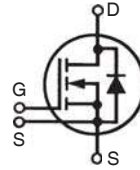


**Polar™ HiperFET™
Power MOSFET**

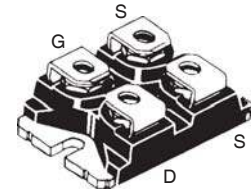
IXFN44N80P

V_{DSS} = 800V
I_{D25} = 39A
R_{DS(on)} ≤ 190mΩ
t_{rr} ≤ 250ns



N-Channel Enhancement Mode
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 _{DSS}	T _J = 25°C to 150°C	800	V
V _{DGR}	T _J = 25°C to 150°C, R _{GS} = 1MΩ	800	V
V _{GSS}	Continuous	±30	V
V _{GSM}	Transient	±40	V
I _{D25}	T _C = 25°C	39	A
I _{DM}	T _C = 25°C, Pulse Width Limited by T _{JM}	100	A
I _A	T _C = 25°C	22	A
E _{AS}	T _C = 25°C	3.4	J
dv/dt	I _S ≤ I _{DM} , V _{DD} ≤ V _{DSS} , T _J ≤ 150°C	10	V/ns
P _D	T _C = 25°C	694	W
T _J		-55 ... +150	°C
T _{JM}		150	°C
T _{stg}		-55 ... +150	°C
V _{ISOL}	50/60 Hz, RMS, t = 1minute	2500	V~
	I _{ISOL} ≤ 1mA, t = 1s	3000	V~
M _d	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
- Low Intrinsic Gate Resistance
- miniBLOC with Aluminum Nitride Isolation
- Low Package Inductance
- Fast Intrinsic Rectifier
- Low R_{DS(on)} and Q_G

Advantages

- High Power Density
- Easy to Mount
- Space Savings

Applications

- DC-DC Converters
- Battery Chargers
- Switch-Mode and Resonant-Mode Power Supplies
- AC Motor Control
- High Speed Power Switching Application

Symbol	Test Conditions (T _J = 25°C Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV _{DSS}	V _{GS} = 0V, I _D = 800μA	800		V
V _{GS(th)}	V _{DS} = V _{GS} , I _D = 8mA	3.0		5.0 V
I _{GSS}	V _{GS} = ±30V, V _{DS} = 0V			±200 nA
I _{DSS}	V _{DS} = V _{DSS} , V _{GS} = 0V T _J = 125°C			50 μA 1.5 mA
R _{DS(on)}	V _{GS} = 10V, I _D = 22A, Note 1			190 mΩ

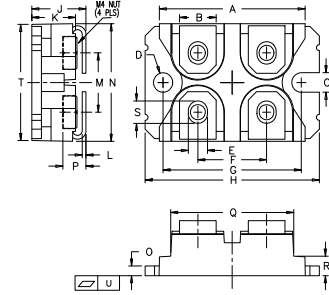
Symbol	Test Conditions ($T_J = 25^\circ\text{C}$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 20\text{V}, I_D = 22\text{A}$, Note 1	27	43	S
C_{iss}	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$		18	nF
C_{oss}			910	pF
C_{rss}			30	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 22\text{A}$ $R_G = 1\Omega$ (External)		28	ns
t_r			22	ns
$t_{d(off)}$			75	ns
t_f			27	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 22\text{A}$		200	nC
Q_{gs}			67	nC
Q_{gd}			65	nC
R_{thJC}				0.18 $^\circ\text{C/W}$
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	$V_{GS} = 0\text{V}$			44 A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			100 A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{V}$, Note 1			1.5 V
t_{rr}	$I_F = 22\text{A}, -di/dt = 100\text{A}/\mu\text{s}$ $V_R = 100\text{V}, V_{GS} = 0\text{V}$			250 ns
Q_{RM}			0.8	μC
I_{RM}			8.0	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	

