



# Datasheet

## GPS/GLONASS/Galileo SMD Patch Antenna

**Part No:**  
SGGP.18.4.A.08

**Description:**  
18\*18\*4mm GPS/GLONASS/Galileo SMD Patch Antenna

### Features:

SMD Direct Mount Ceramic Patch Antenna  
GPS/Galileo/GLONASS Antenna  
GPS L1/Galileo E1 (1575.42 MHz) – 78% Efficiency  
GLONASS L1 (1602 MHz) – 80% Efficiency  
Dimensions: 18\*18\*4mm  
RoHS & Reach Compliant

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## 1. Introduction



The Taoglas SGGP.18 is a ceramic GPS/GLONASS/Galileo passive patch antenna designed for optimal performance on GPS L1/Galileo E1 band (1575.42 MHz) and GLONASS L1 band (1602 MHz). With a low-profile thickness of just 4mm and convenient mounting via standard SMD process, it is ideal for high-volume, low-cost assembly applications. SGGP.18 is designed for applications in navigation devices, vehicle tracking/fleet management systems, and telematics devices. It is an excellent choice for applications in transportation, defense, marine, agriculture, and navigation industries.

This antenna has been tuned for use on a 50mm\*50mm ground plane to achieve 2.86 dBi gain at 1575.42 MHz and 3.04 dBi gain at 1602 MHz. In addition to excellent efficiency, it also offers a broadly hemispherical radiation pattern with stable gain across elevations.

SGGP.18 is manufactured and tested in an IATF16949 first tier automotive approved facility. For further optimization to customer-specific device environments, custom tuned patch antennas can be supplied, subject to NRE and MOQ.

For further information or support with integrating this antenna into your device, please contact your regional Taoglas customer support team.

## 2. Specifications

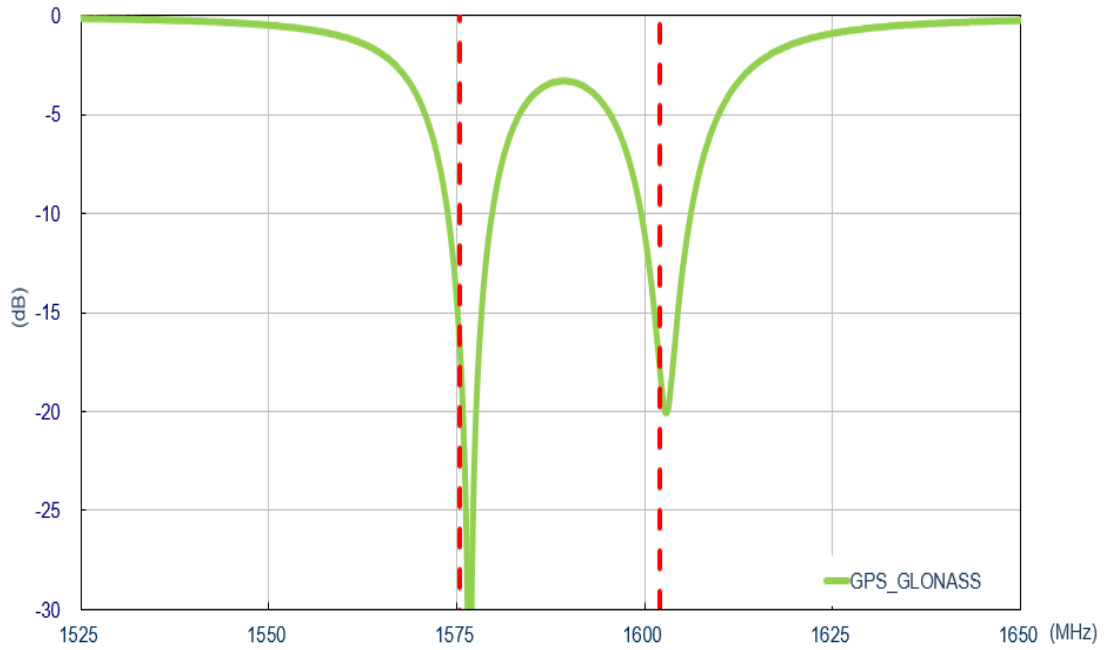
GNSS Frequency Bands Covered							
<b>GPS/QZSS</b>	L1 1575.42MHz	L2 1227.6MHz	L5 1176.45MHz	L6 1278.75MHz			
	■	□	□	□			
<b>GLONASS</b>	L5R 1176.45MHz	L3PT 1201.5MHz	L2PT 1246MHz	L1CR 1575.42MHz	L1PT 1602MHz		
	□	□	□	■	■		
<b>Galileo</b>	E5a 1176.45MHz	E5b 1201.5MHz	E4 1215MHz	E3 1256MHz	E6 1278.75MHz	E2 1561MHz	E1 1575.42MHz
	□	□	□	□	□	□	■
<b>BeiDou</b>	B1 1561MHz	B2 1207.14MHz	B3 1268.52MHz				
	□	□	□				
<b>Compass</b>	E5B(B2)/ E6(B3) 1268.56MHz	E2(B1) 1561MHz					
	□	□					
<b>SBAS</b>	Omnistar 1542.5MHz	WAAS/EGN OS 1575.42MHz					
	□	■					

GNSS Electrical		
Application Bands	GPS/Galileo	GLONASS
Operation Frequency (MHz)	1575.42 ±1.023	1602±5
Return Loss (dB)	< -10	< -10
Efficiency (%)	78	80
Average Gain (dB)	-1.07	-0.98
Peak Gain (dBi)	2.86	3.04
Impedance	50 ohms	
Polarization	RHCP	
Mechanical		
Ceramic Dimension	18*18*4mm	
Weight	5.8g	
Enviorinmental		
Operation Temperature	-40°C to 85°C	
Humidity	Non-condensing 65°C 95% RH	
Moisture Sensitivity Level (MSL)	3 (168 Hours)	

