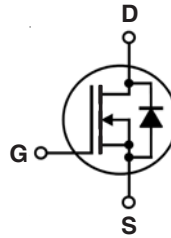


High Voltage Power MOSFET

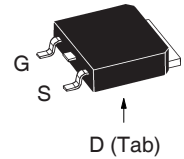
IXTY01N100D
IXTU01N100D
IXTP01N100D

$V_{DSX} = 1000V$
 $R_{DS(on)} \leq 80\Omega$

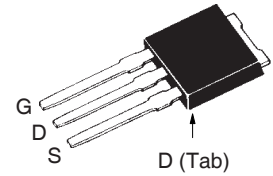
N-Channel



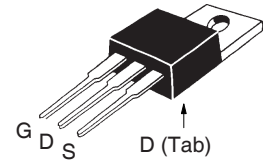
TO-252 (IXTY)



TO-251 (IXTU)



TO-220AB (IXTP)



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

Symbol	Test Conditions	Maximum Ratings	
V_{DSX}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1000	V
V_{DGX}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1000	V
V_{GSX}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{DM}	$T_C = 25^\circ\text{C}$, Pulse Width Limited by T_J	400	mA
P_D	$T_C = 25^\circ\text{C}$	25	W
	$T_A = 25^\circ\text{C}$	1.1	W
T_J		- 55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		- 55 ... +150	$^\circ\text{C}$
T_L	Maximum Lead Temperature for Soldering	300	$^\circ\text{C}$
T_{SOLD}	1.6 mm (0.062in.) from Case for 10s	260	$^\circ\text{C}$
M_d	Mounting Torque (TO-220)	1.13 / 10	Nm/lb.in.
Weight	TO-252	0.35	g
	TO-251	0.40	g
	TO-220	3.00	g

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSX}	$V_{GS} = -10V, I_D = 25\mu\text{A}$	1000		V
$V_{GS(off)}$	$V_{DS} = 25V, I_D = 25\mu\text{A}$	- 2.0		V
I_{GSX}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100 nA
$I_{DSX(off)}$	$V_{DS} = V_{DSX}, V_{GS} = -10V$ $T_J = 125^\circ\text{C}$			10 μA 250 μA
$R_{DS(on)}$	$V_{GS} = 0V, I_D = 50\text{mA}$, Note 1		50	80 Ω
$I_{D(on)}$	$V_{GS} = 0V, V_{DS} = 25V$, Note 1		400	mA

Features

- Normally ON Mode
- International Standard Packages
- Low $R_{DS(on)}$ HDMOS™ Process
- Rugged Polysilicon Gate Cell Structure
- Fast Switching Speed

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

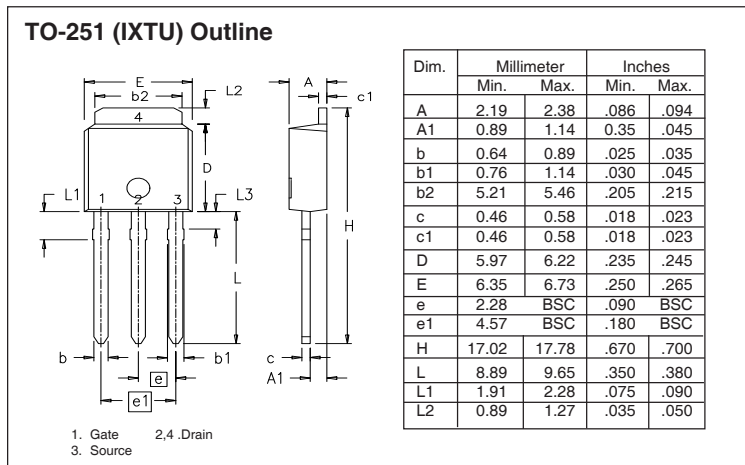
- Level Shifting
- Triggers
- Solid State Relays
- Current Regulators

