

# CP1005 Series (Preliminary)

## Multilayer Chip Couplers

### Features

- ❖ Monolithic SMD with ultra-small, low-profiled, and light-weight type.
- ❖ HF & RoHS compliant

### Applications

- ❖ 0.4 ~ 6 GHz wireless communication systems, including DECT/PACS/PHS/GSM/DCS phones, WLAN card, Bluetooth modules, etc.



### Specifications

| Part Number            | Frequency (MHz) | Insertion Loss (dB) | Return Loss (dB) | Coupling (dB) | Directivity (dB) |
|------------------------|-----------------|---------------------|------------------|---------------|------------------|
| <b>CP1005-07C5500_</b> | 5500            | 1.8 max.            | 10 min.          | 6.5 ± 1.0     | 12 typ.          |

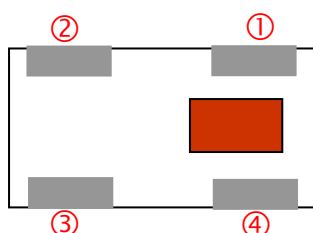
Q'ty/Reel (pcs) : 10000  
 Operating Temperature Range : -40 ~ +85 °C  
 Storage Temperature Range : +5 ~ +35 °C, Humidity 45~75%RH  
 Storage Period : 12 months max.  
 Power Capacity : 1W max.

### Part Number

**CP 1005 - 07 C 5500 □ /LF**  
 ① ② ③ ④ ⑤ ⑥ ⑦

|                     |                                   |                        |                           |
|---------------------|-----------------------------------|------------------------|---------------------------|
| ① Type              | CP : Coupler                      | ② Dimensions ( L × W ) | 1.0 × 0.5 mm              |
| ③ Coupling          | 07 : 6.5 dB                       | ④ Specification Code   | C                         |
| ⑤ Central Frequency | 5500 : 5500MHz                    | ⑥ Packaging            | T: Tape & Reel<br>B: Bulk |
| ⑦ Soldering         | =lead-containing<br>/LF=lead-free |                        |                           |

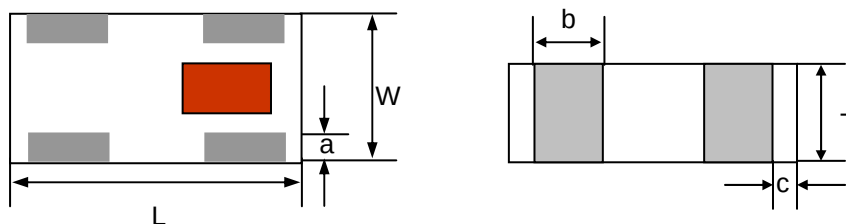
### Terminal Configuration



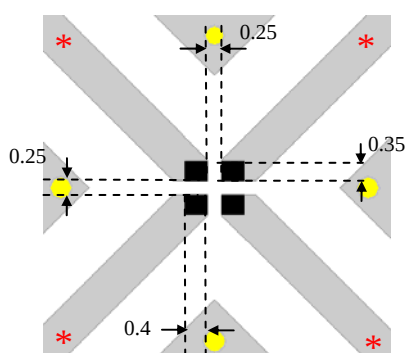
| No. | Terminal Name | No. | Terminal Name |
|-----|---------------|-----|---------------|
| ①   | Out           | ③   | Coupling      |
| ②   | IN            | ④   | Termination   |

## Dimensions and Recommended PC Board Pattern

Unit : mm



| Mark       | L             | W             | T               | a                | b                 | c                |
|------------|---------------|---------------|-----------------|------------------|-------------------|------------------|
| Dimensions | $1.0 \pm 0.1$ | $0.5 \pm 0.1$ | $0.37 \pm 0.05$ | $0.1 +0.1/-0.05$ | $0.25 +0.1/-0.05$ | $0.1 +0.1/-0.05$ |

