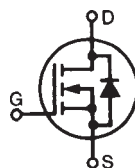


Linear™ Power MOSFET w/Extended FBSOA

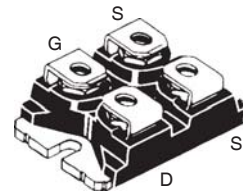
IXTN62N50L

N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



$$\begin{aligned} V_{DSS} &= 500V \\ I_{D25} &= 62A \\ R_{DS(on)} &\leq 100m\Omega \end{aligned}$$

miniBLOC
E153432



G = Gate
S = Source
D = Drain

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}	$T_C = 25^\circ\text{C}$	62	A
I_{DM}	$T_C = 25^\circ\text{C}$, Pulse Width Limited by T_{JM}	150	A
I_A	$T_C = 25^\circ\text{C}$	80	A
E_{AS}	$T_C = 25^\circ\text{C}$	5	J
P_D	$T_C = 25^\circ\text{C}$	800	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
V_{ISOL}	50/60 Hz, RMS, $t = 1\text{minute}$ $I_{ISOL} \leq 1\text{mA}$, $t = 1\text{s}$	2500	V~
		3000	V~
M_d	Mounting Torque for Base Plate Terminal Connection Torque	1.5/13	Nm/lb.in.
		1.3/11.5	Nm/lb.in.
Weight		30	g

Features

- International Standard Package
- Low Intrinsic Gate Resistance
- miniBLOC with Aluminum Nitride Isolation
- Fast Intrinsic Diode
- Extended FBSOA
- Avalanche Rated
- Low $R_{DS(on)}$ and Q_G
- Low Package Inductance

Advantages

- High Power Density
- Easy to Mount
- Space Savings

Applications

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

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
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\mu\text{A}$	3.0		5.5 V
I_{GSS}	$V_{GS} = \pm 30V$, $V_{DS} = 0V$			± 200 nA
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0V$ $T_J = 125^\circ\text{C}$			50 μA
				1 mA
$R_{DS(on)}$	$V_{GS} = 20V$, $I_D = 0.5 \cdot I_{D25}$, Note 1			100 m Ω

Symbol	Test Conditions ($T_J = 25^{\circ}\text{C}$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10\text{V}, I_D = 0.5 \cdot I_{D25}$, Note 1	10	15	20 S
C_{iss}	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$		11.5	nF
C_{oss}			1460	pF
C_{rss}			210	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = 15\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 2\Omega$ (External)		36	ns
t_r			85	ns
$t_{d(off)}$			110	ns
t_f			75	ns
$Q_{g(on)}$	$V_{GS} = 20\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		550	nC
Q_{gs}			115	nC
Q_{gd}			180	nC
R_{thJC}				0.156 $^{\circ}\text{C/W}$
R_{thCS}		0.05		$^{\circ}\text{C/W}$

Safe Operating Area Specification

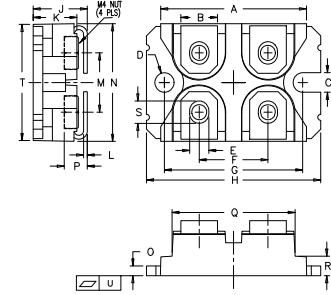
Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
SOA	$V_{DS} = 400\text{V}, I_D = 750\text{mA}, T_C = 90^{\circ}\text{C}$	300		W

Source-Drain Diode

Symbol	Test Conditions ($T_J = 25^{\circ}\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
I_S	$V_{GS} = 0\text{V}$			62 A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			176 A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{V}$, Note 1			1.5 V
t_{rr}	$I_F = I_S, V_{GS} = 0\text{V}$ $-di/dt = 100\text{A}/\mu\text{s}, V_R = 100\text{V}$		500	ns

Note 1. Pulse test, $t \leq 300\mu\text{s}$, 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

