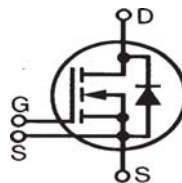


Linear L2™ Power MOSFET

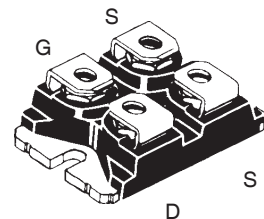
IXTN60N50L2

N-Channel Enhancement Mode
Extended FBSOA



$$\begin{aligned} V_{DSS} &= 500V \\ I_{D25} &= 53A \\ R_{DS(on)} &\leq 100m\Omega \end{aligned}$$

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}	$T_J = 25^\circ\text{C}$ to 150°C	500	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C , $R_{GS} = 1M\Omega$	500	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	$T_C = 25^\circ\text{C}$	53	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	150	A
I_A	$T_C = 25^\circ\text{C}$	60	A
E_{AS}	$T_C = 25^\circ\text{C}$	3	J
P_D	$T_C = 25^\circ\text{C}$	735	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
T_L	1.6mm (0.062 in.) from case for 10s	300	$^\circ\text{C}$
T_{SOLD}	Plastic body for 10s	260	$^\circ\text{C}$
V_{ISOL}	50/60 Hz, RMS $t = 1$ minute	2500	V~
	$I_{ISOL} \leq 1\text{mA}$ $t = 1$ 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

Features

- Designed for linear operation
- International standard package
- Molding epoxy meets UL94 V-0 flammability classification
- miniBLOC with Aluminium nitride isolation

Applications

- Programmable loads
- Current regulators
- DC-DC converters
- Battery chargers
- DC choppers
- Temperature and lighting controls

Advantages

- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0V$, $I_D = 1\text{mA}$	500		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\mu\text{A}$	2.5		4.5 V
I_{GSS}	$V_{GS} = \pm 30V$, $V_{DS} = 0V$			± 200 nA
I_{DSS}	$V_{DS} = V_{DSS}$			50 μA
	$V_{GS} = 0V$ $T_J = 125^\circ\text{C}$			5 mA
$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 30A$ Note 1			100 m Ω

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10V, I_D = 30A$, Note 1	18	25	32
C_{iss}	$V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$		24	nF
C_{oss}			1325	pF
C_{rss}			172	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = 15V, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 30A$ $R_G = 0.5\Omega$ (External)		40	ns
t_r			40	ns
$t_{d(off)}$			165	ns
t_f			38	ns
$Q_{g(on)}$	$V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 30A$		610	nC
Q_{gs}			130	nC
Q_{gd}			365	nC
R_{thJC}				0.17 °C/W
R_{thCS}			0.05	°C/W

Safe Operating Area Specification

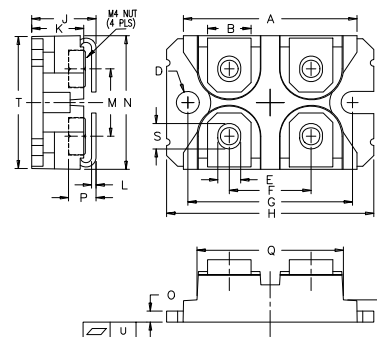
Symbol	Test Conditions	Min.	Typ.	Max.
SOA	$V_{DS} = 400V, I_D = 0.9A, T_C = 75^\circ C, t_p = 3s$	360		W

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
I_S	$V_{GS} = 0V$			60 A
I_{SM}	Repetitive, pulse width limited by T_{JM}			240 A
V_{SD}	$I_F = I_S, V_{GS} = 0V$, Note 1			1.5 V
t_{rr}	$I_F = 60A, -di/dt = 100A/\mu s$ $V_R = 100V, V_{GS} = 0V$		980	ns
I_{RM}			73	A
Q_{RM}			35.8	μC

Note 1: Pulse test, $t \leq 300\mu s$; duty cycle, $d \leq 2\%$.

