

Datasheet

0.61-0.96GHz & 1.7-5.9GHz

Chip antenna

Features:

High performing 5G FR1 antenna with SMT mounting on PCB.

Applications:

- Sub-6 Mesh
- Smart Metering
- Robotics
- Intelligent Transport Systems
- Internet of Things (IoT)
- High Definition Video Broadcast Systems



35 × 5 × 4 mm

Chip Antenna



Electrical Specifications

Antenna Characteristics

Antenna Type	Radiation Pattern	Polarization	Max. Input Power	Impedance
Chip Antenna	Omni	Linear	5W	50Ω

Frequency (GHz)	0.617~0.96	1.71~2.17	2.3~2.69	3.3~5.0	5.15~5.925
Return Loss (dB)	< -4	< -4	< -4	< -4	< -4
Peak Gain (dBi)	2.5	4.7	4.3	5.5	3.8
Average Gain (dB)	-2.5	-1.3	-1.8	-2.3	-3.0
Efficiency (%)	57	74	66	59	50

Mechanical Specifications

Mechanical

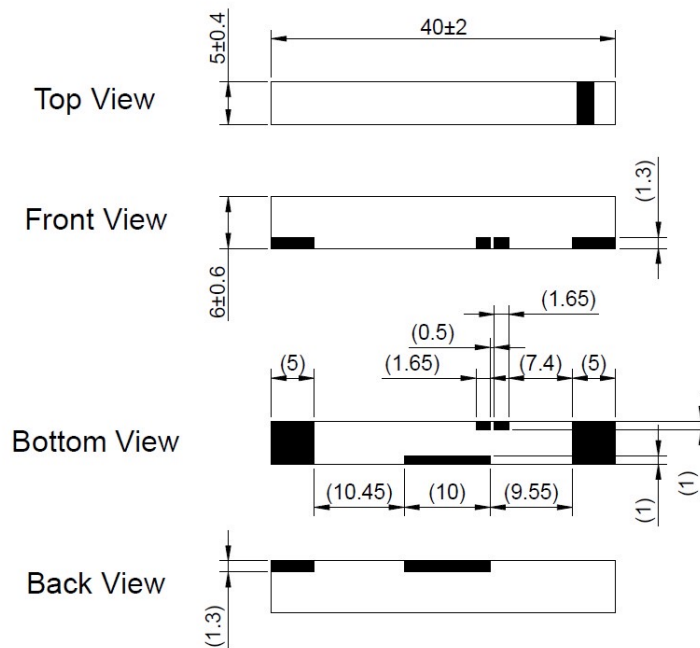
Dimension (mm)	40.0 × 5.0 × 6.0
Material	Ceramic
Weight (g)	4.0

Environmental

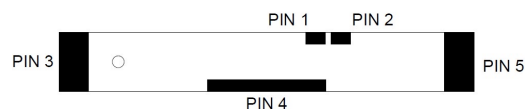
Temperature Range (°C)	-40 to 85
Humidity	Non-condensing 65°C 95% RH

