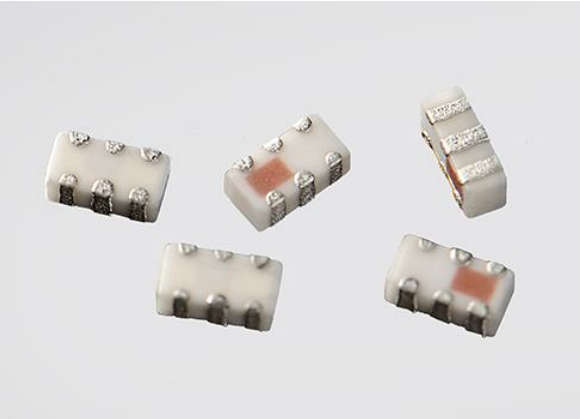
ACX
Advanced Ceramic X

# BL 1608 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) | Balance Impedance (ohm) | Insertion Loss (dB) | VSWR @BW | Phase Difference (degree) | Amplitude Difference (dB) | CMRR (dB) |
|---|---|---|---|---|---|---|---|---|
| BL1608-10K3600_ | 3300~3900 | 50 | 100 | 1.2 max. | 2.0 max. | 180 ± 15 | 1.5 max. | 18 min. |

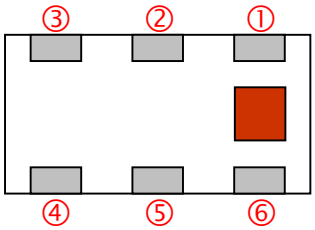
Q'ty/Reel (pcs) : 4000
Operating Temperature Range : -40 ~ +85 °C
Storage Temperature Range : -40 ~ +85 °C
Storage Period : 12 months max.
Power Capacity : 2W max.

### Part Number

BL 1608 - 10 K 3600 □ /LF
① ② ③ ④ ⑤ ⑥ ⑦

| | | | |
|---|---|---|---|
| ① Type | BL : Balun | ② Dimensions ( L × W ) | 1.6 × 0.8 mm |
| ③ Balanced Impedance | 10 : 100 ohm | ④ Specification Code | K |
| ⑤ Central Frequency | 3600 : 3600MHz | ⑥ Packaging | T: Tape & Reel<br>B: Bulk |
| ⑦ Soldering | /LF=lead-free | | |

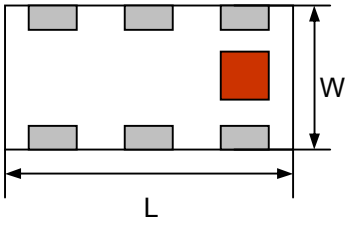
## Terminal Configuration



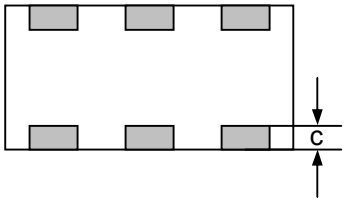

| No. | Terminal Name | No. | Terminal Name |
|---|---|---|---|
| ① | Unbalanced Port (IN) | ④ | Balanced Port (OUT2) |
| ② | GND or DC feed + RF GND | ⑤ | GND |
| ③ | Balanced Port (OUT1) | ⑥ | NC |

## Dimensions and Recommended PC Board Pattern

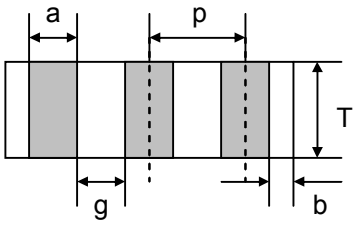
Unit : mm




< Top View>



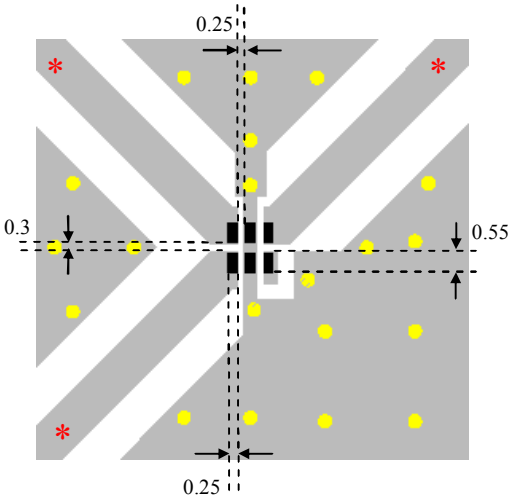

< Bottom View>




< Side View>

| Mark | L | W | T | a | b | c | g | p |
|---|---|---|---|---|---|---|---|---|
| Dimensions | 1.6 ±0.1 | 0.8 ±0.1 | 0.6 ±0.1 | 0.2 ±0.1 | 0.2+0.1 /-0.15 | 0.15 ±0.1 | 0.3 ±0.1 | 0.50 ±0.05 |

