

# High Current Power MOSFET

	$V_{DSS}$	$I_{D25}$	$R_{DS(on)}$
<b>IXTN 58N50</b>	<b>500 V</b>	<b>58 A</b>	<b>85 mΩ</b>
<b>IXTN 61N50</b>	<b>500 V</b>	<b>61 A</b>	<b>75 mΩ</b>

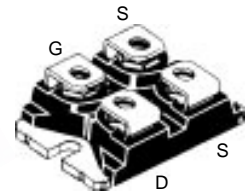
N-Channel Enhancement Mode



Preliminary Data

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
$I_{D25}$	$T_C = 25^\circ\text{C}$	IXTN 58N50: 58 IXTN 61N50: 61	A
$I_{DM}$	$T_C = 25^\circ\text{C}$ Pulse width limited by $T_{JM}$	IXTN 58N50: 232 IXTN 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	$t = 1\ \text{minute}$ : 2500 $t = 1\ \text{s}$ : 3000	V~ V~
$M_d$	Mounting torque Terminal connection torque (M4)	1.5/13 Nm/lb.in. 1.5/13 Nm/lb.in.	
<b>Weight</b>		30	g

miniBLOC, SOT-227 B  
E153432



G = Gate                      D = Drain  
S = Source

Either Source terminal at miniBLOC can be used as Main or Kelvin Source

## Features

- International standard package
- Isolation voltage 3000V (RMS)
- Low  $R_{DS(on)}$  HDMOS™ process
- Rugged polysilicon gate cell structure
- Low drain-to-case capacitance (<100 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

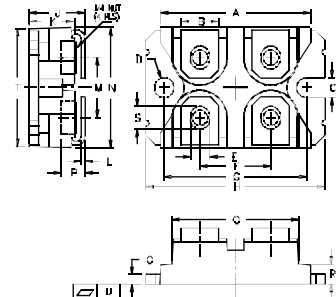
Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ unless otherwise specified)		
		Min.	Typ.	Max.
$V_{DSS}$	$V_{GS} = 0\ \text{V}$ , $I_D = 5\ \text{mA}$	500		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 12\ \text{mA}$	1.7		V
$I_{GSS}$	$V_{GS} = \pm 20\ \text{V DC}$ , $V_{DS} = 0$			$\pm 200\ \text{nA}$
$I_{DSS}$	$V_{DS} = 0.8 V_{DSS}$ , $T_J = 25^\circ\text{C}$ $V_{GS} = 0\ \text{V}$ , $T_J = 125^\circ\text{C}$			500 $\mu\text{A}$ 2 mA
$R_{DS(on)}$	$V_{GS} = 10\ \text{V}$ , $I_D = 0.5 I_{D25}$ Pulse test, $t \leq 300\ \mu\text{s}$ , 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
$C_{iss}$ $C_{oss}$ $C_{rss}$	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		11000	pF
			1550	pF
			225	pF
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 50\text{ A}$ $R_G = 1\ \Omega$ (External)		30	ns
			60	ns
			100	ns
			50	ns
$Q_g$ $Q_{gs}$ $Q_{gd}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = I_{D2}$		420	nC
			55	nC
			160	nC
$R_{thJC}$ $R_{thCK}$			0.20	K/W
		0.05		K/W

### Source-Drain Diode

Symbol	Test Conditions	Ratings and Characteristics ( $T_J = 25^\circ\text{C}$ unless otherwise specified)		
		Min.	Typ.	Max.
$I_S$	$V_{GS} = 0\text{ V}$			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
$t_{rr}$	$I_F = 50\text{ A}, di/dt = -100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$			800 ns

### 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