RoHS Compliant

Mechanical Drawing



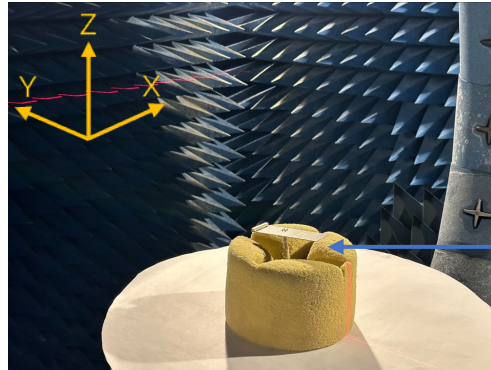
PIN Definitions



Bottom View

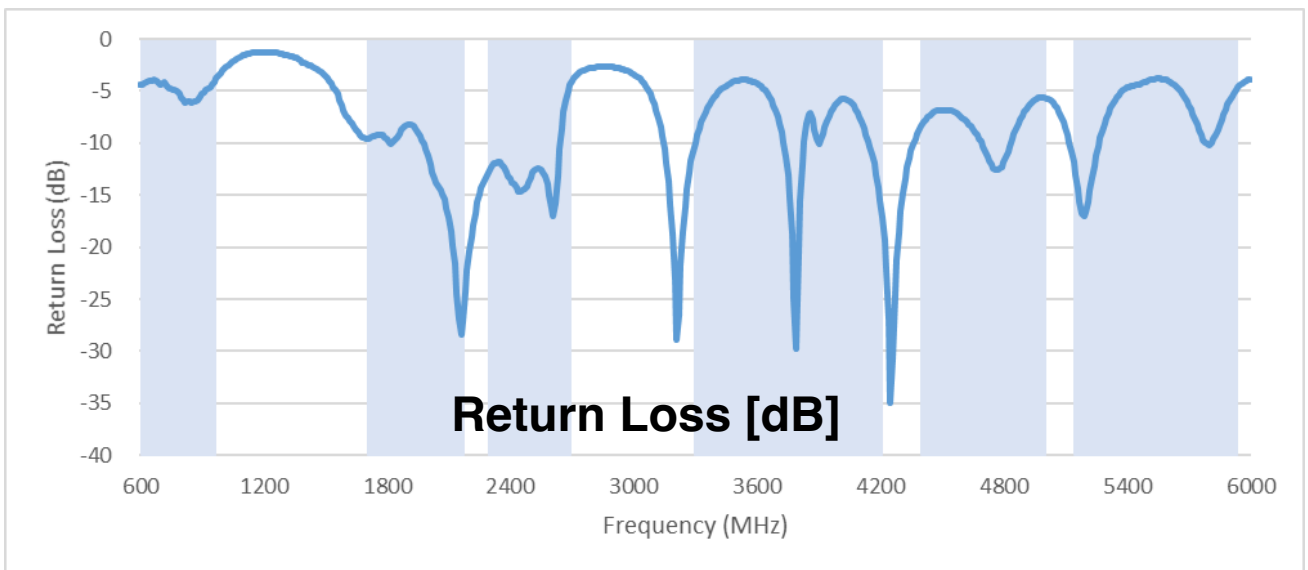
Pin	Soldering PAD
1	Tuning/Ground
2	Signal
3~5	Fixing

