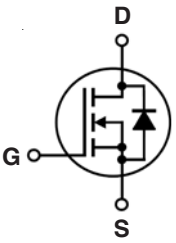
IXYS

Linear™ Power MOSFET w/ Extended FBSOA

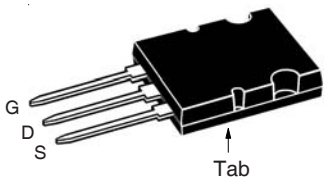
IXTB30N100L

V_{DSS} = 1000V
I_{D25} = 30A
$R_{DS(on)}$ ≤ 450mΩ

N-Channel Enhancement Mode
Avalanche Rated



PLUS264™



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

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	1000	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	1000	V
V_{GSS}	Continuous	±30	V
V_{GSM}	Transient	±40	V
I_{D25}	T_C = 25°C	30	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	70	A
I_A	T_C = 25°C	30	A
E_{AS}	T_C = 25°C	2	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

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 1mA	1000			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, $I_D = 0.5 \bullet I_{DSS}$, Note 1			450	mΩ

Features

- Designed for Linear Operation
- 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

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Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 20V, I_D = 0.5 • I_{DSS}, Note 1	6	10	15	S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		13.7		nF
C_{oss}			980		pF
C_{rss}			115		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_{DSS}		70		ns
$t_{d(off)}$	R_G = 2Ω (External)		100		ns
t_f			78		ns
$Q_{g(on)}$	V_{GS} = 20V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{DSS}		545		nC
Q_{gs}			86		nC
Q_{gd}			165		nC
R_{thJC}				0.156	°C/W
R_{thCS}			0.13		°C/W

Safe-Operating-Area Specification

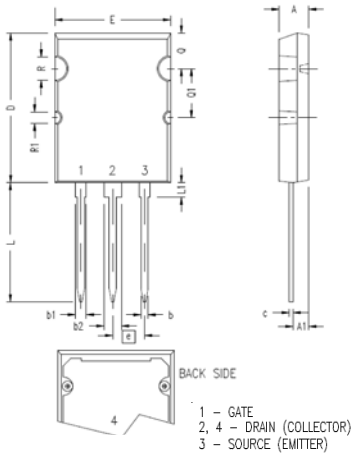
Symbol	Test Conditions	Characteristic Values Min.	Typ.	Max.	
SOA	V_{DS} = 600V, I_D = 0.5A, T_C = 90°C	300			W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0V			30	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			120	A
V_{SD}	I_F = I_S, V_{GS} = 0V, Note 1			1.5	V
t_{rr}	I_F = I_S, -di/dt = 100A/μs V_R = 100V, V_{GS} = 0V		1000		ns

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

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

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 4,860,072 4,881,106 4,931,844 5,017,508 5,034,796 5,049,961 5,063,307 5,187,117 5,237,481 5,381,025 5,486,715 6,162,665 6,259,123 B1 6,306,728 B1 6,404,065 B1 6,534,343 6,583,505 6,683,344 6,710,405 B2 6,710,463 6,727,585 6,759,692 6,771,478 B2 7,005,734 B2 7,063,975 B2 7,071,537 7,157,338B2

