IXYS

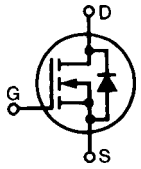
HiPerFET™ Power MOSFETs

	V_{DSS}	I_{D25}	$R_{DS(on)}$
IXFH/IXFT/IXFX14N100	1000 V	14 A	0.75 Ω
IXFH/IXFT/IXFX15N100	1000 V	15 A	0.70 Ω

$t_{rr} \leq$ 200 ns

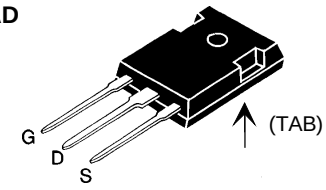
N-Channel Enhancement Mode
High dv/dt, Low t_{rr}, HDMOS™ Family

Preliminary data sheet

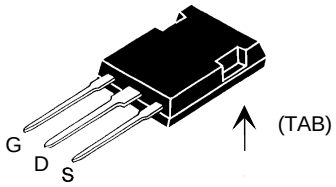


Symbol	Test Conditions		Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C		1000	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ		1000	V
V_{GS}	Continuous		±20	V
V_{GSM}	Transient		±30	V
I_{D25}	T_C = 25°C	14N100	14	A
		15N100	15	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	14N100	56	A
		15N100	60	A
I_{AR}	T_C = 25°C	14N100	14	A
		15N100	15	A
E_{AR}	T_C = 25°C		45	mJ
dv/dt	$I_S \leq I_{DM}$, di/dt ≤ 100 A/μs, $V_{DD} \leq V_{DSS}$, $T_J \leq$ 150°C, R_G = 2 Ω		5	V/ns
P_D	T_C = 25°C		360	W
T_J			-55 ... +150	°C
T_{JM}			150	°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		1.13/10	Nm/lb.in.
Weight			6	g

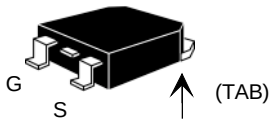
TO-247 AD (IXFH)



PLUS 247™ (IXFX)



TO-268 (D3) (IXFT)



Features
- International standard packages
- 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

Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
V_{DSS}	V_{GS} = 0 V, I_D = 1 mA		1000			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 4 mA		2.5		4.5	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			250	μA
	V_{GS} = 0 V	T_J = 125°C			1	mA
$R_{DS(on)}$	V_{GS} = 10 V, $I_D = 0.5 \cdot I_{D25}$	14N100			0.75	Ω
		15N100			0.70	Ω
	Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %					

Applications
- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- AC motor control
- Temperature and lighting controls

Advantages
- Easy to mount with 1 screw (TO-247) (isolated mounting screw hole) or mounting clip or spring (PLUS 247™)
- High power surface mountable package
- High power density

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

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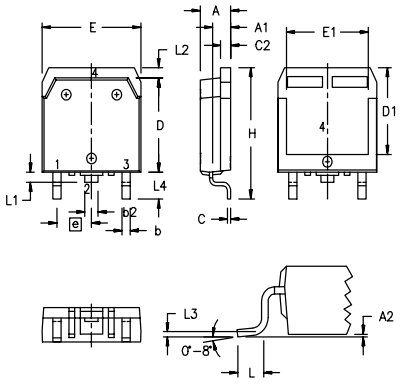
Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	min.	typ.	max.	
g_{fs}	V_{DS} = 10 V; I_D = 0.5 • I_{D25}, pulse test	6	10		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		4500		pF
C_{oss}			430		pF
C_{rss}			150		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		27		ns
t_r	R_G = 2 Ω (External),		30		ns
$t_{d(off)}$			120		ns
t_f			30		ns
$Q_{g(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		220		nC
Q_{gs}			30		nC
Q_{gd}			85		nC
R_{thJC}				0.35	K/W
R_{thCK}	(TO-247 Case Style)		0.25		K/W

Source-Drain Diode

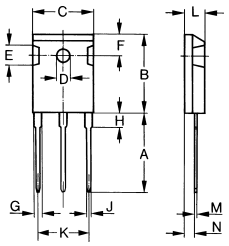
Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)		min.	typ.	max.	
I_S	V_{GS} = 0 V	14N100			14	A
		15N100			15	A
I_{SM}	Repetitive; pulse width limited by T_{JM}	14N100			56	A
		15N100			60	A
V_{SD}	I_F = I_S, V_{GS} = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %				1.5	V
t_{rr}	I_F = I_S, -di/dt = 100 A/μs, V_R = 100 V	T_J = 25°C			200	ns
		T_J = 125°C			350	ns
Q_{RM}		T_J = 25°C		1		μC
		T_J = 125°C		2		μC
I_{RM}		T_J = 25°C		10		A
		T_J = 125°C		15		A

