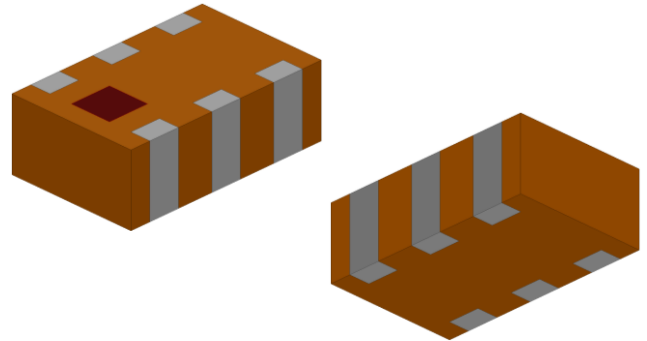


## Impedance-matched Integrated Passive Device (IPD) Balun + Filter for Texas Instruments (TI) +20dBm Transmit Mode

- Designed for the following Texas Instruments chipsets in +20dBm transmit mode
  - CC1352P
  - CC1352P7
  - CC1354P10
  - CC1311P3
  - CC1312P
- Replaces complex RF front end with single integrated passive device (IPD)
- SMD, EIA 0805



### General Specifications<sup>1</sup>

|   |   |
|---|---|
| <b>Passband Frequency (MHz)</b>           | <b>868, 902 – 928</b>   |
| Balanced Impedance ( $\Omega$ )           | Impedance-matched to TI CC1352P, CC1352P7, CC1354P10, CC1311P3, CC1312P |
| Unbalanced Impedance ( $\Omega$ )         | 50  |
| Insertion Loss (dB)                       | 1.6 Typ. (1.8 Max.)   |
| Return Loss (dB)                          | 9.5 Min.  |
| Phase Difference (degree)                 | 180 $\pm$ 8 Typ. (180 $\pm$ 15 Min./Max.)                               |
| Amplitude Difference (dB)                 | 1.0 Typ. (2.0 Max.)   |
| <b>Attenuation</b>                        |   |
| Frequency Range (MHz)<br>Attenuation (dB) | 1736<br>23 Min.   |
| Frequency Range (MHz)<br>Attenuation (dB) | 1830<br>30 Min.   |
| Frequency Range (MHz)<br>Attenuation (dB) | 2604 - 2745<br>55 Min.  |
| Frequency Range (MHz)<br>Attenuation (dB) | 3472 - 3660<br>45 Min.  |
| Frequency Range (MHz)<br>Attenuation (dB) | 4340 - 4575<br>30 Min.  |
| Frequency Range (MHz)<br>Attenuation (dB) | 5208 - 5490<br>20 Min.  |

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

**Maximum Ratings**

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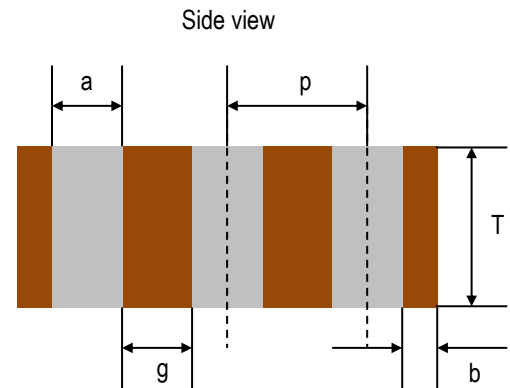
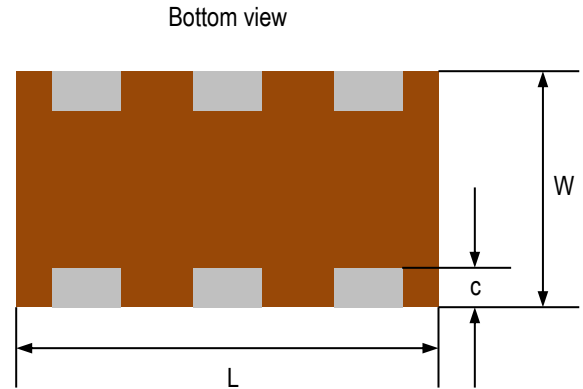
|   |   |
|---|---|
| Power Capacity (W)  | 1 Max. (CW)                                   |
| Operating Temperature (°C)  | -40 to +105                                   |
| Recommended Storage Conditions post-installation (°C)                         | -40 to +105                                   |
| Recommended Storage Conditions and Period for Unused T&R Product <sup>2</sup> | 45% - 60% RH<br>+5 to +35°C<br>18 Months Max. |

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<sup>2</sup> 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>.

