

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)	Balance Impedance (ohm)	Insertion Loss (dB)	VSWR @BW	OOB Rejection (dB)	Phase Difference (degree)	Amplitude Difference (dB)
BL1608-05K3600_	3300~3900	50	1.2 max.	2.0 max.	9 min. @800~960MHz 3 min. @1700~1900MHz	180 ± 15	1.5 max.

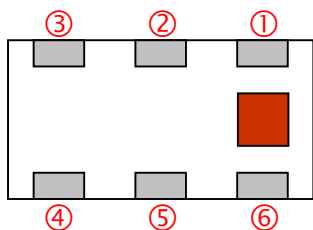
Q'ty/Reel (pcs) : 4000
 Operating Temperature Range : -40 ~ +85 °C
 Storage Temperature Range : -40 ~ +85 °C
 Storage Period : 12 months max.
 Power Capacity : 2W max.

Part Number

BL **1608** - **05** **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	05 : 50 ohm	④ Specification Code	K
⑤ Central Frequency	3600 : 3600MHz	⑥ Packaging	T: Tape & Reel B: Bulk
⑦ Soldering	/LF=lead-free		

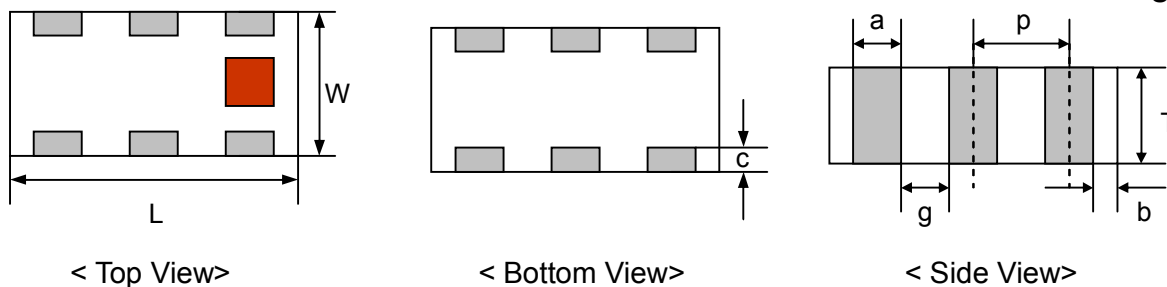
Terminal Configuration



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

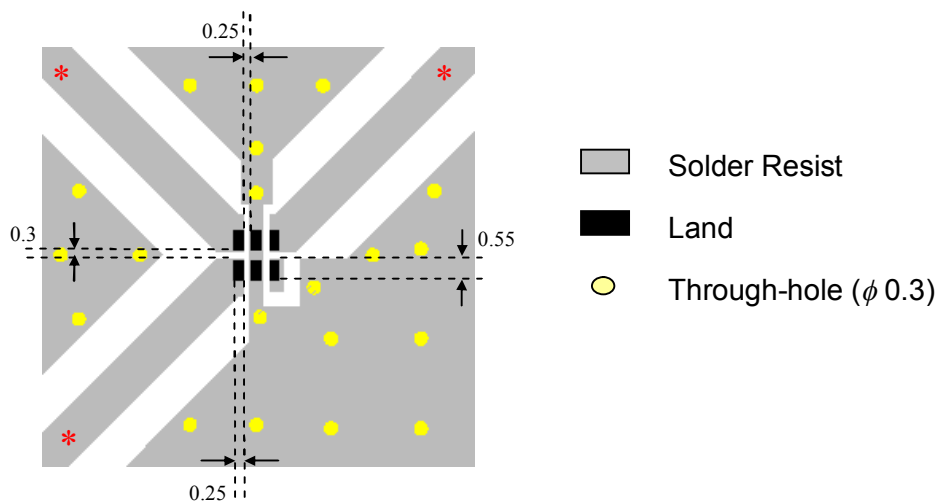
Dimensions and Recommended PC Board Pattern

