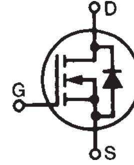
IXYS

High Voltage Power MOSFETs

IXTA02N250 IXTH02N250 IXTV02N250S

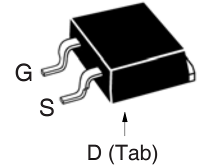
V_{DSS} = 2500V
I_{D25} = 200mA
$R_{DS(on)}$ ≤ 450Ω

N-Channel Enhancement Mode
Fast Intrinsic Diode

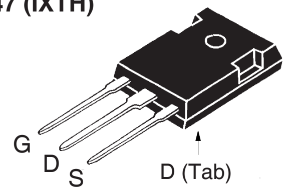


Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	2500	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	2500	V
V_{GSS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_C = 25°C	200	mA
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	600	mA
P_D	T_C = 25°C	83	W
T_J		- 55 ... +150	°C
T_{JM}		150	°C
T_{stg}		- 55 ... +150	°C
T_L	1.6mm (0.062 in.) from Case for 10s	300	°C
T_{SOLD}	Plastic Body for 10s	260	°C
M_d	Mounting Torque (TO-247)	1.13 / 10	Nm/lb.in
F_C	Mounting Force (PLUS220 & TO-263)	11..65 / 25..14.6	N/lb.
Weight	TO-263	2.5	g
	PLUS220	4.0	g
	TO-247	6.0	g

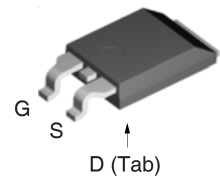
TO-263 (IXTA)



TO-247 (IXTH)



PLUS220SMD (IXTV_S)



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

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 250μA	2500			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.5		4.5	V
I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
I_{DSS}	V_{DS} = 0.8 • V_{DSS}			5	μA
	T_J = 125°C			500	μA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 50mA, Note 1			450	Ω

Features

- Fast Intrinsic Diode
- Low Package Inductance

Advantages

- Easy to Mount
- Space Savings

Applications

- High Voltage Power Supplies
- Capacitor Discharge
- Pulse Circuits

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Symbol	Test Conditions	Characteristic Values		
(T_J = 25°C, Unless Otherwise Specified)		Min.	Typ.	Max.
g_{fs}	V_{DS} = 100V, I_D = 0.5 • I_{D25}, Note 1	88	145	mS
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		116	pF
C_{oss}			8	pF
C_{rss}			3	pF
$t_{d(on)}$	**Resistive Switching Times**		19	ns
t_r	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		19	ns
$t_{d(off)}$	R_G = 100Ω (External)		32	ns
t_f			33	ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		7.4	nC
Q_{gs}			0.7	nC
Q_{gd}			5.3	nC
R_{thJC}				1.5 °C/W
R_{thCS}	TO-247 & PLUS220		0.25	°C/W

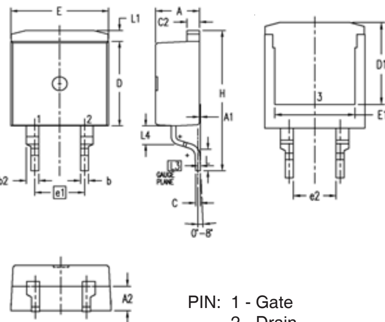
Source-Drain Diode

Symbol	Test Conditions	Characteristic Values		
(T_J = 25°C, Unless Otherwise Specified)		Min.	Typ.	Max.
I_S	V_{GS} = 0V			200 mA
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			800 mA
V_{SD}	I_F = 100mA, V_{GS} = 0V, Note 1			2.0 V
t_{rr}	I_F = 200mA, -di/dt = 50A/μs, V_R = 100V		1.5	μs

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

*Additional provisions for lead to lead voltage isolation are required at V_{DS} > 1200V.

