



High Voltage Power MOSFETs

IXTA 3N120
IXTP 3N120

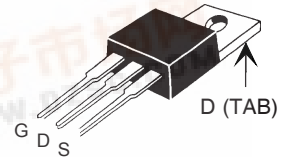
N-Channel Enhancement Mode
Avalanche Rated, High dv/dt

V_{DSS}	I_{D25}	$R_{DS(on)}$
1200 V	3 A	4.5 Ω

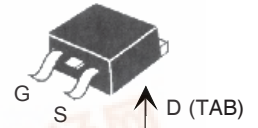


Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	1200	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1\text{ M}\Omega$	1200	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$	3	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	12	A
I_{AR}	$T_C = 25^\circ\text{C}$	3	A
E_{AR}	$T_C = 25^\circ\text{C}$	20	mJ
E_{AS}		700	mJ
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100\text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 2\text{ }\Omega$	5	V/ns
P_D	$T_C = 25^\circ\text{C}$	200	W
T_J		-55 to +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 to +150	$^\circ\text{C}$
T_L	1.6 mm (0.063 in) from case for 10 s	300	$^\circ\text{C}$
M_d	Mounting torque (TO-220)	1.13/10	Nm/lb.in.
Weight	TO-220	4	g
	TO-263	2	g

TO-220 (IXTP)



TO-263 (IXTA)



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

Features

- 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 ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_{DSS}	$V_{GS} = 0\text{ V}$, $I_D = 1\text{ mA}$	1200		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\text{ }\mu\text{A}$	2.0		5.0 V
I_{GSS}	$V_{GS} = \pm 20\text{ V}_{DC}$, $V_{DS} = 0$			$\pm 100\text{ nA}$
I_{DSS}	$V_{DS} = 0.8\text{ V}_{DSS}$	$T_J = 25^\circ\text{C}$		25 μA
	$V_{GS} = 0\text{ V}$	$T_J = 125^\circ\text{C}$		1 mA
$R_{DS(on)}$	$V_{GS} = 10\text{ V}$, $I_D = 0.5\text{ I}_{D25}$ Note 1			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} , Note 1	1.5	2.6		S
C_{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		1100	1350	pF
C_{oss}			110	135	pF
C_{rss}			40	60	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}		42		nC
Q_{gs}			8		nC
Q_{gd}			21		nC
R_{thJC}	(TO-220)			0.62	K/W
R_{thCK}			0.25		K/W

Source-Drain Diode		Characteristic Values (T _J = 25°C, unless otherwise specified)		
Symbol	Test Conditions	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, Note 1			1.5 V
t_{rr}	I _F = I _S , -di/dt = 100 A/μs, V _R = 100 V		700	ns

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

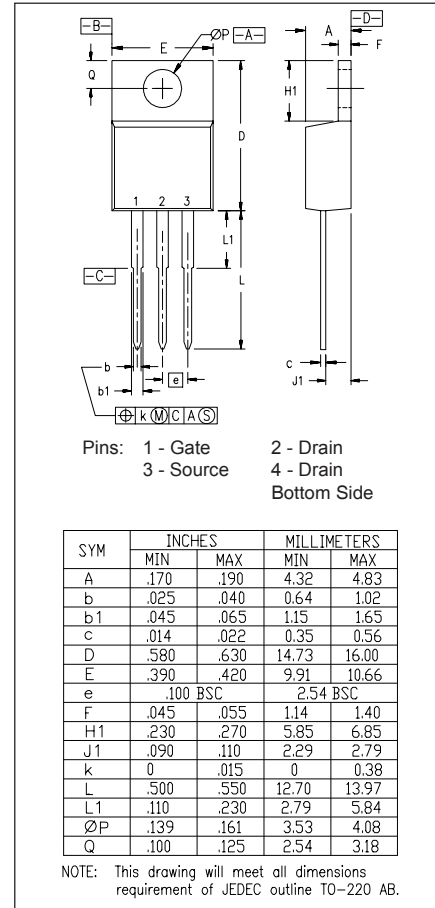
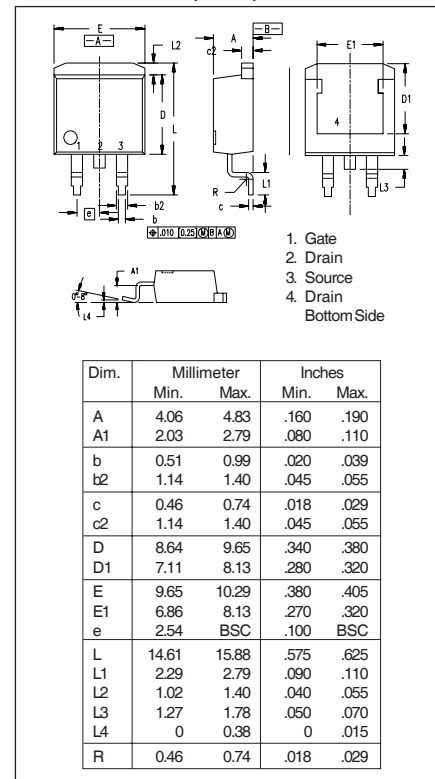
TO-220 (IXTP) Outline

