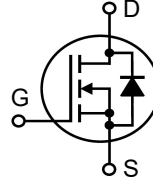


X3-Class HiPerFET™ Power MOSFET

IXFT150N30X3HV
IXFH150N30X3
IXFK150N30X3

$V_{DSS} = 300V$
 $I_{D25} = 150A$
 $R_{DS(on)} \leq 8.3m\Omega$

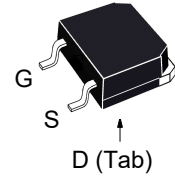
N-Channel Enhancement Mode
Avalanche Rated



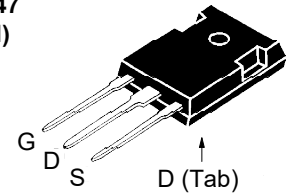
Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^{\circ}C$ to $150^{\circ}C$	300	V
V_{DGR}	$T_J = 25^{\circ}C$ to $150^{\circ}C$, $R_{GS} = 1M\Omega$	300	V
V_{GSS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^{\circ}C$	150	A
I_{DM}	$T_C = 25^{\circ}C$, Pulse Width Limited by T_{JM}	400	A
I_A	$T_C = 25^{\circ}C$	75	A
E_{AS}	$T_C = 25^{\circ}C$	2	J
dv/dt	$I_S \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^{\circ}C$	20	V/ns
P_D	$T_C = 25^{\circ}C$	890	W
T_J		-55 ... +150	$^{\circ}C$
T_{JM}		150	$^{\circ}C$
T_{stg}		-55 ... +150	$^{\circ}C$
T_L	Maximum Lead Temperature for Soldering	300	$^{\circ}C$
T_{SOLD}	1.6 mm (0.062 in.) from Case for 10s	260	$^{\circ}C$
M_d	Mounting Torque (TO-247 & TO-264K)	1.13 / 10	Nm/lb.in
Weight	TO-268HV	4	g
	TO-247	6	g
	TO-264K	10	g

Symbol	Test Conditions ($T_J = 25^{\circ}C$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0V$, $I_D = 1mA$	300		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4mA$	2.5		4.5 V
I_{GSS}	$V_{GS} = \pm 20V$, $V_{DS} = 0V$			± 100 nA
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0V$ $T_J = 125^{\circ}C$			25 μA 1 mA
$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 0.5 \cdot I_{D25}$, Note 1	6.6		8.3 m Ω

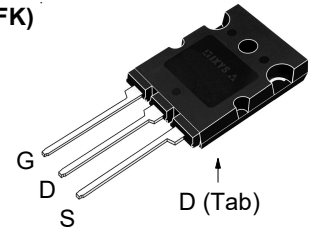
TO-268HV
(IXFT..HV)



TO-247
(IXFH)



TO-264K
(IXFK)



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

Features

- International Standard Packages
- Low $R_{DS(on)}$ and Q_G
- Avalanche Rated
- Low Package Inductance

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	Characteristic Values		
(T _J = 25°C, Unless Otherwise Specified)		Min.	Typ.	Max
g_{fs}	V _{DS} = 10V, I _D = 60A, Note 1	70	120	S
R_{Gi}	Gate Input Resistance		1.2	Ω
C_{iss}	V _{GS} = 0V, V _{DS} = 25V, f = 1MHz		13.1	nF
C_{oss}			2.0	nF
C_{rss}			1.7	pF
Effective Output Capacitance				
C_{o(er)}	Energy related	V _{GS} = 0V V _{DS} = 0.8 • V _{DSS}	700	pF
C_{o(tr)}	Time related		2700	pF
t_{d(on)}	Resistive Switching Times V _{GS} = 10V, V _{DS} = 0.5 • V _{DSS} , I _D = 0.5 • I _{D25} R _G = 5Ω (External)		40	ns
t_r			32	ns
t_{d(off)}			187	ns
t_f			14	ns
Q_{g(on)}	V _{GS} = 10V, V _{DS} = 0.5 • V _{DSS} , I _D = 0.5 • I _{D25}		177	nC
Q_{gs}			63	nC
Q_{gd}			49	nC
R_{thJC}	TO-247 TO-264K			0.14 °C/W
R_{thCS}			0.21 0.15	°C/W °C/W

Source-Drain Diode

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max
I_S	$V_{GS} = 0\text{V}$			150 A
I_{SM}	Repetitive, pulse Width Limited by T_{JM}			600 A
V_{SD}	$I_F = I_S$, $V_{GS} = 0\text{V}$, Note 1			1.4 V
t_{rr}	$I_F = 75\text{A}$, $-di/dt = 100\text{A}/\mu\text{s}$ $V_R = 100\text{V}$		167	ns
Q_{RM}			1100	nC
I_{RM}			13	A

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.