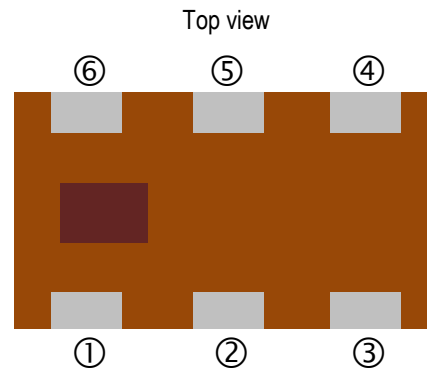
**Mechanical Dimensions**

|          | Inches |   |               | Millimeters |   |             |
|----------|--------|---|---------------|-------------|---|-------------|
| <b>L</b> | 0.079  | ± | 0.004         | 2.00        | ± | 0.10        |
| <b>W</b> | 0.049  | ± | 0.004         | 1.25        | ± | 0.10        |
| <b>T</b> | 0.031  | ± | 0.004         | 0.80        | ± | 0.10        |
| <b>a</b> | 0.012  | ± | 0.004         | 0.30        | ± | 0.10        |
| <b>b</b> | 0.008  | ± | 0.004         | 0.20        | ± | 0.10        |
| <b>c</b> | 0.012  |   | +0.004/-0.008 | 0.30        |   | +0.10/-0.20 |
| <b>g</b> | 0.014  | ± | 0.004         | 0.35        | ± | 0.10        |
| <b>p</b> | 0.026  | ± | 0.002         | 0.65        | ± | 0.05        |



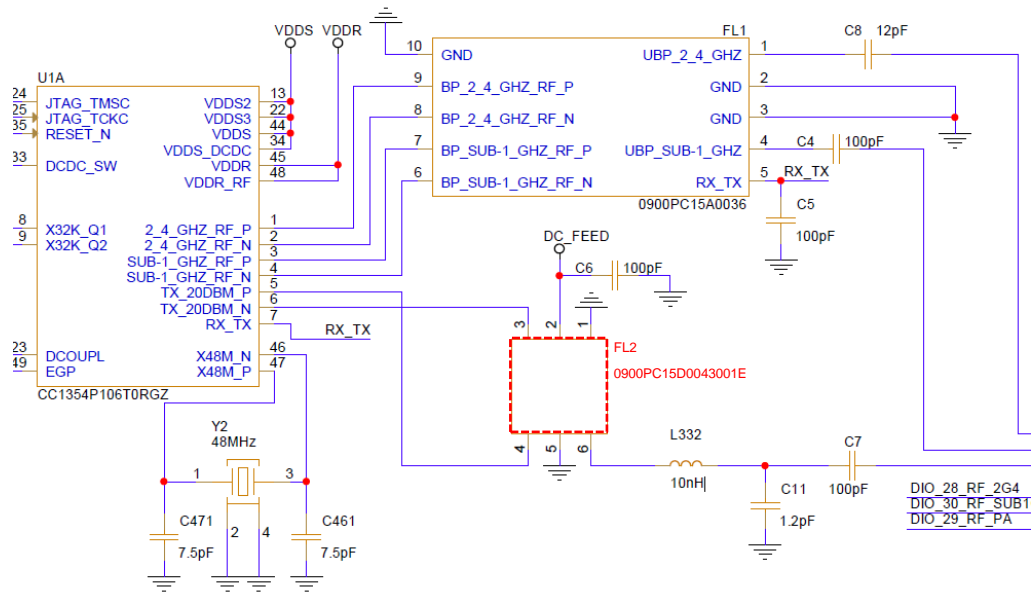
**Terminal Configuration<sup>3</sup>**

| Pin Number | Function        |
|------------|-----------------|
| 1          | GND             |
| 2          | DC Feed         |
| 3          | Balanced Port   |
| 4          | Balanced Port   |
| 5          | GND             |
| 6          | Unbalanced Port |

