PRODUCT SPECIFICATION

RoHS Compliant

ALL

SPEC.NO : D-0603-060-I

DATE : Jul.08,2022

CUSTOMER'S PRODUCT NAME:

PRODUCT NAME:

TPI4018CT□□□□-A1 SERIES

THIS ITEM IS:

☐LEADED ■LEAD-FREE

THIS SPECIFICATION IS:

☐ FULLY ACCEPTED

☐ DENIED

☐ ACCEPTED UNDER THE FOLLOWING CONDITIONS

SIGNATURE: DATE:

NAME(PRINT):

TITLE:

千如電子集團
ABC-ATEC ELECTRONICS GROUP

FACTORY:
GUANGZHOU ABC ELECTRONICS CORP.
No.25 Shihua Road, Shanmen, Hualong, Panyu,
Guangzhou, Guangdong 511434, China.
Tel : 86-20-8475 6229
Fax : 86-20-8475 6937

HEADQUARTERS:
ABC TAIWAN ELECTRONICS CORP.
No.98, Ln.298, Huandong Rd.,
Yangmei 32665 Taoyuan, Taiwan
Tel: 886-3-478-8188
Fax: 886-3-475-5503

PRODUCT SPECIFICATION

SPEC. NO.
D-0603-060-I

1. Scope

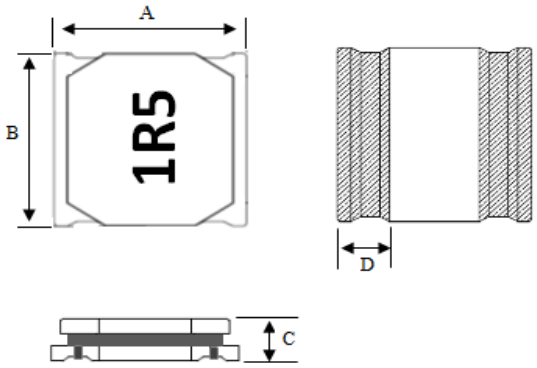
This specification applies to Thin Power Choke TPI4018CT□□□□-A1 Series to be delivered to user.

2. Product Identification

TPI 4018 C T 2R2 M - A1
(1) (2) (3) (4) (5) (6) (7)

(1) Product name
(2) Shapes and dimensions
(3) Coating Type
(4) Taping
(5) Inductance
R82 : 0.82μH 2R2 : 2.2μH 100 : 10μH
(6) Tolerance
M : ±20% N : ±30%
(7) Internal Code

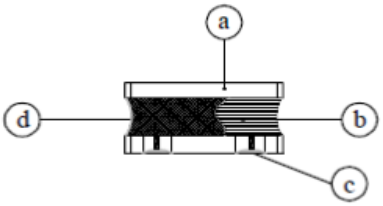
3. Shapes and Dimensions [Dimensions in mm]



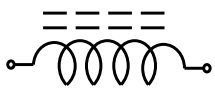
A : 4.0 ±0.2 mm
B : 4.0 ±0.2 mm
C : 1.88 mm Max. (R82~2R7)
: 1.80 mm Max. (3R3~221)
D : 1.3 mm typ.

4. Materials

a) Core : Ferrite Core
b) Wire : R82~2R7 - Polyurethane (P180)
3R3~221 - Polyesterimide (E180)
c) Terminal : Ag/Ni/Sn
d) Coating : Magnetic Epoxy Resin



5. Electrical Schematics



(No Polarity)

