

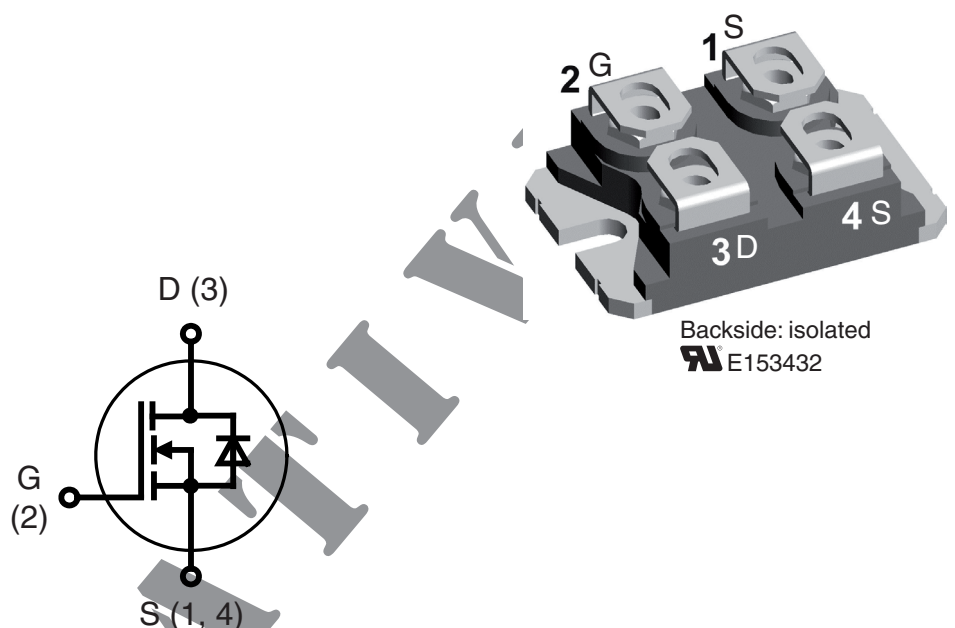
## SiC Power MOSFET

$$I_{D25} = 47 \text{ A}$$

$$V_{DSS} = 1200 \text{ V}$$

$$R_{DS(on) \text{ max}} = 50 \text{ m}\Omega$$

Part number  
IXFN50N120SiC

**Features / Advantages:**

- High speed switching with low capacitances
- High blocking voltage with low  $R_{DS(on)}$
- Easy to parallel and simple to drive
- Avalanche ruggedness
- Resistant to latch-up

**Applications:**

- Solar inverters
- High voltage DC/DC converters
- Motor drives
- Switch mode power supplies
- UPS

**Package:** SOT-227B (minibloc)

- Isolation Voltage: 3000 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Base plate with Aluminium nitride isolation
- Advanced power cycling

**Terms & Conditions of usage**

The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact the sales office, which is responsible for you.

Should you intend to use the product in aviation, in health or life endangering or life support applications, please notify. For any such application we urgently recommend

- to perform joint risk and quality assessments;
- the conclusion of quality agreements;

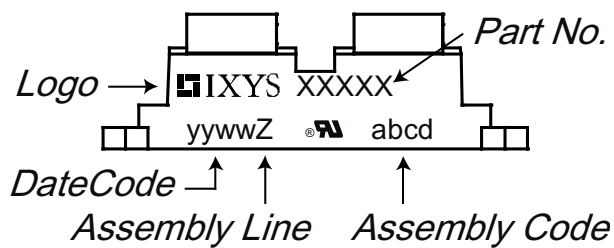
- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

MOSFET				Ratings		
Symbol	Definitions	Conditions	min.	typ.	max.	
$V_{DSS}$	drain source breakdown voltage				1200	V
$V_{GSM}$	max transient gate source voltage		-10		+25	V
$V_{GS}$	continous gate source voltage		-5		+20	V
$I_{D25}$	drain current					47
$I_{D80}$						$T_C = 25^\circ\text{C}$ $T_C = 80^\circ\text{C}$
$R_{DSon}$	static drain source on resistance	$I_D = 40\text{ A}; V_{GS} = 20\text{ V}$			40	50
					75	105
$V_{GS(th)}$	gate threshold voltage	$I_D = 2\text{ mA}; V_{DS} = 10\text{ V}$				
$I_{DSS}$	drain source leakage current	$V_{DS} = 1200\text{ V}; V_{GS} = 0\text{ V}$				2
						20
$I_{GSS}$	gate source leakage current	$V_{DS} = 0\text{ V}; V_{GS} = 20\text{ V}$				0.5
$R_G$	internal gate resistance					4.8
$C_{iss}$	input capacitance	$V_{DS} = 1000\text{ V}; V_{GS} = 0\text{ V}; f = 1\text{ MHz}$				1900
$C_{oss}$	output capacitance					160
$C_{rss}$	reverse transfer (Miller) capacitance					13
$Q_g$	total gate charge	$V_{DS} = 800\text{ V}; I_D = 40\text{ A}; V_{GS} = 0/20\text{ V}$				100
$Q_{gs}$	gate source charge					22
$Q_{gd}$	gate drain (Miller) charge					36
$t_{d(on)}$	turn-on delay time	Inductive switching $V_{DS} = 250\text{ V}; I_D = 32\text{ A}$ $V_{GS} = 10\text{ V}; R_G = 2\ \Omega$ (external)				
$t_r$	current rise time					ns
$t_{d(off)}$	turn-off delay time					ns
$t_f$	current fall time					ns
$E_{on}$	turn-on energy per pulse					mJ
$E_{off}$	turn-off energy per pulse					mJ
$E_{rec(off)}$	reverse recovery losses at turn-off					mJ
$R_{thJC}$	thermal resistance junction to case	with heatsink compound; IXYS test setup				0.55
$R_{thJH}$	thermal resistance junction to heatsink		0.65			

