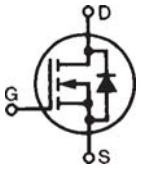
IXYS

Depletion Mode MOSFET

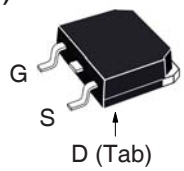
IXTT16N10D2
IXTH16N10D2

V_{DSX} = 100V
$I_{D(on)}$ ≥ 16A
$R_{DS(on)}$ ≤ 64mΩ

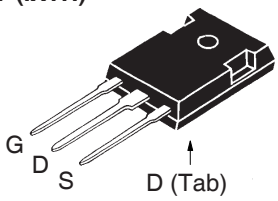
N-Channel



TO-268 (IXTT)



TO-247 (IXTH)



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

Symbol	Test Conditions	Maximum Ratings	
V_{DSX}	T_J = 25°C to 175°C	100	V
V_{DGX}	T_J = 25°C to 175°C, R_{GS} = 1MΩ	100	V
V_{GSX}	Continuous	±20	V
V_{GSM}	Transient	±30	V
P_D	T_C = 25°C	830	W
T_J		- 55 ... +175	°C
T_{JM}		175	°C
T_{stg}		- 55 ... +175	°C
T_L	Maximum Lead Temperature for Soldering	300	°C
T_{SOLD}	1.6 mm (0.062in.) from Case for 10s	260	°C
M_d	Mounting Torque (TO-247)	1.13 / 10	Nm/lb.in
Weight	TO-268	4	g
	TO-247	6	g

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSX}	V_{GS} = - 5V, I_D = 250μA	100			V
$V_{GS(off)}$	V_{DS} = 25V, I_D = 4mA	- 2.0		- 4.5	V
I_{GSX}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
$I_{DSX(off)}$	V_{DS} = V_{DSX}, V_{GS} = - 5V			5	μA
	T_J = 150°C			250	μA
$R_{DS(on)}$	V_{GS} = 0V, I_D = 8A, Note 1			64	mΩ
$I_{D(on)}$	V_{GS} = 0V, V_{DS} = 25V, Note 1	16			A

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°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 20V, I_D = 8A, Note 1	7	11		S
C_{iss}	V_{GS} = -10V, V_{DS} = 25V, f = 1MHz		5700		pF
C_{oss}			1980		pF
C_{rss}			940		pF
$t_{d(on)}$	**Resistive Switching Times**		45		ns
t_r	V_{GS} = ± 5V, V_{DS} = 50V, I_D = 8A		43		ns
$t_{d(off)}$	R_G = 3.3Ω (External)		340		ns
t_f			70		ns
$Q_{g(on)}$	V_{GS} = ± 5V, V_{DS} = 50V, I_D = 8A		225		nC
Q_{gs}			22		nC
Q_{gd}			126		nC
R_{thJC}					0.18 °C/W
R_{thCS}	TO-247		0.21		°C/W

Safe-Operating-Area Specification

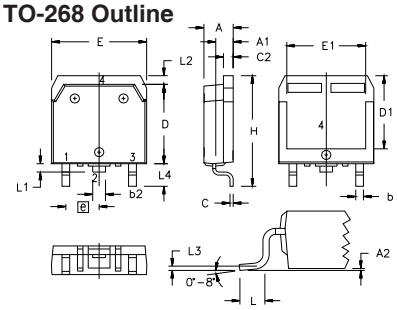
Symbol	Test Conditions	Characteristic Values Min.	Typ.	Max.	
SOA	V_{DS} = 100V, I_D = 5.6A, T_C = 75°C, tp = 5s	556			W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
V_{SD}	I_F = 16A, V_{GS} = -10V, Note 1		0.80	1.30	V
t_{rr}	I_F = 8A, -di/dt = 100A/μs		205		ns
I_{RM}	V_R = 100V, V_{GS} = -10V		8.50		A
Q_{RM}			0.88		μC

Note 1. Pulse test, t ≤ 300μs, duty cycle, d ≤ 2%.

