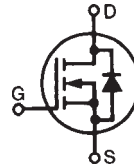


PolarHV™ HiPerFET Power MOSFET

N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode

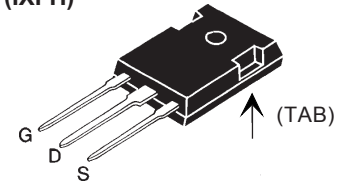
IXFH 20N80P
IXFT 20N80P
IXFV 20N80P
IXFV 20N80PS



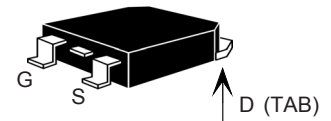
$V_{DSS} = 800 \text{ V}$
 $I_{D25} = 20 \text{ A}$
 $R_{DS(on)} \leq 520 \text{ m}\Omega$
 $t_{rr} \leq 250 \text{ ns}$

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	800	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$	800	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	$T_C = 25^\circ\text{C}$	20	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	50	A
I_{AR}	$T_C = 25^\circ\text{C}$	10	A
E_{AR}	$T_C = 25^\circ\text{C}$	30	mJ
E_{AS}	$T_C = 25^\circ\text{C}$	1.0	J
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 4 \Omega$	10	V/ns
P_D	$T_C = 25^\circ\text{C}$	500	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
T_L	Maximum lead temperature for soldering	300	$^\circ\text{C}$
T_{SOLD}	Plastic case for 10 s	260	$^\circ\text{C}$
M_d	Mounting torque (TO-247)	1.13/10 Nm/lb.in.	
F_C	Mounting force (PLUS220)	1.65 / 2.5..15	N/lb
Weight	TO-247	6	g
	TO-268	5.5	g
	PLUS220 types	4	g

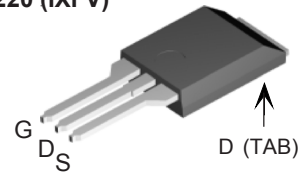
TO-247 (IXFH)



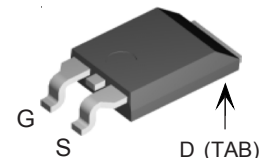
TO-268 (IXFT)



PLUS220 (IXFV)



PLUS220 SMD (IXFV..S)



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

Features

- ¹ International standard packages
- ¹ Fast recovery diode
- ¹ Unclamped Inductive Switching (UIS) rated
- ¹ Low package inductance
- easy to drive and to protect

Advantages

- ¹ Easy to mount
- ¹ Space savings
- ¹ High power density

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 250 \mu\text{A}$	800		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4 \text{ mA}$	3.0		5.0 V
I_{GSS}	$V_{GS} = \pm 30 \text{ V}_{DC}$, $V_{DS} = 0$			$\pm 200 \text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$			25 μA
	$V_{GS} = 0 \text{ V}$ $T_J = 125^\circ\text{C}$			1000 μA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = 10 \text{ A}$ Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2\%$			520 $\text{m}\Omega$

Symbol	Test Conditions	Characteristic Values		
		(T _J = 25°C unless otherwise specified)		
		Min.	Typ.	Max.
g_{fs}	V _{DS} = 20 V; I _D = 10 A, pulse test	14	23	S
C_{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		4685	pF
C_{oss}			356	pF
C_{rss}			26	pF
t_{d(on)}	V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = 10 A R _G = 2 Ω (External)		30	ns
t_r			24	ns
t_{d(off)}			85	ns
t_f			24	ns
Q_{g(on)}	V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = 10 A		86	nC
Q_{gs}			27	nC
Q_{gd}			24	nC
R_{thJC}	(TO-247, PLUS220)		0.25	°CW
R_{thCS}			0.21	°CW

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values		
		(T _J = 25°C unless otherwise specified)		
		Min.	Typ.	Max.
I_S	V _{GS} = 0 V			20 A
I_{SM}	Repetitive			50 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 = 25A, -di/dt = 100 A/μs V _R = 100V; V _{GS} = 0 V			250 ns
Q_{RM}			0.8	μC
I_{RM}			6.0	A

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	6,404,065B1	6,683,344	6,727,585
4,850,072	5,017,508	5,063,307	5,381,025	6,259,123B1	6,534,343	6,710,405B2	6,759,692
4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	6,771,478B2

