

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, RPMA, Firstnet



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.

Hexa Band LTE FR4 Embedded 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
- Smart Metering
- Tracking
- M2M
- Industrial Devices
- SigFox
- LoRa
- Cellular
- LPWAN
- RPMA
- LTE Cat-M1

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 | |

Mechanical Specifications & Ordering Part Number

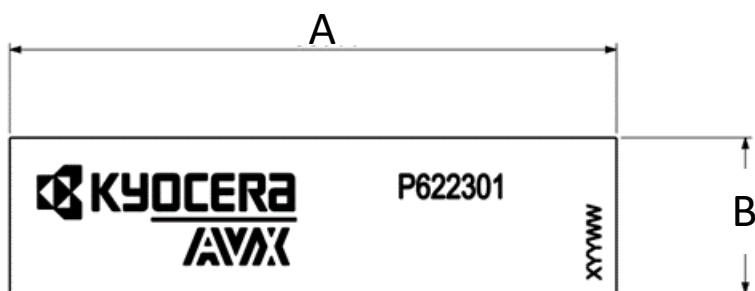
| Ordering Part # | P622301 |
|-----------------|-------------------------------|
| Dimensions (mm) | 35.0 x 9.0 x 3.2 |
| Weight (grams) | 2.1 |
| Mounting | SMT (P&P) |
| Packaging | 1,120 pcs/reel; 5,600 pcs/box |
| Demo Board | P622301-01 |

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)

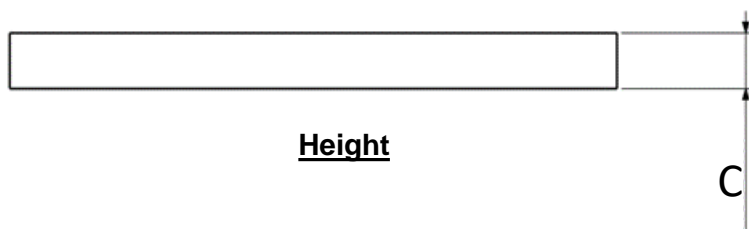
| Part Number | A | B | C |
|-------------|------|------|-----------|
| P622301 | 35.0 | 9.00 | 3.2 ± 0.3 |



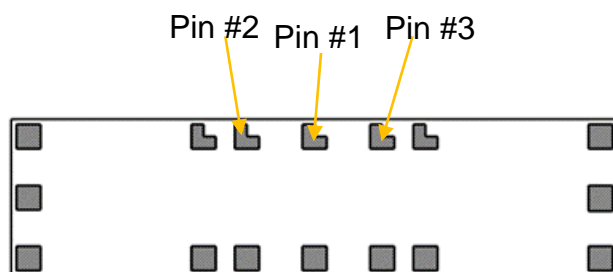
Top View

Pin Descriptions

| Pin# | Description |
|------|-------------|
| 1 | Feed |
| 2 | Tuning Pad |
| 3 | Tuning Pad |



Height

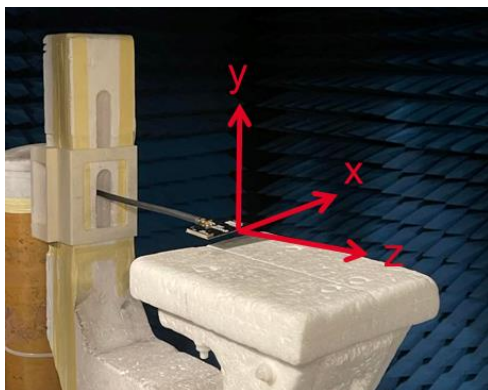


Bottom View

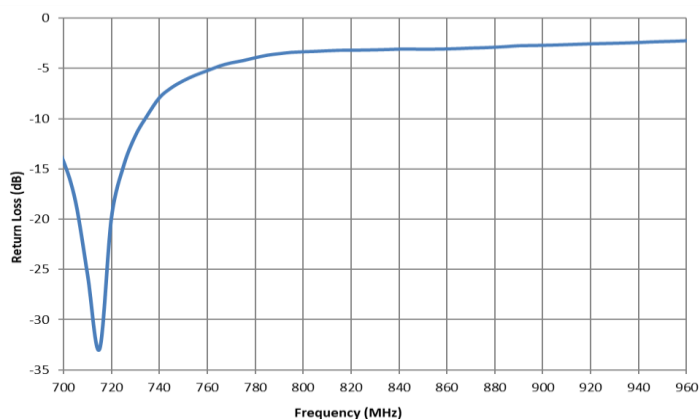
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Return Loss and Efficiency Plots

