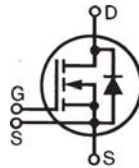


# Power MOSFET Single Die MOSFET

## IXFN230N10

N-Channel Enhancement Mode  
Avalanche Rated, High dv/dt, Low  $t_{rr}$



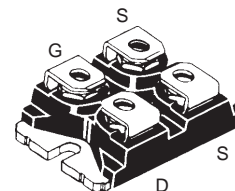
$$V_{DSS} = 100V$$

$$I_{D25} = 230A$$

$$R_{DS(on)} \leq 6.0m\Omega$$

$$t_{rr} \leq 250ns$$

miniBLOC, SOT-227 B  
E153432



G = Gate                      D = Drain  
S = Source

Either Source terminal at miniBLOC can be used as Main or Kelvin Source

Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ C$ to $150^\circ C$	100	V
$V_{DGR}$	$T_J = 25^\circ C$ to $150^\circ C$ , $R_{GS} = 1M\Omega$	100	V
$V_{GSS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ C$ , Chip capability	230	A
$I_{L(RMS)}$	External lead current limit	200	A
$I_{DM}$	$T_C = 25^\circ C$ , pulse width limited by $T_{JM}$	920	A
$I_A$	$T_C = 25^\circ C$	100	A
$E_{AS}$	$T_C = 25^\circ C$	4	J
<b>dv/dt</b>	$I_S \leq I_{DM}$ , $V_{DD} \leq V_{DSS}$ , $T_J \leq 150^\circ C$	10	V/ns
$P_d$	$T_C = 25^\circ C$	700	W
$T_J$		-55 ... +150	$^\circ C$
$T_{JM}$		150	$^\circ C$
$T_{stg}$		-55 ... +150	$^\circ C$
$V_{ISOL}$	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.
<b>Weight</b>		30	g

### Features

- International standard package
- miniBLOC, with Aluminium nitride isolation
- Low  $R_{DS(on)}$  HDMOST™ process
- Rugged polysilicon gate cell structure
- Avalanche rated
- Guaranteed FBSOA
- Low package inductance
- Fast intrinsic Rectifier

### Advantages

- Easy to mount
- Space savings
- High power density

### Applications

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- Temperature and lighting controls

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
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 8mA$	2.0		V
$I_{GSS}$	$V_{GS} = \pm 20V$ , $V_{DS} = 0V$			$\pm 200$ nA
$I_{DSS}$	$V_{DS} = V_{DSS}$			100 $\mu A$
	$V_{GS} = 0V$ $T_J = 125^\circ C$			2 mA
$R_{DS(on)}$	$V_{GS} = 10V$ , $I_D = 0.5 \cdot I_{D25}$ , Note 1			6.0 m $\Omega$

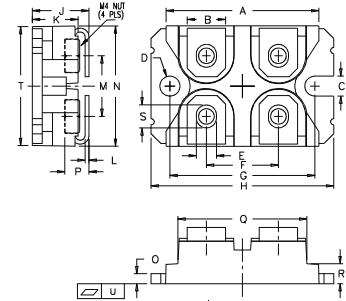
Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
$g_{fs}$	$V_{DS} = 10\text{V}, I_D = 60\text{A}$ , Note 1	60	97	S
$C_{iss}$	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$		19	nF
$C_{oss}$			5600	pF
$C_{rss}$			2750	pF
$t_{d(on)}$	<b>Resistive Switching Times</b> $V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 1\Omega$ (External)		40	ns
$t_r$			150	ns
$t_{d(off)}$			112	ns
$t_f$			60	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		570	nC
$Q_{gs}$			70	nC
$Q_{gd}$			290	nC
$R_{thJC}$			0.18	$^\circ\text{C}/\text{W}$
$R_{thCS}$		0.05		$^\circ\text{C}/\text{W}$

### Source-Drain Diode

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
$I_S$	$V_{GS} = 0\text{V}$			230 A
$I_{SM}$	Repetitive, pulse width limited by $T_{JM}$			920 A
$V_{SD}$	$I_F = 100\text{A}, V_{GS} = 0\text{V}$ , Note 1			1.2 V
$t_{rr}$	$I_F = 50\text{A}, -di/dt = 100\text{A}/\mu\text{s}, V_R = 50\text{V}$			250 ns
$Q_{RM}$			1.2	$\mu\text{C}$
$I_{RM}$			9.0	A

