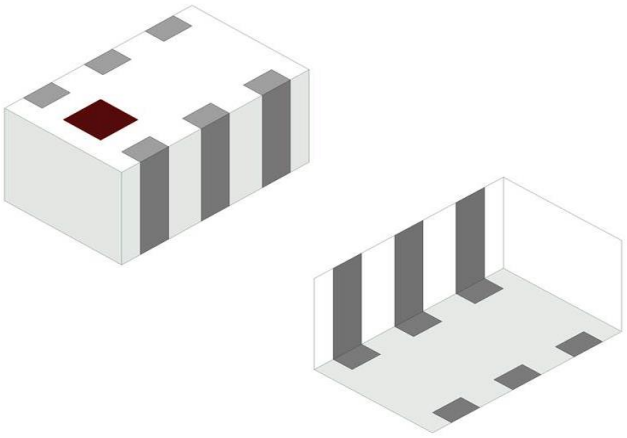
5.4 GHz RF 1:2 Balun

- 4800 - 5950 MHz, 50:100 (1:2) Impedance Ratio
- Wireless communication systems including WiFi, 802.11, Public Safety, UNII, PtP, ISM.
- SMD, EIA 0603
- RoHS compliant



General Specifications[1] [2]

Passband Frequency (MHz)	4900 – 5875	5875 - 5950
Unbalanced Impedance (Ω)	50	50
Balanced Impedance (Ω)	100	100
Insertion Loss (dB)	1.0 Max.	1.0 Max.
Return Loss (dB)	9.5 Min.	9.5 Min.
Phase Difference (degree)	180 ± 15	180 ± 20
Amplitude Difference (dB)	1.5 Max.	1.5 Max.

Maximum Ratings

Power Capacity (W)	3 Max. (CW)
Operating Temperature (°C)	-40 to +125
Recommended Storage Conditions post-installation (°C)	-40 to +125
Recommended Storage Conditions and Period for Unused T&R Product	45% - 75% RH +5 to +35 °C 18 Months Max.

[1] Typical value represents average measurement at 25°C. Min./Max. values represent measurements over specified operating temperature.
[2] General specifications measured on Johanson's evaluation board P/N 5400BL14B0100001CE1.

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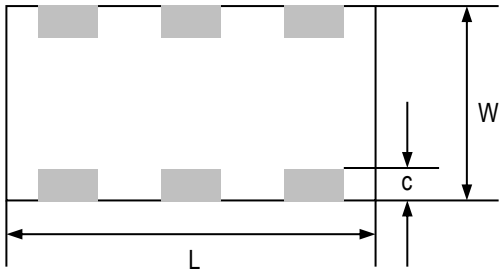
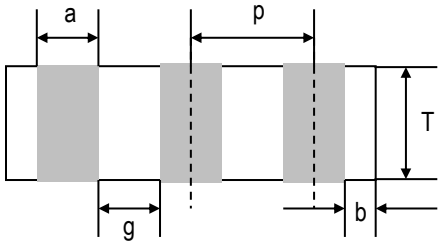
Mechanical Dimensions

	Inches			Millimeters		
L	0.063	±	0.004	1.60	±	0.10
W	0.031	±	0.004	0.80	±	0.10
T	0.024	±	0.004	0.60	±	0.10
a	0.008	±	0.004	0.20	±	0.10
b	0.008		+.004/-.006	0.20		+0.1/-0.15
c	0.006	±	0.004	0.15	±	0.10
g	0.012	±	0.004	0.30	±	0.10
p	0.020	±	0.002	0.50	±	0.05

Bottom view



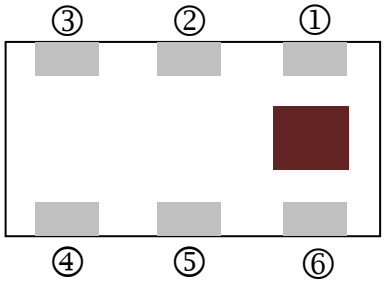
Side view



Terminal Configuration[3]

Pin Number	Function
1	Unbalanced Port (IN)
2	GND *or* (DC feed + RF GND)
3	Balanced Port (OUT1)
4	Balanced Port (OUT2)
5	GND
6	NC

Top view



[3] The termination type is Nickel Tin. Go to: https://www.johansontechnology.com/tech-notes/typical-soldering-profile-ipc for Typical Soldering Profile.

