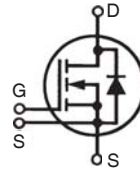


X-Class HiPerFET™ Power MOSFET

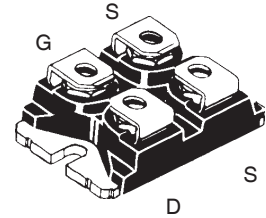
IXFN74N100X

N-Channel Enhancement Mode
Avalanche Rated



$$\begin{aligned} V_{DSS} &= 1000V \\ I_{D25} &= 74A \\ R_{DS(on)} &\leq 66m\Omega \end{aligned}$$

miniBLOC, SOT-227
E153432



G = Gate
S = Source
D = Drain

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1000	V
V_{DGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}, R_{GS} = 1M\Omega$	1000	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	$T_C = 25^\circ\text{C}$	74	A
I_{DM}	$T_C = 25^\circ\text{C}$, Pulse Width Limited by T_{JM}	150	A
I_A	$T_C = 25^\circ\text{C}$	37	A
E_{AS}	$T_C = 25^\circ\text{C}$	2	J
P_D	$T_C = 25^\circ\text{C}$	1170	W
dv/dt	$I_S \leq I_{DM}, V_{DD} \leq V_{DSS}, T_J \leq 150^\circ\text{C}$	50	V/ns
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
V_{ISOL}	50/60 Hz, RMS	$t = 1 \text{ minute}$	2500 V~
	$I_{ISOL} \leq 1\text{mA}$	$t = 1 \text{ second}$	3000 V~
M_d	Mounting Torque	1.5/13	Nm/lb.in
	Terminal Connection Torque	1.3/11.5	Nm/lb.in
Weight		30	g

Features

- International Standard Package
- miniBLOC, with Aluminium Nitride Isolation
- Isolation Voltage 2500V~
- High Current Handling Capability
- Avalanche Rated
- Low $R_{DS(on)}$

Advantages

- High Power Density
- Easy to Mount
- Space Savings

Applications

- Switch-Mode and Resonant-Mode Power Supplies
- DC-DC Converters
- PFC Circuits
- AC and DC Motor Drives
- Robotics and Servo Controls

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0V, I_D = 3mA$	1000		V
$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 8mA$	3.5		5.5 V
I_{GSS}	$V_{GS} = \pm 30V, V_{DS} = 0V$			$\pm 200 \text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}, V_{GS} = 0V$ $T_J = 125^\circ\text{C}$			50 μA 5 mA
$R_{DS(on)}$	$V_{GS} = 10V, I_D = 37A$, Note 1			66 m Ω

Symbol	Test Conditions (T _J = 25°C, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max
g_{fs}	V _{DS} = 20V, I _D = 37A, Note 1	30	53	S
R_{Gi}	Gate Input Resistance		0.56	Ω
C_{iss}	} V _{GS} = 0V, V _{DS} = 25V, f = 1MHz		17	nF
C_{oss}			2450	pF
C_{rss}			48	pF
Effective Output Capacitance				
C_{o(er)}	Energy related	} V _{GS} = 0V V _{DS} = 0.8 • V _{DSS}	400	pF
C_{o(tr)}	Time related		1900	pF
t_{d(on)}	Resistive Switching Times V _{GS} = 10V, V _{DS} = 0.5 • V _{DSS} , I _D = 37A R _G = 1Ω (External)		84	ns
t_r			28	ns
t_{d(off)}			184	ns
t_f			28	ns
Q_{g(on)}	} V _{GS} = 10V, V _{DS} = 0.5 • V _{DSS} , I _D = 37A		425	nC
Q_{gs}			124	nC
Q_{gd}			230	nC
R_{thJC}				0.107 °C/W
R_{thCS}			0.05	°C/W

Source-Drain Diode

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
I_S	$V_{GS} = 0\text{V}$			74 A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			296 A
V_{SD}	$I_F = I_S$, $V_{GS} = 0\text{V}$, Note 1			1.4 V
t_{rr}	$I_F = 37\text{A}$, $-di/dt = 300\text{A}/\mu\text{s}$ $V_R = 100\text{V}$, $V_{GS} = 0\text{V}$		290	ns
Q_{RM}			5.7	μC
I_{RM}			39.0	A

Note 1. Pulse test, $t \leq 300\mu\text{s}$, duty cycle, $d \leq 2\%$.

