

High Frequency Ceramic Solutions

434MHz Impedance-Matched Balun+Filter Integrated Passive Device (IPD) for Silicon Labs EFR32 Chipset, EIA 0805.

0434BM15B0027

Detail Specification: 2/26/2018

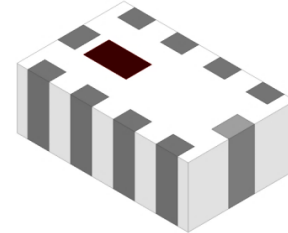
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Do you need a small sub-GHz or 2.4GHz antenna? Go to: www.johansontechnology.com/antennas

General Specifications

| | | |
|-----------------------------------|--|-----------------|
| Part Number | 0434BM15B0027 | |
| Frequency (MHz) | 431 - 437 | |
| Unbalanced Impedance (Ω) | 50 | |
| Balanced Impedance (Ω) | Impedance matched to Silicon Labs EFR32 | |
| Insertion Loss (dB) | 2.0 typ. (2.3 max) | |
| Return Loss (dB) | 15 typ. (10 min) | |
| Phase Balance (deg) | -155 ± 15 | |
| Amplitude Difference (dB) | -5.0 ± 2.0 | |
| Attenuation (dB @MHz) | 22 typ. (18 min.) | 862 - 874 MHz |
| | 35 typ. (30 min.) | 1293 - 1311 MHz |
| Voltage Rating (V) | 3.6 max. | |
| Power Capacity (W) | 3 max. CW | |
| Operating Temperature | -40°C to $+85^{\circ}\text{C}$ | |

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



Silicon Labs Approved!

| | |
|---|--|
| Quantity/Reel | 4,000 |
| Storage Temperature Range | -40°C to $+85^{\circ}\text{C}$ |
| Storage Period | 18 months max |
| Recommended Storage Conditions for unused T&R product | $+5 \sim +35^{\circ}\text{C}$, Humidity 45~75%RH, 18 mos. max |

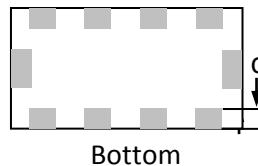
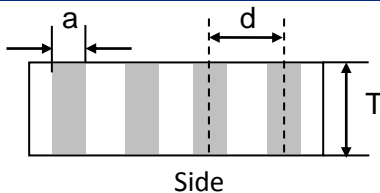
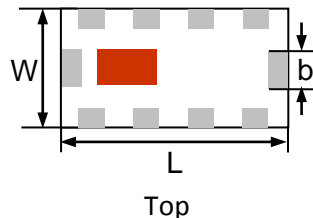
For more Silicon Labs matched balun-filters, go to: www.johansontechnology.com/silabs

Part Number Explanation

| P/N Suffix | Packing Style | Bulk | Suffix = S | eg. 0434BM15B0027S |
|------------|---------------|-------|------------|--------------------|
| | | T & R | Suffix = E | eg. 0434BM15B0027E |

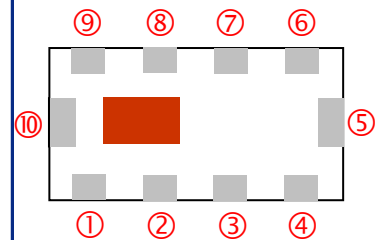
Mechanical Dimensions

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



Terminal Configuration

| No. | Function | No. | Function |
|-----|----------|-----|--------------------|
| 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 |



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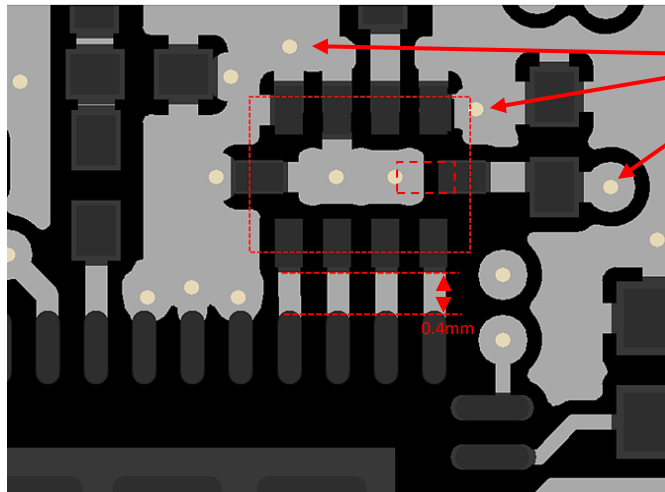
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Pad-Soldermask Guidelines (with DC Feed)

