

Multilayer Common Mode Choke Coils

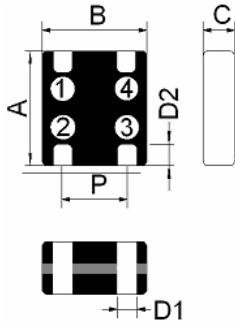
CFM1210-900-T2

1. Scope

This specification applies to Multilayer Common Mode Choke Coil, CFM Series Its Application is limited for the High speed differential transmission line like as followings.
USB, LVDS, MIPI, MDDI, MHL, HDMI, DVI.



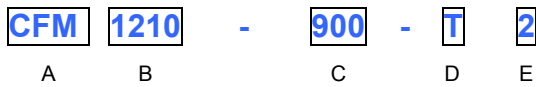
2. Dimensions



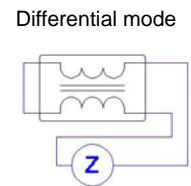
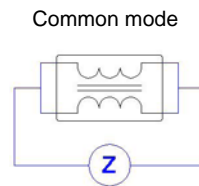
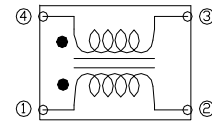
Chip Size						
Size	A	B	C	P	D1	D2
1210	1.25±0.15	1.0±0.15	0.55 ±0.10	0.55±0.10	0.30±0.10	0.20±0.10

Units: mm

3. Part Numbering



- A: Series
- B: Dimension
- C: Impedance 900=90Ω
- D: Packaging T=Taping and Reel, B=Bulk
- E: Number of Lines 2=2 lines

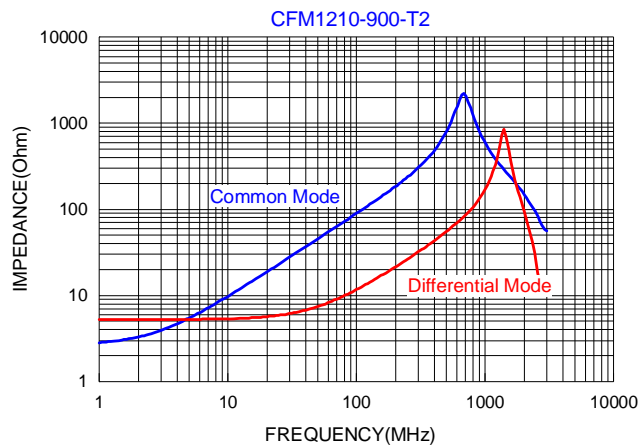


4. Specification

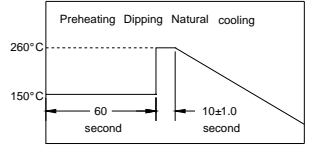
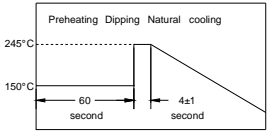
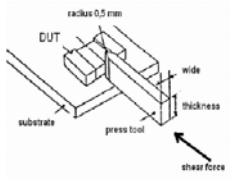
HEKOFLY Part Number	Common Mode Impedance (Ω)	Test Frequency (MHz)	Rated Voltage (Vdc) max.	Insulation Resistance (MΩ) min.	DC Resistance (Ω) max.	Rated Current (mA) max.
CFM1210-900-T2	90±25%	100	5	100	4.5	100

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

■ Impedance-Frequency Characteristics



5. Reliability and Test Condition

Item	Performance	Test Condition															
Series No.	CFM	--															
Operating Temperature	-40~+85°C (Including self-generated heat)	--															
Transportation Storage Temperature	-40~+85°C (on board)	For long storage conditions, please see the Application Notice															
Impedance (Z)	Within the specified tolerance	Measuring equipment: 4291A or its equivalent Measuring jig: 16192A (or its equivalent)															
Insulation Resistance		Measuring points: ① to ③ or ② to ④ Measuring voltage: Rated voltage															
DC Resistance		Measuring points: ① to ② or ③ to ④															
Rated Current		Measuring Current: DC Current Rated Current < 1A ΔT 20°C Max															
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°C, 60sec. Solder: Sn99.5%-Cu0.5% Solder temperature: 260±5°C 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. 														
Solderability	More than 95% of the terminal electrode should be covered with solder. 	Preheat: 150°C, 60sec. Solder: Sn99.5%-Cu0.5% Solder temperature: 245±5°C 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 <0805:40x100x0.8mm Bending depth:>=0805:1.2mm <0805:0.8mm Duration of 10 sec for a min.															
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: <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>1,500</td> <td>0.5</td> <td>Half-sine</td> <td>15.4</td> </tr> <tr> <td>Lead</td> <td>100</td> <td>6</td> <td>Half-sine</td> <td>12.3</td> </tr> </tbody> </table>	Type	Peak Value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (V)/ft/sec	SMD	1,500	0.5	Half-sine	15.4	Lead	100	6	Half-sine	12.3
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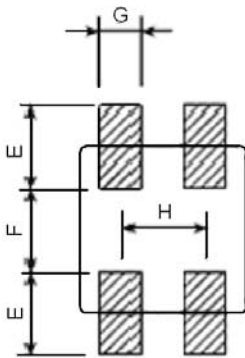
Item	Performance	Test Condition
Life test	Appearance: no damage. Impedance: within±15%of initial value. Inductance: within±10%of initial value. Q : Shall not exceed the specification value. RDC : within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles) 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	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) 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.

