TAOGLAS

Datasheet

Part No:
SGGP252B

Description

GPS/GLONASS/GALILEO/BEIDOU Ceramic SMD Patch Antenna

Features:

SMD Mount Ceramic Patch Antenna
GPS/GLONASS/GALILEO/BEIDOU
Coverage:

- B1I: 1561 MHz
- L1/E1: 1575.42 MHz
- G1: 1602 MHz

Dimension: 25 x 25 x 2mm
Includes Additional Solder Mask
RoHS & Reach Compliant

1. Introduction

The SGGP252B is a compact ceramic GPS/GLONASS/GALILEO/BEIDOU passive patch antenna, measuring just 25mm x 25mm with a low-profile height of 2mm. Its small form factor makes it ideal for space-constrained applications such as compact telematics devices, vehicle tracking and fleet management systems, wearables, and navigation devices.

The antenna is optimized for a 50mm x 50mm ground plane, operating at 1575.42MHz and 1602MHz with a peak gain of 1.06 dBi gain and 1.40 dBi gain. Designed for SMT mounting, the ceramic patch includes an additional solder mask to enhance durability and prevent cracking due to heat expansion during high-volume, cost-sensitive assembly processes.

Typical applications include:

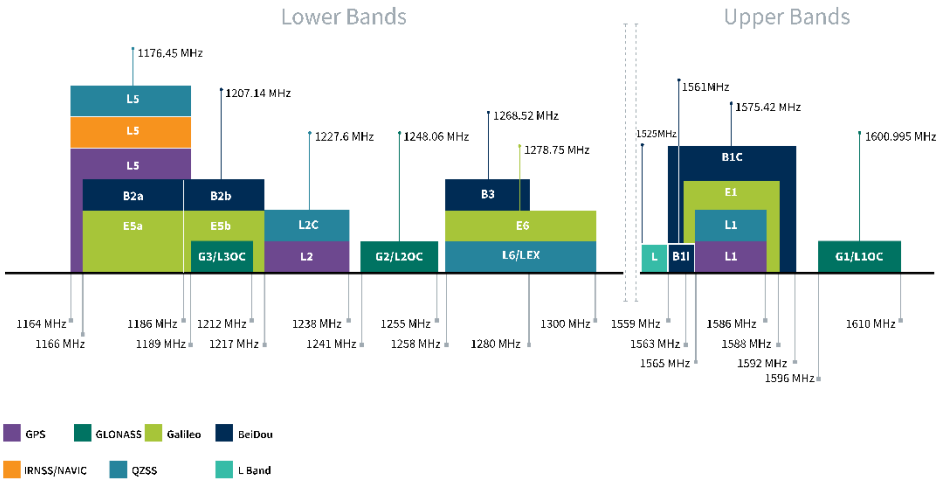
- Vehicle Tracking and Fleet Management Systems
- Wearables
- Navigation Devices

The SSGP Series can be manufactured in a TS16949 first-tier automotive-approved facility and tested to AEC-Q200 certification if required. Further to this, full PPAP and IMDS documentation can be provided upon request. Please discuss your quality and reliability requirements with our team prior to ordering.

Taoglas also offers custom tuning services based on minimum order quantities, contact your regional Taoglas customer support team for further information.

2. Specification

GNSS Frequency Bands					
GPS	L1 1575.42 MHz	L2 1227.6 MHz	L5 1176.45 MHz		
	■	□	□		
GLONASS	G1 1602 MHz	G2 1248 MHz	G3 1207 MHz		
	■	□	□		
Galileo	E1 1575.24 MHz	E5a 1176.45 MHz	E5b 1201.5 MHz	E6 1278.75 MHz	
	■	□	□	□	
BeiDou	B1C 1575.42 MHz	B1I 1561 MHz	B2a 1176.45 MHz	B2b 1207.14 MHz	B3 1268.52 MHz
	■	■	□	□	□
L-Band	L-Band 1542 MHz				
	□				
QZSS (Regional)	L1 1575.42 MHz	L2C 1227.6 MHz	L5 1176.45 MHz	L6 1278.75e6	
	■	□	□	□	
IRNSS (Regional)	L5 1176.45 MHz				
	□				
SBAS	L1/E1/B1 1575.42 MHz	L5/B2a/E5a 1176.45 MHz	G1 1602 MHz	G2 1248 MHz	G3 1207 MHz
	■	□	■	□	□