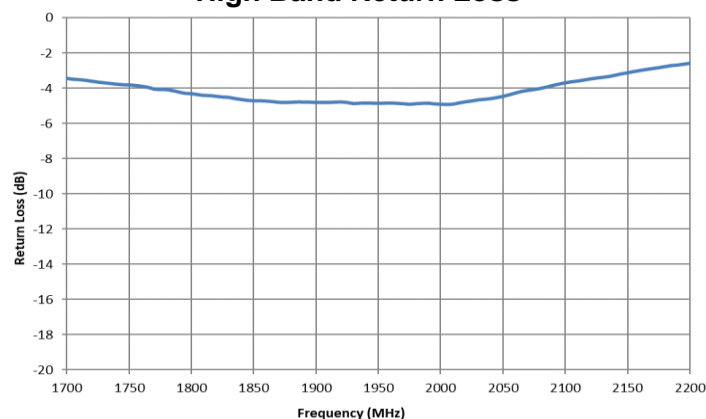
Typical Performance on 60 x 40 mm PCB



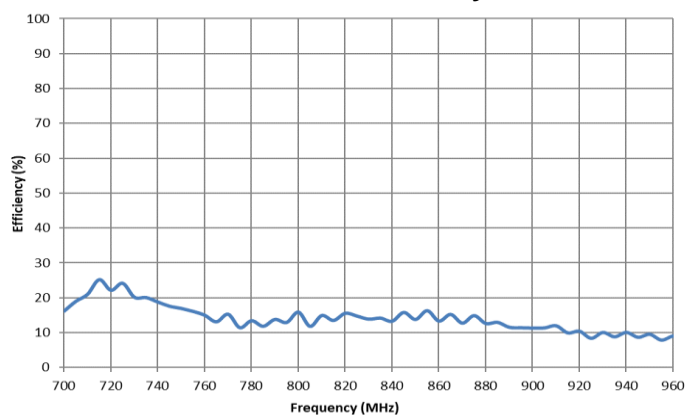
Low Band Return Loss



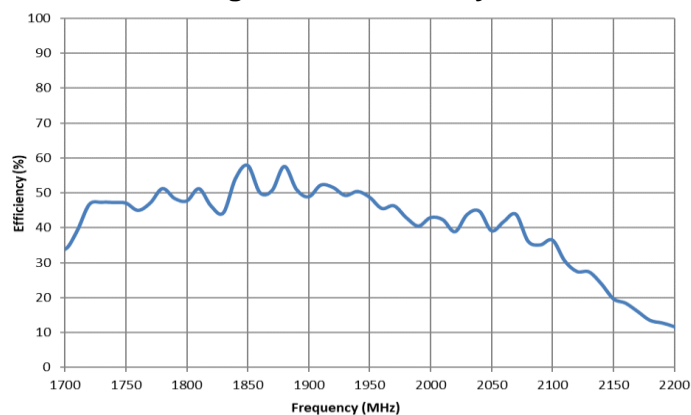
High Band Return Loss



Low Band Efficiency



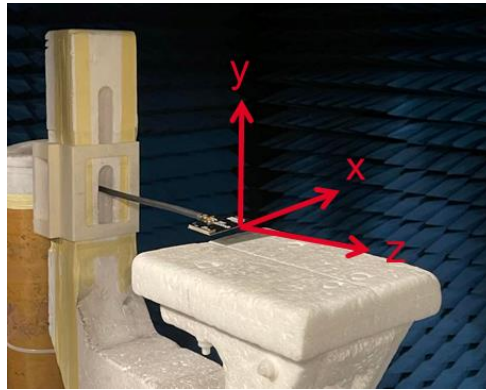
High Band Efficiency



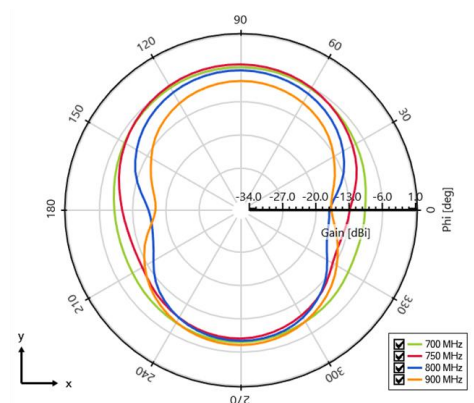