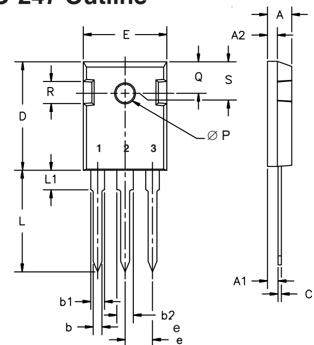
TO-263 Outline



PIN: 1 - Gate
2 - Drain
3 - Source

SYM	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	.170	.185	4.30	4.70
A1	.000	.008	0.00	0.20
A2	.091	.098	2.30	2.50
b	.028	.035	0.70	0.90
b2	.046	.054	1.18	1.38
C	.018	.024	0.45	0.60
C2	.049	.055	1.25	1.40
D	.354	.370	9.00	9.40
D1	.311	.327	7.90	8.30
E	.386	.402	9.80	10.20
E1	.307	.323	7.80	8.20
e1	.200 BSC		5.08 BSC	
(e2)	.163	.174	4.13	4.43
H	.591	.614	15.00	15.60
L	.079	.102	2.00	2.60
L1	.039	.055	1.00	1.40
L3	.010 BSC		0.254 BSC	
(L4)	.071	.087	1.80	2.20

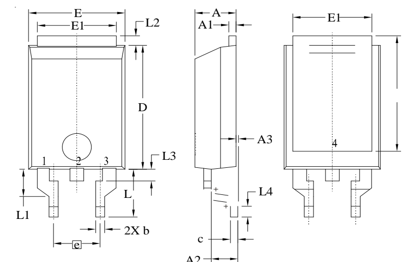
TO-247 Outline



Terminals: 1 - Gate 2 - Drain
3 - Source

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
A_1	2.2	2.54	.087	.102
A_2	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b_1	1.65	2.13	.065	.084
b_2	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
∅P	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15 BSC		242 BSC	

