IXFH88N30P Datasheet

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DiGi Electronics Part Number	IXFH88N30P-DG
Manufacturer	IXYS
Manufacturer Product Number	IXFH88N30P
Description	MOSFET N-CH 300V 88A TO247AD
Detailed Description	N-Channel 300 V 88A (Tc) 600W (Tc) Through Hole TO-247AD (IXFH)

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
IXFH88N30P	IXYS
Series:	Product Status:
HiPerFET™, Polar	Active
FET Type:	Technology:
N-Channel	MOSFET (Metal Oxide)
Drain to Source Voltage (Vdss):	Current - Continuous Drain (Id) @ 25°C:
300 V	88A (Tc)
Drive Voltage (Max Rds On, Min Rds On):	Rds On (Max) @ Id, Vgs:
10V	40mOhm @ 44A, 10V
Vgs(th) (Max) @ Id:	Gate Charge (Qg) (Max) @ Vgs:
5V @ 4mA	180 nC @ 10 V
Vgs (Max):	Input Capacitance (Ciss) (Max) @ Vds:
±20V	6300 pF @ 25 V
FET Feature:	Power Dissipation (Max):
-	600W (Tc)
Operating Temperature:	Mounting Type:
-55°C ~ 150°C (TJ)	Through Hole
Supplier Device Package:	Package / Case:
TO-247AD (IXFH)	TO-247-3
Base Product Number:	
IXFH88	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.29.0095	

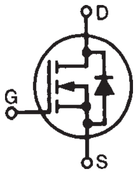
IXYS

Polar™ HiPerFET™ Power MOSFET

IXFT88N30P
IXFH88N30P
IXFK88N30P

V_{DSS} = 300V
I_{D25} = 88A
$R_{DS(on)}$ ≤ 40mΩ
t_{rr} ≤ 200ns

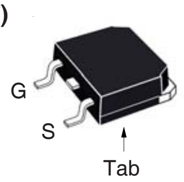
N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



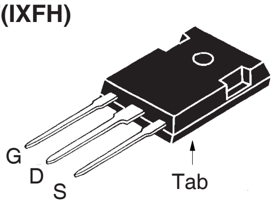
Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	300	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	300	V
V_{GSS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	T_C = 25°C	88	A
$I_{L(RMS)}$	External Lead Current Limit	75	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	220	A
I_A	T_C = 25°C	60	A
E_{AS}	T_C = 25°C	2	J
dV/dt	$I_S \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150°C$	10	V/ns
P_D	T_C = 25°C	600	W
T_J		-55 to +150	°C
T_{JM}		+150	°C
T_{stg}		-55 to +150	°C
T_L	1.6mm (0.063in) from Case for 10s	300	°C
T_{SOLD}	Plastic Body for 10s	260	°C
M_d	Mounting Torque (TO-247&TO-264)	1.13/10	Nm/lb.in.
Weight	TO-268	4	g
	TO-247	6	g
	TO-264	10	g

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 250μA	300			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 4mA	2.5		5.0	V
I_{GSS}	V_{GS} = ± 20V, V_{DS} = 0V			±100	nA
I_{DSS}	V_{DS} = V_{DSS}, V_{GS} = 0V			25	μA
	T_J = 125°C			250	μA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 0.5 • I_{D25}, Note 1			40	mΩ

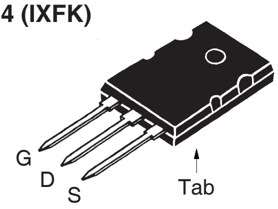
TO-268 (IXFT)



TO-247(IXFH)



TO-264 (IXFK)



G = Gate
D = Drain
S = Source
Tab = Drain

Features

- International Standard Packages
- Fast Intrinsic Diode
- Avalanche Rated
- Low $R_{DS(ON)}$ and Q_G
- Low Package Inductance

Advantages

- High Power Density
- Easy to Mount
- Space Savings

Applications

- DC-DC Coverters
- Battery Chargers
- Switch-Mode and Resonant-Mode Power Supplies
- DC Choppers
- AC and DC Motor Drives
- Uninterrupted Power Supplies
- High Speed Power Switching Applications

