THE DATASHEET OF

IXTN17N120L

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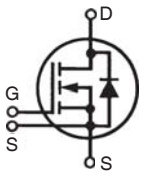
IXYS

Linear™ Power MOSFET w/ Extended FBSOA

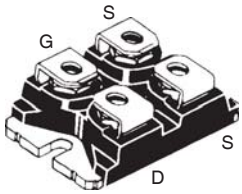
IXTN17N120L

V_{DSS} = 1200V
I_{D25} = 15A
$R_{DS(on)}$ ≤ 900mΩ

N-Channel Enhancement Mode
Avalanche Rated
Guaranteed FBSOA



miniBLOC
E153432



G = Gate D = Drain
S = Source

Either Source Terminal S can be used as the Source Terminal or the Kelvin Source (Gate Return) Terminal.

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	1200	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	1200	V
V_{GSS}	Continuous	±30	V
V_{GSM}	Transient	±40	V
I_{D25}	T_C = 25°C	15	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	34	A
I_A	T_C = 25°C	8.5	A
E_{AS}	T_C = 25°C	2.5	J
P_D	T_C = 25°C	540	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	1200			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	3.0		6.0	V
I_{GSS}	V_{GS} = ±30V, V_{DS} = 0V			±200	nA
I_{DSS}	V_{DS} = V_{DSS}, V_{GS} = 0V			50	μA
	T_J = 125°C			2	mA
$R_{DS(on)}$	V_{GS} = 20V, I_D = 8.5A, Note 1			900	mΩ

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

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

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

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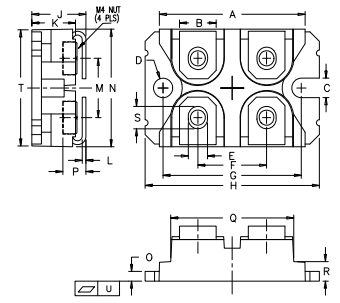
Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 20V, I_D = 8.5A, Note 1	3.5	5.0	6.5	S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		8300		pF
C_{oss}			520		pF
C_{rss}			90		pF
$t_{d(on)}$	**Resistive Switching Times**		42		ns
t_r	V_{GS} = 15V, V_{DS} = 0.5 • V_{DSS}, I_D = 8.5A		31		ns
$t_{d(off)}$	R_G = 2Ω (External)		110		ns
t_f			83		ns
$Q_{g(on)}$	V_{GS} = 15V, V_{DS} = 0.5 • V_{DSS}, I_D = 8.5A		155		nC
Q_{gs}			41		nC
Q_{gd}			60		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} = 800V, I_D = 0.23A, T_C = 60°C, t_P = 3s	184			W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0V			17	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			50	A
V_{SD}	I_F = 17A, V_{GS} = 0V, Note 1			1.5	V
t_{rr}	I_F = I_S, -di/dt = 100A/μs, V_R = 100V		1830		ns

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

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

IXYS MOSFETs and IGBTs are covered by one or moreof the following U.S. patents: 4,835,592 4,850,072 4,881,106 4,931,844 5,017,508 5,034,796 5,049,961 5,063,307 5,187,117 5,237,481 5,381,025 5,486,715 6,162,665 6,259,123 B1 6,306,728 B1 6,404,065 B1 6,534,343 6,583,505 6,683,344 6,710,405 B2 6,710,463 6,727,585 6,759,692 6,771,478 B2 7,005,734 B2 7,063,975 B2 7,071,537 7,157,338B2

