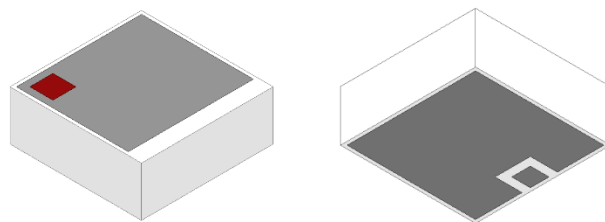


7987 MHz RF Ceramic Patch Antenna

- 7987MHz ± 100 MHz operational frequency
- UWB Channel 9, ranging and radar applications
- SMD, patch, 4x4 x1.5mm (LxWxT)
- Can be mounted in the center, corner or edge
- Broadly linear polarization
- RoHS compliant



Johanson Technology, Inc. (JTI) miniature RF ceramic chip antennas are made using Low Temperature Co-fired Ceramic (LTCC) technology which has the ability to embed low and high dielectric constants inside our antenna. This enables our components to have high detuning resilience and stability over extreme temperatures (~2ppm).

Recommended mounting locations for this antenna

PCB Center

Edge/Corner



General Specifications^{1 2}

Operational Frequency (MHz)	7887 - 8087
Impedance (Ω)	50
Return Loss (dB)	6 Min.
Peak Gain (dBi)	3.5 Typ.
Average Radiated Efficiency (%)	47

Maximum Ratings

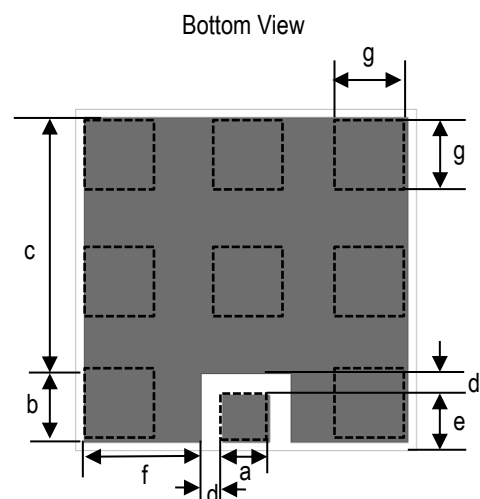
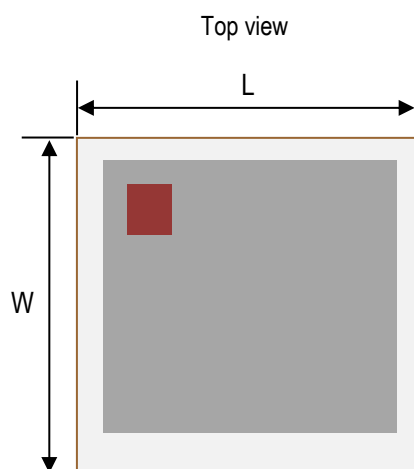
Power Capacity (W)	1 Max. (CW)
Operating Temperature ($^{\circ}$ C)	-40 to +85
Recommended Storage Conditions post-installation ($^{\circ}$ C)	-40 to +85
Recommended Storage Conditions and Period for Unused T&R Product	45% - 75% RH +5 to +35 $^{\circ}$ C 18 Months Max.

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

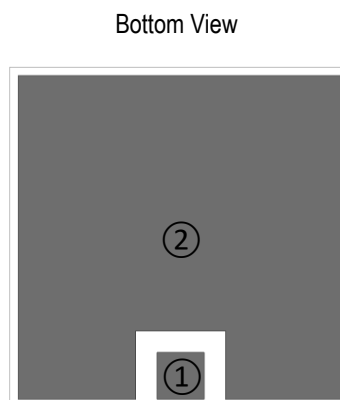
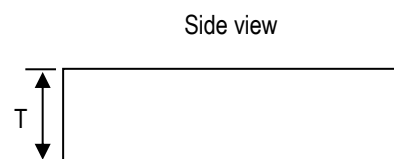
² General specifications measured on Johanson's evaluation board P/N 7987AT45A0200001CE1.