Antenna Testing Includes Evaluation Board

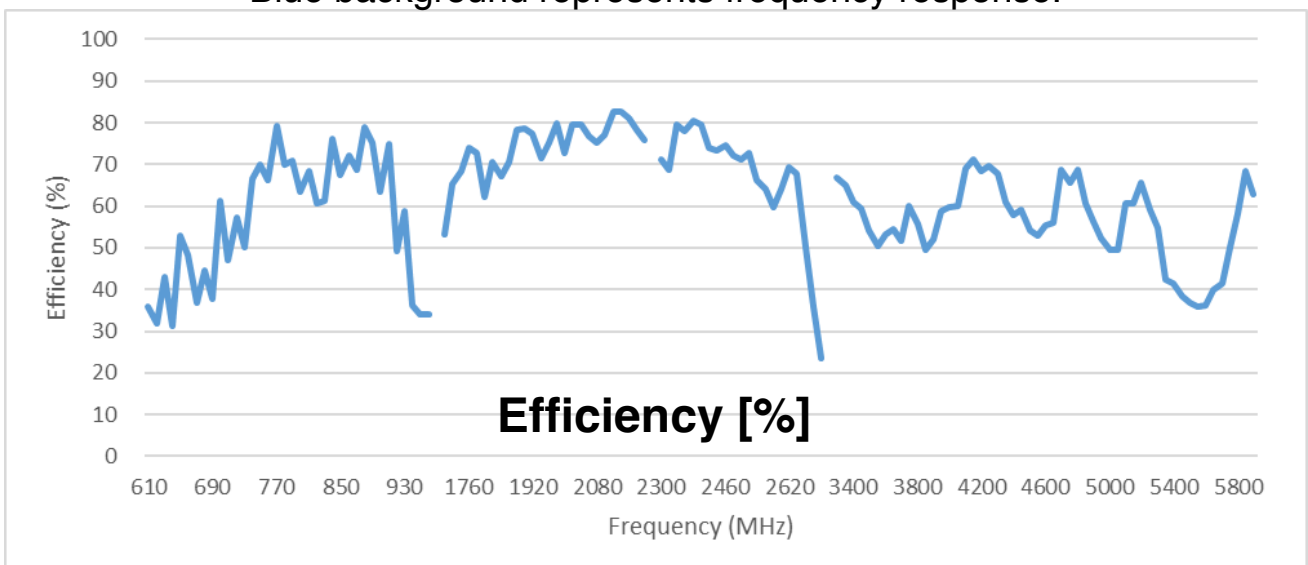


ST0443-10-N01-B

Test setup, measurement performed in 3D anechoic chamber.

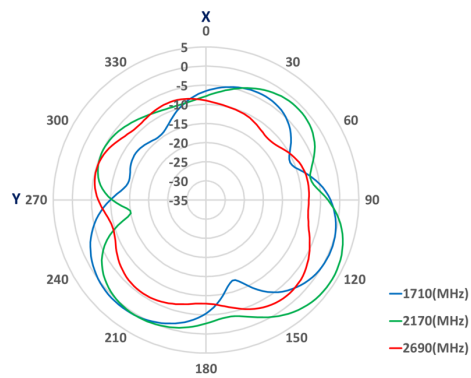
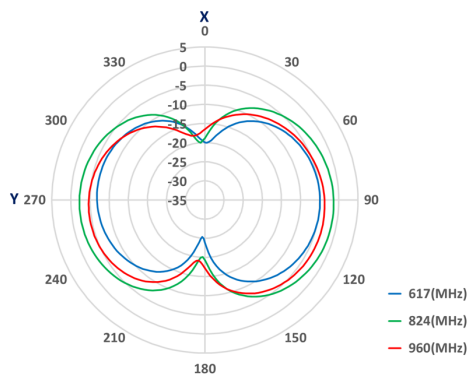


Blue background represents frequency response.

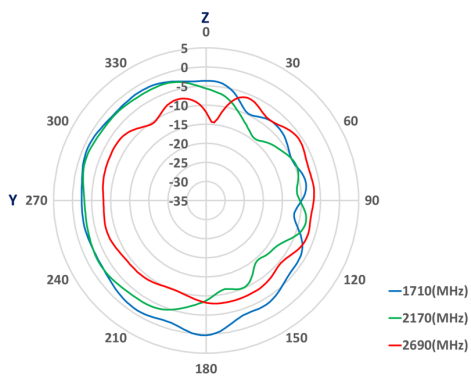
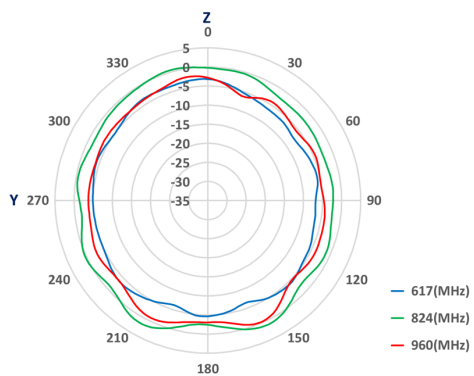


Radiation Pattern - Free Space

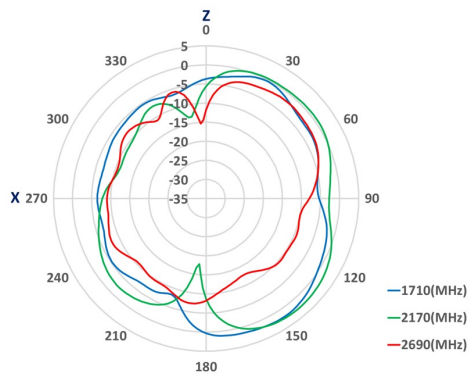
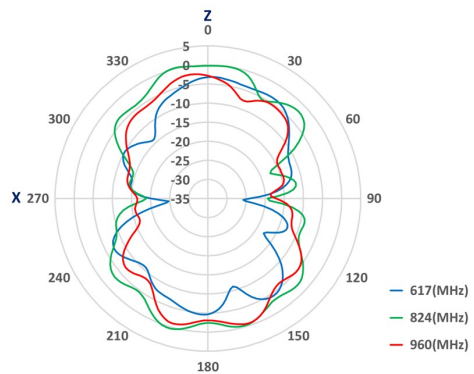
XY - Plane