TO-263 (IXTA) Outline


Fig. 1. Output Characteristics
@ 25 Deg. C

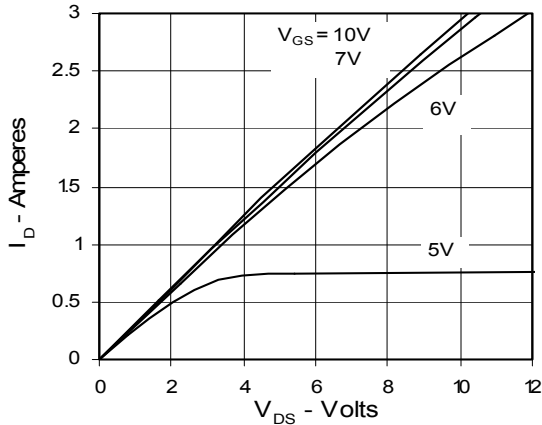


Fig. 2. Extended Output Characteristics
@ 25 deg. C

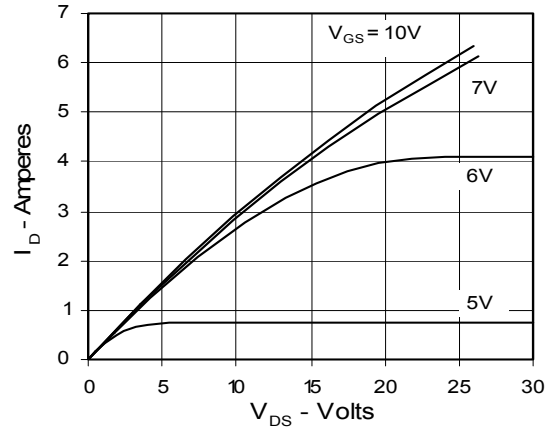


Fig. 3. Output Characteristics
@ 125 Deg. C

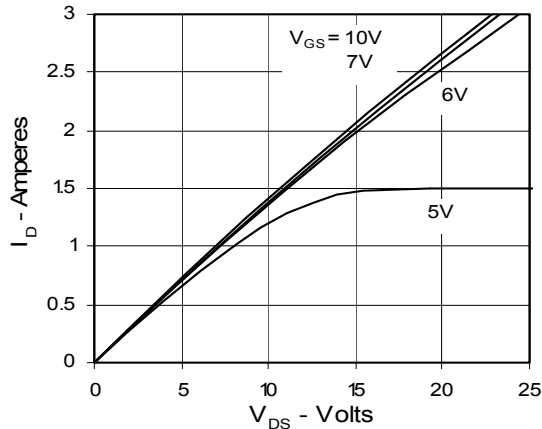


Fig. 4. $R_{DS(on)}$ Normalized to I_{D25} Value vs.
Junction Temperature

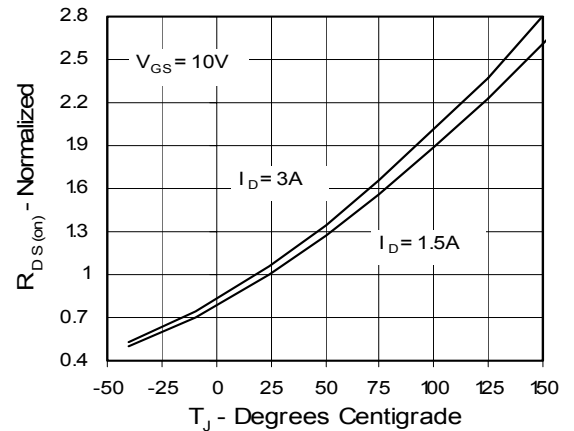


Fig. 5. $R_{DS(on)}$ Normalized to I_{D25}
Value vs. I_D

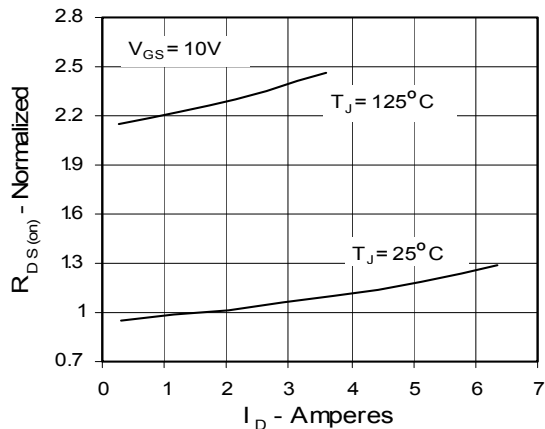


