High Current Ferrite Chip Inductor (Lead Free)

CPI201210UF-Series

	ECN HISTORY LIST							
REV	DATE	DESCRIPTION	APPROVED	CHECKED	DRAWN			
1.0	13/06/06	變更可靠度條件	楊祥忠	羅培君	張嘉玲			
2.0	14/01/24	變更電鍍錫層厚度 3.0um min.=>3.5um min.	楊祥忠	羅培君	張嘉玲			
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**TAI-TECH TBM01-140400755** P2.

# **High Current Ferrite Chip Inductor (Lead Free)**

CPI201210UF-Series

## 1.Features

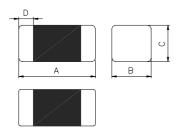
- 2.0x1.25 mm and 1.0 mm in height (very compact size): CAE and fine printing technology made this compact size possible
- 2. Stable minimum DC resistance in the class.
- 3. High speed mounting: Using SMT mounter makes less than a second mounting possible.
- 4. Excellent mounting strength by SMD chip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







# 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			

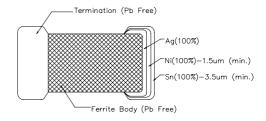
# 3. Part Numbering



Lead Free Material

C: Category Code D: Material

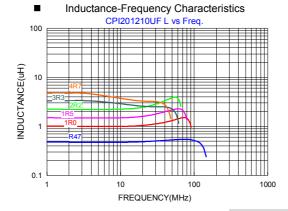
E: Inductance 2R2=2.2uH
F: Inductance Tolerance M=±20%
G: Rated Current 0A8=800mA

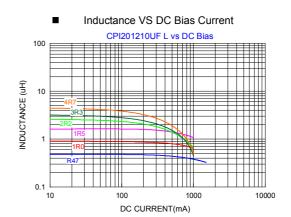


## 4. Specification

Tai-Tech	In directors of (all)	Test Frequency	Rated Current	DCF	R( )
Part Number	Inductance(uH)	(MHz)	(mA) max.	max.	typ.
CPI201210UF-R47M-1A2	0.47±20%	1	1200	0.08	0.06
CPI201210UF-1R0M-1A0	1.0±20%	1	1000	0.14	0.11
CPI201210UF-1R5M-0A8	1.5±20%	1	800	0.20	0.15
CPI201210UF-2R2M-0A8	2.2±20%	1	800	0.20	0.15
CPI201210UF-3R3M-0A7	3.3±20%	1	700	0.24	0.20
CPI201210UF-4R7M-0A7	4.7±20%	1	700	0.28	0.23

Rated Current: based on temperature rise test





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# 5. Reliability and Test Condition

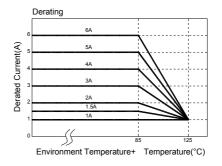
Item	Performance	Test Condition			
Operating Temperature	-40~+85 (Including self-temperature rise)				
Transportation Storage Temperature	-40~+85	For long storage conditions, please see the Application Notice			
Inductance (Ls)  DC Resistance  Rated Current	Refer to standard electrical characteristics list	Agilent4291 Agilent E4991 Agilent4287 Agilent16192 Agilent 4338 DC Power Supply Over Rated Current requirements, there will be some risk			
Temperature Rise Test	Rated Current < 1A $\Delta$ T 20 Max Rated Current 1A $\Delta$ T 40 Max	Applied the allowed DC current.     Temperature measured by digital surface thermometer.			
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	Preheat: 150 ,60sec. Solder: Sn99.5%-Cu0.5% Solder tamperature: 260±5 Flux for lead free: Rosin. 9.5% Temperature ramp/immersion and immersion rate: 25±6 mm/s Dip time: 10±1sec. Depth: completely cover the termination.  Preheating Dipping Natural cooling 260°C  150°C  60  10±1.0  second			
Solderability	More than 95% of the terminal electrode should be covered with solder.	Preheat: 150 ,60sec. Solder: Sn99.5%-Cu0.5% Solder tamperature: 245±5 Flux for lead free: Rosin. 9.5% Depth: completely cover the termination. Dip time: 4±1sec.			
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 (>0805:1kg <=0805:0.5kg)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.			
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:>=0805:40x100x1.2mm			
Vibration Test	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: 10 2K 10Hz for 20 minutes Equipment: Vibration checker Total Amplitude:1.52mm±10% Testing Time: 12 hours(20 minutes, 12 cycles each of 3 orientations),			
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	Test condition:   Type			

