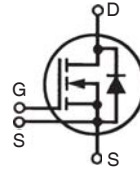


Linear Power MOSFET w/Extended FBSOA

IXTN8N150L

N-Channel Enhancement Mode
Guaranteed FBSOA

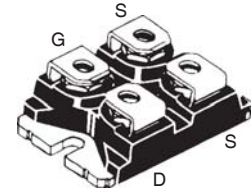


$$V_{DSS} = 1500V$$

$$I_{D25} = 7.5A$$

$$R_{DS(on)} \leq 3.6\Omega$$

miniBLOC, SOT-227 B
E153432



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

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ C$ to $150^\circ C$	1500	V
V_{DGR}	$T_J = 25^\circ C$ to $150^\circ C$, $R_{GS} = 1M\Omega$	1500	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	$T_C = 25^\circ C$	7.5	A
I_{DM}	$T_C = 25^\circ C$, Pulse Width Limited by T_{JM}	20	A
P_D	$T_C = 25^\circ C$	545	W
T_J		-55 to +150	$^\circ C$
T_{JM}		150	$^\circ C$
T_{stg}		-55 to +150	$^\circ C$
V_{ISOL}	50/60 Hz, RMS, t = 1 minute $I_{ISOL} \leq 1mA$, t = 1s	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

- Designed for Linear Operations
- International Standard Package
- Molding Epoxies Meet UL94 V-0 Flammability Classification
- Guaranteed FBSOA at $60^\circ C$
- miniBLOC with Aluminum Nitride Isolation
- Low $R_{DS(on)}$ HDMOS™ Process
- Rugged Polysilicon Gate Cell Structure
- Low Package Inductance

Applications

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

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Symbol	Test Conditions ($T_J = 25^\circ C$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0V$, $I_D = 1mA$	1500		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	5.0		V
I_{GSS}	$V_{GS} = \pm 30V$, $V_{DS} = 0V$			± 200 nA
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0V$ $T_J = 125^\circ C$			25 μA
				500 μA
$R_{DS(on)}$	$V_{GS} = 20V$, $I_D = 4A$, Note 1			3.6 Ω

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values			
		Min.	Typ.	Max.	
g_{fs}	$V_{DS} = 50\text{V}$, $I_D = 4\text{A}$, Note 1	1.4	2.3	3.2	S
C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = 25\text{V}$, $f = 1\text{MHz}$		8000		pF
C_{oss}			405		pF
C_{rss}			70		pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = 15\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 4\text{A}$ $R_G = 2\Omega$ (External)		36		ns
t_r			18		ns
$t_{d(off)}$			90		ns
t_f			95		ns
$Q_{g(on)}$		$V_{GS} = 15\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 4\text{A}$		250	
Q_{gs}			80		nC
Q_{gd}			116		nC
R_{thJC}				0.23	$^\circ\text{C/W}$
R_{thCS}		0.05			$^\circ\text{C/W}$

Safe Operating Area Specification

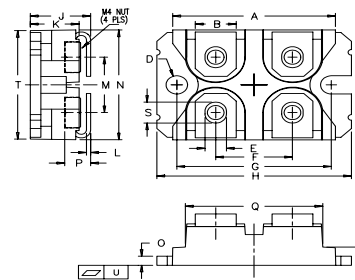
Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
SOA	$V_{DS} = 1500\text{V}$, $I_D = 0.17\text{A}$, $T_C = 60^\circ\text{C}$, $T_P = 3\text{s}$	255		W

Source-Drain Diode

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values			
		Min.	Typ.	Max.	
I_S	$V_{GS} = 0\text{V}$			8	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			32	A
V_{SD}	$I_F = 8\text{A}$, $V_{GS} = 0\text{V}$, Note 1			1.2	V
t_{rr}	$I_F = I_S$, $-di/dt = 100\text{A}/\mu\text{s}$, $V_R = 100\text{V}$		1700		ns

Notes: 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
	4,860,072	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. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