PRODUCT SPECIFICATION

SPEC. NO.
D-0603-060-I

6. Electrical Characteristics

KEY

Part No.	Inductance (μH)	Test Freq.	Tolerance	SRF Min (MHz)	DC Resistance (mΩ)	DC Resistance Tol.	Rated DC current (A) Idc1	Rated DC current (A) Idc2	Marking
TPI4018CT R82□-A1	0.82	100kHz,1V	N	100	16	±30%	4.20	4.00	R82
TPI4018CT 1R0□-A1	1.0	100kHz,1V	N	90	19		4.70	3.70	1R0
TPI4018CT 1R2□-A1	1.2	100kHz,1V	N	80	21		4.00	3.50	1R2
TPI4018CT 1R5□-A1	1.5	100kHz,1V	N	70	32		3.50	3.10	1R5
TPI4018CT 2R2□-A1	2.2	100kHz,1V	M	60	37	±20%	3.00	2.90	2R2
TPI4018CT 2R7□-A1	2.7	100kHz,1V	M	52	43		2.40	2.30	2R7
TPI4018CT 3R3□-A1	3.3	100kHz,1V	M	45	55		2.30	2.20	3R3
TPI4018CT 4R7□-A1	4.7	100kHz,1V	M	35	70		2.00	1.90	4R7
TPI4018CT 6R8□-A1	6.8	100kHz,1V	M	30	98		1.60	1.50	6R8
TPI4018CT 100□-A1	10	100kHz,1V	M	25	150		1.40	1.30	100
TPI4018CT 150□-A1	15	100kHz,1V	M	18	220		1.10	1.00	150
TPI4018CT 220□-A1	22	100kHz,1V	M	15	290		0.95	0.90	220
TPI4018CT 330□-A1	33	100kHz,1V	M	12	460		0.75	0.70	330
TPI4018CT 470□-A1	47	100kHz,1V	M	10	650		0.62	0.60	470
TPI4018CT 680□-A1	68	100kHz,1V	M	8	940		0.50	0.50	680
TPI4018CT 101□-A1	100	100kHz,1V	M	6	1330		0.45	0.42	101
TPI4018CT 151□-A1	150	100kHz,1V	M	5	2000		0.35	0.32	151
TPI4018CT 221□-A1	220	100kHz,1V	M	3	2960		0.30	0.28	221

1. Inductance is measured in HP-4285A Precision LCR Meter.
2. DCR is measured in DU-5011 milliohm meter (or equivalent).
3. Tolerance : M=20% , N=30% (Table shows stock tolerances in □).
4. Idc1 : Based on inductance change (△L/Lo :≦-30%)
5. Idc2 : Based on temperature rise (△T : 40°C typ.)
6. Operating temperature range: -40°C ~ +125°C (Including self generated heat)

