

Part No. P622301

Embedded FR4 LTE-M/ NB-IoT / LPWA Antenna

700-960 MHz; 1710-2170 MHz

Supports: LTE-M, NB-IoT, SigFox, LoRa, Cellular LPWA



KYOCERA AVX's standard antennas provide high performance. They require a smaller design keep-out area, carry lower program development risk which yields a quicker time-to-market, without sacrificing RF performance. This center feed LTE antenna provides flexible tuning options within a small PCB form factor.

Embedded FR4 LTE-M/ NB-IoT / LPWA Antenna

Low Band 700 – 960 MHz

High Band 1710 - 2170 MHz

KEY BENEFITS

Reduced Costs and Time-to-Market

Standard antenna eliminates design fees and cycle time associated with a custom solution; getting products to market faster.

Greater Flexibility with Unique Form Factors

Ethertronics' technology helps you deliver more advanced ergonomic designs without adverse impact on product performance.

Environmental Compliance

Comply with latest RoHS requirements

APPLICATIONS

- IoT
- Healthcare (FDA Class I)
- Smart Metering
- Tracking
- M2M
- Industrial Devices

Electrical Specifications

Typical Characteristics, on 60 x 40 mm PCB

Frequency	700 - 960 MHz	1710 - 2170 MHz
Efficiency	15%	45%
Return Loss	< -2.25 dB	< -3.0 dB
Peak Gain	-0.89 dBi	1.06 dBi
Polarization	Linear	
Power Handling	2 Watts CW	
Radiation Pattern	Omni-directional	
Feed Point Impedance	50 ohms unbalanced	
Additional Resources	Download Simulation Files	

Mechanical Specifications & Ordering Part Number

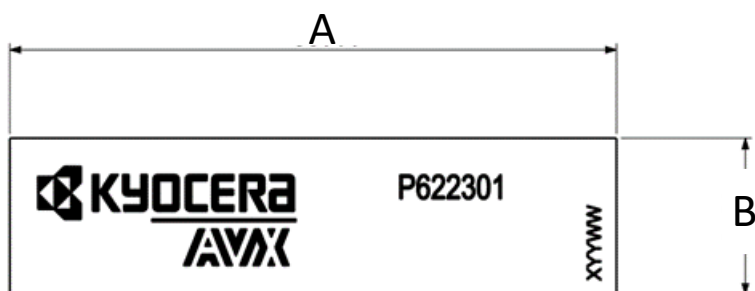
Ordering Part #	P622301
Dimensions (mm)	35.0 x 9.0 x 3.2
Weight (grams)	2.1
Mounting	SMT (P&P)
Packaging	1,120 pcs/reel; 5,600 pcs/box
Demo Board	P622301-01
Additional Resources	Download DXF File

Embedded FR4 LTE-M/ NB-IoT / LPWA Antenna Specifications.
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

Antenna Dimensions

Typical antenna dimensions (mm)

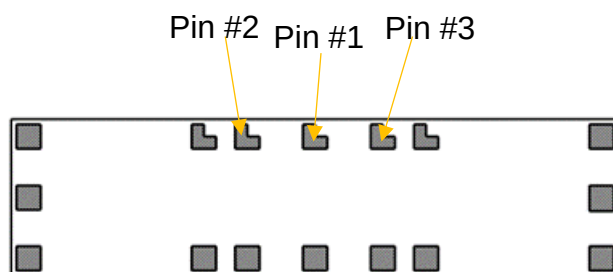
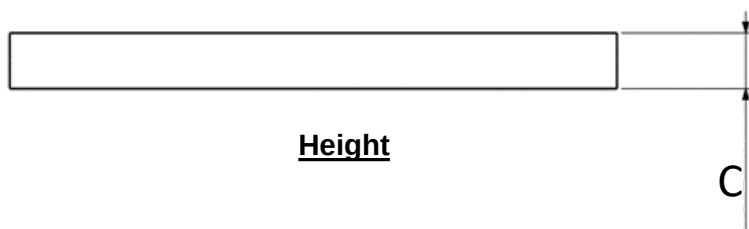
Part Number	A	B	C
P622301	35.0	9.00	3.2 ± 0.3