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Item	Performance	Test Condition
Life test	Appearance: no damage.  Impedance: within±15%of initial value.	Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020D Classification Reflow Profiles) Temperature: 125±2 (bead), 85±2 (inductor) Applied current: rated current. Duration: 1000±12hrs. Measured at room temperature after placing for 24±2 hrs.
Load Humidity	Q : Shall not exceed the specification value.  RDC : within ±15% of initial value and shall not exceed the specification value  H  T  C  C  M	Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020D Classification Reflow Profiles) Humidity: 85±2%R.H. Temperature: 85±2 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: -40±2 30±5 min. Step2: 25±2 0.5min Step3: +105±2 30±5min. Number of cycles: 500 Measured at room temperature after placing for 24±2 hrs.
Insulation Resistance	IR>1GΩ	Chip Inductor Only Test Voltage:100±10%V for 30Sec.

## \*\*Derating Curve

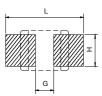
For the ferrite chip bead which withstanding current over 1.5A, as the operating temperature over 85 , the derating current information is necessary to consider with. For the detail derating of current, please refer to the Derated Current vs. Operating Temperature curve.



# 6. Soldering and Mounting

# 6-1. Recommended PC Board Pattern

Chip Size							Pattern ow Solde	
Serie	Туре	A(mm)	B(mm)	C(mm)	D(mm)	L(mm)	G(mm)	H(mm)
CPI	201210	2.0±0.20	1.25±0.20	1.0 max.	0.5±0.30	3.00	1.00	1.00



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. (Refered to J-STD-020C)

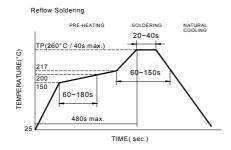
# 6-2.2 Soldering Iron:

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.

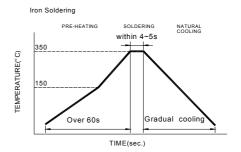
Preheat circuit and products to 150 350 tip temperature (max)

Never contact the ceramic with the iron tip 1.0mm tip diameter (max)

Use a 20 watt soldering iron with tip diameter of 1.0mm 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:

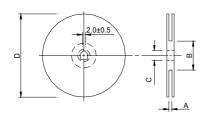
Accordingly increasing the solder volume, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance. Solder shall be used not to be exceed as shown in right side:

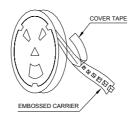
Minimum fillet height = soldering thickness + 25% product height



# 7. Packaging Information

### 7-1. Reel Dimension

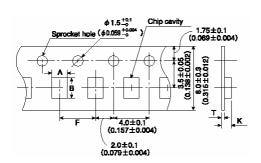




Туре	A(mm)	B(mm)	C(mm)	D(mm)
7"x8mm	10±1.5	50 or more	13±0.2	178±2.0

## 7-2 Tape Dimension / 8mm

Material of taping is plastic



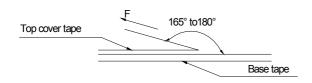
	Size	A(mm)	B(mm)	K(mm)	F(mm)	T(mm)
_:	201210	1.55±0.1	2.30±0.1	1.30 max.	4.0±0.1	0.30±0.05

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## 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.	Room Humidity	Room atm	Tearing Speed
( )	(%)	(hPa)	mm/min
5~35	45~85	860~1060	300

## **Application Notice**

### Storage Conditions

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 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.

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CR54NP-8R5MC 70F224AI MGDQ4-00004-P MHL1ECTTP18NJ MHQ1005P10NJ MHQ1005P1N0S MHQ1005P2N4S MHQ1005P3N6S
MHQ1005P5N1S MHQ1005P8N2J PE-51506NL PE-53601NL PE-53602NL PE-53630NL PE-53824SNLT PE-92100NL PG0434.801NLT
PG0936.113NLT 9220-20 9310-16 PM06-2N7 PM06-39NJ A01TK 1206CS-471XJ HC2LP-R47-R HC2-R47-R HC3-2R2-R HCF13053R3-R 1206CS-151XG RCH664NP-140L RCH664NP-4R7M RCH8011NP-221L RCP1317NP-332L RCP1317NP-391L RCR1010NP-470M