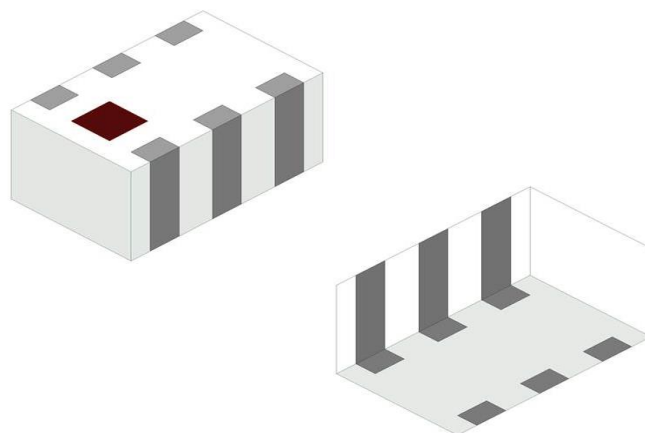




5.4 GHz RF 1:1 Balun

- 4900 - 5875 MHz, 50:50 (1:1) Impedance Ratio
- Wireless communication systems including: WiFi, 802.11, Public Safety, UNII, PtP, ISM
- SMD, EIA 0805
- RoHS compliant



General Specifications^{1 2}

Passband Frequency (MHz)	4900 – 5875
Unbalanced Impedance (Ω)	50
Balanced Impedance (Ω)	50
Insertion Loss (dB)	1.0 Max.
Return Loss (dB)	9.5 Min.
Phase Difference (degree)	180 ± 10
Amplitude Difference (dB)	2 Max.

Maximum Ratings

Power Capacity (W)	2 Max. (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% - 75% RH +5 to +35 $^{\circ}\text{C}$ 18 Months Max.

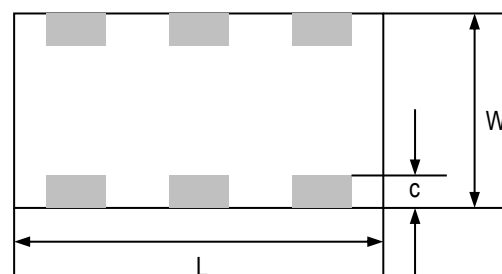
¹ Typical value represents average measurement at 25 $^{\circ}\text{C}$. Min./Max. values represent measurements over specified operating temperature.

² General specifications measured on Johanson's evaluation board P/N 5400BL15B0050001CE1.

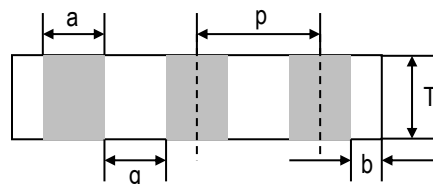
Mechanical Dimensions

	Inches			Millimeters		
L	0.079	±	0.004	2.00	±	0.10
W	0.049	±	0.004	1.25	±	0.10
T	0.037	±	0.004	0.95	±	0.10
a	0.012	±	0.004	0.30	±	0.10
b	0.008	±	0.004	0.20	±	0.10
c	0.012	+0.004/-0.008		0.30	+0.1/-0.2	
g	0.014	±	0.004	0.35	±	0.10
p	0.026	±	0.002	0.65	±	0.05

Bottom view



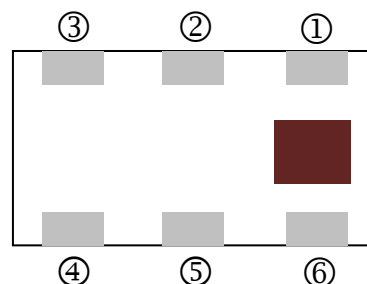
Side view



Terminal Configuration³

Pin Number	Function
1	Unbalanced Port (IN)
2	GND
3	Balanced Port (OUT1)
4	Balanced Port (OUT2)
5	GND
6	NC

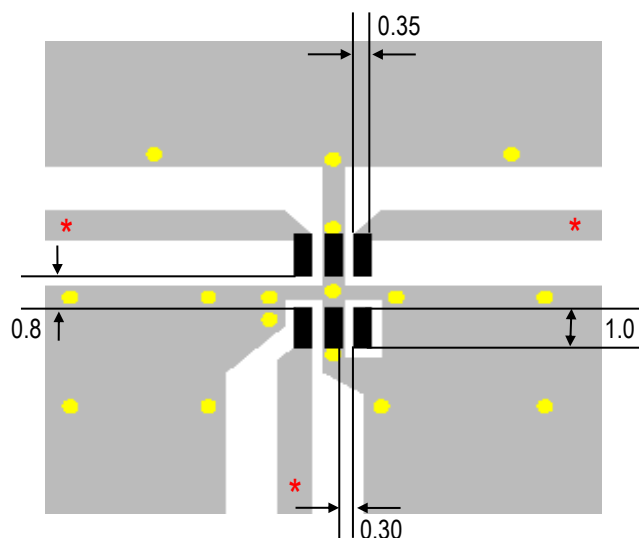
Top view



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

Recommended PCB Layout

Note: Mount device with colored mark facing up.



