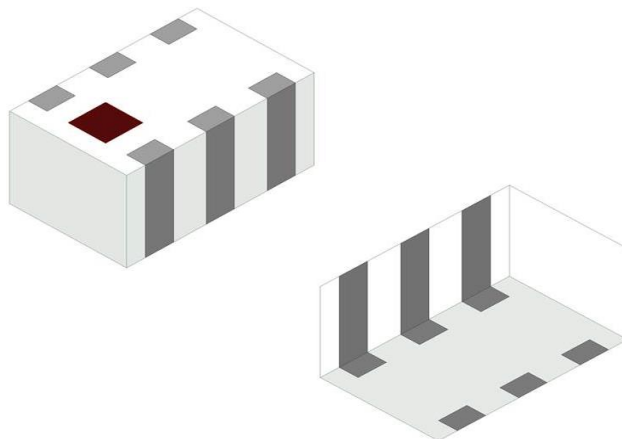




4.4 GHz RF 1:2 Wideband Balun

- 2800 - 6000MHz, 50:100 (1:2) Impedance Ratio
- Wireless communication systems
- SMD, EIA 0805
- RoHS compliant



General Specifications^{1 2}

Passband Frequency (MHz)	2800 – 6000
Unbalanced Impedance (Ω)	50
Balanced Impedance (Ω)	100
Insertion Loss (dB)	1.5 Max.
Return Loss (dB)	9.5 Min..
Phase Difference (degree)	180 ± 12
Amplitude Difference (dB)	1.8 Max.
CMRR (dB)	15 Min.

Maximum Ratings

Power Capacity (W)	3 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.

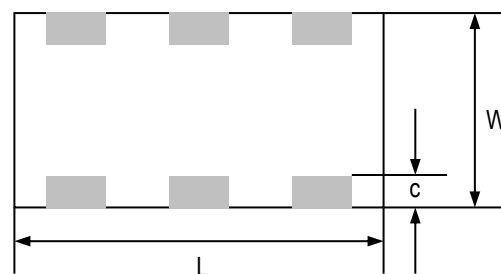
¹ Typical value represents average measurement at 25 $^{\circ}\text{C}$. Min./Max. values represent measurements over specified operating temperature.

² General specifications measured on Johanson's evaluation board PN 4400BL15A0100001CE1.

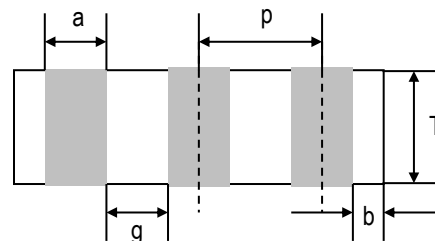
Mechanical Dimensions

	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



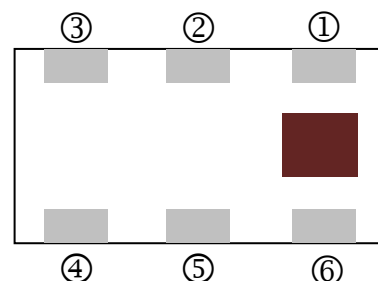
Side view



Terminal Configuration³

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

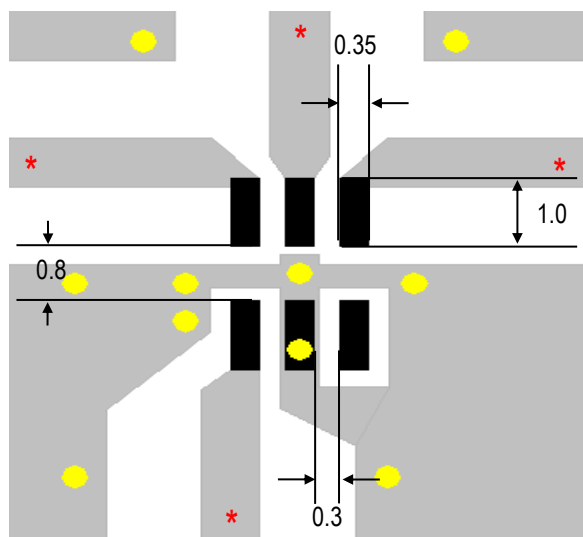
Top view



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

Recommended PCB Layout

Note: Mount device with colored mark facing up.



