

# High Voltage MegaMOS™ FETs

**IXTK 21N100**  
**IXTN 21N100**

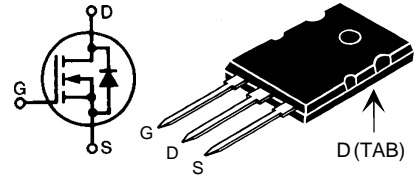
$V_{DSS} = 1000\text{ V}$   
 $I_{D25} = 21\text{ A}$   
 $R_{DS(on)} = 0.55\ \Omega$

N-Channel, Enhancement Mode

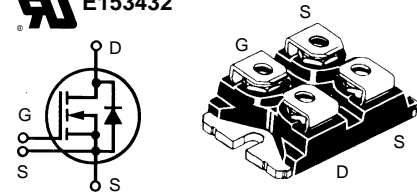
Symbol	Test Conditions	Maximum Ratings		
		IXTK	IXTN	
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	1000	1000	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1\text{ M}\Omega$	1000	1000	V
$V_{GS}$	Continuous	$\pm 20$	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$ , Chip capability	21	21	A
$I_{DM}$	$T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$	84	84	A
$P_D$	$T_C = 25^\circ\text{C}$	500	520	W
$T_J$		-55 ... +150		$^\circ\text{C}$
$T_{JM}$		150		$^\circ\text{C}$
$T_{stg}$		-55 ... +150		$^\circ\text{C}$
$T_L$	1.6 mm (0.063 in) from case for 10 s	300	-	$^\circ\text{C}$
$V_{ISOL}$	50/60 Hz, RMS $t = 1\text{ min}$	-	2500	V~
	$I_{ISOL} \leq 1\text{ mA}$ $t = 1\text{ s}$	-	3000	V~
$M_d$	Mounting torque	0.9/6	1.5/13	Nm/lb.in.
	Terminal connection torque	-	1.5/13	Nm/lb.in.
<b>Weight</b>		10	30	g

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{DSS}$	$V_{GS} = 0\text{ V}$ , $I_D = 6\text{ mA}$	1000		V
$V_{GH(th)}$	$V_{DS} = V_{GS}$ , $I_D = 500\ \mu\text{A}$	2		4.5 V
$I_{GSS}$	$V_{GS} = \pm 20\text{ V}_{DC}$ , $V_{DS} = 0$			$\pm 200\text{ nA}$
$I_{DSS}$	$V_{DS} = 0.8 \cdot V_{DSS}$			500 $\mu\text{A}$
	$V_{GS} = 0\text{ V}$			2 mA
$R_{DS(on)}$	$V_{GS} = 10\text{ V}$ , $I_D = 0.5 \cdot I_{D25}$ Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $d \leq 2\%$			0.55 $\Omega$

TO-264 AA (IXTK)



miniBLOC, SOT-227 B  
E153432



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

## Features

- International standard packages
- JEDECTO-264, epoxy meet UL94V-0 flammability classification
- miniBLOC, (ISOTOP-compatible) with Aluminium nitride isolation
- Low  $R_{DS(on)}$  HDMOS™ process
- Rugged polysilicon gate cell structure
- Low package inductance

## Applications

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

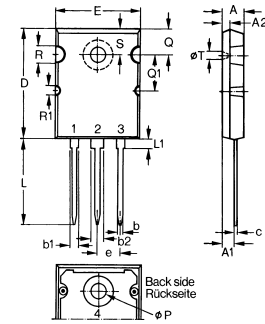
## Advantages

- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$g_{fs}$	$V_{DS} = 10\text{ V}; I_D = 0.5 \cdot I_{D25}$ , pulse test		24	S
$C_{iss}$	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		8400	pF
$C_{oss}$			630	pF
$C_{rss}$			110	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 1\ \Omega$ (External),		30	ns
$t_r$			50	ns
$t_{d(off)}$			100	ns
$t_f$			40	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		250	nC
$Q_{gs}$			60	nC
$Q_{gd}$			100	nC
$R_{thJC}$	TO-264 AA		0.25	K/W
$R_{thCK}$	TO-264 AA		0.15	K/W
$R_{thJC}$	miniBLOC, SOT-227 B		0.24	K/W
$R_{thCK}$	miniBLOC, SOT-227 B		0.05	K/W

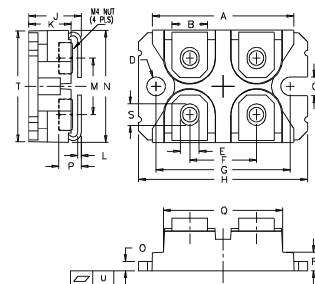
Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$I_s$	$V_{GS} = 0\text{ V}$			21 A
$I_{SM}$	Repetitive; pulse width limited by $T_{JM}$			84 A
$V_{SD}$	$I_F = I_s, V_{GS} = 0\text{ V}$ , Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $d \leq 2\%$			1.5 V
$t_{rr}$	$I_F = I_s, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$		1000	ns
$I_{RM}$			20	A