Units: mm

Gray Solder Resist

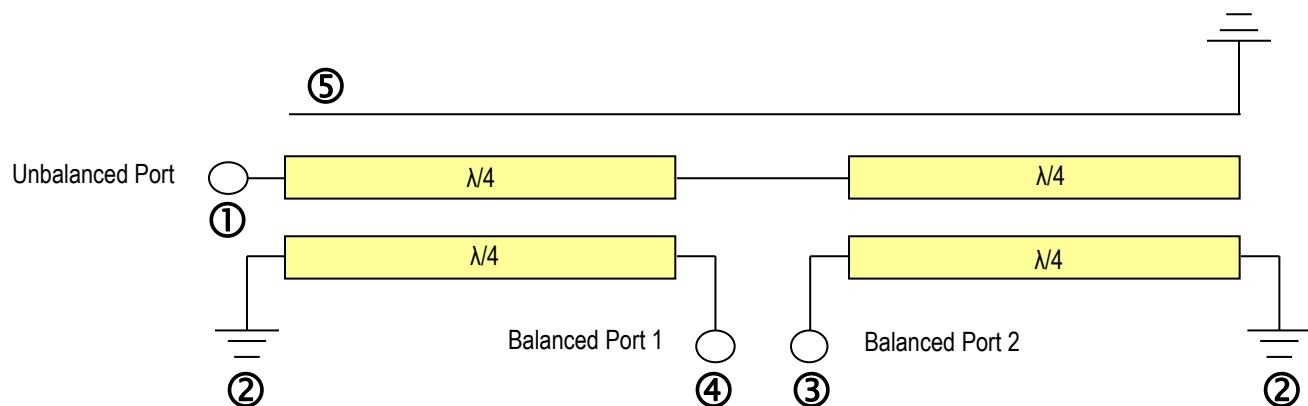
Black Land

Yellow Through-hole ($\phi 0.3$)

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

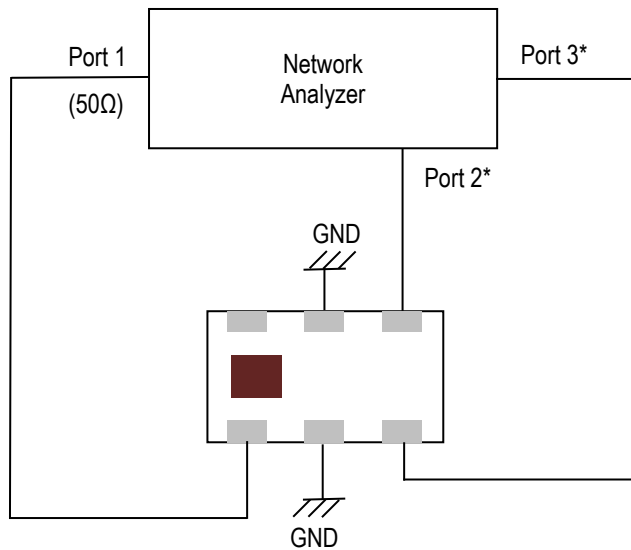
If you would like the full reference design package or have any questions, contact our application engineers at <https://www.johansontechnology.com/ask-a-question>

Equivalent Internal Circuit⁴



⁴ Pin 6 is a floating pin (no internal connections) but it still must be soldered.

