Revision Record			
Revision	**Description**	**Date**	**Approved**
A0	Initial release CPTC010708B-1R0MDAA CPTC010708B-2R2MDAA	**2026/3/25**	jason

Mini Molded Chip Power Inductors – CPTC Series

◆ FEATURES

- High performance (Isat) realized by metal dust core.
- Low loss realized with low Rdc.
- Low profile.
- Closed magnetic circuit design reduces leakage flux.
- Compliance with RoHS and Halogen Free.

◆ APPLICATIONS

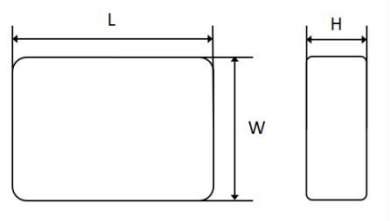
- Smart phone，pad，Notebooks, VR, AR.
- Portable gaming devices, Smart wear, Wi-Fi module.
- DC/DC converters.
- Battery powered devices.
- SSD modules.

◆ PRODUCT IDENTIFICATION

CPTC	0420	B	-	1R0	M	S	A	A
①	②	③		④	⑤	⑥	⑦	⑧

① Product Series：Mini Molding Power Inductors

② Outline Dimensions：L×W×H　0420=4.1×4.1×2.0mm



③ Coating color：B=Black　G=Gray

④ Inductance value：1R0=1.0uH

⑤ Tolerance：M=±20%

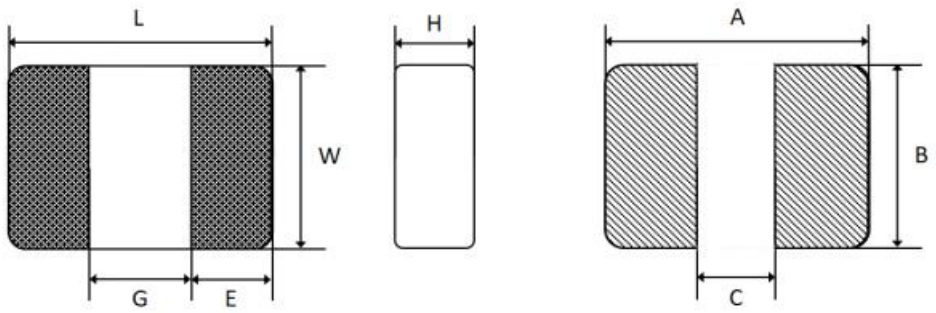
⑥ Size Tolerance：S=±0.2mm

⑦ special requirement

⑧ Internal Code

◆ DIMENAIONS

Outline Dimensions　　Unit : mm



Series	L	W	H	G	E	A	B	C
010708	1.0±0.1	0.7±0.1	0.80Max.	0.4	0.30±0.2	1.10	0.80	0.30

◆ MARKING

No Marking

◆ ELECTRICAL CHARACTERISTICS

- **Specifications：**

Part NO.	L0(uH) @0A	Rdc(mΩ)		Heat rating current Irms(A)		Saturation current Isat(A)	
		Typ.	Max.	Typ.	Max.	Typ.	Max.
CPTC010708B-1R0MDAA	1.0	220	260	1.3	1.2	1.5	1.4
CPTC010708B-2R2MDAA	2.2	425	480	1.0	0.9	1.15	1.05

- **Product characteristic description：**

Note 1.：All test data is referenced to 25 ℃ ambient.

Note 2.：Test Condition：1MHz, 1.0Vrms.

Note 3.：Irms：DC current (A) that will cause an approximate △T of 40 ℃.

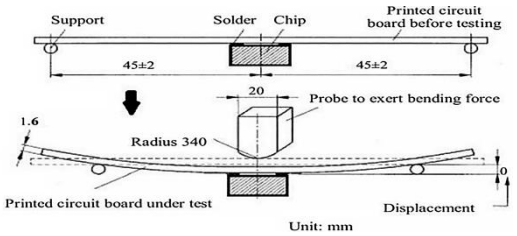
Note 4.：Isat：DC current (A) that will cause L0 to drop approximately 30%.