Fig. 6. Drain Current vs. Case
Temperature

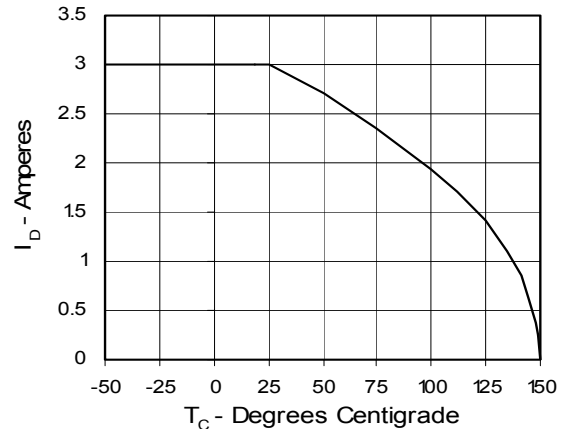


Fig. 7. Input Admittance

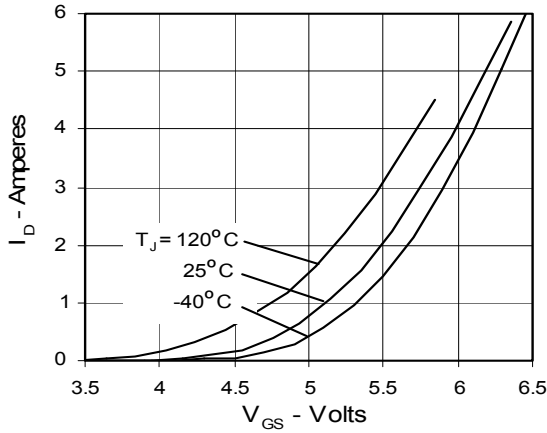


Fig. 8. Transconductance

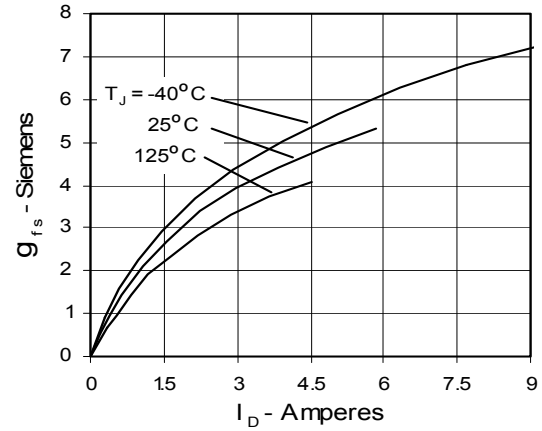


Fig. 9. Source Current vs. Source-To-Drain Voltage

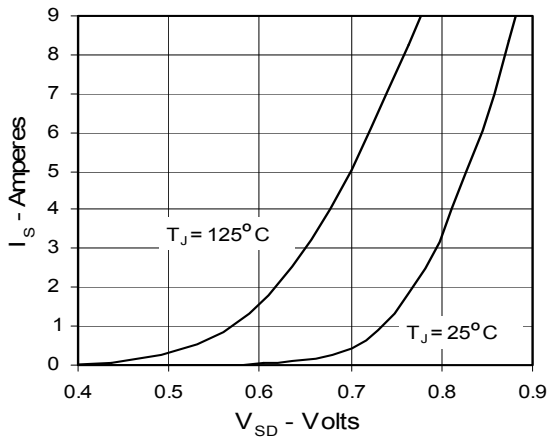


Fig. 10. Gate Charge

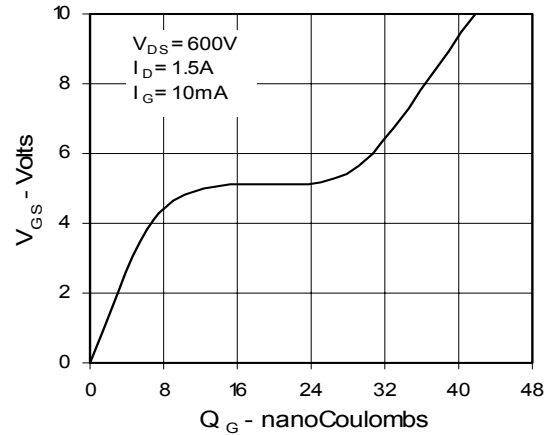


Fig. 11. Capacitance

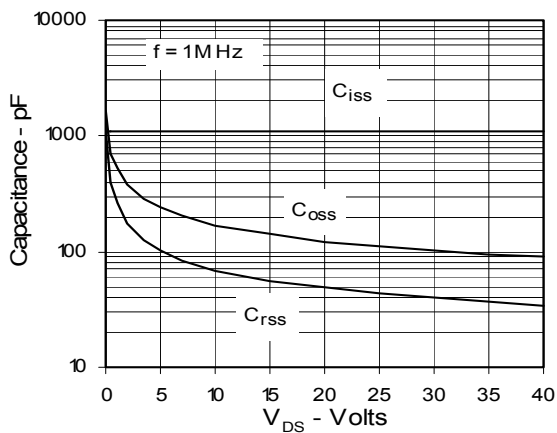


Fig. 12. Maximum Transient Thermal Resistance

