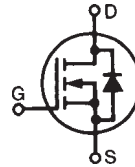


**Linear™ Power MOSFET  
w/ Extended FBSOA**

**IXTK17N120L  
IXTX17N120L**

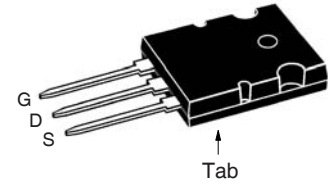
**V<sub>DSS</sub> = 1200V**  
**I<sub>D25</sub> = 17A**  
**R<sub>DS(on)</sub> ≤ 900mΩ**

N-Channel Enhancement Mode  
 Avalanche Rated  
 Guaranteed FBSOA

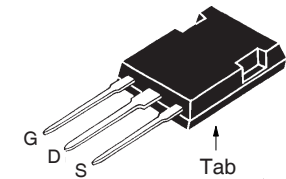


Symbol	Test Conditions	Maximum Ratings	
V <sub>DSS</sub>	T <sub>J</sub> = 25°C to 150°C	1200	V
V <sub>DGR</sub>	T <sub>J</sub> = 25°C to 150°C, R <sub>GS</sub> = 1MΩ	1200	V
V <sub>GSS</sub>	Continuous	±30	V
V <sub>GSM</sub>	Transient	±40	V
I <sub>D25</sub>	T <sub>C</sub> = 25°C	17	A
I <sub>DM</sub>	T <sub>C</sub> = 25°C, pulse width limited by T <sub>JM</sub>	34	A
I <sub>A</sub>	T <sub>C</sub> = 25°C	8.5	A
E <sub>AS</sub>	T <sub>C</sub> = 25°C	2.5	J
P <sub>D</sub>	T <sub>C</sub> = 25°C	700	W
T <sub>J</sub>		-55...+150	°C
T <sub>JM</sub>		150	°C
T <sub>stg</sub>		-55...+150	°C
T <sub>L</sub>	1.6mm (0.063 in.) from case for 10s	300	°C
T <sub>SOLD</sub>	Plastic body for 10s	260	°C
M <sub>d</sub>	Mounting torque (IXTK)	1.13/10	Nm/lb.in.
F <sub>C</sub>	Mounting Force (IXTX)	20..120 / 4.5..27	N/lb.
Weight	TO-264	10	g
	PLUS247	6	g

TO-264 (IXTK)



PLUS247 (IXTX)



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

**Features**

- Designed for Linear Operations
- Guaranteed FBSOA at 60°C
- Avalanche Rated
- Low R<sub>DS(on)</sub> HDMOS™ Process
- Molding Epoxies Meet UL94 V-0 Flammability Classification

**Advantages**

- Easy to Mount
- Space Savings
- High Power Density

**Applications**

- Programmable Loads
- Current Regulators
- DC-DC Convertors
- Battery Chargers
- DC Choppers
- Temperature and Lighting Controls

Symbol	Test Conditions (T <sub>J</sub> = 25°C, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 1mA	1200		V
V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	3.0		6.0 V
I <sub>GSS</sub>	V <sub>GS</sub> = ±30V, V <sub>DS</sub> = 0V			±200 nA
I <sub>DSS</sub>	V <sub>DS</sub> = V <sub>DSS</sub> , V <sub>GS</sub> = 0V T <sub>J</sub> = 125°C			50 μA 2 mA
R <sub>DS(on)</sub>	V <sub>GS</sub> = 20V, I <sub>D</sub> = 0.5 • I <sub>DSS</sub> , Note 1			900 mΩ

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , Unless Otherwise Specified)	Characteristic Values			
		Min.	Typ.	Max.	
$g_{fs}$	$V_{DS} = 20\text{V}$ , $I_D = 0.5 \cdot I_{DSS}$ , Note 1	3.5	5.0	6.5	S
$C_{iss}$	$V_{GS} = 0\text{V}$ , $V_{DS} = 25\text{V}$ , $f = 1\text{MHz}$		8300		pF
$C_{oss}$			520		pF
$C_{rss}$			90		pF
$t_{d(on)}$	<b>Resistive Switching Times</b> $V_{GS} = 15\text{V}$ , $V_{DS} = 0.5 \cdot V_{DSS}$ , $I_D = 0.5 \cdot I_{DSS}$ $R_G = 2\Omega$ (External)		42		ns
$t_r$			31		ns
$t_{d(off)}$			110		ns
$t_f$			83		ns
$Q_{g(on)}$		$V_{GS} = 15\text{V}$ , $V_{DS} = 0.5 \cdot V_{DSS}$ , $I_D = 0.5 \cdot I_{DSS}$		155	
$Q_{gs}$			41		nC
$Q_{gd}$			60		nC
$R_{thJC}$				0.18	$^\circ\text{C/W}$
$R_{thCS}$			0.15		$^\circ\text{C/W}$

