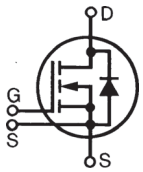
IXYS

PolarHV™ HiPerFET Power MOSFET

IXFN 80N50P

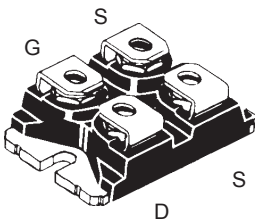
V_{DSS} = 500 V
I_{D25} = 66 A
$R_{DS(on)}$ ≤ 65 mΩ
t_{rr} ≤ 200 ns

N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25° C to 150° C	500	V
V_{DGR}	T_J = 25° C to 150° C; R_{GS} = 1 MΩ	500	V
V_{GS}	Transient	± 40	V
V_{GSM}	Continuous	± 30	V
I_{D25}	T_C = 25° C	66	A
I_{DM}	T_C = 25° C, pulse width limited by T_{JM}	200	A
I_{AR}	T_C = 25° C	80	A
E_{AR}	T_C = 25° C	80	mJ
E_{AS}	T_C = 25° C	3.0	J
dv/dt	$I_S \le I_{DM}$, di/dt ≤100 A/μs, $V_{DD} \le V_{DSS}$, $T_J \le$150° C, R_G = 2 Ω	10	V/ns
P_D	T_C = 25° C	700	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	1.6 mm (0.062 in.) from case for 10 s	300	°C
V_{ISOL}	50/60 Hz; $I_{ISOL} \le$1 mA	2500	V~
M_d	Mounting torque	1.5/13	Nm/ib.in.
	Terminal connection torque (M4)	1.5/13	Nm/ib.in.
Weight		30	g

miniBLOC, SOT-227 B (IXFN)
E153432



G = Gate D = Drain
S = Source

Either source tab S can be used forsource current or Kelvin gate return.

Symbol	Test Conditions (T_J = 25° C unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0 V, I_D = 500 μA	500			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 8 mA	3.0		5.0	V
I_{GSS}	V_{GS} = ±30 V_{DC}, V_{DS} = 0			± 200	nA
I_{DSS}	$V_{DS} = V_{DSS}$			25	μA
	V_{GS} = 0 V T_J = 125° C			1	mA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 I_{D25}, Note 1			65	mΩ

Features
- Fast intrinsic diode
- International standard package
- Unclamped Inductive Switching (UIS) rated
- UL recognized.
- Isolated mounting base

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

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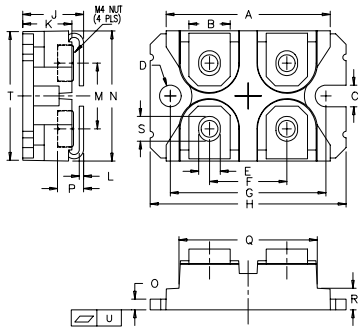
Symbol	Test Conditions (T_J = 25° C unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS}= 20 V; I_D = 0.5 I_{D25}, Note 1	35	70		S
C_{iss}			12.7		nF
C_{oss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		1280		pF
C_{rss}			120		pF
$t_{d(on)}$			25		ns
t_r	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 0.5*I_{D25}		27		ns
$t_{d(off)}$	R_G = 2 Ω (External)		70		ns
t_f			18		ns
$Q_{g(on)}$			195		nC
Q_{gs}	V_{GS}= 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}		70		nC
Q_{gd}			64		nC
R_{thJC}				0.18	° C/W
R_{thCK}			0.05		° C/W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25° C unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0 V			80	A
I_{SM}	Repetitive			200	A
V_{SD}	I_F = I_S, V_{GS} = 0 V, Note 1			1.5	V
t_{rr}	I_F = 25 A, -di/dt = 100 A/μs			200	ns
Q_{RM}	V_R = 100 V, V_{GS} = 0 V		0.8		μC
I_{RM}			8		A

