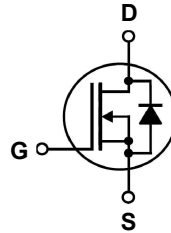


Depletion Mode MOSFET

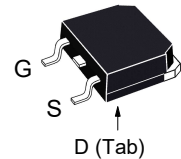
IXTT16N20D2
IXTH16N20D2

$V_{DSX} = 200V$
 $I_{D(on)} \geq 16A$
 $R_{DS(on)} \leq 80m\Omega$

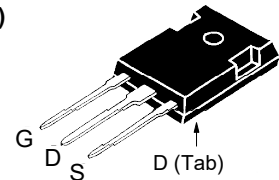
N-Channel



**TO-268
(IXTT)**



**TO-247
(IXTH)**



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

Symbol	Test Conditions	Maximum Ratings	
V_{DSX}	$T_J = 25^{\circ}C$ to $150^{\circ}C$	200	V
V_{DGX}	$T_J = 25^{\circ}C$ to $150^{\circ}C$, $R_{GS} = 1M\Omega$	200	V
V_{GSX}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
P_D	$T_C = 25^{\circ}C$	695	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}	Plastic Body for 10s	260	$^{\circ}C$
Weight	TO-268	4	g
	TO-247	6	g

Features

- Normally ON Mode
- International Standard Packages
- Molding Epoxies Meet UL 94 V-0 Flammability Classification

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- Audio Amplifiers
- Start-up Circuits
- Protection Circuits
- Ramp Generators
- Current Regulators
- Active Loads

Symbol	Test Conditions ($T_J = 25^{\circ}C$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSX}	$V_{GS} = -5V$, $I_D = 250\mu A$	200		V
$V_{GS(off)}$	$V_{DS} = 25V$, $I_D = 4mA$	- 2.0		- 4.5 V
I_{GSX}	$V_{GS} = \pm 20V$, $V_{DS} = 0V$			± 100 nA
$I_{DSX(off)}$	$V_{DS} = V_{DSX}$, $V_{GS} = -5V$ $T_J = 125^{\circ}C$			5 μA 100 μA
$R_{DS(on)}$	$V_{GS} = 0V$, $I_D = 8A$, Note 1			80 m Ω
$I_{D(on)}$	$V_{GS} = 0V$, $V_{DS} = 25V$, Note 1	16		A

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 20\text{V}$, $I_D = 8\text{A}$, Note 1	7	12	S
C_{iss}	$V_{GS} = -10\text{V}$, $V_{DS} = 25\text{V}$, $f = 1\text{MHz}$		5500	pF
C_{oss}			1360	pF
C_{rss}			607	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = \pm 5\text{V}$, $V_{DS} = 100\text{V}$, $I_D = 8\text{A}$ $R_G = 3.3\Omega$ (External)		46	ns
t_r			130	ns
$t_{d(off)}$			270	ns
t_f			135	ns
$Q_{g(on)}$	$V_{GS} = \pm 5\text{V}$, $V_{DS} = 100\text{V}$, $I_D = 8\text{A}$		208	nC
Q_{gs}			28	nC
Q_{gd}			110	nC
R_{thJC}	TO-247			0.18 $^\circ\text{C/W}$
R_{thCS}			0.21	$^\circ\text{C/W}$

Safe-Operating-Area Specification

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
SOA	$V_{DS} = 200\text{V}$, $I_D = 2.1\text{A}$, $T_C = 75^\circ\text{C}$, $t_p = 5\text{s}$	420		W

Source-Drain Diode

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
V_{SD}	$I_F = 16\text{A}$, $V_{GS} = -10\text{V}$, Note 1		0.8	1.3 V
t_{rr}	$I_F = 8\text{A}$, $-di/dt = 100\text{A}/\mu\text{s}$ $V_R = 100\text{V}$, $V_{GS} = -10\text{V}$		265	ns
I_{RM}			14.3	A
Q_{RM}			1.9	μC

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	6,404,065 B1	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	

