

HiPerFET™

Power MOSFETs

Q Class

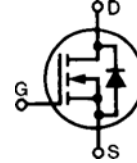
IXFH/IXFT12N100Q

IXFH/IXFT10N100Q

N-Channel Enhancement Mode

Avalanche Rated

Low Q_g , High dv/dt



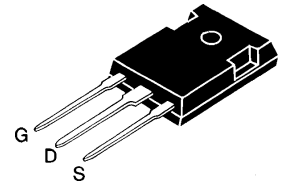
V_{DSS}	I_{D25}	$R_{DS(on)}$
1000 V	12 A	1.05 Ω
1000 V	10 A	1.20 Ω

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

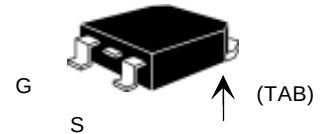
Symbol	Test Conditions	Maximum Ratings
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	1000 V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$	1000 V
V_{GS}	Continuous	± 20 V
V_{GSM}	Transient	± 30 V
I_{D25}	$T_C = 25^\circ\text{C}$	12N100Q 12 A 10N100Q 10 A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	12N100Q 48 A 10N100Q 40 A
I_{AR}	$T_C = 25^\circ\text{C}$	12N100Q 12 A 10N100Q 10 A
E_{AR}	$T_C = 25^\circ\text{C}$	30 mJ
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 2 \Omega$	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 (0.063 in) from case for 10 s	300 $^\circ\text{C}$
M_d	Mounting torque	1.13/10 Nm/lb.in.
Weight		TO-247 AD 6 g TO-268 4 g

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)
		min. typ. max.
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 3 \text{ mA}$	1000 V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4 \text{ mA}$	2.5 5.5 V
I_{GSS}	$V_{GS} = \pm 20 V_{DC}$, $V_{DS} = 0$	± 100 nA
I_{DSS}	$V_{DS} = 0.8 \cdot V_{DSS}$, $V_{GS} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$ 50 μA $T_J = 125^\circ\text{C}$ 1 mA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = 0.5 I_{D25}$	12N100Q 1.05 Ω 10N100Q 1.20 Ω
Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2 \%$		

TO-247 AD (IXFH)



TO-268 (D3) (IXFT)



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

Features

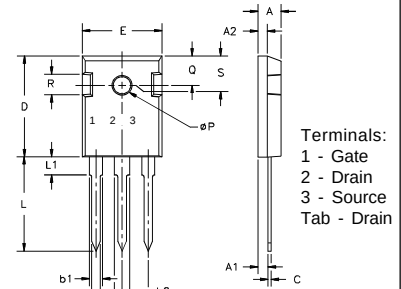
- IXYS advanced low Q_g process
- Low gate charge and capacitances
 - easier to drive
 - faster switching
- International standard packages
- Low $R_{DS(on)}$
- Unclamped Inductive Switching (UIS) rated
- Molding epoxies meet UL 94 V-0 flammability classification

Advantages

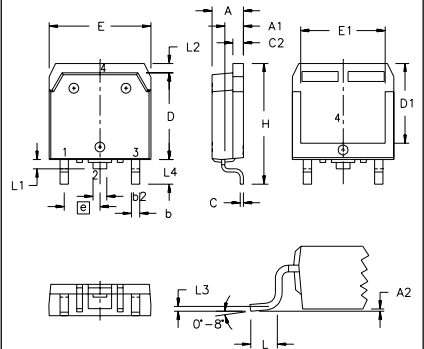
- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values (T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	V _{DS} = 15 V; I _D = 0.5 • I _{D25} , pulse test	4	10	S
C_{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		2900	pF
C_{oss}			315	pF
C_{rss}			50	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),		20	ns
t_r			23	ns
t_{d(off)}			40	ns
t_f			15	ns
Q_{g(on)}	V _{GS} = 10 V, V _{DS} = 0.5 • V _{DSS} , I _D = 0.5 • I _{D25}		90	nC
Q_{gs}			30	nC
Q_{gd}			40	nC
R_{thJC}	(TO-247)		0.25	0.42 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			12 A
I_{SM}	Repetitive; pulse width limited by T _{JM}			48 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}	I _F = I _S , -di/dt = 100 A/μs, V _R = 100 V		200	ns
Q_{RM}			0.6	μC
I_{RM}			7	A

TO-247 AD (IXFH) Outline


Dim.	Millimeter Min.	Max.	Inches 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
ØP	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

