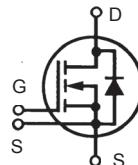


HiPerFET™ Power MOSFETs

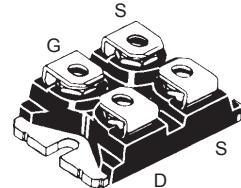
N-Channel Enhancement Mode
Avalanche Rated, High dv/dt, Low t_{rr}

IXFN 20N120

$V_{DSS} = 1200 \text{ V}$
 $I_{D25} = 20 \text{ A}$
 $R_{DS(on)} = 0.75 \Omega$
 $t_{rr} \leq 300 \text{ ns}$



miniBLOC, SOT-227 B (IXFN)
 E153432



G = Gate D = Drain
 S = Source TAB = Drain

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

Symbol	Test Conditions	Maximum Ratings		
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	1200	V	
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$	1200	V	
V_{GS}	Continuous	± 30	V	
V_{GSM}	Transient	± 40	V	
I_{D25}	$T_c = 25^\circ\text{C}$, Chip capability	20	A	
I_{DM}	$T_c = 25^\circ\text{C}$, pulse width limited by T_{JM}	80	A	
I_{AR}	$T_c = 25^\circ\text{C}$	10	A	
E_{AR}	$T_c = 25^\circ\text{C}$	40	mJ	
E_{AS}	$T_c = 25^\circ\text{C}$	2	J	
dv/dt	$I_s \leq I_{DM}$, $dI/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 2 \Omega$	5	V/ns	
P_D	$T_c = 25^\circ\text{C}$	780	W	
T_J		-55 ... +150	$^\circ\text{C}$	
T_{JM}		150	$^\circ\text{C}$	
T_{stg}		-55 ... +150	$^\circ\text{C}$	
V_{ISOL}	50/60 Hz, RMS $I_{ISOL} \leq 1 \text{ mA}$	t = 1 min t = 1 s	2500 3000	V~
M_d	Mounting torque Terminal connection torque		1.5/13 Nm/lb.in. 1.5/13 Nm/lb.in.	
Weight		30	g	

Symbol	Test Conditions	Characteristic Values		
		($T_J = 25^\circ\text{C}$, unless otherwise specified)	min.	typ.
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 1 \text{ mA}$	1200		V
$V_{GH(th)}$	$V_{DS} = V_{GS}$, $I_D = 8 \text{ mA}$	2.5		4.5 V
I_{GSS}	$V_{GS} = \pm 30 \text{ V}_{DC}$, $V_{DS} = 0$			$\pm 100 \text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$		100 μA 2 mA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = 0.5 \cdot I_{D25}$ Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2 \%$			0.75 Ω

Features

- International standard package
- miniBLOC, with Aluminium nitride isolation
- Low $R_{DS(on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
- Fast intrinsic Rectifier

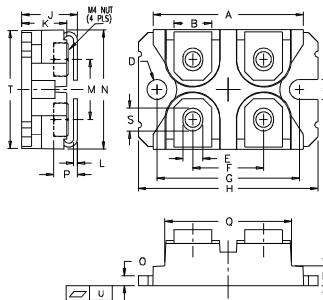
Applications

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

Advantages

- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values			
		($T_J = 25^\circ\text{C}$, unless otherwise specified)	min.	typ.	max.
g_{fs}	$V_{DS} = 20 \text{ V}; I_D = 0.5 \cdot I_{D25}$, pulse test	15	27	S	
C_{iss}	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	7400	pF		
C_{oss}		560	pF		
C_{rss}		100	pF		
$t_{d(on)}$	$V_{GS} = 10 \text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 1 \Omega$ (External),	25	ns		
t_r		45	ns		
$t_{d(off)}$		75	ns		
t_f		20	ns		
$Q_{g(on)}$	$V_{GS} = 10 \text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$	160	nC		
Q_{gs}		35	nC		
Q_{gd}		60	nC		
R_{thJC}			0.16	K/W	
R_{thCK}			0.05	K/W	