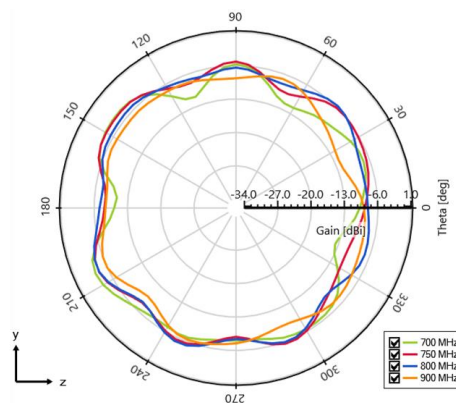
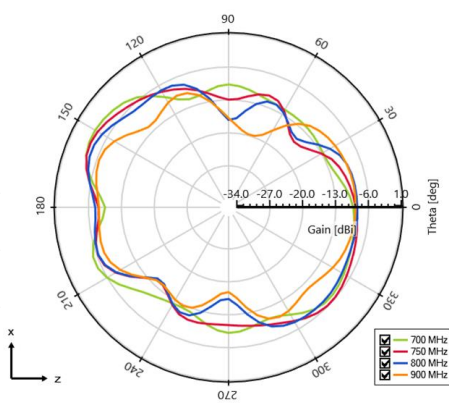
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Antenna Radiation Patterns (Low & High Band)

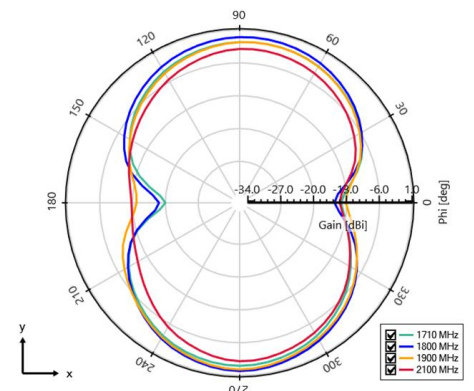
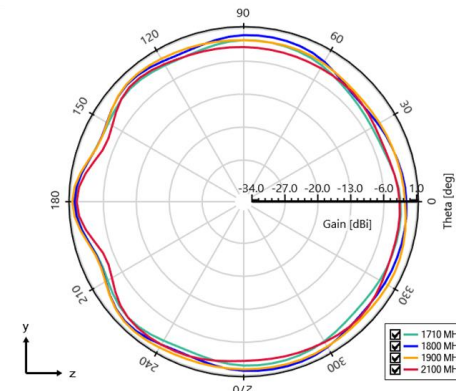
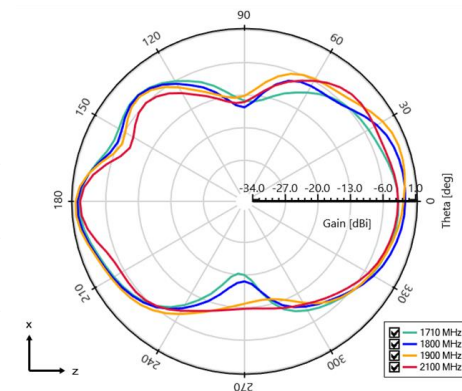
Typical Performance on 60 x 40 mm PCB



