

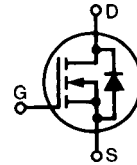
# HiPerFET™ Power MOSFETs Q-Class

**IXFH 15N80Q**  
**IXFT 15N80Q**

**V<sub>DSS</sub> = 800 V**  
**I<sub>D25</sub> = 15 A**  
**R<sub>DS(on)</sub> = 0.60 Ω**

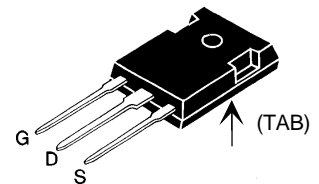
**t<sub>rr</sub> ≤ 250 ns**

N-Channel Enhancement Mode  
Avalanche Rated, High dv/dt, Low Q<sub>g</sub>

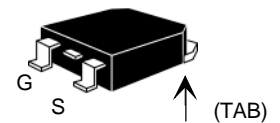


Symbol	Test Conditions	Maximum Ratings	
V <sub>DSS</sub>	T <sub>J</sub> = 25°C to 150°C	800	V
V <sub>DGR</sub>	T <sub>J</sub> = 25°C to 150°C; R <sub>GS</sub> = 1 MΩ	800	V
V <sub>GS</sub>	Continuous	±20	V
V <sub>GSM</sub>	Transient	±30	V
I <sub>D25</sub>	T <sub>C</sub> = 25°C	15	A
I <sub>DM</sub>	T <sub>C</sub> = 25°C, pulse width limited by T <sub>JM</sub>	60	A
I <sub>AR</sub>	T <sub>C</sub> = 25°C	15	A
E <sub>AR</sub>	T <sub>C</sub> = 25°C	30	mJ
E <sub>AS</sub>	T <sub>C</sub> = 25°C	1.0	J
dv/dt	I <sub>S</sub> ≤ I <sub>DM1</sub> , di/dt ≤ 100 A/μs, V <sub>DD</sub> ≤ V <sub>DSS</sub> , T <sub>J</sub> ≤ 150°C, R <sub>G</sub> = 2 Ω	5	V/ns
P <sub>D</sub>	T <sub>C</sub> = 25°C	300	W
T <sub>J</sub>		-55 ... +150	°C
T <sub>JM</sub>		150	°C
T <sub>stg</sub>		-55 ... +150	°C
T <sub>L</sub>	1.6 mm (0.062 in.) from case for 10 s	300	°C
M <sub>d</sub>	Mounting torque	1.13/10	Nm/lb.in.
Weight	TO-247	6	g
	TO-268	4	g

## TO-247 AD (IXFH)



## TO-268 (D3) (IXFT) Case Style



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

## Features

- IXYS advanced low Q<sub>g</sub> process
- International standard packages
- Low R<sub>DS(on)</sub>
- Unclamped Inductive Switching (UIS) rated
- Fast switching
- Molding epoxies meet UL 94 V-0 flammability classification

## Advantages

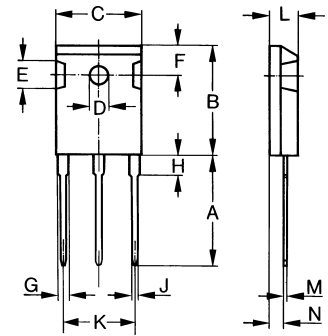
- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
V <sub>DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 3 mA	800		V
V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 4 mA	2.0		4.5 V
I <sub>GSS</sub>	V <sub>GS</sub> = ±20 V <sub>DC</sub> , V <sub>DS</sub> = 0			±100 nA
I <sub>DSS</sub>	V <sub>DS</sub> = V <sub>DSS</sub> V <sub>GS</sub> = 0 V	T <sub>J</sub> = 25°C		25 μA
		T <sub>J</sub> = 125°C		1 mA
R <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 0.5 I <sub>D25</sub> Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			0.60 Ω

Symbol	Test Conditions	Characteristic Values			
		(T <sub>J</sub> = 25°C, unless otherwise specified)			
		Min.	Typ.	Max.	
$g_{fs}$	V <sub>DS</sub> = 10 V; I <sub>D</sub> = 0.5 I <sub>D25</sub> pulse test	8	16		S
C <sub>iss</sub>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 25 V, f = 1 MHz		4300		pF
C <sub>oss</sub>			360		pF
C <sub>rss</sub>			60		pF
t <sub>d(on)</sub>	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> = 1.5 Ω (External)		18		ns
t <sub>r</sub>			27		ns
t <sub>d(off)</sub>			53		ns
t <sub>f</sub>			16		ns
Q <sub>g(on)</sub>	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>		90		nC
Q <sub>gs</sub>			20		nC
Q <sub>gd</sub>			30		nC
R <sub>thJC</sub>	(TO-247)			0.42	K/W
R <sub>thCK</sub>			0.25		K/W

