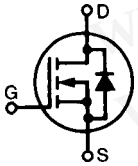
IXYS

HiPerFET™ Power MOSFETs

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

	V_{DSS}	I_{D25}	$R_{DS(on)}$
IXFH 76 N06-11	60 V	76 A	11 mΩ
IXFH 76 N06-12	60 V	76 A	12 mΩ
IXFH 76 N07-11	70 V	76 A	11 mΩ
IXFH 76 N07-12	70 V	76 A	12 mΩ

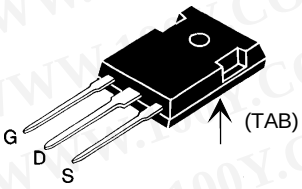
Preliminary data sheet



Symbol	Test Conditions		Maximum Ratings	
V_{DSS}	T_J = 25°C to 175°C	N06	60	V
		N07	70	V
V_{DGR}	T_J = 25°C to 175°C; R_{GS} = 10 kΩ	N06	60	V
		N07	70	V
V_{GS}	Continuous		±20	V
V_{GSM}	Transient		±30	V
I_{D25}	T_C = 25°C (Chip capability = 125 A)		76	A
I_{D119}	T_C = 119°C, limited by external leads		76	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}		304	A
I_{AR}	T_C = 25°C		100	A
E_{AR}	T_C = 25°C		30	mJ
E_{AS}			2	J
dv/dt	$I_S \le I_{DM}$, di/dt ≤ 100 A/µs, $V_{DD} \le V_{DSS}$, $T_J \le 150°C$, R_G = 2 Ω		5	V/ns
P_D	T_C = 25°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.
Weight			6	g

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

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

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

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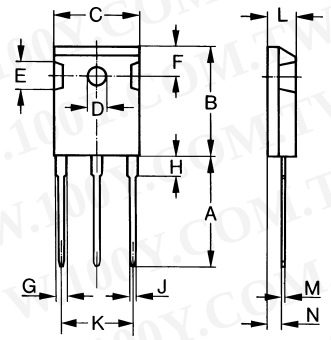
Symbol	Test Conditions (T$_J$ = 25°C, unless otherwise specified)	Characteristic Values min.	typ.	max.	
g_{fs}	V_{DS} = 10 V; I_D = 40 A, pulse test	30	40		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		4400		pF
C_{oss}			2000		pF
C_{rss}			1200		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 50 V, I_D = 30 A R_G = 1 Ω (External)		40		ns
t_r			70		ns
$t_{d(off)}$			130		ns
t_f			55		ns
$Q_{g(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 40 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 (T$_J$ = 25°C, unless otherwise specified)	Characteristic Values min.	typ.	max.	
I_S	V_{GS} = 0 V			76	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			304	A
V_{SD}	$I_F = I_S$, V_{GS} = 0 V, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %			1.5	V
t_{rr}	I_F = 25 A, -di/dt = 100 A/µs, T_J = 25°C V_R = 25 V T_J = 125°C		150	 250	ns ns

TO-247 AD (IXFH) Outline



Dim.	Millimeter Min.	Max.	Inches 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

IXYS MOSFETS and IGBTs are covered by one or more of the following U.S. patents:
4,835,592 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025