### Without DC feed

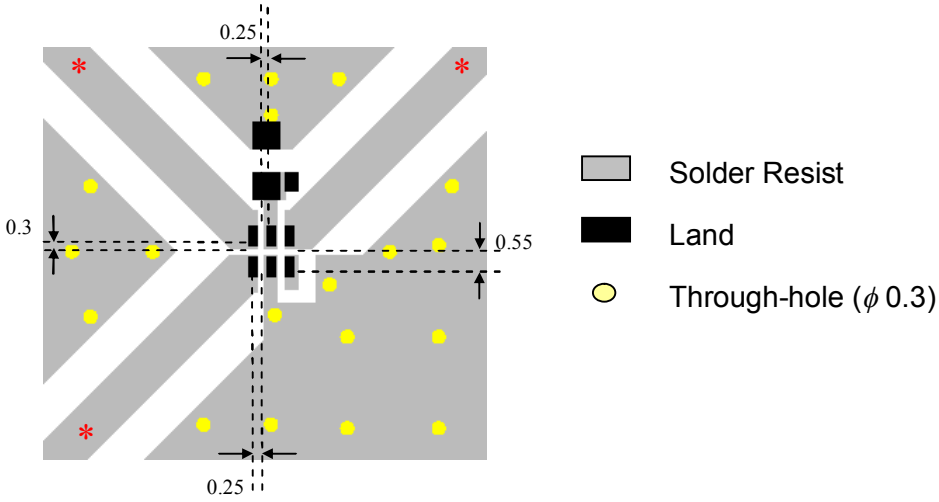



Solder Resist

Land

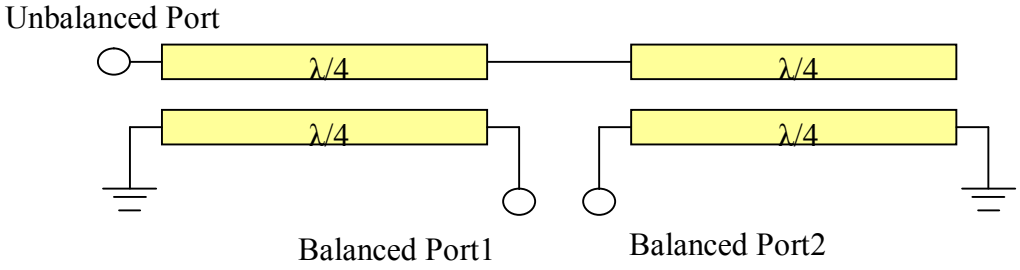
Through-hole ($\phi$ 0.3)

**With DC feed**

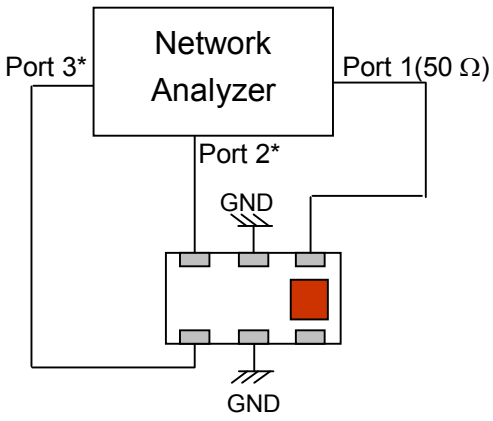



* Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.
** By-pass capacitor should be connected when feeding DC power.

