5G FR1

ST0443-10-N01-B

Amphenol

Datasheet

0.61-0.96GHz & 1.7-5.9GHz
Chip antenna

35 × 5 × 4 mm

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

RoHS

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

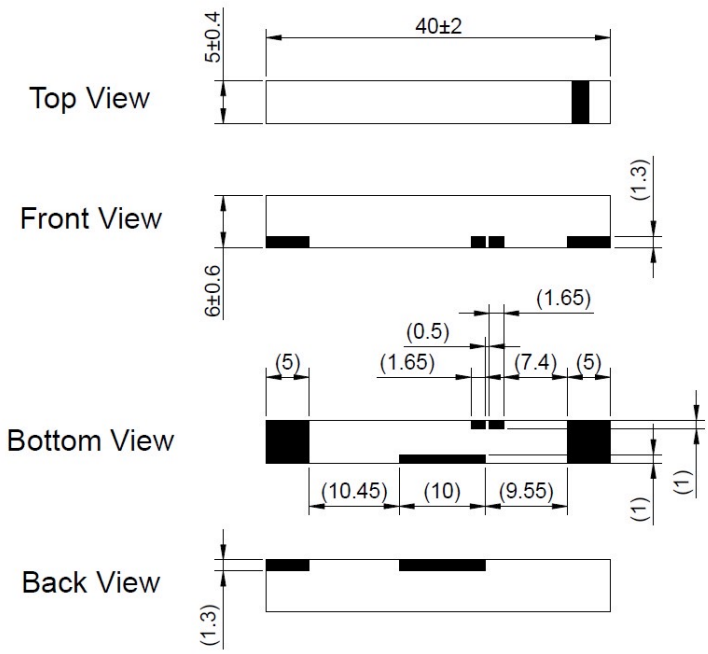
Mechanical Specifications

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

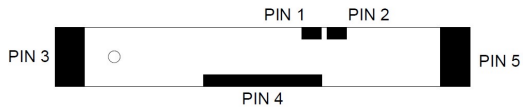
Environmental	
Temperature Range (˚C)	-40 to 85
Humidity	Non-condensing 65°C 95% RH
RoHS Compliant	