Fig. 1. Output Characteristics @ T_J = 25ºC

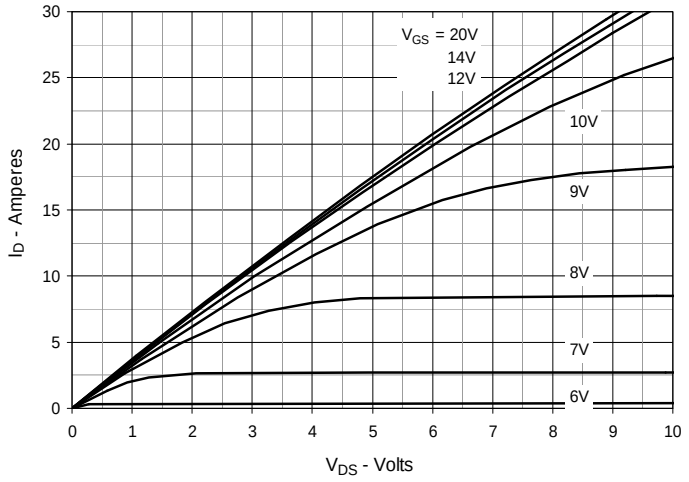


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

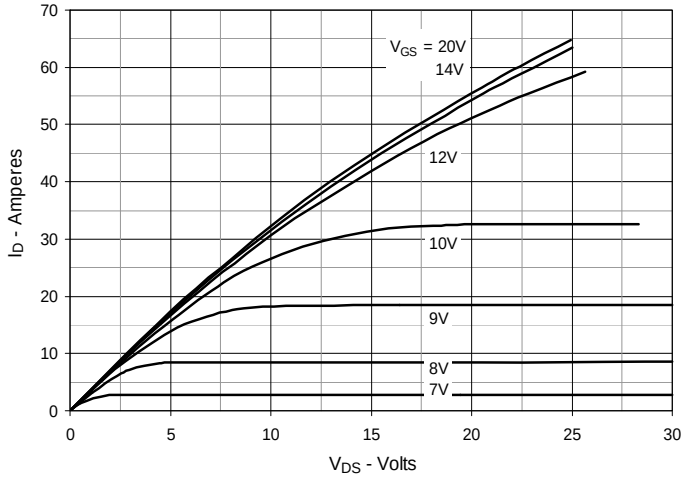


Fig. 3. Output Characteristics @ T_J = 125ºC

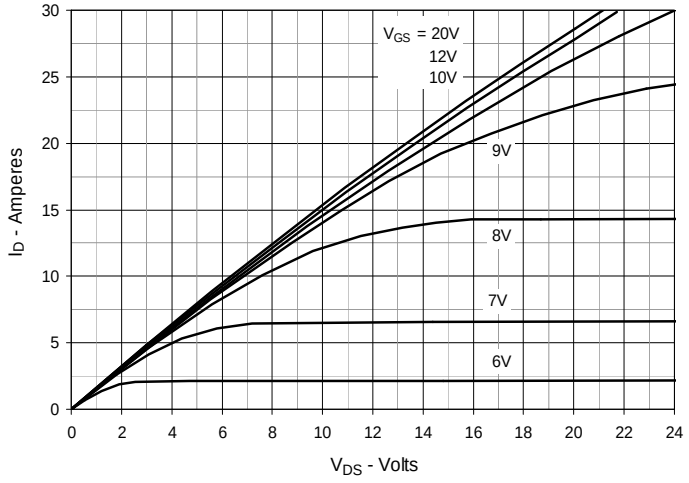


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 15A Value vs. Junction Temperature

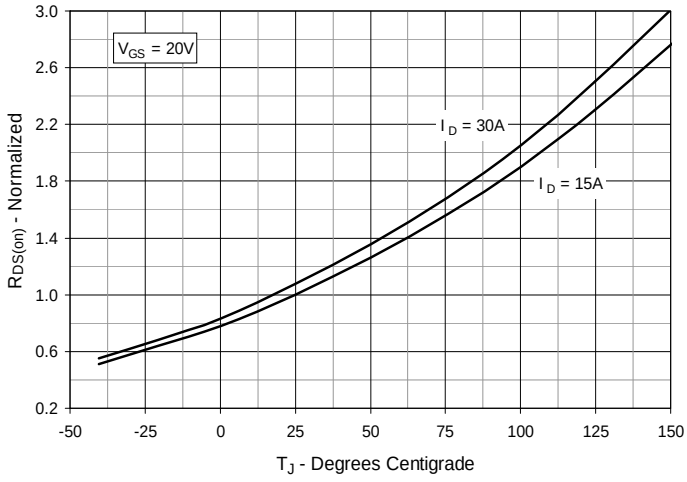


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 15A Value vs. Drain Current