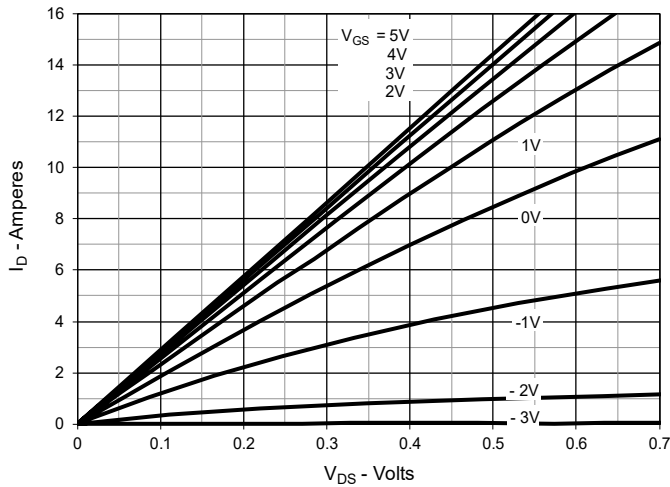
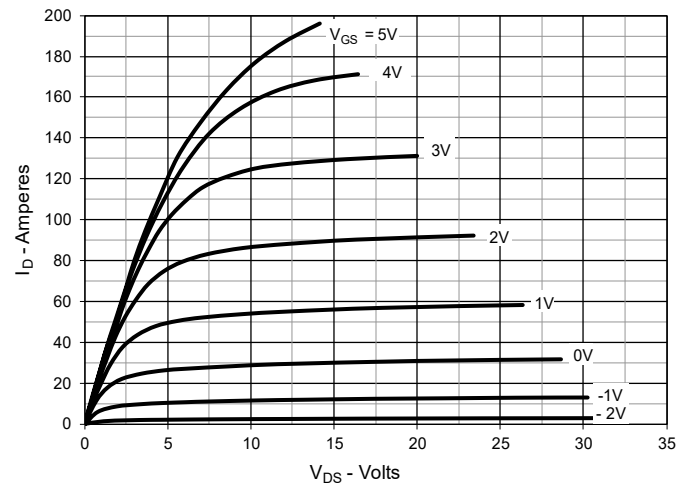
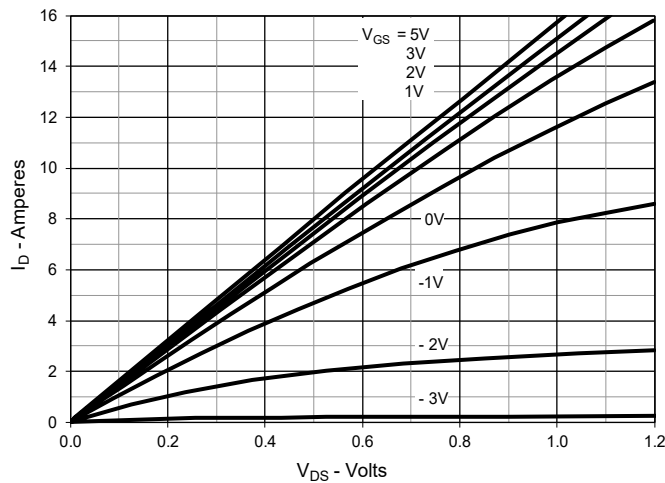
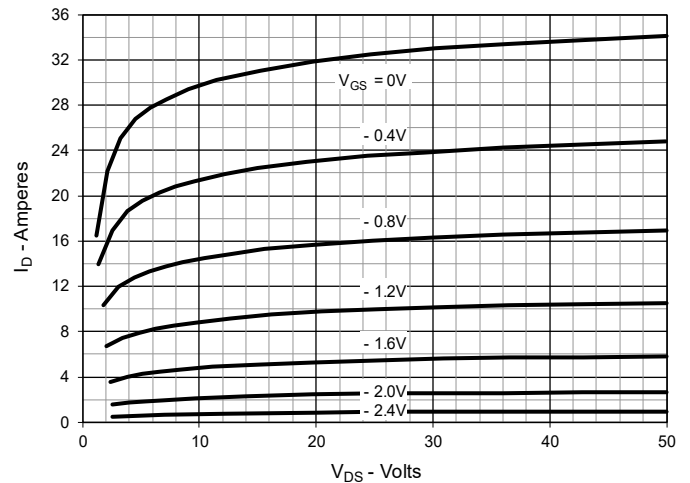
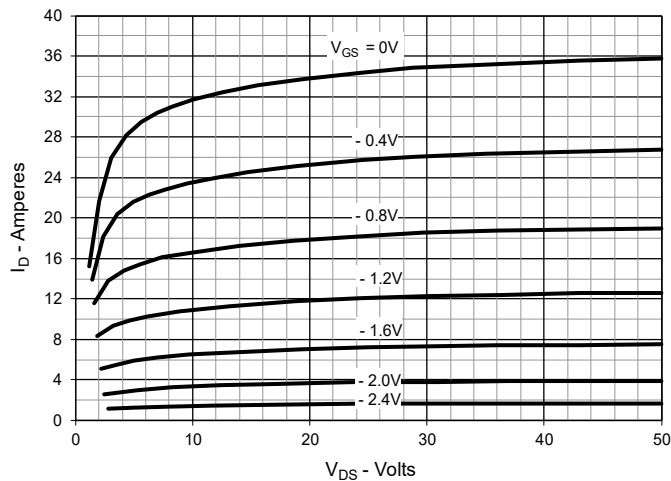
Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$ Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$ Fig. 3. Output Characteristics @ $T_J = 125^\circ\text{C}$ Fig. 4. Drain Current @ $T_J = 25^\circ\text{C}$ Fig. 5. Drain Current @ $T_J = 100^\circ\text{C}$ 