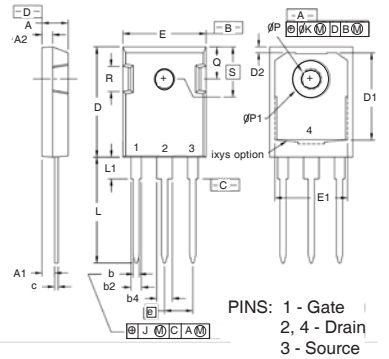
TO-268 Outline



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

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS 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
b2	.075	.083	1.90	2.10
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.488	.500	12.40	12.70
E	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
e	.215 BSC		5.45 BSC	
H	.736	.752	18.70	19.10
L	.094	.106	2.40	2.70
L1	.047	.055	1.20	1.40
L2	.039	.045	1.00	1.15
L3	.010 BSC		0.25 BSC	
L4	.150	.161	3.80	4.10

TO-247 Outline



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

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS 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	

Fig. 1. Output Characteristics @ T_J = 25ºC

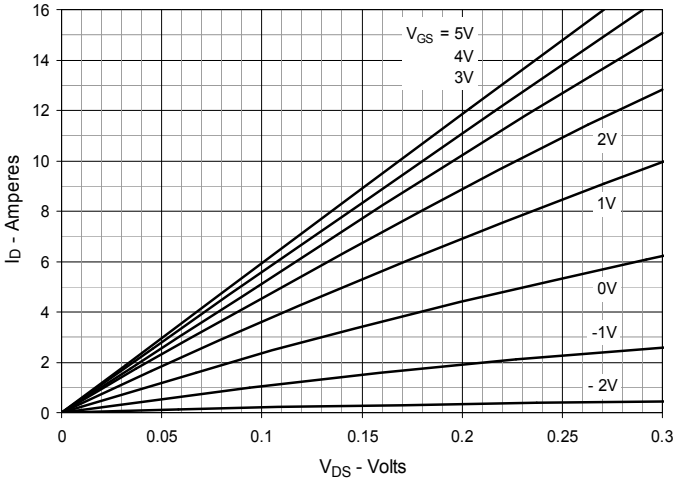


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