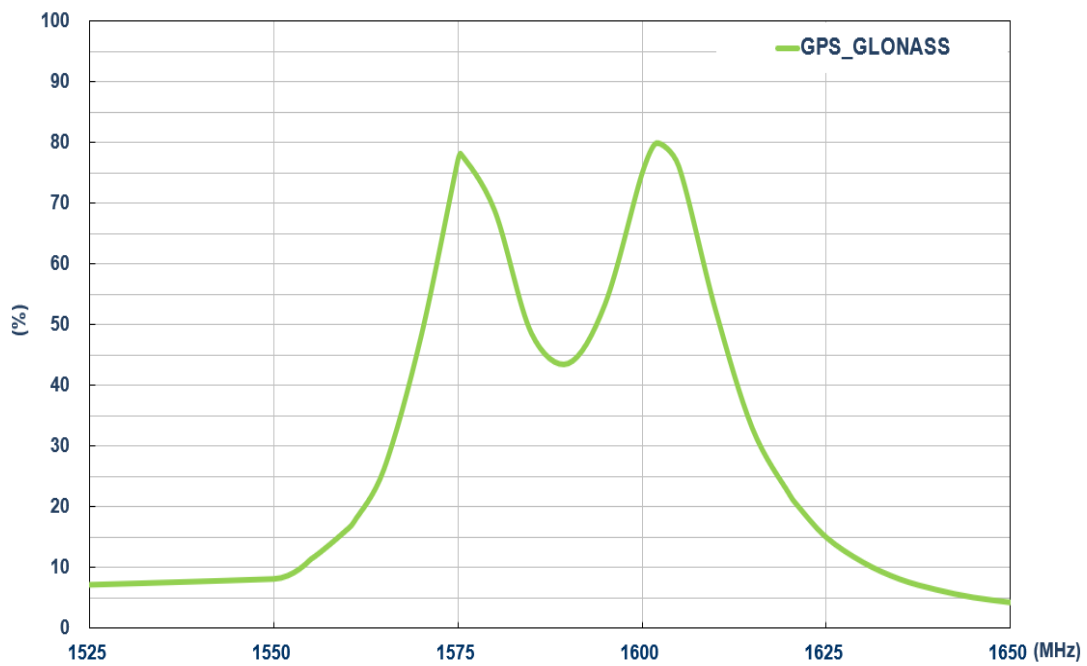
\*Measurements tested on 50\*50mm ground plane