SOT-227B (IXTN) Outline



(M4 screws (4x) supplied)

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	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

PRELIMINARY TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from data gathered during objective characterizations of preliminary engineering lots; but also may yet contain some information supplied during a pre-production design evaluation. 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
	4,850,072	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
@ 25°C

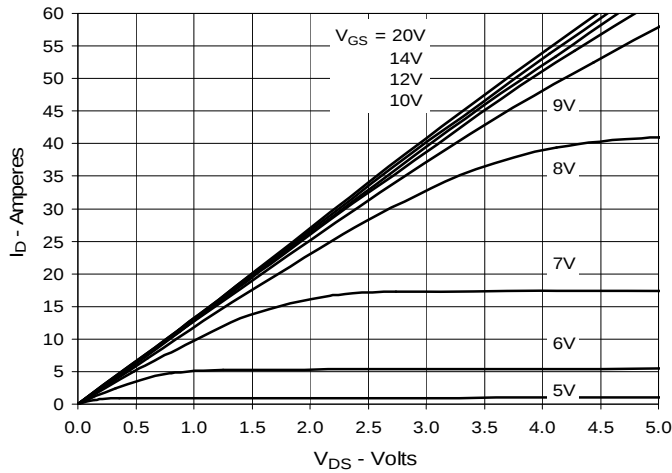


Fig. 2. Extended Output Characteristics
@ 25°C

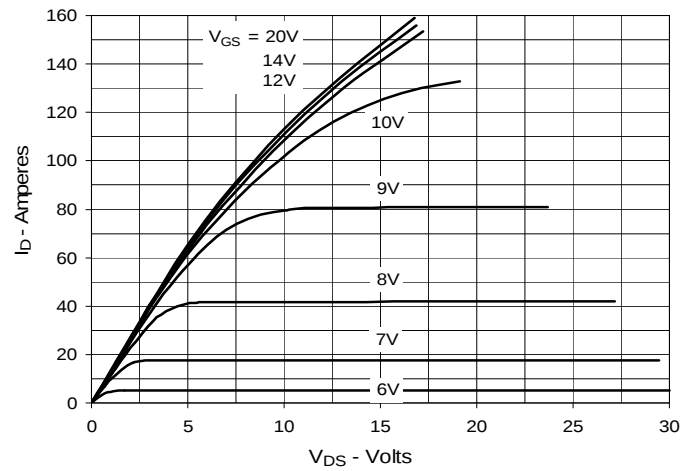


Fig. 3. Output Characteristics
@ 125°C

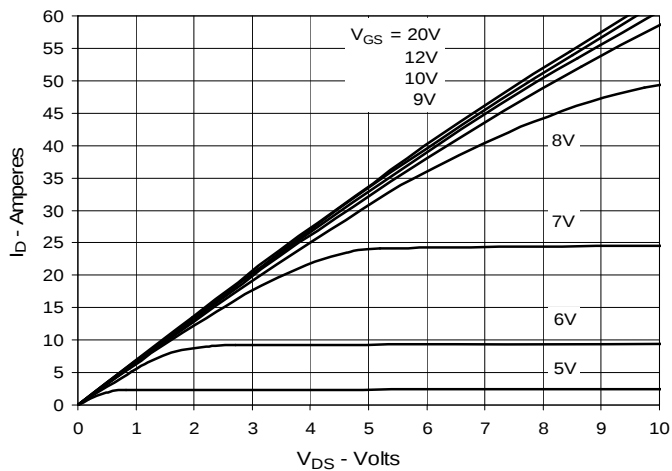


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 30A$ Value
vs. Junction Temperature

