

HiPerFET™ Power MOSFETs

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

Obsolete:
IXFM10N90
IXFM12N90

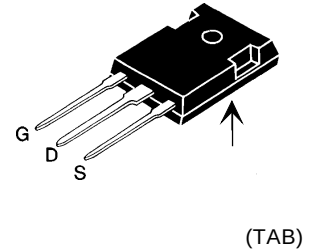
~~IXFH/IXFM 10 N90~~
~~IXFH/IXFM 12 N90~~
IXFH/IXFT 13 N90



V_{DSS}	I_{D25}	$R_{DS(on)}$
900 V	10 A	1.1 Ω
900 V	12 A	0.9 Ω
900 V	13 A	0.8 Ω

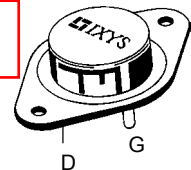
$t_{rr} \leq 250$ ns

TO-247 AD (IXFH)



~~TO-247 AA (IXFM)~~

Package
unavailable



TO-268 (IXFT)



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

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	900	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1$ M Ω	900	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$	10N90 10 12N90 12 13N90 13	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	10N90 40 12N90 48 13N90 52	A
I_{AR}	$T_C = 25^\circ\text{C}$	10N90 10 12N90 12 13N90 13	A
E_{AR}	$T_C = 25^\circ\text{C}$	30	mJ
dv/dt	$I_S \leq I_{DM}$, di/dt ≤ 100 A/ μs , $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 2$ Ω	5	V/ns
P_D	$T_C = 25^\circ\text{C}$	300	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
T_L	1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
M_d	Mounting torque	1.13/10	Nm/lb.in.
Weight		TO-204 = 18 g, TO-247 = 6 g	

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_{DSS}	$V_{GS} = 0$ V, $I_D = 3$ mA	900		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4$ mA	2.0		4.5 V
I_{GSS}	$V_{GS} = \pm 20$ V $_{DC}$, $V_{DS} = 0$			± 100 nA
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0$ V			25 μA 1 mA
$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = 0.5 \cdot I_{D25}$	10N90 12N90 13N90		1.1 Ω 0.9 Ω 0.8 Ω
Pulse test, $t \leq 300$ μs , duty cycle $d \leq 2$ %				