ADVANCE TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

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. Output Characteristics @ $T_J = 25^\circ\text{C}$

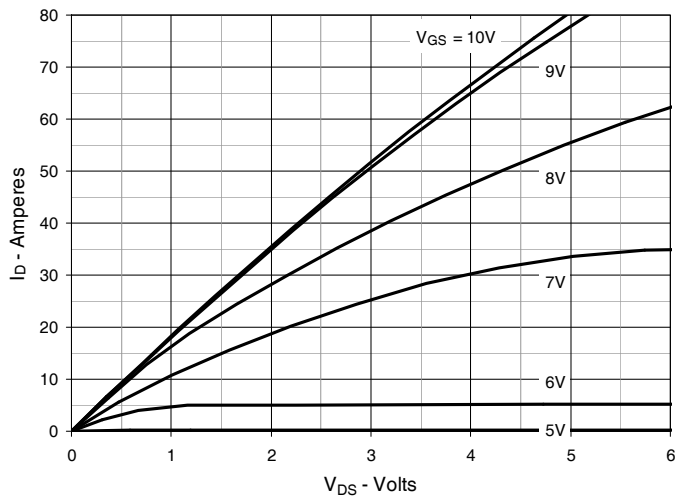


Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

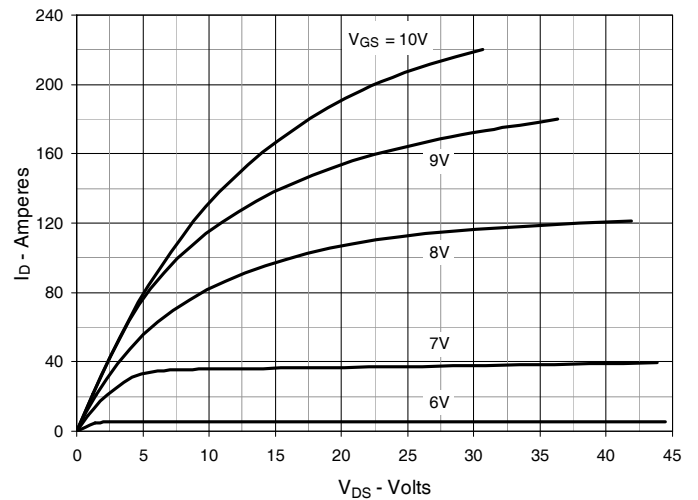


Fig. 3. Output Characteristics @ $T_J = 125^\circ\text{C}$

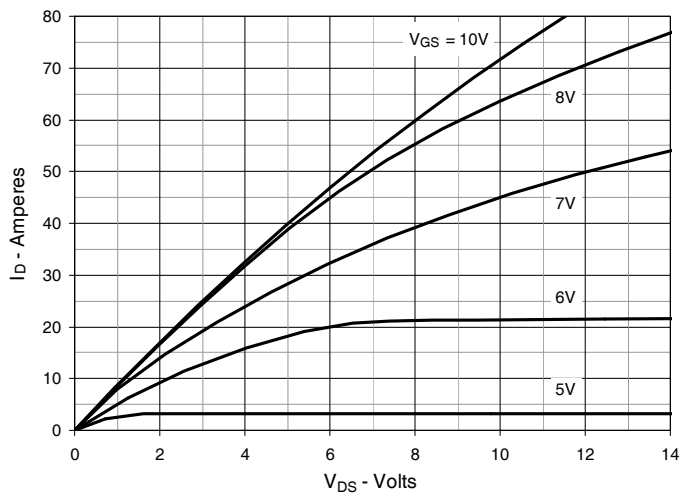


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 37A$ Value vs. Junction Temperature