miniBLOC, SOT-227 B


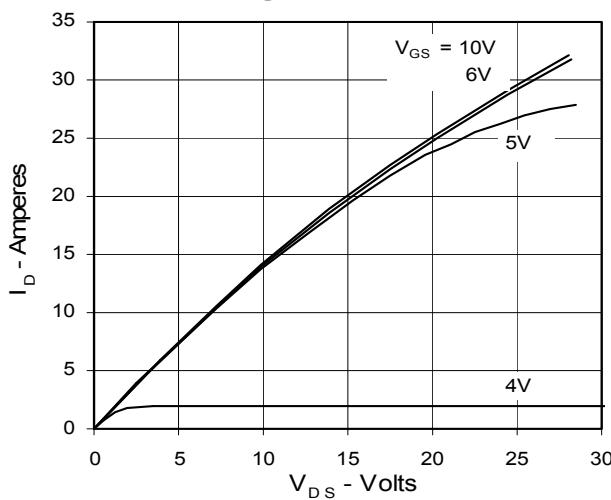
M4 screws (4x) supplied

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

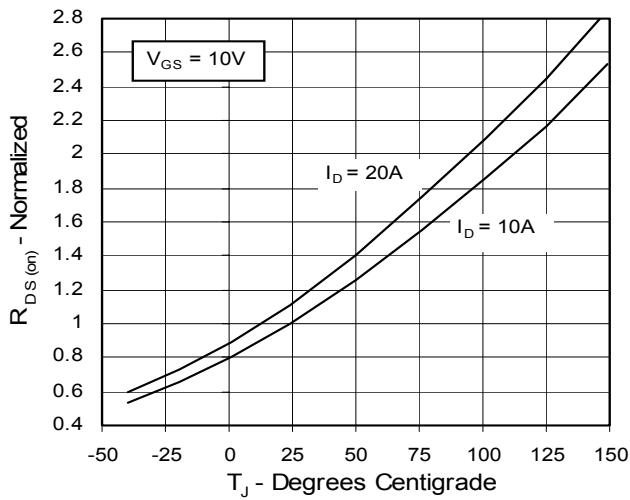
Source-Drain Diode
Characteristic Values
 $(T_J = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Test Conditions	min.	typ.	max.
I_s	$V_{GS} = 0 \text{ V}$		20	A
I_{SM}	Repetitive; pulse width limited by T_{JM}		80	A
V_{SD}	$I_F = I_S, V_{GS} = 0 \text{ V}$, Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2 \%$		1.5	V
t_{rr}	$I_F = I_S, -di/dt = 100 \text{ A}/\mu\text{s}, V_R = 100 \text{ V}$	1.4	300	ns
Q_{RM}		8	μC	
I_{RM}			A	

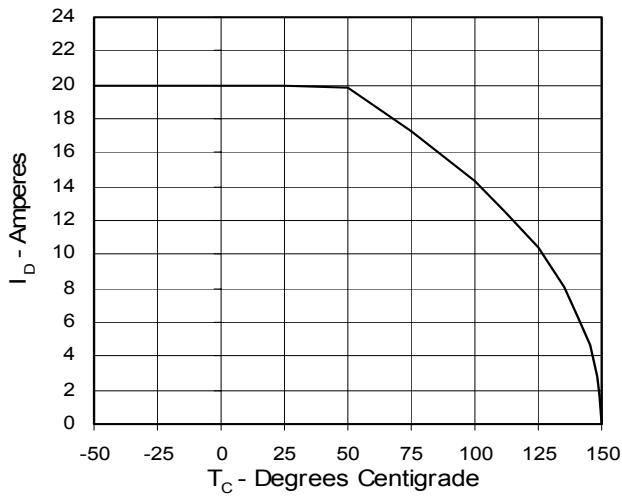
**Fig. 1. Output Characteristics
@ 25 deg. C**



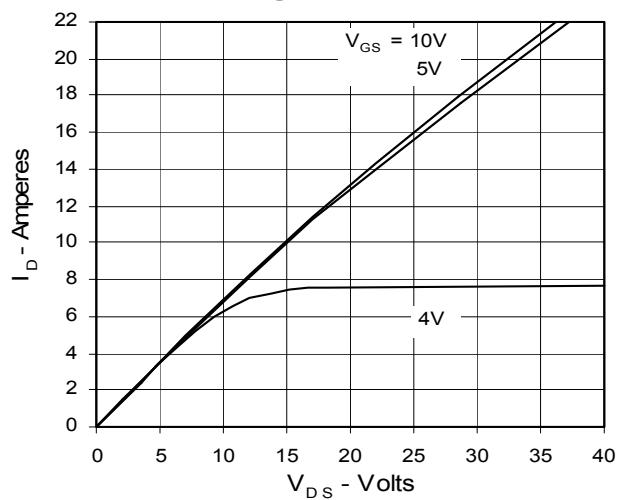
**Fig. 3. $R_{DS(on)}$ Normalized to I_{D25} Value vs.
Junction Temperature**



