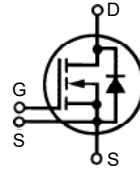


**Linear™  
Power MOSFET  
w/Extended FBSOA**

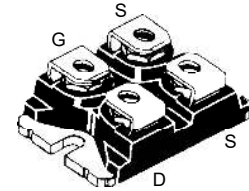
**IXTN8N150L**

**V<sub>DSS</sub> = 1500V**  
**I<sub>D25</sub> = 7.5A**  
**R<sub>DS(on)</sub> ≤ 3.6Ω**



N-Channel Enhancement Mode  
Guaranteed FBSOA

miniBLOC, SOT-227 B



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

Symbol	Test Conditions	Maximum Ratings	
V <sub>DSS</sub>	T <sub>J</sub> = 25°C to 150°C	1500	V
V <sub>DGR</sub>	T <sub>J</sub> = 25°C to 150°C, R <sub>GS</sub> = 1MΩ	1500	V
V <sub>GSS</sub>	Continuous	±30	V
V <sub>GSM</sub>	Transient	±40	V
I <sub>D25</sub>	T <sub>C</sub> = 25°C	7.5	A
I <sub>DM</sub>	T <sub>C</sub> = 25°C, Pulse Width Limited by T <sub>JM</sub>	20	A
P <sub>D</sub>	T <sub>C</sub> = 25°C	545	W
T <sub>J</sub>		-55 to +150	°C
T <sub>JM</sub>		150	°C
T <sub>stg</sub>		-55 to +150	°C
V <sub>ISOL</sub>	50/60 Hz, RMS, t = 1minute	2500	V~
	I <sub>ISOL</sub> ≤ 1mA, t = 1s	3000	V~
M <sub>d</sub>	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°C
- miniBLOC with Aluminum Nitride Isolation
- Low R<sub>DS(on)</sub> HDMOS™ Process
- Rugged Polysilicon Gate Cell Structure
- Low Package Inductance

**Advantages**

- Easy to Mount
- Space Savings
- High Power Density

**Applications**

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

Symbol	Test Conditions (T <sub>J</sub> = 25°C, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 1mA	1500		V
V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	5.0		V
I <sub>GSS</sub>	V <sub>GS</sub> = ±30V, V <sub>DS</sub> = 0V			±200 nA
I <sub>DSS</sub>	V <sub>DS</sub> = V <sub>DSS</sub> , V <sub>GS</sub> = 0V T <sub>J</sub> = 125°C			25 μA
				500 μA
R <sub>DS(on)</sub>	V <sub>GS</sub> = 20V, I <sub>D</sub> = 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
$t_{d(on)}$	<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	nC
$Q_{gs}$			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.
<b>SOA</b>	$V_{DS} = 1500\text{V}$ , $I_D = 0.17\text{A}$ , $T_C = 60^\circ\text{C}$ , $T_P = 3\text{s}$	255		W

### Source-Drain Diode

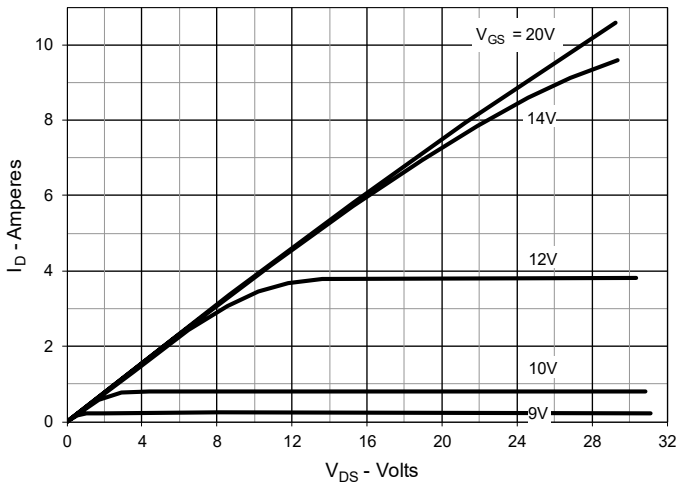
Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$I_S$	$V_{GS} = 0\text{V}$			8 A
$I_{SM}$	Repetitive, Pulse Width Limited by $T_{JM}$			32 A
$V_{SD}$	$I_F = 8\text{A}$ , $V_{GS} = 0\text{V}$ , Note 1			1.2 V
$t_{rr}$	$I_F = I_S$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

