Preliminary Data Sheet

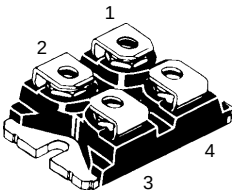
High Current Power MOSFET

N-Channel Enhancement Mode

	V_{DSS}	I_{D25}	$R_{DS(on)}$
IXFN 58N50	500V	58A	85 mΩ
IXFN 61N50	500V	61A	75 mΩ

Symbol	Test Conditions		Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C		500	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1.0 MΩ		500	V
V_{GS}	Continuous		±20	V
V_{GSM}	Transient		±30	V
I_{D25}	T_C = 25°C	IXFN 58N50	58	A
		IXFN 61N50	61	A
I_{DM}	T_C = 25°C (1)	IXFN 58N50	232	A
		IXFN 61N50	244	A
P_D	T_C = 25°C		625	W
T_J			-40 ... +150	°C
T_{JM}			150	°C
T_{stg}			-40 ... +150	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 minute	2500	V~
		t = 1s	3000	V~
M_d	Mounting torque		1.5/13	Nm/lb.in.
	Terminal connection torque (M4)		1.5/13	Nm/lb.in.
Weight			30	g
E_{AR}			75	mJ

miniBLOC, SOT-227 B



1 = Source 2 = Gate
3 = Drain 4 = Source

Symbol	Test Conditions		Characteristic Values (T_J = 25°C unless otherwise specified) Min.	Typ.	Max.	
V_{DSS}	V_{GS} = 0 V, I_D = 5 mA		500			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 12 mA		1.7		4.0	V
I_{GSS}	V_{GS} = ±20 V DC, V_{DS} = 0				±200	nA
I_{DSS}	V_{DS} = 0.8 V_{DSS}	T_J = 25°C			500	µA
	V_{GS} = 0 V	T_J = 125°C			2	mA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 I_{D25}	58N50			85	mΩ
		61N50			75	mΩ
	Pulse test, t ≤ 300 µs, duty cycle ≤ 2 %					

Features

- International standard package
- Isolation voltage 3000V (RMS)
- Low $R_{DS\ (on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Low drain-to-case capacitance (<60 pF)
  - reduced RFI
- Low package inductance (< 10 nH)
  - easy to drive and to protect
- Aluminium Nitride Isolation
  - increased current ratings

Applications

- DC choppers
- AC motor speed controls
- DC servo and robot drives
- Uninterruptible power supplies (UPS)
- Switched mode and resonant mode power supplies

Advantages

- Easy to mount
- Space savings
- High power density

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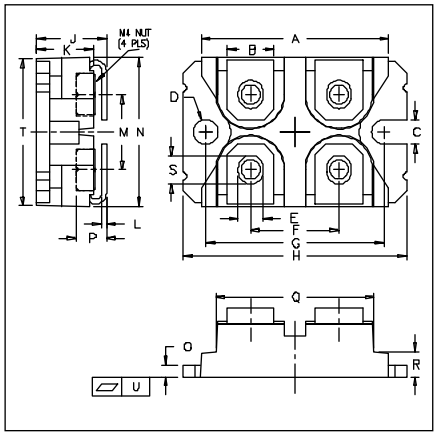
Symbol	Test Conditions (T_J = 25°C unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10 V; I_D = 0.5 I_{D25}, pulse test	20	30		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		11		nF
C_{oss}			1550		pF
C_{rss}			225		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 50 A		30		ns
t_r	R_G = 1 Ω (External)		60		ns
$t_{d(off)}$			100		ns
t_f			50		ns
Q_g	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = I_{D25}		420		nC
Q_{gs}			55		nC
Q_{gd}			160		nC
R_{thJC}				0.20	K/W
R_{thCK}			0.05		K/W

Package Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	1.240	1.255	31.50	31.88
B	.307	.323	7.80	8.20
C	.161	.169	4.09	4.29
D	.161	.169	4.09	4.29
E	.161	.169	4.09	4.29
F	.587	.595	14.91	15.11
G	1.186	1.193	30.12	30.30
H	1.496	1.505	38.00	38.23
J	.460	.481	11.68	12.22
K	.351	.378	8.92	9.60
L	.030	.033	0.76	0.84
M	.496	.506	12.60	12.85
N	.990	1.001	25.15	25.42
O	.078	.084	1.98	2.13
P	.195	.235	4.95	5.97
Q	1.045	1.059	26.54	26.90
R	.155	.174	3.94	4.42
S	.186	.191	4.72	4.85
T	.968	.987	24.59	25.07
U	-.002	.004	-0.05	0.1

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C unless otherwise specified)	Ratings and Characteristics Min.	Typ.	Max.	
I_S	V_{GS} = 0			61	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			244	A
V_{SD}	I_F = I_S, V_{GS} = 0 V, Pulse test, t ≤ 300 µs, duty cycle ≤ 2 %			1.5	V
t_{rr}	I_F = 50A, di/dt = -100 A/µs, V_R = 100 V			250	ns

Notes: 1. Pulse width limited by max T_J.
2. $I_F \le I_{DM}$, di/dt ≤ 100 A/µs, $V_{DD} \le V_{DSS}$, $T_J \le 150$ºC, R_G = 2Ω.

The data supplied herein reflects the pre-production objective specification and characterization from engineering lots.
IXYS reserves the right to change limits, test conditions, and dimensions.