TAOGLAS®

Datasheet

Part No:
PA.25A

Description:

Anam Hexa-Band Cellular SMT Antenna

800 MHz to 2200 MHz

Features:

Compact High Efficiency Antenna

Surface Mount Device

Dimensions: 35*5*6mm

Manufactured in an IATF16949 Approved Facility

RoHS & REACH Compliant

1. Introduction

The PA.25A is ceramic cellular antenna designed for in-device mounting. The PA.25A is mounted through SMT process and can be used in varying applications based on it's small form factor of just 35*6*5mm.

Typical Applications Include:

- Body Worn Devices
- Hand-held IoT Devices
- Remote Monitoring

This ceramic multiband cellular antenna uses high grade ceramics which have been developed in Taoglas through years of expertise in delivering the right materials for high performance antennas. Taoglas, through constant research and development have designed a small form factor high efficiency antenna for use across cellular bands from 800MHz to 2170MHz.

The PA.25A is manufactured and tested in our IATF16949 approved facility.

The PA.25 is a unique SMT solution which is delivered on tape and reel. For very detailed integration information additional to this specification please download our comprehensive PA.25 integration application note from our website. For further information, please contact your regional Taoglas customer support team.

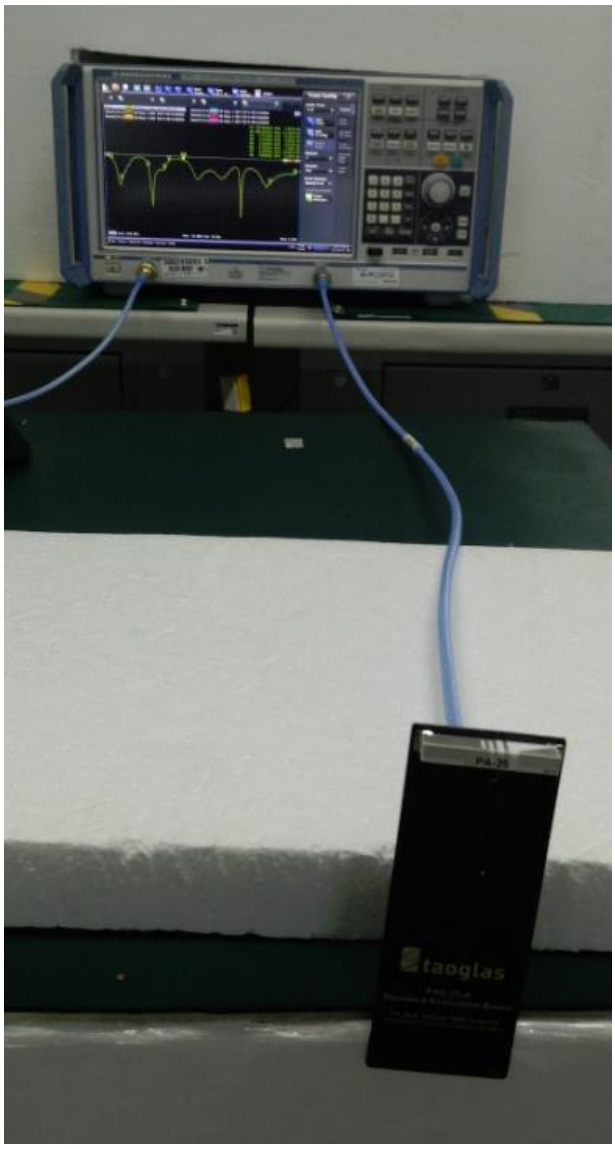
2. Specifications

Electrical		
Standard	**4G/3G/2G**	
Operation Frequency (MHz)	824-960	1710-2170
Peak Gain (dBi)	2.00	3.51
Average Gain (dBi)	-1.55	-2.39
Efficiency (%)	70.43	58.16
VSWR	<3:1	
Impedance	50Ω	
Polarization	Linear	
Radiation Properties	Omnidirectional	
Max Input Power	5 W	

* The antenna was tested on a 110*40mm ground plane and covered by 2mm thick ABS plastic.
* Actual Antenna Electrical performance will depend on customer ground plane size.

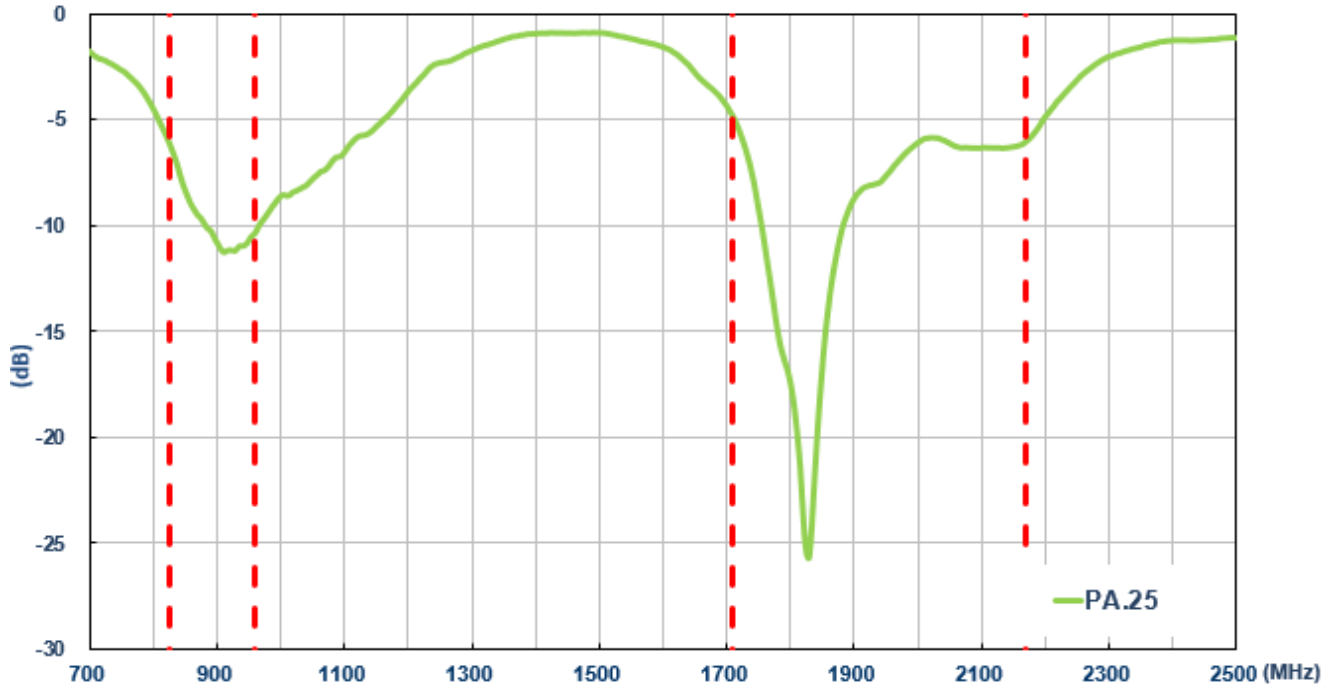
Mechanical	
Dimensions (mm)	35*5*6mm
Material	Ceramic
Termination	Ag (environmental-friendly Pb free)
Weight	3g
EVB Connector	SMA-Female
Environmental	
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 105°C
Moisture Sensitivity	Level 3
RoHs Compliant	Yes
REACH Compliant	Yes