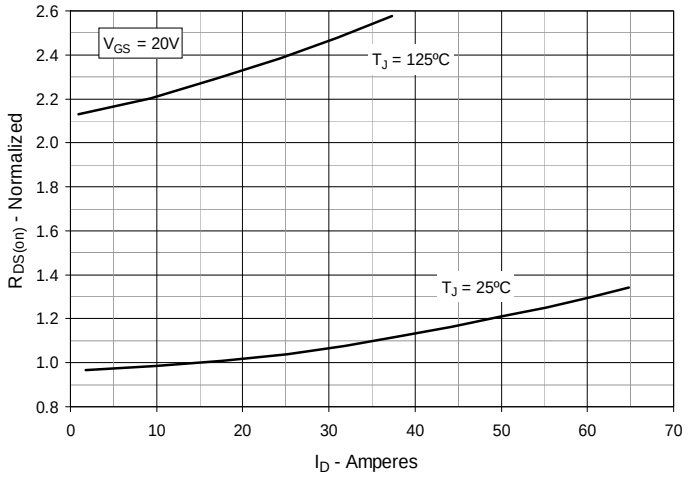
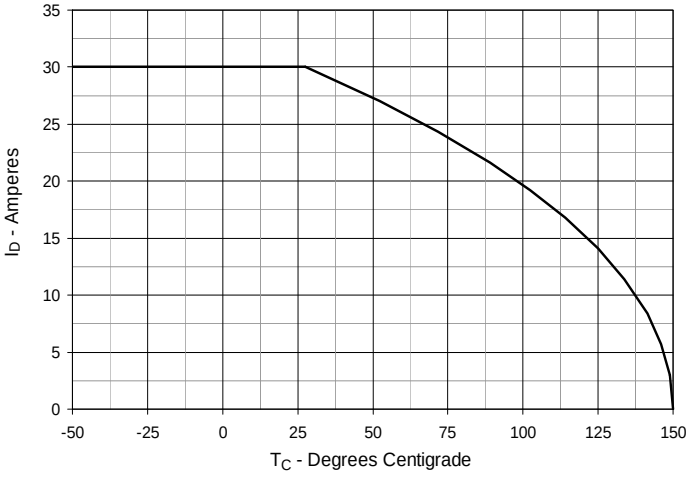


