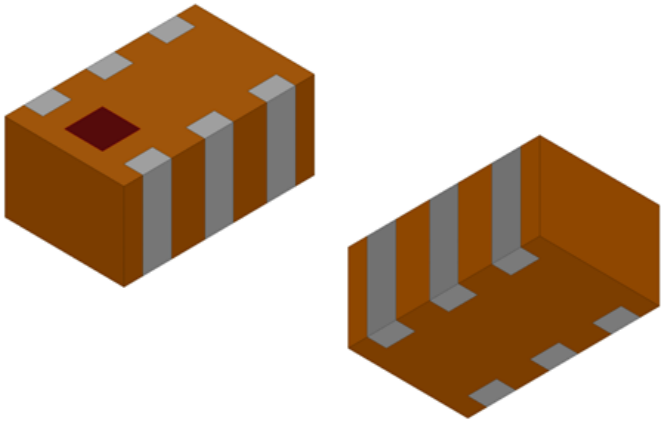
863 – 873 MHz Integrated Balun-filter for Texas Instruments Chipsets

- 863 - 873 MHz ISM bands
- SMD, EIA 0805
- Complete front-end RF solution
  - Integrated impedance-matching balun and filter
  - Integrated harmonic filter for regulatory compliance
- Designed for use with Texas Instruments MCU chipsets and series:
  - CC110X, CC111X, CC113X, CC115X
  - CC110L, CC113L, CC115L
  - CC430, RF430



General Specifications[1]

Passband Frequency (MHz)	**863 - 873**
Unbalanced Impedance, Antenna-side (Ω)	50
Balanced Impedance, Transceiver-side (Ω)	Impedance match to Texas Instruments CC110X, CC111X, CC113X, CC115X, CC110L, CC113L, CC115L, CC430, RF430
Insertion Loss (dB)	2.1 Max
Return Loss (dB)	9.5 Min.
Phase Difference (Degree)	180 ± 15
Amplitude Difference (dB)	1.5 Max.
Attenuation	
Frequency Range (MHz) Attenuation (dB)	699 10 Min.
Frequency Range (MHz) Attenuation (dB)	1736 30 Min.
Frequency Range (MHz) Attenuation (dB)	2604 35 Min.
Frequency Range (MHz) Attenuation (dB)	4340 30 Min.

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

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Maximum Ratings

Power Capacity (W)	1 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[2]	45% - 75% RH +5 to +35 °C 18 Months Max.

[2] 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.

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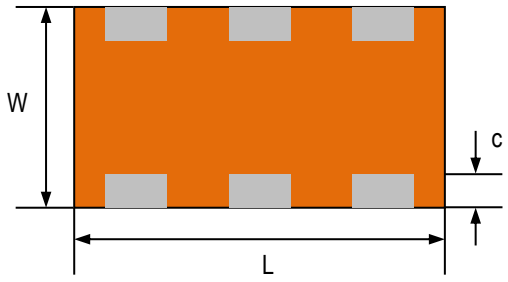
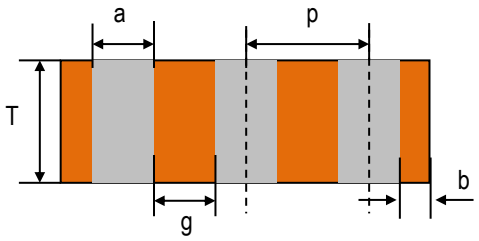
Mechanical Dimensions

	Inches			Millimeters		
L	0.079	±	0.004	2.00	±	0.10
W	0.049	±	0.004	1.25	±	0.10
T	0.028	±	0.004	0.70	±	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



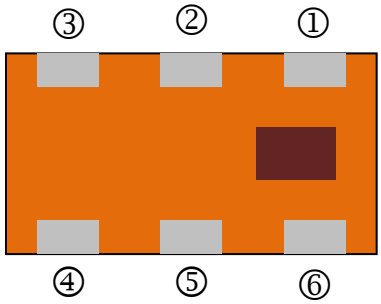
Side view



Terminal Configuration[3]

Pin Number	Function
1	Unbalanced
2	GND
3	Balanced Port
4	Balanced Port
5	GND
6	GND

Top view



[3] The termination type is Silver. Go to: https://www.johansontechnology.com/ipcsoldering-profile for Typical Soldering Profile.