3. Test Setup on PAD.25 Evaluation Board

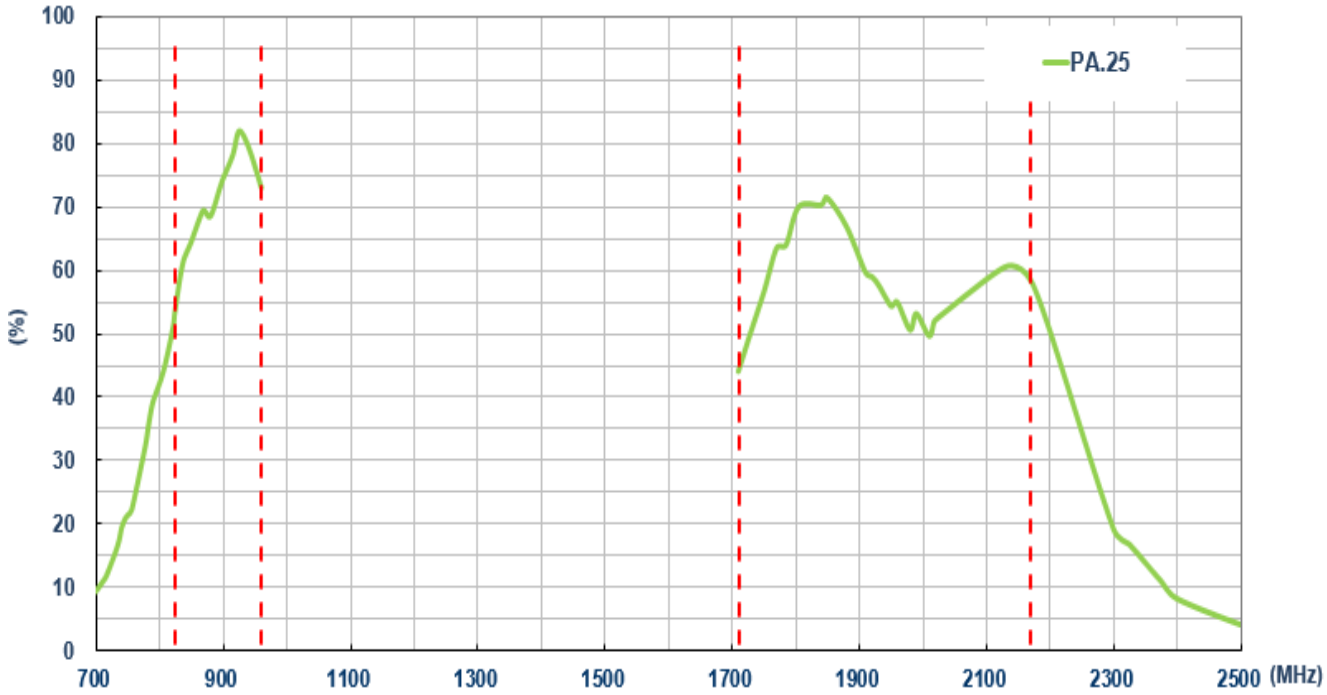


4. Antenna Characteristics

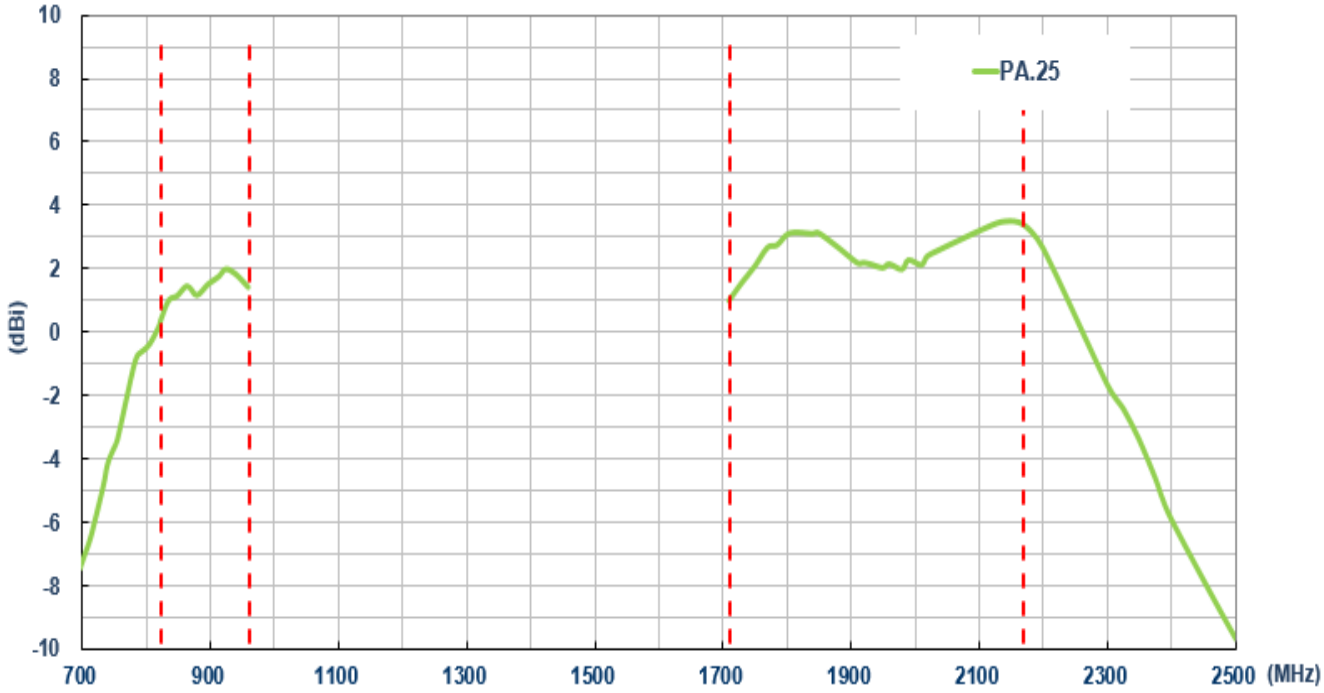
4.1 Return Loss



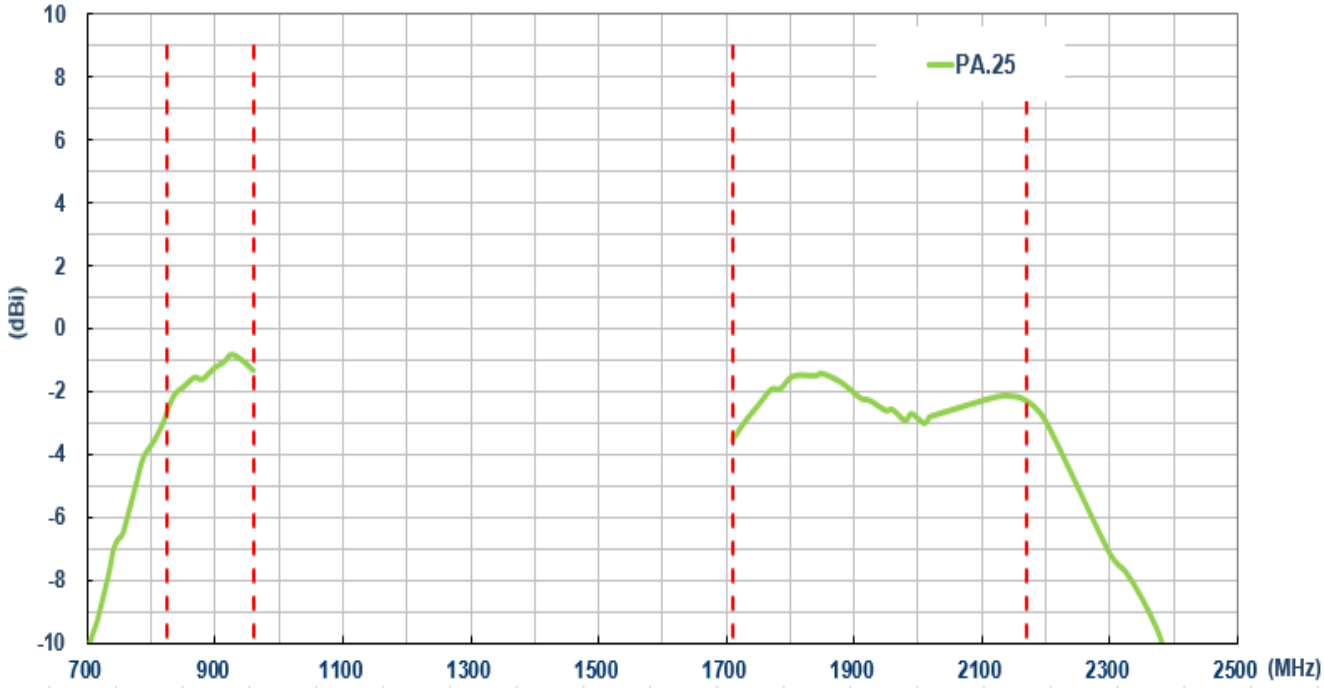
