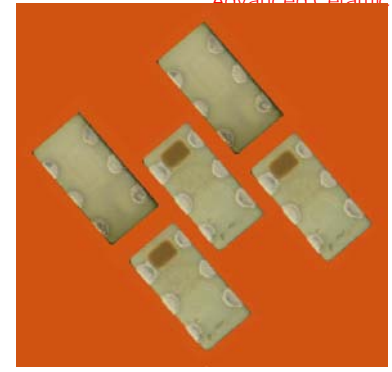


FB 1608 Series

Multilayer Chip Low Pass Filter + Balun



Features

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

Applications

- ❖ Sub-1 GHz Ultra-Low Power Wireless communication systems, etc.

Specifications

Part Number	Frequency Range (MHz)	Unbalanced Impedance (ohm)	Balanced Impedance (ohm)	Insertion Loss @ BW (dB)	VSWR @ BW	Phase Diff. (degree)	Amp. Diff. (dB)	Attenuation (dB)
FB1608-T4NR85A	770~ 860	50	Conjugate match to TI CC13XX chipset	1.6 max.	2.0 max.	180±17	3.5 max.	8 min.@ 1540~1720 MHz 15 min.@ 1720~1736 MHz 15 min.@ 1736~1856MHz
	860~928			2.2 max.		180±15	2.0 max.	30 min.@ 2310~2580 MHz 30 min.@ 2580~2784 MHz 33 min.@ 3080~3440MHz 35 min.@ 3440~3712 MHz

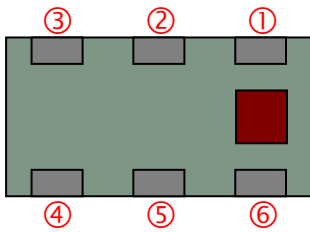
Q'ty/Reel (pcs) : 4000
 Operating Temperature Range : -40 ~ +85 °C
 Storage Temperature Range : -40 ~ +85 °C
 Storage Period : 12 months max.
 Power Capacity : 2W max.

Part Number

FB 1608 - T4 N R85 A □ /LF
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Type	FB : Low Pass Filter +Balun	② Dimensions (L x W)	1.6 x 0.8 mm
③ Balanced Impedance	T4 : Conjugate match to TI CC13XX chipset	④ Material Code	N
⑤ Central Frequency	R85 : 850MHz	⑥ Specification Code	A
⑦ Packaging	T: Tape & Reel B: Bulk	⑧ Soldering	/LF=lead-free

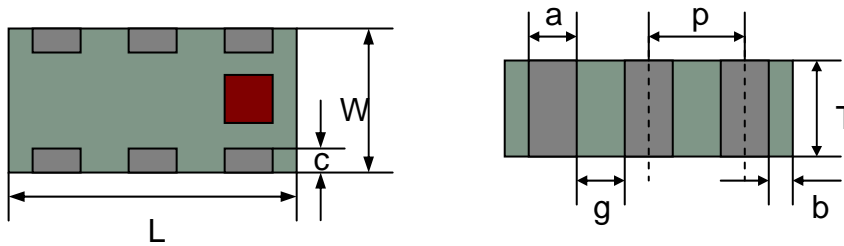
Terminal Configuration



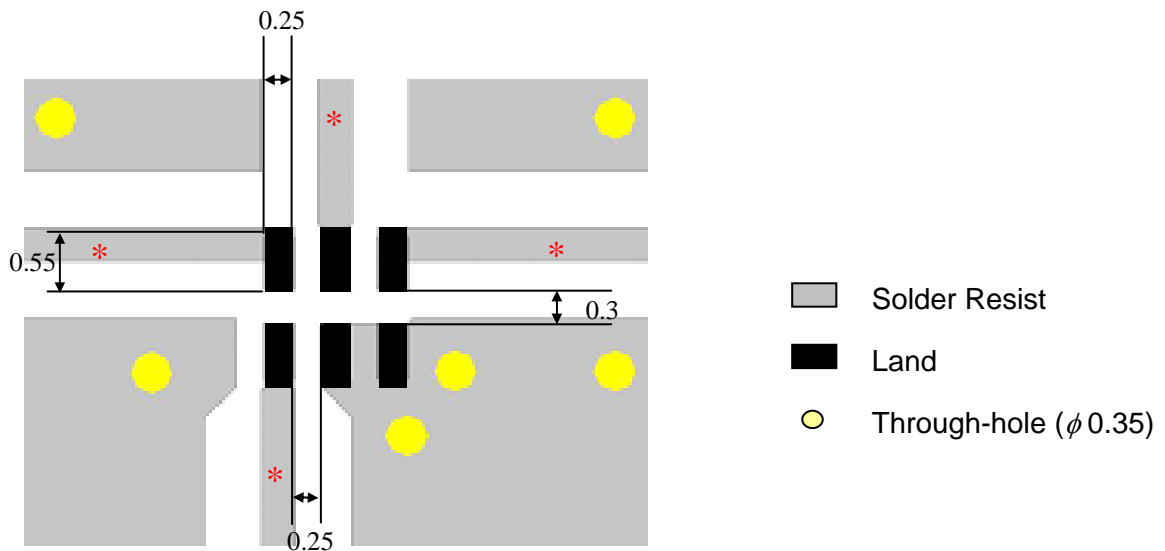
No.	Terminal Name	No.	Terminal Name
①	Unbalanced Port	④	Balanced Port
②	RX_TX	⑤	GND
③	Balanced Port	⑥	GND