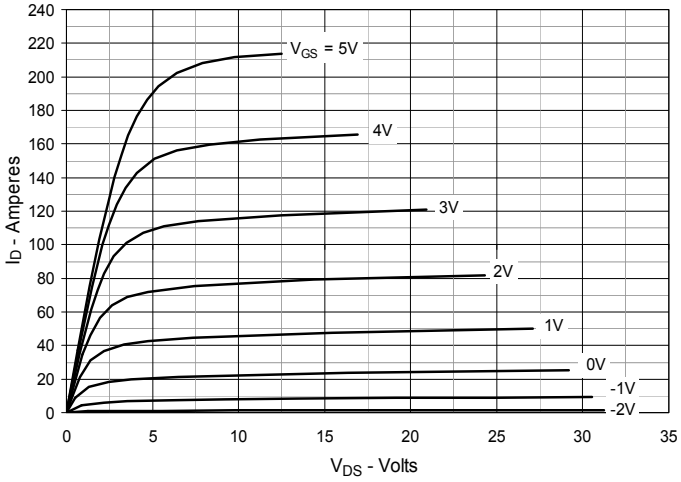


Fig. 3. Output Characteristics @ T_J = 150ºC

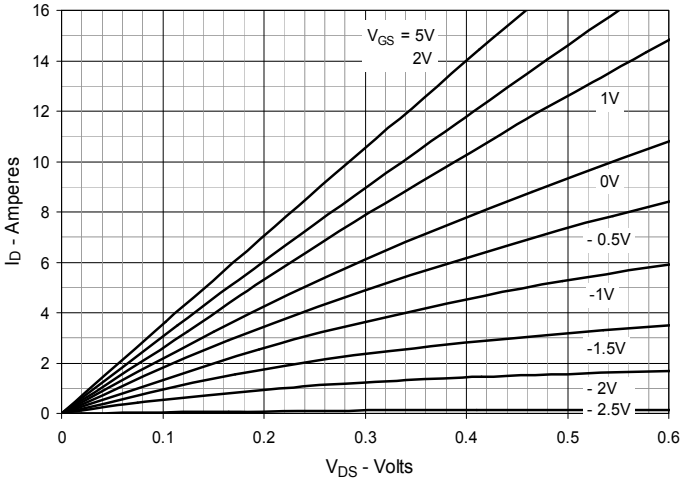


Fig. 4. Drain Current @ T_J = 25ºC

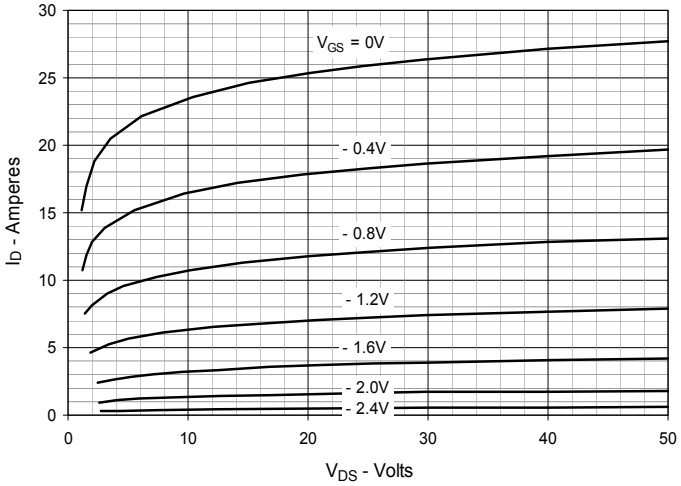


Fig. 5. Drain Current @ T_J = 100ºC

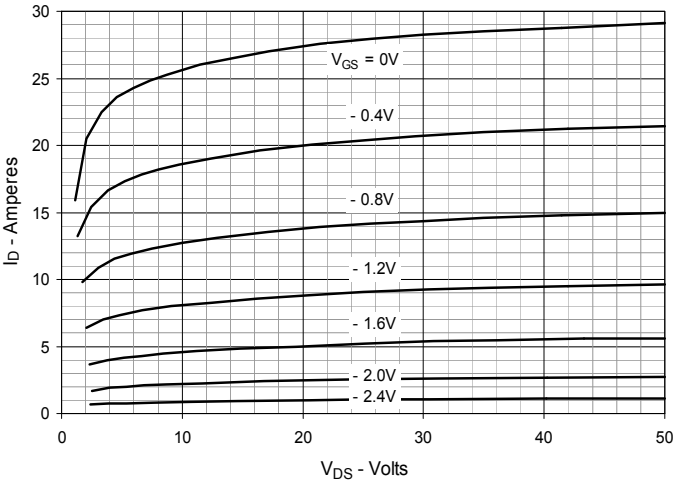


Fig. 6. Dynamic Resistance vs. Gate Voltage

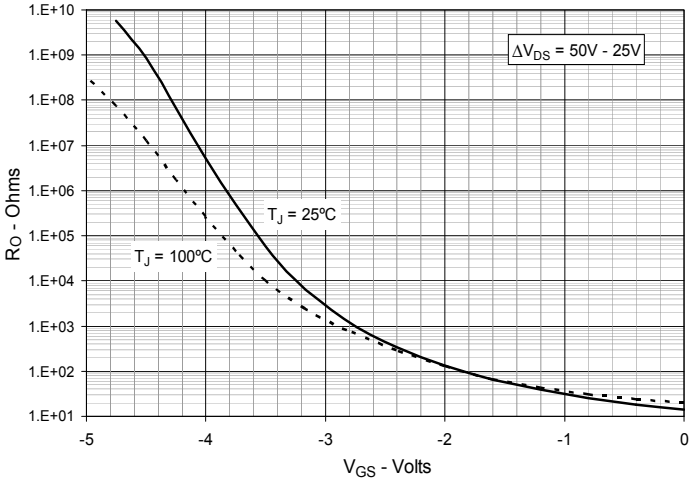


Fig. 7. Normalized $R_{DS(on)}$ vs. Junction Temperature