Mechanical Dimensions

	Inches			Millimeters		
L	0.157	±	0.008	4.00	±	0.20
W	0.157	±	0.008	4.00	±	0.20
T	0.059	±	0.004	1.50	±	0.10
a	0.022	±	0.008	0.55	±	0.20
b	0.031	±	0.002	0.80	±	0.05
c	0.118	±	0.008	3.00	±	0.20
d	0.010	±	0.008	0.25	±	0.20
e	0.026	±	0.008	0.65	±	0.20
f	0.054	±	0.008	1.375	±	0.20
g	0.035	±	0.008	0.89	±	0.20



Recommended Solder Pads



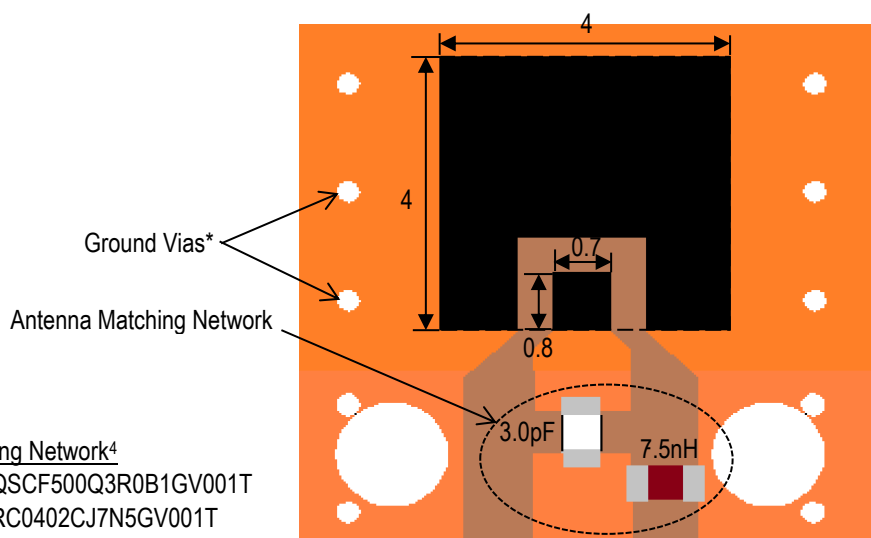
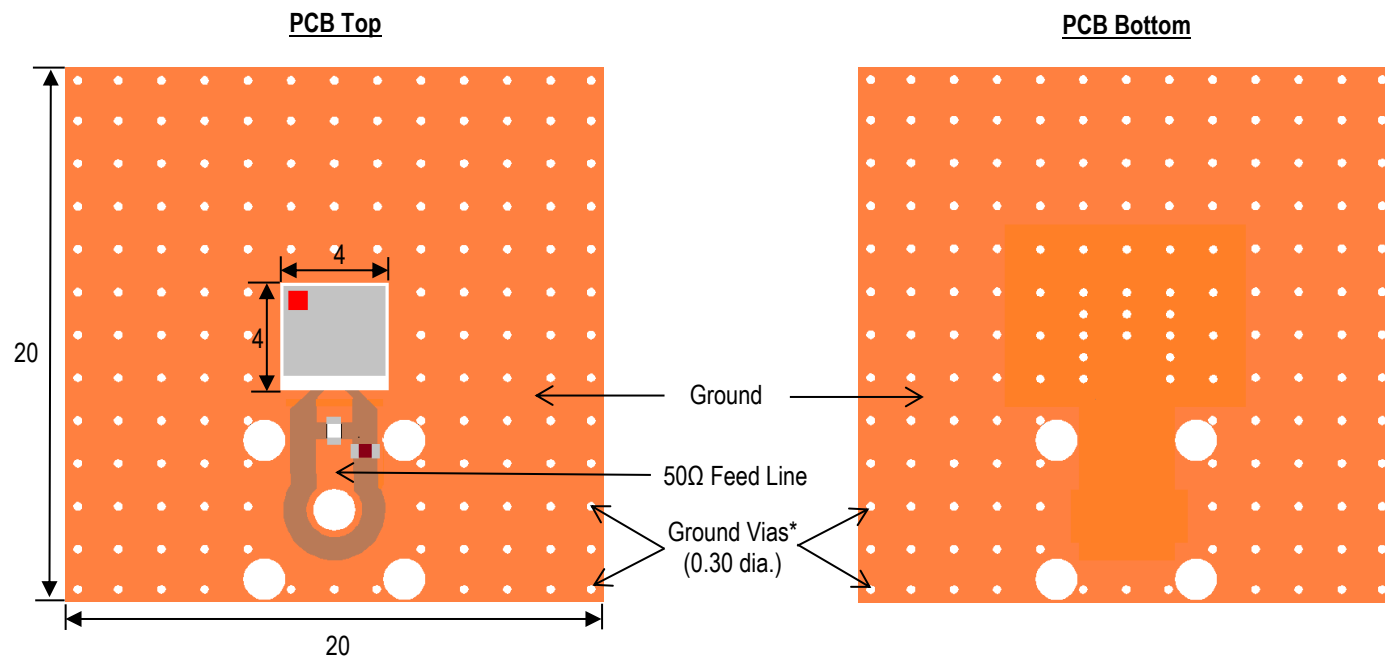
Terminal Configuration³