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

### miniBLOC, SOT-227 B



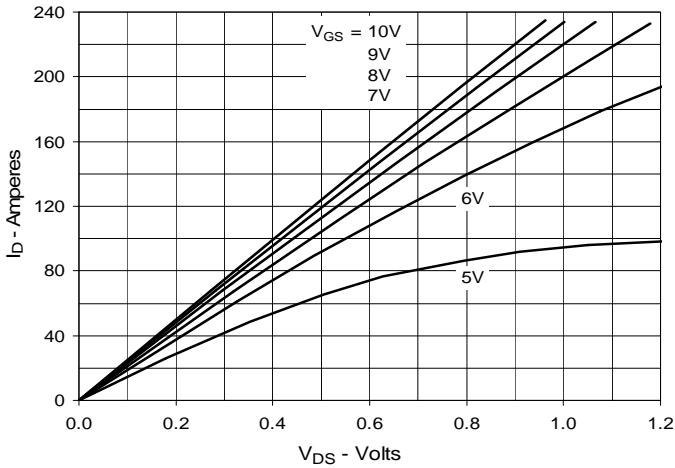
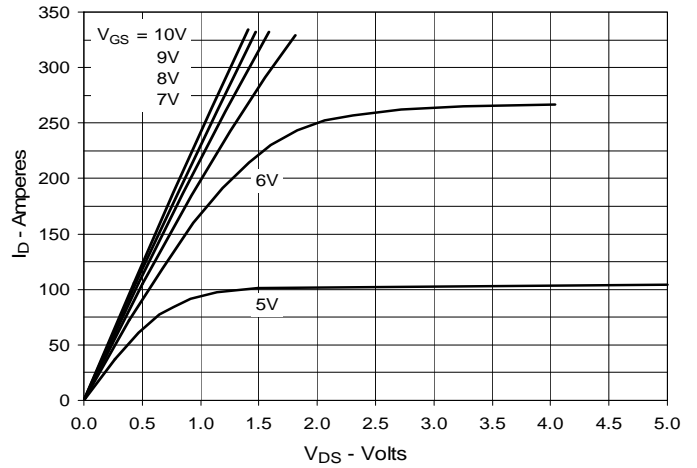
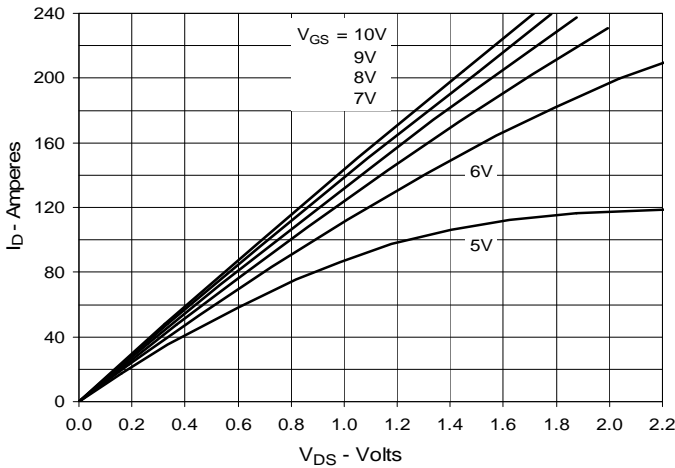
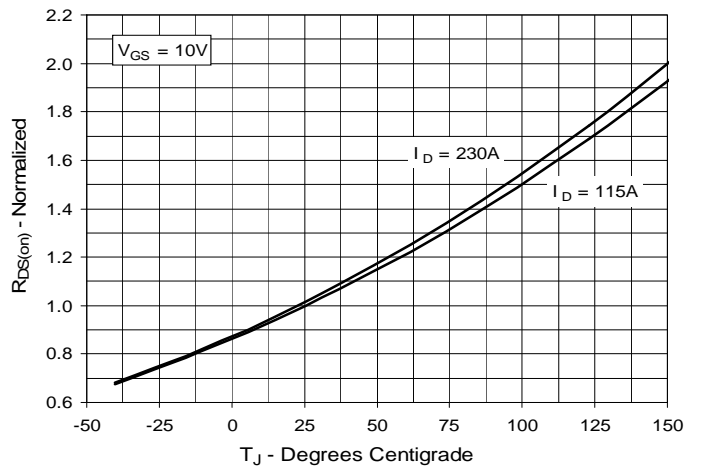
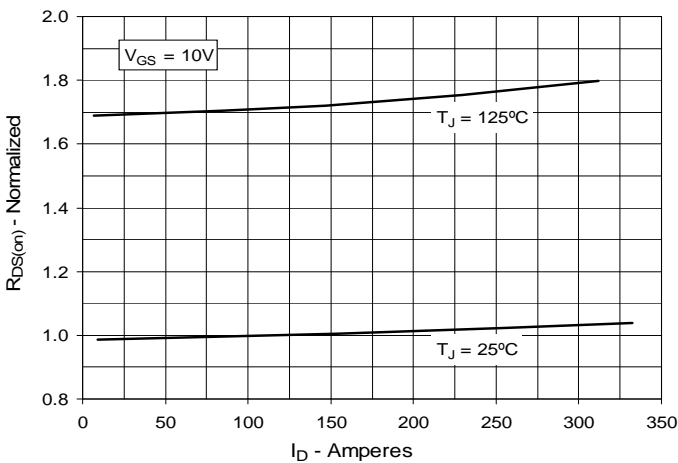
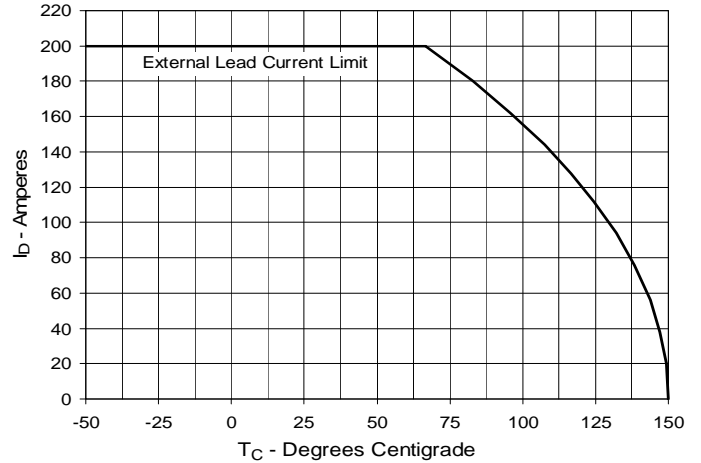
M4 screws (4x) supplied