Measured at
700,750,800,900 MHz



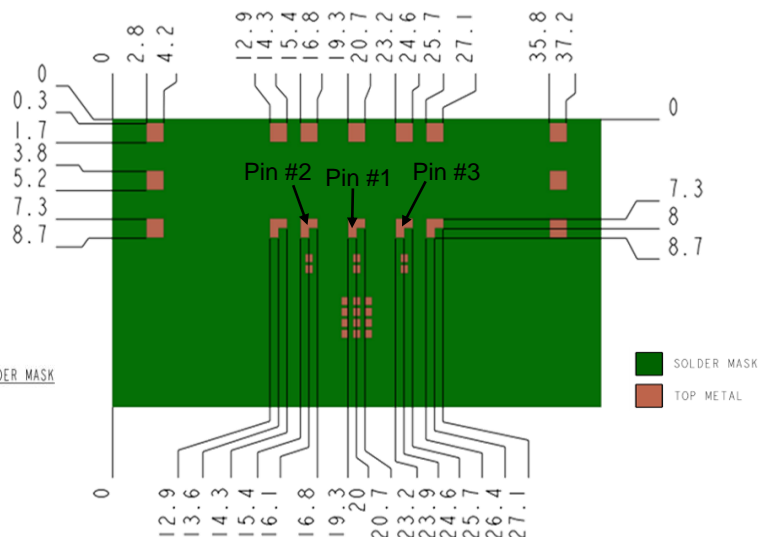
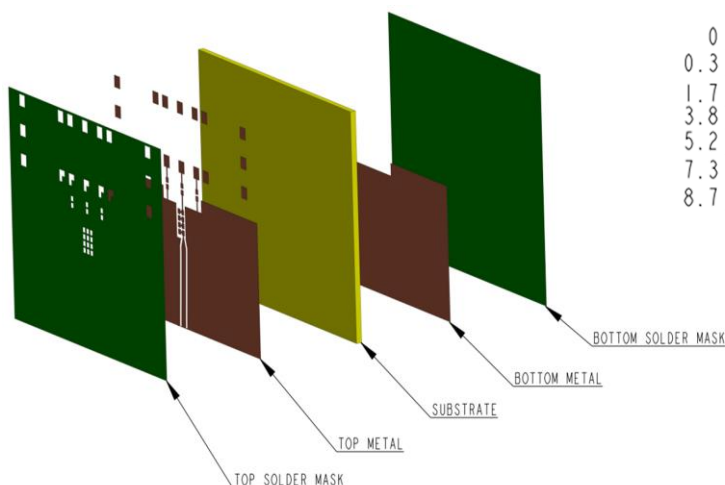
Measured at
1710,1800,1900,2100 MHz



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Antenna Layout

Typical layout dimensions (mm)



