1MΩ	2500	V
V _{GSS}	Continuous	±20	V
V _{GSM}	Transient	±30	V
I _{D25}	T _C = 25°C	1.4	A
I _{D110}	T _C = 110°C	1.0	A
I _{DM}	T _C = 25°C, Pulse Width Limited by T _{JM}	3.5	A
P _D	T _C = 25°C	195	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

Symbol	Test Conditions (T _J = 25°C, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV _{DSS}	V _{GS} = 0V, I _D = 250μA	2500		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 T _J = 125°C			25 μA 250 μA
R _{DS(on)}	V _{GS} = 10V, I _D = 0.7A, Note 1			28 Ω

Features

- High Blocking Voltage
- Fast Intrinsic Diode
- Low Package Inductance

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.
g _{fs}	V _{DS} = 60V, I _D = 0.7A, Note 1	0.55	0.90	S
C _{iss}	V _{GS} = 0V, V _{DS} = 25V, f = 1MHz	960		pF
C _{oss}		64		pF
C _{rss}		22		pF
t _{d(on)}	Resistive Switching Times		18	ns
t _r	V _{GS} = 10V, V _{DS} = 1250V, I _D = I _{D25} R _G = 5Ω (External)	24		ns
t _{d(off)}		39		ns
t _f		87		ns
Q _{g(on)}	V _{GS} = 10V, V _{DS} = 1250V, I _D = 0.5 • I _{D25}	33.0		nC
Q _{gs}		4.0		nC
Q _{gd}		18.5		nC
R _{thJC}			0.64 °C/W	
R _{thCS}		0.21		°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		1.4	A
I _{SM}	Repetitive, Pulse Width Limited by T _{JM}		5.6	A
V _{SD}	I _F = I _S , V _{GS} = 0V, Note 1		1.5	V
t _r	I _F = I _{D25} , -di/dt = 100A/μs V _R = 100V, V _{GS} = 0V	1.8		μs
Q _{RM}		16.7		μC
I _{RM}		18.8		A

- Notes:
1. Pulse test, t ≤ 300μs, duty cycle, d ≤ 2%.
 2. Additional provisions for lead-to-lead voltage isolation are required at V_{DS} > 1200V.

TO-247 Outline			
Dim.	Millimeter min. max	Inches min. max	
A	4.70 5.30	0.185 0.209	
A1	2.21 2.59	0.087 0.102	
A2	1.50 2.49	0.059 0.098	
b	0.99 1.40	0.039 0.055	
b2	1.65 2.39	0.065 0.094	
b4	2.59 3.43	0.102 0.135	
c	0.38 0.89	0.015 0.035	
D	20.79 21.45	0.819 0.845	
D1	13.07 -	0.515 -	
D2	0.51 1.35	0.020 0.053	
E	15.48 16.24	0.610 0.640	
E1	13.45 -	0.53 -	
E2	4.31 5.48	0.170 0.216	
e	5.45 BSC	0.215 BSC	
L	19.80 20.30	0.78 0.800	
L1	- 4.49	- 0.177	
OP	3.55 3.65	0.140 0.144	
OP1	- 7.39	- 0.290	
Q	5.38 6.19	0.212 0.244	
S	6.14 BSC	0.242 BSC	

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.

IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: 4,835,592 4,931,844 5,049,961 5,237,481 6,162,665 6,404,065 B1 6,683,344 6,727,585 7,005,734 B2 7,157,338B2 4,860,072 5,017,508 5,063,307 5,381,025 6,259,123 B1 6,534,343 6,710,405 B2 6,759,692 7,063,975 B2 4,881,106 5,034,796 5,187,117 5,486,715 6,306,728 B1 6,583,505 6,710,463 6,771,478 B2 7,071,537

