



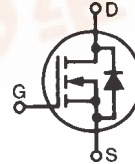
HiPerFET™ Power MOSFETs

IXFA 3N120
IXFP 3N120

V_{DSS} = 1200 V
I_{D25} = 3 A
R_{DS(on)} = 4.5 Ω
t_{rr} ≤ 300 ns

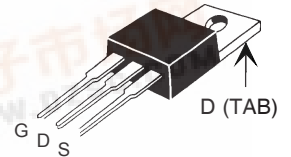
N-Channel Enhancement Mode
Avalanche Rated, Low Q_g, High dv/dt

Preliminary Data Sheet

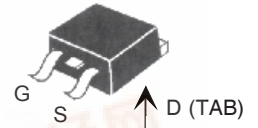


Symbol	Test Conditions	Maximum Ratings	
V _{DSS}	T _J = 25°C to 150°C	1200	V
V _{DGR}	T _J = 25°C to 150°C; R _{GS} = 1 MΩ	1200	V
V _{GS}	Continuous	±20	V
V _{GSM}	Transient	±30	V
I _{D25}	T _C = 25°C	3	A
I _{DM}	T _C = 25°C, pulse width limited by T _{JM}	12	A
I _{AR}	T _C = 25°C	3	A
E _{AR}	T _C = 25°C	20	mJ
E _{AS}		700	mJ
dv/dt	I _S ≤ I _{DM} , di/dt ≤ 100 A/μs, V _{DD} ≤ V _{DSS} , T _J ≤ 150°C, R _G = 4.7 Ω	10	V/ns
P _D	T _C = 25°C	200	W
T _J		-55 to +150	°C
T _{JM}		150	°C
T _{stg}		-55 to +150	°C
T _L	1.6 mm (0.063 in) from case for 10 s	300	°C
M _d	Mounting torque (TO-220)	1.13/10	Nm/lb.in.
Weight	TO-220	4	g
	TO-263	2	g

TO-220 (IXFP)



TO-263 (IXFA)



G = Gate D = Drain
S = Source TAB = Drain

Features

- Low gate charge and capacitances
- easier to drive
- faster switching
- International standard packages
- Low R_{DS(on)}
- Rated for unclamped Inductive load Switching (UIS)
- Molding epoxies meet UL 94 V-0 flammability classification

Advantages

- Easy to mount
- Space savings
- High power density

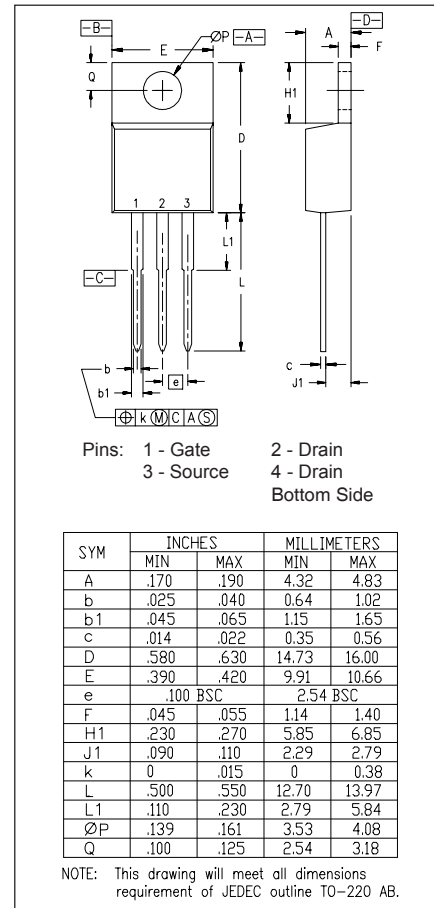
Symbol	Test Conditions	Characteristic Values (T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
V _{DSS}	V _{GS} = 0 V, I _D = 1 mA	1200		V
V _{GS(th)}	V _{DS} = V _{GS} , I _D = 1.5 mA	2.5		5.0 V
I _{GSS}	V _{GS} = ±20 V _{DC} , V _{DS} = 0			±100 nA
I _{DSS}	V _{DS} = V _{DSS} V _{GS} = 0 V	T _J = 25°C		50 μA
		T _J = 125°C		2 mA
	V _{GS} = 10 V, I _D = 0.5 I _{D25} Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			4.5 Ω