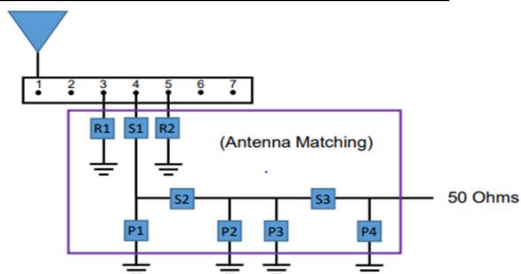
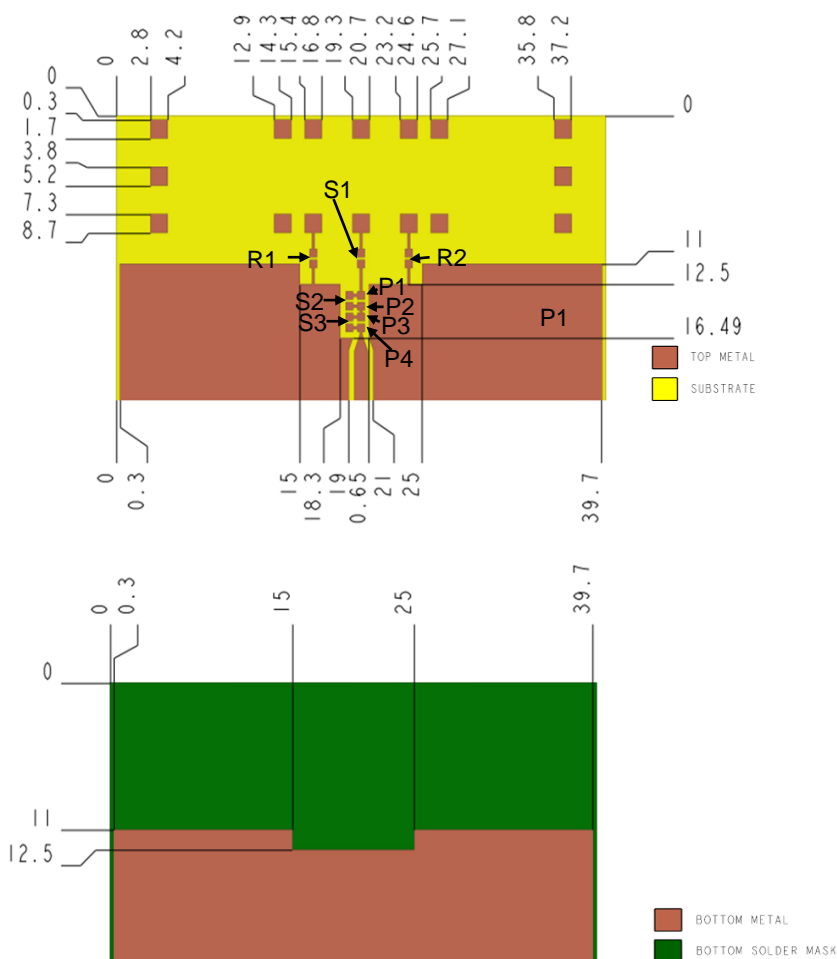
* VIAS: Diam. 0.2mm, (no vias on transmission lines).
Via holes must be covered by solder mask

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% |

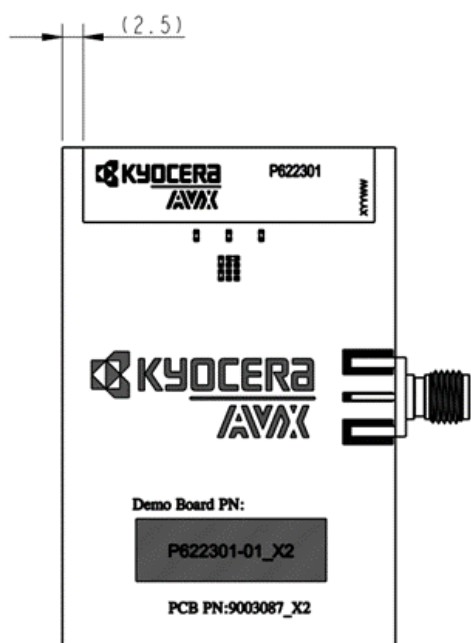


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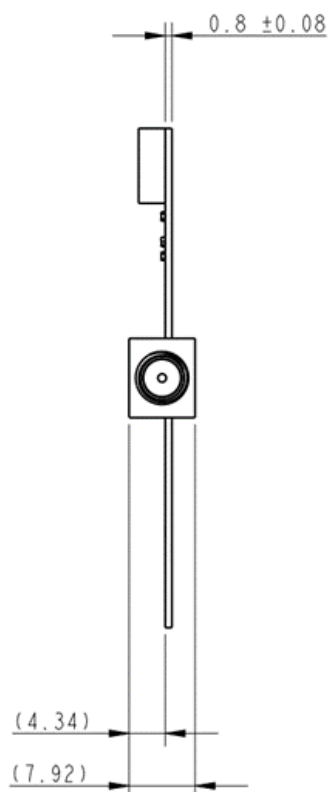
Antenna Demo Board