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	38.00	38.23	1.496	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	0.84	0.030	0.033
M	12.60	12.85	0.496	0.506
N	25.15	25.42	0.990	1.001
O	1.98	2.13	0.078	0.084
P	4.95	5.97	0.195	0.235
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.174
S	4.72	4.85	0.186	0.191
T	24.59	25.07	0.968	0.987
U	-0.05	0.1	-0.002	0.004

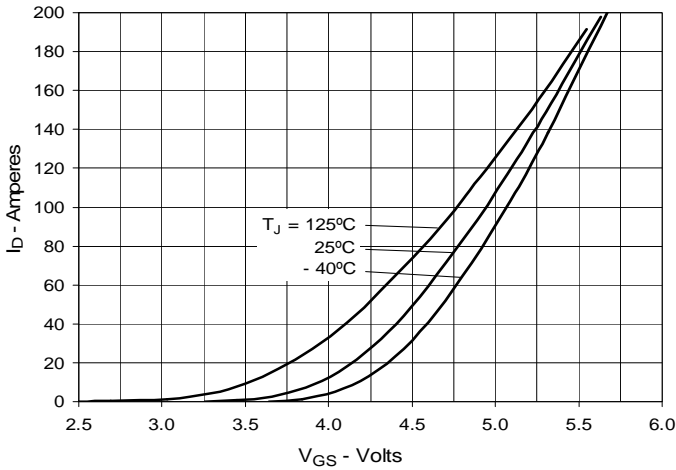
IXYS reserves the right to change limits, test conditions, and dimensions.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

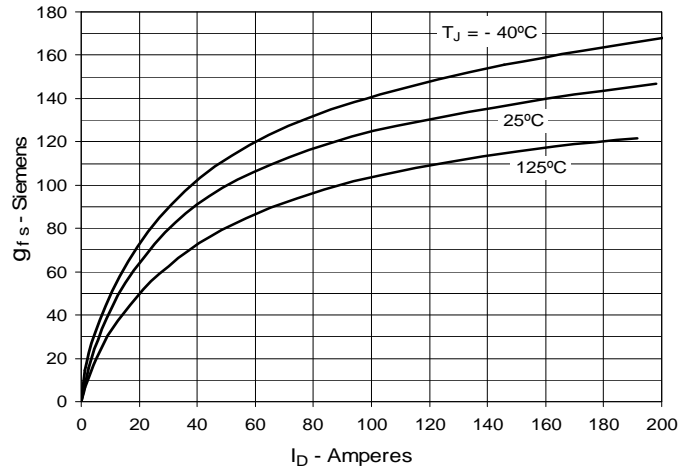
4,835,592	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585	7,005,734 B2	7,157,338B2
4,850,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692	7,063,975 B2	
4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	6,771,478 B2	7,071,537	

