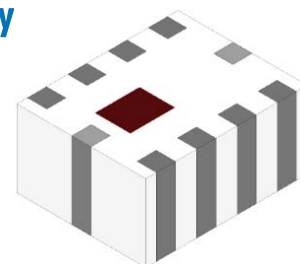


Impedance-Matched Integrated Passive Device (IPD) Balun+Filter for Semtech LR11xx (LR1110, LR1120, LR1121) Chipset Family

- Designed for the Semtech LoRa Connect™ and LoRa Edge™ series chipsets.
- Covers ISM bands 868MHz and 915MHz (902-928MHz) complete front-end.
- Provides necessary attenuation for FCC and ETSI requirements.
- Replaces complex RF front end with a single integrated passive device (IPD).



General Specifications¹

TX Passband Frequencies (MHz)	868, 902-928
TX Passband Frequency 1 (MHz)	868
Balanced Impedance, transceiver side (Ω)	Impedance-matched to Semtech chipsets LR1110, LR1120, LR1121
Unbalanced Impedance, antenna side (Ω)	50
Insertion Loss (dB)	1.0 Typ. (1.4 Max.)
Return Loss (dB)	10 Min.
Attenuation	
Frequency Range (MHz)	1736
Attenuation (dB)	38 Min.
Frequency Range (MHz)	2604
Attenuation (dB)	33 Min.
Frequency Range (MHz)	3472
Attenuation (dB)	35 Min.
Frequency Range (MHz)	4340
Attenuation (dB)	37 Min.
Frequency Range (MHz)	5208
Attenuation (dB)	23 Min.
TX Passband Frequency 2 (MHz)	902 - 928
Balanced Impedance, transceiver side (Ω)	Impedance-matched to Semtech chipsets LR1110, LR1120, LR1121
Unbalanced Impedance, antenna side (Ω)	50
Insertion Loss (dB)	1.5 Max.
Return Loss (dB)	10 Min.
Attenuation	
Frequency Range (MHz)	1804 - 1856
Attenuation (dB)	18 Min.

¹ Typical value represents average measurement at 25°C. Min./Max. values represent measurements from -40°C to +85°C

General Specifications (continued)

Frequency Range (MHz)	2706 - 2784
Attenuation (dB)	47 Min.
Frequency Range (MHz)	3608 - 3712
Attenuation (dB)	47 Min.
Frequency Range (MHz)	4510 - 4640
Attenuation (dB)	30 Min.
Frequency Range (MHz)	5412 - 5568
Attenuation (dB)	20 Min.
RX Passband Frequency 1 (MHz)	868 - 928
Balanced Impedance, transceiver side (Ω)	Impedance-matched to Semtech chipsets LR1110, LR1120, LR1121
Unbalanced Impedance, antenna side (Ω)	50
Insertion Loss (dB)	1.7 Typ. (2.3 Max.)
Return Loss (dB)	10 Min.

Maximum Ratings

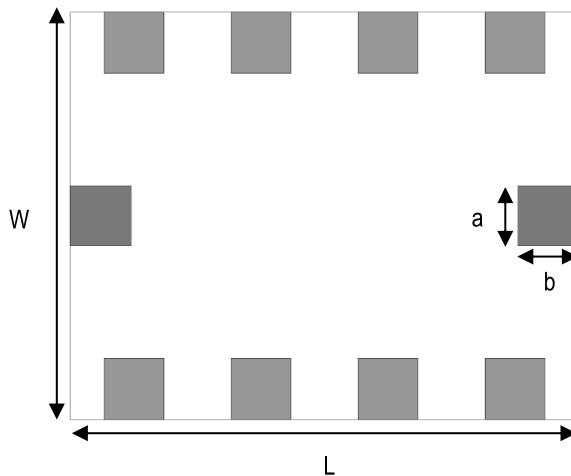
Power Capacity (W)	2 (CW)
Operating Temperature ($^{\circ}\text{C}$)	-40 to +85
Recommended Storage Conditions post-installation ($^{\circ}\text{C}$)	-40 to +85
Recommended Storage Conditions and Period for Unused T&R Product	45% - 60% RH +5 to +35 $^{\circ}\text{C}$ 18 Months Max.