Measuring Diagram



Port 1: Unbalanced Port

Ports 2 and 3: Balanced Port

Insertion Loss = S_{ds21}

Return Loss = S_{ss11}

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

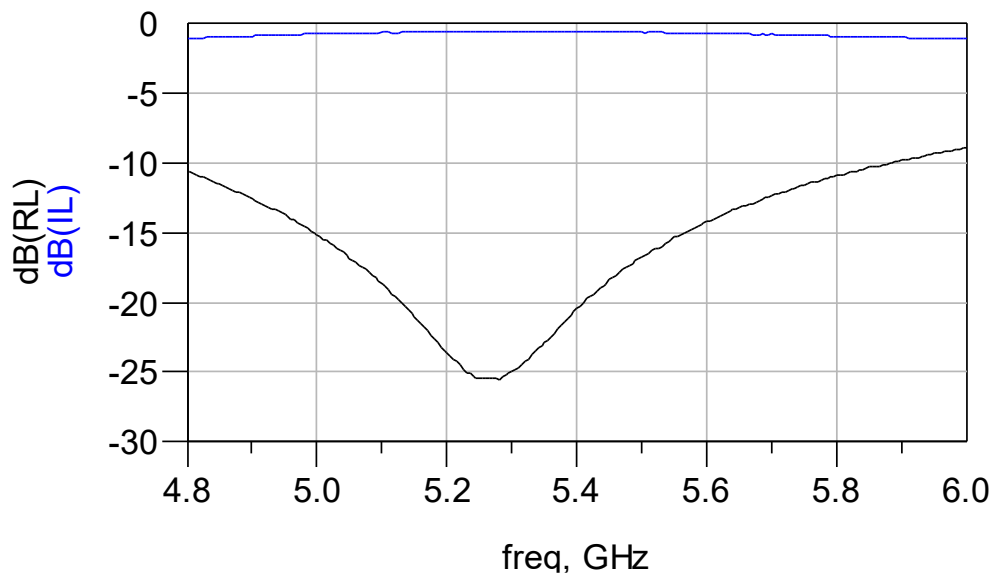
Phase Balance = $\text{Phase}(S(2,1)/S(3,1))$

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

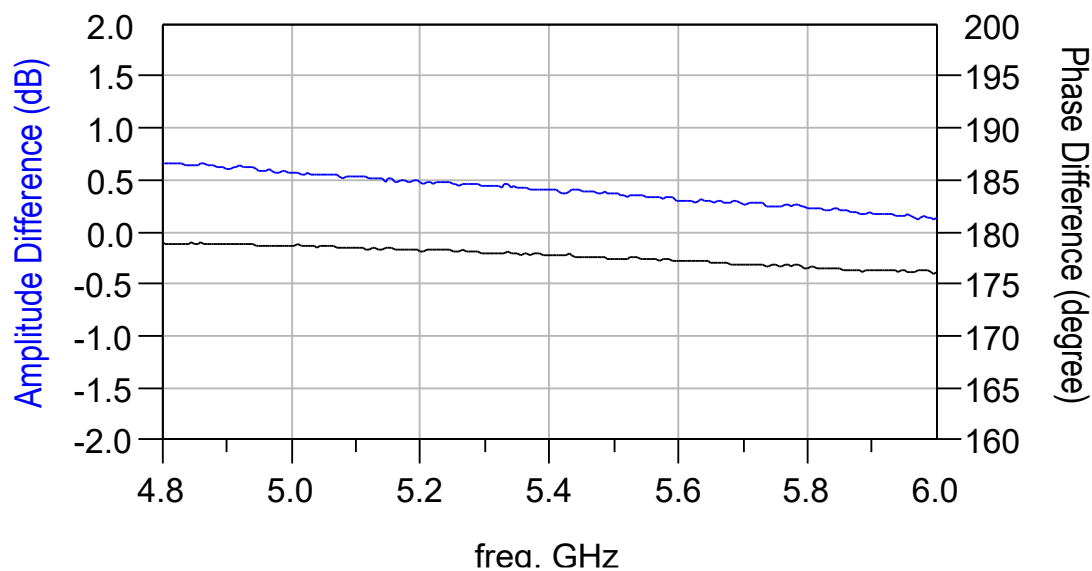


RF Measurement (T=25°C)

Insertion Loss and Return Loss



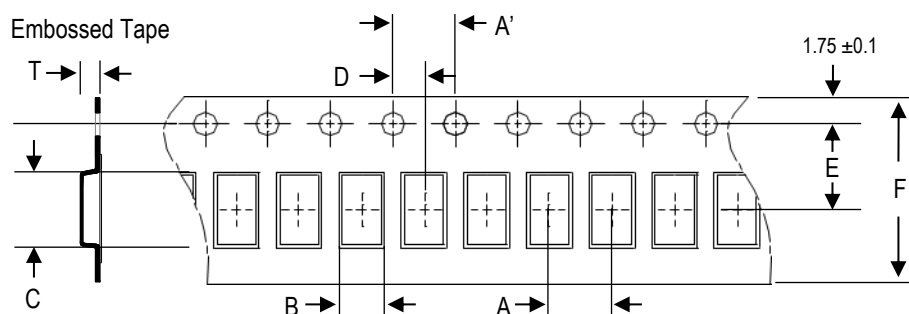
Phase Difference and Amplitude Difference



