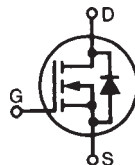


PolarHT™ Power MOSFET HiPerFET™

IXFV74N20P
IXFV74N20PS
IXFH74N20P

N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode

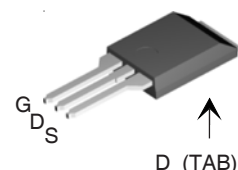


Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 175°C	200	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 175°C , $R_{GS} = 1\text{M}\Omega$	200	V
V_{GSS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$	74	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	200	A
I_A	$T_C = 25^\circ\text{C}$	37	A
E_{AS}	$T_C = 25^\circ\text{C}$	1	J
dV/dt	$I_S \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 175^\circ\text{C}$	10	V/ns
P_D	$T_C = 25^\circ\text{C}$	480	W
T_J		-55 ... +175	$^\circ\text{C}$
T_{JM}		175	$^\circ\text{C}$
T_{stg}		-55 ... +175	$^\circ\text{C}$
T_L	Maximum lead temperature for soldering	300	$^\circ\text{C}$
T_{SOLD}	Plastic body for 10s	260	$^\circ\text{C}$
M_d	Mounting torque (TO-247)	1.13/10	Nm/lb.in.
F_C	Mounting force (PLUS220)	11..65/2.5..14.6	N/lb.
Weight	PLUS220 & PLUS220SMD	4	g
	TO-247	6	g

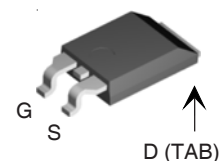
Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0\text{V}$, $I_D = 250\mu\text{A}$	200		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4\text{mA}$	2.5		5.0 V
I_{GSS}	$V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$			± 100 nA
I_{DSS}	$V_{DS} = V_{DSS}$			25 μA
	$V_{GS} = 0\text{V}$, $T_J = 150^\circ\text{C}$			250 μA
$R_{DS(on)}$	$V_{GS} = 10\text{V}$, $I_D = 0.5 \cdot I_{D25}$, Note 1			34 m Ω

$V_{DSS} = 200\text{V}$
 $I_{D25} = 74\text{A}$
 $R_{DS(on)} \leq 34\text{m}\Omega$
 $t_{rr} \leq 200\text{ns}$

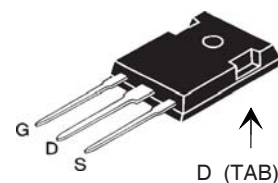
PLUS220 (IXFV)



PLUS220SMD (IXFV_S)



TO-247 (IXFH)



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

Features

- International standard packages
- Fast recovery diode
- Avalanche rated
- Low package inductance
 - easy to drive and to protect

Advantages

- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$ unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10\text{V}, I_D = 0.5 \cdot I_{D25}$, Note 1	30	44	S
C_{iss}	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$		3300	pF
C_{oss}			800	pF
C_{rss}			190	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = 1\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 4\Omega$ (External)		23	ns
t_r			21	ns
$t_{d(off)}$			60	ns
t_f			21	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		107	nC
Q_{gs}			24	nC
Q_{gd}			52	nC
R_{thJC}	(TO-247, PLUS220)			0.31 $^\circ\text{C/W}$
R_{thCS}		0.25		$^\circ\text{C/W}$

Source-Drain Diode		Characteristic Values		
$T_J = 25^\circ\text{C}$ unless otherwise specified)		Min.	Typ.	Max.
I_S	$V_{GS} = 0\text{V}$			74 A
I_{SM}	Repetitive, pulse width limited by T_{JM}			180 A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{V}$, Note 1			1.5 V
t_{rr}	$I_F = 25\text{A}, -di/dt = 100\text{A}/\mu\text{s}$ $V_R = 100\text{V}, V_{GS} = 0\text{V}$		120	200 ns
Q_{RM}			0.40	μC
I_{RM}			6	A