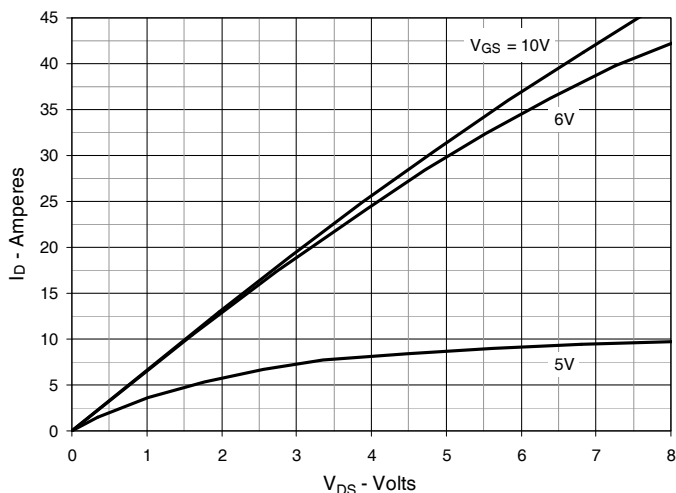
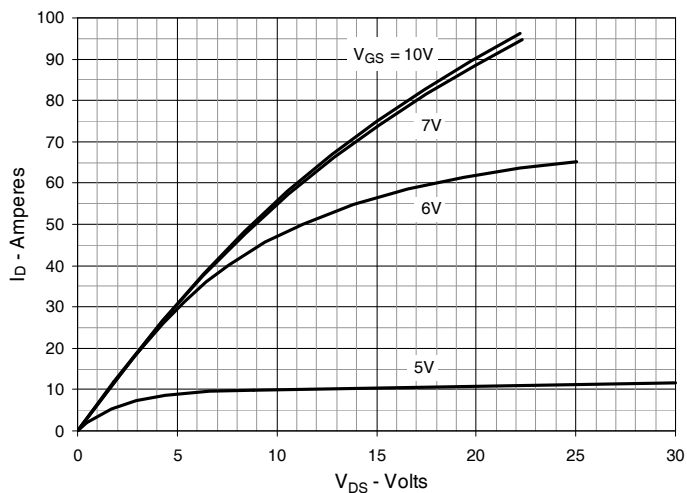
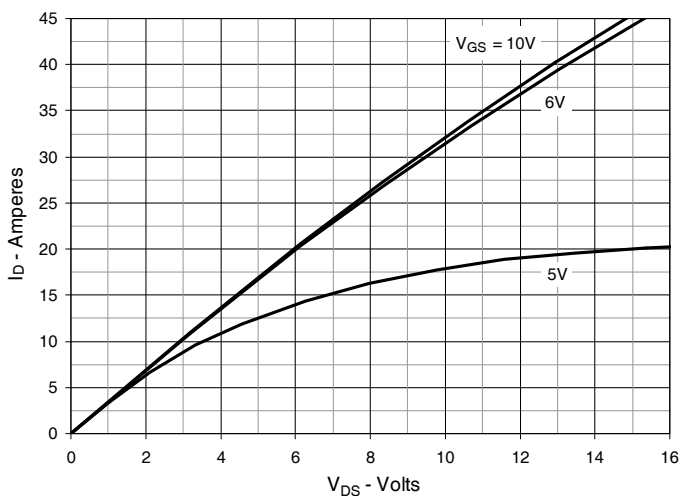
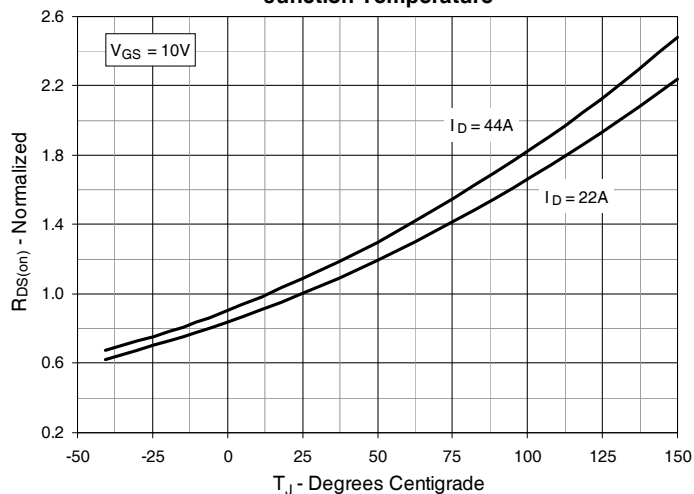
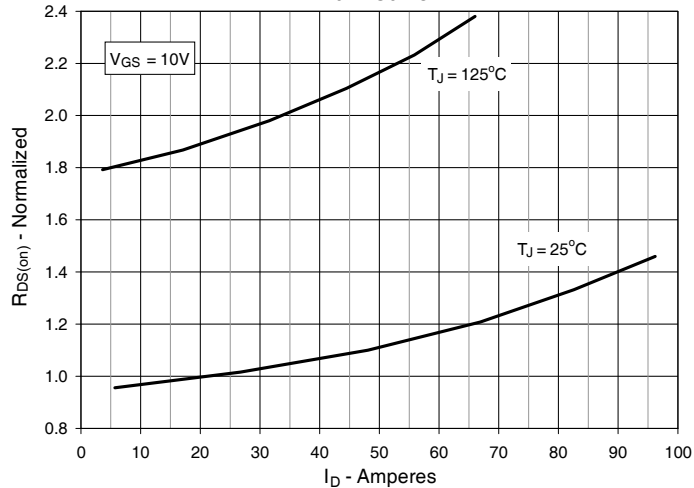
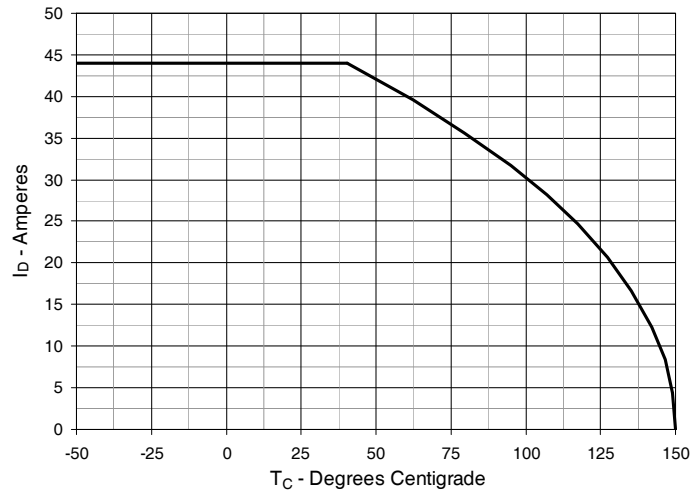
Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

