



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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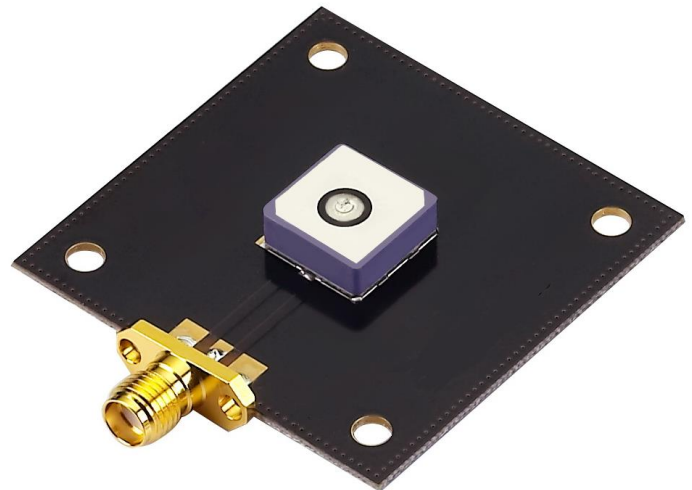
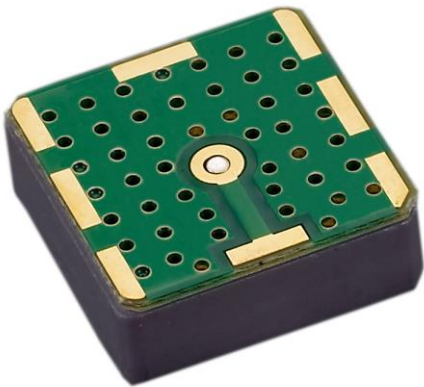
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SPECIFICATION

Part No.	:	SGP.1575.12.4.A.02
Product Name	:	GPS/GALILEO SMT Patch Antenna