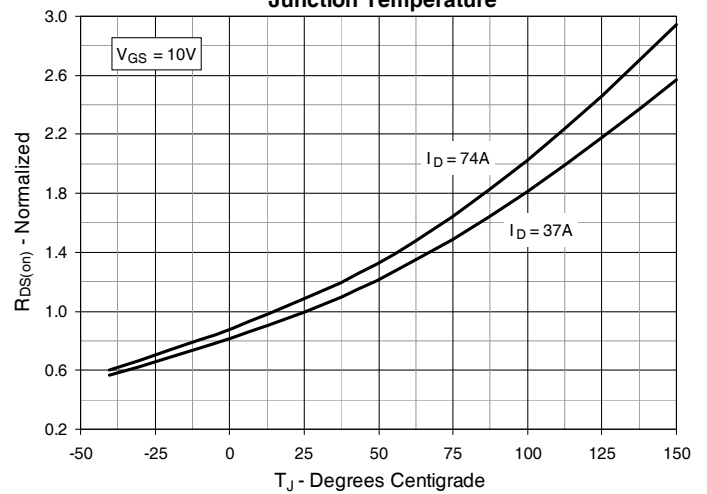


Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 37A$ Value vs. Drain Current

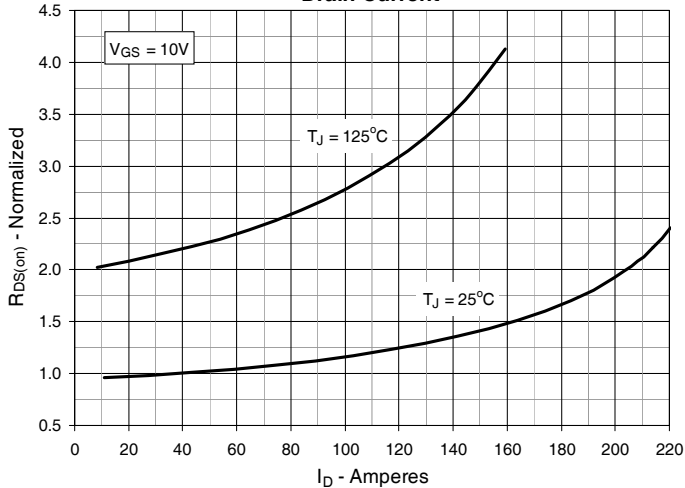


Fig. 6. Normalized Breakdown & Threshold Voltages vs. Junction Temperature

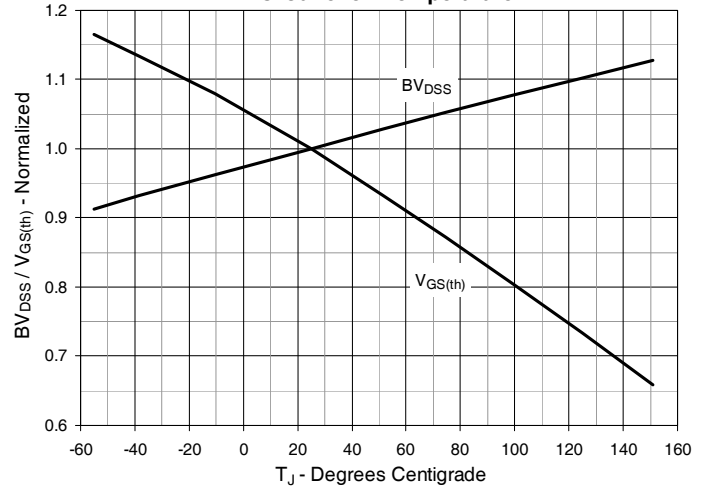