Dimensions and Recommended PC Board Pattern

Unit : mm

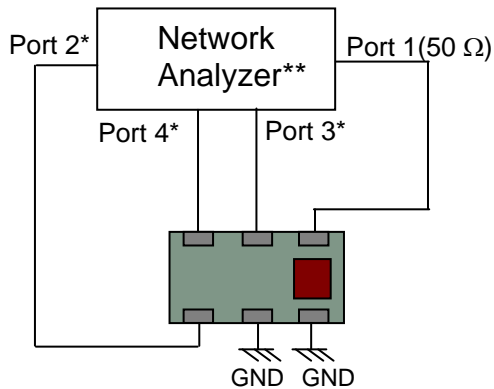


Mark	L	W	T	a	b	c	g	g
Dimensions	1.6 ± 0.1	0.8 ± 0.1	0.6 ± 0.1	0.2 ± 0.1	0.2+0.1/ -0.15	0.15± 0.1	0.3± 0.1	0.50± 0.05



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

Measuring Diagram



Port 1: Unbalanced Port

Ports 2 and 4: Balanced Port

*Ports 2 and 4 Terminate impedance

=Conjugate match to TI CC13XX chipset

Ports 3: RX_TX Port

*Ports 3 Terminate impedance

=The loading Impedance looking into RX_TX pin of TI CC13XX chipset

$$I_L = S_{ds21}$$

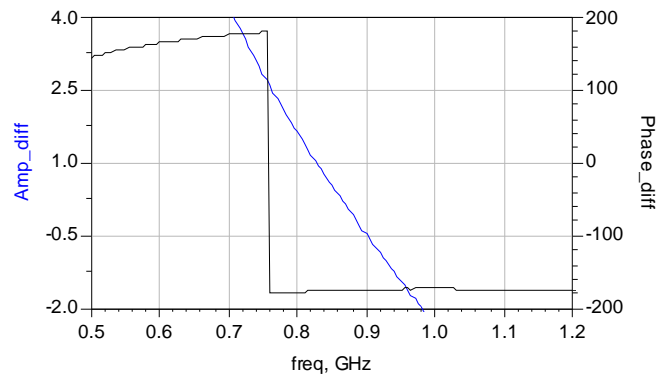
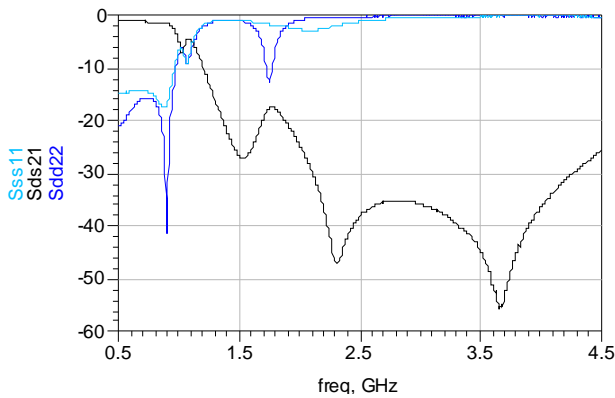
$$R_L = S_{ss11}$$

$$\text{Amp_balance} = \text{dB}(S(2,1)/S(4,1))$$

$$\text{Phase_balance} = \text{Phase}(S(2,1)/S(4,1))$$

**E5071B from Agilent

Typical Electrical Characteristics (T=25°C)

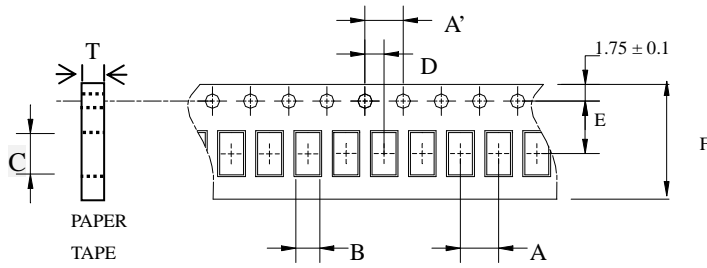


Notes

❖ The contents of this data sheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

