

# High Voltage MegaMOS™ FETs

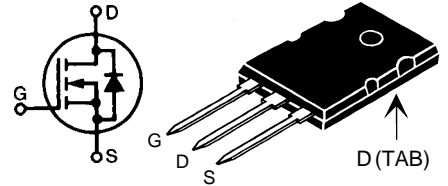
**IXTK 21N100**  
**IXTN 21N100**

**V<sub>DSS</sub> = 1000 V**  
**I<sub>D25</sub> = 21 A**  
**R<sub>DS(on)</sub> = 0.55 Ω**

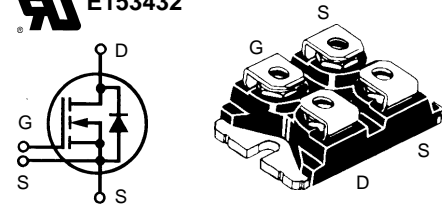
N-Channel, Enhancement Mode

Symbol	Test Conditions	Maximum Ratings		
		IXTK	IXTN	
V <sub>DSS</sub>	T <sub>J</sub> = 25°C to 150°C	1000	1000	V
V <sub>DGR</sub>	T <sub>J</sub> = 25°C to 150°C; R <sub>GS</sub> = 1 MΩ	1000	1000	V
V <sub>GS</sub>	Continuous	±20	±20	V
V <sub>GSM</sub>	Transient	±30	±30	V
I <sub>D25</sub>	T <sub>C</sub> = 25°C, Chip capability	21	21	A
I <sub>DM</sub>	T <sub>C</sub> = 25°C, pulse width limited by T <sub>JM</sub>	84	84	A
P <sub>D</sub>	T <sub>C</sub> = 25°C	500	520	W
T <sub>J</sub>		-55 ... +150		°C
T <sub>JM</sub>			150	°C
T <sub>stg</sub>		-55 ... +150		°C
T <sub>L</sub>	1.6 mm (0.063 in) from case for 10 s	300	-	°C
V <sub>ISOL</sub>	50/60 Hz, RMS t = 1 min I <sub>ISOL</sub> ≤ 1 mA t = 1 s	-	2500 3000	V~ V~
M <sub>d</sub>	Mounting torque Terminal connection torque	0.9/6 -	1.5/13 1.5/13	Nm/lb.in. Nm/lb.in.
Weight		10	30	g

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
- JEDEC TO-264, epoxy meet UL 94 V-0 flammability classification
- miniBLOC, (ISOTOP-compatible) with Aluminium nitride isolation
- Low R<sub>DS(on)</sub> 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

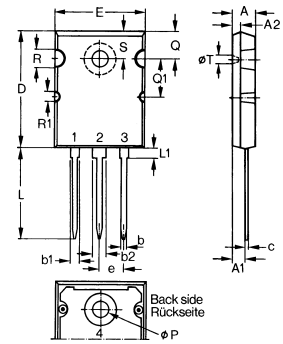
- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values (T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
V <sub>DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 6 mA	1000		V
V <sub>GH(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 500 μA	2		4.5 V
I <sub>GSS</sub>	V <sub>GS</sub> = ±20 V <sub>DC</sub> , V <sub>DS</sub> = 0			±200 nA
I <sub>DSS</sub>	V <sub>DS</sub> = 0.8 • V <sub>DSS</sub> V <sub>GS</sub> = 0 V			500 μA 2 mA
R <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 0.5 • I <sub>D25</sub> Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			0.55 Ω

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-264AA		0.25	K/W
$R_{thCK}$	TO-264AA		0.15	K/W
$R_{thJC}$	miniBLOC, SOT-227 B		0.24	K/W
$R_{thCK}$	miniBLOC, SOT-227 B		0.05	K/W

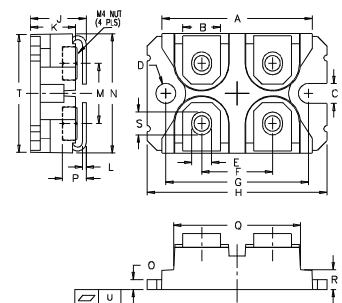
Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$I_S$	$V_{GS} = 0\text{ V}$			21 A
$I_{SM}$	Repetitive; pulse width limited by $T_{JM}$			84 A
$V_{SD}$	$I_F = I_S, V_{GS} = 0\text{ V}$ , Pulse test, $t \leq 300\ \mu\text{s}$ , duty 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

