

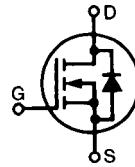
# HiPerFET™ Power MOSFETs

N-Channel Enhancement Mode  
High dv/dt, Low  $t_{rr}$ , HDMOS™ Family

**IXFH 76 N06-11**  
**IXFH 76 N06-12**  
**IXFH 76 N07-11**  
**IXFH 76 N07-12**

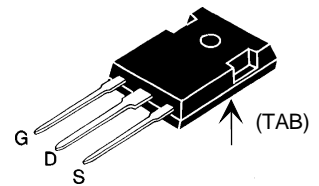
$V_{DSS}$	$I_{D25}$	$R_{DS(on)}$
<b>60 V</b>	<b>76 A</b>	<b>11 mΩ</b>
<b>60 V</b>	<b>76 A</b>	<b>12 mΩ</b>
<b>70 V</b>	<b>76 A</b>	<b>11 mΩ</b>
<b>70 V</b>	<b>76 A</b>	<b>12 mΩ</b>

Preliminary data sheet



Symbol	Test Conditions	Maximum Ratings		
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $175^\circ\text{C}$	N06	60	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $175^\circ\text{C}$ ; $R_{GS} = 10\text{ k}\Omega$	N06	60	V
		N07	70	V
$V_{GS}$	Continuous		$\pm 20$	V
$V_{GSM}$	Transient		$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$ (Chip capability = 125 A)		76	A
$I_{D119}$	$T_C = 119^\circ\text{C}$ , limited by external leads		76	A
$I_{DM}$	$T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$		304	A
$I_{AR}$	$T_C = 25^\circ\text{C}$		100	A
$E_{AR}$	$T_C = 25^\circ\text{C}$		30	mJ
$E_{AS}$			2	J
dv/dt	$I_S \leq I_{DM}$ , $di/dt \leq 100\text{ A}/\mu\text{s}$ , $V_{DD} \leq V_{DSS}$ , $T_J \leq 150^\circ\text{C}$ , $R_G = 2\ \Omega$		5	V/ns
$P_D$	$T_C = 25^\circ\text{C}$		360	W
$T_J$			-55 ... +175	$^\circ\text{C}$
$T_{JM}$			175	$^\circ\text{C}$
$T_{stg}$			-55 ... +150	$^\circ\text{C}$
$T_L$	1.6 mm (0.062 in.) from case for 10 s		300	$^\circ\text{C}$
$M_d$	Mounting torque		1.15/10	Nm/lb.in.
Weight			6	g

TO-247 AD



G = Gate, D = Drain,  
S = Source, TAB = Drain

### Features

- International standard package JEDEC TO-247 AD
- Low  $R_{DS(on)}$  HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Low package inductance - easy to drive and to protect
- Fast intrinsic Rectifier

### Applications

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

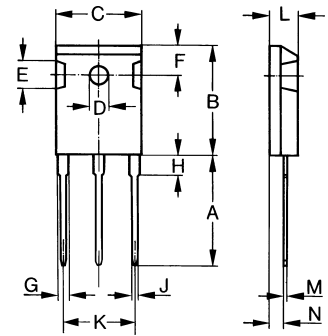
### Advantages

- Easy to mount with 1 screw (isolated mounting screw hole)
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{DSS}$	$V_{GS} = 0\text{ V}$ , $I_D = 250\ \mu\text{A}$	N06	60	V
		N07	70	V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 4\text{ mA}$		2.0	3.4 V
$I_{GSS}$	$V_{GS} = \pm 20\text{ V}_{DC}$ , $V_{DS} = 0$			$\pm 100\text{ nA}$
$I_{DSS}$	$V_{DS} = 0.8 \cdot V_{DSS}$ , $V_{GS} = 0\text{ V}$	$T_J = 25^\circ\text{C}$		100 $\mu\text{A}$
		$T_J = 125^\circ\text{C}$		500 $\mu\text{A}$
$R_{DS(on)}$	$V_{GS} = 10\text{ V}$ , $I_D = 40\text{ A}$	76N06/N07-11		11 mΩ
		76N06/N07-12		12 mΩ
	Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $d \leq 2\%$			

Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
<b>g<sub>fs</sub></b>	V <sub>DS</sub> = 10 V; I <sub>D</sub> = 40 A, pulse test	30	40	S
<b>C<sub>iss</sub></b>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 25 V, f = 1 MHz		4400	pF
<b>C<sub>oss</sub></b>			2000	pF
<b>C<sub>rss</sub></b>			1200	pF
<b>t<sub>d(on)</sub></b>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 50 V, I <sub>D</sub> = 30 A R <sub>G</sub> = 1 Ω (External)		40	ns
<b>t<sub>r</sub></b>			70	ns
<b>t<sub>d(off)</sub></b>			130	ns
<b>t<sub>f</sub></b>			55	ns
<b>Q<sub>g(on)</sub></b>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 0.5 • V <sub>DSS</sub> , I <sub>D</sub> = 40 A		240	nC
<b>Q<sub>gs</sub></b>			30	nC
<b>Q<sub>gd</sub></b>			120	nC
<b>R<sub>thJC</sub></b>			0.42	K/W
<b>R<sub>thCK</sub></b>		0.25		K/W

Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
<b>I<sub>S</sub></b>	V <sub>GS</sub> = 0 V			76 A
<b>I<sub>SM</sub></b>	Repetitive; pulse width limited by T <sub>JM</sub>			304 A
<b>V<sub>SD</sub></b>	I <sub>F</sub> = I <sub>S</sub> , V <sub>GS</sub> = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			1.5 V
<b>t<sub>rr</sub></b>	I <sub>F</sub> = 25 A, -di/dt = 100 A/μs, T <sub>J</sub> = 25°C V <sub>R</sub> = 25 V T <sub>J</sub> = 125°C		150	ns 250 ns

**TO-247 AD (IXFH) Outline**


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.610	0.640
D	3.55	3.65	0.140	0.144
E	4.32	5.49	0.170	0.216
F	5.4	6.2	0.212	0.244
G	1.65	2.13	0.065	0.084
H	-	4.5	-	0.177
J	1.0	1.4	0.040	0.055
K	10.8	11.0	0.426	0.433
L	4.7	5.3	0.185	0.209
M	0.4	0.8	0.016	0.031
N	1.5	2.49	0.087	0.102