Fig. 1. Output Characteristics
@ 25°C

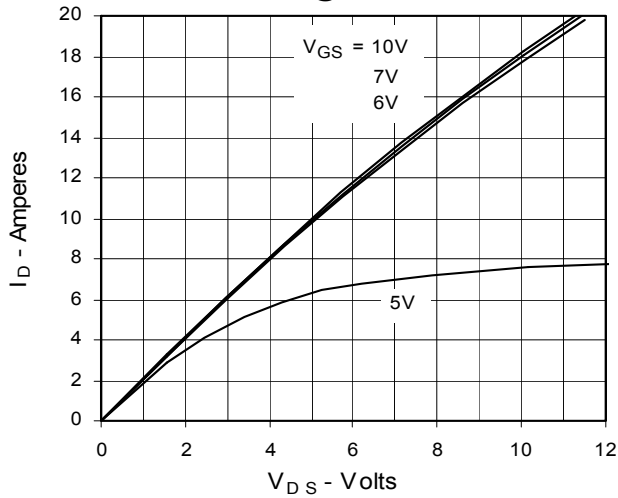


Fig. 2. Extended Output Characteristics
@ 25°C

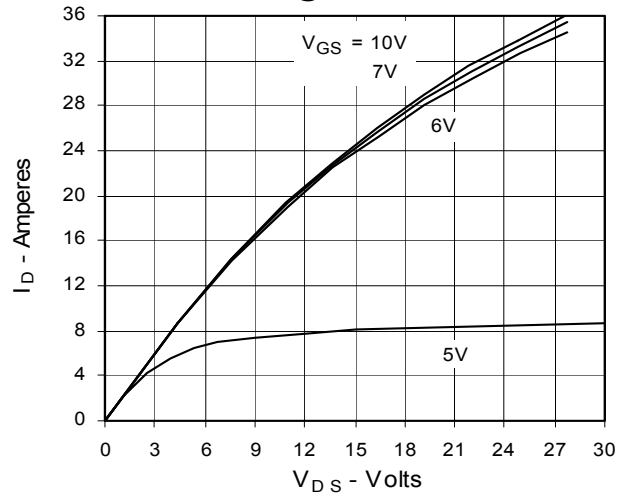


Fig. 3. Output Characteristics
@ 125°C

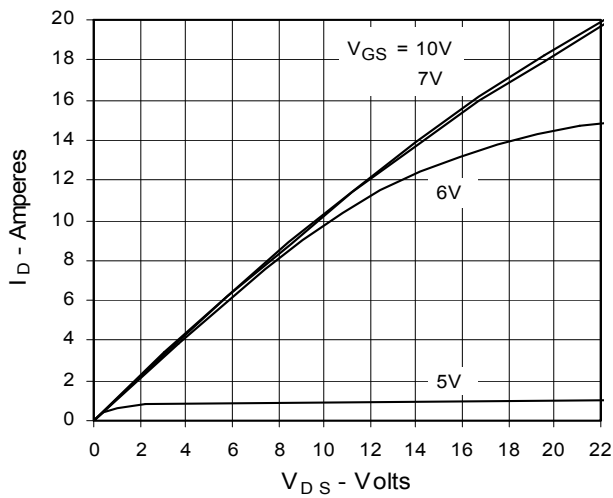


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 10A$ Value vs. Junction Temperature

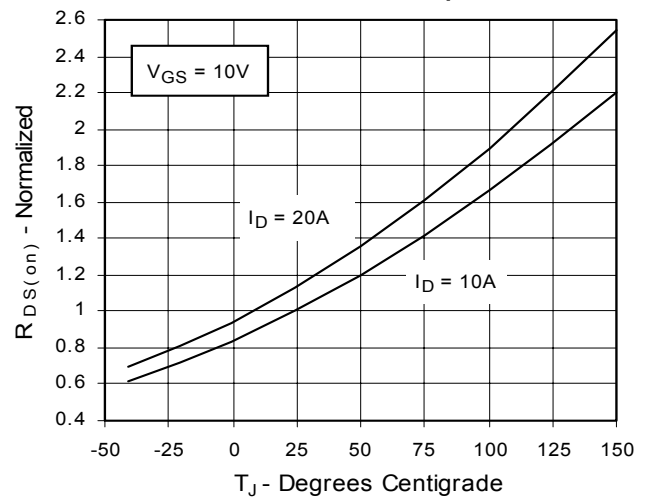


Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 10A$ Value vs. Drain Current