Symbol	Test Conditions	Characteristic Values			
		(T <sub>J</sub> = 25°C, unless otherwise specified)			
		min.	typ.	max.	
I <sub>S</sub>	V <sub>GS</sub> = 0 V			15	A
I <sub>SM</sub>	Repetitive;			60	A
V <sub>SD</sub>	I <sub>F</sub> = I <sub>S</sub> , V <sub>GS</sub> = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			1.5	V
t <sub>rr</sub>	I <sub>F</sub> = I <sub>S</sub> -di/dt = 100 A/μs, V <sub>R</sub> = 100 V		0.85	250	ns
Q <sub>RM</sub>			8		μC
I <sub>RM</sub>					

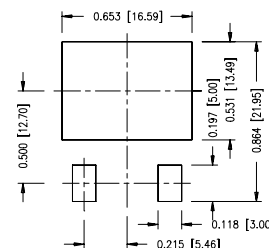
TO-247 AD (IXFH) Outline



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 (D <sup>3</sup> PAK)		Dim.		Millimeter		Inches	
				Min. Max.		Min. Max.	
		A	4.9	5.1	.193	.201	
		A <sub>1</sub>	2.7	2.9	.106	.114	
		A <sub>2</sub>	.02	.25	.001	.010	
		b	1.15	1.45	.045	.057	
		b <sub>2</sub>	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 <sub>1</sub>	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	
		L <sub>1</sub>	1.20	1.40	.047	.055	
		L <sub>2</sub>	1.00	1.15	.039	.045	
		L <sub>3</sub>	0.25 BSC		.010 BSC		
		L <sub>4</sub>	3.80	4.10	.150	.161	

