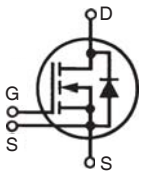
IXYS

Linear Power MOSFET w/Extended FBSOA

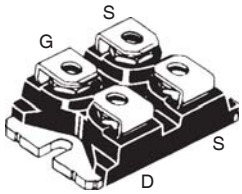
IXTN8N150L

V_{DSS} = 1500V
I_{D25} = 7.5A
$R_{DS(on)}$ ≤ 3.6Ω

N-Channel Enhancement Mode
Guaranteed FBSOA



miniBLOC, SOT-227 B
E153432



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

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	1500	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	1500	V
V_{GSS}	Continuous	±30	V
V_{GSM}	Transient	±40	V
I_{D25}	T_C = 25°C	7.5	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	20	A
P_D	T_C = 25°C	545	W
T_J		-55 to +150	°C
T_{JM}		150	°C
T_{stg}		-55 to +150	°C
V_{ISOL}	50/60 Hz, RMS, t = 1minute	2500	V~
	I_{ISOL} ≤ 1mA, t = 1s	3000	V~
M_d	Mounting Torque for Base Plate	1.5/13	Nm/lb.in.
	Terminal Connection Torque	1.3/11.5	Nm/lb.in.
Weight		30	g

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 1mA	1500			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	5.0		8.0	V
I_{GSS}	V_{GS} = ±30V, V_{DS} = 0V			±200	nA
I_{DSS}	V_{DS} = V_{DSS}, V_{GS} = 0V			25	μA
	T_J = 125°C			500	μA
$R_{DS(on)}$	V_{GS} = 20V, I_D = 4A, Note 1			3.6	Ω

Features

- Designed for Linear Operations
- International Standard Package
- Molding Epoxies Meet UL94 V-0 Flammability Classification
- Guaranteed FBSOA at 60ºC
- miniBLOC with Aluminum Nitride Isolation
- Low $R_{DS(on)}$ HDMOS™ Process
- Rugged Polysilicon Gate Cell Structure
- Low Package Inductance

Applications

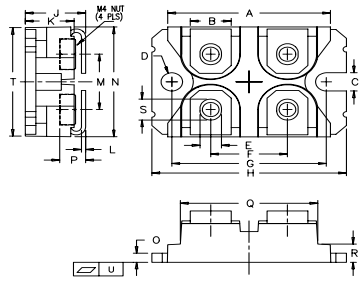
- Programmable Loads
- Current Regulators
- DC-DC Convertors
- Battery Chargers
- DC Choppers
- Temperature and Lighting Controls

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS}= 50V, I_D = 4A, Note 1	1.4	2.3	3.2	S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		8000		pF
C_{oss}			405		pF
C_{rss}			70		pF
$t_{d(on)}$	**Resistive Switching Times**		36		ns
t_r	V_{GS} = 15V, V_{DS} = 0.5 • V_{DSS}, I_D = 4A		18		ns
$t_{d(off)}$	R_G = 2Ω (External)		90		ns
t_f			95		ns
$Q_{g(on)}$	V_{GS}= 15V, V_{DS} = 0.5 • V_{DSS}, I_D = 4A		250		nC
Q_{gs}			80		nC
Q_{gd}			116		nC
R_{thJC}				0.23	°C/W
R_{thCS}			0.05		°C/W

SOT-227B (IXTN) Outline



(M4 screws (4x) supplied)

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	1.240	1.255	31.50	31.88
B	.307	.323	7.80	8.20
C	.161	.169	4.09	4.29
D	.161	.169	4.09	4.29
E	.161	.169	4.09	4.29
F	.587	.595	14.91	15.11
G	1.186	1.193	30.12	30.30
H	1.496	1.505	38.00	38.23
J	.460	.481	11.68	12.22
K	.351	.378	8.92	9.60
L	.030	.033	0.76	0.84
M	.496	.506	12.60	12.85
N	.990	1.001	25.15	25.42
O	.078	.084	1.98	2.13
P	.195	.235	4.95	5.97
Q	1.045	1.059	26.54	26.90
R	.155	.174	3.94	4.42
S	.186	.191	4.72	4.85
T	.968	.987	24.59	25.07
U	-.002	.004	-0.05	0.1

Safe Operating Area Specification

Symbol	Test Conditions	Characteristic Values Min.	Typ.	Max.	
SOA	V_{DS} = 1500V, I_D = 0.17A, T_C = 60°C, T_P = 3s	255			W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0V			8	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			32	A
V_{SD}	I_F = 8A, V_{GS} = 0V, Note 1			1.2	V
t_{rr}	I_F = I_S, -di/dt = 100A/μs, V_R = 100V		1700		ns

Notes: 1. Pulse Test, t ≤ 300μs; Duty Cycle, d ≤ 2%.