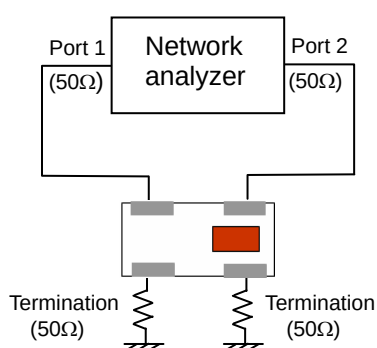


-  Solder Resist
-  Land
-  Through-hole ( $\phi 0.3$ )

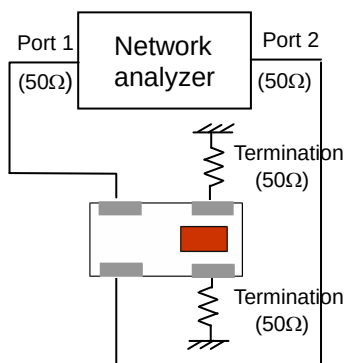
\* Line width should be designed to match  $50\Omega$  characteristic impedance, depending on PCB material and thickness.

## Measuring Diagram

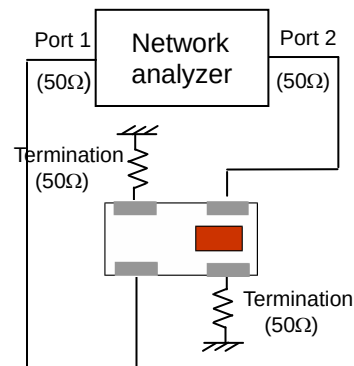
### Attenuation



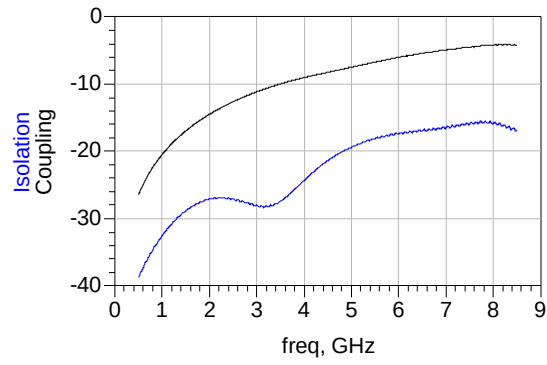
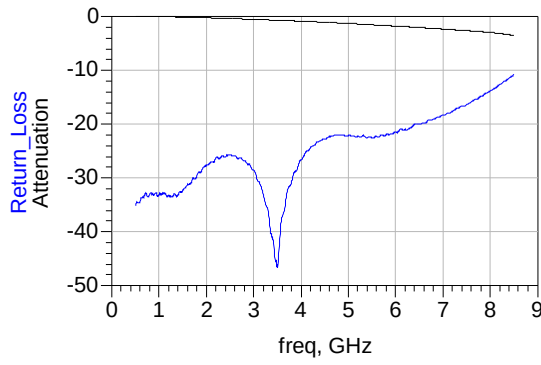
### Coupling



