

# BL 1005 Series

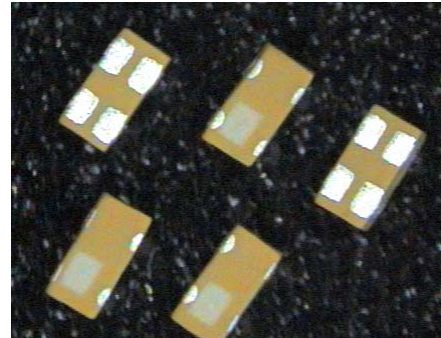
## Multilayer Chip Baluns

### Features

- ❖ Monolithic SMD with small, low-profile and light-weight type.

### Applications

- ❖ 2.4 GHz wireless communication systems, including WLAN card, Bluetooth modules, Home RF, etc.



### Specifications

Part Number	Frequency Range (MHz)	Unbalanced Impedance (ohm)	Balanced Impedance (ohm)	Insertion Loss (dB)	VSWR @BW	Phase Difference (degree)	Amplitude Difference (dB)
<b>BL1005-AVR2450_</b>	2400 ~ 2500	50	Conjugate match to AR6003	1.4 max.	2.0 max.	180 ± 10	2.0 max.

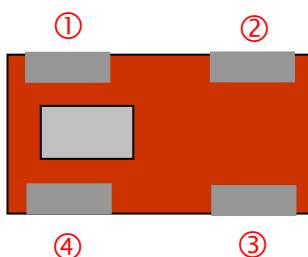
Q'ty/Reel (pcs) : 10,000  
 Operating Temperature Range : -40 ~ +85 °C  
 Storage Temperature Range : +5 ~ +35 °C, Humidity 45~75%RH  
 Storage Period : 12 months max.\*  
 \*12 months in vacuum sealed bag and 1 week after opened. Please keep unused parts in vacuum sealed bags.  
 Solder Paste : SAC 305 type is recommended.  
 Power Capacity : 2W max.

### Part Number

BL   1005   -   AV   R   2450   □   /LF  
 ①   ②   ③   ④   ⑤   ⑥   ⑦

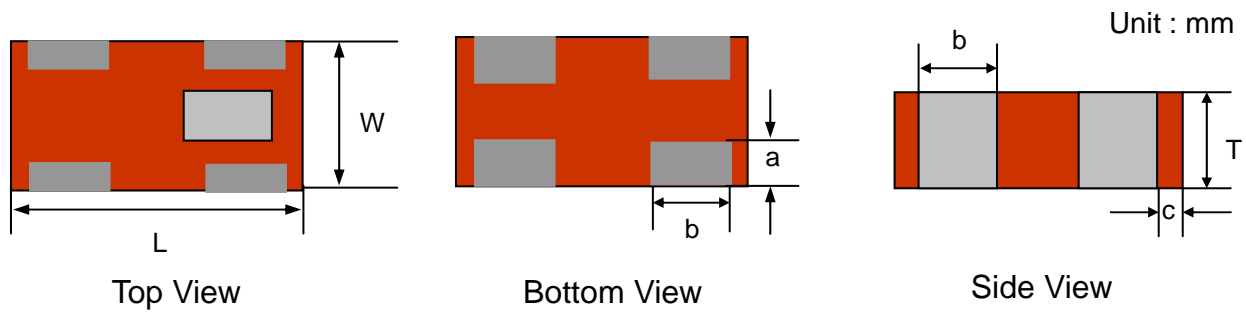
① Type	BL : Balun	② Dimensions ( L x W )	1.0 x 0.5 mm
③ Balanced Impedance	AV : Conjugate match to Atheros chipset	④ Specification Code	R
⑤ Central Frequency	2450 : 2450MHz	⑥ Packaging	T: Tape & Reel B: Bulk
⑦ Soldering	=lead-containing /LF=lead-free		