Fig. 6. Dynamic Resistance vs. Gate Voltage

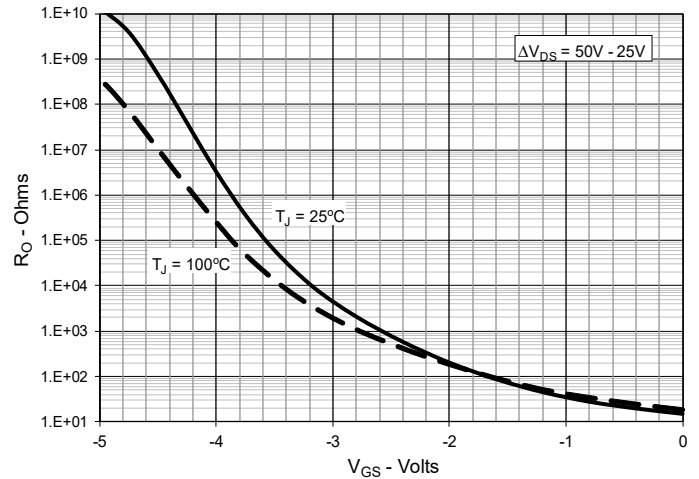


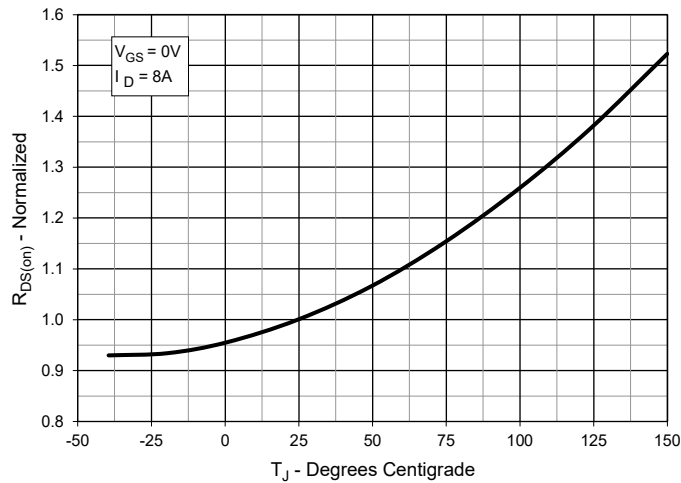
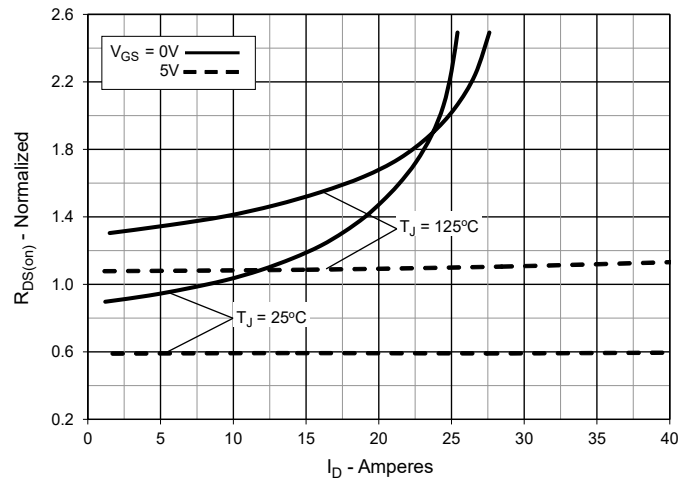
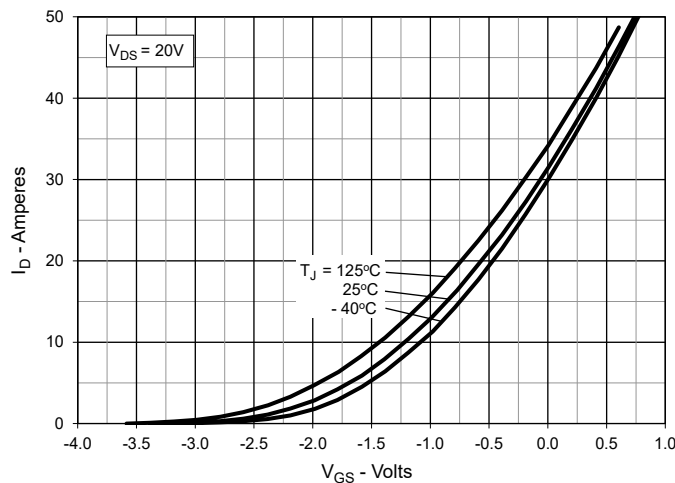