Fig. 6. Maximum Drain Current vs. Case Temperature



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Fig. 7. Input Admittance

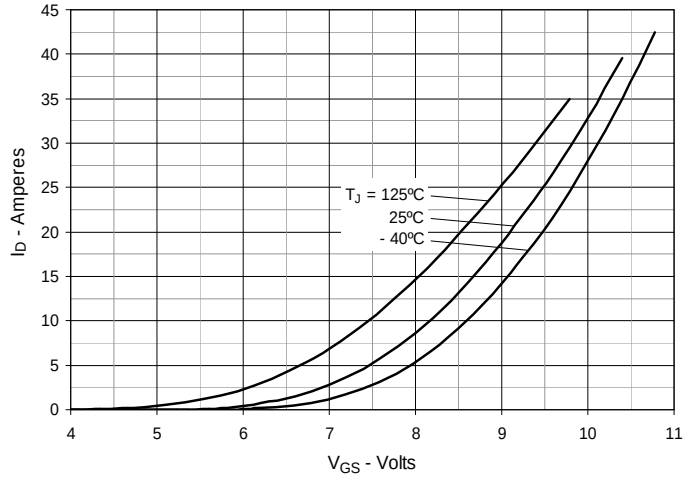


Fig. 8. Transconductance

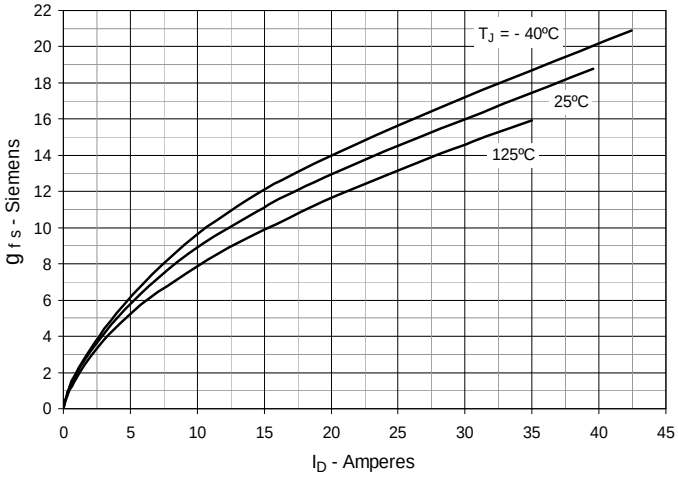


Fig. 9. Forward Voltage Drop of Intrinsic Diode

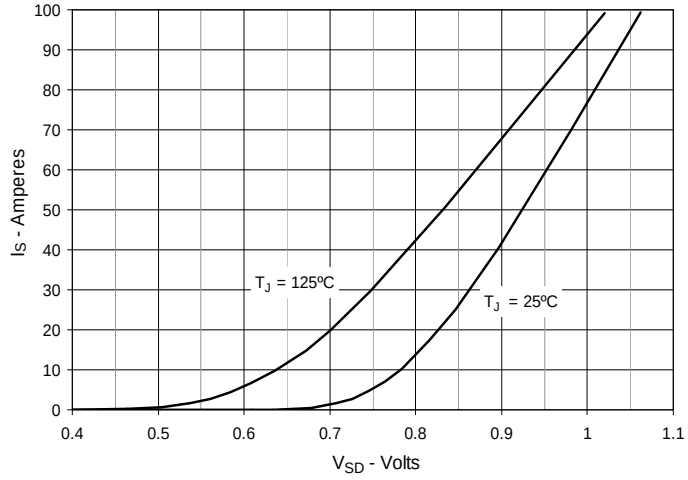


Fig. 10. Gate Charge

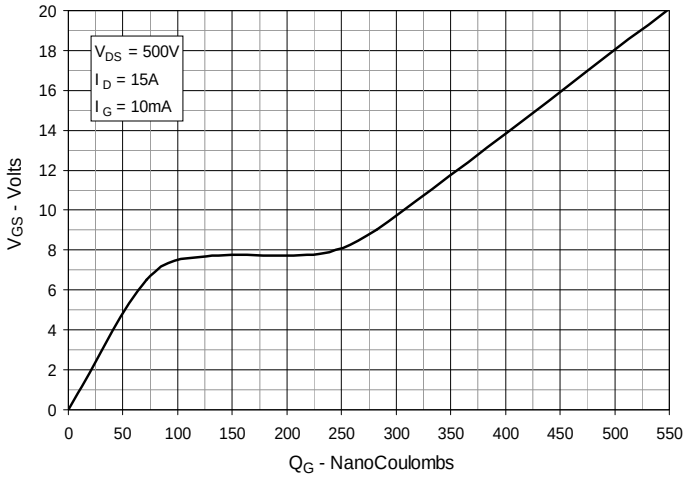


Fig. 11. Capacitance

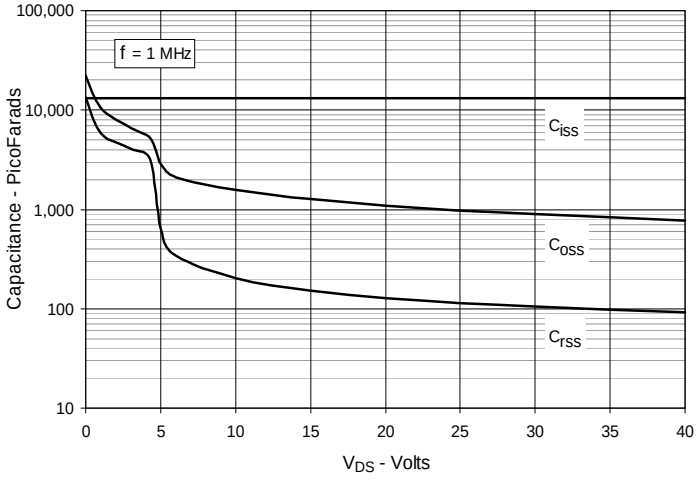
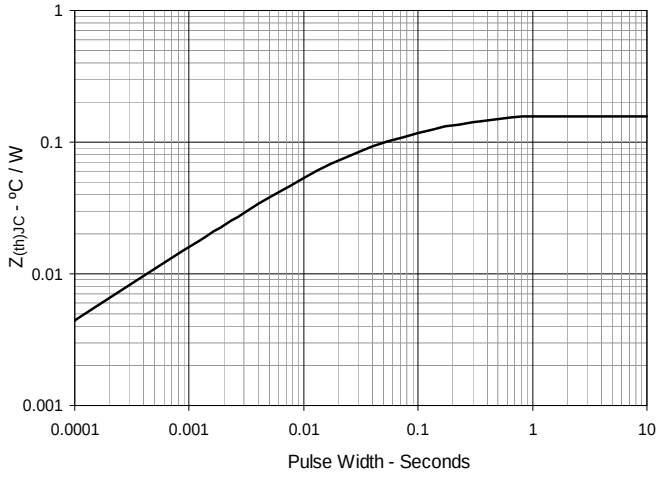


