



# HiPerFET™ Power MOSFETs

IXFH/IXFM 67 N10  
IXFH/IXFM 75 N10

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

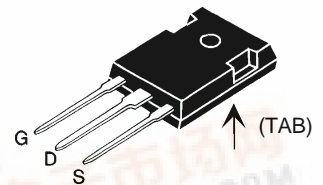
$V_{DSS}$	$I_{D25}$	$R_{DS(on)}$
100 V	67 A	25 mΩ
100 V	75 A	20 mΩ

$t_{rr} \leq 200$  ns

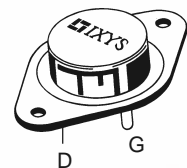


Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	100	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1$ MΩ	100	V
$V_{GS}$	Continuous	±20	V
$V_{GSM}$	Transient	±30	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	67N10	67 A
		75N10	75 A
$I_{DM}$	$T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$	67N10	268 A
		75N10	300 A
$I_{AR}$	$T_C = 25^\circ\text{C}$	67N10	67 A
		75N10	75 A
$E_{AR}$	$T_C = 25^\circ\text{C}$	30	mJ
dv/dt	$I_S \leq I_{DM}$ , $di/dt \leq 100$ 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	°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 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

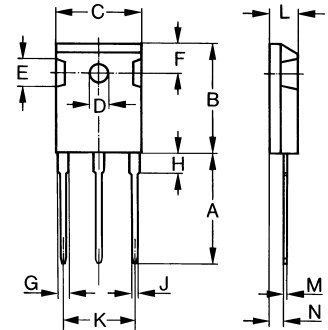
- Easy to mount with 1 screw (TO-247) (isolated mounting screw hole)
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{DSS}$	$V_{GS} = 0$ V, $I_D = 250$ μA	100		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 4$ mA	2.0		V
$I_{GSS}$	$V_{GS} = \pm 20$ V <sub>DC</sub> , $V_{DS} = 0$			±100 nA
$I_{DSS}$	$V_{DS} = 0.8 \cdot V_{DSS}$ , $V_{GS} = 0$ V	$T_J = 25^\circ\text{C}$		250 μA
		$T_J = 125^\circ\text{C}$		1 mA
$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = 0.5 I_{D25}$  Pulse test, $t \leq 300$ μs, duty cycle $d \leq 2$ %	67N10		0.025 Ω
		75N10		0.020 Ω

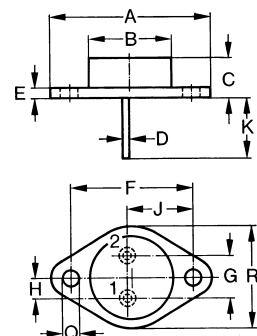


Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
<b>g<sub>fs</sub></b>	V <sub>DS</sub> = 10 V; I <sub>D</sub> = I <sub>D25</sub> , pulse test	25	30	S
<b>C<sub>iss</sub></b>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 25 V, f = 1 MHz		4500	pF
<b>C<sub>oss</sub></b>			1600	pF
<b>C<sub>rss</sub></b>			800	pF
<b>t<sub>d(on)</sub></b>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 0.5 • V <sub>DSS</sub> , I <sub>D</sub> = 0.5 I <sub>D25</sub> R <sub>G</sub> = 2 Ω, (External)		20	30 ns
<b>t<sub>r</sub></b>			60	110 ns
<b>t<sub>d(off)</sub></b>			80	110 ns
<b>t<sub>f</sub></b>			60	90 ns
<b>Q<sub>g(on)</sub></b>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 0.5 • V <sub>DSS</sub> , I <sub>D</sub> = 0.5 I <sub>D25</sub>		180	260 nC
<b>Q<sub>gs</sub></b>			36	70 nC
<b>Q<sub>gd</sub></b>			85	160 nC
<b>R<sub>thJC</sub></b>			0.42	K/W
<b>R<sub>thCK</sub></b>		0.25		K/W

Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
<b>I<sub>S</sub></b>	V <sub>GS</sub> = 0 V	67N10 75N10		67 A 75 A
<b>I<sub>SM</sub></b>	Repetitive; pulse width limited by T <sub>JM</sub>	67N10 75N10		268 A 300 A
<b>V<sub>SD</sub></b>	I <sub>F</sub> = I <sub>S</sub> , V <sub>GS</sub> = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2%			1.75 V
<b>t<sub>rr</sub></b>	I <sub>F</sub> = 25 A, -di/dt = 100 A/μs, T <sub>J</sub> = 25°C V <sub>R</sub> = 25 V T <sub>J</sub> = 125°C			200 ns 300 ns

**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 AE (IXFM) Outline**


Dim.	Millimeter		Inches	
	Min.	Max.	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

