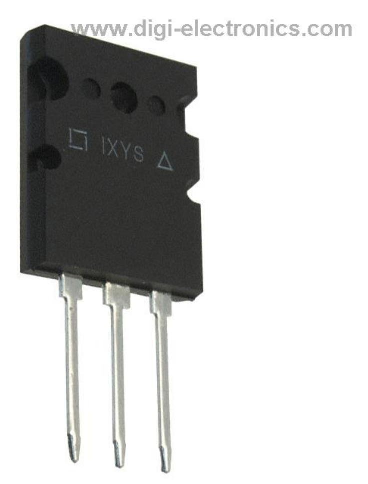
IXFK52N30Q Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number	IXFK52N30Q-DG
Manufacturer	IXYS
Manufacturer Product Number	IXFK52N30Q
Description	MOSFET N-CH 300V 52A TO264AA
Detailed Description	N-Channel 300 V 52A (Tc) 360W (Tc) Through Hole TO-264AA (IXFK)

Purchase and inquiry

Manufacturer Product Number: IXFK52N30Q

Manufacturer: IXYS

Series: HiPerFET™

Product Status: Obsolete

FET Type: N-Channel

Technology: MOSFET (Metal Oxide)

Drain to Source Voltage (Vdss): 300 V

Current - Continuous Drain (Id) @ 25°C: 52A (Tc)

Drive Voltage (Max Rds On, Min Rds On): 10V

Rds On (Max) @ Id, Vgs: 60mOhm @ 500mA, 10V

Vgs(th) (Max) @ Id: 4V @ 4mA

Gate Charge (Qg) (Max) @ Vgs: 150 nC @ 10 V

Vgs (Max): ±20V

Input Capacitance (Ciss) (Max) @ Vds: 5300 pF @ 25 V

FET Feature: -

Power Dissipation (Max): 360W (Tc)

Operating Temperature: -55°C ~ 150°C (TJ)

Mounting Type: Through Hole

Supplier Device Package: TO-264AA (IXFK)

Package / Case: TO-264-3, TO-264AA

Base Product Number: IXFK52

Environmental & Export classification

Moisture Sensitivity Level (MSL): 1 (Unlimited)

ECCN: EAR99

HTSUS: 8541.29.0095

IXYS

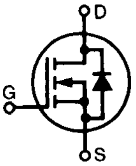
HiPerFET™ Power MOSFETs
Q-Class

IXFH 52N30Q
IXFK 52N30Q
IXFT 52N30Q

V_{DSS} = 300 V
I_{D25} = 52 A
$R_{DS(on)}$ = 60 mΩ
t_{rr} ≤ 250 ns

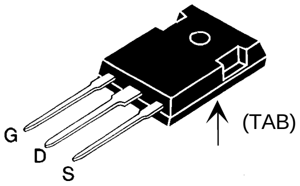
N-Channel Enhancement Mode
Avalanche Rated, High dv/dt, Low t_{rr}
Low Gate Charge and Capacitances

Preliminary data

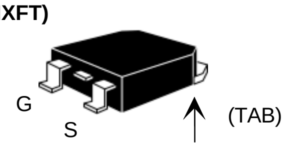


Symbol	Test Conditions		Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C		300	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ		300	V
V_{GS}	Continuous		±20	V
V_{GSM}	Transient		±30	V
I_{D25}	T_C = 25°C, Chip capability		52	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}		208	A
I_{AR}	T_C = 25°C		52	A
E_{AR}	T_C = 25°C		30	mJ
E_{AS}	T_C = 25°C		1.5	J
dv/dt	$I_S \leq I_{DM}$, di/dt ≤ 100 A/µs, $V_{DD} \leq V_{DSS}$, $T_J \leq$ 150°C, R_G = 2 Ω		5	V/ns
P_D	T_C = 25°C		360	W
T_J			-55 ... +150	°C
T_{JM}			150	°C
T_{stg}			-55 ... +150	°C
T_L	1.6 mm (0.063 in) from case for 10 s		300	°C
M_d	Mounting torque	TO-247	1.13/10	Nm/lb.in.
		TO-264	0.9/6	Nm/lb.in.
Weight		TO-247	6	g
		TO-264	10	g
		TO-268	4	g

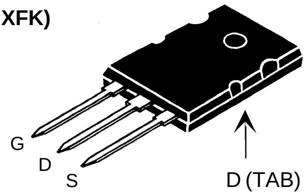
TO-247 AD (IXFH)