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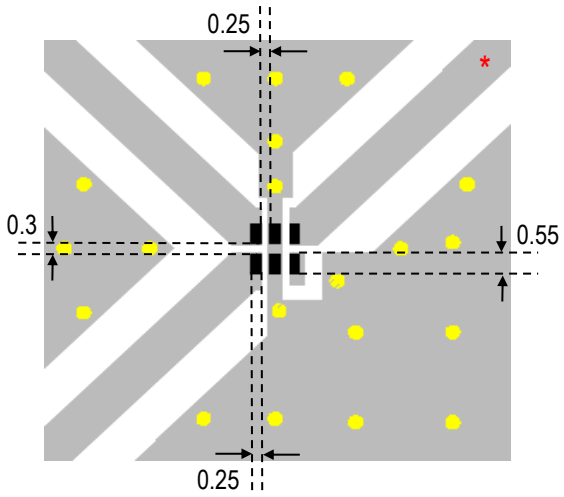
Recommended PCB Layout

Note: Mount device with colored mark facing up.

Without DC feed



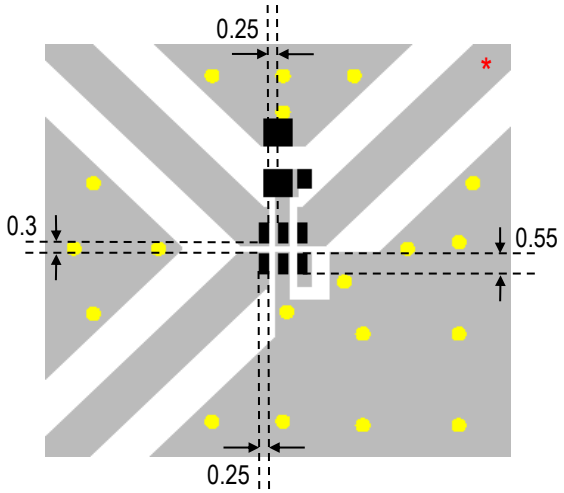
Units: mm

Solder Resist

Land

Through-hole (ϕ 0.3)

With DC feed[4]



Solder Resist

Land

Through-hole (ϕ 0.3)

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

If you would like the full reference design package or have any questions,
contact our application engineers at https://www.johansontechnology.com/ask-a-question

[4] Bypass capacitor should be connected when feeding DC power.