Mechanical Drawing

Unit : mm



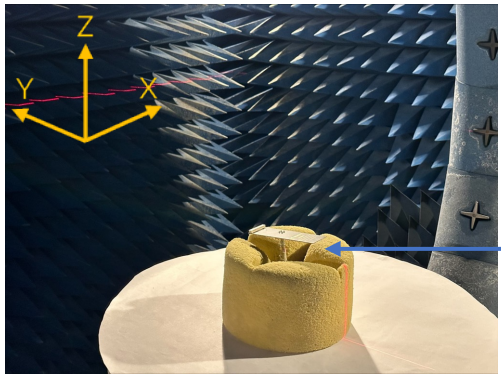
PIN Definitions



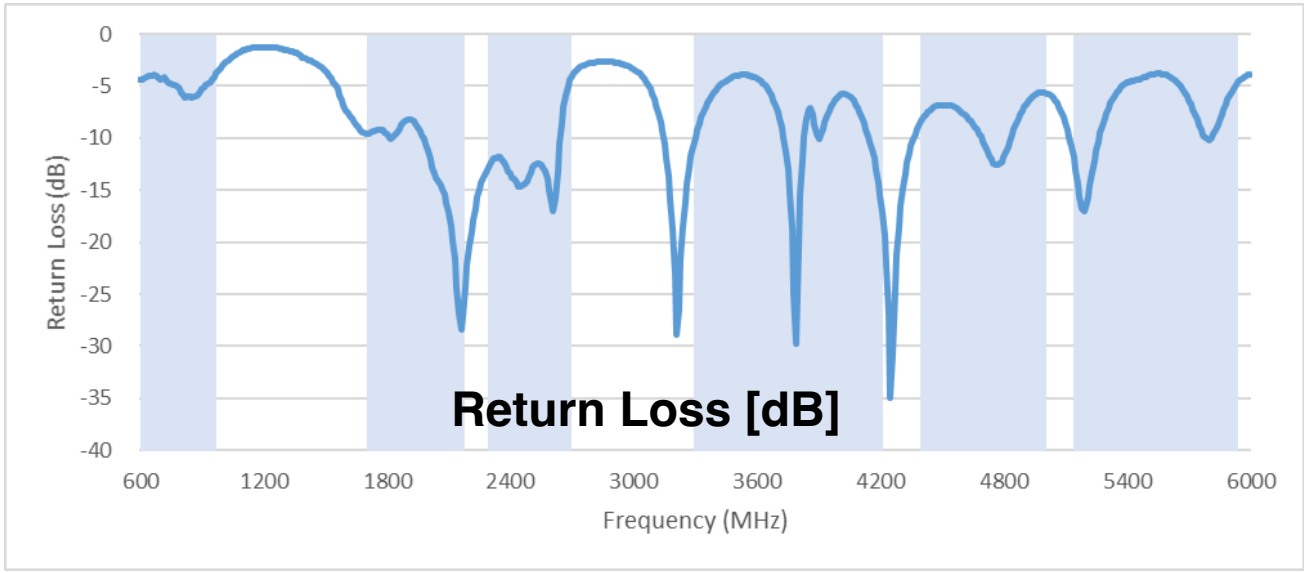
Bottom View

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

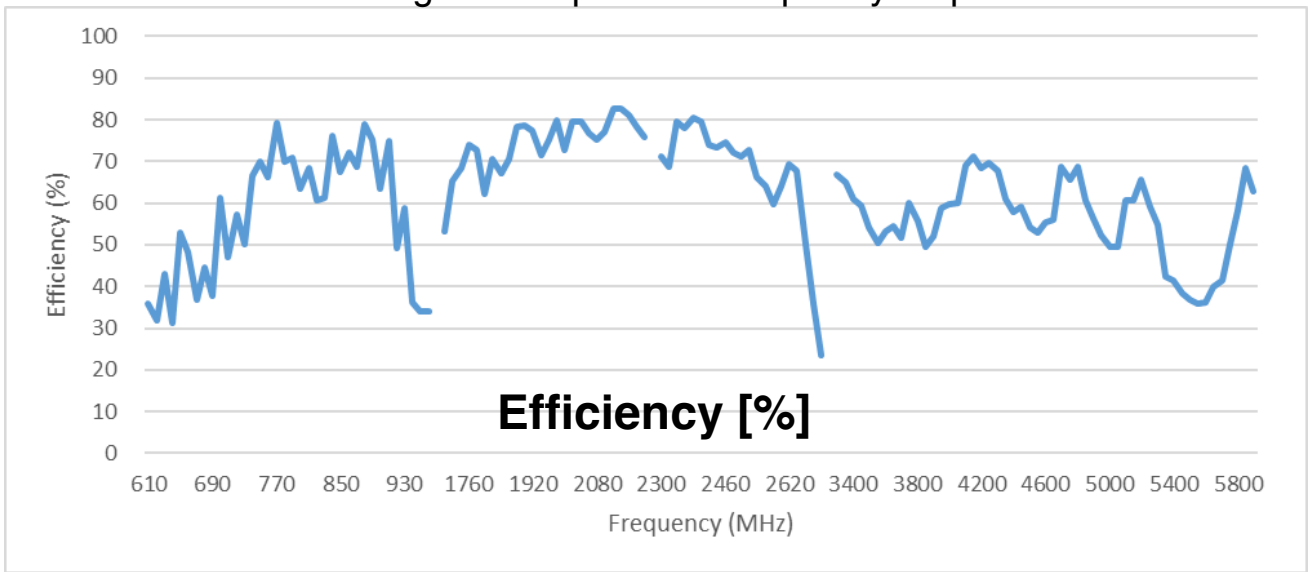
Antenna Testing Includes Evaluation Board



Test setup, measurement performed in 3D anechoic chamber.

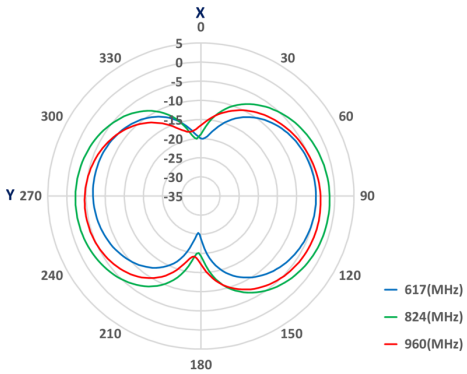


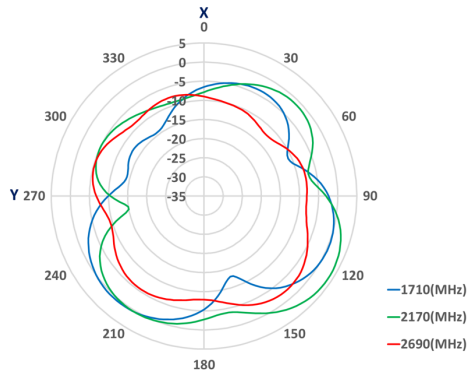
Blue background represents frequency response.