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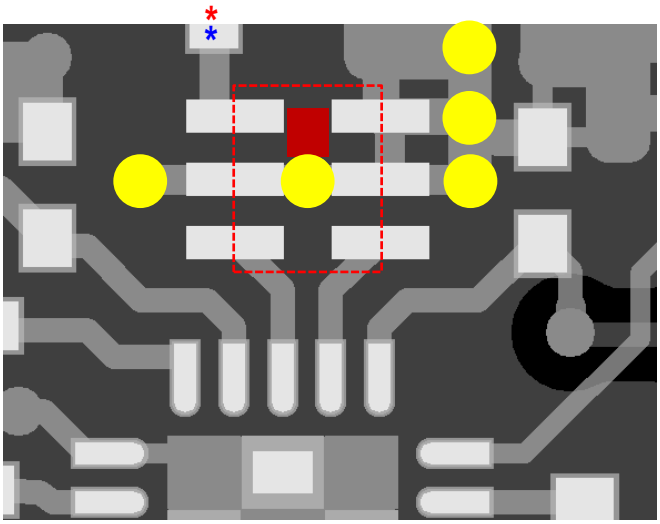
PCB Reference Design Layout



Solder Resist

Solder Pads

GND Via

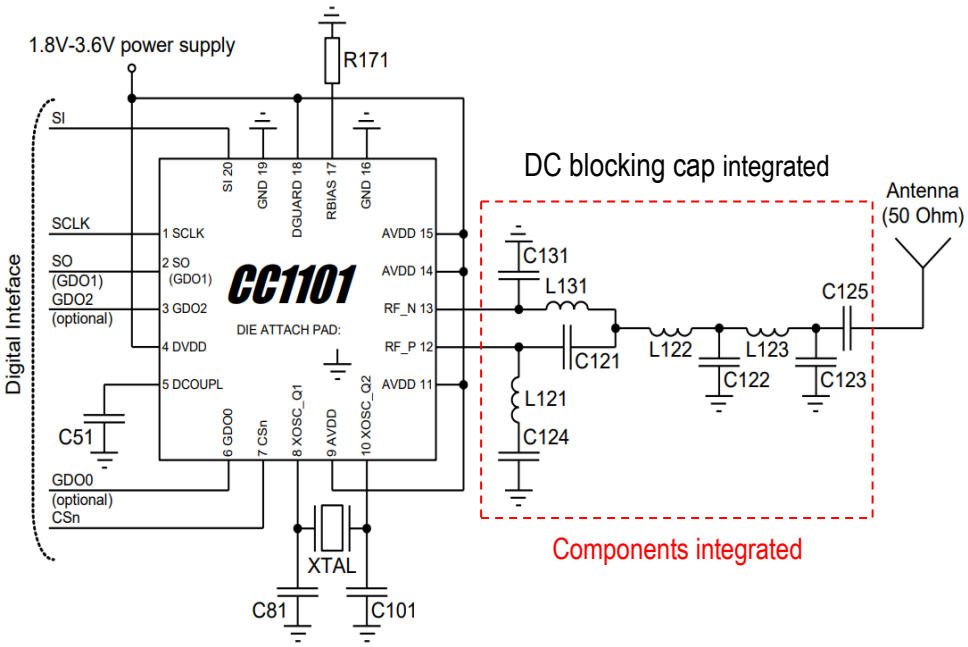
NOTE: GND via placement is crucial to the harmonic attenuation capability of the filter.

* DC-blocking capacitor embedded. External DC-blocking cap not necessary.

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

We recommend designers to follow the official reference design in Texas Instruments Design Note DN025.

Equivalent Integrated Circuit



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

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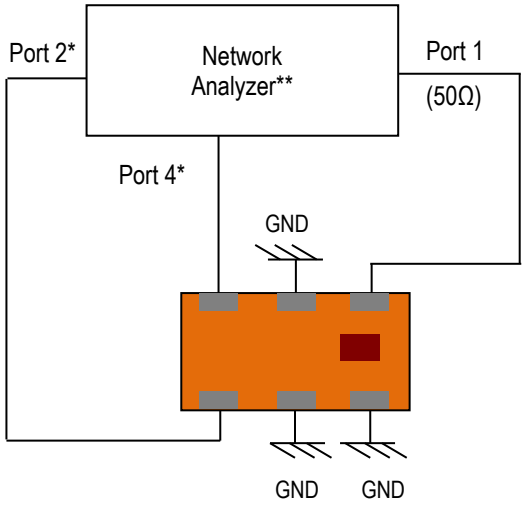
Measuring Diagram



Port 1: Unbalanced

Ports 2 and 4: Balanced

Insertion Loss= S_{DS21}

Return Loss=S_{SS11}

Amplitude Difference = dB(S(2,1)/S(4,1))

Phase Difference = Phase(S(2,1)/S(4,1))

*Ports 2 and 4: Conjugate match to TI chipsets (Page 1)