### 3. Antenna Characteristics

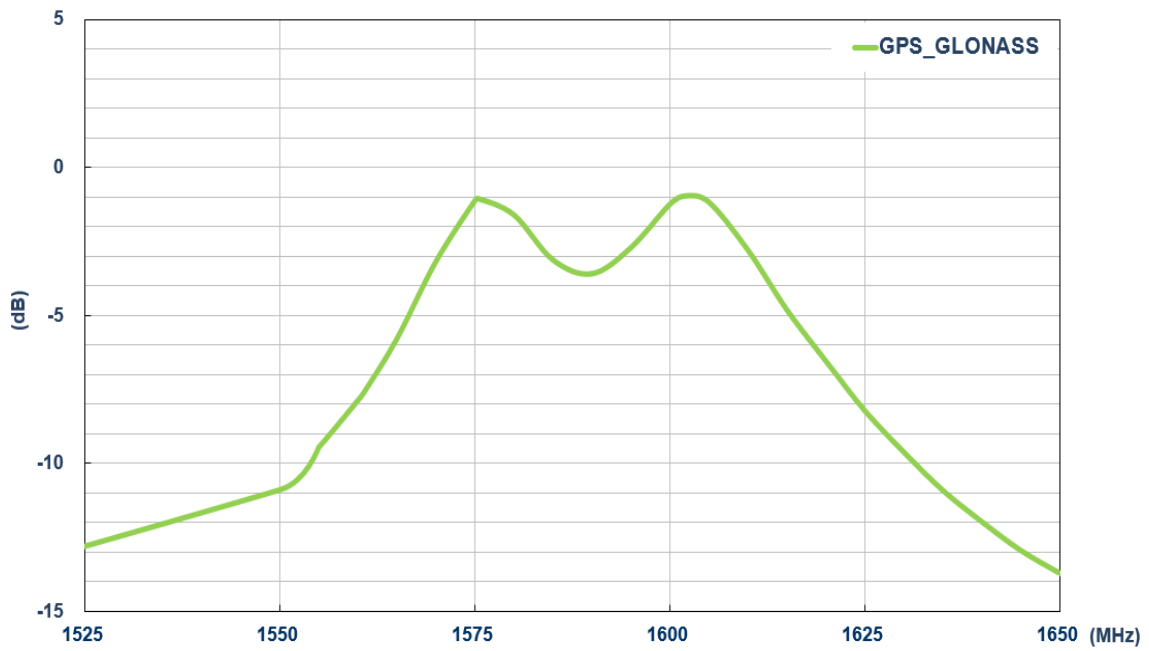
#### 3.1 Return Loss



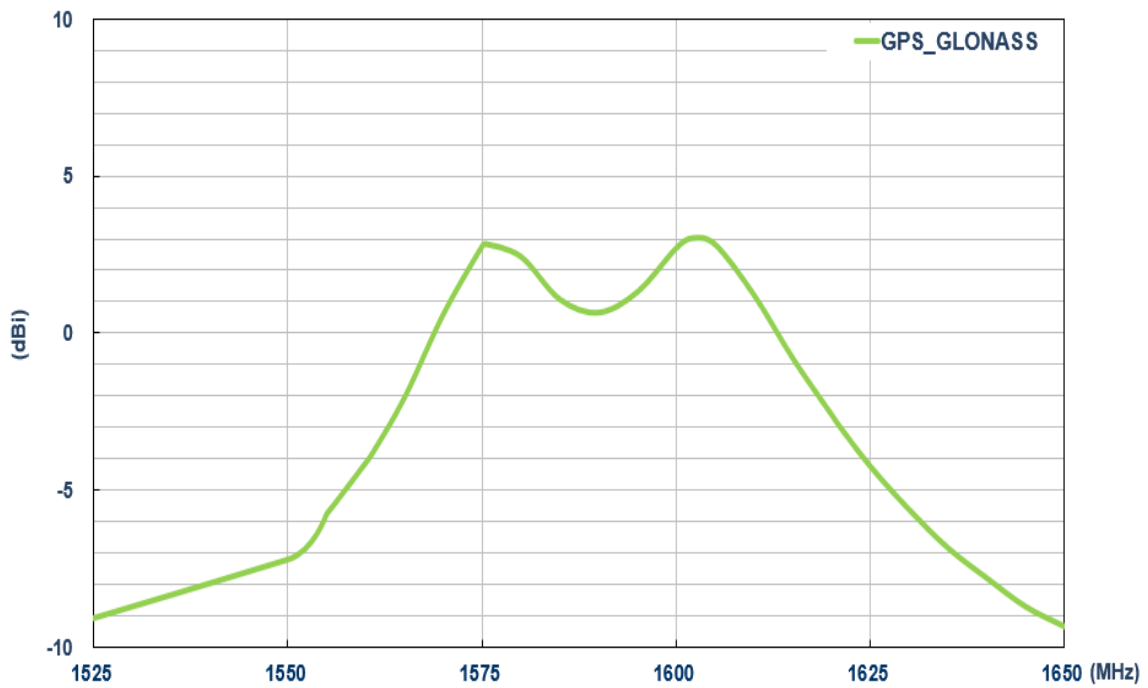
#### 3.2 Efficiency



### 3.3 Average Gain

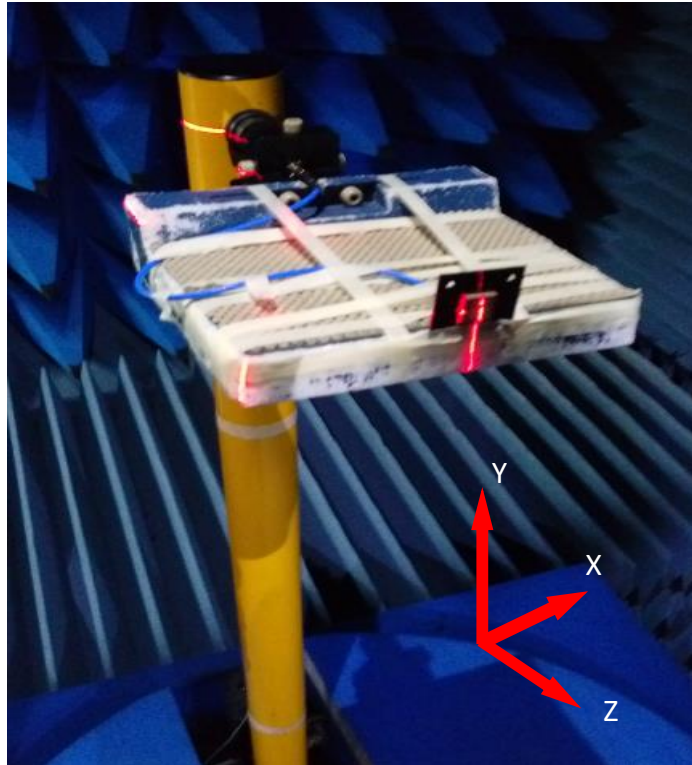


### 3.4 Peak Gain



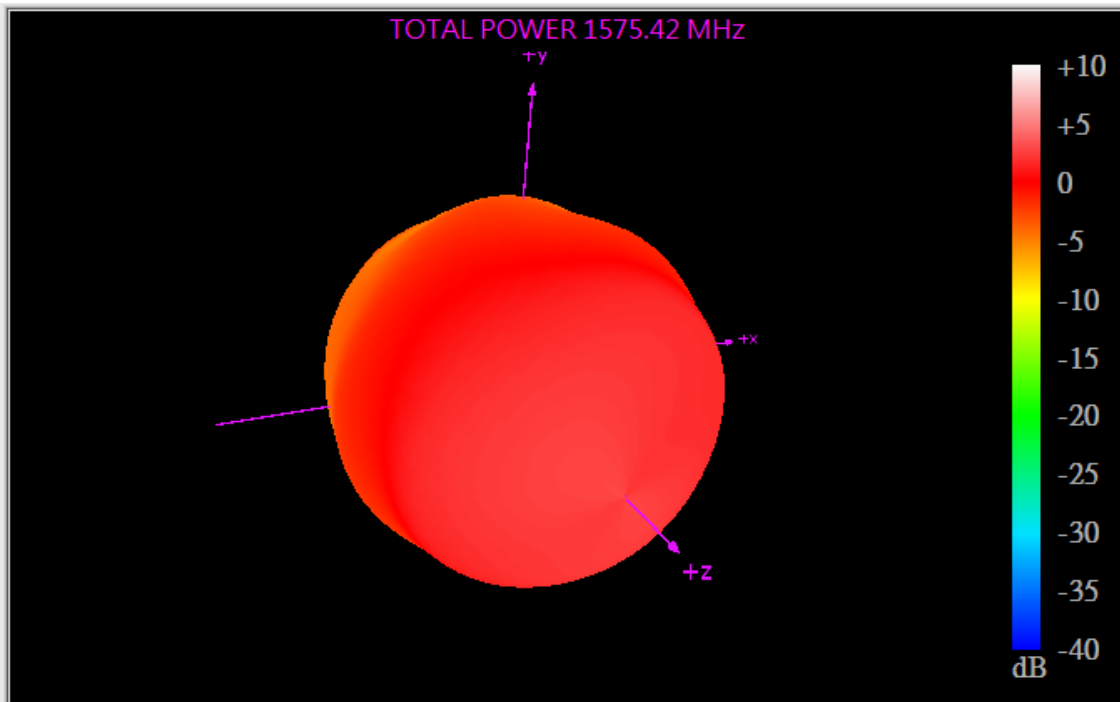
## 4. Radiation Patterns

### 4.1 Test Setup



The SGGP.18.4.A.08 antenna is tested with 50mm\*50mm ground plane in a CTIA certified ETS-Lindgren Anechoic Chamber. The test setup is shown above.

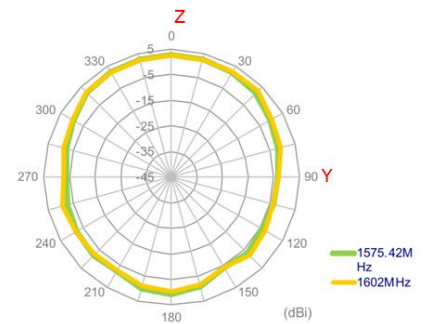
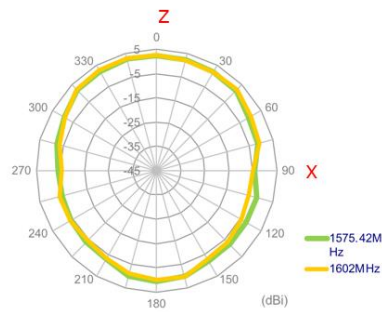
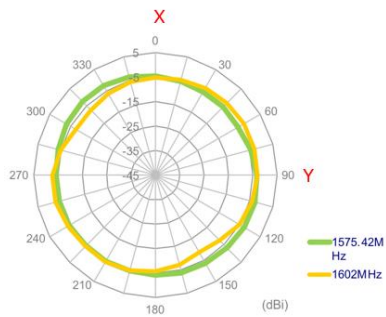
4.2 1575.42MHz 3D and 2D Radiation Patterns



