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IXYS Corporation
IXTB62N50L

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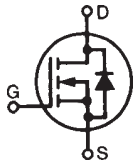
sales@integrated-circuit.com

IXYS

Linear™ Power MOSFET w/Extended FBSOA

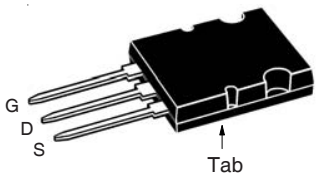
IXTB62N50L

V_{DSS} = 500V
I_{D25} = 62A
$R_{DS(on)}$ ≤ 100mΩ



N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode

PLUS264™



G = Gate D = Drain
S = Source Tab = Drain

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} = 1MΩ	500	V
V_{GSS}	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_A	T_C = 25°C	80	A
E_{AS}	T_C = 25°C	5	J
P_D	T_C = 25°C	800	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
F_C	Mounting Force	30..120/6.7..27	N/lb.
Weight		10	g

Features

- Fast Intrinsic Diode
- 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°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 1mA	500			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250μA	3.0		5.5	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			1	mA
$R_{DS(on)}$	V_{GS} = 20V, $I_D = 0.5 \bullet I_{D25}$, Note 1			100	mΩ

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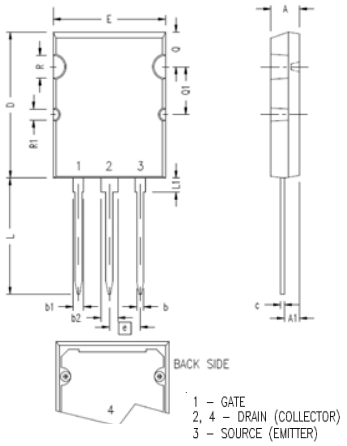
Symbol	Test Conditions (T_J = 25°C Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10V, I_D = 0.5 • I_{D25}, Note 1	10	15	20	S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		11.5		nF
C_{oss}			1460		pF
C_{rss}			210		pF
$t_{d(on)}$	**Resistive Switching Times**		36		ns
t_r	V_{GS} = 15V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		85		ns
$t_{d(off)}$	R_G = 2Ω (External)		110		ns
t_f			75		ns
$Q_{g(on)}$	V_{GS} = 20V, 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

PLUS264™ (IXTB) Outline



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

Safe Operating Area Specification

Symbol	Test Conditions	Characteristic Values Min.	Typ.	Max.	
SOA	V_{DS} = 400V, I_D = 750mA, 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} = 0V			62	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			176	A
V_{SD}	I_F = I_S, V_{GS} = 0V, Note 1			1.5	V
t_{rr}	I_F = I_S, V_{GS} = 0V -di/dt = 100A/μs, V_R = 100V		500		ns

