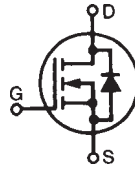


Polar™ Power MOSFET IXFN300N10P

HiPerFET™

N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



$$V_{DSS} = 100V$$

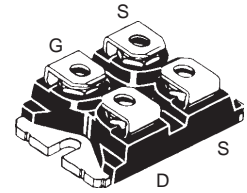
$$I_{D25} = 295A$$

$$R_{DS(on)} \leq 5.5m\Omega$$

$$t_{rr} \leq 200ns$$

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ C$ to $175^\circ C$	100	V
V_{DGR}	$T_J = 25^\circ C$ to $175^\circ C$, $R_{GS} = 1M\Omega$	100	V
V_{GSS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ C$	295	A
I_{LRMS}	External lead current limit	100	A
I_{DM}	$T_C = 25^\circ C$, pulse width limited by T_{JM}	900	A
I_A	$T_C = 25^\circ C$	100	A
E_{AS}	$T_C = 25^\circ C$	3	J
dV/dt	$I_S \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 175^\circ C$	20	V/ns
P_D	$T_C = 25^\circ C$	1070	W
T_J		-55 ... +175	$^\circ C$
T_{JM}		175	$^\circ C$
T_{stg}		-55 ... +175	$^\circ C$
T_L	1.6mm (0.062 in.) from case for 10s	300	$^\circ C$
V_{ISOL}	50/60 Hz, RMS	$t = 1min$	2500 V~
	$I_{ISOL} \leq 1mA$	$t = 1s$	3000 V~
M_d	Mounting torque	1.5/13	Nm/lb.in.
	Terminal connection torque	1.3/11.5	Nm/lb.in.
Weight		30	g

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
- High current capability
- Isolation voltage 3000 V~
- International standard package

Advantages

- Easy to mount
- Space savings
- High power density
- Low gate drive requirement

Applications

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

Symbol	Test Conditions ($T_J = 25^\circ C$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0V$, $I_D = 3mA$	100		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}	$V_{DS} = V_{DSS}$			25 μA
	$V_{GS} = 0V$ $T_J = 150^\circ C$			1.5 mA
$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 50A$, Note 1			5.5 m Ω

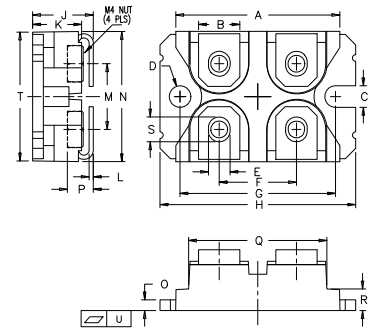
Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10V, I_D = 60A$, Note 1	55	92	S
C_{iss}	$V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$		23	nF
C_{oss}			6100	pF
C_{rss}			417	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 100A$ $R_G = 1\Omega$ (External)		36	ns
t_r			35	ns
$t_{d(off)}$			56	ns
t_f			25	ns
$Q_{g(on)}$	$V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 150A$		279	nC
Q_{gs}			84	nC
Q_{gd}			107	nC
R_{thJC}			0.14	$^{\circ}C/W$
R_{thCS}		0.05		$^{\circ}C/W$

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
I_S	$V_{GS} = 0V$			300 A
I_{SM}	Repetitive, pulse width limited by T_{JM}			1000 A
V_{SD}	$I_F = 100A, V_{GS} = 0V$, Note 1			1.3 V
t_{rr}	$I_F = 150A, -di/dt = 100A/\mu s$ $V_R = 50V$		0.71	200 ns
Q_{RM}				μC
I_{RM}			10	A

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

SOT-227B Outline (IXFN)



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

PRELIMINARY TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from data gathered during objective characterizations of preliminary engineering lots; but also may yet contain some information supplied during a pre-production design evaluation. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

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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
	4,850,072	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. Extended Output Characteristics @ 25°C

