

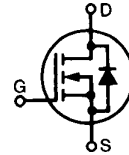
# HiPerFET™ Power MOSFETs

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**

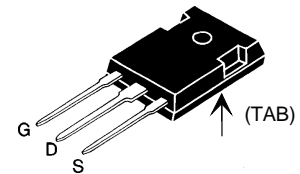
$V_{DSS}$	$I_{D25}$	$R_{DS(on)}$
<b>60 V</b>	<b>76 A</b>	<b>11 mΩ</b>
<b>60 V</b>	<b>76 A</b>	<b>12 mΩ</b>
<b>70 V</b>	<b>76 A</b>	<b>11 mΩ</b>
<b>70 V</b>	<b>76 A</b>	<b>12 mΩ</b>

Preliminary data sheet



Symbol	Test Conditions	Maximum Ratings		
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $175^\circ\text{C}$	N06	60	V
		N07	70	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 °C		
$T_{JM}$		175 °C		
$T_{stg}$		-55 ... +150 °C		
$T_L$	1.6 mm (0.062 in.) from case for 10 s	300 °C		
$M_d$	Mounting torque	1.15/10 Nm/lb.in.		
<b>Weight</b>		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 $\mu\text{A}$
$R_{DS(on)}$	$V_{GS} = 10\text{ V}$ , $I_D = 40\text{ A}$  Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $d \leq 2\%$	76N06/N07-11		11 mΩ
		76N06/N07-12		12 mΩ

IXYS reserves the right to change limits, test conditions, and dimensions.

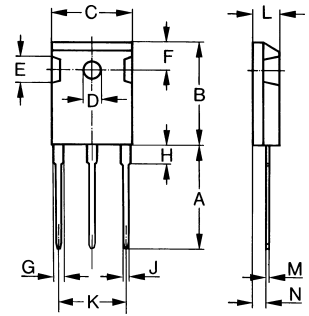
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Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$g_{fs}$	$V_{DS} = 10\text{ V}$ ; $I_D = 40\text{ A}$ , pulse test	30	40	S
$C_{iss}$	$V_{GS} = 0\text{ V}$ , $V_{DS} = 25\text{ V}$ , $f = 1\text{ MHz}$		4400	pF
$C_{oss}$			2000	pF
$C_{rss}$			1200	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}$ , $V_{DS} = 50\text{ V}$ , $I_D = 30\text{ A}$ $R_G = 1\ \Omega$ (External)		40	ns
$t_r$			70	ns
$t_{d(off)}$			130	ns
$t_f$			55	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}$ , $V_{DS} = 0.5 \cdot V_{DSS}$ , $I_D = 40\text{ A}$		240	nC
$Q_{gs}$			30	nC
$Q_{gd}$			120	nC
$R_{thJC}$			0.42	K/W
$R_{thCK}$		0.25		K/W

**Source-Drain Diode**

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$I_S$	$V_{GS} = 0\text{ V}$			76 A
$I_{SM}$	Repetitive; pulse width limited by $T_{JM}$			304 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
$t_{rr}$	$I_F = 25\text{ A}$ , $-di/dt = 100\text{ A}/\mu\text{s}$ , $T_J = 25^\circ\text{C}$ $V_R = 25\text{ V}$ , $T_J = 125^\circ\text{C}$		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

