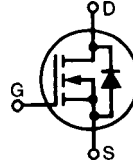


HiPerFET™ Power MOSFETs

IXFH/IXFT 30N50
IXFH/IXFT 32N50

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

Obsolete:
IXFH30N50
IXFH32N50
IXFT32N50



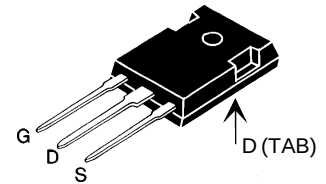
Symbol	Test Conditions	Maximum Ratings
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	500 V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1\text{ M}\Omega$	500 V
V_{GS}	Continuous	± 20 V
V_{GSM}	Transient	± 30 V
I_{D25}	$T_C = 25^\circ\text{C}$	30N50: 30 A 32N50: 32 A
I_{DM}	$T_C = 25^\circ\text{C}$ pulse width limited by T_{JM}	30N50: 120 A 32N50: 128 A
I_{AR}	$T_C = 25^\circ\text{C}$	30N50: 30 A 32N50: 32 A
E_{AS}	$T_C = 25^\circ\text{C}$	1.5 J
E_{AR}	$I_D = 25^\circ\text{C}$	45 mJ
dv/dt	$I_S \leq I_{DM}$, di/dt $\leq 100\text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 2\text{ }\Omega$	5 V/ns
P_D	$T_C = 25^\circ\text{C}$	360 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		6 g

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)
		min. typ. max.
V_{DSS}	$V_{GS} = 0\text{ V}$, $I_D = 1\text{ mA}$ V_{DSS} temperature coefficient	500 0.102 V %/K
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4\text{ mA}$ $V_{GS(th)}$ temperature coefficient	2 -0.206 V %/K
I_{GSS}	$V_{GS} = \pm 20\text{ V}_{DC}$, $V_{DS} = 0$	± 100 nA
I_{DSS}	$V_{DS} = 0.8 \cdot V_{DSS}$, $T_J = 25^\circ\text{C}$ $V_{GS} = 0\text{ V}$, $T_J = 125^\circ\text{C}$	200 1 μA mA
$R_{DS(on)}$	$V_{GS} = 10\text{ V}$, $I_D = 15\text{ A}$ Pulse test, $t \leq 300\text{ }\mu\text{s}$, duty cycle $d \leq 2\%$	32N50: 0.15 Ω 30N50: 0.16 Ω

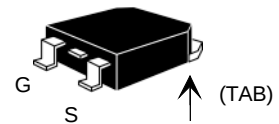
V_{DSS}	I_{D25}	$R_{DS(on)}$
500 V	30 A	0.16 Ω
500 V	32 A	0.15 Ω

$t_{rr} \leq 250\text{ ns}$

TO-247 AD (IXFH)



TO-268 (D3) Case Style



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 Diode

Applications

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

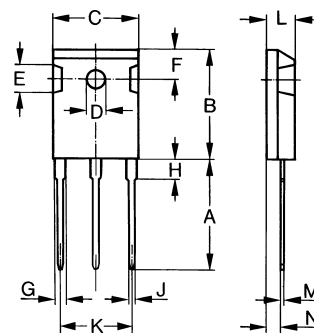
Advantages

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

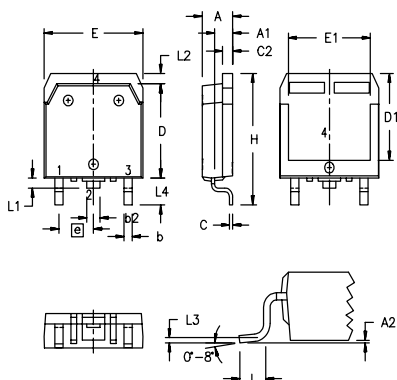
Symbol	Test Conditions	Characteristic Values (T _j = 25°C, unless otherwise specified)			
		min.	typ.	max.	
g_{fs}	V _{DS} = 10 V; I _D = 0.5 I _{D25} , pulse test	18	28	S	
C_{iss}	} V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz	5200		5700	pF
C_{oss}		640		750	pF
C_{rss}		240		310	pF
t_{d(on)}	} V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = 0.5 I _{D25} R _G = 2 Ω (External)		35	45	ns
t_r			42	50	ns
t_{d(off)}			110	140	ns
t_f			26	35	ns
Q_{g(on)}	} V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = 0.5 I _{D25}		227	300	nC
Q_{gs}			29	40	nC
Q_{gd}			110	145	nC
R_{thJC}	(TO-247 Case Style)		0.25	0.35	K/W
R_{thCK}				K/W	

