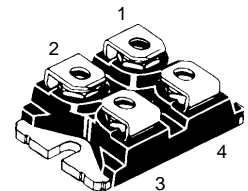


# High Current Power MOSFET

## 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	
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	500	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1.0\text{ M}\Omega$	500	V
$V_{GS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	IXFN 58N50: 58 IXFN 61N50: 61	A
$I_{DM}$	$T_C = 25^\circ\text{C}$ (1)	IXFN 58N50: 232 IXFN 61N50: 244	A
$P_D$	$T_C = 25^\circ\text{C}$	625	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	t = 1 minute: 2500 t = 1s: 3000	V~ V~
$M_d$	Mounting torque	1.5/13	Nm/lb.in.
	Terminal connection torque (M4)	1.5/13	Nm/lb.in.
<b>Weight</b>		30	g
$E_{AR}$		75	mJ

**miniBLOC, SOT-227 B**


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

### Features

- International standard package
- Isolation voltage 3000V (RMS)
- Low  $R_{DS(on)}$  HDMOS™ process<sup>1</sup>
- 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

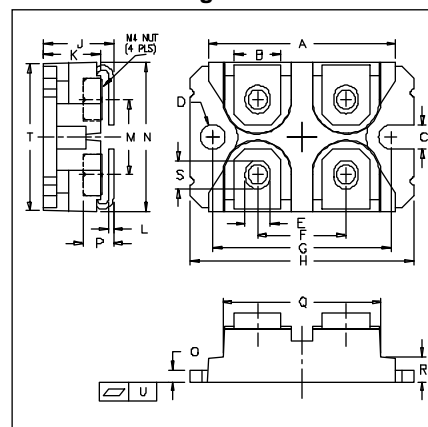
- DC choppers
- AC motor speed controls
- DC servo and robot drives
- Uninterruptible power supplies (UPS)
- Switched mode and resonant mode power supplies

### Advantages

- Easy to mount
- Space savings
- High power density

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

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

**Package Outline**


SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	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**
**Ratings and Characteristics**  
( $T_J = 25^\circ\text{C}$  unless otherwise specified)

Symbol	Test Conditions	Min.	Typ.	Max.
$I_S$	$V_{GS} = 0$			61 A
$I_{SM}$	Repetitive; pulse width limited by $T_{JM}$			244 A
$V_{SD}$	$I_F = I_S, V_{GS} = 0\text{ V}$ , Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $\leq 2\%$			1.5 V
$t_{rr}$	$I_F = 50\text{ A}, di/dt = -100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$			250 ns

- Notes:
1. Pulse width limited by max  $T_J$ .
  2.  $I_F \leq I_{DM}, di/dt \leq 100\text{ A}/\mu\text{s}, V_{DD} \leq V_{DSS}, T_J \leq 150^\circ\text{C}, R_G = 2\ \Omega$ .

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:

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