## Equivalent Circuit




## Measuring Diagram




Port 1:Unbalanced Port

Ports 2 and 3: Balanced Port

IL=$S_{ds21}$

RL=$S_{ss11}$

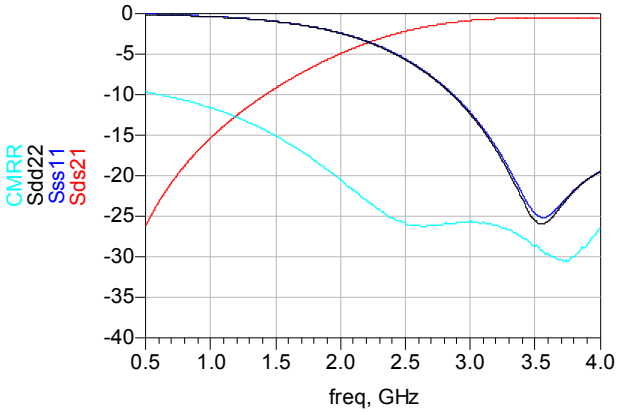
Amp_balance = dB(S(2,1)/S(3,1))

Phase_balance = Phase(S(2,1)/S(3,1))

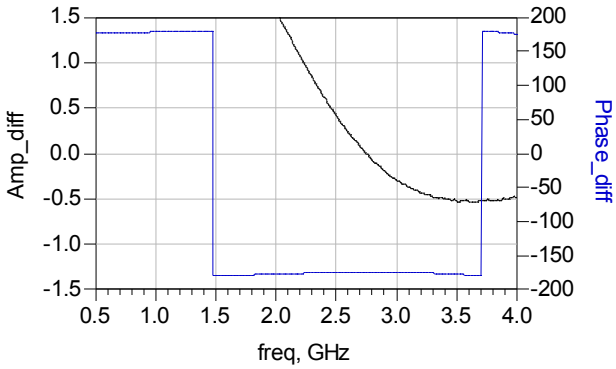
*Impedance for ports 2 and 3 = Balanced Impedance/2

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

### Insertion and Return Loss




### Amplitude and Phase Balance




## Notes

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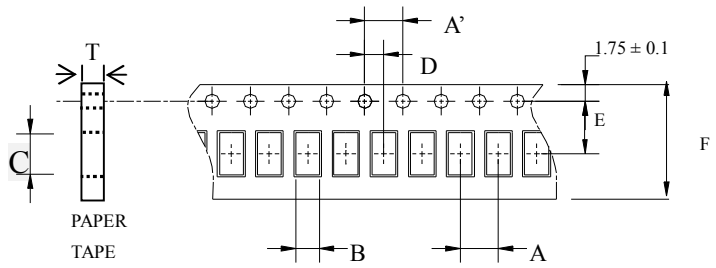
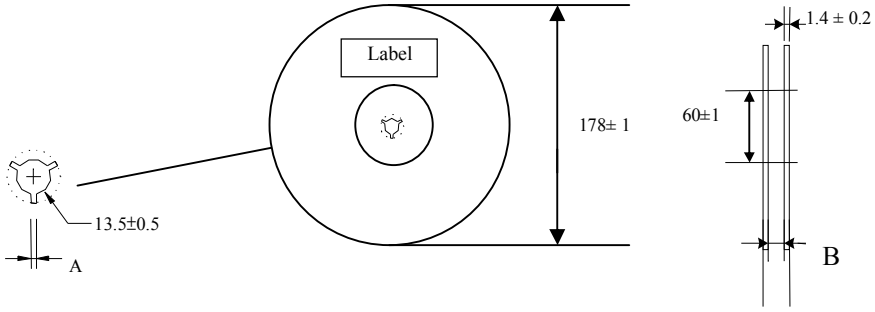
## Taping Specifications

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




| Type | A | A' | B | C | D | E | F | T | Quantity/reel | Tape material |
|---|---|---|---|---|---|---|---|---|---|---|
| 1608 | 4.0± 0.1 | 4.0± 0.1 | 1.10± 0.1 | 1.92± 0.1 | 2.0± 0.1 | 3.5± 0.1 | 8.0± 0.1 | 0.75± 0.05 | 4,000pcs | Paper |