### Safe Operating Area Specification

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
SOA	$V_{DS} = 800\text{V}$ , $I_D = 0.3\text{A}$ , $T_C = 60^\circ\text{C}$ , $t_p = 3\text{s}$	240		W

### Source-Drain Diode

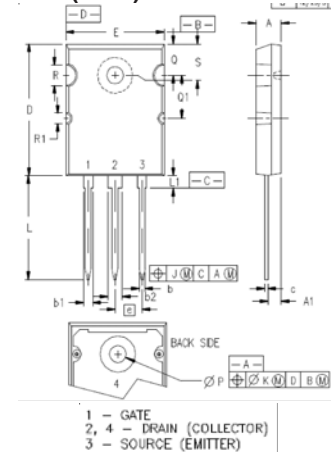
Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , Unless Otherwise Specified)	Characteristic Values			
		Min.	Typ.	Max.	
$I_S$	$V_{GS} = 0\text{V}$			17	A
$I_{SM}$	Repetitive, Pulse Width Limited by $T_{JM}$			50	A
$V_{SD}$	$I_F = 17\text{A}$ , $V_{GS} = 0\text{V}$ , Note 1			1.5	V
$t_{rr}$	$I_F = I_S$ , $-di/dt = 100\text{A}/\mu\text{s}$ , $V_R = 100\text{V}$		1830		ns

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

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

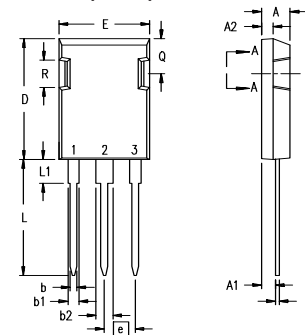
IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: 4,835,592; 4,931,844; 5,049,961; 5,237,481; 6,162,665; 6,404,065 B1; 6,683,344; 6,727,585; 7,005,734 B2; 7,157,338 B2; 4,850,072; 5,017,508; 5,063,307; 5,381,025; 6,259,123 B1; 6,534,343; 6,710,405 B2; 6,759,692; 7,063,975 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

### TO-264 (IXTK) Outline



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.185	.209	4.70	5.31
A1	.102	.118	2.59	3.00
b	.037	.055	0.94	1.40
b1	.087	.102	2.21	2.59
b2	.110	.126	2.79	3.20
c	.017	.029	0.43	0.74
D	1.007	1.047	25.58	26.59
E	.760	.799	19.30	20.29
e	.215 BSC		5.46 BSC	
J	.000	.010	0.00	0.25
K	.000	.010	0.00	0.25
L	.779	.842	19.79	21.39
L1	.087	.102	2.21	2.59
ØP	.122	.138	3.10	3.51
Q	.240	.256	6.10	6.50
Q1	.330	.346	8.38	8.79
ØR	.155	.187	3.94	4.75
ØR1	.085	.093	2.16	2.36
S	.243	.253	6.17	6.43