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

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

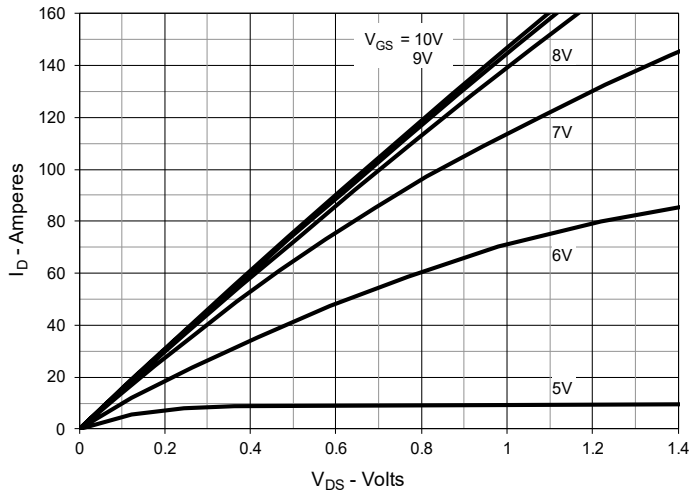


Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

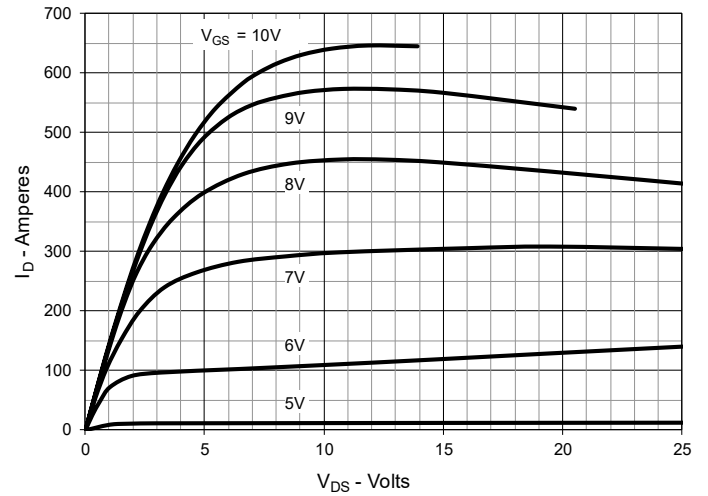


Fig. 3. Output Characteristics @ $T_J = 125^\circ\text{C}$

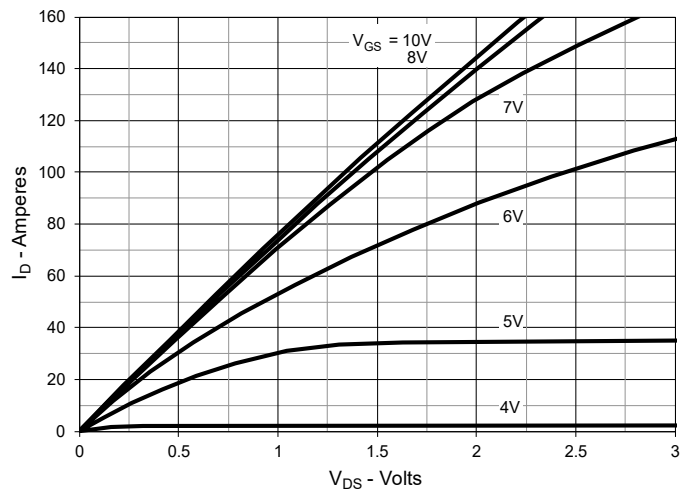


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 75A$ Value vs. Junction Temperature