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	

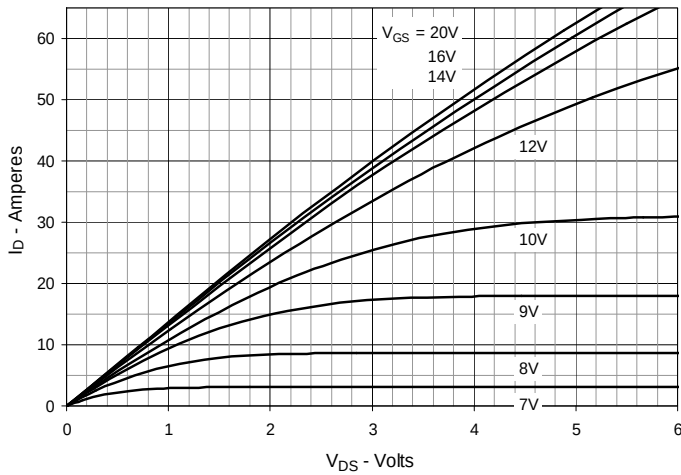
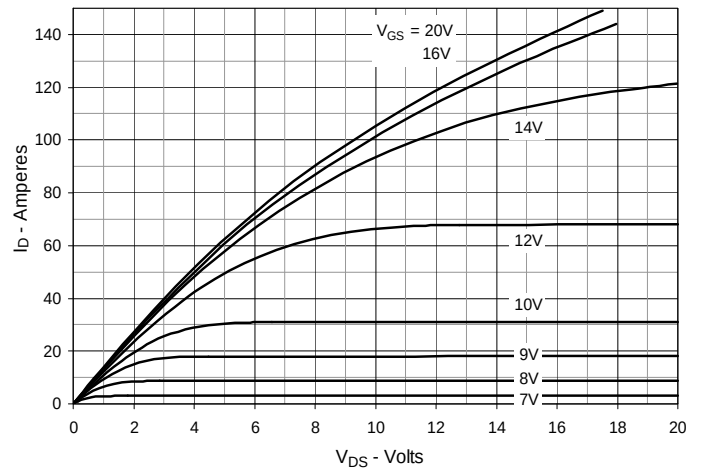
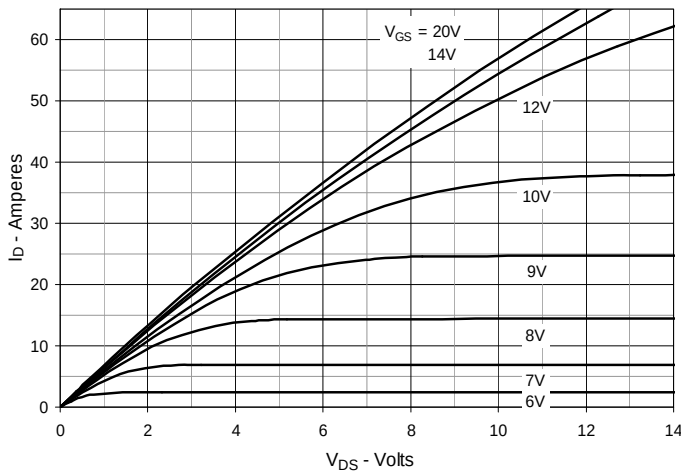
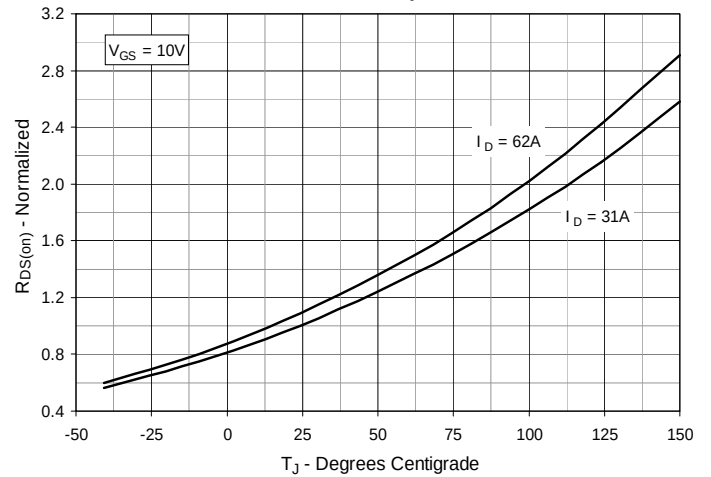
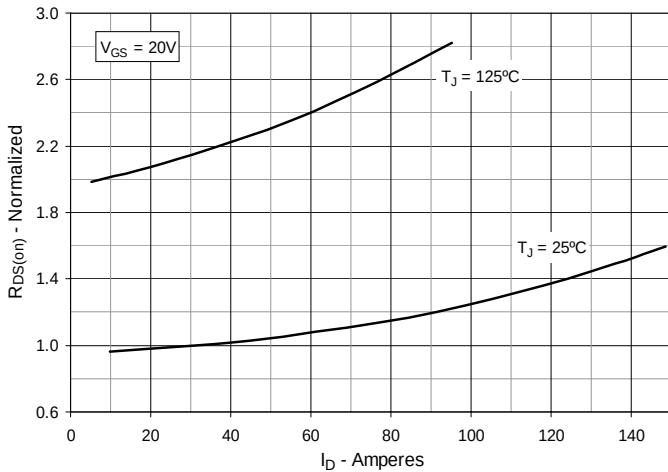
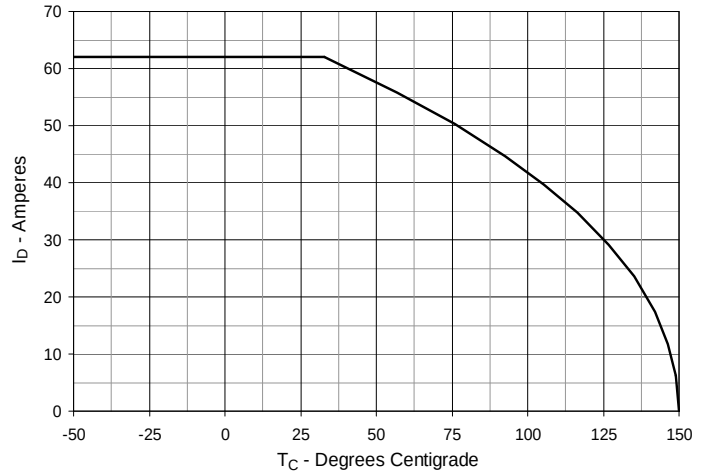
Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

