



**THE DATASHEET OF
IXFN32N120**



HiPerFET™ Power MOSFETs

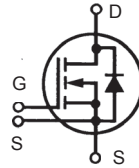
IXFN 32N120

$$V_{DSS} = 1200V$$

$$I_{D25} = 32A$$

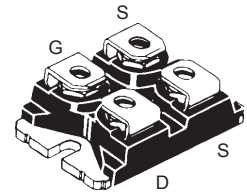
$$R_{DS(on)} = 0.35\Omega$$

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



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ C$ to $150^\circ C$	1200	V
V_{DGR}	$T_J = 25^\circ C$ to $150^\circ C$; $R_{GS} = 1\ M\Omega$	1200	V
V_{GS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	$T_C = 25^\circ C$, Chip capability	32	A
I_{DM}	$T_C = 25^\circ C$, pulse width limited by T_{JM}	128	A
I_{AR}	$T_C = 25^\circ C$	32	A
E_{AR}	$T_C = 25^\circ C$	64	mJ
E_{AS}	$T_C = 25^\circ C$	4	J
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100\ A/\mu s$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ C$, $R_G = 2\ \Omega$	15	V/ns
P_D	$T_C = 25^\circ C$	780	W
T_J		-55 ... +150	$^\circ C$
T_{JM}		150	$^\circ C$
T_{stg}		-55 ... +150	$^\circ C$
V_{ISOL}	50/60 Hz, RMS $t = 1\ min$ $I_{ISOL} \leq 1\ mA$ $t = 1\ s$	2500 3000	V~ V~
M_d	Mounting torque Terminal connection torque	1.5/13 1.5/13	Nm/lb.in. Nm/lb.in.
Weight		30	g

miniBLOC, SOT-227 B (IXFN)
E153432



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

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

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

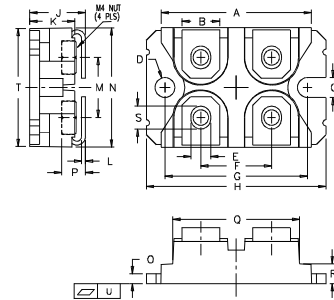
- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- Temperature and lighting controls

Advantages

- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ C$, unless otherwise specified)		
		min.	typ.	max.
V_{DSS}	$V_{GS} = 0\ V$, $I_D = 3\ mA$	1200		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 8\ mA$	2.5		5.0 V
I_{GSS}	$V_{GS(th)} = \pm 30\ V_{DC}$, $V_{DS} = 0$			$\pm 200\ nA$
I_{DSS}	$V_{DS} = V_{DSS}$, $T_J = 25^\circ C$ $V_{GS} = 0\ V$, $T_J = 125^\circ C$			50 μA 3 mA
$R_{DS(on)}$	$V_{GS} = 10\ V$, $I_D = 0.5 \cdot I_{D25}$ Pulse test, $t \leq 300\ \mu s$, duty cycle $d \leq 2\ %$			0.35 Ω

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	28	52	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		15900	pF
C_{oss}			1000	pF
C_{rss}			260	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),		36	ns
t_r			42	ns
$t_{d(off)}$			98	ns
t_f			22	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		400	nC
Q_{gs}			70	nC
Q_{gd}			188	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

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
I_S	$V_{GS} = 0\text{ V}$			32 A
I_{SM}	Repetitive; pulse width limited by T_{JM}			128 A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$			1.3 V
t_{rr}	$I_F = 25\text{ A}, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$		180	300 ns
Q_{RM}			1.4	μC
I_{RM}			8	A