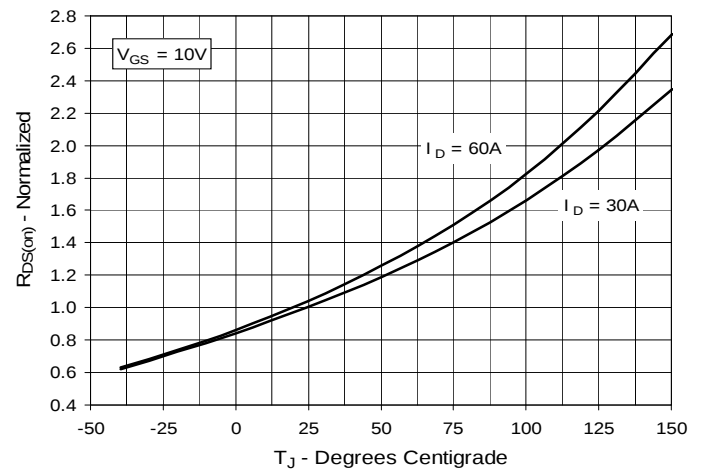


Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 30A$ Value
vs. Drain Current

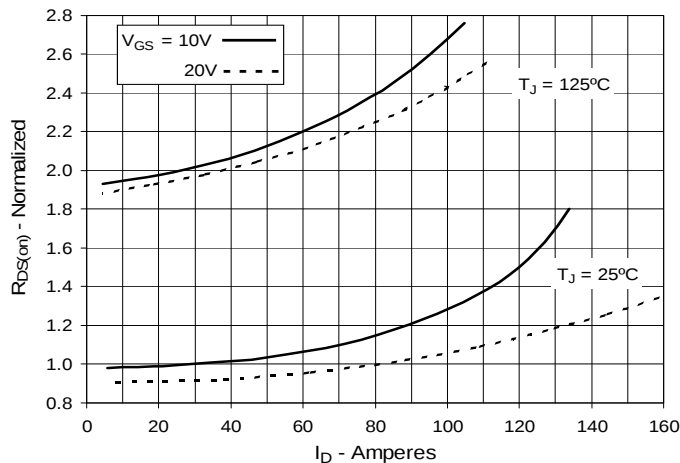


Fig. 6. Maximum Drain Current vs.
Case Temperature

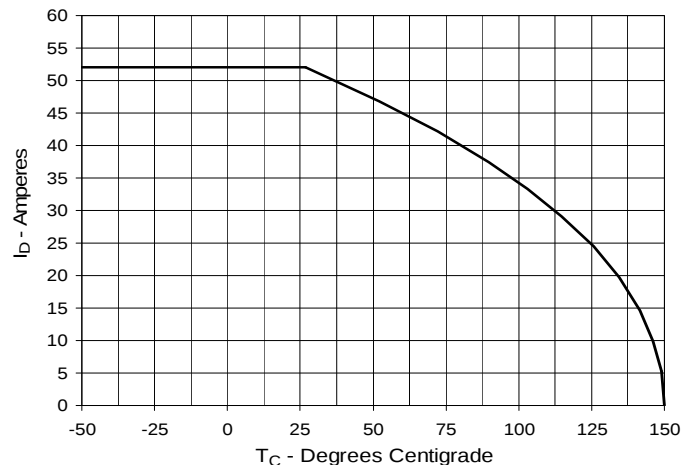


Fig. 7. Input Admittance