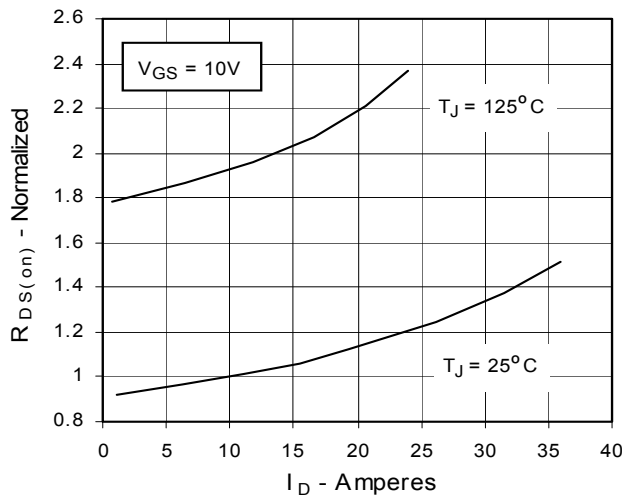


Fig. 6. Drain Current vs. Case Temperature

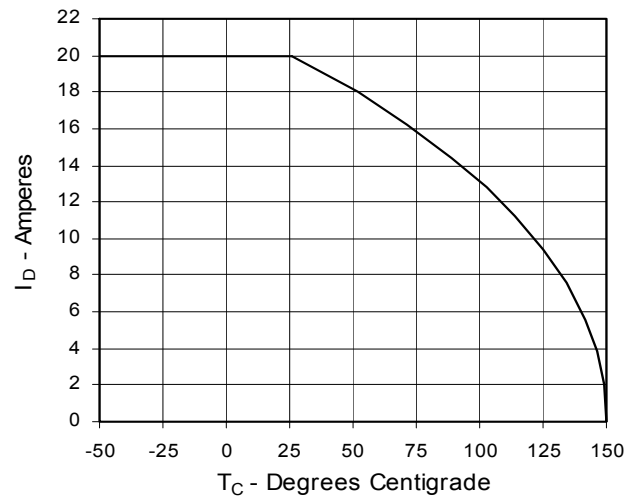


Fig. 7. Input Admittance

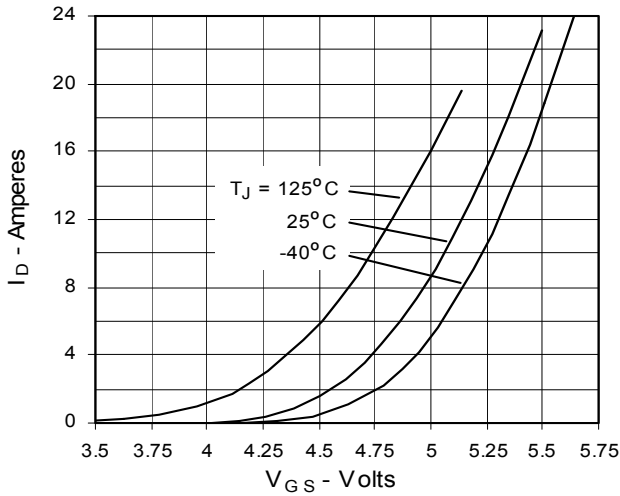


Fig. 8. Transconductance

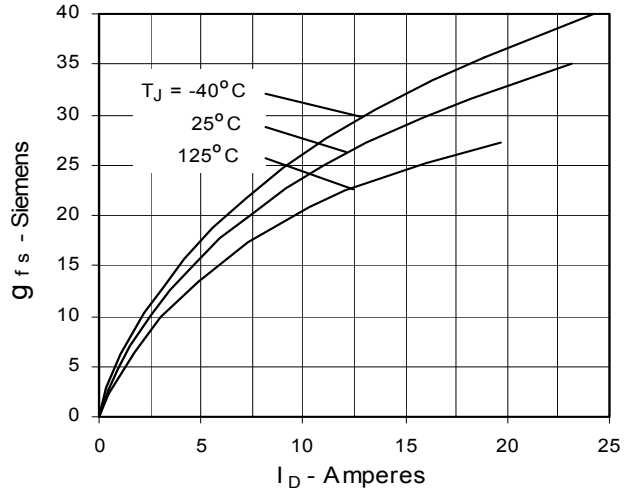