4.2 Efficiency



4.3 Peak Gain

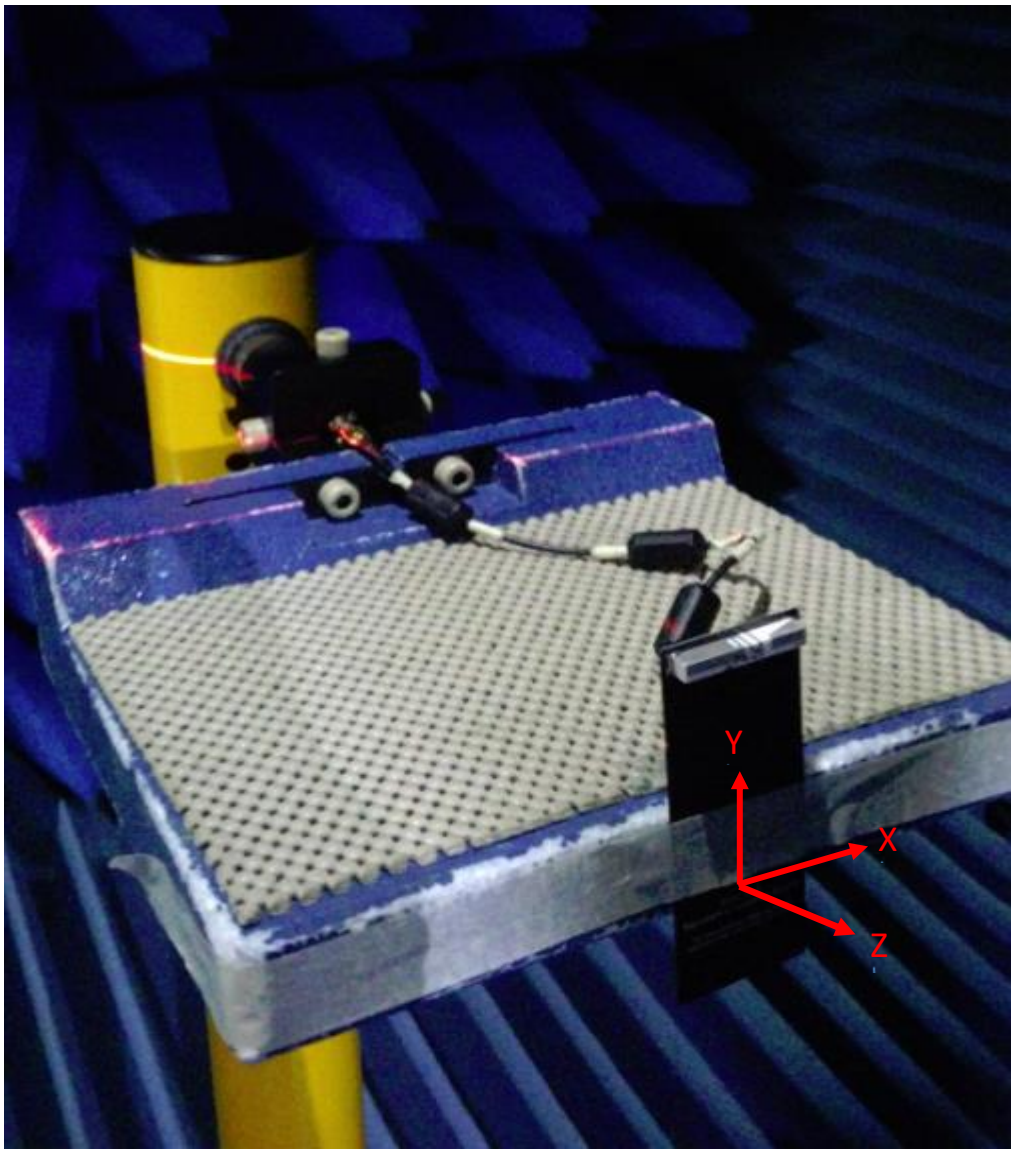


4.4 Average Gain



5. Radiation Pattern

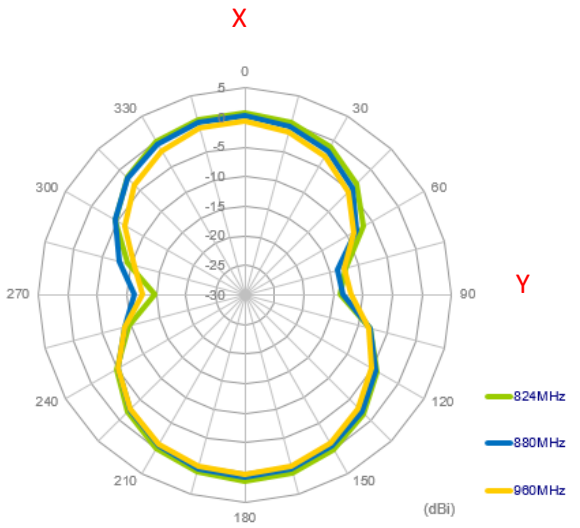
5.1 Test Setup on PAD.25 Evaluation Board