### Terminal Configuration

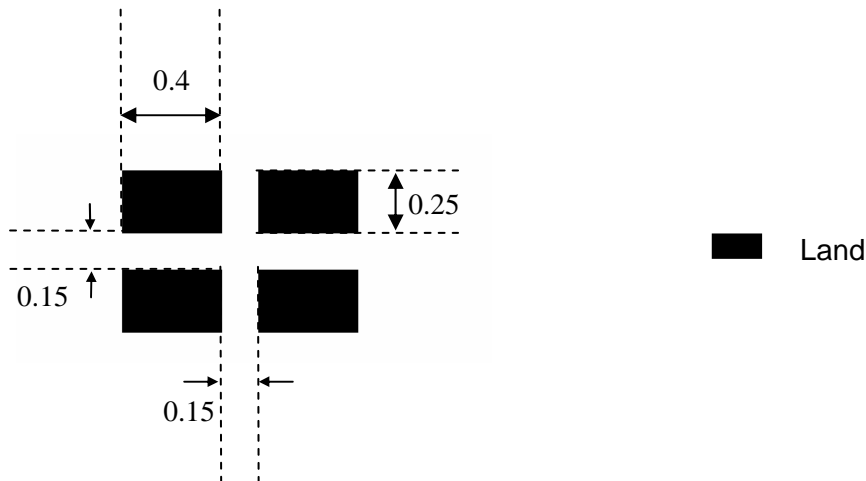


No.	Terminal Name	No.	Terminal Name
①	Balanced Port	③	GND
②	Balanced Port	④	Unbalanced Port

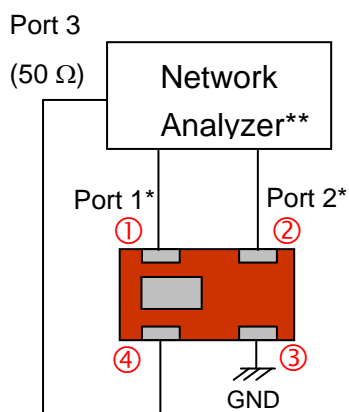
## Dimensions and Recommended Land Pattern



Mark	L	W	T	a	b	c
Dimensions	1.0 ± 0.1	0.5 ± 0.1	0.45 max.	0.175 +0.1/-0.05	0.25 +0.1/-0.05	0.1 +0.1/-0.05



