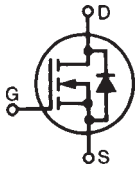
IXYS

PolarHT™ HiPerFET Power MOSFET IXFN 180N15P

N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode

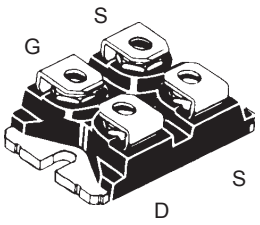


V_{DSS} = 150 V
I_{D25} = 150 A
$R_{DS(on)}$ ≤ 11 mΩ
t_{rr} ≤ 200 ns

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25° C to 175° C	150	V
V_{DGR}	T_J = 25° C to 175° C; R_{GS} = 1 MΩ	150	V
V_{DSS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_C = 25° C	150	A
$I_{D(RMS)}$	External lead current limit	100	A
I_{DM}	T_C = 25° C, pulse width limited by T_{JM}	380	A
I_{AR}	T_C = 25° C	60	A
E_{AR}	T_C = 25° C	100	mJ
E_{AS}	T_C = 25° C	4	J
dv/dt	$I_S \le I_{DM}$, di/dt ≤100 A/µs, $V_{DD} \le V_{DSS}$, T_J ≤150° C, R_G = 4 Ω	10	V/ns
P_D	T_C = 25° C	680	W
T_J		-55 ... +175	°C
T_{JM}		175	°C
T_{stg}		-55 ... +150	°C
M_d	Mounting torque	1.5/13	Nm/lb.in.
	Terminal connection torque (M4)	1.5/13	Nm/lb.in.
V_{ISOL}	50/60 Hz t = 1 min	2500	V~
	I_{ISOL} ≤1 mA t = 1 s	3000	V~
T_L	1.6 mm (0.062 in.) from case for 10 s	300	°C
Weight		30	g

Symbol	Test Conditions (T_J = 25° C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
V_{DSS}	V_{GS} = 0 V, I_D = 250 µA	150			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 4 mA	2.5		5.0	V
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0			±100	nA
I_{DSS}	$V_{DS} = V_{DSS}$, V_{GS} = 0 V			25	µA
	T_J = 150° C			500	µA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 90 A Pulse test, t ≤300 µs, duty cycle d ≤ 2 %			11	mΩ

miniBLOC, SOT-227 B (IXFN)
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.

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

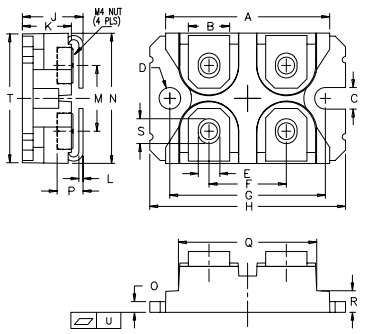
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Symbol	Test Conditions (T_J = 25° C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS}= 10 V; I_D = 90 A, pulse test	55	86		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		7000		pF
C_{oss}			2250		pF
C_{rss}			515		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 90 A R_G = 3.3 Ω (External)		30		ns
t_r			32		ns
$t_{d(off)}$			150		ns
t_f			36		ns
$Q_{g(on)}$	V_{GS}= 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 90 A		240		nC
Q_{gs}			55		nC
Q_{gd}			140		nC
R_{thJC}				0.22	° CW
R_{thCS}			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			180	A
I_{SM}	Repetitive			380	A
V_{SD}	I_F = I_S, V_{GS} = 0 V, Pulse test, t ≤300 µs, duty cycle d≤ 2 %			1.5	V
t_{rr}	I_F = 25 A			200	ns
Q_{RM}	-di/dt = 100 A/µs		0.6		µC
I_{RM}	V_R = 100 V, V_{GS} = 0 V		6		A

SOT-227B 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 moreof 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 4,850,072 5,017,508 5,063,307 5,381,025 6,259,123 B1 6,534,343 6,710,405B2 6,759,692 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

