

HiPerFET™ Power MOSFETs

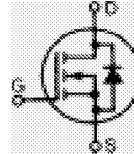
IXFH16N90
IXFX16N90

V_{DSS} = 900 V
I_{D25} = 16 A
R_{DS(on)} = 0.65 Ω

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

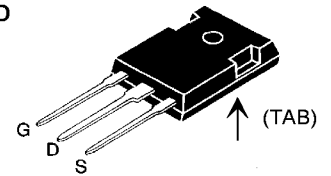
t_{rr} ≤ 200 ns

Preliminary data

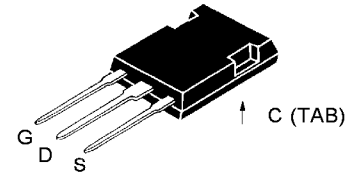


Symbol	Test Conditions	Maximum Ratings	
V _{DSS}	T _J = 25°C to 150°C	900	V
V _{DGR}	T _J = 25°C to 150°C; R _{GS} = 1 MΩ	900	V
V _{GS}	Continuous	±20	V
V _{GSM}	Transient	±30	V
I _{D25}	T _C = 25°C	16	A
I _{DM}	T _C = 25°C, pulse width limited by T _{JM}	64	A
I _{AR}	T _C = 25°C	16	A
E _{AR}	T _C = 25°C	45	mJ
dv/dt	I _S ≤ I _{DM1} , 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	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)**



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

Advantages

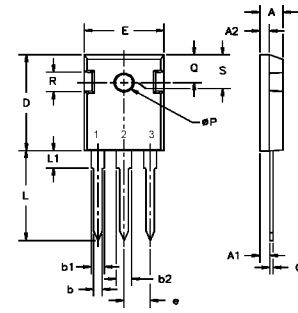
- Easy to mount with 1 screw (TO-247) (isolated mounting screw hole) or mounting clip or spring (PLUS 247™)
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values (T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
V _{DSS}	V _{GS} = 0 V, I _D = 250 μA	900		V
V _{GS(th)}	V _{DS} = V _{GS} , I _D = 5 mA	2.0		V
I _{GSS}	V _{GS} = ±20 V _{DC} , V _{DS} = 0			±100 nA
I _{DSS}	V _{DS} = 0.8 • V _{DSS} , T _J = 25°C V _{GS} = 0 V, T _J = 125°C			25 μA 250 μA
R _{DS(on)}	V _{GS} = 10 V, I _D = 0.5 • I _{D25} Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			0.65 Ω

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	6	10	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		4500	pF
C_{oss}			430	pF
C_{rss}			150	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 2\ \Omega$ (External),		27	ns
t_r			30	ns
$t_{d(off)}$			120	ns
t_f			30	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		220	nC
Q_{gs}			30	nC
Q_{gd}			85	nC
R_{thJC}			0.35	KW
R_{thCK}		0.25		KW

Source-Drain Diode		Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
Symbol	Test Conditions	min.	typ.	max.
I_S	$V_{GS} = 0\text{ V}$			16 A
I_{SM}	Repetitive; pulse width limited by T_{JM}			64 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}	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$			200 ns
Q_{RM}	$I_F = I_S$ $-di/dt = 100\text{ A}/\mu\text{s}$, $V_R = 100\text{ V}$		1	μC
				2
I_{RM}	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$			10 A

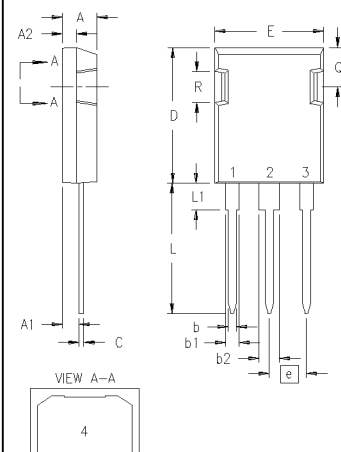
TO-247 AD (IXFH) Outline



Terminals: 1 - Gate 2 - Drain
3 - Source Tab - Drain

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
A ₁	2.2	2.54	.087	.102
A ₂	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b ₁	1.65	2.13	.065	.084
b ₂	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
∅P	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15	BSC	.242	BSC

PLUS 247™ Outline



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A ₁	.090	.100	2.29	2.54
A ₂	.075	.095	1.91	2.16
b	.045	.055	1.14	1.40
b ₁	.075	.084	1.91	2.13
b ₂	.115	.123	2.92	3.12
C	.024	.031	0.61	0.80
D	.819	.840	20.80	21.34
E	.620	.635	15.75	16.13
e		.215 BSC		5.45 BSC
L	.780	.800	19.81	20.32
L1	.150	.170	3.81	4.32
Q	.220	.244	5.59	6.20
R	.170	.190	4.32	4.83

1 - GATE
2 - DRAIN (COLLECTOR)
3 - SOURCE (EMITTER)
4 - DRAIN (COLLECTOR)

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
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025