Note: MSL = 1

PRODUCT SPECIFICATION

SPEC. NO.
D-0603-060-I

7. Reliability Test

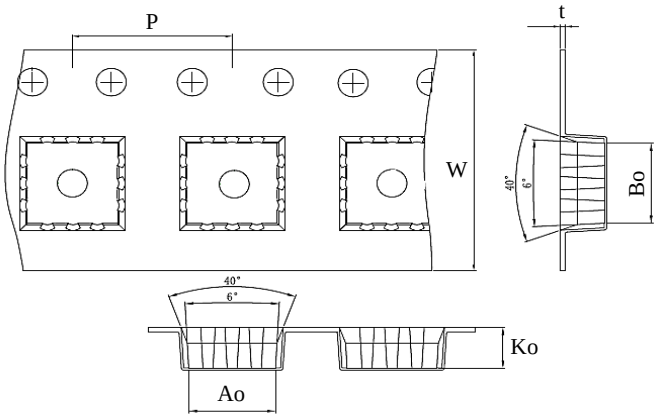
Item	Reference documents	AEC-Q200 Test Condition	Specification
1. High Temperature Exposure	MIL-STD-202 Method 108	1. Temperature : 125°C 2. Time : 1000 hours.	1. No mechanical and electrical damage. 2. Inductance shall not change more than ±20%.
2. Temperature Cycling	JESD 22 Method JA-104	1. Temperature : -40°C ~ 125°C 2. Number of cycle : 1000 cycles 3. Dwell time : 30 minutes	1. No mechanical and electrical damage. 2. Inductance shall not change more than ±20%.
3. Biased Humidity Test	MIL-STD-202 Method 103	1.Temperature : 85±5°C 2. Time : 1000 hours. 3. Humidity :85±5% RH.	1. No mechanical and electrical damage. 2. Inductance shall not change more than ±20%.
4. Operational Life	MIL-PRF-27-3.26/4.7.23 & User Spec.	1. Temperature : 125°C (Temp. rise included) 2. Time : 1000 hours. 3. Apply rated current	1. No mechanical and electrical damage. 2. Inductance shall not change more than ±20%.
5. External Visual	MIL-STD-883 Method 2009	Inspect product construction, marking and workmanship.	1. No contamination on the surface of product. 2. Clear Marking. 3. No crack.
6. Physical Dimensions	JESD22 Method JB-100	Verify physical dimensions to the applicable product detail specification.	Per product specification standard.
7. Resistance to Solvents	MIL-STD-202 Method 215	Immerse into solvent for 3±0.5 minutes and brush 10 times for 3 cycles.	1. No body change in appearance. 2. No marking blurred. 3. Inductance shall not change more than ±20%.
8. Mechanical Shock	MIL-STD-202 Method 213	1. Peak acceleration 100g`s 2. Duration of pulse : 6ms 3. Waveform : Half-sine 4. Velocity change : 12.3 ft/sec 5. Direction: ±X, ±Y, ±Z (3 times / axis)	1. No mechanical and electrical damage. 2. Inductance shall not change more than ±20%.
9. Vibration Test	MIL-STD-202 Method 204	1. Frequency and Amplitude : 10-2000-10Hz 2. Sweep time : 20 min 3. Acceleration : 5g 4. Direction : X, Y, Z 5. Number of sweep : 12 times/axis	1. No mechanical and electrical damage. 2. Inductance shall not change more than ±20%.
10. Resistance to Soldering Heat Test	MIL-STD-202 Method 210 & J-STD020D.1	1. Highest temperature : 260±5°C 2. Time (temp ≥ 217°C) : 60~150 second. 3. IR reflow : 3 times	1. No mechanical and electrical damage. 2. Inductance shall not change more than ±20%.
11. ESD	AEC-Q200-002 or ISO/DIS 10605	1. ESD Voltage : 15kV 2. Mode 1: 150pF / 330Ω 3. Mode 2: 150pF / 2000Ω 4. Discharge times and polarity : 3 times pos. / 3 times eng. for each condition	1. No mechanical and electrical damage. 2. Inductance shall not change more than ±20%.
12. Solderability Test	J-STD-002	1. Baking in pre-testing. 150±5°C / 16 hours ± 30 min 2. Peak temperature : 240 ±5°C 3. Time (temp ≥ 217°C) : 60`150 second. 4. IR reflow : 1 time	The terminal shall be at least 95% covered by fresh solder.
13. Electrical Characterization	MIL-STD-202 Method 304 & User Spec	1. Operating temperature: -40 ~ 125°C 2. Room temperature : 25°C.	1. No mechanical and electrical damage. 2. Inductance shall not change more than ±20%.
14. Flammability			
15. Board Flex	AEC-Q200-005	1. Deflection speed : 1mm/sec 2. Amount of deflection : 2mm 3. Span : 90mm 4. Direction for test : Bottom of PCB 5. Holding time : 60 sec.	1. No mechanical and electrical damage. 2. Inductance shall not change more than ±20%.
16. Terminal Strength Test	AEC-Q200-006	1. Apply push force to samples mounted on PCB. 2. Force of 1.8kg for 60±1 seconds	After test, inductors shall be no mechanical damage.

