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Preliminary Data Sheet

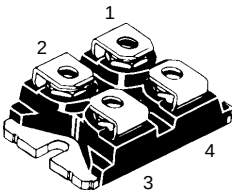
High Current Power MOSFET

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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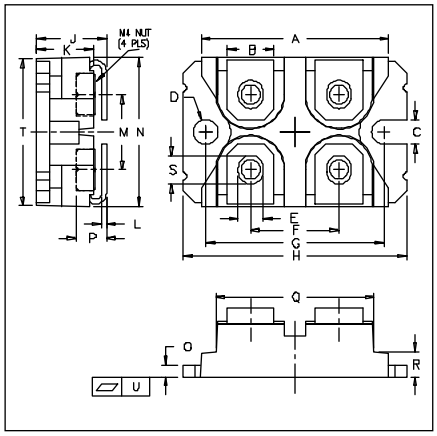
Symbol	Test Conditions (T$_J$ = 25°C unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10 V; I_D = 0.5 I_{D25}, pulse test	20	30		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		11		nF
C_{oss}			1550		pF
C_{rss}			225		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, 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.

IXYS MOSFETS and IGBTs are covered by one or more of the following U.S. patents:
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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