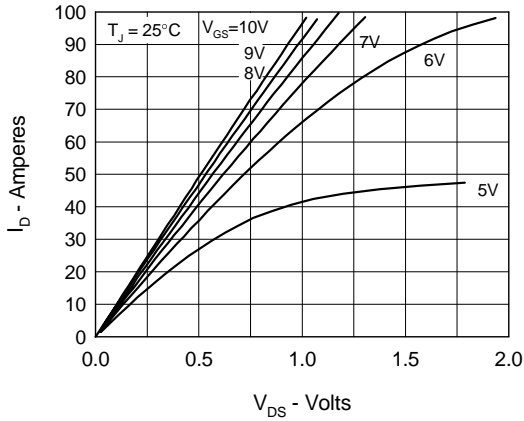


Fig. 2 Input Admittance

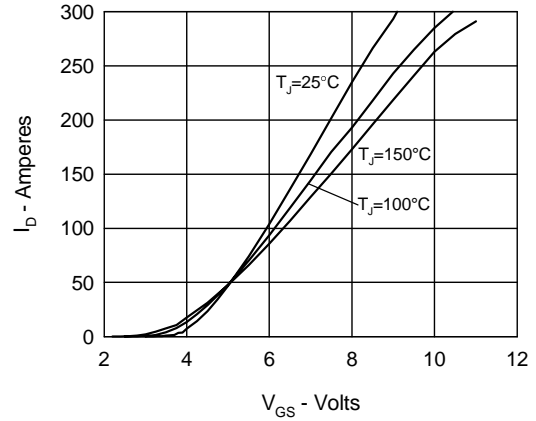


Fig. 3  $R_{DS(on)}$  vs. Drain Current

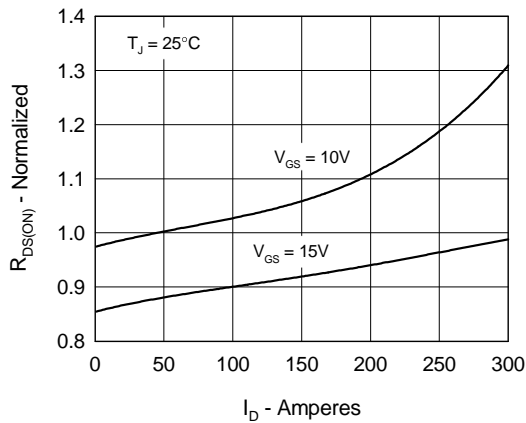


Fig. 4  $R_{DS(on)}$  Temperature Dependence

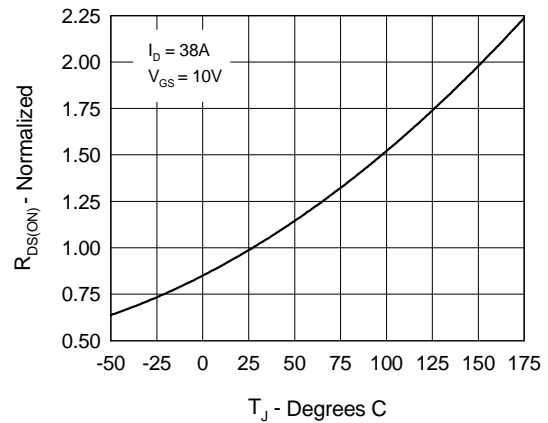


Fig. 5  $I_D$  vs. Case Temperature

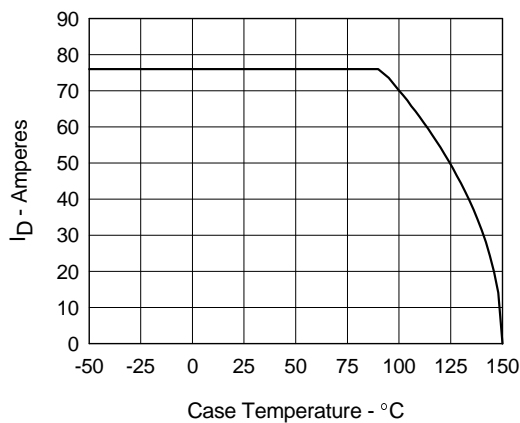


Fig. 6 Transconductance

