IXYS

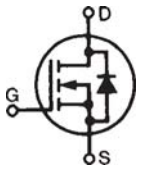
Preliminary Technical Information

Linear Power MOSFET With Extended FBSOA

IXTB62N50L

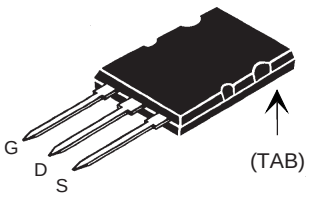
N-Channel Enhancement Mode

V_{DSS} = 500 V
I_{D25} = 62 A
$R_{DS(on)}$ ≤ 0.1 Ω



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	500	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ	500	V
V_{GS}	Continuous	±30	V
V_{GSM}	Transient	±40	V
I_{D25}	T_C = 25°C	62	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	150	A
I_{AR}	T_C = 25°C	62	A
E_{AR}	T_C = 25°C	80	mJ
E_{AS}		5.0	J
P_D	T_C = 25°C	800	W
T_J		-55 to +150	°C
T_{JM}		150	°C
T_{stg}		-55 to +150	°C
T_L	1.6 mm (0.063 in) from case for 10 s	300	°C
T_{SOLD}	Plastic body for 10 s	260	°C
F_c	Mounting force	20...120/4.5...27	N/lb.
Weight		10	g

PLUS 264™ (IXTB)



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

Features

- Designed for linear operation
- International standard package
- Unclamped Inductive switching (UIS) rated
- Molding epoxies meet UL 94 V-0 flammability classification

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	Characteristic Values (T_J = 25°C, unless otherwise specified)	Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0 V, I_D = 1 mA		500			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250 μA		3		5	V
I_{GSS}	V_{GS} = ±30 V, V_{DS} = 0 V				±200	nA
I_{DSS}	$V_{DS} = V_{DSS}$ V_{GS} = 0 V	T_J = 25°C T_J = 125°C			50 1	μA mA
$R_{DS(on)}$	V_{GS} = 20 V, $I_D = 0.5\ I_{D25}$ Note 1				0.10	Ω

Symbol	Test Conditions (T$_J$ = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10 V; I_D = 0.5 • I_{D25}, Note 1	10	15	20	S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		11500		pF
C_{oss}			1460		pF
C_{rss}			210		pF
$t_{d(on)}$	V_{GS} = 15 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25} R_G = 2 Ω (External),		36		ns
t_r			85		ns
$t_{d(off)}$			110		ns
t_f			75		ns
$Q_{g(on)}$	V_{GS} = 20 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		550		nC
Q_{gs}			115		nC
Q_{gd}			180		nC
R_{thJC}				0.156	°C/W
R_{thCS}			0.15		°C/W

Safe Operating Area Specification

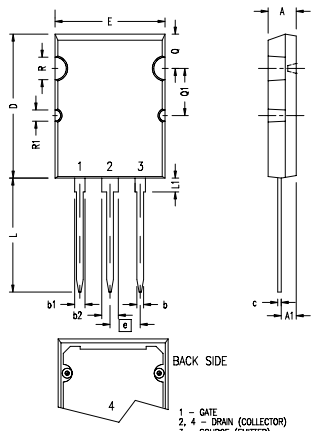
Symbol	Test Conditions	Min.	Typ.	Max.	
SOA	V_{DS} = 400 V, I_D = 0.75 A, T_C = 90°C	300			W

Source-Drain Diode

Symbol	Test Conditions (T$_J$ = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0 V			62	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			176	A
V_{SD}	I_F = I_S, V_{GS} = 0 V, Note 1			1.5	V
t_{rr}	I_F = I_S, -di/dt = 100 A/µs, V_R = 100V		500		ns

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

PLUS 264™ (IXTB) Outline



NOTE: This drawing meets all dimensions requirement of JEDEC outlines TO-264 AA except screw hole area dimensions.