Fig. 3. Output Characteristics @ $T_J = 125^\circ\text{C}$

Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 31\text{A}$ Value vs. Junction Temperature

Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 31\text{A}$ Value vs. Drain Current

Fig. 6. Maximum Drain Current vs. Case Temperature


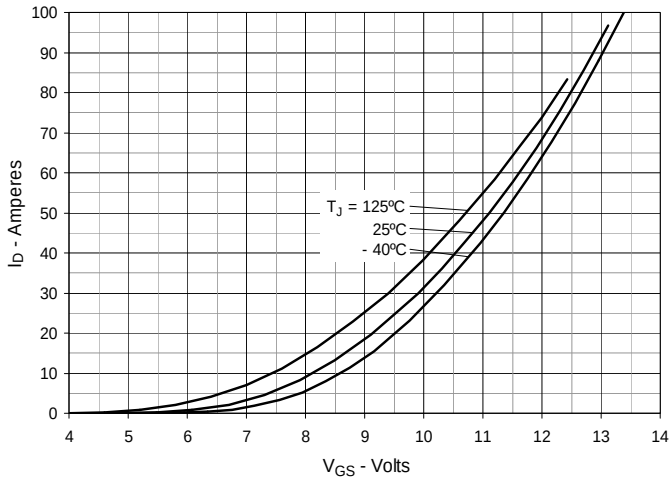