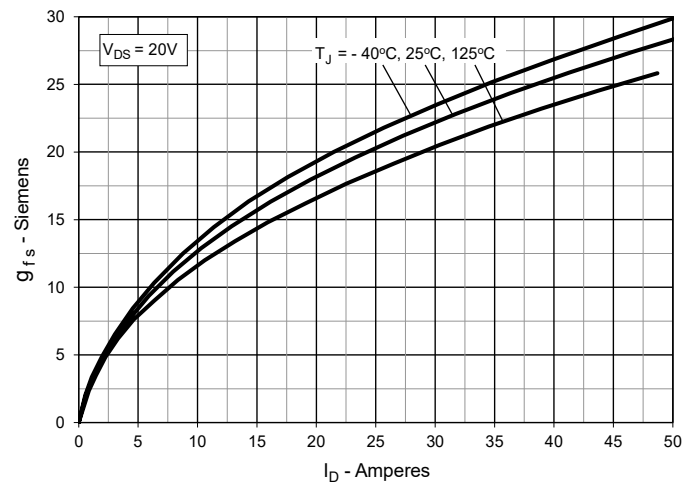
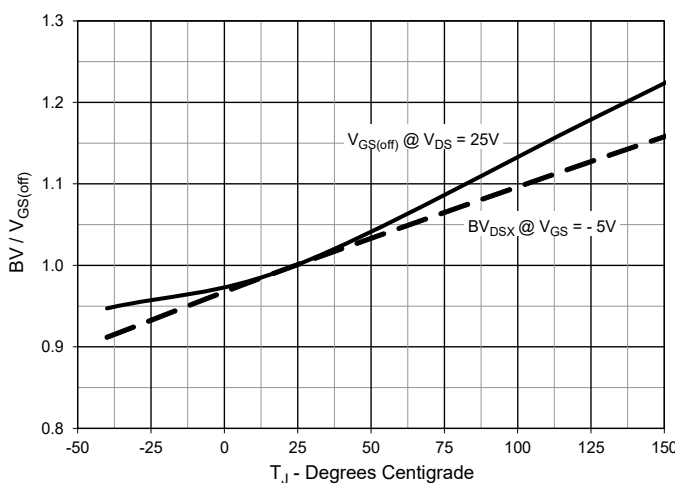
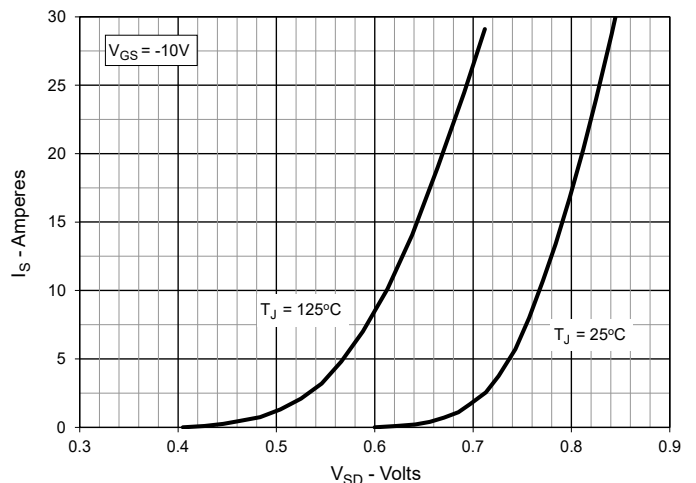
Fig. 7. Normalized $R_{DS(on)}$ vs. Junction Temperature