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

PLUS220 (IXFV) Outline

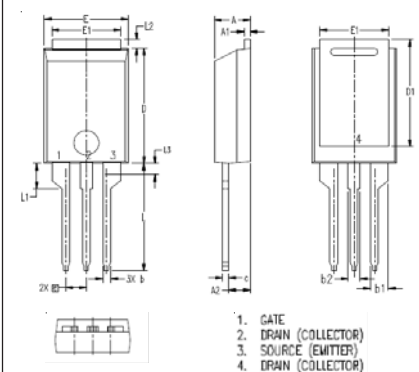


Fig. 1. Output Characteristics
@ 25°C

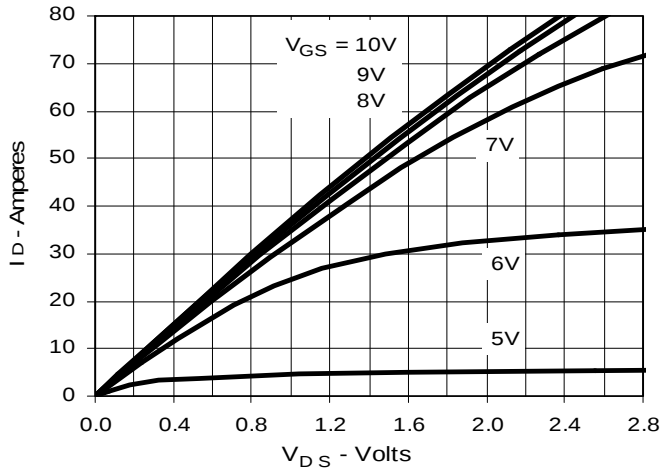


Fig. 2. Extended Output Characteristics
@ 25°C

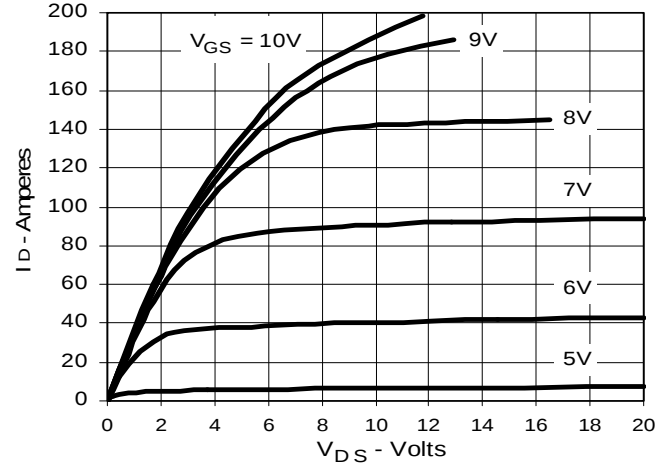


Fig. 3. Output Characteristics
@ 150°C

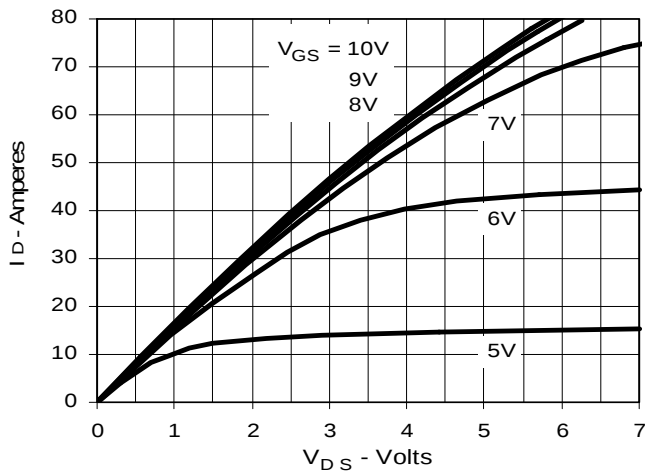


Fig. 4. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value
vs. Junction Temperature