Features	:	12mm*12mm*4.5mm 1575MHz Centre Frequency Patent Pending RoHS Compliant



1. Introduction

This ceramic GPS/GALILEO patch antenna is based on smart **XtremeGain™** technology. It is mounted via SMT process and has been selected as optimal solution for the 45x45mm ground plane.

2. Specification

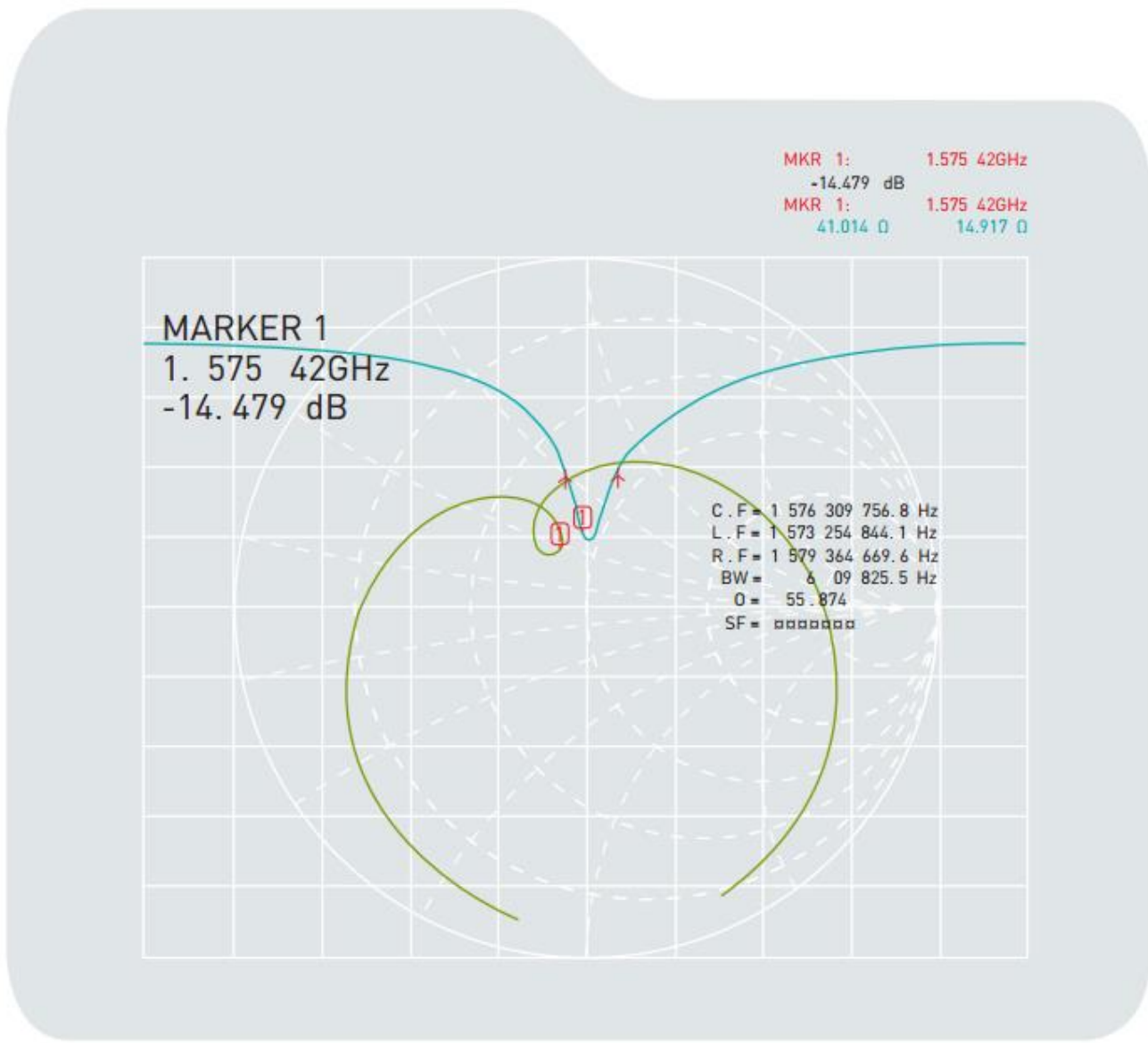
Original Patch Specification tested on 45mm ground plane