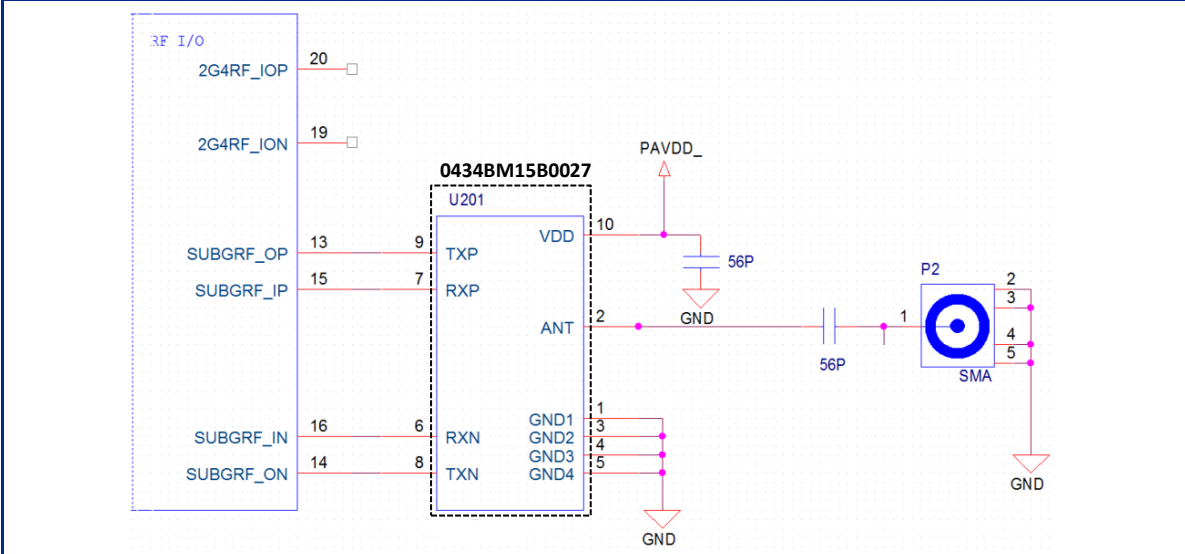


GND vias are crucial for filter harmonic attenuation

- GND
- Solder Pads
- GND via (ϕ 0.20)

For reference design package and PCB CAD files, please contact us at:
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PCB Reference Design Schematic



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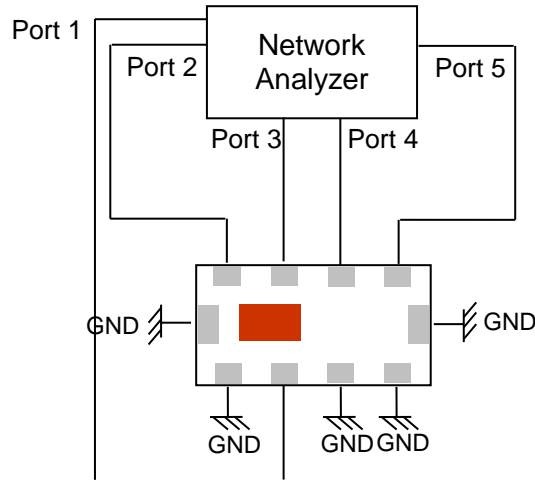
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Measuring Diagram



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 $Z_{IC,RX\ off}$

$$IL=TX\ S_{DS21}$$

$$RL=TX\ S_{SS11} / TX\ S_{DD22}$$

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

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

Rx mode:

Port 1 impedance: 50Ω

Port 4 and 5 impedance*: Complex conjugate to EFR32 $Z_{IC,RX\ on}$

Port 2 and 3 impedance*: Load impedance of EFR32 $Z_{IC,TX\ off}$

$$IL=RX\ S_{DS21}$$

$$RL=RX\ S_{SS11} / RX\ S_{DD22}$$

$$\text{Amp_balance} = dB(S(1,4)/S(1,5))$$

$$\text{Phase_balance} = \text{Phase}(S(1,4)/S(1,5))$$

*Termination impedance included in s-parameters

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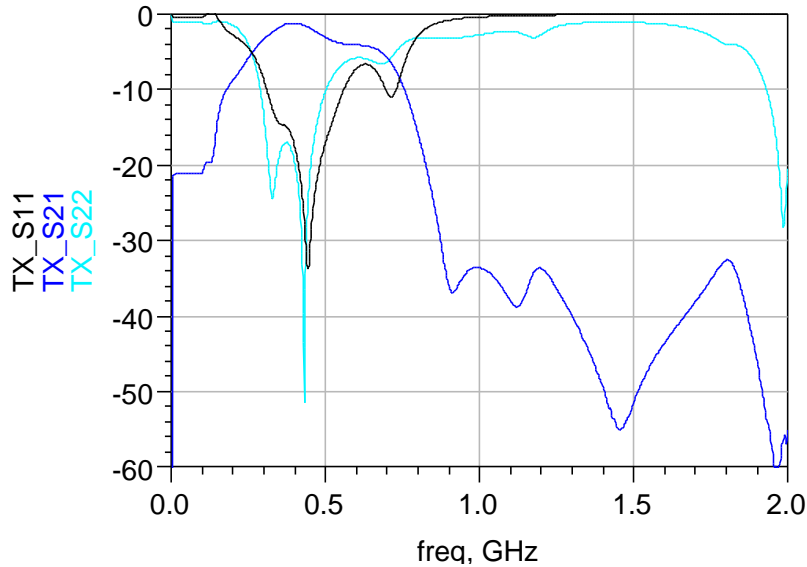
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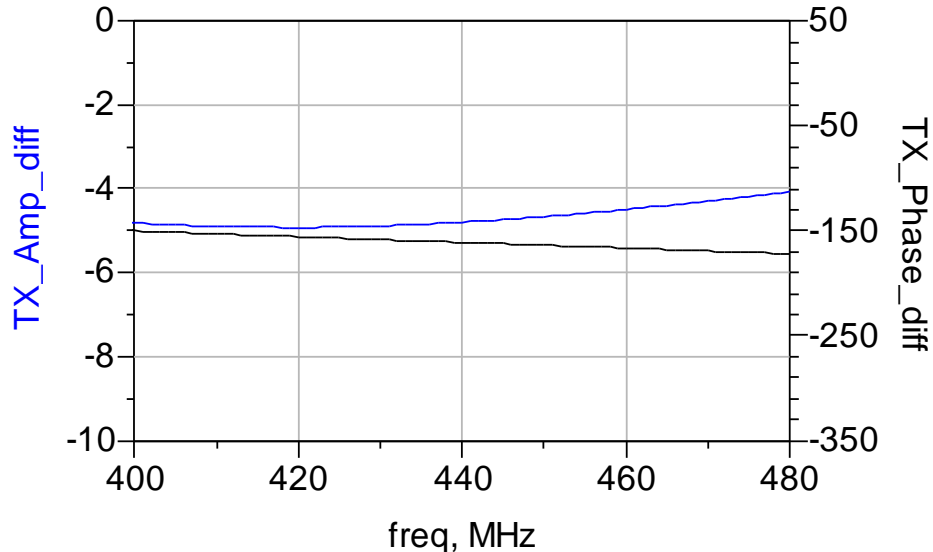
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Typical Electrical Characteristics (T=25°C)