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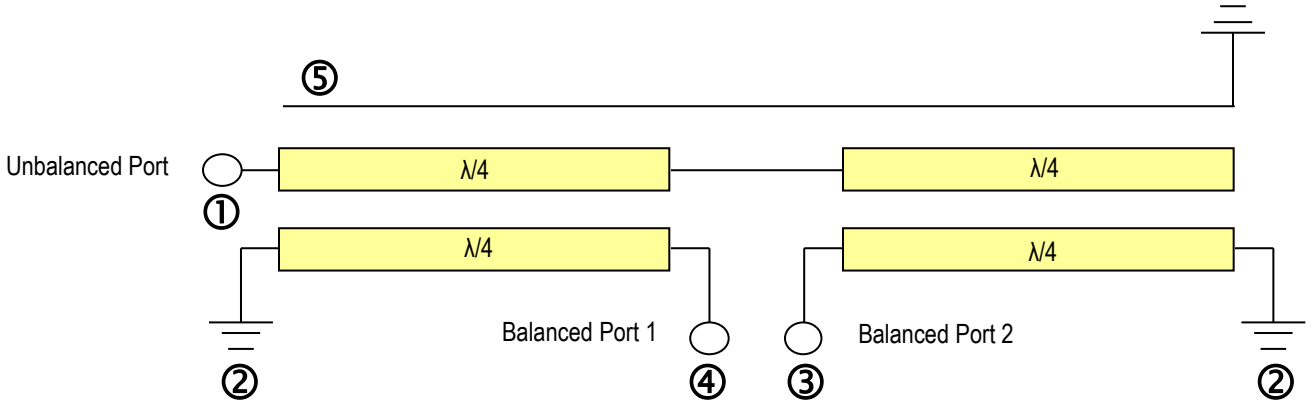
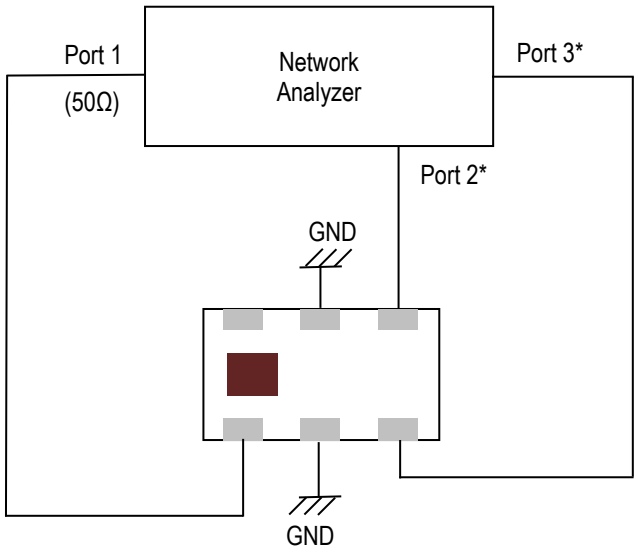
Equivalent Internal Circuit[5] [6] [7]



Measuring Diagram



Port 1: Unbalanced Port

Ports 2 and 3: Balanced Port

Insertion Loss = S_{ds21}

Return Loss = S_{ss11}

Amplitude Balance = dB(S(2,1)/S(3,1))

Phase Balance = Phase(S(2,1)/S(3,1))

*Impedance for Ports 2 and 3 = Balanced Impedance/2

[5] Pin3 and Pin4 are DC connected to Pin2 (GND or DC feed) in the device but not DC connected to Pin5 (GND). Therefore, by-pass capacitors should be connected when feeding DC power from Pin2. Contact us for best cap value for this.
[6] Unbalanced port does not have a direct current path to GND.
[7] Pin 6 is a floating pin (no internal connections) but it still must be soldered.

