

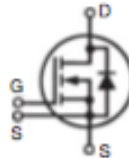
**X2-Class HiPerFET™  
Power MOSFET**
**IXFN120N65X2**

$$V_{DSS} = 650V$$

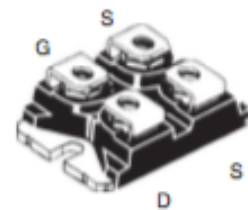
$$I_{D25} = 108A$$

$$R_{DS(on)} \leq 24m\Omega$$

N-Channel Enhancement Mode  
Avalanche Rated  
Fast Intrinsic Diode



miniBLOC, SOT-227  
E153432



G = Gate      D = Drain  
S = Source

Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	650	V
$V_{DGR}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}, R_{GS} = 1M\Omega$	650	V
$V_{GSS}$	Continuous	$\pm 30$	V
$V_{GSM}$	Transient	$\pm 40$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	108	A
$I_{DM}$	$T_C = 25^\circ\text{C}, \text{Pulse Width Limited by } T_{JM}$	240	A
$I_A$	$T_C = 25^\circ\text{C}$	20	A
$E_{AS}$	$T_C = 25^\circ\text{C}$	1.5	J
$P_D$	$T_C = 25^\circ\text{C}$	890	W
$dv/dt$	$I_S \leq I_{DM}, V_{DS} \leq V_{DSS}, T_J \leq 150^\circ\text{C}$	50	V/ns
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-55 ... +150	$^\circ\text{C}$
$V_{ISOL}$	50/60 Hz, RMS $t = 1 \text{ minute}$	2500	V~
	$I_{ISOL} \leq 1\text{mA}$ $t = 1 \text{ second}$	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
- Isolation Voltage 2500 V~
- High Current Handling Capability
- Fast Intrinsic Diode
- Avalanche Rated
- Low  $R_{DS(on)}$

**Advantages**

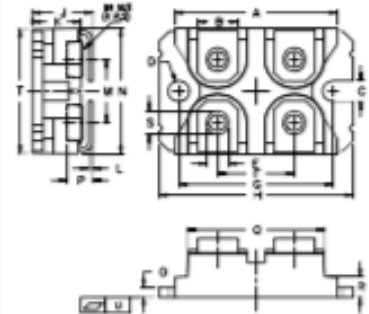
- High Power Density
- Easy to Mount
- Space Savings

**Applications**

- Switch-Mode and Resonant-Mode Power Supplies
- DC-DC Converters
- PFC Circuits
- AC and DC Motor Drives
- Robotics and Servo Controls

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$BV_{DSS}$	$V_{GS} = 0V, I_D = 3\text{mA}$	650		V
$V_{GS(th)}$	$V_{DS} = V_{DSS}, I_D = 8\text{mA}$	2.7		V
$I_{GSS}$	$V_{GS} = \pm 30V, V_{DS} = 0V$			$\pm 100$ nA
$I_{DSS}$	$V_{DS} = V_{DSS}, V_{GS} = 0V$ $T_J = 125^\circ\text{C}$			50 $\mu\text{A}$ 5 mA
$R_{DS(on)}$	$V_{GS} = 10V, I_D = 0.5 \cdot I_{D25}, \text{Note 1}$			24 m $\Omega$

Symbol	Test Conditions ( $T_j = 25^\circ\text{C}$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$g_{fs}$	$V_{DS} = 10\text{V}, I_D = 0.5 \cdot I_{D25}$ , Note 1	46	76	S
$R_{Gi}$	Gate Input Resistance		0.7	$\Omega$
$C_{iss}$	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$		15.5	nF
$C_{oss}$			9.0	nF
$C_{rss}$			4.2	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)		64	ns
$t_r$			23	ns
$t_{d(off)}$			86	ns
$t_f$			12	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		225	nC
$Q_{gs}$			118	nC
$Q_{gd}$			66	nC
$R_{thJC}$			0.14	$^\circ\text{C/W}$
$R_{thCS}$		0.05		$^\circ\text{C/W}$

**SOT-227B (IXFN) Outline**


(M4 σφρεσσ (4ξ))

σπυραλί (μδ)

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	12.40	12.55	31.50	31.88
B	3.07	3.23	7.80	8.20
C	3.61	3.69	4.09	4.29
D	3.61	3.69	4.09	4.29
E	3.61	3.69	4.09	4.29
F	5.87	5.95	14.91	15.11
G	1.186	1.193	30.12	30.30
H	1.496	1.503	38.00	38.23
J	4.60	4.81	11.68	12.22
K	3.51	3.78	8.92	9.60
L	0.30	0.33	0.76	0.84
M	4.96	5.06	12.60	12.85
N	7.90	7.91	20.15	20.15
O	0.78	0.84	1.98	2.13
P	1.95	2.25	4.95	5.72
Q	1.045	1.059	26.54	26.90
R	1.55	1.74	3.94	4.42
S	3.06	3.35	4.72	4.85
T	9.68	9.87	24.59	25.07
U	-0.02	0.04	-0.05	0.1

**Source-Drain Diode**

Symbol	Test Conditions ( $T_j = 25^\circ\text{C}$ , Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$I_S$	$V_{GS} = 0\text{V}$			120 A
$I_{SM}$	Repetitive, Pulse Width Limited by $T_{JM}$			480 A
$V_{SD}$	$I_F = I_S, V_{GS} = 0\text{V}$ , Note 1			1.4 V
$t_{rr}$	$I_F = 60\text{A}, -di/dt = 100\text{A}/\mu\text{s}$		240	ns
$Q_{RM}$			2.8	$\mu\text{C}$
$I_{RM}$	$V_R = 100\text{V}, V_{GS} = 0\text{V}$		23.4	A

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

**ADVANCE TECHNICAL INFORMATION**

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated result. 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: 4,835,582 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  
 4,860,072 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