Fig. 1 Output Characteristics

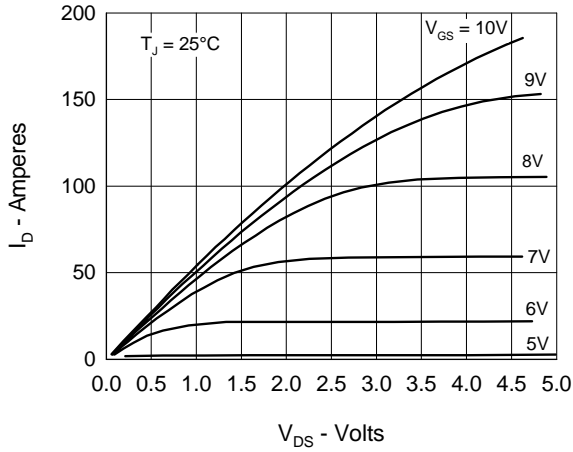


Fig. 2 Input Admittance

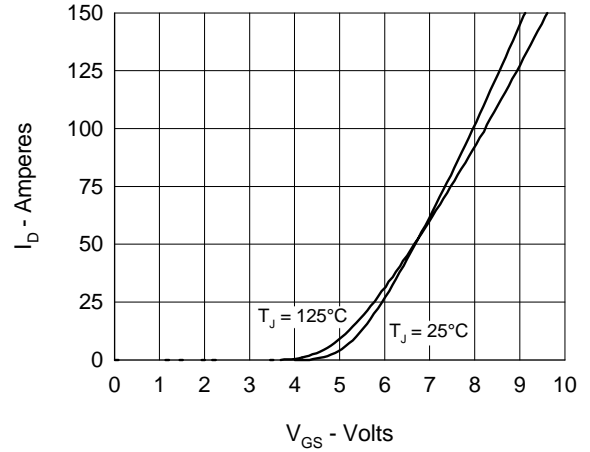


Fig. 3  $R_{DS(on)}$  vs. Drain Current

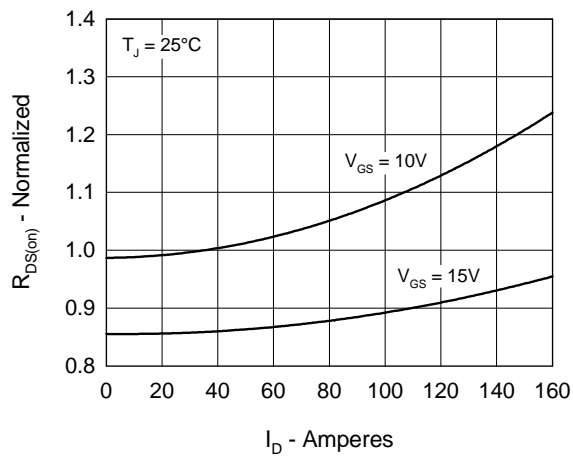


Fig. 4 Temperature Dependence of Drain to Source Resistance

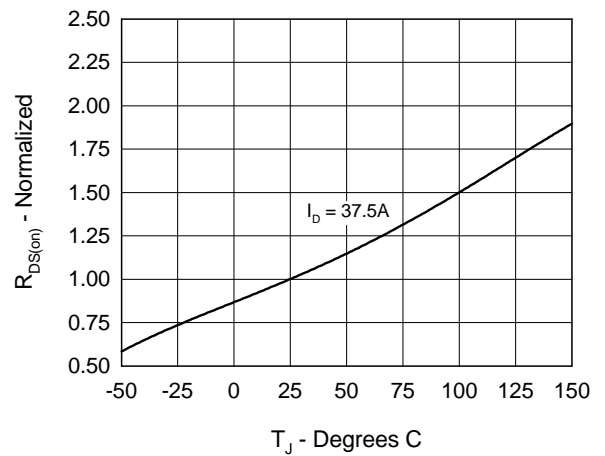


Fig. 5 Drain Current vs. Case Temperature

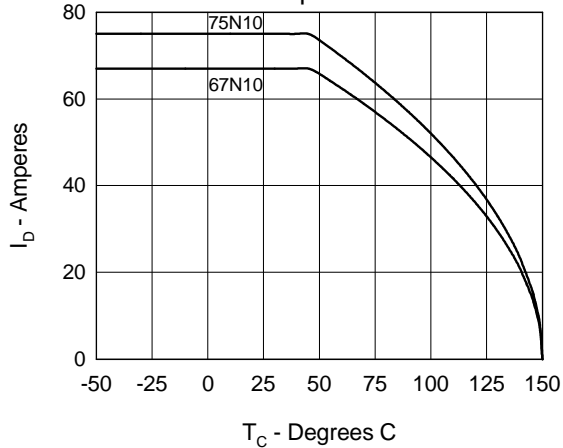