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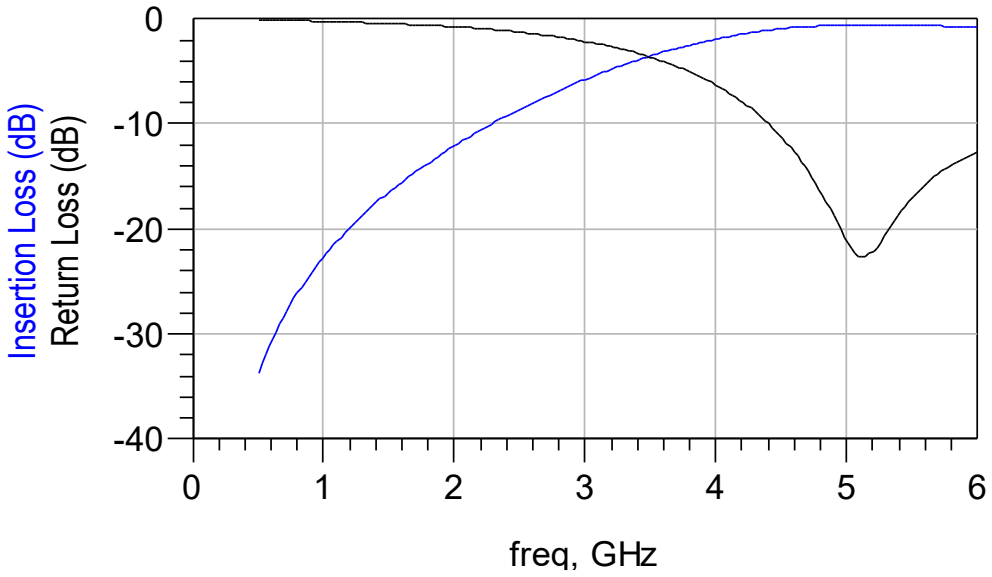
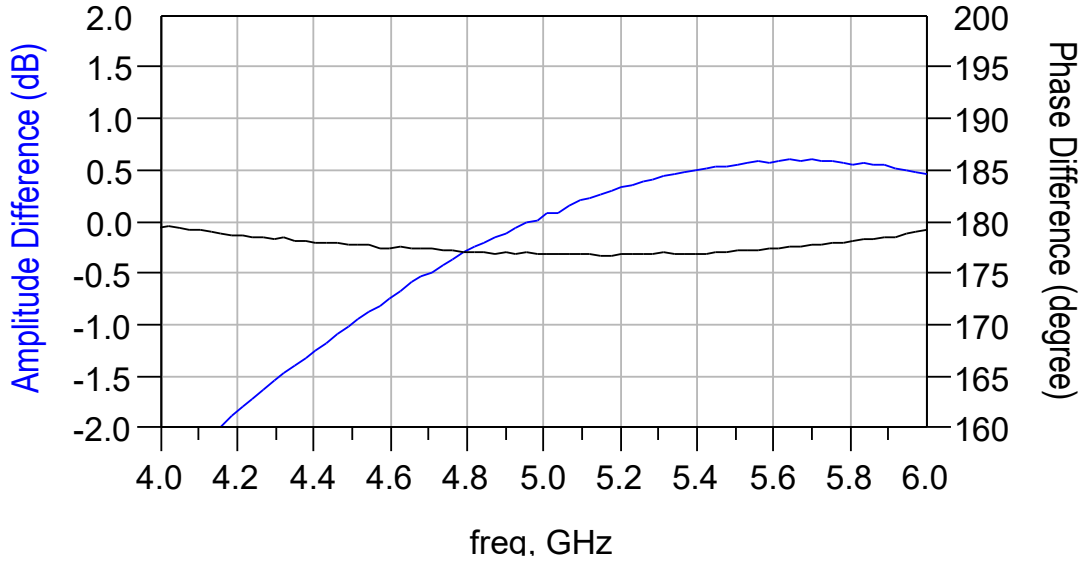
RF Measurement (T=25°C)

Insertion Loss and Return Loss



Phase Difference and Amplitude Difference



S-parameter and layout files available upon request. Please contact us at https://www.johansontechnology.com/ask-a-question

