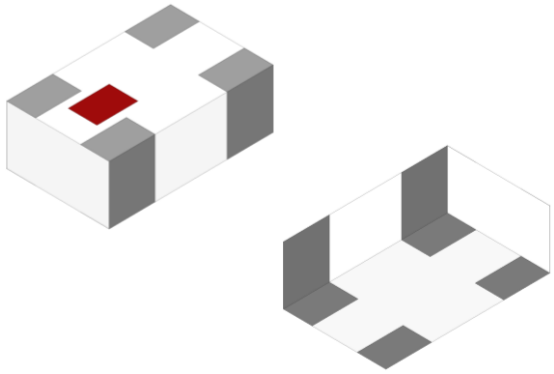
# 1.95 GHz 90° Hybrid Coupler

- 1900 - 2000 MHz passband
- PCS applications, LTE, DECT applications
- SMD, EIA 0805
- RoHS compliant



## General Specifications[1] [2]

| Passband Frequency (MHz) | 1900 – 2000 |
|---|---|
| Insertion Loss (dB) | 3.3 ± 0.5 |
| Return Loss (dB) | 14 Min. |
| Amplitude Balance (dB) | 1.0 Max |
| Phase Deviation (degrees) | 90 ± 3 |
| Isolation (dB) | 16 Min. |

## Maximum Ratings

| | |
|---|---|
| Power Capacity (W) | 2 Max. (CW) |
| Operating Temperature (°C) | -40 to +85 |
| Recommended Storage Conditions post-installation (°C) | -40 to +85 |
| Recommended Storage Conditions and Period for Unused T&R Product | 45% - 75% RH<br>+5 to +35°C<br>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 PN 1950CH15A0100001CE1.



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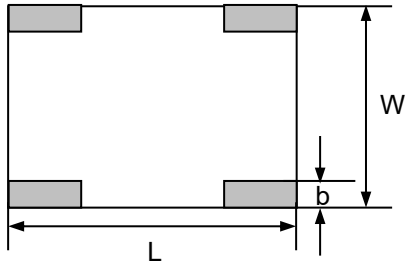
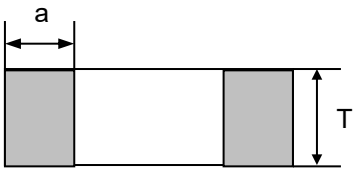
## Mechanical Dimensions

| | Inches | | | Millimeters | | |
|---|---|---|---|---|---|---|
| **L** | 0.080 | ± | 0.004 | 2.03 | ± | 0.1 |
| **W** | 0.061 | ± | 0.004 | 1.55 | ± | 0.1 |
| **T** | 0.039 | ± | 0.004 | 0.98 | ± | 0.1 |
| **a** | 0.022 | ± | 0.010 | 0.56 | ± | 0.25 |
| **b** | 0.014 | ± | 0.006 | 0.35 | ± | 0.15 |

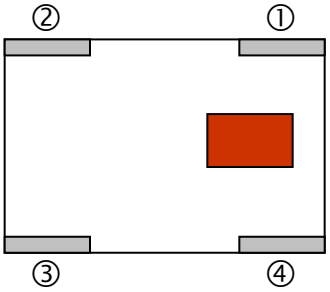
Bottom view




Side view




Top view




## Terminal Configuration[3]

| Pin Number | Function |
|---|---|
| 1 | TERMINATION |
| 2 | INPUT |
| 3 | OUTPUT2 |
| 4 | OUTPUT1 |

[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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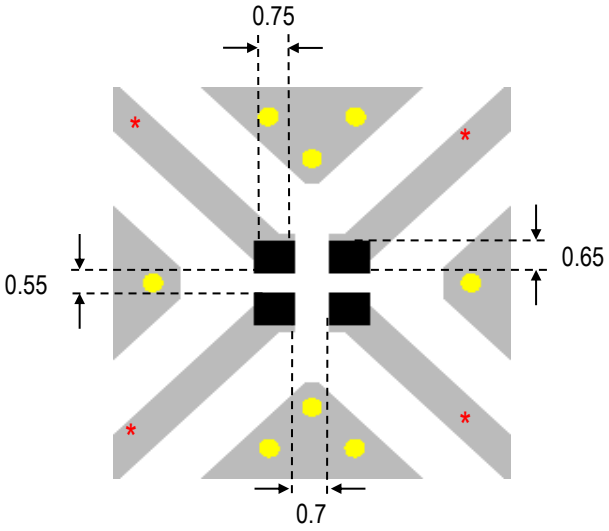
## Recommended PCB Layout