### Isolation



## Typical Electrical Characteristics (T=25°C)

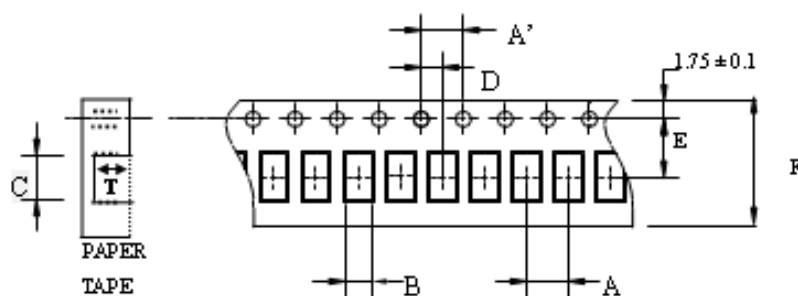


### Notes

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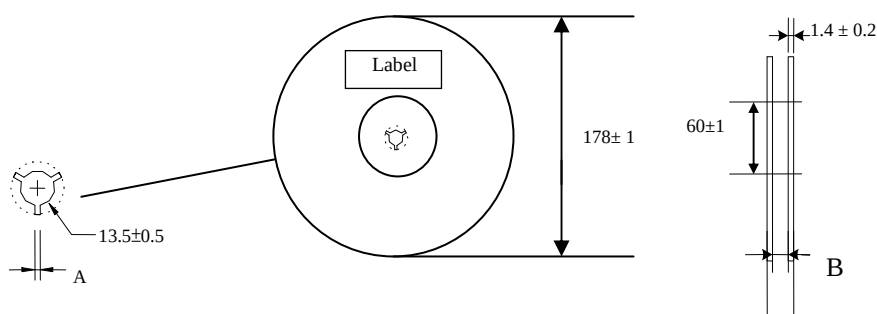
## Taping Specifications

### ❖Tape Dimensions (Unit: mm) & Quantity



| Type | A            | A'          | B             | C             | D            | E            | F           | T             | Quantity/reel | Tape material |
|------|--------------|-------------|---------------|---------------|--------------|--------------|-------------|---------------|---------------|---------------|
| 1005 | 2.0±<br>0.05 | 4.0±<br>0.1 | 0.62±<br>0.03 | 1.12±<br>0.03 | 2.0±<br>0.05 | 3.5±<br>0.05 | 8.0±<br>0.1 | 0.45±<br>0.03 | 10,000pcs     | Paper         |

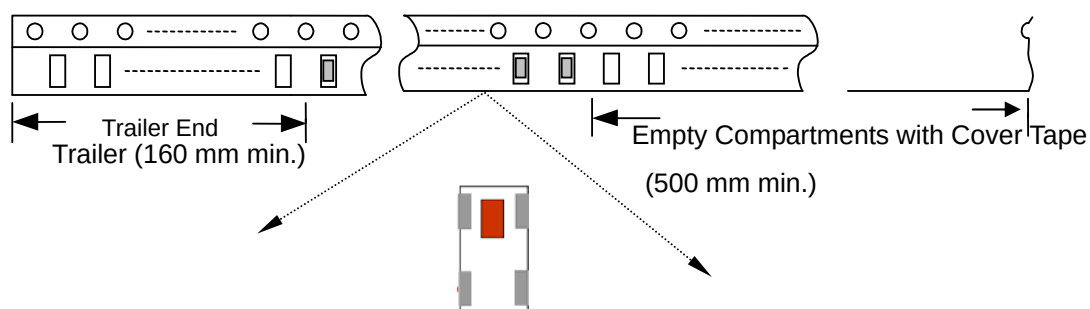
### ❖Reel Dimensions (Unit: mm)



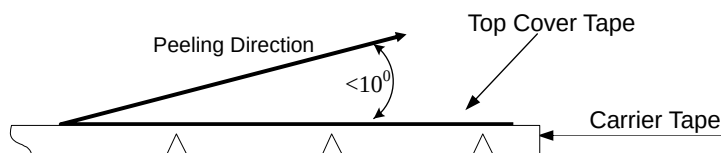
Label: Customer's Name,  
ACX P/N, Q'ty, Date,  
ACX Corp.

| Type | A       | B       |
|------|---------|---------|
| 1005 | 2.3±0.5 | 9.0±0.3 |

### ❖Leader and Trailer Tape



#### ❖ Peel-off Force



Peel-off force should be in the range of 0.1 – 0.6 N at a peel-off speed of  $300 \pm 10$  mm/min .

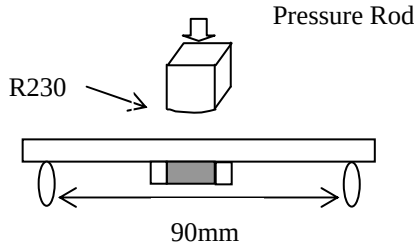
#### ❖ Storage Conditions

- (1) Temperature: 15 ~35°C , relative humidity (RH): 45~75%.
- (2) Non-corrosive environment.