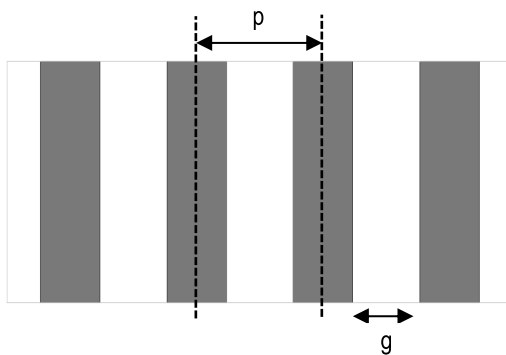
Mechanical Dimensions

	Inches			Millimeters		
L	0.079	±	0.006	2.00	±	0.15
W	0.063	±	0.006	1.60	±	0.15
T	0.037	±	0.004	0.95	±	0.1
a	0.009	±	0.004	0.235	±	0.1
b	0.009	±	0.004	0.24	±	0.1
g	0.010	±	0.004	0.265	±	0.1
p	0.020	±	0.004	0.5	±	0.1

Bottom view



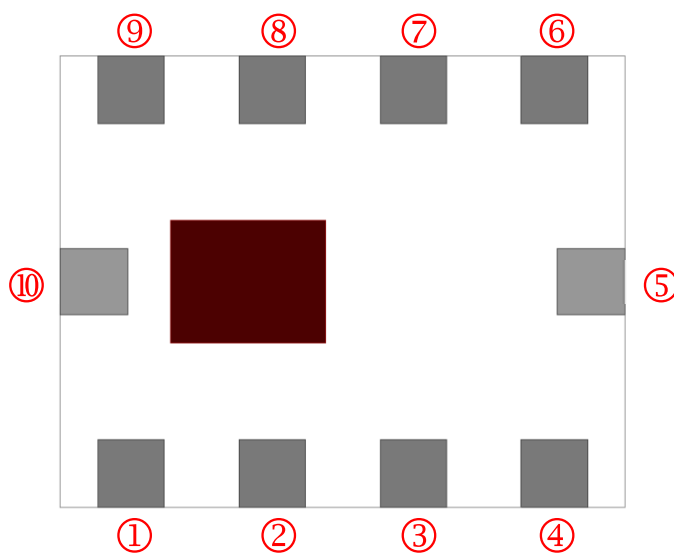
Side view



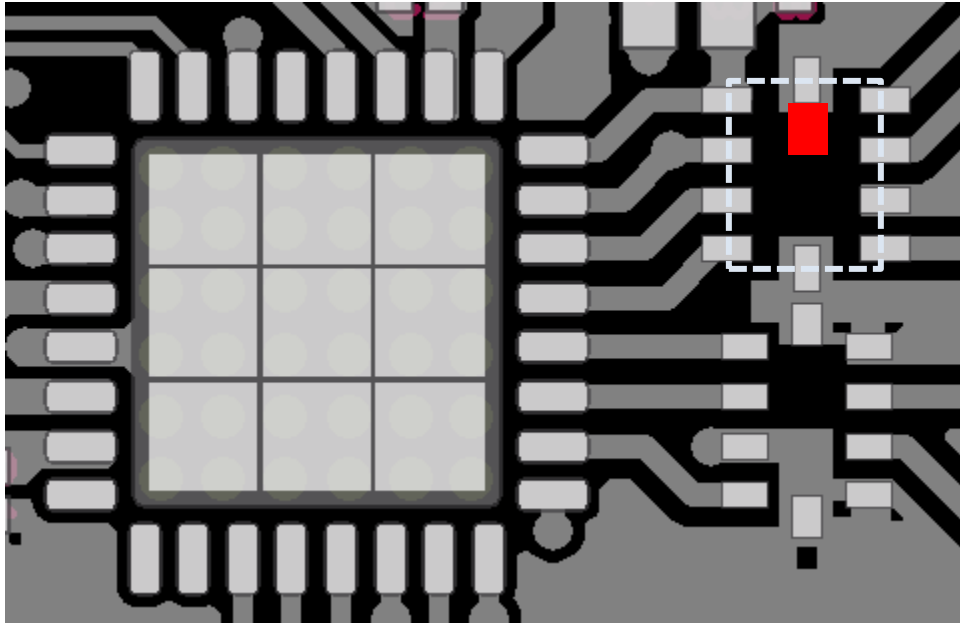
Terminal Configuration

Pin Number	Function
1	RFO_HP_LF
2	RFO_LP_LF
3	RFI_P_LFO
4	RFI_N_LFO
5	GND
6	RX
7	GND
8	TX_LP
9	TX_HP
10	GND