Fig. 1. Output Characteristics @ T_J = 25ºC

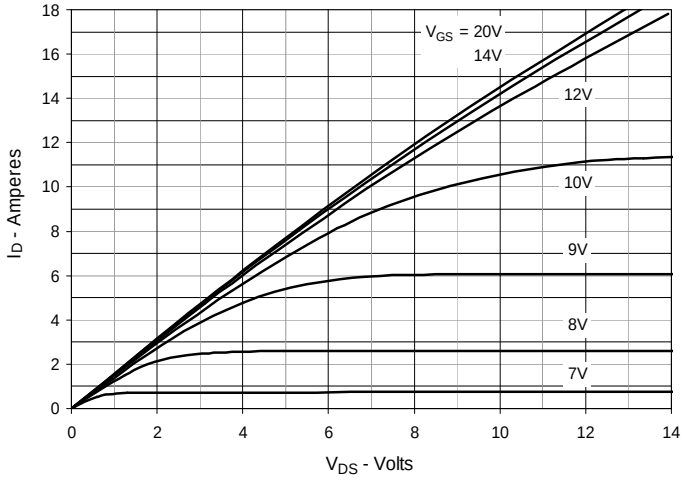


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

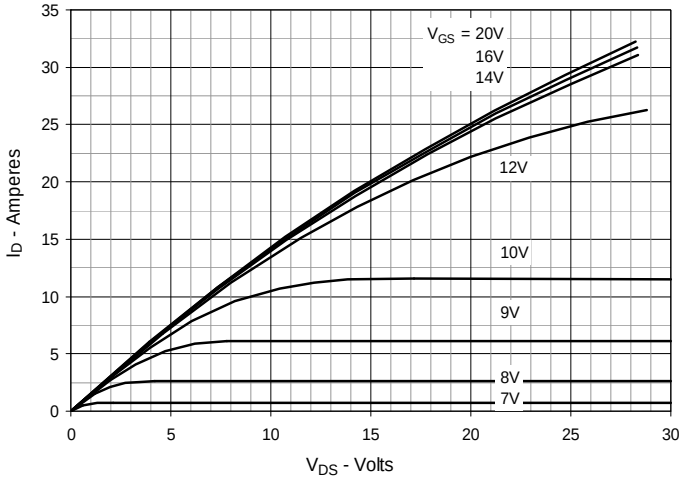


Fig. 3. Output Characteristics @ T_J = 125ºC

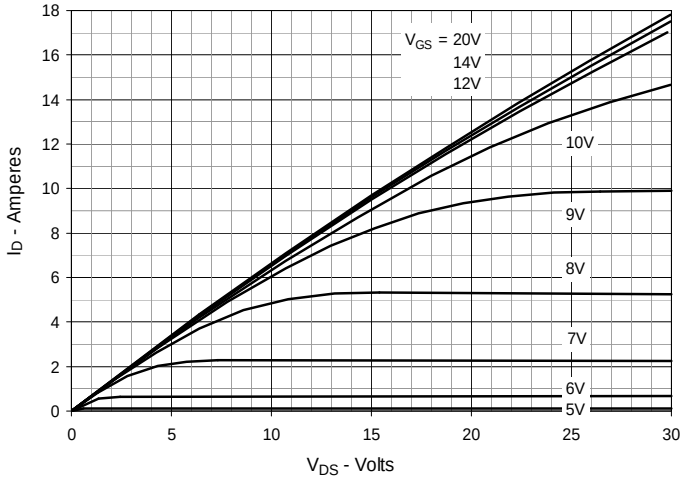


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 8.5A Value vs. Junction Temperature

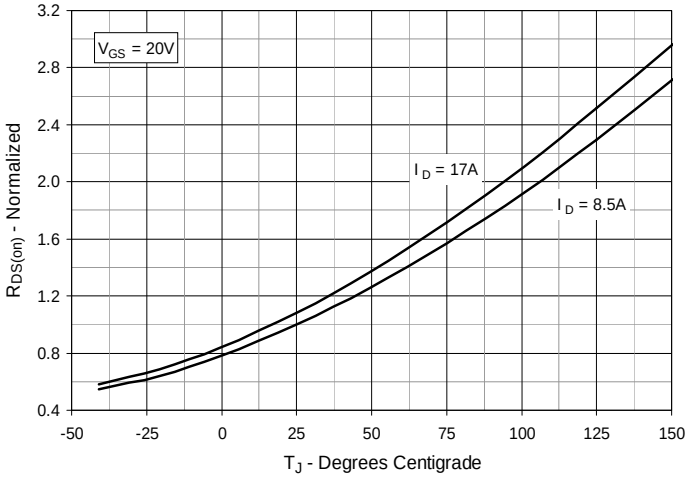


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 8.5A Value vs. Drain Current

