

## Specification Sheet for Approved

Customer Name:	
Customer Part No.:	
Ceaiya Part No:	CCM3416F2-600T
Spec No:	Y-22050601

### 【For Customer Approval Only】

If you Approval, Please Stamp

### 【RoHS Compliant Parts】

Approved By	Checked By	Prepared By
李庆辉	刘志坚	劳水花

## Shenzhen Ceaiya Electronics Co., Ltd.

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### 1. Features

- 1) High common mode impedance at high frequency effects excellent noise suppression performance.
- 2) CCM3416F2 series realizes small size and low profile. 3.4\*1.6\*2.0mm
- 3) 100% Leas (Pb) & Halogen-Free and RoHs compliant.

### 2. Product Description and Identification (Part Number)

CCM    3416    F    2    -    600    T  
 ①        ②        ③    ④        ⑤        ⑥

- ① Series
- ② Dimension
- ③ Material Ferrite Core
- ④ Number of Lines 2=2 lines
- ⑤ Inductance 600=60uH
- ⑥ Taping and Reel

### 3. Shape and Dimensions (Unit:mm)

Dimensions and recommended PCB pattern for reflow soldering, please see Fig4-1 and Table4-1

#### Shape and Dimensions:

#### Recommended pad:

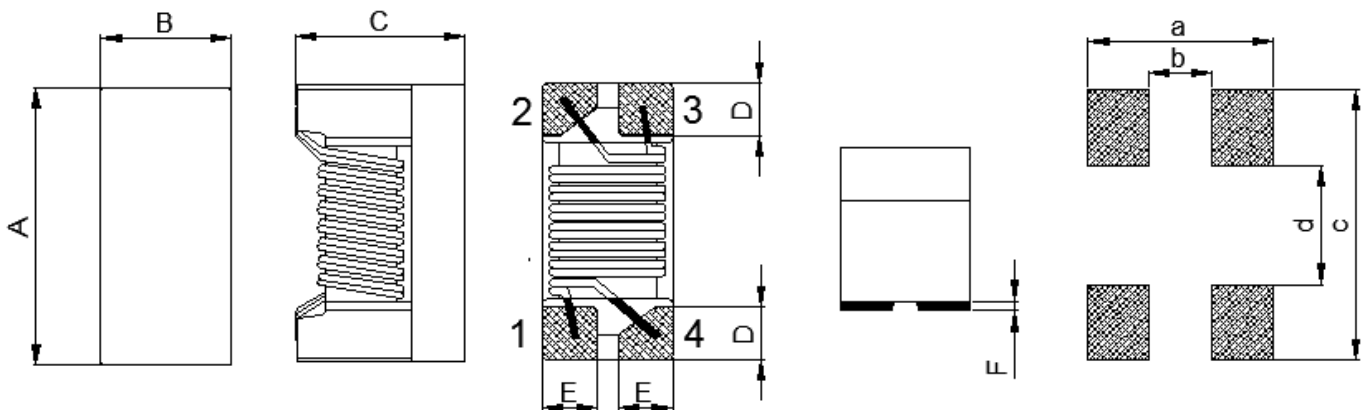


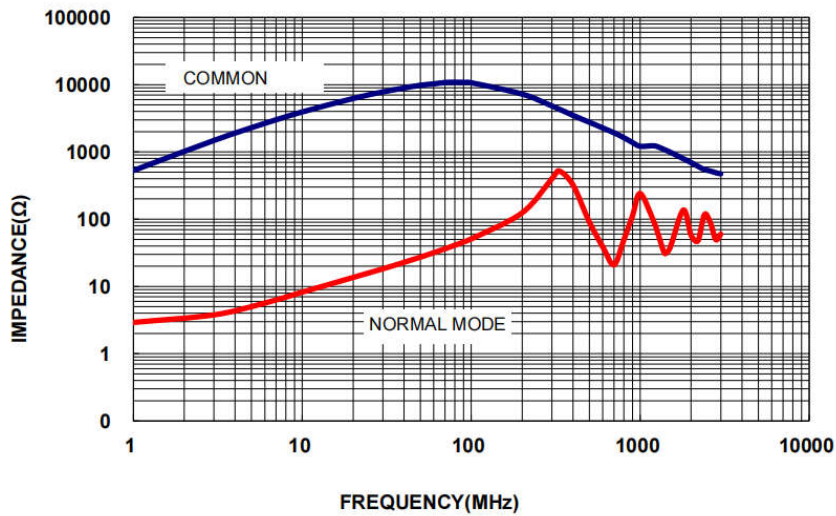
Fig4-1.