Fig. 1. Output Characteristics @ 25ºC

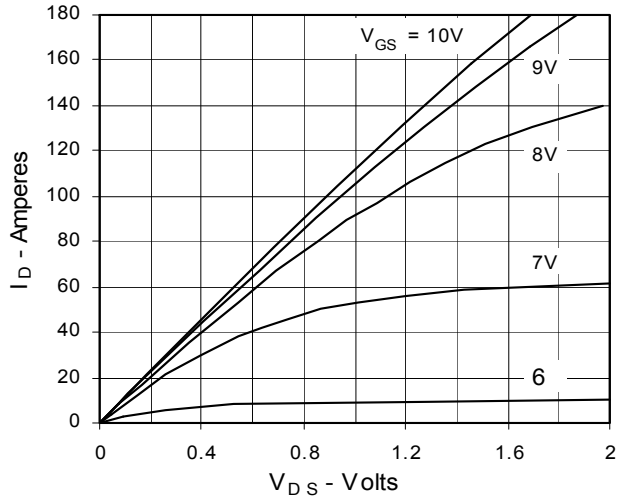


Fig. 2. Extended Output Characteristics @ 25ºC

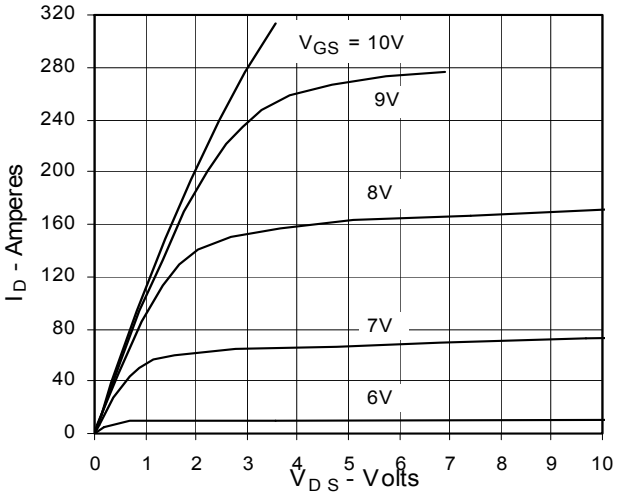


Fig. 3. Output Characteristics @ 150ºC

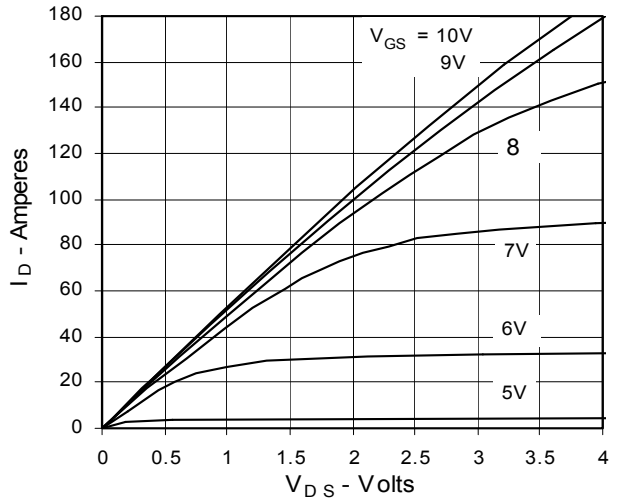


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 90A Value vs. Junction Temperature

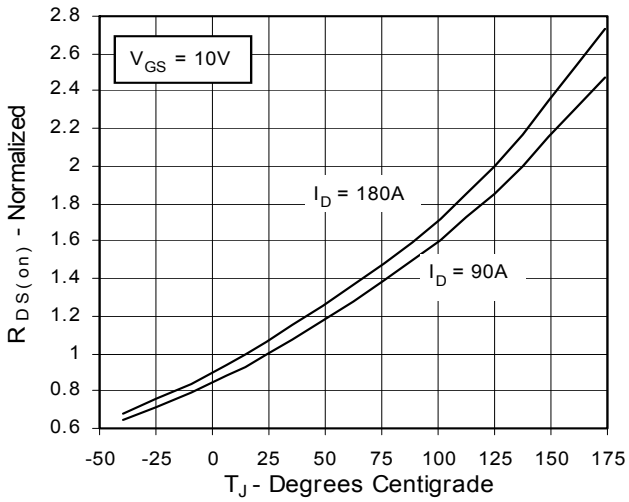


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 90A Value vs. Drain Current

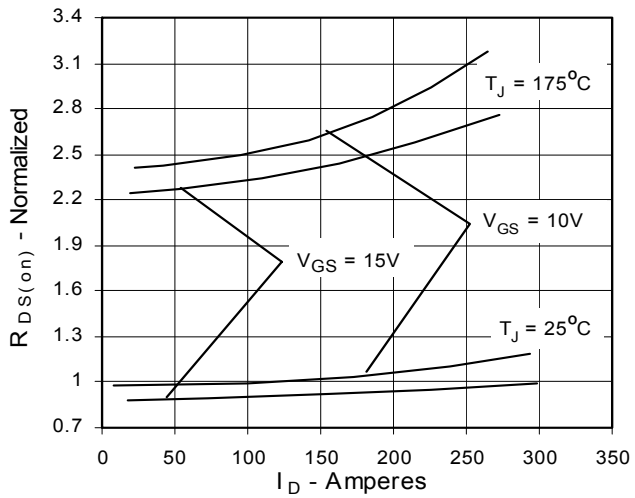
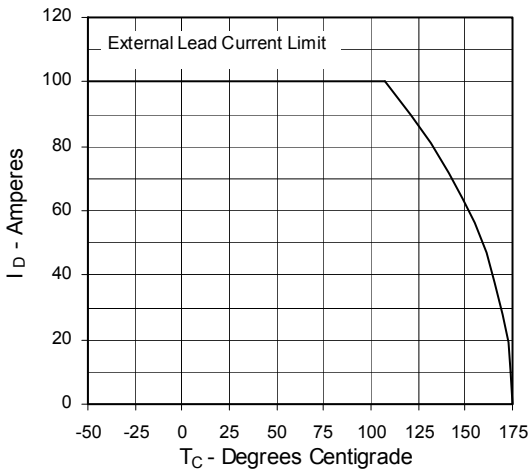


