

FB1608 Series

Multilayer Chip Band Pass Filter + Balun

Features

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



Applications

- ❖ 2.4 GHz wireless communication systems, including BLE, Zigbee, 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-T2E2R4A	2400 ~ 2500	50	Conjugate match to TI CC2650 chipset	1.8 max.	2.0 max.	180±10	2.0 max.	25 min.@4800~5000MHz 20 min.@7200~7500MHz

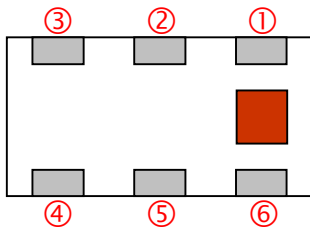
Q'ty/Reel (pcs)	: 4000
Operating Temperature Range	: -40 ~ +105 °C
Storage Temperature Range	: -40 ~ +105 °C
Storage Period	: 12 months max.
Power Capacity	: 2W max.

Part Number

FB 1608 - T2E 2R4 A □ /LF
 ① ② ③ ④ ⑤ ⑥ ⑦

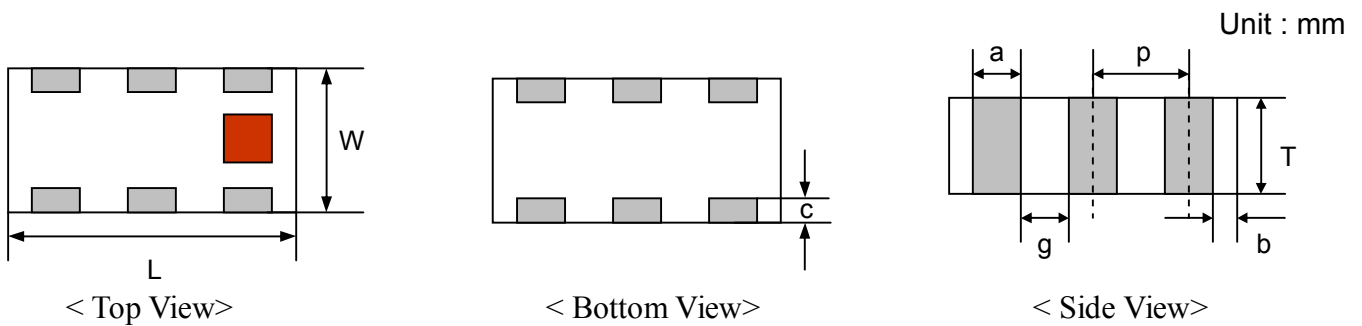
① Type	FB : Band Pass Filter + Balun	② Dimensions (L × W)	1.6 × 0.8 mm
③ Balanced Impedance	T2E : Conjugate match to TI CC2650 chipset	④ Central Frequency	2R4 : 2450MHz
⑤ Specification Code	A	⑥ Packaging	T: Tape & Reel B: Bulk
⑦ Soldering	/LF=lead-free		

Terminal Configuration

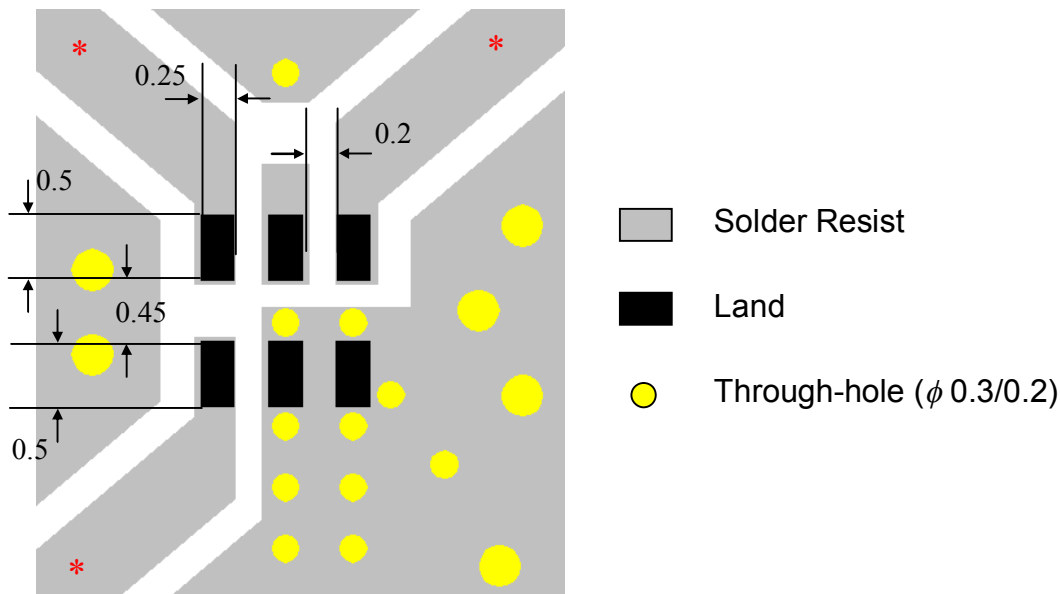


No.	Terminal Name	No.	Terminal Name
①	Unbalanced Port	④	Balanced Port
②	NC	⑤	GND
③	Balanced Port	⑥	GND