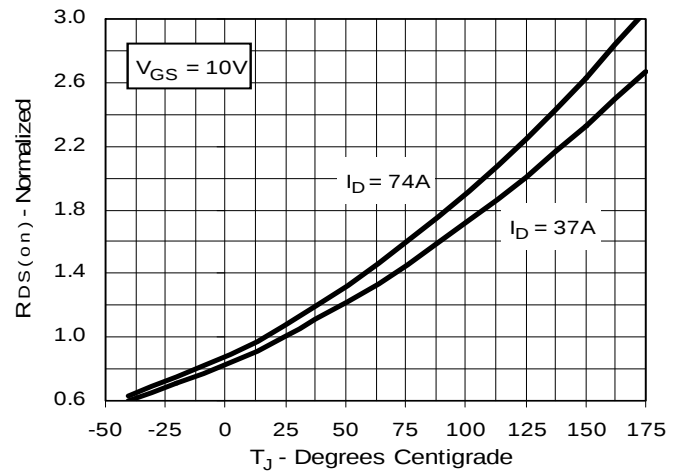


Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value
vs. I_D

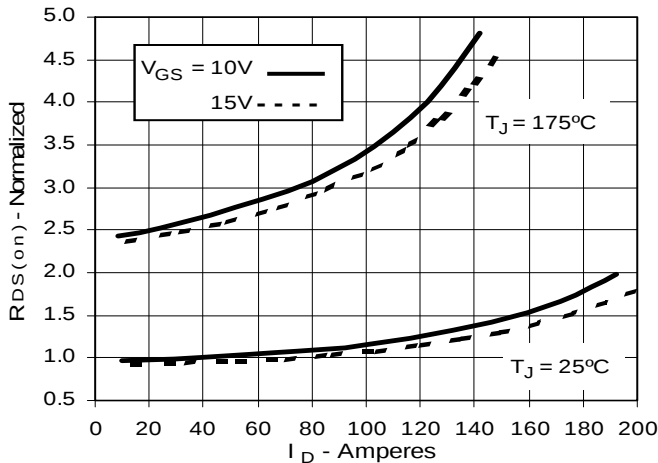


Fig. 6. Drain Current vs. Case Temperature

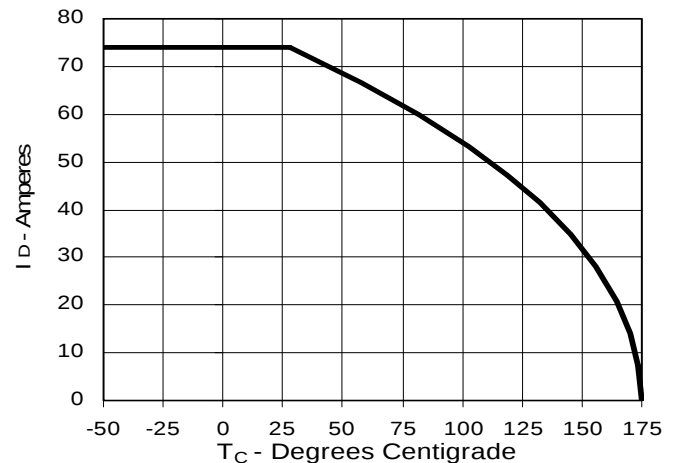


Fig. 7. Input Admittance