## Measuring Diagram



Port 3: Unbalanced Port

Ports 1 and 2: Balanced Port

$$IL = S_{ds21}$$

$$RL = S_{ss11}$$

$$\text{Amp\_balance} = \text{dB}(S(1,3)/S(2,3))$$

$$\text{Phase\_balance} = \text{Phase}(S(1,3)/S(2,3))$$

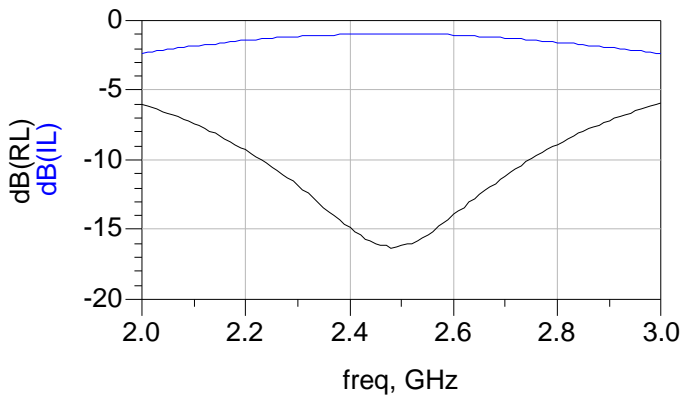
\*Impedance for ports 1 and 2

= Conjugate to Balanced Impedance/2

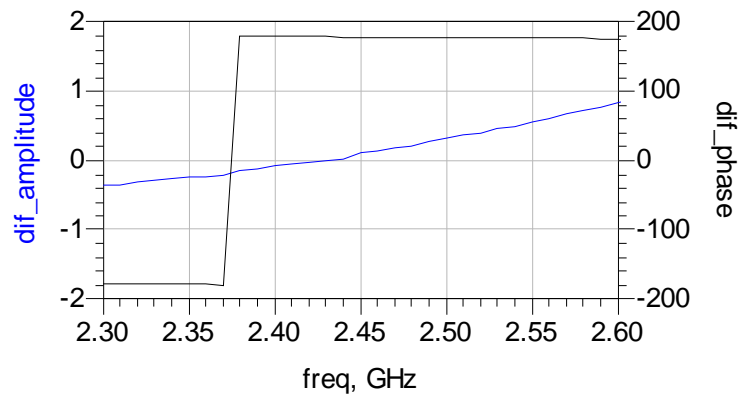
\*\*E5071B from Agilent

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

**Insertion and Return Loss**



**Amplitude and Phase Balance**

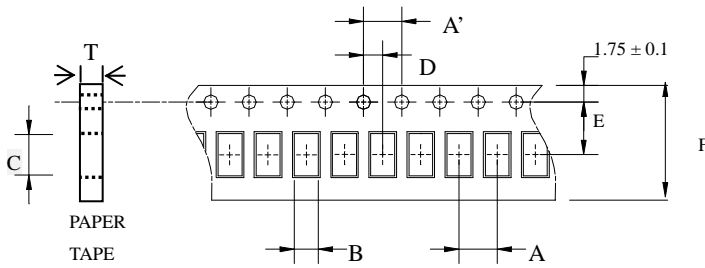


**Notes**

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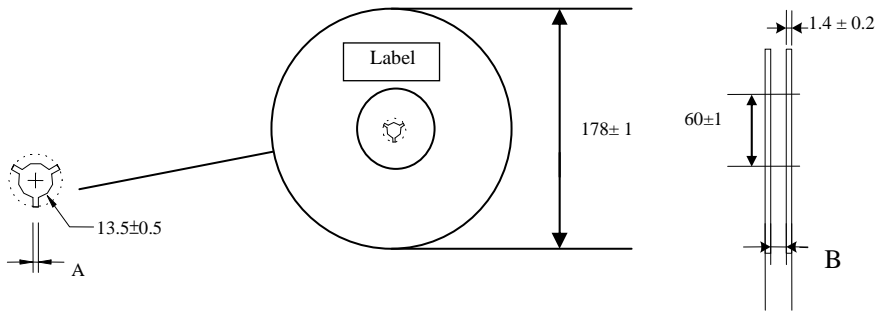
## Taping Specifications

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



Type	A	A'	B	C	D	E	F	T	Quantity/reel	Tape material
1005	2.0± 0.05	4.0± 0.1	0.62± 0.03	1.12± 0.03	2.0± 0.05	3.5± 0.05	8.0± 0.1	0.43± 0.03	10,000pcs	Paper

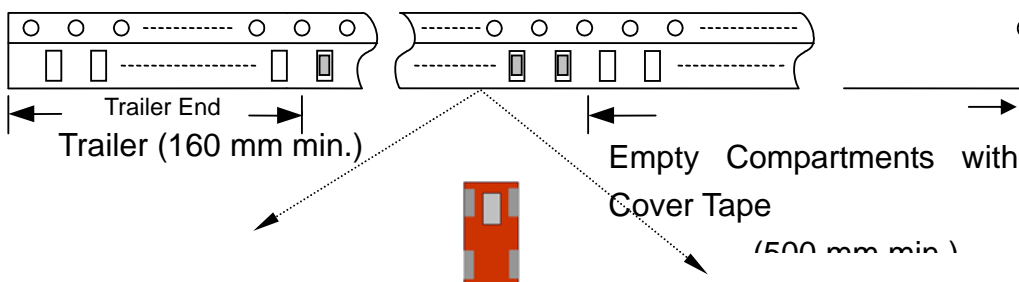
### ❖ Reel Dimensions (Unit: mm)



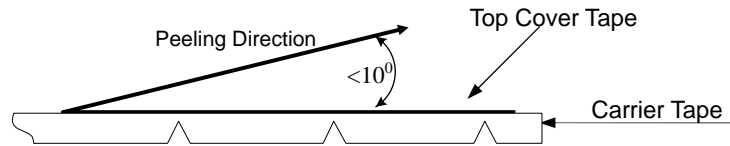
Label: Customer's Name,  
ACX P/N, Q'ty, Date,  
ACX Corp.

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 .

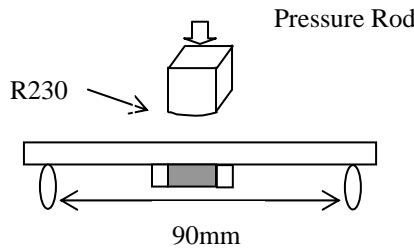
❖ **Storage Conditions**

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

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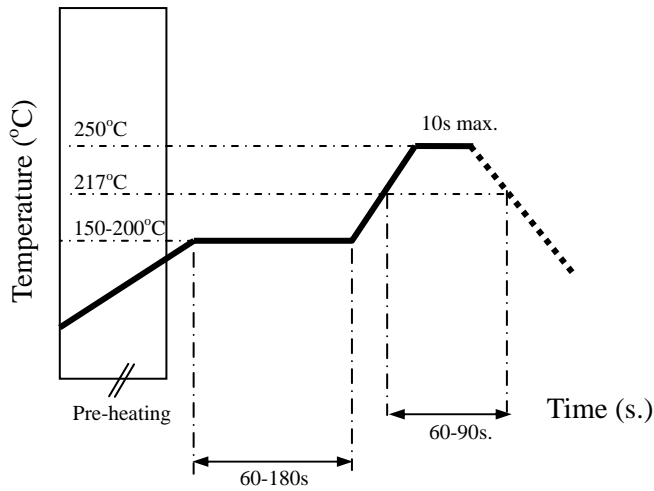
## Mechanical & Environmental Characteristics

Item	Requirements	Procedure
Solderability	<ol style="list-style-type: none"> <li>No apparent damage</li> <li>More than 75% 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 (Termination Adhesion)	<ol style="list-style-type: none"> <li>0.7kg 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 (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 (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 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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