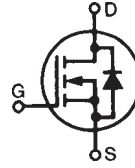


# PolarHV™ HiPerFET IXFN 140N30P

## Power MOSFET

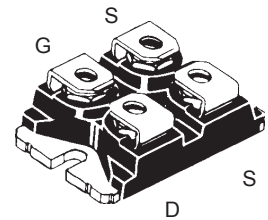
N-Channel Enhancement Mode  
Avalanche Rated  
Fast Intrinsic Diode



$$\begin{aligned} V_{DSS} &= 300 \text{ V} \\ I_{D25} &= 115 \text{ A} \\ R_{DS(on)} &\leq 24 \text{ m}\Omega \\ t_{rr} &\leq 200 \text{ ns} \end{aligned}$$

Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	300	V
$V_{DGR}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GS} = 1 \text{ M}\Omega$	300	V
$V_{GS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	115	A
$I_L$	Lead Current Limit, RMS	100	A
$I_{DM}$	$T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$	300	A
$I_{AR}$	$T_C = 25^\circ\text{C}$	115	A
$E_{AR}$	$T_C = 25^\circ\text{C}$	80	mJ
$E_{AS}$	$T_C = 25^\circ\text{C}$	5	J
$dv/dt$	$I_S \leq I_{DM}$ , $di/dt \leq 100 \text{ A}/\mu\text{s}$ , $V_{DD} \leq V_{DSS}$ , $T_J \leq 150^\circ\text{C}$ , $R_G = 2 \Omega$	20	V/ns
$P_D$	$T_C = 25^\circ\text{C}$	700	W
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-55 ... +150	$^\circ\text{C}$
$T_L$	1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
$V_{ISOL}$	50/60 Hz, RMS $I_{ISOL} \leq 1 \text{ mA}$	$t = 1 \text{ min}$ $t = 1 \text{ s}$	2500 3000 V~ V~
$M_d$	Mounting torque Terminal connection torque	1.5 / 13 1.5 / 13	Nm/lb.in. Nm/lb.in.
<b>Weight</b>		30	g

miniBLOC, SOT-227 B (IXFN)  
E153432



G = Gate  
S = Source  
D = Drain

Either Source terminal S can be used as the Source terminal or the Kelvin Source (gate return) terminal.

### Features

- International standard package
- Encapsulating epoxy meets UL 94 V-0, flammability classification
- miniBLOC with Aluminium nitride isolation
- † Fast recovery diode
- † Unclamped Inductive Switching (UIS) rated
- † Low package inductance - easy to drive and to protect

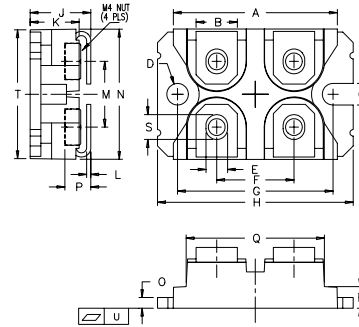
### Advantages

- † 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.
$BV_{DSS}$	$V_{GS} = 0 \text{ V}$ , $I_D = 3 \text{ mA}$	300		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 8 \text{ mA}$	3.0		5.0 V
$I_{GSS}$	$V_{GS} = \pm 20 V_{DC}$ , $V_{DS} = 0$			$\pm 200 \text{ nA}$
$I_{DSS}$	$V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$ $T_J = 125^\circ\text{C}$			25 $\mu\text{A}$ 1 mA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$ , $I_D = 0.5 I_{D25}$	20		24 m $\Omega$

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ unless otherwise specified)		
		Min.	Typ.	Max.
$g_{fs}$	$V_{DS} = 20\text{ V}; I_D = 0.5 I_{D25}$ , Note 1	50	90	S
$C_{iss}$	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 500\text{ kHz}$		14	nF
$C_{oss}$			1800	pF
$C_{rss}$			135	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}$ $R_G = 1\ \Omega$ (External)		30	ns
$t_r$			30	ns
$t_{d(off)}$			100	ns
$t_f$			20	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}$		185	nC
$Q_{gs}$			72	nC
$Q_{gd}$			60	nC
$R_{thJC}$			0.18	$^\circ\text{C/W}$
$R_{thCS}$		0.05		$^\circ\text{C/W}$

### SOT-227B Outline



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.240	1.255	31.50	31.88
B	.307	.323	7.80	8.20
C	.161	.169	4.09	4.29
D	.161	.169	4.09	4.29
E	.161	.169	4.09	4.29
F	.587	.595	14.91	15.11
G	1.186	1.193	30.12	30.30
H	1.496	1.505	38.00	38.23
J	.460	.481	11.68	12.22
K	.351	.378	8.92	9.60
L	.030	.033	0.76	0.84
M	.496	.506	12.60	12.85
N	.990	1.001	25.15	25.42
O	.078	.084	1.98	2.13
P	.195	.235	4.95	5.97
Q	1.045	1.059	26.54	26.90
R	.155	.174	3.94	4.42
S	.186	.191	4.72	4.85
T	.968	.987	24.59	25.07
U	-.002	.004	-0.05	0.1

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ unless otherwise specified)		
		Min.	Typ.	Max.
$I_s$	$V_{GS} = 0\text{ V}$		140	A
$I_{SM}$	Repetitive		300	A
$V_{SD}$	$I_F = 90\text{ A}, V_{GS} = 0\text{ V},$		1.3	V
$t_{rr}$	$I_F = 25\text{ A}, -di/dt = 100\text{ A}/\mu\text{s}$ $V_R = 100\text{ V}, V_{GS} = 0\text{ V}$		200	ns
$Q_{RM}$			0.6	$\mu\text{C}$
$I_{RM}$			6	A

### Notes:

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

### PRELIMINARY TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from data gathered during objective characterizations of preliminary engineering lots; but also may yet contain some information supplied during a pre-production design evaluation. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

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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