** E5071B from Agilent

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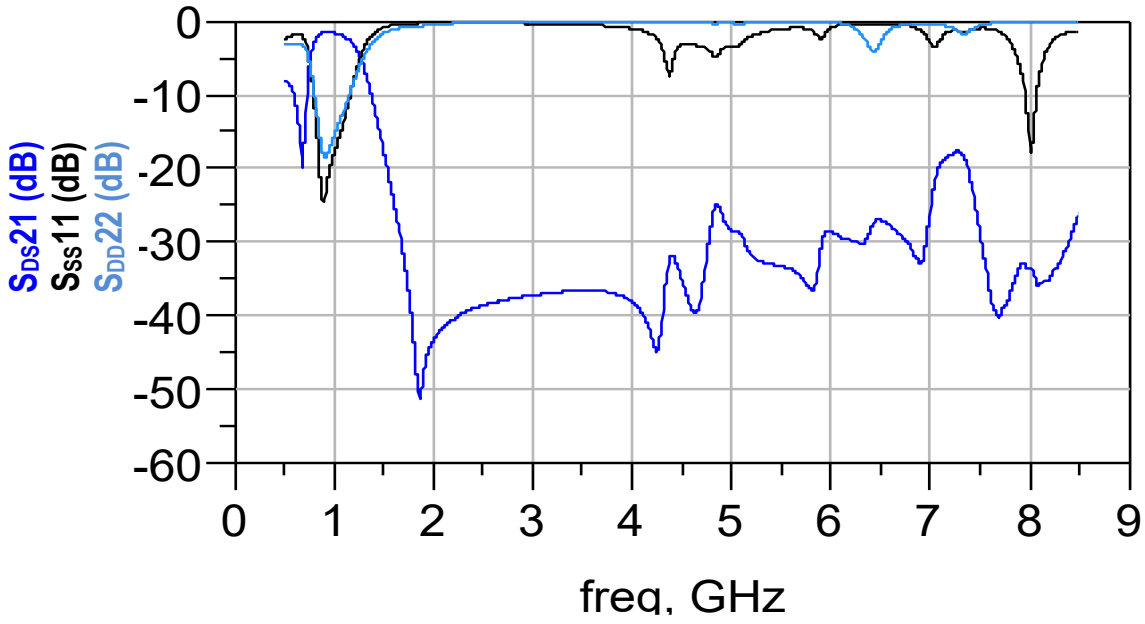
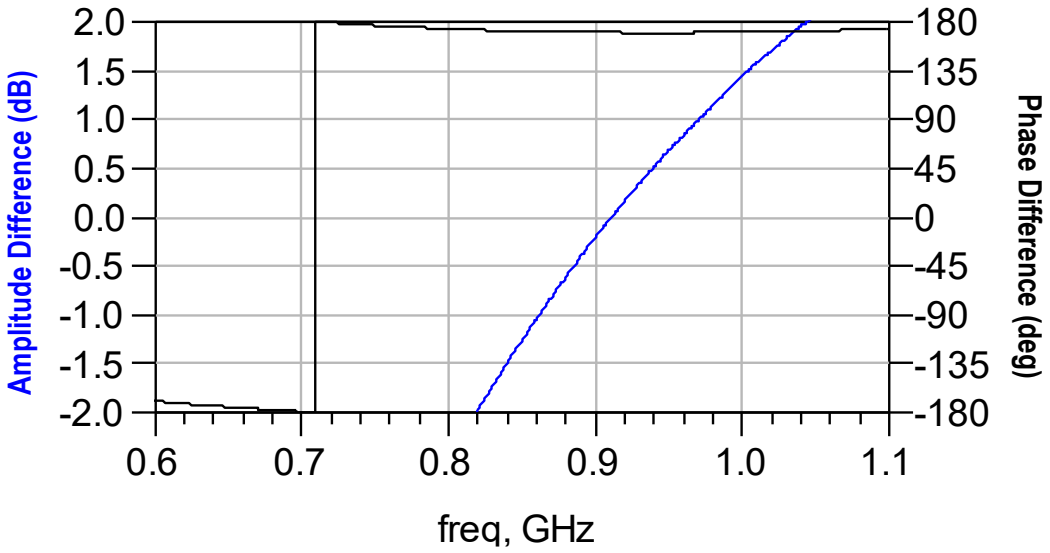
RF Measurement