YZ - Plane

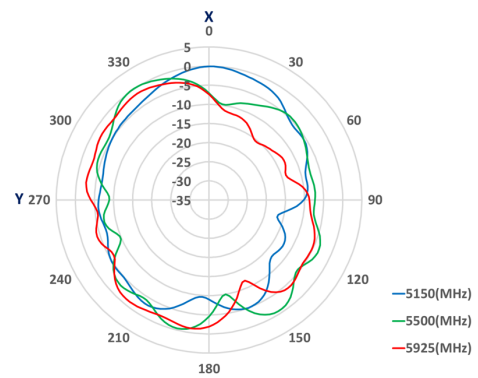
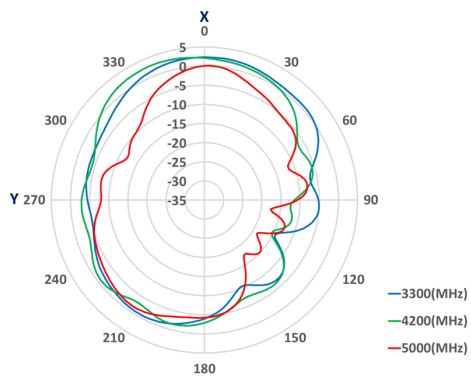


XZ - Plane

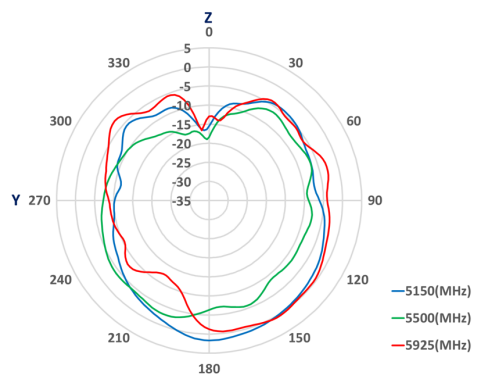
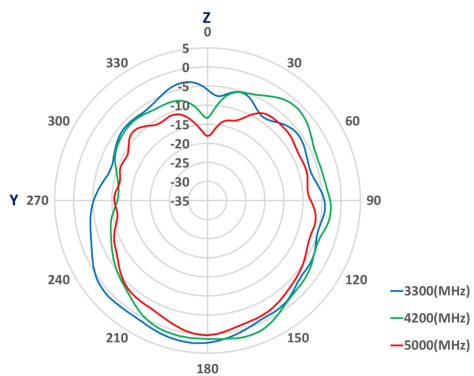


Radiation Pattern - Free Space

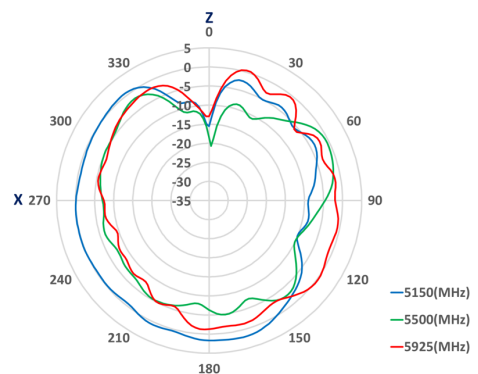
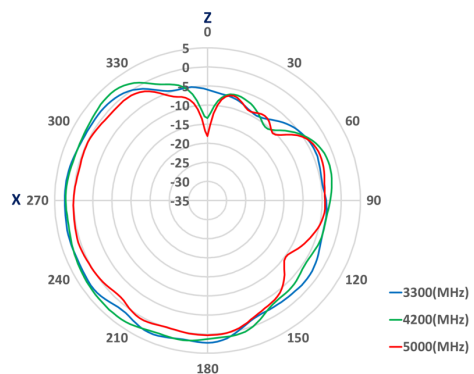
XY - Plane