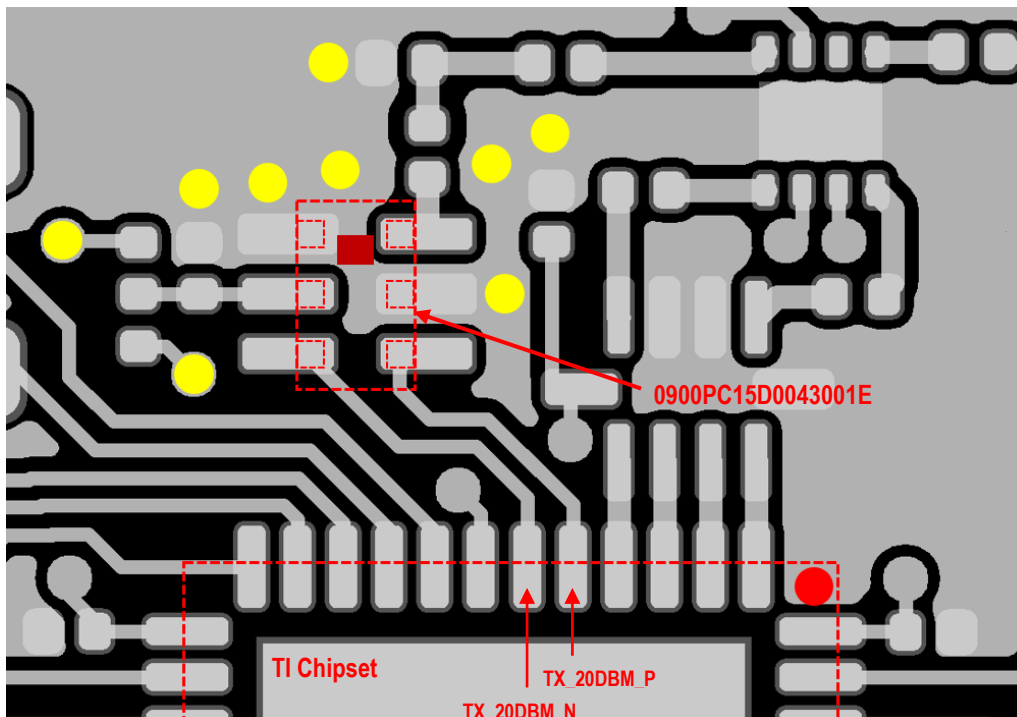


<sup>3</sup> The termination type is Silver. Go to: <https://www.johansontechnology.com/ipcsoldering-profile> for Typical Soldering Profile. Recommended Solder Paste: SAC 305 type.

**Reference Schematic**

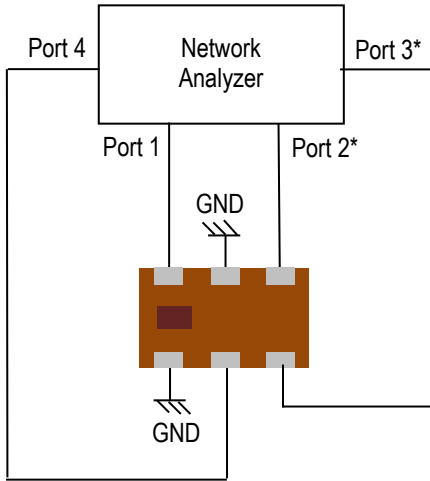


**Reference Design PCB Layout**



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

**Measuring Diagram**



Port 1: Unbalanced Port

Ports 2 and 3: Balanced Port

Port 4 : 100pF matching

$$IL = S_{ds21}$$

$$RL = S_{ss11}$$

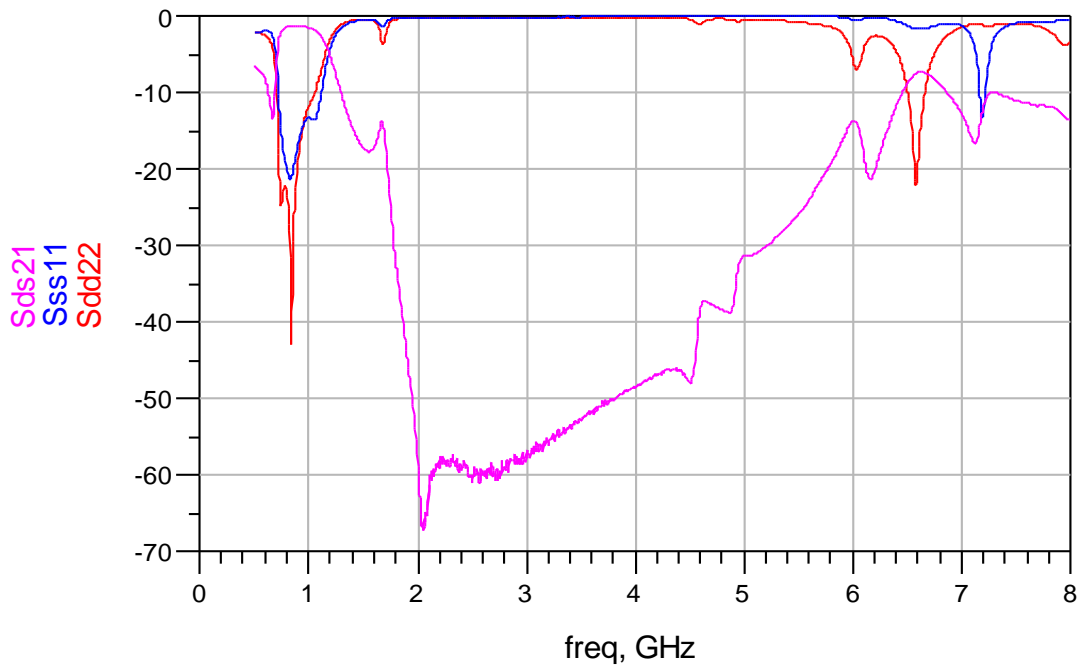
$$\text{Amplitude balance} = \text{dB}(S(2,1)/S(3,1))$$