Top View

Pin Descriptions

Pin#	Description
1	Feed
2	Tuning Pad
3	Tuning Pad

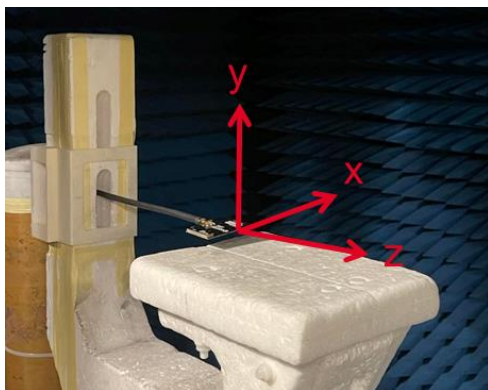


Bottom View

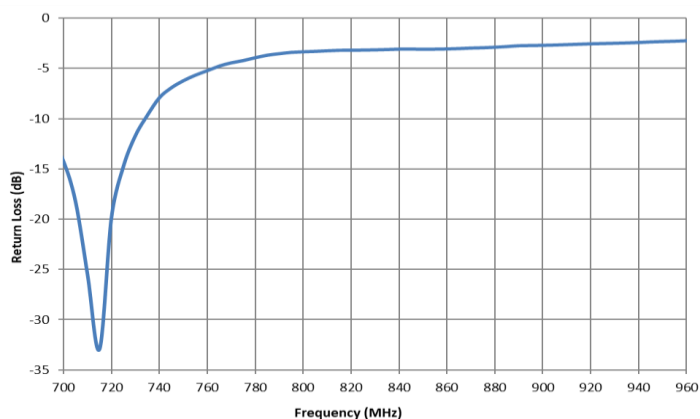
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Return Loss and Efficiency Plots

