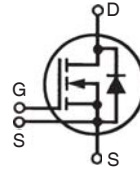


**Linear Power MOSFET  
w/Extended FBSOA**
**IXTN8N150L**

$$V_{DSS} = 1500V$$

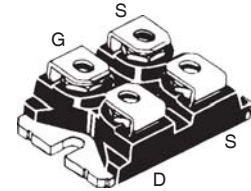
$$I_{D25} = 7.5A$$

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

 N-Channel Enhancement Mode  
Guaranteed FBSOA


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	$\pm 30$	V
$V_{GSM}$	Transient	$\pm 40$	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.
<b>Weight</b>		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
$I_{GSS}$	$V_{GS} = \pm 30V$ , $V_{DS} = 0V$			$\pm 200$ nA
$I_{DSS}$	$V_{DS} = V_{DSS}$ $V_{GS} = 0V$ $T_J = 125^\circ C$			50 $\mu A$
				3 mA
$R_{DS(on)}$	$V_{GS} = 20V$ , $I_D = 4A$ , Note 1			3.6 $\Omega$

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
$t_{d(on)}$	<b>Resistive Switching Times</b> $V_{GS} = 15\text{V}$ , $V_{DS} = 0.5 \cdot V_{DSS}$ , $I_D = 4\text{A}$ $R_G = 2\Omega$ (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	$V_{DS} = 1000\text{V}$ , $I_D = 0.40\text{A}$ , $T_C = 60^\circ\text{C}$ , $T_P = 3\text{s}$	400		W

### Source-Drain Diode

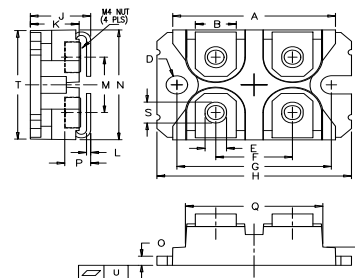
Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , Unless Otherwise Specified)	Characteristic Values			
		Min.	Typ.	Max.	
$I_S$	$V_{GS} = 0\text{V}$			8	A
$I_{SM}$	Repetitive, Pulse Width Limited by $T_{JM}$			32	A
$V_{SD}$	$I_F = 8\text{A}$ , $V_{GS} = 0\text{V}$ , Note 1			1.2	V
$t_{rr}$	$I_F = I_S$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

Notes: 1. Pulse Test,  $t \leq 300\mu\text{s}$ ; Duty Cycle,  $d \leq 2\%$ .

### 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.

### SOT-227B (IXTN) Outline



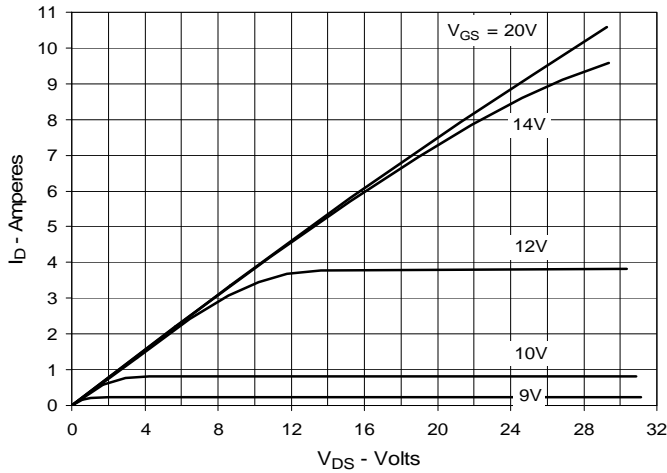
(M4 screws (4x) supplied)

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

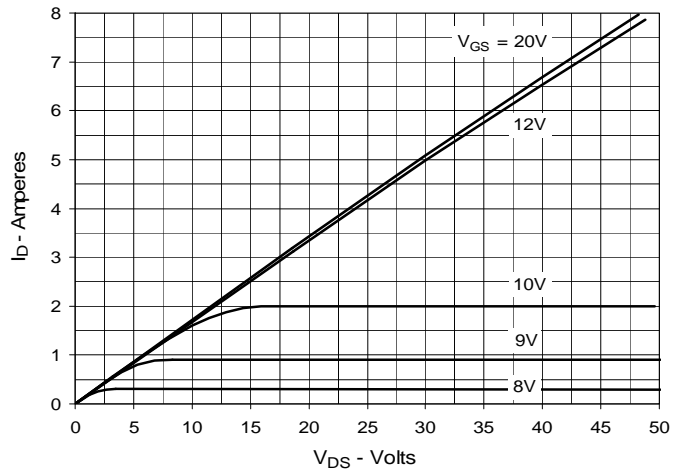
IXYS reserves the right to change limits, test conditions, and dimensions.