Fig. 1. Extended Output Characteristics @ T_J = 25ºC

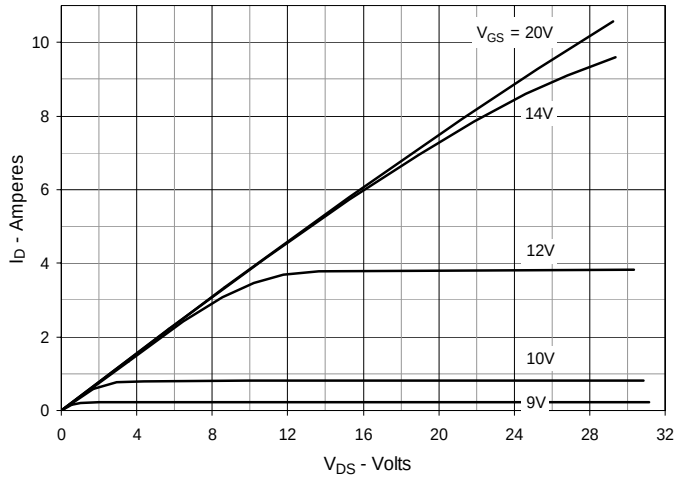


Fig. 2. Output Characteristics @ T_J = 125ºC

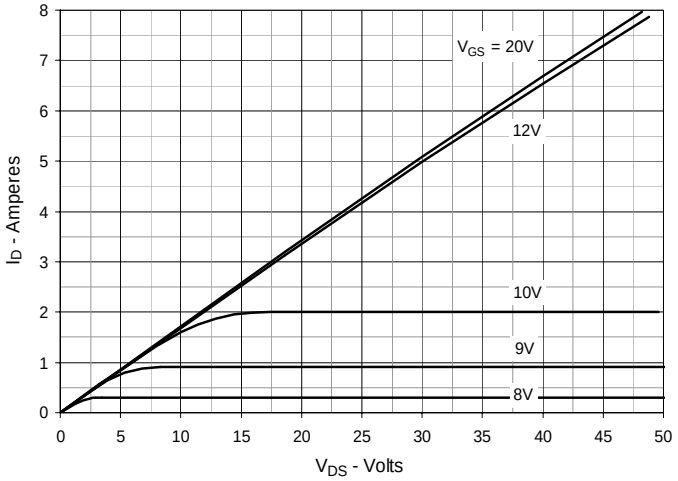


Fig. 3. $R_{DS(on)}$ Normalized to I_D = 4A Value vs. Junction Temperature