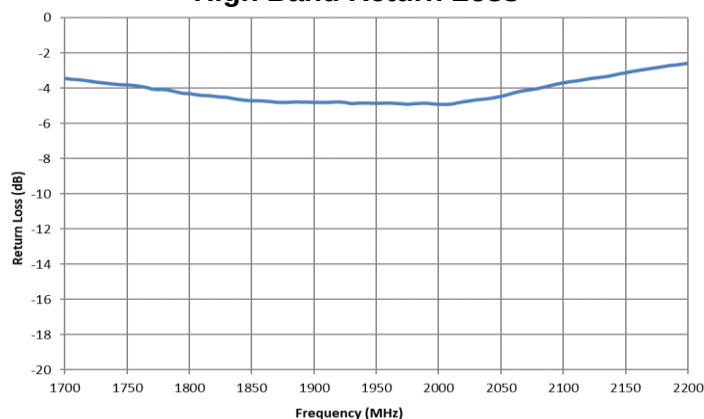
Typical Performance on 60 x 40 mm PCB



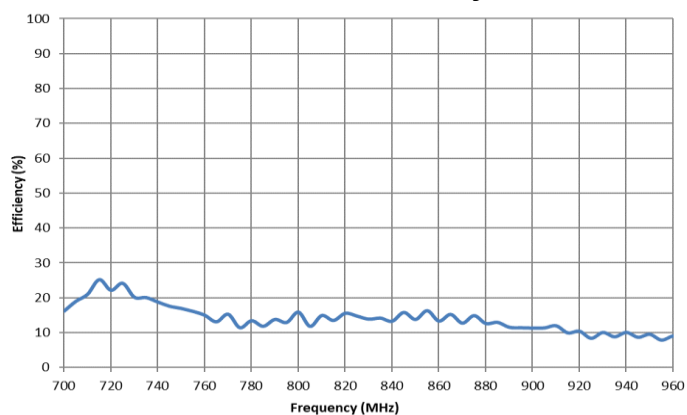
Low Band Return Loss



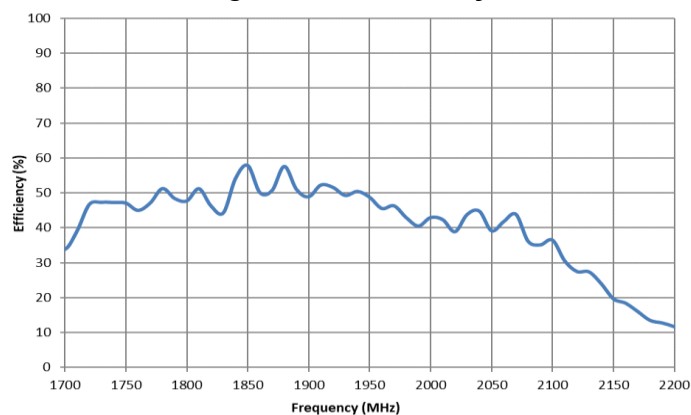
High Band Return Loss



Low Band Efficiency



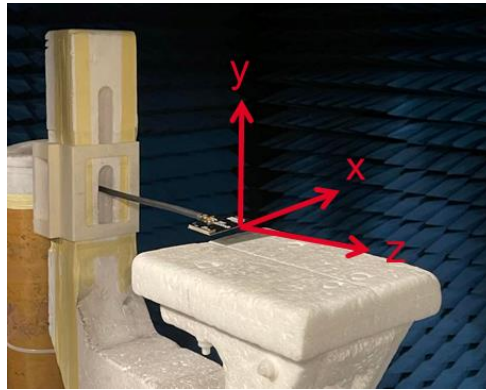
High Band Efficiency



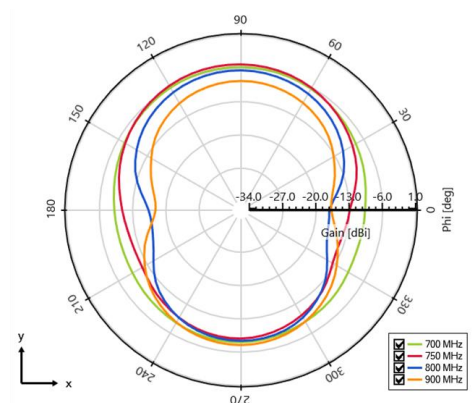
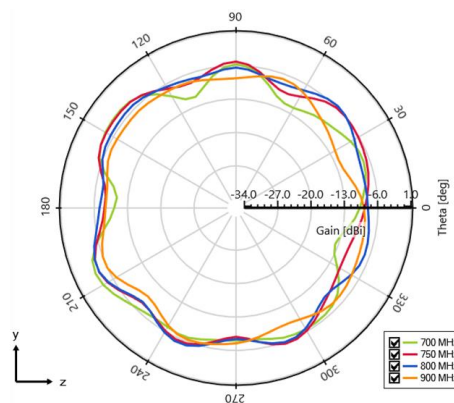
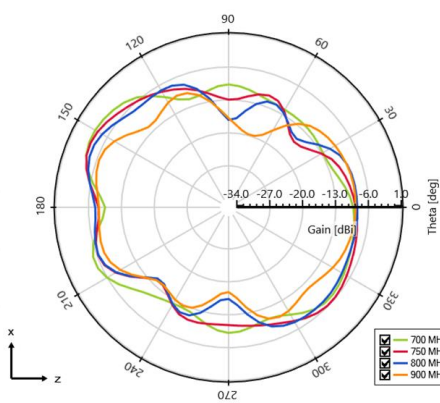
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Antenna Radiation Patterns (Low & High Band)