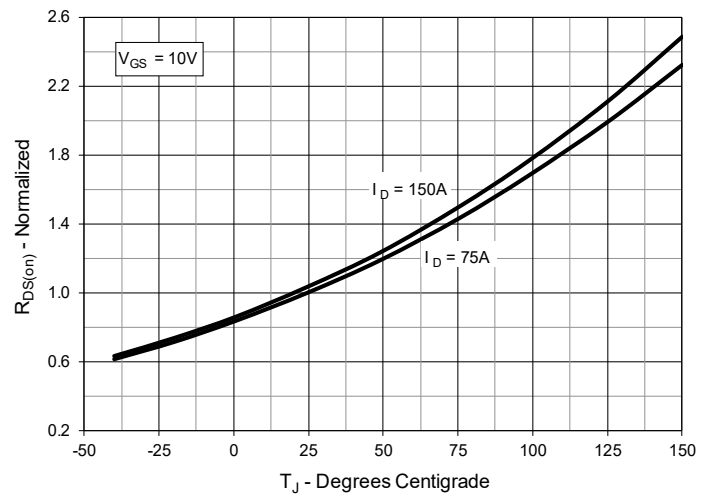


Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 75A$ Value vs. Drain Current

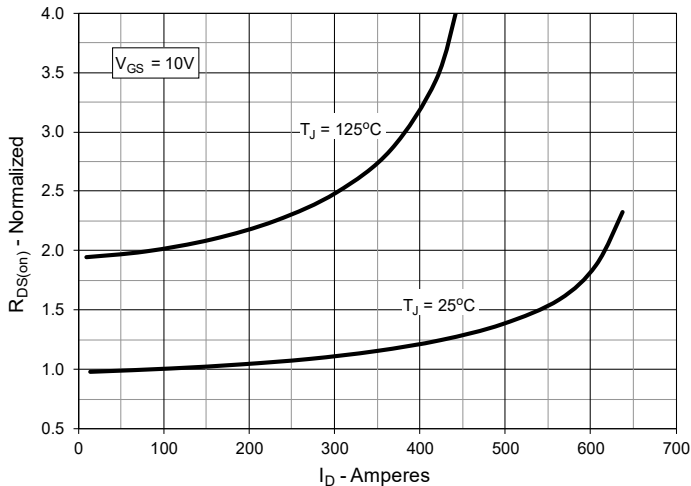


Fig. 6. Normalized Breakdown & Threshold Voltages vs. Junction Temperature