XY Plane

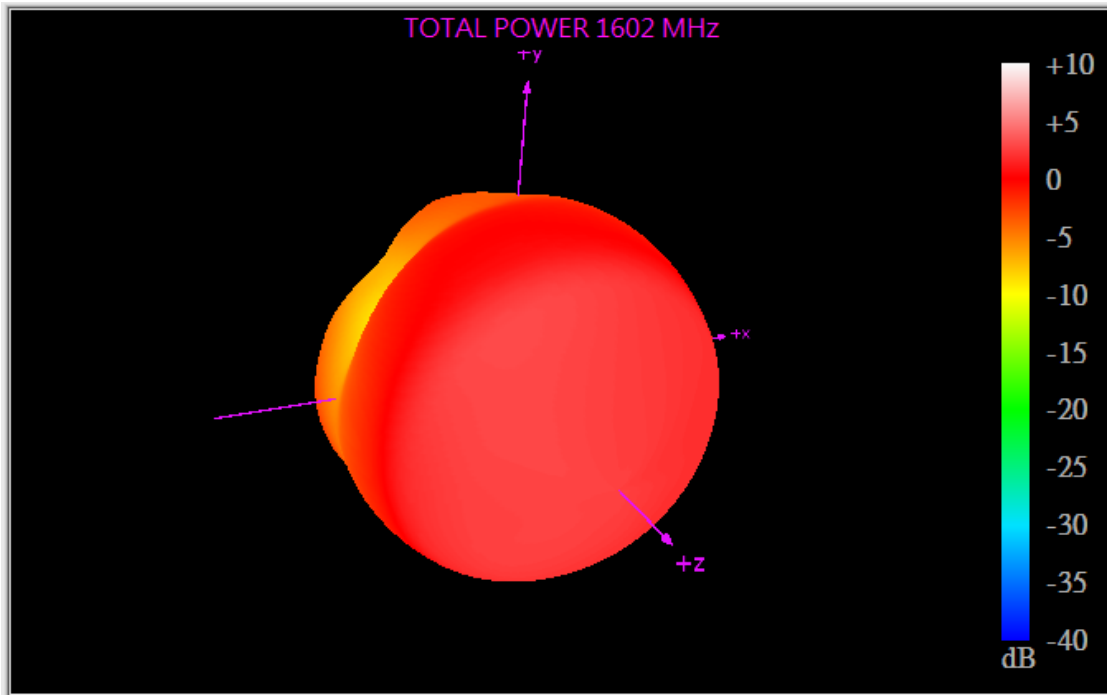
XZ Plane

YZ Plane





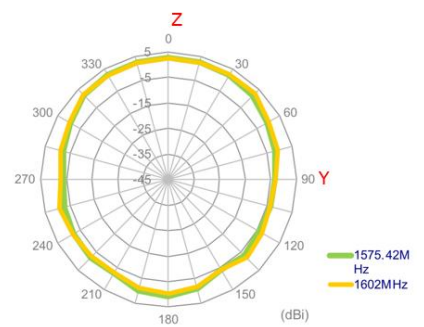
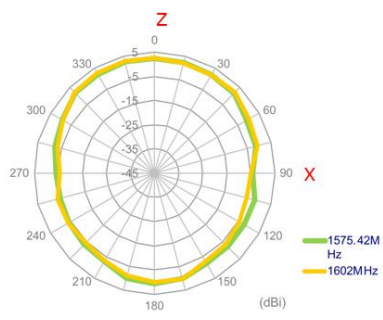
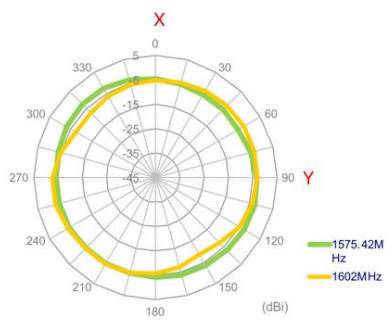
1602MHz



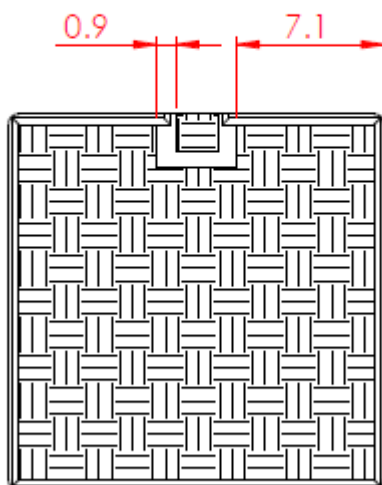
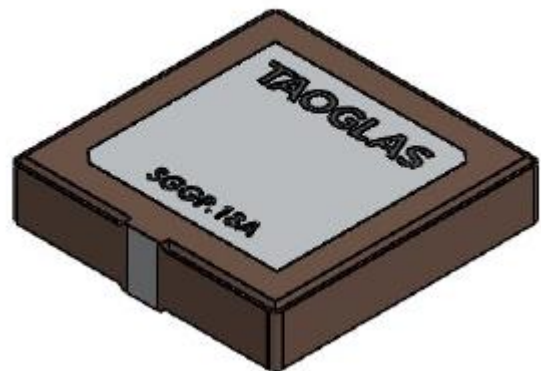
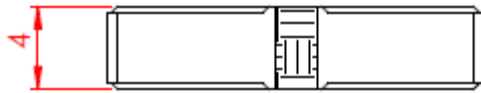
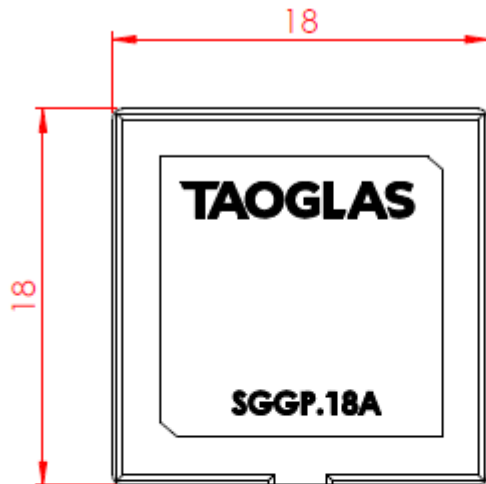
XY Plane

