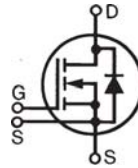


**Polar™ HiPerFET™  
Power MOSFET**

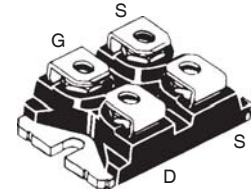
**IXFN82N60P**

**V<sub>DSS</sub> = 600V**  
**I<sub>D25</sub> = 72A**  
**R<sub>DS(on)</sub> ≤ 75mΩ**  
**t<sub>rr</sub> ≤ 200ns**



N-Channel Enhancement Mode  
 Avalanche Rated  
 Fast Intrinsic Rectifier

miniBLOC  
 E153432



G = Gate      D = Drain  
 S = Source

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

Symbol	Test Conditions	Maximum Ratings	
V <sub>DSS</sub>	T <sub>J</sub> = 25°C to 150°C	600	V
V <sub>DGR</sub>	T <sub>J</sub> = 25°C to 150°C, R <sub>GS</sub> = 1MΩ	600	V
V <sub>GSS</sub>	Continuous	±30	V
V <sub>GSM</sub>	Transient	±40	V
I <sub>D25</sub>	T <sub>C</sub> = 25°C	72	A
I <sub>DM</sub>	T <sub>C</sub> = 25°C, Pulse Width Limited by T <sub>JM</sub>	200	A
I <sub>A</sub>	T <sub>C</sub> = 25°C	82	A
E <sub>AS</sub>	T <sub>C</sub> = 25°C	5	J
dv/dt	I <sub>S</sub> ≤ I <sub>DM</sub> , V <sub>DD</sub> ≤ V <sub>DSS</sub> , T <sub>J</sub> ≤ 150°C	20	V/ns
P <sub>D</sub>	T <sub>C</sub> = 25°C	1040	W
T <sub>J</sub>		-55 ... +150	°C
T <sub>JM</sub>		150	°C
T <sub>stg</sub>		-55 ... +150	°C
T <sub>L</sub>	1.6mm (0.062 in.) from Case for 10s	300	°C
T <sub>SOLD</sub>	Plastic Body for 10s	260	°C
V <sub>ISOL</sub>	50/60 Hz, RMS, t = 1minute	2500	V~
	I <sub>ISOL</sub> ≤ 1mA, t = 1s	3000	V~
M <sub>d</sub>	Mounting Torque for Base Plate	1.5/13	Nm/lb.in.
	Terminal Connection Torque	1.3/11.5	Nm/lb.in.
Weight		30	g

**Features**

- International Standard Package
- miniBLOC, with Aluminium Nitride Isolation
- Dynamic dv/dt Rating
- Avalanche Rated
- Fast Intrinsic Rectifier
- Low R<sub>DS(on)</sub>
- Low Drain-to-Tab Capacitance
- Low Package Inductance

**Advantages**

- Easy to Mount
- Space Savings

**Applications**

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

Symbol	Test Conditions (T <sub>J</sub> = 25°C Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 3mA	600		V
V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 8mA	3.0		5.0 V
I <sub>GSS</sub>	V <sub>GS</sub> = ±30V, V <sub>DS</sub> = 0V			±200 nA
I <sub>DSS</sub>	V <sub>DS</sub> = V <sub>DSS</sub> , V <sub>GS</sub> = 0V T <sub>J</sub> = 125°C			50 μA 1 mA
R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 41A, Note 1			75 mΩ

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$g_{fs}$	$V_{DS} = 20\text{V}, I_D = 41\text{A}$ , Note 1	50	80	S
$C_{iss}$	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$		23	nF
$C_{oss}$			1490	pF
$C_{rss}$			200	pF
$t_{d(on)}$	<b>Resistive Switching Times</b> $V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 41\text{A}$ $R_G = 1\Omega$ (External)		28	ns
$t_r$			23	ns
$t_{d(off)}$			79	ns
$t_f$			24	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 41\text{A}$		240	nC
$Q_{gs}$			96	nC
$Q_{gd}$			67	nC
$R_{thJC}$				0.12 $^\circ\text{C/W}$
$R_{thCS}$		0.05		$^\circ\text{C/W}$

### Source-Drain Diode

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$I_S$	$V_{GS} = 0\text{V}$			82 A
$I_{SM}$	Repetitive, Pulse Width Limited by $T_{JM}$			200 A
$V_{SD}$	$I_F = I_S, V_{GS} = 0\text{V}$ , Note 1			1.5 V
$t_{rr}$	$I_F = 25\text{A}, -di/dt = 100\text{A}/\mu\text{s}$ $V_R = 100\text{V}, V_{GS} = 0\text{V}$			200 ns
$Q_{RM}$			0.6	$\mu\text{C}$
$I_{RM}$			6.0	A