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

Fig. 1. Output Characteristics @ 25 Deg. C

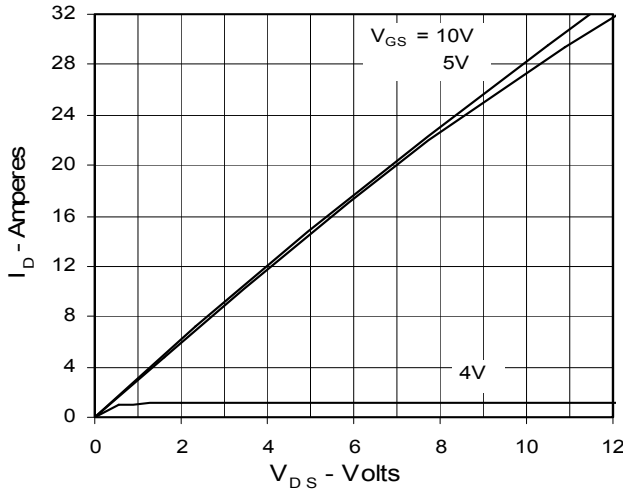


Fig. 2. Extended Output Characteristics @ 25 deg. C

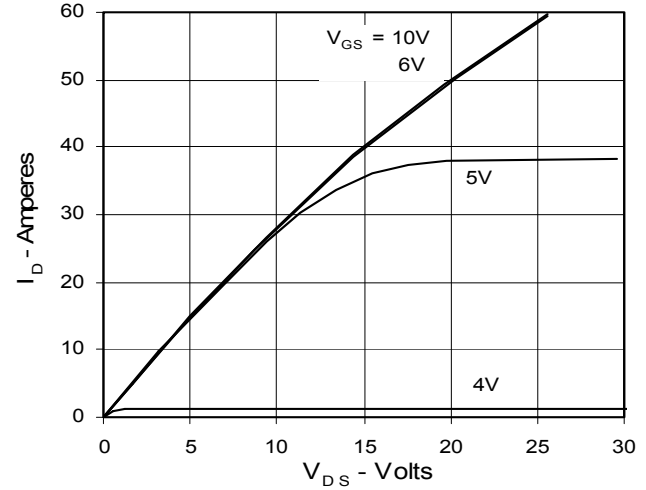


Fig. 3. Output Characteristics @ 125 Deg. C

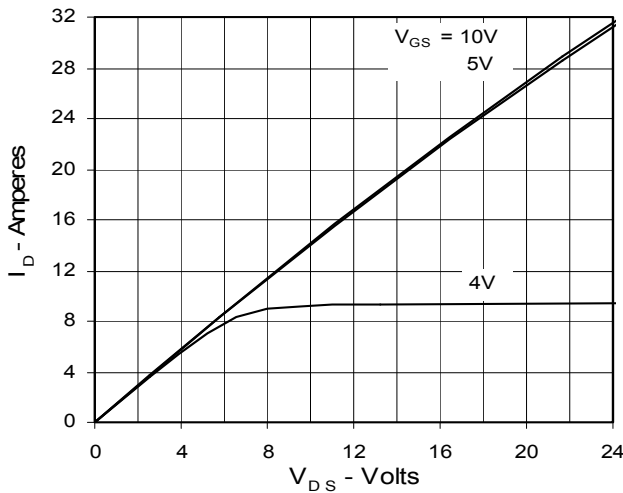


Fig. 4. $R_{DS(on)}$ Normalized to I_{D25} Value vs. Junction Temperature

