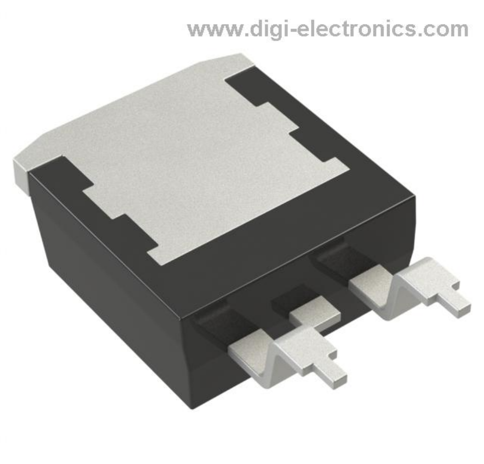
IXTA42N25P Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number	IXTA42N25P-DG
Manufacturer	IXYS
Manufacturer Product Number	IXTA42N25P
Description	MOSFET N-CH 250V 42A TO263
Detailed Description	N-Channel 250 V 42A (Tc) 300W (Tc) Surface Mount TO-263AA

Purchase and inquiry

Manufacturer Product Number:
IXTA42N25P

Manufacturer:
IXYS

Series:
Polar

Product Status:
Active

FET Type:
N-Channel

Technology:
MOSFET (Metal Oxide)

Drain to Source Voltage (Vdss):
250 V

Current - Continuous Drain (Id) @ 25°C:
42A (Tc)

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

Rds On (Max) @ Id, Vgs:
84mOhm @ 500mA, 10V

Vgs(th) (Max) @ Id:
5.5V @ 250µA

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

Vgs (Max):
±20V

Input Capacitance (Ciss) (Max) @ Vds:
2300 pF @ 25 V

FET Feature:
-

Power Dissipation (Max):
300W (Tc)

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

Mounting Type:
Surface Mount

Supplier Device Package:
TO-263AA

Package / Case:
TO-263-3, D2PAK (2 Leads + Tab), TO-263AB

Base Product Number:
IXTA42

Environmental & Export classification

RoHS Status:
ROHS3 Compliant

Moisture Sensitivity Level (MSL):
1 (Unlimited)

REACH Status:
REACH Unaffected

ECCN:
EAR99

HTSUS:
8541.29.0095

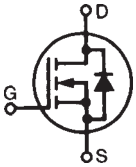
IXYS

PolarHT™ Power MOSFET

IXTA 42N25P
IXTP 42N25P
IXTQ 42N25P

V_{DSS} = 250 V
I_{D25} = 42 A
$R_{DS(on)} \le$ 84 mΩ

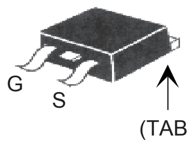
N-Channel Enhancement Mode
Avalanche Rated



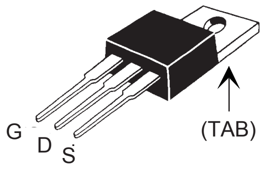
Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	250	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ	250	V
V_{GS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_C = 25°C	42	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	110	A
I_{AR}	T_C = 25°C	42	A
E_{AR}	T_C = 25°C	30	mJ
E_{AS}	T_C = 25°C	1.0	J
dv/dt	$I_S \le I_{DM}$, di/dt ≤ 100 A/μs, $V_{DD} \le V_{DSS}$, $T_J \le$ 150°C, R_G = 10 Ω	10	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
T_{SOLD}	Plastic body for 10 s	260	°C
M_d	Mounting torque (TO-3P / TO-220)	1.13/10	Nm/lb.in.
Weight	TO-3P	5.5	g
	TO-220	4	g
	TO-263	3	g

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0 V, I_D = 250 μA	250			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250μA	3.0		5.5	V
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0			±100	nA
I_{DSS}	$V_{DS} = V_{DSS}$, V_{GS} = 0 V			25	μA
	T_J = 125°C			250	μA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 I_{D25} Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			84	mΩ

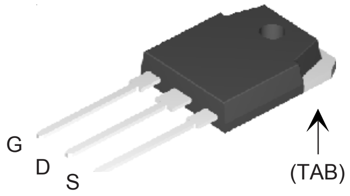
TO-263 (IXTA)



TO-220 (IXTP)



TO-3P (IXTQ)



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

Features

- International standard packages
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
  - easy to drive and to protect