Top view

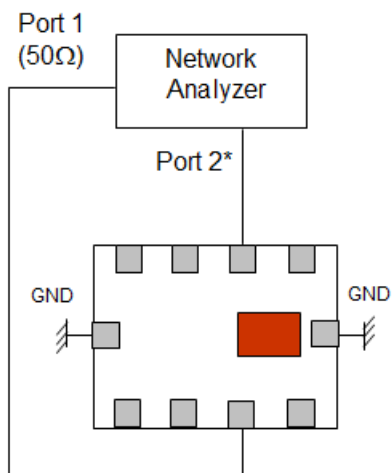


PCB Layout



Please contact us for the full reference design package: <https://www.johansontechnology.com/ask-a-question>

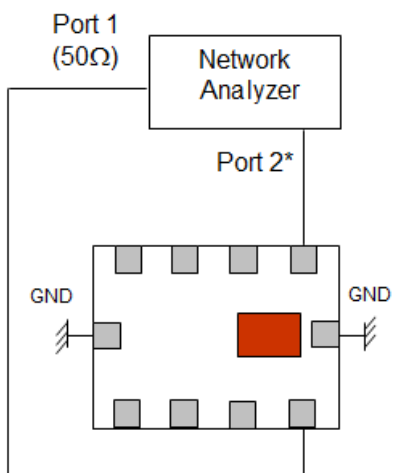
Measurement Diagram



TX_LP

Port 1 : ANT port, 50Ω

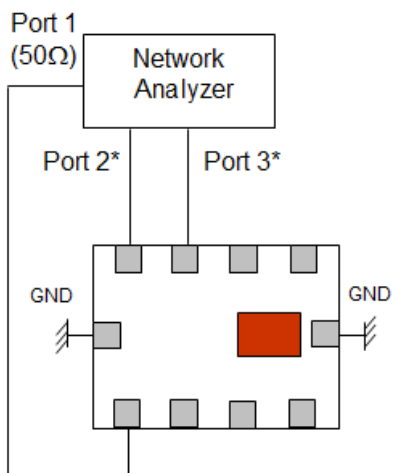
*Port 2 : RFO_LP_LF Port, Impedance match to Semtech chipset



TX_HP

Port 1 : ANT port, 50Ω

*Port 2 : RFO_HP_LF Port, Impedance match to Semtech chipset



RX

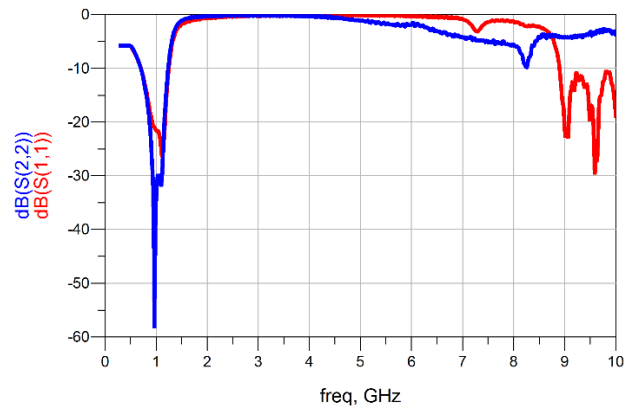
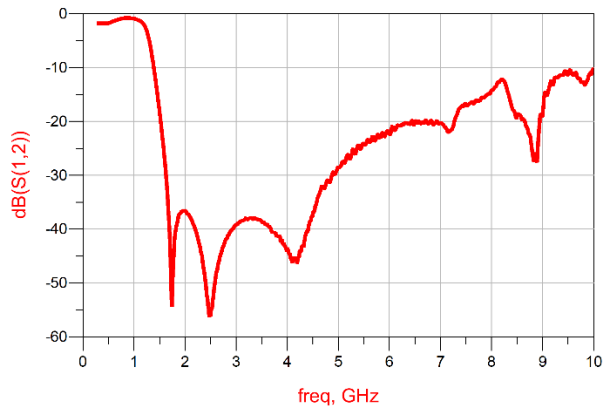
Port 1 : ANT port, 50Ω