XZ Plane

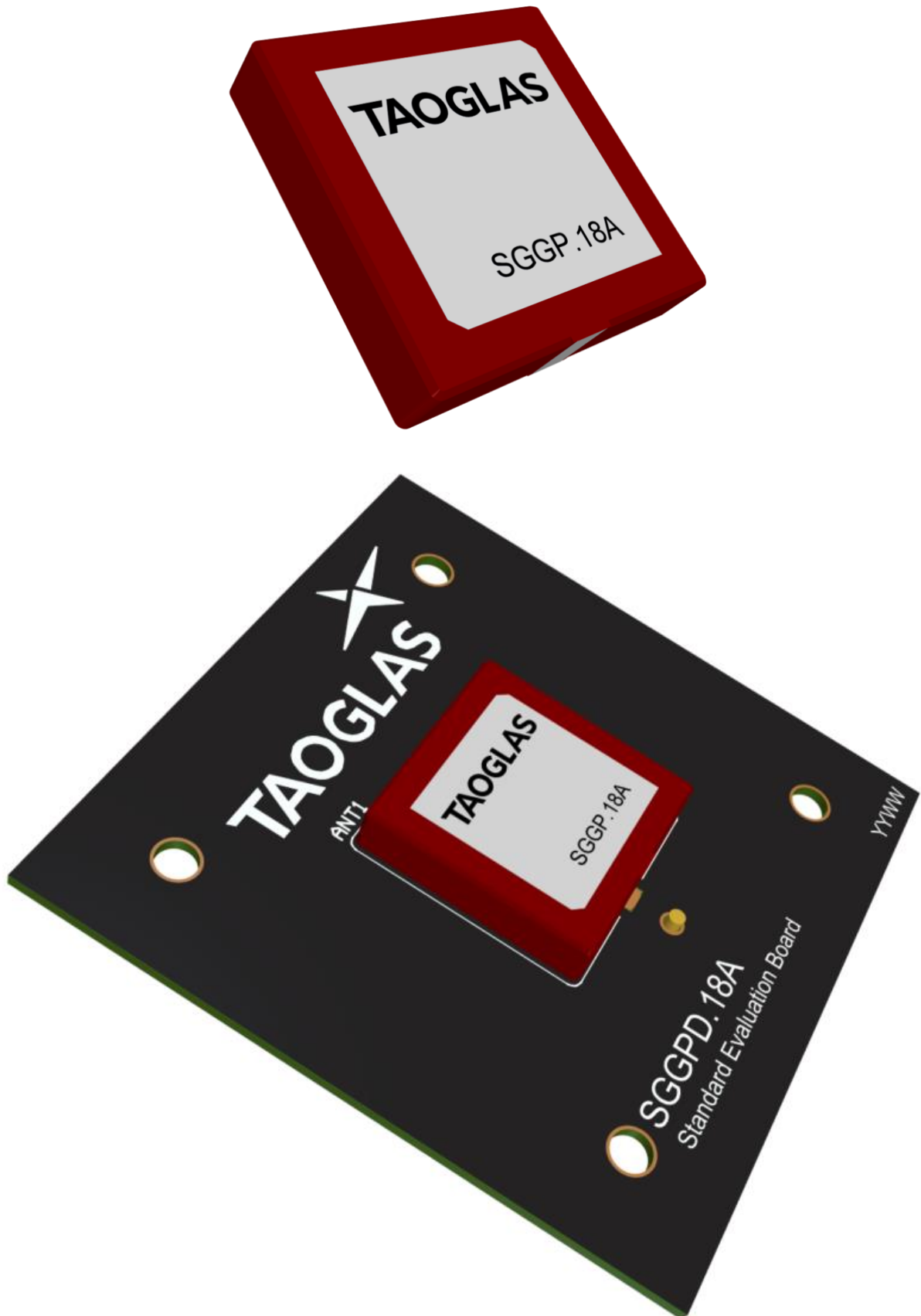
YZ Plane



## 5. Mechanical Drawing (Units: mm)



## 6. Antenna Integration Guide

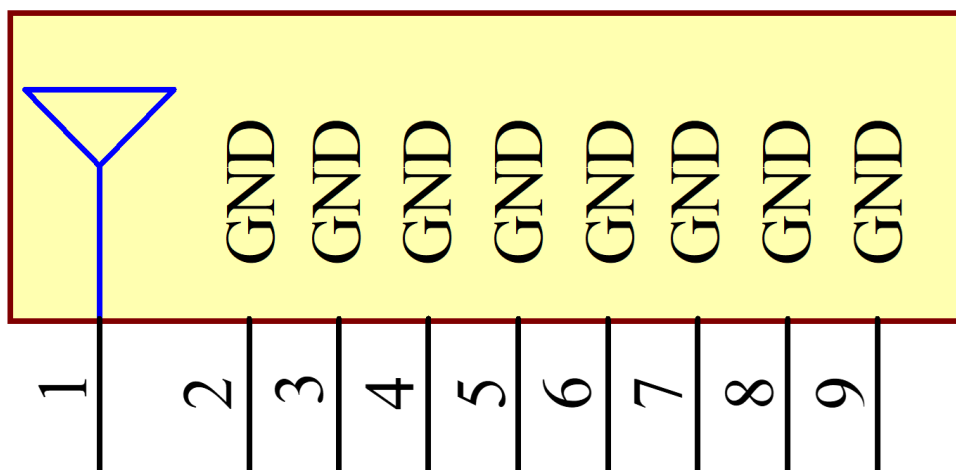


## 6.1 Schematic Symbol and Pin Definition

The circuit symbol for the antenna is shown below. The antenna has 9 pins as indicated below.

Pin	Description
1	RF Feed
2-9	Ground

TAOGLAS\_SGGP.18.4.A.08  
ANT1



Please note you can download the design files, 3D model, 2D drawings and CST simulation files from the website here:

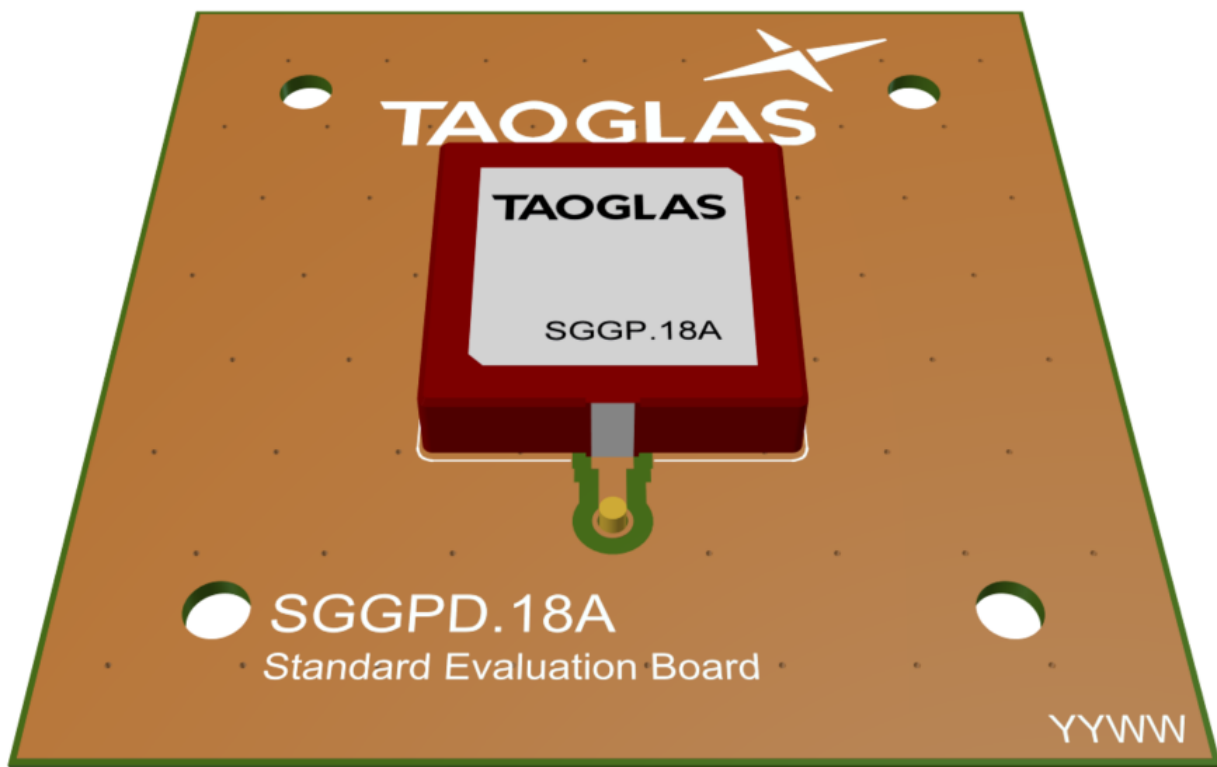
<https://www.taoglas.com/product/sggp-18-4-a-08-gps-glonass-galileo-smd-18184mm-mount-patch/>