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

5,049,961	5,187,117	5,486,715	6,306,728B1
5,063,307	5,237,481	5,381,025	

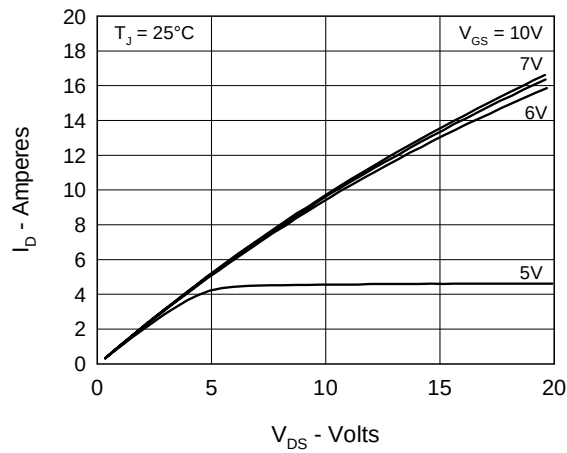
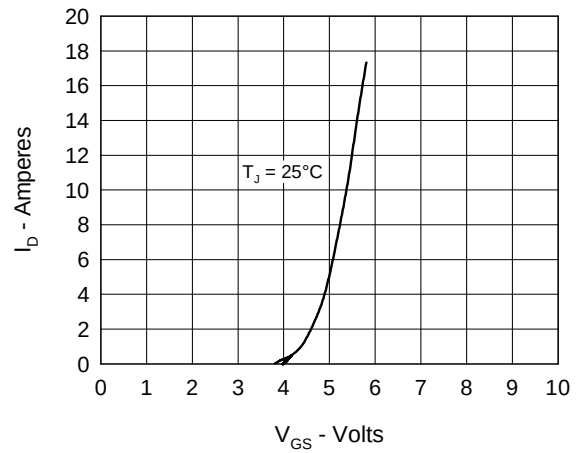
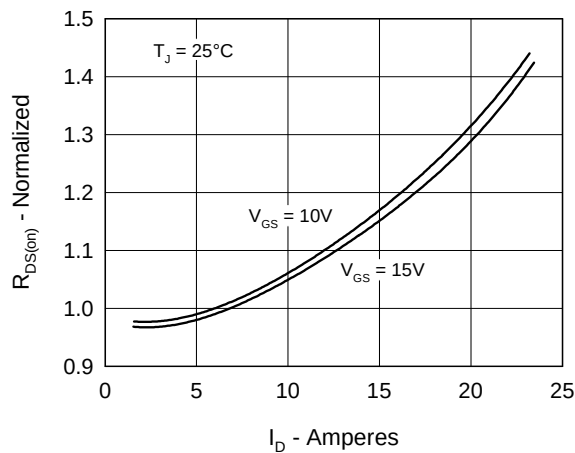
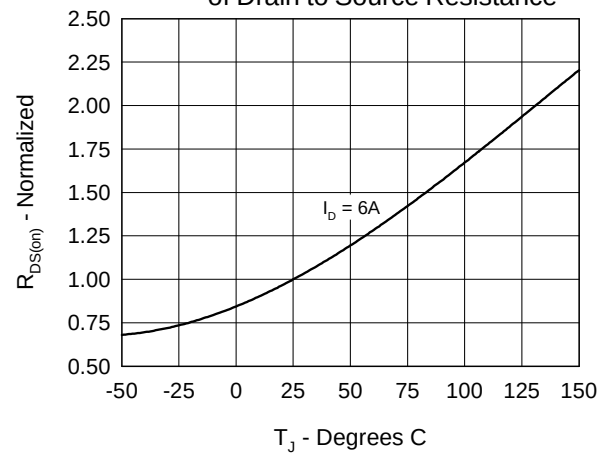
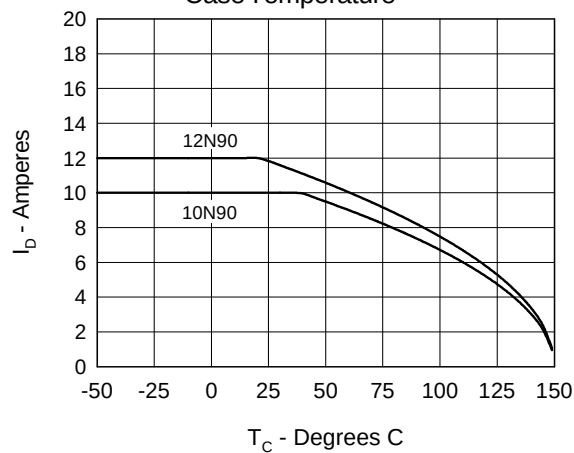
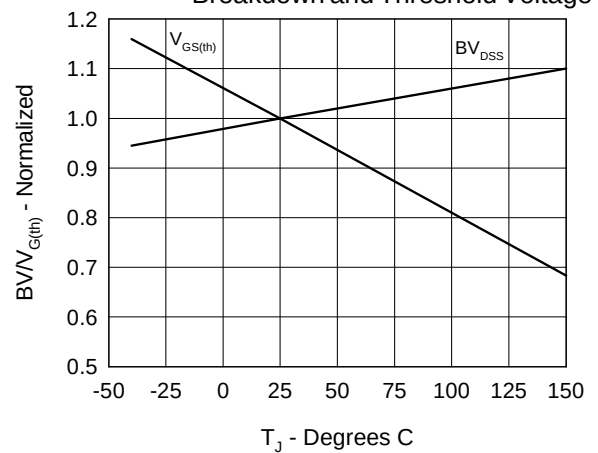
Fig. 1. Output Characteristics

