IXYS

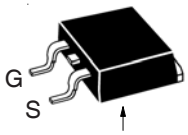
PolarP™ Power MOSFETs

P-Channel Enhancement Mode
Avalanche Rated

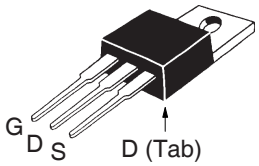
IXTA26P20P
IXTP26P20P
IXTQ26P20P
IXTH26P20P

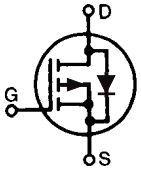
V_{DSS} = - 200V
I_{D25} = - 26A
$R_{DS(on)}$ ≤ 170mΩ

TO-263 AA (IXTA)

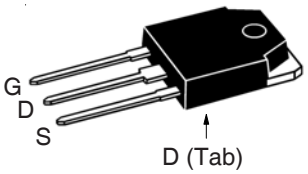


TO-220AB (IXTP)



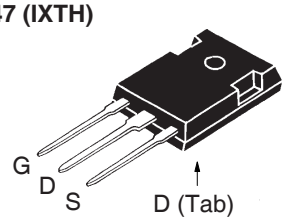


TO-3P (IXTQ)



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	- 200	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	- 200	V
V_{GSS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_C = 25°C	- 26	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	- 70	A
I_A	T_C = 25°C	- 26	A
E_{AS}	T_C = 25°C	1.5	J
dv/dt	$I_S \le I_{DM}$, $V_{DD} \le V_{DSS}$, $T_J \le 150°C$	10	V/ns
P_D	T_C = 25°C	300	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-3P,TO-220 &TO-247)	1.13/10	Nm/lb.in.
Weight	TO-263	2.5	g
	TO-220	3.0	g
	TO-3P	5.5	g
	TO-247	6.0	g

TO-247 (IXTH)



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

Features

- International Standard Packages
- Avalanche Rated
- Rugged PolarP™ Process
- Low Package Inductance
- Fast Intrinsic Diode

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- High-Side Switches
- Push Pull Amplifiers
- DC Choppers
- Automatic Test Equipment
- Current Regulators

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = - 250μA	- 200			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = - 250μA	- 2.0		- 4.0	V
I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
I_{DSS}	$V_{DS} = V_{DSS}$, V_{GS}= 0V			- 10	μA
	T_J = 125°C			-150	μA
$R_{DS(on)}$	V_{GS} = -10V, $I_D = 0.5 \bullet I_{D25}$, Note 1			170	mΩ

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = -10V, I_D = 0.5 • I_{D25}, Note 1	10	17		S
C_{iss}	V_{GS} = 0V, V_{DS} = -25V, f = 1MHz		2740		pF
C_{oss}			540		pF
C_{rss}			100		pF
$t_{d(on)}$	**Resistive Switching Times**		18		ns
t_r	V_{GS} = -10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		33		ns
$t_{d(off)}$	R_G = 3.3Ω (External)		46		ns
t_f			21		ns
$Q_{g(on)}$	V_{GS} = -10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		56		nC
Q_{gs}			18		nC
Q_{gd}			20		nC
R_{thJC}				0.42	°C/W
R_{thCS}	(TO-3P & TO-247)		0.21		°C/W
	(TO-220)		0.50		°C/W

Safe Operating Area Specification

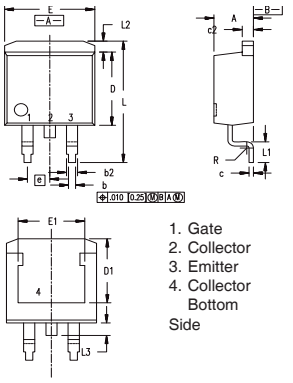
Symbol	Test Conditions	Characteristic Values Min.	Typ.	Max.	
SOA	V_{DS} = - 200V, I_D = - 0.8A, T_C = 70°C, Tp = 5s	160			W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0V			- 26	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			- 104	A
V_{SD}	I_F = -13A, V_{GS} = 0V, Note 1			- 3.2	V
t_{rr}	I_F = -13A, -di/dt = -100A/μs		240		ns
Q_{RM}	V_R = -100V, V_{GS} = 0V		2.2		μC
I_{RM}			-18.0		A