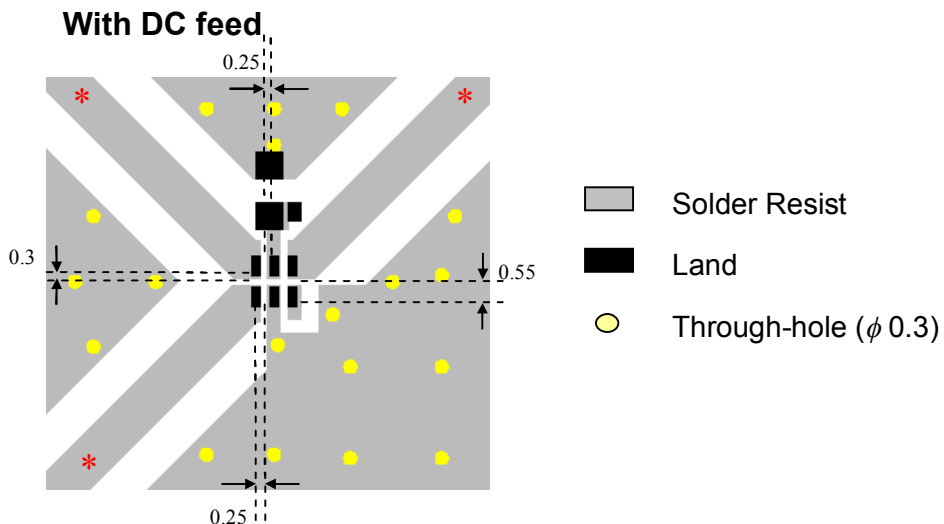
Unit : mm



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



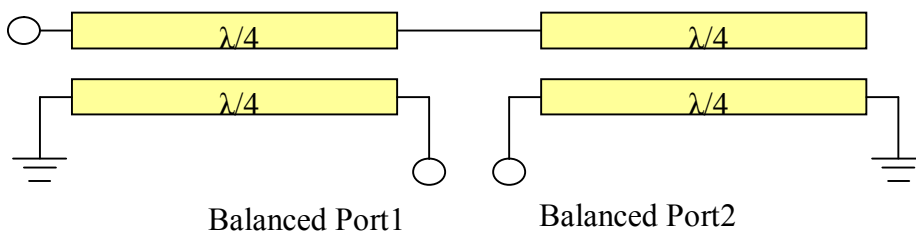


* Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.

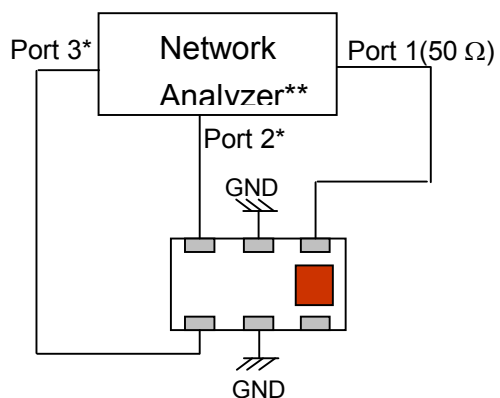
** By-pass capacitor should be connected when feeding DC power.

Equivalent Circuit

Unbalanced Port



Measuring Diagram



Port 1: Unbalanced Port

Ports 2 and 3: Balanced Port

$$IL = S_{ds21}$$

$$RL = S_{ss11}$$

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

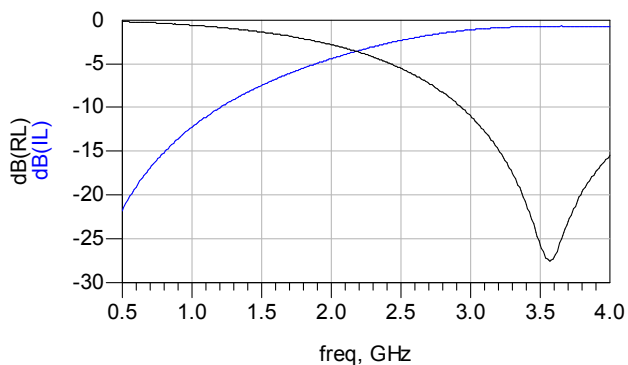
$$\text{Phase_balance} = \text{Phase}(S(2,1)/S(3,1))$$

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

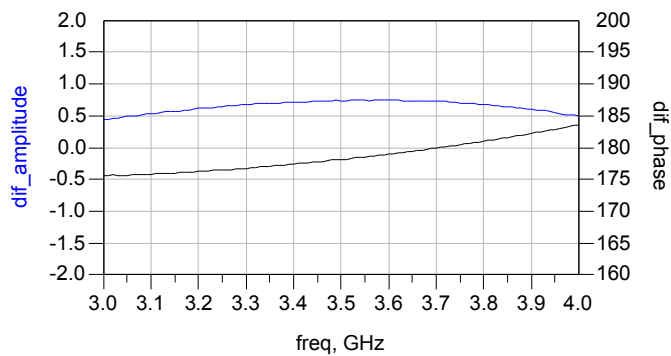
** E5071B from Agilent

Typical Electrical Characteristics (T=25°C)