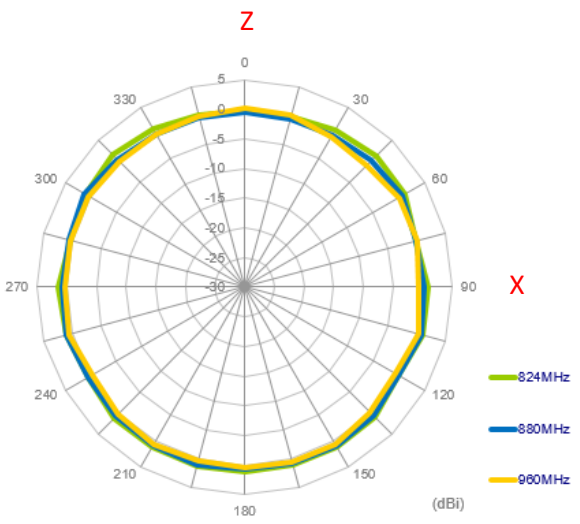
5.2 2D Radiation Patterns

4.2.1. 824MHz – 960MHz

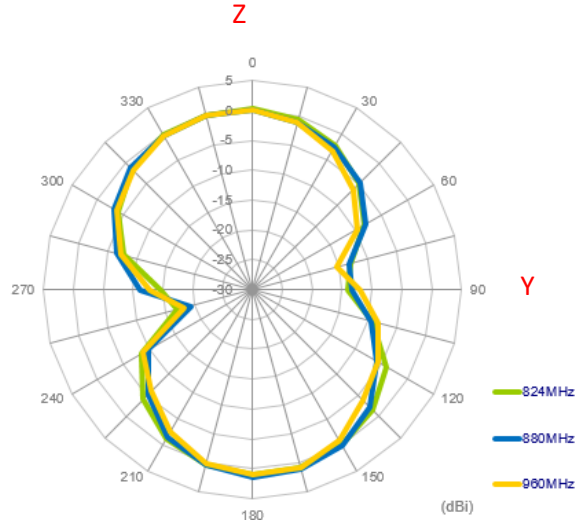
XY Plane



XZ Plane

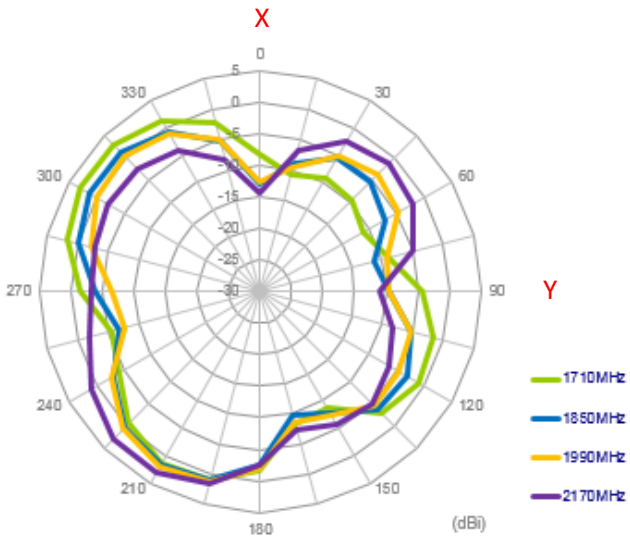


YZ Plane

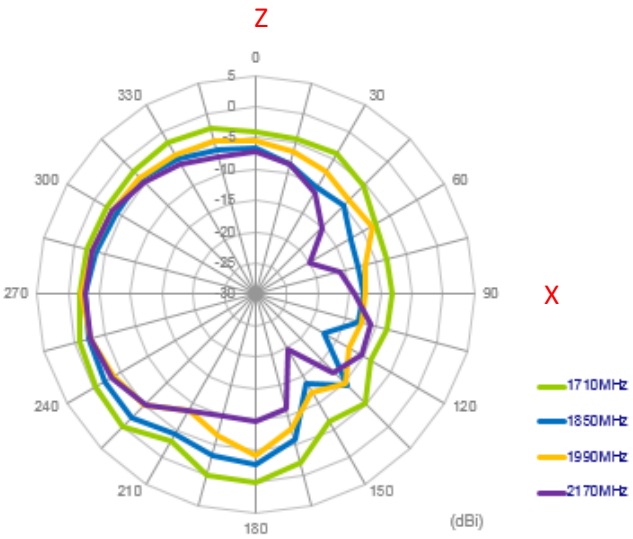


5.2.2. 1710MHz – 2170MHz

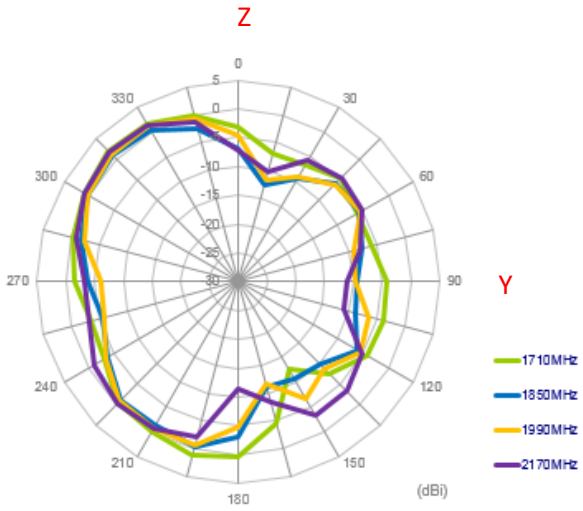
XY Plane



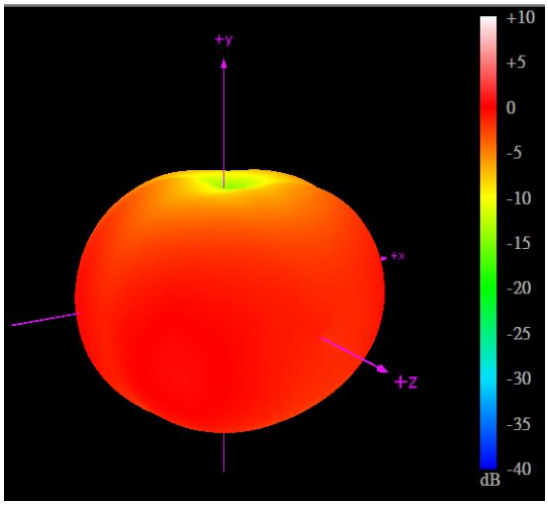