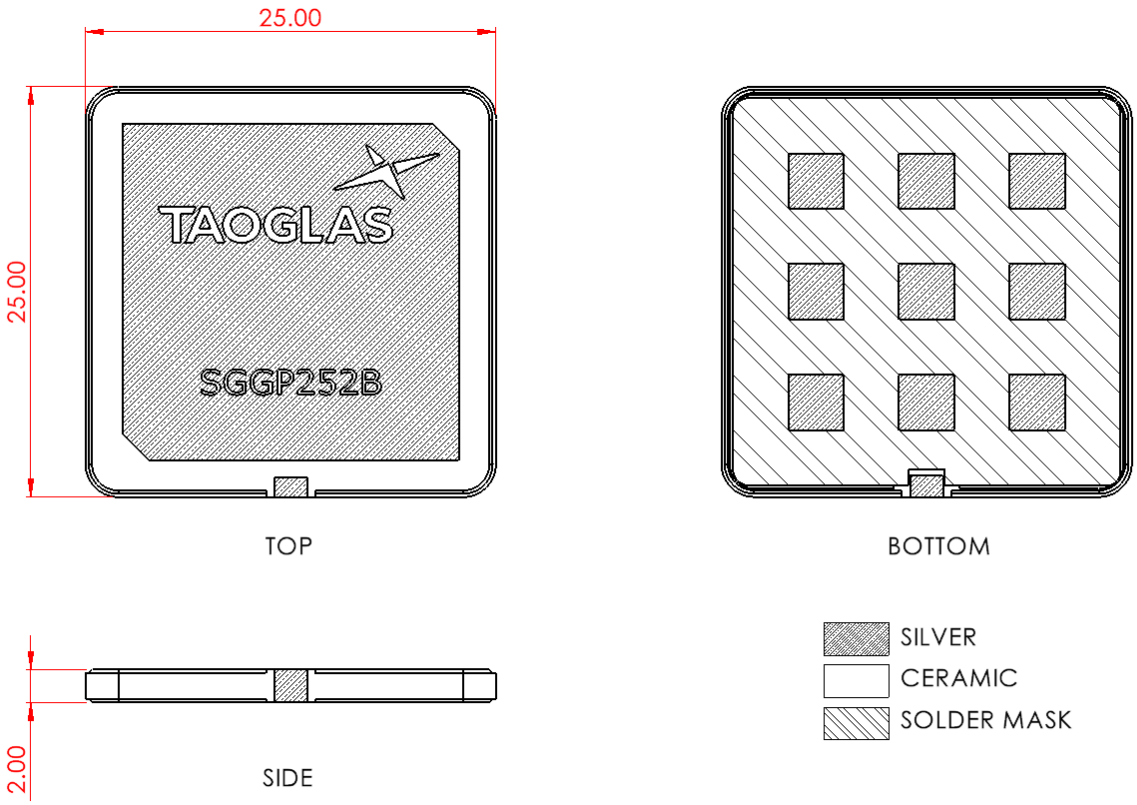
GNSS Bands and Constellations

GNSS Electrical			
Frequency (MHz)	B1I – 1561 MHz	L1 - 1575.42 MHz	G1 – 1602 MHz
	1559-1565	1565-1586	1596-1610
Efficiency (%)	16.7	36.2	37.7
Average Gain (dB)	-7.77	-4.41	-4.23
Peak Gain (dBi)	-2.77	1.06	1.40
Axial Ratio (dB)	22.58	18.82	15.20
Polarization	RHCP		
Impedance	50 Ω		
*Tested on a 50x50mm Ground Plane			

Mechanical	
Dimensions	25mm x 25mm x 2mm
Weight	5g ± 3%
Material	Ceramic

Environmental	
Operation Temperature	-40°C to 105°C
Storage Temperature	-40°C to 105°C
Relative Humidity	Non-condensing 65°C 95% RH
Moisture Sensitivity	3 (168 hours)

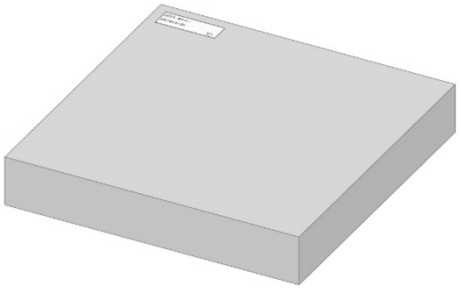
3. Mechanical Drawing



4. Packaging

200 pcs/ Reel/ Vacuum bag

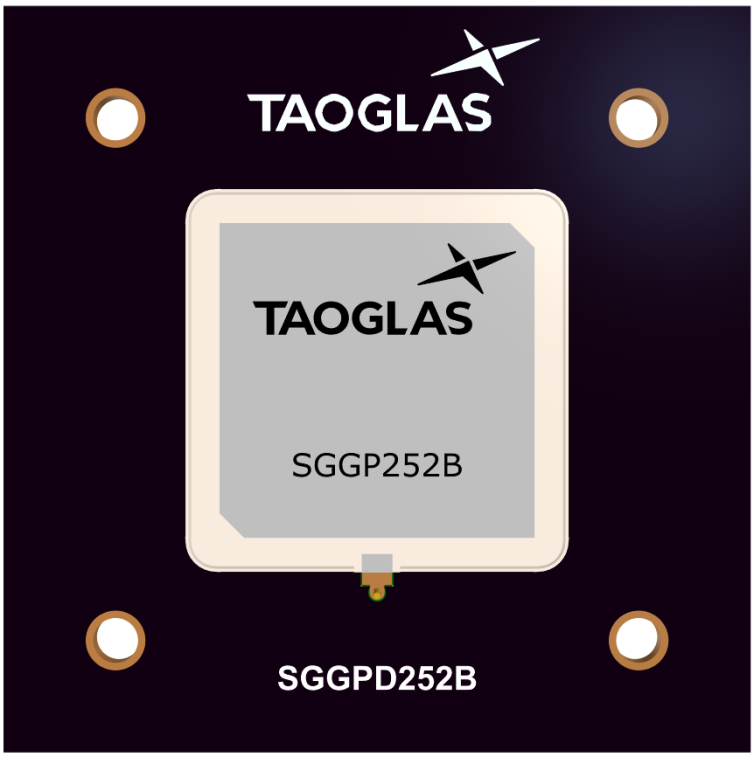
200 pcs / Box
Box: 350x340x67mm
Weight: 1.8 ±3% Kg