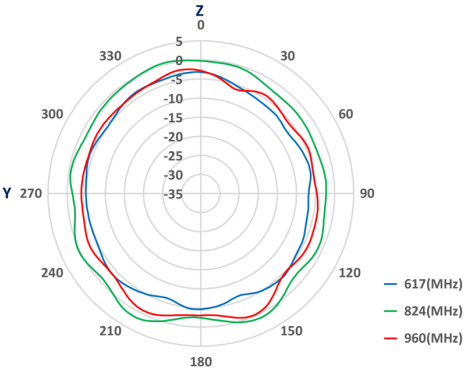
Radiation Pattern - Free Space

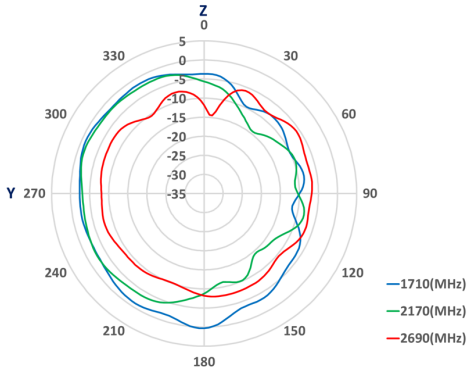
XY - Plane



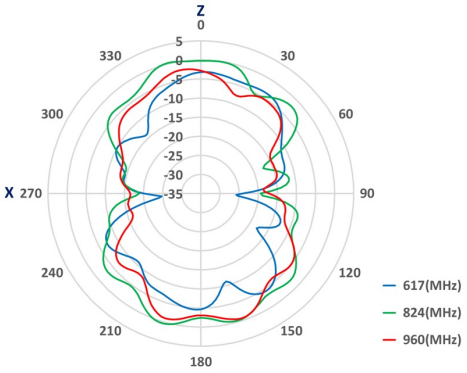


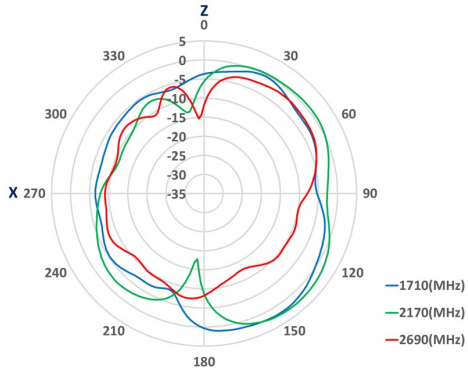
YZ - Plane





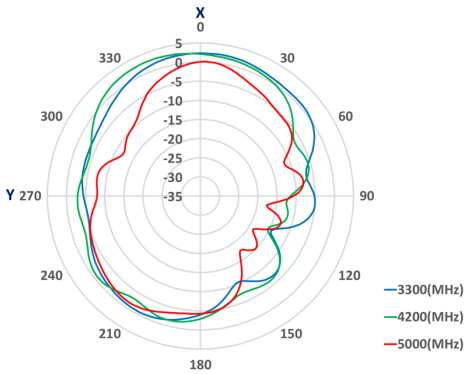
XZ - Plane

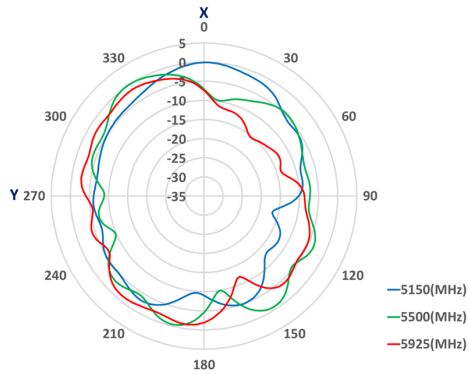




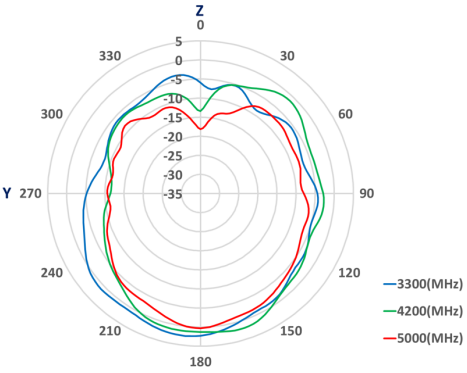
Radiation Pattern - Free Space

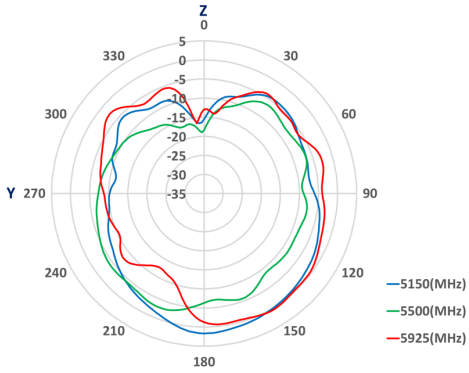
XY - Plane



