

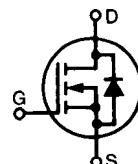
HiPerFET™ Power MOSFETs Q-Class

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

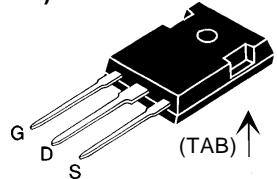
IXFH 30N40Q
IXFT 30N40Q

V_{DSS} = 400 V
 I_{D25} = 30 A
 $R_{DS(on)}$ = 0.16 Ω

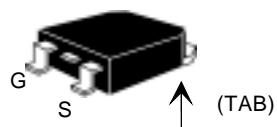
$t_{rr} \leq 250$ ns



TO-247 AD (IXFH)



TO-268 (D3) (IXFT)



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

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	400	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1\text{ M}\Omega$	400	V
V_{GS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	$T_c = 25^\circ\text{C}$	30	A
I_{DM}	$T_c = 25^\circ\text{C}$, pulse width limited by T_{JM}	120	A
I_{AR}	$T_c = 25^\circ\text{C}$	30	A
E_{AR}	$T_c = 25^\circ\text{C}$	30	mJ
E_{AS}		1.5	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 to +150	°C
T_{JM}		150	°C
T_{stg}		-55 to +150	°C
T_L	1.6 mm (0.063 in) from case for 10 s	300	°C
M_d	Mounting torque	1.13/10	Nm/lb.in.
Weight	TO-247 TO-268	6 4	g g

Symbol	Test Conditions	Characteristic Values		
		($T_J = 25^\circ\text{C}$, unless otherwise specified)	min.	typ.
V_{DSS}	$V_{GS} = 0\text{ V}$, $I_D = 250\text{ }\mu\text{A}$	400		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4\text{ mA}$	2.0	4.0	V
I_{GSS}	$V_{GS} = \pm 20\text{ V}_{DC}$, $V_{DS} = 0$		±100	nA
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0\text{ V}$	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	25 1	μA mA
$R_{DS(on)}$	$V_{GS} = 10\text{ V}$, $I_D = 0.5 I_{D25}$ Pulse test, $t \leq 300\text{ }\mu\text{s}$, duty cycle $d \leq 2\%$		0.16	Ω

Features

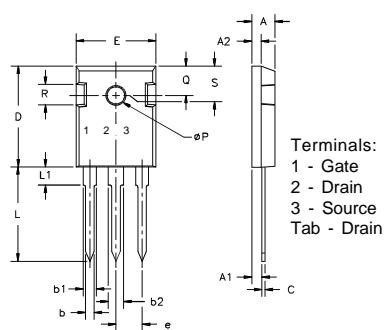
- IXYS advanced low Q_g process
- Low gate charge and capacitances
 - easier to drive
 - faster switching
- International standard packages
- Low $R_{DS(on)}$
- Rated for unclamped Inductive load switching (UIS) rated
- Molding epoxies meet UL 94 V-0 flammability classification

Advantages

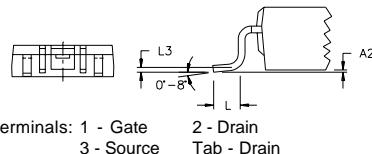
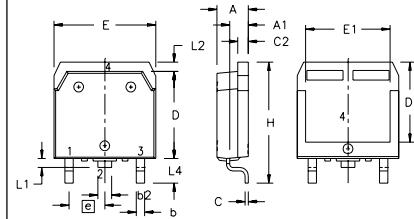
- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values			
		($T_J = 25^\circ\text{C}$, unless otherwise specified)	min.	typ.	max.
g_{fs}	$V_{DS} = 20 \text{ V}; I_D = 0.5 \cdot I_{D25}$, pulse test	18	25	S	
C_{iss}	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	3300	pF		
C_{oss}		540	pF		
C_{rss}		150	pF		
$t_{d(on)}$	$V_{GS} = 10 \text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 2.0 \Omega$ (External),	25	ns		
t_r		35	ns		
$t_{d(off)}$		51	ns		
t_i		12	ns		
$Q_{g(on)}$	$V_{GS} = 10 \text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$	95	nC		
Q_{gs}		22	nC		
Q_{gd}		44	nC		
R_{thJC}	(TO-247)		0.42	KW	
R_{thCK}			0.25	KW	

Symbol	Test Conditions	Characteristic Values			
		($T_J = 25^\circ\text{C}$, unless otherwise specified)	min.	typ.	max.
I_s	$V_{GS} = 0 \text{ V}$		30	A	
I_{SM}	Repetitive; pulse width limited by T_{JM}		120	A	
V_{SD}	$I_F = I_S, V_{GS} = 0 \text{ V},$ Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2 \%$		1.5	V	
t_{rr}	$I_F = I_S, -di/dt = 100 \text{ A}/\mu\text{s}, V_R = 100 \text{ V}$	1.1	250	ns	
Q_{RM}		10	μC		
I_{RM}			A		

TO-247 AD (IXFH) Outline


Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches 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	.205	.225
L	19.81	20.32	.780	.800
L ₁		4.50		.177
$\emptyset P$	3.55	3.65	.140	.144
Q	5.89	6.40	.232	.252
R	4.32	5.49	.170	.216
S	6.15	BSC	242	BSC

TO-268 Outline


Terminals: 1 - Gate 2 - Drain
3 - Source Tab - Drain

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 4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025