IXYS

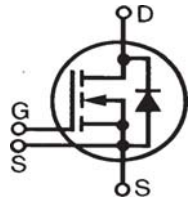
Advance Technical Information

Linear L2™ Power MOSFET w/ Extended FBSOA

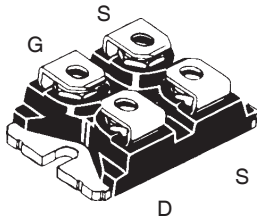
IXTN200N10L2

V_{DSS} = 100V
I_{D25} = 178A
$R_{DS(on)}$ ≤ 11mΩ

N-Channel Enhancement Mode
Guaranteed FBSOA
Avalanche Rated



miniBLOC, SOT-227
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	100	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	100	V
V_{GSS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_C = 25°C	178	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	500	A
I_A	T_C = 25°C	100	A
E_{AS}	T_C = 25°C	5	J
P_D	T_C = 25°C	830	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	1.6mm (0.062 in.) from Case for 10s	300	°C
T_{SOLD}	Plastic Body for 10s	260	°C
V_{ISOL}	50/60 Hz, RMS t = 1 Minute	2500	V~
	I_{ISOL} ≤ 1mA t = 1 Second	3000	V~
M_d	Mounting Torque	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	100			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 3mA	2.0		4.5	V
I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±200	nA
I_{DSS}	$V_{DS} = V_{DSS}$, V_{GS} = 0V			10	μA
	T_J = 125°C			250	μA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 100A, Note 1			11	mΩ

Features

- MiniBLOC with Aluminium Nitride Isolation
- Designed for Linear Operation
- International Standard Package
- Guaranteed FBSOA at 75°C
- Avalanche Rated
- Molding Epoxy Meets UL94 V-0 Flammability Classification

Advantages

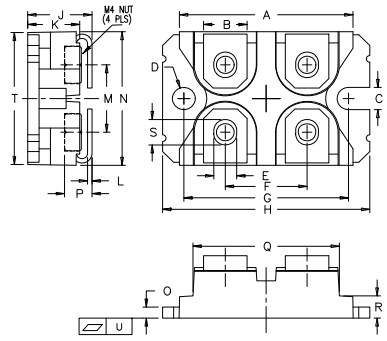
- Easy to Mount
- Space Savings
- High Power Density

Applications

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

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS}= 10V, I_D = 60A, Note 1	55	73	90	S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		23		nF
C_{oss}			3200		pF
C_{rss}			610		pF
$t_{d(on)}$	**Resistive Switching Times**		40		ns
t_r	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 100A		225		ns
$t_{d(off)}$	R_G = 1Ω (External)		127		ns
t_f			27		ns
$Q_{g(on)}$	V_{GS}= 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 100A		540		nC
Q_{gs}			115		nC
Q_{gd}			226		nC
R_{thJC}				0.15	°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} = 100V, I_D = 5A, T_C = 75°C , tp = 5s	500			W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0V			200	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			800	A
V_{SD}	I_F = 100A, V_{GS} = 0V, Note 1			1.4	V
t_{rr}	I_F = 100A, -di/dt = 100A/μs		245		ns
I_{RM}	V_R = 50V, V_{GS} = 0V		24.4		A
Q_{RM}			3.0		μC

