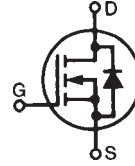


**PolarHT™ Power
MOSFET HiPerFET™**

**IXFV74N20P
IXFV74N20PS
IXFH74N20P**

V_{DSS} = 200V
I_{D25} = 74A
R_{DS(on)} ≤ 34mΩ
t_{rr} ≤ 200ns

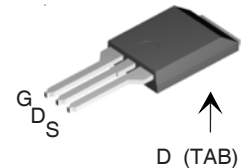
N-Channel Enhancement Mode
 Avalanche Rated
 Fast Intrinsic Diode



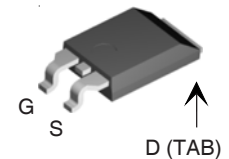
Symbol	Test Conditions	Maximum Ratings	
		Value	Unit
V _{DSS}	T _J = 25°C to 175°C	200	V
V _{DGR}	T _J = 25°C to 175°C, R _{GS} = 1MΩ	200	V
V _{GSS}	Continuous	± 20	V
V _{GSM}	Transient	± 30	V
I _{D25}	T _C = 25°C	74	A
I _{DM}	T _C = 25°C, pulse width limited by T _{JM}	200	A
I _A	T _C = 25°C	37	A
E _{AS}	T _C = 25°C	1	J
dV/dt	I _S ≤ I _{DM} , V _{DD} ≤ V _{DSS} , T _J ≤ 175°C	10	V/ns
P _D	T _C = 25°C	480	W
T _J		-55 ... +175	°C
T _{JM}		175	°C
T _{stg}		-55 ... +175	°C
T _L	Maximum lead temperature for soldering	300	°C
T _{SOLD}	Plastic body for 10s	260	°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°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 = 4mA	2.5		5.0 V
I _{GSS}	V _{GS} = ± 20V, V _{DS} = 0V			± 100 nA
I _{DSS}	V _{DS} = V _{DSS} V _{GS} = 0V T _J = 150°C			25 μA
				250 μA
R _{DS(on)}	V _{GS} = 10V, I _D = 0.5 • I _{D25} , Note 1			34 mΩ

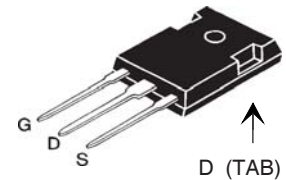
PLUS220 (IXFV)



PLUS220SMD (IXFV_S)



TO-247 (IXFH)



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

Features

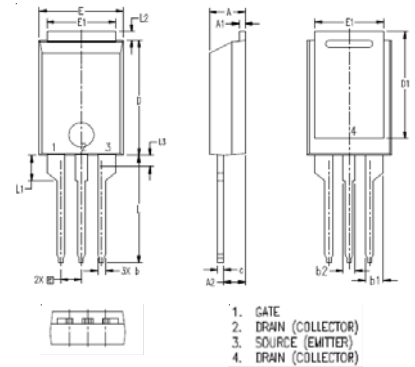
- International standard packages
- Fast recovery diode
- Avalanche rated
- Low package inductance
 - easy to drive and to protect

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	$^\circ\text{C/W}$

PLUS220 (IXFV) Outline



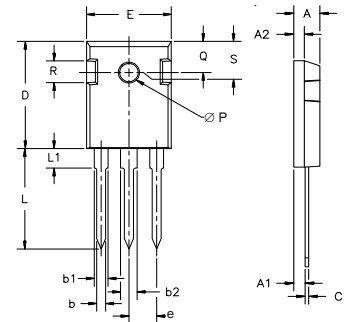
SYM	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	.169	.185	4.30	4.70
A1	.028	.035	0.70	0.90
A2	.098	.118	2.50	3.00
b	.035	.047	0.90	1.20
b1	.080	.095	2.03	2.41
b2	.054	.064	1.37	1.63
c	.028	.035	0.70	0.90
D	.551	.591	14.00	15.00
D1	.512	.539	13.00	13.70
E	.394	.433	10.00	11.00
E1	.331	.346	8.40	8.80
e	.100 BSC		2.54 BSC	
L	.512	.551	13.00	14.00
L1	.118	.138	3.00	3.50
L2	.035	.051	0.90	1.30
L3	.047	.059	1.20	1.50

Source-Drain Diode

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$ unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
I_s	$V_{GS} = 0\text{V}$			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

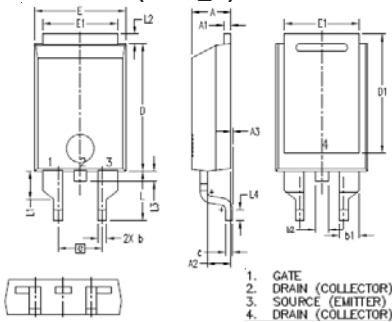
Note 1: Pulse test, $t \leq 300\mu\text{s}$; duty cycle, $d \leq 2\%$.