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

Fig. 1. Output Characteristics @ T_J = 25ºC

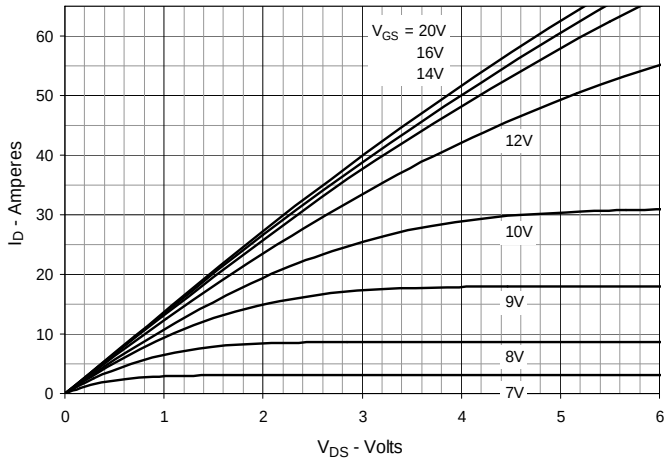


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

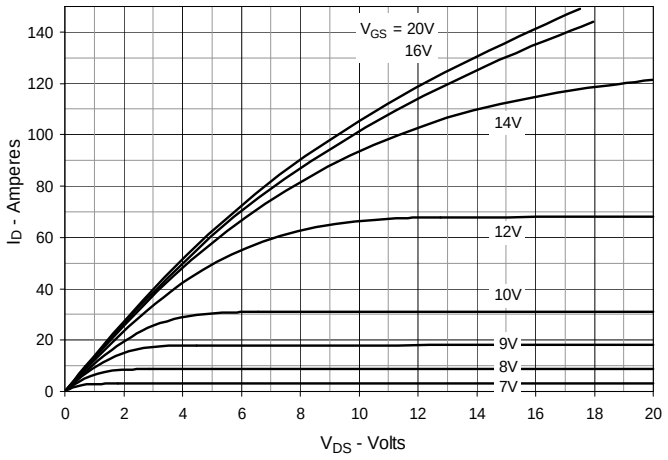


Fig. 3. Output Characteristics @ T_J = 125ºC

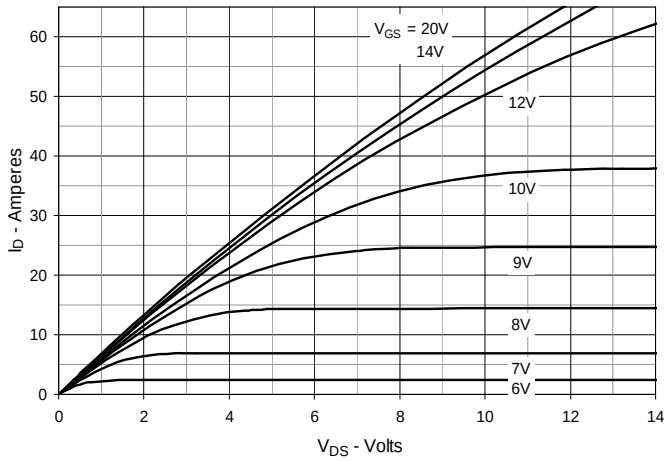


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 31A Value vs. Junction Temperature

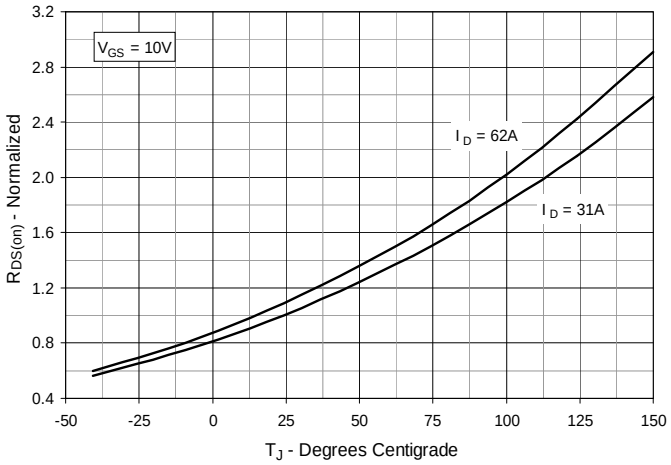


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 31A Value vs. Drain Current