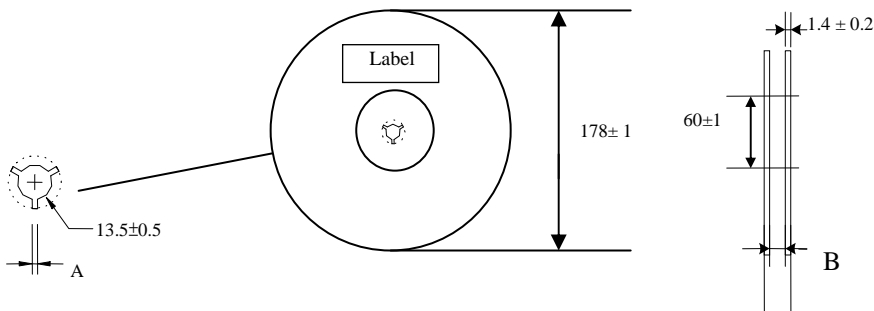
Taping Specifications

❖Tape Dimensions (Unit: mm) & Quantity



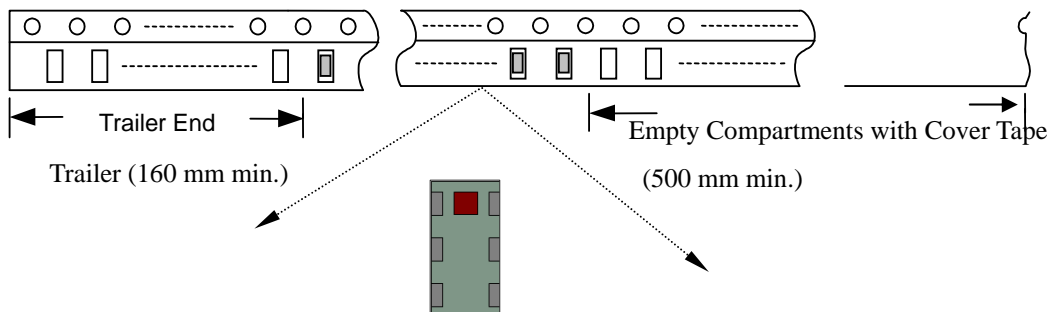
Type	A	A'	B	C	D	E	F	T	Quantity/reel	Tape material
1608	4.0±	4.0±	1.10±	1.92±	2.0±	3.5±	8.0±	0.75±	4,000pcs	Paper
	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05		

❖Reel Dimensions (Unit: mm)

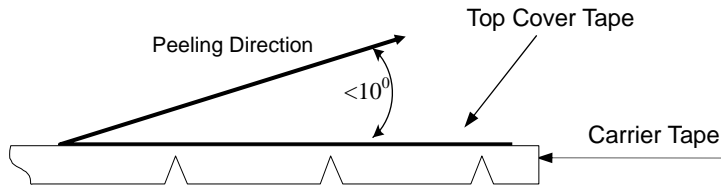


Type	A	B
1608	2.3±0.5	9.0±0.3

❖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 .

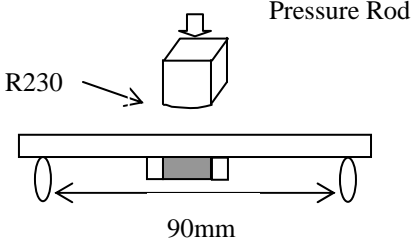
❖ **Storage Conditions**

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

Notes

❖ The contents of this data sheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

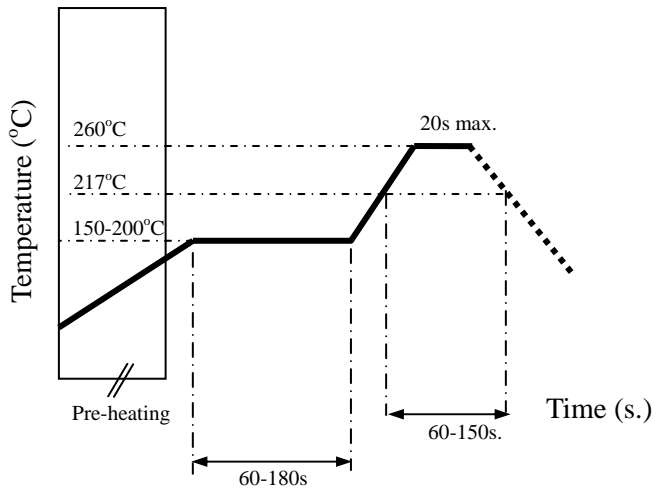
Mechanical & Environmental Characteristics

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: $85 \pm 5\%$ 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 :



Notes

❖ The contents of this data sheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

Advanced Ceramic X Corp.

16 Tzu Chiang Road, Hsinchu Industrial District Hsinchu Hsien 303, Taiwan

TEL:886-3-5987008 FAX:886-3-5987001

E-mail: acx@acxc.com.tw

<http://www.acxc.com.tw>