Symbol	Test Conditions	Characteristic Values		
		(T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	V _{DS} = 20 V; I _D = 0.5 • I _{D25} , pulse test	1.5	2.5	S
C_{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		1050	pF
C_{oss}			100	pF
C_{rss}			25	pF
t_{d(on)}	V _{GS} = 10 V, V _{DS} = 0.5 • V _{DSS} , I _D = 0.5 • I _{D25} R _G = 4.7 Ω (External),		17	ns
t_r			15	ns
t_{d(off)}			32	ns
t_f			18	ns
Q_{g(on)}	V _{GS} = 10 V, V _{DS} = 0.5 • V _{DSS} , I _D = 0.5 • I _{D25}		39	nC
Q_{gs}			9	nC
Q_{gd}			22	nC
R_{thJC}	(TO-220)		0.62	K/W
R_{thCK}			0.25	K/W

Symbol	Test Conditions	Characteristic Values		
		(T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
I_S	V _{GS} = 0 V			3 A
I_{SM}	Repetitive; pulse width limited by T _{JM}			12 A
V_{SD}	I _F = I _S , V _{GS} = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			1.5 V
t_{rr}	I _F = I _S , -di/dt = 100 A/μs, V _R = 100 V			300 ns
Q_{RM}			0.4	μC
I_{RM}			1.2	A