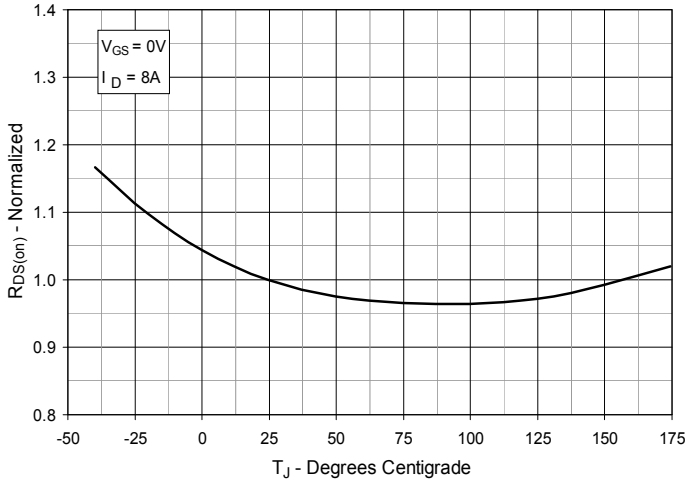


Fig. 8. $R_{DS(on)}$ Normalized to I_D = 8A Value vs. Drain Current

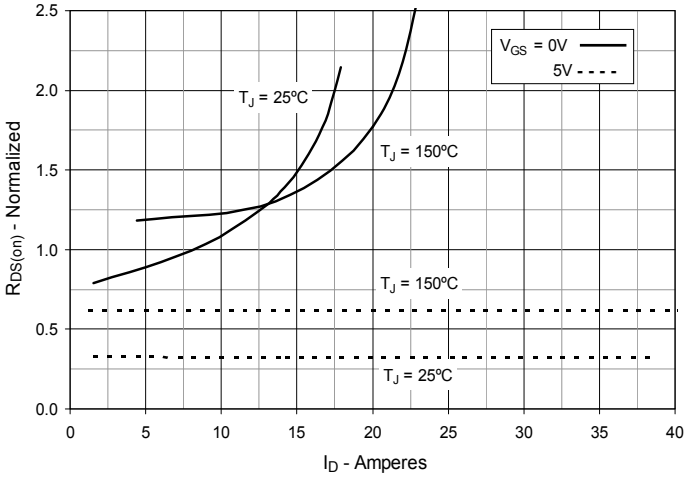


Fig. 9. Input Admittance

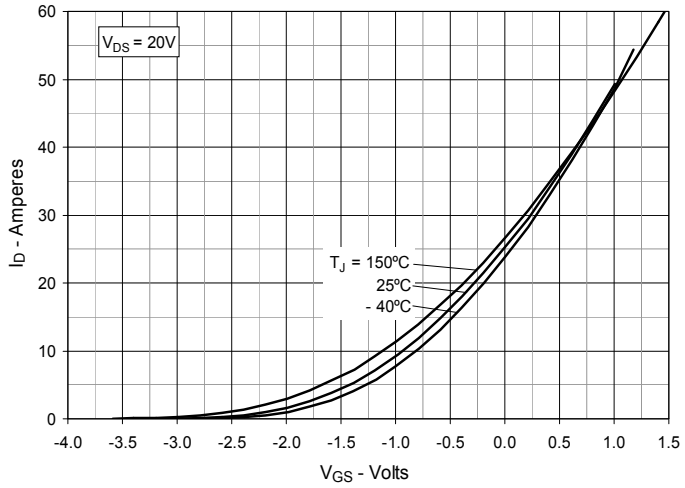


Fig. 10. Transconductance

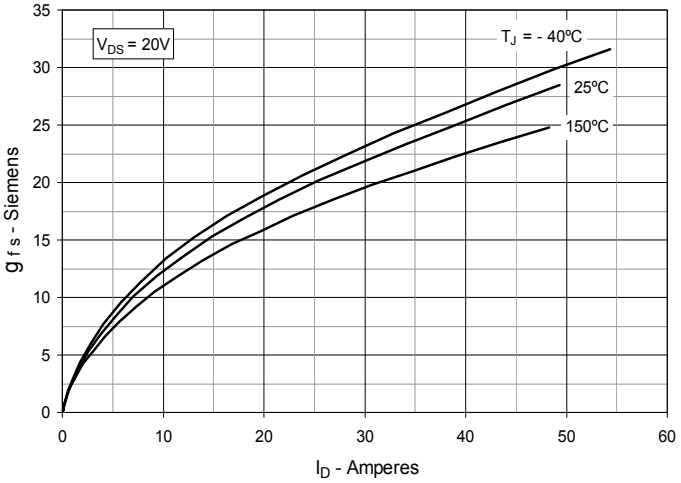


Fig. 11. Normalized Breakdown and Threshold Voltages vs. Junction Temperature

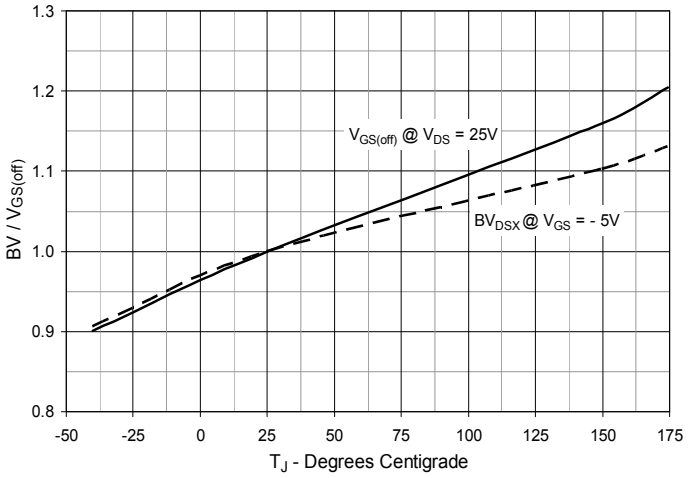


Fig. 12. Forward Voltage Drop of Intrinsic Diode