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 100\text{V}$, $I_D = 100\text{mA}$, Note 1	100	200	mS
C_{iss}	$V_{GS} = -10\text{V}$, $V_{DS} = 25\text{V}$, $f = 1\text{MHz}$		100	pF
C_{oss}			12	pF
C_{rss}			2	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = \pm 5\text{V}$, $V_{DS} = 50\text{V}$, $I_D = 50\text{mA}$ $R_G = 30\Omega$ (External)		7	ns
t_r			10	ns
$t_{d(off)}$			34	ns
t_f			64	ns
$Q_{g(on)}$	$V_{GS} = \pm 5\text{V}$, $V_{DS} = 500\text{V}$, $I_D = 50\text{mA}$		5.8	nC
Q_{gs}			3.6	nC
Q_{gd}			0.4	nC
R_{thJC}	TO-220			5.0 $^\circ\text{C/W}$
R_{thCS}			0.50	$^\circ\text{C/W}$

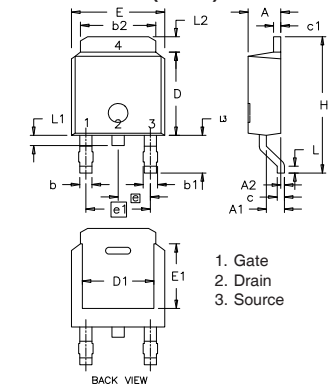
Source-Drain Diode

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
V_{SD}	$I_F = 100\text{mA}$, $V_{GS} = -10\text{V}$, Note 1			1.5 V
t_{rr}	$I_F = 750\text{mA}$, $-di/dt = 100\text{A}/\mu\text{s}$ $V_R = 25\text{V}$, $V_{GS} = -10\text{V}$			1.5 μs

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

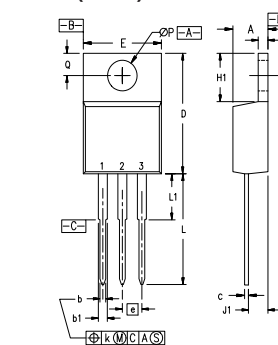


TO-252 AA (IXTY) Outline



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.19	2.38	0.086	0.094
A1	0.89	1.14	0.035	0.045
A2	0	0.13	0	0.005
b	0.64	0.89	0.025	0.035
b1	0.76	1.14	0.030	0.045
b2	5.21	5.46	0.205	0.215
c	0.46	0.58	0.018	0.023
c1	0.46	0.58	0.018	0.023
D	5.97	6.22	0.235	0.245
D1	4.32	5.21	0.170	0.205
E	6.35	6.73	0.250	0.265
E1	4.32	5.21	0.170	0.205
e	2.28	BSC	0.090	BSC
e1	4.57	BSC	0.180	BSC
H	9.40	10.42	0.370	0.410
L	0.51	1.02	0.020	0.040
L1	0.64	1.02	0.025	0.040
L2	0.89	1.27	0.035	0.050
L3	2.54	2.92	0.100	0.115

TO-220 (IXTP) Outline



Pins: 1 - Gate 2 - Drain
3 - Source

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.170	.190	4.32	4.83
b	.025	.040	0.64	1.02
b1	.045	.065	1.15	1.65
c	.014	.022	0.35	0.56
D	.580	.630	14.73	16.00
E	.390	.420	9.91	10.66
e	.100 BSC		2.54 BSC	
F	.045	.055	1.14	1.40
H1	.230	.270	5.85	6.85
J1	.090	.110	2.29	2.79
k	0	.015	0	0.38
L	.500	.550	12.70	13.97
L1	.110	.230	2.79	5.84
ØP	.139	.161	3.53	4.08
Q	.100	.125	2.54	3.18