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

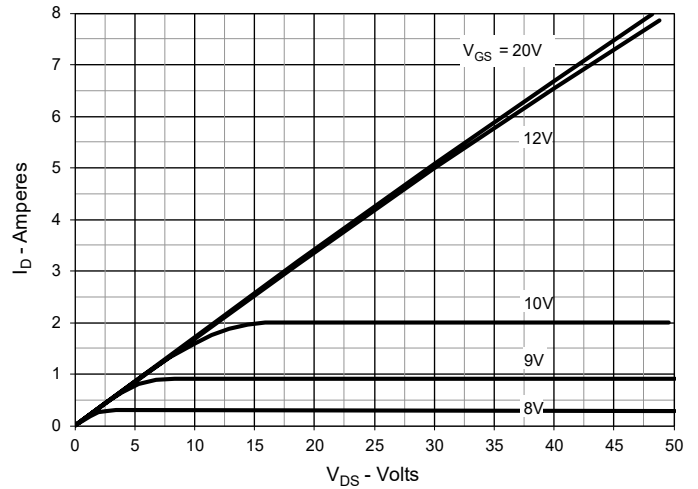
Littelfuse reserves the right to change limits, test conditions, and dimensions.

IXYS MOSFETs and IGBTs are covered	4,835,592	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065B1	6,683,344	6,727,585	7,005,734 B2	7,157,338B2
by one or more of the following U.S. patents:	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	

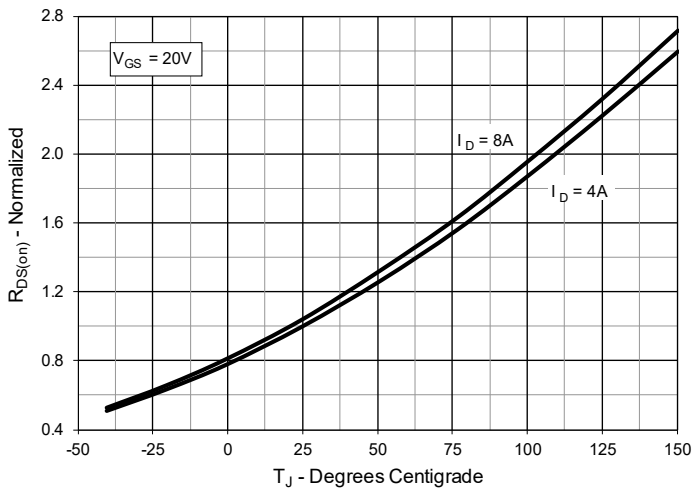
**Fig. 1. Extended Output Characteristics @  $T_J = 25^\circ\text{C}$**



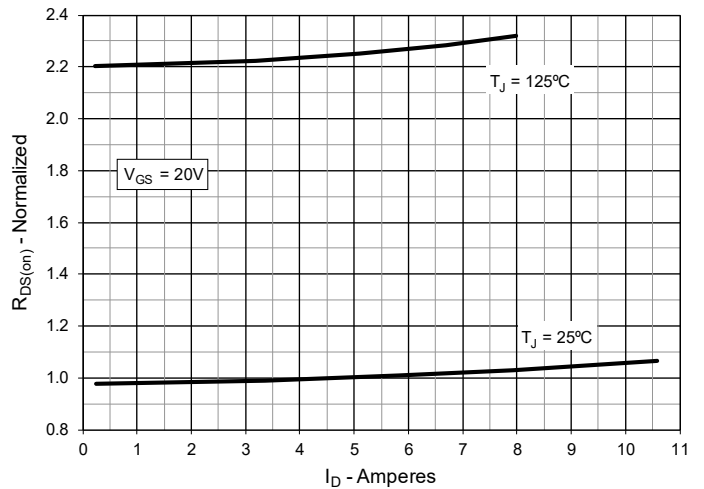
**Fig. 2. Output Characteristics @  $T_J = 125^\circ\text{C}$**