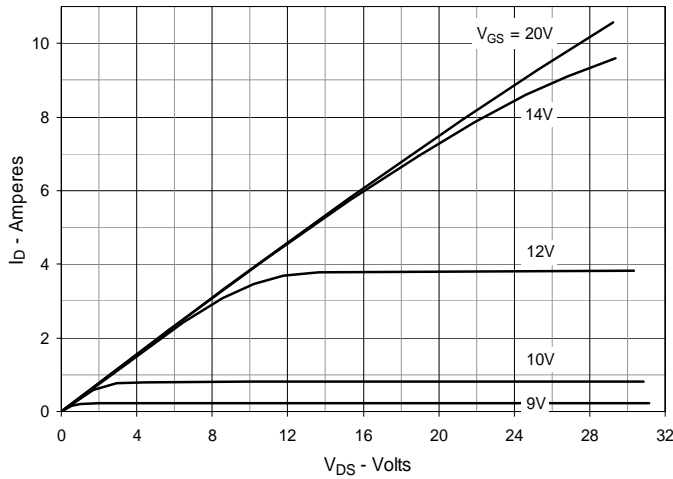


Fig. 2. Output Characteristics @ $T_J = 125^\circ\text{C}$

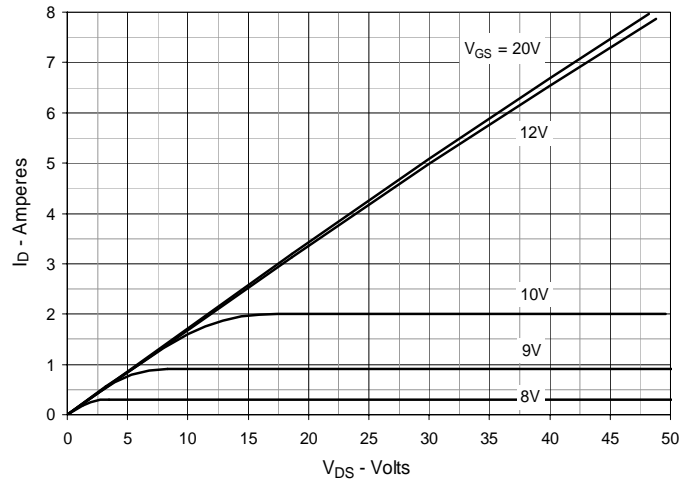


Fig. 3. $R_{DS(on)}$ Normalized to $I_D = 4A$ Value vs. Junction Temperature

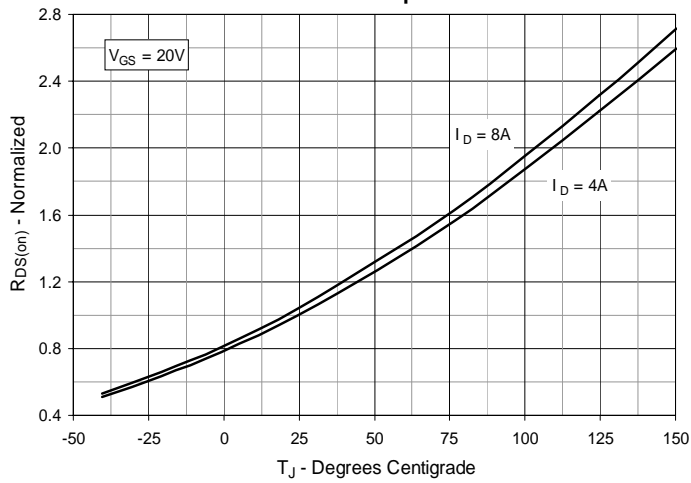


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 4A$ Value vs. Drain Current