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	

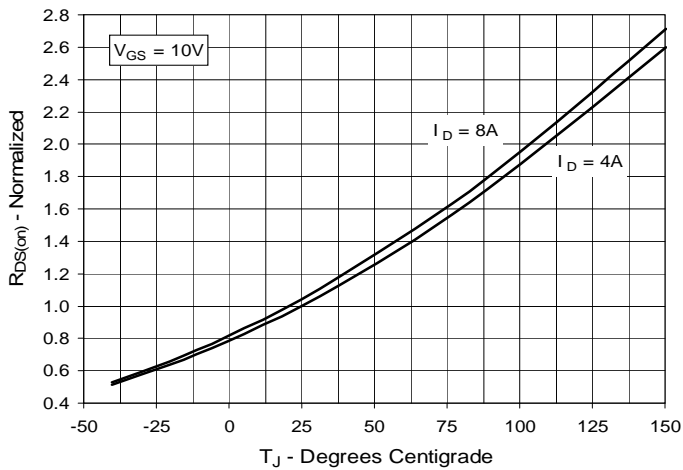
**Fig. 1. Extended Output Characteristics @ 25°C**



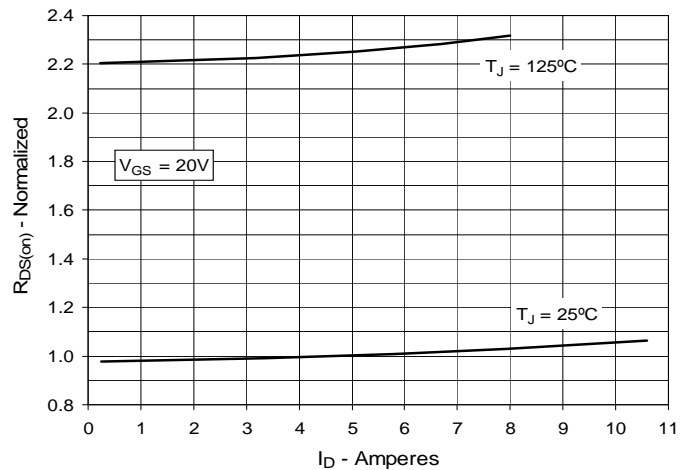
**Fig. 2. Output Characteristics @ 125°C**



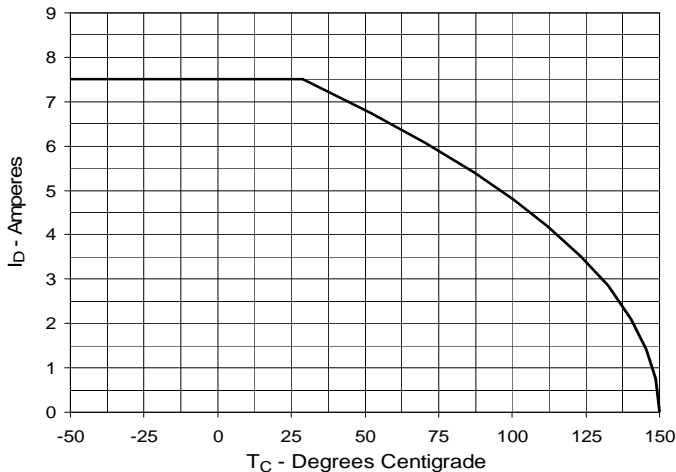
**Fig. 3.  $R_{DS(on)}$  Normalized to  $I_D = 4A$  Value vs. Junction Temperature**



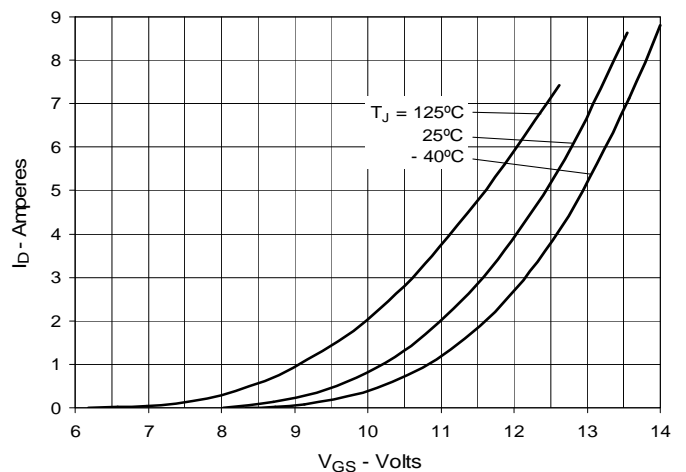
**Fig. 4.  $R_{DS(on)}$  Normalized to  $I_D = 4A$  Value vs. Drain Current**