PLUS220SMD Outline

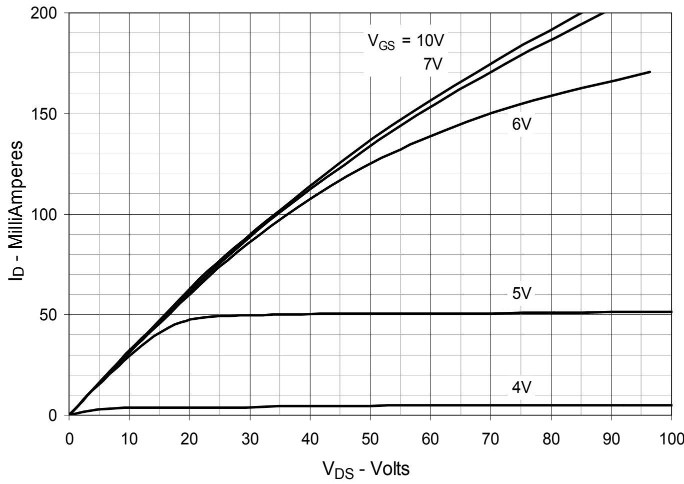


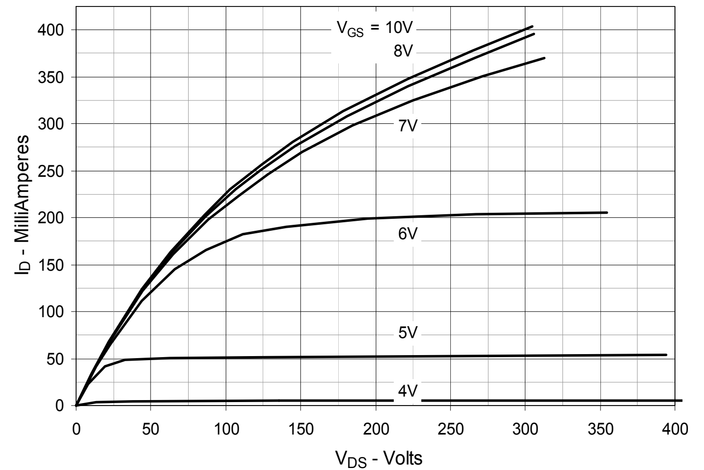
1. Gate 2. Drain
3. Source 4. Drain

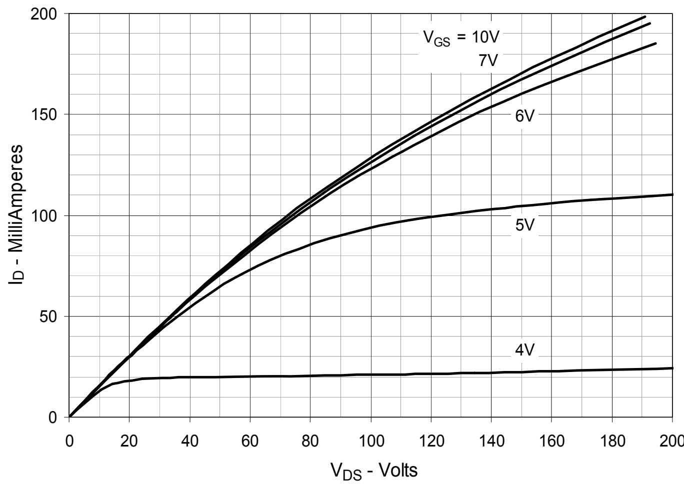
SYM	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	.169	.185	4.30	4.70
A1	.028	.035	0.70	0.90
A2	.098	.118	2.50	3.00
A3	.000	.010	0.00	0.25
b	.035	.047	0.90	1.20
b1	.080	.095	2.03	2.41
b2	.054	.064	1.37	1.63
c	.028	.035	0.70	0.90
D	.551	.591	14.00	15.00
D1	.512	.539	13.00	13.70
E	.394	.433	10.00	11.00
E1	.331	.346	8.40	8.80
e	.200BSC		5.08 BSC	
L	.209	.228	5.30	5.80
L1	.118	.138	3.00	3.50
L2	.035	.051	0.90	1.30
L3	.045	.053	1.25	1.35
L4	.039	.059	1.00	1.50

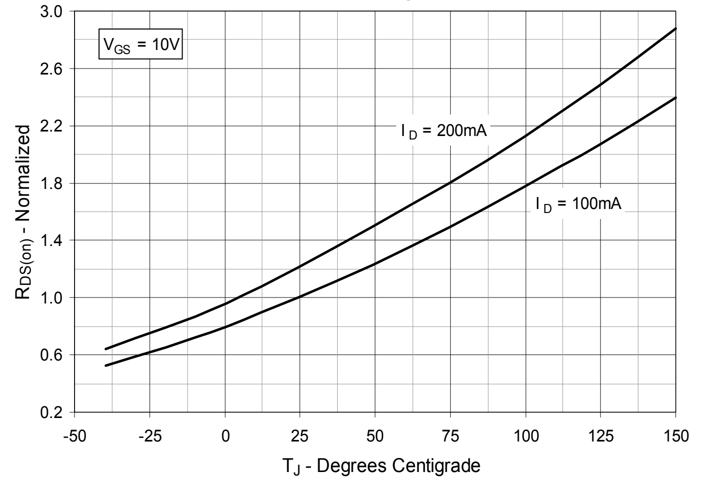
IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