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

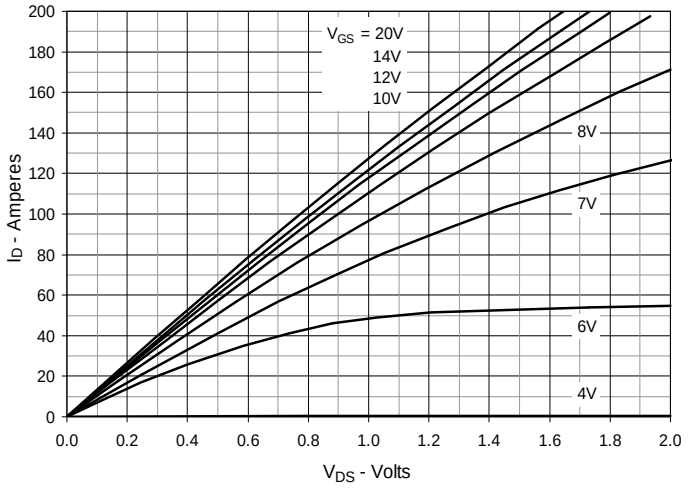


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

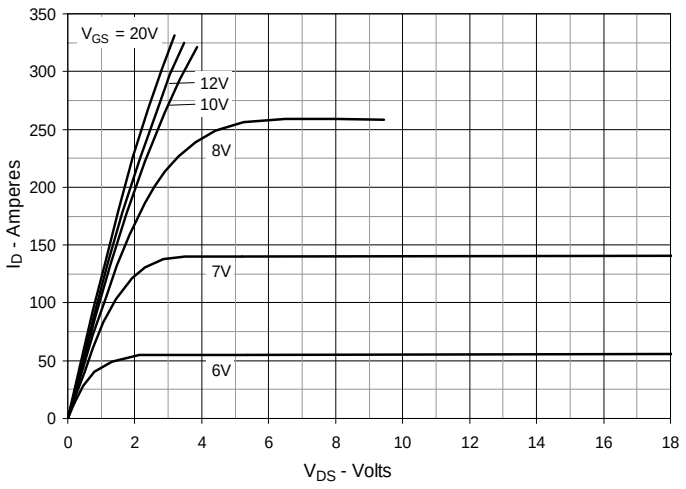


Fig. 3. Output Characteristics @ T_J = 125ºC

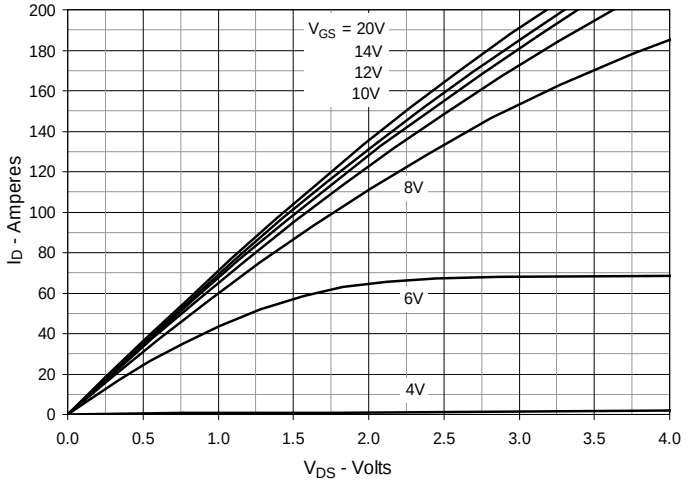


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 100A Value vs. Junction Temperature

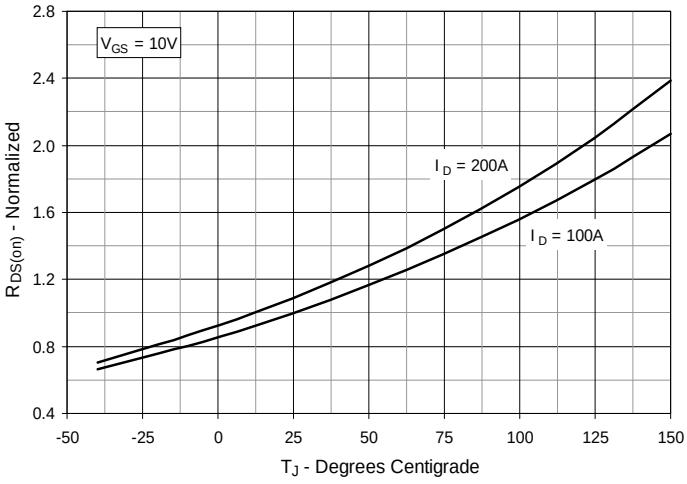


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 100A Value vs. Drain Current

