IXYS

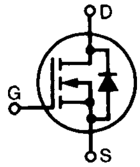
HiPerFET™ Power MOSFETs

IXFH/IXFM 67 N10
IXFH/IXFM 75 N10

V_{DSS}	I_{D25}	$R_{DS(on)}$
100 V	67 A	25 mΩ
100 V	75 A	20 mΩ

$t_{rr} \leq$ 200 ns

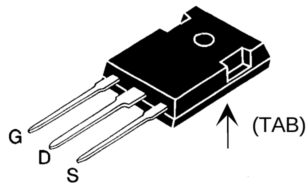
N-Channel Enhancement Mode
High dv/dt, Low t_{rr}, HDMOS™ Family



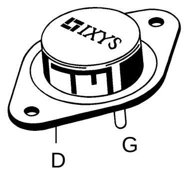
Symbol	Test Conditions		Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C		100	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ		100	V
V_{GS}	Continuous		±20	V
V_{GSM}	Transient		±30	V
I_{D25}	T_C = 25°C	67N10 75N10	67 75	A A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	67N10 75N10	268 300	A A
I_{AR}	T_C = 25°C	67N10 75N10	67 75	A A
E_{AR}	T_C = 25°C		30	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		300	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		TO-204 = 18 g, TO-247 = 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		100			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 4 mA		2.0		4	V
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0				±100	nA
I_{DSS}	V_{DS} = 0.8 • V_{DSS} V_{GS} = 0 V	T_J = 25°C T_J = 125°C			250 1	µA mA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 I_{D25} Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %	67N10 75N10			0.025 0.020	Ω Ω

TO-247 AD (IXFH)



TO-204 AE (IXFM)



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

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

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

Advantages
- Easy to mount with 1 screw (TO-247) (isolated mounting screw hole)
- Space savings
- High power density

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

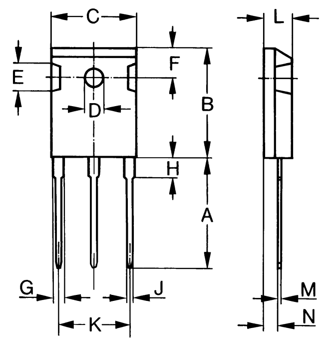
91521F (10/95)

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	V_{DS} = 10 V; $I_D = I_{D25}$, pulse test	25	30		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		4500		pF
C_{oss}			1600		pF
C_{rss}			800		pF
$t_{d(on)}$	V_{GS} = 10 V, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 0.5\ I_{D25}$		20	30	ns
t_r	$R_G = 2\ \Omega$, (External)		60	110	ns
$t_{d(off)}$			80	110	ns
t_f			60	90	ns
$Q_{g(on)}$	V_{GS} = 10 V, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 0.5\ I_{D25}$		180	260	nC
Q_{gs}			36	70	nC
Q_{gd}			85	160	nC
R_{thJC}				0.42	K/W
R_{thCK}			0.25		K/W

Source-Drain Diode

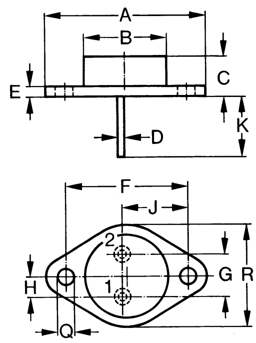
Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
I_S	V_{GS} = 0 V	67N10			67	A
		75N10			75	A
I_{SM}	Repetitive;	67N10			268	A
	pulse width limited by T_{JM}	75N10			300	A
V_{SD}	$I_F = I_S$, V_{GS} = 0 V, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %				1.75	V
t_{rr}	I_F = 25 A, -di/dt = 100 A/µs,	T_J = 25°C			200	ns
	V_R = 25 V	T_J = 125°C			300	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

TO-204 AE (IXFM) Outline



Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	38.61	39.12	1.520	1.540
B	-	22.22	-	0.875
C	6.40	11.40	0.252	0.449
D	1.45	1.60	0.057	0.063
E	1.52	3.43	0.060	0.135
F	30.15	BSC	1.187	BSC
G	10.67	11.17	0.420	0.440
H	5.21	5.71	0.205	0.225
J	16.64	17.14	0.655	0.675
K	11.18	12.19	0.440	0.480
Q	3.84	4.19	0.151	0.165
R	25.16	26.66	0.991	1.050