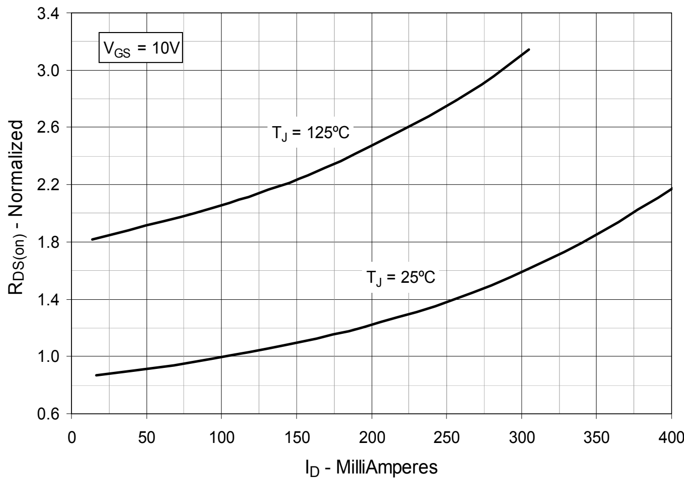
IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: 4,835,592 4,860,072 4,881,106 4,931,844 5,017,508 5,034,796 5,049,961 5,063,307 5,187,117 5,237,481 5,381,025 5,486,715 6,162,665 6,259,123 B1 6,306,728 B1 6,404,065 B1 6,534,343 6,583,505 6,683,344 6,710,405 B2 6,710,463 6,727,585 6,759,692 6,771,478 B2 7,005,734 B2 7,063,975 B2 7,071,537 7,157,338B2

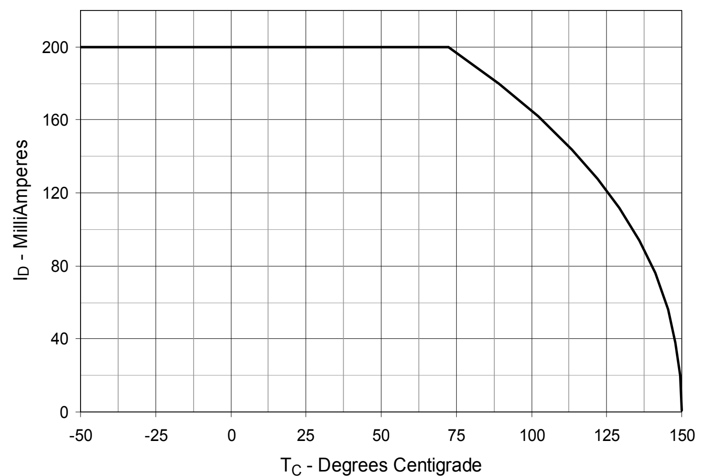












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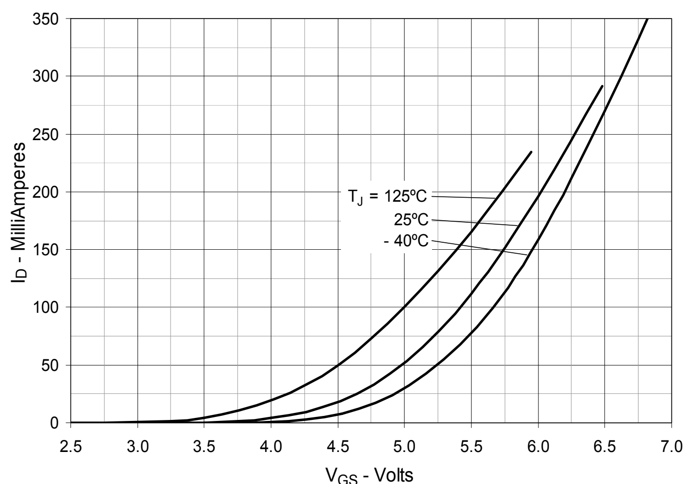