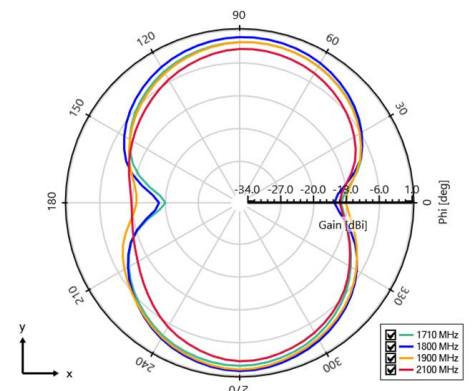
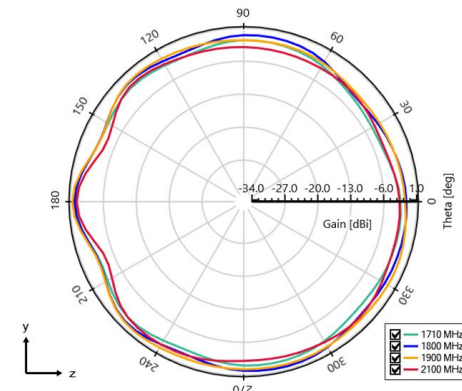
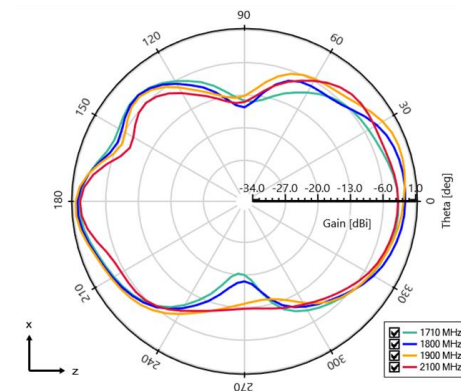
Typical Performance on 60 x 40 mm PCB



Measured at
700,750,800,900 MHz



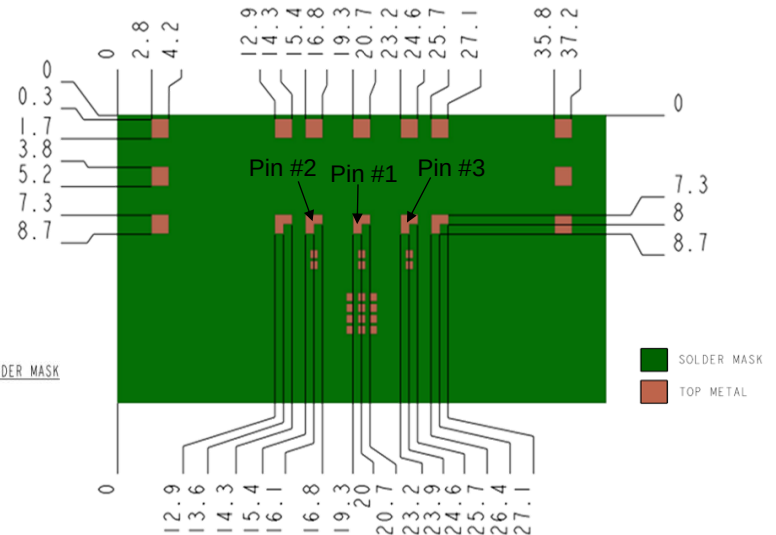
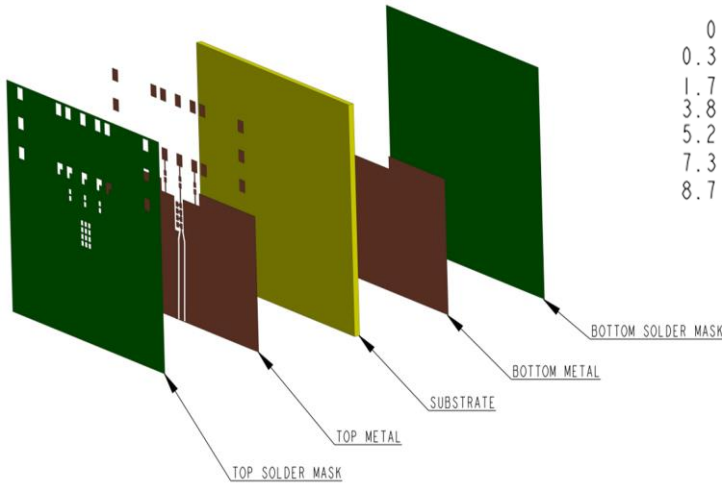
Measured at
1710,1800,1900,2100 MHz