No	Parameter	Specification	Notes
1	Range of Receiving Frequency	1575.42 MHz ± 1.023 MHz	
2	Center Frequency	1575.42 ± 3MHz	With 45*45mm ground plane
3	Bandwidth	4MHz min	Return Loss ≤ -10 dB
4	VSWR	1.5 max	
5	Gain at Zenith	-1.0 dBic typ.	
6	Gain at 10°elevation	-1.5 dBic typ.	
7	Axial Ratio	4.0 dB max	
8	Polarization	RHCP	
9	Impedance	50 Ohms	
10	Frequency Temperature Coefficient (τ_f)	0 ± 20ppm / °C	-40°C to +85°C
11	Operating Temperature	-40°C to +85°C	

****Changes in user groundplane and environment will offset centre frequency**

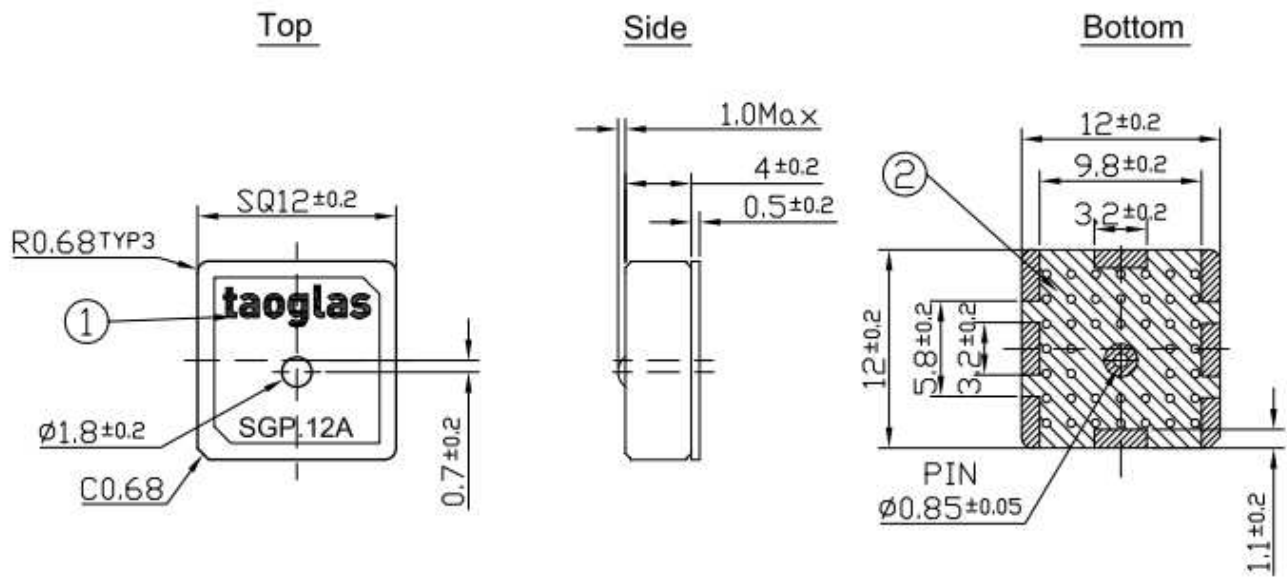
3. Electrical Specifications

3.1 Return Loss, SWR, Impedance, measured on the test fixture



4. Mechanical Specifications

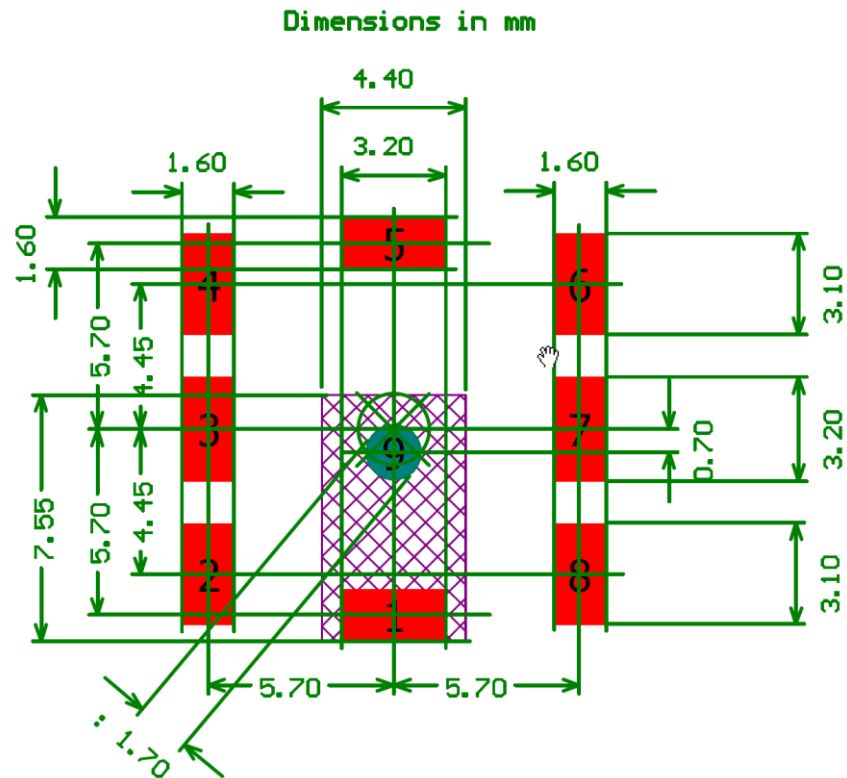
4.1 Dimensions and Drawing



	Name	Part no.	Material	Finish	QTY
1	SGP.12 Patch 12x12x4	SGP.12	Ceramic	Clear	1
2	SGP.12 PCB		FR 0.5t	Green	1