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.185	.209	4.70	5.31
A1	.102	.118	2.59	3.00
b	.037	.055	0.94	1.40
b1	.087	.102	2.21	2.59
b2	.110	.126	2.79	3.20
c	.017	.029	0.43	0.74
D	1.007	1.047	25.58	26.59
E	.760	.799	19.30	20.29
e	.215 BSC		5.46 BSC	
L	.779	.842	19.79	21.39
L1	.087	.102	2.21	2.59
Q	.240	.256	6.10	6.50
Q1	.330	.346	8.38	8.79
ØR	.155	.187	3.94	4.75
ØR1	.085	.093	2.16	2.36

Ref: IXYS CO 0113 R0

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.

Fig. 1. Output Characteristics @ 25ºC

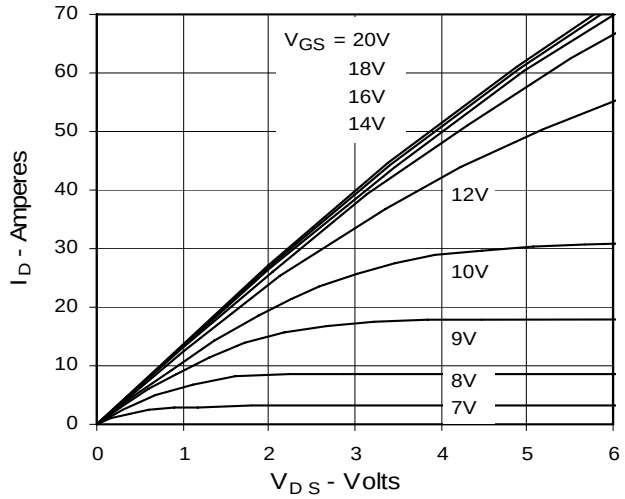


Fig. 2. Extended Output Characteristics @ 25ºC

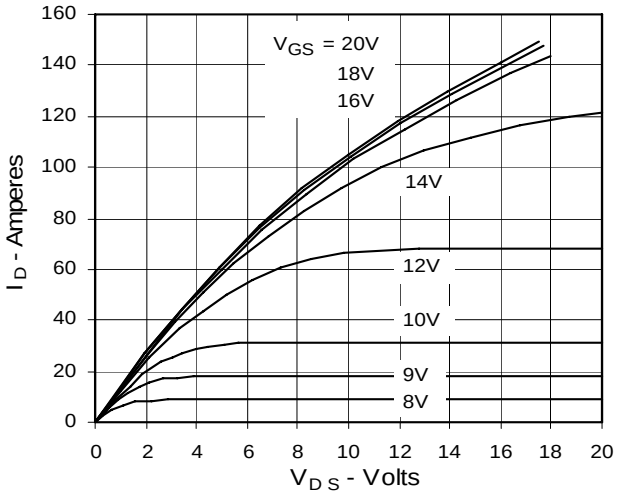


Fig. 3. Output Characteristics @ 125ºC

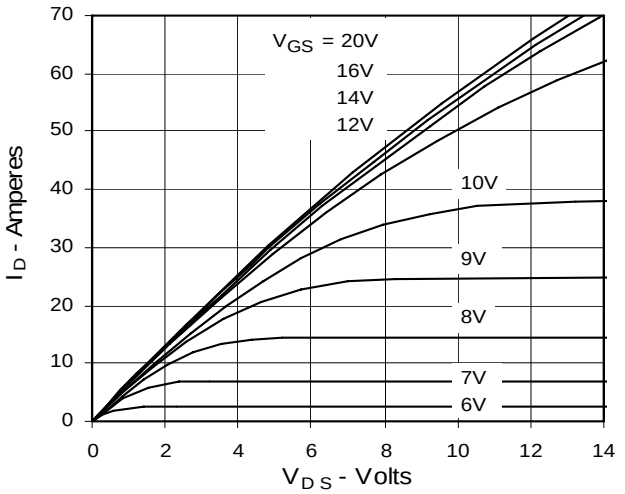


Fig. 4. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Junction Temperature

