# High Frequency Ceramic Solutions

2.45GHz Impedance Matched Balun + Band Pass Filter: Optimized for Nordic’s Chipset nRF51822-CEAA, nRF51822-CDAB, nRF51822-CFAC, nRF51422-CEAA, nRF51422-CDAB, nRF51422-CFAC

P/N 2450BM08B0003

Detail Specification: 7/29/2015

## General Specifications

<table>
<thead>
<tr>
<th>Part Number</th>
<th>2450BM08B0003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (MHz)</td>
<td>2400 - 2500</td>
</tr>
<tr>
<td>Unbalanced Impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>Balanced Differential Impedance</td>
<td>Conjugate match to: nRF51822-CEAA, nRF51822-CDAB, nRF51822-CFAC, nRF51422-CEAA, nRF51422-CDAB, nRF51422-CFAC</td>
</tr>
</tbody>
</table>

### Insertion Loss when connected to the nRF51XX chip (Active OP)
- 1dB Typ @ 25°C, 1.5dB max (-40 to +85°C), 2.4dB max (+85 to +105°C)

### Insertion Loss when component measured by itself (passive insertion loss)
- 1.88dB Typ. @ 25°C, 3.65dB @ 105°C

### Phase Difference (deg.)
- 180° ± 10

### Amplitude Difference
- 2.0 max.

### Qty/Reel (pcs)
- 4,000

### Operating Temp. Range
- -40 ~ +105°C

### Storage Temp. Range
- -40 ~ +85°C

### Recommended Storage Conditions of Product on T&R
- +5 ~ +35°C, Humidity 45-75%RH, 18 months max on vacuum package, 1 week max after opened

### Storage Period
- 18 months max.

### Power Capacity
- 2W max (CW)

### Mechanical Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Inches</th>
<th>Millimeter</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>0.055 ± 0.006</td>
<td>1.40 ± 0.15</td>
</tr>
<tr>
<td>W</td>
<td>0.039 ± 0.006</td>
<td>1.00 ± 0.15</td>
</tr>
<tr>
<td>T</td>
<td>0.027 max.</td>
<td>0.69 max.</td>
</tr>
<tr>
<td>a</td>
<td>0.009 +/- 0.002</td>
<td>0.22 +/- 0.05</td>
</tr>
<tr>
<td>b</td>
<td>0.004 +/- 0.002</td>
<td>0.0975 +/- 0.05</td>
</tr>
<tr>
<td>c</td>
<td>0.011 +/- 0.002</td>
<td>0.28 +/- 0.05</td>
</tr>
<tr>
<td>d</td>
<td>0.007 +/- 0.002</td>
<td>0.18 +/- 0.05</td>
</tr>
</tbody>
</table>

### Terminal Configuration

<table>
<thead>
<tr>
<th>No</th>
<th>Function</th>
<th></th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unbalanced Port</td>
<td>4</td>
<td>Balanced Port</td>
</tr>
<tr>
<td>2</td>
<td>DC Feed</td>
<td>5</td>
<td>GND</td>
</tr>
<tr>
<td>3</td>
<td>Balanced Port</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Mounting Considerations

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

- Land
- Through-hole (φ 0.3)

Download the gerber files at:
www.johansontechnology.com/nordic

Would you like us to review your layout for free? Please go to this link to contact our RF team:
http://www.johansontechnology.com/ask-a-question select "Applications Engineering" on the drop down

If you need 2.45GHz mini-antennas to go with your compact design, go to: http://johansontechnology.com/antennas

Measuring Diagram

- Port 1: Unbalanced Port
- Port 2 and 3: Balanced Port
- IL = S_{621}
- RL = S_{511}
- 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
** E5071C from Agilent

You can download layout files, schematics, output power measured results (App Note AN030), and s-parameters at:
http://johansontechnology.com/nordic

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Typical Electrical Characteristics (T=25°C)

Insertion and Return Loss

Amplitude and Phase Balance

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Application Notes, Layout Files, and more
http://johansontechnology.com/nordic

Packaging information
www.johansontechnology.com/ipcpackaging.html

Soldering Information
www.johansontechnology.com/ipcsoldering-profile

MSL Info
www.johansontechnology.com/technical-notes/msl-rating.html

Recommended Storage Condition and Max Shelf Life
www.johansontechnology.com/ipcstorage-shelflife

RoHS Compliance
www.johansontechnology.com/technical-notes/rohs-compliance.html

Antenna layout and tuning techniques
www.johansontechnology.com/tuning

Antenna layout review, tuning, and characterization services
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In-Application Image