Units in mm

Solder Resist

Land

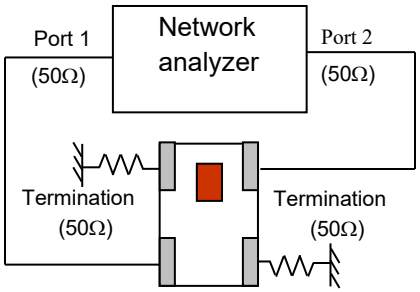
Through-hole ($\phi$0.35)

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

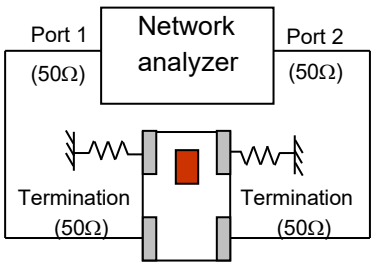
If you would like the full reference design package or have any questions,
contact our application engineers at https://www.johansontechnology.com/ask-a-question

## Measuring Diagram

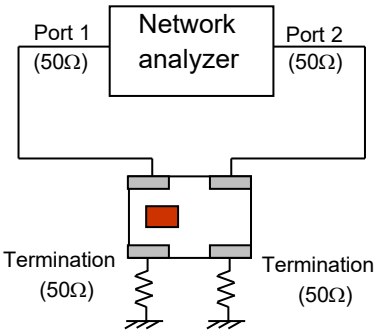
### Insertion Loss 1 & Return Loss




### Insertion Loss 2 & Return Loss




### Isolation




### Amplitude Balance & Phase Deviation

Amp_Balance = dB(I.L.1) - dB(I.L.2)

Phase_Deviation = Phase(I.L.1) - Phase(I.L.2)



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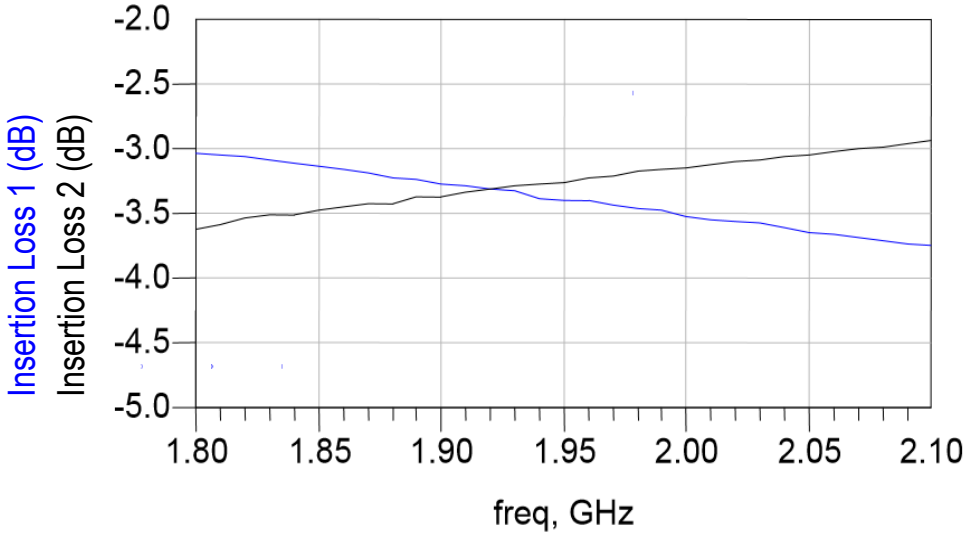
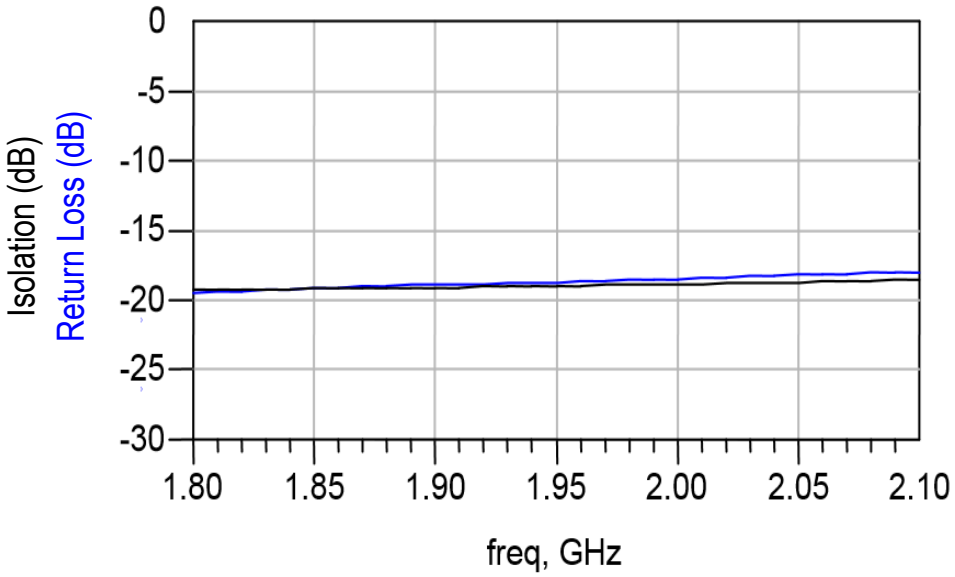
## RF Measurement