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

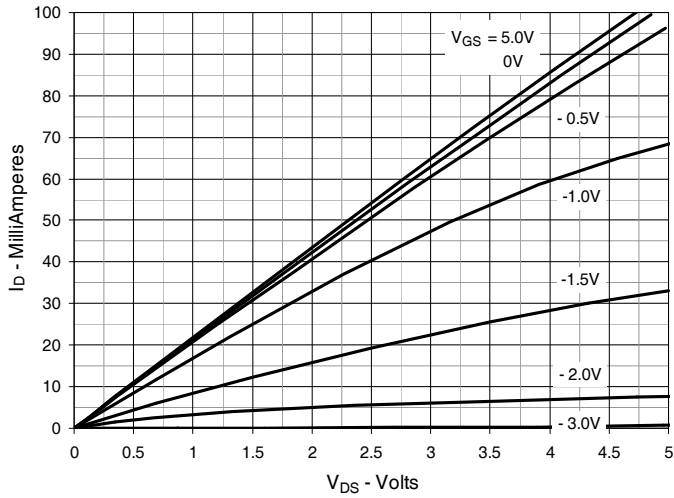


Fig. 2. Output Characteristics @ $T_J = 125^\circ\text{C}$

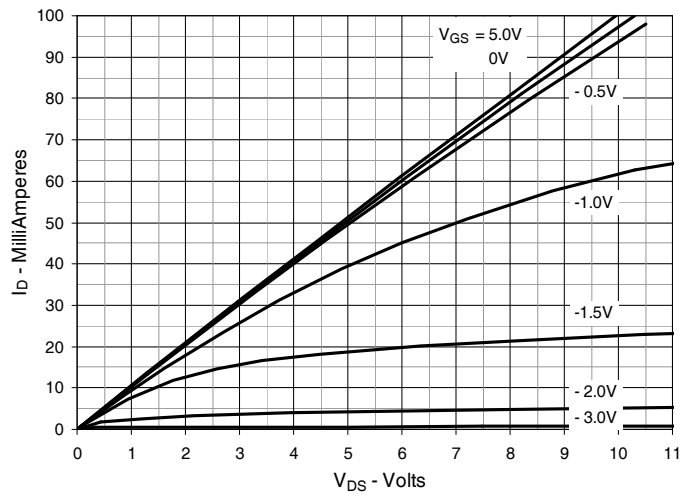


Fig. 3. Drain Current @ $T_J = 25^\circ\text{C}$

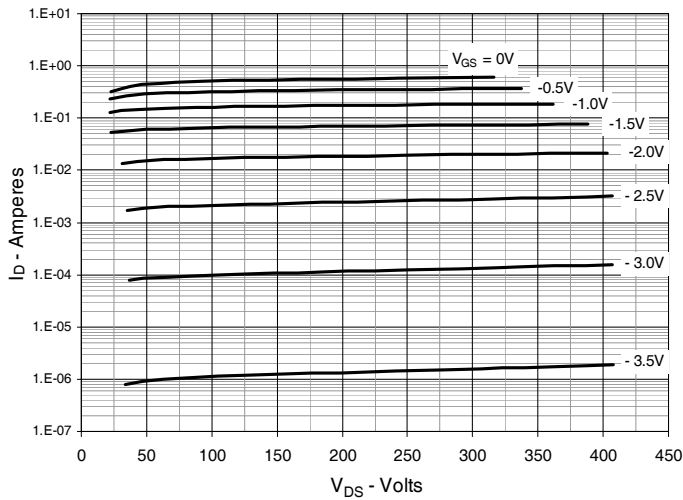