Table 4-1.

A	B	C	D	E	F	a	b	c	d
3.4±0.2	1.6±0.2	2.0±0.2	0.66±0.2	0.64±0.2	0.12 Ref	1.7 Ref	0.5 Ref	3.7 Ref	2.3 Ref

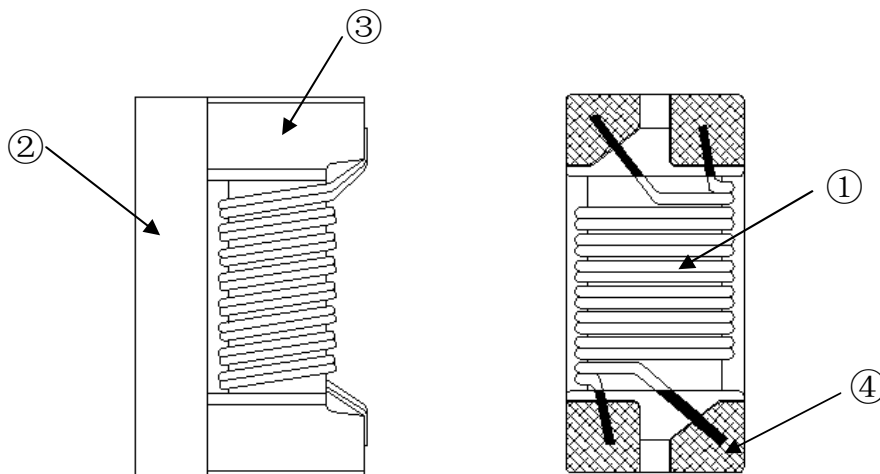
#### 4. Electrical Characteristics

Part Number	Inductance(uH) [100KHz/0.1V] Min.	Capacitance (pF)Max	DC Resistance ( $\Omega$ )Max.	Rated Current (mA)	Rated Volt. (Vdc)	Withstand Volt. (Vdc) Max.
CCM3416F2-600T	60	18	1.7	200	50	125



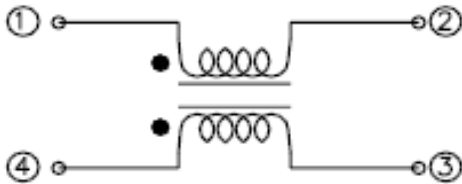
#### 5. Structure

The structure of CCM3416F2 product.



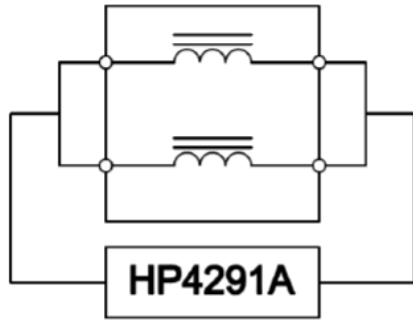
No	Part	Material
①	WIRE	Grade 180
②	Cover sheet	Ferrite
③	CORE	Ferrite
④	TERMINAL	Ag/Cu/Ni/Sn