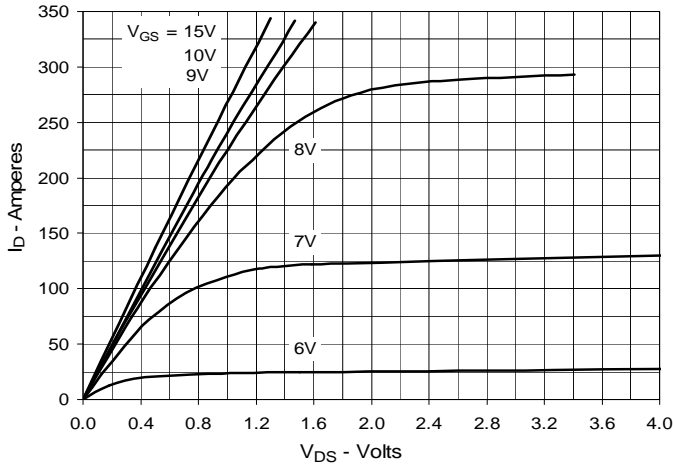


Fig. 2. Output Characteristics @ 150°C

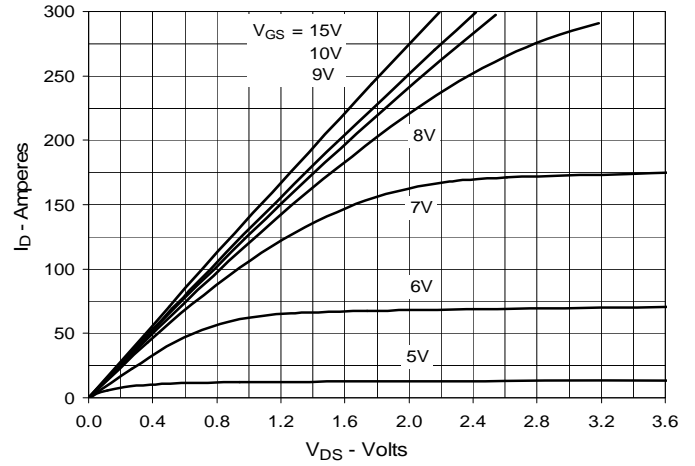


Fig. 3. $R_{DS(on)}$ Normalized to $I_D = 150A$ Value vs. Junction Temperature

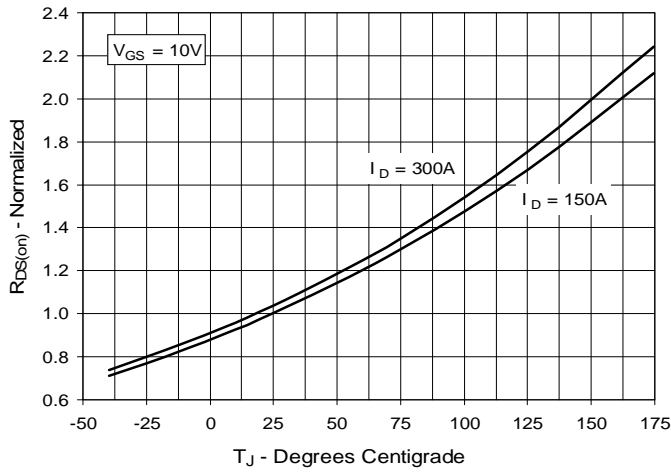


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 150A$ Value vs. Drain Current