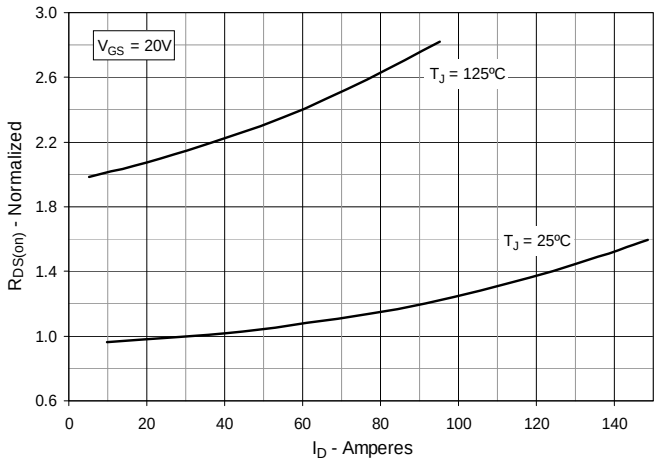


Fig. 6. Maximum Drain Current vs. Case Temperature

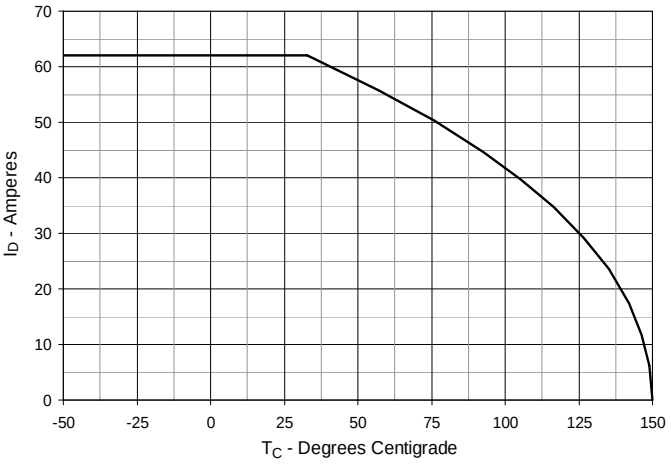


Fig. 7. Input Admittance

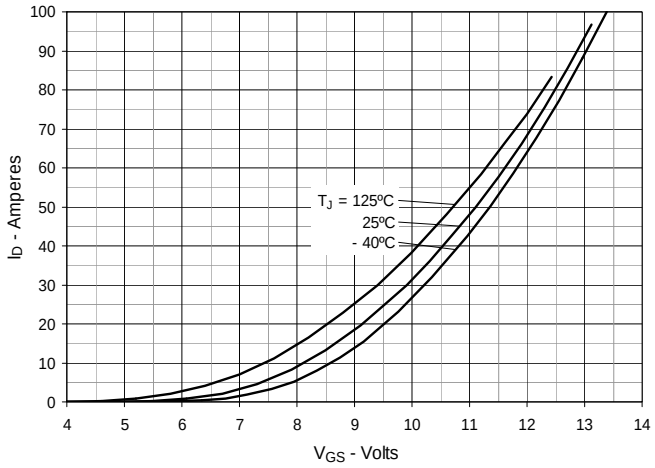


Fig. 8. Transconductance

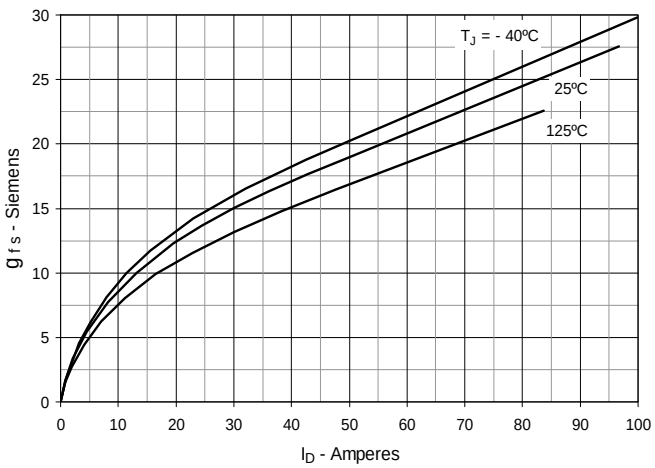


Fig. 9. Forward Voltage Drop of Intrinsic Diode

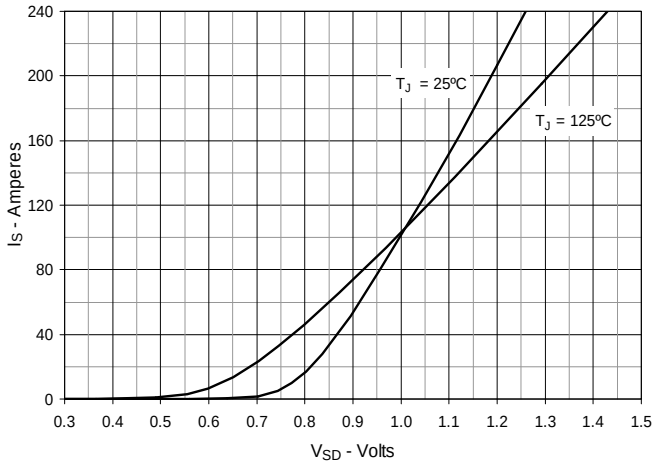


