FB2012 Series
Multilayer Chip Band Pass Filter + Balun

Features
- Monolithic SMD with small, low-profile and light-weight type.

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

Specifications

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Freq. Range (MHz)</th>
<th>Unbalanced Impedance (ohm)</th>
<th>Balanced Impedance (ohm)</th>
<th>Insertion Loss @ BW (dB)</th>
<th>VSWR @ BW</th>
<th>Phase Diff. (degree)</th>
<th>Amp. Diff. (dB)</th>
<th>Attenuation (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FB2012-06N2R4M_</td>
<td>2400 ~ 2500</td>
<td>50</td>
<td>Conjugate match to MTK chipset</td>
<td>3.0 max.</td>
<td>2.0 max.</td>
<td>180±15</td>
<td>2.0 max.</td>
<td>40 min @ 880~960MHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>35 min @ 1710~1880 MHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25 min @ 1880~1990 MHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>35 min @ 4800~5000MHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25 min @ 7200~7500MHz</td>
</tr>
</tbody>
</table>

Q’ty/Reel (pcs) : 4,000
Operating Temperature Range : -40 ~ +85 °C
Storage Temperature Range : -40 ~ +85 °C
Storage Period : 12 months max.
Power Capacity : 1W max.

Part Number

1. Type
2. Dimensions (L × W) 2.0 × 1.2 mm
3. Balanced Impedance
4. Material Code N
5. Central Frequency 2R4 : 2400MHz
6. Specification Code M
7. Packaging T: Tape & Reel
8. Soldering /LF=lead-free

FB : Band Pass Filter + Balun
=lead-containing
**Terminal Configuration**

<table>
<thead>
<tr>
<th>No.</th>
<th>Terminal Name</th>
<th>No.</th>
<th>Terminal Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unbalanced Port</td>
<td>5</td>
<td>Balanced Port</td>
</tr>
<tr>
<td>2</td>
<td>NC or DC Feed</td>
<td>6</td>
<td>GND</td>
</tr>
<tr>
<td>3</td>
<td>NC</td>
<td>7</td>
<td>Balanced Port</td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
<td>8</td>
<td>GND</td>
</tr>
</tbody>
</table>

**Dimensions**

Unit: mm

<table>
<thead>
<tr>
<th>Mark</th>
<th>L</th>
<th>W</th>
<th>T</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>g</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>2.0 ±</td>
<td>1.25 ±</td>
<td>0.7 ±</td>
<td>0.3 ±</td>
<td>0.2 ±</td>
<td>0.3+0.1</td>
<td>0.35 ±</td>
<td>0.65 ±</td>
</tr>
<tr>
<td></td>
<td>0.2</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>-0.2</td>
<td>0.1</td>
<td>0.05</td>
</tr>
</tbody>
</table>

* Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.
**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
  = Conjugate to Balanced Impedance/2
**E5071B from Agilent

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

![Graphs showing dB(IL), dB(RL), dif_amplitude vs. freq, GHz, and dif_phase vs. freq, GHz.]

**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

<table>
<thead>
<tr>
<th>Type</th>
<th>A</th>
<th>A'</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>T</th>
<th>Quantity/reel</th>
<th>Tape material</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>4.0±0.1</td>
<td>4.0±0.1</td>
<td>1.4±0.05</td>
<td>2.15±0.05</td>
<td>2.0±0.05</td>
<td>3.5±0.05</td>
<td>8.0±0.05</td>
<td>1.00±0.05</td>
<td>4,000pcs</td>
<td>Plastic (Embossed)</td>
</tr>
</tbody>
</table>

#### Reel Dimensions (Unit: mm)

- **A**: 13.5±0.5
- **B**: 4.4±0.5
- **C**: 178±1
- **D**: 60±1
- **E**: 1.4±0.2

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

#### Leader and Trailer Tape

- **Trailer End**
- **Empty Compartments with Cover Tape**
- **Trailer (160 mm min.)**
- **Empty Compartments (500 mm min.)**
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

<table>
<thead>
<tr>
<th>Item</th>
<th>Requirements</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solderability</td>
<td>1. No apparent damage&lt;br&gt;2. More than 95% of the terminal electrode shall be covered with new solder</td>
<td>1. Preheat: 120±5°C&lt;br&gt;2. Solder: 245±5°C for 5±1 sec</td>
</tr>
<tr>
<td>Soldering strength&lt;br&gt;(Termination Adhesion)</td>
<td>1. 1kg minimum</td>
<td>1. Solder specimen onto test jig.&lt;br&gt;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</td>
</tr>
<tr>
<td>Deflection&lt;br&gt;(Substrate Bending)</td>
<td>1. No apparent damage</td>
<td>1. Solder specimen onto test jig (FR4, 0.8mm) using the recommend soldering profile.&lt;br&gt;2. Apply a bending force of 2mm deflection</td>
</tr>
<tr>
<td>Thermal shock&lt;br&gt;(Temperature Cycle)</td>
<td>1. No apparent damage&lt;br&gt;2. Fulfill the electrical specification after test</td>
<td>1. One cycle/step 1 : 125 ± 5°C for 30 min&lt;br&gt;step 2 : -40 ± 5°C for 30 min&lt;br&gt;2. No of cycles : 100&lt;br&gt;3. Recovery:1-2 hrs</td>
</tr>
</tbody>
</table>
Soldering Conditions

❖ Typical Soldering Profile for Lead-free Process

Reflow Soldering:

![Temperature vs. Time Graph](image)

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