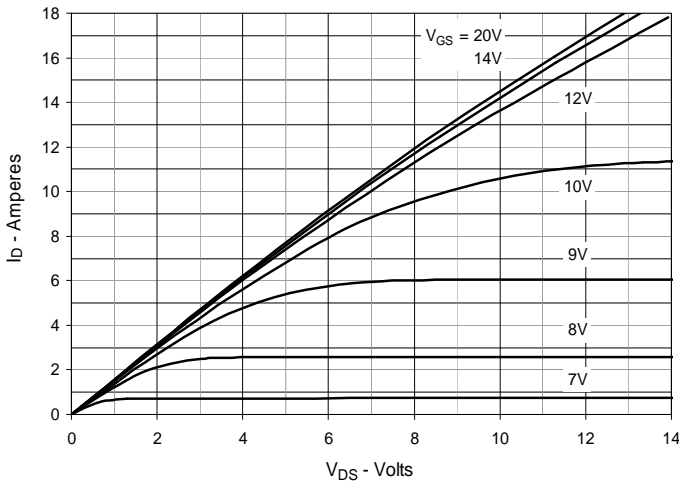
### PLUS 247™ (IXTX) Outline



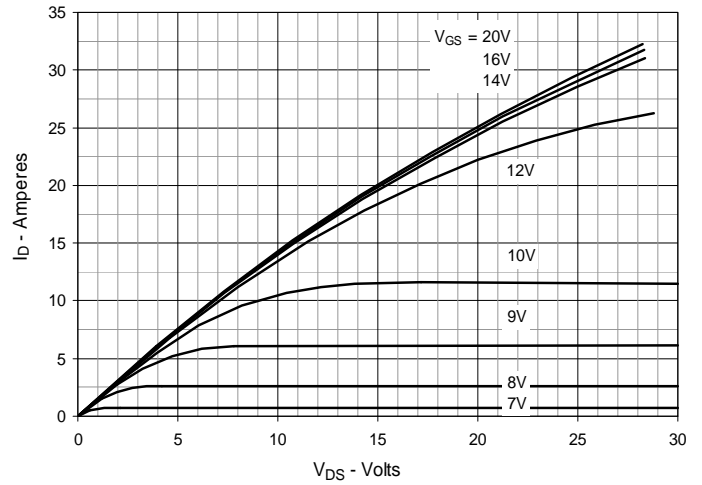
Terminals: 1 - Gate  
2 - Drain (Collector)  
3 - Source (Emitter)  
4 - Drain (Collector)

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.83	5.21	.190	.205
A <sub>1</sub>	2.29	2.54	.090	.100
A <sub>2</sub>	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b <sub>1</sub>	1.91	2.13	.075	.084
b <sub>2</sub>	2.92	3.12	.115	.123
C	0.61	0.80	.024	.031
D	20.80	21.34	.819	.840
E	15.75	16.13	.620	.635
e	5.45 BSC		.215 BSC	
L	19.81	20.32	.780	.800
L1	3.81	4.32	.150	.170
Q	5.59	6.20	.220	0.244
R	4.32	4.83	.170	.190

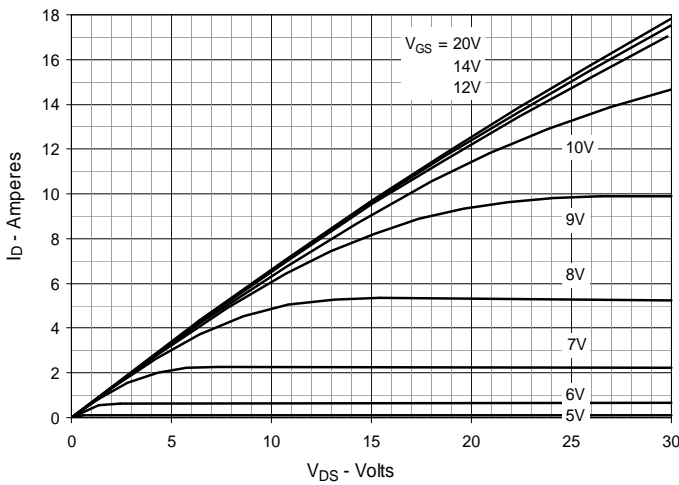
**Fig. 1. Output Characteristics @  $T_J = 25^\circ\text{C}$**



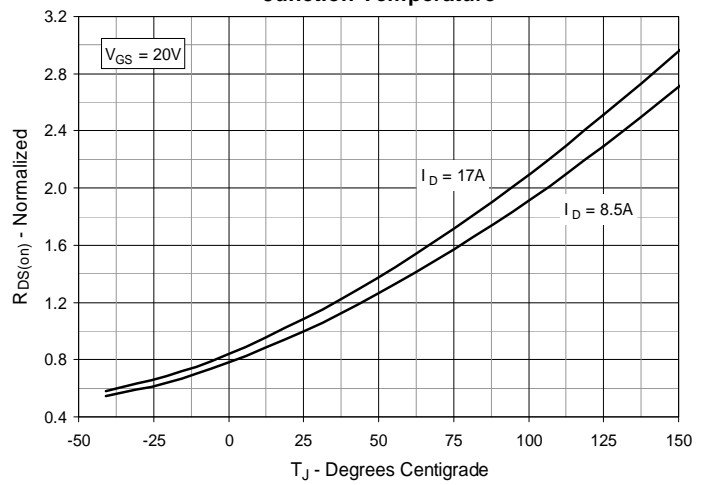
**Fig. 2. Extended Output Characteristics @  $T_J = 25^\circ\text{C}$**



