

FB1608 Series

Multilayer Chip Band Pass Filter + Balun

Features

- ❖ Monolithic SMD with small, low-profile and light-weight type.
- ❖ HF & RoHS Compliant



Applications

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

Specifications

Part Number	Freq. Range (MHz)	Unbalanced Impedance (ohm)	Balanced Impedance (ohm)	Insertion Loss @ BW (dB)	VSWR @ BW	Phase Diff. (degree)	Amp. Diff. (dB)	Attenuation (dB)
FB1608-N1A2R4B_	2400 ~ 2500	50	Conjugate match to Nordic RF chipset	2.0 max.	2.0 max.	160±15	3.5±1.5	Differential mode: 15 min.@4800~5000MHz 15 min.@7200~7500MHz Common mode: 20 min.@4800~5000MHz

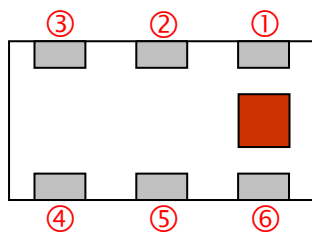
Q'ty/Reel (pcs) : 4000
 Operating Temperature Range : -40 ~ +85 °C
 Storage Temperature Range : -40 ~ +85 °C
 Storage Period : 12 months max.
 Power Capacity : 2W max.

Part Number

FB **1608** - **N1** **A** **2R4** **B** **□** **□**
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Type	FB : Band Pass Filter + Balun	② Dimensions (L × W)	1.6 × 0.8 mm
③ Balanced Impedance	N1 : Conjugate match to Nordic RF chipset	④ Material Code	A
⑤ Central Frequency	2R4 : 2450MHz	⑥ Specification Code	B
⑦ Packaging	T: Tape & Reel B: Bulk	⑧ Soldering	/LF=lead-free

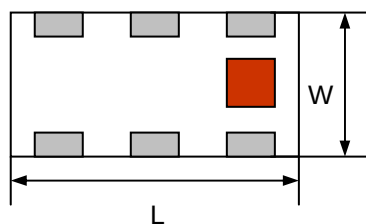
Terminal Configuration



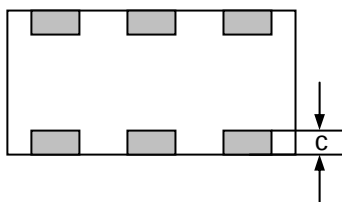
No.	Terminal Name	No.	Terminal Name
①	Unbalanced Port	④	Balanced Port
②	GND	⑤	DC Feed
③	Balanced Port	⑥	NC

Dimensions

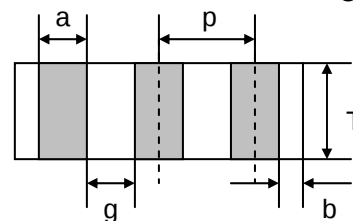
Unit : mm



< Top View >

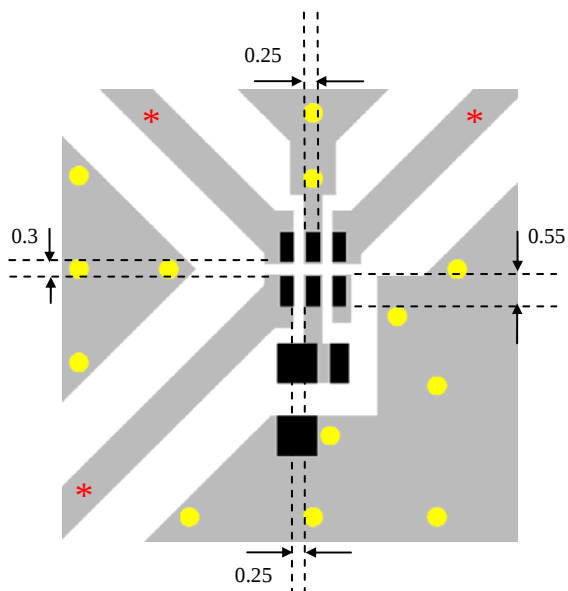


< Bottom View >



< Side View >

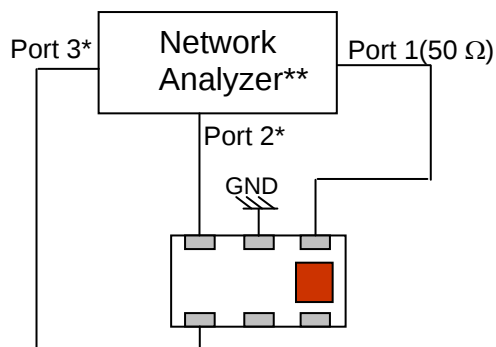
Mark	L	W	T	a	b	c	g	p
Dimensions	1.6 ± 0.1	0.8 ± 0.1	0.6 ± 0.1	0.2 ± 0.1	0.2+0.1 / -0.15	0.15 ± 0.1	0.30 ± 0.1	0.50 ± 0.05