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Antenna Layout

Typical layout dimensions (mm)



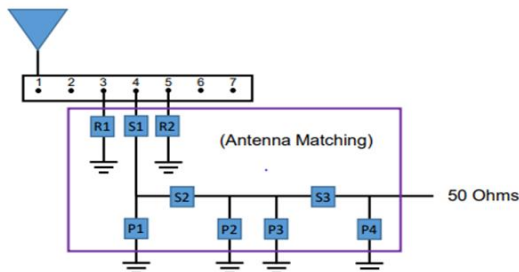
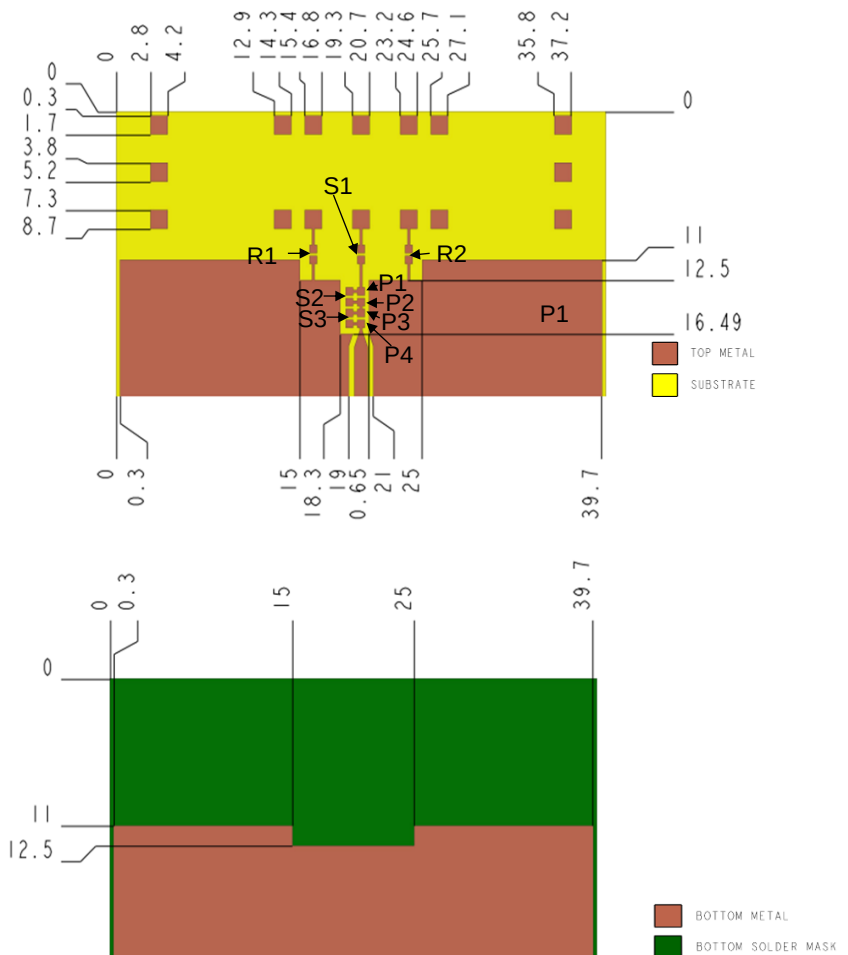
* VIAS: Diam. 0.2mm, (no vias on transmission lines).
Via holes must be covered by solder mask