Pin Number	Function
1	Feed
2	GND

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

Evaluation Board and Recommended Mounting Configuration (P/N 7987AT45A0200001CE1)

All units in mm



JTI P/N's for Matching Network⁴

Capacitor (3.0pF): QSCF500Q3R0B1GV001T

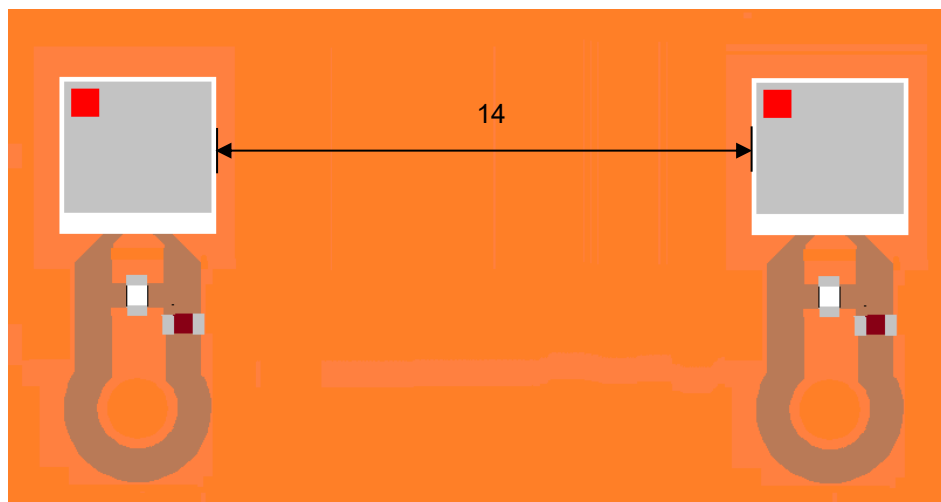
Inductor (7.5nH): LRC0402CJ7N5GV001T

*Note: Ground Vias are highly recommended to have better antenna efficiency.

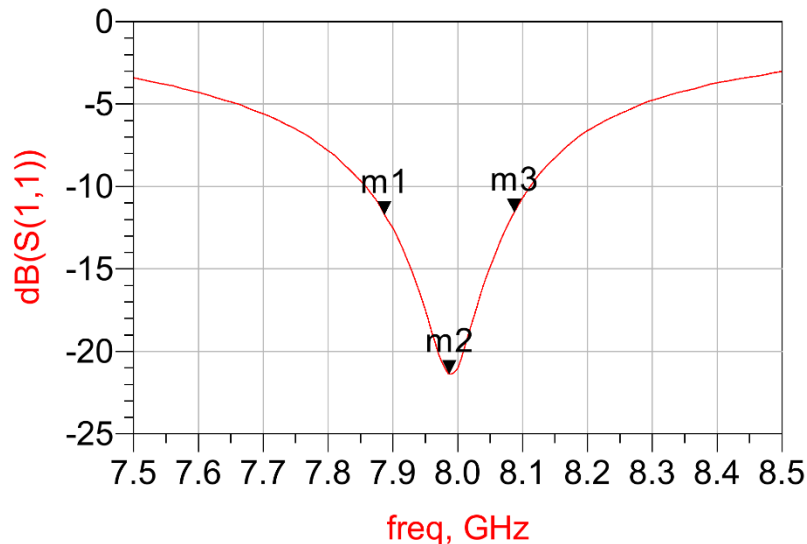
If you'd like the CAD PCB layout or have any questions,
contact our application engineers at <https://www.johansontechnology.com/ask-a-question>

⁴ It is recommended that the designer leave available slots for a "pi" (or shunt-series-shunt) network. The antenna matching network values above are used when antenna is mounted on Johanson's evaluation board. The matching values on client's PCB will be different, depending on the layout, thickness, material, etc. Go to: <https://www.johansontechnology.com/tuning> and see how to obtain the new values.