Fig. 9. Source Current vs. Source-To-Drain Voltage

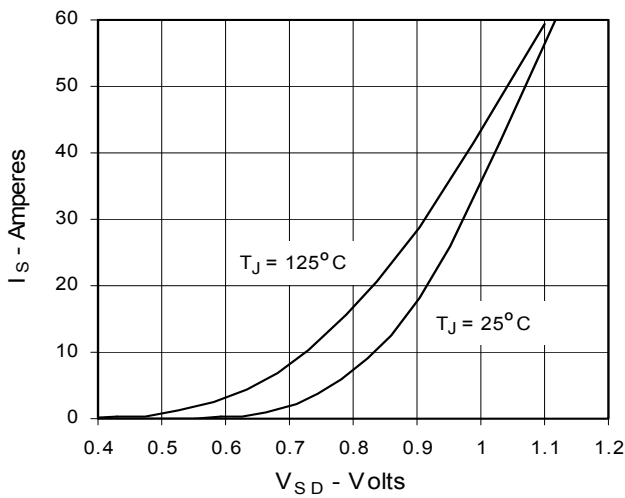


Fig. 10. Gate Charge

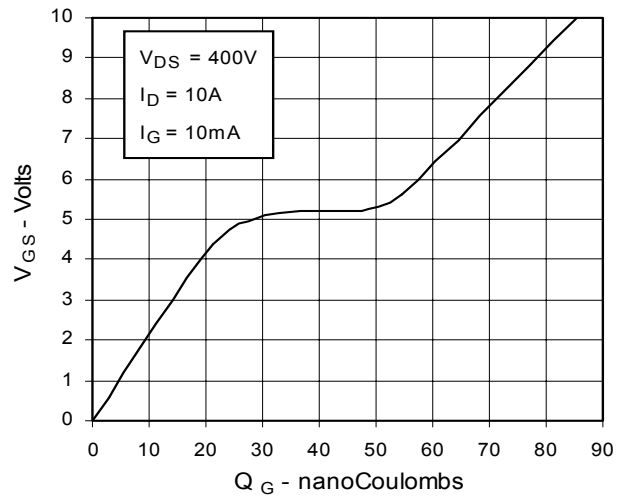


Fig. 11. Capacitance

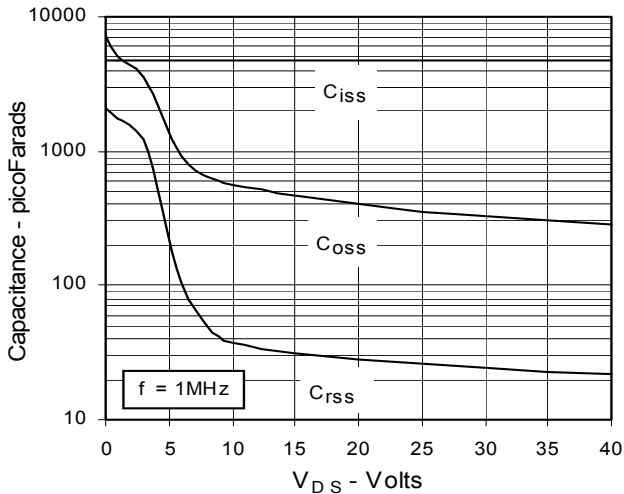
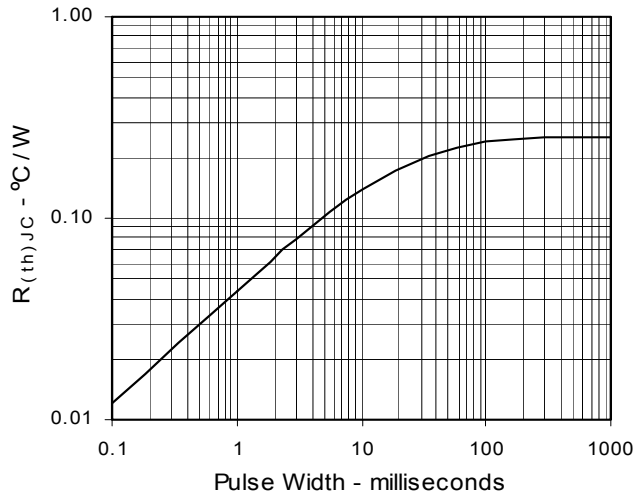
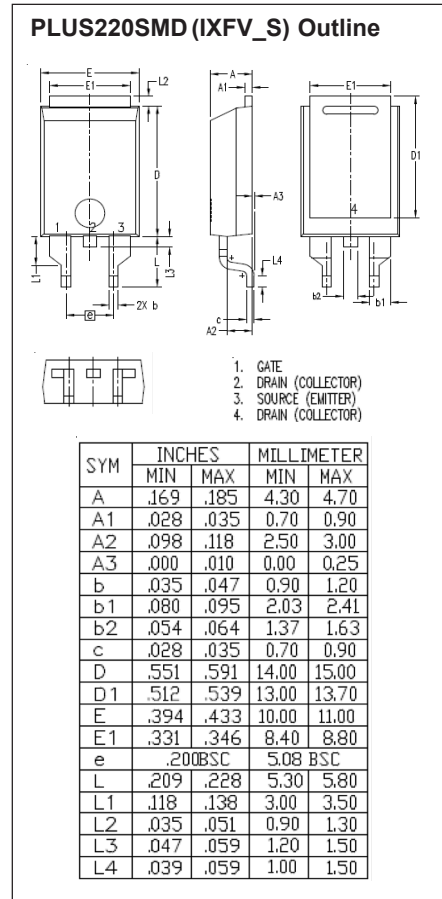
