The entire sub-GHz discrete L/C circuit is integrated inside this small package!

Do you need a small sub-GHz or 2.4GHz antenna? Go to: www.johansontechnology.com/antennas

For more Silicon Labs matched balun-filters, go to: www.johansontechnology.com/silabs

Part Number Explanation

<table>
<thead>
<tr>
<th>P/N Suffix</th>
<th>Packing Style</th>
<th>P/N Suffix = S</th>
<th>eg. 0868BM15G0027S</th>
</tr>
</thead>
<tbody>
<tr>
<td>T &amp; R</td>
<td>Bulk</td>
<td>Suffix = E</td>
<td>eg. 0868BM15G0027E (4k pcs/reel)</td>
</tr>
</tbody>
</table>

Mechanical Dimensions

| L (inch) | 0.079 ± 0.008 | 2.00 ± 0.20 |
| W (inch) | 0.049 ± 0.008 | 1.25 ± 0.20 |
| T (inch) | 0.028 ± 0.004 | 0.70 ± 0.10 |
| a (inch) | 0.010 ± 0.004 | 0.25 ± 0.10 |
| b (inch) | 0.012 ± 0.006 | 0.30 ± 0.15 |
| c (inch) | 0.008±0.004/-0.006 | 0.20 ±0.1/-0.15 |
| d (inch) | 0.020 ± 0.004 | 0.50 ± 0.10 |

Terminal Configuration

1. GND  6. RX_N
2. ANT   7. RX_P
3. GND   8. TX_N
4. GND   9. TX_P
5. GND 10. GND or DC Feed/GND

Part Number

0868BM15G0027

General Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Number</td>
<td>0868BM15G0027</td>
</tr>
<tr>
<td>Frequency (MHz)</td>
<td>865 - 870</td>
</tr>
<tr>
<td>Unbalanced Impedance (Ω)</td>
<td>50</td>
</tr>
<tr>
<td>Balanced Impedance (Ω)</td>
<td>Impedance matched to Silicon Labs EFR32</td>
</tr>
<tr>
<td>Insertion Loss (dB)</td>
<td>1.7 typ. (2.0 max)</td>
</tr>
<tr>
<td>Return Loss (dB)</td>
<td>14 typ. (10 min.)</td>
</tr>
<tr>
<td>Phase Balance (deg)</td>
<td>180±10</td>
</tr>
<tr>
<td>Amplitude Difference (dB)</td>
<td>2.0 max.</td>
</tr>
<tr>
<td>Attenuation (dB @MHz)</td>
<td>36 typ. (30 min.)</td>
</tr>
<tr>
<td></td>
<td>1730 - 1740 MHz</td>
</tr>
<tr>
<td></td>
<td>28 typ. (23 min.)</td>
</tr>
<tr>
<td></td>
<td>2595 - 2610 MHz</td>
</tr>
<tr>
<td>Voltage Rating (V)</td>
<td>3.6 max.</td>
</tr>
<tr>
<td>Power Capacity (W)</td>
<td>3 max. CW</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Recommended Storage Conditions</td>
<td>+5 ~ +35 °C, Humidity</td>
</tr>
<tr>
<td></td>
<td>45~75%RH, 18 mos. max</td>
</tr>
<tr>
<td>Quantity/Reel</td>
<td>4,000</td>
</tr>
<tr>
<td>Storage Period</td>
<td>18 months max</td>
</tr>
<tr>
<td>Recommended Storage Conditions</td>
<td>18 months max</td>
</tr>
<tr>
<td>for unused T&amp;R product</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| For more Silicon Labs matched balun-filters, go to: www.johansontechnology.com/silabs

868MHz Impedance-Matched Balun+Filter Integrated Passive Device (IPD) for Silicon Labs EFR32 Chipset, EIA 0805.
868MHz Impedance-Matched Balun+Filter Integrated Passive Device (IPD) for Silicon Labs EFR32 Chipset, EIA 0805.

Pad-Soldermask Guidelines (with DC Feed)

GND vias are crucial for filter harmonic attenuation

For reference design package and PCB CAD files, please contact us at:
www.johansontechnology.com/ask-a-question

PCB Reference Design Schematic

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Measure Diagram

Tx mode:
Port 1 impedance: 50Ω
Port 2 and 3 impedance*: Complex conjugate to EFR32 Z_{IC,TX on}
Port 4 and 5 impedance*: Load impedance of EFR32 Z_{IC,RX off}

\[ IL = TX S_{DS21} \]
\[ RL = TX S_{SS11} / TX S_{DD22} \]
Amplitude Difference = dB(S(1,2)/S(1,3))
Phase Balance = Phase(S(1,2)/S(1,3))

Rx mode:
Port 1 impedance: 50Ω
Port 2 and 3 impedance*: Complex conjugate to EFR32 Z_{IC,RX on}
Port 4 and 5 impedance*: Load impedance of EFR32 Z_{IC,TX off}

\[ IL = RX S_{DS21} \]
\[ RL = RX S_{SS11} / RX S_{DD22} \]
Amplitude balance = dB(S(1,4)/S(1,5))
Phase balance = Phase(S(1,4)/S(1,5))

*Termination impedance included in s-parameters
Typical Electrical Characteristics (T=25°C)

**Transmit Mode** Insertion Loss, Return Loss, and Attenuation

**Transmit Mode** Phase Balance, Amplitude Difference
Typical Electrical Characteristics (T=25°C)

**Receive Mode** Insertion Loss, Return Loss, and Attenuation

![Graph showing Insertion Loss, Return Loss, and Attenuation vs. frequency.]

**Receive Mode** Phase Balance, Amplitude Difference

![Graph showing Phase Balance and Amplitude Difference vs. frequency.]

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# High Frequency Ceramic Solutions

## 868MHz Impedance-Matched Balun+Filter Integrated Passive Device

**Detail Specification:** 2/26/2018

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### 0868BM15G0027

(0868BM15G0027 for Silicon Labs EFR32 Chipset, EIA 0805.)

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### Application Notes, Layout Files, and more

www.johansontechnology.com/silabs

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### Small SMD 868MHz (or 434M, 2.4G, 5G) antennas

www.johansontechnology.com/antennas

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### RoHS Compliance

www.johansontechnology.com/rohs-compliance

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### Soldering Information

www.johansontechnology.com/ipcsoldering-profile

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### Antenna layout and tuning techniques

www.johansontechnology.com/tuning

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### Antenna layout review, tuning, and characterization services

www.johansontechnology.com/ipc-antenna-services

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### MSL Info

www.johansontechnology.com/msl-rating

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### Recommended Storage Condition and Max Shelf Life

www.johansontechnology.com/recommended-storage-conditions

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### Packaging information

www.johansontechnology.com/tape-reel-packaging

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### Terminal Pad Composition

100% Tin (Sn)

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Would you like us to review your layout for free? Need an embedded antenna recommendation for your application? Contact us at:

www.johansontechnology.com/ask-a-question

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