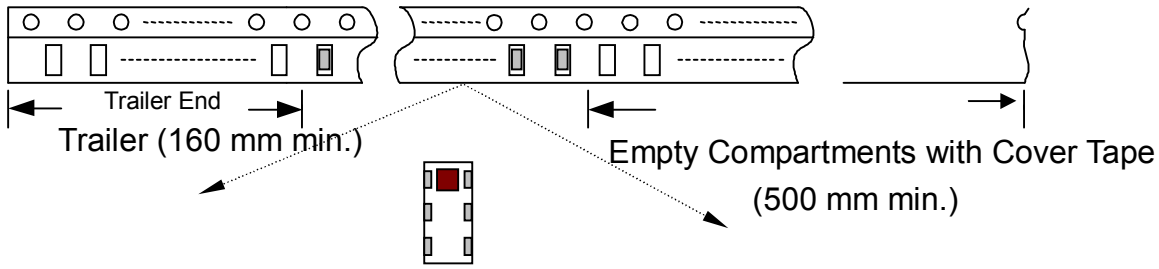
### ❖Reel Dimensions (Unit: mm)



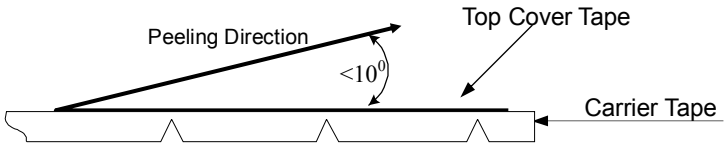

Label: Customer's Name,
ACX P/N, Q'ty, Date,
ACX Corp.

| Type | A | B |
|---|---|---|
| 1608 | 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: 15 ~35℃, relative humidity (RH): 45~75%.
(2) Non-corrosive environment.

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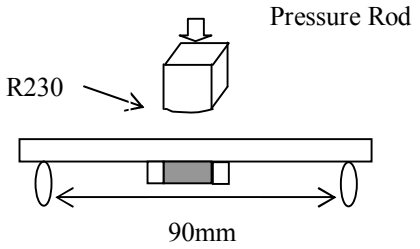
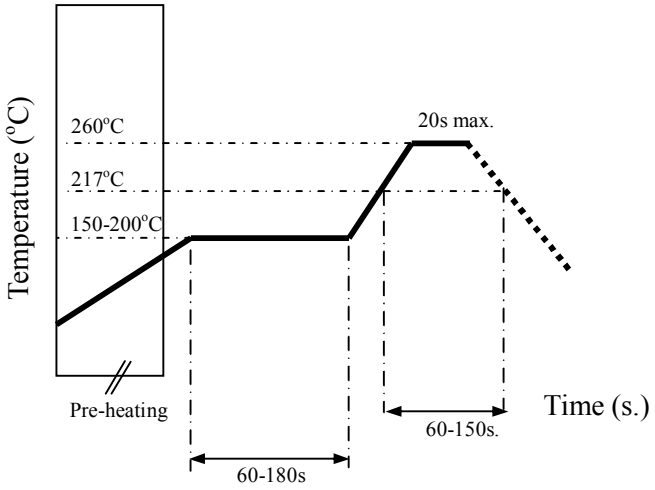
## Mechanical & Environmental Characteristics

| Item | Requirements | Procedure |
|---|---|---|
| Solderability | 1. No apparent damage<br>2. More than 95% of the terminal electrode shall be covered with new solder | 1. Preheat: 120± 5 °C<br>2. Solder: 245± 5°C for 5± 1 sec |
| Soldering strength (Termination Adhesion) | 1. 10N minimum | 1. Solder specimen onto test jig.<br>2. 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) | 1. No apparent damage | 1. Solder specimen onto test jig (FR4, 1.6mm) using the recommend soldering profile.<br>2. Apply a bending force of 2mm deflection<br>  |
| Heat/Humidity Resistance | 1. No apparent damage<br>2. Fulfill the electrical specification after test | 1. Temperature: 85± 2°C<br>2. Humidity: 90% ~ 95% RH<br>3. Duration: 1000±48hrs<br>4. Recovery: 1-2hrs |
| Thermal shock (Temperature Cycle) | 1. No apparent damage<br>2. Fulfill the electrical specification after test | 1. One cycle/step 1：125 ± 5°C for 30 min<br>step 2：- 40 ± 5°C for 30 min<br>2. No of cycles：100<br>3. Recovery:1-2 hrs |
| Low Temperature Resistance | 1. No apparent damage<br>2. Fulfill the electrical specification after test | 1. Temperature: -40± 5 °C<br>2. Duration: 500 ±24hrs<br>3. Recovery: 1-2hrs |

## Soldering Conditions

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

Reflow Soldering :

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