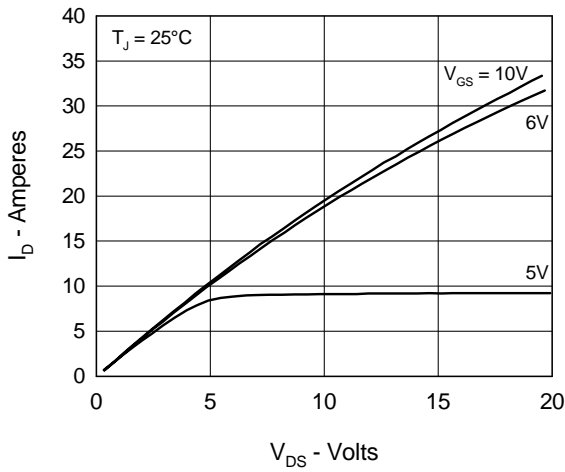
### miniBLOC, SOT-227 B



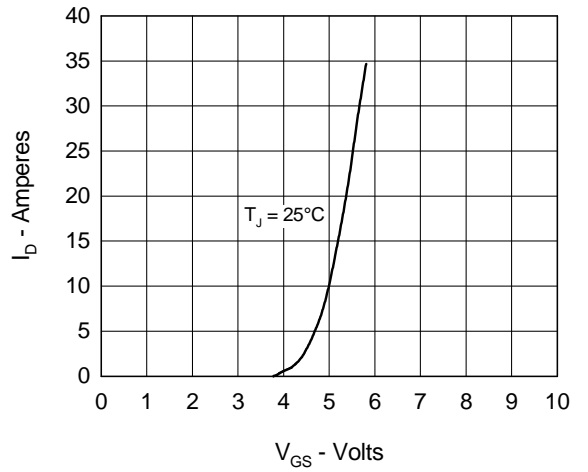
M4 screws (4x) supplied

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

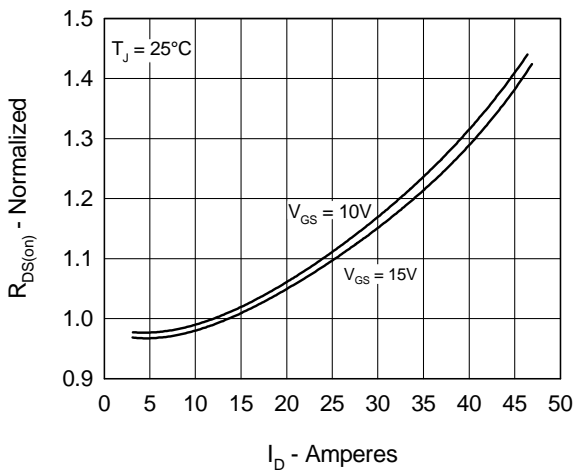
**Fig. 1 Output Characteristics**



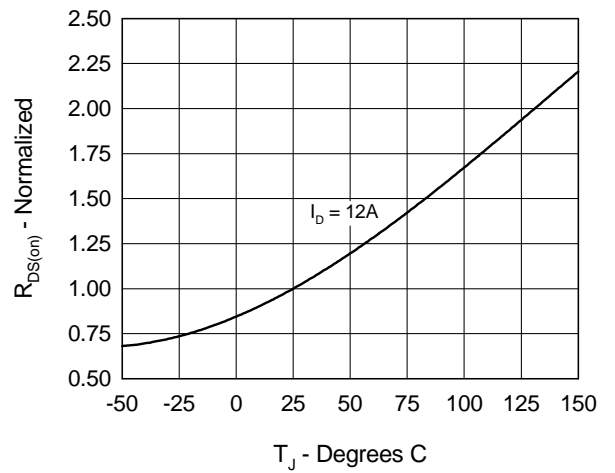
**Fig. 2 Input Admittance**



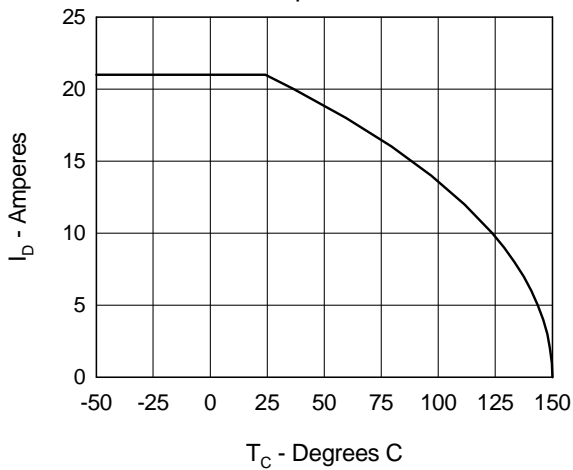
**Fig. 3  $R_{DS(on)}$  vs. Drain Current**



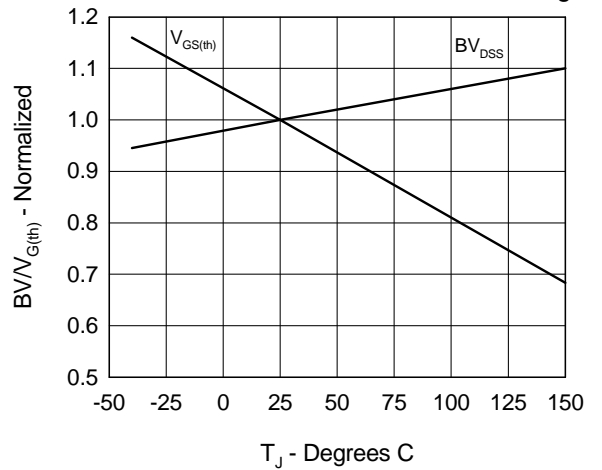
**Fig. 4 Temperature Dependence of Drain to Source Resistance**