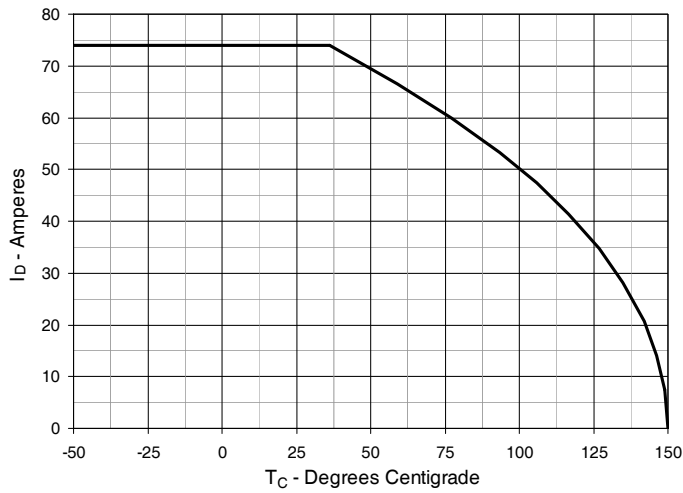
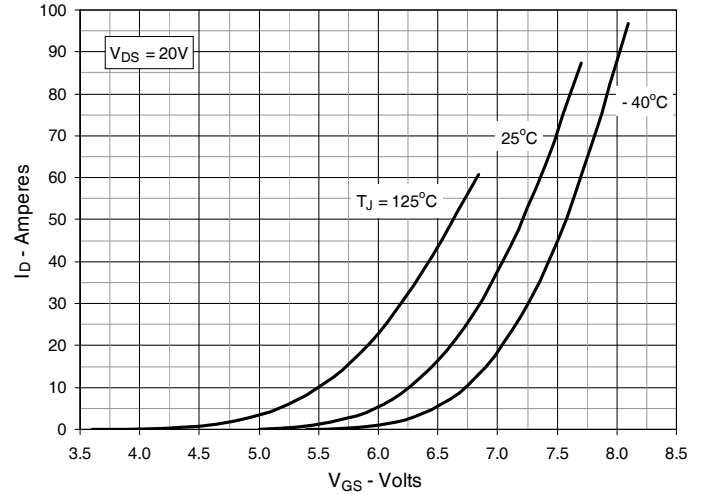
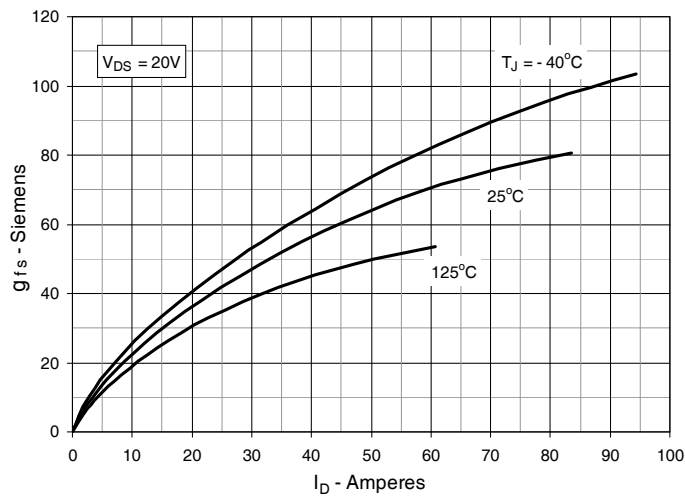
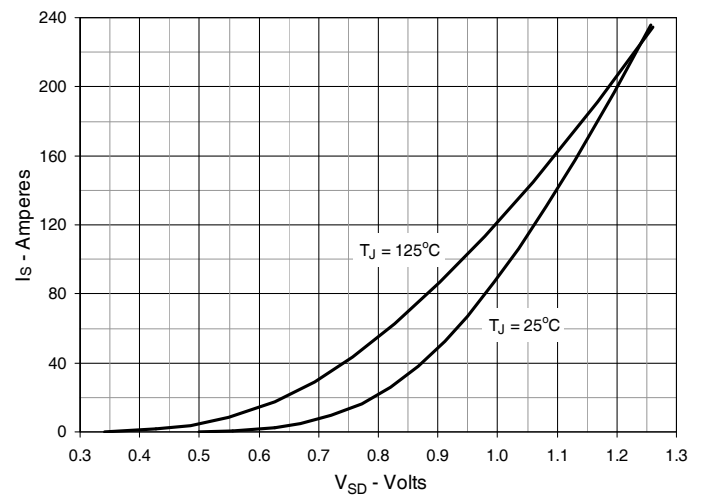
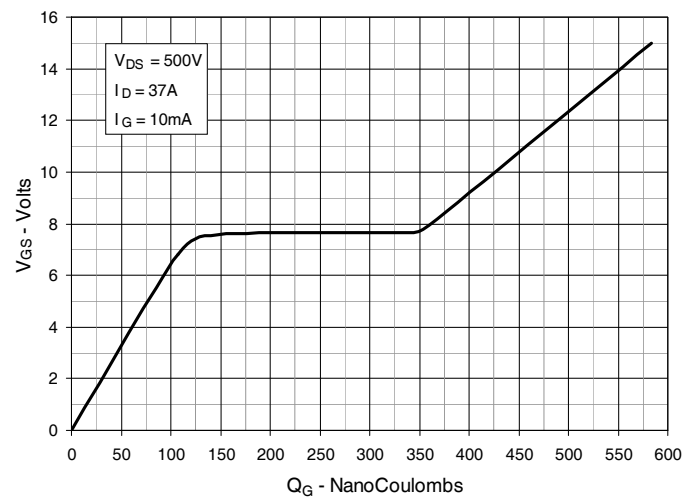
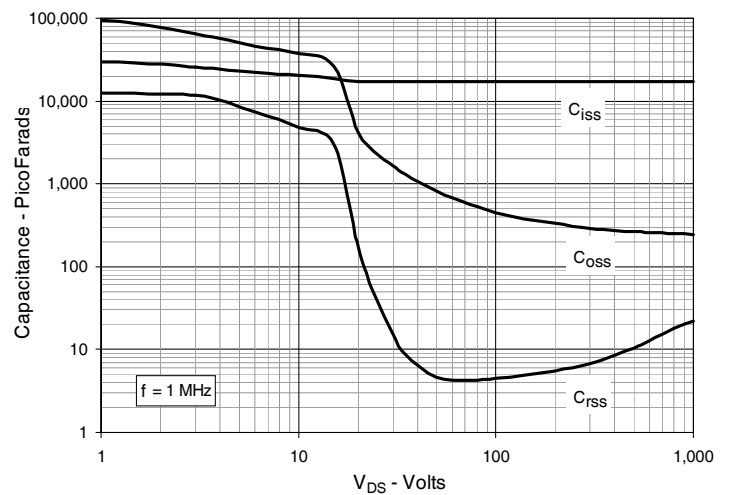
Fig. 7. Maximum Drain Current vs. Case Temperature