**Insertion Loss 1 & 2**




**Return Loss and Isolation**



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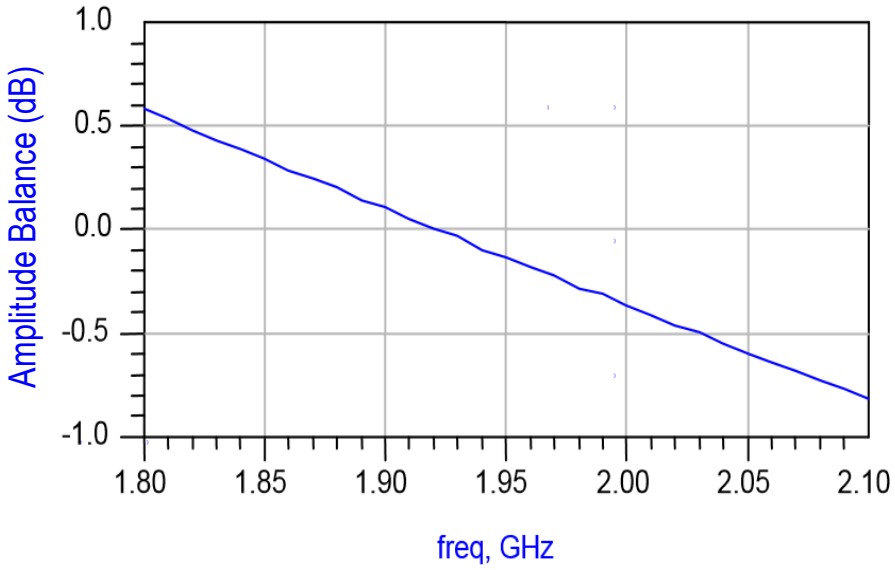
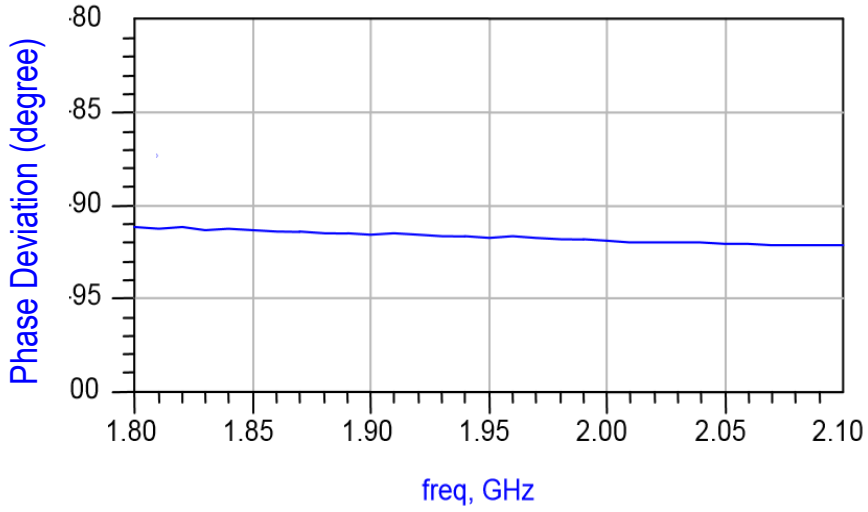
**Amplitude Balance**




**Phase Deviation**




S-parameter and layout file available upon request, contact our application engineers at https://www.johansontechnology.com/ask-a-question