Note 5.：The part temperature (ambient + temp rise) should not exceed 125 under ℃ the worst case operating conditions. Circuit design, component placement, PCB trace size and thickness, airflow and other cooling provision all affect the part temperature. Part temperature should be verified in the end application.

Note 6.：The rated current as listed is either the saturation current or the heating current depending on which value is lower.

◆ RELIABILITY

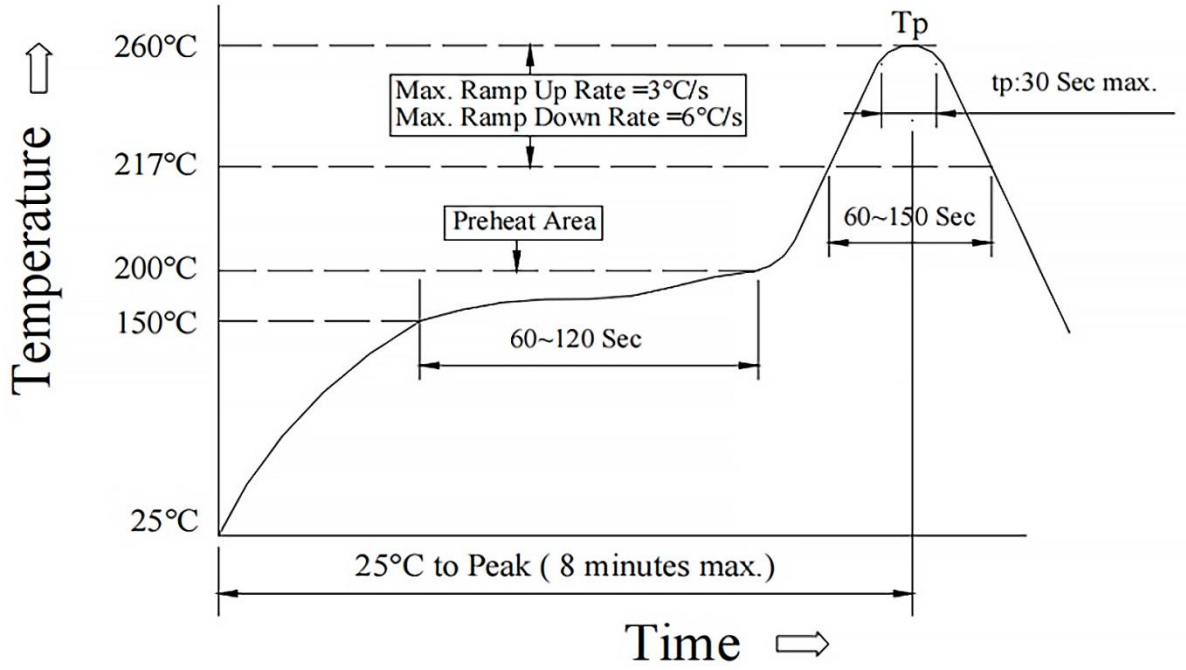
<table>
<tr><th>ITEM</th><th>Specification and Requirement</th><th>Test Method</th></tr>
<tr><td>Solderability</td><td>1. No case deformation or change in appearance
2. New solder coverage more than 95%</td><td>1. Preheat：155℃±5℃ 60s±2s
2. Tin：lead-free
3. Temperature：245℃±5℃ flux 3±0.5s</td></tr>
<tr><td>Mechanical shock</td><td>1. No case deformation or change in appearance
2. △L/L0≤±10%</td><td>1. Acceleration：100G
2. Pulse time：6ms
3. 3 times in each positive and negative direction of 3 mutual perpendicular directions</td></tr>
<tr><td>Mechanical vibration</td><td>1. No case deformation or change in a ppearance
2. △L/L0≤±10%</td><td>1. The test samples shall be soldered to the board. Then it shall be submitted to below test conditions.
<table>
<tr><td>Fre. Range</td><td>10~55Hz</td></tr>
<tr><td>Total Amplitude</td><td>1.5mm</td></tr>
<tr><td>Sweeping Method</td><td>10Hz to 55Hz to 10Hz</td></tr>
<tr><td>Time</td><td>For 2 hours on each X,Y,Z axis.</td></tr>
</table>
2. Recovery: At least 2 hours of recovery under the standard condition after the test, followed by the measurement within 24 ±2 hours.</td></tr>
<tr><td>Thermal Shock</td><td>Inductance change：Within ± 10%
Without distinct damage in appearance</td><td>1. First -55℃ for 30 minutes，last 125℃for 30 minutes as 1 cycle. Go through 1000 cycles.
2. Max transfer time is 2 minutes.
3. Measured at room temperature after placing for 24±2 hours</td></tr>
<tr><td>Humidity Resistance</td><td>Inductance change：Within ± 10%
Without distinct damage in appearance</td><td>1.Reflow 2 times,
2.85℃,85%RH,1000 hours
3.Measured at room temperature after placing for 24±2hours</td></tr>
</table>