Demo Board Front View/Back View

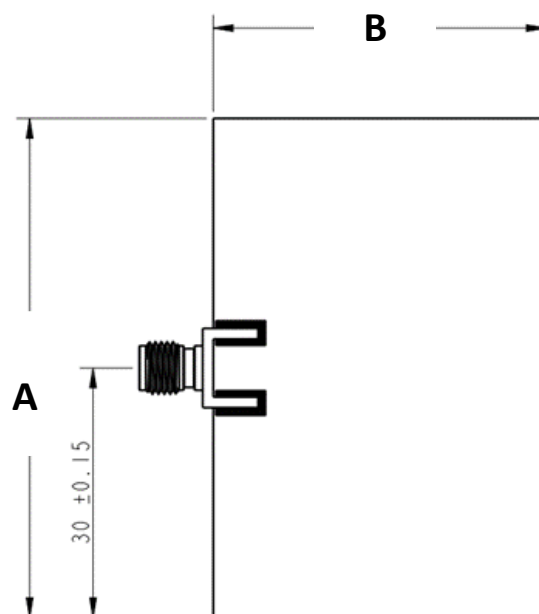
| Part Number | A | B |
|-------------|---------------|---------------|
| P622301-01 | 60 ± 0.15 | 40 ± 0.15 |



Front View



Side View

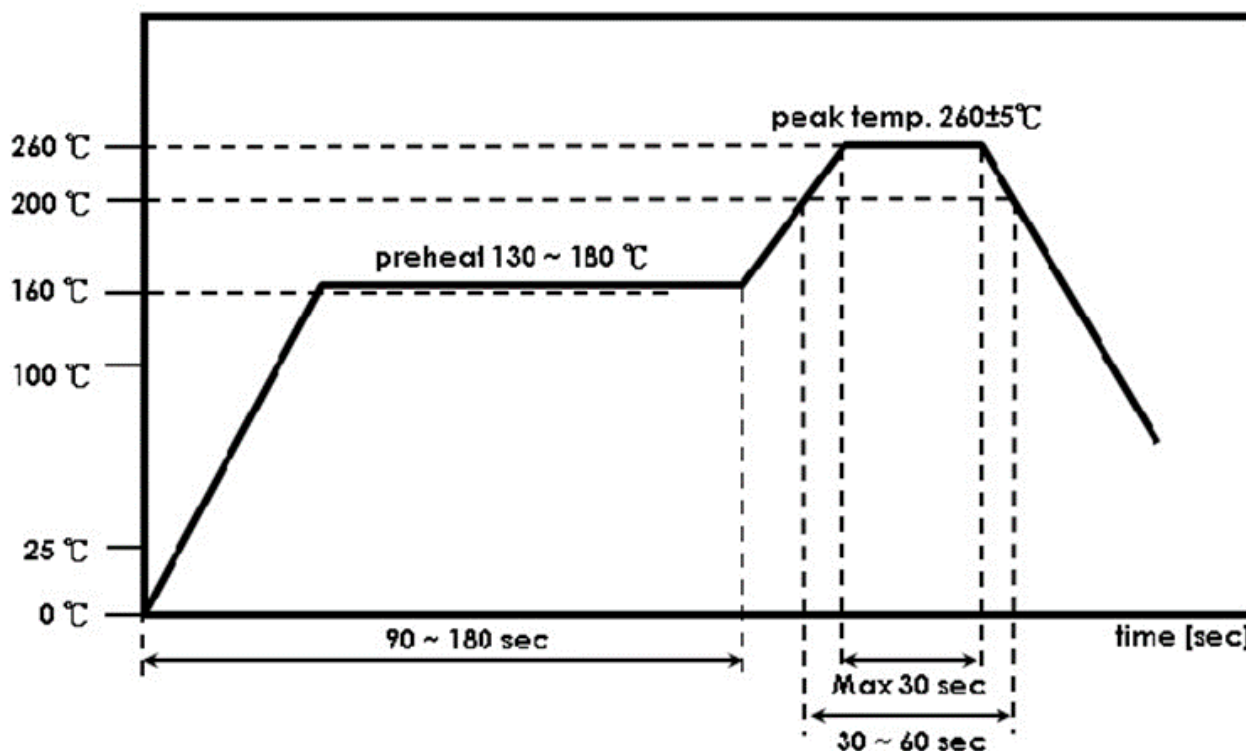


Back View

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