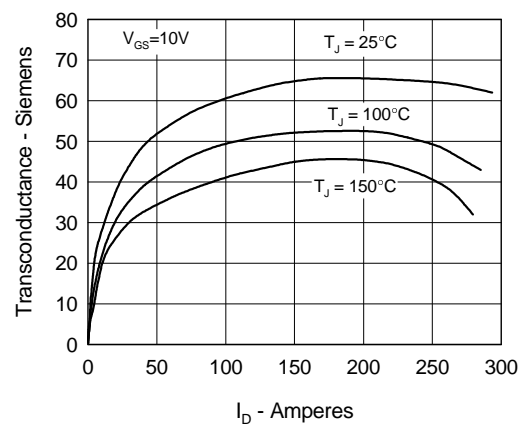


Fig. 7 Gate Charge

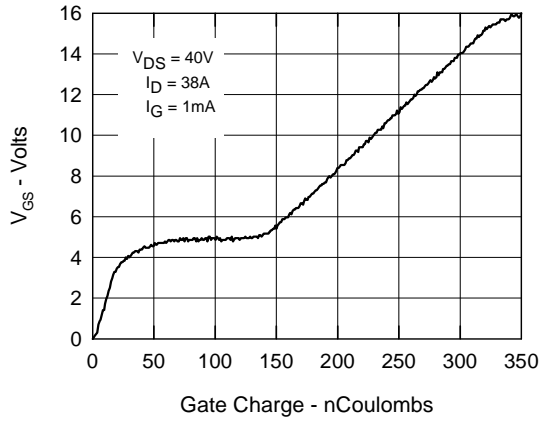


Fig. 8 Forward Bias Safe Operating Area

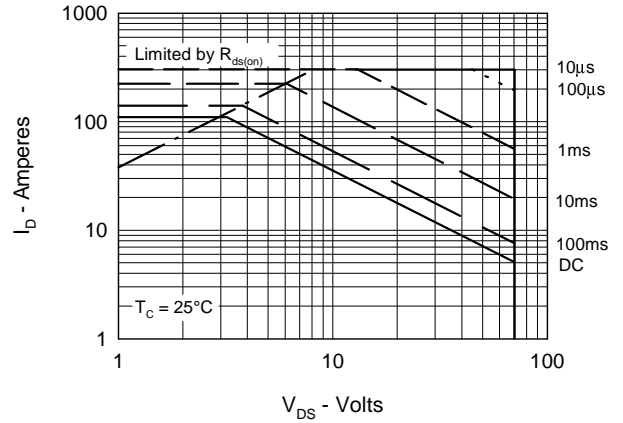


Fig. 9 Capacitance Curves

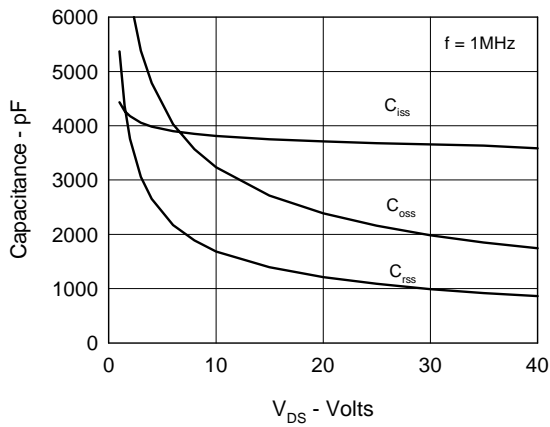


Fig. 10 Source Current vs. Source to Drain Voltage

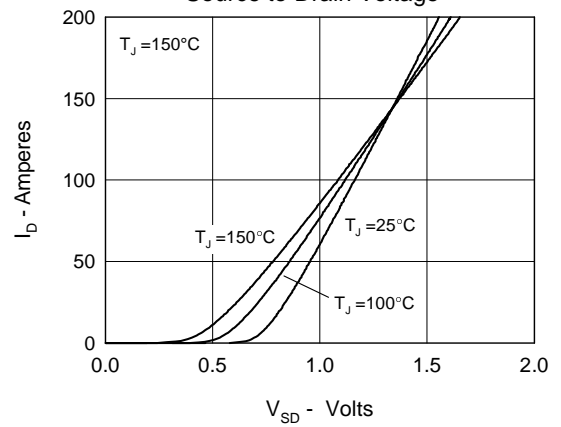


Fig. 11 Transient Thermal Impedance

