IXYS

HiPerFET™ Power MOSFETs Q-Class

IXFN 27N80Q

|			
V_{DSS}	=	800	V
I_{D25}	=	27	A
$R_{DS(on)}$	=	320	mΩ

Single Die MOSFET
N-Channel Enhancement Mode
Avalanche Rated, High dv/dt, Low t_{rr}
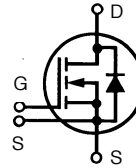
Preliminary data sheet

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	800	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ	800	V
V_{GS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_C = 25°C	27	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	108	A
I_{AR}		27	A
E_{AR}	T_C = 25°C	60	mJ
E_{AS}	T_C = 25°C	2.5	J
dv/dt	I_S ≤ I_{DM}, di/dt ≤ 100 A/µs, V_{DD} ≤ V_{DSS}, T_J ≤ 150°C, R_G = 2 Ω	5	V/ns
P_D	T_C = 25°C	520	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
V_{ISOL}	50/60 Hz, RMS t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA t = 1 s	3000	V~
M_d	Mounting torque	1.5/13	Nm/lb.in.
	Terminal connection torque	1.5/13	Nm/lb.in.
Weight		30	g

miniBLOC, SOT-227 B (IXFN)

E153432
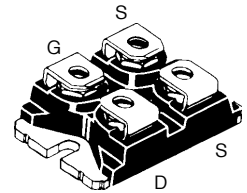
G = Gate   D = Drain
S = Source   TAB = Drain
Either Source terminal at miniBLOC can be used as Main or Kelvin Source

Features

- International standard package
- Epoxy meet UL94 V-0, flammability classification
- miniBLOC with Aluminium nitride isolation
- IXYS advanced low Q_g process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
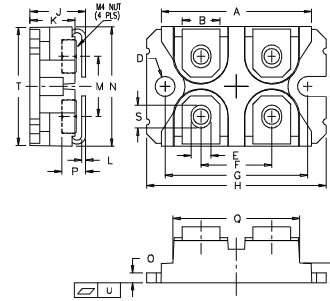- Fast intrinsic Rectifier

Applications

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- Temperature and lighting controls

Advantages

- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified)		
		min.	typ.	max.
V_{DSS}	V_{GS} = 0 V, I_D = 250 µA	800		V
$V_{GH(th)}$	V_{DS} = V_{GS}, I_D = 4 mA	2.5		4.5	V
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0			±100	nA
I_{DSS}	V_{DS} = V_{DSS} T_J = 25°C			100	µA
	V_{GS} = 0 V T_J = 125°C			2	mA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 I_{D25} Note 1			0.32	Ω

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Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified)			
		min.	typ.	max.	
g_{fs}	V_{DS} = 10 V; I_D = 0.5 I_{D25}, pulse test	20	27		S
C_{iss}			7600		pF
C_{oss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		750		pF
C_{rss}			120		pF
$t_{d(on)}$			20		ns
t_r	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}		28		ns
$t_{d(off)}$	R_G = 1 Ω (External),		50		ns
t_f			13		ns
$Q_{g(on)}$			170		nC
Q_{gs}	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}		47		nC
Q_{gd}			65		nC
R_{thJC}				0.24	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

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified)			
		min.	typ.	max.	
I_S	V_{GS} = 0 V			27	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			108	A
V_{SD}	I_F = I_S, V_{GS} = 0 V, Note 1			1.5	V
t_{rr}	I_F = I_S, -di/dt = 100 A/µs, V_R = 100 V			250	ns
Q_{RM}			1.3		µC
I_{RM}			8		A

Note 1: Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %

IXYS reserves the right to change limits, test conditions, and dimensions.

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