Transmit Mode Insertion Loss, Return Loss, and Attenuation



Transmit Mode Phase Balance, Amplitude Difference



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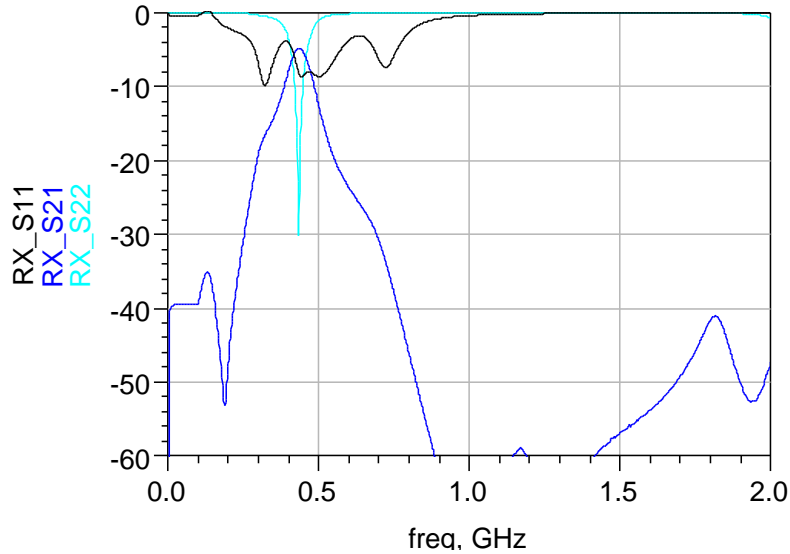
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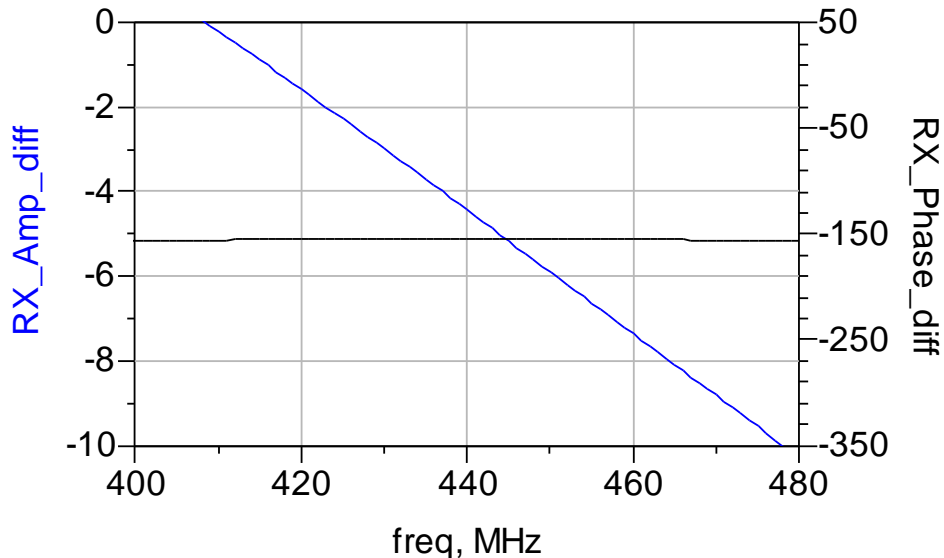
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Typical Electrical Characteristics (T=25°C)

Receive Mode Insertion Loss, Return Loss, and Attenuation



Receive Mode Phase Balance, Amplitude Difference



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Application Notes, Layout Files, and more

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Small SMD 433MHz (or 900M, 2.4G, 5G) antennas

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RoHS Compliance

www.johansontechnology.com/rohs-compliance

Soldering Information

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Antenna layout and tuning techniques

www.johansontechnology.com/tuning

Antenna layout review, tuning, and characterization services

www.johansontechnology.com/ipc-antenna-services

MSL Info

www.johansontechnology.com/msl-rating

Recommended Storage Condition and Max Shelf Life

www.johansontechnology.com/recommended-storage-conditions

Packaging information

www.johansontechnology.com/tape-reel-packaging

Terminal Pad Composition

100% Tin (Sn)

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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