TO-268 Outline


SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.193	.201	4.90	5.10
A ₁	.106	.114	2.70	2.90
A ₂	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
b ₂	.075	.083	1.90	2.10
C	.016	.026	0.40	0.65
C ₂	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D ₁	.488	.500	12.40	12.70
E	.624	.632	15.85	16.05
E ₁	.524	.535	13.30	13.60
e	.215	BSC	5.45	BSC
H	.736	.752	18.70	19.10
L	.094	.106	2.40	2.70
L ₁	.047	.055	1.20	1.40
L ₂	.039	.045	1.00	1.15
L ₃	.010	BSC	0.25	BSC
L ₄	.150	.161	3.80	4.10

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	

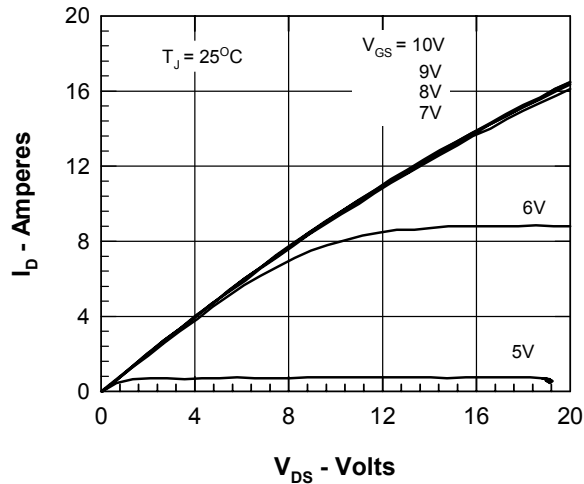


Figure 1. Output Characteristics at 25°C

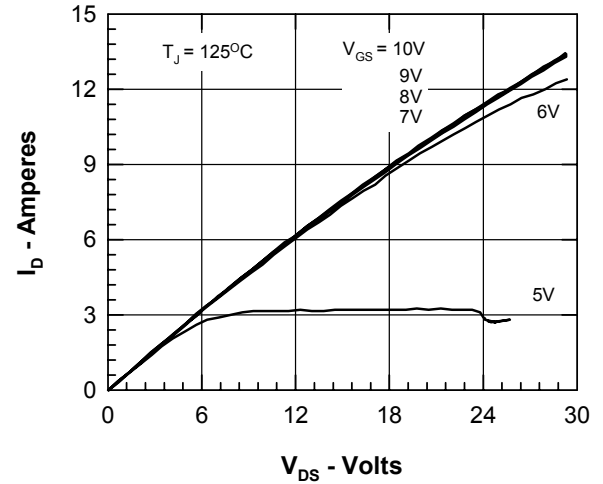


Figure 2. Output Characteristics at 125°C

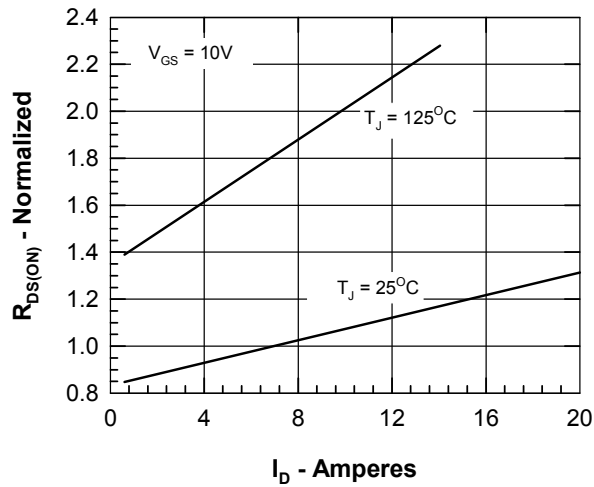


Figure 3. $R_{DS(on)}$ normalized to value at $I_D = 12A$

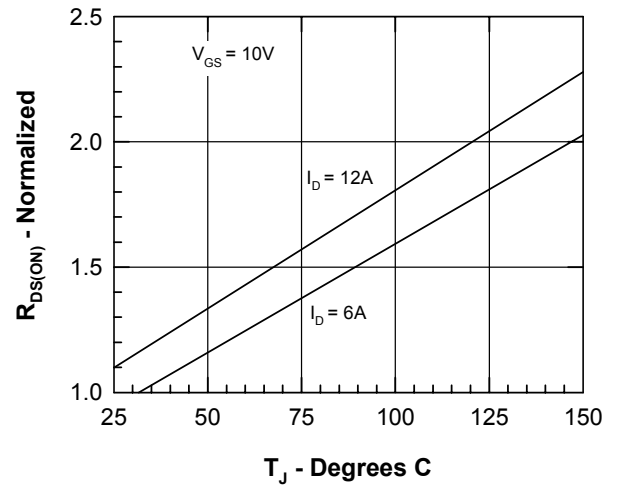