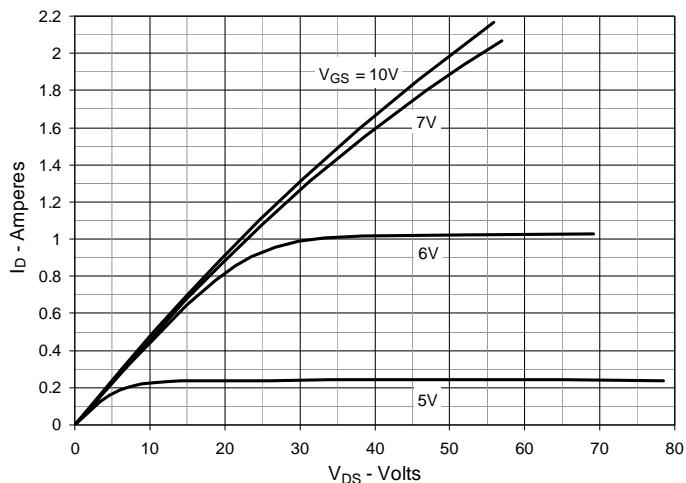
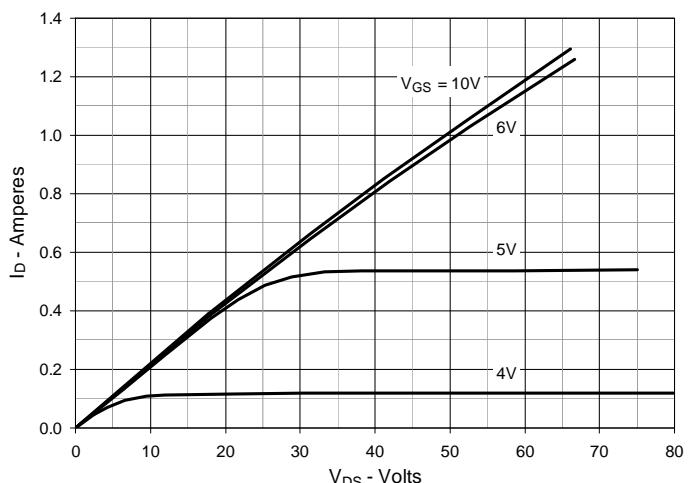
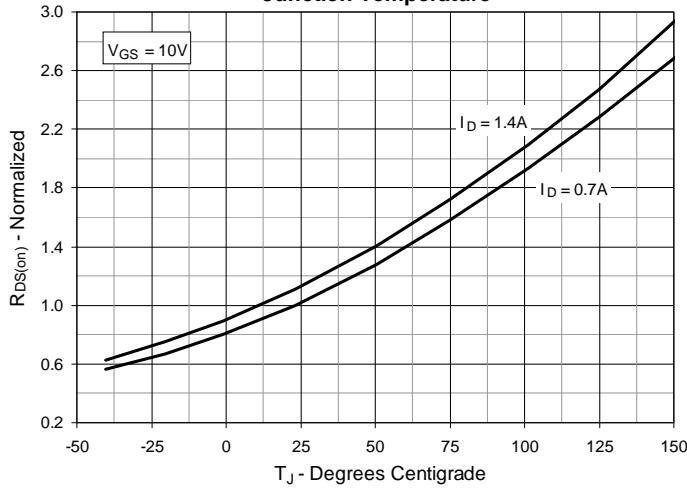
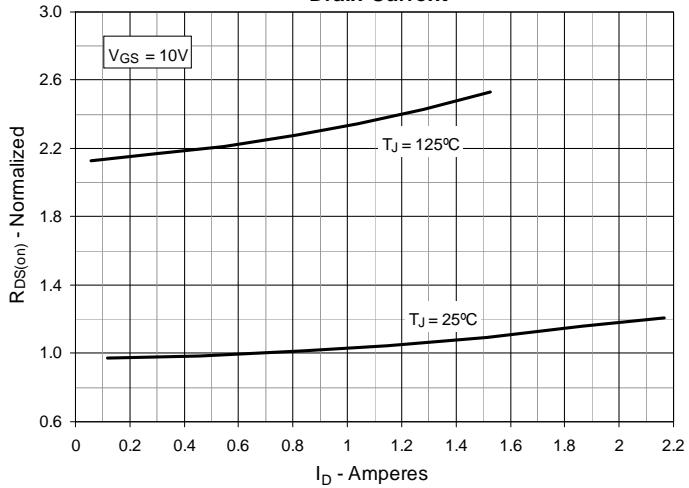
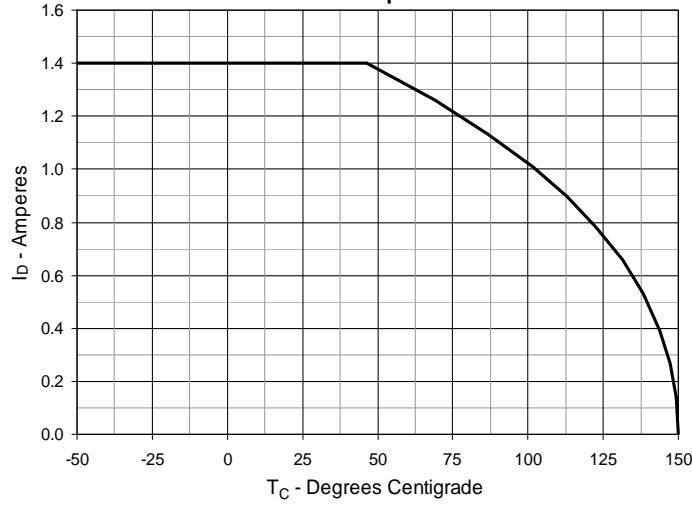
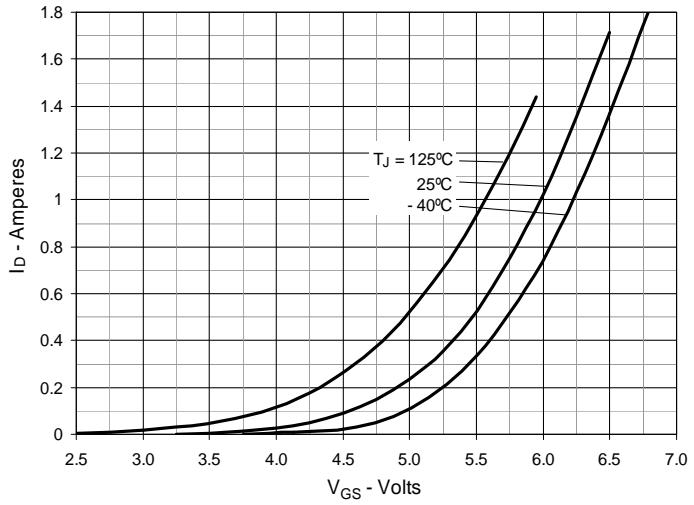
Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