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

### SOT-227B (IXFN) Outline



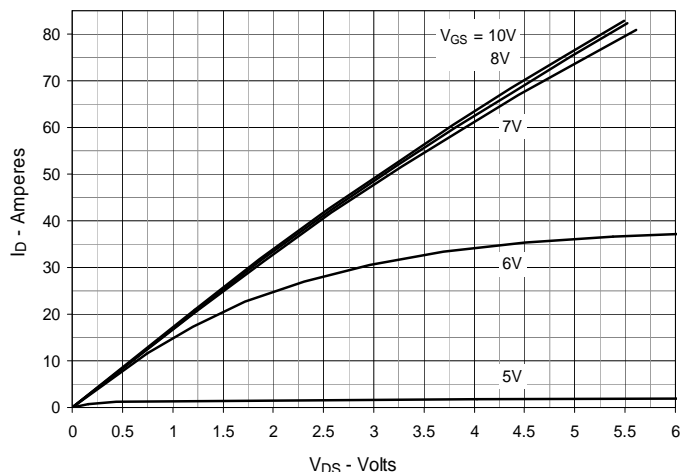
(M4 screws (4x) supplied)

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

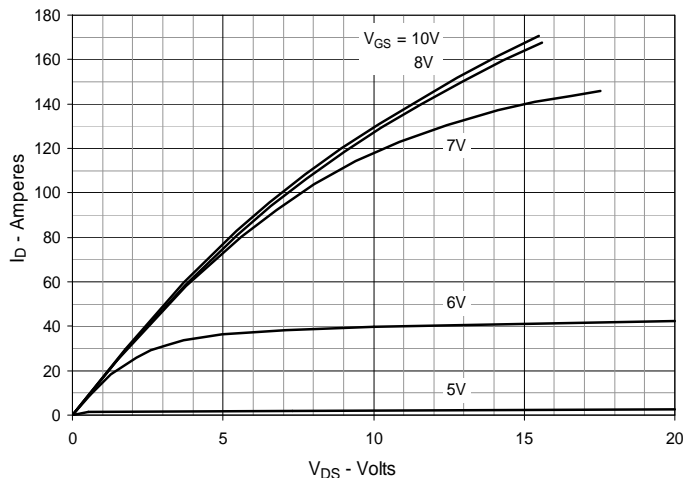
IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

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	7,157,338B2
	4,860,072	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	

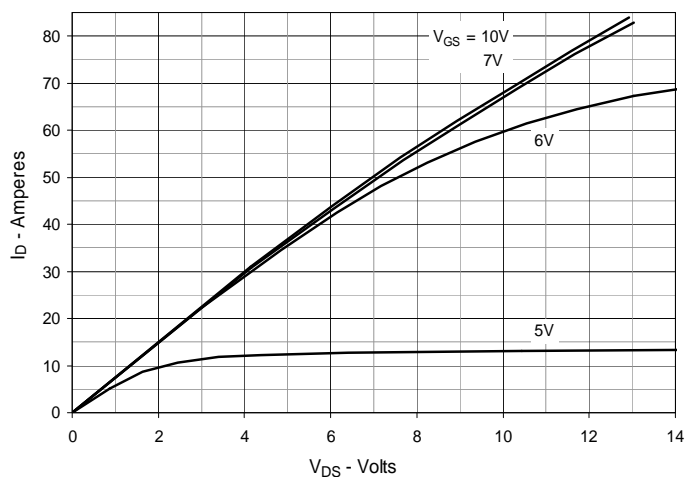
**Fig. 1. Output Characteristics @  $T_J = 25^\circ\text{C}$**



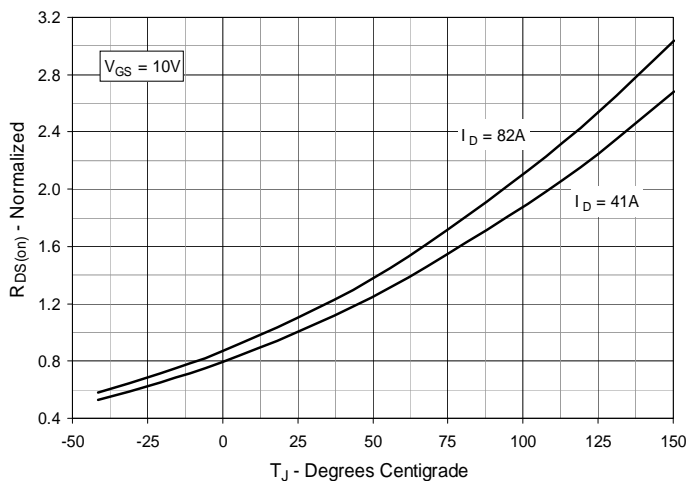
**Fig. 2. Extended Output Characteristics @  $T_J = 25^\circ\text{C}$**