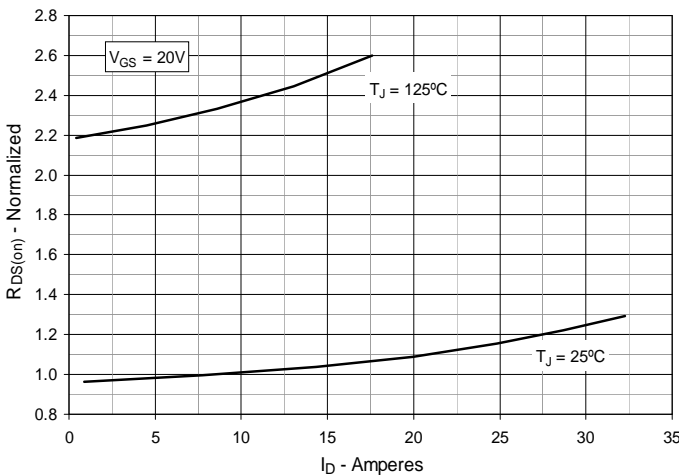
**Fig. 3. Output Characteristics @  $T_J = 125^\circ\text{C}$**



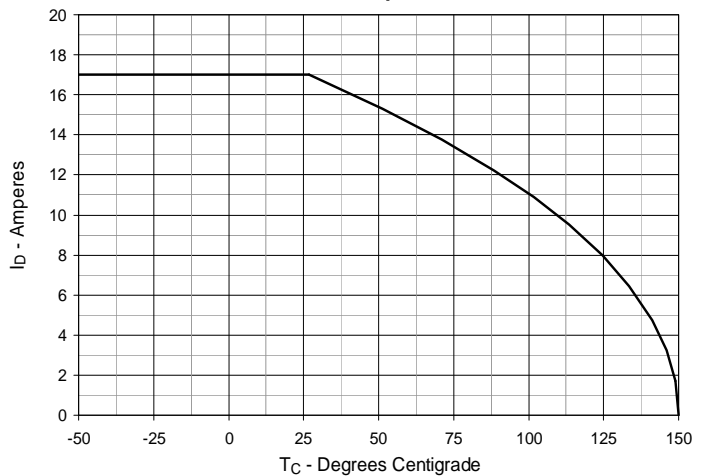
**Fig. 4.  $R_{DS(on)}$  Normalized to  $I_D = 8.5\text{A}$  Value vs. Junction Temperature**



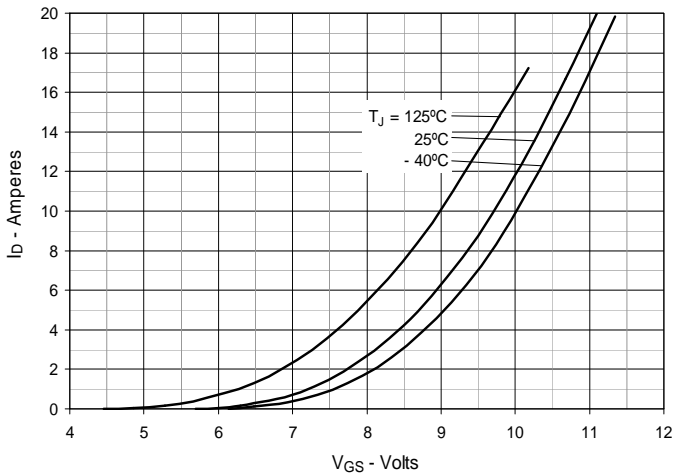
**Fig. 5.  $R_{DS(on)}$  Normalized to  $I_D = 8.5\text{A}$  Value vs. Drain Current**