Fig. 2. Output Characteristics @ $T_J = 125^\circ\text{C}$

Fig. 3. $R_{DS(on)}$ Normalized to $I_D = 0.7\text{A}$ Value vs. Junction Temperature

Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 0.7\text{A}$ Value vs. Drain Current

Fig. 5. Maximum Drain Current vs. Case Temperature

Fig. 6. Input Admittance


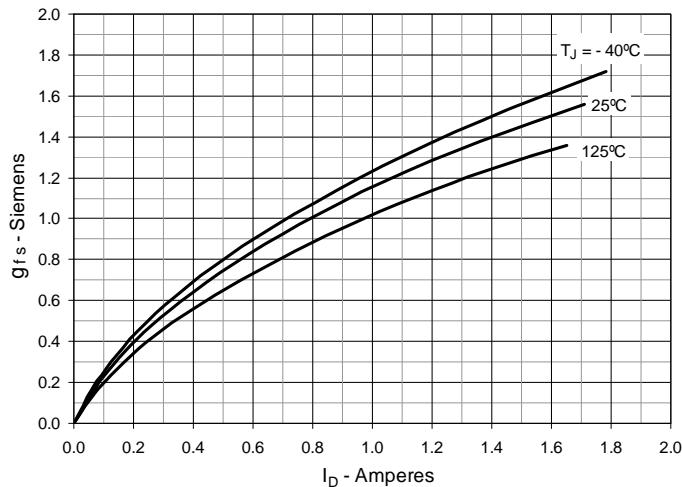
