

HiPerFET™ Power MOSFET

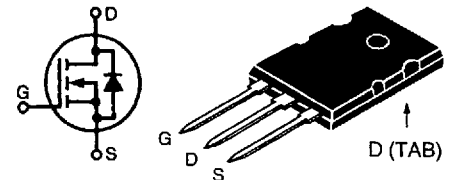
Single MOSFET Die

	V_{DSS}	I_{D25}	$R_{DS(on)}$	t_{rr}
IXFN 120N20	200V	120A	17mΩ	200ns
IXFN 110N20	200V	110A	20mΩ	200ns
IXFK 120N20	200V	120A	17mΩ	200ns
IXFK 110N20	200V	110A	20mΩ	200ns

Symbol	Test Conditions	Maximum Ratings			
		IXFK 110N20	IXFK 120N20	IXFN 110N20	IXFN 120N20
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	200		200	V
$V_{DGR} \text{ ①}$	$T_J = 25^\circ\text{C}$ to 150°C	200		200	V
V_{GS}	Continuous	±20		±20	V
V_{GSM}	Transient	±30		±30	V
I_{D25}	$T_C = 25^\circ\text{C}$	110	120	110	A
$I_{DM} \text{ ②}$	$T_C = 25^\circ\text{C}$	440	480	440	A
I_{AR}	$T_C = 25^\circ\text{C}$	110	120	120	A
E_{AR}	$T_C = 25^\circ\text{C}$	60		60	mJ
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		5	V/ns
P_D	$T_C = 25^\circ\text{C}$	560		600	W
T_J		-55 ... +150			$^\circ\text{C}$
T_{JM}		150			$^\circ\text{C}$
T_{stg}		-55 ... +150			$^\circ\text{C}$
T_L	1.6 mm (0.063 in) from case for 10 s	300		N/A	$^\circ\text{C}$
V_{ISOL}	50/60 Hz, RMS $I_{ISOL} \leq 1 \text{ mA}$	$t = 1 \text{ min}$ $t = 1 \text{ s}$	N/A N/A	2500 3000	V~ V~
M_d	Mounting torque Terminal connection torque	0.9/6 N/A		1.5/13 1.5/13	Nm/lb.in. Nm/lb.in.
Weight		10		30	g

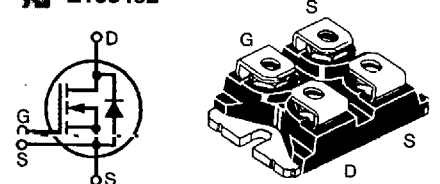
Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values	
		Min.	Max.
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 3 \text{ mA}$	200	V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 8 \text{ mA}$	2	4
I_{GSS}	$V_{GS} = \pm 20 \text{ V}$; $V_{DS} = 0 \text{ V}$		±200
I_{DSS}	$V_{DS} = 0.8 \cdot V_{DSS}$ V $V_{GS} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	400 2
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = 0.5 \cdot I_{D25}$ Pulse test, $t \leq 300 \text{ ms}$, duty cycle $d \leq 2 \%$	110N20 120N20	20 17
			mΩ mΩ

TO-264 AA (IXFK)



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 packages
- Encapsulating epoxy meets UL 94 V-0, flammability classification
- 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

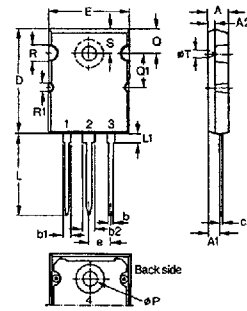
- DC-DC converters
- Synchronous rectification
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- Temperature and lighting controls
- Low voltage relays

Advantages

- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10 \text{ V}; I_D = 0.5 \cdot I_{D25}$, pulse test		65	S
C_{iss}	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$		10,300	pF
C_{oss}			2,200	pF
C_{rss}			1,200	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),		40	ns
t_r			90	ns
$t_{d(off)}$			158	ns
t_f			79	ns
$Q_{g(on)}$	$V_{GS} = 10 \text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		515	nC
Q_{gs}			62	nC
Q_{gd}			276	nC
R_{thJC}	TO-264 AA		0.22	K/W
R_{thCK}	TO-264 AA		0.15	K/W
R_{thJC}	miniBLOC, SOT-227 B		0.21	K/W
R_{thCK}	miniBLOC, SOT-227 B		0.05	K/W

TO-264 AA Outline



Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches Max.
A	4.82	5.13	.190	.202
A1	2.54	2.89	.100	.114
A2	2.00	2.10	.079	.083
b	1.12	1.42	.044	.056
b1	2.39	2.69	.094	.106
b2	2.90	3.09	.114	.122
c	0.53	0.83	.021	.033
D	25.91	26.16	1.020	1.030
E	19.81	19.96	.780	.786
e	5.46	BSC	.215	BSC
J	0.00	0.25	.000	.010
K	0.00	0.25	.000	.010
L	20.32	20.83	.800	.820
L1	2.29	2.59	.090	.102
P	3.17	3.66	.125	.144
Q	6.07	6.27	.239	.247
Q1	8.38	8.69	.330	.342
R	3.81	4.32	.150	.170
R1	1.78	2.29	.070	.090
S	6.04	6.30	.238	.248
T	1.57	1.83	.062	.072

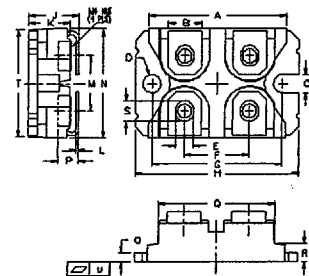
Source-Drain Diode

($T_J = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Test Conditions	Min.	Typ.	Max.
I_S	$V_{GS} = 0$	110N20 120N20		110 120
I_{SM}	Repetitive; pulse width limited by T_{JM}	110N20 120N20		440 480
V_{SD}	$I_F = 100 \text{ A}, V_{GS} = 0 \text{ V}$, Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2\%$			1.5
t_{tr}	$I_F = 50 \text{ A}, -di/dt = 100 \text{ A}/\mu\text{s}, V_R = 100 \text{ V}$		175	ns
Q_{RM}			1.1	μC
I_{RM}			12.6	A

- Notes: 1. $R_{GS} = 1 \text{ M}\Omega$
2. Pulse width limited by T_{JM} .

miniBLOC, SOT-227 B



M4 screws (4x) supplied

Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches 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	1.188	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 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025