800 pcs / Carton
Carton: 370x370x300mm
Weight: 8 ±3% Kg

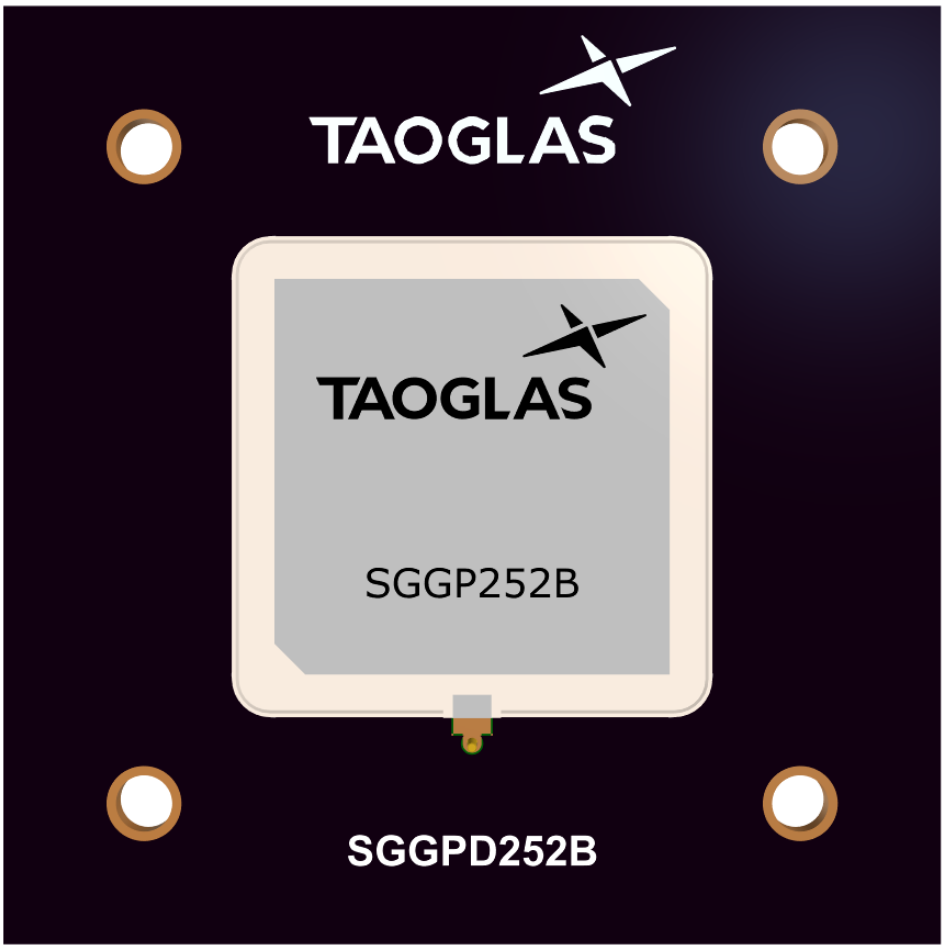
5. Antenna Integration Guide

The following is an example on how to integrate the SGGP252B into a design. This antenna has 10 pins, where one pin is used for the RF Feed. Taoglas recommends using a minimum of 50x50mm ground plane (PCB) to ensure optimal performance.



Top view of PCB reference design.

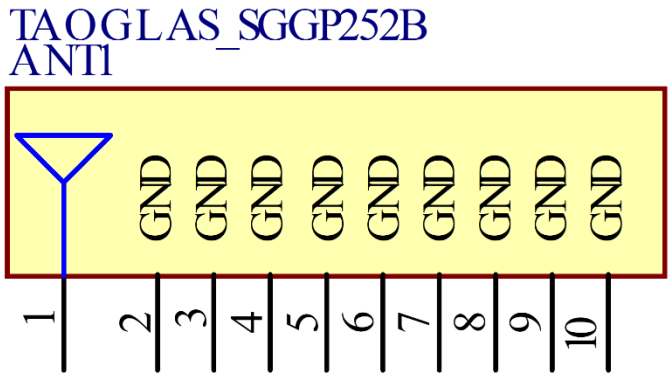
5.1 Schematic and Symbol Definition



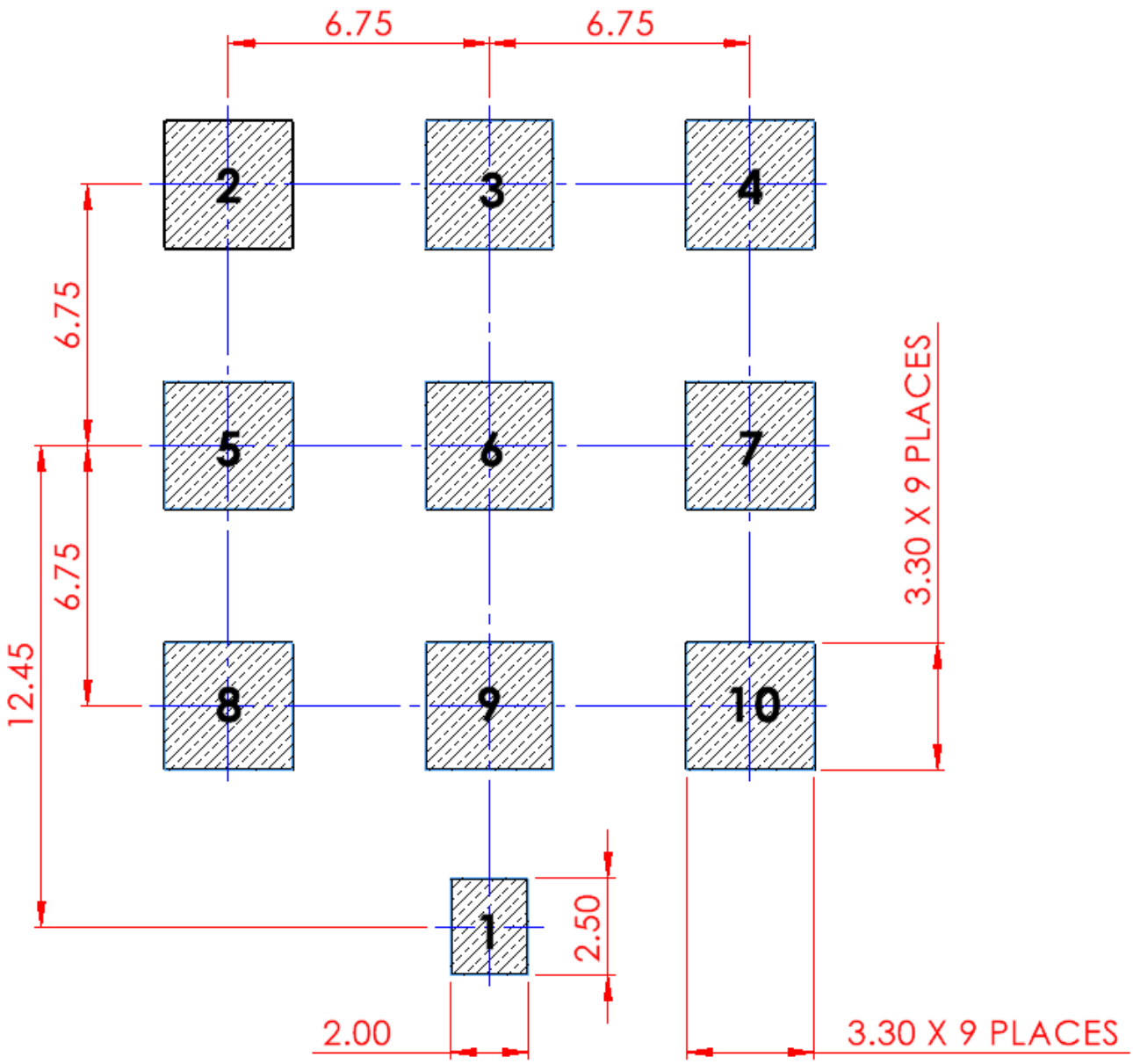
Above is a 3D model of the SGGP252B on a PCB reference design.