Source-Drain Diode		Characteristic Values (T _j = 25°C, unless otherwise specified)				
Symbol	Test Conditions		min.	typ.	max.	
I _S	V _{GS} = 0 V	30N50			30	A
		32N50			32	A
I _{SM}	Repetitive; pulse width limited by T _{JM}	30N50			120	A
		32N50			128	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}	$\left. \begin{array}{l} I_F = I_S \\ -di/dt = 100 \text{ A}/\mu\text{s}, \\ V_R = 100 \text{ V} \end{array} \right\}$	T _J = 25°C	0.85		250	ns
		T _J = 125°C			400	ns
Q _{RM}		T _J = 25°C				μC
		T _J = 25°C				
I _{RM}				8		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-268AA (D³ PAK)

Dim.	Millimeter		Inches	
	Min.	Max.	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	.025 BSC		.010 BSC	
L4	3.80	4.10	.150	.161

Min. Recommended Footprint

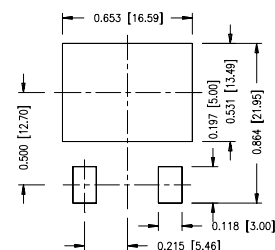


Figure 1. Output Characteristics at 25°C

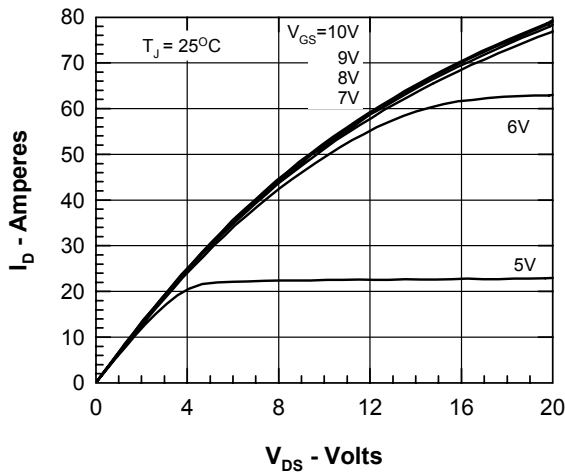


Figure 2. Output Characteristics at 125°C

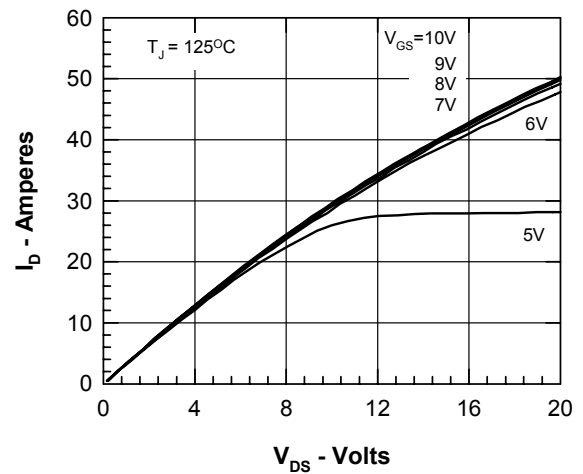


Figure 3. $R_{DS(on)}$ normalized to 15A/25°C vs. I_D

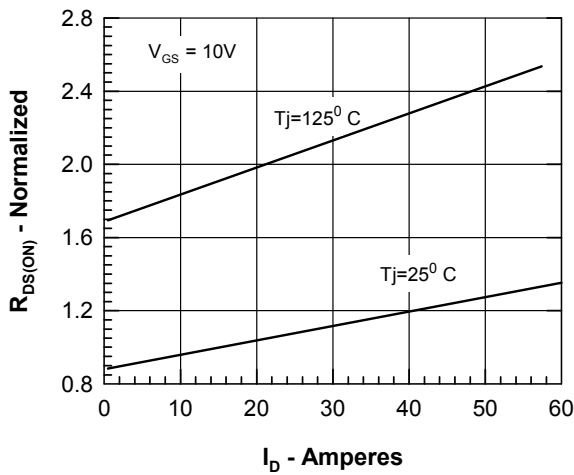


Figure 4. $R_{DS(on)}$ normalized to 15A/25°C vs. T_J