TO-247 (IXFH) Outline



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
∅P	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15	BSC	242	BSC

PLUS220SMD (IXFV_S) Outline



SYM	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	.169	.185	4.30	4.70
A1	.028	.035	0.70	0.90
A2	.098	.118	2.50	3.00
A3	.000	.010	0.00	0.25
b	.035	.047	0.90	1.20
b1	.080	.095	2.03	2.41
b2	.054	.064	1.37	1.63
c	.028	.035	0.70	0.90
D	.551	.591	14.00	15.00
D1	.512	.539	13.00	13.70
E	.394	.433	10.00	11.00
E1	.331	.346	8.40	8.80
e	.200 BSC		5.08 BSC	
L	.209	.228	5.30	5.80
L1	.118	.138	3.00	3.50
L2	.035	.051	0.90	1.30
L3	.047	.059	1.20	1.50
L4	.039	.059	1.00	1.50

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	

Fig. 1. Output Characteristics
@ 25°C

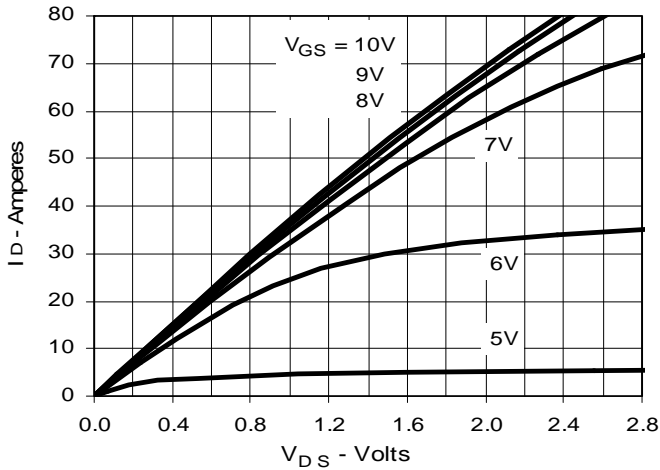


Fig. 2. Extended Output Characteristics
@ 25°C

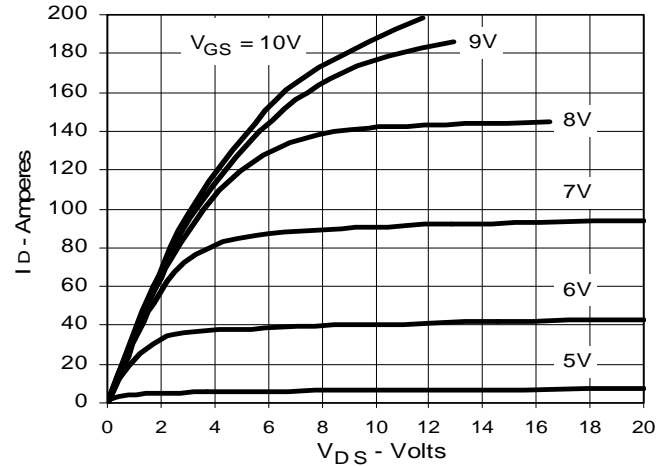


Fig. 3. Output Characteristics
@ 150°C

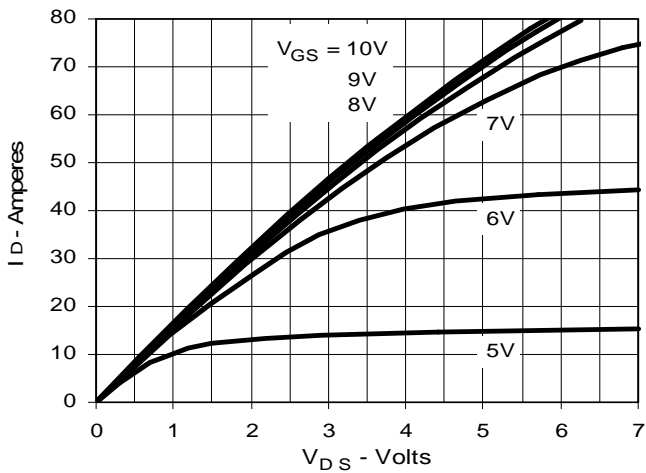


Fig. 4. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Junction Temperature

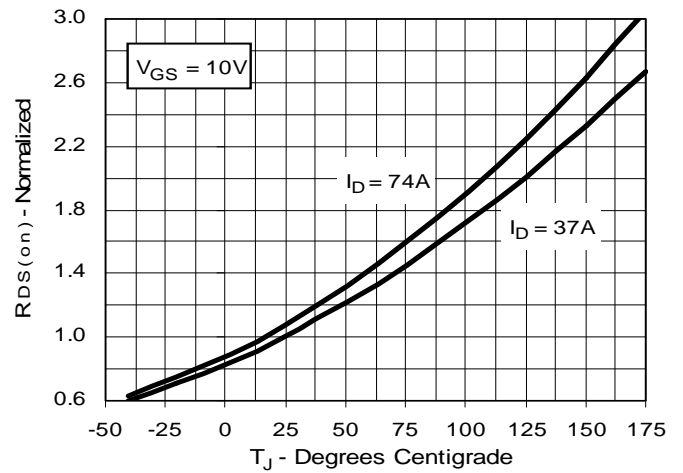


Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. I_D

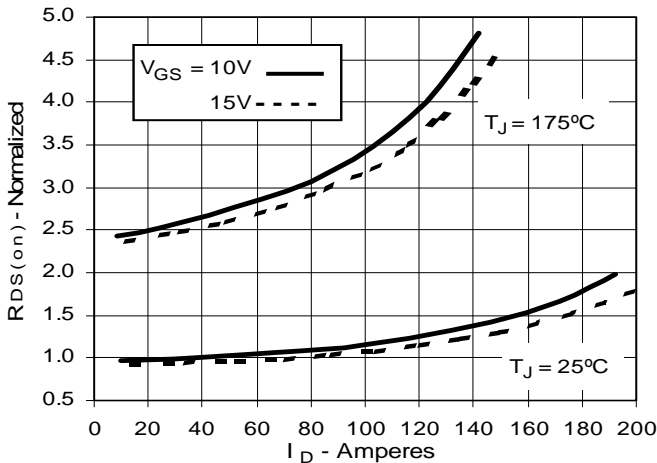