The circuit symbol for the SGGP252B is shown below. The antenna has 10 pins as indicated below.

Pin	Description
1	RF Feed
2-10	Ground

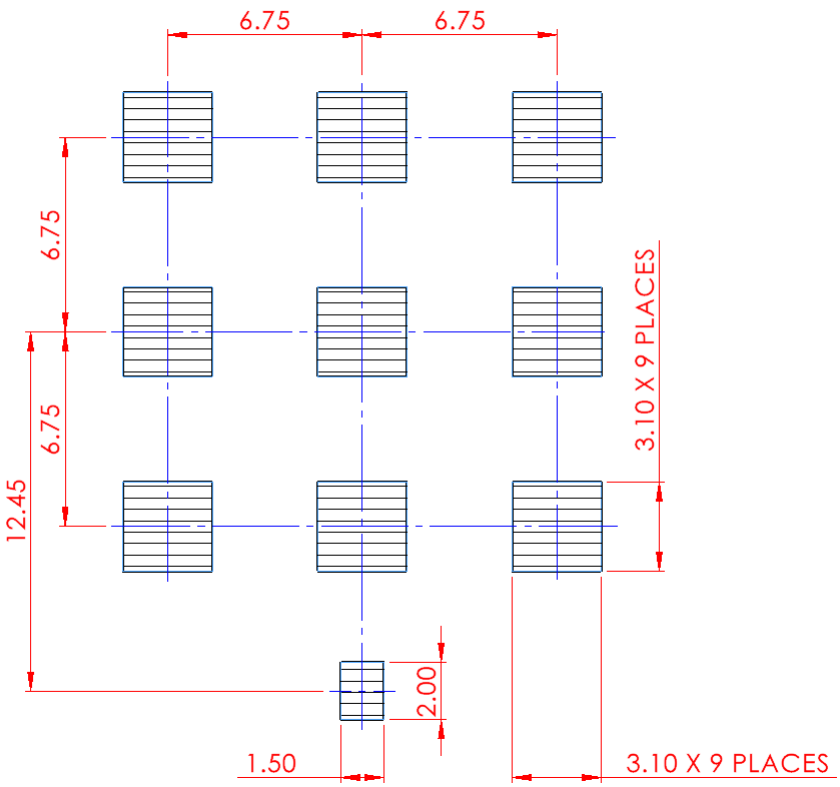


5.2 Antenna Footprint

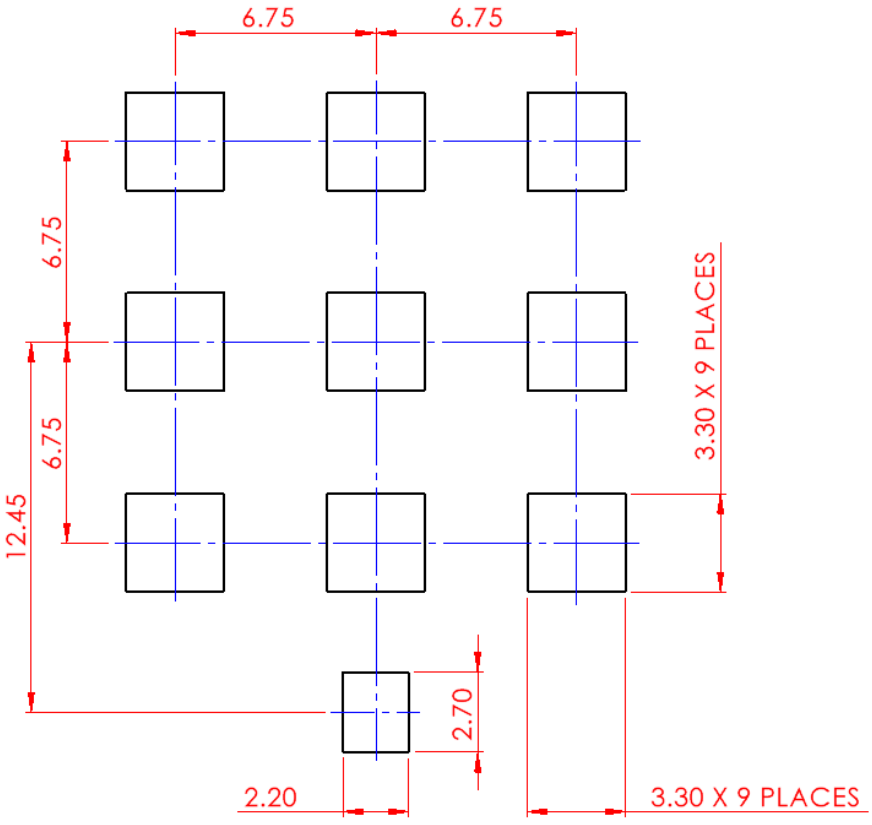


Pin	Description
1	RF Feed
2-10	Ground

5.3 Top Solder Paste



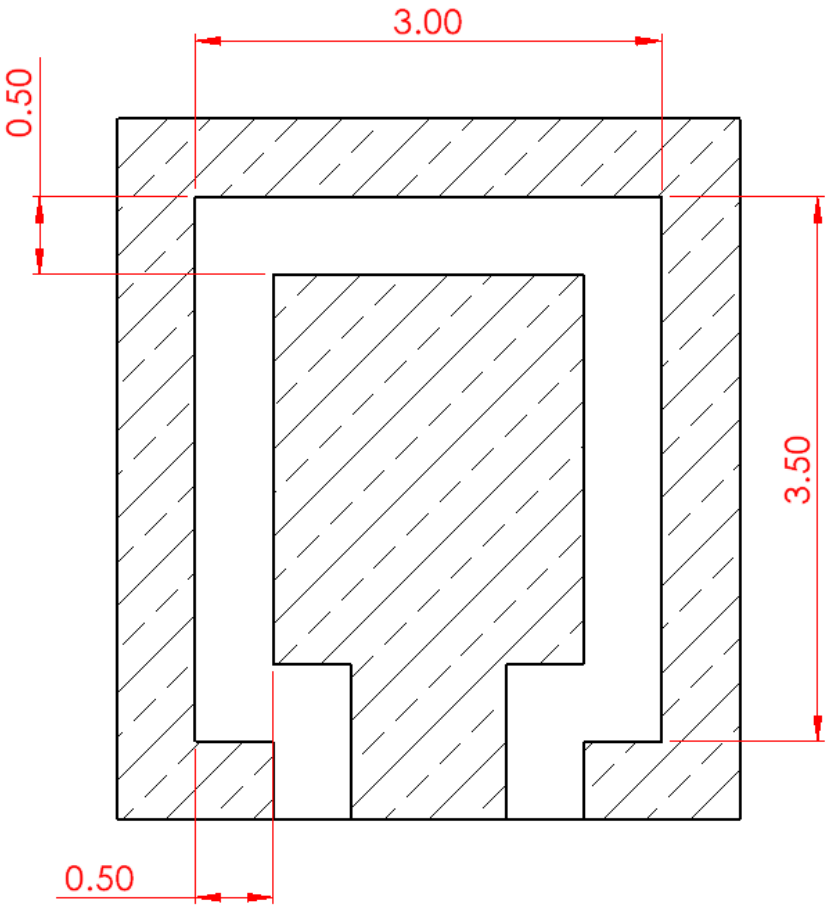
5.4 Top Solder Mask



5.5 Copper Clearance for SGGP252B

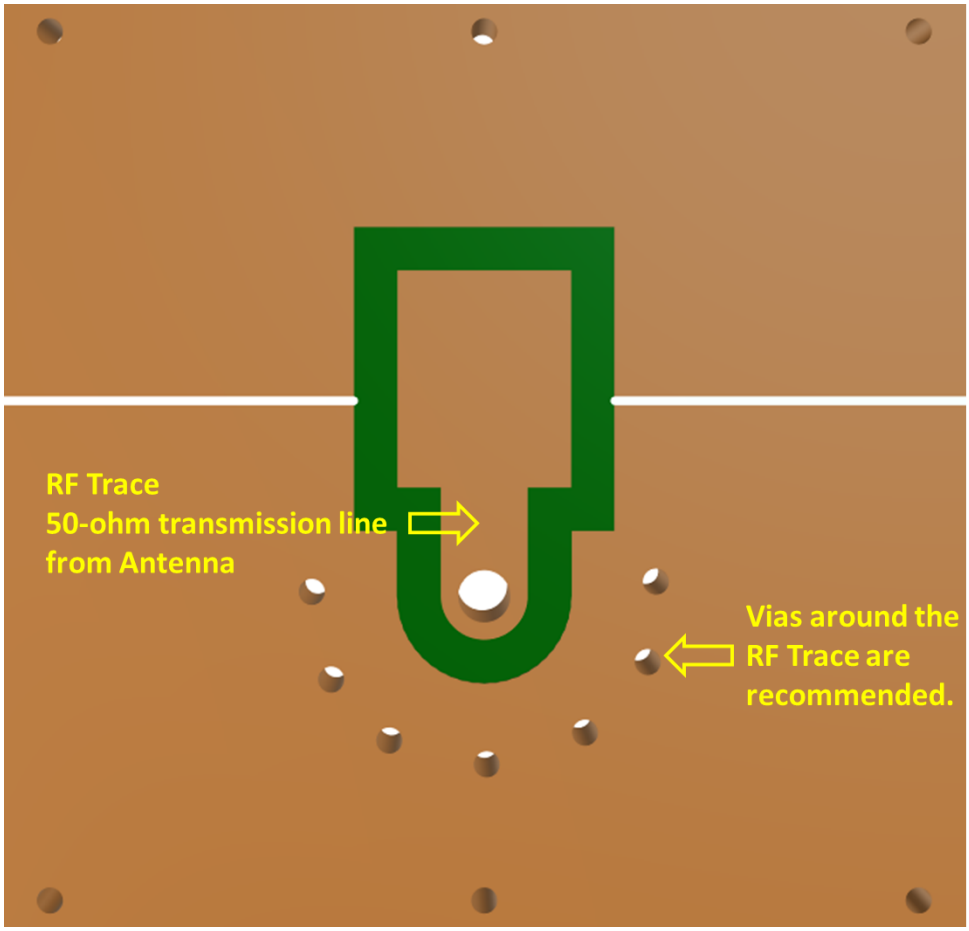
The footprint and clearance on the PCB must comply with the antenna's specification. The PCB