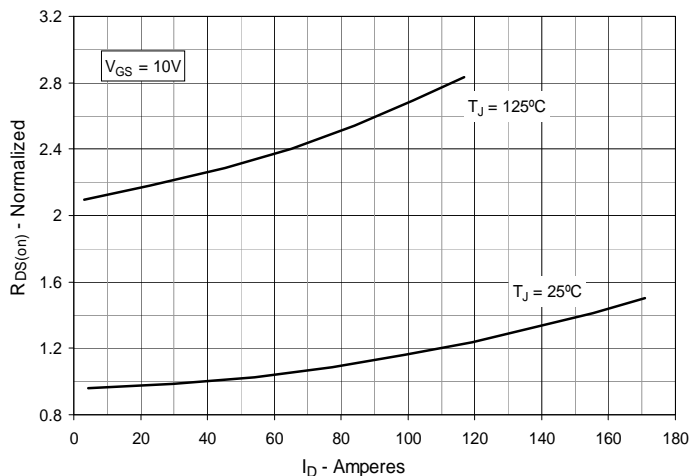
**Fig. 3. Output Characteristics @  $T_J = 125^\circ\text{C}$**



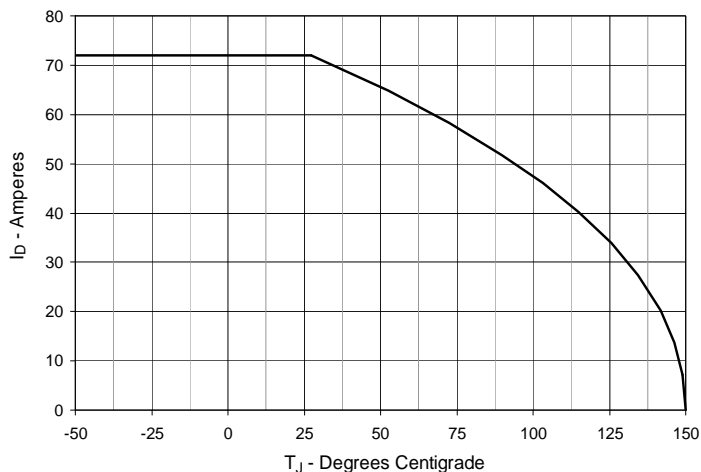
**Fig. 4.  $R_{DS(on)}$  Normalized to  $I_D = 41\text{A}$  Value vs. Junction Temperature**



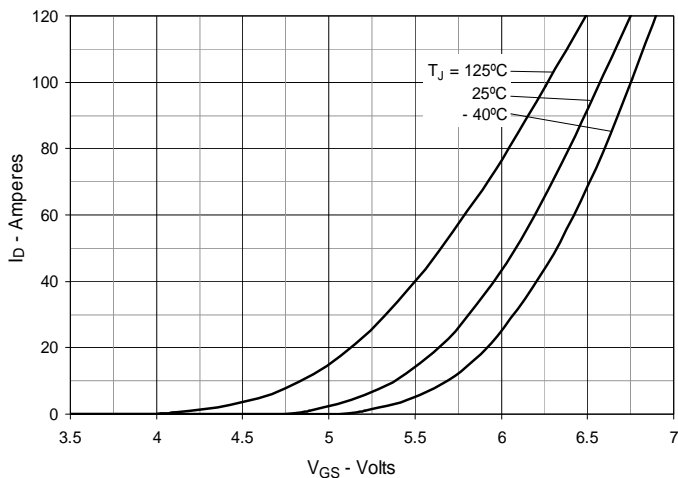
**Fig. 5.  $R_{DS(on)}$  Normalized to  $I_D = 41\text{A}$  Value vs. Drain Current**



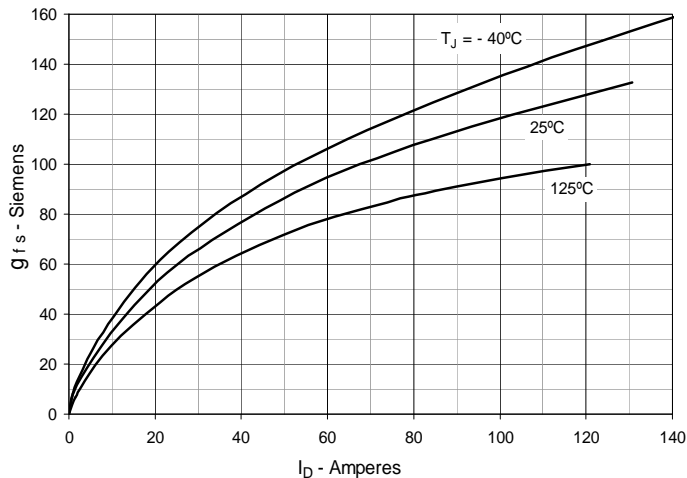
**Fig. 6. Maximum Drain Current vs. Case Temperature**