- Solder Resist
- Land
- Through-hole (ϕ 0.35/0.2)

* 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 3: Balanced Port

$$IL = S_{ds21}, Att_DM = S_{ds21}, Att_CM = S_{cs21}$$

$$RL = S_{ss11}$$

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

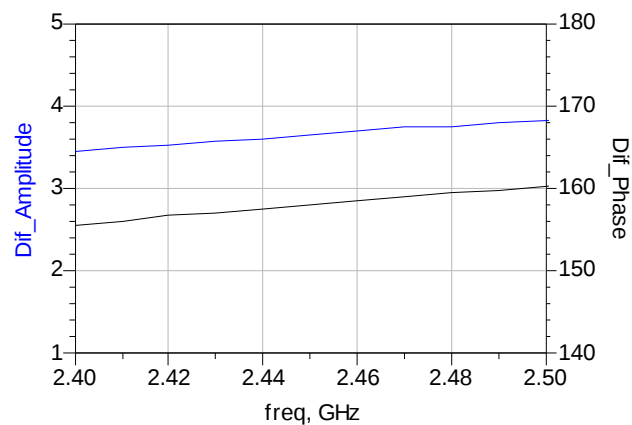
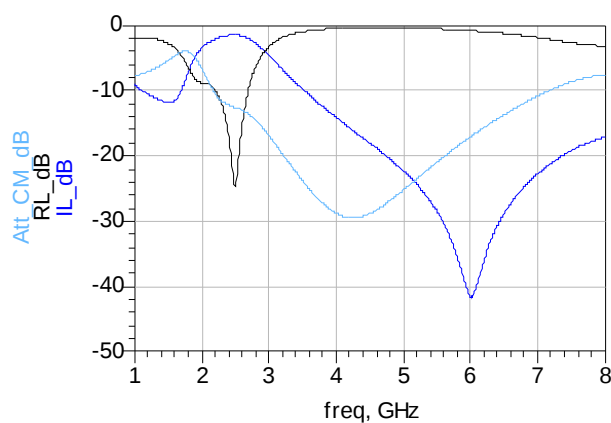
$$Phase_balance = Phase(S(2,1)/S(3,1))$$

*Impedance for ports 2 and 3

= Conjugate to Balanced Impedance/2

**E5071B from Agilent

Typical Electrical Characteristics (T=25°C)

