

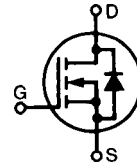
HiPerFET™ Power MOSFETs Q-Class

IXFH 15N80Q
IXFT 15N80Q

$V_{DSS} = 800 \text{ V}$
 $I_{D25} = 15 \text{ A}$
 $R_{DS(on)} = 0.60 \Omega$

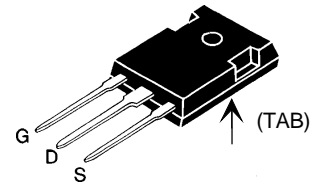
$t_{rr} \leq 250 \text{ ns}$

N-Channel Enhancement Mode
Avalanche Rated, High dv/dt, Low Q_g

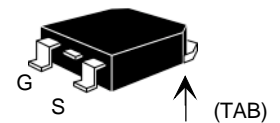


Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	800	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$	800	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$	15	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	60	A
I_{AR}	$T_C = 25^\circ\text{C}$	15	A
E_{AR}	$T_C = 25^\circ\text{C}$	30	mJ
E_{AS}	$T_C = 25^\circ\text{C}$	1.0	J
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 (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
M_d	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_g process
- International standard packages
- Low $R_{DS(on)}$
- Unclamped Inductive Switching (UIS) rated
- Fast switching
- Molding epoxies meet UL 94 V-0 flammability classification

Advantages

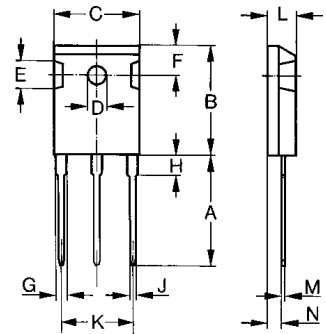
- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 3 \text{ mA}$	800		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4 \text{ mA}$	2.0		V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}_{DC}$, $V_{DS} = 0$			$\pm 100 \text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$		25 μA
		$T_J = 125^\circ\text{C}$		1 mA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = 0.5 I_{D25}$ Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2\%$			0.60 Ω

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	8	16	S
C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		4300	pF
C _{oss}			360	pF
C _{rss}			60	pF
t _{d(on)}	V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = 0.5 I _{D25} R _G = 1.5 Ω (External)		18	ns
t _r			27	ns
t _{d(off)}			53	ns
t _f			16	ns
Q _{g(on)}	V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = 0.5 I _{D25}		90	nC
Q _{gs}			20	nC
Q _{gd}			30	nC
R _{thJC}	(TO-247)			0.42 K/W
R _{thCK}			0.25	K/W

Symbol	Test Conditions	Characteristic Values		
		(T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
I _S	V _{GS} = 0 V			15 A
I _{SM}	Repetitive;			60 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		0.85	250 ns
Q _{RM}				μC
I _{RM}			8	A

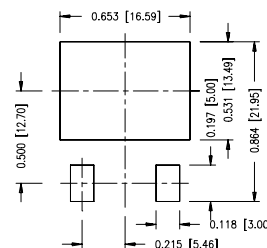
TO-247 AD (IXFH) Outline



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 (D ³ PAK)		Dim.		Millimeter		Inches	
		Min.	Max.	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		0.25 BSC		.010 BSC			
L4		3.80	4.10	.150	.161		