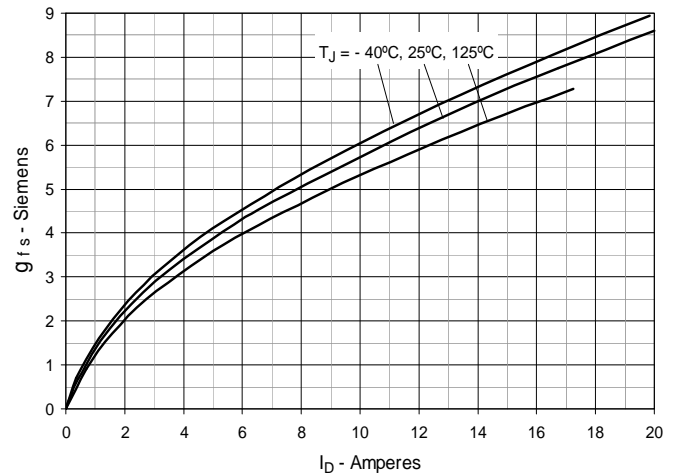
**Fig. 6. Maximum Drain Current vs. Case Temperature**



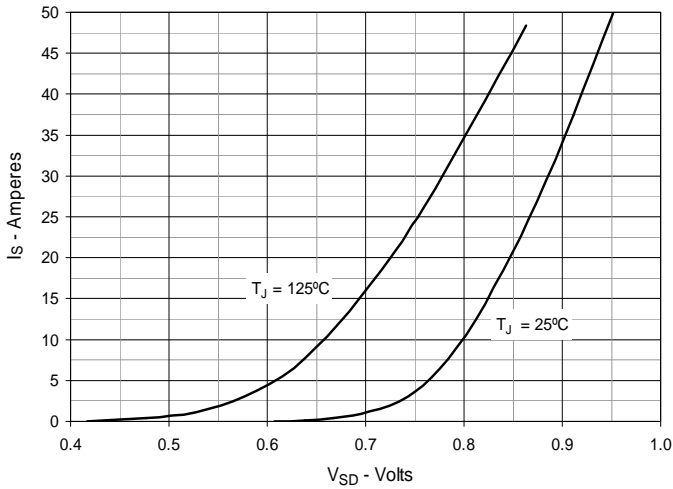
**Fig. 7. Input Admittance**



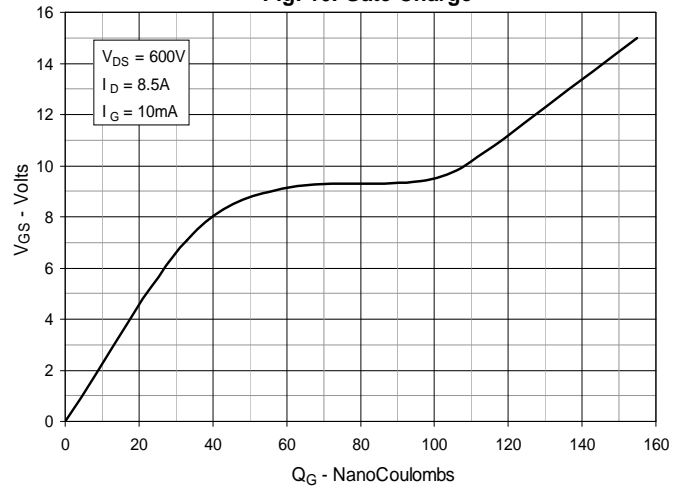
**Fig. 8. Transconductance**



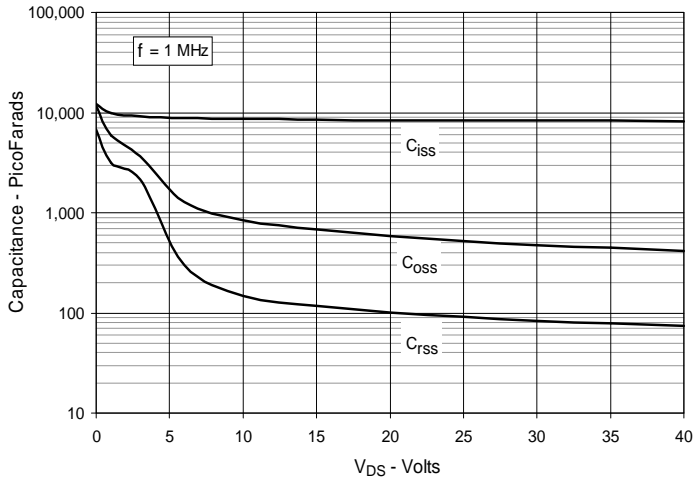
**Fig. 9. Forward Voltage Drop of Intrinsic Diode**