Insertion and Return Loss



Amplitude and Phase Balance

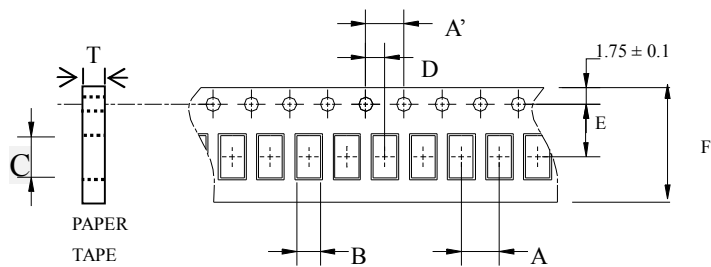


Notes

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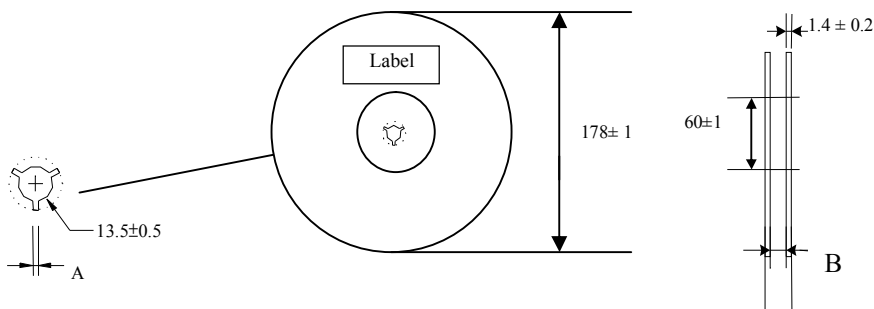
Taping Specifications

❖Tape Dimensions (Unit: mm) & Quantity



Type	A	A'	B	C	D	E	F	T	Quantity/reel	Tape material
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

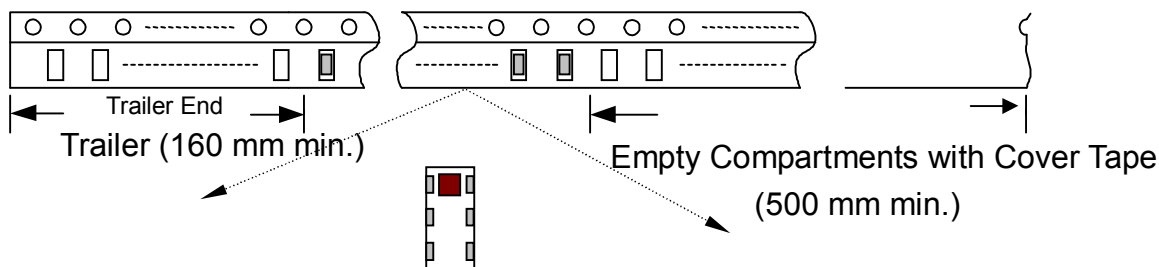
❖Reel Dimensions (Unit: mm)

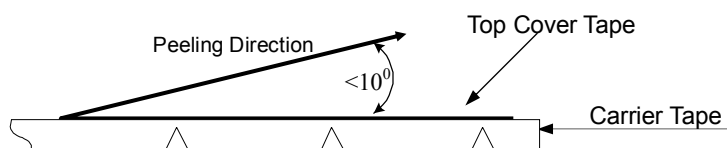


Label: Customer's Name,
ACX P/N, Q'ty, Date,
ACX Corp.

Type	A	B
1608	2.3±0.5	9.0±0.3

❖Leader and Trailer Tape (Plastic material)



❖ 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 .

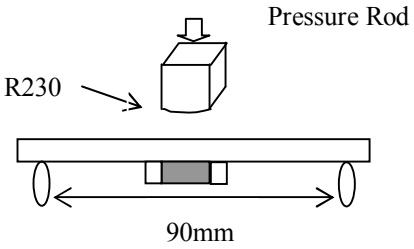
❖ Storage Conditions

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

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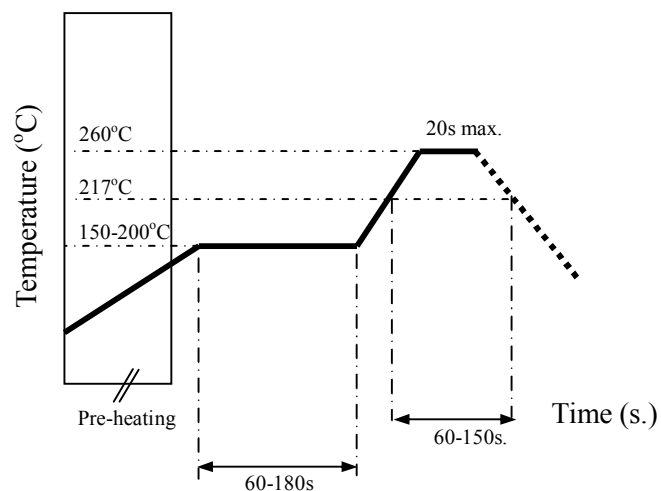
Mechanical & Environmental Characteristics

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"> 1kg 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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