Note 1: Pulse test, t ≤300 μs, duty cycle d ≤ 2 %

miniBLOC, SOT-227B (IXFN) Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS 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 4,850,072 4,881,106 4,931,844 5,017,508 5,034,796 5,049,961 5,063,307 5,187,117 5,237,481 5,381,025 5,486,715 6,162,665 6,259,123 B1 6,306,728 B1 6,404,065 B1 6,534,343 6,583,505 6,683,344 6,710,405B2 6,710,463 6,727,585 6,759,692 6771478 B2

Fig. 1. Output Characteristics @ 25°C

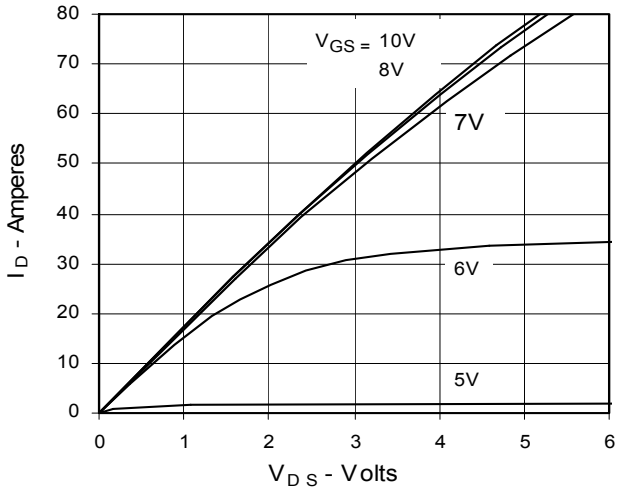


Fig. 2. Extended Output Characteristics @ 25°C

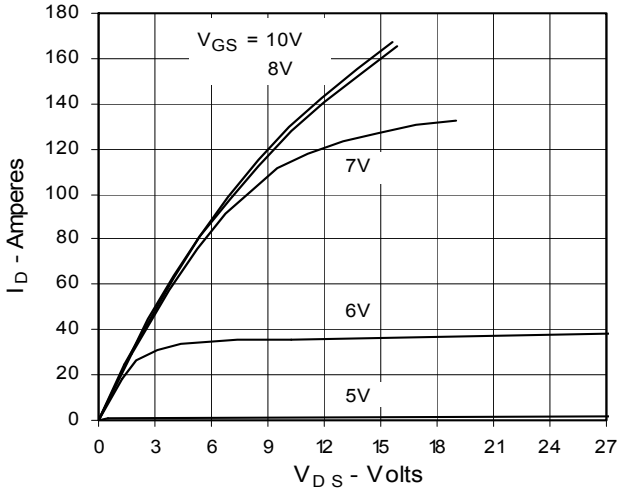


Fig. 3. Output Characteristics @ 125°C

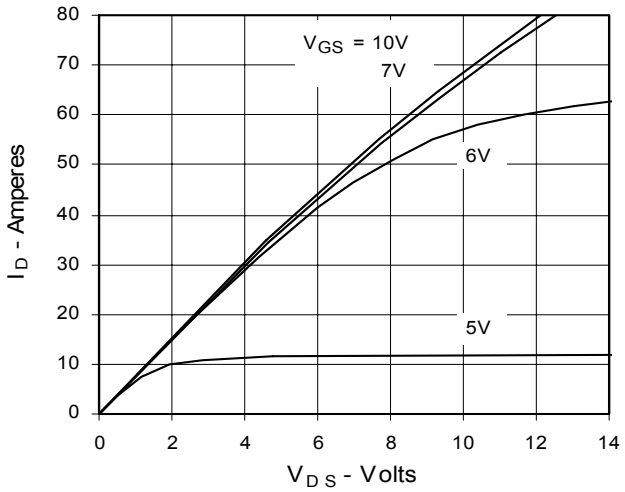


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 40A Value vs. Junction Temperature