IXYS

IXFT88N30P IXFH88N30P
IXFK88N30P

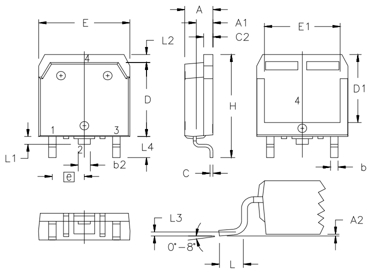
Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10V, I_D = 0.5 • I_{D25}, Note 1	40	60		S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		6300		pF
C_{oss}			950		pF
C_{rss}			190		pF
$t_{d(on)}$	**Resistive Switching Times** V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 60A R_G = 3.3Ω (External)		25		ns
t_r			24		ns
$t_{d(off)}$			96		ns
t_f			25		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		180		nC
Q_{gs}			44		nC
Q_{gd}			90		nC
R_{thJC}				0.21	°C/W
R_{thCS}	TO-247		0.21		°C/W
	TO-264		0.15		°C/W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0V			88	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			220	A
V_{SD}	I_F = I_S, V_{GS} = 0V, Note 1			1.5	V
t_{rr}	I_F = 25A, -di/dt = 100A/μs, V_R = 100V, V_{GS} = 0V		100	200	ns
Q_{RM}			0 .6		μC

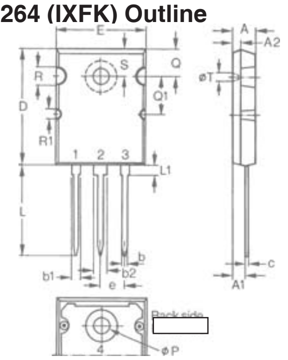
Note 1. Pulse test, t ≤ 300μs, duty cycle, d ≤ 2%.

TO-268 (IXFT) Outline



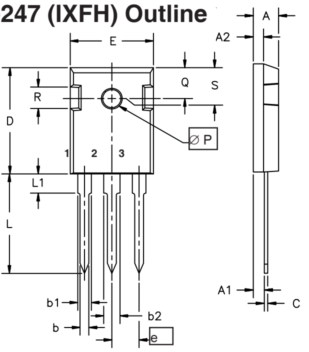
SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.193	.201	4.90	5.10
A1	.106	.114	2.70	2.90
A2	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
b2	.075	.083	1.90	2.10
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.488	.500	12.40	12.70
E	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
e	.215 BSC		5.45 BSC	
H	.736	.752	18.70	19.10
L	.094	.106	2.40	2.70
L1	.047	.055	1.20	1.40
L2	.039	.045	1.00	1.15
L3	.010 BSC		0.25 BSC	
L4	.150	.161	3.80	4.10

TO-264 (IXFK) Outline



Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches 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-247 (IXFH) Outline



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

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	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
∅P	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	

IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

Fig. 1. Output Characteristics @ T_J = 25ºC

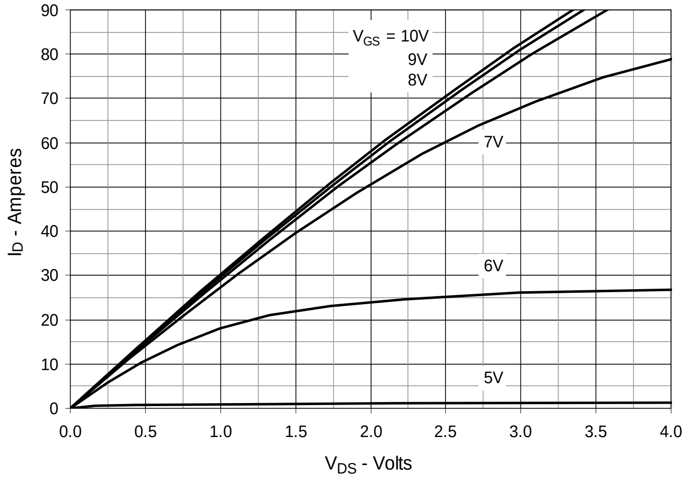


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

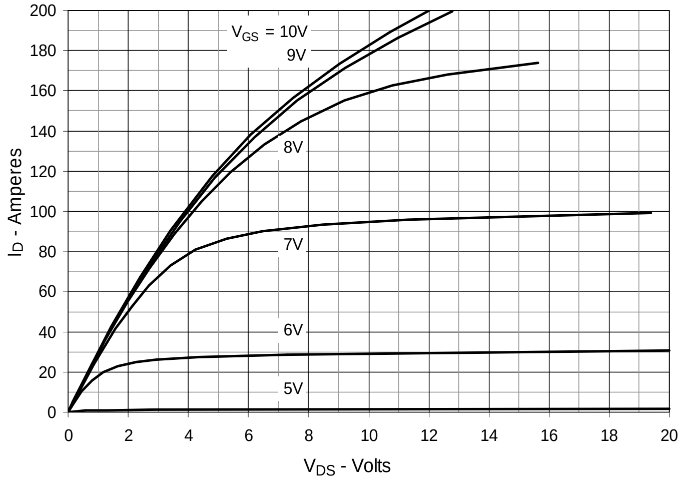


Fig. 3. Output Characteristics @ T_J = 125ºC

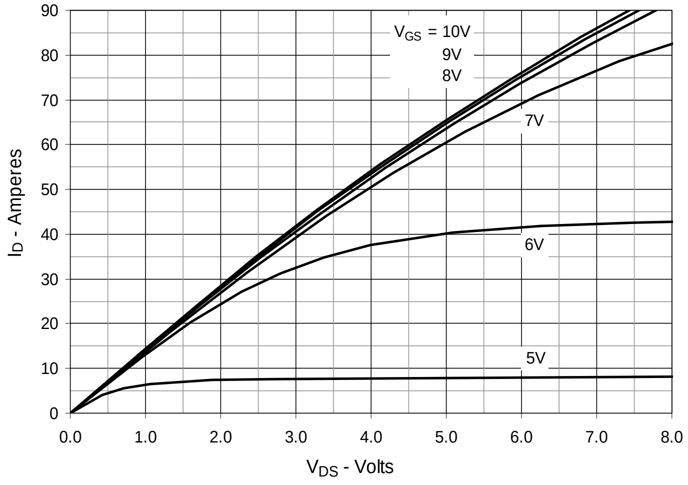


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 44A Value vs. Junction Temperature

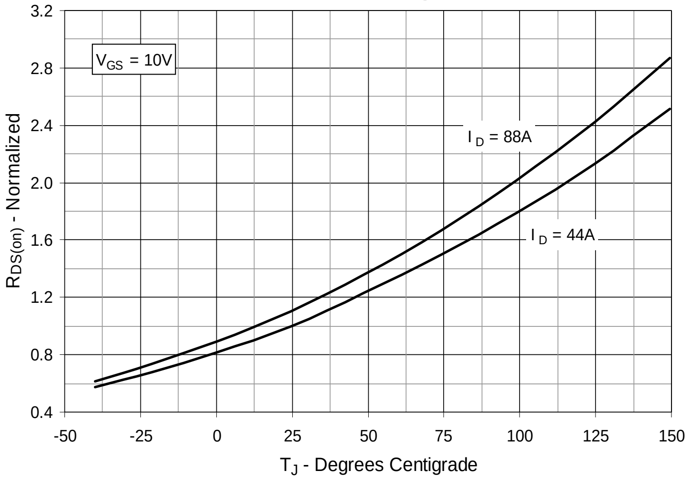


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 44A Value vs. Drain Current