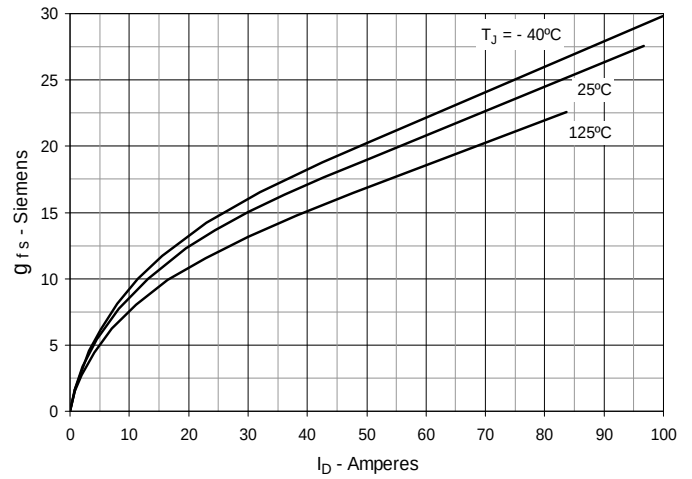
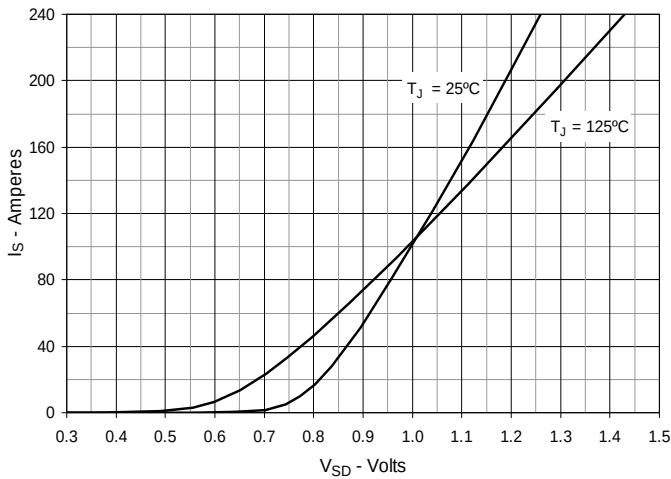
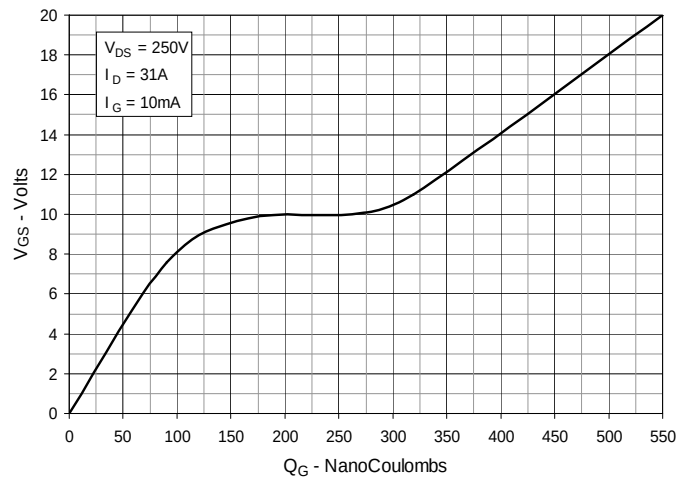
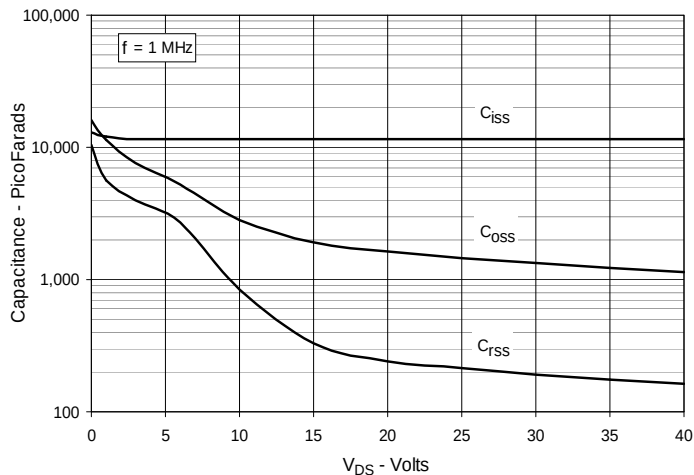
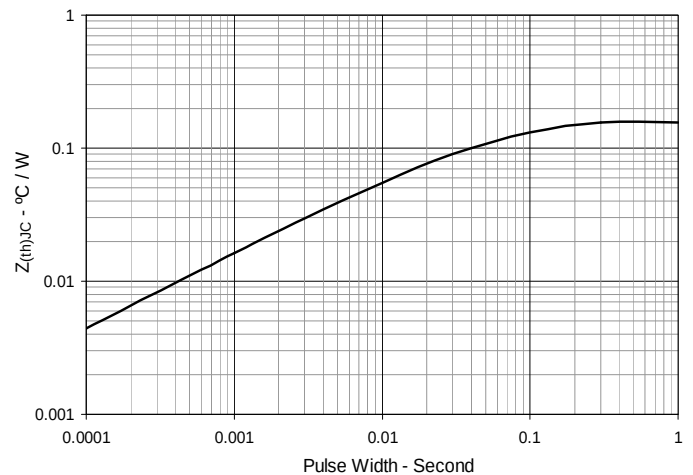
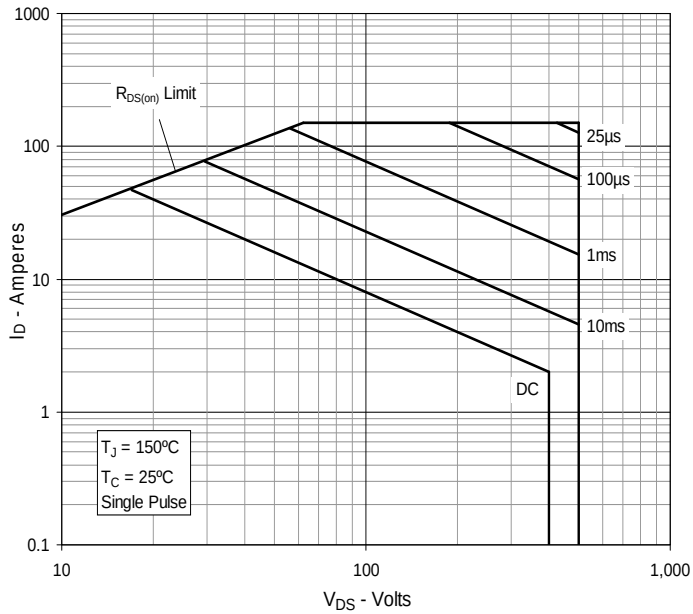
Fig. 7. Input Admittance

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
@ $T_C = 90^\circ\text{C}$