Fig. 4. Drain Current @ $T_J = 100^\circ\text{C}$

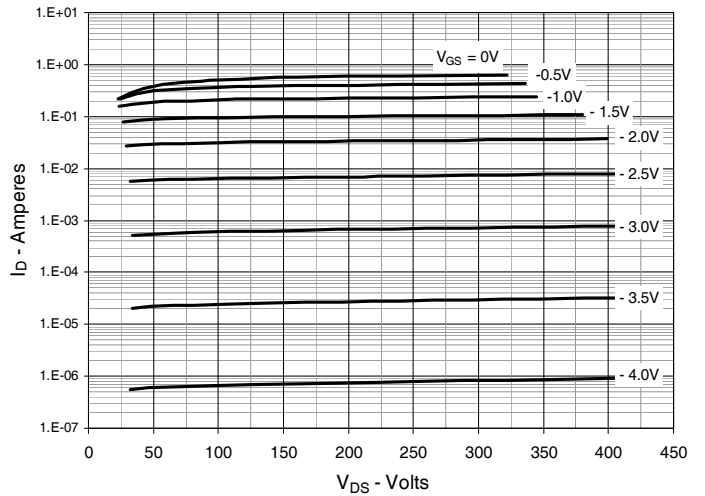


Fig. 5. Dynamic Resistance vs. Gate Voltage

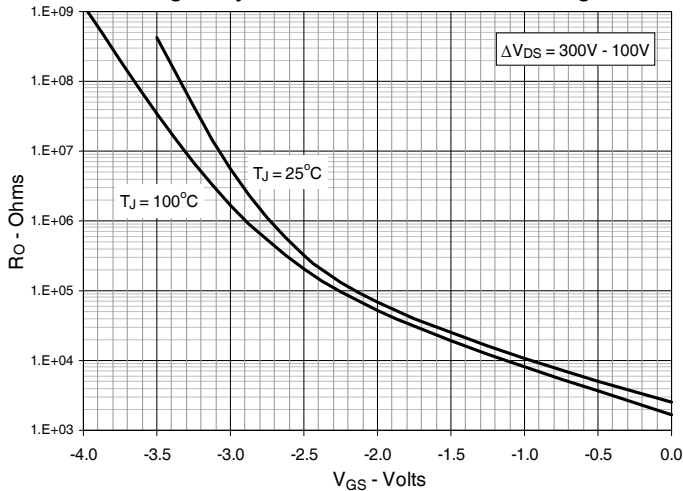


Fig. 6. Normalized $R_{DS(on)}$ vs. Junction Temperature

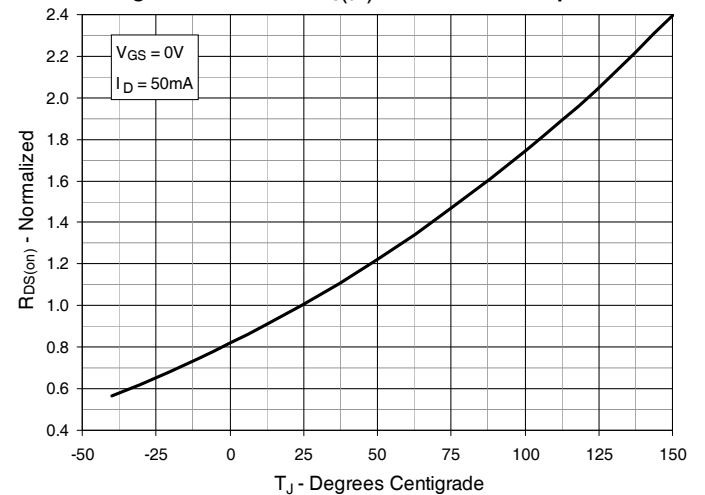


