



HiPerFET™ Power MOSFETs

IXFH/IXFM6N90
IXFH/IXFM6N100

V _{DSS}	I _{D25}	R _{DS(on)}
900 V	6 A	1.8 Ω
1000 V	6 A	2.0 Ω

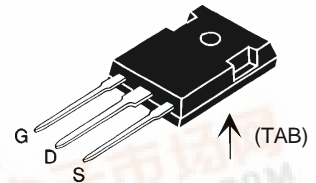
t_{rr} ≤ 250 ns

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

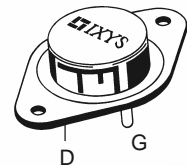


Symbol	Test Conditions	Maximum Ratings		
V _{DSS}	T _J = 25°C to 150°C	6N90	900	V
V _{DGR}	T _J = 25°C to 150°C; R _{GS} = 1 MΩ		6N100	1000
V _{GS}	Continuous		±20	V
V _{GSM}	Transient		±30	V
I _{D25}	T _C = 25°C		6	A
I _{DM}	T _C = 25°C, pulse width limited by T _{JM}		24	A
I _{AR}	T _C = 25°C		6	A
E _{AR}	T _C = 25°C		18	mJ
dv/dt	I _S ≤ I _{DM} , di/dt ≤ 100 A/μs, V _{DD} ≤ V _{DSS} , T _J ≤ 150°C, R _G = 2 Ω		5	V/ns
P _D	T _C = 25°C		180	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	

TO-247 AD (IXFH)



TO-204 AA (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

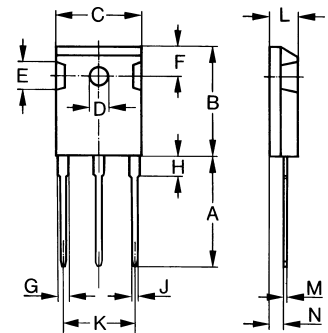
- Easy to mount with 1 screw (TO-247) (isolated mounting screw hole)
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values (T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
V _{DSS}	V _{GS} = 0 V, I _D = 3 mA	6N90 6N100	900 1000	V V
V _{GS(th)}	V _{DS} = V _{GS} , I _D = 2.5 mA		2.0	4.5 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 μA 1 mA
R _{DS(on)}	V _{GS} = 10 V, I _D = 0.5 • I _{D25}	6N90 6N100		1.8 Ω 2.0 Ω
	Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			

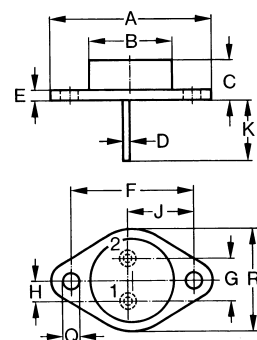


Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	$V_{DS} = 10\text{ V}; I_D = 0.5 \cdot I_{D25}$, pulse test	4	6	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		2600	pF
C_{oss}			180	pF
C_{rss}			45	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 4.7\ \Omega$ (External)		35	100 ns
t_r			40	110 ns
$t_{d(off)}$			100	200 ns
t_f			60	100 ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		88	130 nC
Q_{gs}			21	30 nC
Q_{gd}			38	70 nC
R_{thJC}			0.7	K/W
R_{thCK}		0.25		K/W

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
I_S	$V_{GS} = 0\text{ V}$			6 A
I_{SM}	Repetitive; pulse width limited by T_{JM}			24 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}	$I_F = I_S$ $-di/dt = 100\text{ A}/\mu\text{s}$, $V_R = 100\text{ V}$	$T_J = 25^\circ\text{C}$		250 ns
		$T_J = 125^\circ\text{C}$		400 ns
Q_{RM}	$I_F = I_S$ $-di/dt = 100\text{ A}/\mu\text{s}$, $V_R = 100\text{ V}$	$T_J = 25^\circ\text{C}$	0.5	μC
		$T_J = 125^\circ\text{C}$	1.0	μC
I_{RM}	$I_F = I_S$ $-di/dt = 100\text{ A}/\mu\text{s}$, $V_R = 100\text{ V}$	$T_J = 25^\circ\text{C}$	7.5	A
		$T_J = 125^\circ\text{C}$	9.0	A

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

TO-204 AA (IXFM) Outline


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	38.61	39.12	1.520	1.540
B	19.43	19.94	-	0.785
C	6.40	9.14	0.252	0.360
D	0.97	1.09	0.038	0.043
E	1.53	2.92	0.060	0.115
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	25.90	0.991	1.020