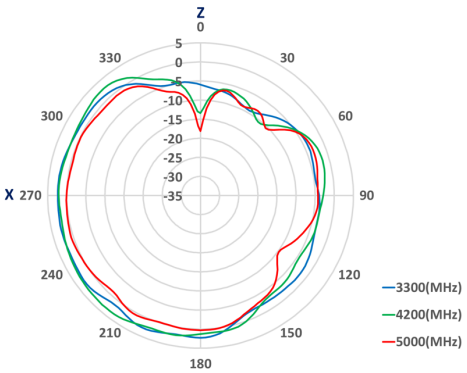


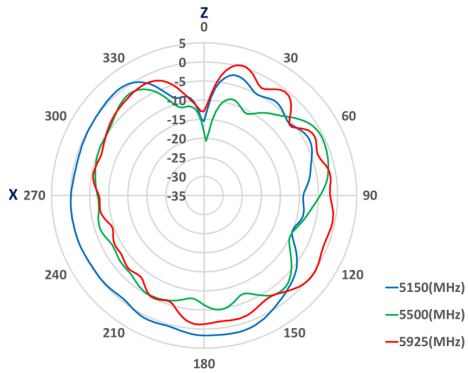
YZ - Plane



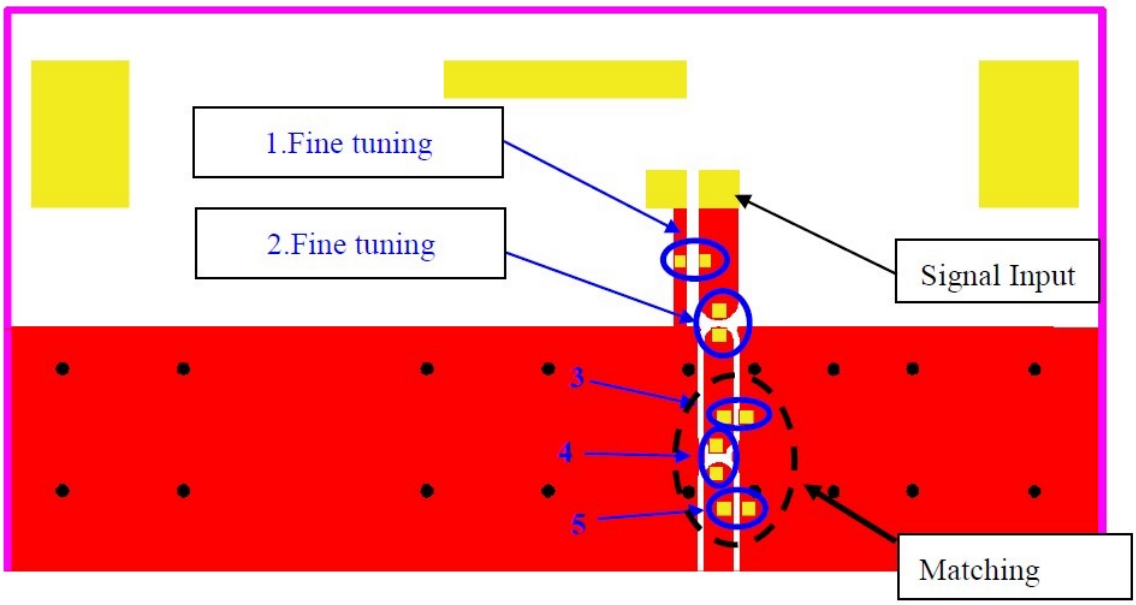


XZ - Plane





Matching Circuit Design

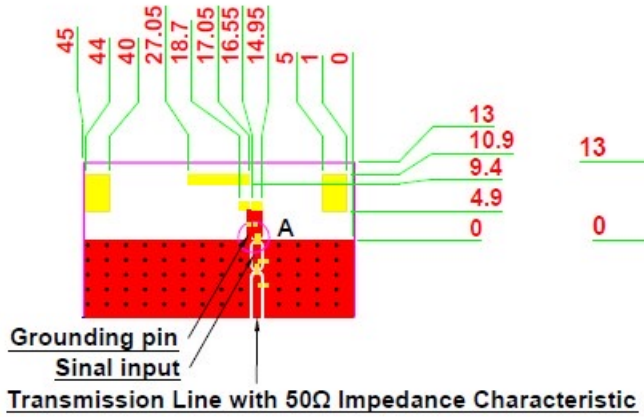


* To make the antenna have this resonance must be matched with the matching circuit.
* The matching component may be slightly different than that shown depending on the distance to the ground plane, the dielectric constant of the PCB, and PCB material thickness.

