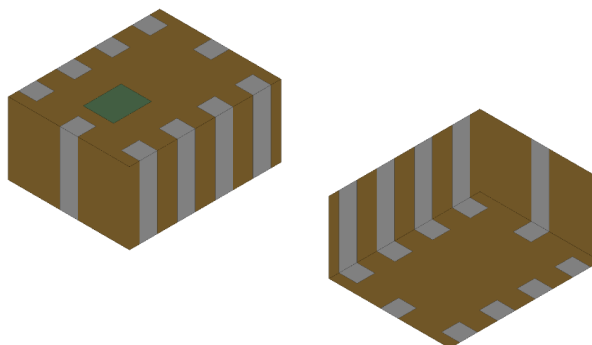


Impedance-Matched Integrated Passive Device (IPD) for the Semtech LR11xx (LR1110, LR1120, LR1121) Chipset Family

- Designed for the Semtech LoRa Connect™ and LoRa Edge™ series chipsets LR1110, LR1120, LR1121
- Covers ISM bands 863 - 870MHz and 902 - 928MHz
- Provides necessary attenuation to meet FCC and ETSI regulations
- Integrated impedance transformation balun and harmonic filter
- Replaces complex RF front end with a single integrated passive device (IPD)



General Specifications¹

TX Passband Frequencies (MHz)	863 – 870 & 902 – 928
TX Passband Frequency 1 (MHz)	863 – 870
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.
Frequency Range (MHz)	1804 - 1856
Attenuation (dB)	18 Min.

¹ Typical value represents average measurement at 25°C. Min./Max. values represent measurements over specified operating temperature.

General Specifications (continued)

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.
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 (MHz)	863 – 870 & 902 – 928
Balanced Impedance, transceiver side (Ω)	Impedance-matched to Semtech chipsets LR1110, LR1120, LR1121
Unbalanced Impedance, antenna side (Ω)	50
Insertion Loss (dB)	1.7 Typ. (2.3 Max.)
Return Loss (dB)	10 Min.

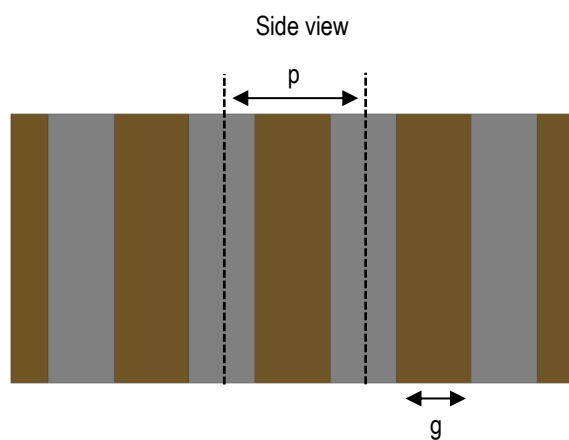
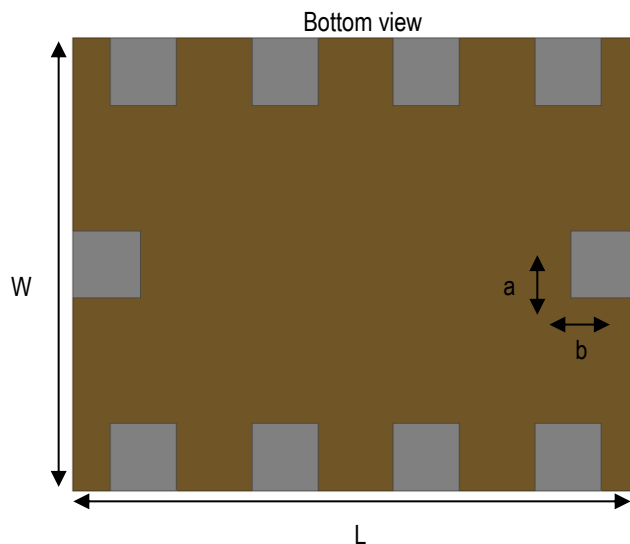
Maximum Ratings

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 ²	45% - 60% RH +5 to +35 $^{\circ}\text{C}$ 18 Months Max.