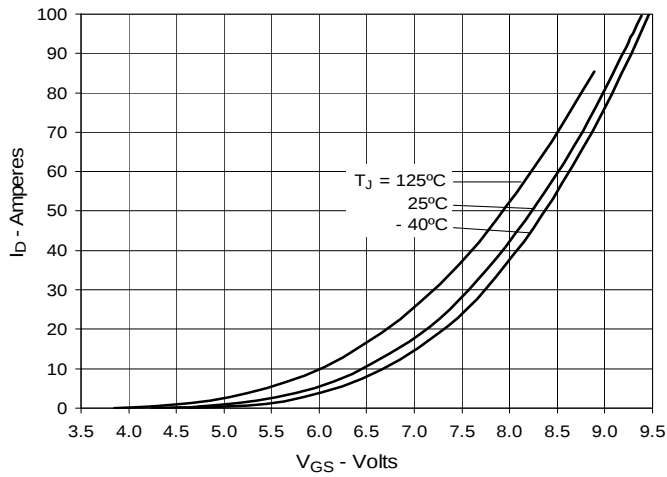


Fig. 8. Transconductance

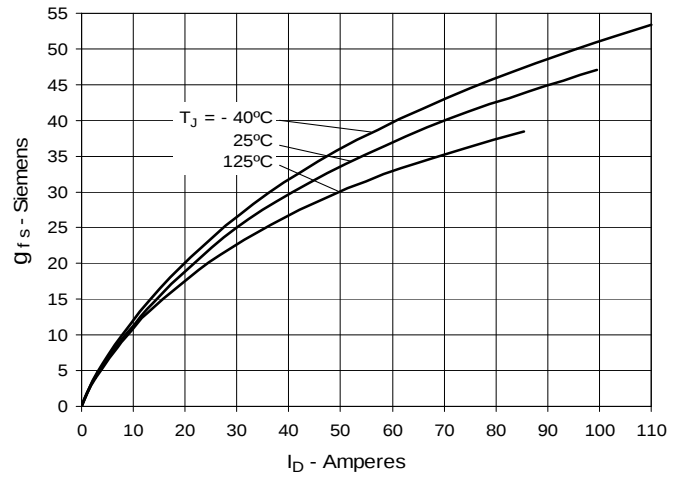


Fig. 9. Forward Voltage Drop of Intrinsic Diode

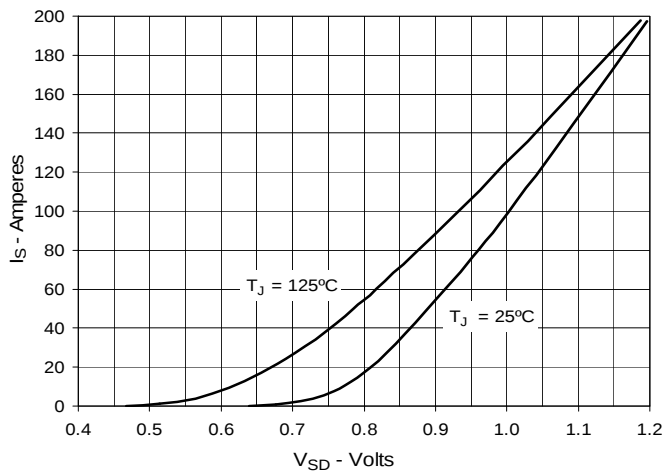


Fig. 10. Gate Charge

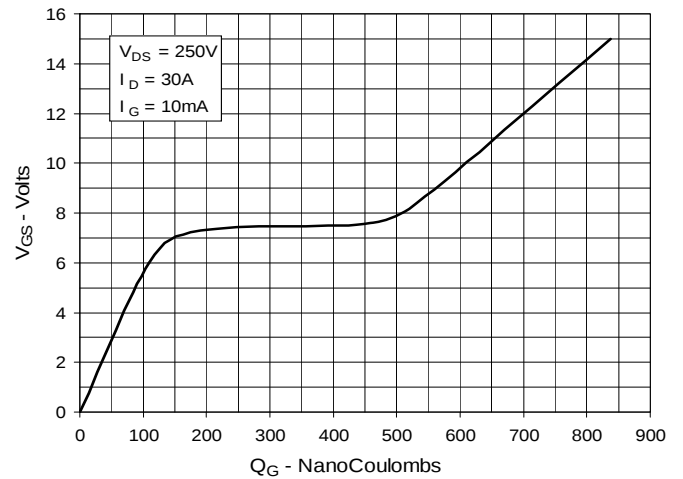


Fig. 11. Capacitance