Min. Recommended Footprint



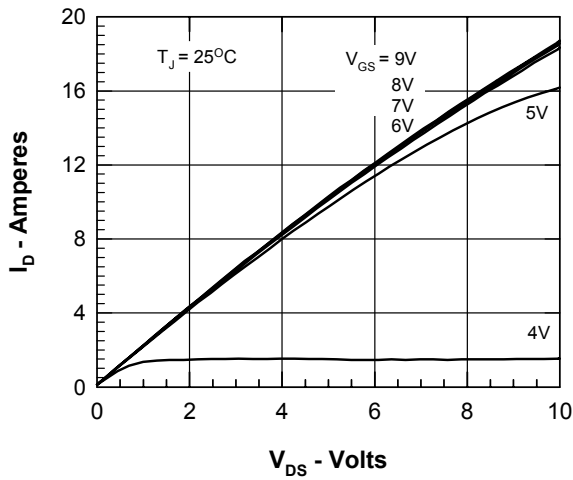


Figure 1. Output Characteristics at 25°C

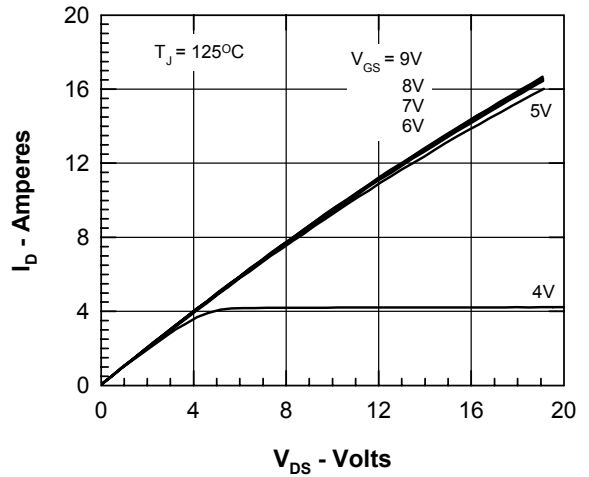


Figure 2. Output Characteristics at 125°C

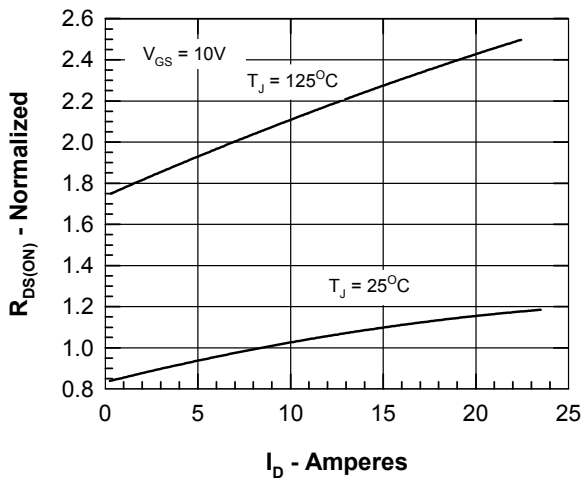


Figure 3. $R_{DS(on)}$ normalized to value at $I_D = 12A$

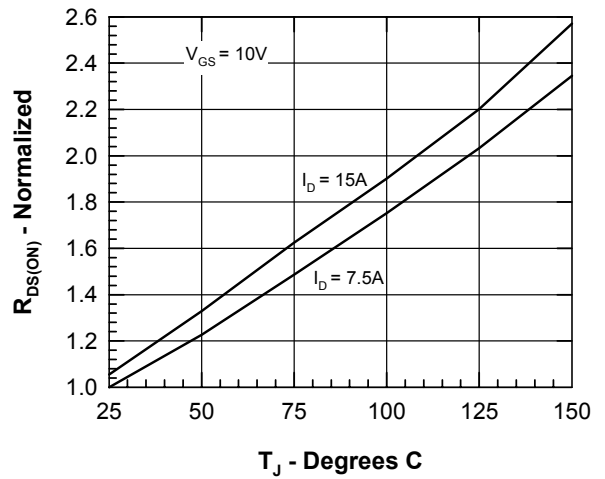