**Fig. 5. Drain Current vs. Case
Temperature**



**Fig. 2. Output Characteristics
@ 125 Deg. C**



**Fig. 4. $R_{DS(on)}$ Normalized to I_{D25}
Value vs. I_D**

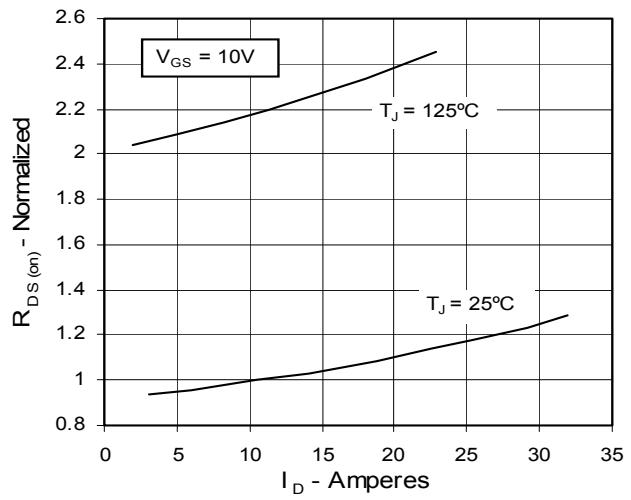


Fig. 6. Input Admittance

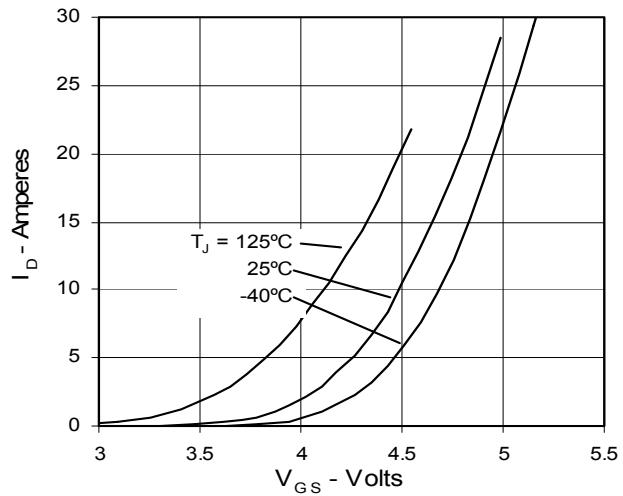
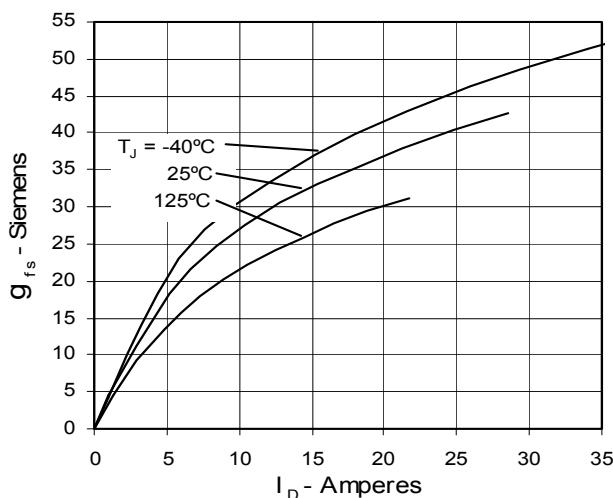
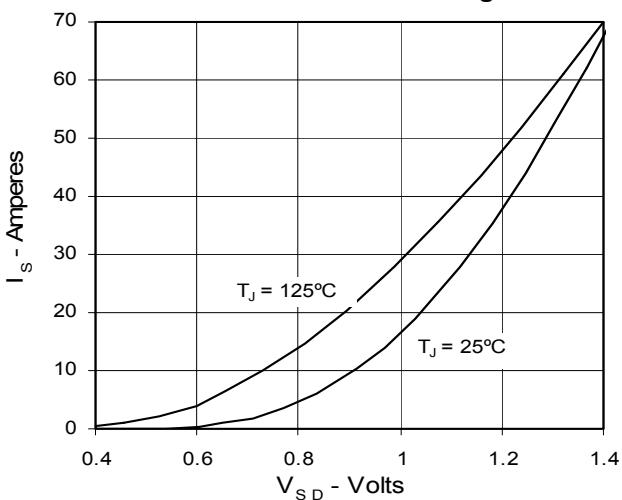
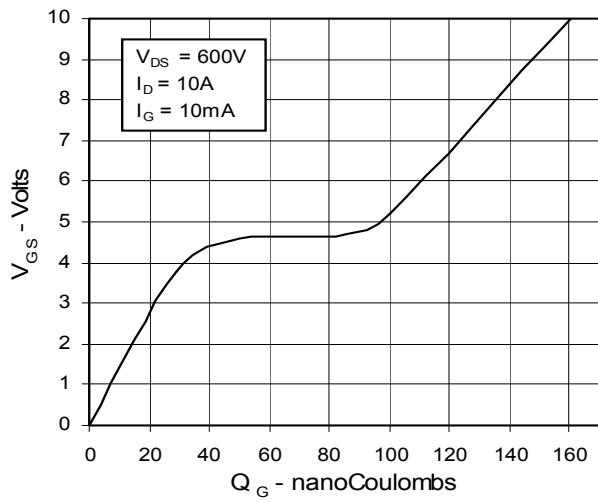
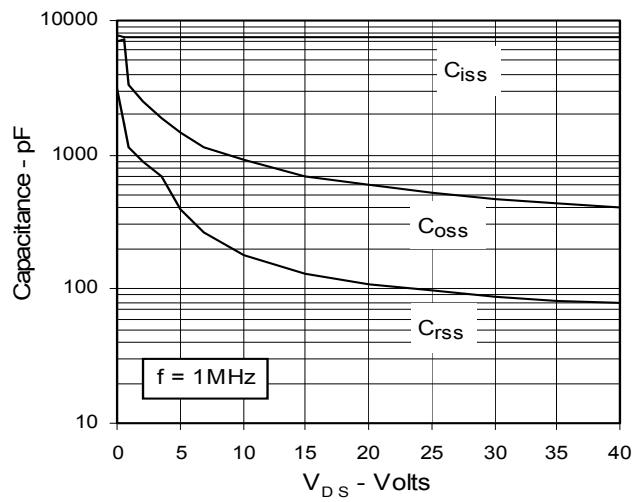