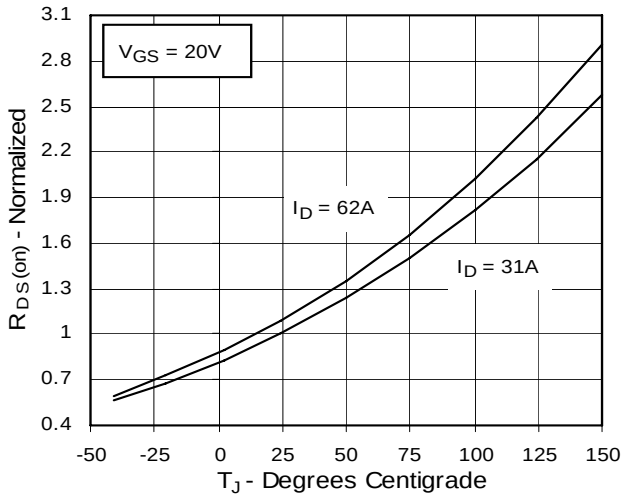


Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. I_D

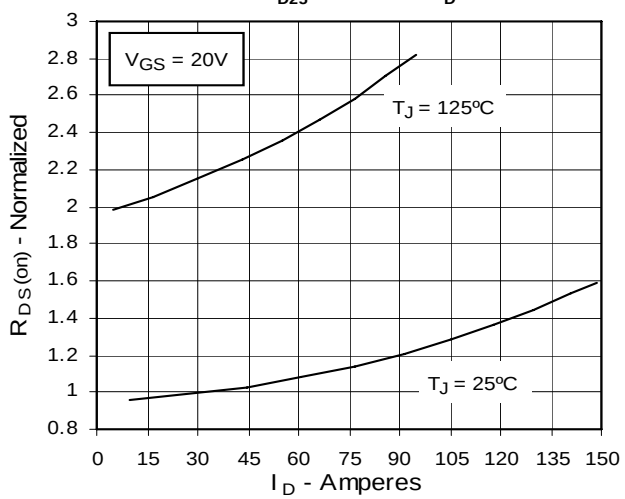


Fig. 6. Drain Current vs. Case Temperature

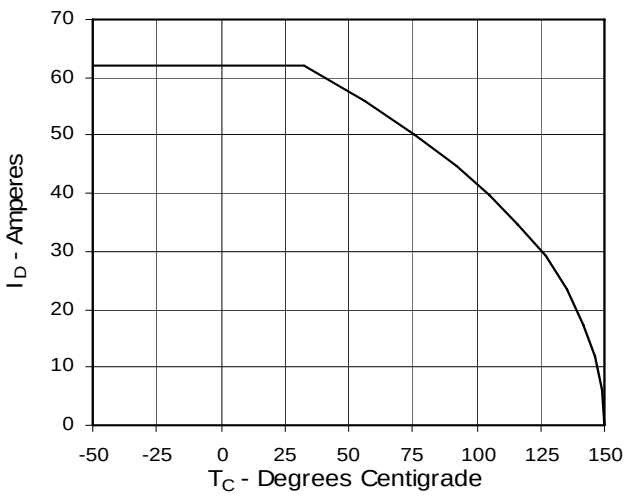


Fig. 7. Input Admittance

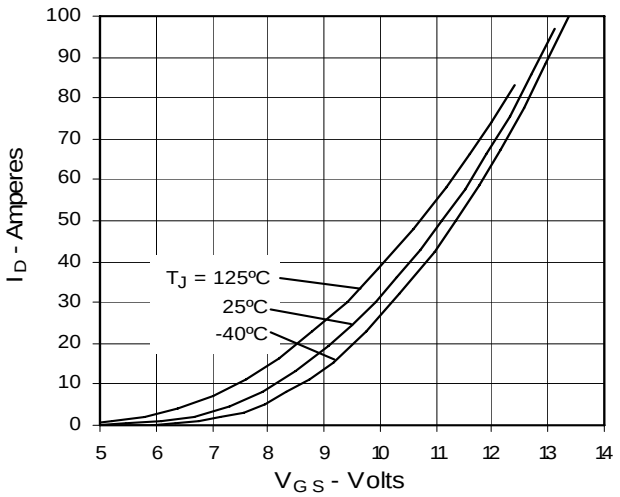


Fig. 8. Transconductance

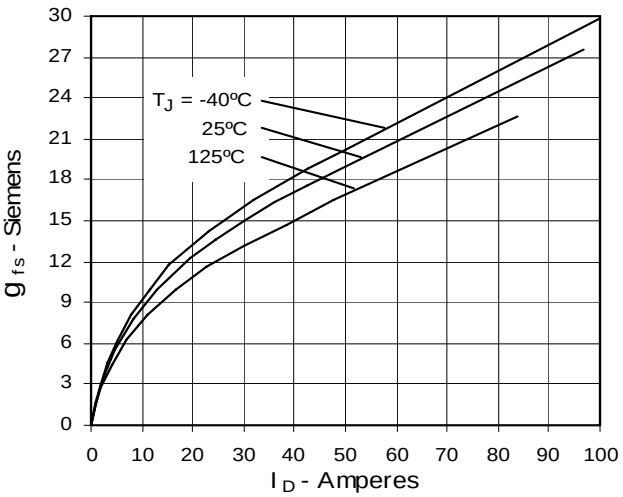


Fig. 9. Source Current vs. Source-To-Drain Voltage