Figure 4. $R_{DS(on)}$ normalized to value at $I_D = 12A$

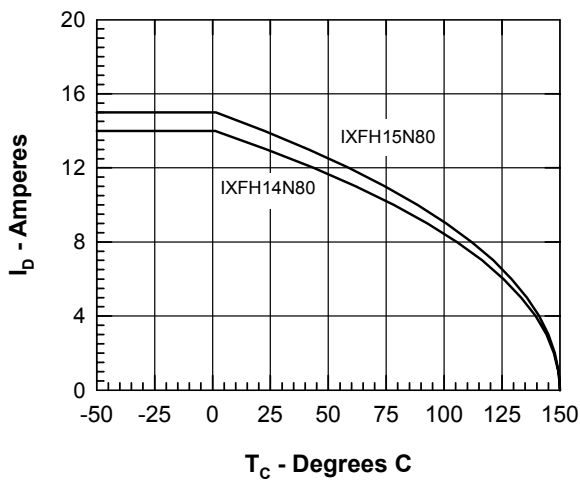


Figure 5. Drain Current vs. Case Temperature

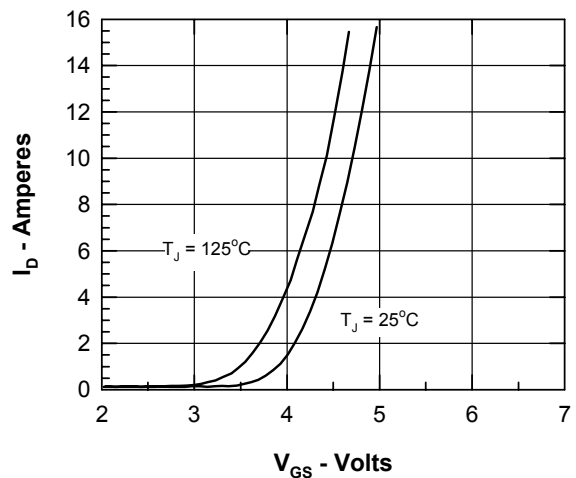


Figure 6. Admittance Curves

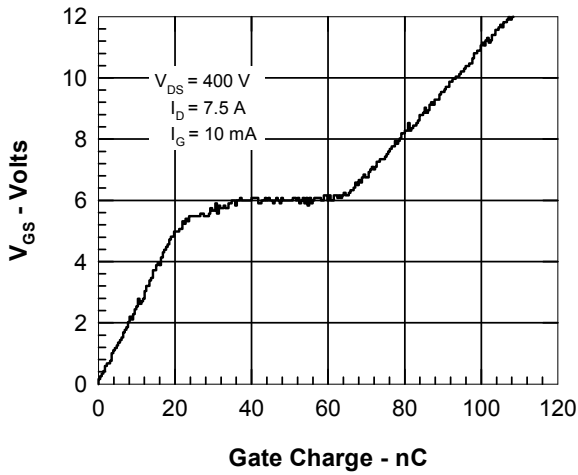


Figure 7. Gate Charge

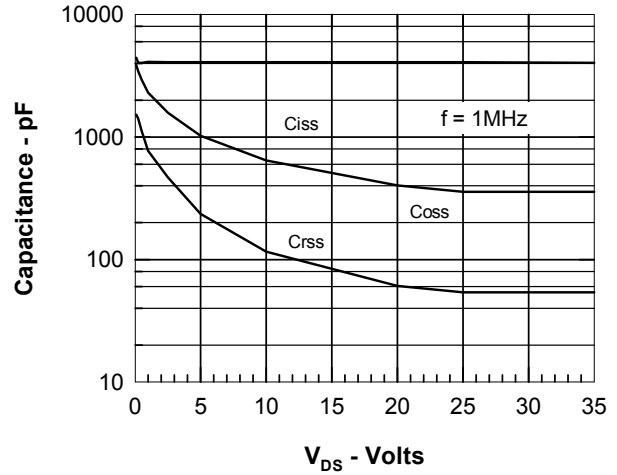