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 $I_D = 22\text{A}$ Value vs. Junction Temperature

Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 22\text{A}$ Value vs. Drain Current

Fig. 6. Maximum Drain Current vs. Case Temperature


Fig. 7. Input Admittance

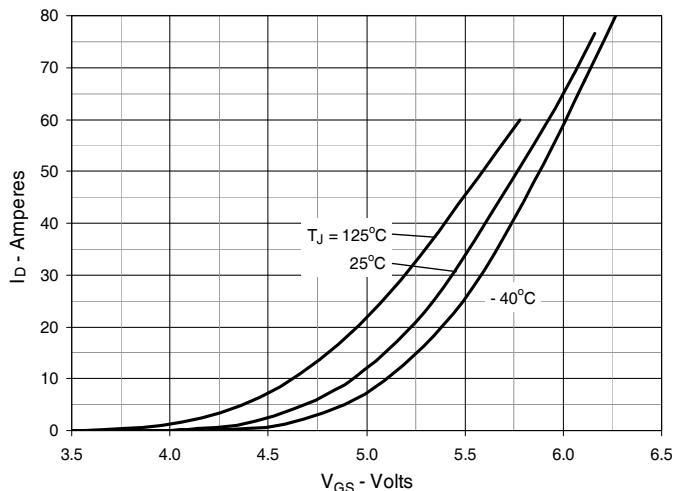


Fig. 8. Transconductance

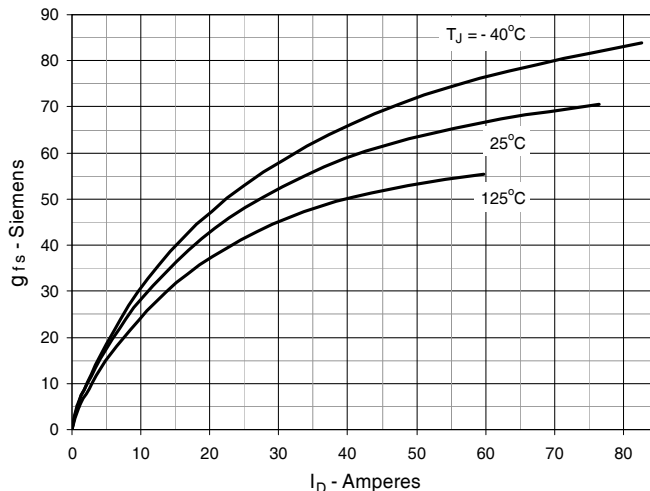