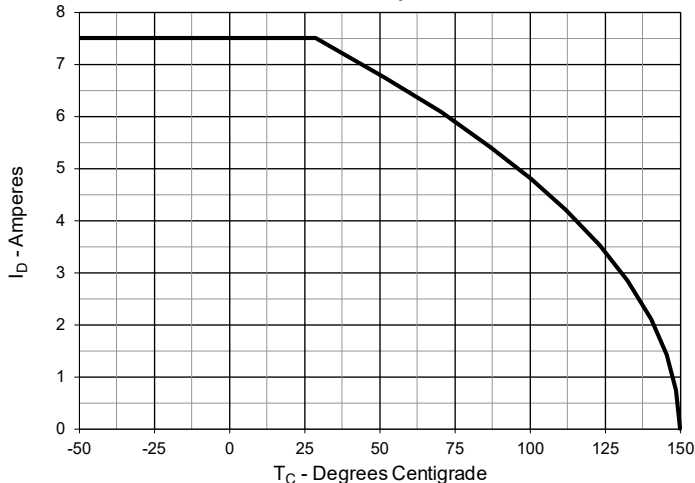
**Fig. 3.  $R_{DS(on)}$  Normalized to  $I_D = 4\text{A}$  Value vs. Junction Temperature**



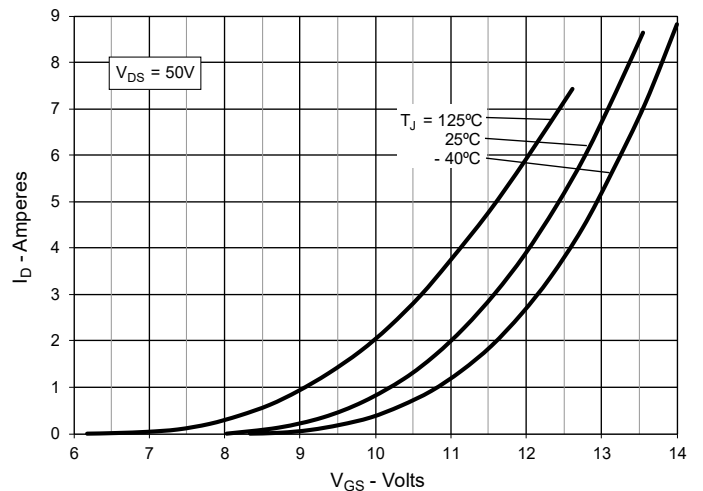
**Fig. 4.  $R_{DS(on)}$  Normalized to  $I_D = 4\text{A}$  Value vs. Drain Current**



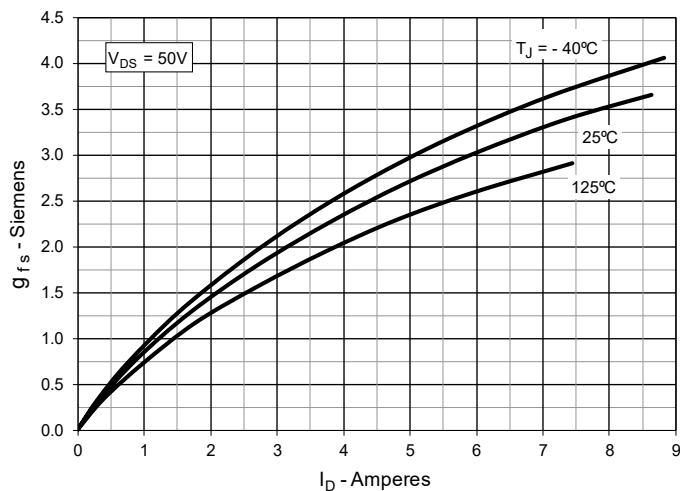
**Fig. 5. Maximum Drain Current vs. Case Temperature**



