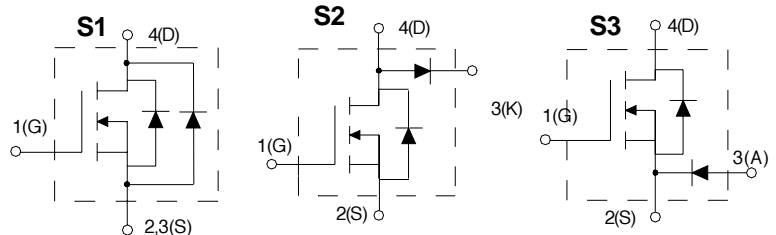


# HiPerFET™ Power MOSFETs with Schottky Diodes

**IXFN 100N10S1**  
**IXFN 100N10S2**  
**IXFN 100N10S3**

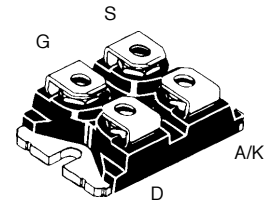
**$V_{DSS} = 100 \text{ V}$**   
 **$I_{D25} = 100 \text{ A}$**   
 **$R_{DS(on)} = 15 \text{ m}\Omega$**

Parallel, Buck & Boost Configurations  
for SMPS, PFC & Motor Control Circuits



	Symbol	Test Conditions	Maximum Ratings		
HiPerFET MOSFET	$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	100	V	
	$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1 \text{ M}\Omega$	100	V	
	$V_{GS}$	Continuous	$\pm 20$	V	
	$V_{GSM}$	Transient	$\pm 30$	V	
	$I_{D25}$	$T_C = 25^\circ\text{C}$	100	A	
	$I_{DM}$	$T_C = 25^\circ\text{C}$ , pulse width limited by max. $T_{JM}$	400	A	
	$I_{AR}$	$T_C = 25^\circ\text{C}$	100	A	
	$E_{AR}$	Repetitive	45	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	V/ns	
	$P_D$	$T_C = 25^\circ\text{C}$	360	W	
Diode	$V_{RRM}$		100	V	
	$I_{RMS}$		100	A	
	$I_{FAVM}$	$T_C = 105^\circ\text{C}$ ; rectangular, $d = 0.5$	60	A	
	$I_{FRM}$	$t_p < 10 \mu\text{s}$ ; pulse width limited by $T_J$	700	A	
	$(dv/dt)_{CR}$		1	V/ns	
$P_D$	$T_C = 25^\circ\text{C}$	150	W		
Case	$T_J$		-40 ... +150	$^\circ\text{C}$	
	$T_{JM}$		150	$^\circ\text{C}$	
	$T_{stg}$		-40 ... +150	$^\circ\text{C}$	
	$V_{ISOL}$	50/60 Hz, RMS	$t = 1 \text{ min}$	2500	V~
		$I_{ISOL} \leq 1 \text{ mA}$	$t = 1 \text{ s}$	3000	V~
	$M_d$	Mounting torque		1.5/13	Nm/lb.in.
Terminal connection torque (M4)			1.5/13	Nm/lb.in.	
<b>Weight</b>			30	g	

miniBLOC, SOT-227 B  
 E153432



S = Source  
G = Gate  
D = Drain  
A = Anode  
K = Cathode

### Features

- Popular Buck & Boost circuit topologies
- Low  $V_F$  Schottky diode with very small switching losses
- International standard package miniBLOC SOT-227 B
- Aluminium nitride isolation
  - high power dissipation
- Isolation voltage 3000 V~
- Low  $R_{DS(on)}$  HDMOS™ process
- Rugged polysilicon gate cell structure
- Low drain-to-case capacitance (<60 pF)
  - reduced RFI

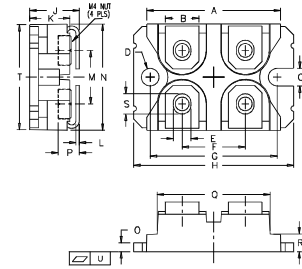
### Applications

- SMPS, power factor controls and buck regulators
- DC servo and robotic drives
- DC choppers
- Switch reluctance motor controls

### Advantages

- Easy to mount with 2 screws
- Space savings
- Tightly coupled Schottky diode

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ ; unless otherwise specified)		
		min.	typ.	max.
$V_{DS}$	$V_{GS} = 0\text{ V}; I_D = 3\text{ mA}$	S1	100	V
	$V_{GS} = 0\text{ V}; I_D = 250\ \mu\text{A}$	S2/S3	100	V
$V_{GS(th)}$	$V_{DS} = V_{GS}; I_D = 4\text{ mA}$		2	4 V
$I_{GSS}$	$V_{GS} = \pm 20\text{ V}_{DC}; V_{DS} = 0$			$\pm 100\text{ nA}$
$I_{DSS}$	$V_{DS} = V_{DSS}; V_{GS} = 0\text{ V}$	S1		2 mA
		S2/S3		25 $\mu\text{A}$
	$T_J = 125^\circ\text{C}$	S1		20 mA
		S2/S3		1 mA
$R_{DS(on)}$	$V_{GS} = 10\text{ V}; I_D = 0.5\ I_{D25}$ ; Note 1			15 m $\Omega$
$g_{fs}$	$V_{DS} = 10\text{ V}; I_D = 0.5\ I_{D25}$ ; pulse test		30	45 S
$C_{iss}$	$V_{GS} = 0\text{ V}; V_{DS} = 25\text{ V}; f = 1\text{ MHz}$			4500 pF
$C_{oss}$		S1		1900 pF
		S2/S3		1600 pF
$C_{rss}$				870 pF
$t_{d(on)}$				30 ns
$t_r$	$V_{GS} = 10\text{ V}; V_{DS} = 0.5\ V_{DSS}; I_D = 0.5\ I_{D25}$			70 ns
$t_{d(off)}$	$R_G = 1.5\ \Omega$ (External)			100 ns
$t_f$				30 ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}; V_{DS} = 0.5\ V_{DSS}; I_D = 0.5\ I_{D25}$			180 nC
$Q_{gs}$				36 nC
$Q_{gd}$				95 nC
$V_{SD}$	$I_F = 100\text{ A}; V_{GS} = 0\text{ V}$ ; Note 1 (S2, S3)			1.5 V
$t_{rr}$	$I_F = 25\text{ A}; -di/dt = 100\text{ A}/\mu\text{s}; V_R = 25\text{ V}$			200 ns
$Q_{RM}$				0.8 $\mu\text{C}$
$I_{RM}$				6 A
$R_{thJC}$				0.35 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

**Schottky Diode**
**Characteristic Values**

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

Symbol	Test Conditions	Characteristic Values		
		min.	typ.	max.
$I_R$	$V_R = V_{RRM}$			2 mA
	$T_J = 125^\circ\text{C}; V_R = V_{RRM}$			20 mA
$V_F$	$I_F = 60\text{ A}; V_{GS} = 0\text{ V}$ ; Note 1			0.86 V
	$I_F = 60\text{ A}; V_{GS} = 0\text{ V}$			0.73 V
	$I_F = 120\text{ A}$			0.93 V
$R_{thJC}$				0.8 K/W
$R_{thJK}$				0.1 K/W

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