

Polar™ HiPerFET™ Power MOSFET

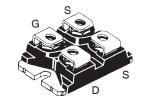
IXFN210N20P

N-Channel Enhancement Mode Avalanche Rated Fast Intrinsic Diode



 $V_{\rm DSS} = 200 {
m V}$ $V_{\rm D25} = 188 {
m A}$ $V_{\rm D25} \leq 10.5 {
m m} {
m M}$ $V_{\rm D25} \leq 200 {
m ns}$





G = Gate D = Drain S = Source

Either Source Terminal S can be used as the Source Terminal or the Kelvin Source (Gate Return) Terminal.

Features

- International Standard Package
- miniBLOC, with Aluminium Nitride Isolation
- Low Package Inductance Avalanche Rated
- $^{\bullet}$ Low $R_{DS(ON)}$ and Q_{G}
- Fast Intrinsic Diode

Ad	var	ıtag	es
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- Easy to Mount
- Space Savings
- High Power Density

Applications

- DC-DC Coverters
- Battery Chargers
- Switch-Mode and Resonant-Mode Power Supplies
- DC Choppers
- AC and DC Motor Drives
- Uninterrupted Power Supplies
- High Speed Power Switching Applications

Symbol	Test Conditions	Maximum Ratings			
V _{DSS} V _{DGR}	$T_J = 25^{\circ}C \text{ to } 175^{\circ}C$ $T_J = 25^{\circ}C \text{ to } 175^{\circ}C, R_{GS} =$	1ΜΩ	200 200	V V	
V _{GSS} V _{GSM}	Continuous Transient		±20 ± 30	V V	
I _{D25}	$T_{c} = 25^{\circ}C$ $T_{c} = 25^{\circ}C$, Pulse Width Lin	188 600	A A		
I _A E _{AS}	$T_{c} = 25^{\circ}C$ $T_{c} = 25^{\circ}C$		105 4	A J	
dv/dt	$I_{S} \leq I_{DM}, V_{DD} \leq V_{DSS}, T_{J} \leq 175^{\circ}C$		20	V/ns	
$P_{_{\mathrm{D}}}$	T _C = 25°C		1070	W	
T _J T _{JM} T _{stg}			-55 +175 175 -55 +175	°C °C °C	
T _L	1.6mm (0.062 in.) from Case	.6mm (0.062 in.) from Case for 10s		°C	
V _{ISOL}	50/60 Hz, RMS I _{ISOL} ≤ 1mA	t = 1min t = 1s	2500 3000	V~ V~	
M _d	Mounting Torque Terminal Connection Torque	е	1.5/13 1.3/11.5	Nm/lb.in. Nm/lb.in.	
Weight			30	g	

Symbol (T _J = 25°C,	Symbol Test Conditions Characteristic Min. Typ.			_	/alues Max.	
BV _{DSS}	$V_{GS} = 0V, I_D = 3mA$		200			V
V _{GS(th)}	$V_{DS} = V_{GS}, I_{D} = 8mA$		2.5		4.5	V
I _{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$				±200	nA
I _{DSS}	$V_{DS} = V_{DSS}, V_{GS} = 0V$	T _J = 150°C			25 2	μA mA
R _{DS(on)}	$V_{GS} = 10V, I_{D} = 105A, Note$	1			10.5	mΩ





Symbol (T _J = 25°C, U	Test Conditions Unless Otherwise Specified)	Charac Min.	Characteristic Values Min. Typ. Max.		
g _{fs}	$V_{DS} = 10V, I_{D} = 60A, Note 1$	60	103		S
C _{iss}			18.6		nF
C _{oss}	$V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$		3270		рF
C _{rss}			80		pF
t _{d(on)}	Resistive Switching Times		43		ns
t, ($V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_{D} = 105A$		30		ns
t _{d(off)}	$V_{GS} = 10V$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 105A$ $R_G = 1\Omega$ (External)		70		ns
t _f	N _G = 122 (External)		18		ns
Q _{g(on)}			255		nC
Q _{gs}	$V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_{D} = 105A$		94		nC
Q_{gd})		83		nC
R _{thJC}				0.14	°C/W
R _{thCS}			0.05		°C/W

SOT-227B (IXFN) Outline (M4 screws (4x) supplied) MILLIMETERS MIN MAX 31.50 31.88 7.80 8.20 MAX 31.88 8.20 MAX .307 .161 .161 .161 .587 1.186 1.496 4.09 4.09 4.09 4.29 4.29 .169 .595 1.193 9.60 0.84 12.85 25.42 2.13 5.97 26.90 4.42 .378 .033 .506 1.001 .084 .351 12.60