layout shown in the diagrams below demonstrates the SGGP252B clearance area. The copper keep out area applies to the top layer and all internal layers.

There should be a 3.5x3mm copper clearance area around RF Feed pad.



5.6 Antenna Integration

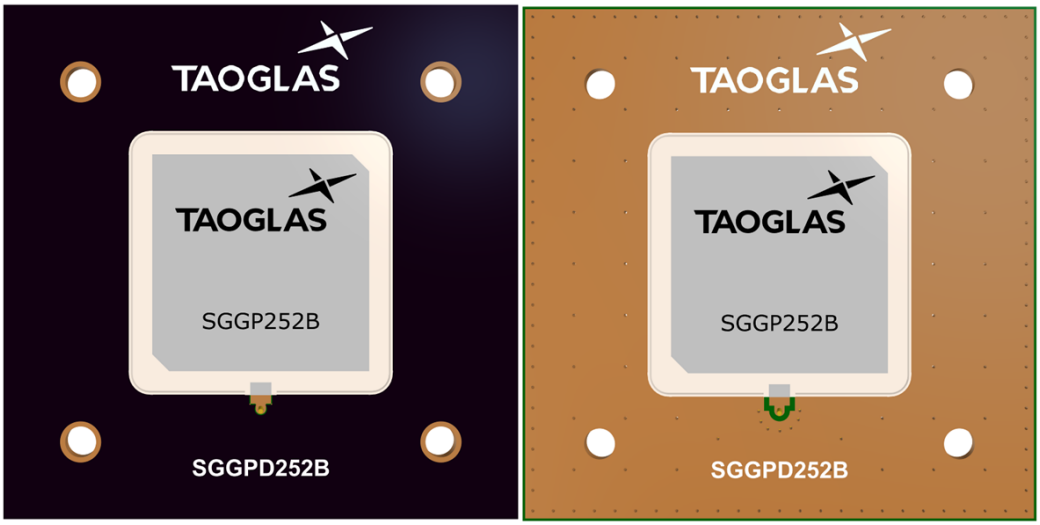
The SGGP252B should be placed in the centre, as close to the edge on the long side of the PCB as possible, to take advantage of the ground plane. The RF trace must maintain a 50 Ohm transmission line. Ground vias should be placed around the RF trace.