XZ Plane



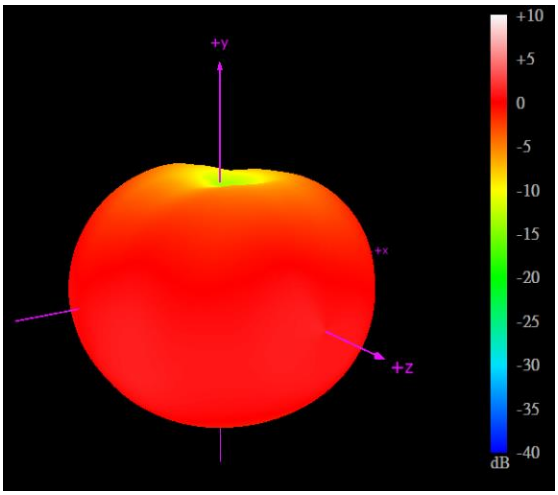
YZ Plane



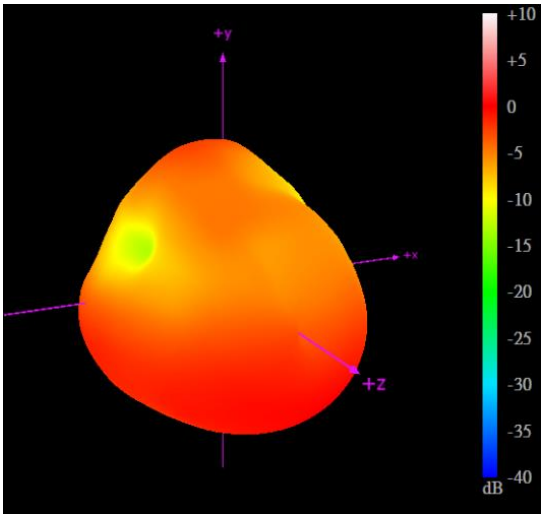
5.2.3. 3D Radiation Patterns



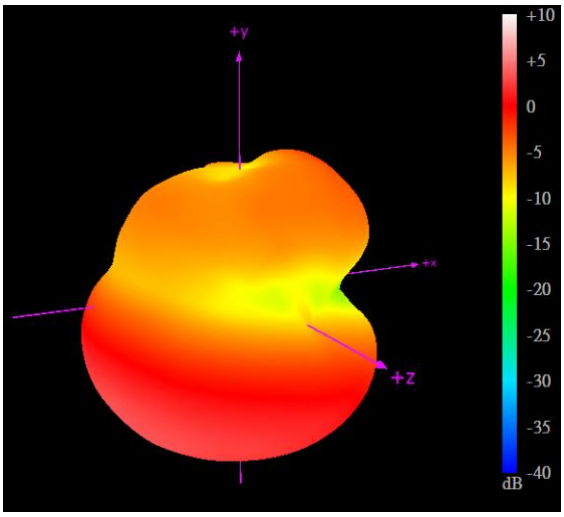
824MHz



960MHz



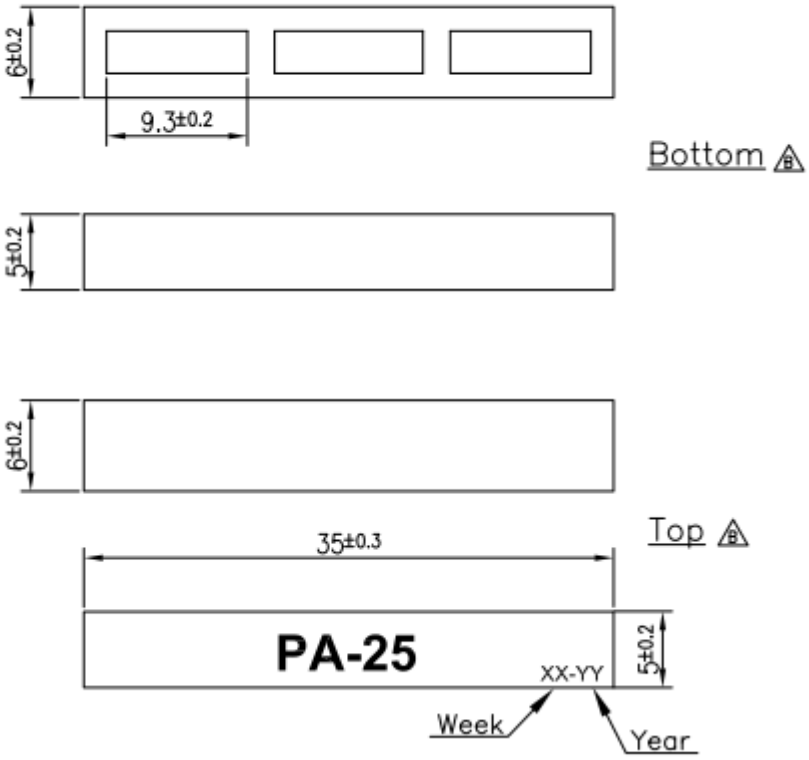
1710MHz



1850MHz

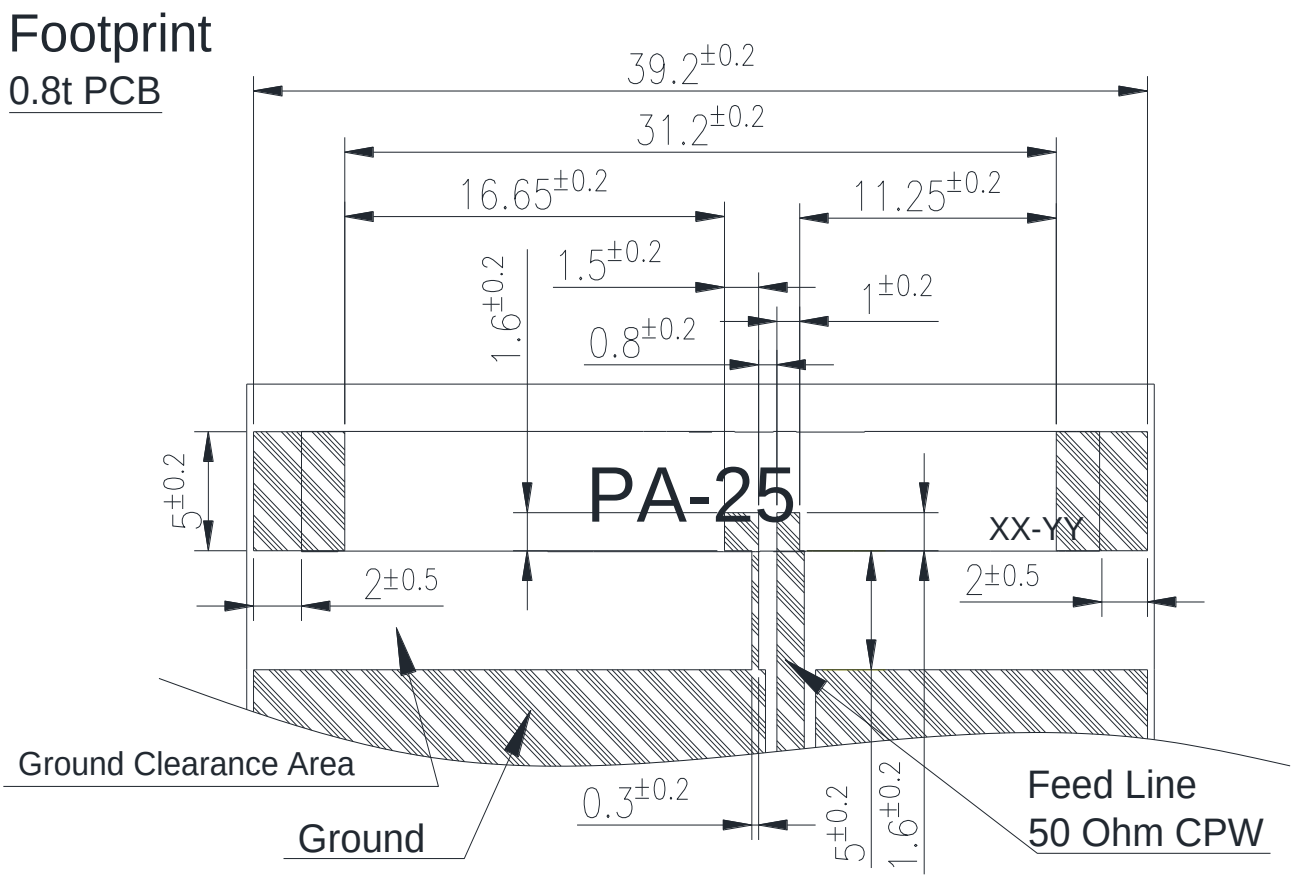
6. Mechanical Drawings (Unit:mm)