TO-268AA (D³ PAK)



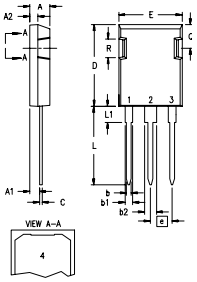
Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	4.9	5.1	.193	.201
A_1	2.7	2.9	.106	.114
A_2	.02	.25	.001	.010
b	1.15	1.45	.045	.057
b_2	1.9	2.1	.75	.83
C	.4	.65	.016	.026
D	13.80	14.00	.543	.551
E	15.85	16.05	.624	.632
E_1	13.3	13.6	.524	.535
e	5.45 BSC		.215 BSC	
H	18.70	19.10	.736	.752
L	2.40	2.70	.094	.106
L1	1.20	1.40	.047	.055
L2	1.00	1.15	.039	.045
L3	0.25 BSC		.010 BSC	
L4	3.80	4.10	.150	.161

TO-247 AD (IXFH) Outline



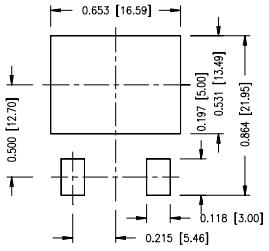
Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.610	0.640
D	3.55	3.65	0.140	0.144
E	4.32	5.49	0.170	0.216
F	5.4	6.2	0.212	0.244
G	1.65	2.13	0.065	0.084
H	-	4.5	-	0.177
J	1.0	1.4	0.040	0.055
K	10.8	11.0	0.426	0.433
L	4.7	5.3	0.185	0.209
M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

PLUS247™ (IXFX) Outline



Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	4.83	5.21	.190	.205
A_1	2.29	2.54	.090	.100
A_2	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b_1	1.91	2.13	.075	.084
b_2	2.92	3.12	.115	.123
C	0.61	0.80	.024	.031
D	20.80	21.34	.819	.840
E	15.75	16.13	.620	.635
e	5.45 BSC		.215 BSC	
L	19.81	20.32	.780	.800
L1	3.81	4.32	.150	.170
Q	5.59	6.20	.220	.244
R	4.32	4.83	.170	.190

Min. Recommended Footprint



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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