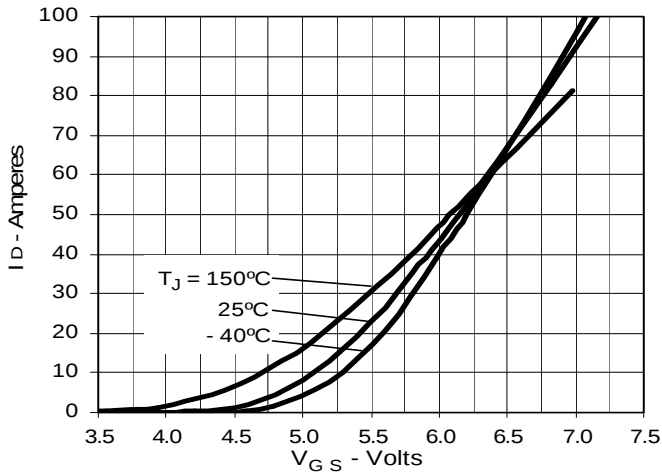


Fig. 8. Transconductance

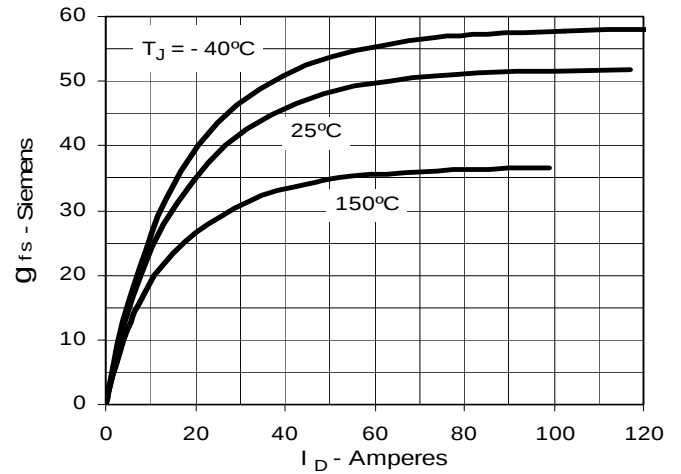


Fig. 9. Source Current vs. Source-To-Drain Voltage

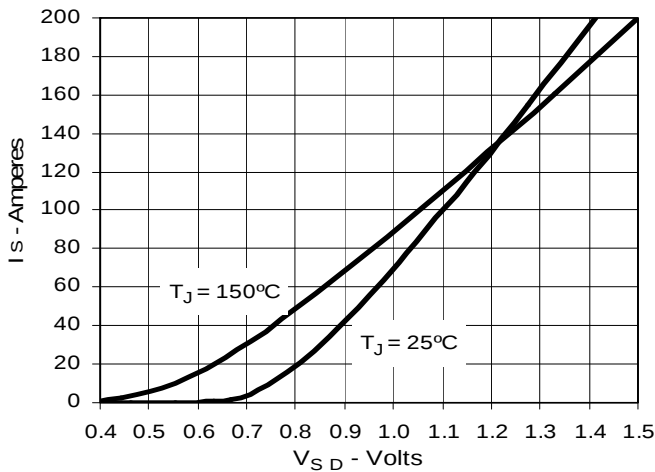


Fig. 10. Gate Charge

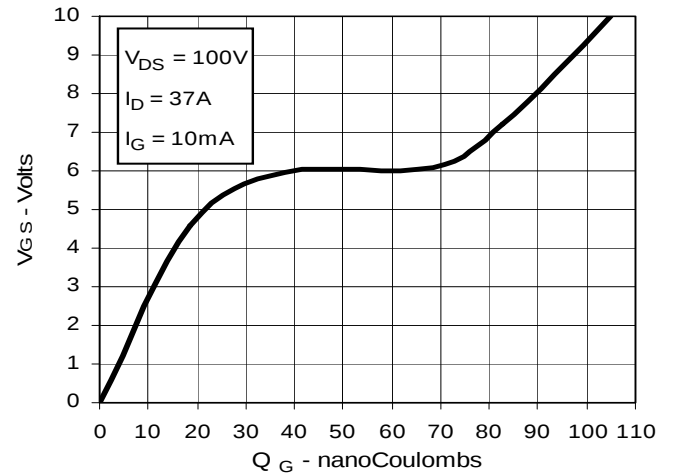


Fig. 11. Capacitance

