

Specification for Approval

Date: 2019/12/18

Certificate of GreenPartner
Customer : _____

TAI-TECH **CPI201210UF-SERIES**
CUSTOMER
DESCRIPTIO
QUANTITY: _____ **pcs**

REMARK:		
Customer Approval Feedback		

西北臺慶科技股份有限公司
TAI-TECH Advanced Electronics Co., Ltd

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High Current Ferrite Chip Inductor (Lead Free) [CPI201210UF-SERIES](#)

ECN HISTORY LIST

REV	DATE	DESCRIPTION	APPROVED	CHECKED	DRAWN
1.0	19/08/20	新版發行	鄧福興	浦冬生	王俞琴
備註					

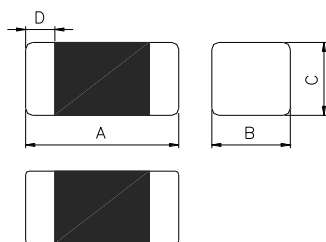
High Current Ferrite Chip Inductor (Lead Free) CPI201210UF-SERIES

1.Features

1. 2.0x1.25 mm and 1.0 mm in height (very compact size): CAE and fine printing technology made this compact size possible
2. Stable minimum DC resistance in the class.
3. High speed mounting: Using SMT mounter makes less than a second mounting possible.
4. Excellent mounting strength by SMD chip making.
5. Reduced noise over 2/3 of coil inductor by optimal design of CAD
Completely lead-free product and support lead-free solder.
6. Operating Temperature: -55~+105°C (Including self-temperature rise)



2. Dimensions



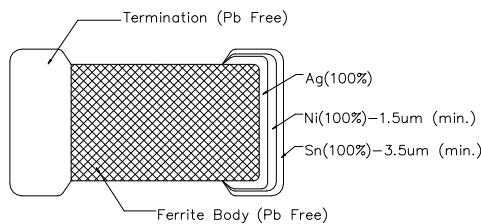
Chip Size				
Series	A(mm)	B(mm)	C(mm)	D(mm)
201210	2.0±0.2	1.25±0.2	1.0 max.	0.5±0.3

3. Part Numbering



- A: Series
- B: Dimension
- C: Category Code
- D: Material
- E: Inductance
- F: Inductance Tolerance
- G: Rated Current

Lead Free Material
2R2=2.2uH
M=±20%
0A8=800mA



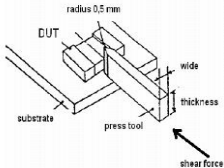
4.Specification

Tai-Tech Part Number	Inductance(uH)	Test Frequency (Hz)	Rated Current (mA) max.	DCR (Ω)	
				max.	typ.
CPI201210UF-1R0M-1A0	1.0±20%	1M / 60mV	1000	0.14	0.11
CPI201210UF-1R5M-0A8	1.5±20%	1M / 60mV	800	0.20	0.15
CPI201210UF-2R2M-0A8	2.2±20%	1M / 60mV	800	0.20	0.15
CPI201210UF-4R7M-0A7	4.7±20%	1M / 60mV	700	0.28	0.23