**Fig. 1. Output Characteristics  
@ 25°C**

**Fig. 2. Extended Output Characteristics  
@ 25°C**

**Fig. 3. Output Characteristics  
@ 125°C**

**Fig. 4.  $R_{DS(on)}$  Normalized to  $I_D = 115\text{A}$  Value  
vs. Junction Temperature**

**Fig. 5.  $R_{DS(on)}$  Normalized to  $I_D = 115\text{A}$  Value  
vs. Drain Current**

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


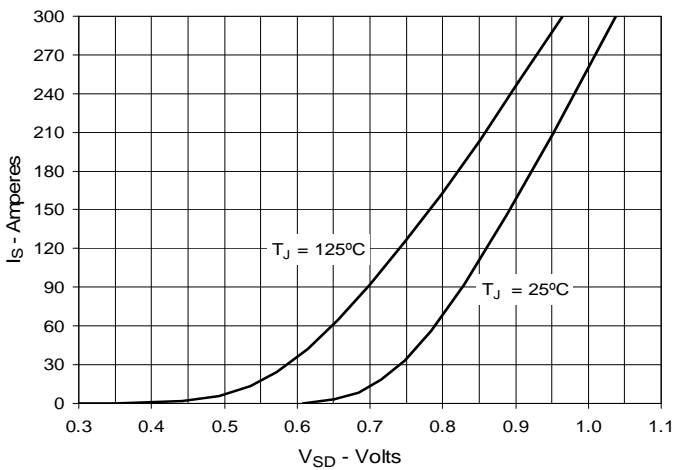
**Fig. 7. Input Admittance**



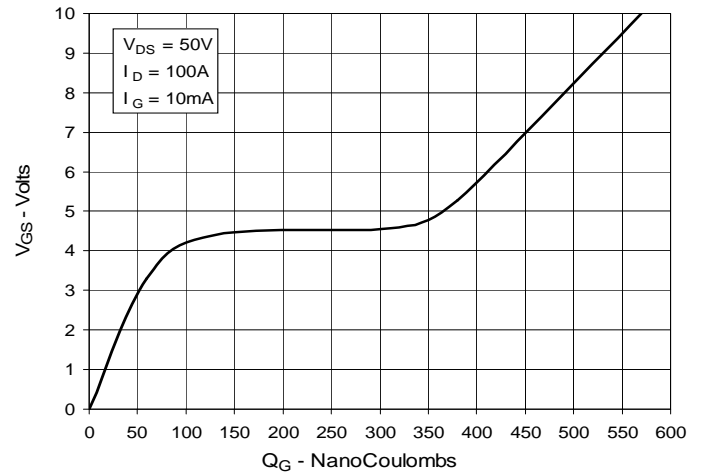
**Fig. 8. Transconductance**



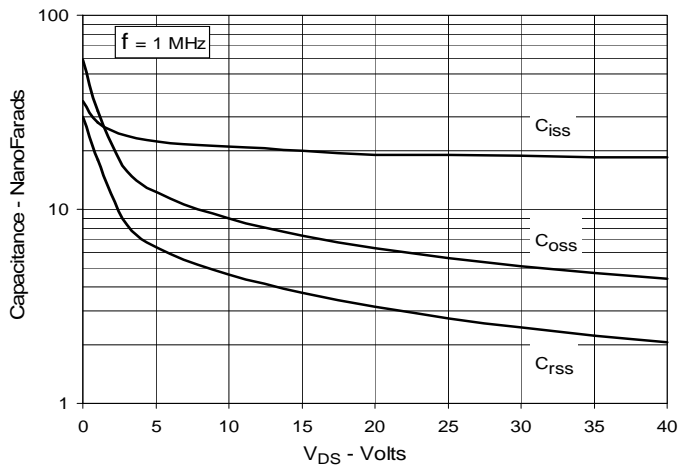
**Fig. 9. Forward Voltage Drop of Intrinsic Diode**