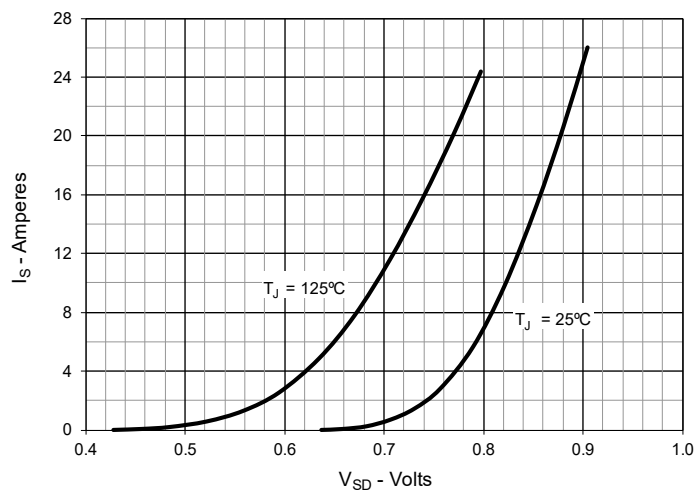
**Fig. 6. Input Admittance**



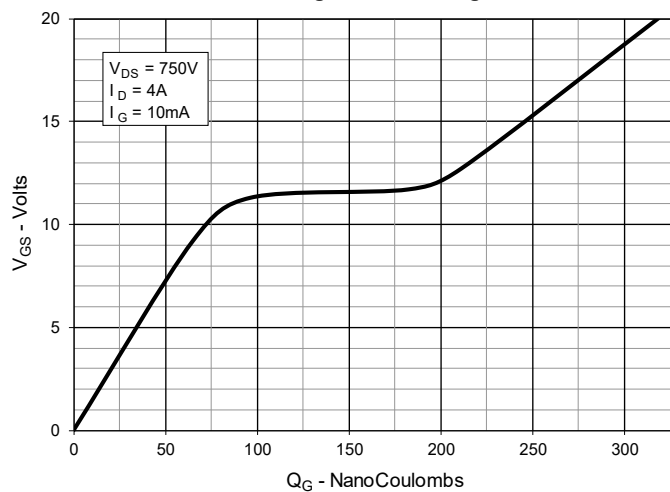
**Fig. 7. Transconductance**



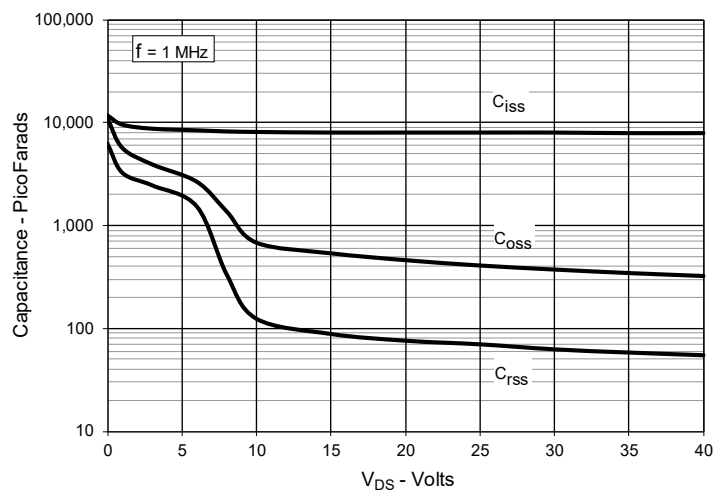
**Fig. 8. Forward Voltage Drop of Intrinsic Diode**