² 18 months max. in vacuum sealed bag and 1 week after opened. Please keep unused parts in vacuum sealed bags. For more info go to <https://www.johansontechnology.com/silverleads-profile>.

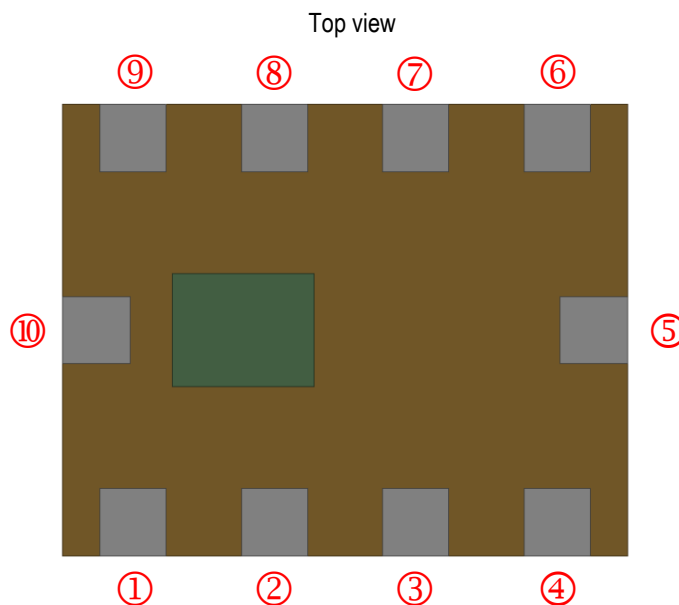
Mechanical Dimensions

	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



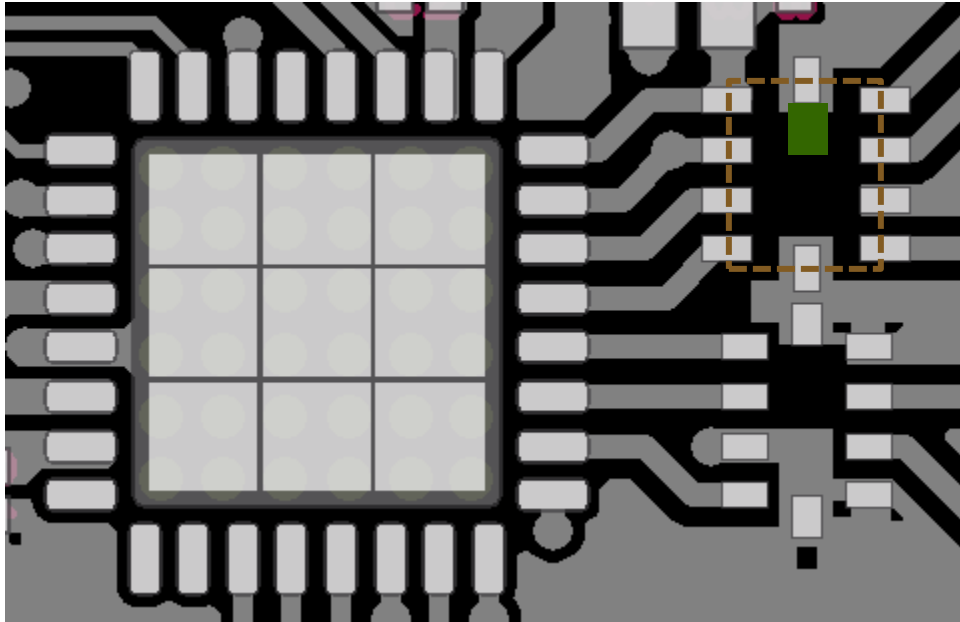
Terminal Configuration³

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



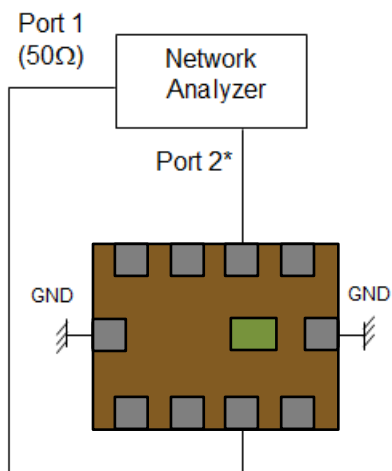
³ The termination type is Silver. Go to: <https://www.johansontechnology.com/ipcsoldering-profile> for Typical Soldering Profile. Recommended Solder Paste: SAC 305 type.