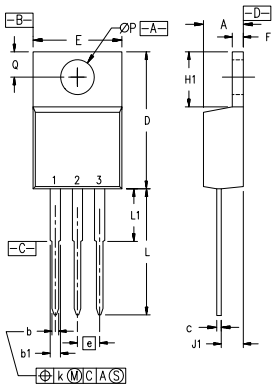
Note 1. Pulse Test, t ≤ 300μs; Duty Cycle, d ≤ 2%.

TO-263 Outline



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.06	4.83	.160	.190
b	0.51	0.99	.020	.039
b2	1.14	1.40	.045	.055
c	0.40	0.74	.016	.029
c2	1.14	1.40	.045	.055
D	8.64	9.65	.340	.380
D1	8.00	8.89	.280	.320
E	9.65	10.41	.380	.405
E1	6.22	8.13	.270	.320
e	2.54	BSC	.100	BSC
L	14.61	15.88	.575	.625
L1	2.29	2.79	.090	.110
L2	1.02	1.40	.040	.055
L3	1.27	1.78	.050	.070
L4	0	0.13	0	.005

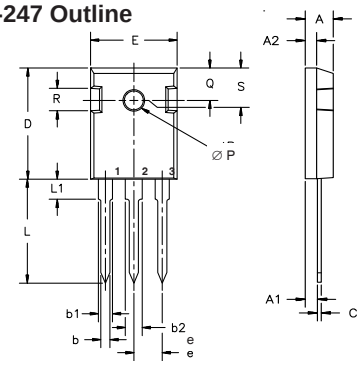
TO-220 Outline



Pins: 1 - Gate 2 - Drain

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

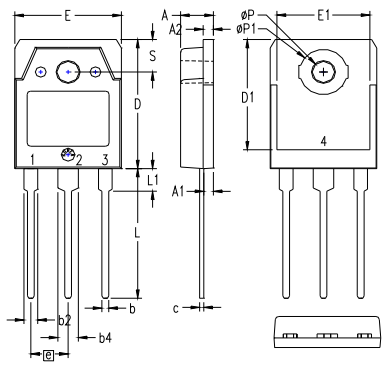
TO-247 Outline



Terminals: 1 - Gate 2 - Drain

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
ØP	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216

TO-3P Outline



1 – GATE
2 – DRAIN (COLLECTOR)
3 – SOURCE (EMITTER)
4 – DRAIN (COLLECTOR)

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.185	.193	4.70	4.90
A1	.051	.059	1.30	1.50
A2	.057	.065	1.45	1.65
b	.035	.045	0.90	1.15
b2	.075	.087	1.90	2.20
b4	.114	.126	2.90	3.20
c	.022	.031	0.55	0.80
D	.780	.799	19.80	20.30
D1	.665	.677	16.90	17.20
E	.610	.622	15.50	15.80
E1	.531	.539	13.50	13.70
e	.215 BSC		5.45 BSC	
L	.779	.795	19.80	20.20
L1	.134	.142	3.40	3.60
øP	.126	.134	3.20	3.40
øP1	.272	.280	6.90	7.10
S	.193	.201	4.90	5.10