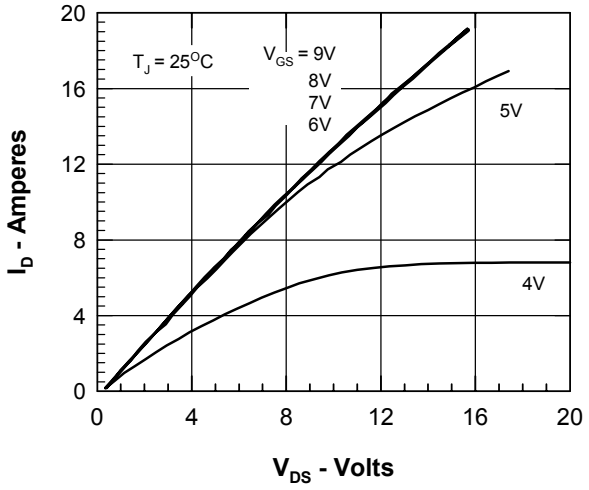

Fig.1 Output Characteristics

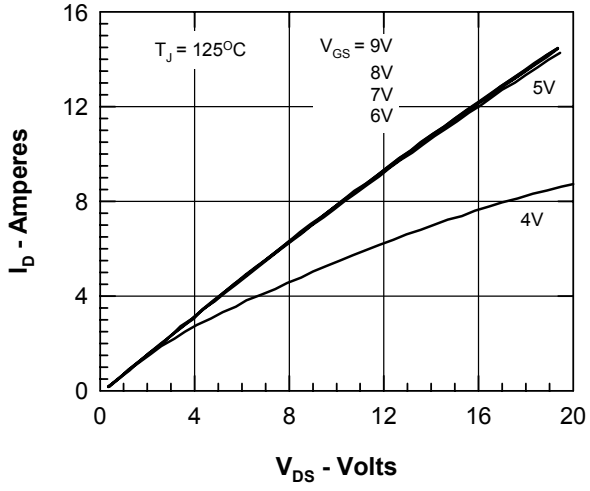

Fig.2 Output characteristics at elevated temperature

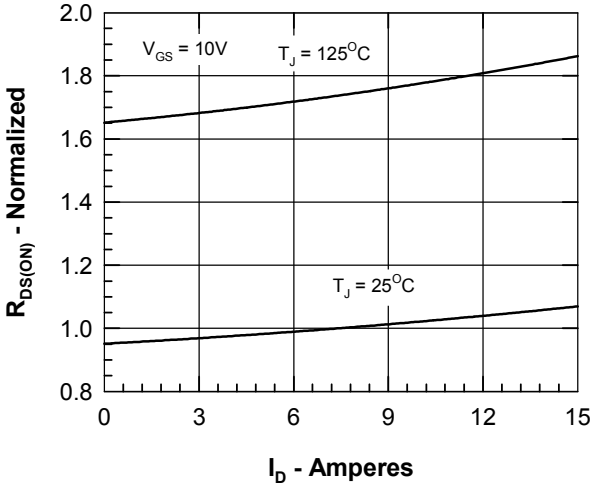

Fig.3 $R_{DS(on)}$ vs. Drain Current

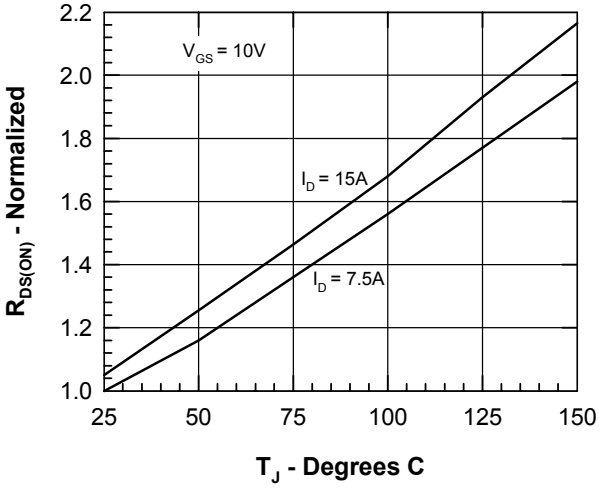

Fig.4 Temperature Dependence of Drain to Source Resistance

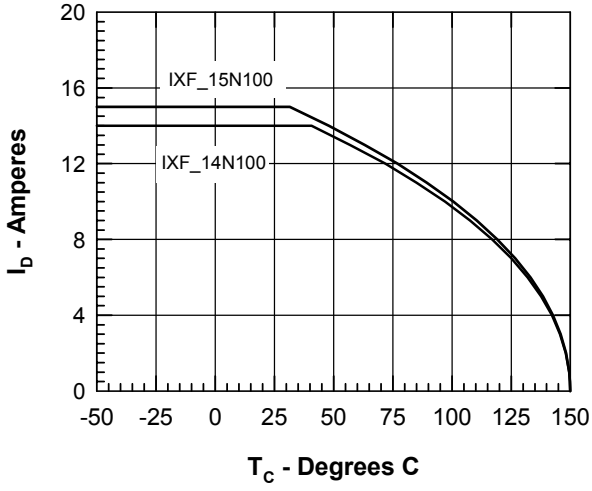

Fig.5 Drain Current vs. Case Temperature

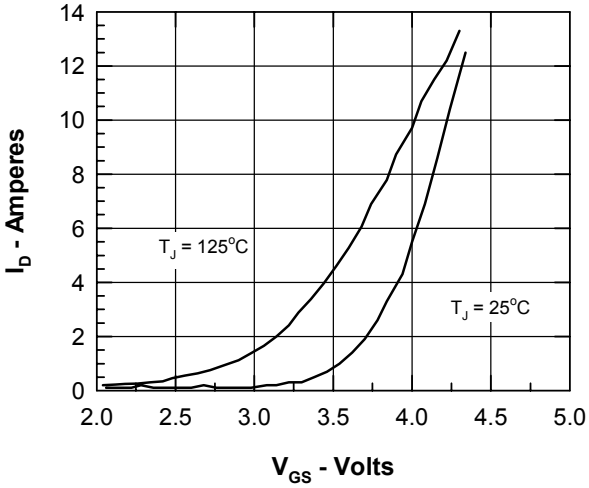

Fig.6 Input admittance

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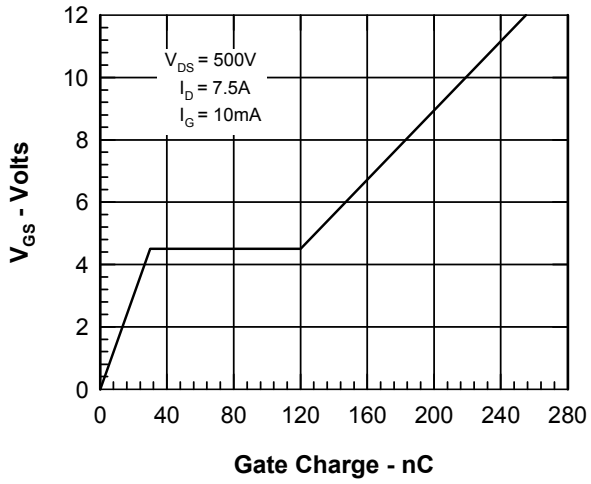