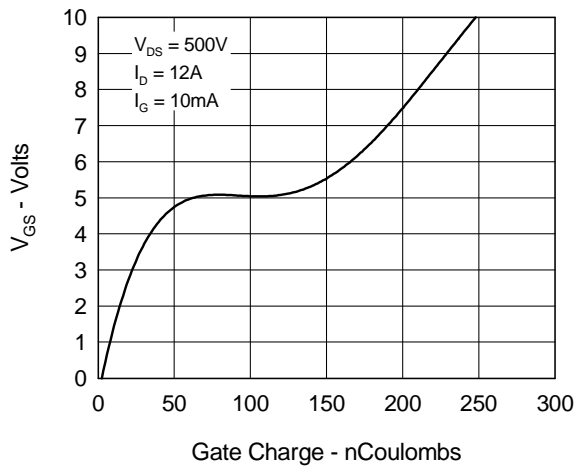
**Fig. 5 Drain Current vs. Case Temperature**



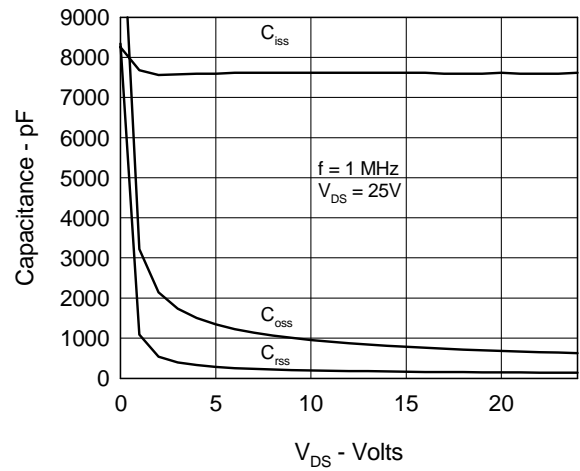
**Fig. 6 Temperature Dependence of Breakdown and Threshold Voltage**



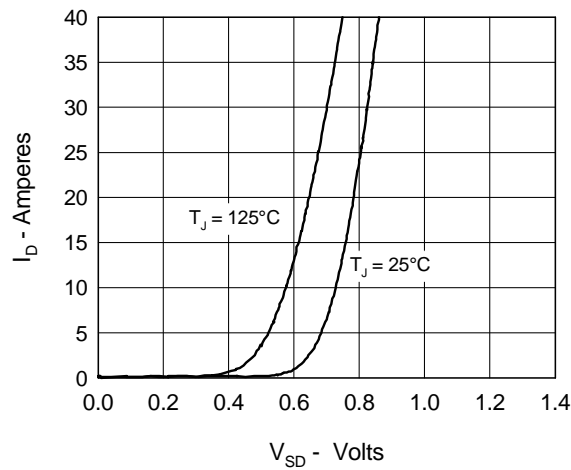
**Fig.7 Gate Charge Characteristic Curve**



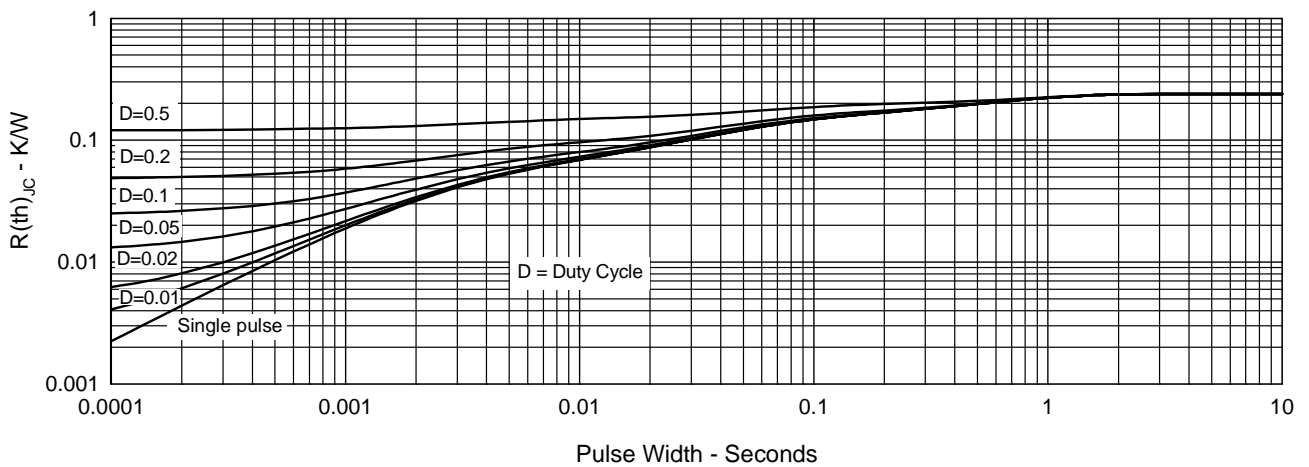
**Fig.8 Capacitance Curves**



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



**Fig.10 Transient Thermal Impedance**



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