Units: mm

Gray box: Solder Resist

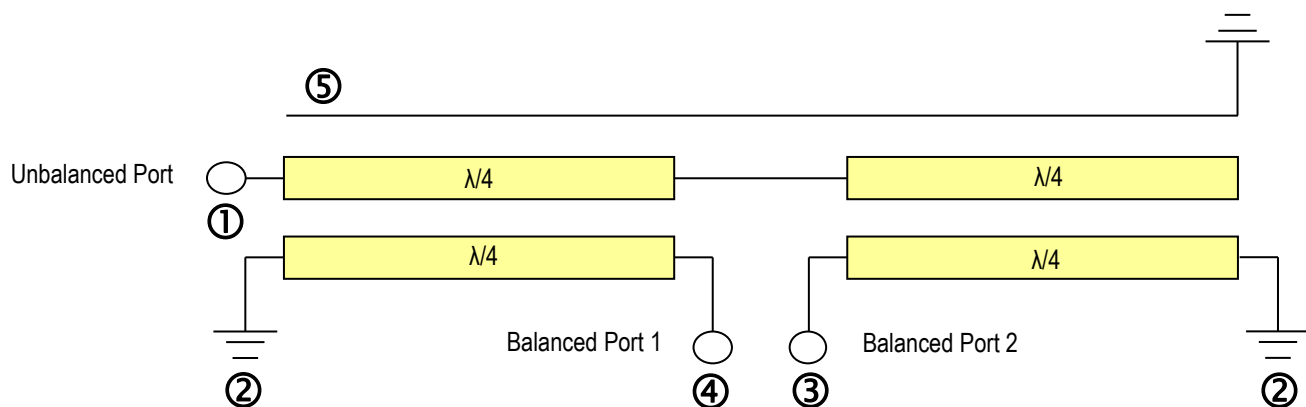
Black box: Land

Yellow circle: Through-hole ($\Phi 0.3$)

* 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>

Equivalent Internal Circuit^{4 5 6}

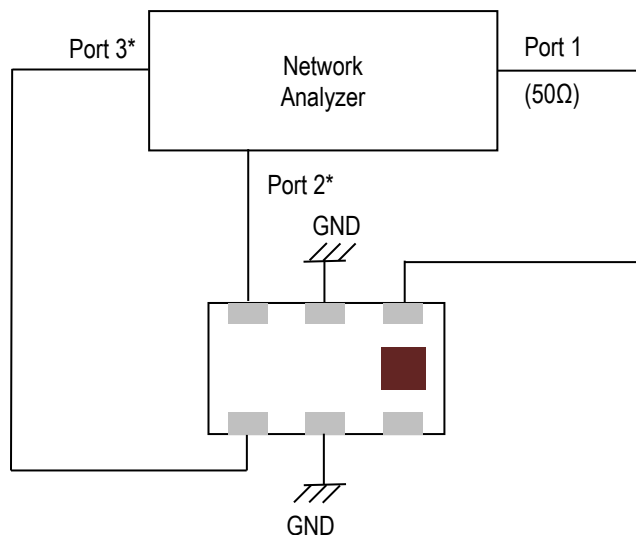


⁴ Pin3 and Pin4 are DC connected to Pin2 (GND or DC feed) in the device but not DC connected to Pin5 (GND). Therefore, by-pass capacitors should be connected when feeding DC power from Pin2.

⁵ Unbalanced port does not have a direct current path to GND.

⁶ Use an RF capacitor to RF GND when using DC-Feed option. Contact us for best cap value for this.