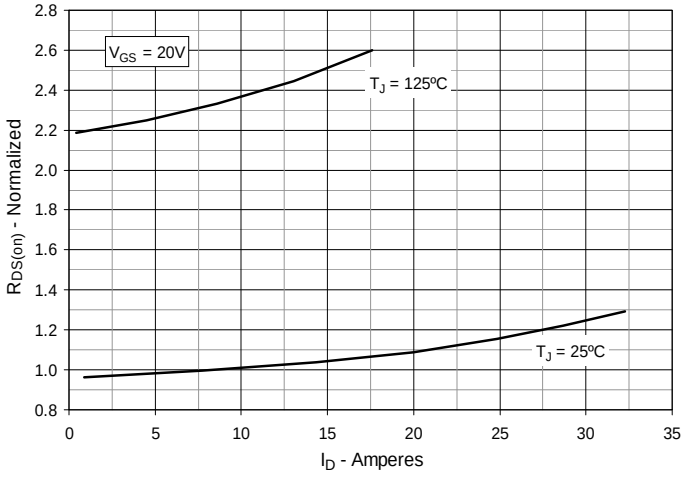


Fig. 6. Maximum Drain Current vs. Case Temperature

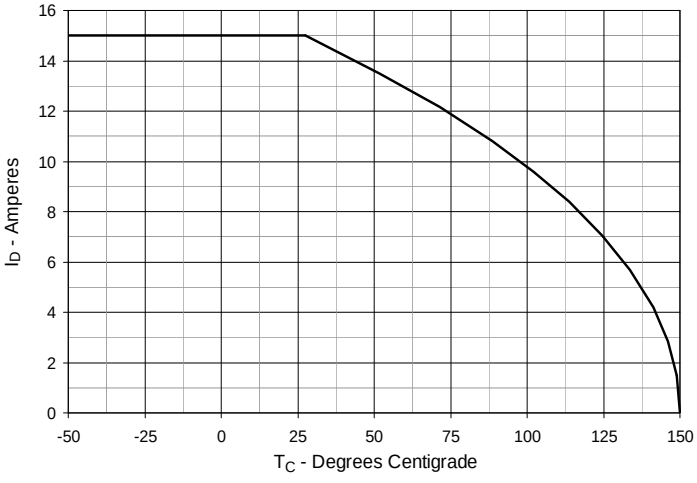


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Fig. 7. Input Admittance

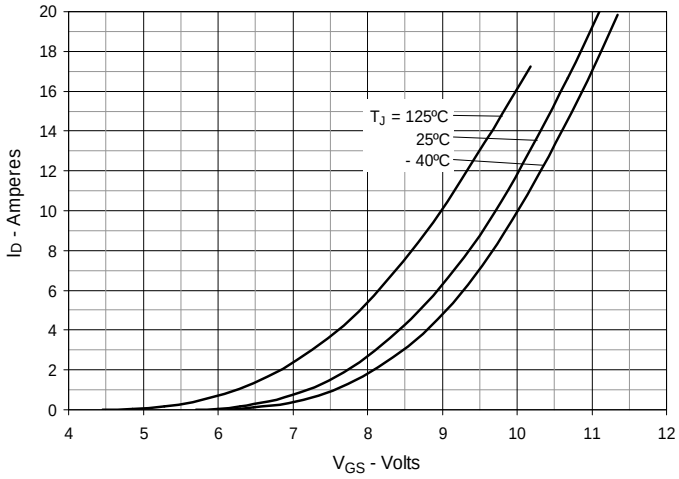

Fig. 8. Transconductance

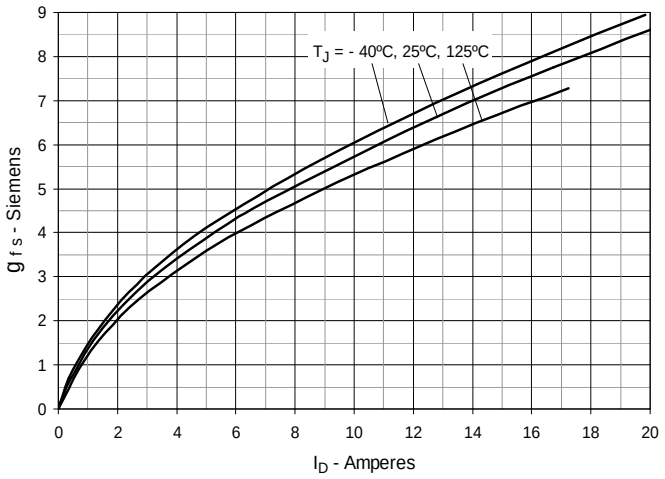