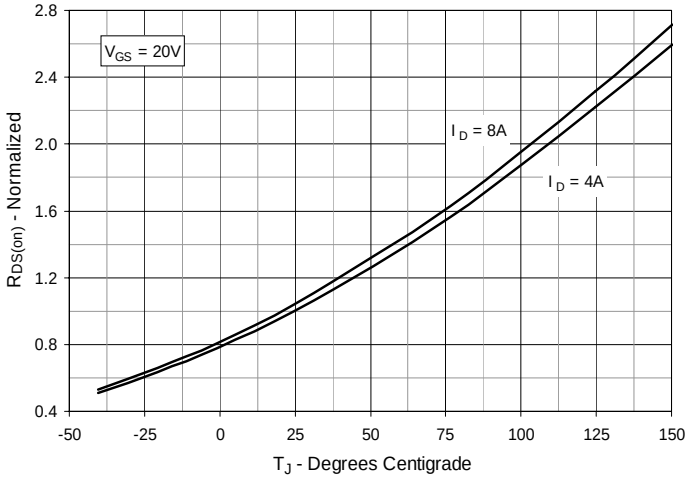


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 4A Value vs. Drain Current

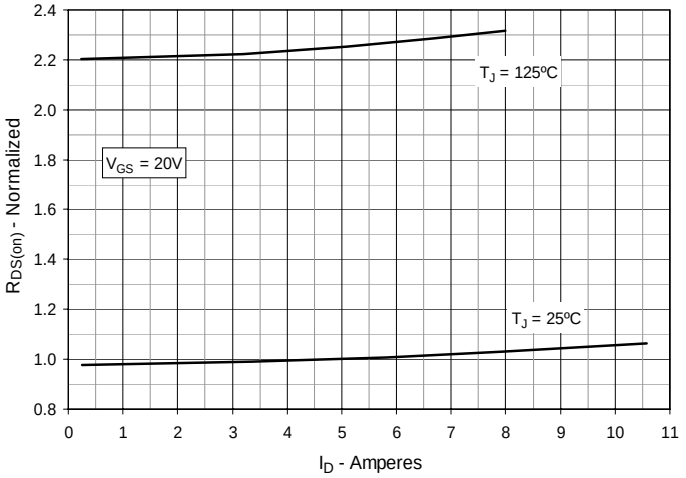


Fig. 5. Maximum Drain Current vs. Case Temperature

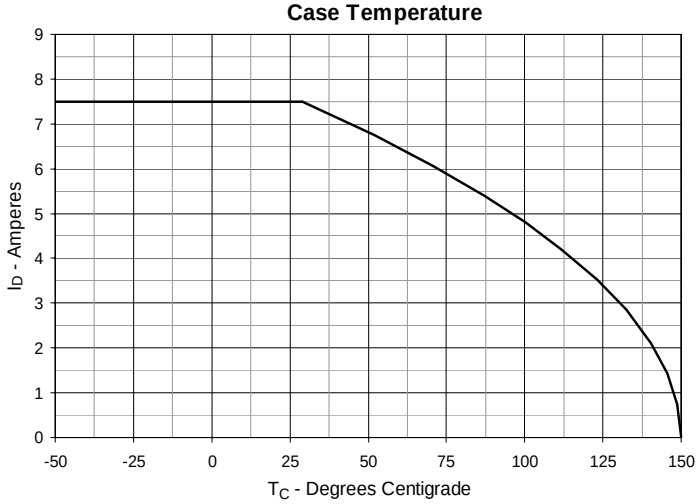


Fig. 6. Input Admittance