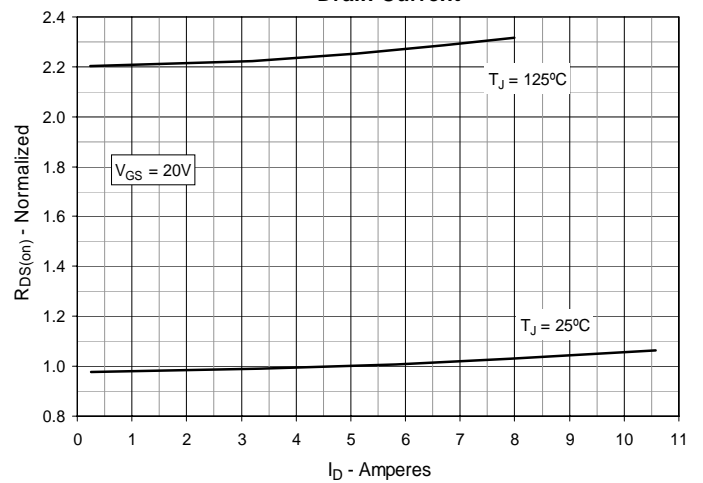


Fig. 5. Maximum Drain Current vs. Case Temperature

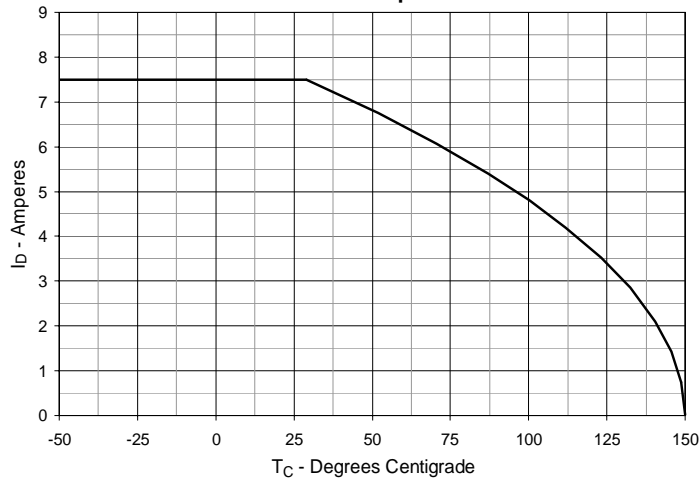


Fig. 6. Input Admittance

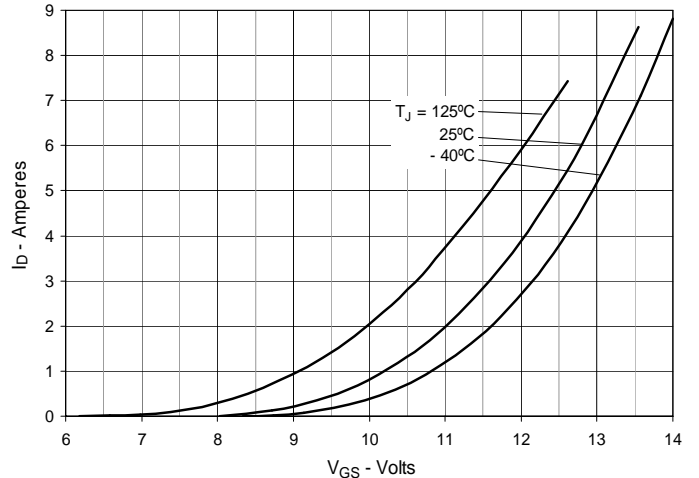