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

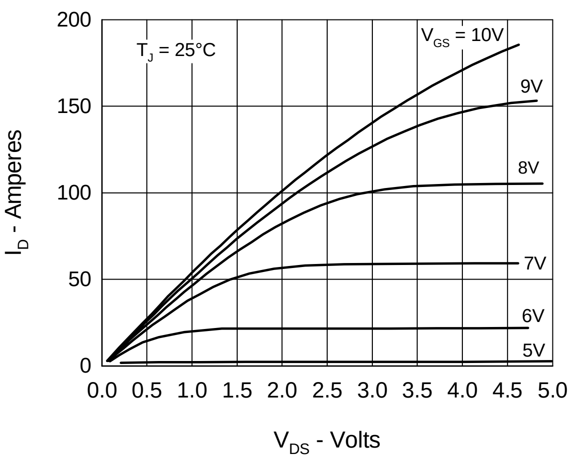


Fig. 2 Input Admittance

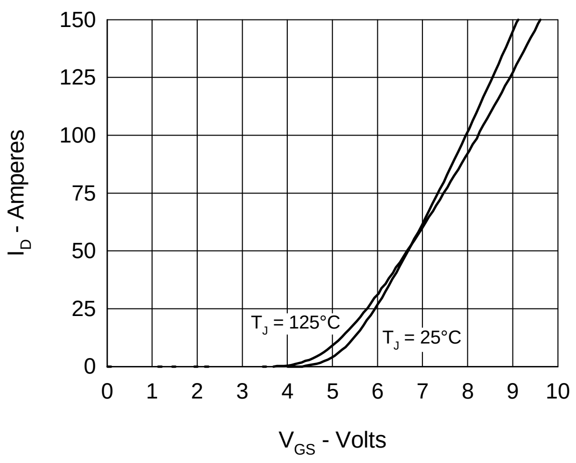


Fig. 3 $R_{DS(on)}$ vs. Drain Current

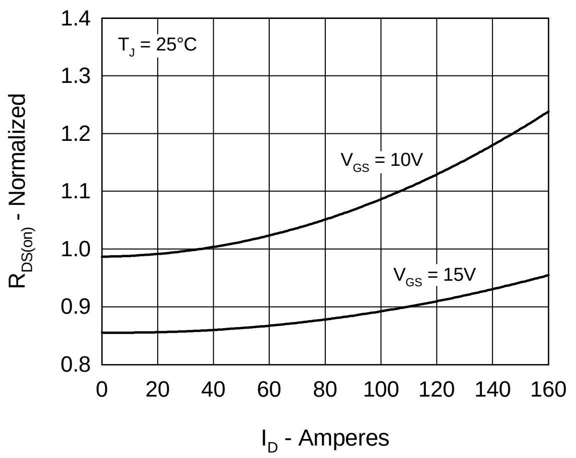


Fig. 4 Temperature Dependence of Drain to Source Resistance

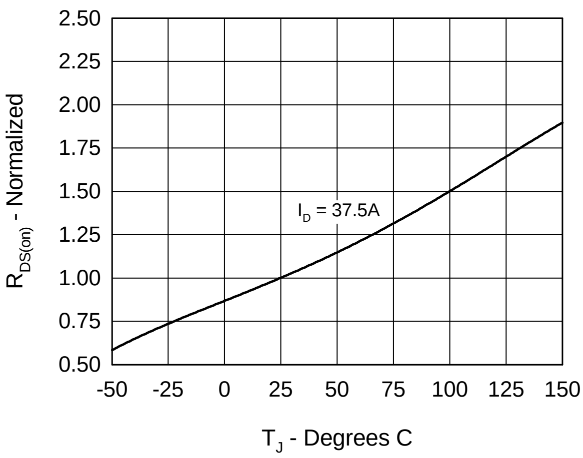


Fig. 5 Drain Current vs. Case Temperature

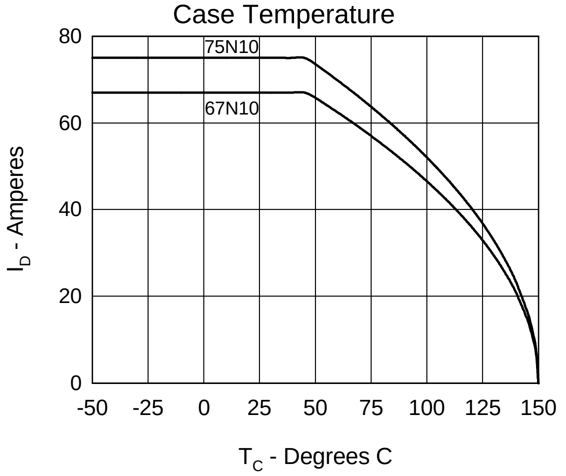