Fig. 1. Output Characteristics @ T_J= 25ºC

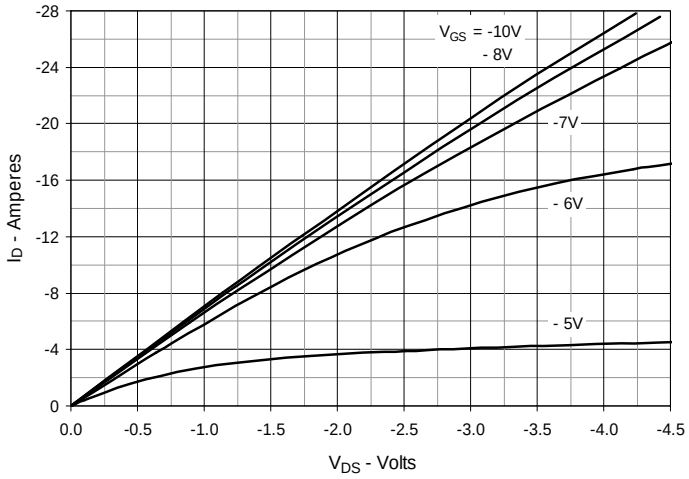


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

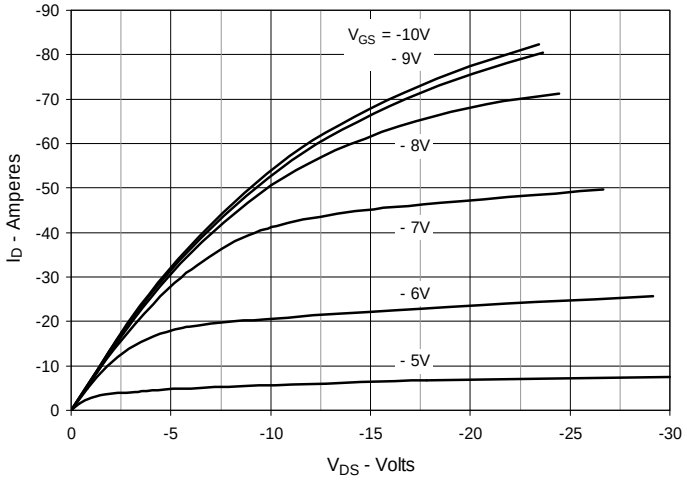


Fig. 3. Output Characteristics @ T_J = 125ºC

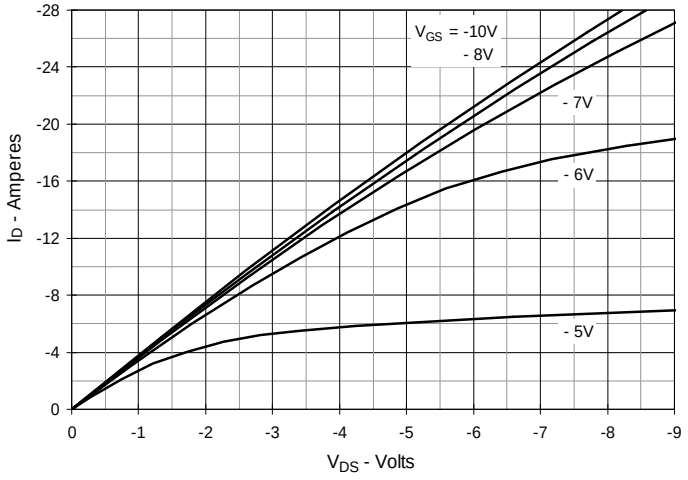