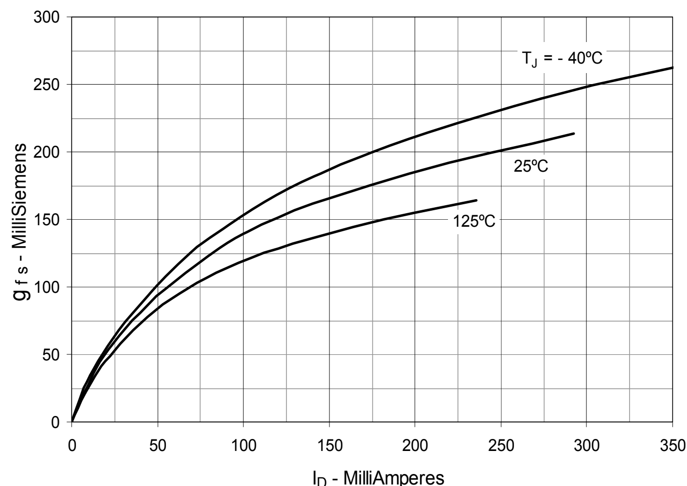

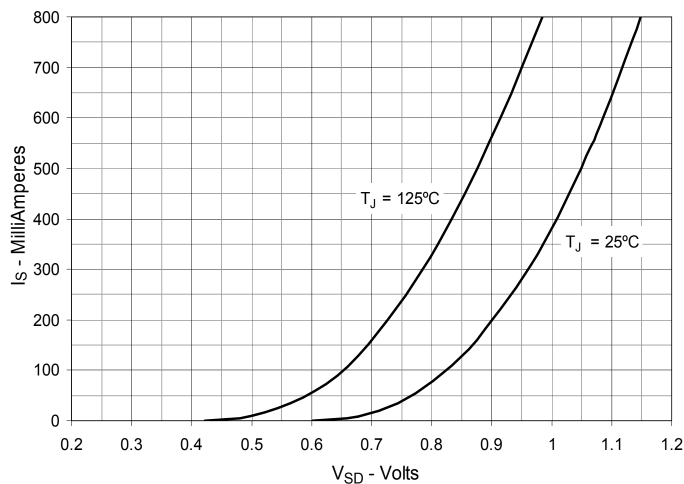

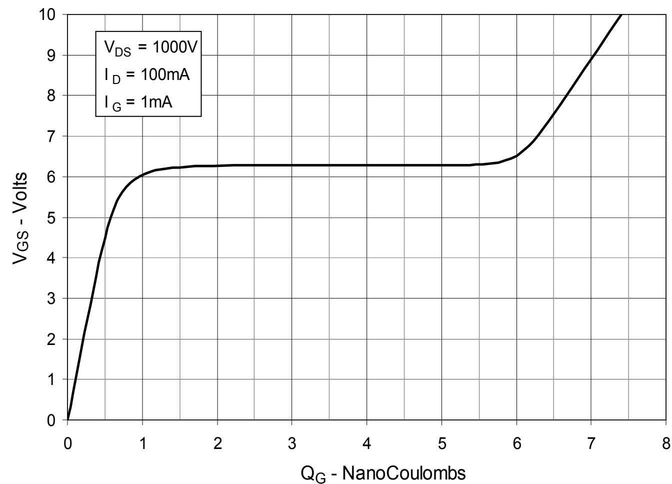

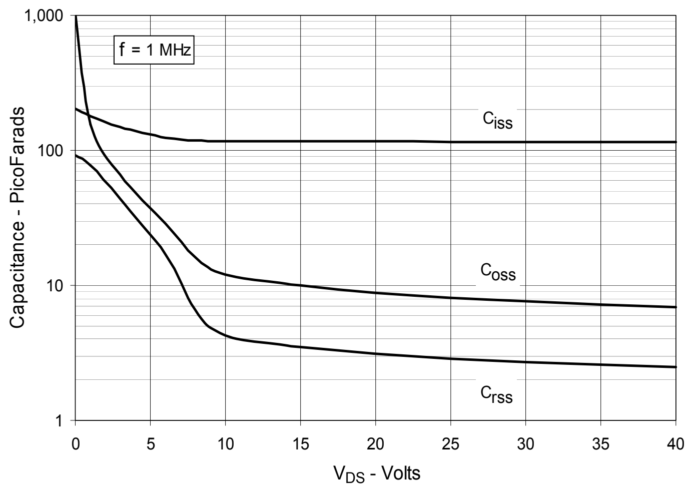

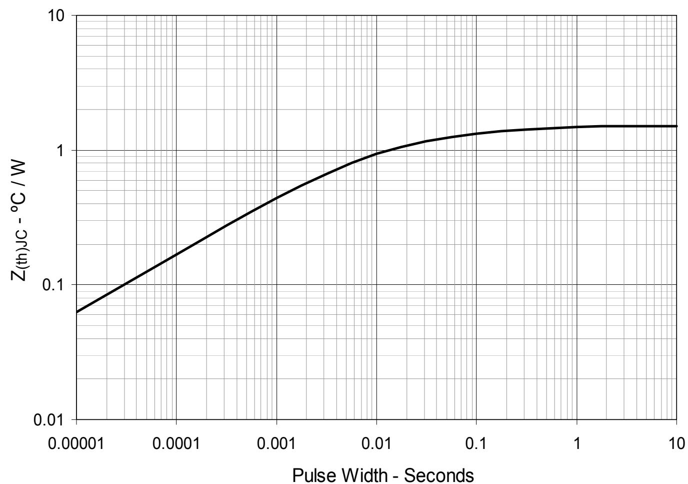