Fig. 7. $R_{DS(on)}$ Normalized to $I_D = 50mA$ Value vs. Drain Current

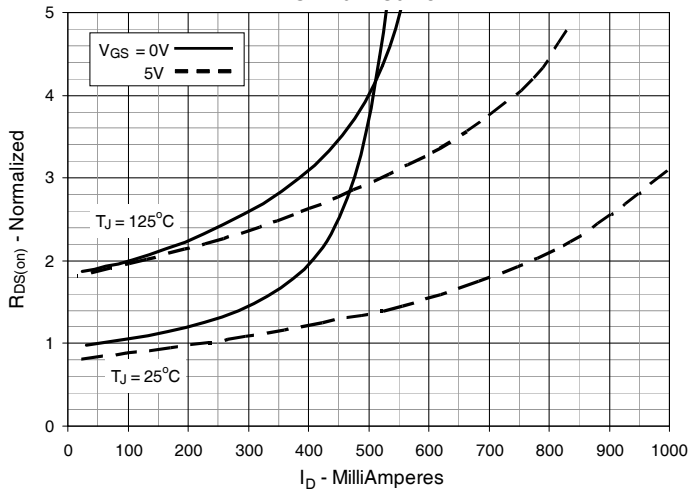


Fig. 8. Input Admittance

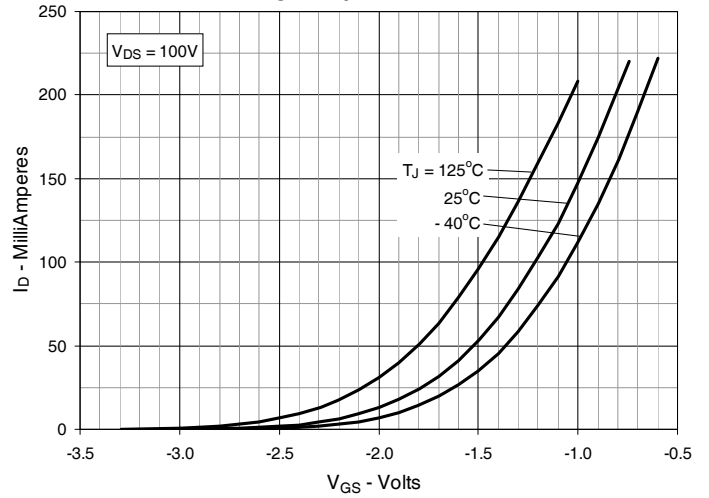


Fig. 9. Transconductance

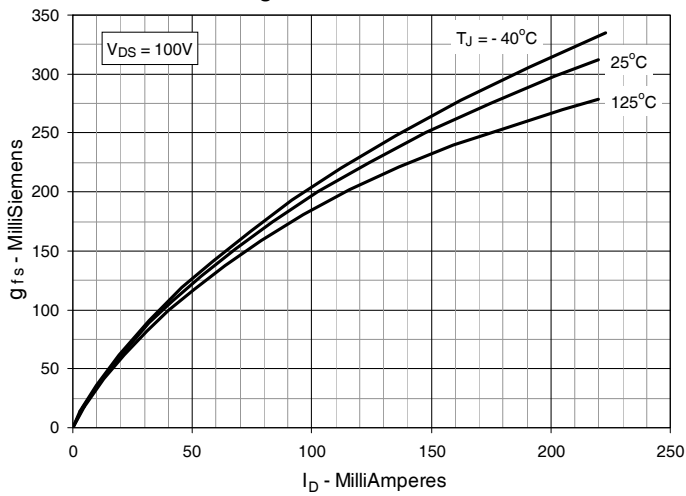