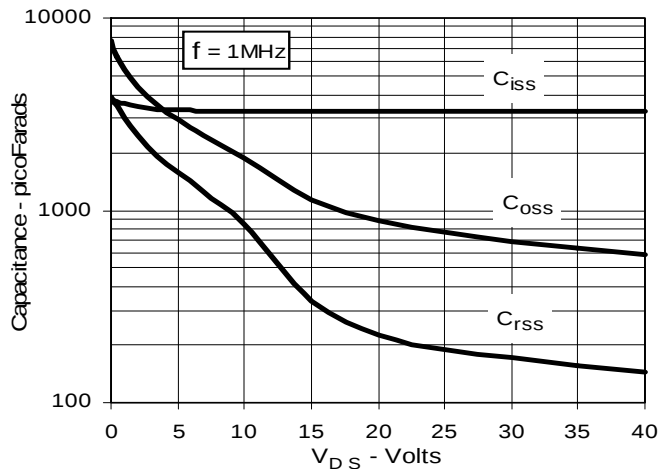


Fig. 12. Forward-Bias Safe Operating Area

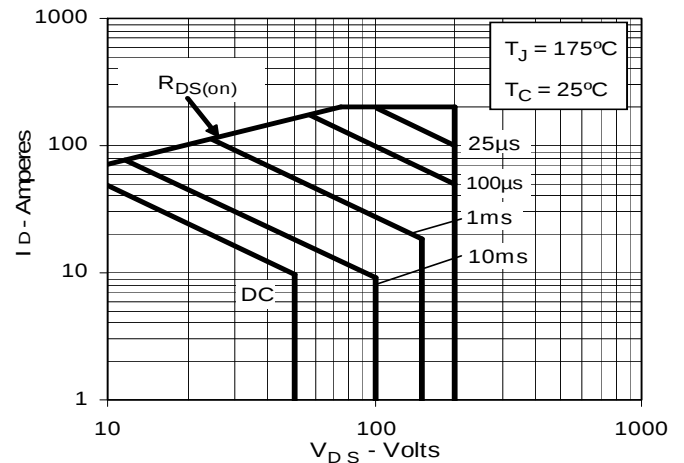
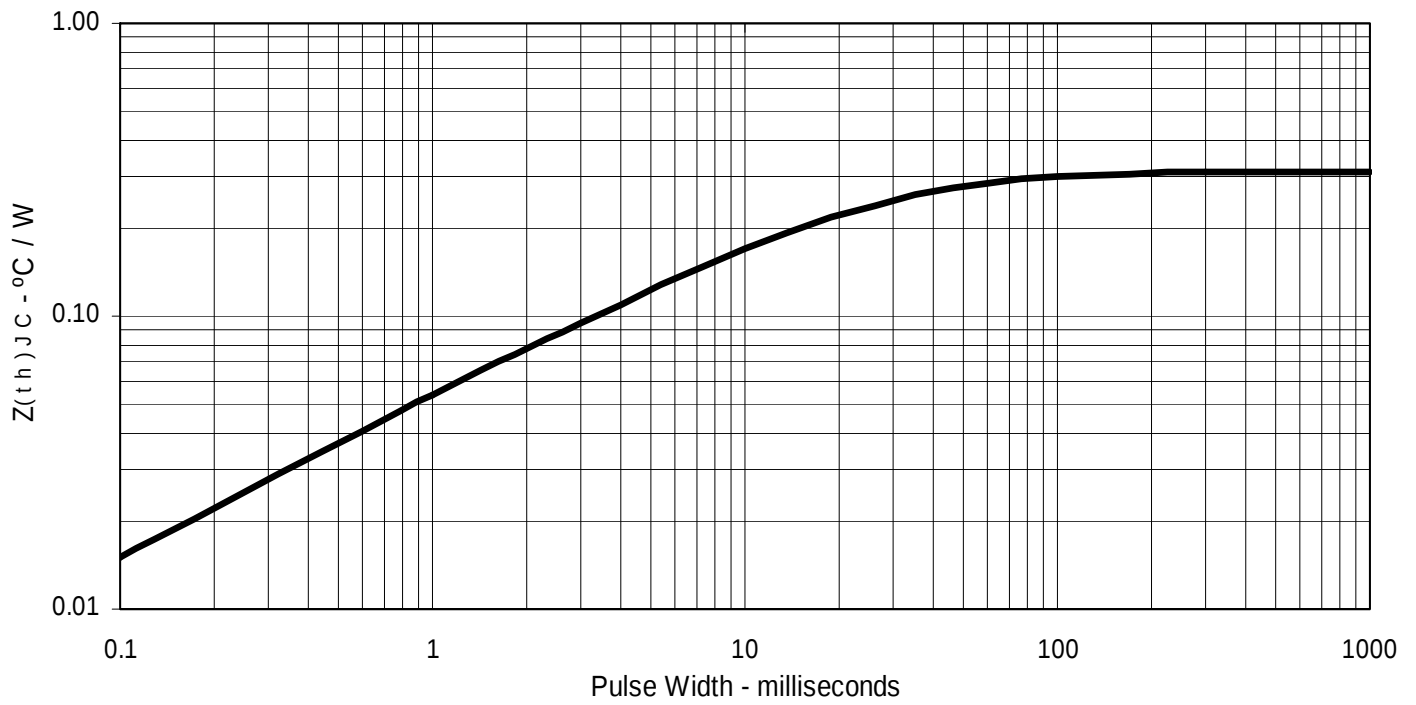


Fig. 13. Maximum Transient Thermal Impedance





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