### TO-264 AA Outline



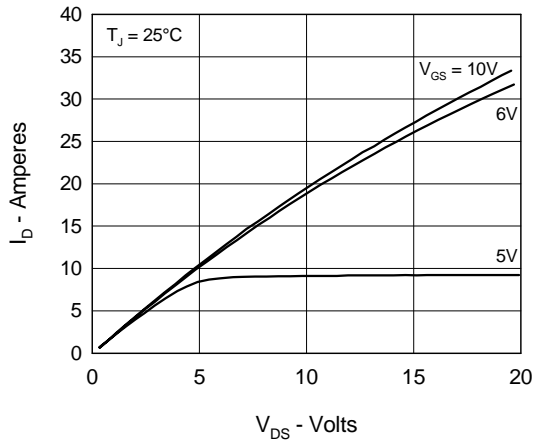
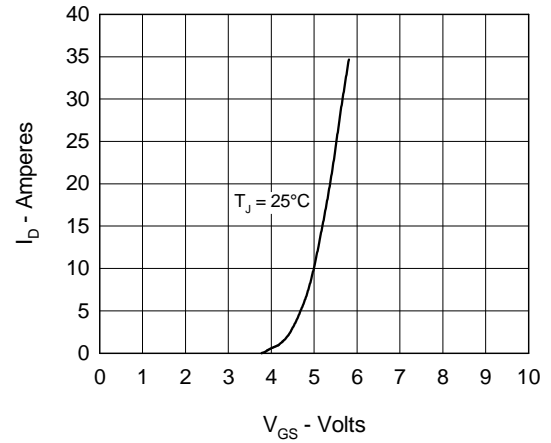
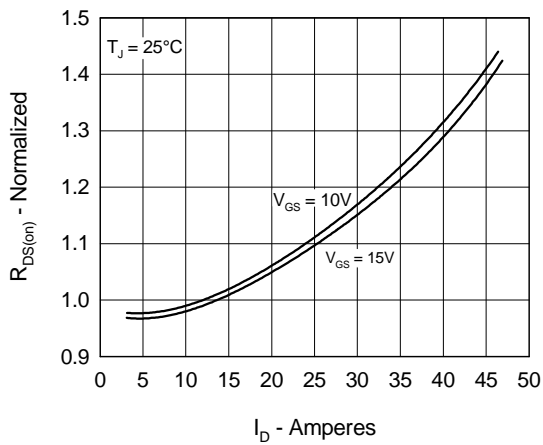
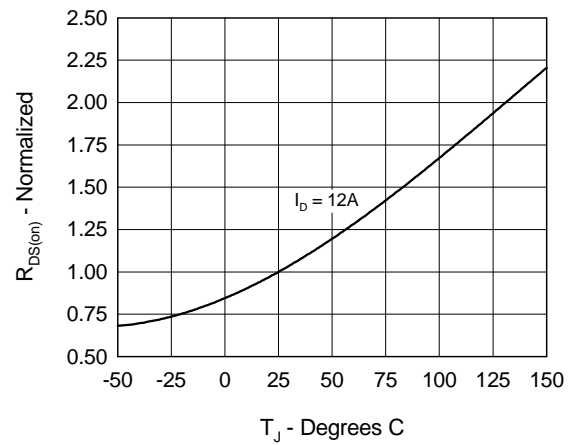
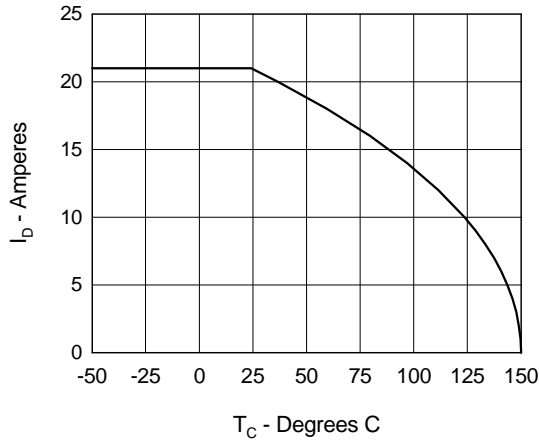
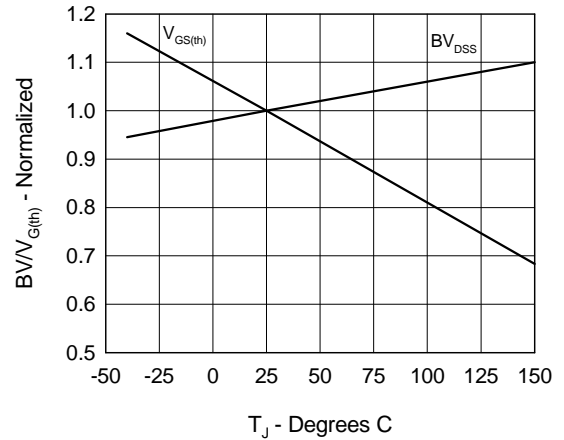
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.82	5.13	.190	.202
A1	2.54	2.89	.100	.114
A2	2.00	2.10	.079	.083
b	1.12	1.42	.044	.056
b1	2.39	2.69	.094	.106
b2	2.90	3.09	.114	.122
c	0.53	0.83	.021	.033
D	25.91	26.16	1.020	1.030
E	19.81	19.96	.780	.786
e	5.46 BSC		.215 BSC	
J	0.00	0.25	.000	.010
K	0.00	0.25	.000	.010
L	20.32	20.83	.800	.820
L1	2.29	2.59	.090	.102
P	3.17	3.66	.125	.144
Q	6.07	6.27	.239	.247
Q1	8.38	8.69	.330	.342
R	3.81	4.32	.150	.170
R1	1.78	2.29	.070	.090
S	6.04	6.30	.238	.248
T	1.57	1.83	.062	.072