Advantages

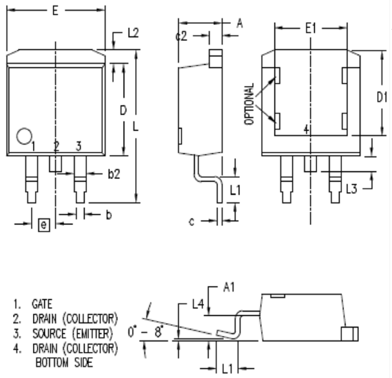
- Easy to mount
- Space savings
- High power density

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	12	20		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		2300		pF
C_{oss}			430		pF
C_{rss}			115		pF
$t_{d(on)}$	V_{GS} = 10 V, $V_{DS} = 0.5\ V_{DSS}$, $I_D = 0.5\ I_{D25}$ R_G = 10 Ω (External)		24		ns
t_r			28		ns
$t_{d(off)}$			81		ns
t_f			30		ns
$Q_{g(on)}$	V_{GS} = 10 V, $V_{DS} = 0.5\ V_{DSS}$, $I_D = 0.5\ I_{D25}$		70		nC
Q_{gs}			17		nC
Q_{gd}			37		nC
R_{thJC}				0.42	°C/W
R_{thCS}	(TO-3P)		0.21		°C/W
	(TO-220)		0.25		°C/W

Source-Drain Diode

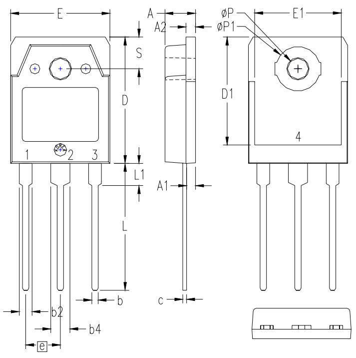
Symbol	Test Conditions	Characteristic Values ($T_J = 25°C$, unless otherwise specified) Min.	Typ.	Max.	
I_S	V_{GS} = 0 V			42	A
I_{SM}	Repetitive			110	A
V_{SD}	$I_F = I_S$, V_{GS} = 0 V, Pulse test, t ≤300 µs, duty cycle d≤ 2 %			1.5	V
t_{rr}	I_F = 25 A -di/dt = 100 A/µs		200		ns
Q_{RM}	V_R = 100 V		2.0		µC

TO-263 (IXTA) Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.160	.190	4.06	4.83
A1	.080	.110	2.03	2.79
b	.020	.039	0.51	0.99
b2	.045	.055	1.14	1.40
c	.016	.029	0.40	0.74
c2	.045	.055	1.14	1.40
D	.340	.380	8.64	9.65
D1	.315	.350	8.00	8.89
E	.380	.410	9.65	10.41
E1	.245	.320	6.22	8.13
e	.100 BSC		2.54 BSC	
L	.575	.625	14.61	15.88
L1	.090	.110	2.29	2.79
L2	.040	.055	1.02	1.40
L3	.050	.070	1.27	1.78
L4	0	.005	0	0.13

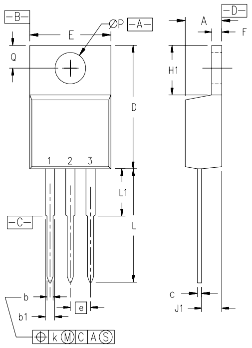
TO-3P (IXTQ) Outline



1 – GATE
2 – DRAIN (COLLECTOR)
3 – SOURCE (EMITTER)
4 – DRAIN (COLLECTOR)

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.185	.193	4.70	4.90
A1	.051	.059	1.30	1.50
A2	.057	.065	1.45	1.65
b	.035	.045	0.90	1.15
b2	.075	.087	1.90	2.20
b4	.114	.126	2.90	3.20
c	.022	.031	0.55	0.80
D	.780	.799	19.80	20.30
D1	.665	.677	16.90	17.20
E	.610	.622	15.50	15.80
E1	.531	.539	13.50	13.70
e	.215 BSC		5.45 BSC	
L	.779	.795	19.80	20.20
L1	.134	.142	3.40	3.60
øP	.126	.134	3.20	3.40
øP1	.272	.280	6.90	7.10
S	.193	.201	4.90	5.10