Fig. 9. Forward Voltage Drop of Intrinsic Diode

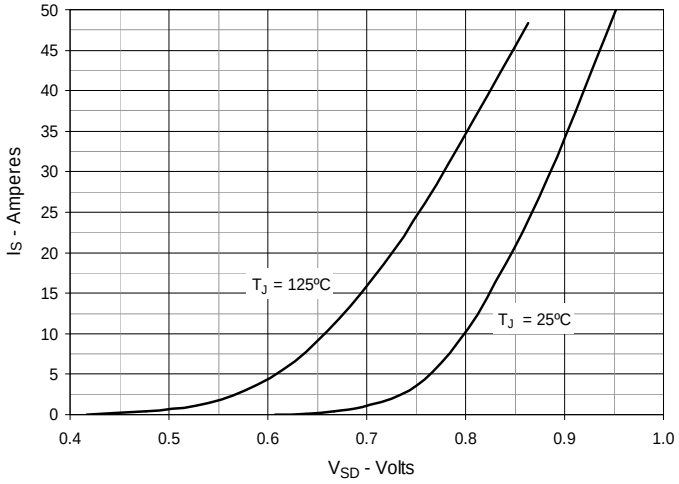

Fig. 10. Gate Charge

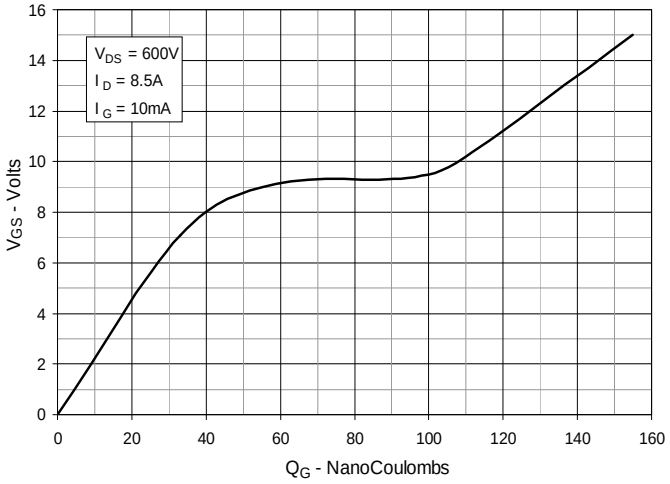

Fig. 11. Capacitance

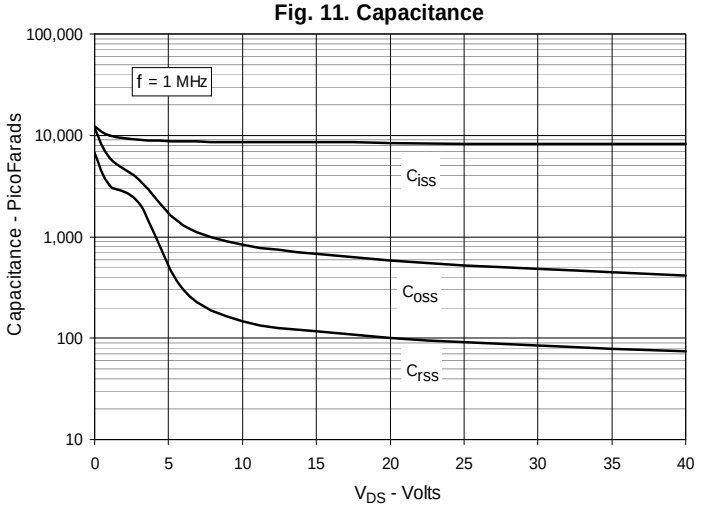

Fig. 12. Maximum Transient Thermal Impedance

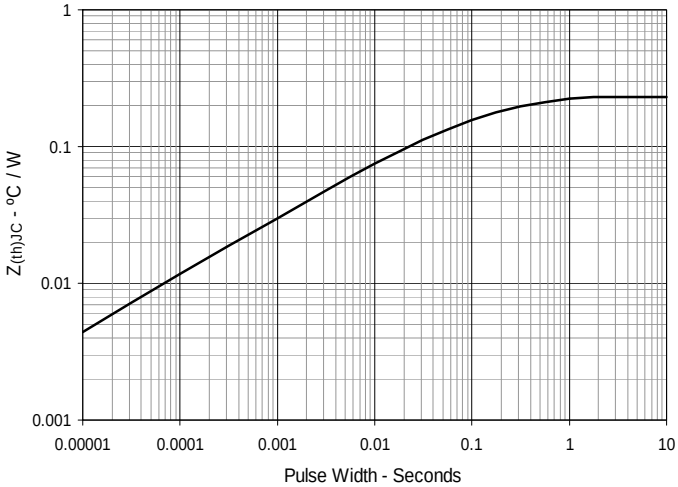