6.1. Antenna Dimensions

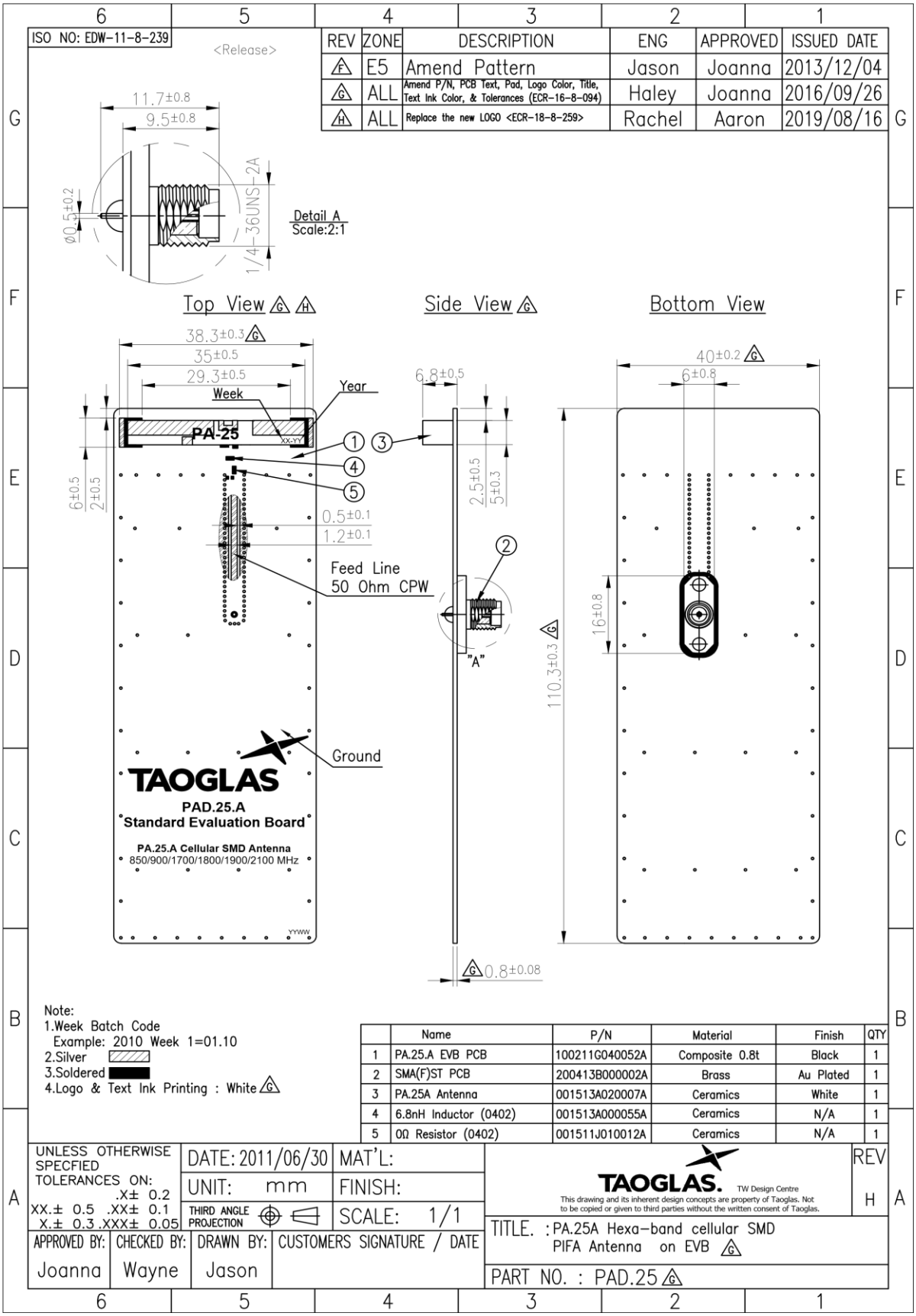


3D View

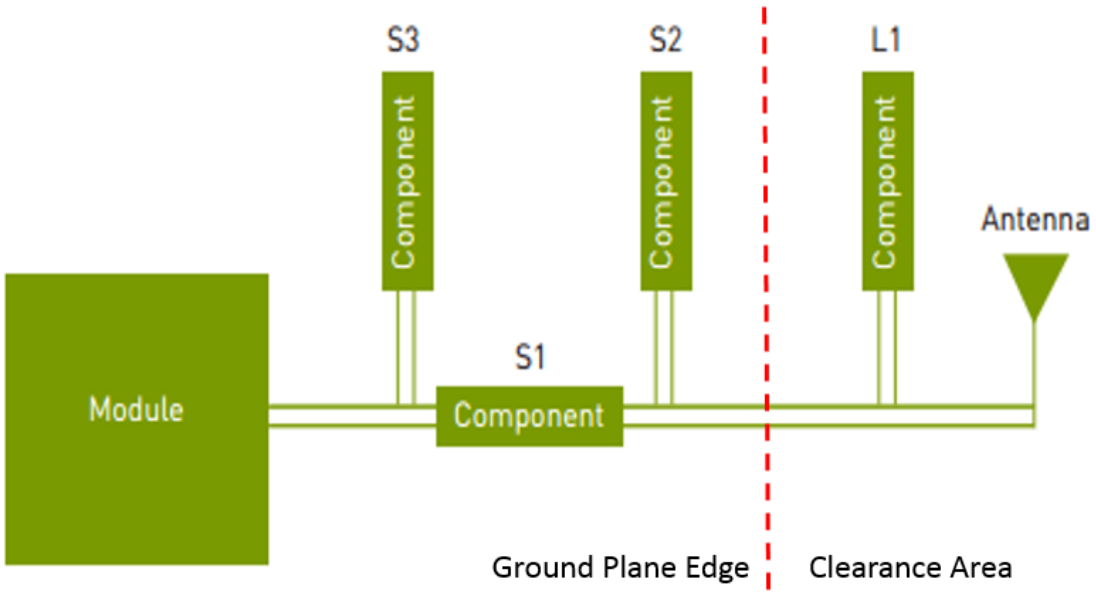
6.2. Antenna Footprint



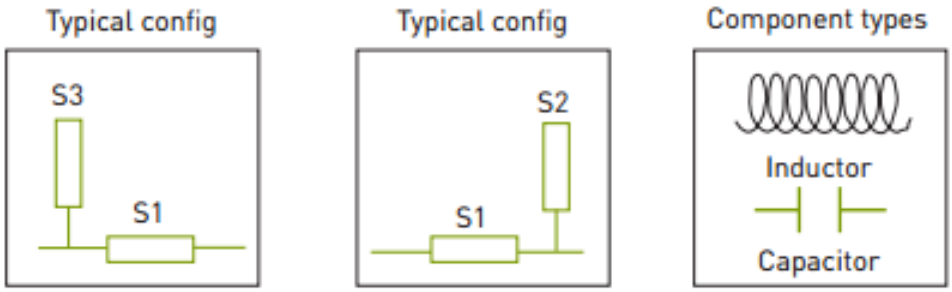
7. EVB Drawing (Unit: mm)



8. Transmission Line and Matching Component



"pi" matching network



"L" and "Inverted-L" matching network

A matching component (L1 in the above drawing) in parallel with the PA.26A is