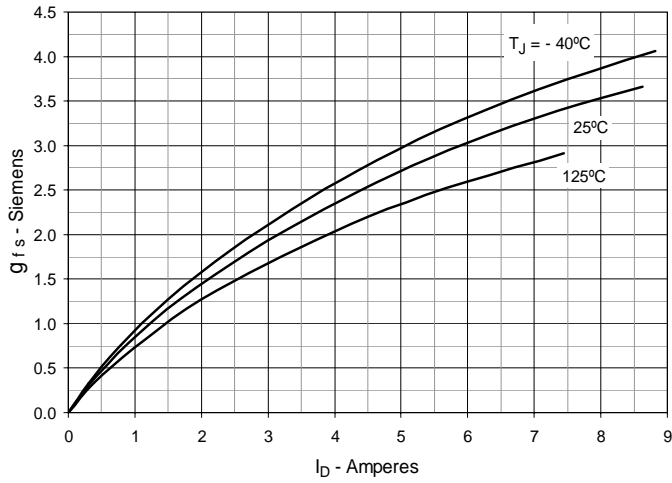
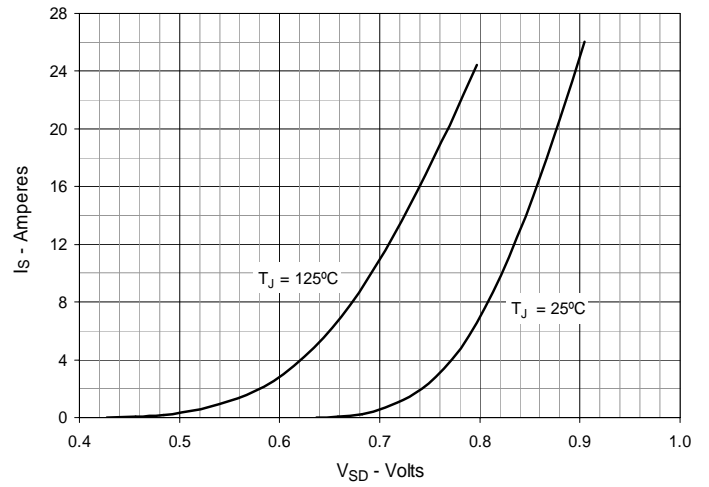
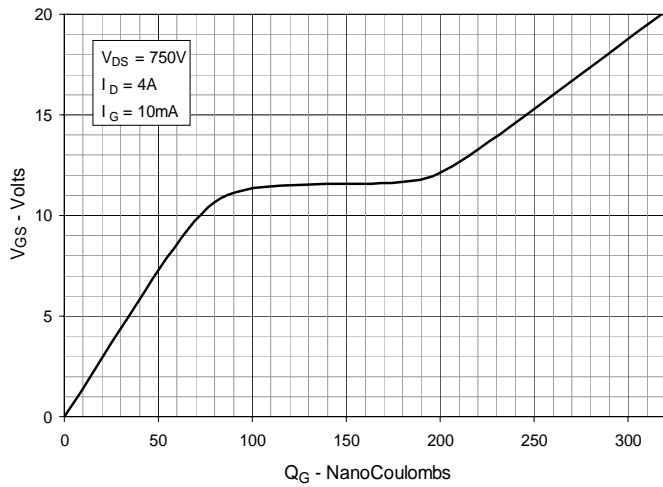
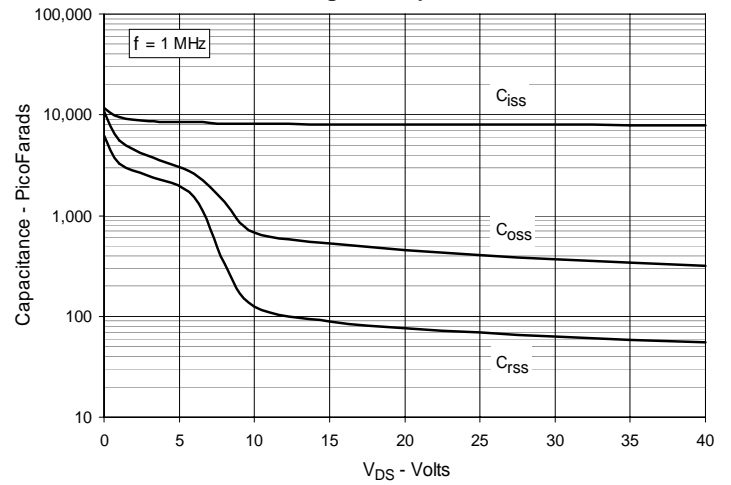
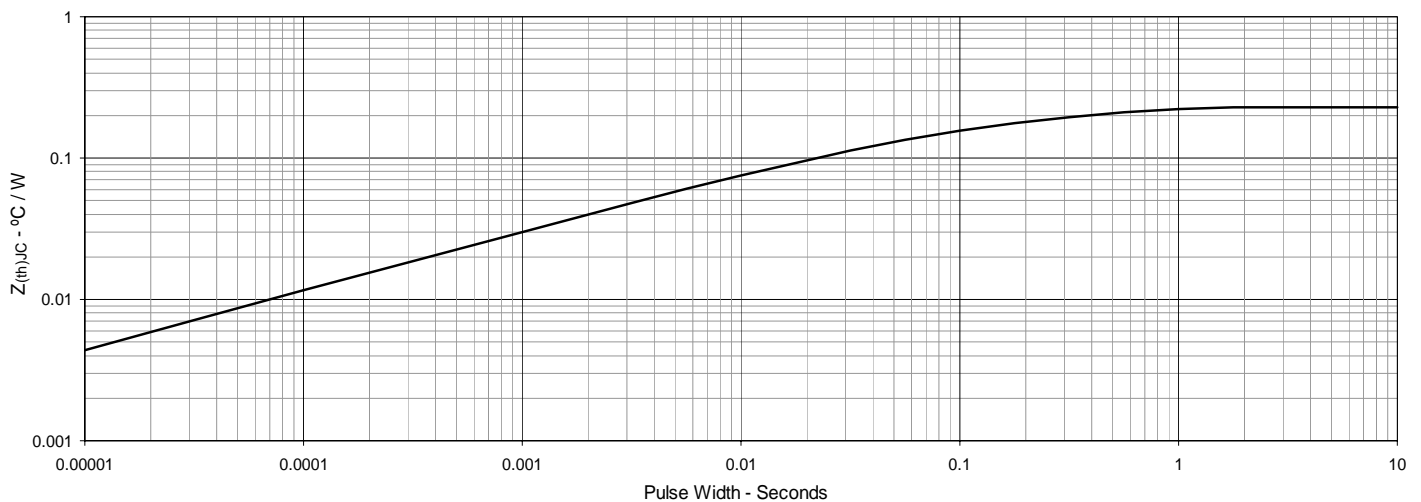