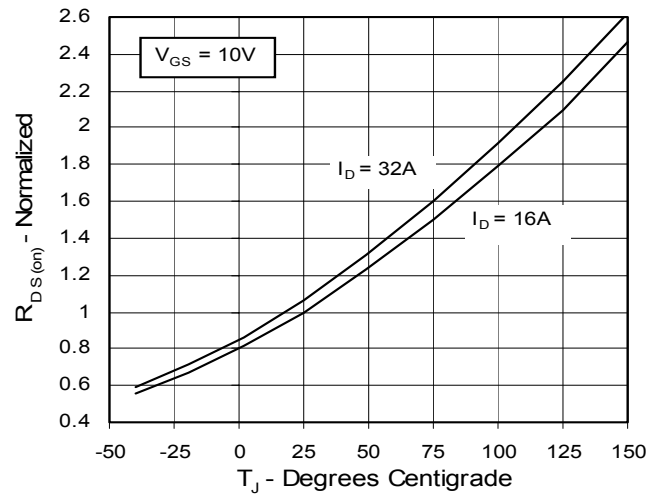


Fig. 5. $R_{DS(on)}$ Normalized to I_{D25} Value vs. I_D

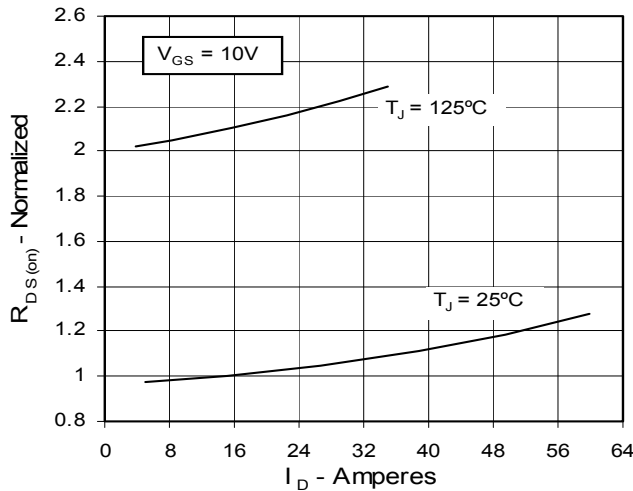


Fig. 6. Drain Current vs. Case Temperature

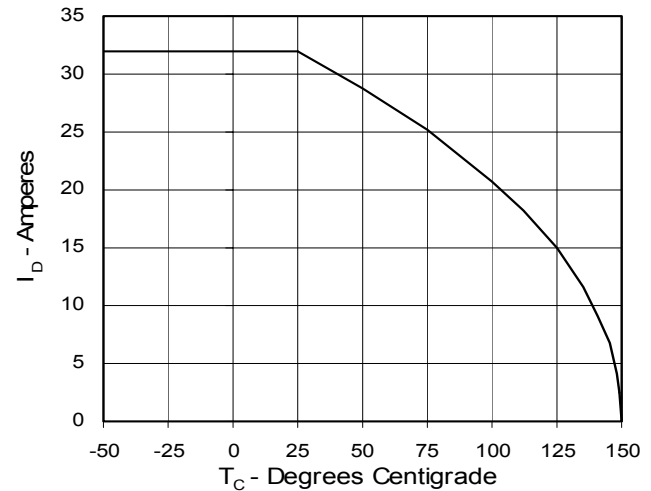


Fig. 7. Input Admittance

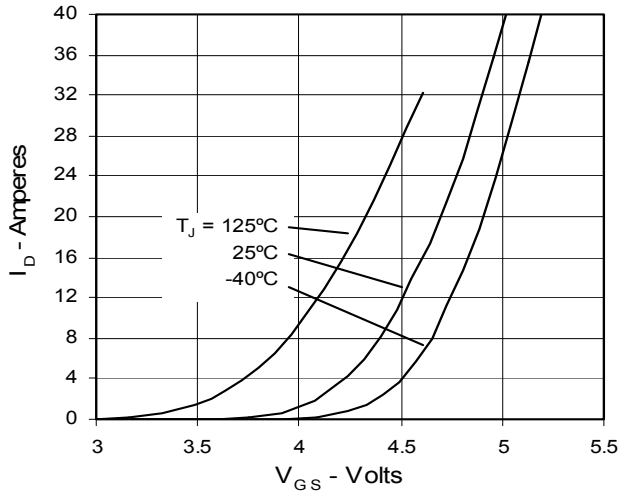


Fig. 8. Transconductance

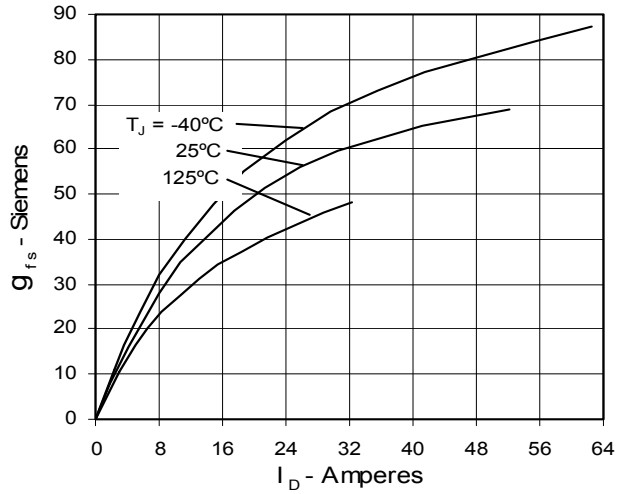