Fig. 6. Drain Current vs. Case Temperature



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Fig. 7. Input Admittance

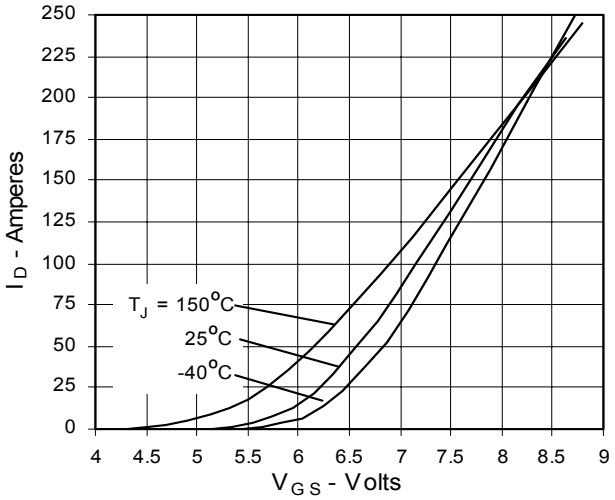


Fig. 8. Transconductance

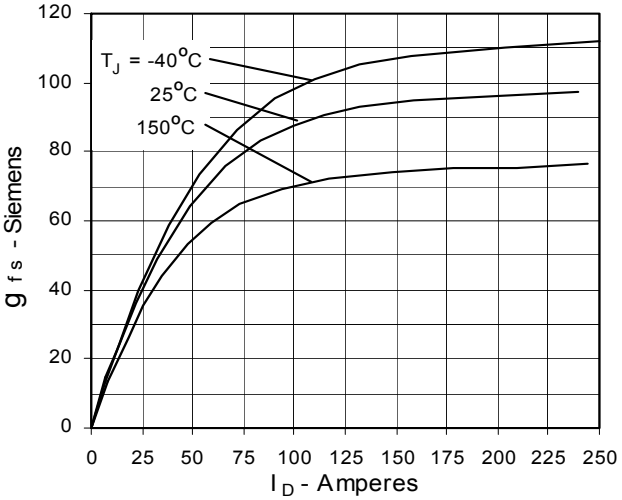


Fig. 9. Source Current vs. Source-To-Drain Voltage

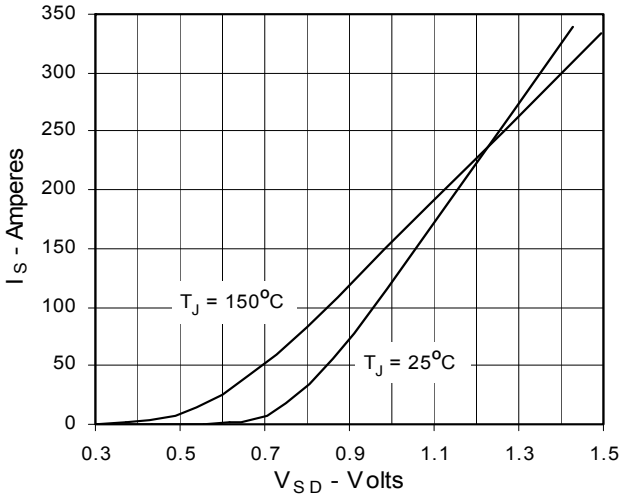


Fig. 10. Gate Charge