PCB Layout



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

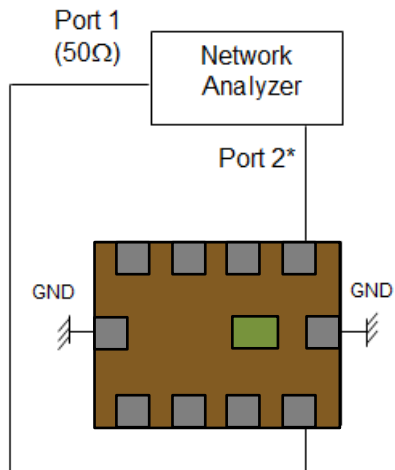
Measurement Diagram



TX_LP

Port 1 : ANT port, 50Ω

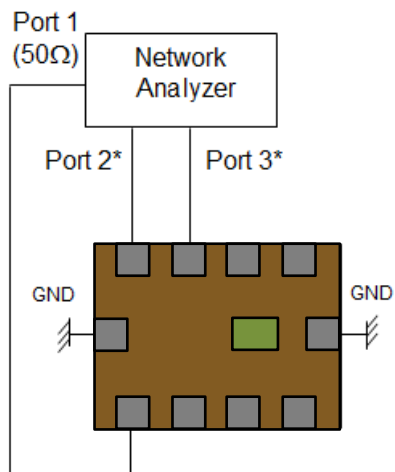
*Port 2 : RFO_LP_LF Port, Impedance match to Semtech chipset



TX_HP

Port 1 : ANT port, 50Ω

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



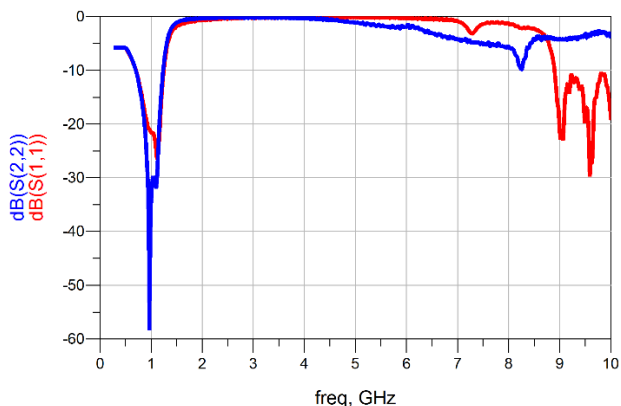
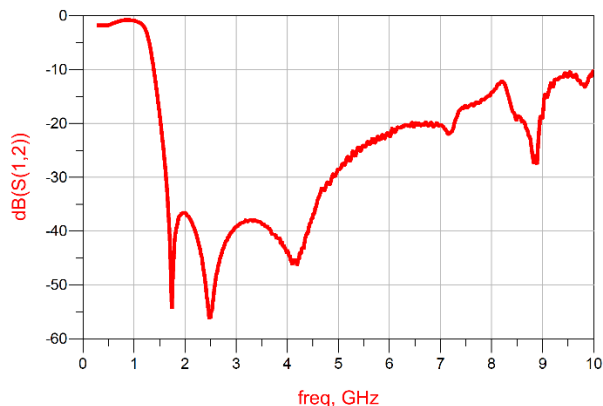
RX