Fig.7 Gate Charge Characteristic Curve

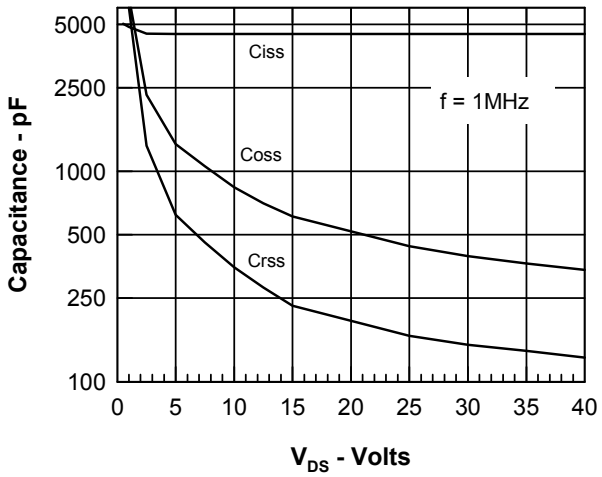

Fig.8 Capacitance Curves

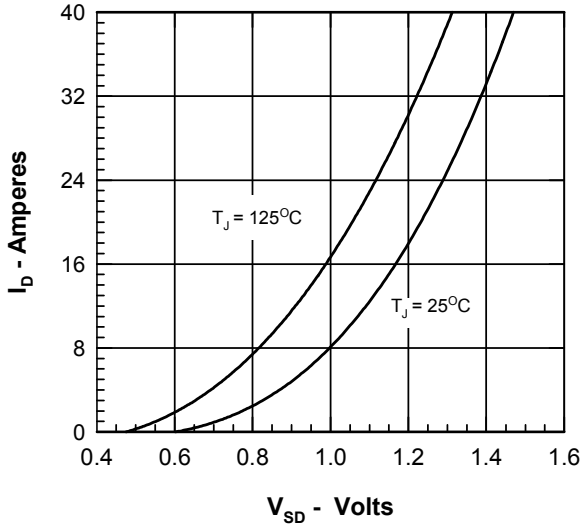

Fig.9 Source current vs Source drain voltage.

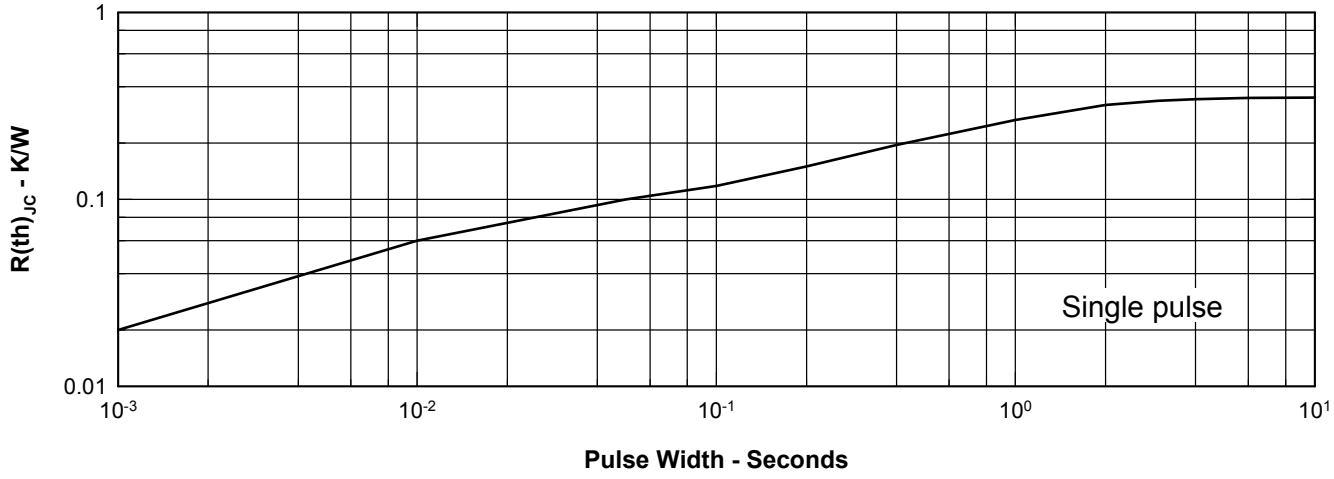

Fig.10 Transient Thermal Impedance

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