

BL 2012 Series

Multilayer Chip Baluns

Features

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

Applications

- ❖ 0.8 ~ 6 GHz wireless communication systems, including DECT/PACS/PHS/GSM/DCS phones, WLAN card, Bluetooth modules, Hyper-LAN, etc.



Specifications

| Part Number | Frequency Range (MHz) | Unbalanced Impedance (ohm) | Balanced Impedance (ohm) | Insertion Loss (dB) | VSWR @BW | Phase Difference (degree) | Amplitude Difference (dB) |
|------------------------|-----------------------|----------------------------|--------------------------|---------------------|----------|---------------------------|---------------------------|
| BL2012-10B1850_ | 1700~2000 | 50 | 100 | 1.0 max. | 2.0 max. | 180 ± 10 | 2 max. |

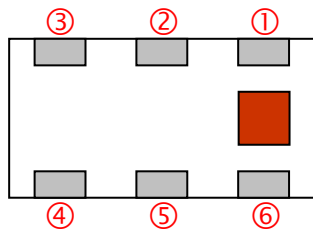
Q'ty/Reel (pcs) : 4000
 Operating Temperature Range : -40 ~ +85 °C
 Storage Temperature Range : -40 ~ +85 °C
 Storage Period : 12 months max.
 Power Capacity : 3W max.

Part Number

BL 2012 - 10 B 1850 □ /LF
 ① ② ③ ④ ⑤ ⑥ ⑦

| | | | |
|----------------------|----------------|------------------------|---------------------------|
| ① Type | BL : Balun | ② Dimensions (L x W) | 2.0 x 1.25 mm |
| ③ Balanced Impedance | 10 : 100 ohm | ④ Material Code | B |
| ⑤ Central Frequency | 1850 : 1850MHz | ⑥ Packaging | T: Tape & Reel B: Bulk |
| ⑦ Soldering | /LF=lead-free | | |

Terminal Configuration

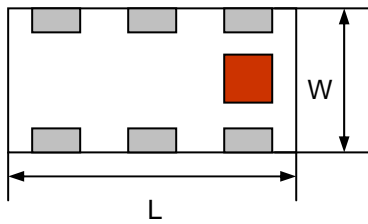


< Top View >

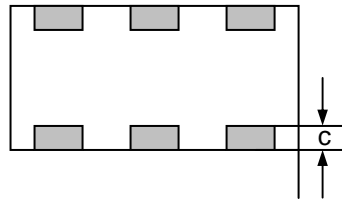
| No. | Terminal Name | No. | Terminal Name |
|-----|-------------------------|-----|----------------------|
| ① | Unbalanced Port (IN) | ④ | Balanced Port (OUT2) |
| ② | GND or DC feed + RF GND | ⑤ | GND |
| ③ | Balanced Port (OUT1) | ⑥ | NC |