## 6. Schematic Diagram

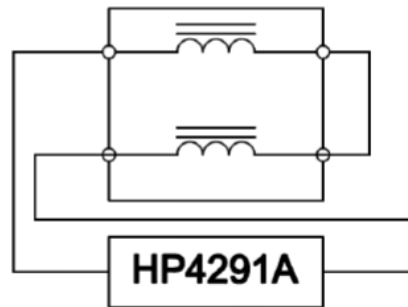


## 7. Measuring Circuits 2 line

### Common mode

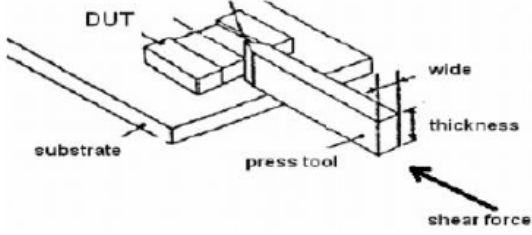


### Differential mode



## 8. Reliability and Test Condition

Item	Performance	Test Condition
Operating temperature	-40°C~+85°C (Including self - temperature rise)	
Storage temperature	-40°C~+85°C (on board)	
Electrical Performance Test		
L(common mode)		Agilent -4291A+ Agilent - 16197A
DCR	Refer to standard electrical characteristics list.	Agilent -4338B
I.R.		Agilent 4339
Temperature Rise Test	Rated Current < 1A $\Delta T$ 20°C Max. Rated Current $\geq$ 1A $\Delta T$ 40°C Max.	1. Applied the allowed DC current. 2. Temperature measured by digital surface thermometer.
Reliability Test		
Life Test	Appearance: No damage. Inductance: within $\pm 10\%$ of initial value RDC: within $\pm 15\%$ of initial value and shall not exceed the specification value	Preeconditioning: Run through IR reflow for 2 times. (IPC/JEDECJ-STD-020D Classification Reflow Profiles) Temperature: 85 $\pm$ 2°C Applied current: rated current Duration: 1000 $\pm$ 12hrs Measured at room temperature after placing for 24 $\pm$ 2hrs

Item	Performance	Test Condition															
Load Humidity		<p>Preeconditioning: Run through IR reflow for 2 times. (IPC/JEDECJ-STD-020D Classification Reflow Profiles) Humidity: 85±2°C R.H. Duration: 1000hrs Min. with 100% rated current. Measured at room temperature after placing for 24±2hrs</p>															
Thermal shock	<p>Appearance: No damage. Inductance: within ±10% of initial value RDC: within ±15% of initial value and shall not exceed the specification value</p>	<p>Preconditioning: Run through IR reflow for 2times. (IPC/JEDECJ-STD-020D Classification Reflow Profiles) Step1: -40±2°C 30±5min Step2: 25±2°C ≤0.5min Step2: 85±2°C 30±5min Number of cycles: 500 Measured at room temperature after placing for 24±2°C Hrs</p>															
Vibration		<p>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).</p>															
Shock	<p>Appearance: No damage. Inductance: within ±10% of initial value RDC: within ±15% of initial value and shall not exceed the specification value</p>	<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 (Vi) 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 (Vi) ft/sec	SMD	50	11	Half-sine	11.3	Lead	50	11	Half-sine	11.3
Type	Peak value (g's)	Normal Duration(D) (ms)	Wave form	Velocity Change (Vi) ft/sec													
SMD	50	11	Half-sine	11.3													
Lead	50	11	Half-sine	11.3													
Solder ability	<p>More than 95% of the terminal electrode should be covered with solder</p>	<p>Preheat: 150°C, 60sec. Solder: Sn99%, Ag0.3%,Cu0.7% Temperature: 245±5°C Flux for lead free: Rosin. 9.5% Dip time: 4 ± 1sec. Depth: completely cover the termination</p>															
Resistance to Sodering Heat		<p>Depth: completely cover the termination</p> <table border="1"> <thead> <tr> <th>Temperature (°C)</th> <th>Time(s)</th> <th>Temperature ramp/immersion and emersion rate</th> <th>Number of heat cycles</th> </tr> </thead> <tbody> <tr> <td>260 ±5 (solder temp)</td> <td>10±1</td> <td>25mm/s ± 6mm/s</td> <td>1</td> </tr> </tbody> </table>	Temperature (°C)	Time(s)	Temperature ramp/immersion and emersion rate	Number of heat cycles	260 ±5 (solder temp)	10±1	25mm/s ± 6mm/s	1							
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260 ±5 (solder temp)	10±1	25mm/s ± 6mm/s	1														
Terminal Strength	<p>Appearance: No damage. Inductance: within ±10% of initial value RDC: within ±15% of initial value and shall not exceed the specification value</p>	<p>Preconditioning: Run through IR reflow for 2 times. (IPC/JEDECJ-STD-020D Classification Reflow Profiles) With the component mounted on a PCB with the device to be tested, apply a force(&gt;0805: 1kg, &lt;=0805:0.5kg) to the side of a device being tested. This force shall be applied for 60+1 a shock to the component being tested.</p>  <p>The diagram shows a component (DUT) mounted on a substrate. A press tool is applied to the side of the component, and a shear force is indicated by an arrow pointing to the right. Labels include 'DUT', 'substrate', 'press tool', 'wide', 'thickness', and 'shear force'.</p>															