PRODUCT SPECIFICATION

SPEC. NO.
D-0603-060-I

8. Packaging

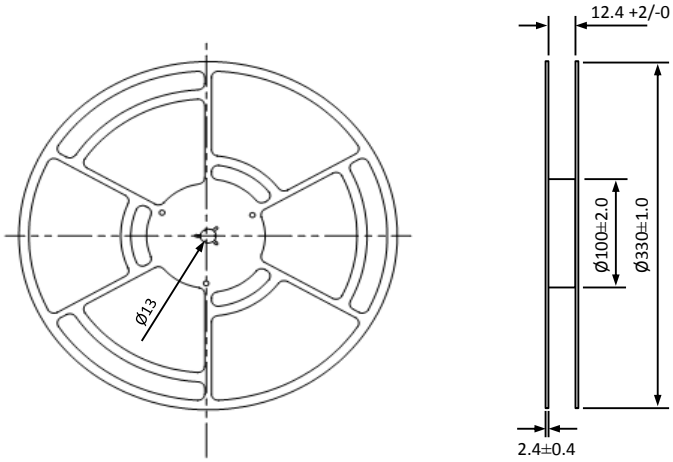
8-1 Tape dimensions



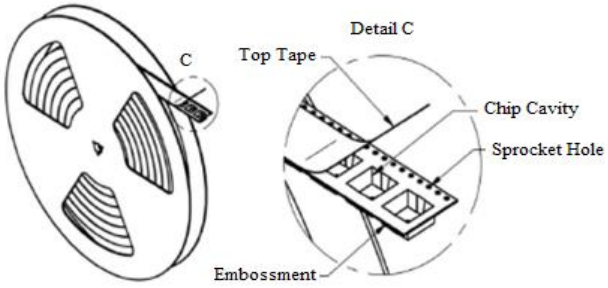
unit : mm

Ao	4.50
Bo	4.35
Ko	2.00
W	12.00
P	8.00
t	0.30

8-2 Reel dimensions



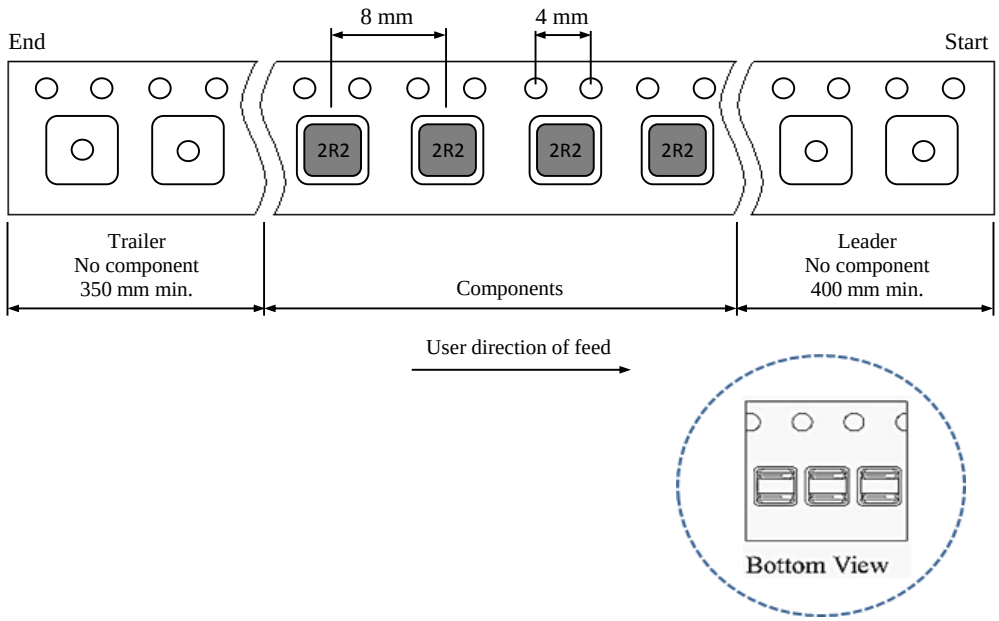
8-3 Taping figure



PRODUCT SPECIFICATION

SPEC. NO.
D-0603-060-I

8-4 Packaging Form



8-5 Packing Quantity

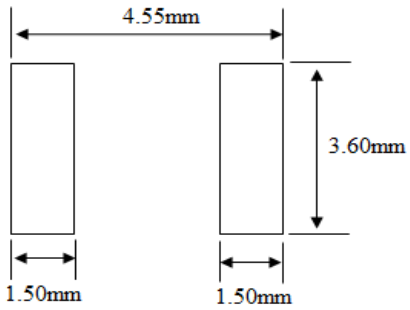
Quantity : ø330 mm reel type : 3000 pcs./reel
Outer Box : 5 reel/ Box.