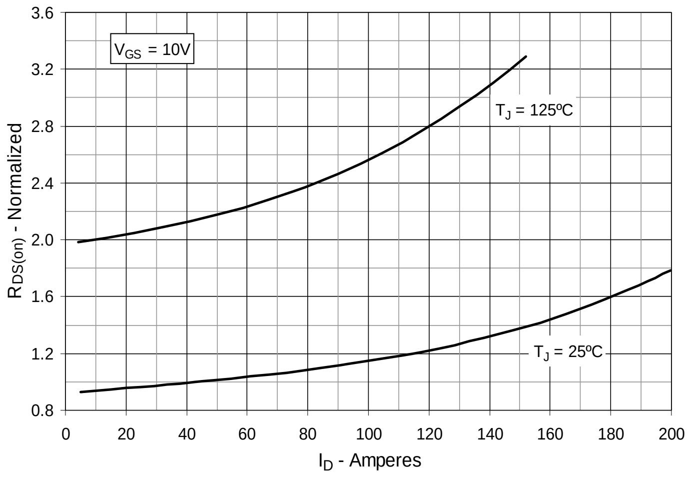


Fig. 6. Maximum Drain Current vs. Case Temperature

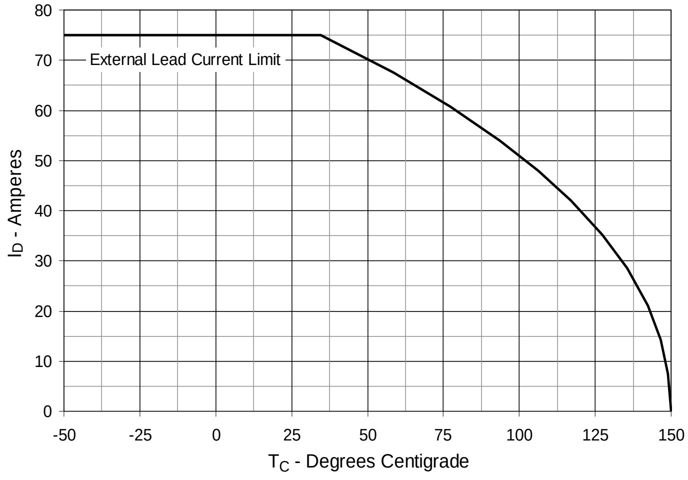


Fig. 7. Input Admittance

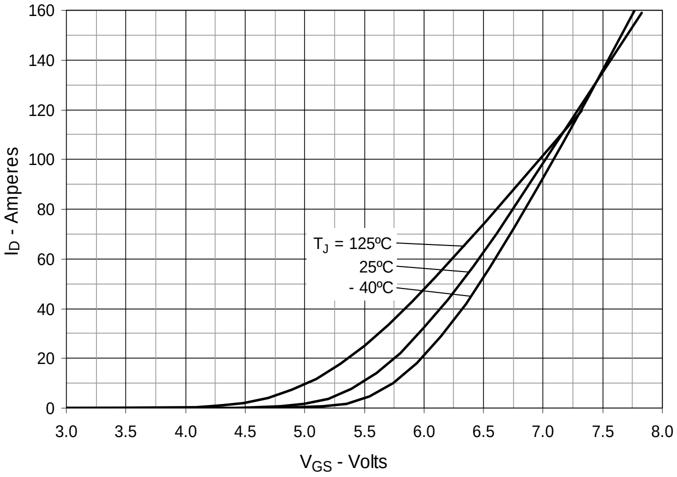


Fig. 8. Transconductance

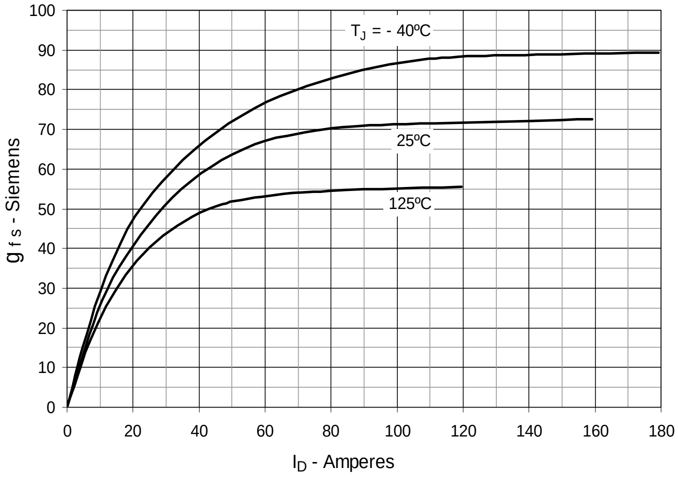


Fig. 9. Forward Voltage Drop of Intrinsic Diode