## 9. Soldering and Mounting

### 9-1 Soldering

Mildly activated rosin fluxes are preferred. terminations are suitable for all wave and re-flow soldering systems.

If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

#### 9-1.1 Solder re-flow:

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

#### 9-1.2 Soldering Iron (Figure 2):

Products attachment with a soldering iron is discouraged due to the inherent process control limitations.

In the event that a soldering iron must be employed the following precautions are recommended.

Preheat circuit and products to 150°C

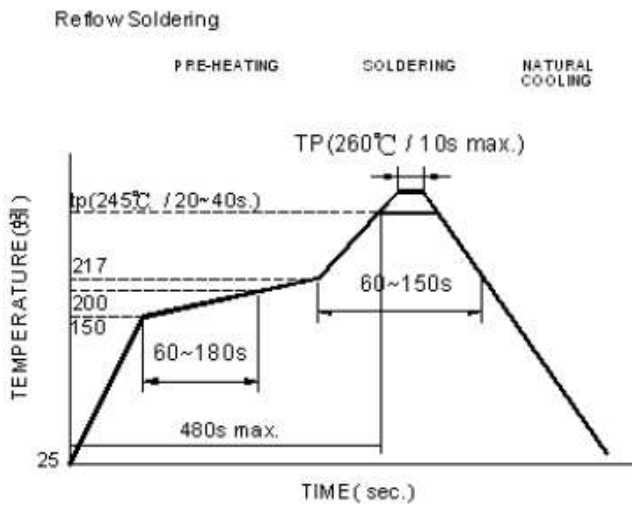
Never contact the ceramic with the iron tip

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

355°C tip temperature (max)

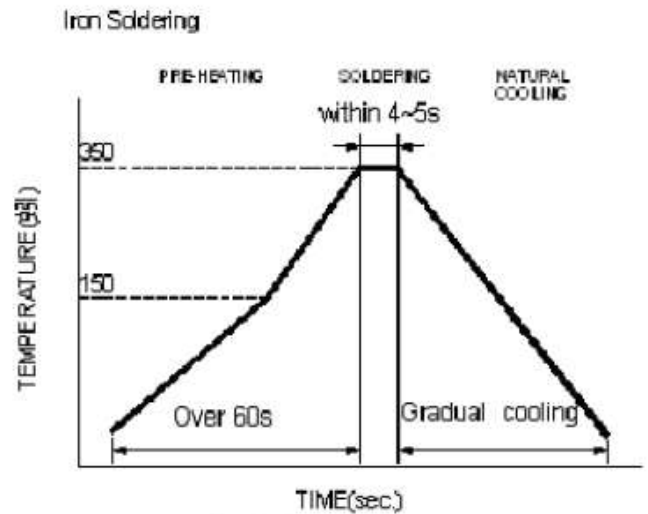
1.0mm tip diameter (max)

Limit soldering time to 4~5 sec.



Reflow times: 3 times max.