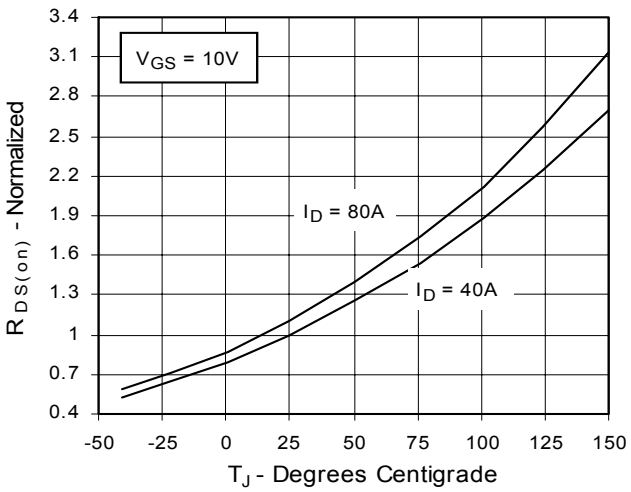


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 40A Value vs. Drain Current

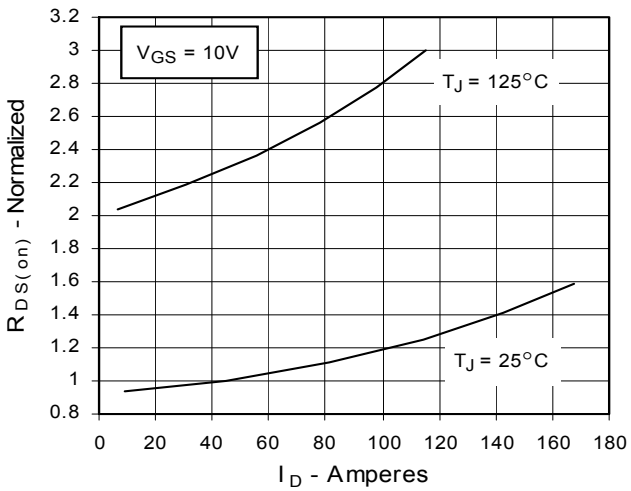
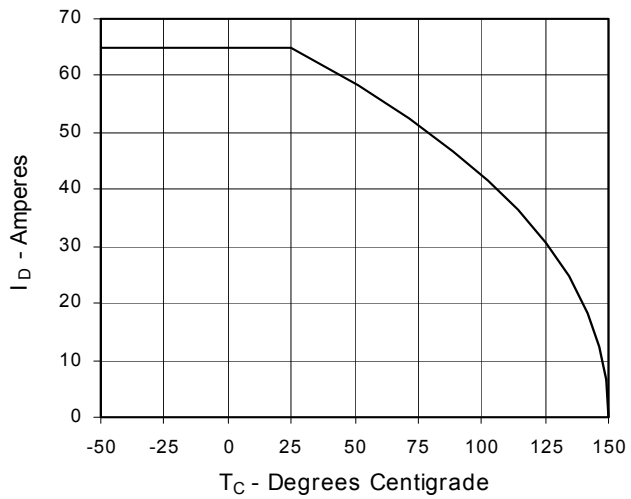