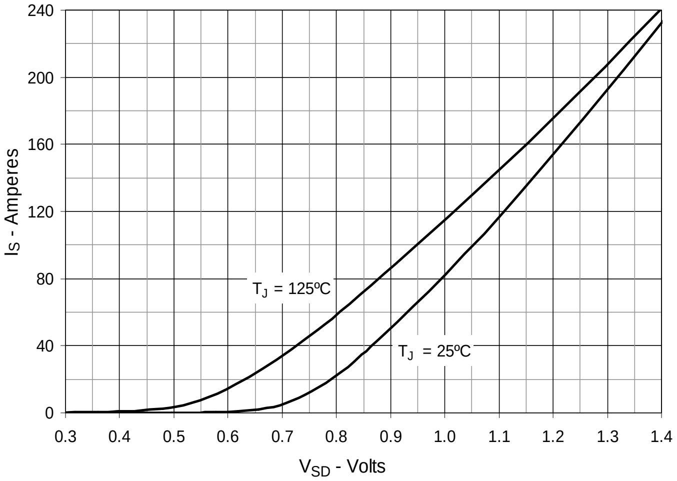


Fig. 10. Gate Charge

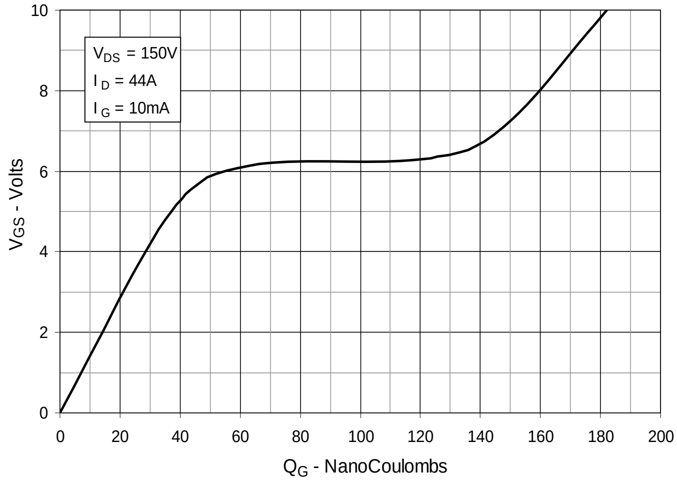


Fig. 11. Capacitance

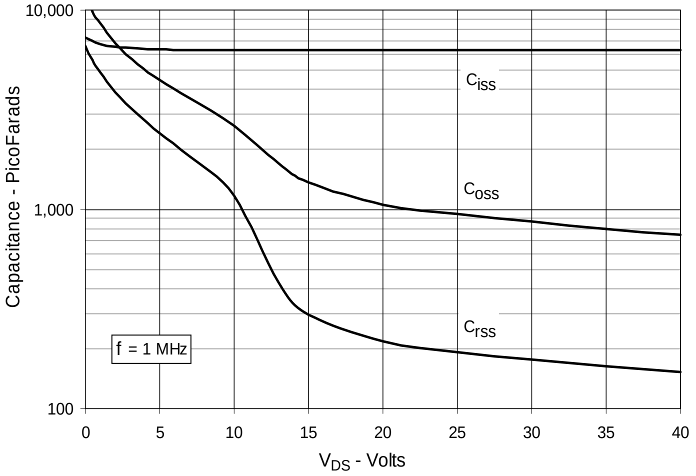


Fig. 12. Forward-Bias Safe Operating Area

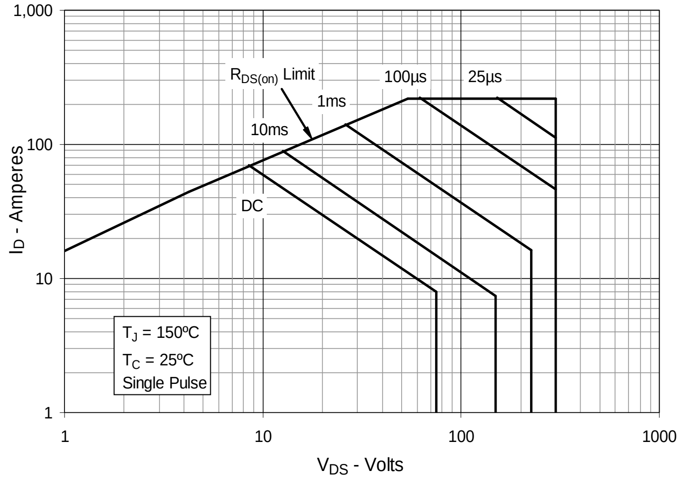
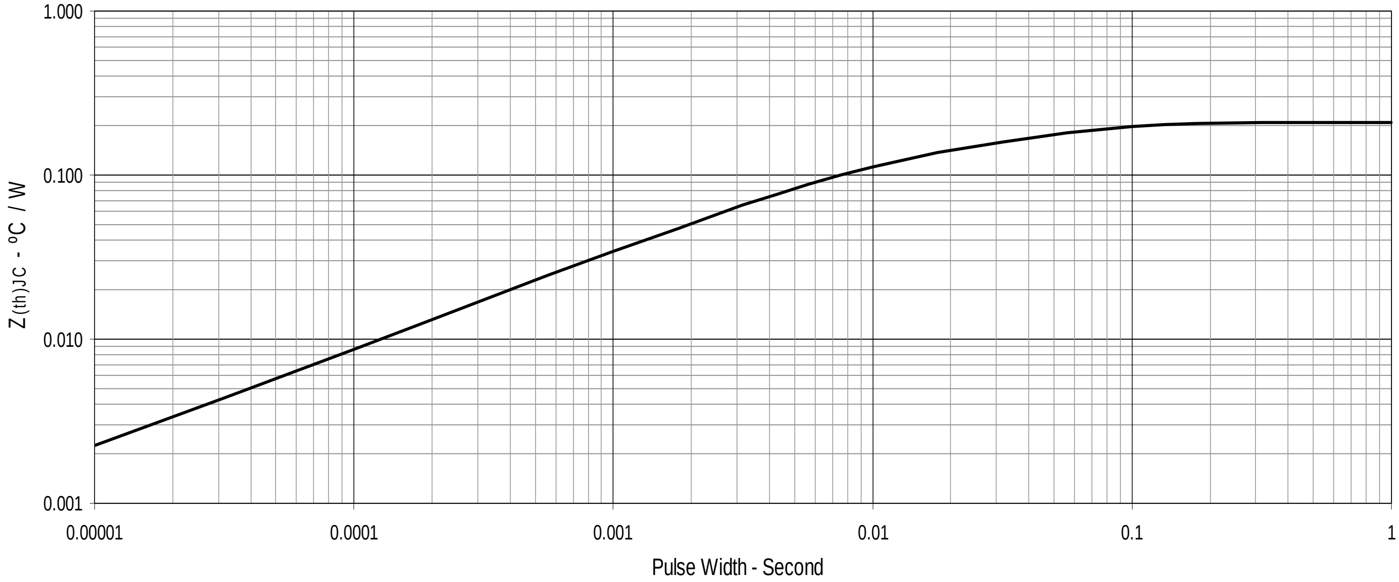


Fig. 13. Maximum Transient Thermal Impedance



IXYS REF: T_88N30P(8S)11-18-09-A

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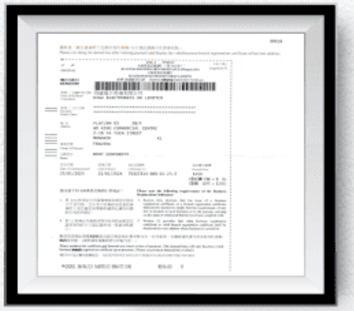

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

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