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Fig. 13. Forward-Bias Safe Operating Area @ T_C = 25ºC

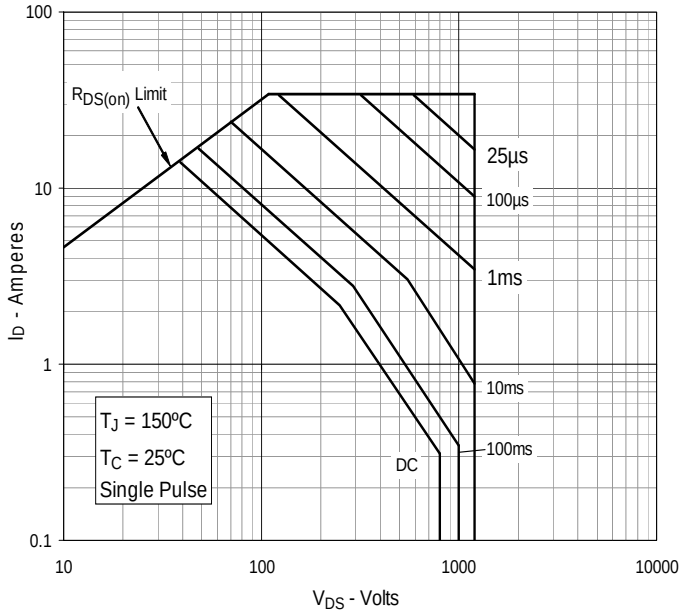
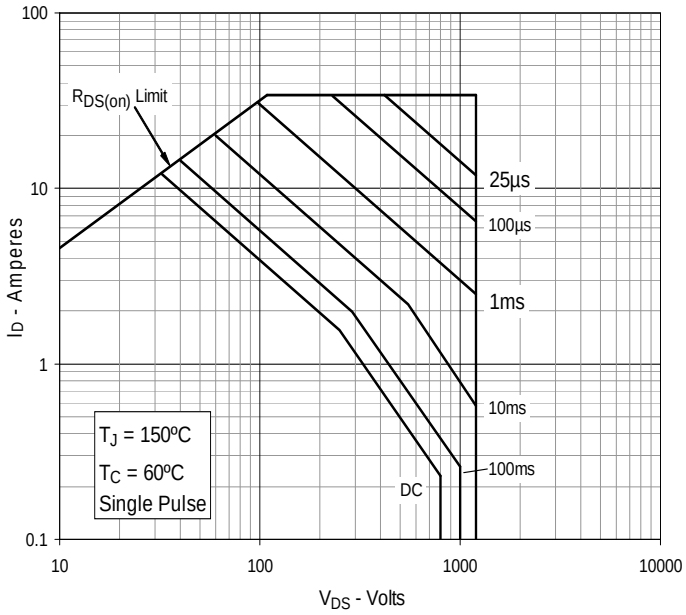


Fig. 14. Forward-Bias Safe Operating Area @ T_C = 60ºC



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