Fig.1 Output Characteristics

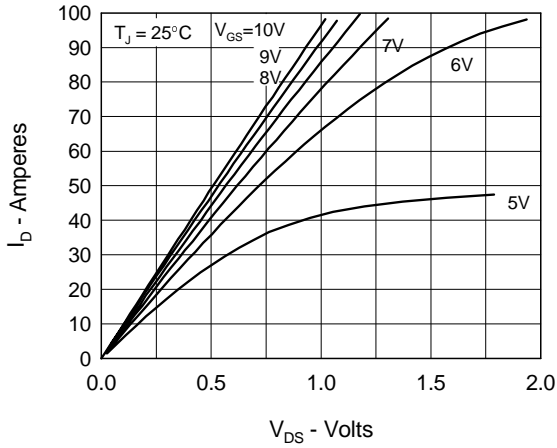


Fig. 2 Input Admittance

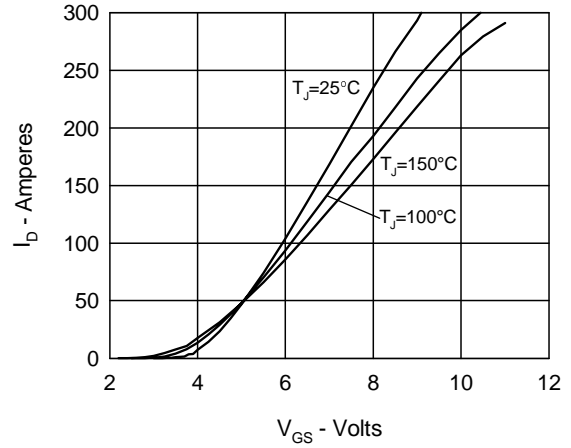


Fig. 3  $R_{DS(on)}$  vs. Drain Current

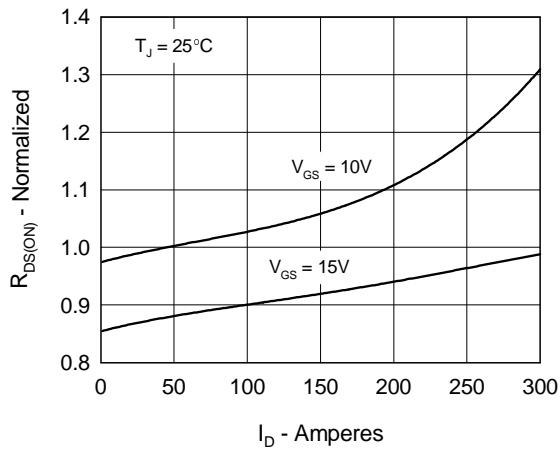


Fig. 4  $R_{DS(on)}$  Temperature Dependence

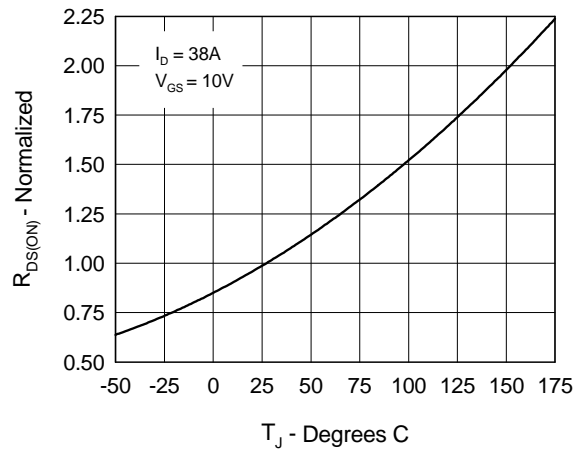


Fig. 5  $I_D$  vs. Case Temperature

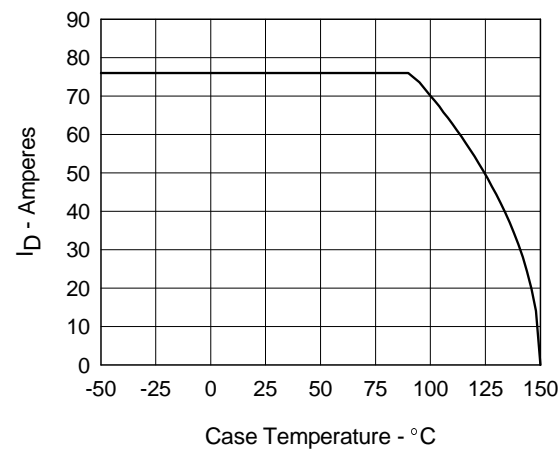


Fig. 6 Transconductance

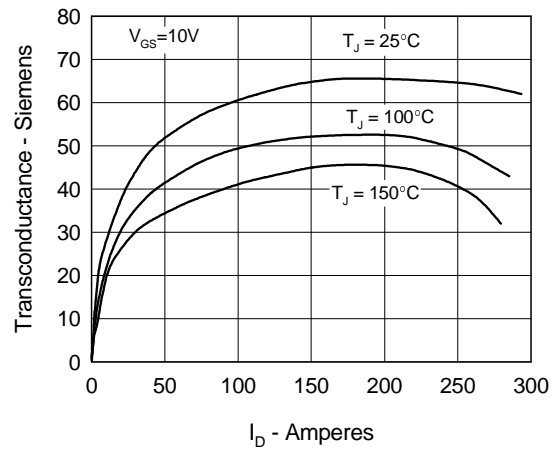