4.2 Antenna footprint

4.2.1 Top Copper

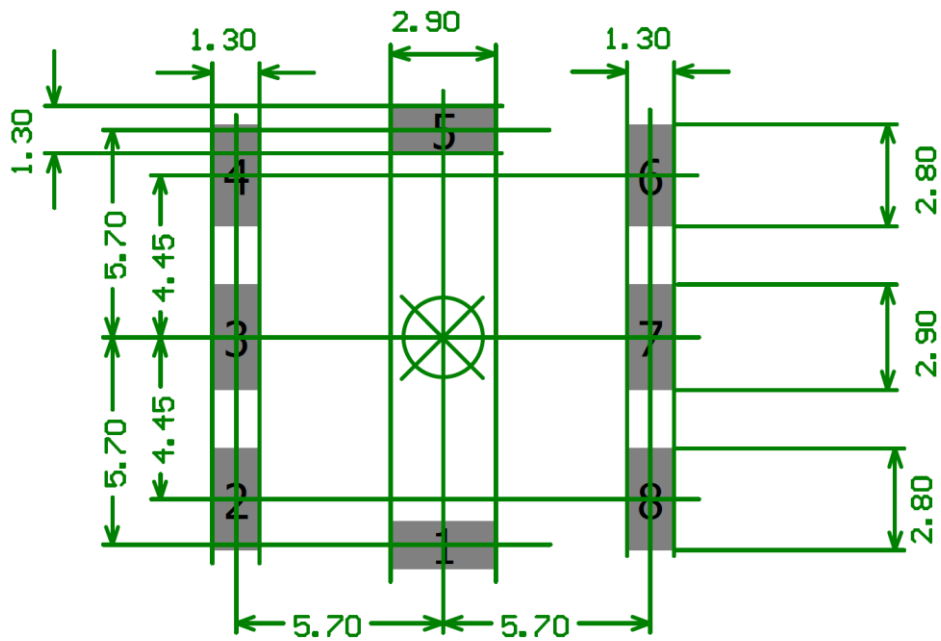


 **Copper Keepout Region**

Pads 2 through 8 should be connected to GND.
 Pads 1 and 5 are the same size (3.2 x 1.6 mm).
 Pads 2, 4, 6, and 8 are the same size (1.6 x 3.1 mm).
 Pads 3 and 7 are the same size (1.6 x 3.2 mm).
 Pad 9 is a 1.70mm dia. non-plated thru-hole.
 Copper Keepout Region should extend at least 2 mm down into PCB.

4.2.2 Solder Paste

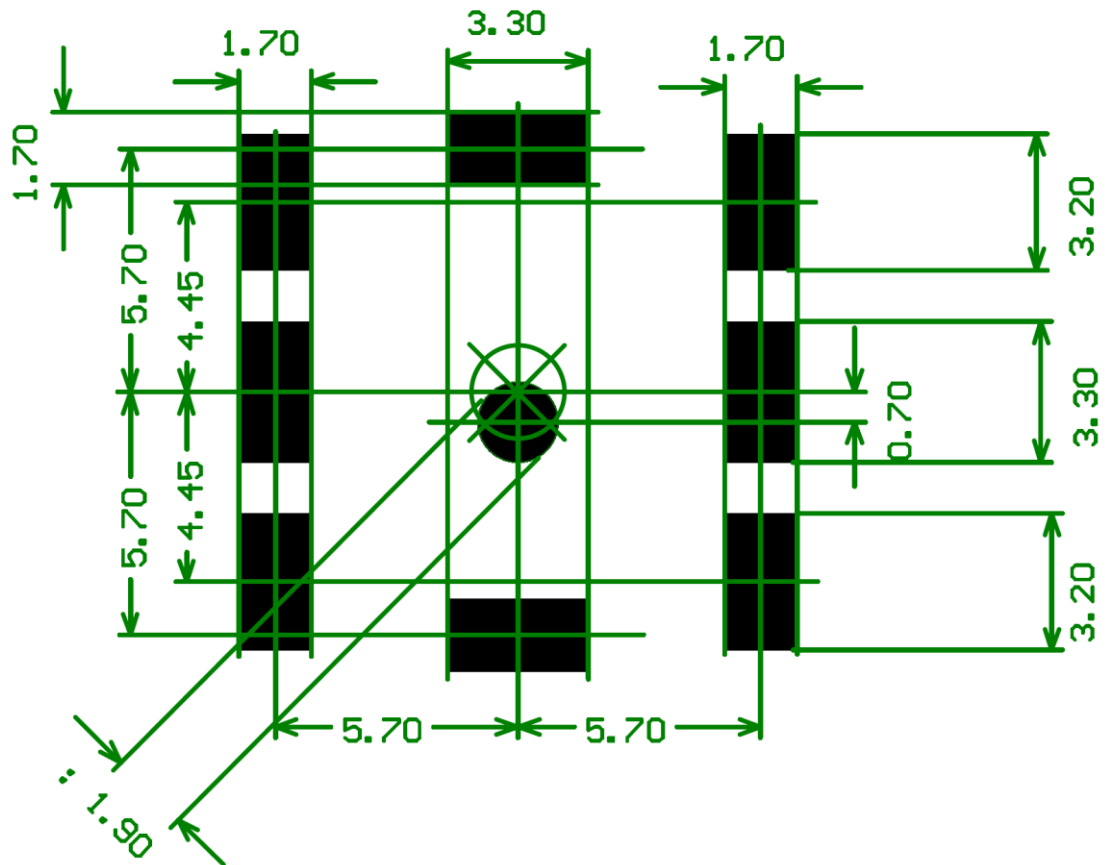
Dimensions in mm



Solder paste application is typically defined by the assembly house. These recommendations are merely a starting point and are subject to change.