Fig. 8. Input Admittance

Fig. 9. Transconductance

Fig. 10. Forward Voltage Drop of Intrinsic Diode

Fig. 11. Gate Charge

Fig. 12. Capacitance


Fig. 13. Output Capacitance Stored Energy

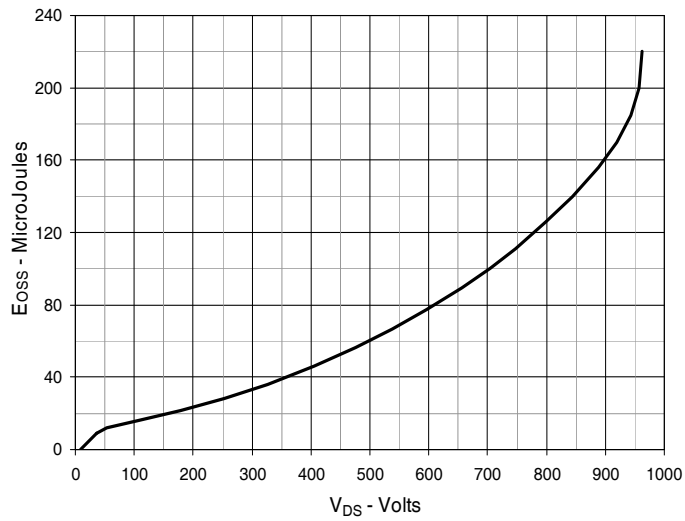