Measuring Diagram



Port 1: Unbalanced Port

Ports 2 and 3: Balanced Port

Insertion Loss = S_{ds21}

Return Loss = S_{ss11}

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

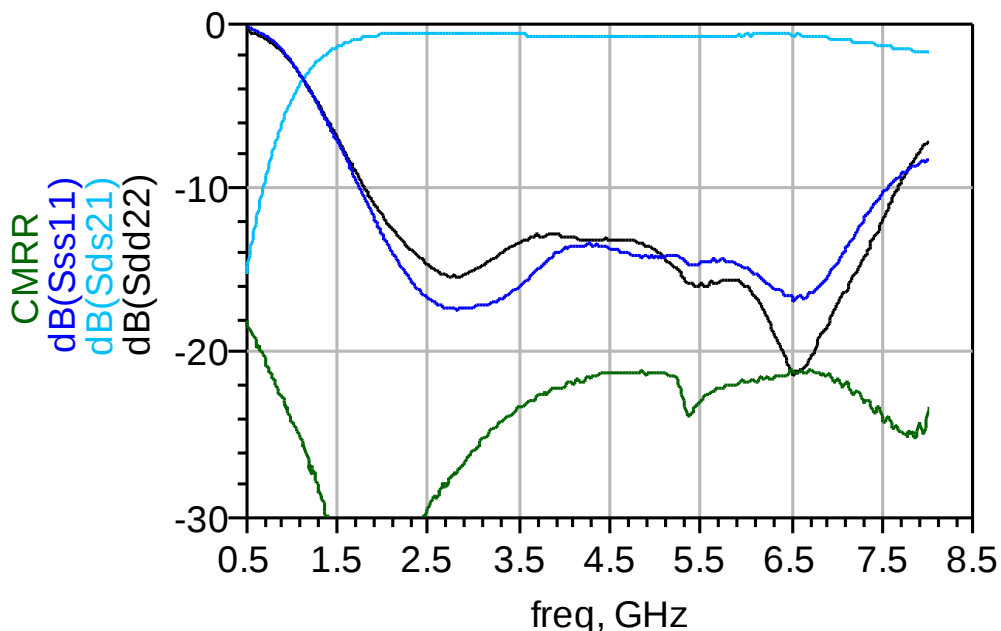
Phase balance = $\text{Phase}(S(2,1)/S(3,1))$

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

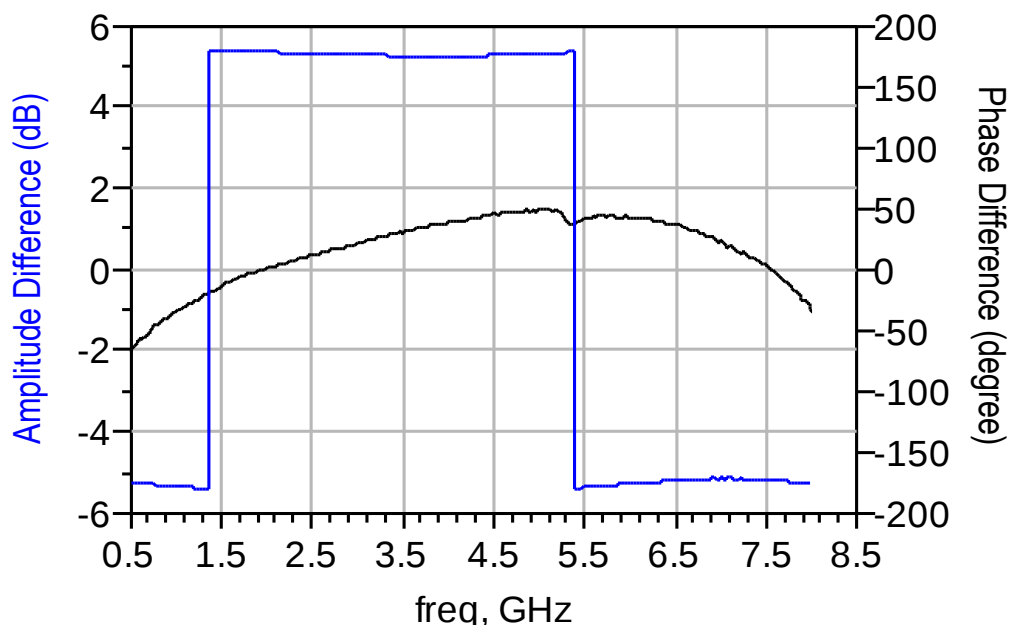


RF Measurement (T=25°C)