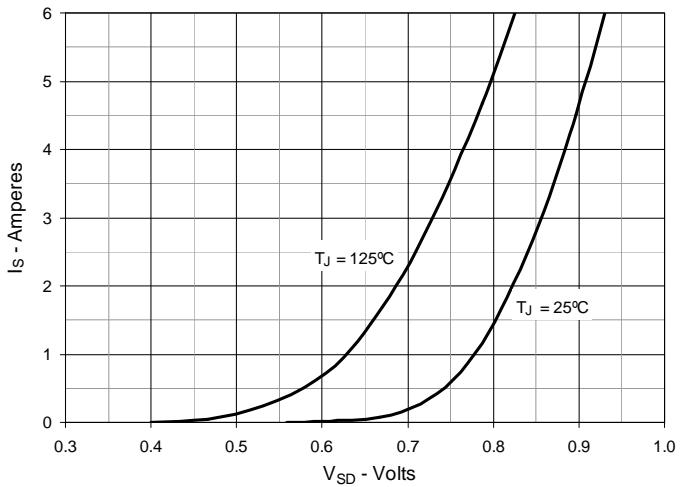
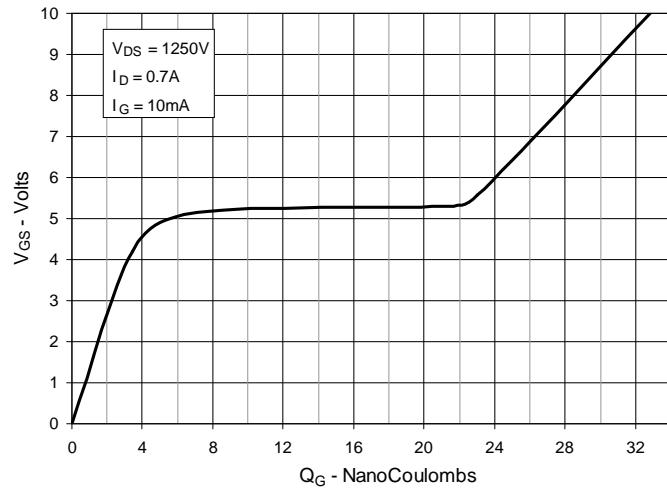
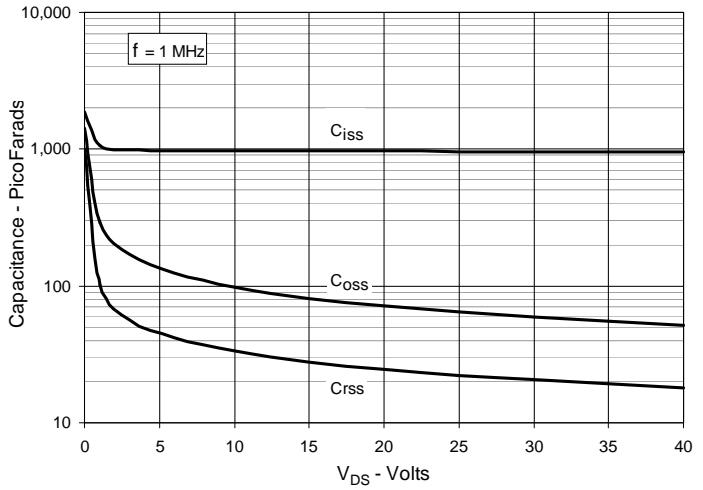
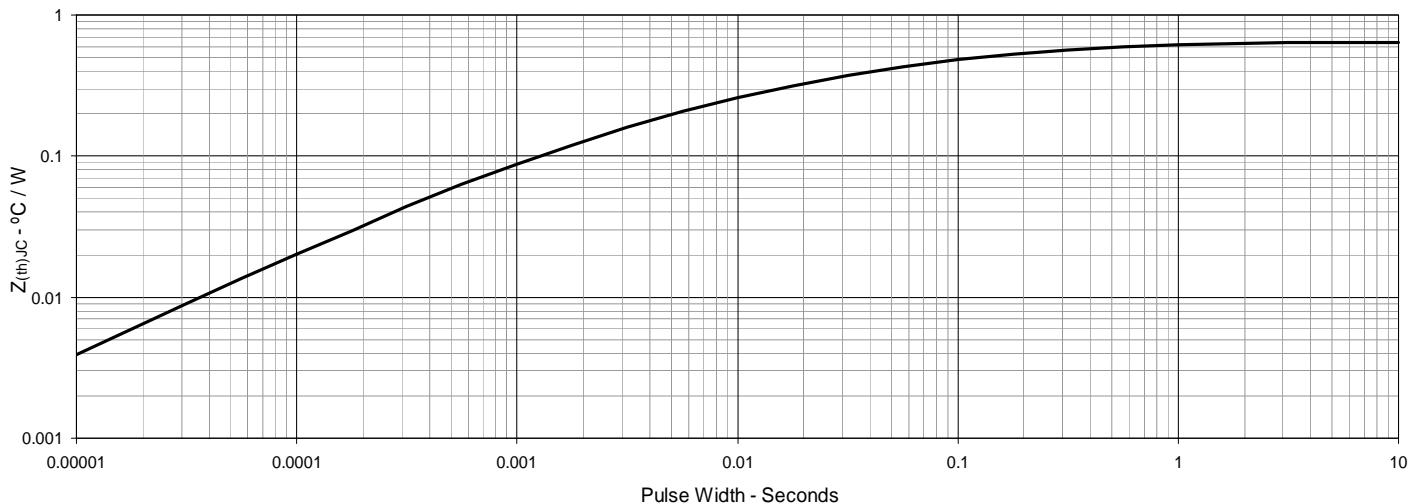
Fig. 7. Transconductance**Fig. 8. Forward Voltage Drop of Intrinsic Diode****Fig. 9. Gate Charge****Fig. 10. Capacitance****Fig. 11. Maximum Transient Thermal Impedance**