Fig. 4. $R_{DS(on)}$ Normalized to I_D = -13A Value vs. Junction Temperature

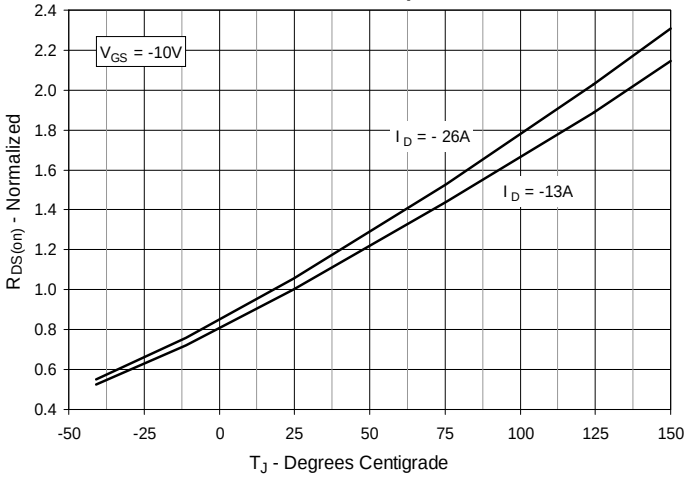


Fig. 5. $R_{DS(on)}$ Normalized to I_D = -13A Value vs. Drain Current

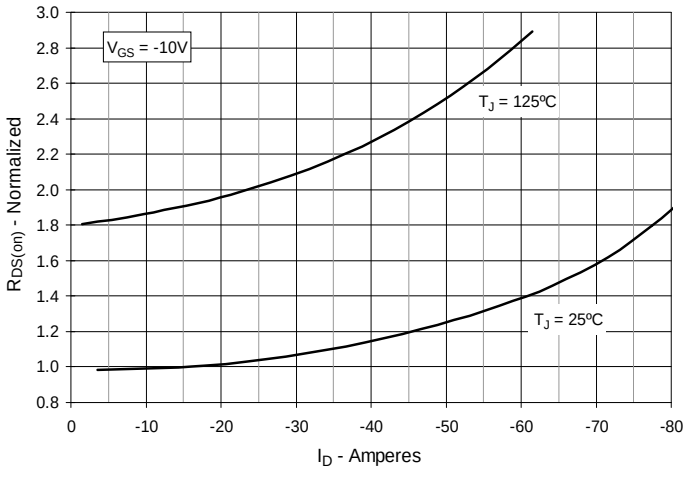


Fig. 6. Maximum Drain Current vs. Case Temperature

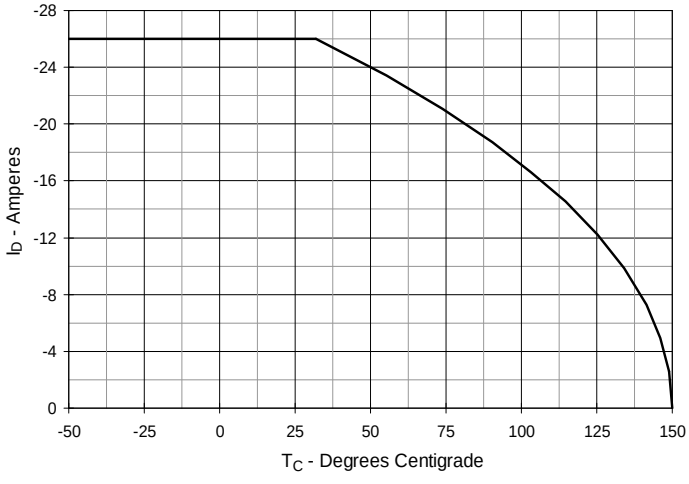