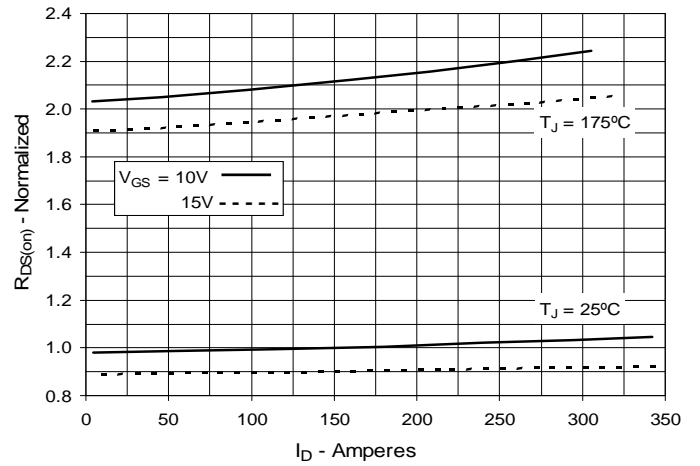


Fig. 5. Maximum Drain Current vs. Case Temperature

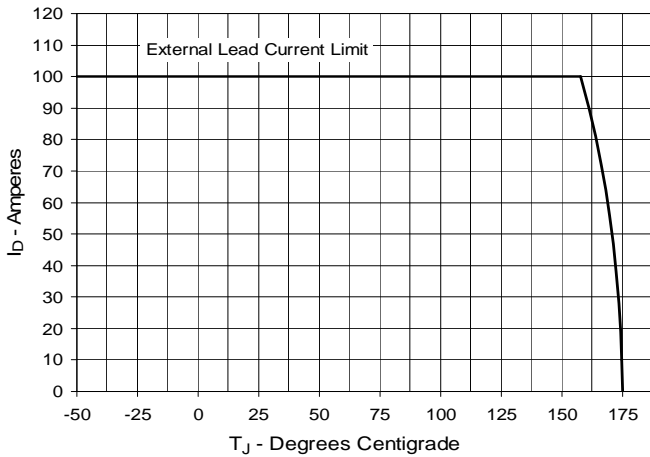


Fig. 6. Input Admittance

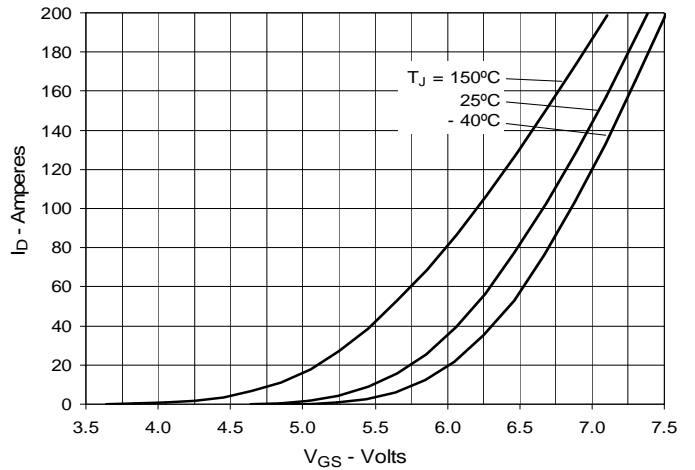


Fig. . Transconductance

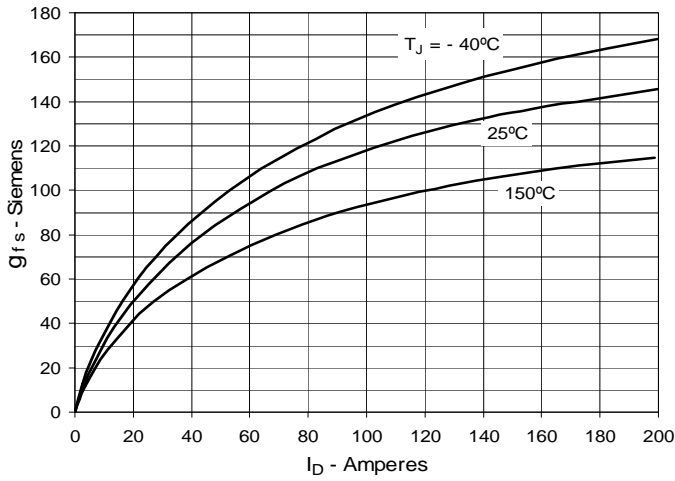


Fig. 8. Forward Voltage Drop of Intrinsic Diode

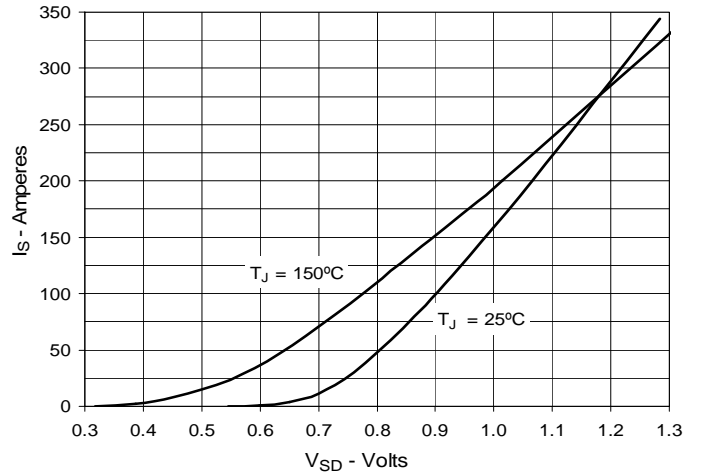