Fig. 12. Forward-Bias Safe Operating Area

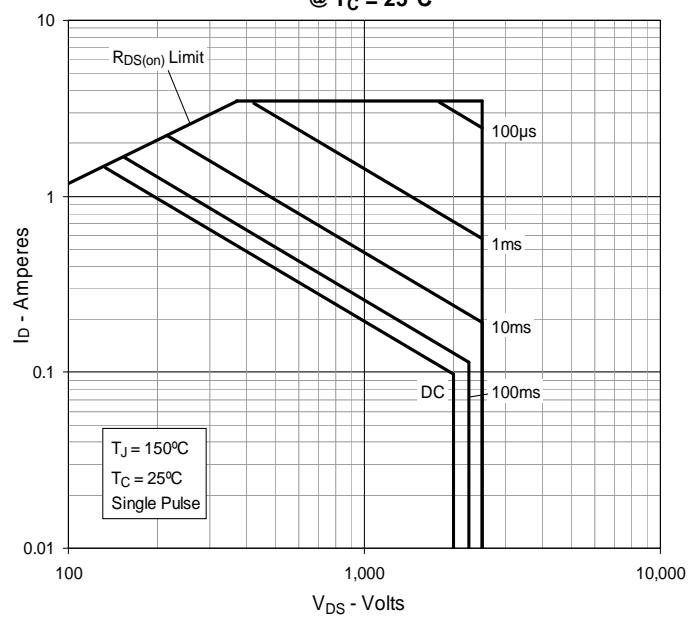
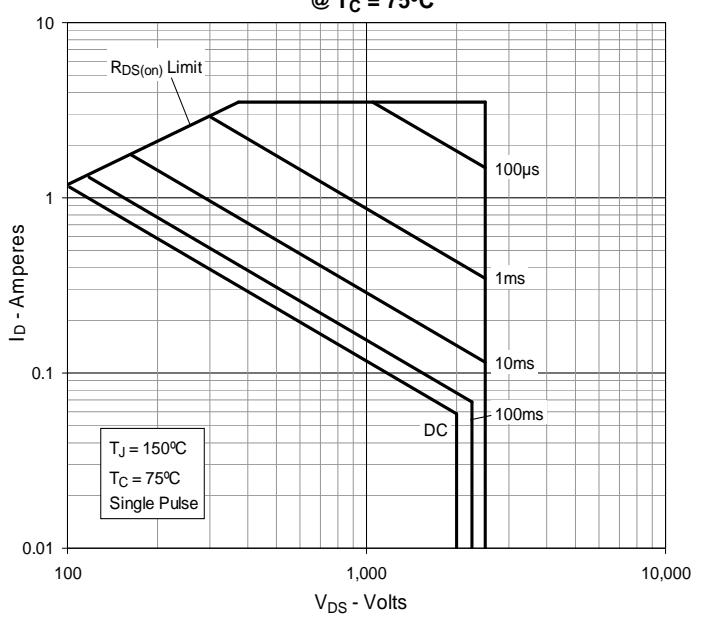
@ $T_C = 25^\circ\text{C}$ 

Fig. 13. Forward-Bias Safe Operating Area

@ $T_C = 75^\circ\text{C}$ 



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