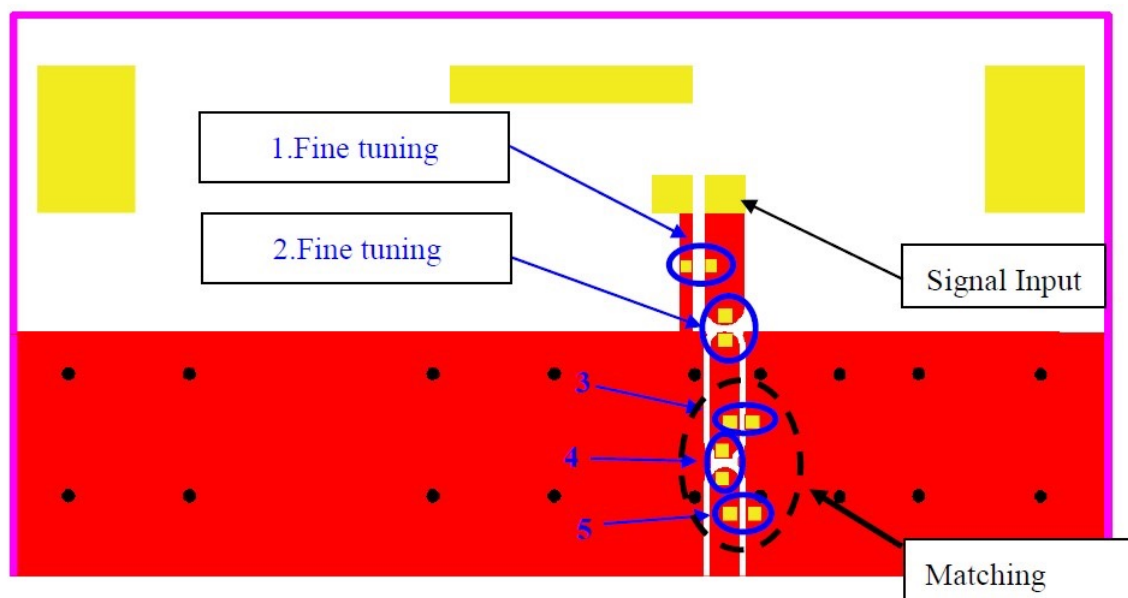
YZ - Plane



XZ - Plane



Matching Circuit Design



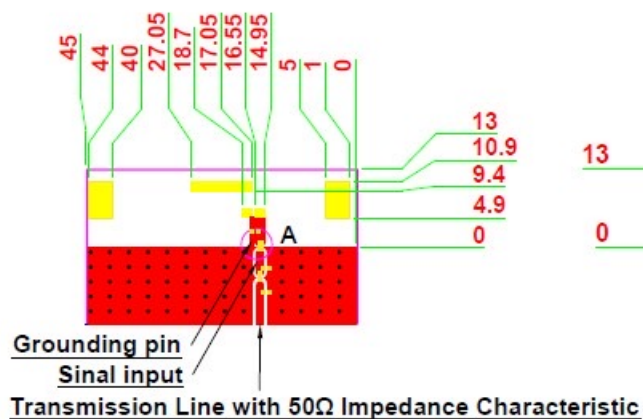
* To make the antenna have this resonance must be matched with the matching circuit.

* The matching component may be slightly different than that shown depending on the distance to the ground plane, the dielectric constant of the PCB, and PCB material thickness.