### miniBLOC, SOT-227 B

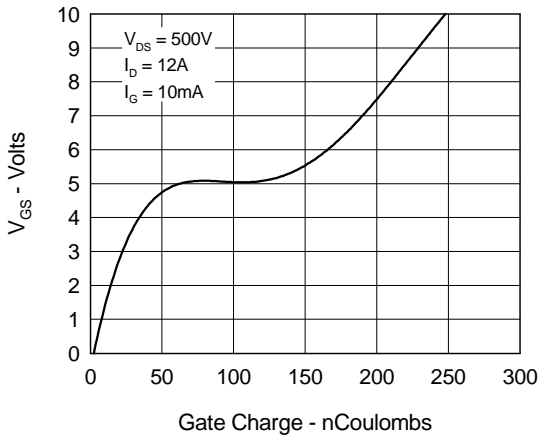


M4 screws (4x) supplied

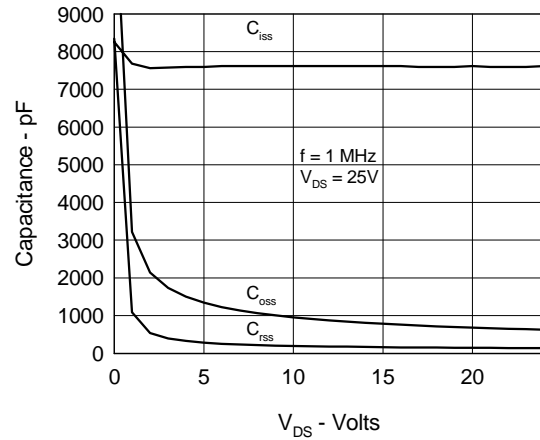
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	38.00	38.23	1.496	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	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

**Fig. 1 Output Characteristics**

**Fig. 2 Input Admittance**

**Fig. 3  $R_{DS(on)}$  vs. Drain Current**

**Fig. 4 Temperature Dependence of Drain to Source Resistance**

**Fig. 5 Drain Current vs. Case Temperature**

**Fig. 6 Temperature Dependence of Breakdown and Threshold Voltage**


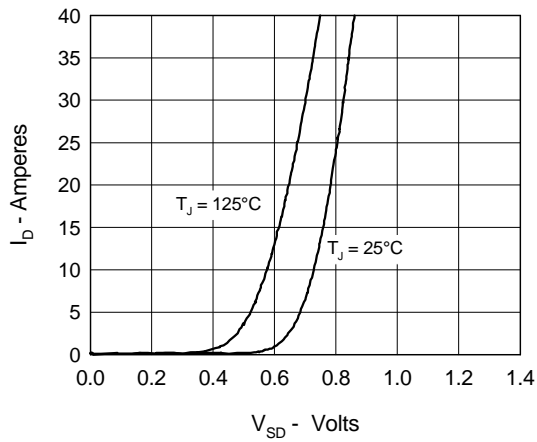
**Fig.7 Gate Charge Characteristic Curve**



**Fig.8 Capacitance Curves**



**Fig.9 Source Current vs. Source to Drain Voltage**



**Fig.10 Transient Thermal Impedance**