Low temperature storage	Inductance change：Within ± 10% Without distinct damage in appearance	1. Temperature：-55 ± 2℃ 2. Time：1000 hours 3. Measured at room temperature after placing for 24±2 hours
High temperature storage	Inductance change：Within ± 10% Without distinct damage in appearance	1. Temperature：+125 ± 2℃ 2. Time：1000 hours 3. Measured at room temperature after placing for 24±2 hours
Board Flex	Inductance change：Within ± 10% Without distinct damage in appearance	1.Run through IR reflow for 2 times； 2.Place the 100mm X 40mm board into a fixture similar to the one shown in below Figure with the component facing down 3.The apparatus shall consist of mechanical means to apply a force which will bend the board (D) x = 2 mm minimum. 4.The duration of the applied forces shall be 60 ±5 sec. The force is to be applied only once to the board. 
Terminal Strength	No removal or split of the termination or other defects shall occur.	1. The test samples shall be soldered to the board 2. Push the product vertically from the side of the sample using the thrust tester. 3. Automotive electronics：17.7N，60S±1s，X，Ydirect.

◆ SOLDERING CONDITION

(This is for recommendation, please customer perform adjustment according to actual application)

Recommend Reflow Soldering Profile：(solder：Sn96.5 / Ag3 / Cu0.5)



Profile Feature	Lead (Pb)-Free solder
Preheat: Temperature Min Temperature Max Time (Ts_{min} to Ts_{max})	 150℃ 200℃ 60 - 120 seconds
Average ramp-up rate	3℃ / second max.
Time maintained above： Temperature Time	 217℃ 60- 150 seconds
Peak Temperature	260℃
Time within $^{+0}_{-5}$℃ of actual peak Temperature (tp)[2]	10 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8minutes max.

Allowed Re-flow times：2 times

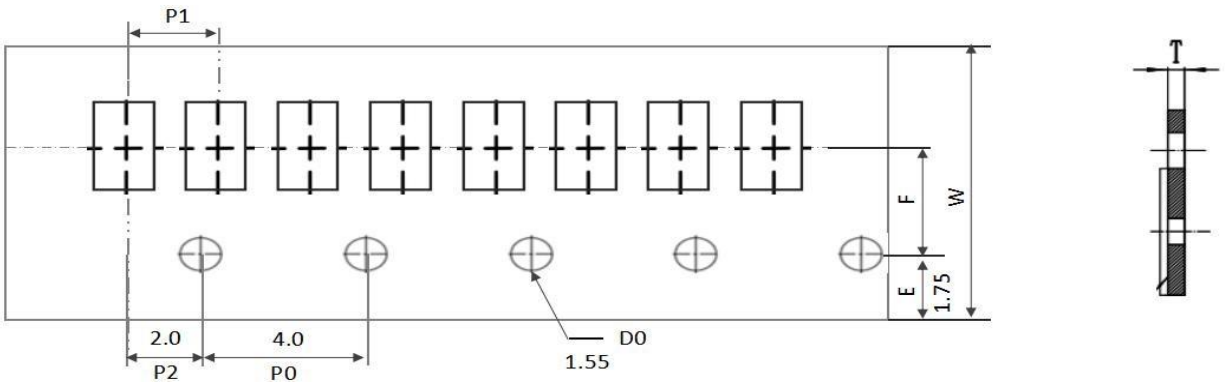
Remark：To avoid discoloration phenomena of chip on terminal electrodes, please use N2 Re-flow furnace .