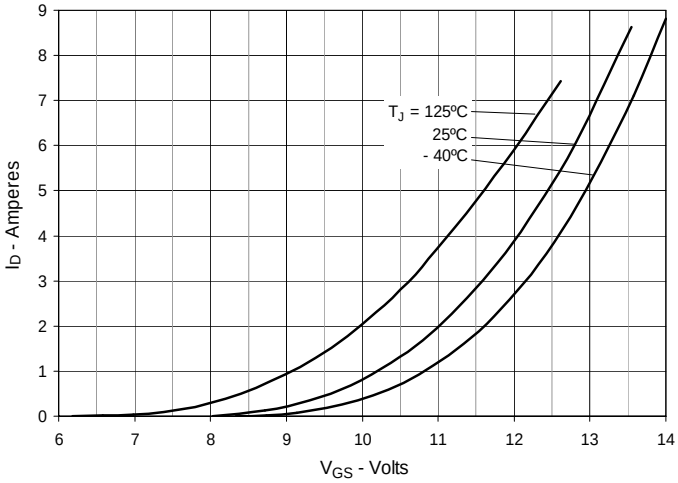


Fig. 7. Transconductance

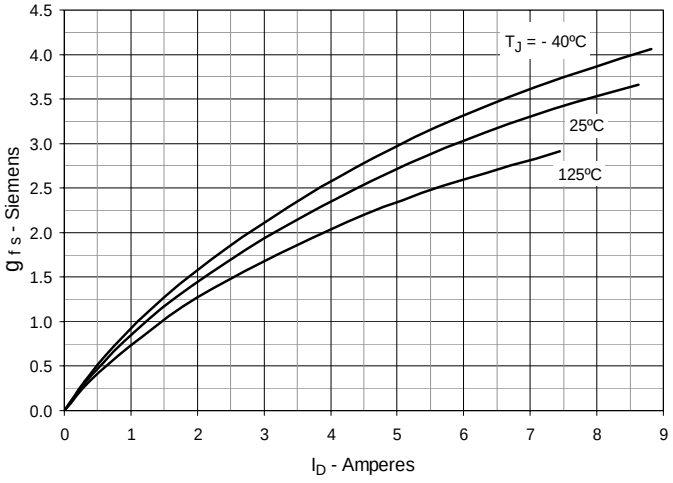


Fig. 8. Forward Voltage Drop of Intrinsic Diode

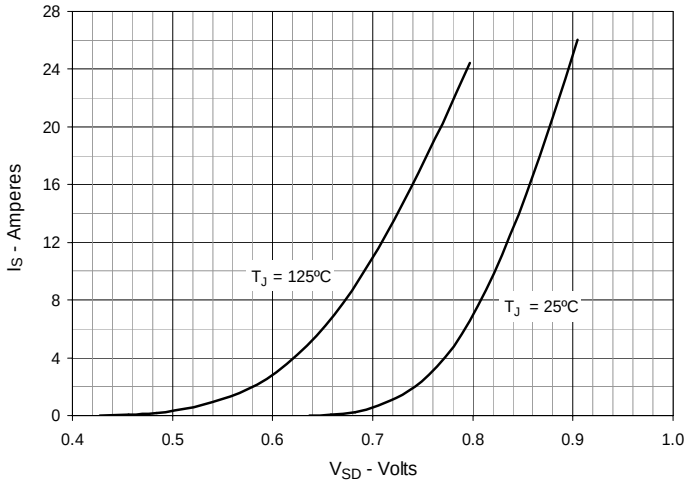


Fig. 9. Gate Charge

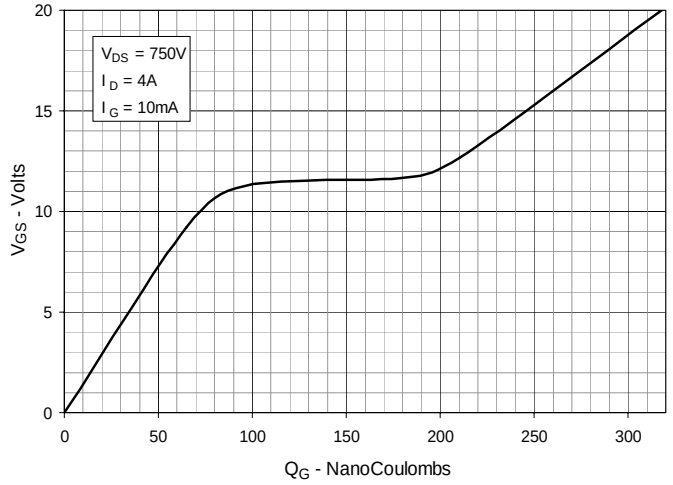


Fig. 10. Capacitance