required for the antenna to have optimal performance on the evaluation board, located outside of the ground plane in the space specified in the above drawings.

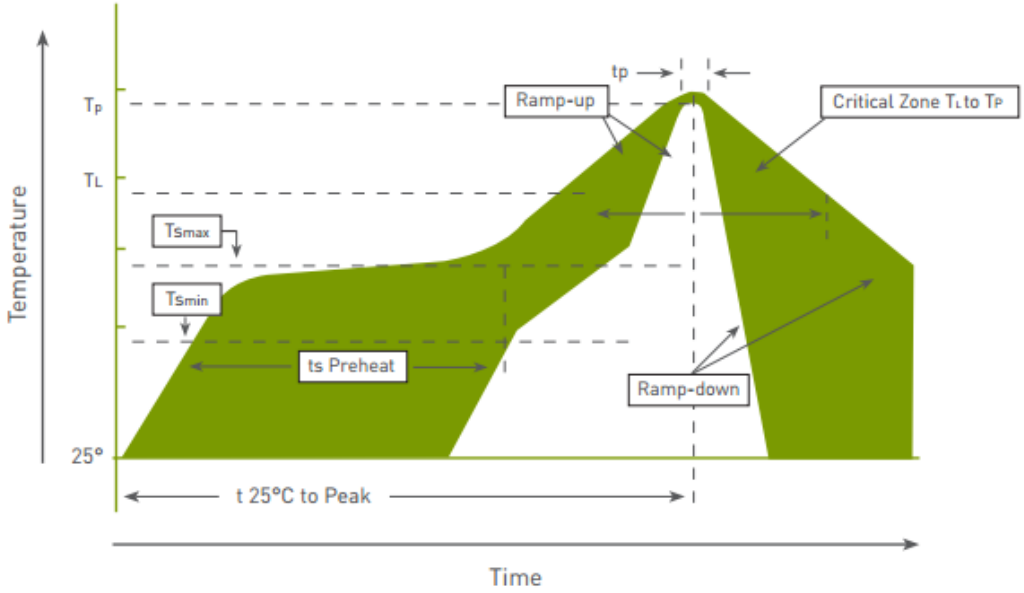
Additional matching components may be necessary for your device, so we recommend incorporating extra component footprints, forming a "pi" network, between the cellular module and the edge of the ground plane.