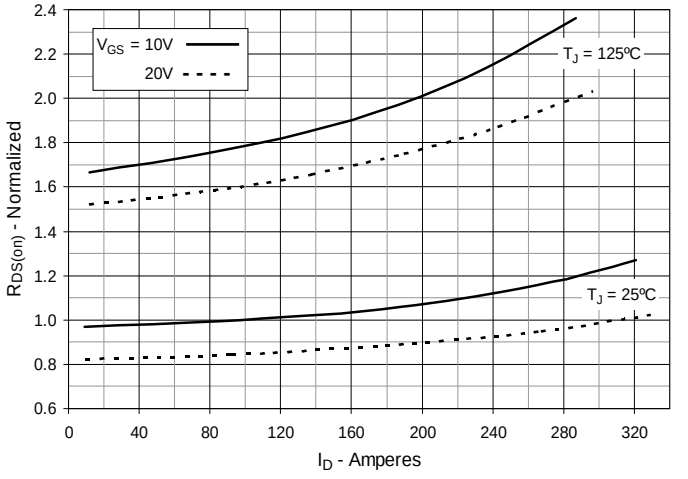


Fig. 6. Maximum Drain Current vs. Case Temperature

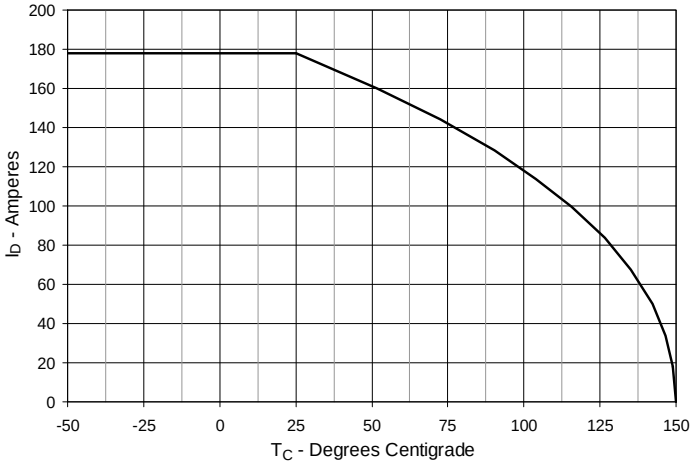


Fig. 7. Input Admittance

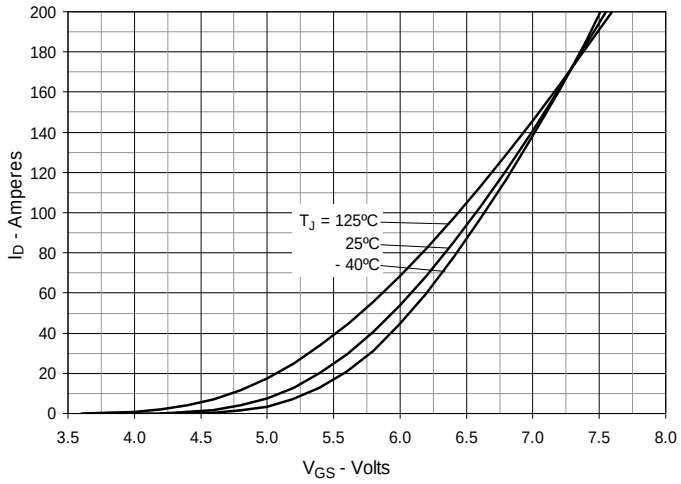


Fig. 8. Transconductance

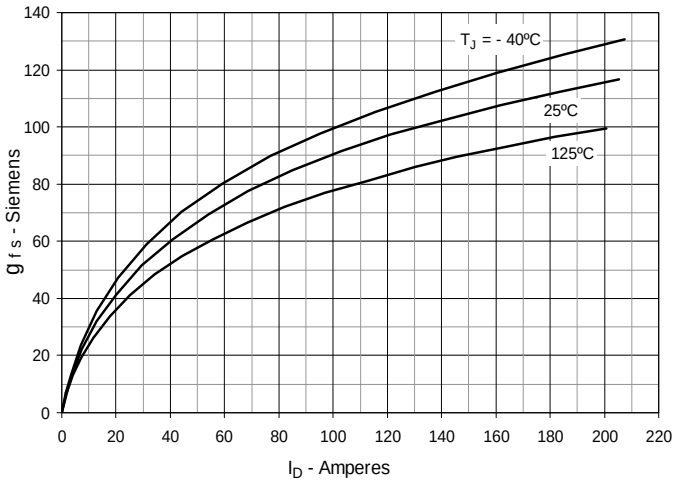


Fig. 9. Forward Voltage Drop of Intrinsic Diode

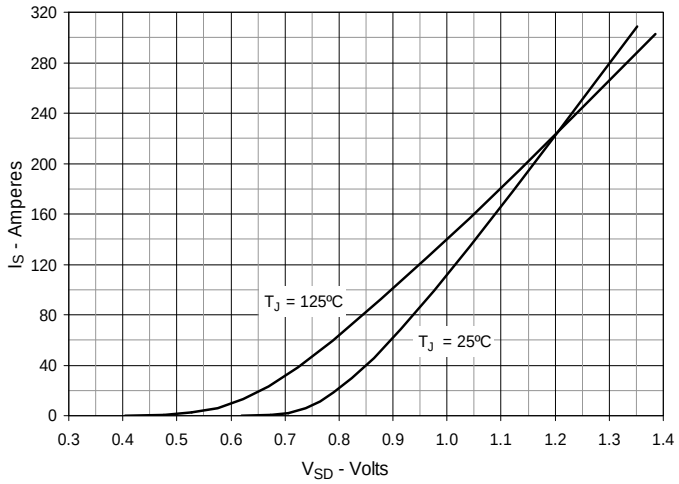