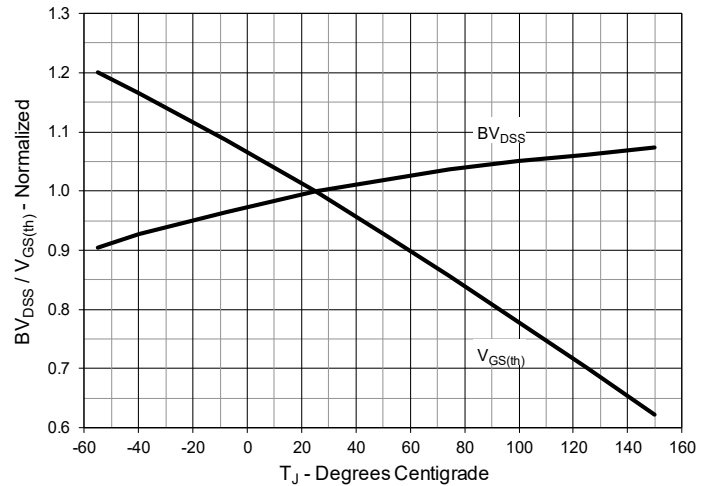


Fig. 7. Maximum Drain Current vs. Case Temperature

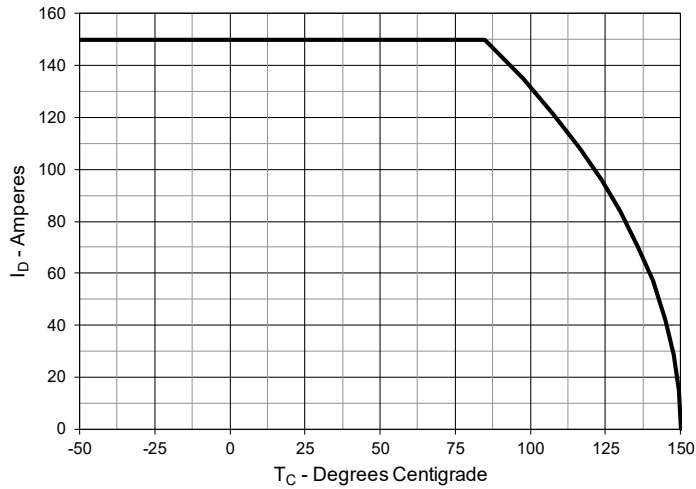


Fig. 8. Input Admittance

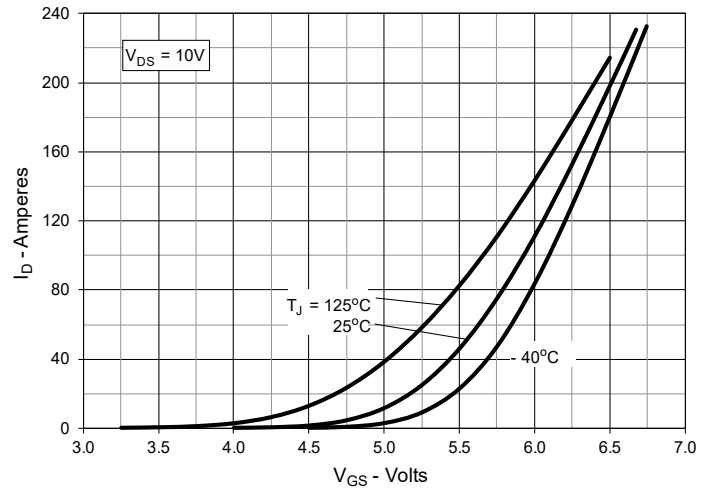


Fig. 9. Transconductance