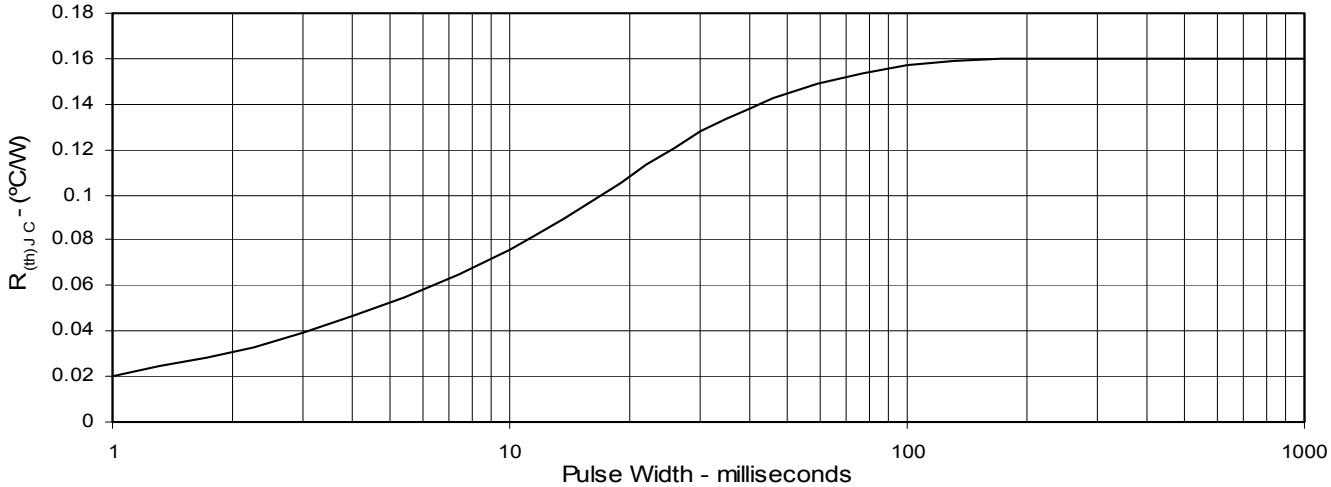


Fig. 7. Transconductance**Fig. 8. Source Current vs. Source-To-Drain Voltage****Fig. 9. Gate Charge****Fig. 10. Capacitance****Fig. 11. Maximum Transient Thermal Resistance**

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 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715 6,306,728B1 6,259,123B1 6,306,728B1
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025 6,404,065B1 6,162,665 6,534,343 6,583,505