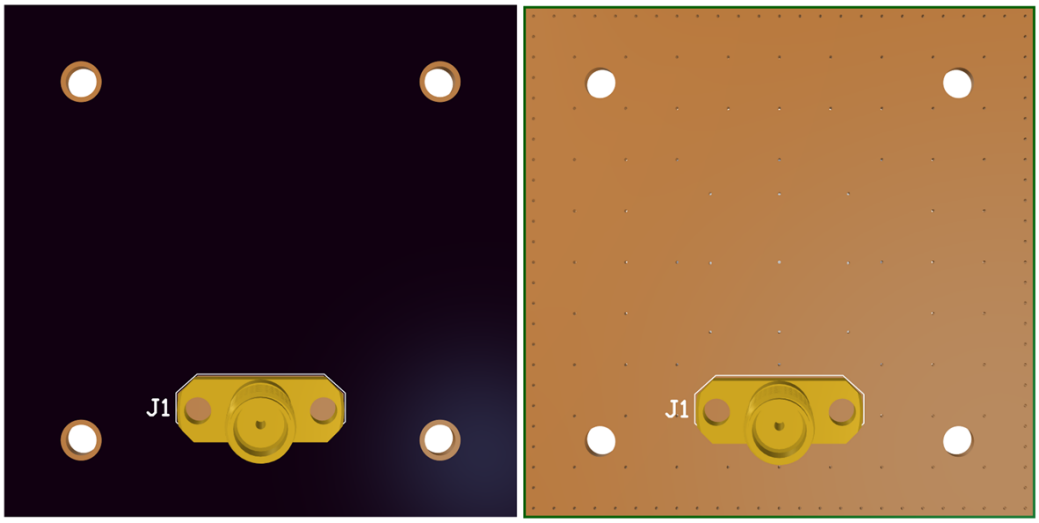
SGGP252B antenna mounted on a PCB reference design, showing transmission lines and integration notes.

5.7 Final Integration

The top side image shown below highlights the antenna transmission line. Taoglas recommends using a minimum of 50x50mm ground plane (PCB) to ensure optimal performance.



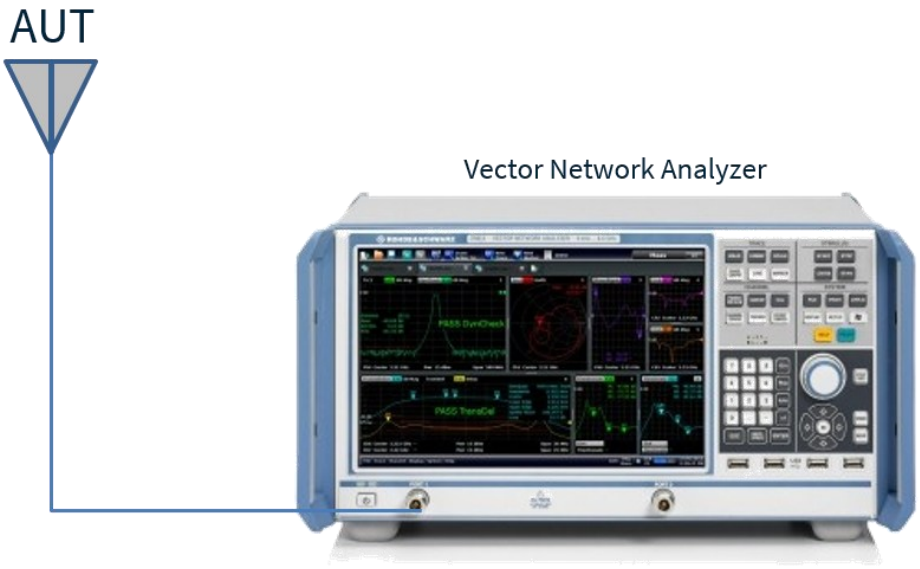
Top Side (SGGP252B placement on 50x50mm PCB reference design