Fig. 7. Input Admittance

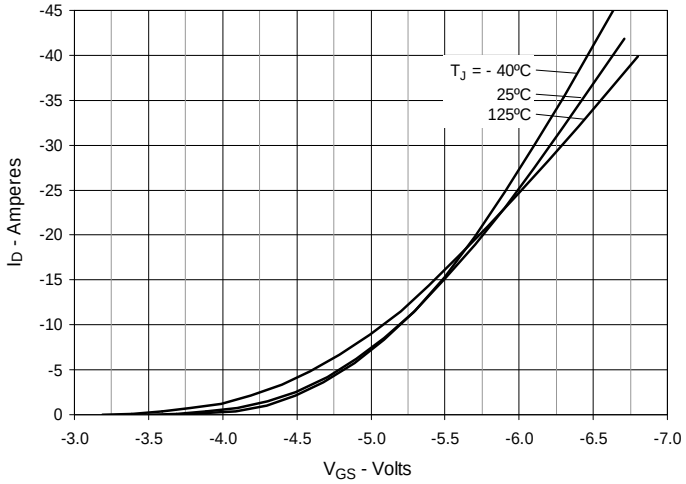


Fig. 8. Transconductance

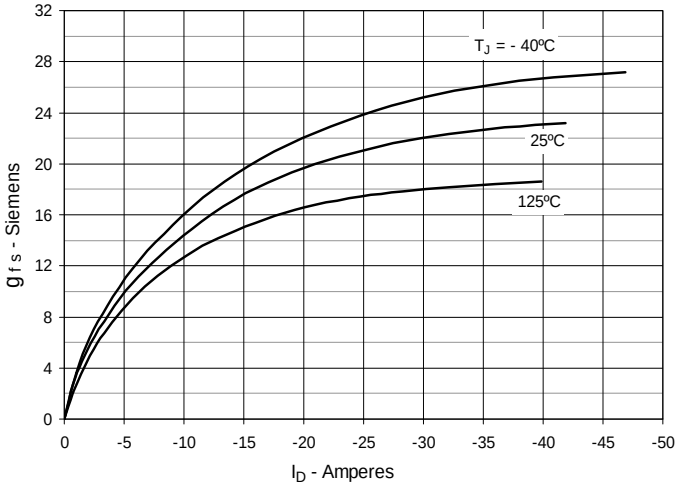


Fig. 9. Forward Voltage Drop of Intrinsic Diode

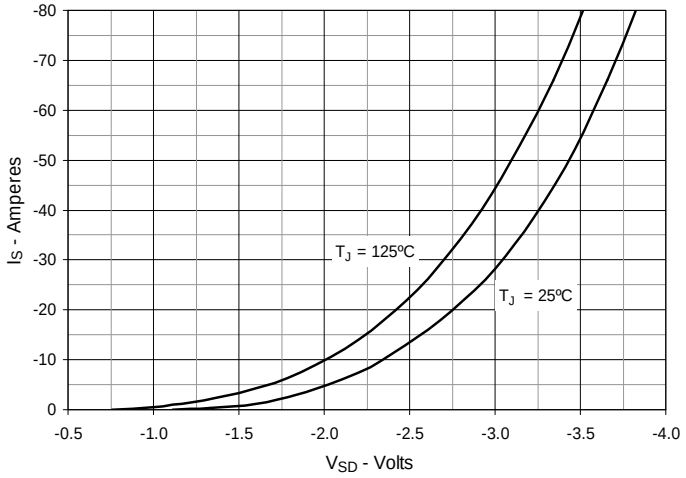


Fig. 10. Gate Charge

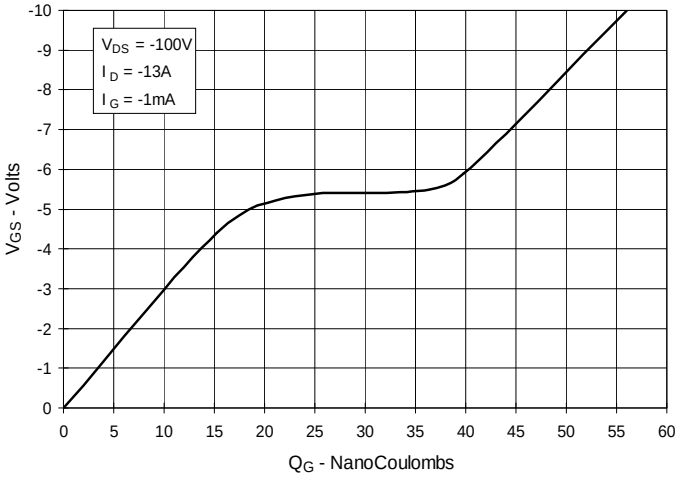


