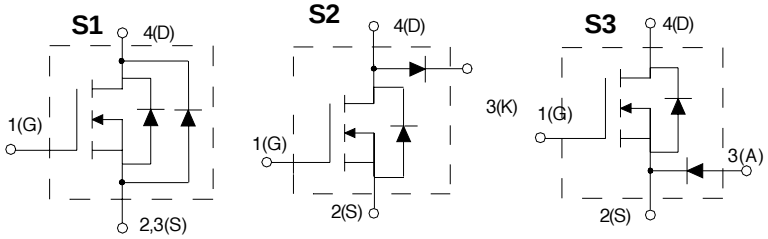
IXYS

HiPerFET™ Power MOSFETs with Schottky Diodes

IXFN 100N10S1
IXFN 100N10S2
IXFN 100N10S3

V_{DSS} = 100 V
I_{D25} = 100 A
$R_{DS(on)}$ = 15 mΩ

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



	Symbol	Test Conditions	Maximum Ratings	
HiPerFET MOSFET	V_{DSS}	T_J = 25°C to 150°C	100	V
	V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ	100	V
	V_{GS}	Continuous	±20	V
	V_{GSM}	Transient	±30	V
	I_{D25}	T_C = 25°C	100	A
	I_{DM}	T_C = 25°C, pulse width limited by max. T_{JM}	400	A
	I_{AR}	T_C = 25°C	100	A
	E_{AR}	Repetitive	45	mJ
	dv/dt	$I_S \le I_{DM}$, -di/dt ≤ 100 A/µs, $V_{DD} \le V_{DSS}$, $T_J \le 150°C$, R_G = 2 Ω	5	V/ns
	P_D	T_C = 25°C	360	W
Diode	V_{RRM}		100	V
	I_{RMS}		100	A
	I_{FAVM}	T_C = 105°C; rectangular, d = 0.5	60	A
	I_{FRM}	t_P <10 µs; pulse width limited by T_J	700	A
	$(dv/dt)_{CR}$		1	V/ns
	P_D	T_C = 25°C	150	W
Case	T_J		-40 ... +150	°C
	T_{JM}		150	°C
	T_{stg}		-40 ... +150	°C
	V_{ISOL}	50/60 Hz, RMS t = 1 min I_{ISOL} ≤ 1 mA t = 1 s	2500 3000	V~ V~
	M_d	Mounting torque Terminal connection torque (M4)	1.5/13 1.5/13	Nm/lb.in. Nm/lb.in.
	Weight		30	g

miniBLOC, SOT-227 B

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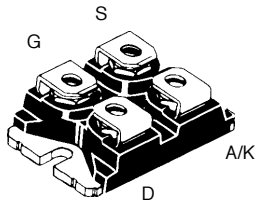

S = Source
G = Gate
D = Drain
A = Anode
K = Cathode

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°C; unless otherwise specified) min.	typ.	max.	
V_{DSS}	V_{GS} = 0 V; I_D = 3 mA	S1	100			V
	V_{GS} = 0 V; I_D = 250 µA	S2/S3	100			V
$V_{GS(th)}$	V_{DS} = V_{GS}; I_D = 4 mA		2		4	V
I_{GSS}	V_{GS} = ±20 V_{DC}; V_{DS} = 0				±100	nA
I_{DSS}	V_{DS} = V_{DSS}; V_{GS} = 0 V	S1			2	mA
		S2/S3			25	µA
	T_J = 125°C	S1			20	mA
		S2/S3			1	mA
$R_{DS(on)}$	V_{GS} = 10 V; I_D = 0.5 I_{D25}; Note 1				15	mΩ
g_{fs}	V_{DS} = 10 V; I_D = 0.5 I_{D25}; pulse test		30	45		S
C_{iss}	V_{GS} = 0 V; V_{DS} = 25 V; f = 1 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 V; V_{DS} = 0.5 V_{DSS}; I_D = 0.5 I_{D25}			70		ns
$t_{d(off)}$	R_G = 1.5 Ω (External)			100		ns
t_f				30		ns
$Q_{g(on)}$	V_{GS} = 10 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 = 100A; V_{GS} = 0 V; Note 1 (S2, S3)				1.5	V
t_{rr}	I_F = 25 A;-di/dt = 100 A/µs; V_R = 25 V				200	ns
Q_{RM}				0.8		µC
I_{RM}				6		A
R_{thJC}					0.35	K/W
R_{thCK}				0.05		K/W

Schottky Diode

Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
I_R	V_R = V_{RRM}				2	mA
	T_J = 125°C; V_R = V_{RRM}				20	mA
V_F	I_F = 60 A; V_{GS} = 0 V; Note 1				0.86	V
	I_F = 60 A; V_{GS} = 0 V	T_J = 125°C			0.73	V
	I_F = 120 A	T_J = 125°C			0.93	V
R_{thJC}					0.8	K/W
R_{thJK}				0.1		K/W

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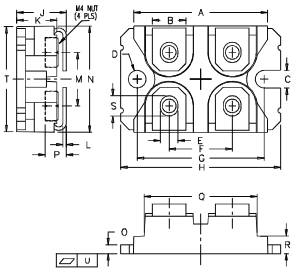

M4 screws (4x) supplied

Dim.	Millimeter Min.	Max.	Inches 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