Fig. 14. Forward-Bias Safe Operating Area

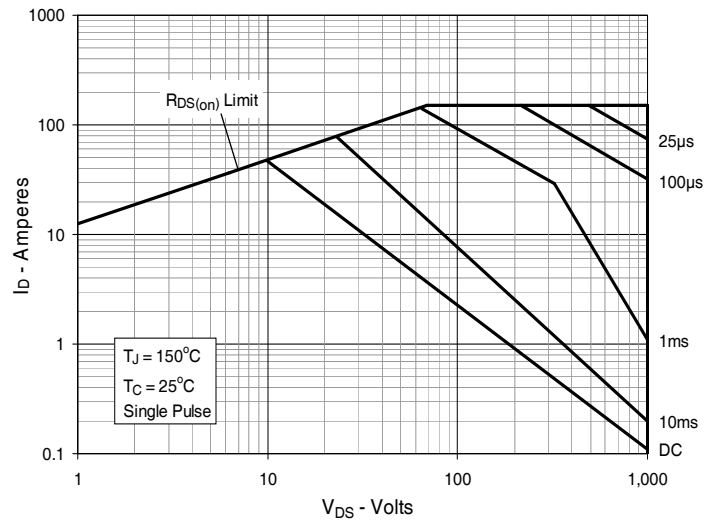
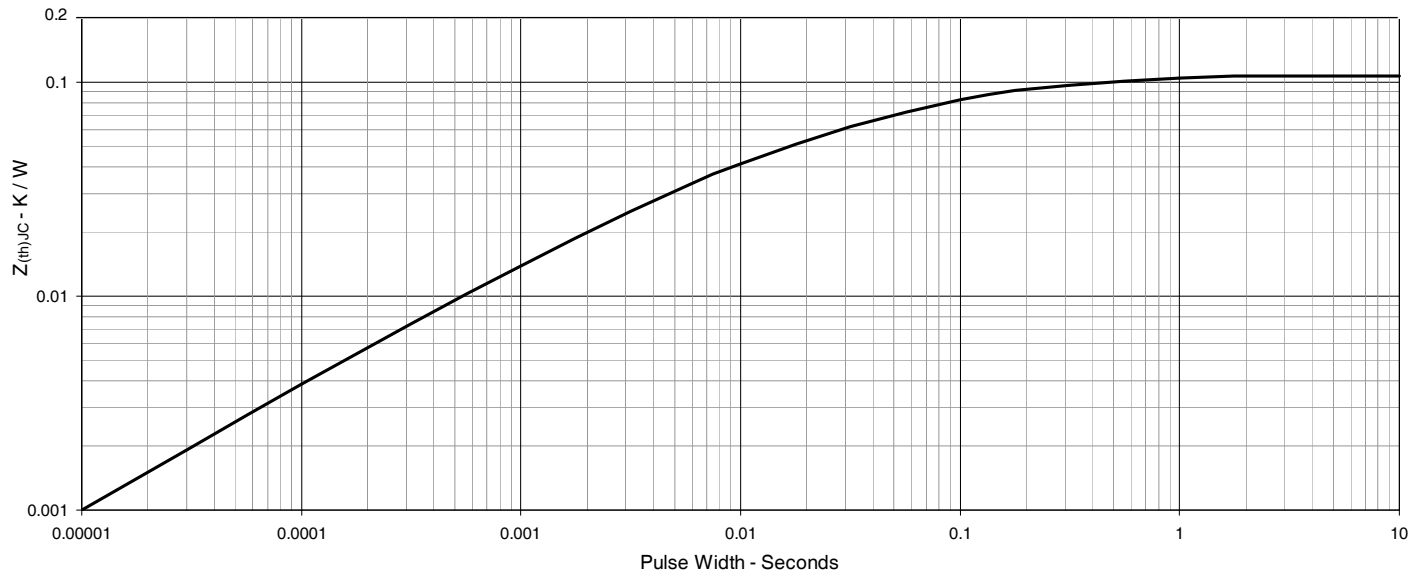
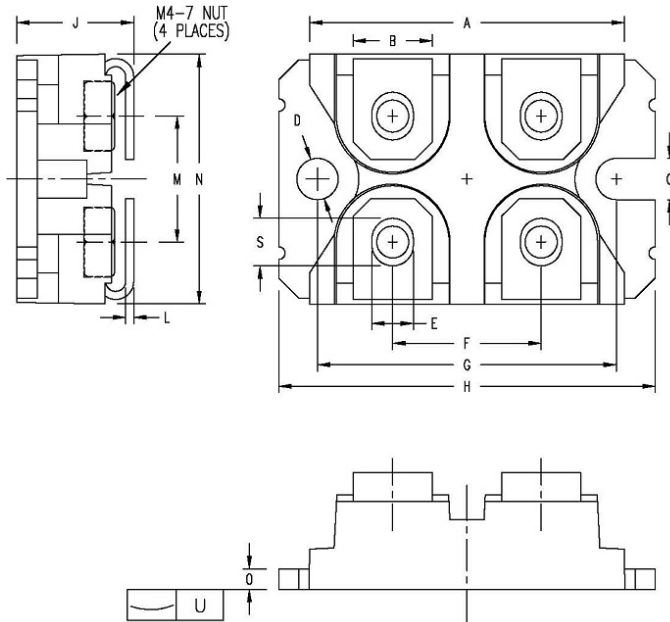


Fig. 15. Maximum Transient Thermal Impedance



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.