## 6.2 Antenna Integration

The antenna should be placed at the center of the ground plane with a length and width of 50mm. Maintaining a square symmetric ground plane shape and symmetric environment around the antenna is critical to maintaining the excellent axial ratio and phase center performance shown in this datasheet.



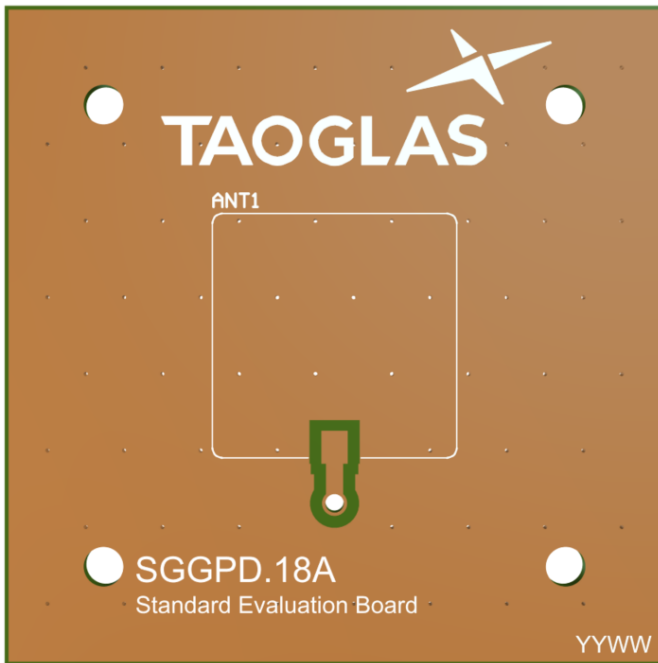
Top Side w/ Solder Mask



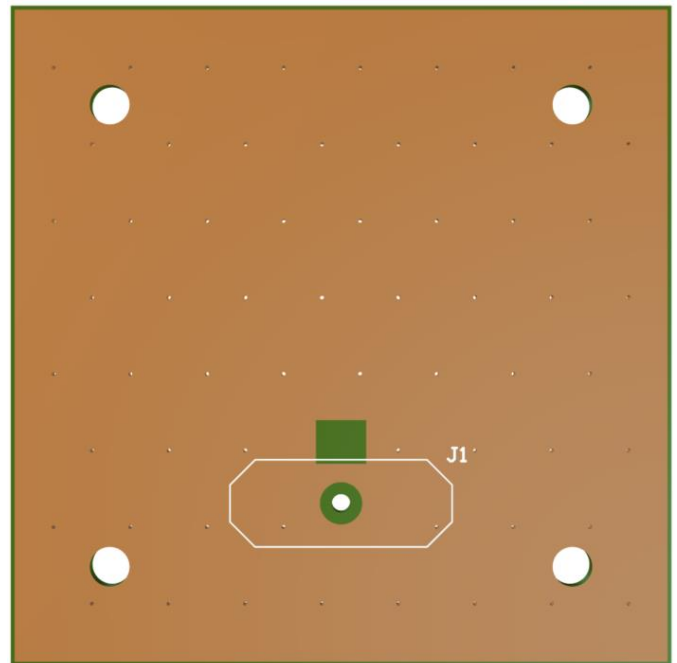
Top Side w/o Solder Mask

## 6.3 PCB Layout

The footprint and clearance on the PCB must comply with the antenna specification. The PCB layout shown in the diagram below demonstrates the antenna footprint.