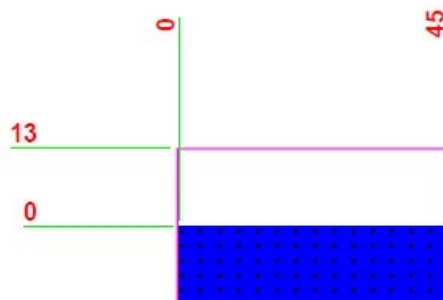
Circuit Matching Components

Circuit Symbol	Size	Description
1. Fine tuning element	0402	6.8 nH Inductance
2. Fine tuning element	0402	6.8 pF Capacitor
3	0402	None
4	0402	0 Ohm Resistance
5	0402	None

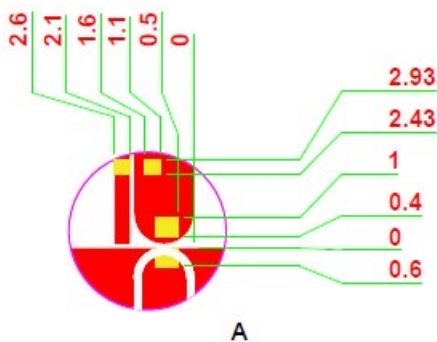
Clearance Area Design



Top View

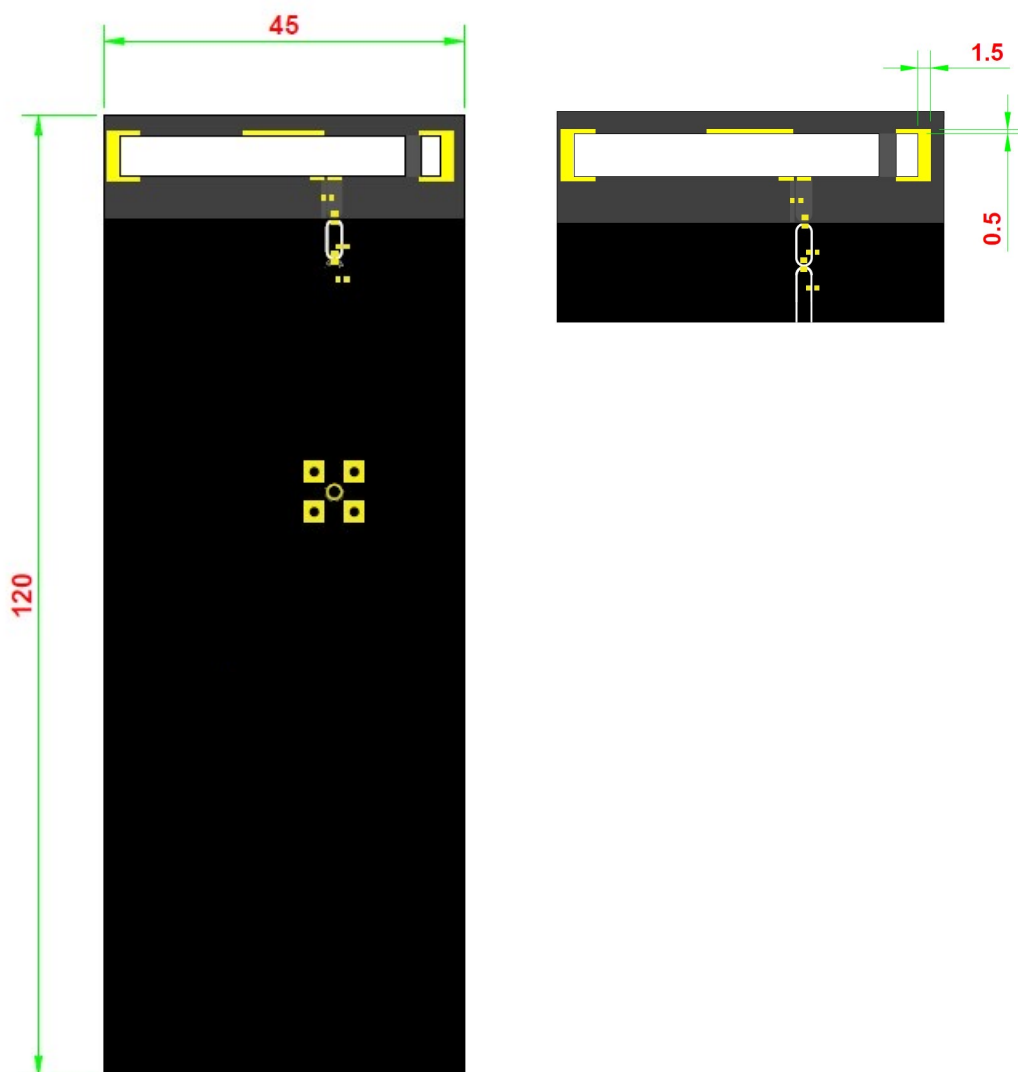


Bottom View