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

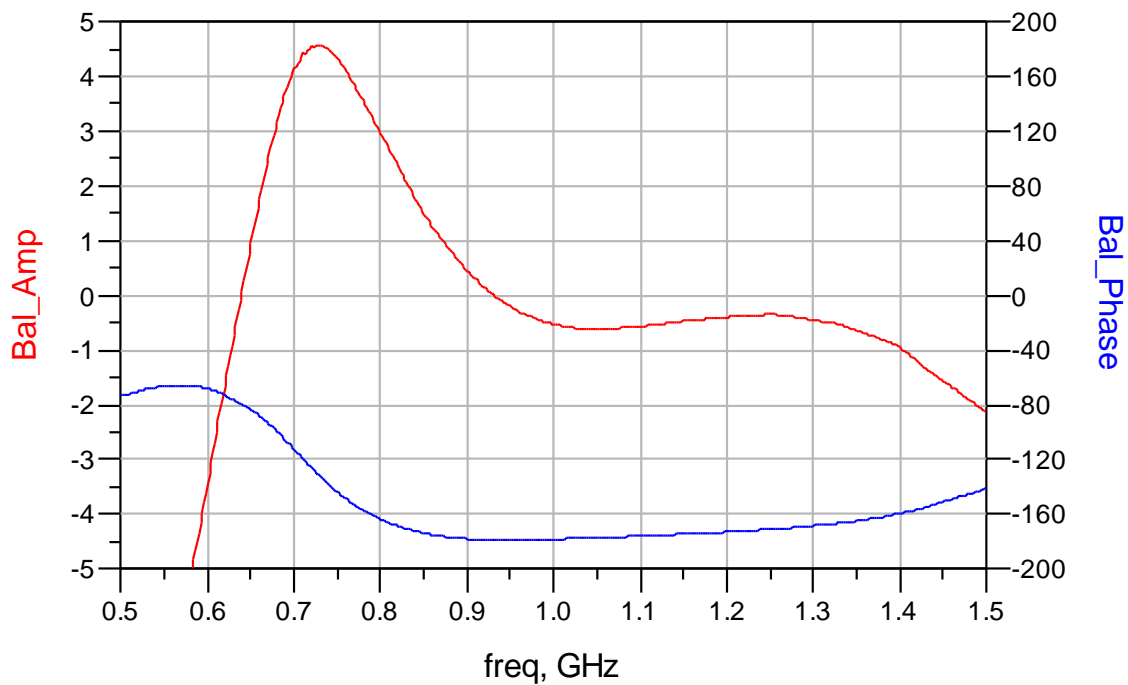
\*Impedance for ports 2 and 3 = Conjugate to Balanced Impedance/2

**RF Measurement (T = 25°C)**

**Insertion Loss, Return Loss, Attenuation**



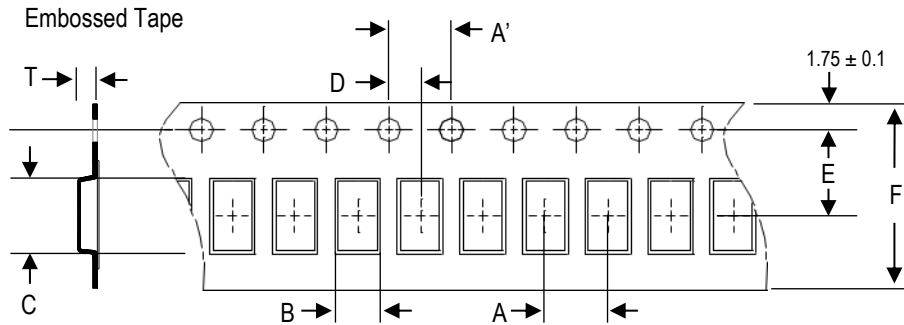
**Amplitude and Phase Balance**



S-parameters and layouts file available upon request. Please contact us at <https://www.johansontechnology.com/ask-a-question>