Fig. 11. Capacitance

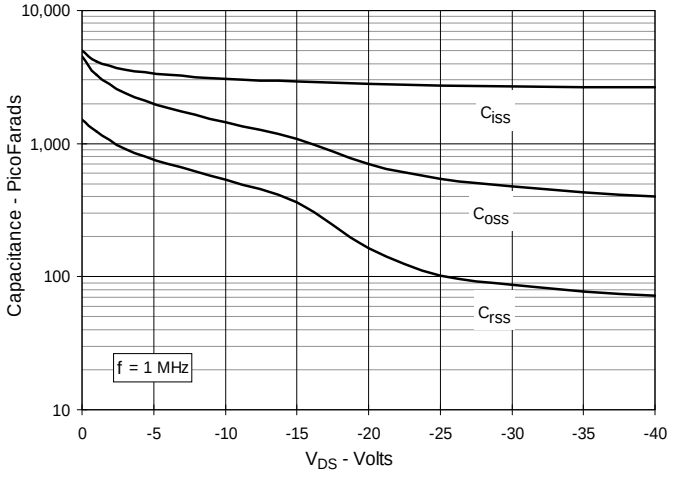


Fig. 12. Maximum Transient Thermal Impedance

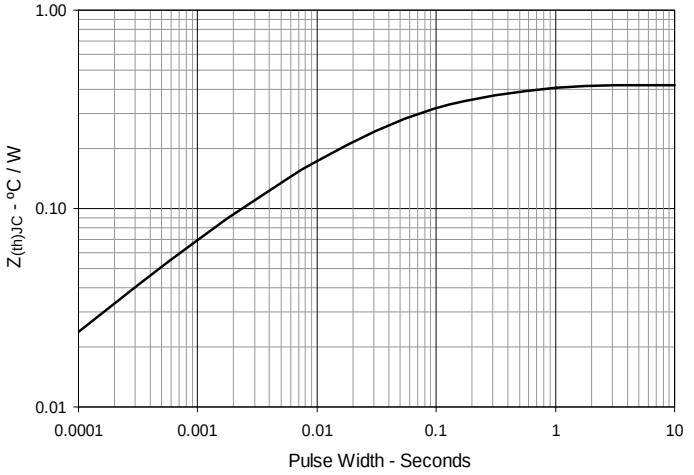


Fig. 13. Forward-Bias Safe Operating Area @ T_C = 25ºC

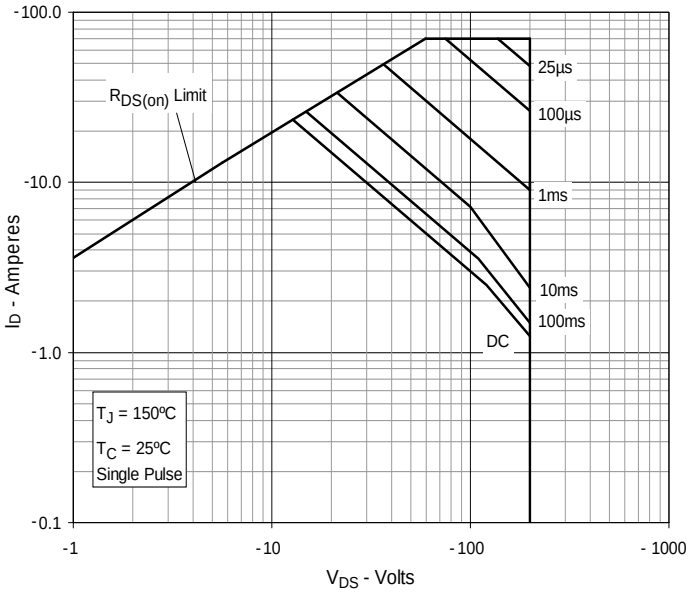


Fig. 14. Forward-Bias Safe Operating Area @ T_C = 70ºC