Fig.1 Output Characteristics

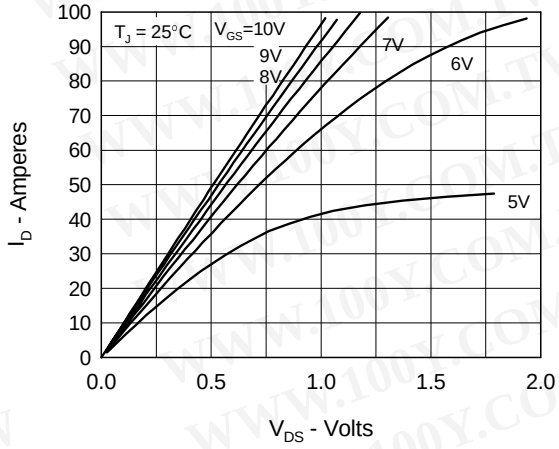


Fig. 2 Input Admittance

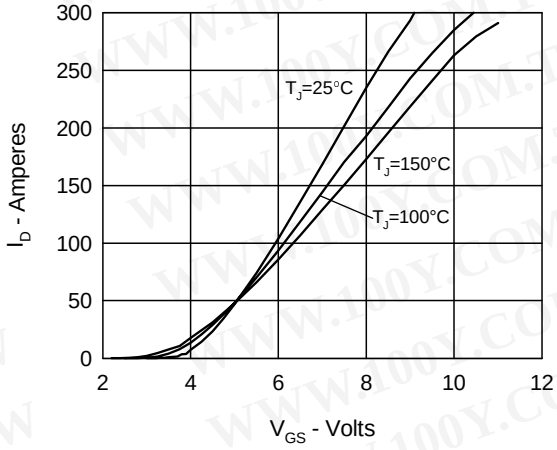


Fig. 3 $R_{ds(on)}$ vs. Drain Current

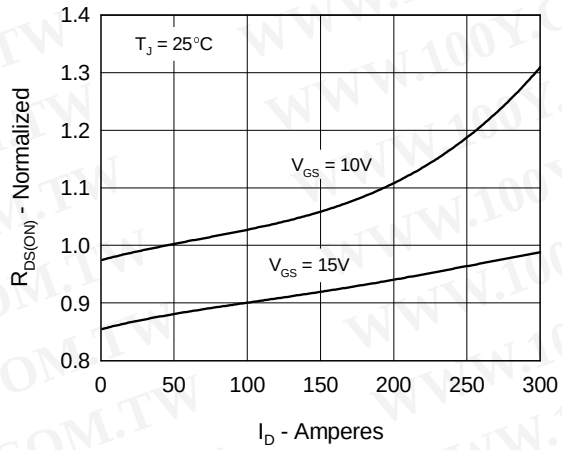


Fig. 4 $R_{DS(ON)}$ Temperature Dependence

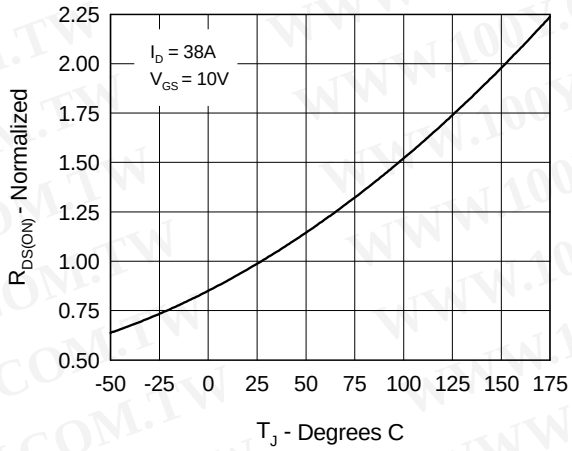


Fig. 5 I_D vs. Case Temperature

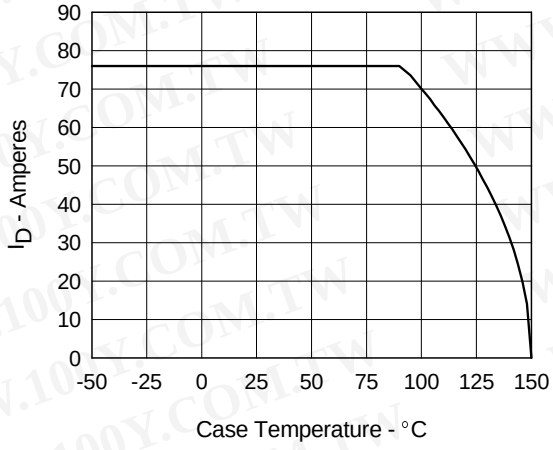


Fig. 6 Transconductance