Fig. 10. Gate Charge

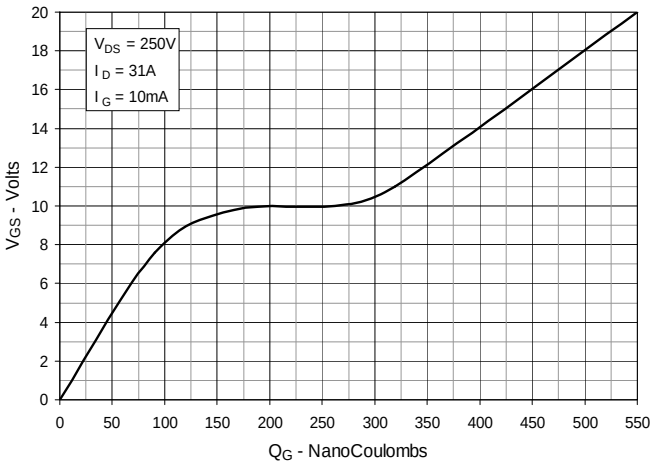


Fig. 11. Capacitance

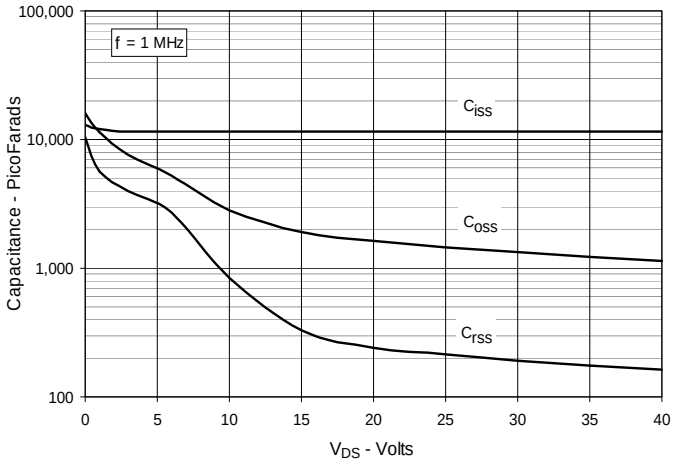


Fig. 12. Maximum Transient Thermal Impedance

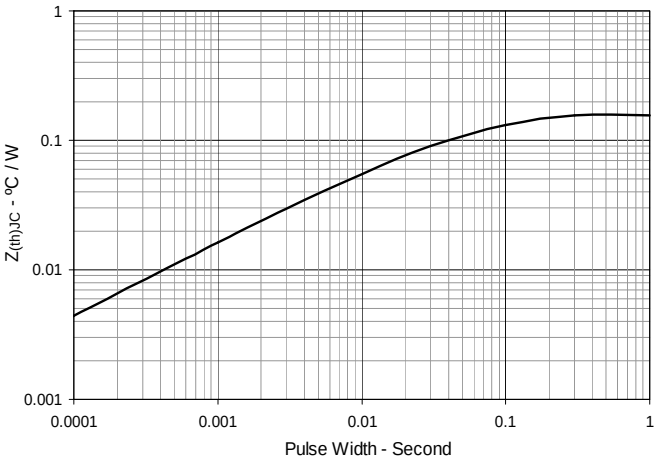


Fig. 13. Forward-Bias Safe Operating Area @ T_C = 25ºC

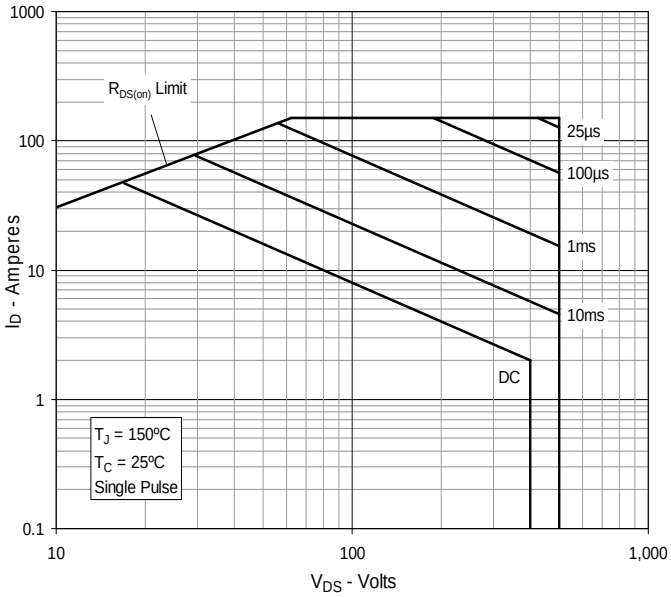


Fig. 14. Forward-Bias Safe Operating Area @ T_C = 90ºC