Dimensions

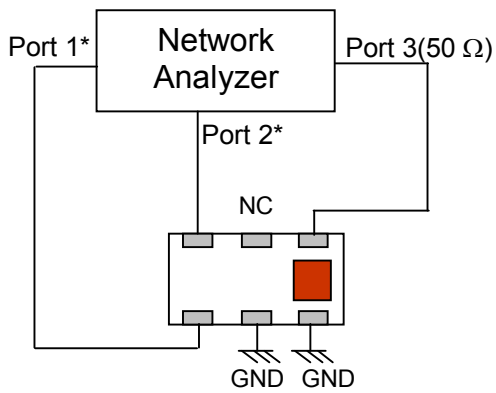


Mark	L	W	T	a	b	c	g	p
Dimensions	1.6 ±	0.8 ±	0.6 ±	0.2 ±	0.2+0.1	0.15 ±	0.30 ±	0.50 ±
	0.1	0.1	0.1	0.1	/-0.15	0.1	0.1	0.05



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

Measuring Diagram



Port 3: Unbalanced Port

Ports 1 and 2: Balanced Port

$$IL = S_{ds21}$$

$$RL = S_{ss11} \text{ and } S_{dd22}$$

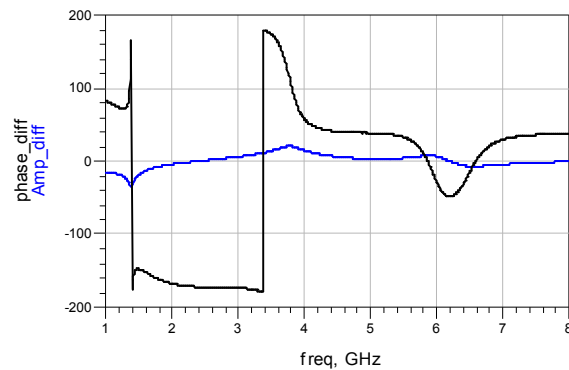
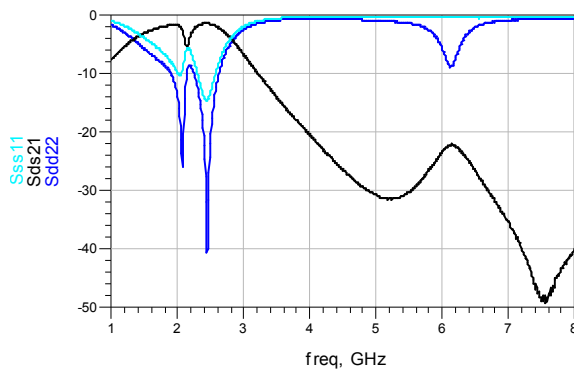
$$\text{Amp_balance} = \text{dB}(S(1,3)/S(2,3))$$

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

*Impedance for ports 1 and 2

= Conjugate to Balanced Impedance/2

Typical Electrical Characteristics (T=25°C)

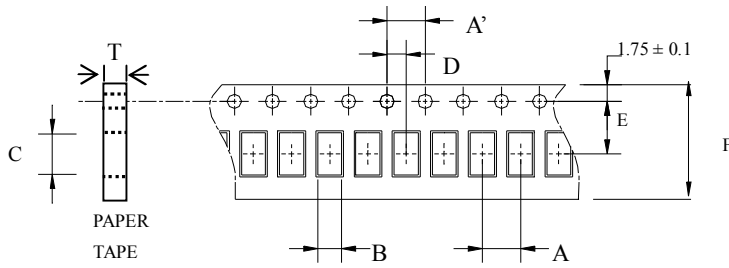


Notes

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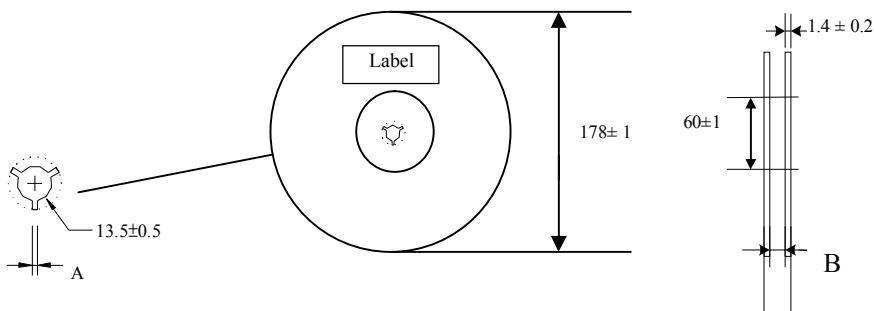
Taping Specifications

❖Tape Dimensions (Unit: mm) & Quantity



Type	A	A'	B	C	D	E	F	T	Quantity/reel	Tape material
1608	4.0±	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		