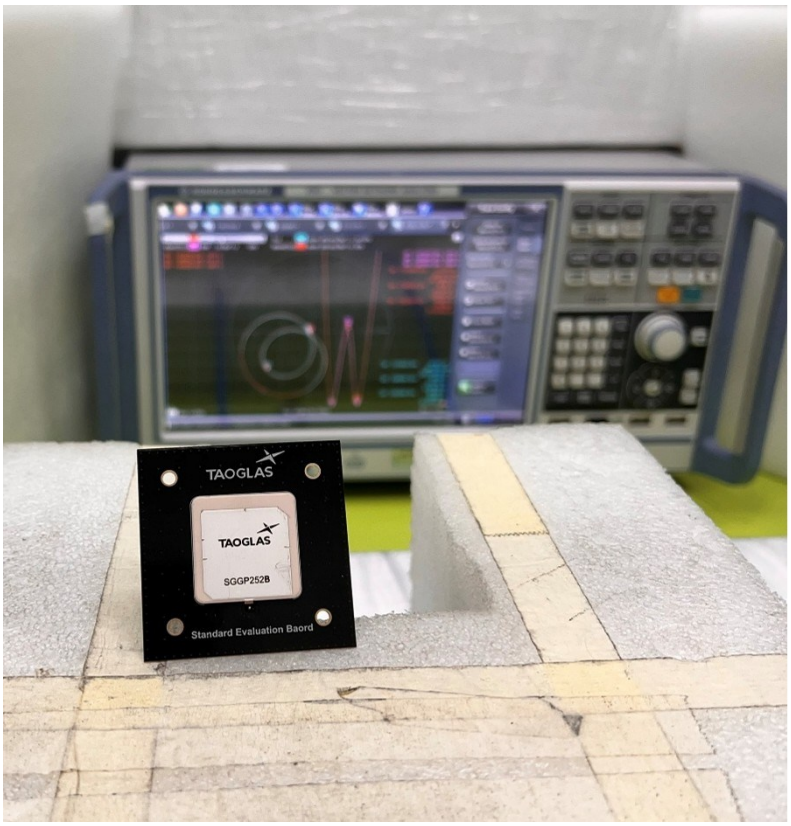


Bottom Side

6. Antenna Characteristics

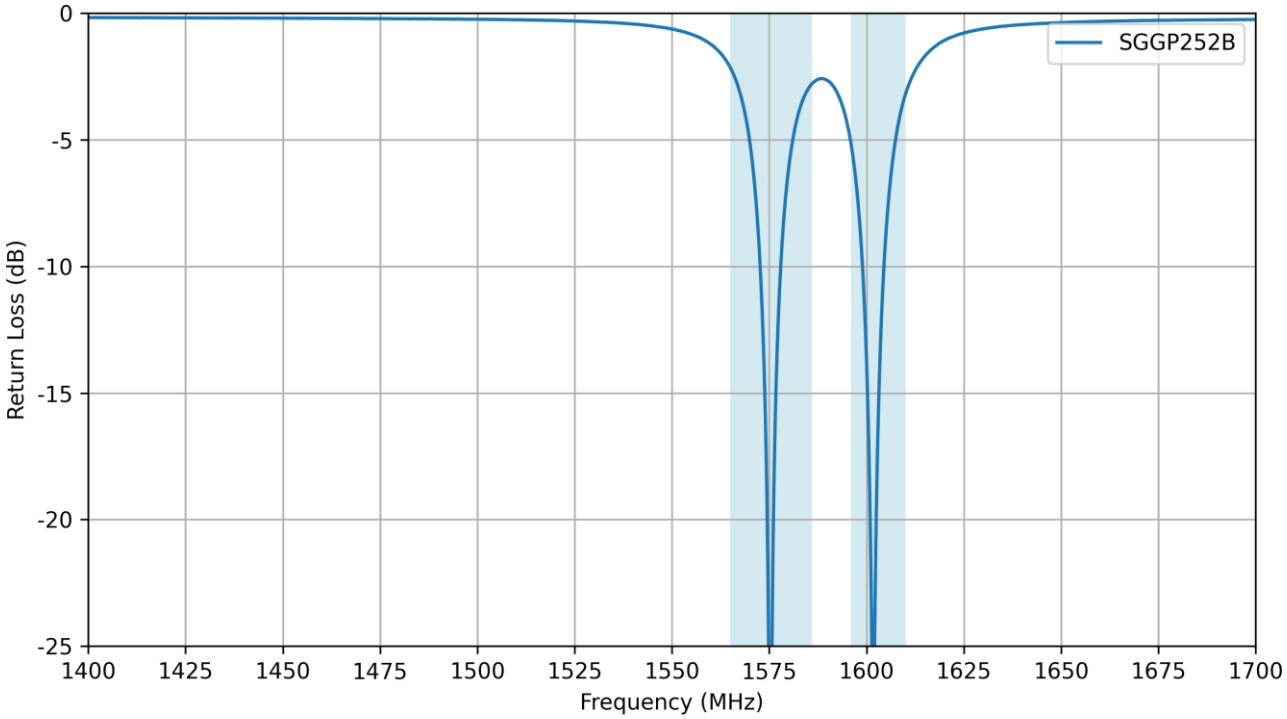
6.1 Test Setup