PRODUCT SPECIFICATION

SPEC. NO.
D-0603-060-I

9. Recommended Soldering Conditions (Please use this product by reflow soldering)

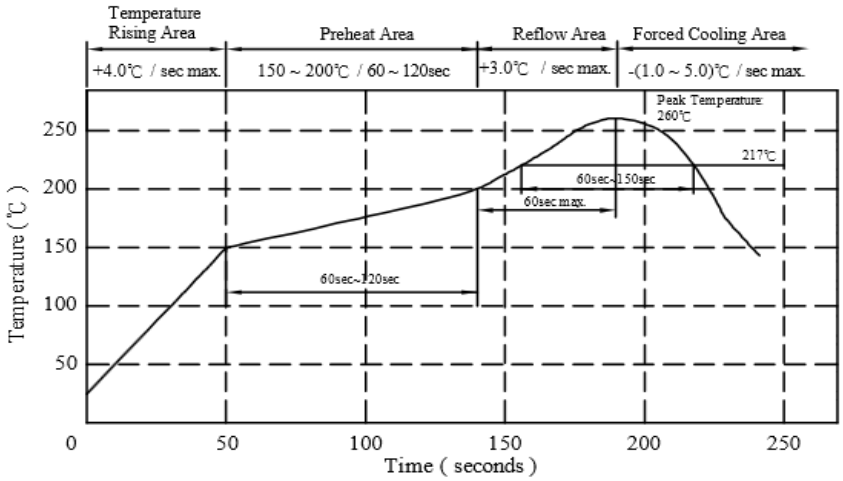
9-1 Recommended Footprint



9-2 Recommended Reflow Pattern

Reflow : 2 times maximum

Peak Temp：260℃ max.
Max. Peak Temp - 5℃ ：30sec max.
Max time above 217℃ ：60sec~150sec max.



9-3 Iron Soldering

Use a solder iron of less than 30W when soldering, do not allow the soldering iron tip directly touch the ferrite body outside of terminal electrode.
2 seconds max. at 280˚C.

PRODUCT SPECIFICATION

SPEC. NO.
D-0603-060-I

10. Safety & Precaution Notes

1. Products may not be used in applications that directly affect the personal safety or cause significant impacts and losses to society. If you apply to these applications, please be sure to contact us at first to confirm.

2. The storage period is less than 12 months. Ensure to follow the storage conditions (Temperature: 5 to 30°C, Humidity: 10 to 60% RH or less). If the storage period is exceeded the limit, the electrodes might be deteriorate/oxidized and affect soldering. Solderability should be checked if this period is exceeded.
Other storage precaution:
a) Products should be stored on the pallet for the prevention of the influence from humidity, dust and so on.
b) Products should be stored in the warehouse without heat shock, vibration, direct sunlight and so on.
c) Do not unpack the minimum package until immediately before use. After unpacking, re-seal promptly or store in desiccator with a desiccant.
d) Do not store product in bulk to prevent coils and parts being damaged.

3. Do not use or store in locations where there are corrosive gases (salt, acid, alkali, etc.).

4. Soldering condition for mounting should be within the specification range.
If overheated, a short circuit, performance deterioration, or lifespan shortening may occur.

5. When using, try to avoid excessive mechanical impact on the product such as collision / drop…etc.

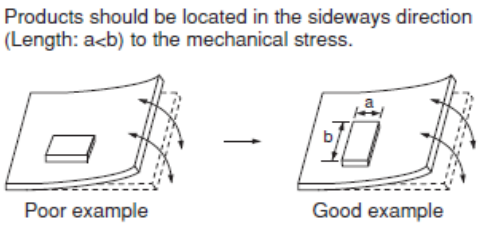
6. When assembling a printed circuit board with a new mounted chip, be careful to avoid assembly deformation of the circuit board that may cause the overall or partial distortion of the circuit board such as at screw tightening position.

7. Self heating (temperature increase) occurs when the power is turned ON, so the tolerance should be sufficient for the thermal design.

8. Do not expose the products to magnets or magnetic fields.

9. If you would like to use this products for more stringent safety or reliability of performance and/or quality requirements, or its failure, malfunction or trouble may cause serious damage to society, individuals or property, or you have special requirement beyond the specification or condition in the catalogue, please contact us.

10. PCB should be designed so that products are not subjected to the mechanical stress caused by warping of the board as shown below. Bending and twisting of PCB will cause excessive mechanical stress and lead to crack in the product as well.



11. Cleaning brush shall not touch the winding portion of the product to prevent the breaking of wire. Cleaning could cause failure and degradation of a product.

12. Care should be taken when transporting or handling product to avoid excessive vibration or mechanical shock. Product could be damaged by external mechanical pressure, stacked under heavy object, as well as strong shaking and drop.