

Polar[™] Power MOSFET HiPerFET[™]

IXFN140N30P

N-Channel Enhancement Mode Avalanche Rated Fast Intrinsic Diode

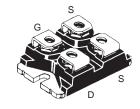


Symbol	Test Conditions		Maximum F	Ratings
V _{DSS}	$T_J = 25^{\circ}C$ to $150^{\circ}C$		300	V
V _{DGR}	$T_J = 25^{\circ}C$ to 150°C, $R_{GS} =$	1ΜΩ	300	V
V _{GSS}	Continuous		±20	V
V _{GSM}	Transient		± 30	V
I _{D25} I _{LRMS}	$T_{c} = 25^{\circ}C$ External lead current limit $T_{c} = 25^{\circ}C$, pulse width lim	110 100 300	A A A	
I _A	T _C = 25°C	70	A	
E _{AS}	$T_{C} = 25^{\circ}C$	5	J	
dV/dt	$I_{S} \leq I_{DM}, \ V_{DD} \leq V_{DSS}, T_{J} \leq 150^{\circ}C$		20	V/ns
P_{D}	T _c = 25°C			W
T _J			-55 +150	°C
T_{JM}			150	°C
T_{stg}			-55 +150	°C
T _L	1.6mm (0.062 in.) from cas	1.6mm (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		1.5/13 1.3/11.5	Nm/lb.in. Nm/lb.in.
Weight			30	g

			Char Min.	acteris Typ.	tic Values Max.		
BV _{DSS}	$V_{GS} = 0V, I_D = 3mA$		300			V	
V _{GS(th)}	$V_{DS} = V_{GS}, I_{D} = 8mA$		3.0		5.0	V	
I _{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$				±200	nA	
I _{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0V$	T _J = 125°C			25 1	μA mA	
R _{DS(on)}	$V_{GS} = 10V, I_{D} = 70A, Note 1$			20	24	mΩ	

 $V_{DSS} = 300V$ $I_{D25} = 110A$ $R_{DS(on)} \le 24m\Omega$ $t_{rr} \le 200ns$

miniBLOC, SOT-227 B E153432



G = Gate D = Drain S = Source

Either Source terminal at miniBLOC can be used as Main or Kelvin Source

Features

- Fast intrinsic diode
- Avalanche Rated
- Low R_{DS(ON)} and Q_G
- Low package inductance

Advantages

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

Applications

- DC-DC coverters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- AC and DC motor control
- Uninterrupted power supplies
- High speed power switching applications





Symbol	Cha	aracteristic Values			
$T_{\rm J} = 25^{\circ}$ C, t	unless otherwise specified)	Min.	Тур.	Max	ζ
g_{fs}	$V_{DS} = 20V, I_{D} = 70A, Note 1$	50	90		S
C _{iss}			14.8		nF
C _{oss}	$V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$		1830		pF
C _{rss}			55		pF
t _{d(on)}	Resistive Switching Times		30		ns
t,	$V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_{D} = 70A$		30		ns
t _{d(off)}	$R_{G} = 10$ (External)		100		ns
$t_{\rm f}$	Tig = 132 (External)		20		ns
$\mathbf{Q}_{g(on)}$			185		nC
Q_{gs}	$V_{GS} = 10V$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_{D} = 70A$		72		nC
Q _{gd}			60		nC
R _{thJC}				0.18	°C/W
R _{thCS}			0.05		°C/W

SOT-227B Outline							
1 + 3 - 1	s s		A BEFORE	+ c			
MYZ	INCH MIN	HES MAX	MILLIN MIN	METERS MAX			

	LITIN	MAX	LITIA	MHA
Α	1.240	1.255	31.50	31.88
В	.307	.323	7.80	8.20
C D	.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
Н	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
М	.496	.506	12.60	12.85
N	.990	1.001	25.15	25.42
0	.078	.084	1.98	2.13
Р	.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

Source-Drain Diode

Characteristic Values

(T_J = 25°C, unless otherwise specified)

Symbol	Test Conditions	Min.	Тур.	Max.	
Is	$V_{GS} = 0V$			140	Α
I _{SM}	Repetitive, pulse width limited by T_{JM}			560	Α
V _{SD}	$I_F = 70A, V_{GS} = 0V, Note 1$			1.3	V
t _{rr} Q _{RM} I _{RM}	$\begin{cases} I_F = 25A, -di/dt = 100A/\mu s \\ V_R = 100V \end{cases}$		0.6 6.0	200	ns μC Α

