

# HiPerFET™ Power MOSFETs Q-Class

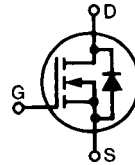
**IXFH 80N10Q**  
**IXFT 80N10Q**

$V_{DSS} = 100 \text{ V}$   
 $I_{D25} = 80 \text{ A}$   
 $R_{DS(on)} = 15 \text{ m}\Omega$

$t_{rr} \leq 200\text{ns}$

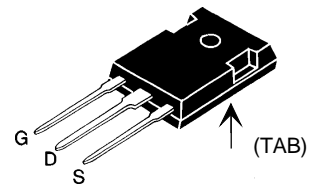
N-Channel Enhancement Mode  
Avalanche Rated, High dV/dt  
Low Gate Charge and Capacitances

Preliminary data

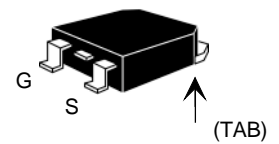


Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	100	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1 \text{ M}\Omega$	100	V
$V_{GS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	80	A
$I_{DM}$	$T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$	320	A
$I_{AR}$	$T_C = 25^\circ\text{C}$	80	A
$E_{AR}$	$T_C = 25^\circ\text{C}$	30	mJ
$E_{AS}$	$T_C = 25^\circ\text{C}$	1.5	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
$P_D$	$T_C = 25^\circ\text{C}$	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 (TO-247)	1.13/10	Nm/lb.in.
Weight		6	g
		4	g

TO-247 AD (IXFH)



TO-268 (IXFT) Case Style



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

### Features

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

### Advantages

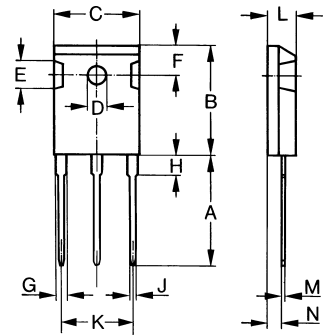
- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
$V_{DSS}$	$V_{GS} = 0 \text{ V}$ , $I_D = 250 \mu\text{A}$	100		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 $\mu\text{A}$
		$T_J = 125^\circ\text{C}$		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 $d \leq 2\%$			15 $\text{m}\Omega$

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> = 0.5 I <sub>D25</sub> , pulse test	30	45	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>			870	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> = 1.5 Ω (External)		30	ns
<b>t<sub>r</sub></b>			70	ns
<b>t<sub>d(off)</sub></b>			68	ns
<b>t<sub>f</sub></b>			30	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	nC
<b>Q<sub>gs</sub></b>			36	nC
<b>Q<sub>gd</sub></b>			95	nC
<b>R<sub>thJC</sub></b>	(TO-247)		0.35	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			80 A
<b>I<sub>SM</sub></b>	Repetitive; pulse width limited by T <sub>JM</sub>			320 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 %			1.5 V
<b>t<sub>rr</sub></b>	I <sub>F</sub> = 25A, -di/dt = 100 A/μs, V <sub>R</sub> = 50 V		0.85	200 ns
<b>Q<sub>RM</sub></b>				μC
<b>I<sub>RM</sub></b>			8	

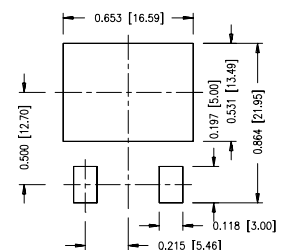
### TO-247 AD (IXFH) Outline



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.	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





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