Fig. 10. Forward Voltage Drop of Intrinsic Diode

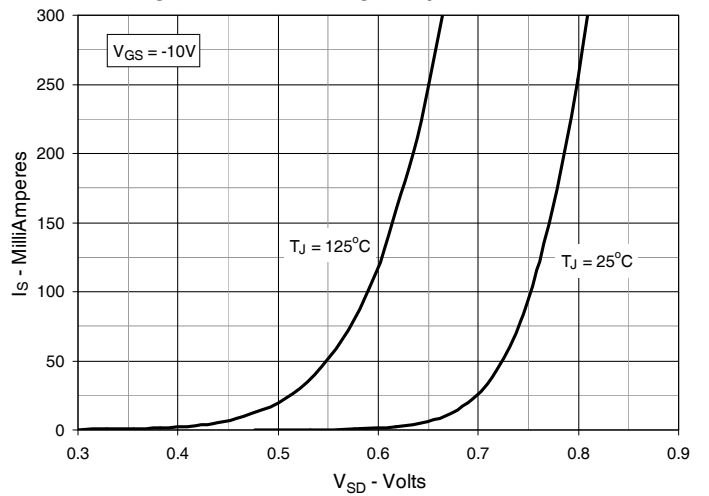


Fig. 11. Capacitance

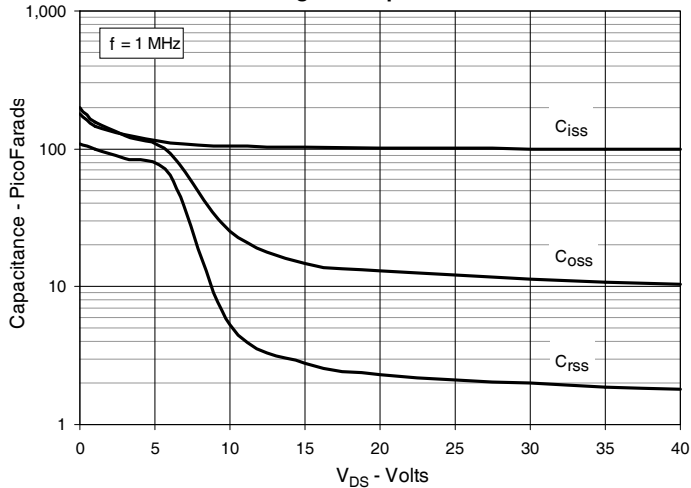


Fig. 12. Gate Charge

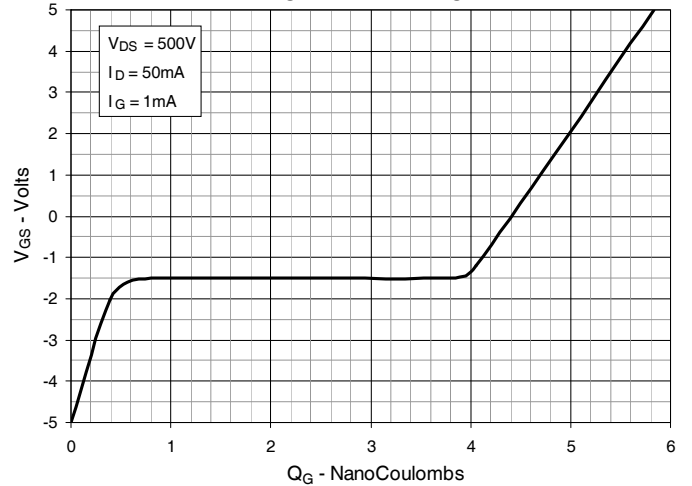


Fig. 13. Forward-Bias Safe Operating Area
@ $T_C = 25^\circ\text{C}$