Fig. 9. Source Current vs. Source-To-Drain Voltage

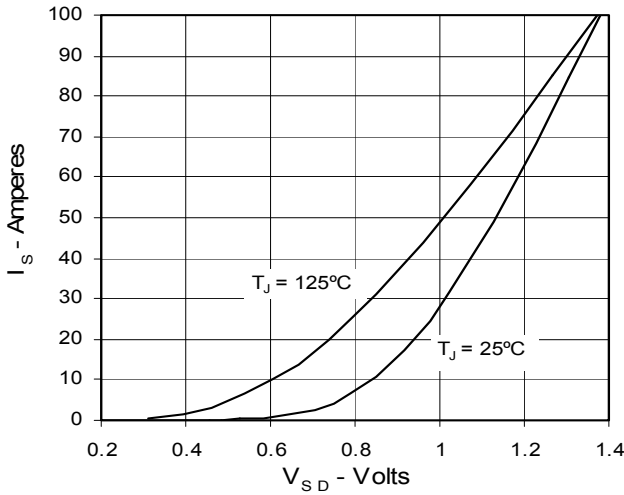


Fig. 10. Gate Charge

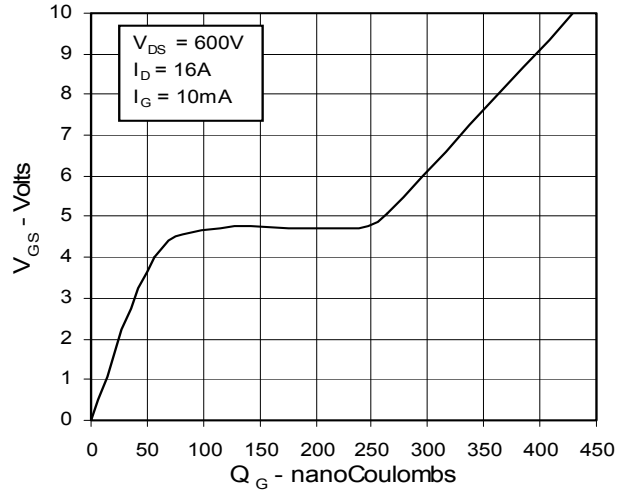


Fig. 11. Capacitance

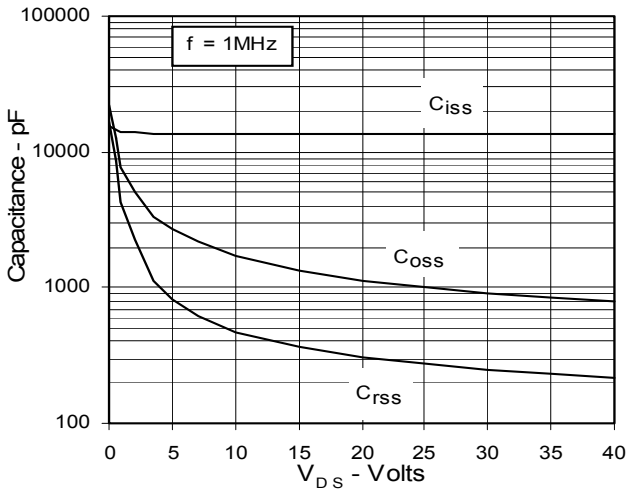
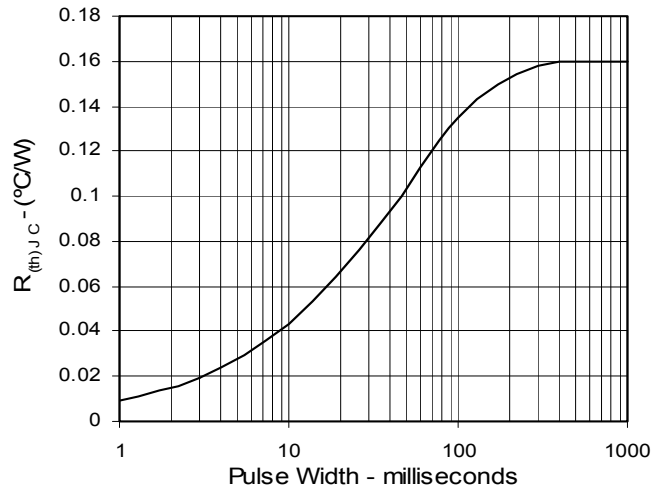


Fig. 12. Maximum Transient Thermal Resistance





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