Recommended distance between antennas (for antenna array)

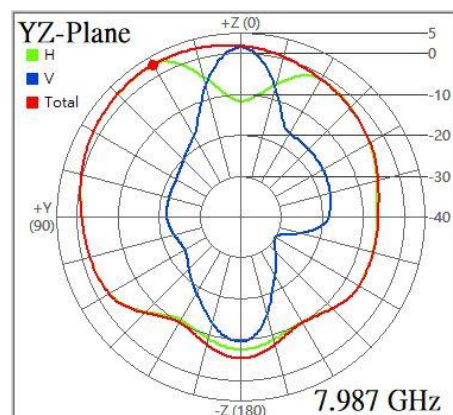
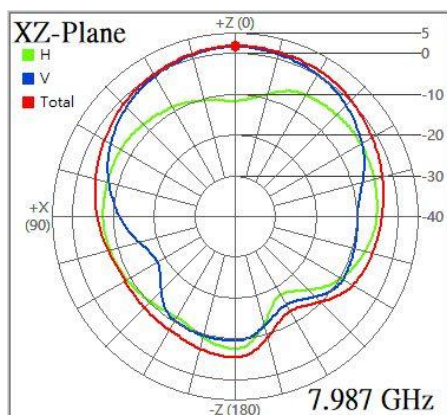
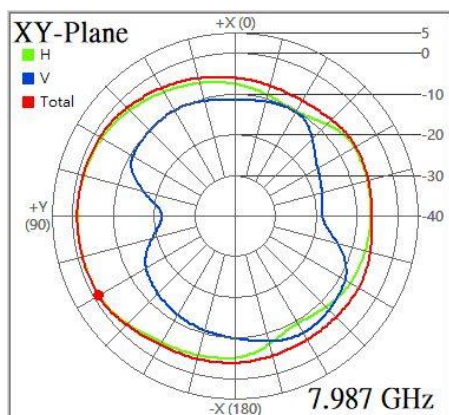
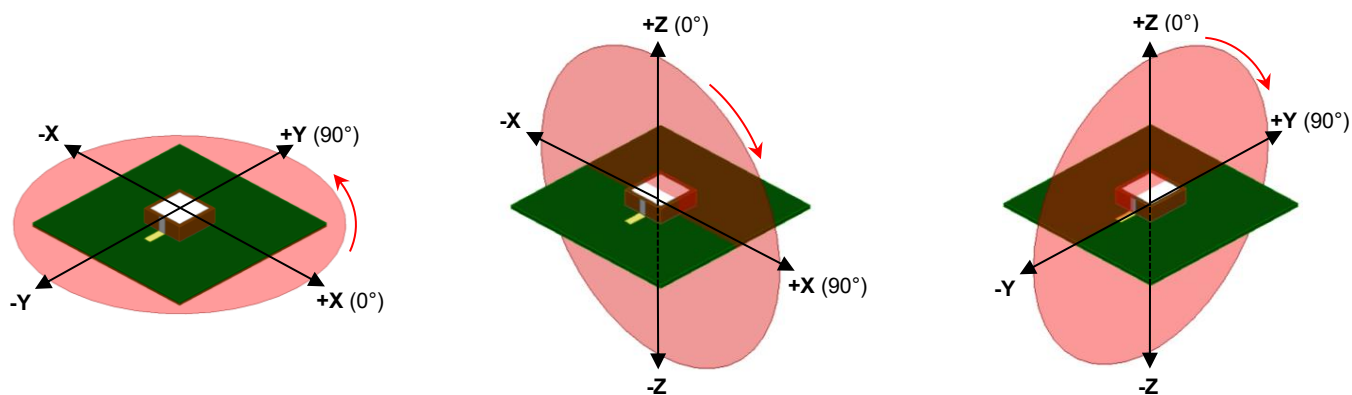


Evaluation Board Typical Return Loss Measurement (P/N 7987AT45A0200001CE1)



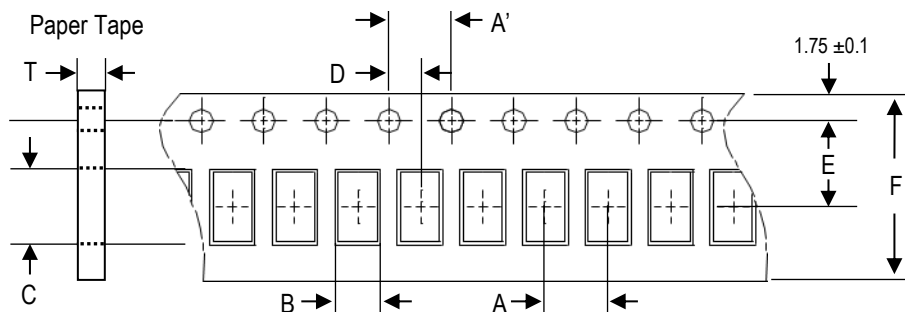
m1 freq=7.887GHz dB(S(1,1))=-11.705	m2 freq=7.987GHz dB(S(1,1))=-21.357	m3 freq=8.087GHz dB(S(1,1))=-11.566
---	---	---

Evaluation Board Typical 2D Radiation Patterns @7987 MHz (P/N 7987AT45A0200001CE1)