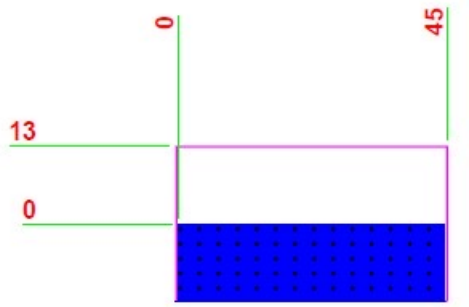
Circuit Matching Components

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

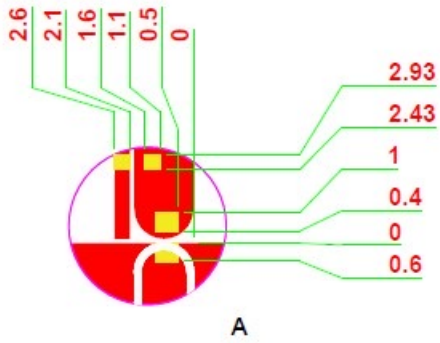
Clearance Area Design



Top View

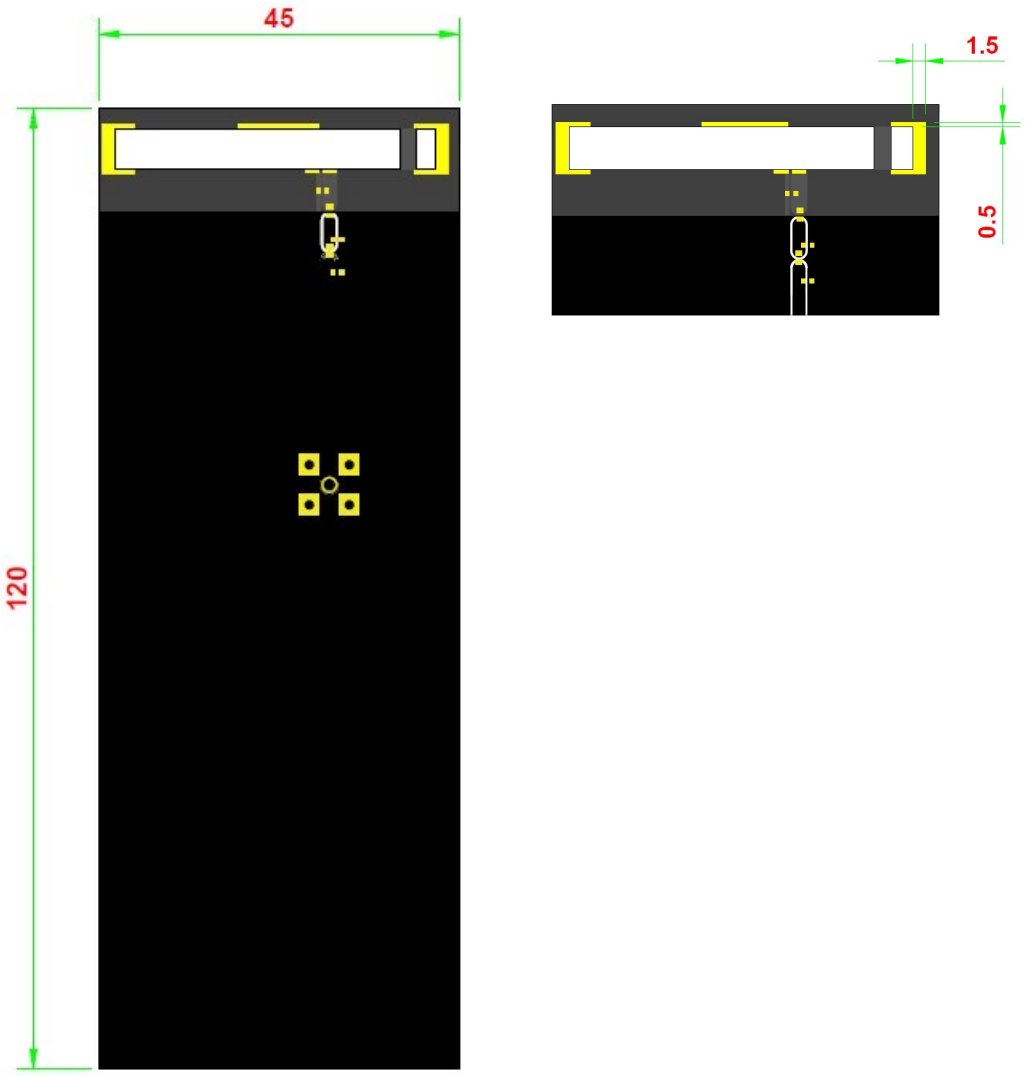


Bottom View



Evaluation Board

Unit : mm

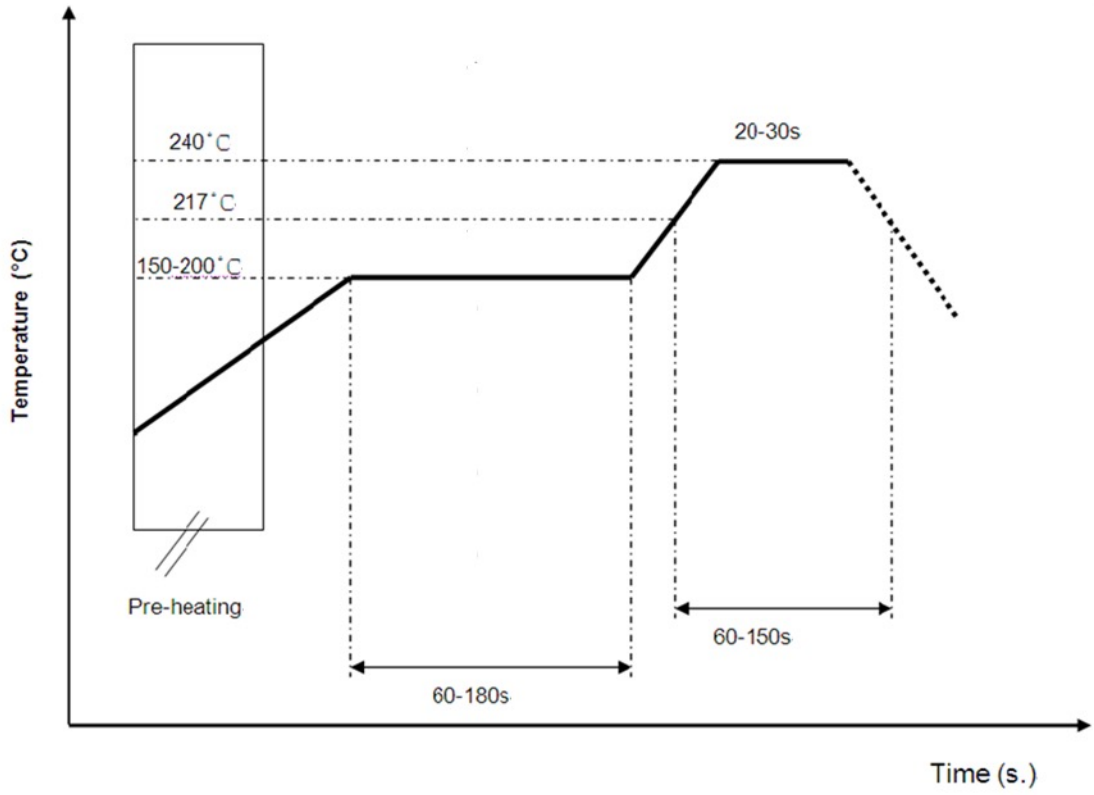


Base Material : FR-4, T=1.0

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