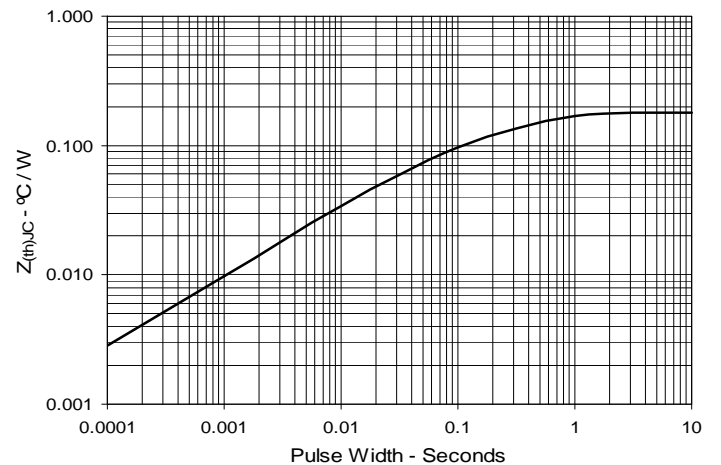
**Fig. 10. Gate Charge**



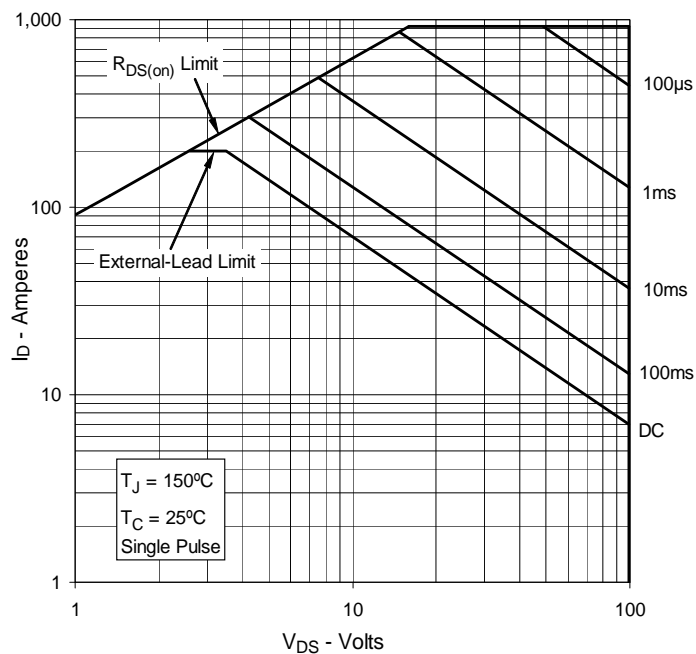
**Fig. 11. Capacitance**



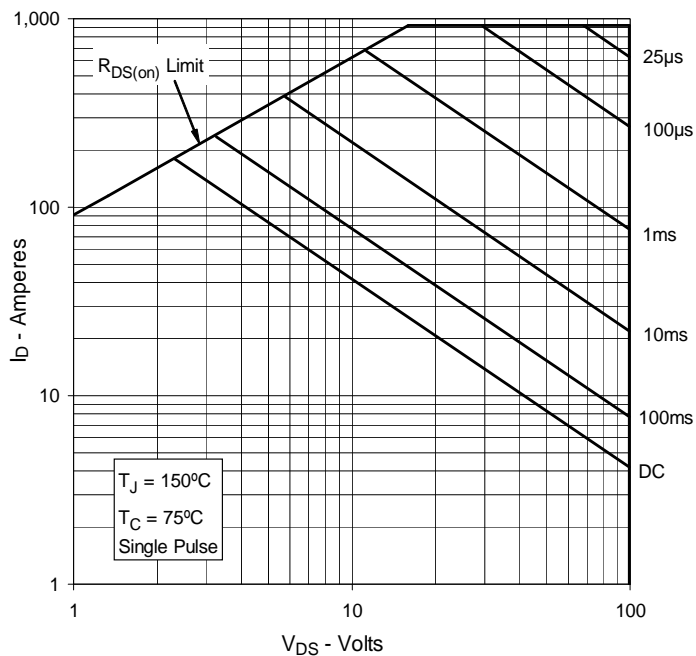
**Fig. 12. Maximum Transient Thermal Impedance**



**Fig. 13. Forward-Bias Safe Operating Area**  
@  $T_C = 25^\circ\text{C}$



**Fig. 14. Forward-Bias Safe Operating Area**  
@  $T_C = 75^\circ\text{C}$





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