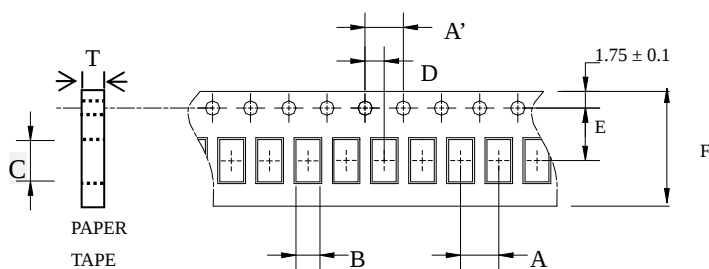


Notes

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

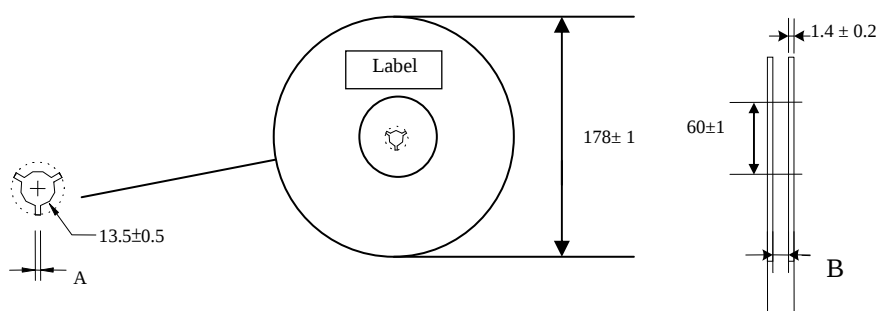
Taping Specifications

❖Tape Dimensions (Unit: mm) & Quantity



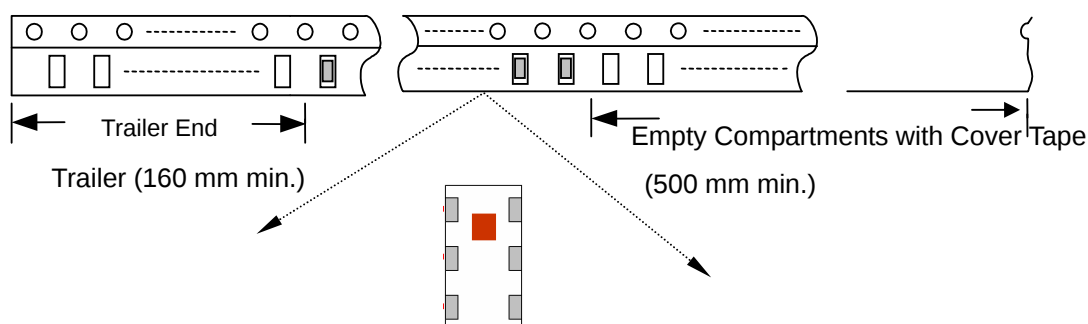
Type	A	A'	B	C	D	E	F	T	Quantity/reel	Tape material
1608	4.0±0.1	4.0±0.1	1.10±0.1	1.92±0.1	2.0±0.1	3.5±0.1	8.0±0.1	0.75±0.05	4,000pcs	Paper

❖Reel Dimensions (Unit: mm)

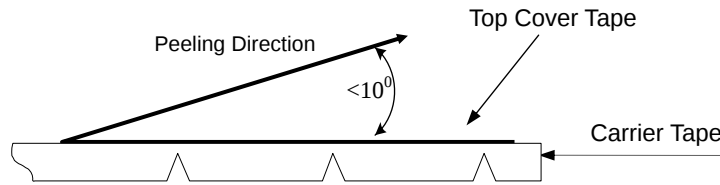


Type	A	B
1608	2.3±0.5	9.0±0.3

❖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 .

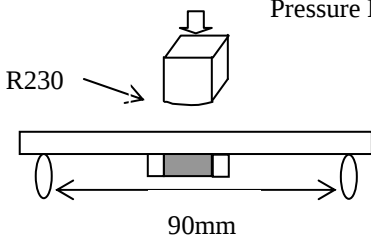
❖ Storage Conditions

- (1) Temperature: $5 \sim 35^{\circ}\text{C}$, 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.

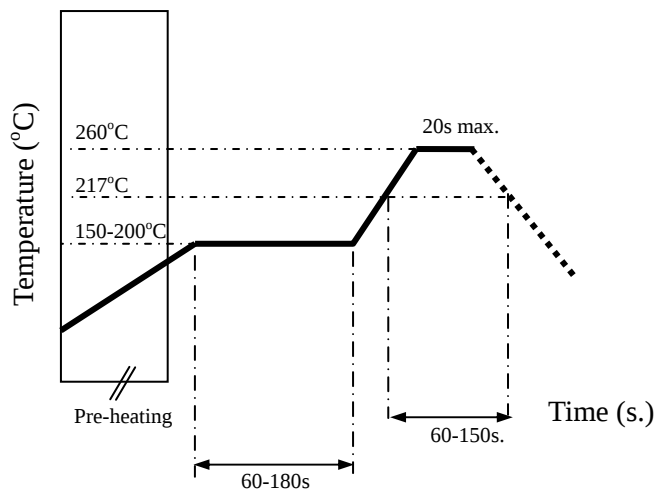
Mechanical & Environmental Characteristics

Item	Requirements	Procedure
Solderability	- No apparent damage - More than 95% of the terminal electrode shall be covered with new solder	- Preheat: $120 \pm 5^{\circ}\text{C}$ - Solder: $245 \pm 5^{\circ}\text{C}$ for 5 ± 1 sec
Soldering strength (Termination Adhesion)	10N minimum	- 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)	No apparent damage	- Solder specimen onto test jig (FR4, 1.6mm) using the recommend soldering profile. - Apply a bending force of 2mm deflection 
Heat/Humidity Resistance	- No apparent damage - Fulfill the electrical specification after test	- Temperature: $85 \pm 2^{\circ}\text{C}$ - Humidity: 90% ~ 95% RH - Duration: 1000 ± 48hrs - Recovery: 1-2hrs
Thermal shock (Temperature Cycle)	- No apparent damage - Fulfill the electrical specification after test	- 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	- No apparent damage - Fulfill the electrical specification after test	- 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.

No.165 Hanyang Road, Hsinchu Industrial District, Hsinchu Hsien, Taiwan, 30350

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

E-mail: acx@acxc.com.tw

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