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

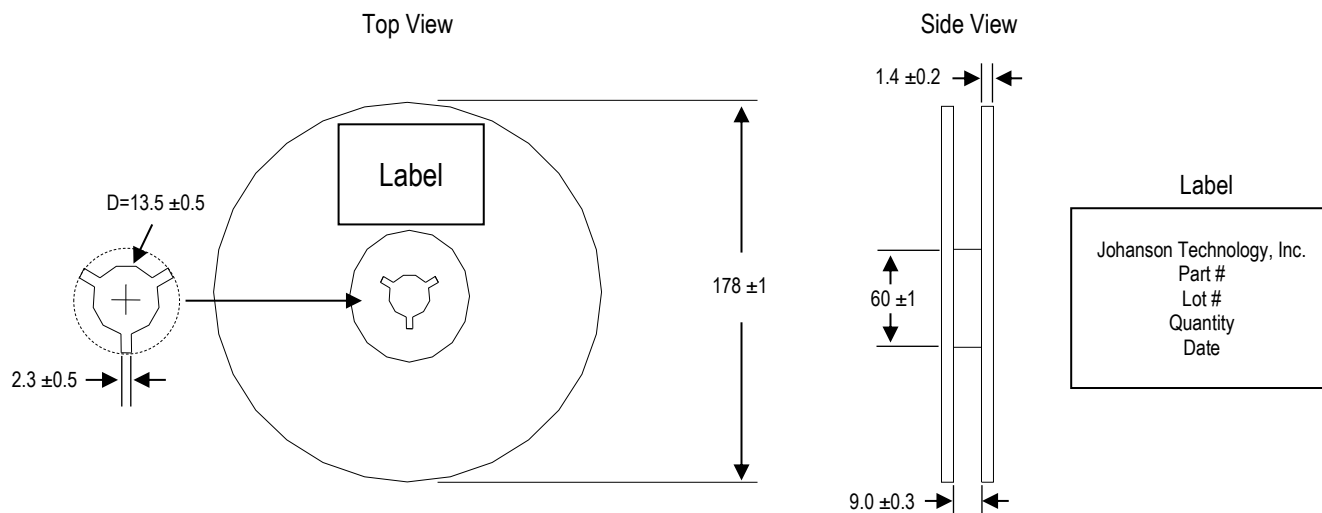
Tape and Reel Specification (Units in mm)

Tape Dimensions

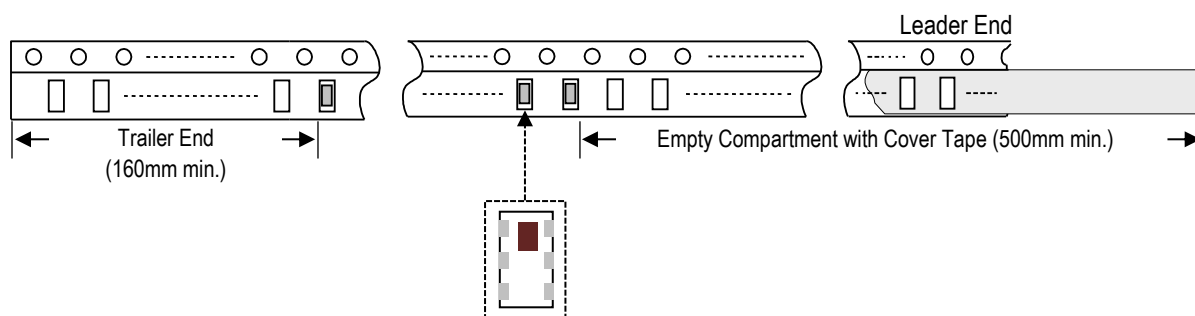


A	A'	B	C	D	E	F	T	Quantity/reel	Tape material
4.0 ±0.1	4.0 ±0.1	1.35 ±0.05	2.15 ±0.05	2.0 ±0.05	3.5 ±0.1	8.0 ±0.1	1.08 ±0.05	4,000 pcs.	Plastic (Embossed)

Reel Dimensions



Leader and Trailer Dimensions



Orderable Part Number

Packaging Style	Part Number	Termination
Bulk (loose pcs.)	5400BL15B0050001B	Nickel Tin
T & R (7" Reel Embossed Tape)	5400BL15B0050001E (Qty: 4,000 pcs./reel)	
Evaluation Board with 3 SMA Connectors	5400BL15B0050001CE1	

Important Links

[5400BL15B0050001E 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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