Dimensions and Recommended PC Board Pattern

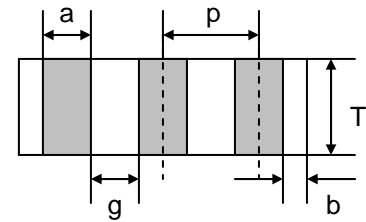
Unit : mm



< Top View >



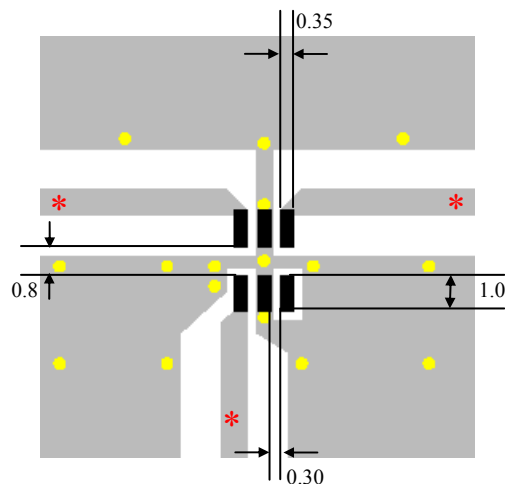
< Bottom View >



< Side View >

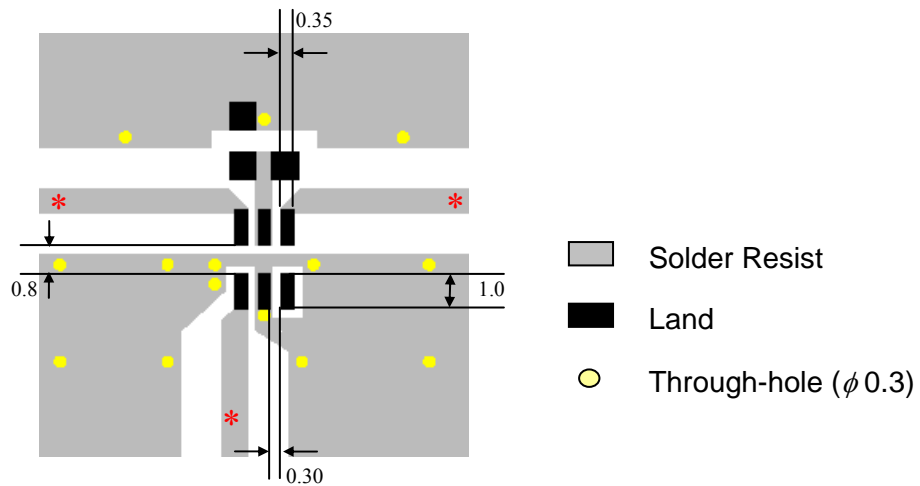
| Mark | L | W | T | a | b | c | g | p |
|------------|---------------|----------------|----------------|---------------|---------------|------------------|----------------|-----------------|
| Dimensions | 2.0 ± 0.1 | 1.25 ± 0.1 | 0.95 ± 0.1 | 0.3 ± 0.1 | 0.2 ± 0.1 | $0.3+0.1 / -0.2$ | 0.35 ± 0.1 | 0.65 ± 0.05 |

Without DC feed



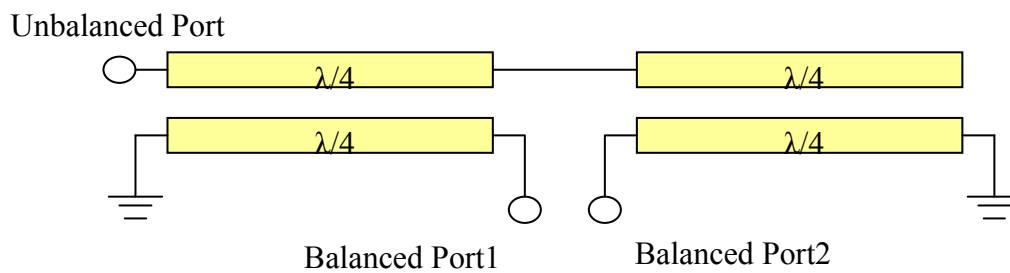
- Solder Resist
- Land
- Through-hole ($\phi 0.3$)

With DC feed

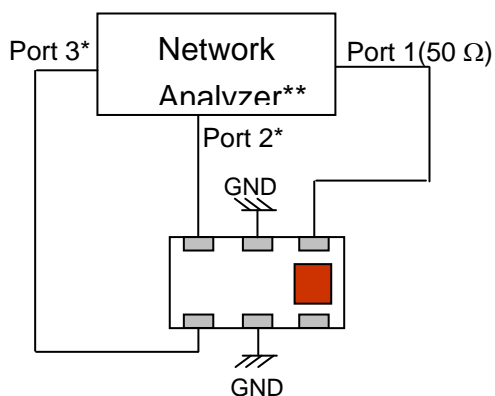


- * Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.
- ** By-pass capacitor should be connected when feeding DC power.

Equivalent Circuit



Measuring Diagram

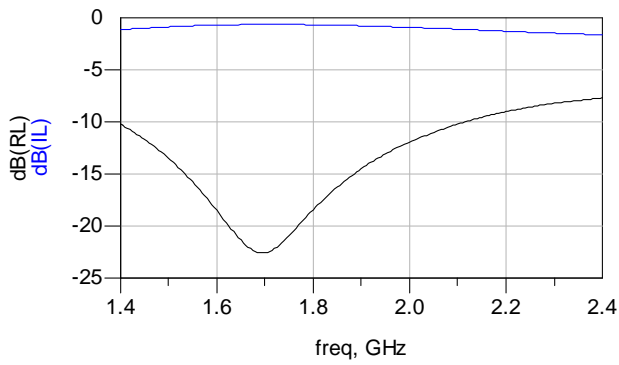


Port 1: Unbalanced Port
 Ports 2 and 3: Balanced Port
 $IL = S_{ds21}$
 $RL = S_{ss11}$
 $Amp_balance = dB(S(2,1)/S(3,1))$
 $Phase_balance = Phase(S(2,1)/S(3,1))$