Evaluation Board

Unit : mm

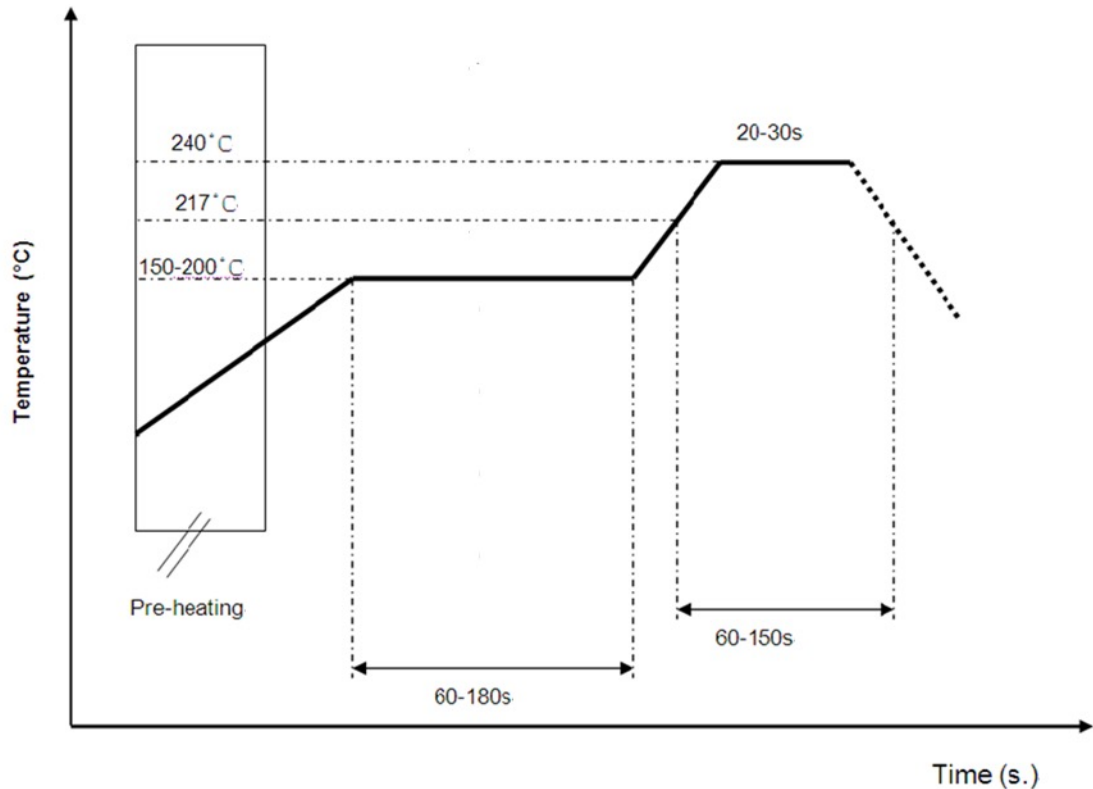


Base Material : FR-4, T=1.0

Recommended Reflow Temperature Profile

Recommended solder paste alloy:

SAC305 (Sn96.5 /Ag3 /Cu0.5) Lead Free solder paste



Revisions				
Rev.	Description	Date	ECN	Approval
A	Initial Release	2023-02-16	ST0443-10-N01-B-RA00	ATC

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