Fig. 12. Maximum Transient Thermal Impedance



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

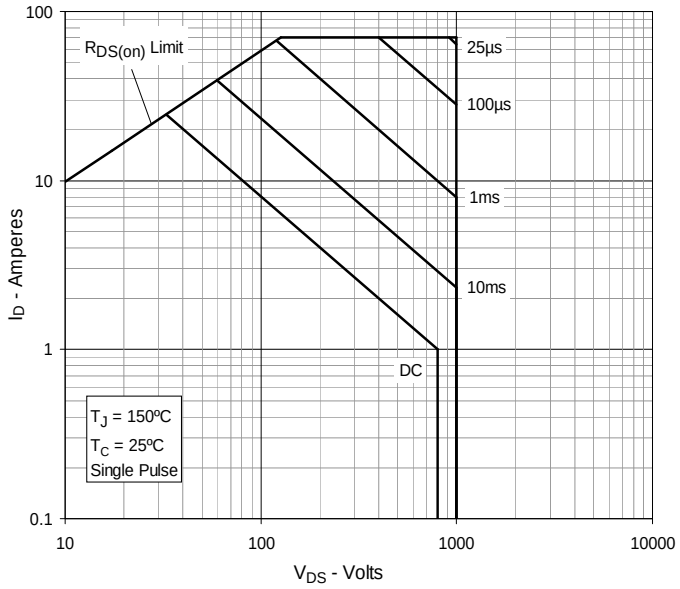
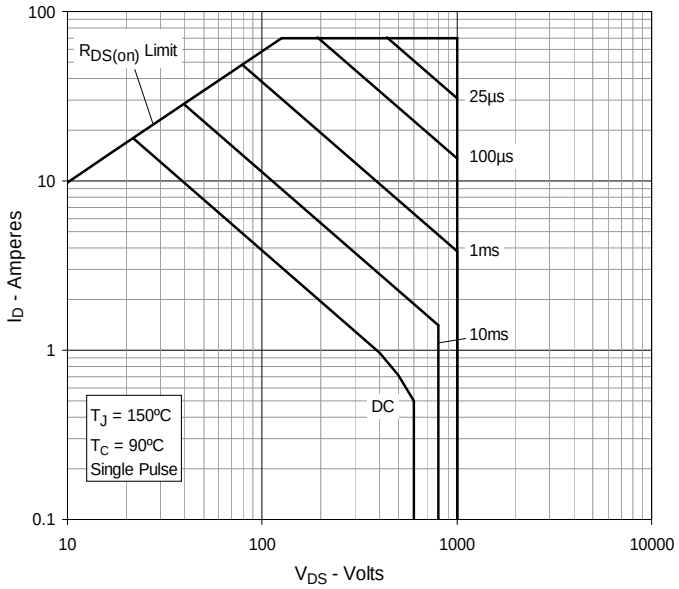


Fig. 14. Forward-Bias Safe Operating Area @ T_C = 90ºC



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