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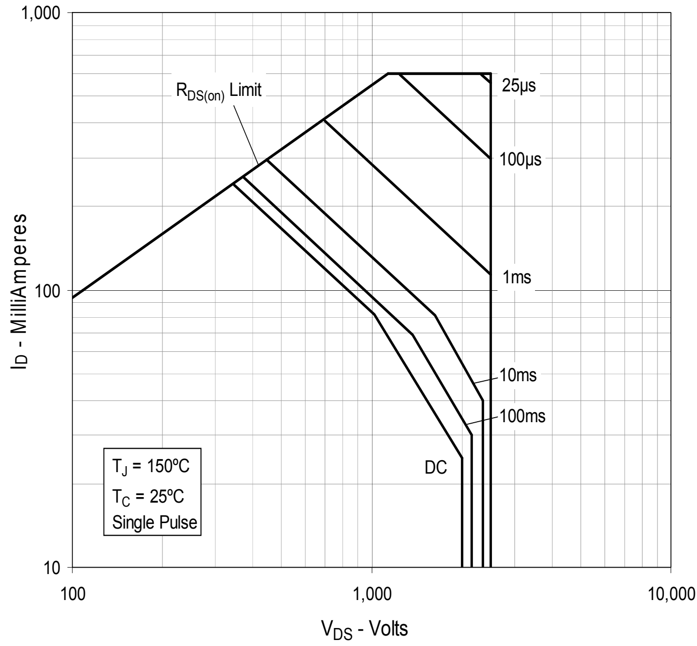

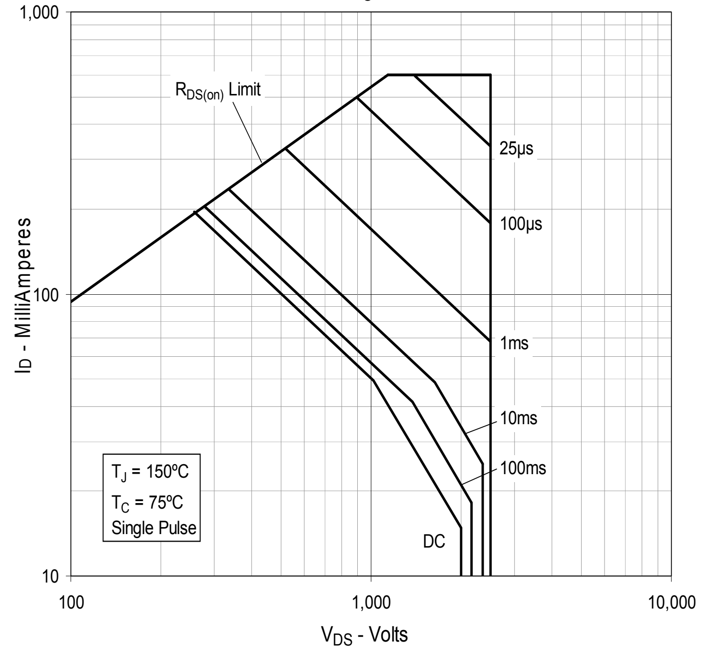

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