TO-220 (IXFP) Outline



TO-263 (IXFA) Outline

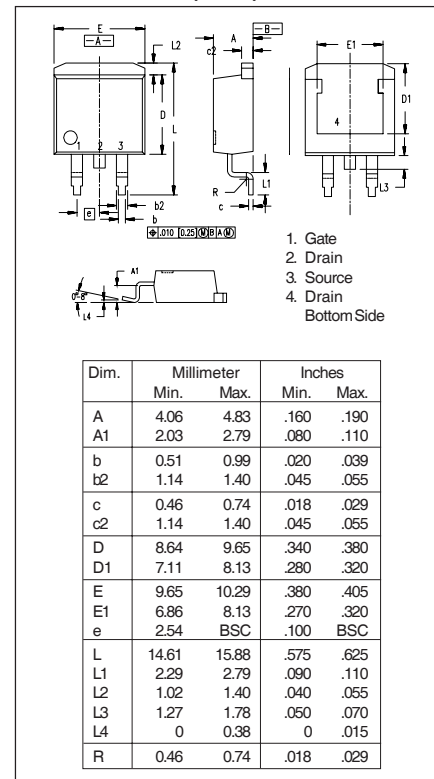


Fig. 1. Output Characteristics
@ 25 Deg. C

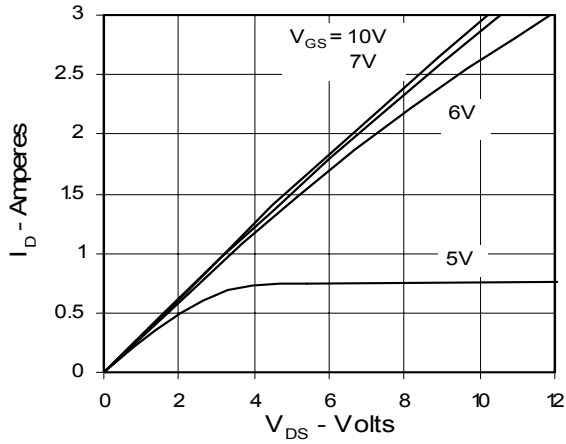


Fig. 2. Extended Output Characteristics
@ 25 deg. C

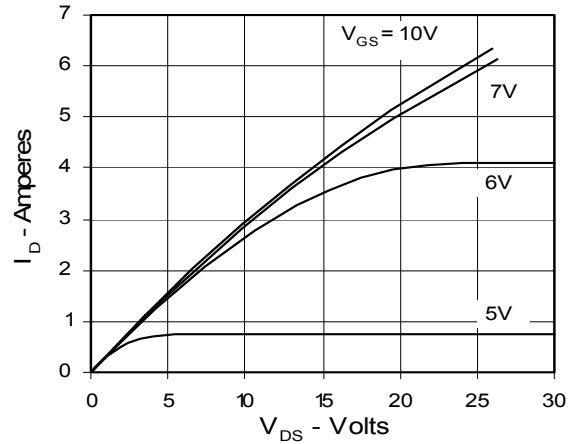


Fig. 3. Output Characteristics
@ 125 Deg. C

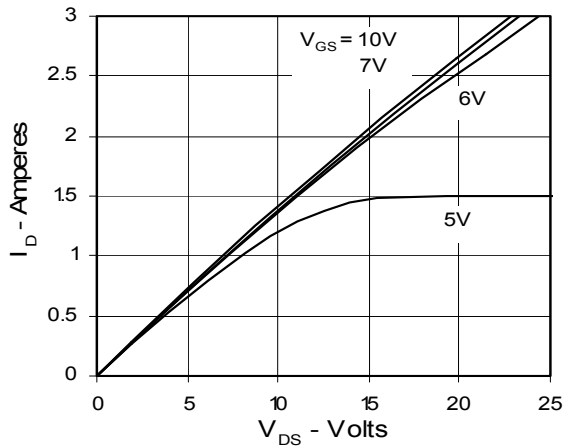


Fig. 4. $R_{DS(on)}$ Normalized to I_{D25} Value vs. Junction Temperature

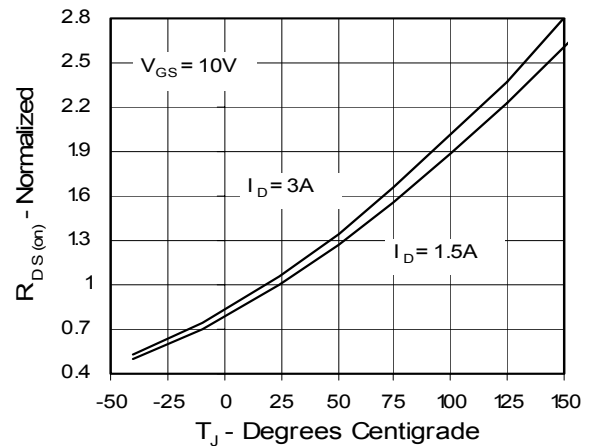


Fig. 5. $R_{DS(on)}$ Normalized to I_{D25} Value vs. I_D