Fig. 1 Output Characteristics

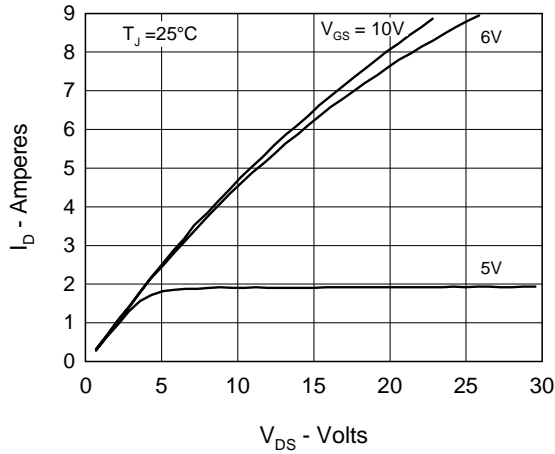


Fig. 2 Input Admittance

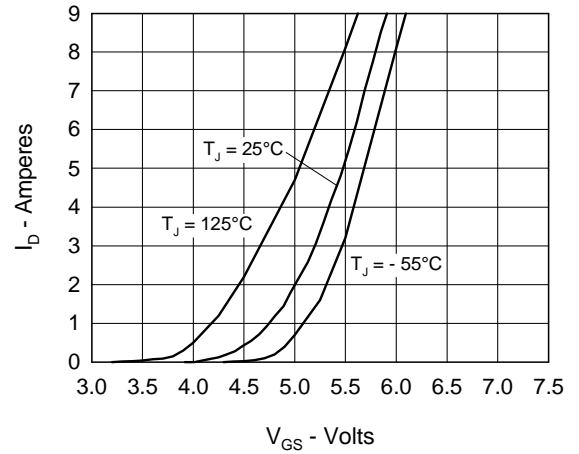


Fig. 3 $R_{DS(on)}$ vs. Drain Current

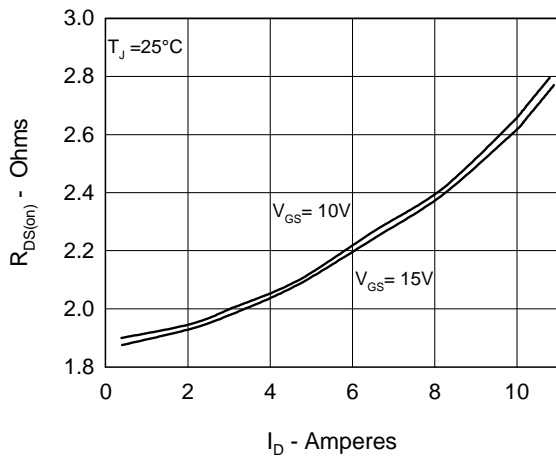


Fig. 4 Temperature Dependence of Drain to Source Resistance

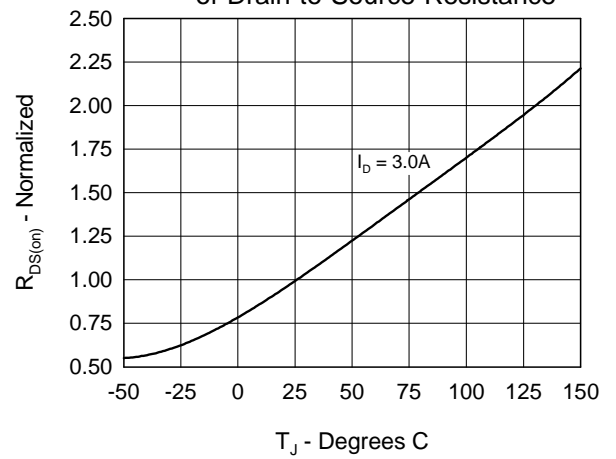


Fig. 5 Drain Current vs. Case Temperature

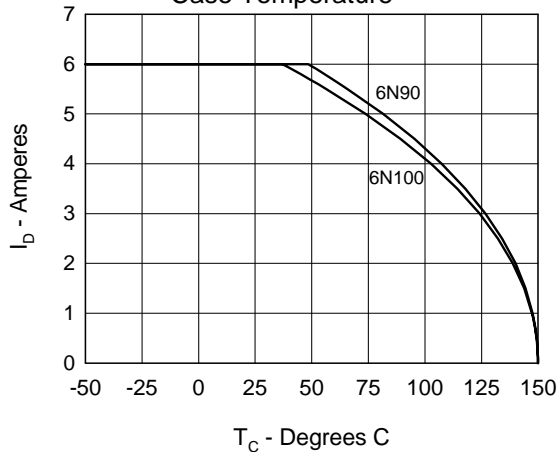