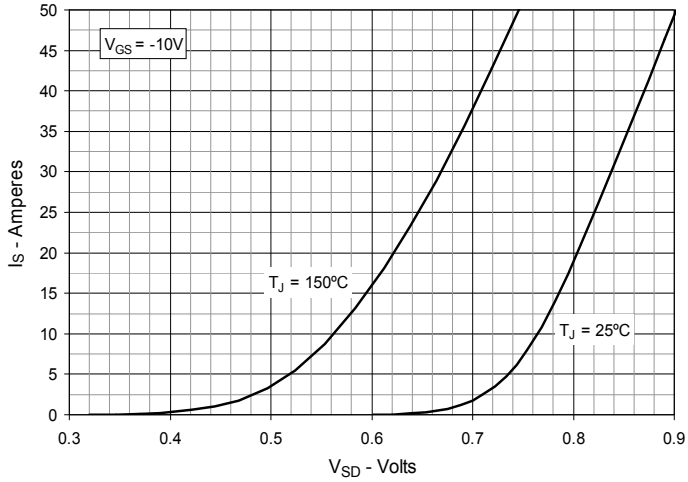


Fig. 13. Capacitance

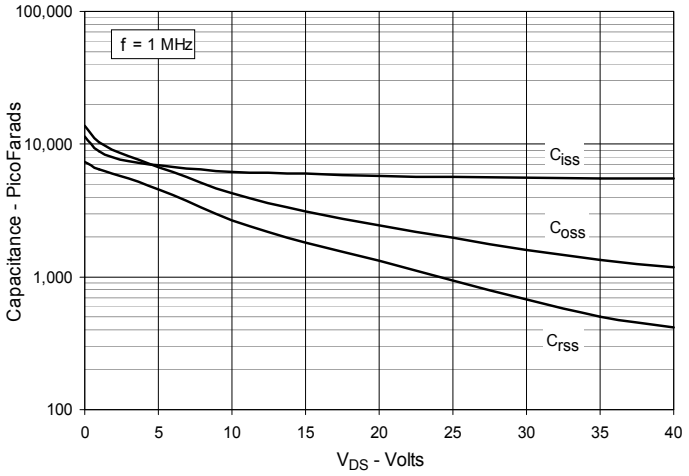


Fig. 14. Gate Charge

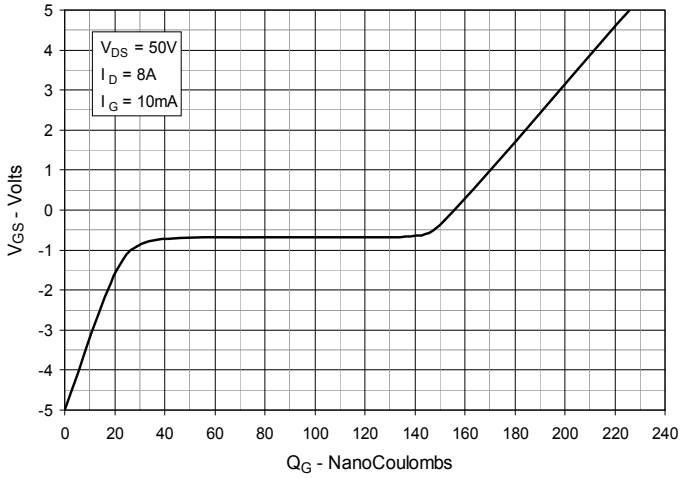


Fig. 15. Forward-Bias Safe Operating Area @ T_C = 25ºC

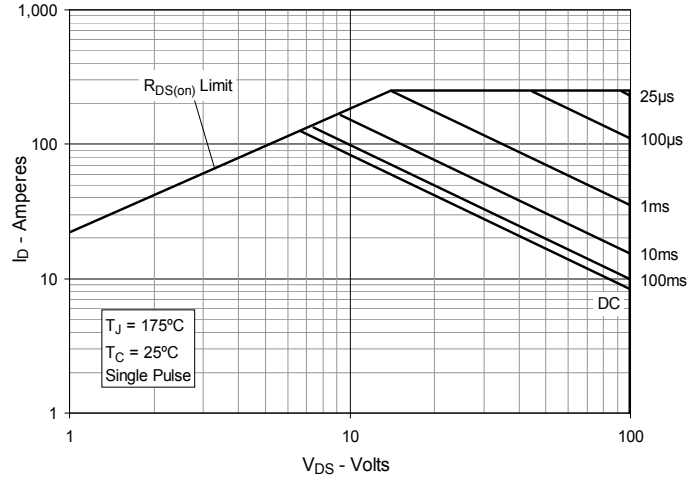


Fig. 16. Forward-Bias Safe Operating Area @ T_C = 75ºC

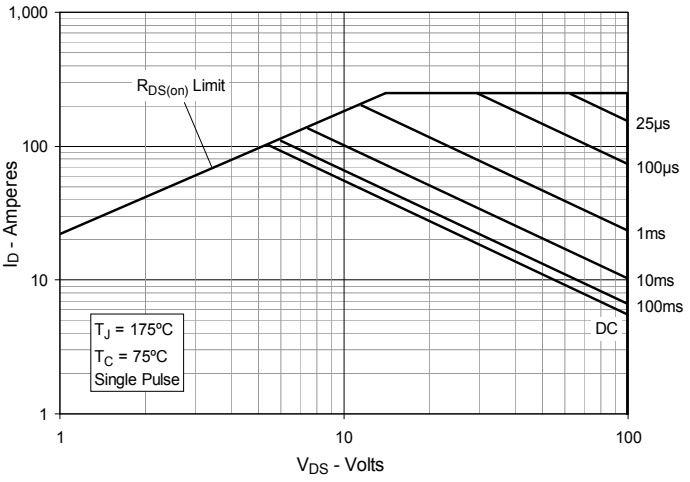


Fig. 17. Maximum Transient Thermal Impedance