9. Recommended Reflow Temperature Profile

The PA.25 can be assembled following either Sn-Pb or Pb-Free assembly processes.

The recommended soldering temperatures are as follows:

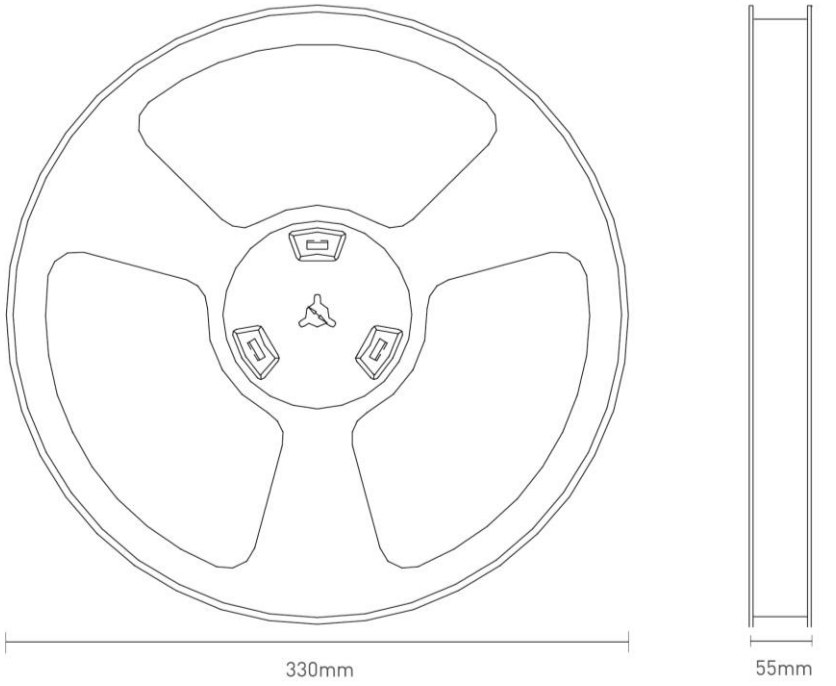
Phase	Profile Features	Sn-Pb Assembly	Pb-Free Assembly (SnAgCu)
Ramp-Up	Avg Ramp-Up Rate (Tsmax to Tp)	3°C/second (max)	3°C/second (max)
Preheat	Temperature Min (Tsmin) Temperature Max (Tsmax) Time (tsmin to tsmax)	100°C 150°C 60-120 seconds	150°C 200°C 60-120 seconds
Reflow	Temperature (T_L) Total Time Above T_L b(t_L)	183°C 60-150 seconds	217°C 60-150 seconds
Peak	Temperature (Tp) Time (tp)	235°C 10-30 seconds	260°C 20-40 seconds
Ramp-Down	Rate	6°C/second (max)	6°C/second (max)
Time from 25°C to peak Temperature		6 minutes max	8 minutes max



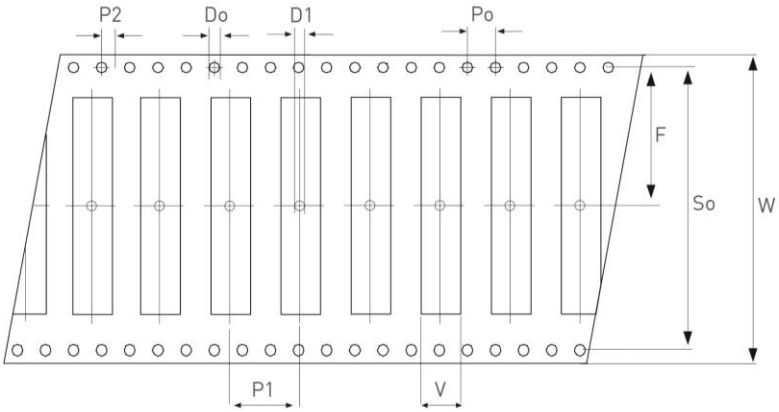
Temperature profile – (green area) for the assembly process in reflow ovens

10. Packaging (Units; mm)

450 pc PA.25.A
1 reel per small inner box
Dimensions - 330*55mm
Weight - 2000g



Symbol	Spec
Po	4.0 ± 0.10
P1	12.0 ± 0.10
P2	2.0 ± 0.15
Do	1.5
D1	0.7
F	26.2 ± 0.10
So	52.4 ± 0.10
W	56.0 ± 0.30
V	5.5 ± 0.10



Changelog for the datasheet

SPE-11-8-061 – PA.25A

Revision: K (Current Version)	
Date:	2020-11-10
Changes:	Specifications table amended - Moisture Sensitivity Level 3
Changes Made by:	Dan Cantwell

Previous Revisions

Revision: J	
Date:	2016-12-21
Changes:	
Changes Made by:	Technical Writer

Revision: E	
Date:	2012-12-06
Changes:	
Changes Made by:	Technical Writer

Revision: I	
Date:	2016-09-22
Changes:	Updated PAD, EBV drawing and image
Changes Made by:	Andy Mahoney

Revision: D	
Date:	2011-09-07
Changes:	
Changes Made by:	Technical Writer

Revision: H	
Date:	2016-01-18
Changes:	
Changes Made by:	Technical Writer

Revision: C	
Date:	
Changes:	
Changes Made by:	Technical Writer

Revision: G	
Date:	2013-09-03
Changes:	Amended Dimensions
Changes Made by:	Aine Doyle

Revision: B	
Date:	
Changes:	
Changes Made by:	Technical Writer

Revision: F	
Date:	2013-03-21
Changes:	
Changes Made by:	Technical Writer

Revision: A (Original First Release)	
Date:	2010-08-18
Notes:	
Author:	Technical Writer

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