

# High Current MegaMOS™ FET

**IXTK 74 N20**  
**IXTH 68 N20**

$V_{DSS}$	$I_{D25}$	$R_{DS(on)}$
<b>200 V</b>	<b>74 A</b>	<b>35 mΩ</b>
<b>200 V</b>	<b>68 A</b>	<b>35 mΩ</b>

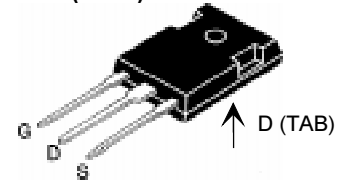
N-Channel Enhancement Mode

Preliminary data

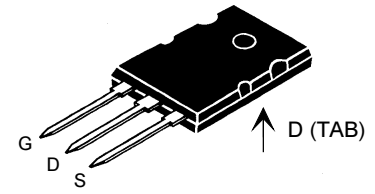


Symbol	Test conditions	Maximum ratings	
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	200	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1.0\text{ M}\Omega$	200	V
$V_{GS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	74N20	74 A
		68N20	68 A
$I_{DM}$	$T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$	74N20	296 A
		68N20	272 A
$P_D$	$T_C = 25^\circ\text{C}$	74N20	416 W
		68N20	300 W
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-55 ... +150	$^\circ\text{C}$
$M_d$	Mounting torque	1.13/10	Nm/lb.in.
Weight		TO-264	10 g
		TO-247	6 g
Max lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	$^\circ\text{C}$

TO-247AD (IXTH)



TO-264 AA (IXTK)



G = Gate      D = Drain  
S = Source      Tab = Drain

## Features

- Low  $R_{DS(on)}$  HDMOS™ process
- Rugged polysilicon gate cell structure
- International standard package
- Fast switching times

## Applications

- Motor controls
- DC choppers
- Uninterruptable Power Supplies (UPS)
- Switch-mode and resonant-mode

## Advantages

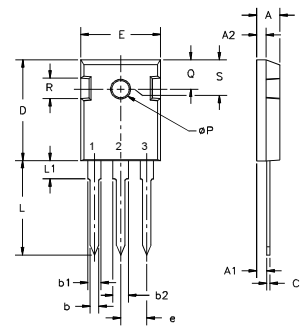
- Easy to mount with one screw (isolated mounting screw hole)
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
$V_{DSS}$	$V_{GS} = 0\text{ V}$ , $I_D = 5\text{ mA}$	200		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 4\text{ mA}$	2.0		4.0 V
$I_{GSS}$	$V_{GS} = \pm 20\text{ V DC}$ , $V_{DS} = 0$			$\pm 100\text{ nA}$
$I_{DSS}$	$V_{DS} = 0.8 V_{DSS}$ $V_{GS} = 0\text{ V}$	$T_J = 25^\circ\text{C}$		500 $\mu\text{A}$
		$T_J = 125^\circ\text{C}$		3 mA
$R_{DS(on)}$	$V_{GS} = 10\text{ V}$ , $I_D = 0.5 I_{D25}$ Pulse test, $t \leq 300\text{ ms}$ , duty cycle $d \leq 2\%$			35 mΩ

Symbol	Test Conditions	Characteristic values		
		Min.	Typ.	Max.
$g_{fs}$	$V_{DS} = 10\text{ V}; I_D = 0.5 I_{D25}$ , pulse test	35	42	S
$C_{iss}$	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		5450	pF
$C_{oss}$			1275	pF
$C_{rss}$			630	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}$ $R_G = 1\ \Omega$ (External)		30	ns
$t_r$			230	ns
$t_{d(off)}$			180	ns
$t_f$			50	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}$		300	nC
$Q_{gs}$			75	nC
$Q_{gd}$			100	nC
$R_{thJC}$	TO-264 AA		0.30	K/W
$R_{thCK}$		0.15		K/W
$R_{thJC}$	TO-247 AD		0.35	K/W
$R_{thCK}$		0.15		K/W

Source-Drain Diode		Ratings and Characteristics		
		$(T_J = 25^\circ\text{C}$ unless otherwise specified)		
Symbol	Test Conditions	Min.	Typ.	Max.
$I_S$	$V_{GS} = 0$	74N20 68N20		74 68 A
$I_{SM}$	Repetitive; pulse width limited by $T_{JM}$	74N20 68N20		296 272 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
$t_{rr}$	$I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$		600	ns

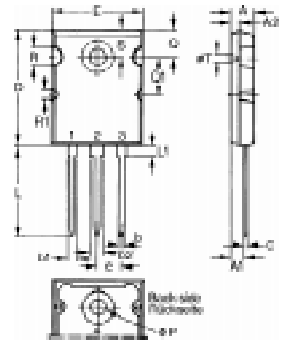
### TO-247 AD (IXTH) Outline



Terminals: 1 - Gate 2 - Drain  
3 - Source Tab - Drain

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
A <sub>1</sub>	2.2	2.54	.087	.102
A <sub>2</sub>	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b <sub>1</sub>	1.65	2.13	.065	.084
b <sub>2</sub>	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
ØP	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15	BSC	242	BSC

### TO-264 AA Outline



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.82	5.13	.190	.202
A <sub>1</sub>	2.54	2.89	.100	.114
A <sub>2</sub>	2.00	2.10	.079	.083
b	1.12	1.42	.044	.056
b <sub>1</sub>	2.39	2.69	.094	.106
b <sub>2</sub>	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