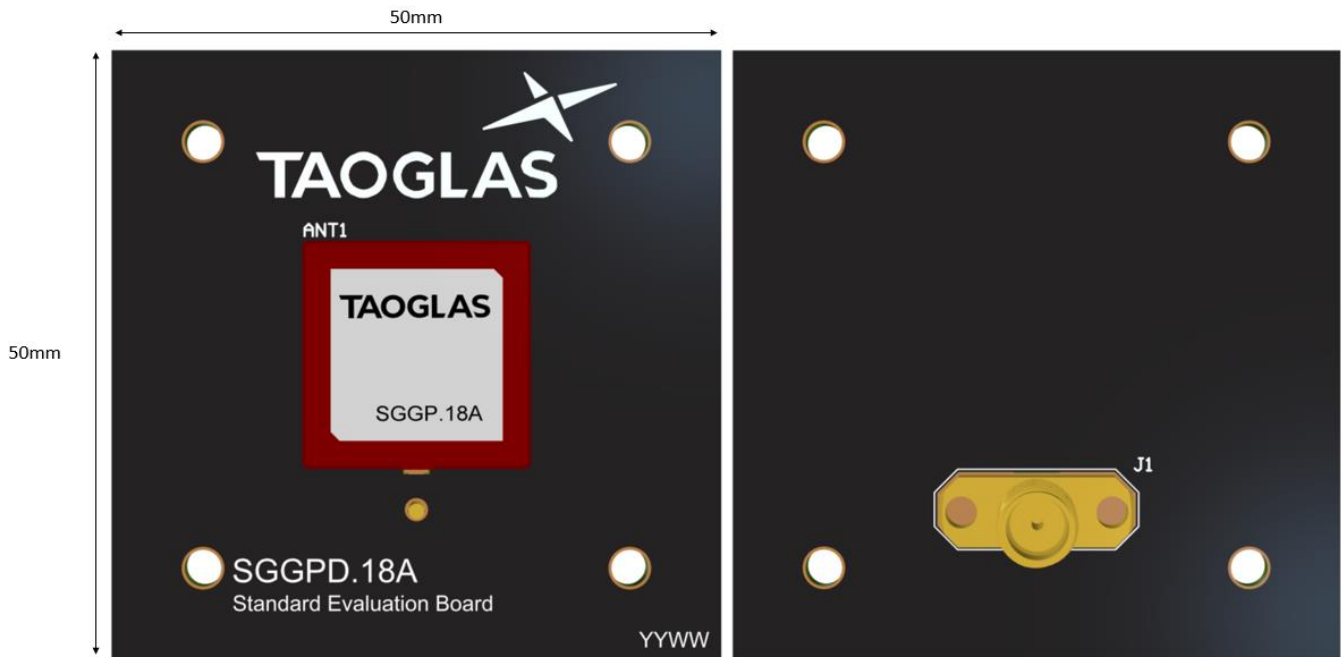


Topside

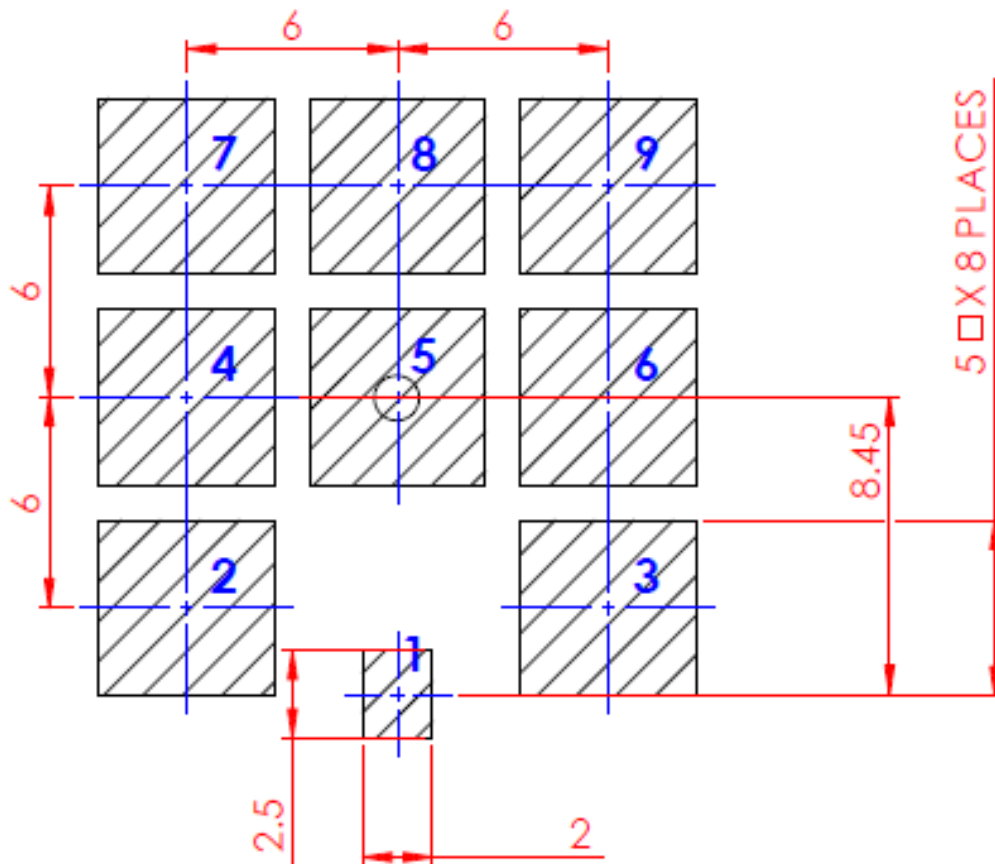


Bottom Side

## 6.4 Evaluation Board



## 6.5 Footprint



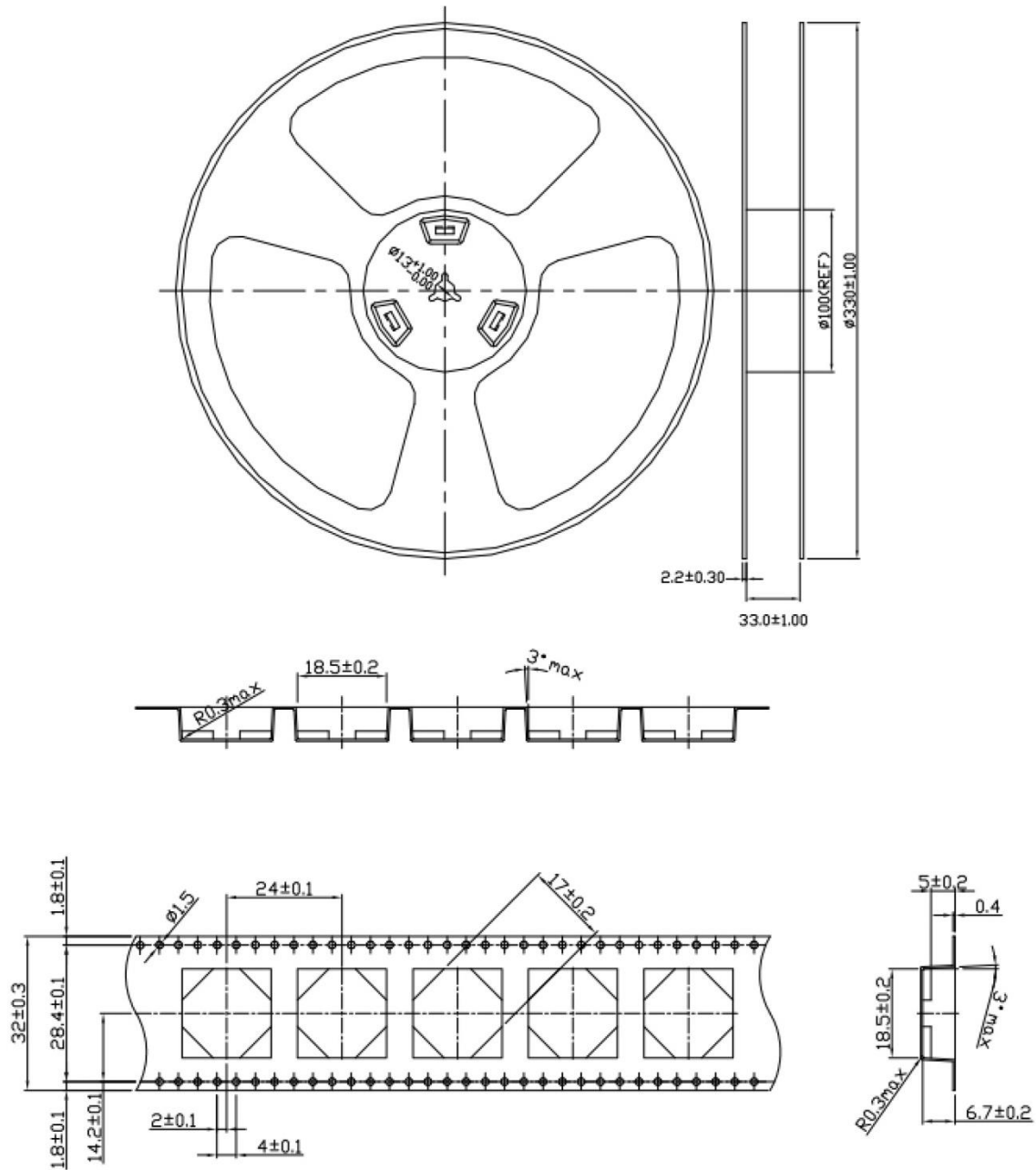
FOOTPRINT PCB

PIN	DESCRIPTION:
1	RF FEED (50 Ohm)
2	GROUND
3	GROUND
4	GROUND
5	GROUND
6	GROUND
7	GROUND
8	GROUND
9	GROUND

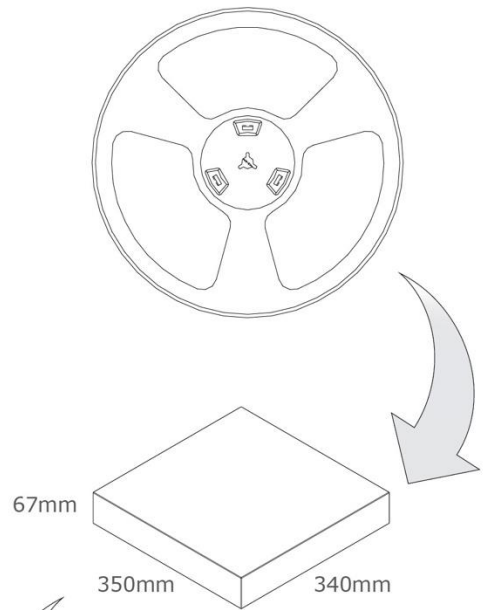


## 7. Packaging

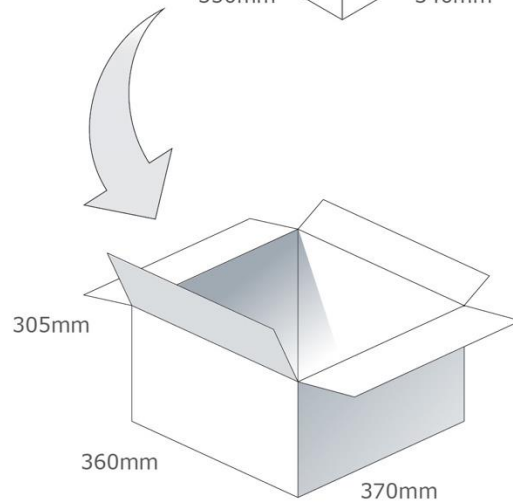
200 pc SGGP.18.4.A.08 per reel  
 Dimensions - Ø330\*33mm  
 Weight - 2.125Kg



200 pc SGGP.18.4.A.08 per small box  
Dimensions - 350\*340\*67mm  
Weight - 2.125Kg



800 pcs SGGP.18.4.A.08 per carton  
Dimensions - 370\*360\*305mm  
Weight - 8.5Kg



## 8. Soldering Recommendations

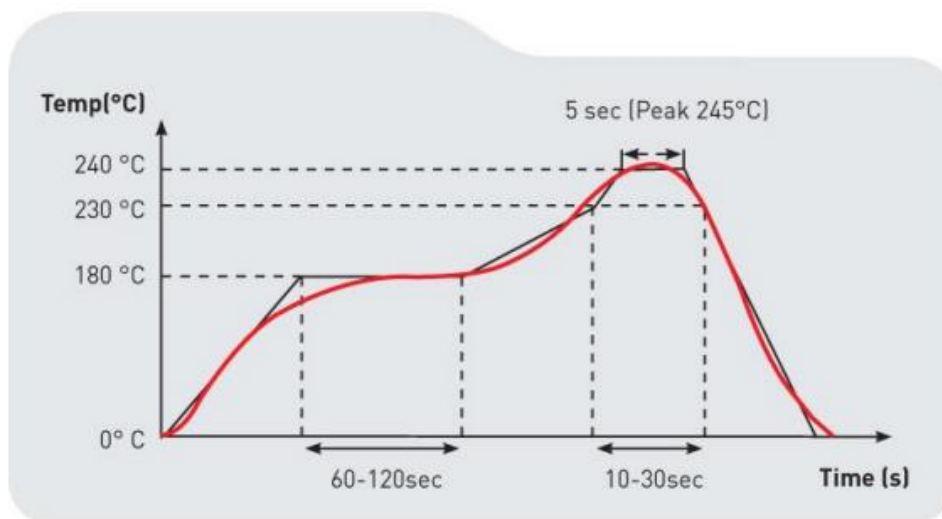
### 8.1 Flux Solder

Use rosin-based flux. Don't use highly acidic flux with halide content exceeding 0.2wt%(chlorine conversion value).

- Use Sn solder.

### 8.2 Flux Solder

- Pre-heating should be in such a way that the temperature difference between solder and product surface is limited to 150°C max. Cooling into solvent after soldering also should be in such a way that temperature difference is limited to 100°C max. Unwrought pre-heating may cause cracks on the product, resulting in the deterioration of products quality.



### 8.3 Reworking with Soldering Iron

The following conditions must be strictly followed when using a soldering iron.

Pre-heating	150°C, 1 min
Tip temperature	290°C max
Soldering iron output	30w max
Soldering time	3 Second max

Changelog for the datasheet

**SPE-18-8-067 - SGGP.18.4.A.08**

**Revision: E (Current Version)**

Date:	2023-01-05
Changes:	Updated PCB Mechanical Footprint Drawing & Integration Guide.
Changes Made by:	Gary West

**Previous Revisions**

**Revision: D**

Date:	2023-01-05
Changes:	Updated PCB Keep Out Drawing
Changes Made by:	Gary West

**Revision: C**

Date:	2022-05-27
Changes:	Added dimension to footprint drawing between pad 1 and 5.
Changes Made by:	Gary West

**Revision: B**

Date:	2021-10-20
Changes:	Full datasheet template update, Addition of MSL to spec table & Integration guide.
Changes Made by:	Gary West

**Revision: A (Original First Release)**

Date:	2018-07-02
Notes:	First Release
Author:	MC



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