TO-220 (IXTP) Outline



Pins: 1 - Gate 2 - Drain

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.170	.190	4.32	4.83
b	.025	.040	0.64	1.02
b1	.045	.065	1.15	1.65
c	.014	.022	0.35	0.56
D	.580	.630	14.73	16.00
E	.390	.420	9.91	10.66
e	.100 BSC		2.54 BSC	
F	.045	.055	1.14	1.40
H1	.230	.270	5.85	6.85
J1	.090	.110	2.29	2.79
k	0	.015	0	0.38
L	.500	.550	12.70	13.97
L1	.110	.230	2.79	5.84
ØP	.139	.161	3.53	4.08
Q	.100	.125	2.54	3.18

Fig. 1. Output Characteristics @ 25ºC

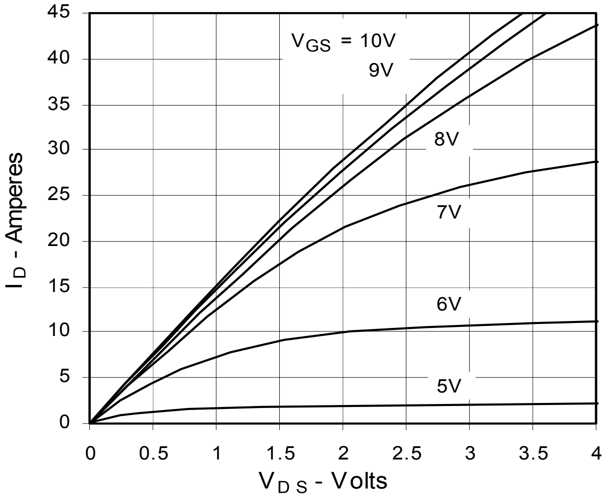


Fig. 2. Extended Output Characteristics @ 25ºC

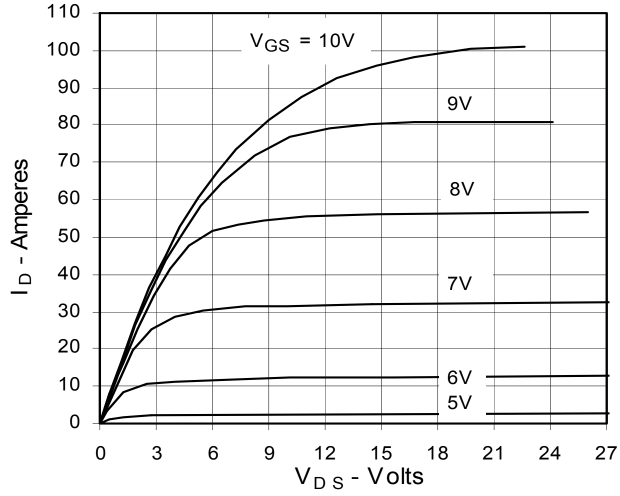


Fig. 3. Output Characteristics @ 125ºC

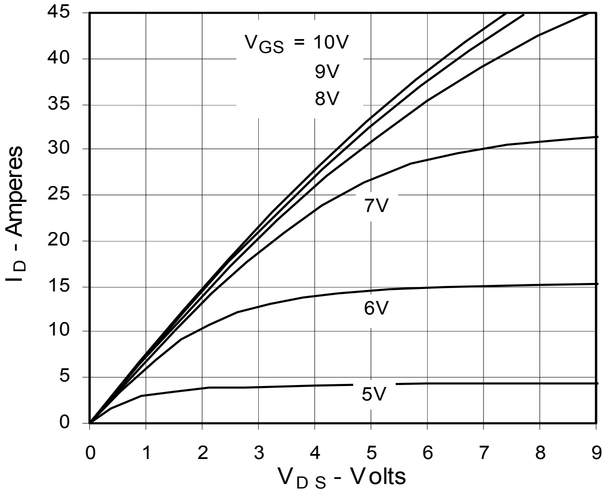