Fig. 6 Temperature Dependence of Breakdown and Threshold Voltage

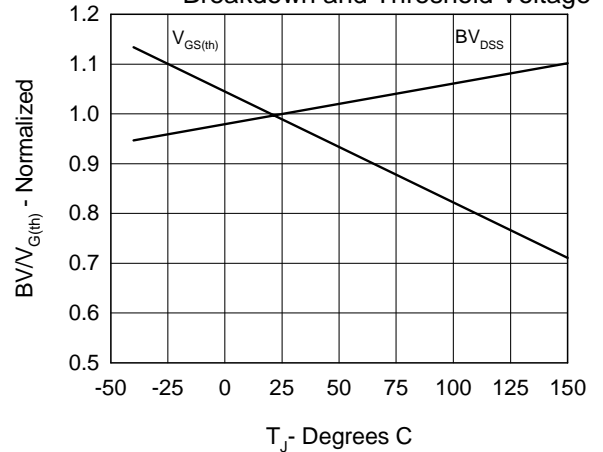


Fig.7 Gate Charge Characteristic Curve

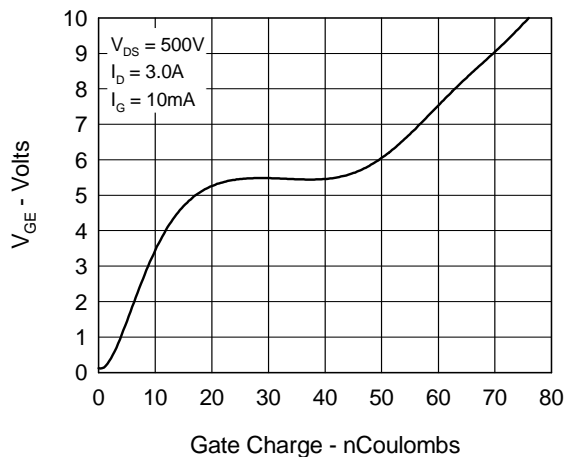


Fig.9 Capacitance Curves

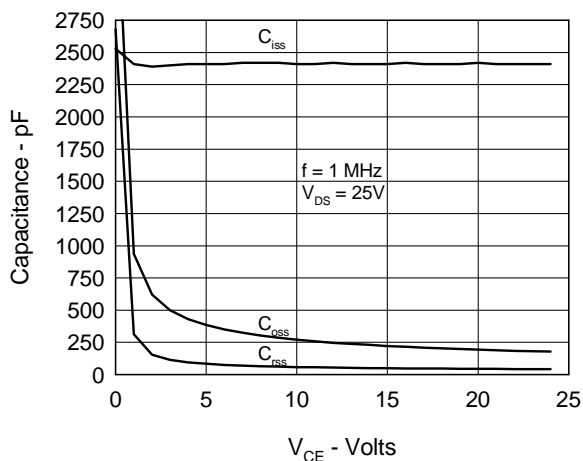


Fig.11 Transient Thermal Impedance

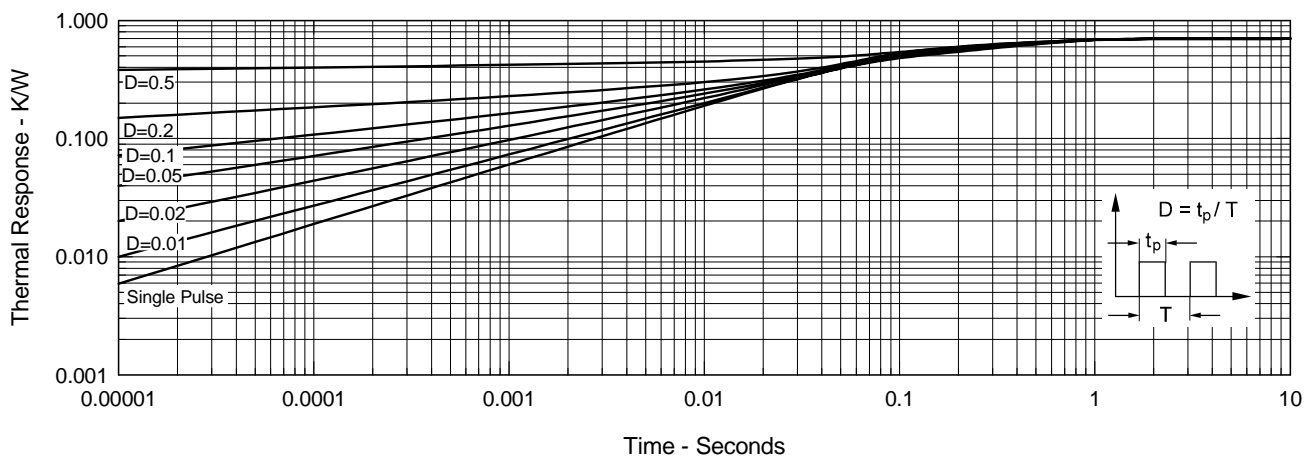


Fig.8 Forward Bias Safe Operating Area

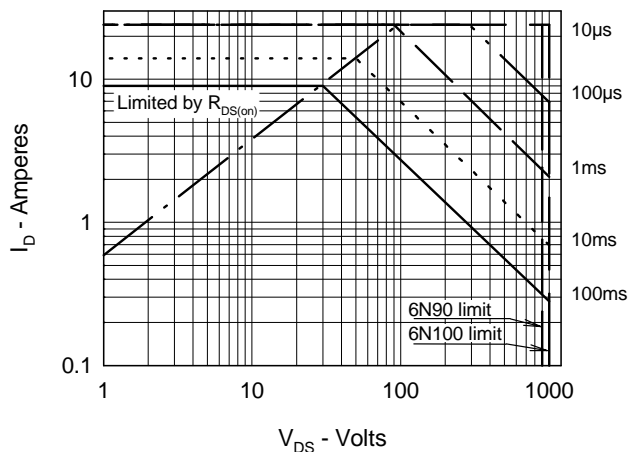


Fig.10 Source Current vs. Source to Drain Voltage