Fig. 7. Transconductance

Fig. 8. Forward Voltage Drop of Intrinsic Diode

Fig. 9. Gate Charge

Fig. 10. Capacitance

Fig. 11. Maximum Transient Thermal Impedance


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Fig. 12. Forward-Bias Safe Operating Area
@ $T_C = 25^\circ\text{C}$

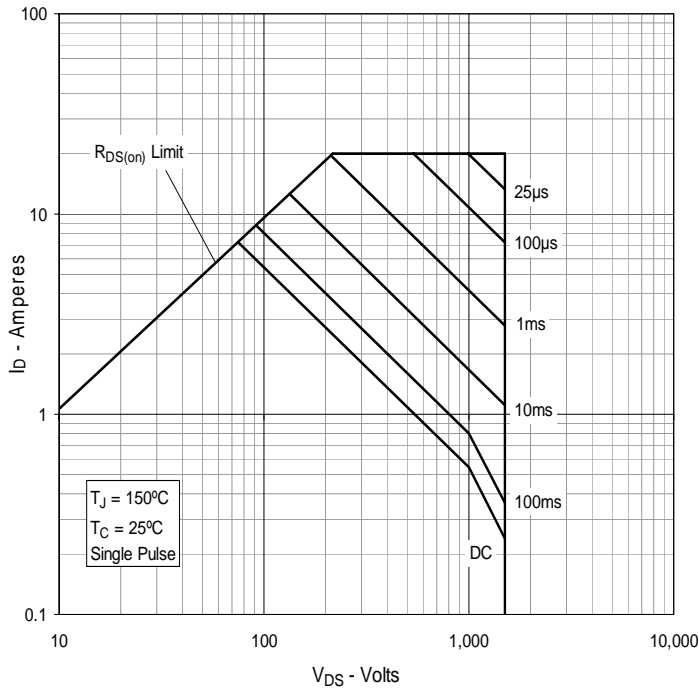
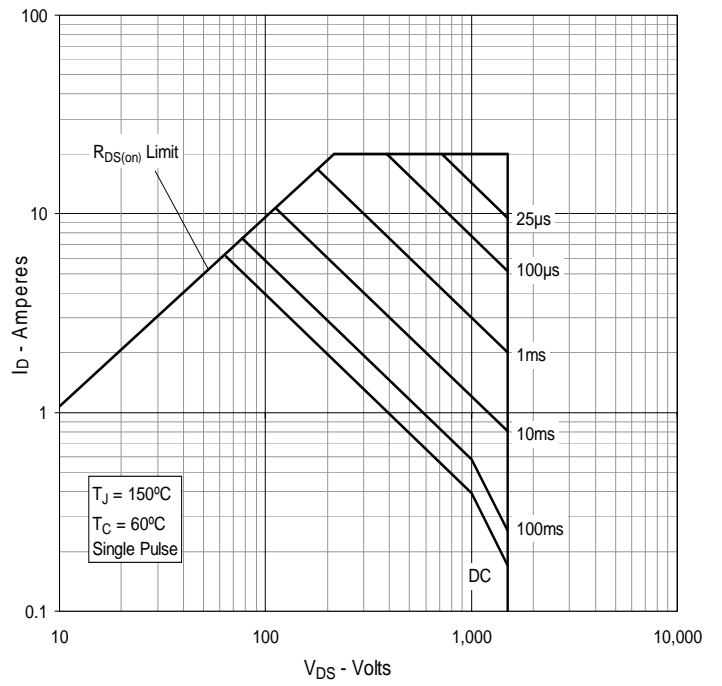


Fig. 13. Forward-Bias Safe Operating Area
@ $T_C = 60^\circ\text{C}$





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