Figure 8. Capacitance Curves

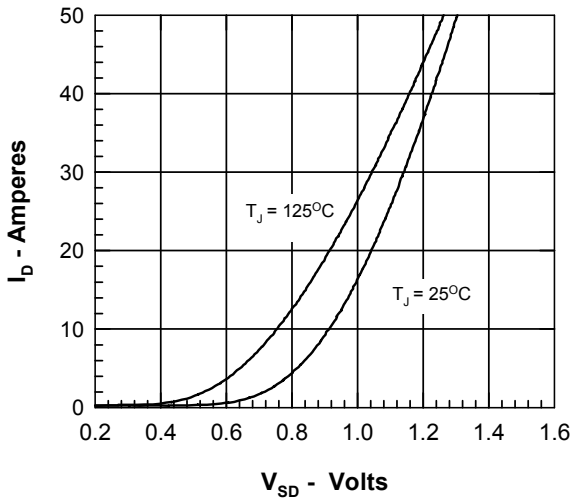


Figure 9. Source Current vs. Source to Drain Voltage

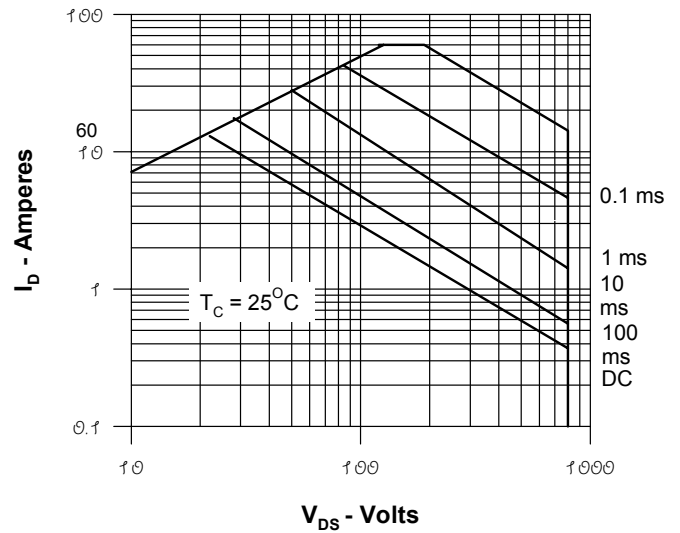


Figure 10. Forward Bias Safe Operating Area

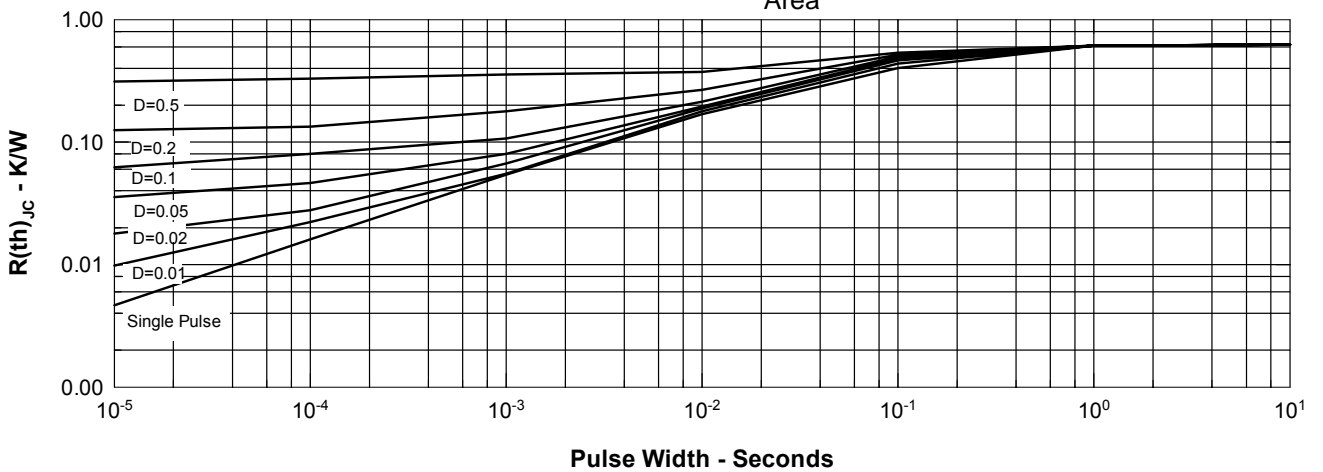


Figure 11. Transient Thermal Resistance



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