Fig. 6 Temperature Dependence of Breakdown and Threshold Voltage

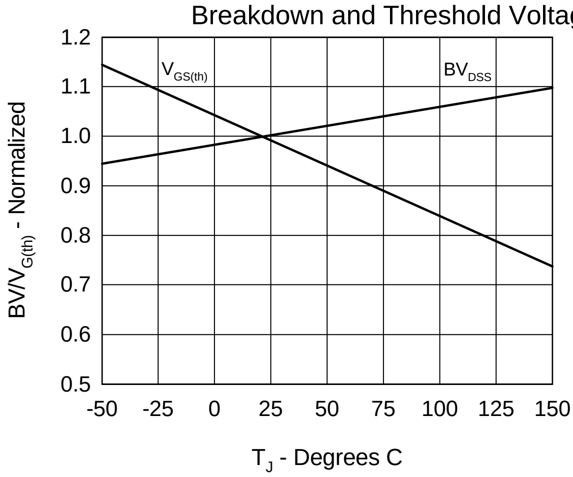


Fig.7 Gate Charge Characteristic Curve

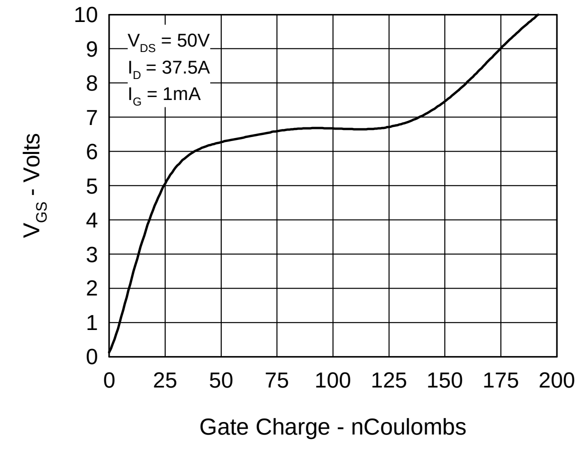


Fig.8 Forward Bias Safe Operating Area

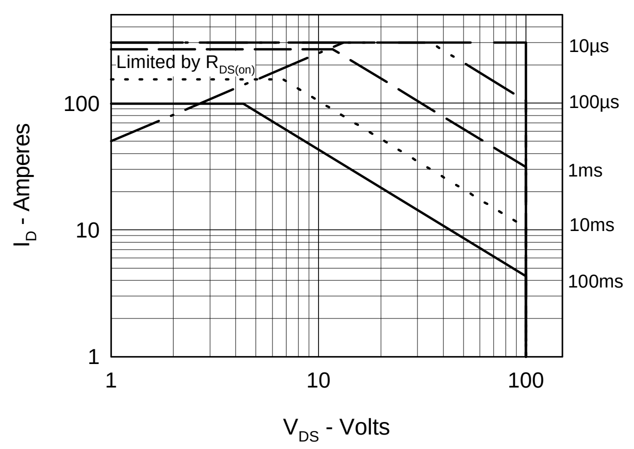


Fig.9 Capacitance Curves

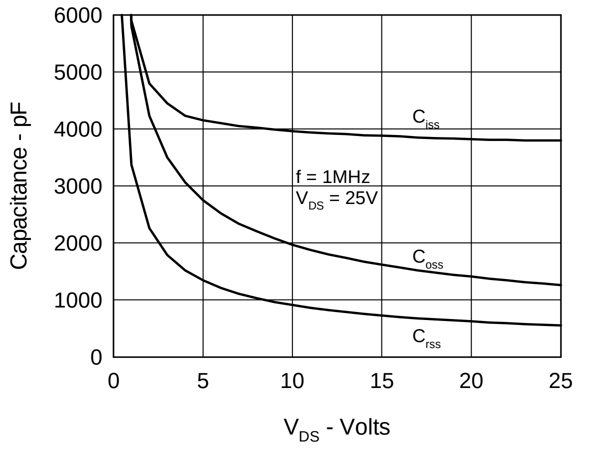


Fig.10 Source Current vs. Source to Drain Voltage

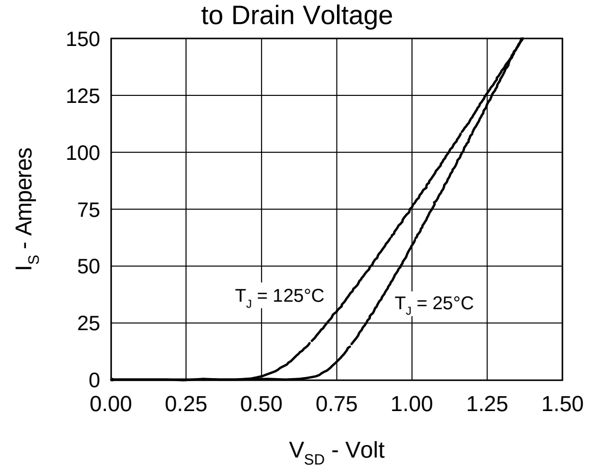


Fig.11 Transient Thermal Impedance