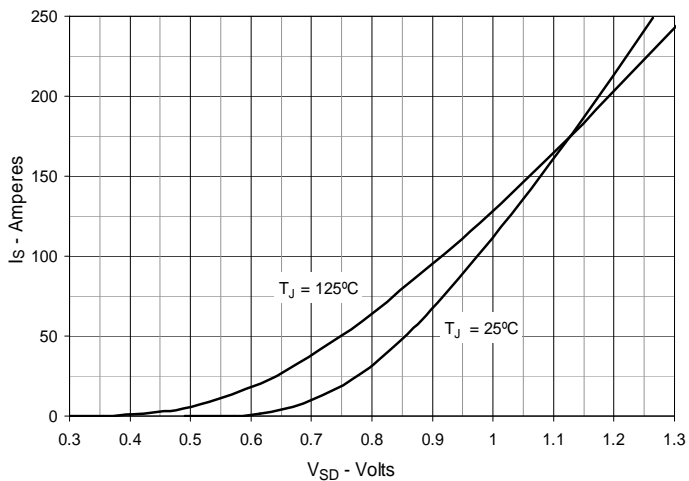
**Fig. 7. Input Admittance**



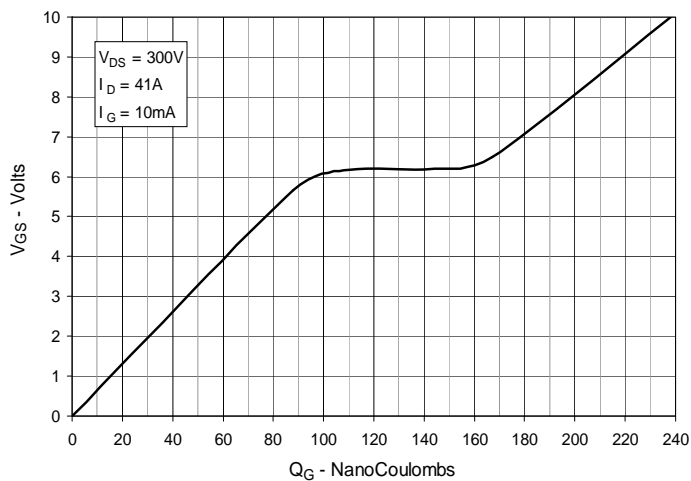
**Fig. 8. Transconductance**



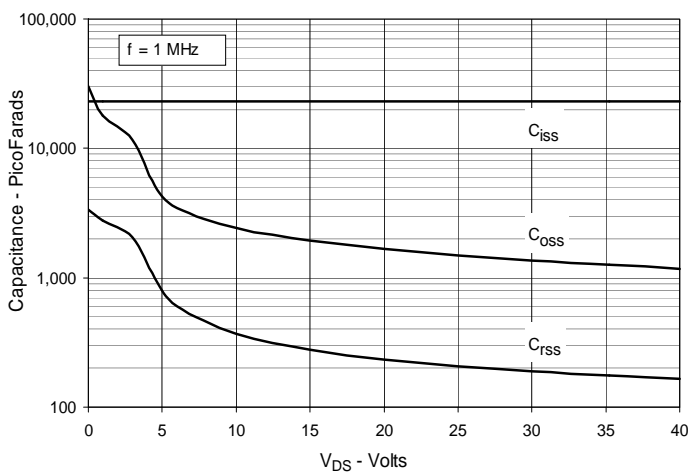
**Fig. 9. Forward Voltage Drop of Intrinsic Diode**



**Fig. 10. Gate Charge**



**Fig. 11. Capacitance**



**Fig. 12. Forward-Bias Safe Operating Area**

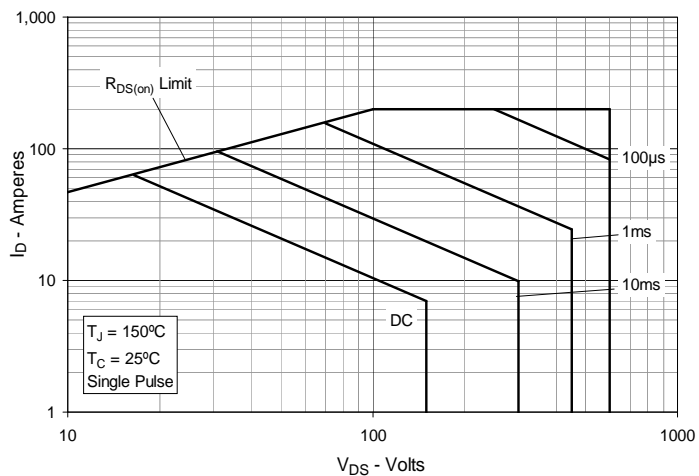


Fig. 13. Maximum Transient Thermal Resistance