TO-268 (D3) (IXFT)



TO-264 AA (IXFK)



G = Gate
S = Source
TAB = Drain

Features

- Low gate charge
- International standard packages
- Epoxy meet UL 94 V-0, flammability classification
- Low $R_{DS\ (on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Avalanche energy and current rated
- Fast intrinsic Rectifier

Advantages

- Easy to mount
- Space savings
- High power density

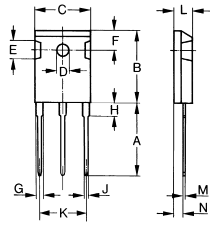
Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
V_{DSS}	V_{GS} = 0 V, I_D = 1 mA		300			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 4 mA		2		4	V
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0				±200	nA
I_{DSS}	V_{DS} = V_{DSS}	T_J = 25°C			50	µA
	V_{GS} = 0 V	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 %				60	mΩ

IXYS

IXFH 52N30Q IXFK 52N30Q IXFT 52N30Q

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	22	35		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		5300		pF
C_{oss}			1010		pF
C_{rss}			200		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),		27		ns
t_r			60		ns
$t_{d(off)}$			80		ns
t_f			25		ns
$Q_{g(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		150		nC
Q_{gs}			34		nC
Q_{gd}			75		nC
R_{thJC}				0.35	K/W
R_{thCK}	TO-247 TO-264		0.25 0.15		K/W K/W

TO-247 AD (IXFH) Outline

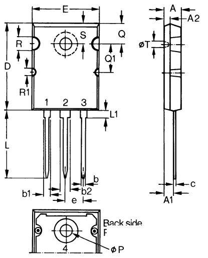


Dim.	Millimeter Min.	 Max.	Inches Min.	 Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.610	0.640
D	3.55	3.65	0.140	0.144
E	4.32	5.49	0.170	0.216
F	5.4	6.2	0.212	0.244
G	1.65	2.13	0.065	0.084
H	-	4.5	-	0.177
J	1.0	1.4	0.040	0.055
K	10.8	11.0	0.426	0.433
L	4.7	5.3	0.185	0.209
M	0.4	0.8	0.016	0.031
N	1.5	2.49	0.087	0.102

Source-Drain Diode

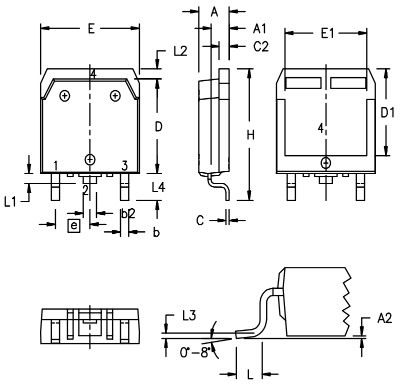
Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
I_S	V_{GS} = 0 V			52	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			208	A
V_{SD}	I_F = I_S, V_{GS} = 0 V, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %			1.5	V
t_{rr}	I_F = I_S -di/dt = 100 A/µs, V_R = 100 V			250	ns
Q_{RM}			1		µC
I_{RM}			8		A

TO-264 AA Outline



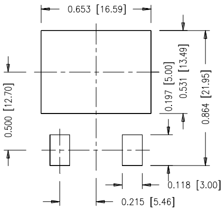
Dim.	Millimeter Min.	 Max.	Inches Min.	 Max.
A	4.82	5.13	.190	.202
A1	2.54	2.89	.100	.114
A2	2.00	2.10	.079	.083
b	1.12	1.42	.044	.056
b1	2.39	2.69	.094	.106
b2	2.90	3.09	.114	.122
c	0.53	0.83	.021	.033
D	25.91	26.16	1.020	1.030
E	19.81	19.96	.780	.786
e	5.46 BSC		.215 BSC	
J	0.00	0.25	.000	.010
K	0.00	0.25	.000	.010
L	20.32	20.83	.800	.820
L1	2.29	2.59	.090	.102
P	3.17	3.66	.125	.144
Q	6.07	6.27	.239	.247
Q1	8.38	8.69	.330	.342
R	3.81	4.32	.150	.170
R1	1.78	2.29	.070	.090
S	6.04	6.30	.238	.248
T	1.57	1.83	.062	.072

TO-268AA (D³ PAK)



Dim.	Millimeter Min.	 Max.	Inches 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



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

IXYS
A Littelfuse Technology

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