Port 1 : ANT port, 50Ω

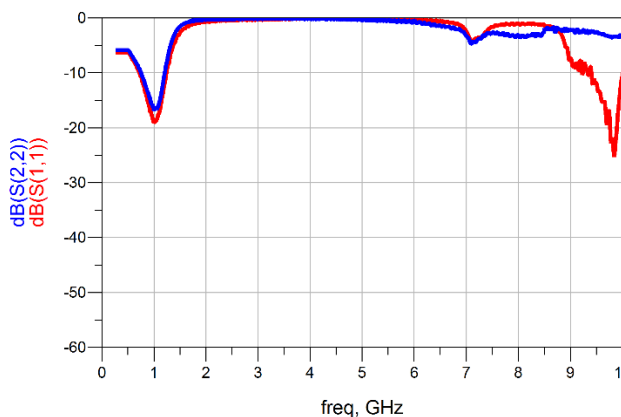
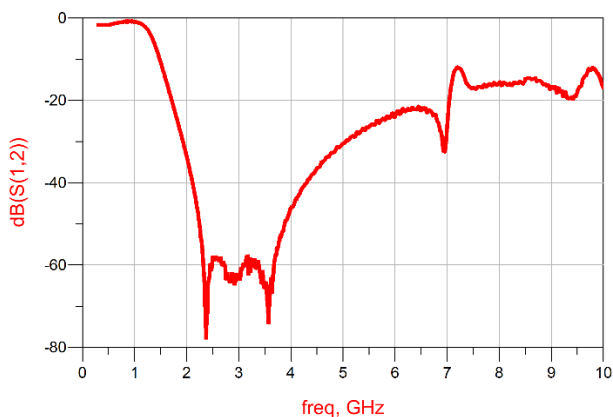
*Ports 2 & 3 : RFI_P / N, Impedance match to Semtech chipset

RF Measurement

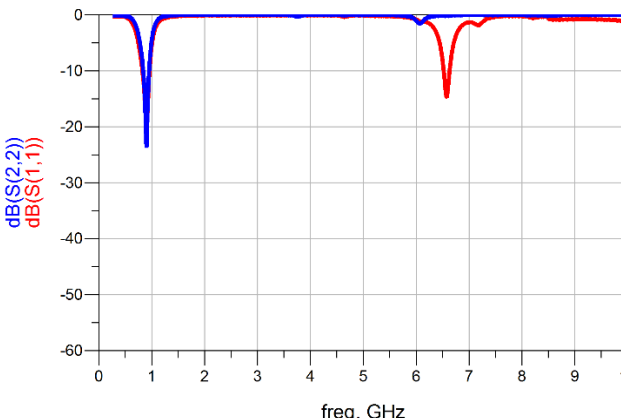
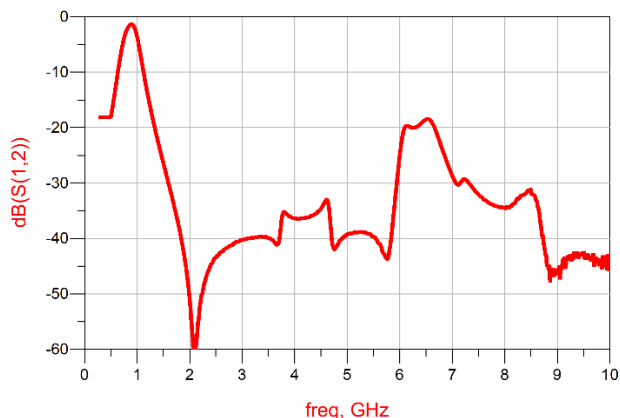
TX_LP (863 – 870MHz)



TX_HP (902 – 928MHz)



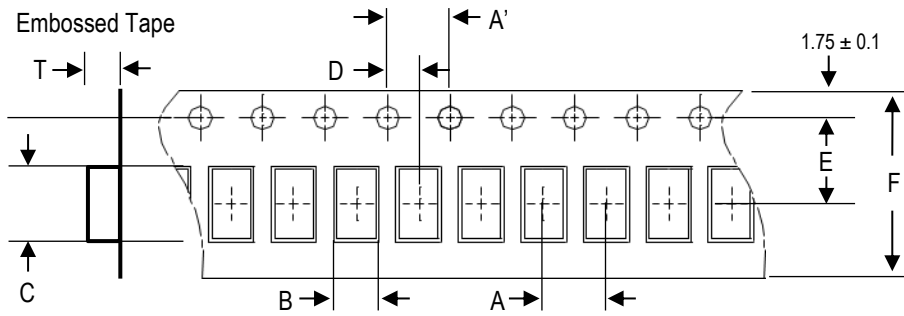
RX (863 – 870MHz, 902 – 928MHz)