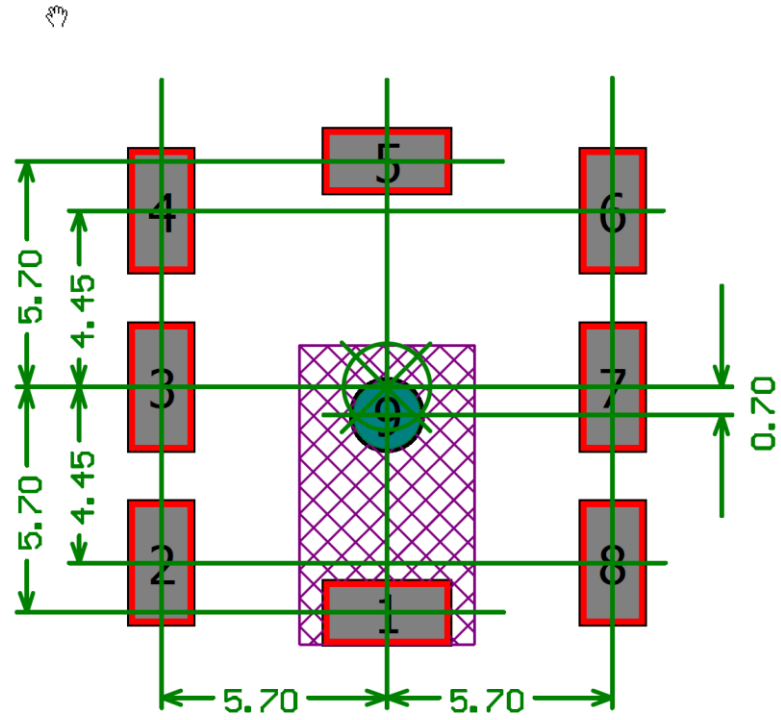
4.2.3 Solder Mask

Dimensions in mm



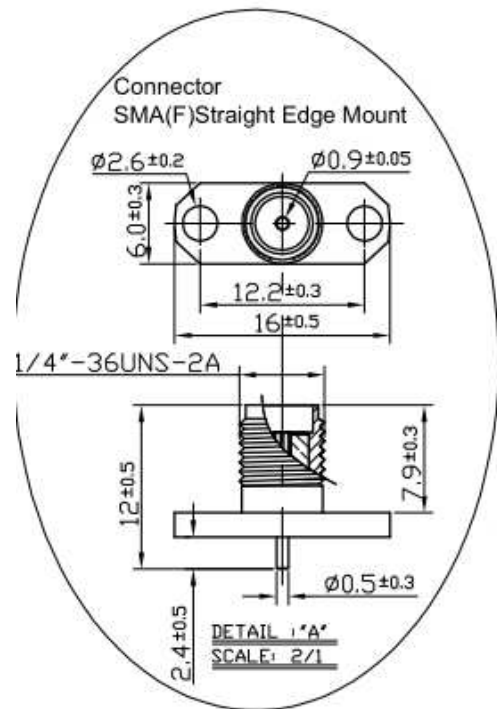
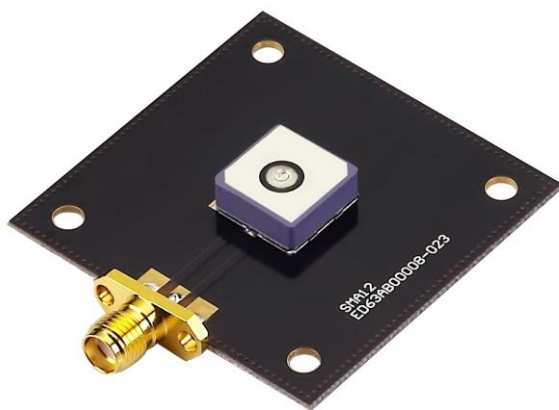
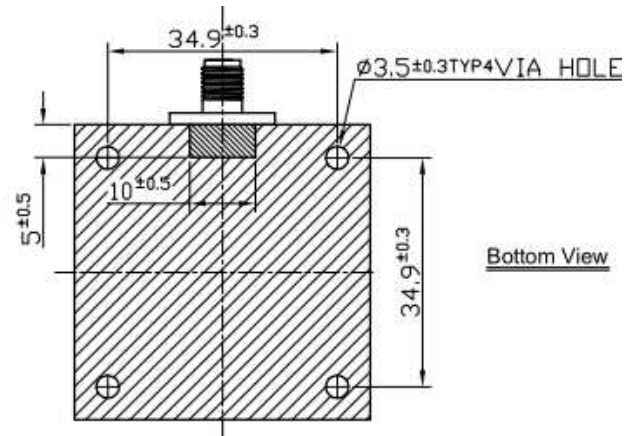
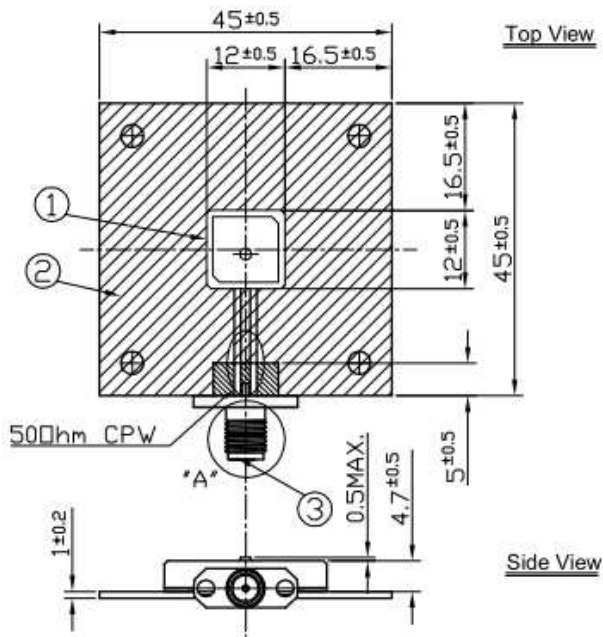
4.2.4 Composite

