

HiPerFET™ Power MOSFETs Q-Class

IXFH 58N20Q
IXFT 58N20Q

V_{DSS} = 200 V
I_{D25} = 58 A
R_{DS(on)} = 40 mΩ

t_{rr} ≤ 200 ns

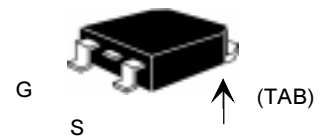
N-Channel Enhancement Mode
Avalanche Rated High dv/dt, Low Q_g

Preliminary data sheet

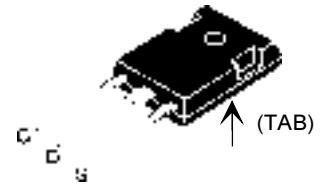


Symbol	Test Conditions	Maximum Ratings	
V _{DSS}	T _J = 25°C to 150°C	200	V
V _{DGR}	T _J = 25°C to 150°C; R _{GS} = 1 MΩ	200	V
V _{GS}	Continuous	±20	V
V _{GSM}	Transient	±30	V
I _{D25}	T _C = 25°C	58	A
I _{DM}	T _C = 25°C, pulse width limited by T _{JM}	232	A
I _{AR}	T _C = 25°C	58	A
E _{AR}	T _C = 25°C	30	mJ
E _{AS}	T _C = 25°C	1.0	J
dv/dt	I _S ≤ I _{DM} , di/dt ≤ 100 A/μs, V _{DD} ≤ V _{DSS} , T _J ≤ 150°C, R _G = 2 Ω	5	V/ns
P _D	T _C = 25°C	300	W
T _J		-55 ... +150	°C
T _{JM}		150	°C
T _{stg}		-55 ... +150	°C
T _L	1.6 mm (0.062 in.) from case for 10 s	300	°C
M _d	Mounting torque	1.13/10	Nm/lb.in.
Weight	TO-247	6	g
	TO-268	4	g

TO-268 (D3) (IXFT) Case Style



TO-247 AD



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

Features

- IXYS advanced low Q_g 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

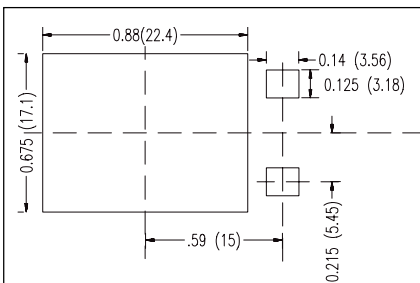
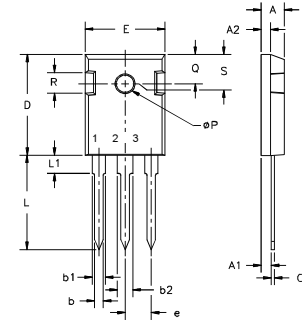
Advantages

- Easy to mount
- Space savings
- High power density

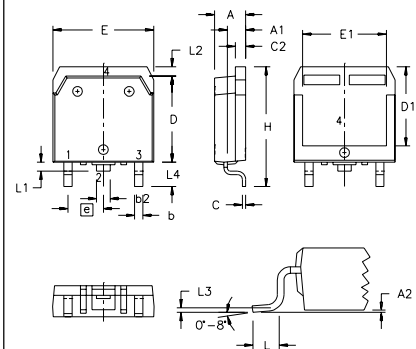
Symbol	Test Conditions (T _J = 25°C, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
V _{DSS}	V _{GS} = 0 V, I _D = 250 μA	200		V
V _{GS(th)}	V _{DS} = V _{GS} , I _D = 4 mA	2.0		V
I _{GSS}	V _{GS} = ±20 V _{DC} , V _{DS} = 0			±100 nA
I _{DSS}	V _{DS} = V _{DSS} V _{GS} = 0 V	T _J = 25°C		25 μA
		T _J = 125°C		1 mA
R _{DS(on)}	V _{GS} = 10 V, I _D = 0.5 I _{D25} Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			40 mΩ

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	24	34	S	
C_{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		3600	pF	
C_{oss}			870	pF	
C_{rss}			280	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)		20	ns	
t_r			40	ns	
t_{d(off)}			40	ns	
t_f			13	ns	
Q_{g(on)}	V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = 0.5 I _{D25}		98	140	nC
Q_{gs}			25	35	nC
Q_{gd}			45	70	nC
R_{thJC}	(TO-247)		0.25	0.42	KW
R_{thCK}				KW	

Source-Drain Diode		Characteristic Values			
		(T _J = 25°C, unless otherwise specified)			
Symbol	Test Conditions	min.	typ.	max.	
I_S	V _{GS} = 0 V			58 A	
I_{SM}	Repetitive;			232 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		0.7	200	ns
Q_{RM}				7	μC
I_{RM}					A

Min. Recommended Footprint
 Dimensions in mm and inches

TO-247 AD Outline

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

Dim.	Millimeter		Inches	
	Min.	Max.	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
L ₁		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
 4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025