6. Soldering and Mounting

6-1. Recommended PC Board Pattern

Type	Chip Size					Land Patterns For Reflow Soldering			
	A	B	C	D1	D2	E	F	G	H
0806	0.85±0.05	0.65±0.05	0.40 ±0.05	0.27±0.10	0.20+0.05/-0.1	0.25~0.35	0.25~0.35	0.25~0.35	0.5
1210	1.25±0.15	1.0±0.15	0.55 ±0.10	0.30±0.10	0.25+0.15/-0.1	0.45~0.55	0.7~0.8	0.25~0.35	0.55

Units: mm



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

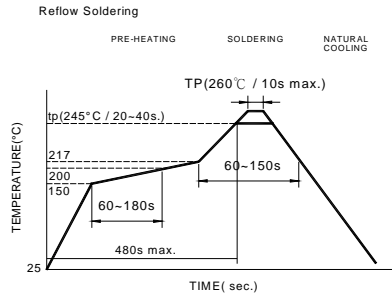
6-2.1 Lead Free Solder re-flow:

Recommended temperature profiles for lead free re-flow soldering in Figure 1.

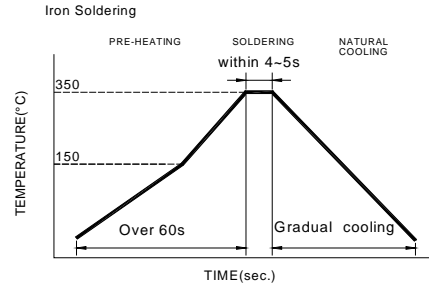
6-2.2 Soldering Iron:

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

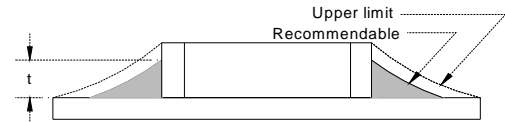


Iron Soldering times : 1 times max
Fig.2

6-2.3 Solder Volume:

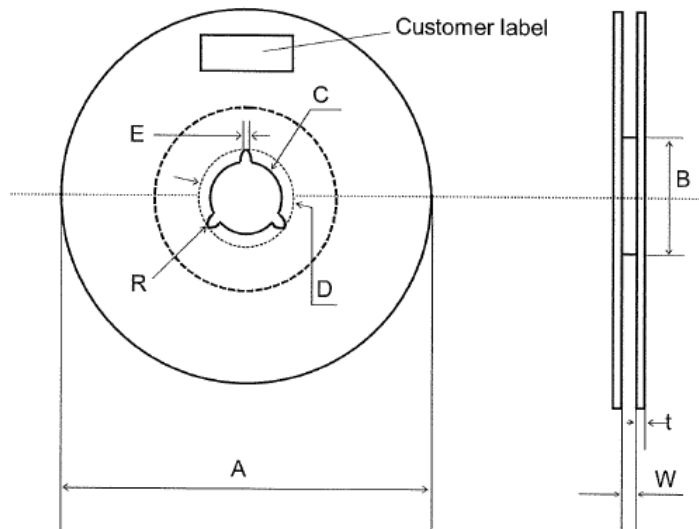
Accordingly increasing the solder volume, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance. Solder shall be used not to be exceed as shown in right side:

Minimum fillet height = soldering thickness + 25% product height



7.Packaging Information

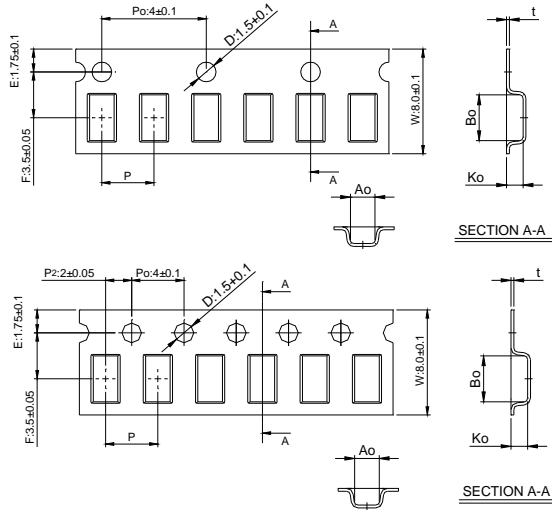
7-1. Reel Dimension



Code	φ A	φ B	φ C	φ D	E	W	t	R
Dimension	178±2.0	50 min	13±0.2	21±0.8	2.0±0.5	10±1.5	2.5 max	1.0

Units: mm

7-2. Tape Dimension / 8mm(black anti-static electricity carrier tape)



Series	Bo	Ao	Ko	P	t
0806	0.95±0.05	0.75±0.05	0.55±0.05	2.0±0.05	0.3 max

Units: mm

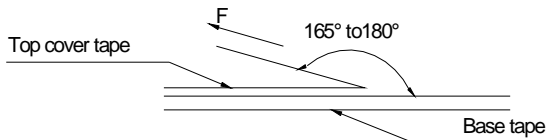
Series	Bo	Ao	Ko	P	t
1210	1.40±0.05	1.15±0.05	0.65±0.05	4.0±0.10	0.3 max

Units: mm

7-3. Packaging Quantity

Chip size	0806	1210
Chip /Reel	10000	4000 or 5000
Inner box	50000	20000 or 25000
Middle box	250000	100000 or 125000
Carton	500000	200000 or 250000

7-4. Tearing Off Force



The force for tearing off cover tape is 15 to 85 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. HEKOFLY 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.