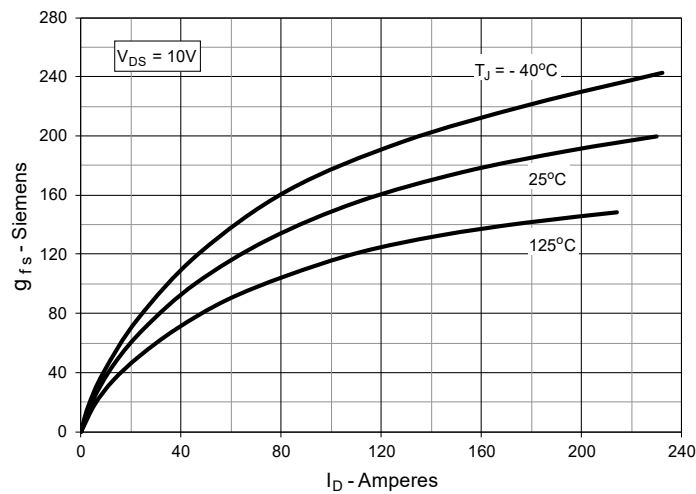


Fig. 10. Forward Voltage Drop of Intrinsic Diode

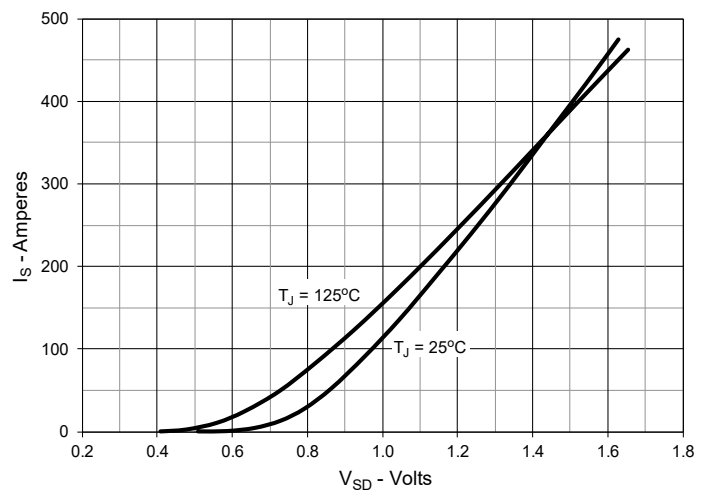


Fig. 11. Gate Charge

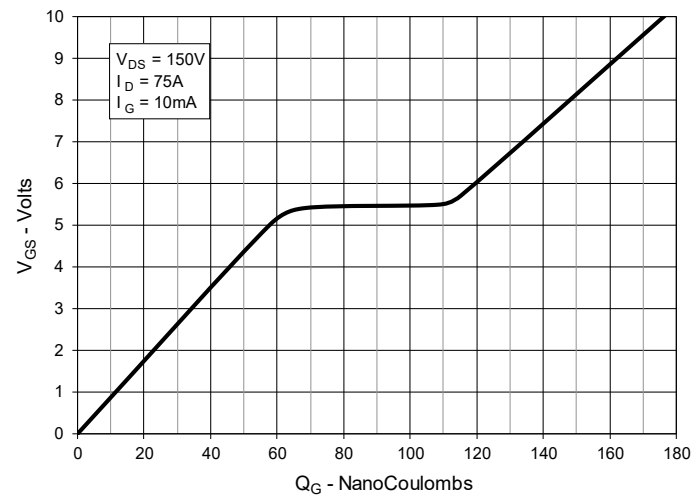


Fig. 12. Capacitance

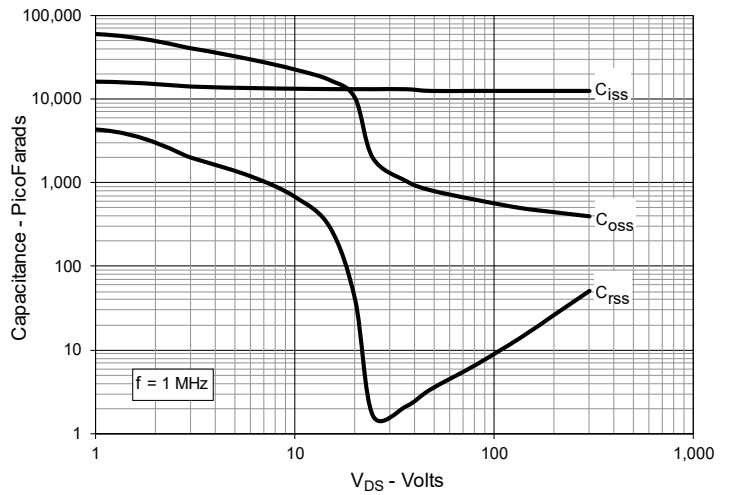