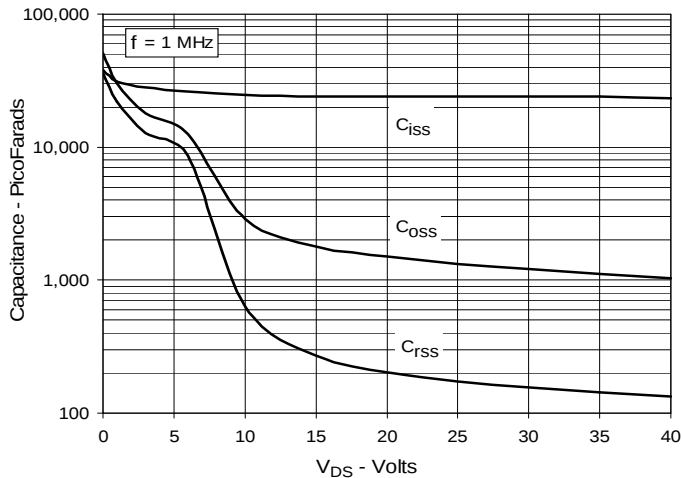


Fig. 12. Maximum Transient Thermal Impedance

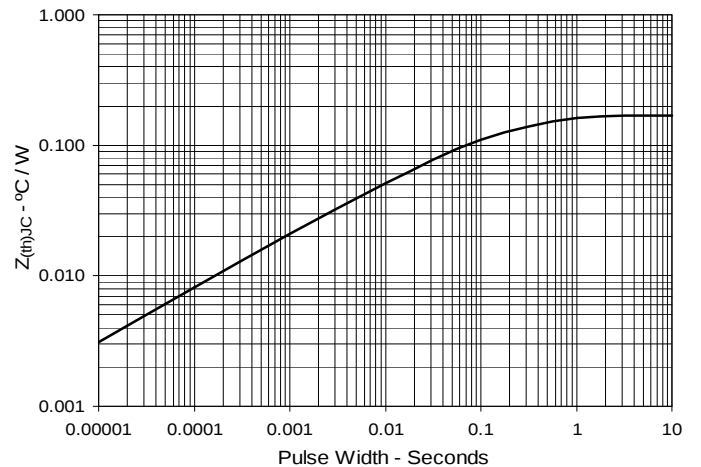


Fig. 13. Forward-Bias Safe Operating Area
@ $T_C = 25^\circ\text{C}$

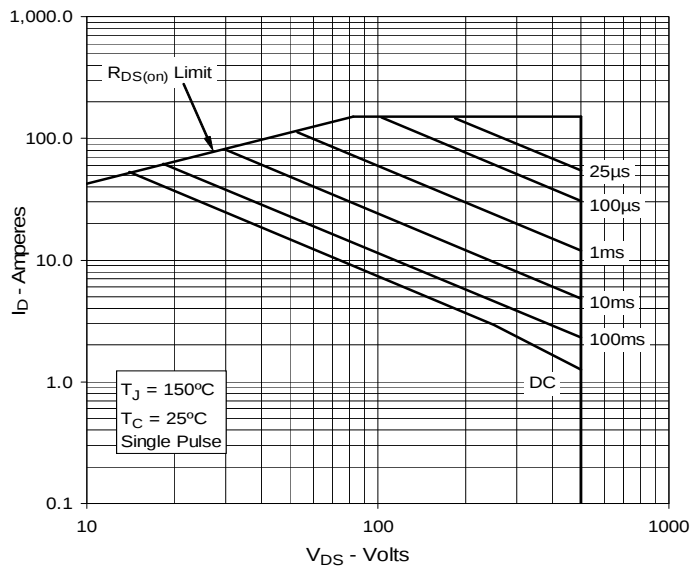


Fig. 14. Forward-Bias Safe Operating Area
@ $T_C = 75^\circ\text{C}$