Insertion Loss, Return Loss, Attenuation



Phase Difference, 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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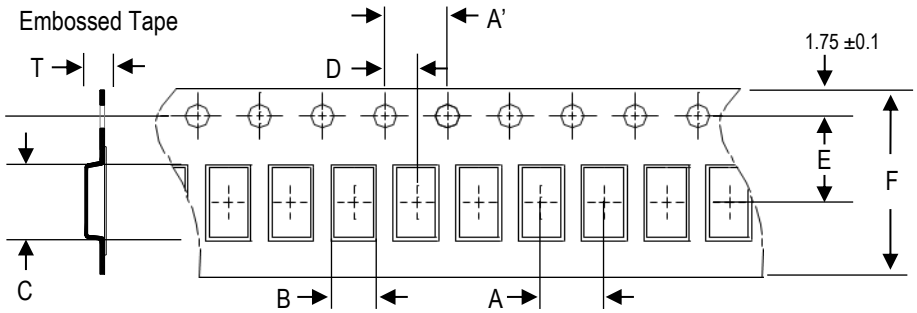
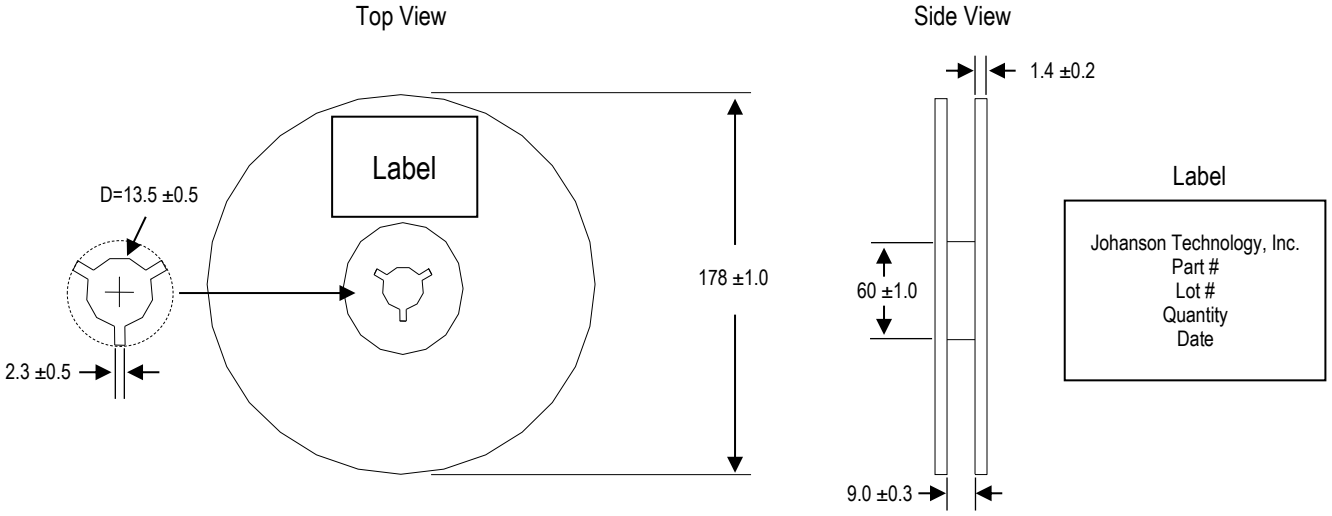
Tape and Reel Specification (Units in mm)

Tape Dimensions

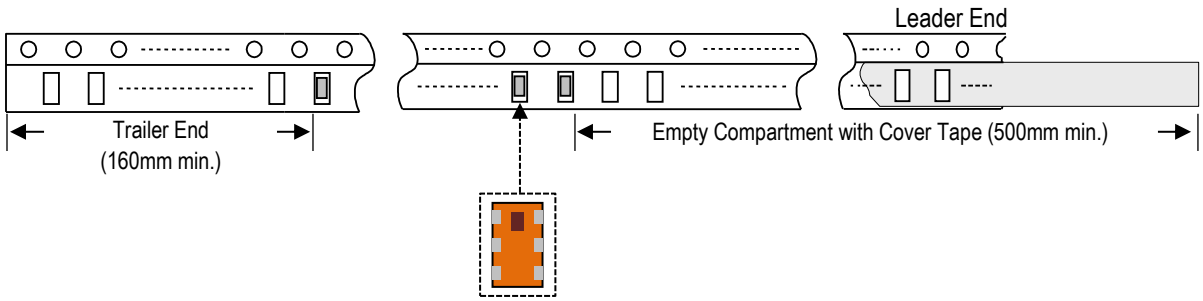


A	A'	B	C	D	E	F	T	Quantity/reel	Tape material
4.0 ± 0.1	4.0 ± 0.1	1.35 ± 0.05	2.15 ± 0.05	2.0 ± 0.05	3.5 ± 0.1	8.0 ± 0.1	1.00 ± 0.05	4,000 pcs	Plastic (Embossed)

Reel Dimensions



Leader and Trailer Dimensions



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Orderable Part Number

Packaging Style	Part Number	Termination
Bulk (loose pcs.)	0868BM15C0001001B	Silver
T & R (7" Reel Embossed Tape)	0868BM15C0001001E (Qty: 4,000 pcs/reel)	

Important Links

0868BM15C0001001E Product Page

Texas Instruments Design Note DN025

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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