Fig. 8. $R_{DS(on)}$ Normalized to $I_D = 8A$ Value vs. Drain Current

Fig. 9. Input Admittance

Fig. 10. Transconductance

Fig. 11. Normalized Breakdown and Threshold Voltages vs. Junction Temperature

Fig. 12. Forward Voltage Drop of Intrinsic Diode


Fig. 13. Capacitance

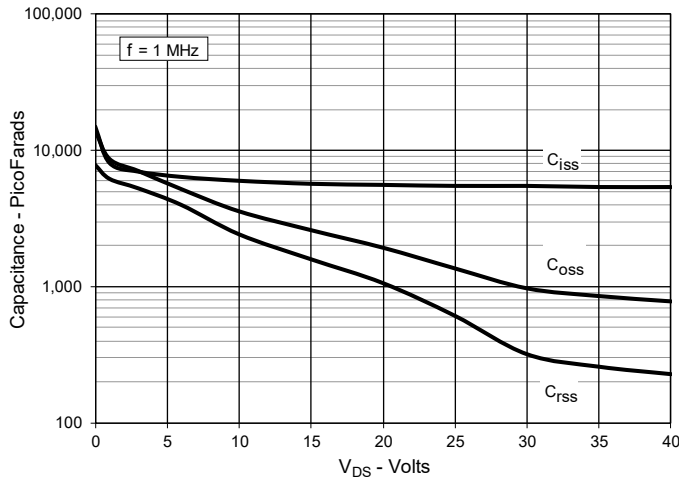


Fig. 14. Gate Charge