Dimensions in mm

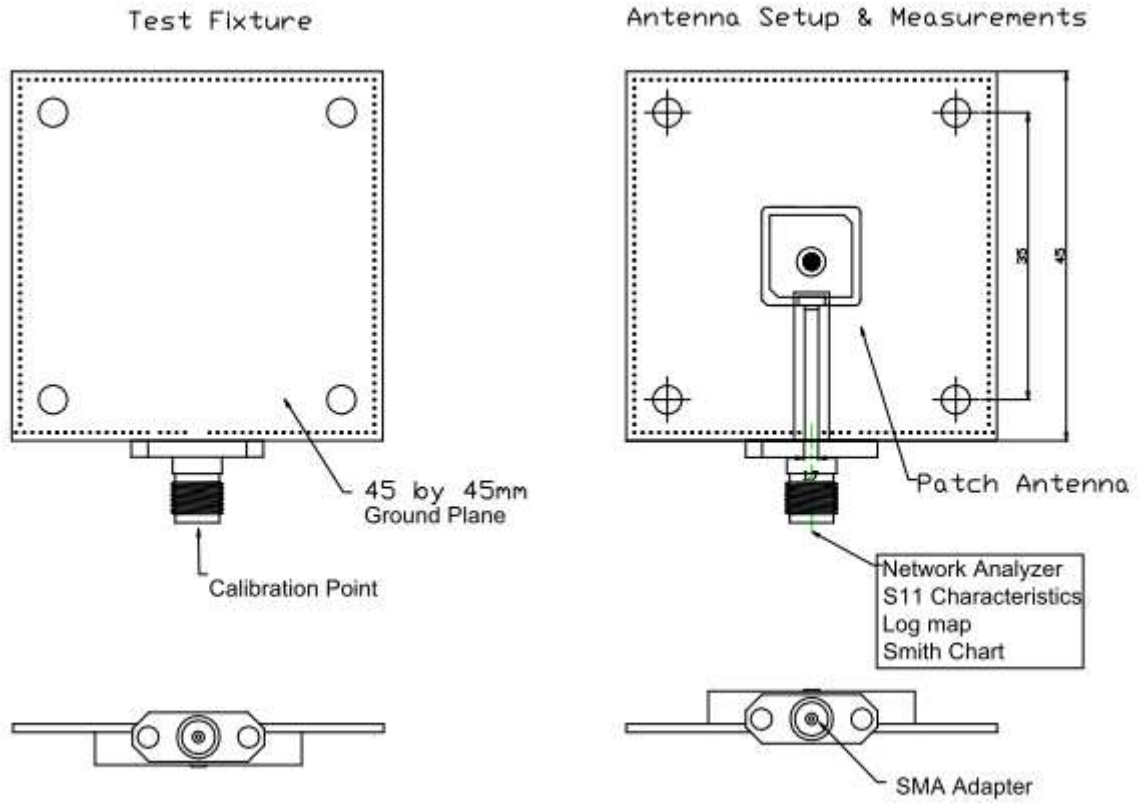


Copper Keepout Region

4.3 Test Jig and Dimension



4.4 Test Fixture set up and measurements

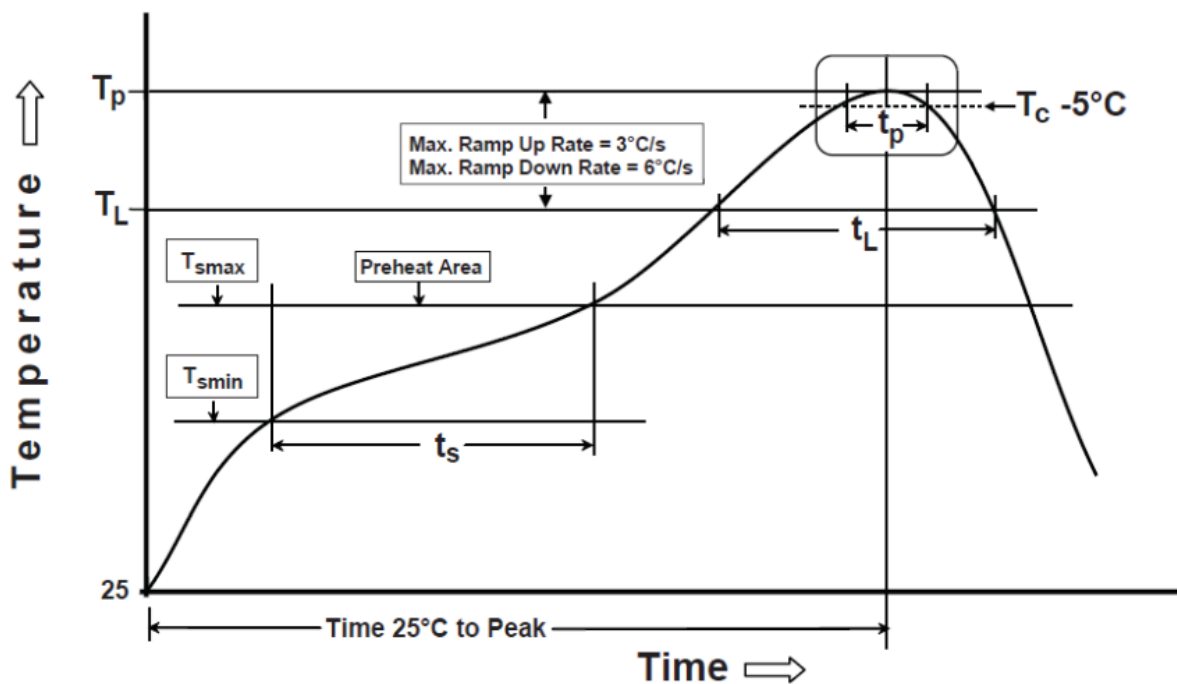


5. Recommended Reflow Soldering Profile

SGP.12A can be assembled following Pb-free assembly. According to the Standard IPC/JEDEC J-STD-020C, the temperature profile suggested is as follow:

Phase	Profile Features	Pb-Free Assembly (SnAgCu)
PREHEAT	Temperature Min(T_{smin})	150°C
	Temperature Max(T_{smax})	200°C
	Time(t_s) from (T_{smin} to T_{smax})	60-120 seconds
RAMP-UP	Avg. Ramp-up Rate (T_{smax} to TP)	3°C/second(max)
REFLOW	Temperature(T_L)	217°C
	Total Time above T_L (t_L)	30-100 seconds
PEAK	Temperature(T_P)	260°C
	Time(t_p)	2-5 seconds
RAMP-DOWN	Rate	3°C/second(max)
Time from 25°C to Peak Temperature		8 minutes max.
Composition of solder paste		96.5Sn/3Ag/0.5Cu
Solder Paste Model		SHENMAO PF606-P26

The graphic shows temperature profile for component assembly process in reflow ovens