Fig. 6. Drain Current vs. Case Temperature



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Fig. 7. Input Admittance

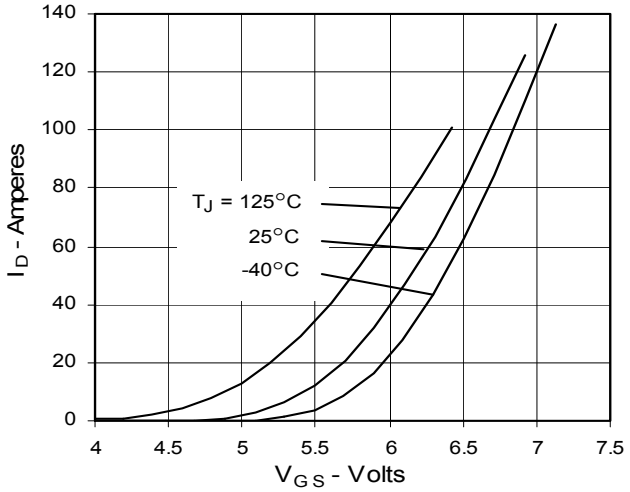


Fig. 8. Transconductance

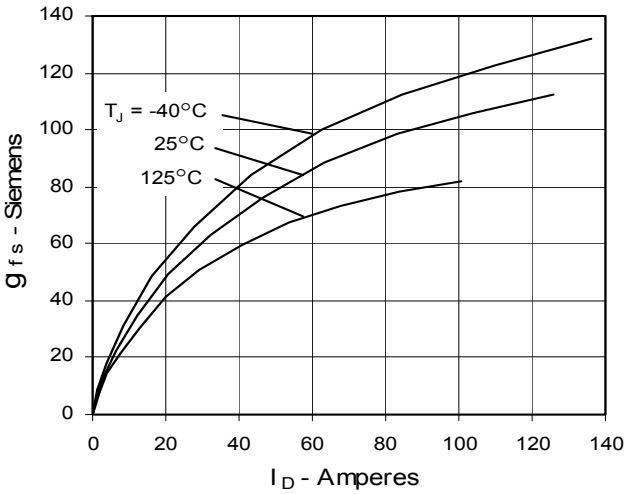


Fig. 9. Source Current vs. Source-To-Drain Voltage

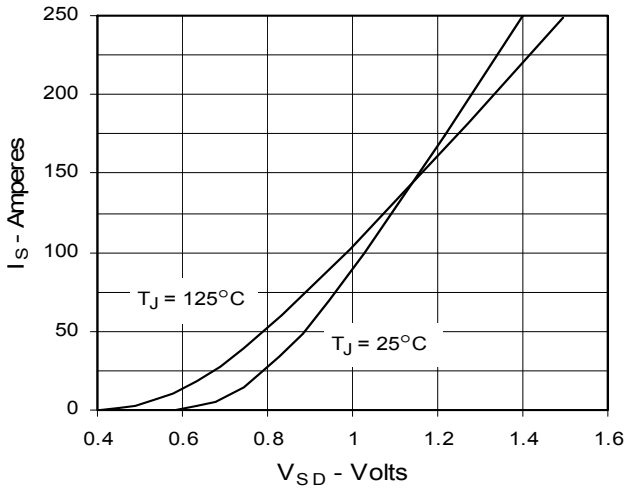


Fig. 10. Gate Charge