Min. Recommended Footprint



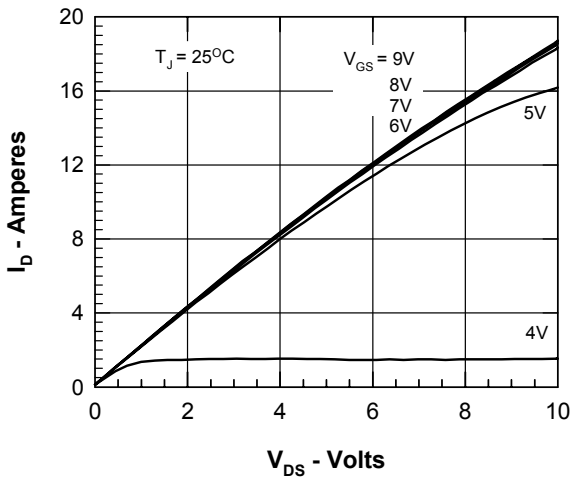


Figure 1. Output Characteristics at 25°C

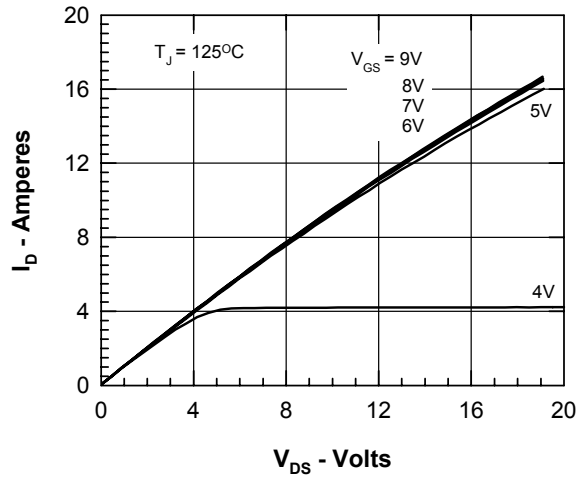


Figure 2. Output Characteristics at 125°C

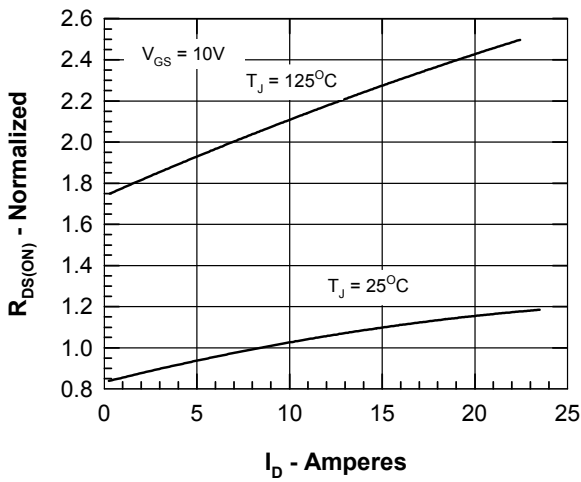


Figure 3.  $R_{DS(on)}$  normalized to value at  $I_D = 12A$

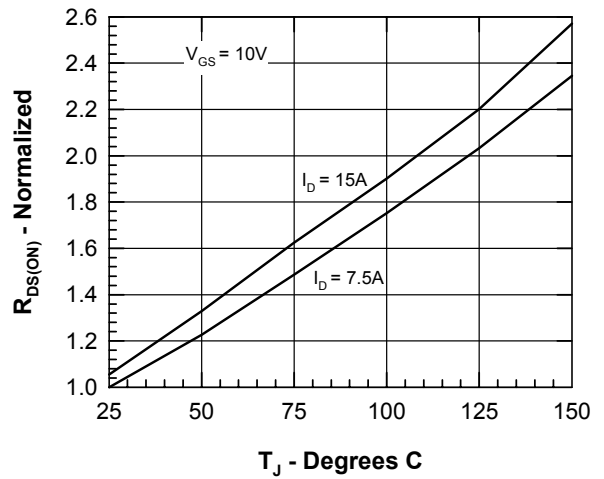


Figure 4.  $R_{DS(on)}$  normalized to value at  $I_D = 12A$

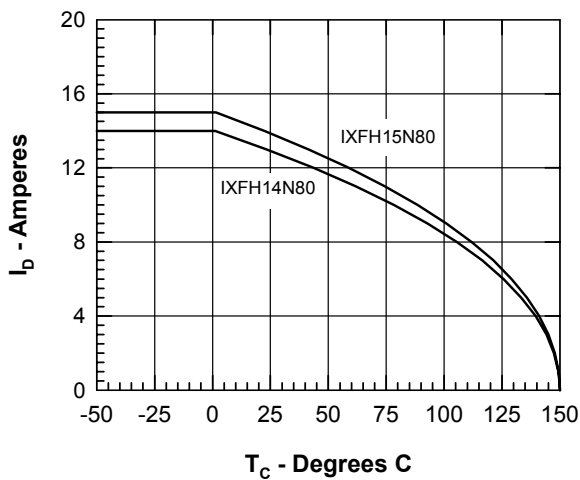


Figure 5. Drain Current vs. Case Temperature