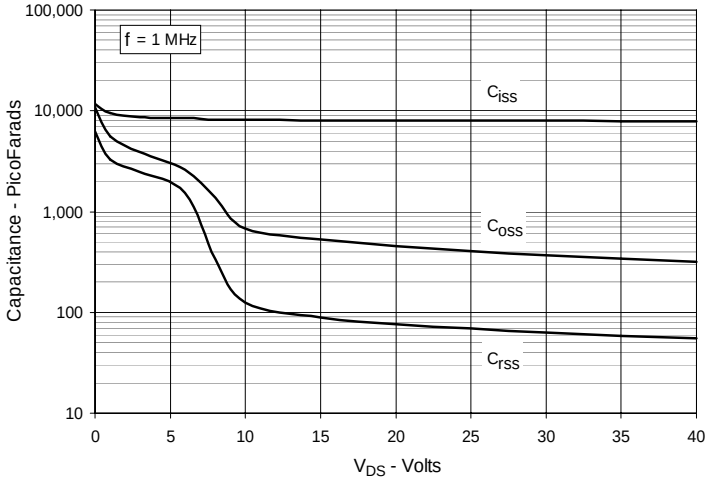


Fig. 11. Maximum Transient Thermal Impedance

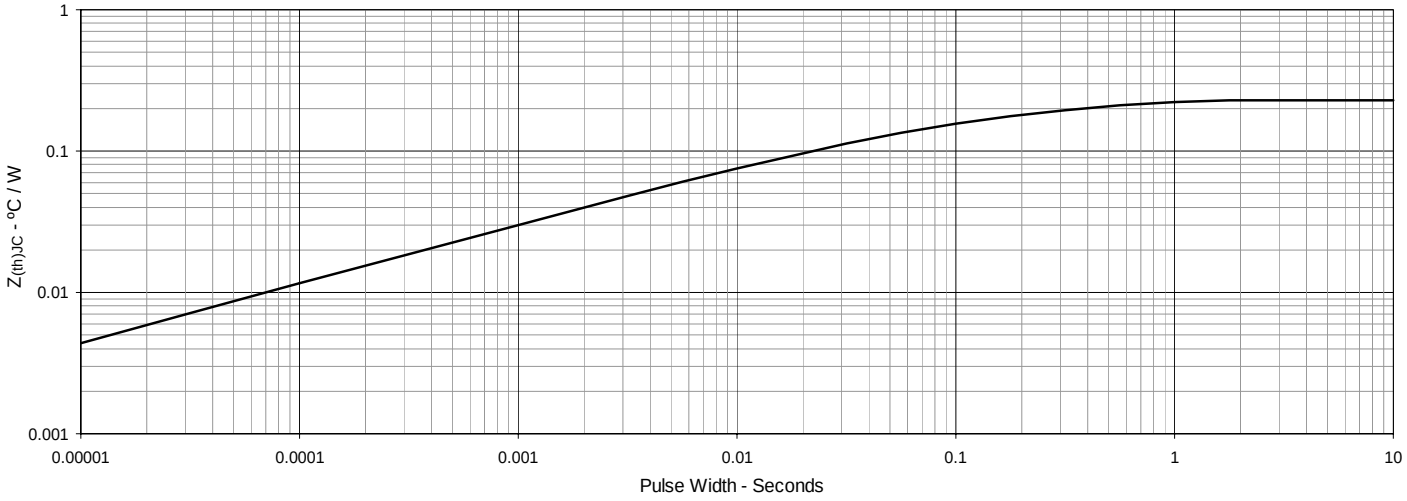


Fig. 12. Forward-Bias Safe Operating Area @ T_C = 25ºC

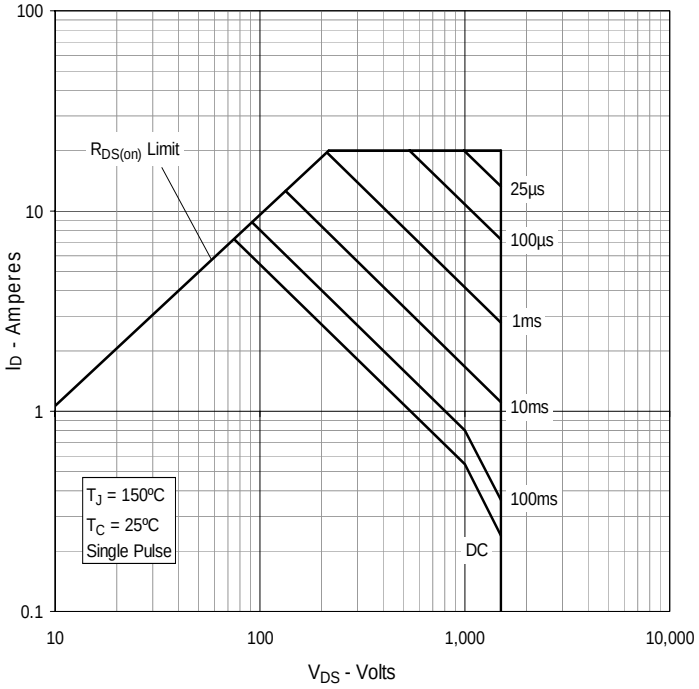


Fig. 13. Forward-Bias Safe Operating Area @ T_C = 60ºC