Fig. 4. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Junction Temperature

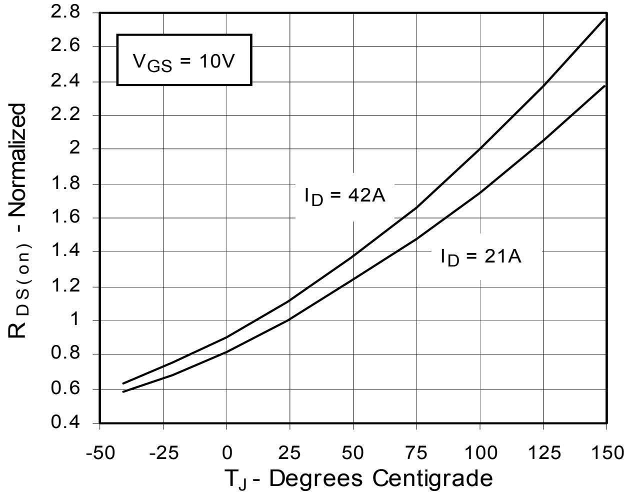


Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. I_D

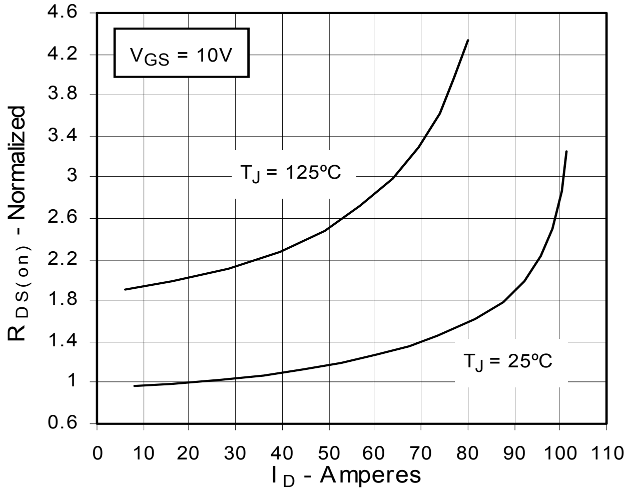


Fig. 6. Drain Current vs. Case Temperature

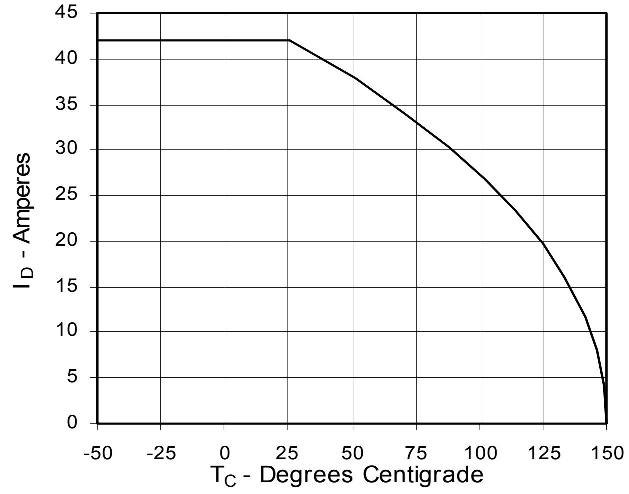


Fig. 7. Input Admittance

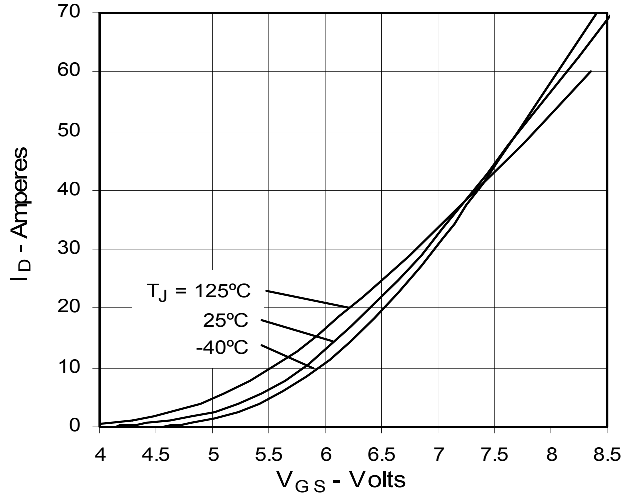


Fig. 8. Transconductance

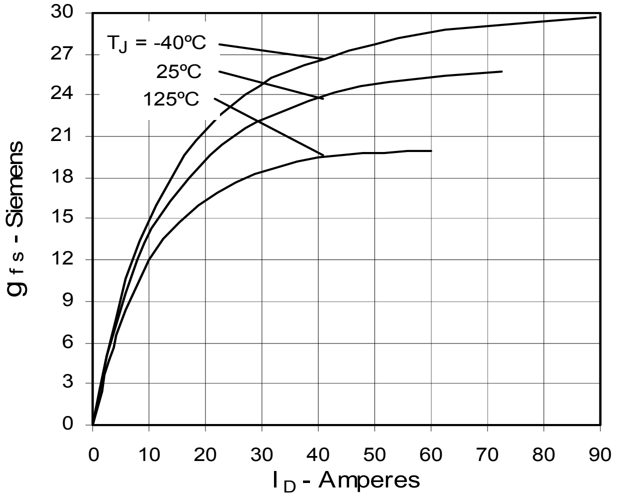


Fig. 9. Source Current vs. Source-To-Drain Voltage

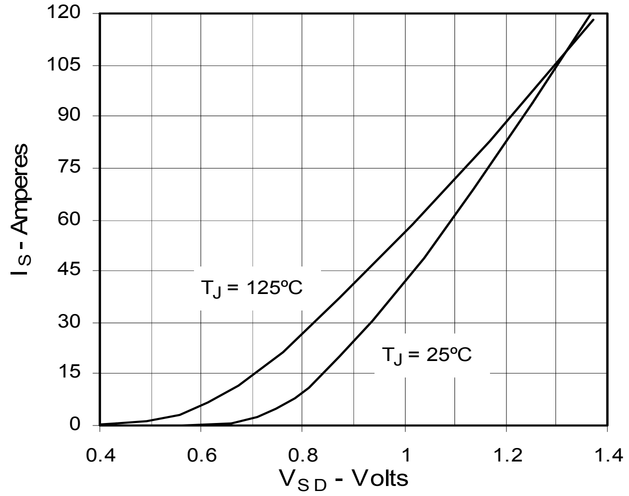


Fig. 10. Gate Charge

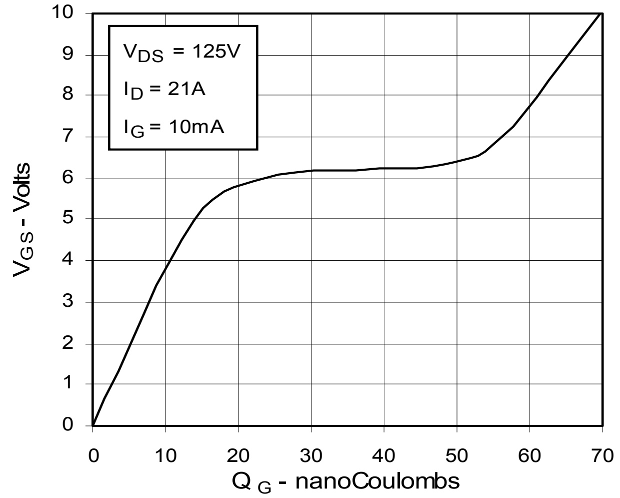


Fig. 11. Capacitance