Figure 4. $R_{DS(on)}$ normalized to value at $I_D = 12A$

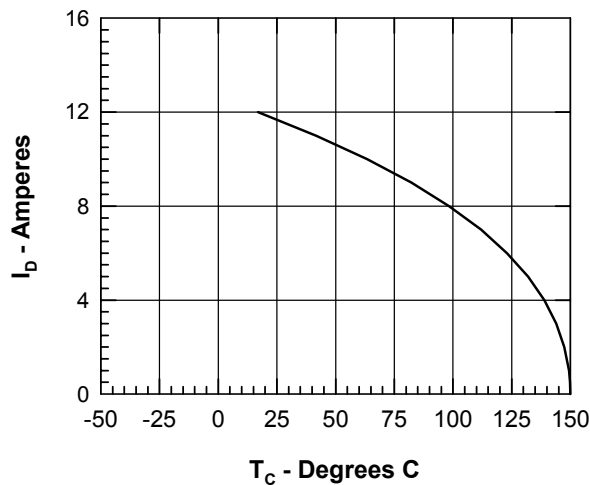


Figure 5. Drain Current vs. Case Temperature

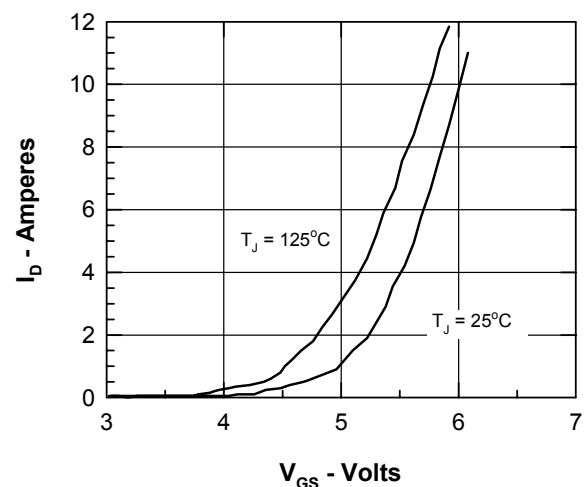
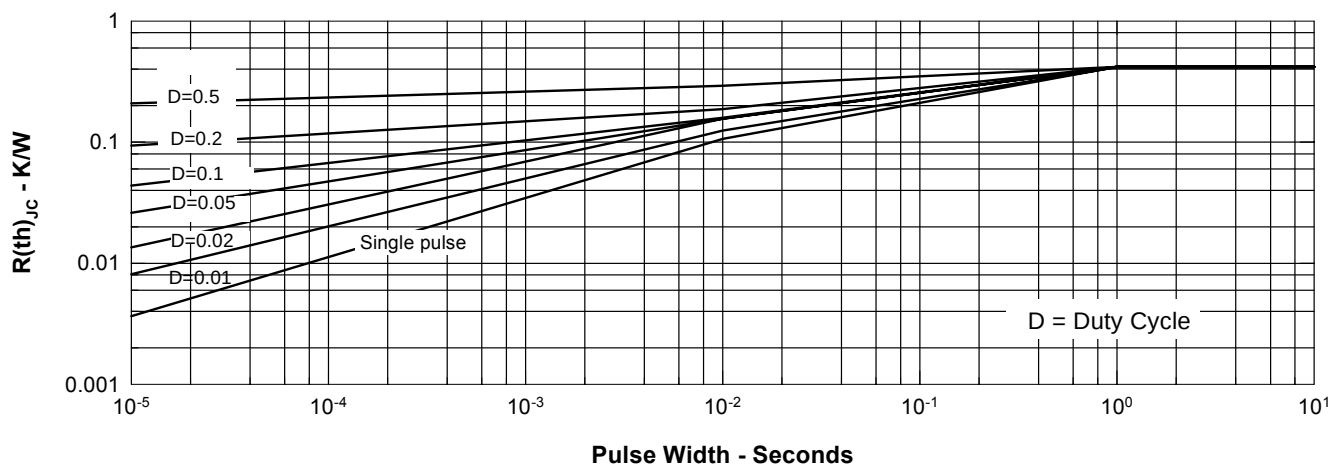
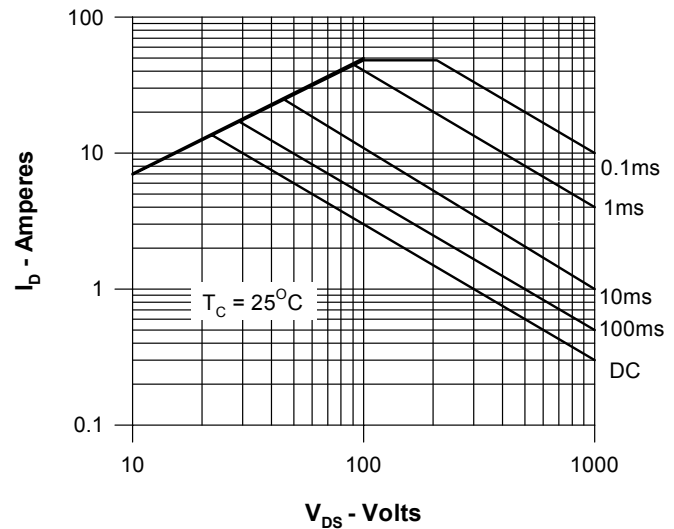
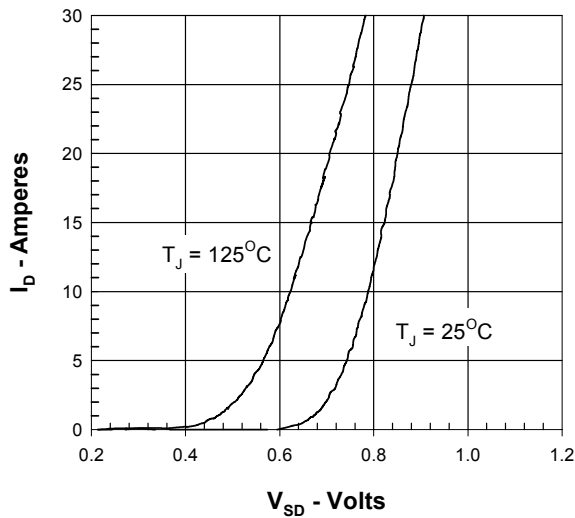
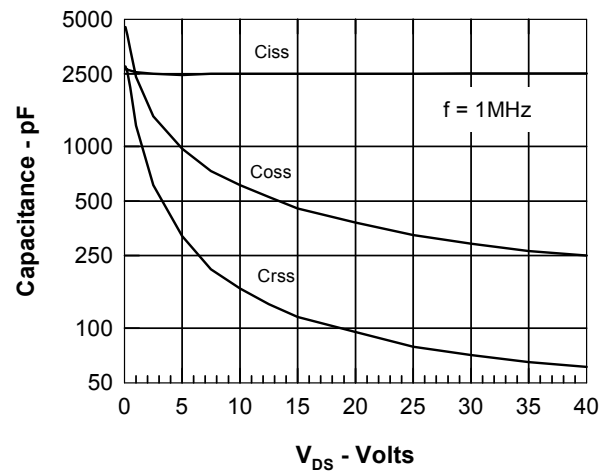
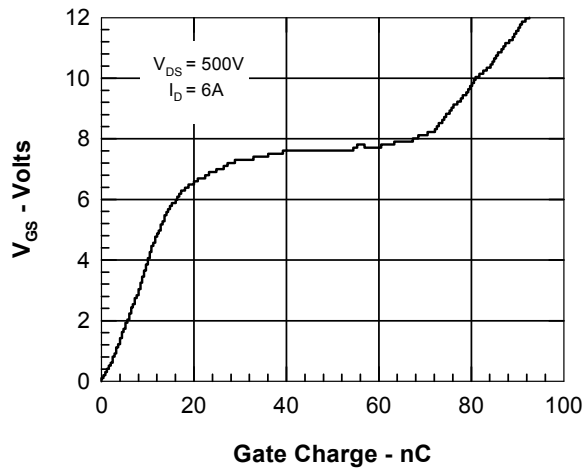


Figure 6. Admittance Curves



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