Fig. 6. Drain Current vs. Case Temperature

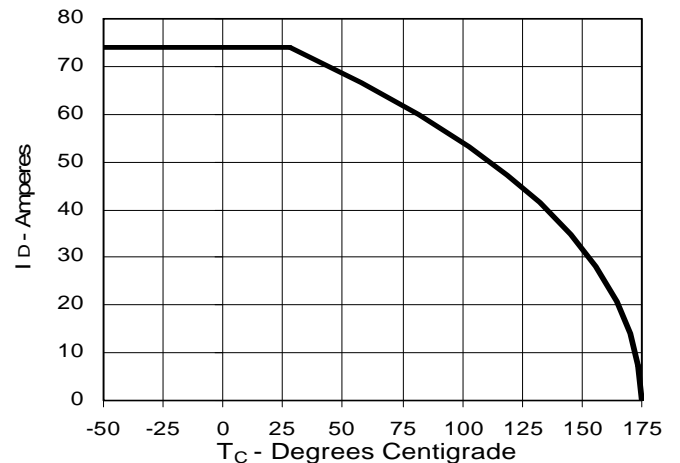


Fig. 7. Input Admittance

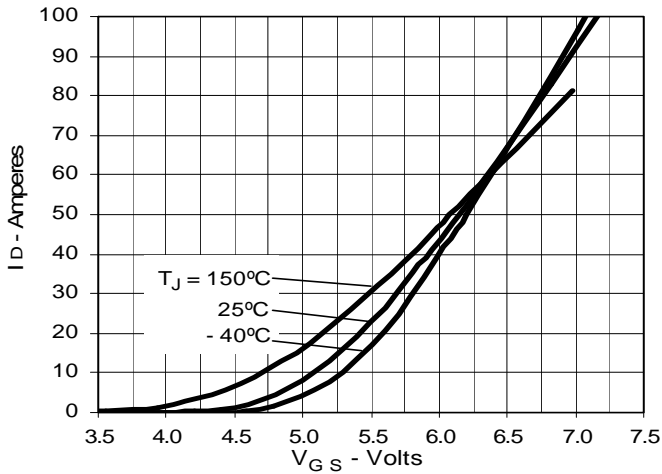


Fig. 8. Transconductance

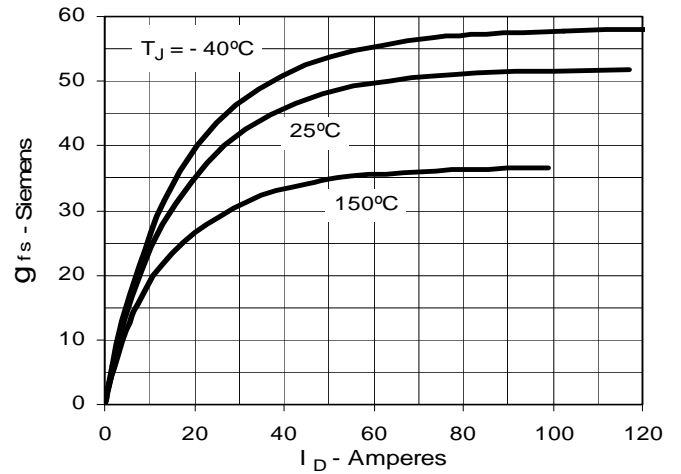


Fig. 9. Source Current vs. Source-To-Drain Voltage

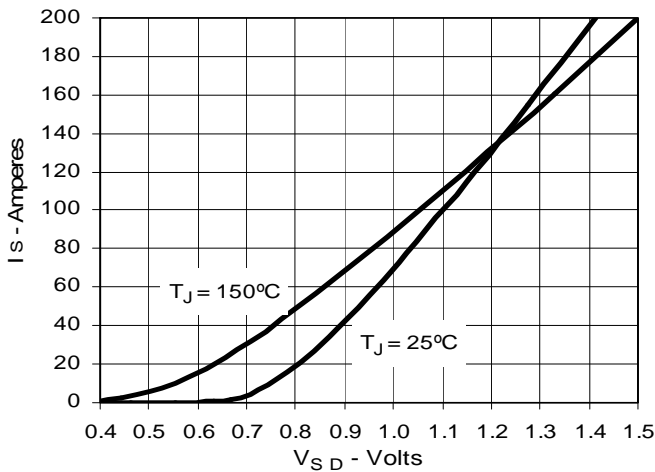


Fig. 10. Gate Charge

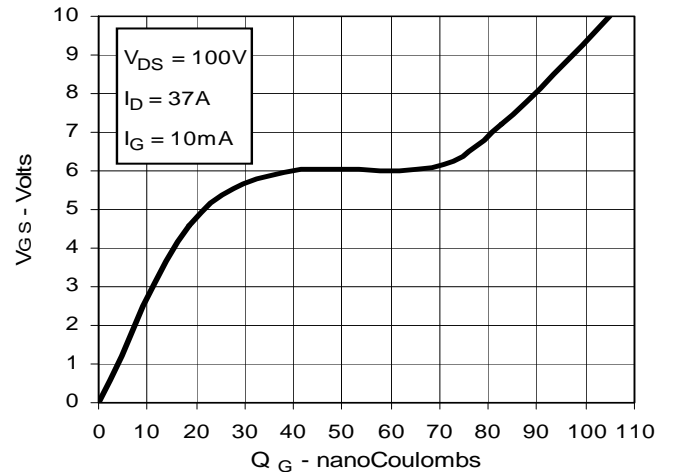


Fig. 11. Capacitance

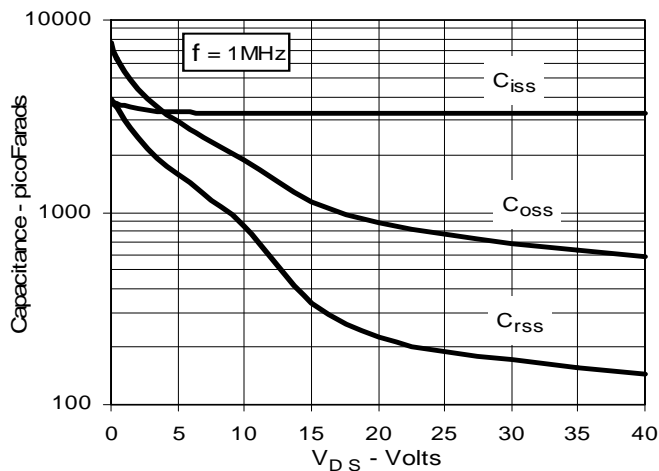


Fig. 12. Forward-Bias Safe Operating Area

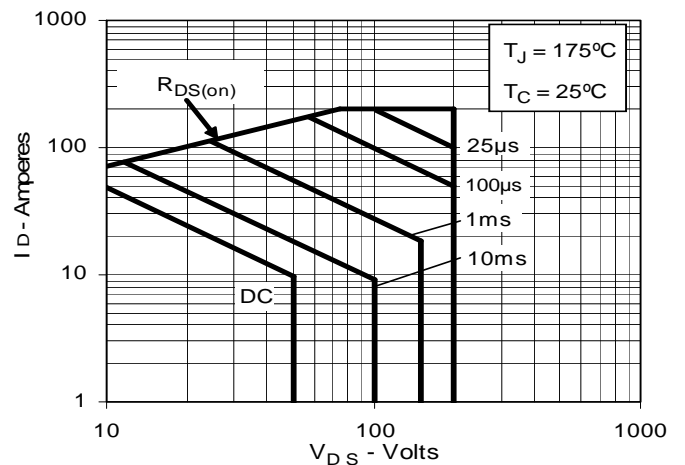


Fig. 13. Maximum Transient Thermal Impedance