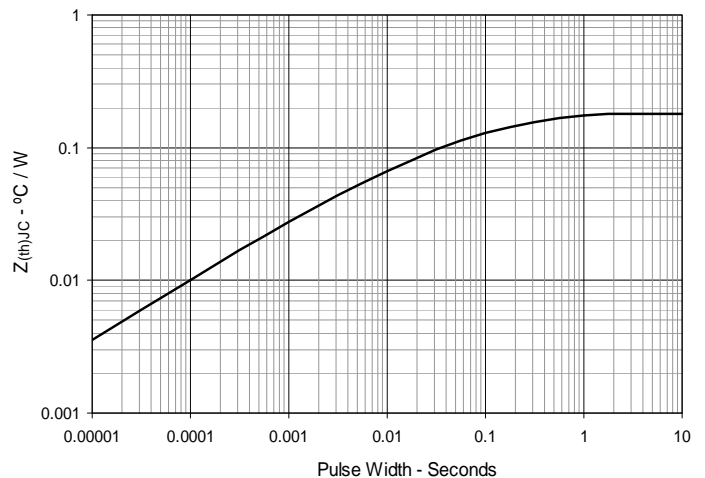
**Fig. 10. Gate Charge**



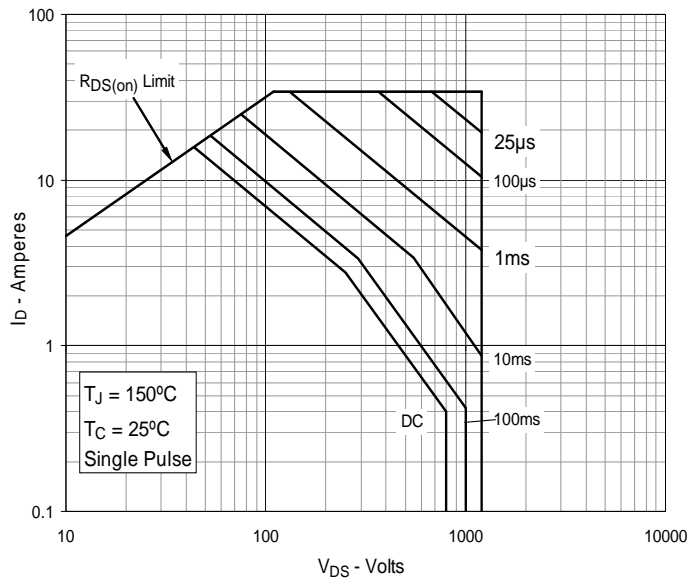
**Fig. 11. Capacitance**



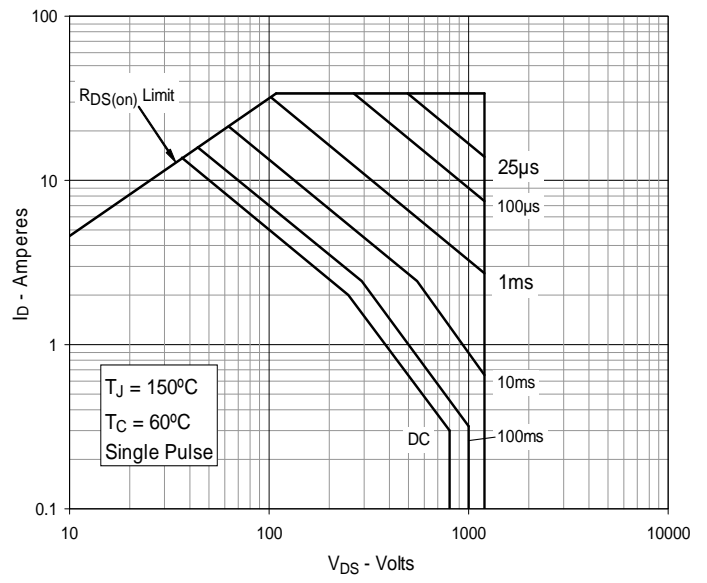
**Fig. 12. Maximum Transient Thermal Impedance**



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



**Fig. 14. Forward-Bias Safe Operating Area**  
@  $T_C = 60^\circ\text{C}$





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