Fig. 7 Gate Charge

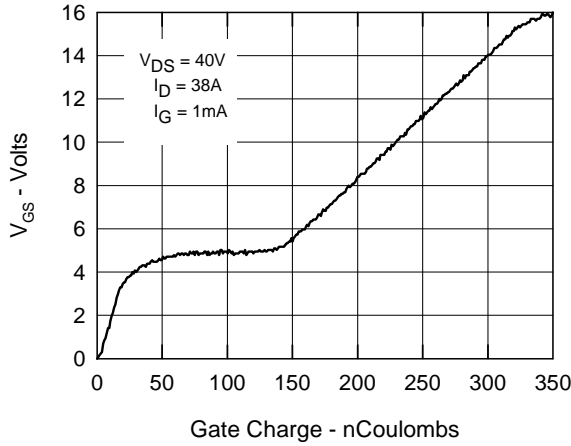


Fig. 8 Forward Bias Safe Operating Area

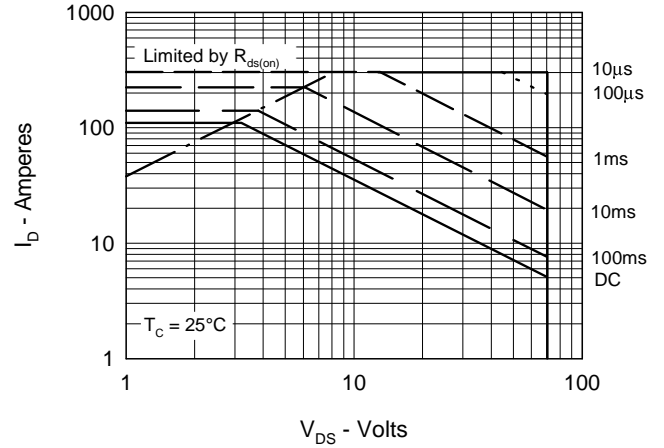


Fig. 9 Capacitance Curves

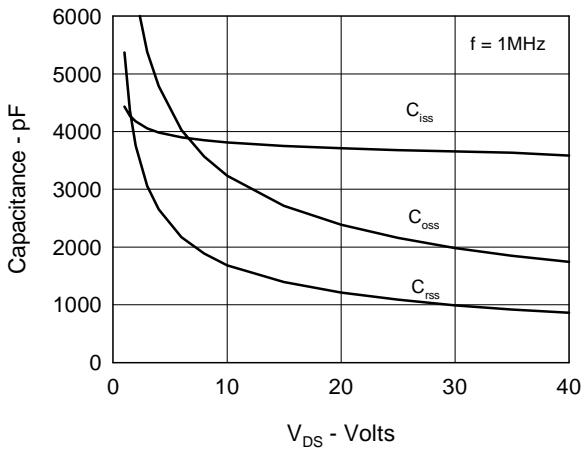


Fig. 10 Source Current vs. Source to Drain Voltage

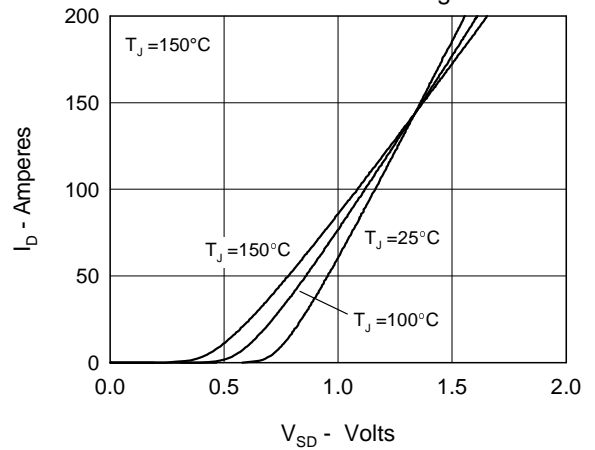
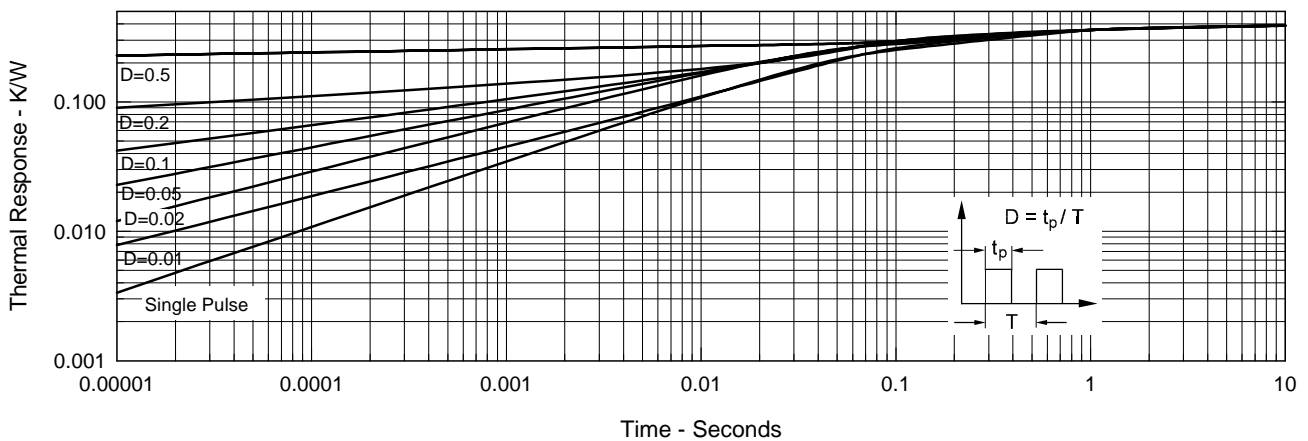


Fig. 11 Transient Thermal Impedance



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