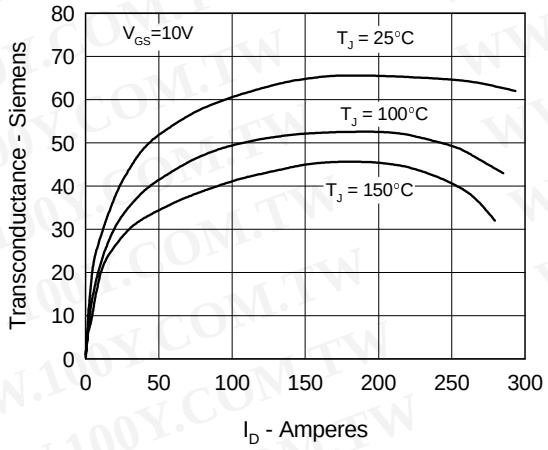


Fig. 7 Gate Charge

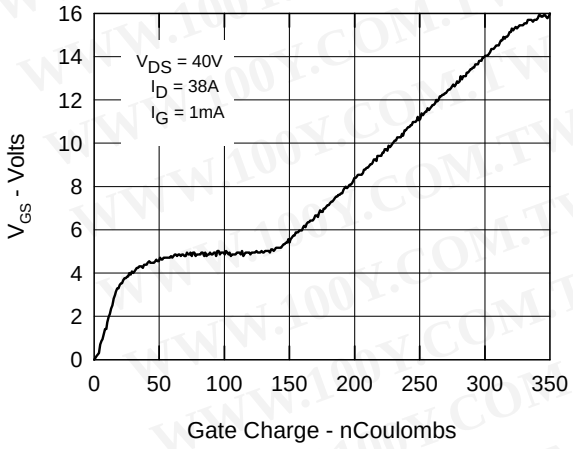


Fig. 8 Forward Bias Safe Operating Area

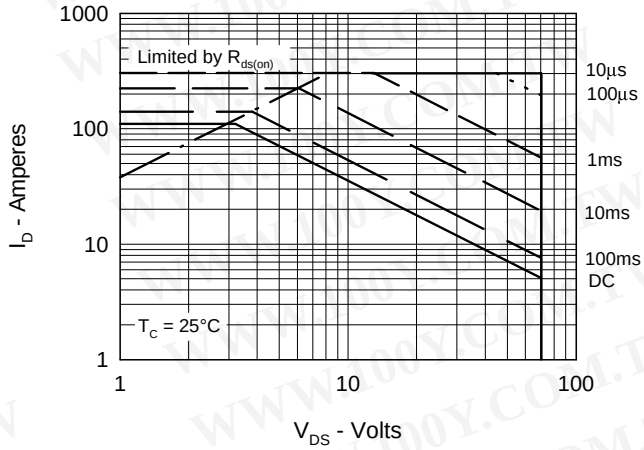


Fig. 9 Capacitance Curves

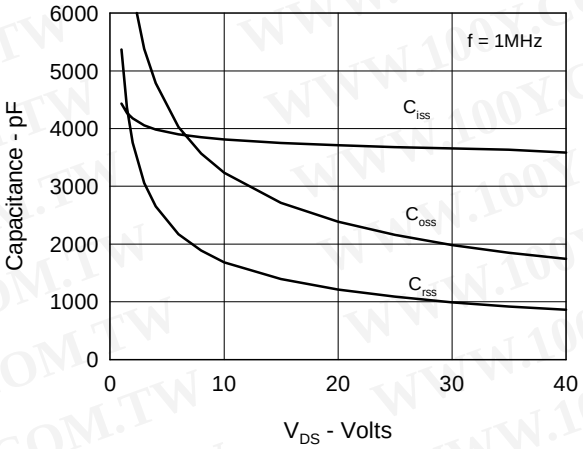


Fig. 10 Source Current vs. Source to Drain Voltage

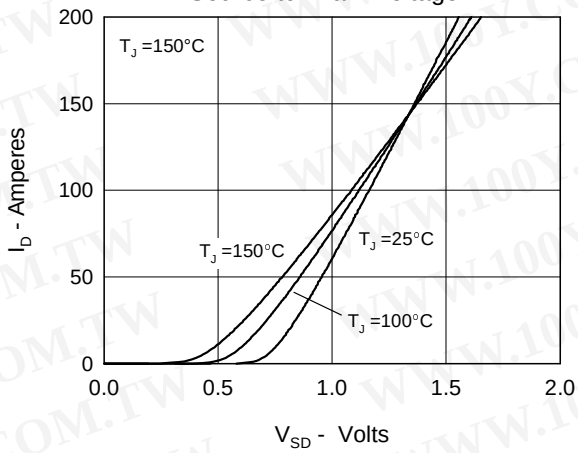


Fig. 11 Transient Thermal Impedance