Pin Descriptions

Pin#	Description
1	Feed
2	Tuning Pad
3	Tuning Pad

Matching & Tuning Component Values

Component	Value	Tolerance
S1	0ohm	N/A
P1	13nH	± 2%
S2	2pF	± 0.02pF
P2	DNI	N/A
P3	DNI	N/A
S3	0ohm	N/A
P4	DNI	N/A
R1	20nH	± 2%
R2	22nH	± 2%

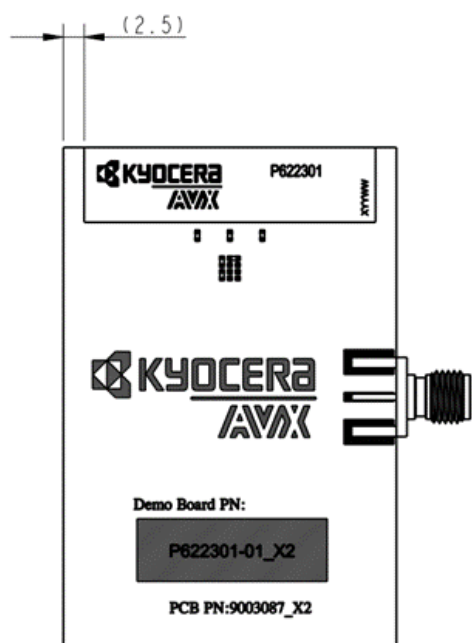


Embedded FR4 LTE-M/ NB-IoT / LPWA Antenna Specifications.
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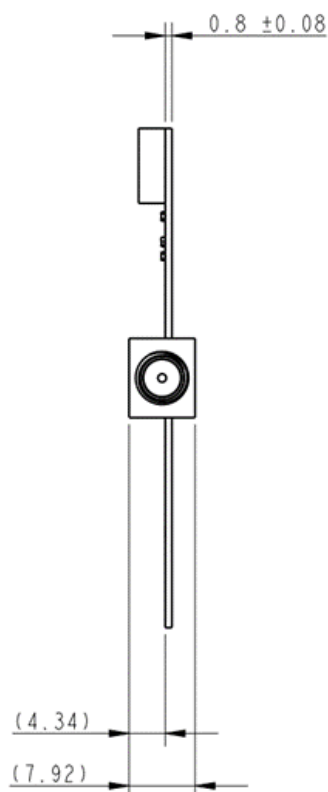
Antenna Demo Board

Demo Board Front View/Back View

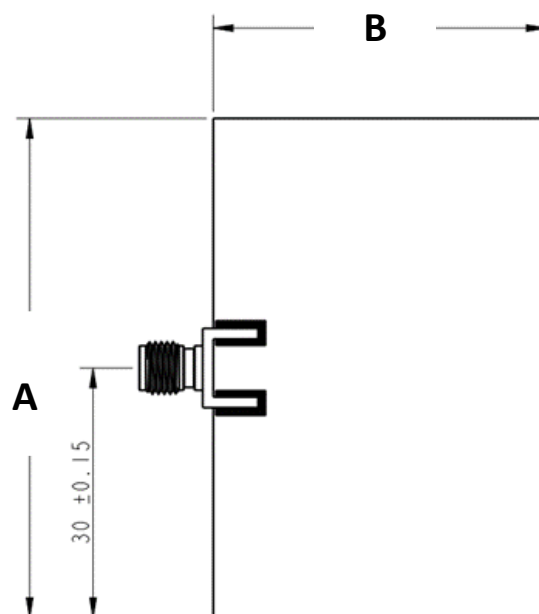
Part Number	A	B
P622301-01	60 ± 0.15	40 ± 0.15