Fig. 6 Temperature Dependence of Breakdown and Threshold Voltage

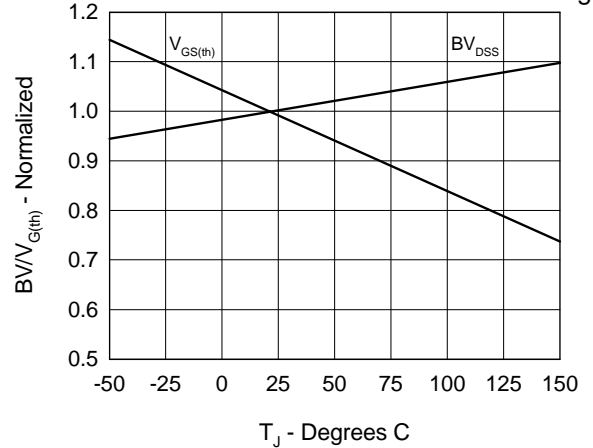


Fig.7 Gate Charge Characteristic Curve

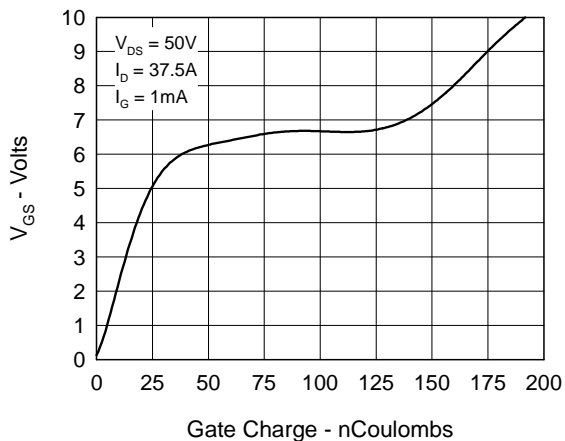


Fig.8 Forward Bias Safe Operating Area

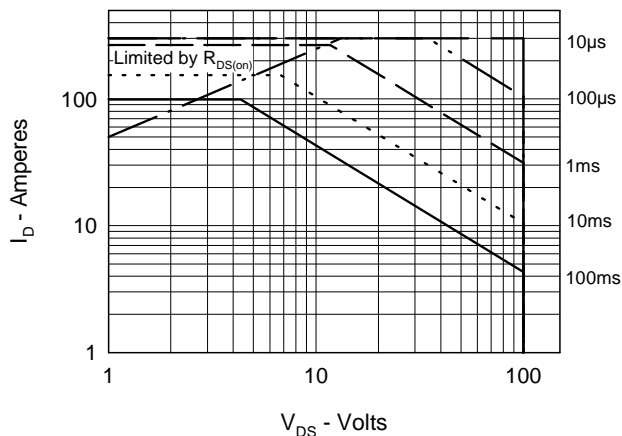


Fig.9 Capacitance Curves

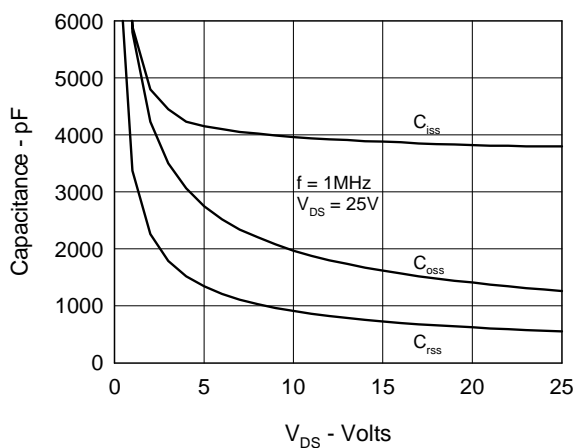


Fig.10 Source Current vs. Source to Drain Voltage

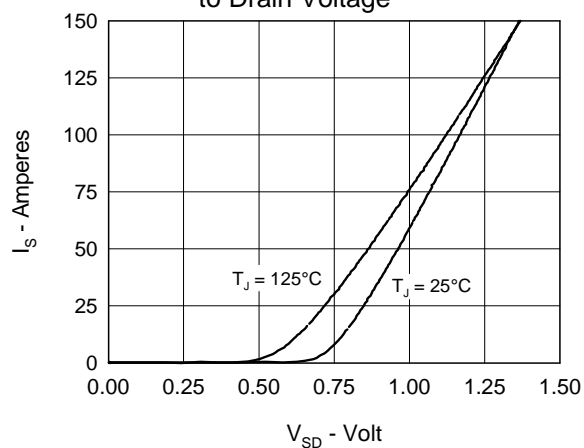


Fig.11 Transient Thermal Impedance