◆ PACKING

Dimension of plastic taping: (Unit: mm)

The following dimensions are related to the actual fit of the machine，for reference only.

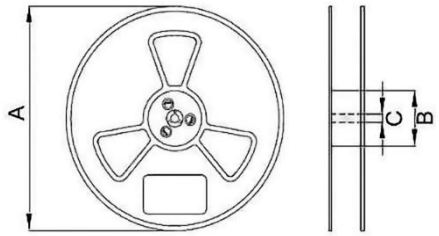
- Dimension of plastic taping: (Unit: mm)



Series	W	A0	B0	D0	F	P1	T	R/pcs
Tolerance				±0.20	±0.10	±0.05	±0.05	
010708	8.0 ±0.10	0.90 ±0.04	1.20 ±0.04	1.55	3.5	2.0	0.95	5000

- Dimension of Reel：(Unit: mm)

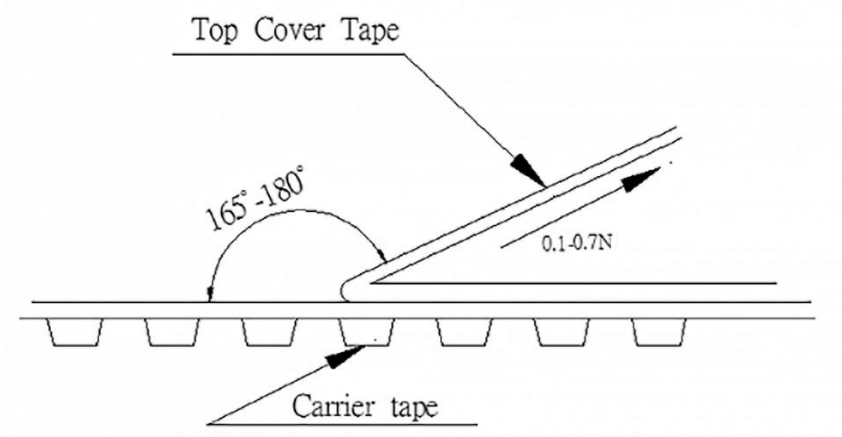
Type	A ±2.0	B ±2.0	C ±2.0
All	178	60	13.0



- Peeling of top cover tape

The peeling speed shall be about 300 mm/minute

The peeling force shall be between 0.1 to 1.0 N



- Label Marking

The following items shall be marked on the production and shipping

Label on the reel

Production Label
Part No. ：
Description ：
Quantity ：
Date code：

◆ CARE NOTE FOR USER

- **Storage Condition**:

Temperature 25 to 35°C, Humidity 45 to 75% RH

- **Use Temperature**:

1. Minimum Temperature: -55°C Ambient temperature of molded power inductor.
2. Maximum Temperature: +125°C The value of temperature including ambient of the transformer and temperature rise of molded power inductor.
3. There is not a problem from -55°C ~ +125°C in a reliability test.
4. However, this is not meant a temperature grade guarantee of UL.

- **Model**:

When this molded power inductor was used in a similar or new product to the original one, sometimes it might be unable to satisfy the specifications due to difference of condition of usage.

- **Drop**:

If the molded power inductor suffered mechanical stress such as drop, characteristics may become poor (due to damage on coil bobbin, etc.).Never use such stressed molded power inductor.