Front View



Side View

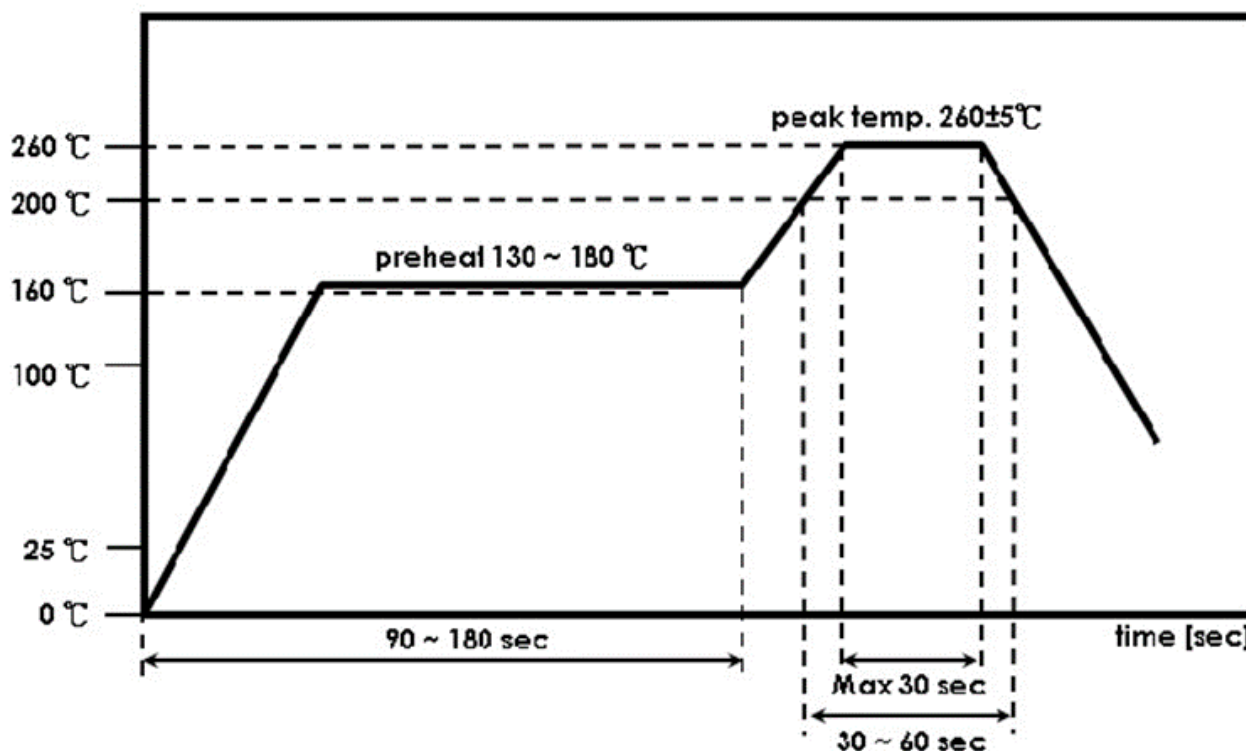


Back View

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Recommended Reflow Soldering Profile

The recommended method for soldering the antenna to the board is forced convection reflow soldering. The following suggestions provide information on how to optimize the reflow process for the FR4 antenna:



*Adjust the reflow duration to create good solder joints without raising the antenna temperature beyond the allowed maximum of 260° C.

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Additional Resources – P622301

Simulation Files:

HFSS : [https://www.kyocera-avx.com/download/antennas/ansys-hfss/P622301_\(Antenna&EVB\)_HFSS_062724.zip](https://www.kyocera-avx.com/download/antennas/ansys-hfss/P622301_(Antenna&EVB)_HFSS_062724.zip)

CST : [https://www.kyocera-avx.com/download/antennas/CST/P622301_\(Antenna&EVB\)_CST_062124.zip](https://www.kyocera-avx.com/download/antennas/CST/P622301_(Antenna&EVB)_CST_062124.zip)

DXF File:

https://www.kyocera-avx.com/download/antennas/3D-DXF/P622301-01_3D-DXF.zip