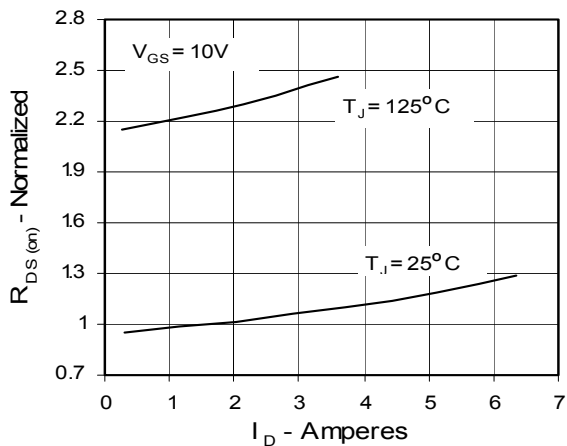


Fig. 6. Drain Current vs. Case Temperature

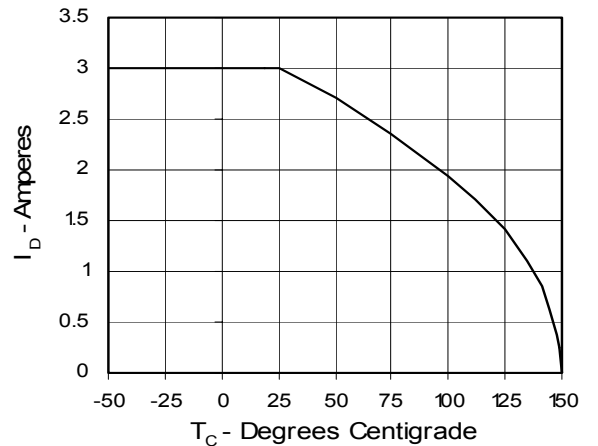


Fig. 7. Input Admittance

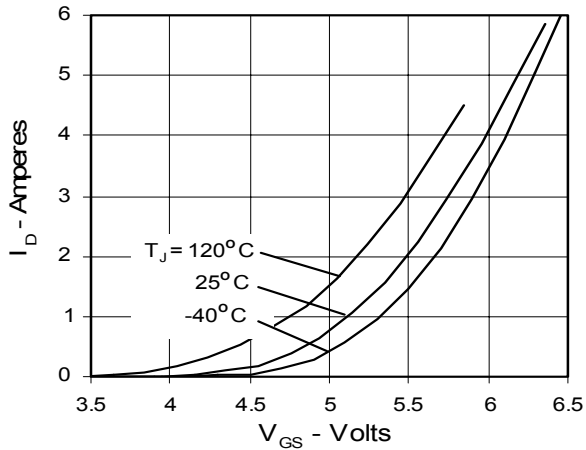


Fig. 8. Transconductance

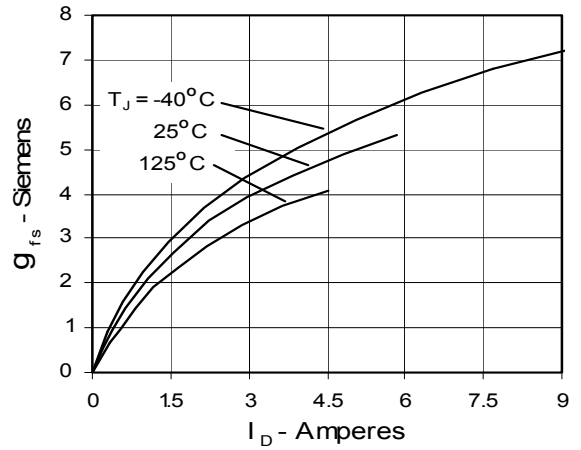


Fig. 9. Source Current vs. Source-To-Drain Voltage

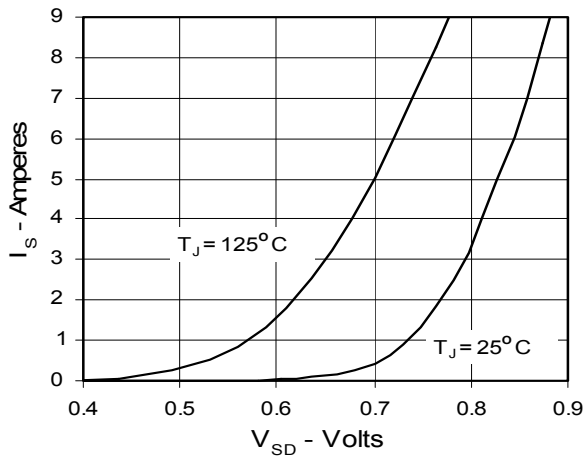


Fig. 10. Gate Charge

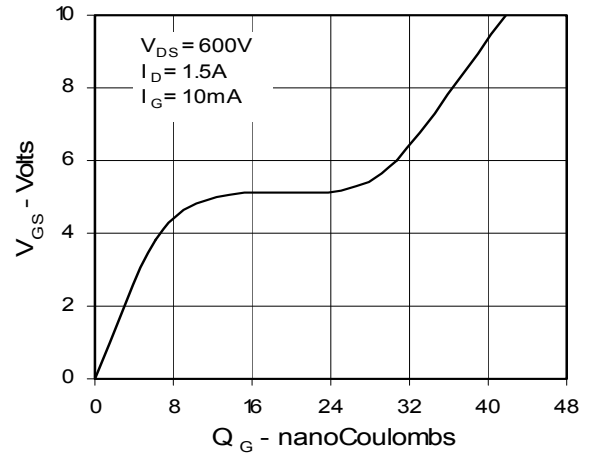


Fig. 11. Capacitance

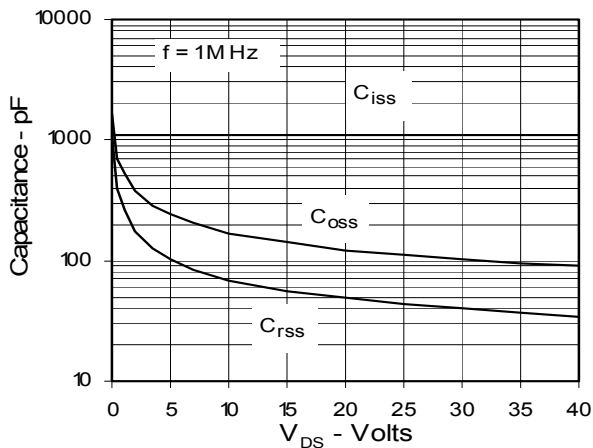


Fig. 12. Maximum Transient Thermal Resistance