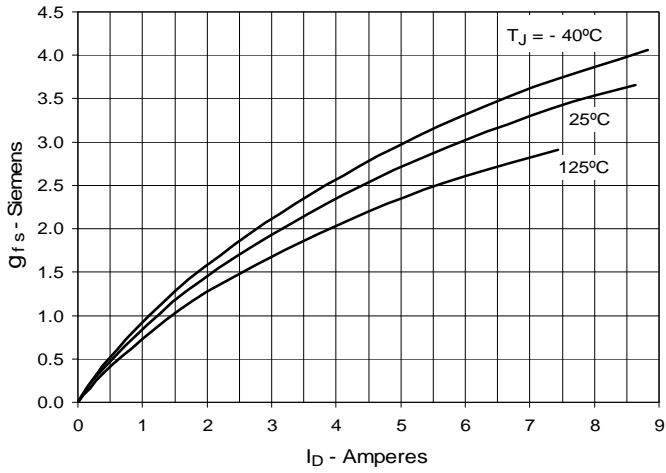
**Fig. 5. Maximum Drain Current vs. Case Temperature**



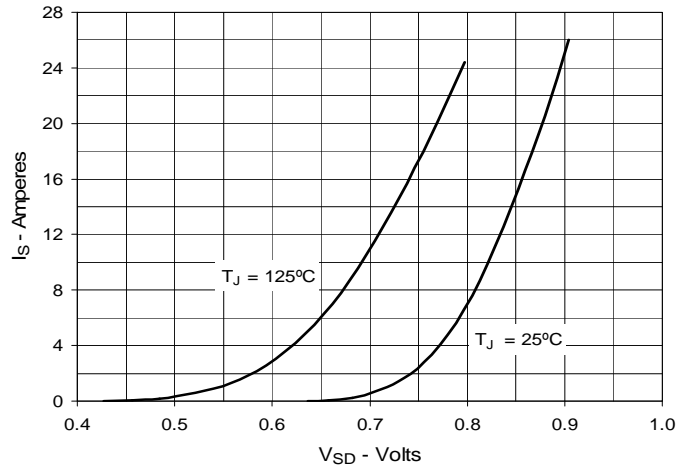
**Fig. 6. Input Admittance**



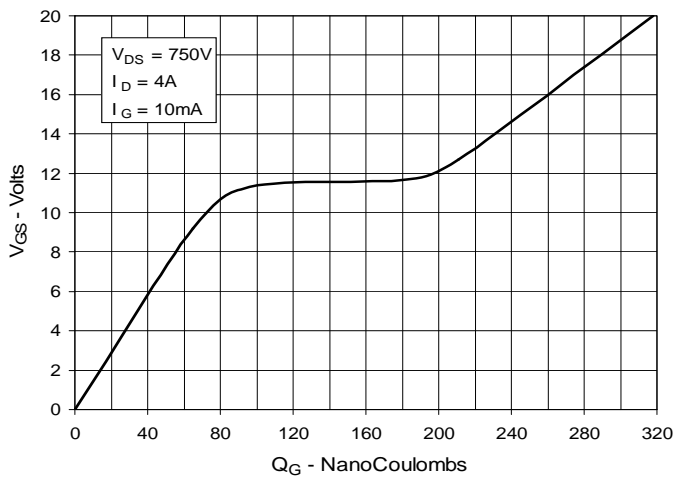
**Fig. 7. Transconductance**



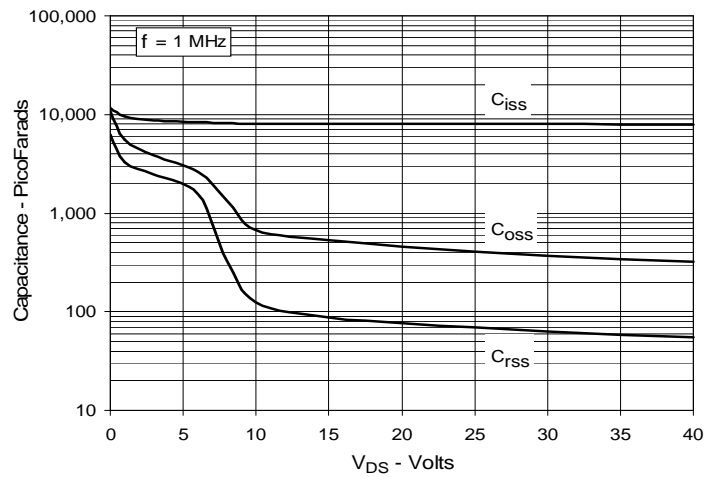
**Fig. 8. Forward Voltage Drop of Intrinsic Diode**