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

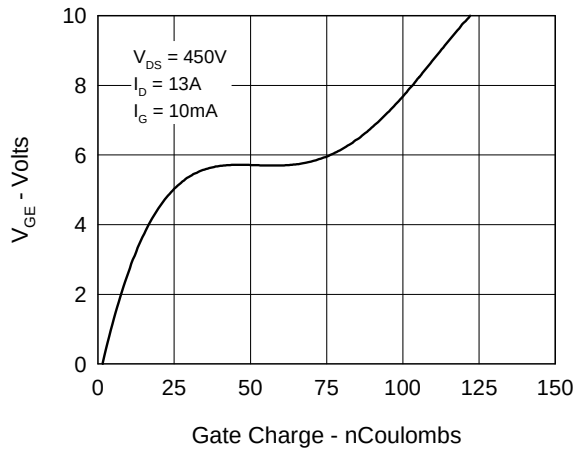


Fig.8. Capacitance Curves

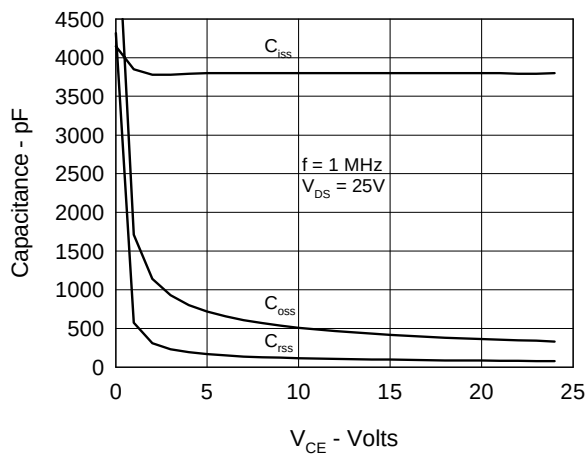


Fig.9. Source Current vs. Source to Drain Voltage

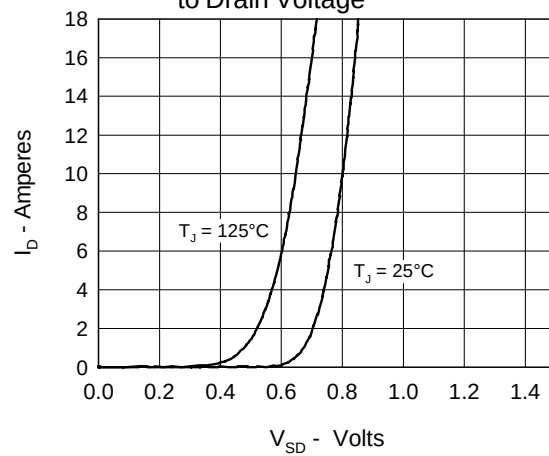
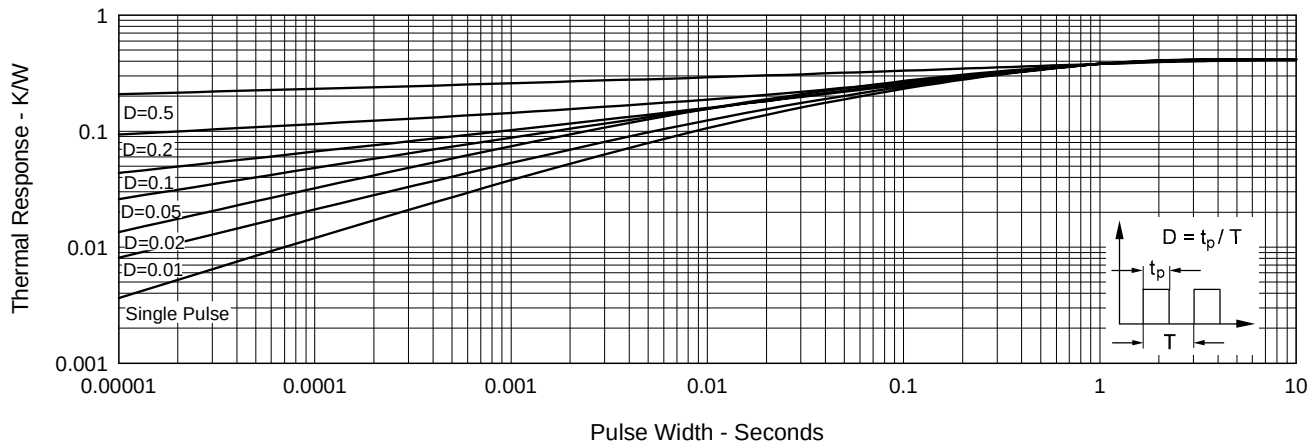


Fig.10. Transient Thermal Impedance



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

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	6,306,728B1
4,850,072	4,931,844	5,034,796	5,063,307	5,237,481	5,381,025	



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