*Ports 2 & 3 : RFI_P / N, Impedance match to Semtech chipset

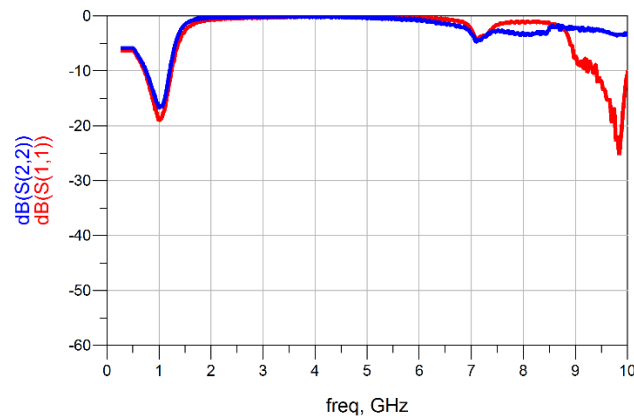
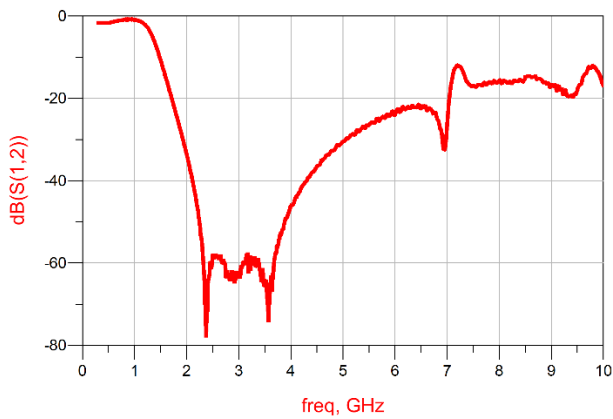


RF Measurement

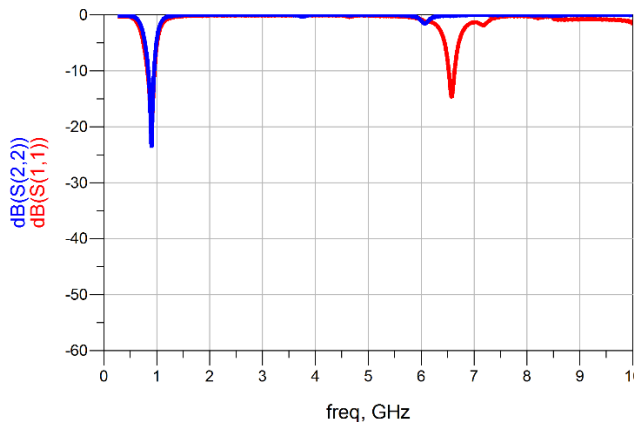
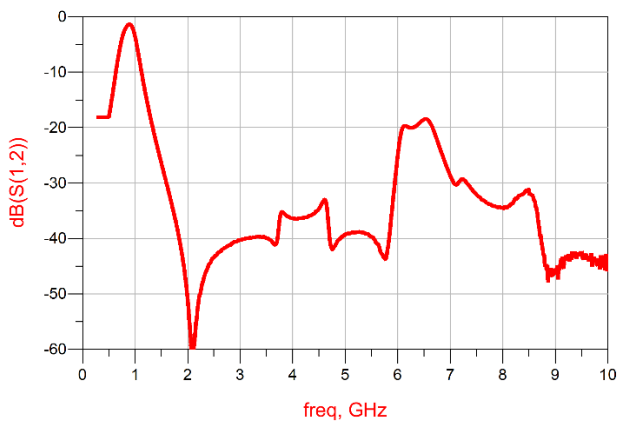
TX_LP (868MHz)



TX_HP (902-928MHz)



RX (868, 902-928MHz)



S-parameter and layout file available upon request. Please contact <https://www.johansontechnology.com/ask-a-question>

Orderable Part Number

Part Number Explanation		
Packaging Style	Bulk (loose pcs.)	0900PC16J0042001B
	T & R (7" Reel Embossed Tape)	0900PC16J0042001E (Qty: 4,000 pcs./reel)

Important Links

[0900PC16J0042001E Samples, Quote, Downloads](#)

[Tuning, Optimization, and Validation Services](#)

[Soldering Information](#)

[MSL Information](#)

[Packaging Information](#)

[RoHS Compliance](#)

Changelog	
1.1	Initial Release