Fig. 9. Forward Voltage Drop of Intrinsic Diode

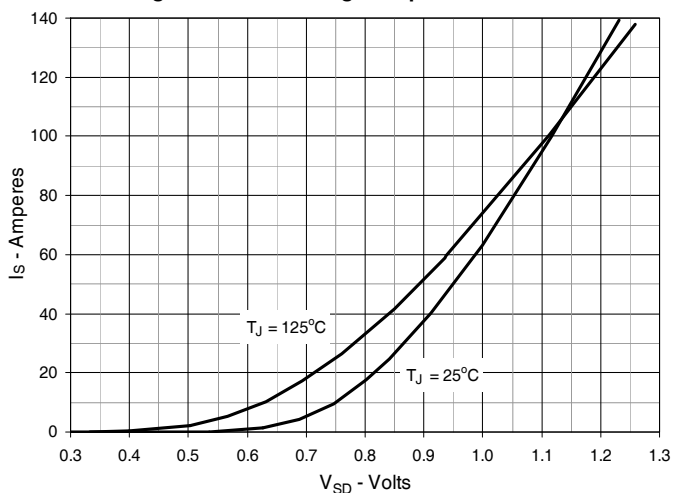


Fig. 10. Gate Charge

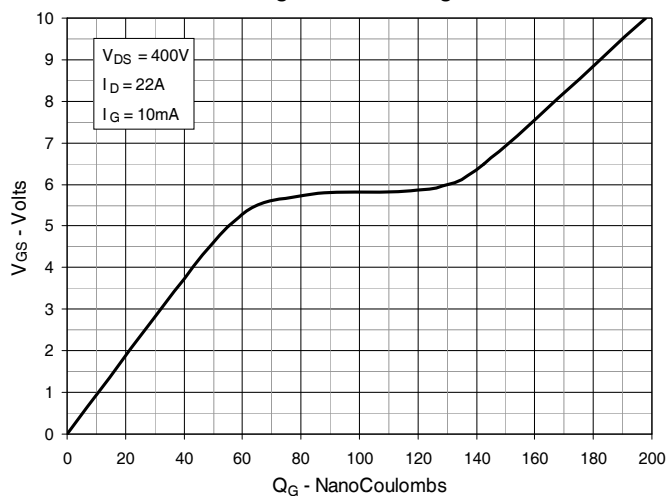


Fig. 11. Capacitance

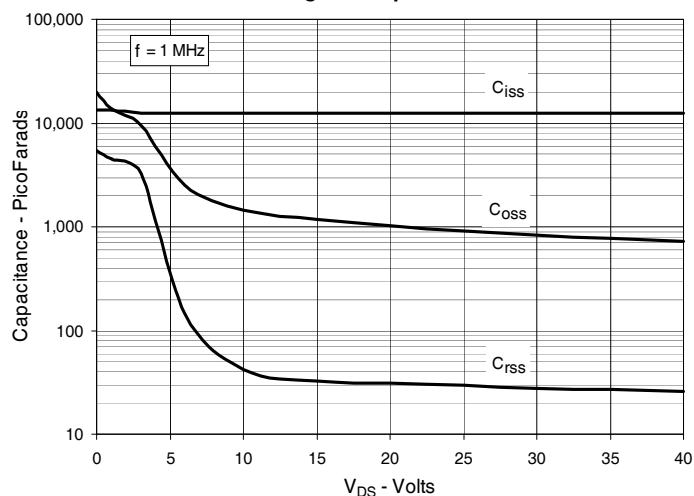
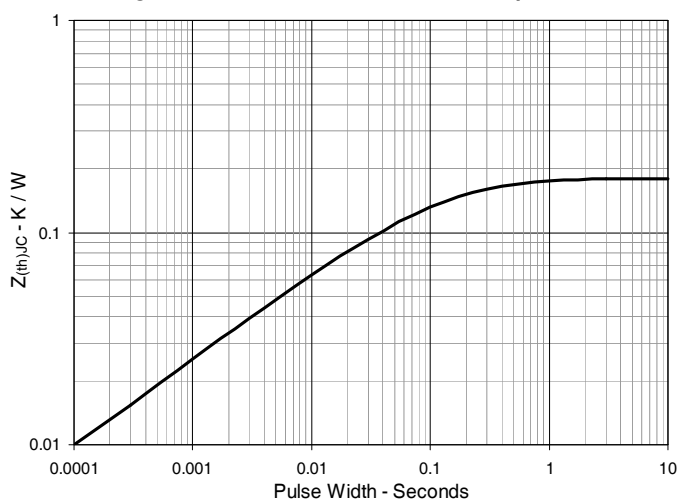


Fig. 12. Maximum Transient Thermal Impedance





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