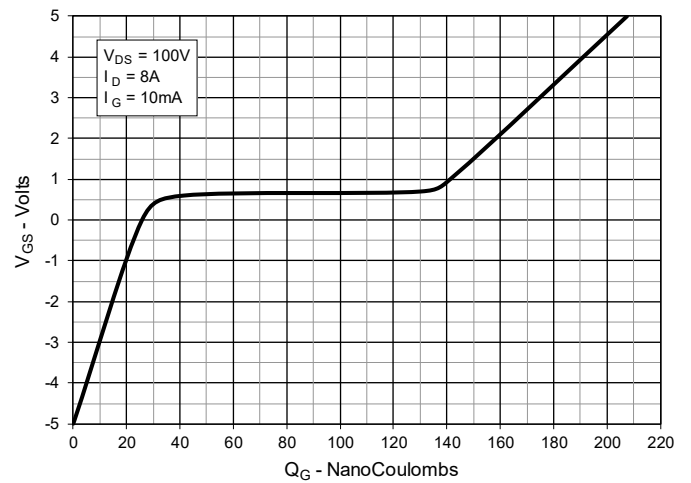


Fig. 15. Forward-Bias Safe Operating Area
@ $T_C = 25^\circ\text{C}$

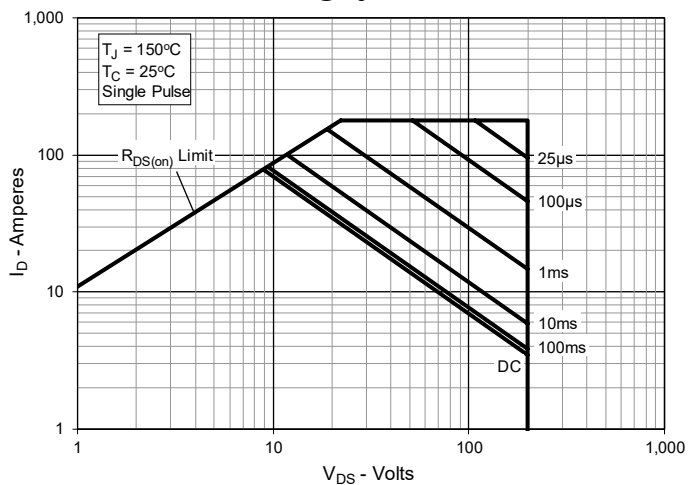


Fig. 16. Forward-Bias Safe Operating Area
@ $T_C = 75^\circ\text{C}$

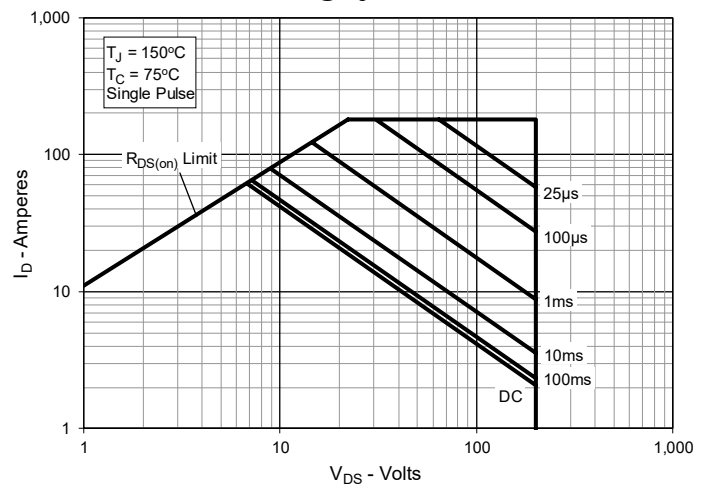
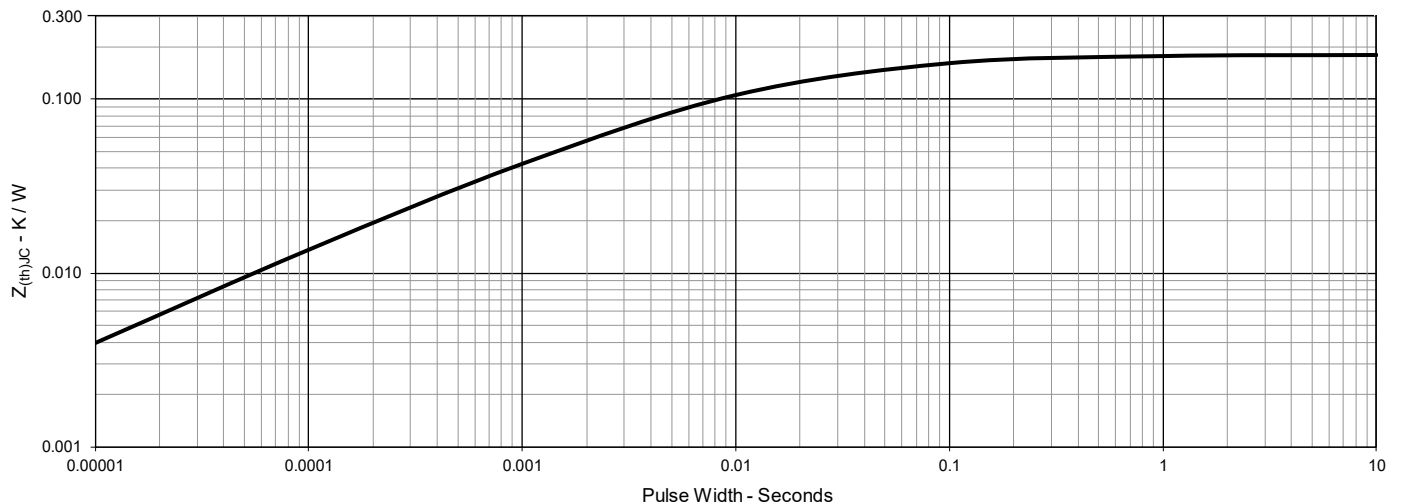
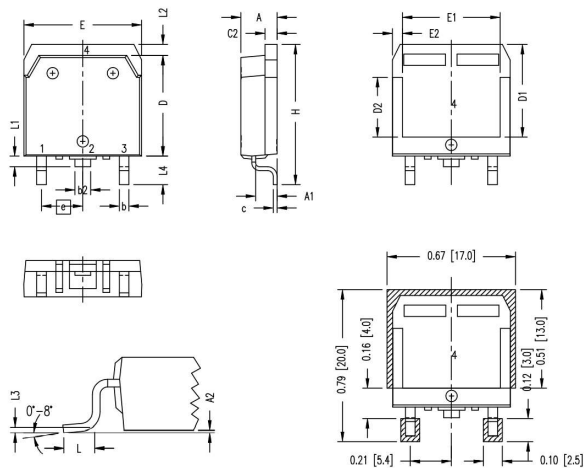