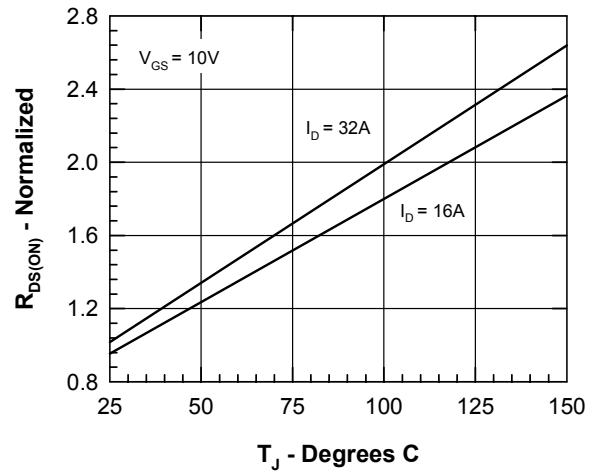


Figure 5. Drain Current vs. Case Temperature

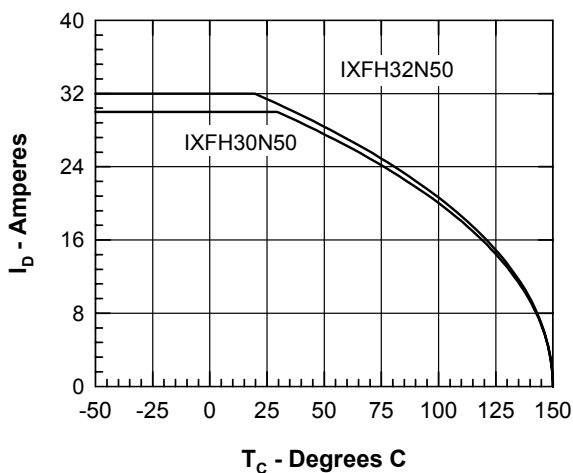


Figure 6. Admittance Curves

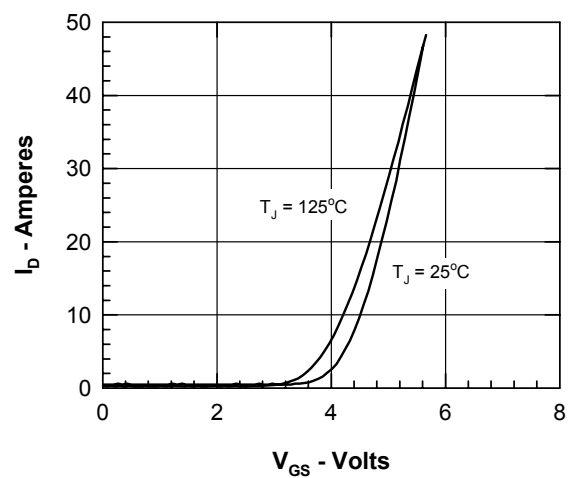


Figure 7. Gate Charge

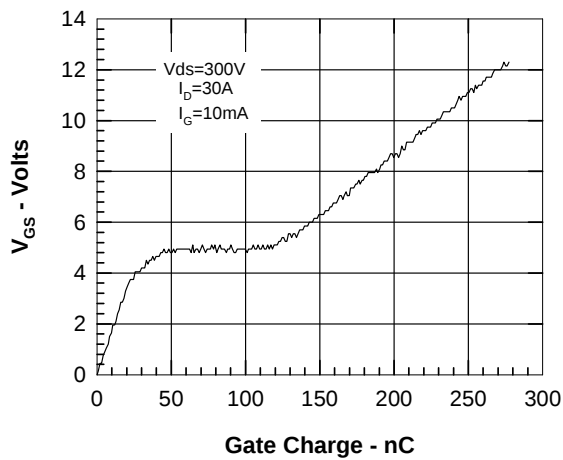


Figure 8. Capacitance Curves

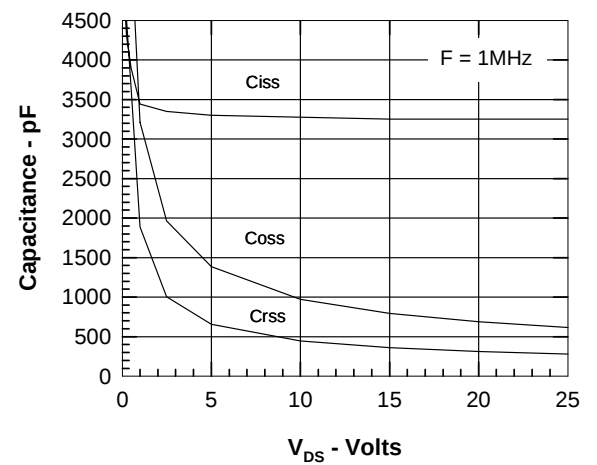


Figure 9. Forward Voltage Drop of the Intrinsic Diode

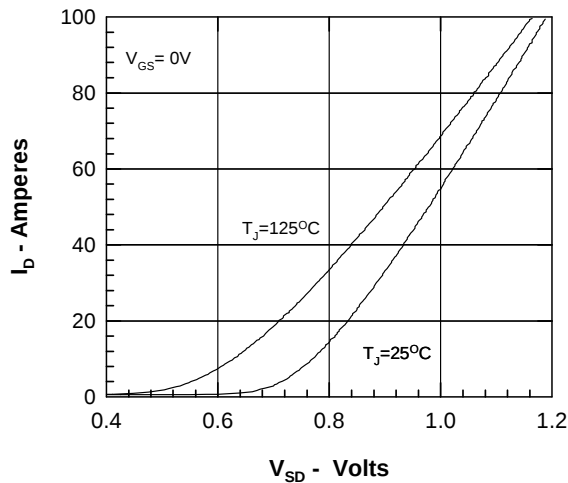
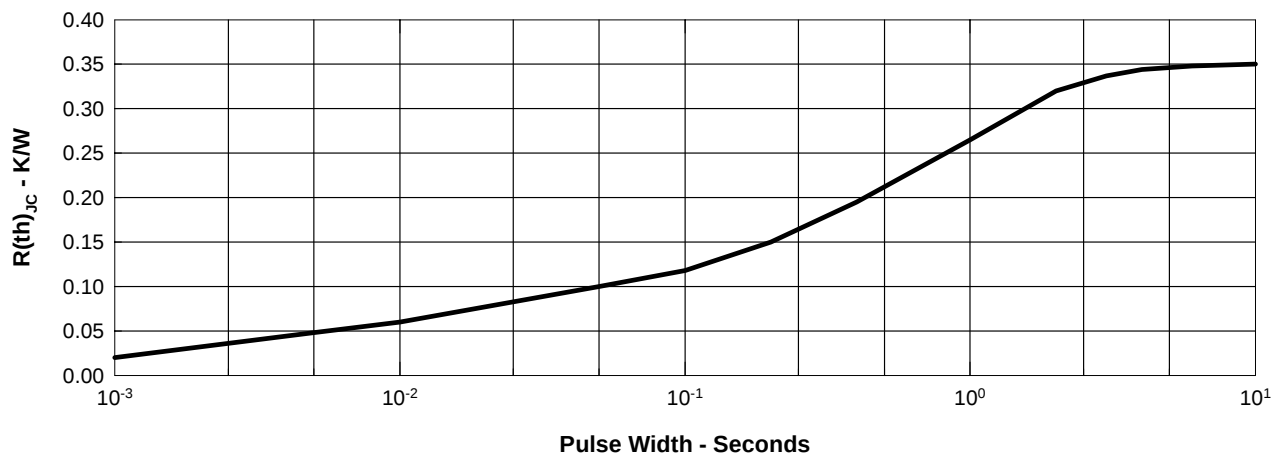


Figure 10. Transient Thermal Resistance





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