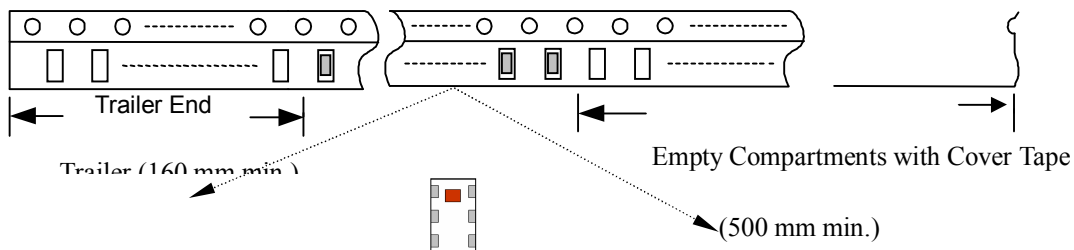
❖Reel Dimensions (Unit: mm)



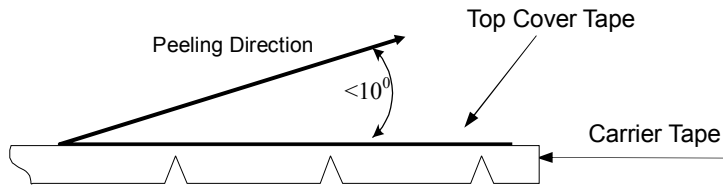
Label: Customer's Name,
ACX P/N, Q'ty, Date,
ACX Corp.

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 .

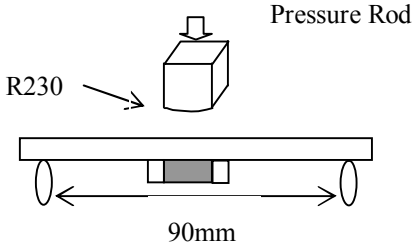
❖ **Storage Conditions**

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

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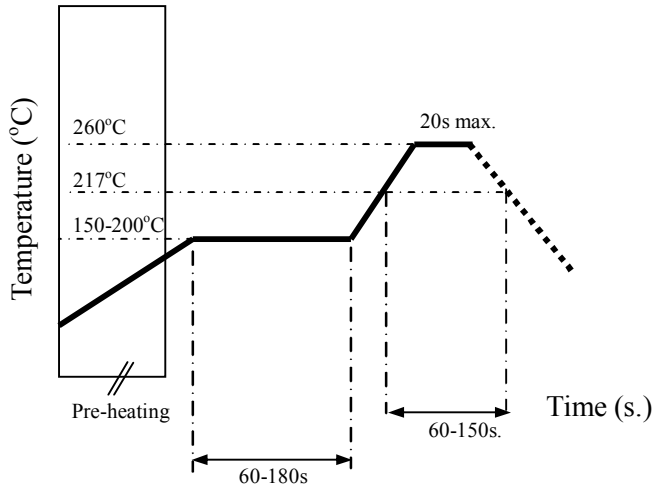
Mechanical & Environmental Characteristics

Item	Requirements	Procedure
Solderability	<ol style="list-style-type: none"> 1. No apparent damage 2. More than 95% of the terminal electrode shall be covered with new solder 	<ol style="list-style-type: none"> 1. Preheat: $120 \pm 5^\circ\text{C}$ 2. Solder: $245 \pm 5^\circ\text{C}$ for 5 ± 1 sec
Soldering strength (Termination Adhesion)	<ol style="list-style-type: none"> 1. 10N minimum 	<ol style="list-style-type: none"> 1. Solder specimen onto test jig. 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)	<ol style="list-style-type: none"> 1. No apparent damage 	<ol style="list-style-type: none"> 1. Solder specimen onto test jig (FR4, 0.8mm) using the recommend soldering profile. 2. Apply a bending force of 2mm deflection. 
Heat/Humidity Resistance	<ol style="list-style-type: none"> 1. No apparent damage 2. Fulfill the electrical specification after test 	<ol style="list-style-type: none"> 1. Temperature: $85 \pm 2^\circ\text{C}$ 2. Humidity: 90% ~ 95% RH 3. Duration: 1000 ± 48 hrs 4. Recovery: 1-2hrs
Thermal shock (Temperature Cycle)	<ol style="list-style-type: none"> 1. No apparent damage 2. Fulfill the electrical specification after test 	<ol style="list-style-type: none"> 1. One cycle/step 1 : $125 \pm 5^\circ\text{C}$ for 30 min step 2 : $-40 \pm 5^\circ\text{C}$ for 30 min 2. No of cycles : 100 3. Recovery: 1-2 hrs
Low Temperature Resistance	<ol style="list-style-type: none"> 1. No apparent damage 2. Fulfill the electrical specification after test 	<ol style="list-style-type: none"> 1. Temperature: $-40 \pm 5^\circ\text{C}$ 2. Duration: 500 ± 24 hrs 3. Recovery: 1-2hrs

Soldering Conditions

❖ Typical Soldering Profile for Lead-free Process

Reflow Soldering :



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