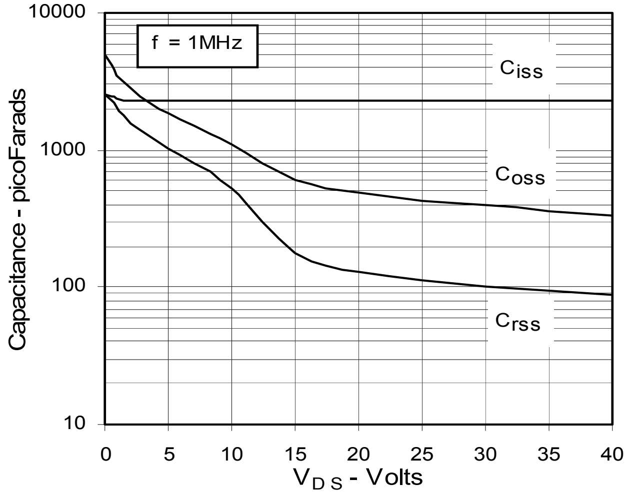


Fig. 12. Forward-Bias Safe Operating Area

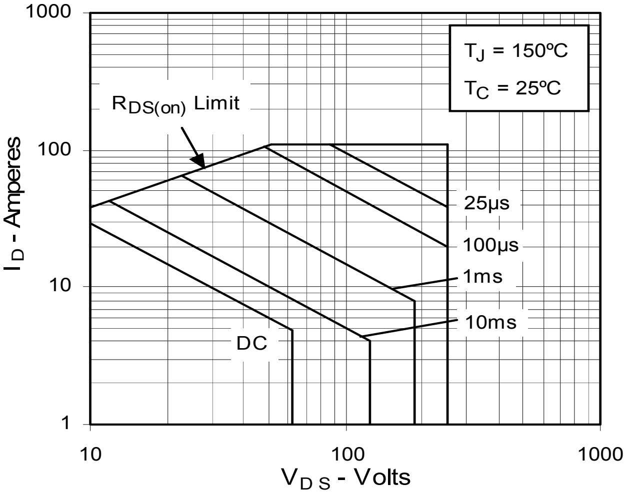
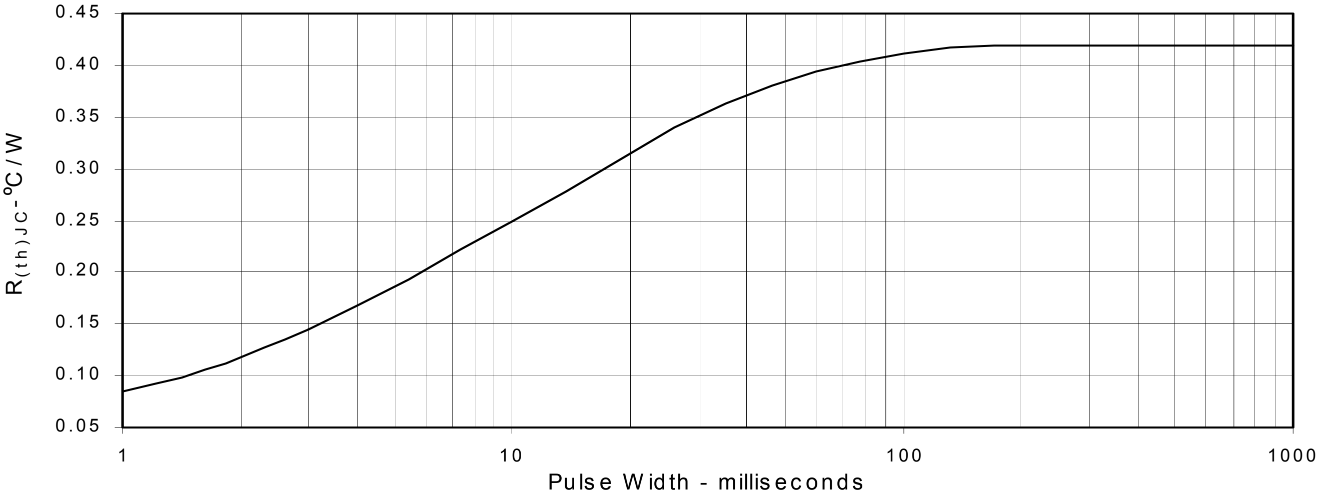


Fig. 13. Maximum Transient Thermal Resistance



IXYS
A Littelfuse Technology

OUR CERTIFICATE

DiGi provide top-quality products and perfect service for customer worldwide through standardization, technological innovation and continuous improvement. DiGi through third-party certification, we striciy control the quality of products and services. Welcome your RFQ to Email: Info@DiGi-Electronics.com

DCI

QUALITY MANAGEMENT SYSTEM CERTIFICATE

DIGI ELECTRONICS HK LIMITED

GB/T 19001-2016 idt ISO9001:2015

DCI Certification Ltd

DCI

ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATE

DIGI ELECTRONICS HK LIMITED

GB/T 24001-2016 idt ISO14001:2015

DCI Certification Ltd

DCI

OCCUPATIONAL HEALTH & SAFETY MANAGEMENT SYSTEM CERTIFICATE

DIGI ELECTRONICS HK LIMITED

GB/T45001-2020 idt ISO45001:2018

DCI Certification Ltd

CR

CERTIFICATE OF INCORPORATION

I hereby certify that

DIGI ELECTRONICS HK LIMITED

Registrar of Companies
Hong Kong Special Administrative Region

ASA

MEMBERSHIP
Certificate

DIGI ELECTRONICS HK LIMITED

Michele Dickstein
President

dun & bradstreet

A Dun & Bradstreet
D-U-N-S® Registered™ Business

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.