Fig. 13. Output Capacitance Stored Energy

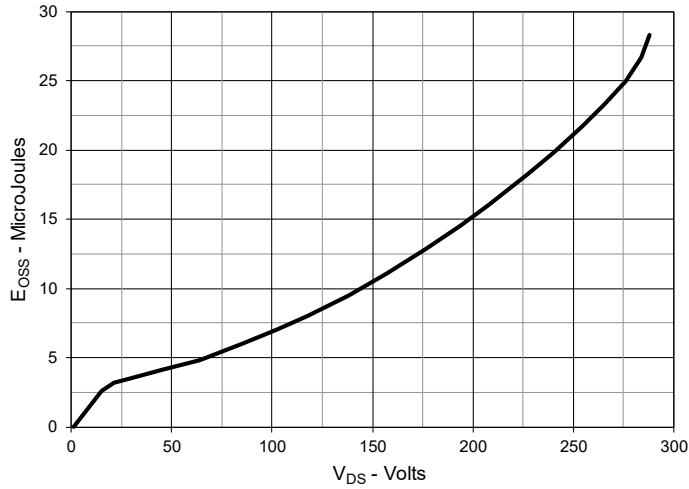


Fig. 14. Forward-Bias Safe Operating Area

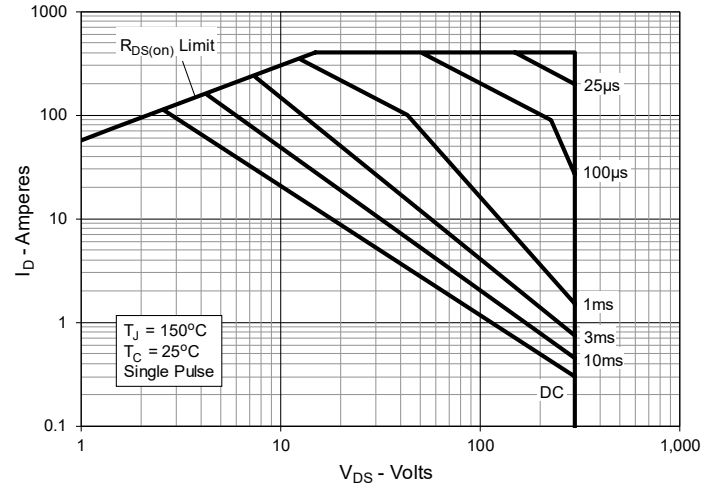
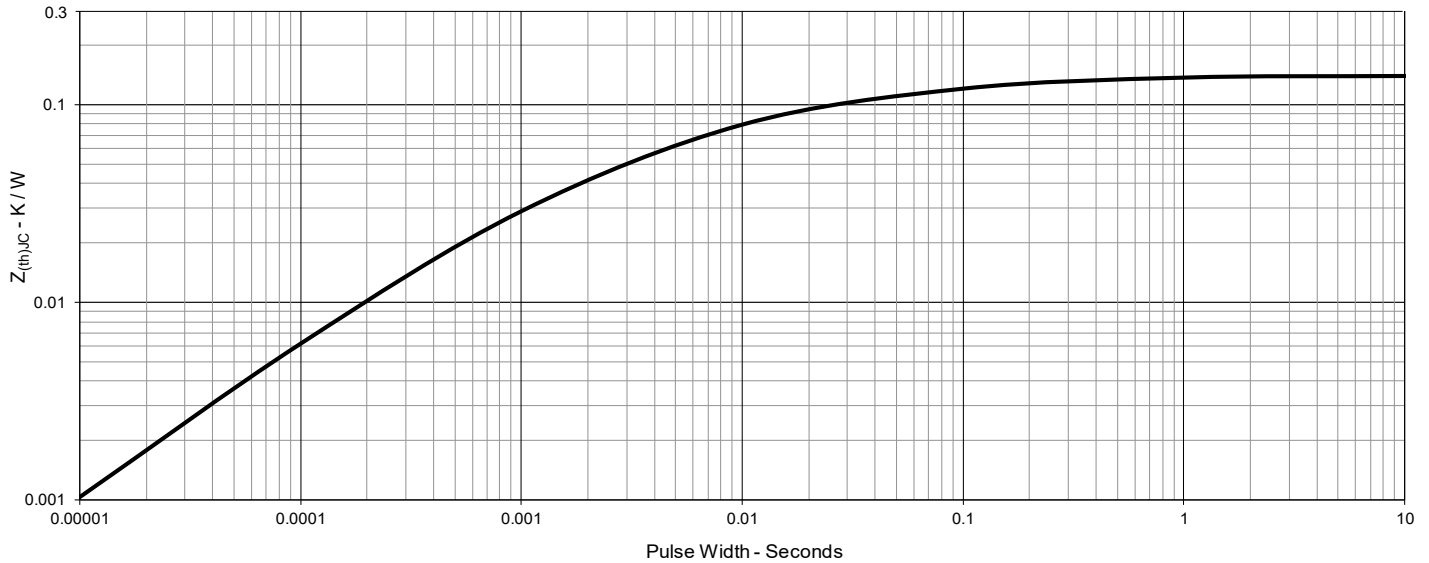
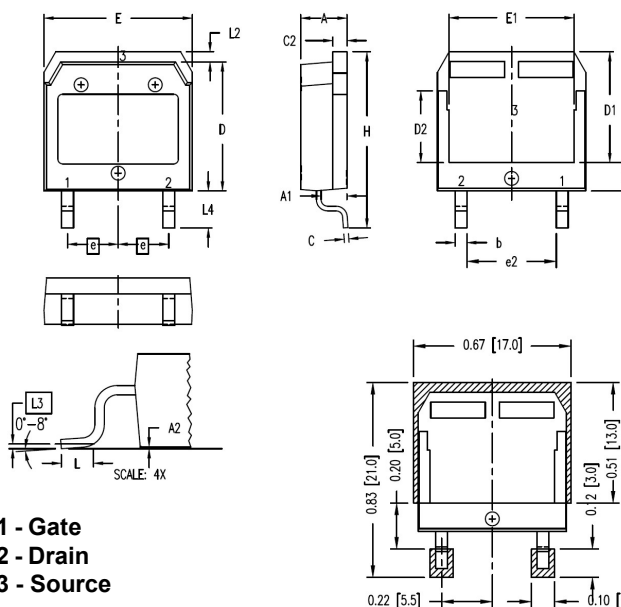