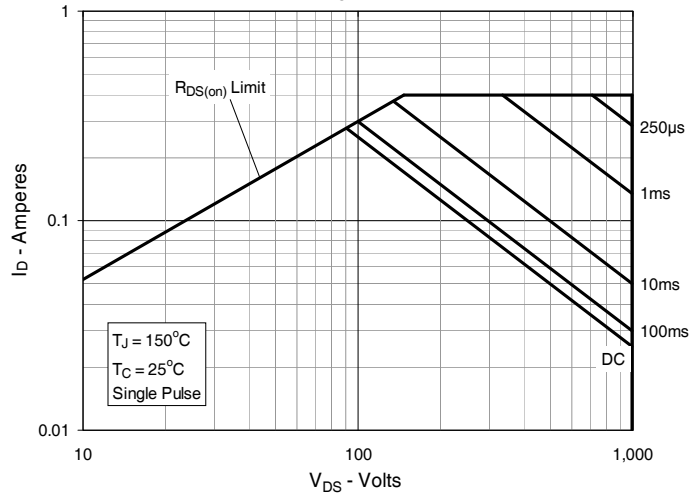


Fig. 14. Forward-Bias Safe Operating Area
@ $T_C = 75^\circ\text{C}$

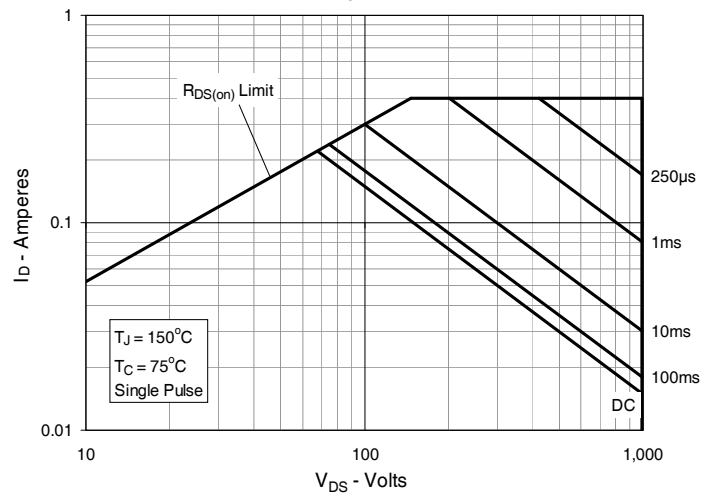
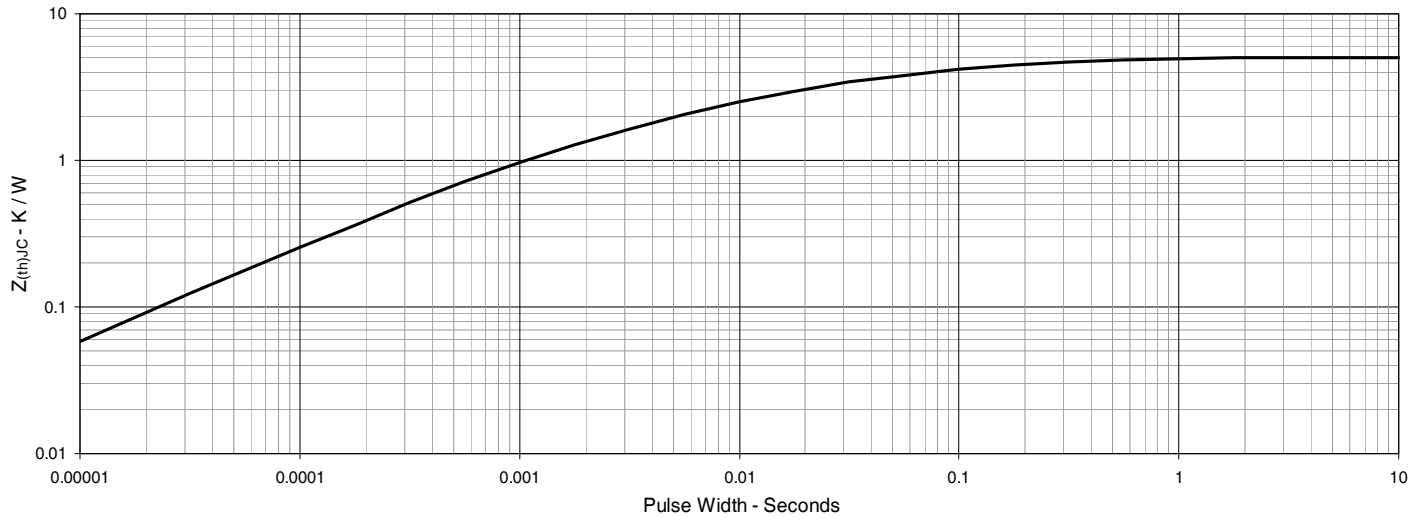


Fig. 15. Maximum Transient Thermal Impedance



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