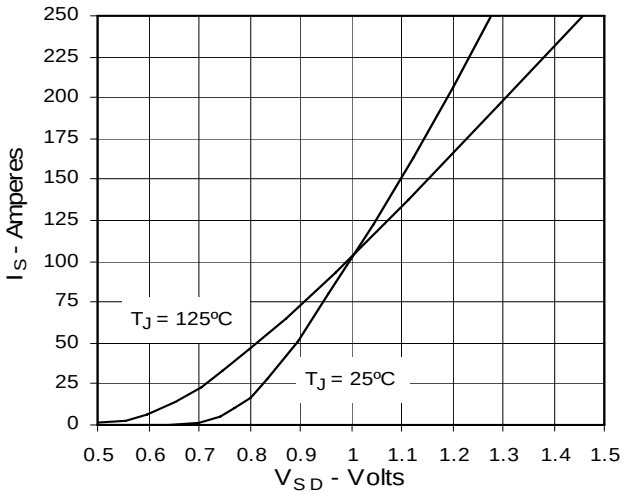


Fig. 10. Gate Charge

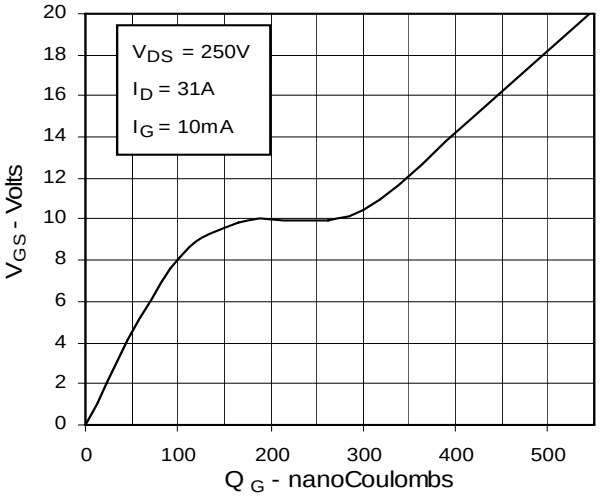


Fig. 11. Capacitance

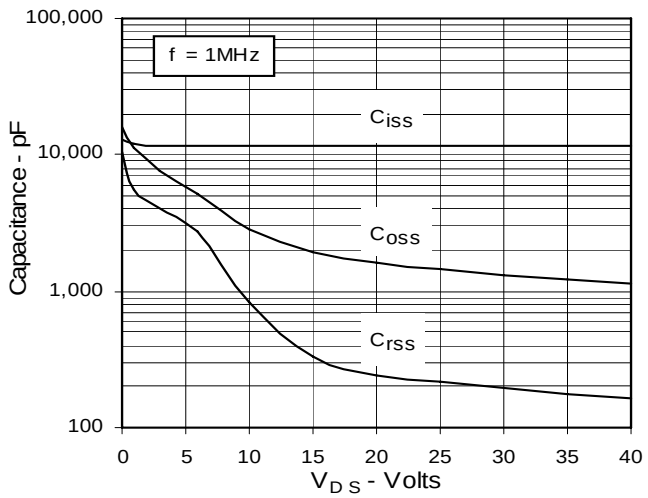


Fig. 12. Forward-Bias Safe Operating Area @ T_C = 25ºC

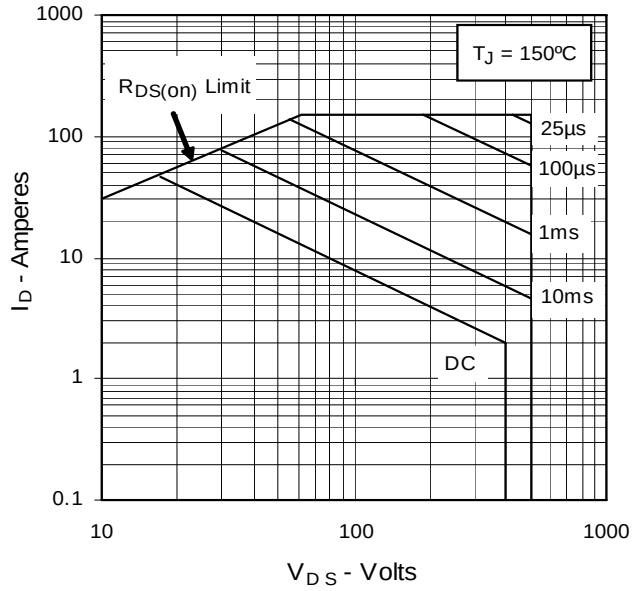


Fig. 13. Forward-Bias Safe Operating Area @ T_C = 90ºC

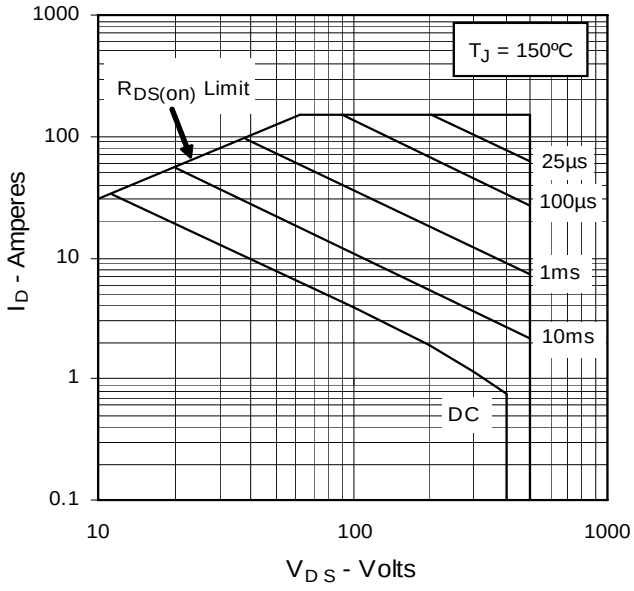


Fig. 14. Maximum Transient Thermal Impedance