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



Fig. 1. Output Characteristics @ 25°C

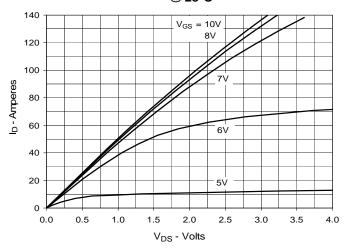


Fig. 3. Output Characteristics @ 125°C

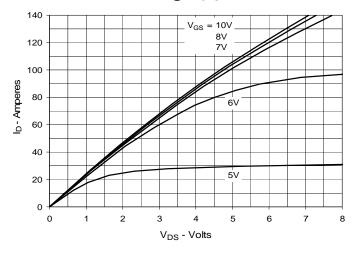


Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 70A$ Value vs. Drain Current

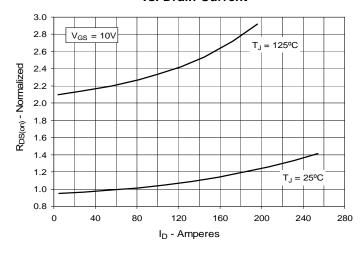


Fig. 2. Extended Output Characteristics
@ 25°C

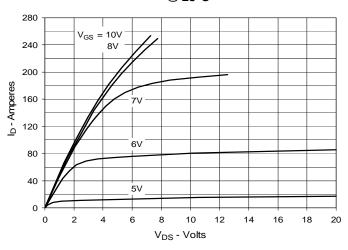


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 70A$ Value vs. Junction Temperature

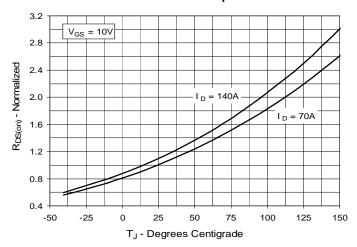


Fig. 6. Maximum Drain Current vs.

Case Temperature

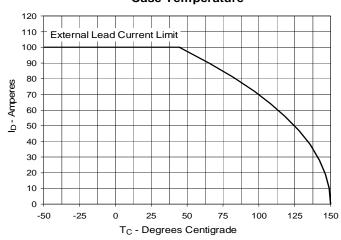


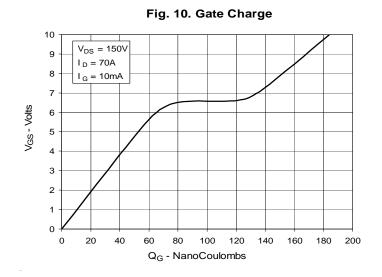


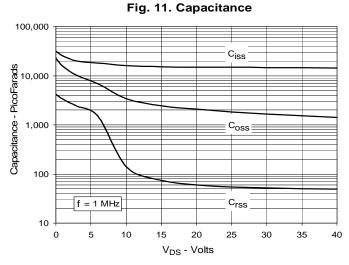
Fig. 7. Input Admittance 180 160 140 120 ID - Amperes = 125°C 100 25°C 40°C 80 60 40 20 0 4.0 4.5 5.5 6.0 6.5 7.0 3.5 5.0 V_{GS} - Volts

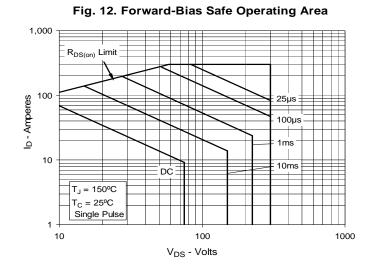
Fig. 8. Transconductance 140 120 100 - 40°C gfs - Siemens 25°C 125°C 80 60 40 20 140 200 0 20 40 60 80 100 120 160 180 I_D - Amperes

Intrinsic Diode 300 250 200 Is - Amperes 150 T_J = 125°C 100 $T_J = 25^{\circ}C$ 50 0.5 0.6 0.7 0.4 8.0 0.9 1.0 1.1 1.2 1.3 1.4 V_{SD} - Volts

Fig. 9. Forward Voltage Drop of







IXYS reserves the right to change limits, test conditions, and dimensions.

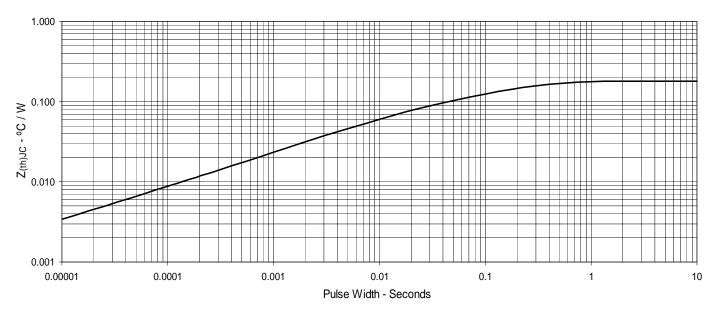


Fig. 13. Maximum Transient Thermal Impedance