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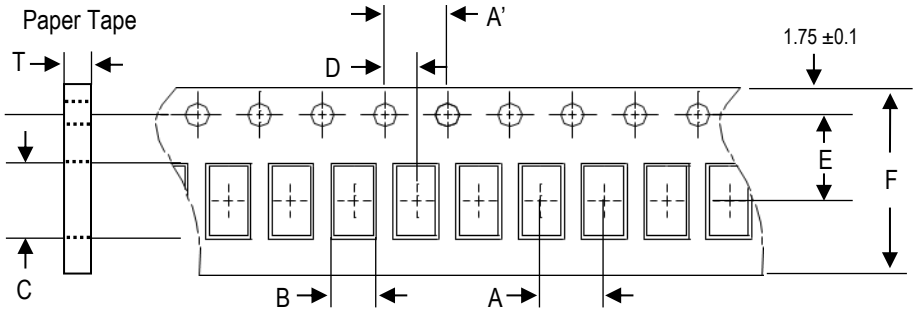
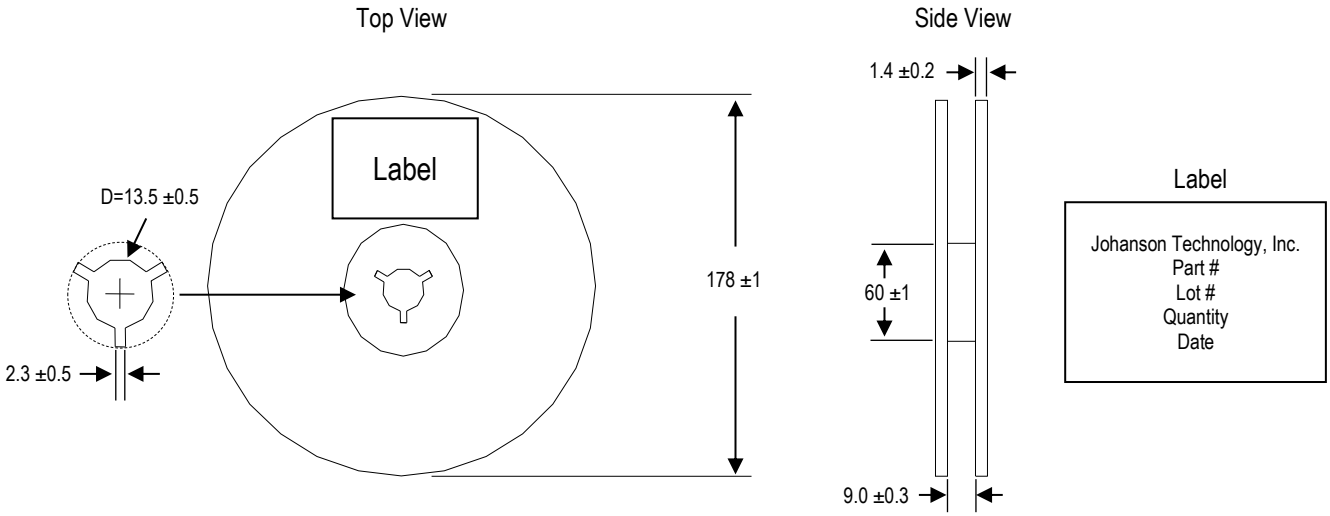
Tape and Reel Specifications (Units in mm)

Tape Dimensions

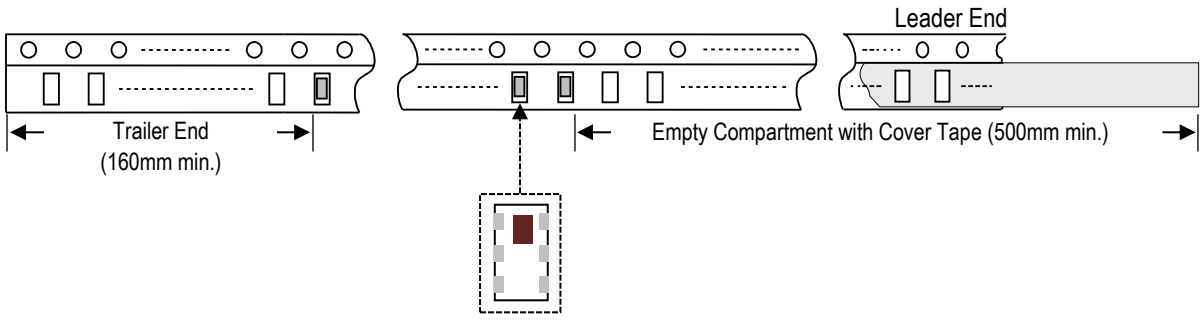


A	A'	B	C	D	E	F	T	Quantity/reel	Tape material
4.0 ±0.1	4.0 ±0.1	1.1 ±0.1	1.92 ±0.1	2.0 ±0.1	3.5 ±0.1	8.0 ±0.1	0.75 ±0.05	4,000 pcs.	Paper

Reel Dimensions



Leader and Trailer Dimensions



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Orderable Part Numbers

Packaging Style	Part Number	Termination
Bulk (loose pcs.)	5400BL14B0100001B	Nickel Tin
T & R (7" Reel Paper Tape)	5400BL14B0100001T (Qty: 4,000 pcs./reel)	
Evaluation Board with 3 SMA Connector	5400BL14B0100001CE1 (Without DC feed)	

Important Links

5400BL14B0100001T Product Page

More RF Baluns

Antenna Tuning, Optimization, and Validation Services

Soldering Information

MSL Information

Packaging Information

Recommended Storage Condition and Max Shelf Life

RoHS Compliance

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