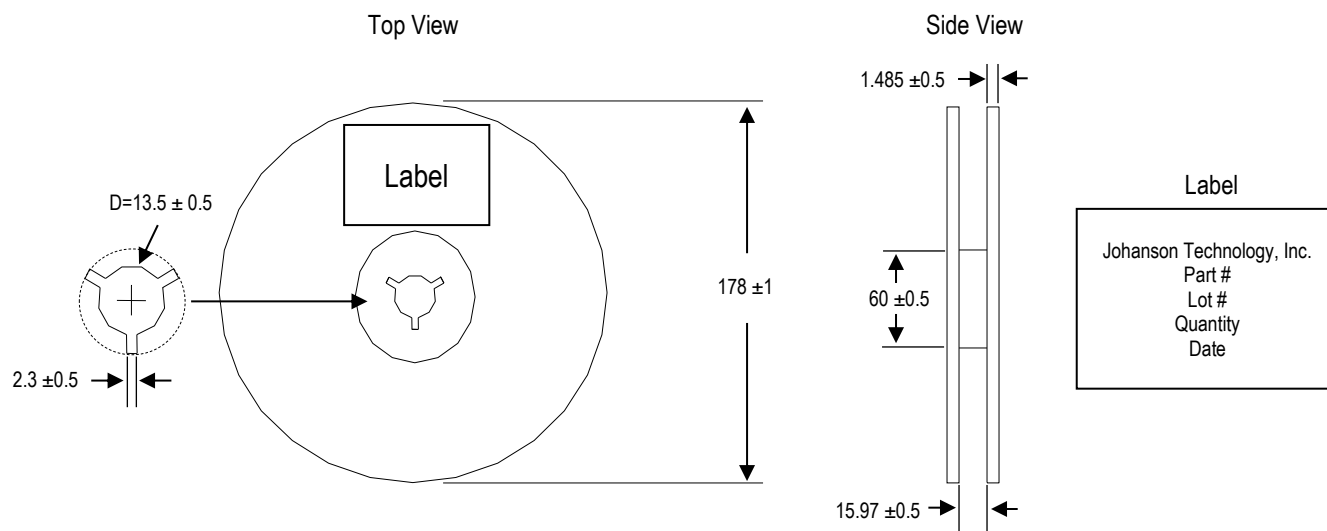
Tape and Reel Specification (Units in mm)

Tape Dimensions

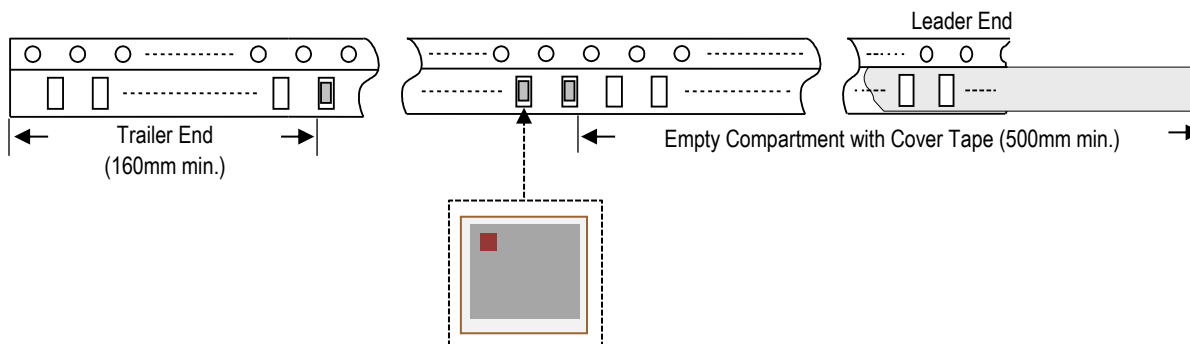


A	A'	B	C	D	E	F	T	Quantity/reel	Tape material
8.0 ±0.1	4.0 ±0.1	4.3 ±0.1	4.3 ±0.1	2.0 ±0.1	5.5 ±0.1	12.0 ±0.15	1.65 ±0.1	1,000pcs.	Plastic (Embossed)

Reel Dimensions



Leader and Trailer Dimensions



Orderable Part Number

Packaging Style	Part Number	Termination
Bulk (loose pcs.)	7987AT45A0200001B	Nickel Tin
T & R (13" Reel Embossed Tape)	7987AT45A0200001E (Qty: 1,000 pcs./reel)	
Evaluation Board with 1 SMA Connector	7987AT45A0200001CE1	

Important Links

[7987AT45A0200001E Product Page](#)

[More RF Chip Antennas](#)

[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.

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