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

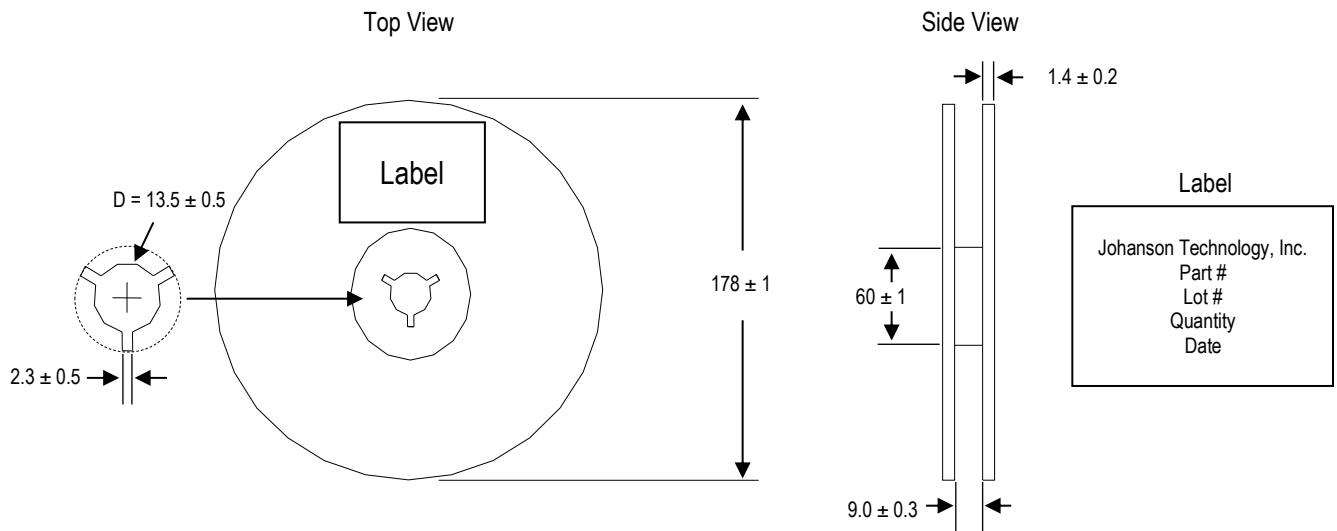
Tape and Reel Specifications (Units in mm)

Tape Dimensions

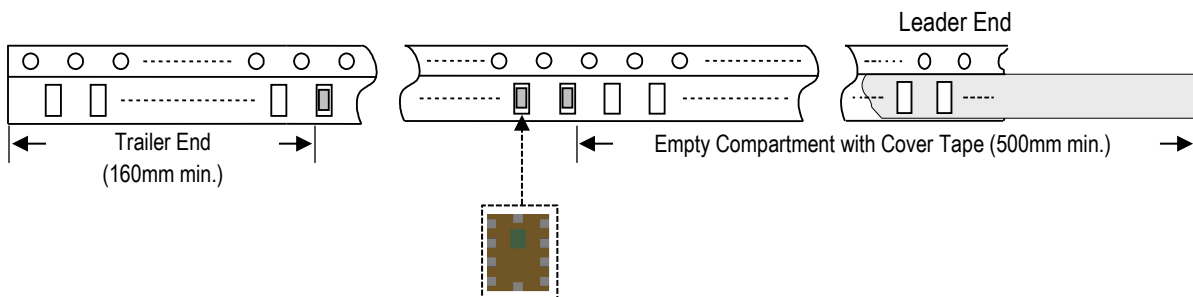


A	A'	B	C	D	E	F	T	Quantity/reel	Tape material
4.0 ± 0.1	4.0 ± 0.1	1.85 ± 0.1	2.4 ± 0.1	2.0 ± 0.1	3.5 ± 0.1	8.0 ± 0.1	1.05 ± 0.05	4,000	Plastic (Embossed)

Reel Dimensions



Leader and Trailer Dimensions



Orderable Part Number

Packaging Style	Part Number	Termination
Bulk (loose pcs.)	0900PC16J0042001B	Silver
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](#)