Fig. 10. Gate Charge

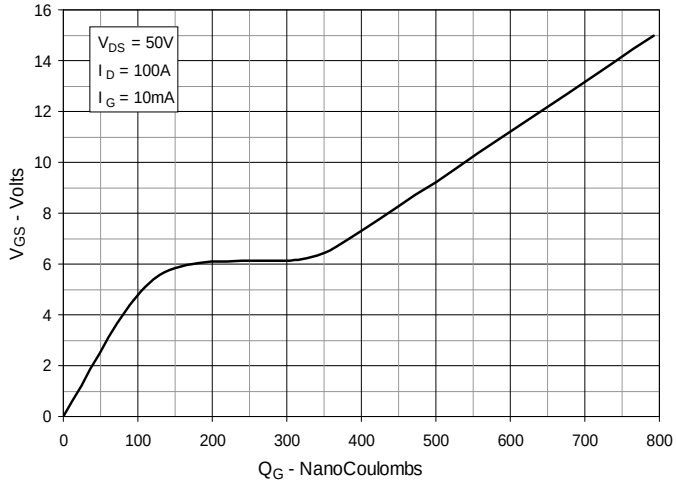


Fig. 11. Capacitance

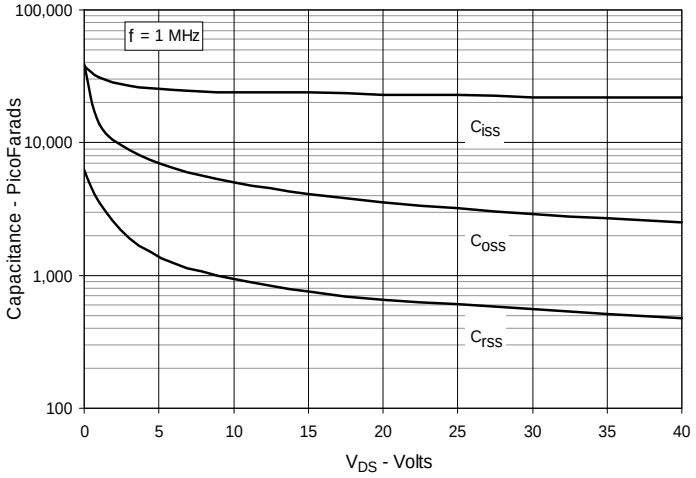


Fig. 12. Maximum Transient Thermal Impedance

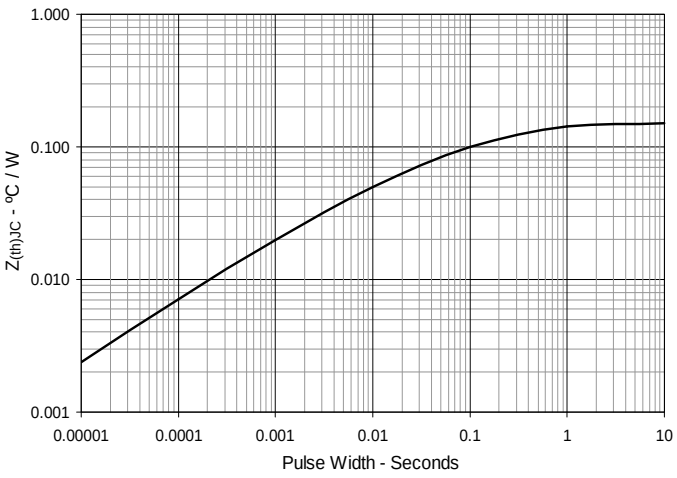


Fig. 13. Forward-Bias Safe Operating Area @ T_C = 25ºC

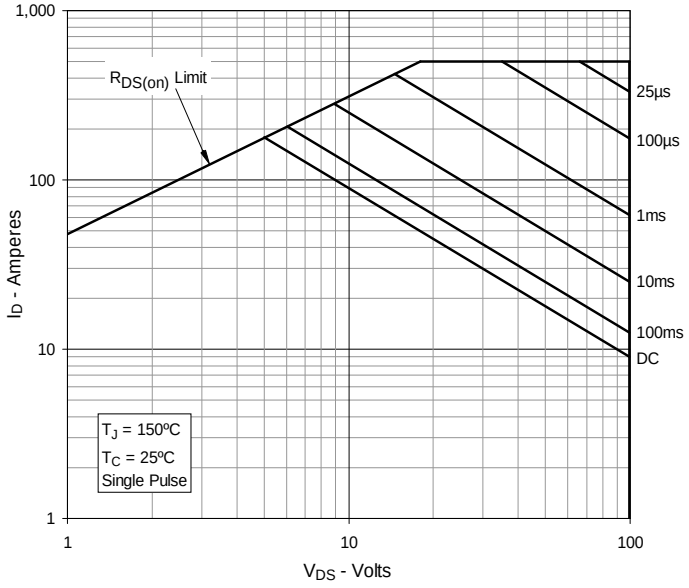


Fig. 14. Forward-Bias Safe Operating Area @ T_C = 75ºC