Fig. 15. Maximum Transient Thermal Impedance



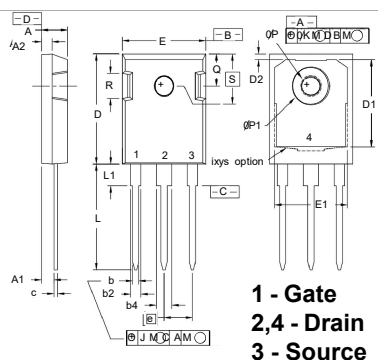
TO-268HV Outline



- 1 - Gate
2 - Drain
3 - Source

SYM	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	.193	.201	4.90	5.10
A1	.106	.114	2.70	2.90
A2	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.465	.476	11.80	12.10
D2	.295	.307	7.50	7.80
D3	.114	.126	2.90	3.20
E	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
<u>E</u>	.215	BSC	5.45	BSC
(e2)	.374	.386	9.50	9.80
H	.736	.752	18.70	19.10
L	.067	.079	1.70	2.00
L2	.039	.045	1.00	1.15
<u>L3</u>	.010	BSC	0.25	BSC
L4	.150	.161	3.80	4.10

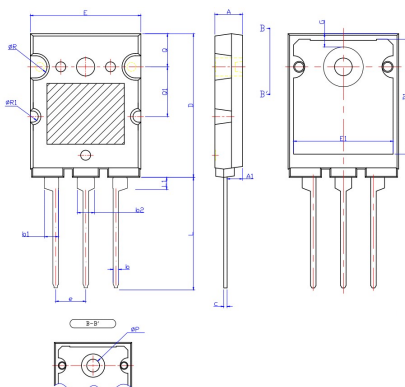
TO-247 Outline



- 1 - Gate
2,4 - Drain
3 - Source

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.045	.055	1.14	1.40
b2	.075	.087	1.91	2.20
b4	.115	.126	2.92	3.20
C	.024	.031	0.61	0.80
D	.819	.840	20.80	21.34
D1	.650	.690	16.51	17.53
D2	.035	.050	0.89	1.27
E	.620	.635	15.75	16.13
E1	.545	.565	13.84	14.35
e	.215 BSC		5.45 BSC	
J	--	.010	--	0.25
K	--	.025	--	0.64
L	.780	.810	19.81	20.57
L1	.150	.170	3.81	4.32
øP	.140	.144	3.55	3.65
øP1	.275	.290	6.99	7.37
Q	.220	.244	5.59	6.20
R	.170	.190	4.32	4.83
S	.242 BSC		6.15 BSC	

TO-264K Outline



- 1 - Gate
2,4 - Drain
3 - Source

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.189	0.205	4.80	5.20
A1	0.098	0.122	2.50	3.10
b	0.035	0.049	0.90	1.25
b1	0.091	0.106	2.30	2.70
b2	0.110	0.126	2.80	3.20
c	0.020	0.033	0.50	0.85
D	1.016	1.031	25.80	26.20
E	0.780	0.795	19.80	20.20
e	0.203	0.226	5.15	5.75
L	0.768	0.807	19.50	20.50
L1	0.094	0.102	2.40	2.60
ØP	0.118	0.134	3.00	3.40
Q	0.228	0.244	5.80	6.20
Q1	0.346	0.362	8.80	9.20
E1	0.701	0.717	17.80	18.20
D1	0.811	0.827	20.60	21.00
G	0.087	0.102	2.20	2.60
ØR	0.079		2.00	
ØR1	0.039		1.00	