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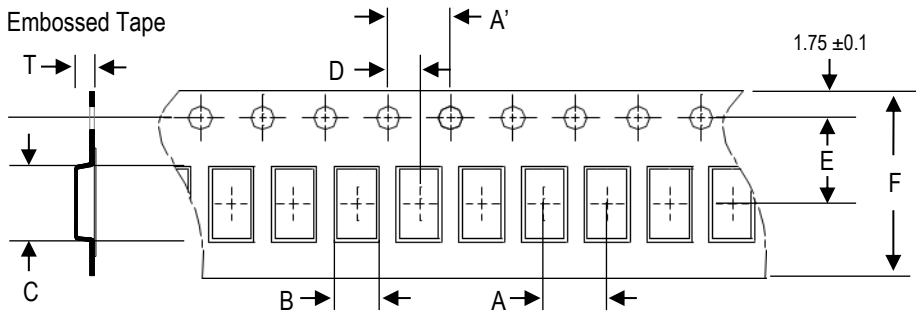
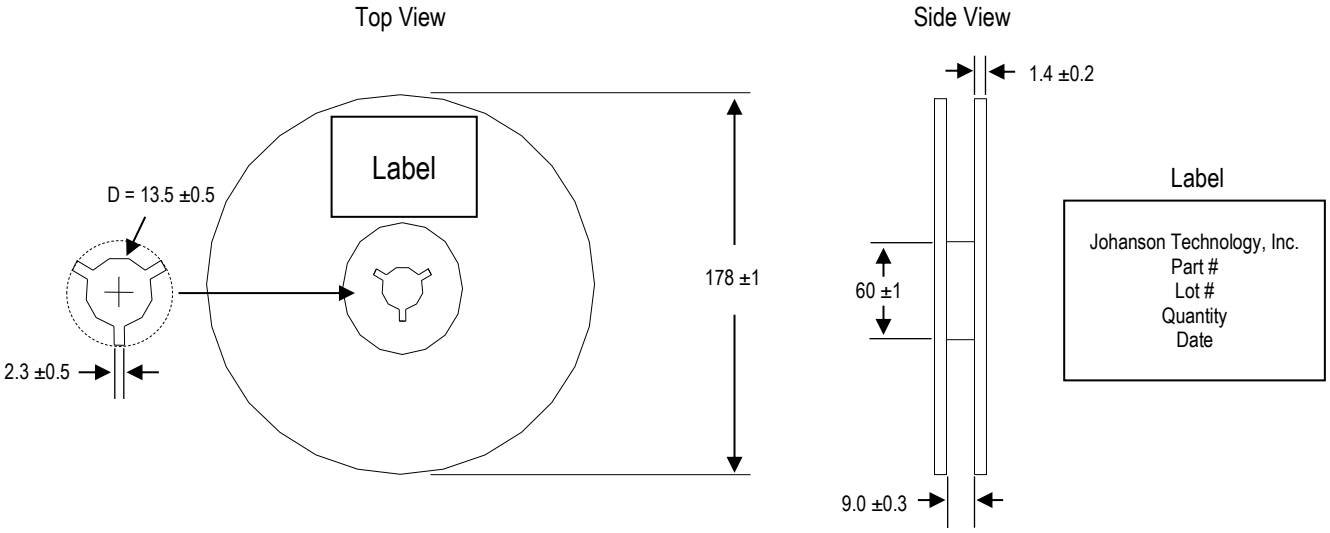
## Tape and Reel Specifications (Units in mm)

### Tape Dimensions

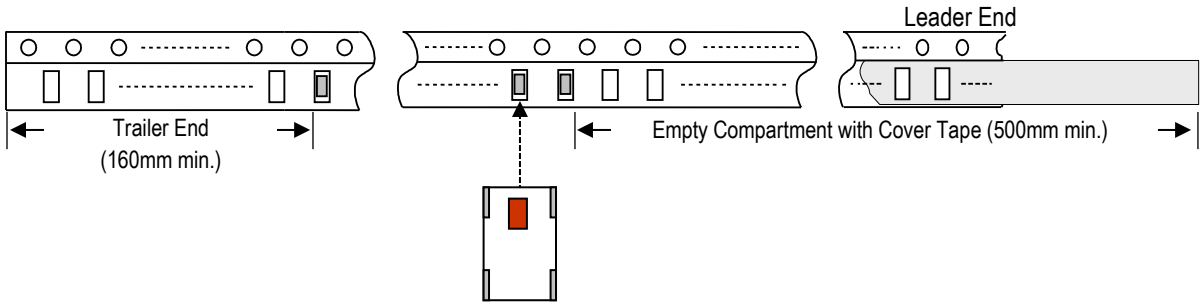



| A | A' | B | C | D | E | F | T | Quantity/reel | Tape material |
|---|---|---|---|---|---|---|---|---|---|
| 4.0 ±0.1 | 4.0 ±0.1 | 1.35 ±0.05 | 2.15 ±0.05 | 2.0 ±0.05 | 3.5 ±0.1 | 8.0 ±0.1 | 1.0 ±0.05 | 4,000pcs. | Plastic (Embossed) |

### Reel Dimensions




### Leader and Trailer Dimensions



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## Orderable Part Numbers

| Packaging Style | Part Number | Termination |
|---|---|---|
| Bulk (loose pcs.) | 1950CH15A0100001B | Nickel Tin |
| T & R (7" Reel Embossed Tape) | 1950CH15A0100001E (Qty: 4,000 pcs./reel) | |
| Evaluation Board with 4 SMA Connector | 1950CH15A0100001CE1 | |

## Important Links

1950CH15A0100001E Product Page

More Couplers

Antenna Tuning, Optimization, and Validation Services

Soldering Information

MSL Information

Packaging Information

Recommended Storage Condition and Max Shelf Life

RoHS Compliance

*Contact our application engineers for a PCB layout review.*





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