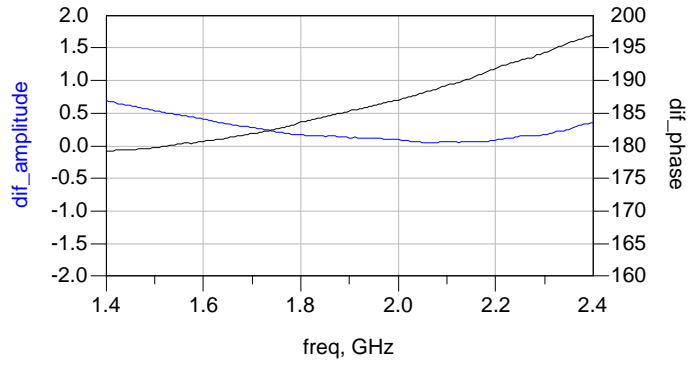
*Impedance for ports 2 and 3 = Balanced Impedance/2
 **E5071B from Agilent

Typical Electrical Characteristics (T=25°C)

Insertion and Return Loss



Amplitude and Phase Balance

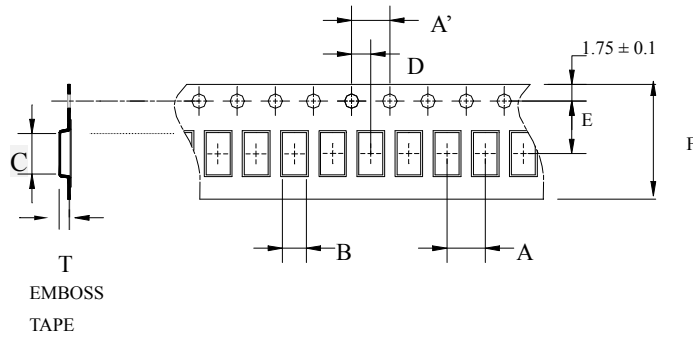


Notes

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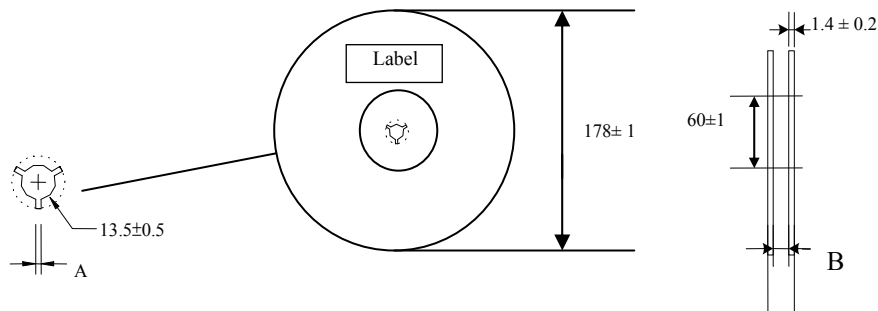
Taping Specifications

❖Tape Dimensions (Unit: mm) & Quantity



| Type | A | A' | B | C | D | E | F | T | Quantity/reel | Tape material |
|------|-------------|-------------|---------------|---------------|--------------|-------------|-------------|---------------|---------------|-----------------------|
| 2012 | 4.0± 0.1 | 4.0± 0.1 | 1.35± 0.05 | 2.15± 0.05 | 2.0± 0.05 | 3.5± 0.1 | 8.0± 0.1 | 1.08± 0.05 | 4,000pcs | Plastic (Embossed) |

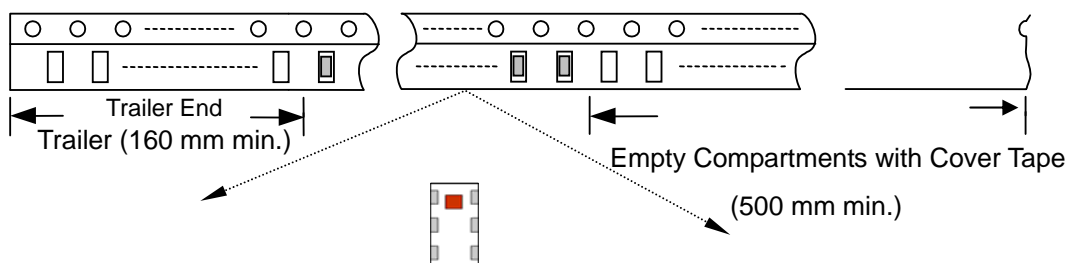
❖Reel Dimensions (Unit: mm)