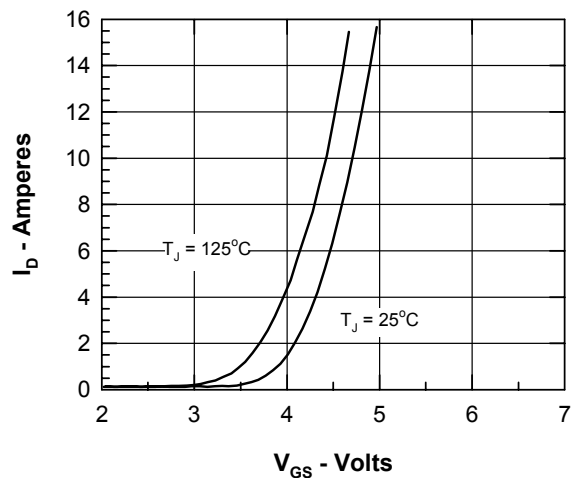


Figure 6. Admittance Curves

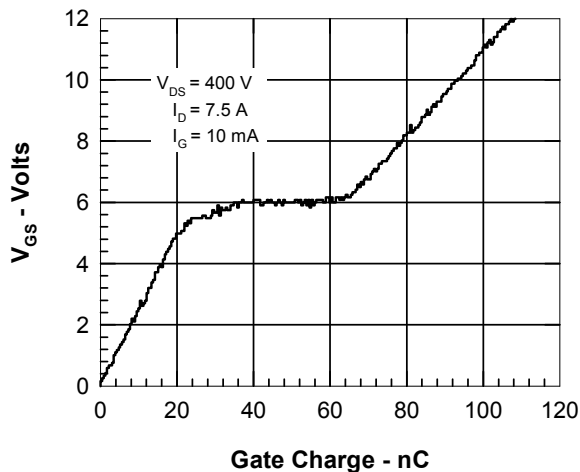


Figure 7. Gate Charge

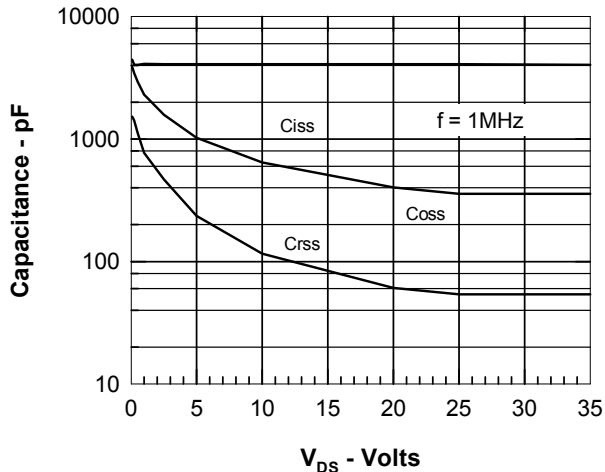


Figure 8. Capacitance Curves

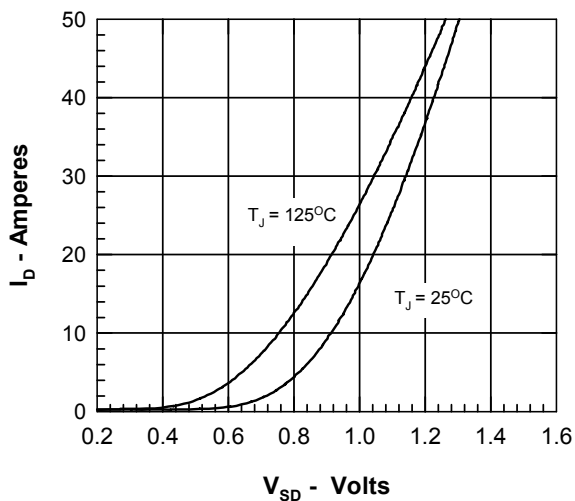


Figure 9. Source Current vs. Source to Drain Voltage

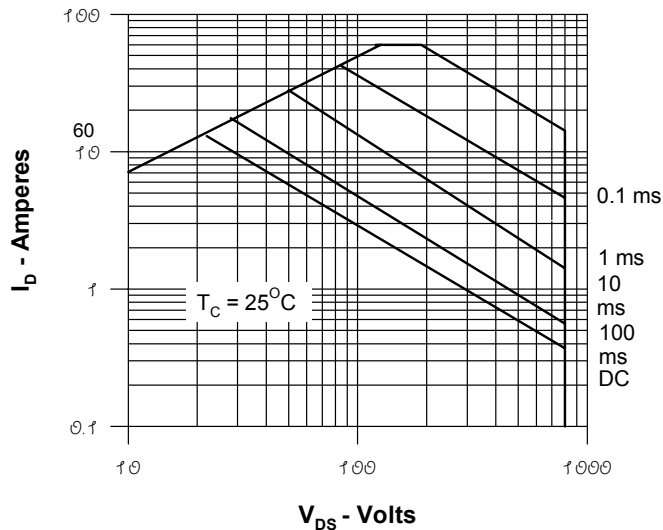


Figure 10. Forward Bias Safe Operating Area

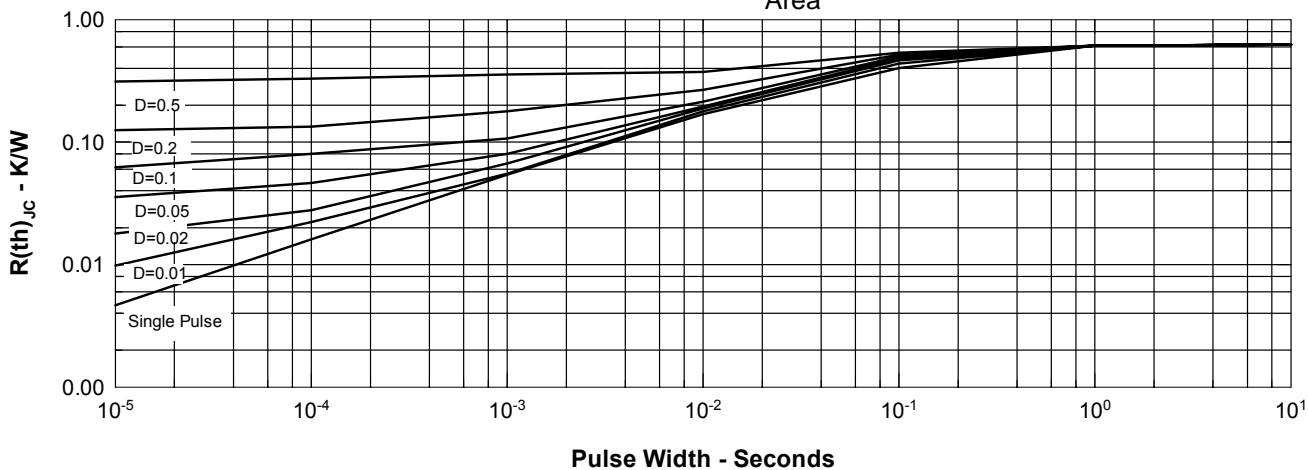


Figure 11. Transient Thermal Resistance