- Rated current: based on temperature rise test
- In compliance with EIA 595

5. Reliability and Test Condition

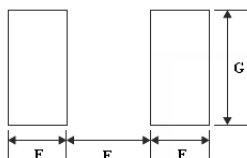
Item	Performance	Test Condition															
Operating Temperature	-55~+105°C (Including self-temperature rise)	--															
Transportation Storage Temperature	-55~+105°C (on board)	For long storage conditions, please see the Application Notice															
Inductance (Ls)	Refer to standard electrical characteristics list	Agilent4291 Agilent E4991 Agilent4287 Agilent16192															
DC Resistance		Agilent 4338															
Rated Current		DC Power Supply Over Rated Current requirements, there will be some risk															
Temperature Rise Test	Rated Current < 1A ΔT 20°CMax Rated Current ≥ 1A ΔT 40°CMax	1. Applied the allowed DC current. 2. Temperature measured by digital surface thermometer.															
Life test	Appearance: no damage.	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles) Temperature: 105±2°C Applied current: rated current. Duration: 1000±12hrs. Measured at room temperature after placing for 24±2 hrs.															
Load Humidity	Impedance: within±15%of initial value. Inductance: within±10%of initial value. Q : Shall not exceed the specification value. RDC : within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles) Humidity: 85±2%R.H. Temperature: 85±2°C. Duration: 1000hrs Min. with 100% rated current. Measured at room temperature after placing for 24±2 hrs.															
Thermal shock	Appearance: no damage. Impedance: within±15%of initial value. Inductance: within±10%of initial value. Q : Shall not exceed the specification value. RDC : within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles) Condition for 1 cycle Step1: -55±2°C 30±5 min. Step2: 25±2°C ≤0.5min Step3: +105±2°C 30±5min. Number of cycles: 500 Measured at room temperature after placing for 24±2 hrs.															
Vibration	Appearance : No damage. Impedance : within±15% of initial value Inductance : within±10% of initial value Q : Shall not exceed the specification value. RDC : within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles) Oscillation Frequency: 10Hz ~ 2KHz ~ 10Hz for 20 minutes Equipment : Vibration checker Total Amplitude:10g Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations) °															
Bending	Appearance : No damage. Impedance : within±10% of initial value Inductance : within±10% of initial value Q : Shall not exceed the specification value. RDC : within ±15% of initial value and shall not exceed the specification value	Shall be mounted on a FR4 substrate of the following dimensions: >=0805inch(2012mm):40x100x1.2mm <0805inch(2012mm):40x100x0.8mm Bending depth: >=0805inch(2012mm):1.2mm <0805inch(2012mm):0.8mm Duration of 10 sec for a min.															
Shock	Appearance : No damage. Impedance : within±10% of initial value Inductance : within±10% of initial value Q : Shall not exceed the specification value. RDC : within ±15% of initial value and shall not exceed the specification value	Test condition: <table border="1"> <thead> <tr> <th>Type</th> <th>Peak Value (g's)</th> <th>Normal duration (D) (ms)</th> <th>Wave form</th> <th>Velocity change (V)/ft/sec</th> </tr> </thead> <tbody> <tr> <td>SMD</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> <tr> <td>Lead</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> </tbody> </table>	Type	Peak Value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (V)/ft/sec	SMD	50	11	Half-sine	11.3	Lead	50	11	Half-sine	11.3
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SMD	50	11	Half-sine	11.3													
Lead	50	11	Half-sine	11.3													
Insulation Resistance	IR>1GΩ	Chip Inductor Only Test Voltage:100±10%V for 30Sec.															

Item	Performance	Test Condition						
Solderability	More than 95% of the terminal electrode should be covered with solder.	Preheat: 150°C, 60sec. Solder: Sn96.5%-Ag3%-Cu0.5% Solder temperature: 245±5°C Flux for lead free: Rosin. 9.5% Depth: completely cover the termination. Dip time: 4±1sec.						
Resistance to Soldering Heat	Appearance : No damage. Impedance : within±15% of initial value Inductance : within±10% of initial value Q : Shall not exceed the specification value. RDC : within ±15% of initial value and shall not exceed the specification value	Number of heat cycles: 1 <table border="1"> <thead> <tr> <th>Temperature (°C)</th> <th>Time (s)</th> <th>Temperature ramp/immersion and emersion rate</th> </tr> </thead> <tbody> <tr> <td>260 ±5 (solder temp)</td> <td>10 ±1</td> <td>25mm/s ±6 mm/s</td> </tr> </tbody> </table> Depth: completely cover the termination	Temperature (°C)	Time (s)	Temperature ramp/immersion and emersion rate	260 ±5 (solder temp)	10 ±1	25mm/s ±6 mm/s
Temperature (°C)	Time (s)	Temperature ramp/immersion and emersion rate						
260 ±5 (solder temp)	10 ±1	25mm/s ±6 mm/s						
Terminal strength	Appearance : No damage. Impedance : within±15% of initial value Inductance : within±10% of initial value Q : Shall not exceed the specification value. RDC : within ±15% of initial value and shall not exceed the specification value	 Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles) Component mounted on a PCB apply a force >0805inch(2012mm):1kg <=0805inch(2012mm):0.5kg to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to shock the component being tested.						

6.Soldering and Mounting

6-1. Recommended PC Board Pattern

Chip Size						Land Patterns For Reflow Soldering		
Serie	Type	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)	G(mm)
CPI	201210	2.0±0.20	1.25±0.20	1.0 max.	0.5±0.30	1.05	1.00	1.45



PC board should be designed so that products can prevent damage from mechanical stress when warping the board.