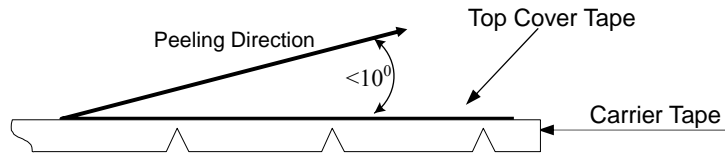
Label: Customer's Name,
ACX P/N, Q'ty, Date,
ACX Corp.

| Type | A | B |
|------|---------|---------|
| 2012 | 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 ± 10 mm/min .

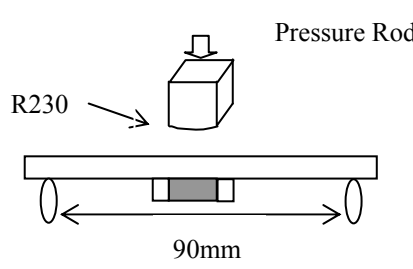
❖ **Storage Conditions**

- (1) Temperature: 5 ~35°C , relative humidity (RH): 45~75%.
- (2) Non-corrosive environment

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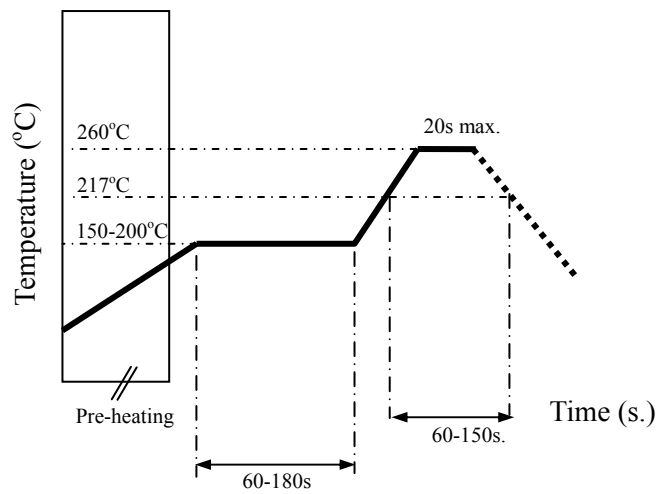
Mechanical & Environmental Characteristics

| Item | Requirements | Procedure |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solderability | <ol style="list-style-type: none"> No apparent damage More than 95% of the terminal electrode shall be covered with new solder | <ol style="list-style-type: none"> Preheat: $120 \pm 5^\circ\text{C}$ Solder: $245 \pm 5^\circ\text{C}$ for 5 ± 1 sec |
| Soldering strength (Termination Adhesion) | <ol style="list-style-type: none"> 10N minimum | <ol style="list-style-type: none"> Solder specimen onto test jig. Apply push force at 0.5mm/s until electrode pads are peeled off or ceramic are broken. Pushing force is applied to longitude direction. |
| Deflection (Substrate Bending) | <ol style="list-style-type: none"> No apparent damage | <ol style="list-style-type: none"> Solder specimen onto test jig (FR4, 0.8mm) using the recommend soldering profile. Apply a bending force of 2mm deflection  |
| Heat/Humidity Resistance | <ol style="list-style-type: none"> No apparent damage Fulfill the electrical specification after test | <ol style="list-style-type: none"> Temperature: $85 \pm 2^\circ\text{C}$ Humidity: 90% ~ 95% RH Duration: 1000 ± 48hrs Recovery: 1-2hrs |
| Thermal shock (Temperature Cycle) | <ol style="list-style-type: none"> No apparent damage Fulfill the electrical specification after test | <ol style="list-style-type: none"> One cycle/step 1 : $125 \pm 5^\circ\text{C}$ for 30 min step 2 : $-40 \pm 5^\circ\text{C}$ for 30 min No of cycles : 100 Recovery: 1-2 hrs |
| Low Temperature Resistance | <ol style="list-style-type: none"> No apparent damage Fulfill the electrical specification after test | <ol style="list-style-type: none"> Temperature: $-40 \pm 5^\circ\text{C}$ Duration: 500 ± 24hrs Recovery: 1-2hrs |

Soldering Conditions

❖ Typical Soldering Profile for Lead-free Process

Reflow Soldering :



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