Fig. 9. Gate Charge

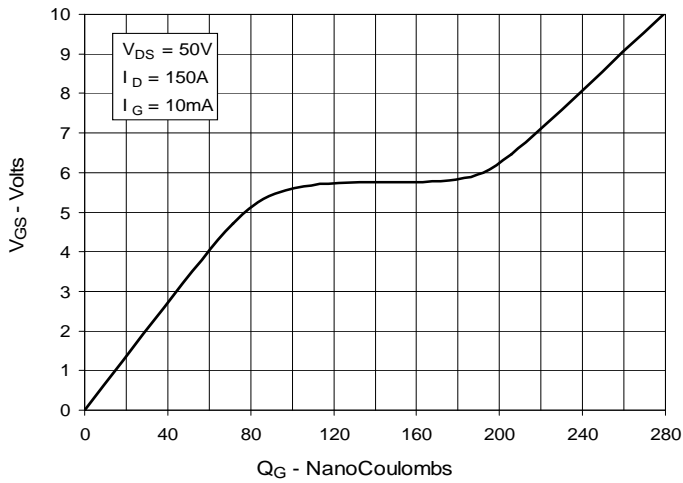


Fig. 10. Capacitance

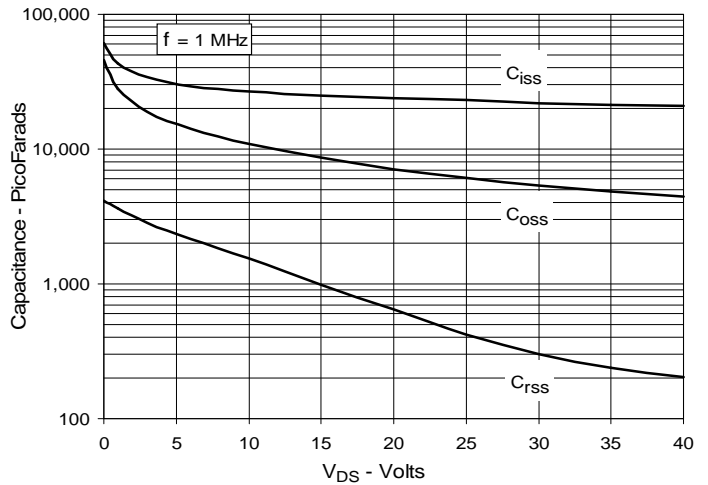


Fig. 11. Forward-Bias Safe Operating Area

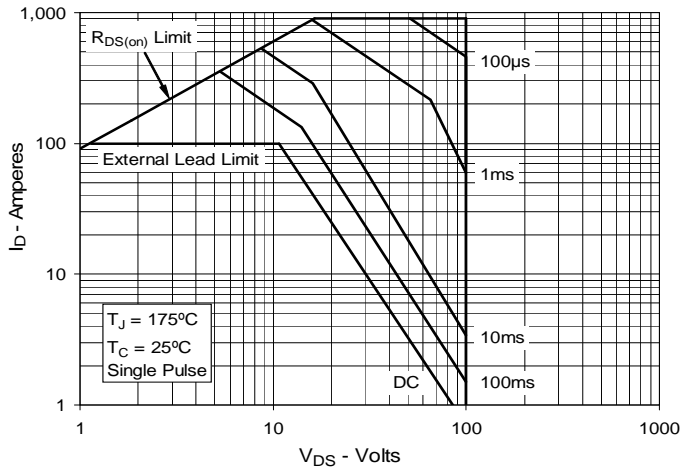
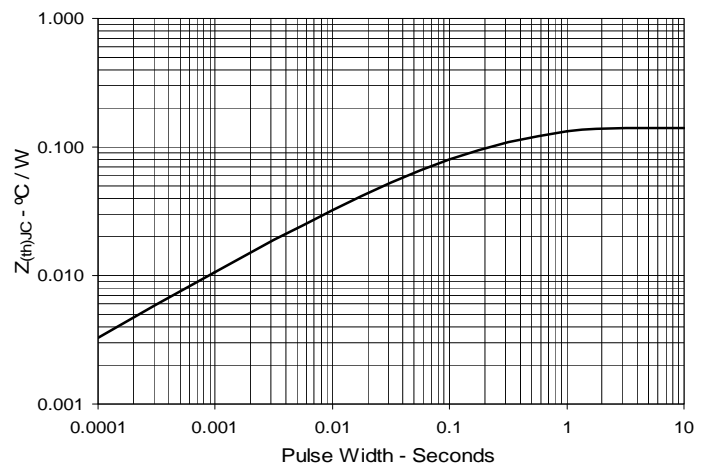


Fig. 12. Maximum Transient Thermal Impedance



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