Insertion Loss, Return Loss



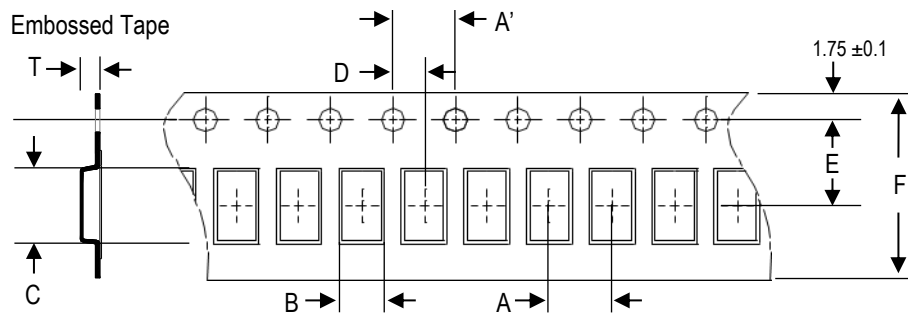
Phase Difference, Amplitude Difference



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

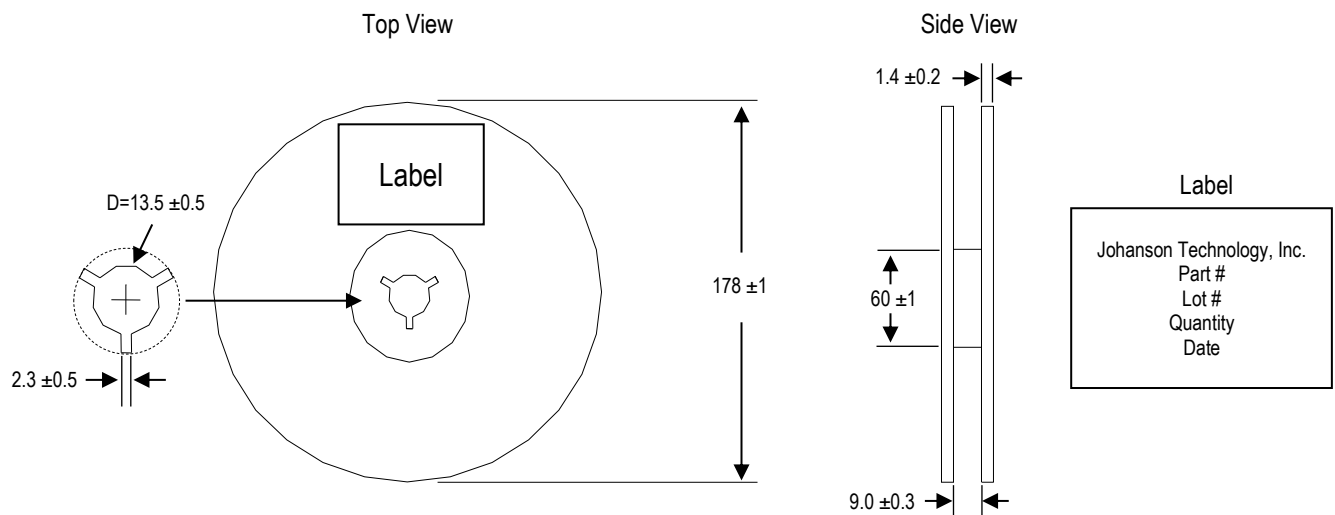
Tape and Reel Specifications (Units in mm)

Tape Dimensions

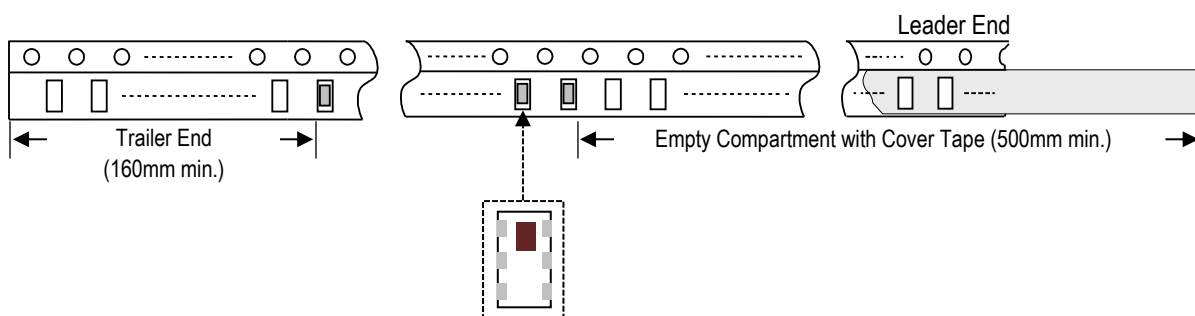


A	A'	B	C	D	E	F	T	Quantity/reel	Tape material
4.0 ±0.1	4.0 ±0.1	1.35 ±0.05	2.15 ±0.05	2.0 ±0.05	3.5 ±0.1	8.0 ±0.1	1.08 ±0.05	4,000 pcs.	Plastic (Embossed)

Reel Dimensions



Leader and Trailer Dimensions



Orderable Part Numbers

Packaging Style	Part Number	Termination
Bulk (loose pcs.)	4400BL15A0100001B	Nickel Tin
T & R (7" Reel Embossed Tape)	4400BL15A0100001E (Qty: 4,000 pcs./reel)	
Evaluation Board with 3 SMA Connector	4400BL15A0100001CE1	

Important Links

[4400BL15A0100001E 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](#)

Johanson Technology, Inc. reserves the right to make design changes without notice.
All sales are subject to Johanson Technology, Inc. terms and conditions.