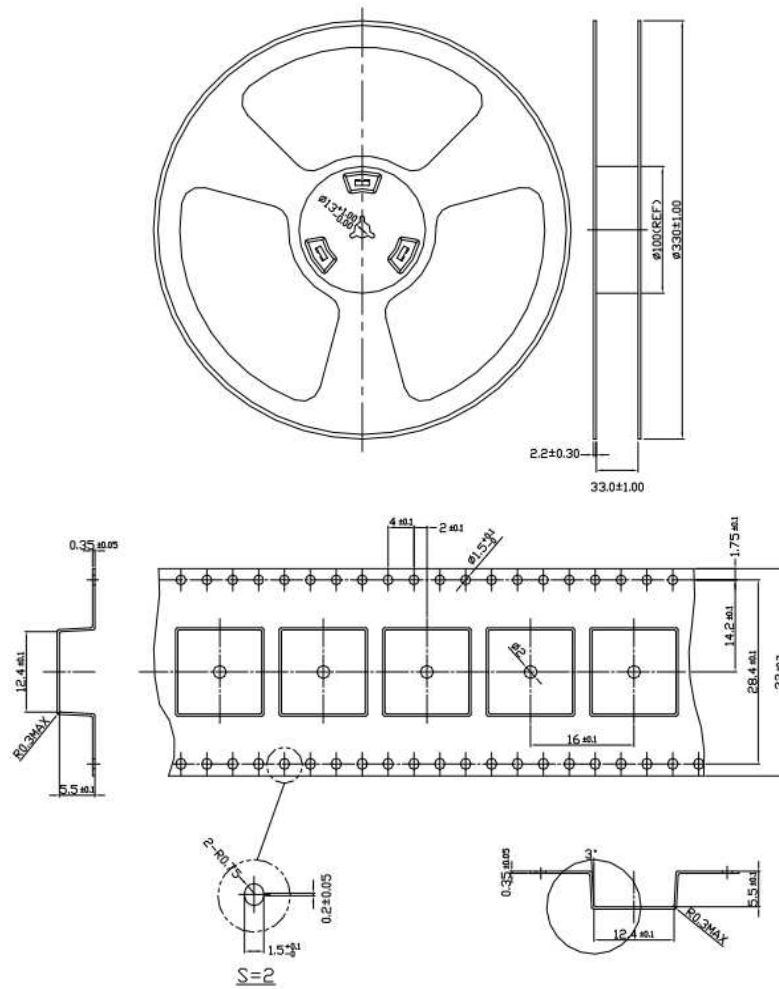
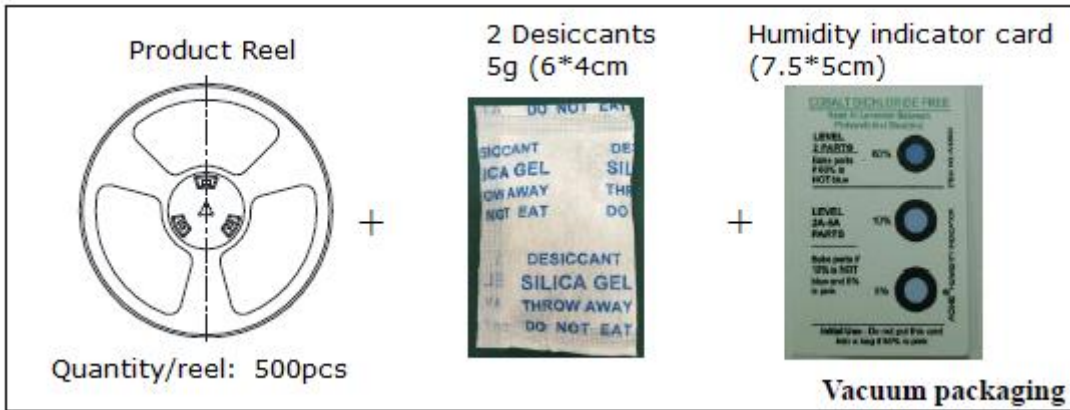
Soldering Iron condition: Soldering iron temperature $270^\circ\text{C} \pm 10^\circ\text{C}$.

Apply preheating at 120°C for 2-3 minutes. Finish soldering for each terminal within 3 seconds, if soldering iron temperature over $270^\circ\text{C} \pm 10^\circ\text{C}$ or 3 seconds, it will make cause component surface peeling or damage.

6. Packaging

500pcs/reel/inner carton

5 reels in an outer carton(2500)





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