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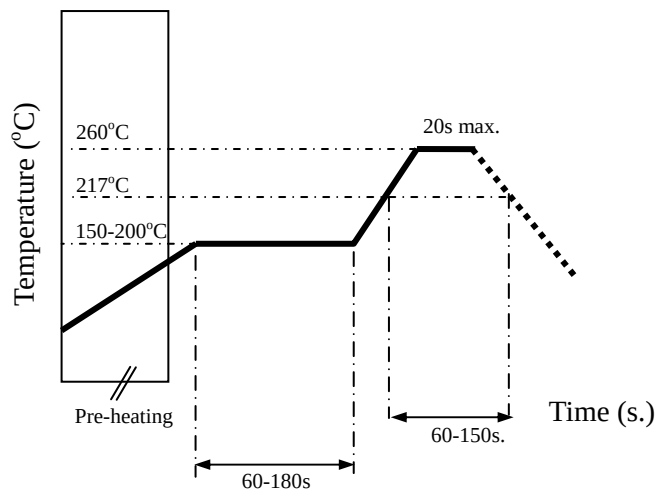
## Mechanical & Environmental Characteristics

| Item                                         | Requirements                                                                                                                                            | Procedure                                                                                                                                                                                                                                                               |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solderability                                | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>More than 95% of the terminal electrode shall be covered with new solder.</li> </ol> | <ol style="list-style-type: none"> <li>Preheat: <math>120 \pm 5^{\circ}\text{C}</math></li> <li>Solder: <math>245 \pm 5^{\circ}\text{C}</math> for <math>5 \pm 1</math> sec</li> </ol>                                                                                  |
| Soldering strength<br>(Termination Adhesion) | <ol style="list-style-type: none"> <li>3N minimum</li> </ol>                                                                                            | <ol style="list-style-type: none"> <li>Solder specimen onto test jig.</li> <li>Apply push force at 0.5mm/s until electrode pads are peeled off or ceramic are broken. Pushing force is applied to longitude direction</li> </ol>                                        |
| Deflection<br>(Substrate Bending)            | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>Fulfill the electrical specification</li> </ol>                                      | <ol style="list-style-type: none"> <li>Solder specimen onto test jig (FR4, 0.8mm) using the recommend soldering profile.</li> <li>Apply a bending force of 2mm deflection</li> </ol>  |
| Heat/Humidity Resistance                     | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>Fulfill the electrical specification after test</li> </ol>                           | <ol style="list-style-type: none"> <li>Temperature: <math>85 \pm 2^{\circ}\text{C}</math></li> <li>Humidity: 90% ~ 95% RH</li> <li>Duration: <math>1000 \pm 48</math>hrs</li> <li>Recovery: 1-2hrs</li> </ol>                                                           |
| Thermal shock<br>(Temperature Cycle)         | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>Fulfill the electrical specification after test</li> </ol>                           | <ol style="list-style-type: none"> <li>One cycle/step 1 : <math>125 \pm 5^{\circ}\text{C}</math> for 30 min<br/>step 2 : <math>-40 \pm 5^{\circ}\text{C}</math> for 30 min</li> <li>No of cycles : 100</li> <li>Recovery: 1-2 hrs</li> </ol>                            |
| Low Temperature Resistance                   | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>Fulfill the electrical specification after test</li> </ol>                           | <ol style="list-style-type: none"> <li>Temperature: <math>-40 \pm 5^{\circ}\text{C}</math></li> <li>Duration: <math>500 \pm 24</math>hrs</li> <li>Recovery: 1-2hrs</li> </ol>                                                                                           |

## Soldering Conditions

### ❖ Typical Soldering Profile for Lead-free Process

Reflow Soldering :



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