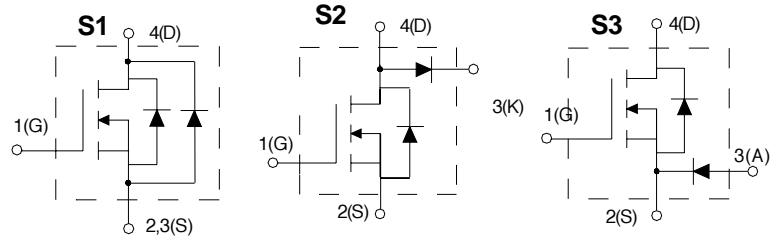


# HiPerFET™ Power MOSFETs with Schottky Diodes

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

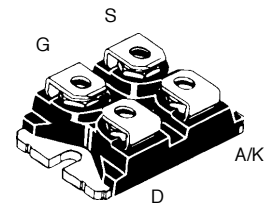
$V_{DSS} = 100 \text{ V}$   
 $I_{D25} = 100 \text{ A}$   
 $R_{DS(on)} = 15 \text{ m}\Omega$

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
Diode	$dv/dt$	$I_S \leq I_{DM}$ , $-di/dt \leq 100 \text{ A}/\mu\text{s}$ , $V_{DD} \leq V_{DSS}$ , $T_J \leq 150^\circ\text{C}$ , $R_G = 2 \Omega$	5	V/ns
	$P_D$	$T_C = 25^\circ\text{C}$	360	W
	$V_{RRM}$		100	V
	$I_{RMS}$		100	A
	$I_{FAVM}$	$T_C = 105^\circ\text{C}$ ; rectangular, $d = 0.5$	60	A
Case	$I_{FRM}$	$t_p < 10 \mu\text{s}$ ; pulse width limited by $T_J$	700	A
	$(dv/dt)_{CR}$		1	V/ns
	$P_D$	$T_C = 25^\circ\text{C}$	150	W
	$T_J$		-40 ... +150	$^\circ\text{C}$
	$T_{JM}$		150	$^\circ\text{C}$
	$T_{stg}$		-40 ... +150	$^\circ\text{C}$
	$V_{ISOL}$	50/60 Hz, RMS $I_{ISOL} \leq 1 \text{ mA}$	$t = 1 \text{ min}$ $t = 1 \text{ s}$	2500 3000
$M_d$	Mounting torque Terminal connection torque (M4)		1.5/13 1.5/13	Nm/lb.in. 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-227B
- 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

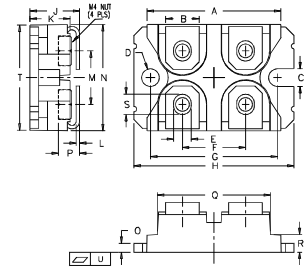
- SMPS, power factor controls and buck regulators
- DC servo and robotic drives
- DC choppers
- Switch reluctance motor controls

### 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.
$V_{DSS}$	$V_{GS} = 0\text{ V}; I_D = 3\text{ mA}$	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
$I_{GSS}$	$V_{GS} = \pm 20\text{ V}; V_{DC}; V_{DS} = 0$			$\pm 100\text{ nA}$
$I_{DSS}$	$V_{DS} = V_{DSS}; V_{GS} = 0\text{ V}$ $T_J = 125^\circ\text{C}$	S1		2 mA
		S2/S3		25 $\mu\text{A}$
		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
$C_{rss}$		S2/S3		1600 pF
				870 pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}; V_{DS} = 0.5 V_{DSS}; I_D = 0.5 I_{D25}$ $R_G = 1.5\ \Omega$ (External)		30	ns
$t_r$			70	ns
$t_{d(off)}$			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 $T_J = 125^\circ\text{C}$	$I_F = 60\text{ A}; V_{GS} = 0\text{ V}$		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