Fig. 17. Maximum Transient Thermal Impedance



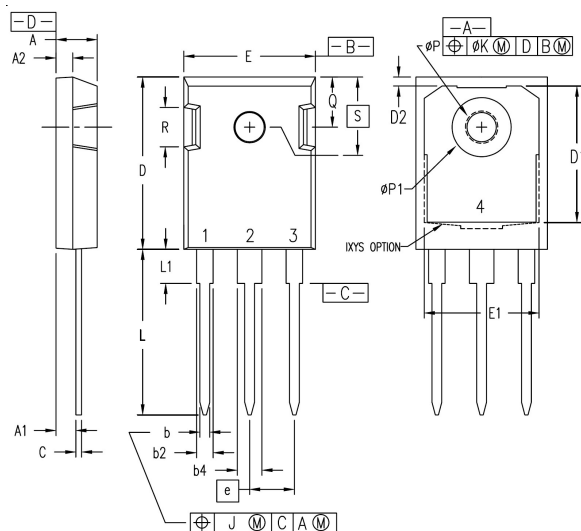
TO-268 Outline



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

SYM	Inches		Millimeters	
	MIN	MAX	MIN	MAX
A	0.193	0.201	4.90	5.10
A1	0.106	0.114	2.70	2.90
A2	0.001	0.010	0.02	0.25
b	0.045	0.057	1.15	1.45
b2	0.075	0.083	1.90	2.10
c	0.016	0.026	0.40	0.65
C2	0.057	0.063	1.45	1.60
D	0.543	0.551	13.80	14.00
D1	0.488	0.500	12.40	12.70
D2	0.320	0.335	8.13	8.50
E	0.624	0.632	15.85	16.05
E1	0.524	0.535	13.30	13.60
E2	0.045	0.055	1.14	1.39
e	0.215	BSC	5.45	BSC
H	0.736	0.752	18.70	19.10
L	0.094	0.106	2.40	2.70
L1	0.047	0.055	1.20	1.40
L2	0.039	0.045	1.000	1.15
L3	0.010	BSC	0.25	BSC
L4	0.150	0.161	3.80	4.10

TO-247 Outline



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

SYM	Inches		Millimeters	
	MIN	MAX	MIN	MAX
A	0.190	0.205	4.83	5.21
A1	0.090	0.100	2.29	2.54
A2	0.075	0.085	1.91	2.16
b	0.045	0.055	1.14	1.40
b2	0.075	0.087	1.91	2.20
b4	0.115	0.126	2.92	3.20
C	0.024	0.031	0.61	0.80
D	0.819	0.840	20.80	21.34
D1	0.650	0.690	16.51	17.53
D2	0.035	0.050	0.89	1.27
E	0.620	0.635	15.57	16.13
E1	0.545	0.565	13.84	14.35
e	0.215 BSC		5.45 BSC	
J	--	0.010	--	0.250
K	--	0.025	--	0.640
L	0.780	0.810	19.81	20.57
L1	0.150	0.170	3.81	4.32
ØP	0.140	0.144	3.55	3.65
ØP1	0.275	0.290	6.99	7.37
Q	0.220	0.244	5.59	6.20
R	0.170	0.190	4.32	4.83
S	0.242 BSC		6.15 BSC	



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