6-2. Soldering

Mildly activated rosin fluxes are preferred. The terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

Note.

If wave soldering is used ,there will be some risk.

Re-flow soldering temperatures below 240 degrees, there will be non-wetting risk

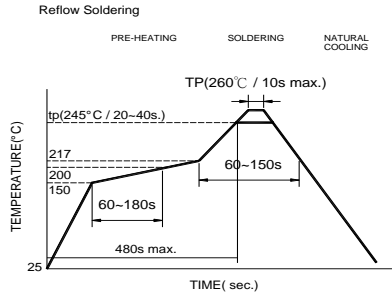
6-2.1 Lead Free Solder re-flow:

Recommended temperature profiles for lead free re-flow soldering in Figure 1. (Referred to J-STD-020C)

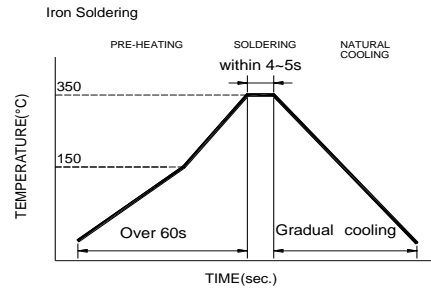
6-2.2 Soldering Iron:

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. If a soldering iron must be employed the following precautions are recommended. for Iron Soldering in Figure 2.

- Preheat circuit and products to 150°C
- Never contact the ceramic with the iron tip
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- 350°C tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 4-5sec.



Reflow times : 3 times max
Fig.1

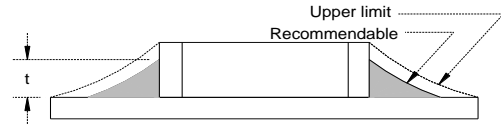


Iron Soldering times : 1 times max
Fig.2

6-2.3 Solder Volume:

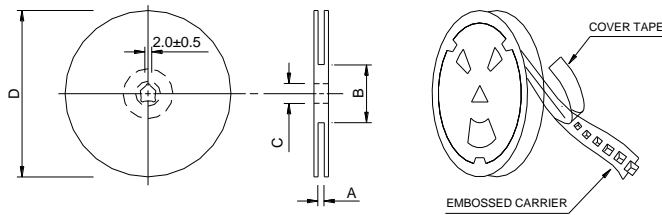
Accordingly increasing the solder volume, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance. Solder shall be used not to be exceed as shown in right side:

Minimum fillet height = soldering thickness + 25% product height



7. Packaging Information

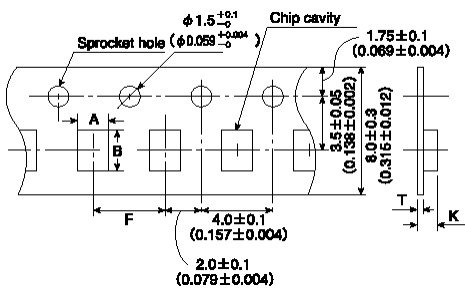
7-1. Reel Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)
7"x8mm	10±1.5	50 or more	13±0.2	178±2.0

7-2. Tape Dimension / 8mm

■Material of taping is plastic

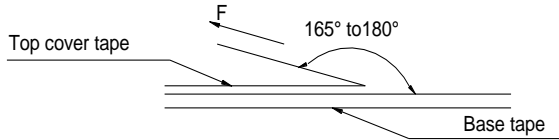


Size	A(mm)	B(mm)	K(mm)	F(mm)	T(mm)
201210	1.40±0.10	2.25±0.10	1.00±0.10	4.0±0.10	0.22±0.05

7-3. Packaging Quantity

Chip size	201210
Reel	3000

7-4. Tearing Off Force



The force for tearing off cover tape is 15 to 60 grams in the arrow direction under the following conditions.

Room Temp. (°C)	Room Humidity (%)	Room atm (hPa)	Tearing Speed mm/min
5-35	45-85	860-1060	300

Application Notice

- Storage Conditions(component level)
 - To maintain the solder ability of terminal electrodes:
 1. TAI-TECH products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
 2. Temperature and humidity conditions: Less than 40°C and 60% RH.
 3. Recommended products should be used within 12 months from the time of delivery.
 4. The packaging material should be kept where no chlorine or sulfur exists in the air.
- Transportation
 1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
 2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
 3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

Typical Inductance v.s. Frequency Curve