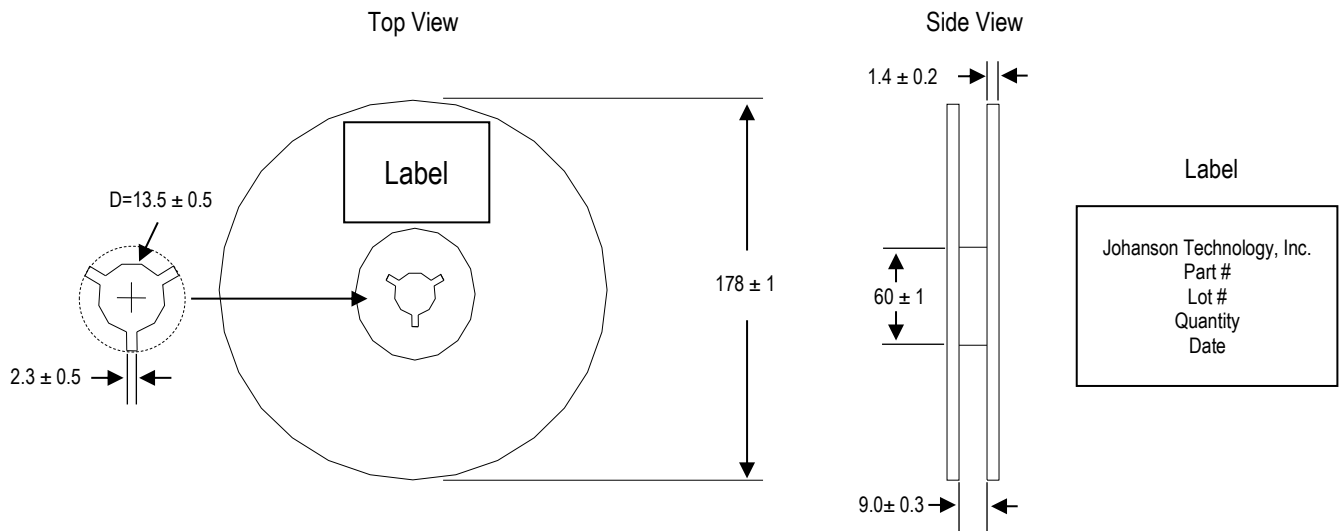
**Tape and Reel Specification (Units in mm)**

**Tape Dimensions**

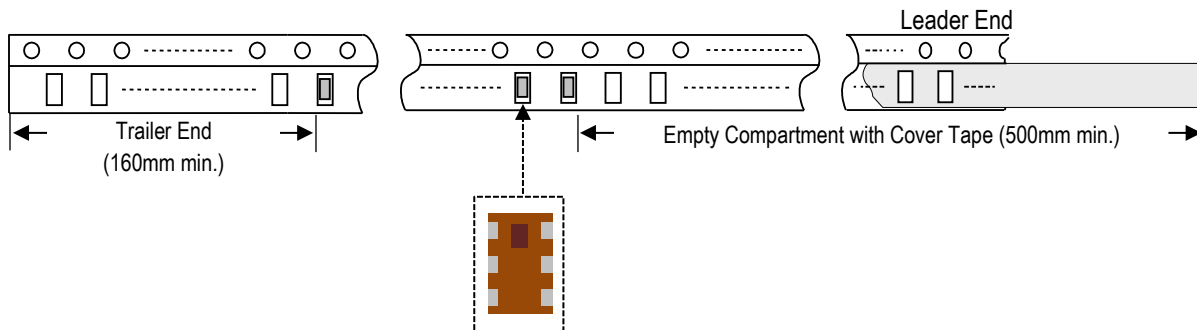


| A       | A'      | B         | C         | D        | E       | F       | T         | Quantity/reel | Tape material      |
|---------|---------|-----------|-----------|----------|---------|---------|-----------|---------------|--------------------|
| 4.0±0.1 | 4.0±0.1 | 1.35±0.05 | 2.15±0.05 | 2.0±0.05 | 3.5±0.1 | 8.0±0.1 | 1.00±0.05 | 4,000pcs      | Plastic (Embossed) |

**Reel Dimensions**



**Leader and Trailer Dimensions**



**Orderable Part Number**

| Packaging Style               | Part Number                              | Termination |
|-------------------------------|--|-------------|
| Bulk (loose pcs.)             | 0900PC15D0043001B                        | Silver      |
| T & R (7" Reel Embossed Tape) | 0900PC15D0043001E (Qty: 4,000 pcs./reel) |             |

**Important Links**

[0900PC15D0043001E Product Page](#)

[More Texas Instruments](#)

[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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