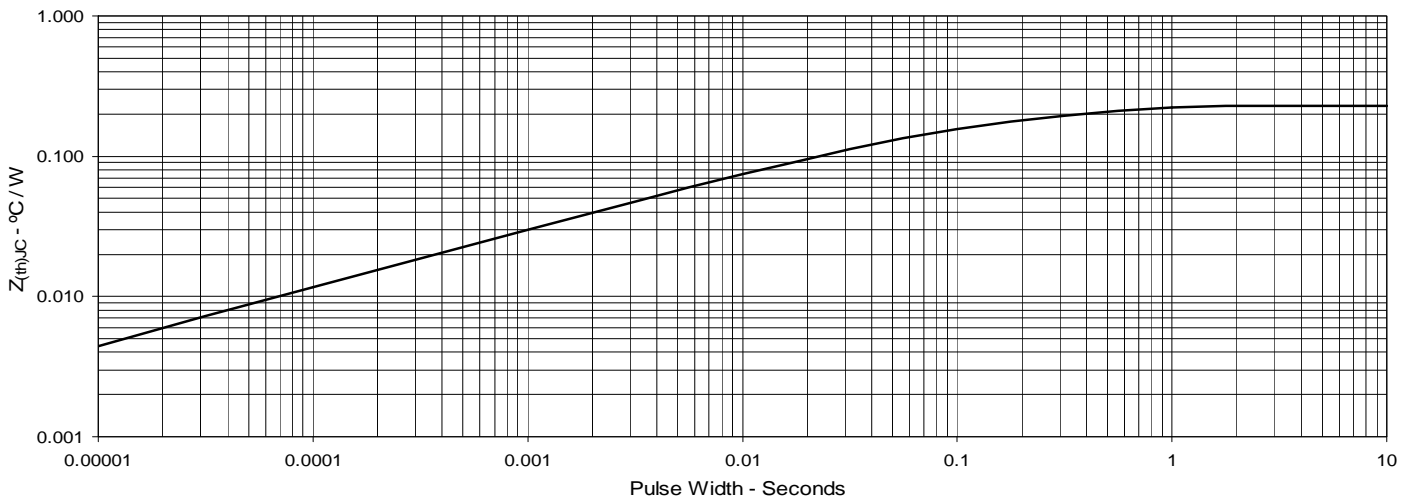
**Fig. 9. Gate Charge**



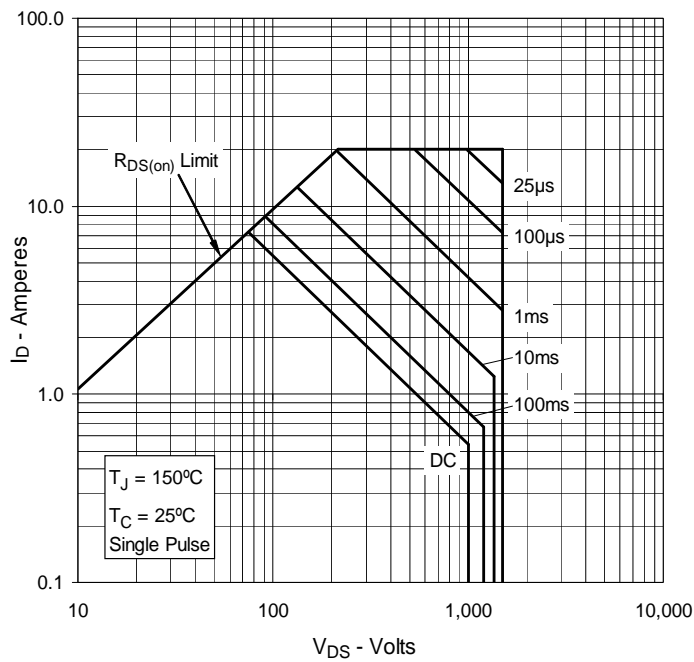
**Fig. 10. Capacitance**



**Fig. 11. Maximum Transient Thermal Impedance**



**Fig. 12. Forward-Bias Safe Operating Area @  
T<sub>C</sub> = 25°C**



**Fig. 13. Forward-Bias Safe Operating Area  
@ T<sub>C</sub> = 60°C**