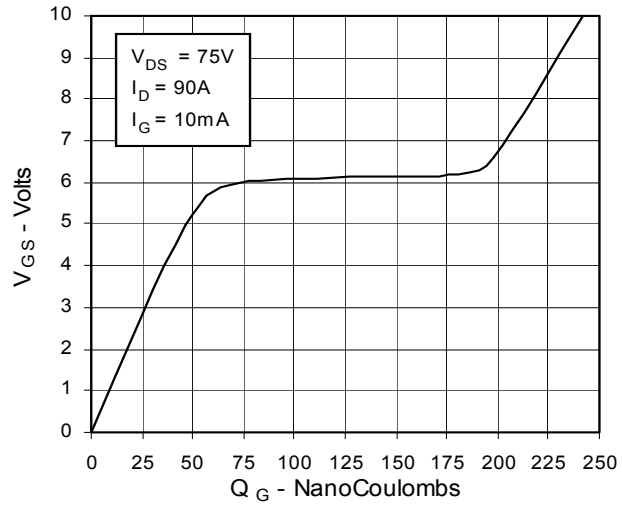


Fig. 11. Capacitance

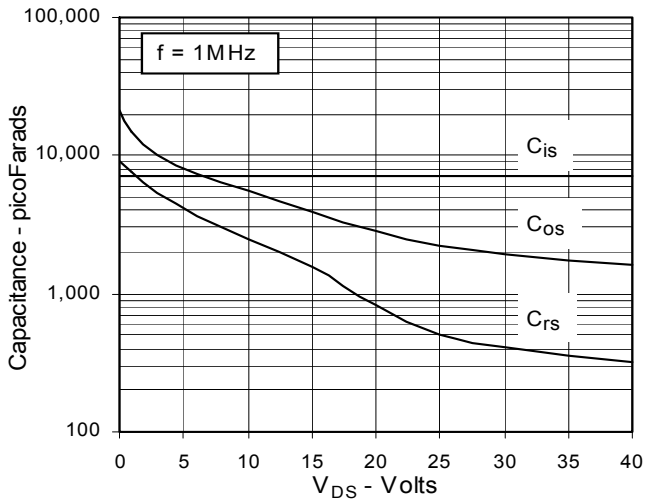
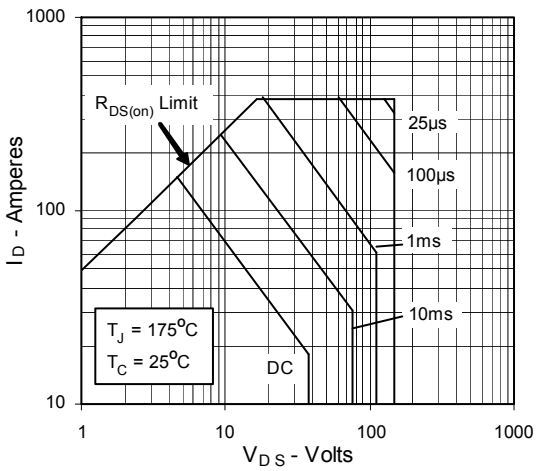
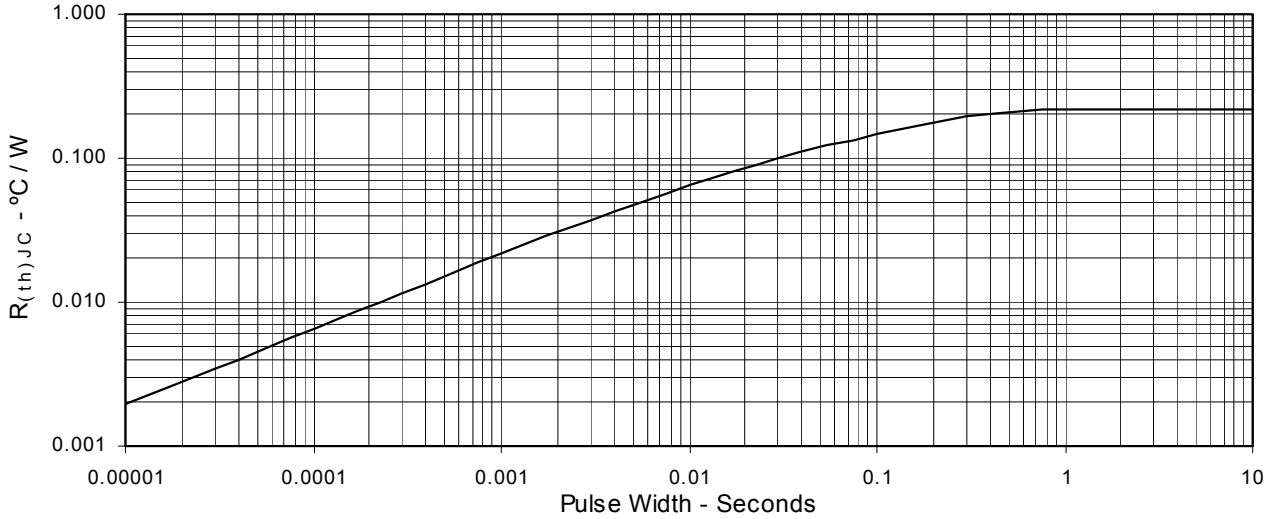


Fig. 12. Forward-Bias Safe Operating Area



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Fig. 13. Maximum Transient Thermal Resistance



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