.195 1.045 .155

-.002

.004

Source-Drain Diode

Symbol	Test Conditions	Char	Characteristic Values			
$(T_J = 25^{\circ}C)$, Unless Otherwise Specified)	Min.	Тур.	Max.		
I _s	$V_{GS} = 0V$			210	Α	
I _{SM}	Repetitive, Pulse Width Limited by $T_{_{\rm JM}}$			800	Α	
V _{SD}	$I_{\rm F} = 105 {\rm A}, \ V_{\rm GS} = 0 {\rm V}, \ {\rm Note} \ 1$			1.3	V	
t _{rr} Q _{RM} I _{RM}	$\begin{cases} I_{F} = 105A, -di/dt = 150A/\mu s \\ V_{R} = 100V \end{cases}$		1.34 18	200	ns μC A	

1: Pulse test, $t \le 300\mu s$, duty cycle, $d \le 2\%$. Note

4.85 25.07

0.1

-0.05



Fig. 1. Output Characteristics @ $T_J = 25^{\circ}C$

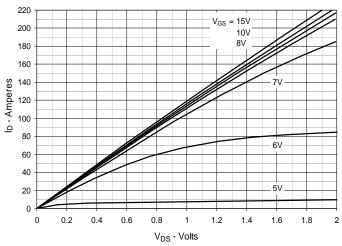


Fig. 2. Extended Output Characteristics @ T_J = 25°C

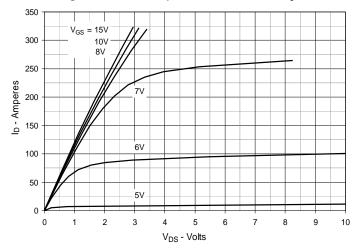


Fig. 3. Output Characteristics @ $T_J = 150$ °C

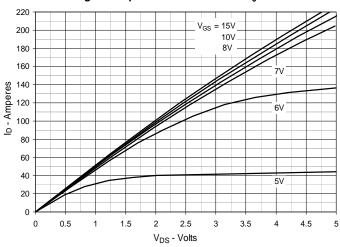


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 105A$ Value vs. Junction Temperature

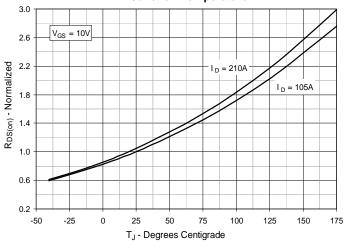


Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 105A$ Value vs.

Drain Current

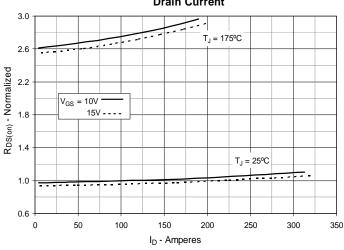
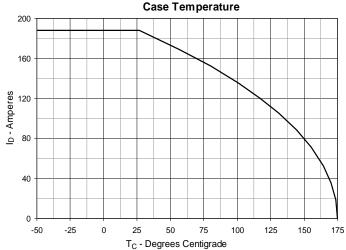
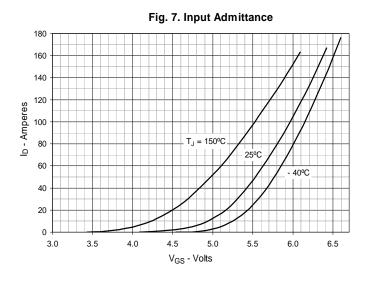
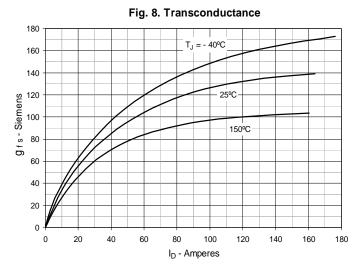


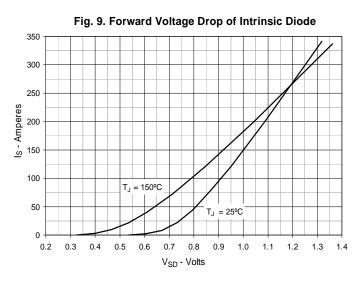
Fig. 6. Maximum Drain Current vs.

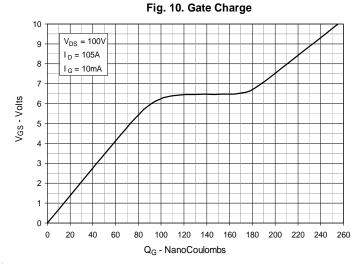


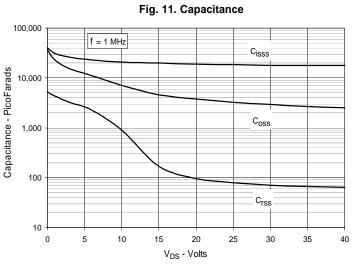


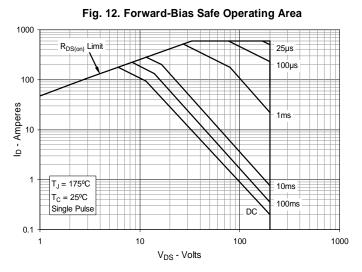












IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.