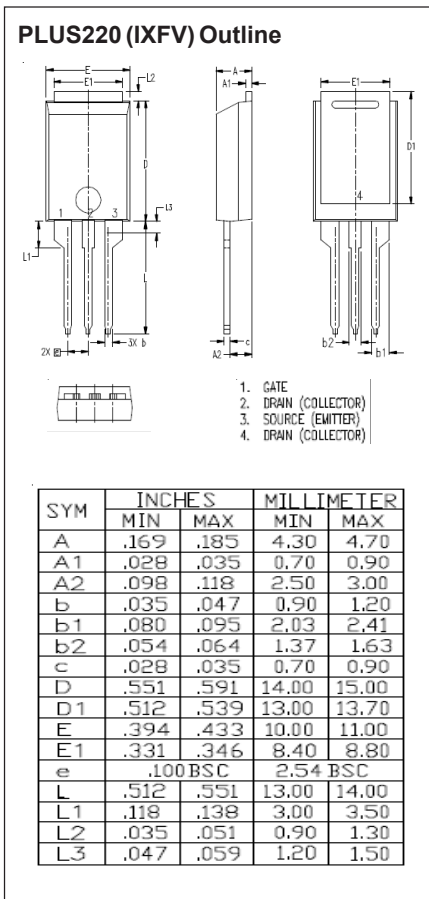
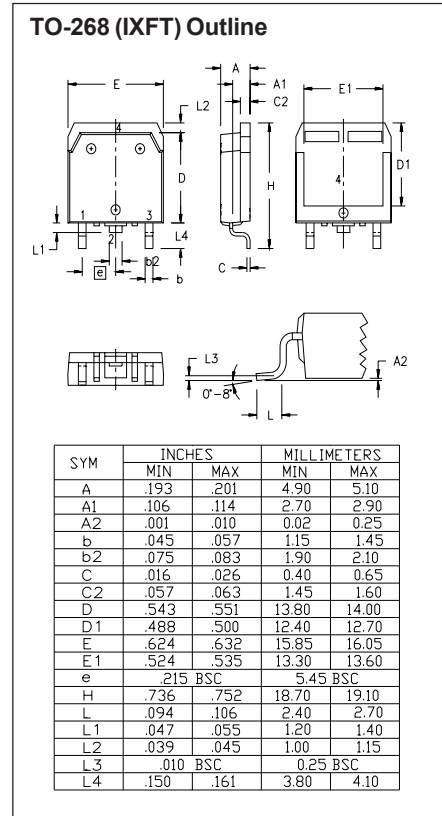
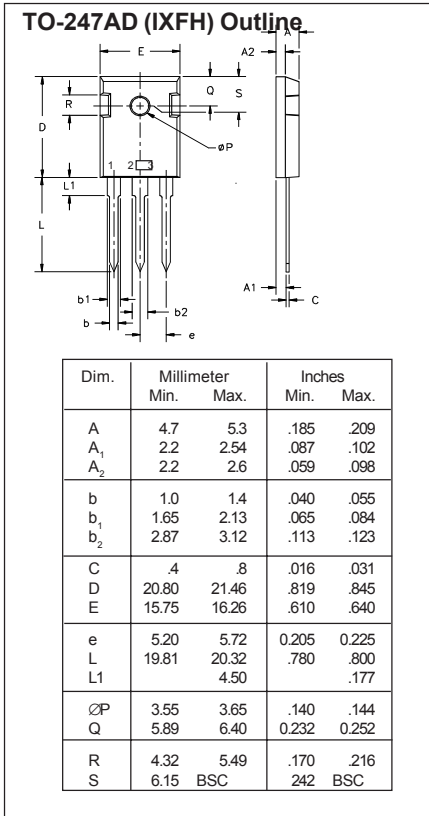


Fig. 12. Maximum Transient Thermal Resistance



Package Outline Drawings





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