Fig.1

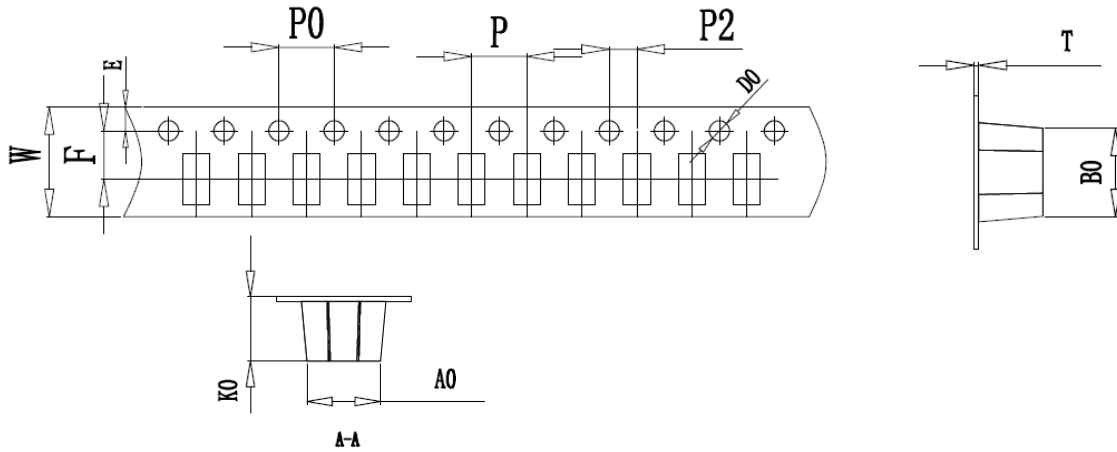


Iron Soldering times: 1 times max.

Fig.2

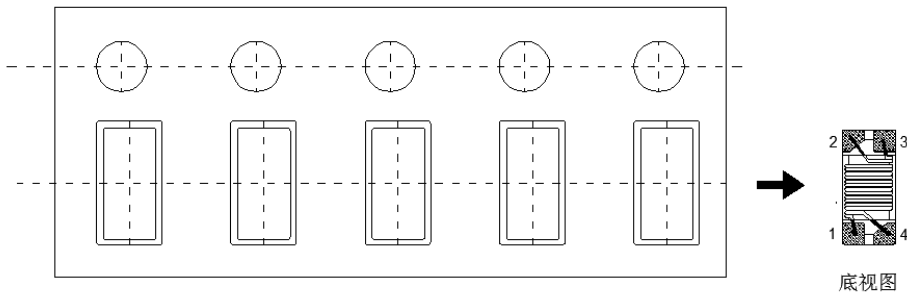
## 10. Packaging and Marking:

### 10-1. Carrier Tape Dimensions:



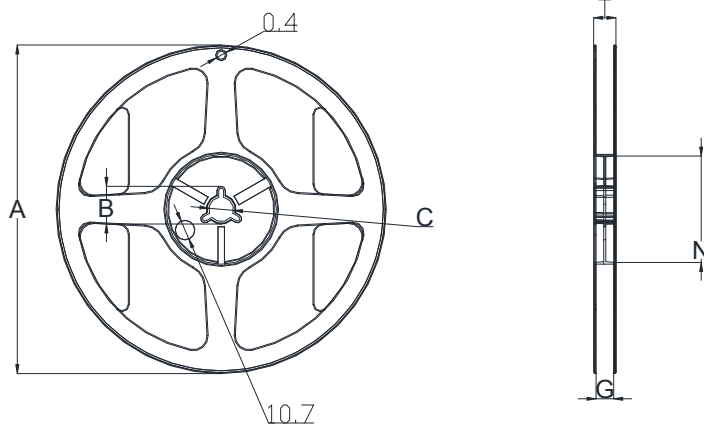
ITEM	W	A0	B0	K0	P	F	E	D0	P0	P2	T
DIM	8.00	1.95	3.7	2.4	4.00	3.5	1.75	1.50	4.00	2.00	0.25
TOLE	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1	±0.1	±0.1	±0.05

### 10-2. Taping Dimensions:



### 10-3. Reel Dimensions:

Carrier Tape Reel



Type	A	B	C	G	N	T
8mm	178	20.7±0.8	13±0.4	9	60	10.8

### 10-4. Packaging Quantity:

2KPCS/ Reel



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