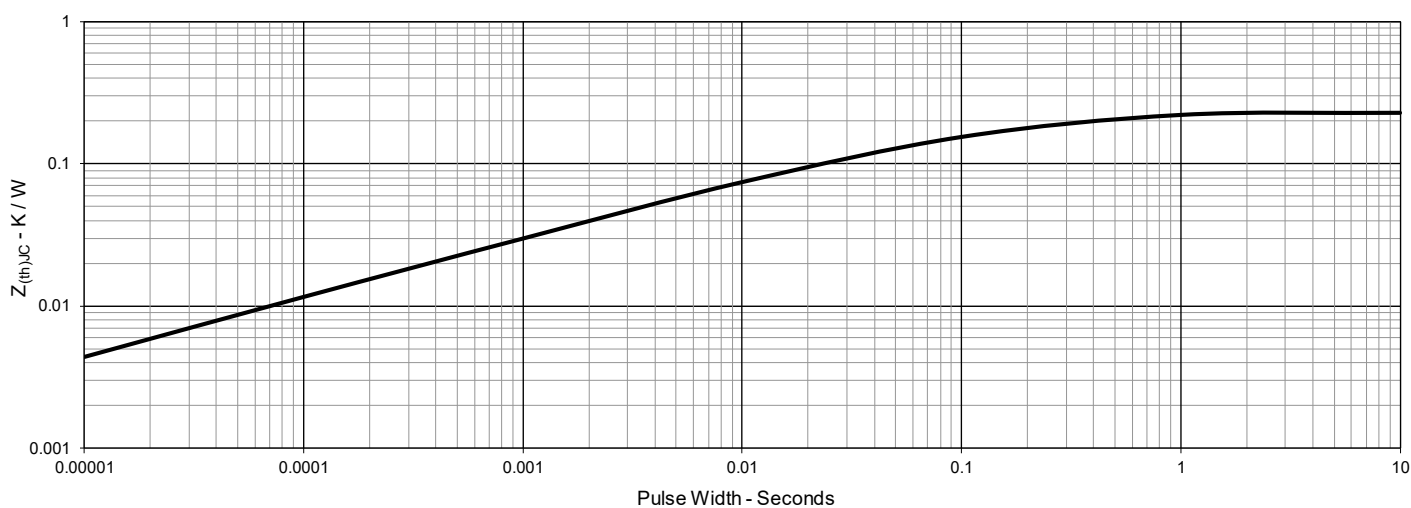
**Fig. 9. Gate Charge**



**Fig. 10. Capacitance**

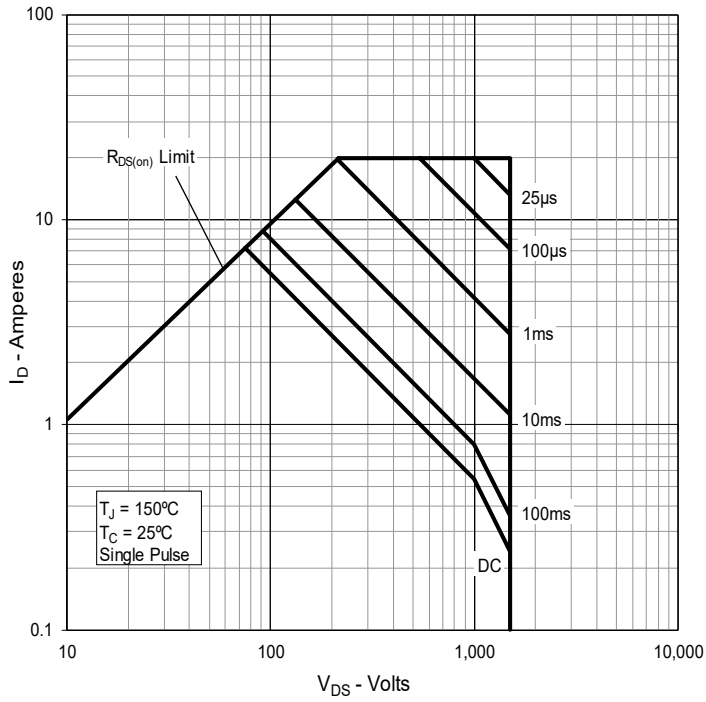


**Fig. 11. Maximum Transient Thermal Impedance**

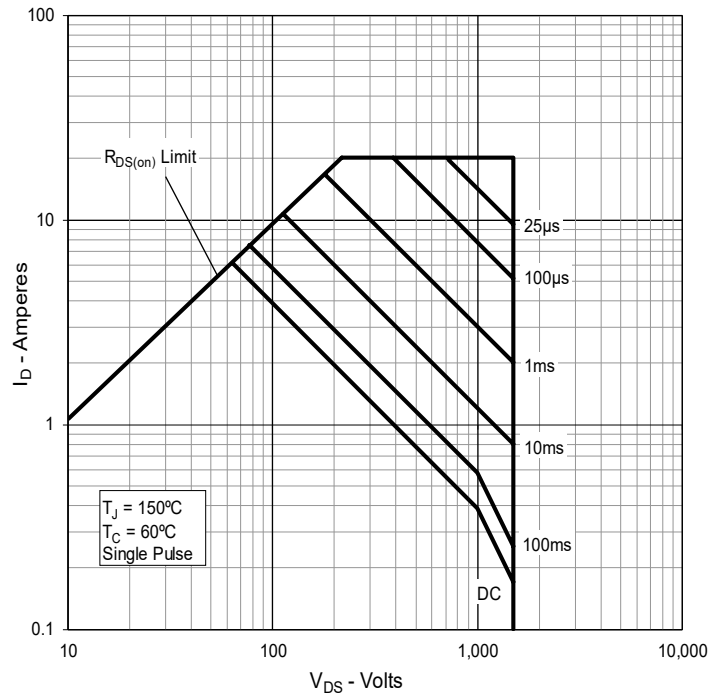


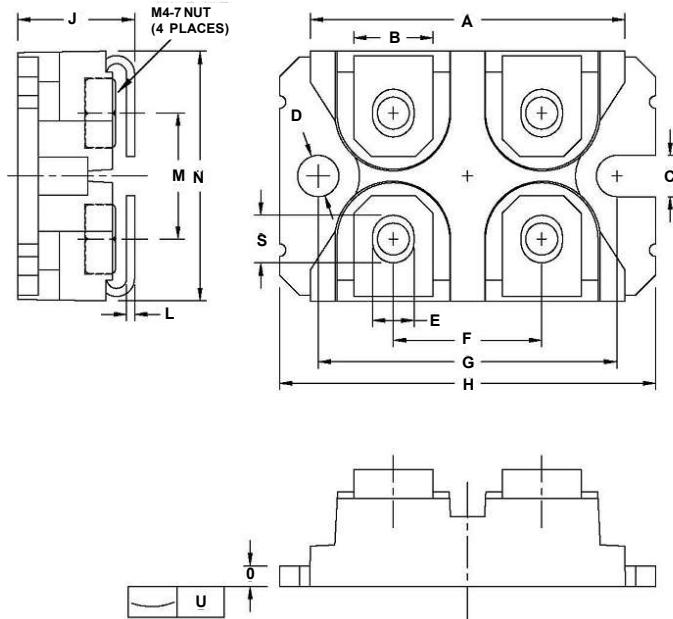
Littelfuse reserves the right to change limits, test conditions, and dimensions.

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



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



**SOT-227 Outline**


SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.224	1.260	31.10	32.00
B	.303	.327	7.70	8.30
C	.161	.173	4.10	4.40
D	.161	.173	4.10	4.40
E	.161	.173	4.10	4.40
F	.587	.598	14.90	15.20
G	1.181	1.201	30.00	30.50
H	1.488	1.508	37.80	38.30
J	.461	.484	11.70	12.30
L	.030	.033	0.75	0.85
M	.492	.512	12.50	13.00
N	.984	1.004	25.00	25.50
O	.075	.087	1.90	2.20
S	.181	.193	4.60	4.90
U	.000	.005	0.00	0.13

- NUT MATERIAL:  
 STANDARD - Low carbon steel with Ni plating.  
 OPTIONAL - Brass Nut is available.  
 PART NUMBER-BN
- ALL METAL SURFACE ARE PRE NI PLATED EXCEPT TRIM AREA.