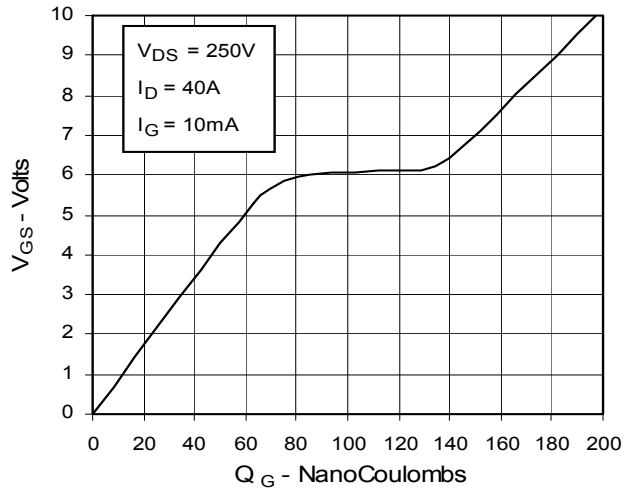


Fig. 11. Capacitance

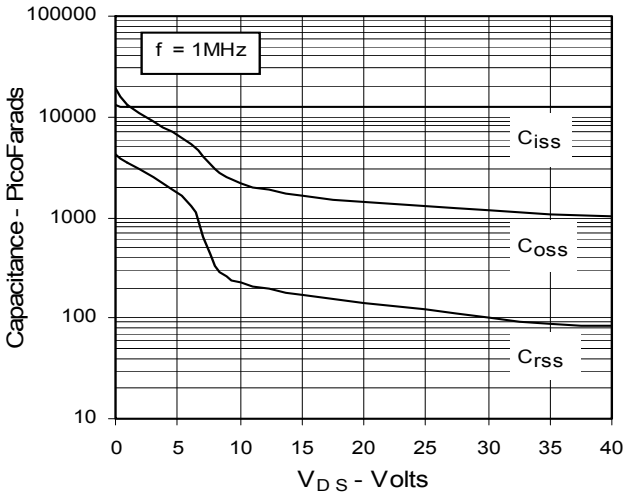
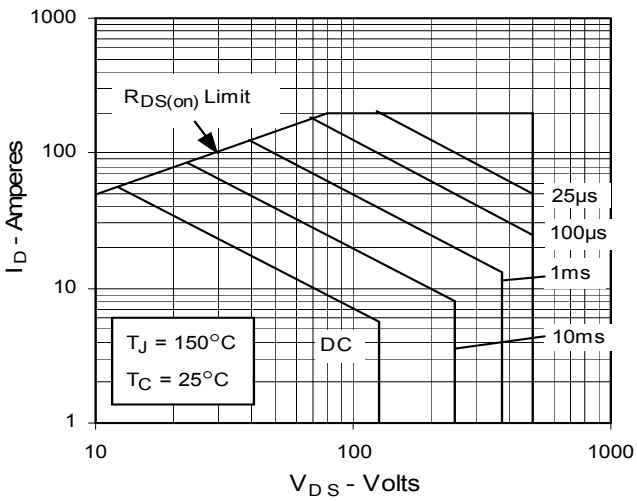
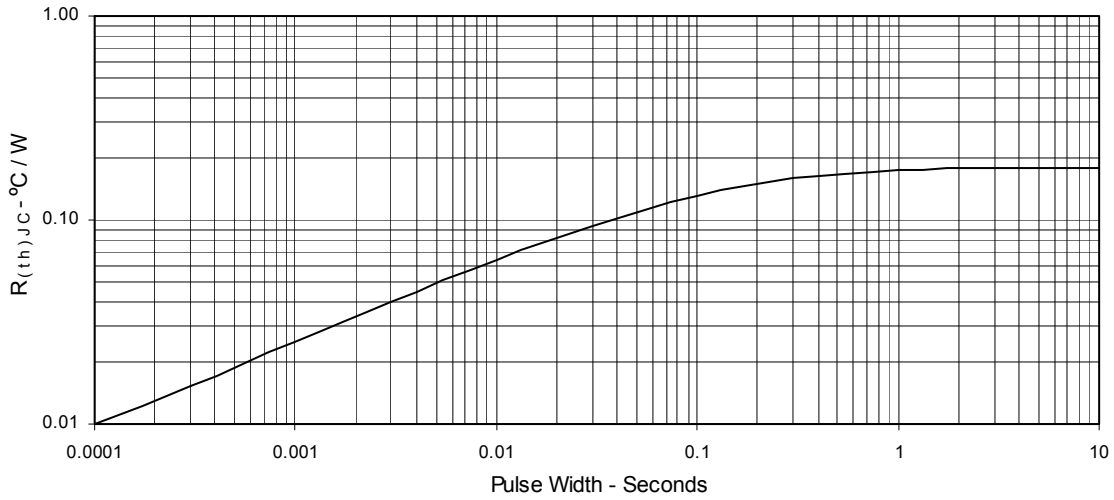


Fig. 12. Forward-Bias Safe Operating Area



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Fig. 13. Maximum Transient Thermal Resistance



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