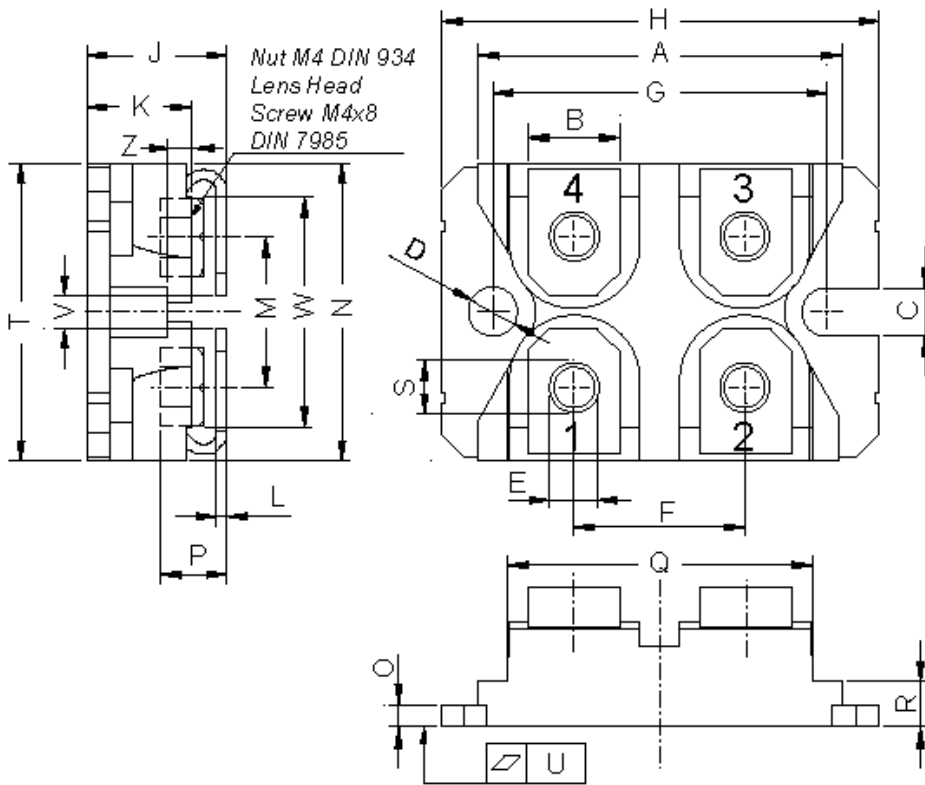
Source-Drain Diode				Ratings		
Symbol	Definitions	Conditions	min.	typ.	max.	
$I_{S25}$	continuous source current	$V_{GS} = -5\text{ V}$				A
$I_{S80}$						$T_C = 25^\circ\text{C}$ $T_C = 80^\circ\text{C}$
$V_{SD}$	forward voltage drop	$I_F = 20\text{ A}; V_{GS} = -5\text{ V}$			3.3	V
		$I_F = 20\text{ A}; V_{GS} = -2\text{ V}$			3.1	V
$t_{rr}$	reverse recovery time	$V_{GS} = -5\text{ V}; I_F = 40\text{ A}$ $V_R = 800\text{ V}; -di_F/dt = 700\text{ A}/\mu\text{s}$				40
$Q_{RM}$	reverse recovery charge (intrinsic diode)					330
$I_{RM}$	max. reverse recovery current					12.8

**Package SOT-227B (minibloc)**

Symbol	Definitions	Conditions	Ratings			Unit
			min.	typ.	max.	
$I_{RMS}$	RMS current	per terminal				A
$T_{stg}$	storage temperature		-40		150	°C
$T_{op}$	operation temperature		-40		150	°C
$T_{vJ}$	virtual junction temperature		-40		150	°C
<b>Weight</b>				30		g
$M_D$	mounting torque		1.1		1.5	Nm
$M_T$	terminal torque		1.1		1.5	Nm
$d_{Spp/App}$	creepage distance on surface / striking distance through air	terminal to backside	10.5 / 3.2			mm
$d_{Spb/Appb}$		terminal to terminal	8.6 / 6.8			mm
$V_{ISOL}$	isolation voltage	$I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz},$				V
		$t = 1 \text{ sec.}$	3000			V
		$t = 1 \text{ minute}$	2500			V

**Product Marking**


Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	IXFN50N120SiC	IXFN50N120SiC	Tube	10	515282

**Outlines SOT-227B (minibloc)**


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	37.80	38.23	1.488	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.74	0.84	0.029	0.033
M	12.50	13.10	0.492	0.516
N	25.15	25.42	0.990	1.001
O	1.95	2.13	0.077	0.084
P	4.95	6.20	0.195	0.244
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.167
S	4.55	4.85	0.179	0.191
T	24.59	25.25	0.968	0.994
U	-0.05	0.10	-0.002	0.004
V	3.20	5.50	0.126	0.217
W	19.81	21.08	0.780	0.830
Z	2.50	2.70	0.098	0.106

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