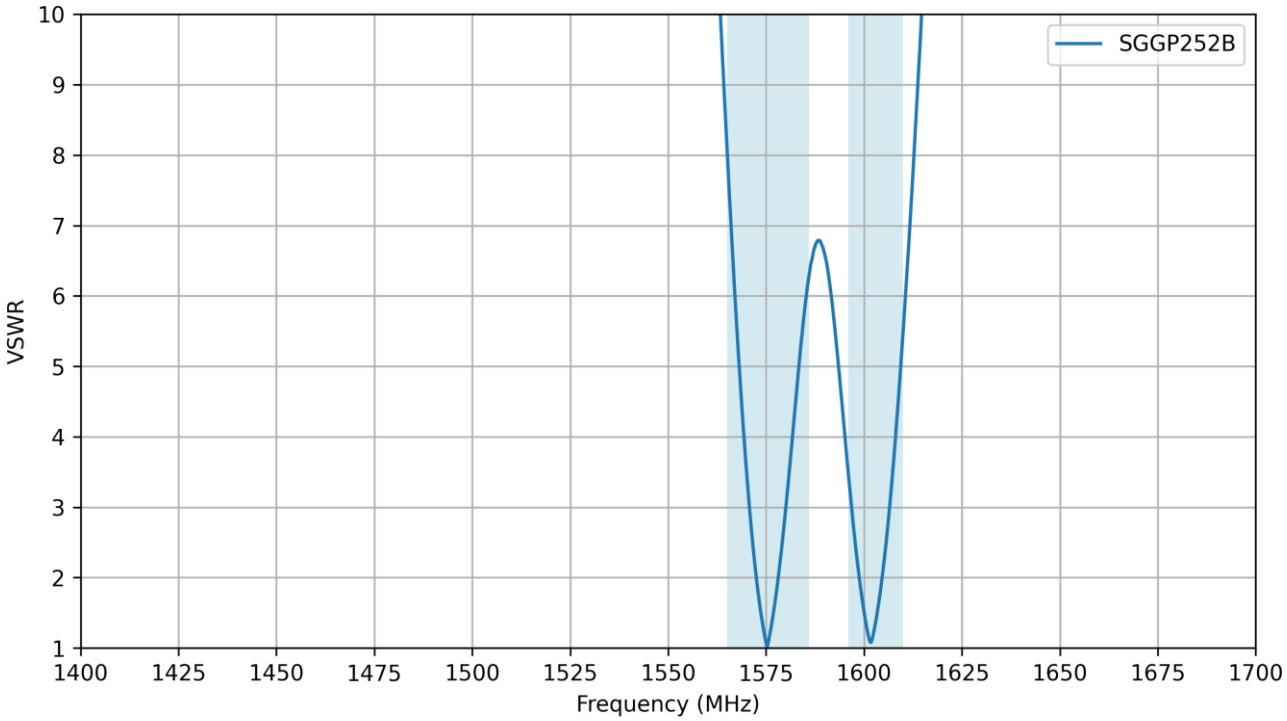


Chamber Test Set-up

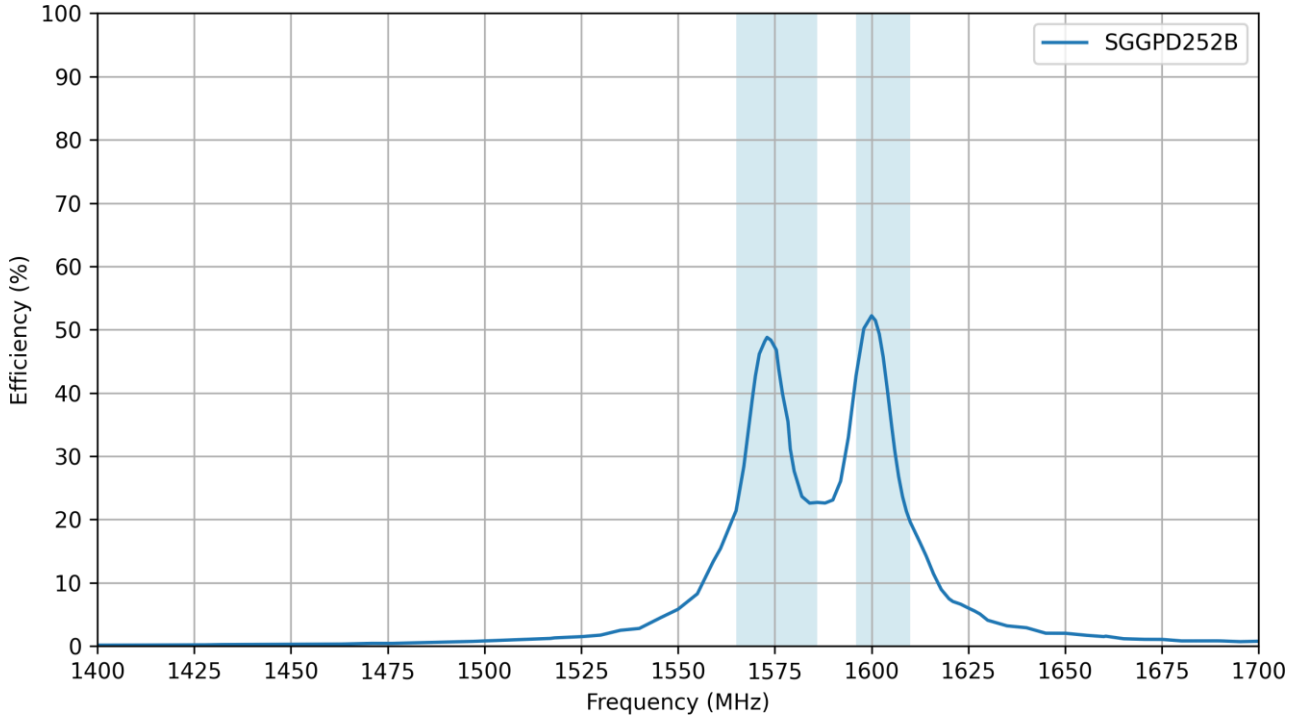
6.2 Return Loss



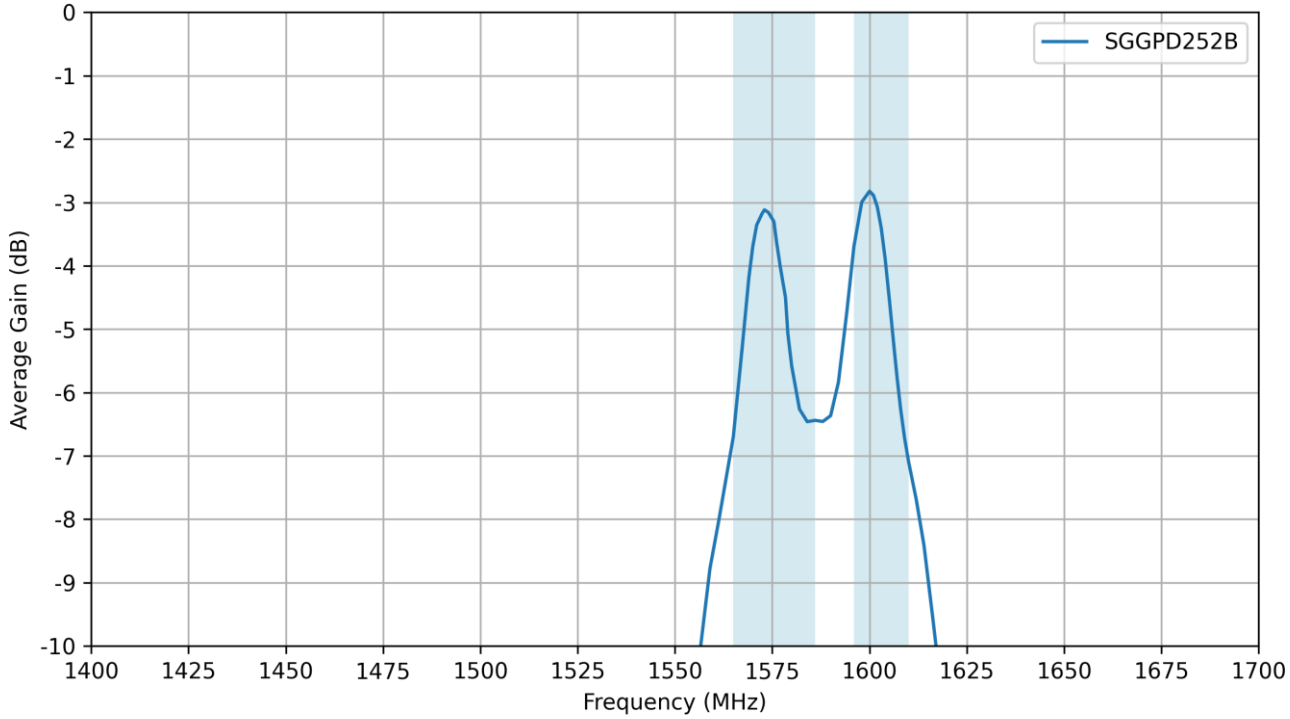
6.3 VSWR



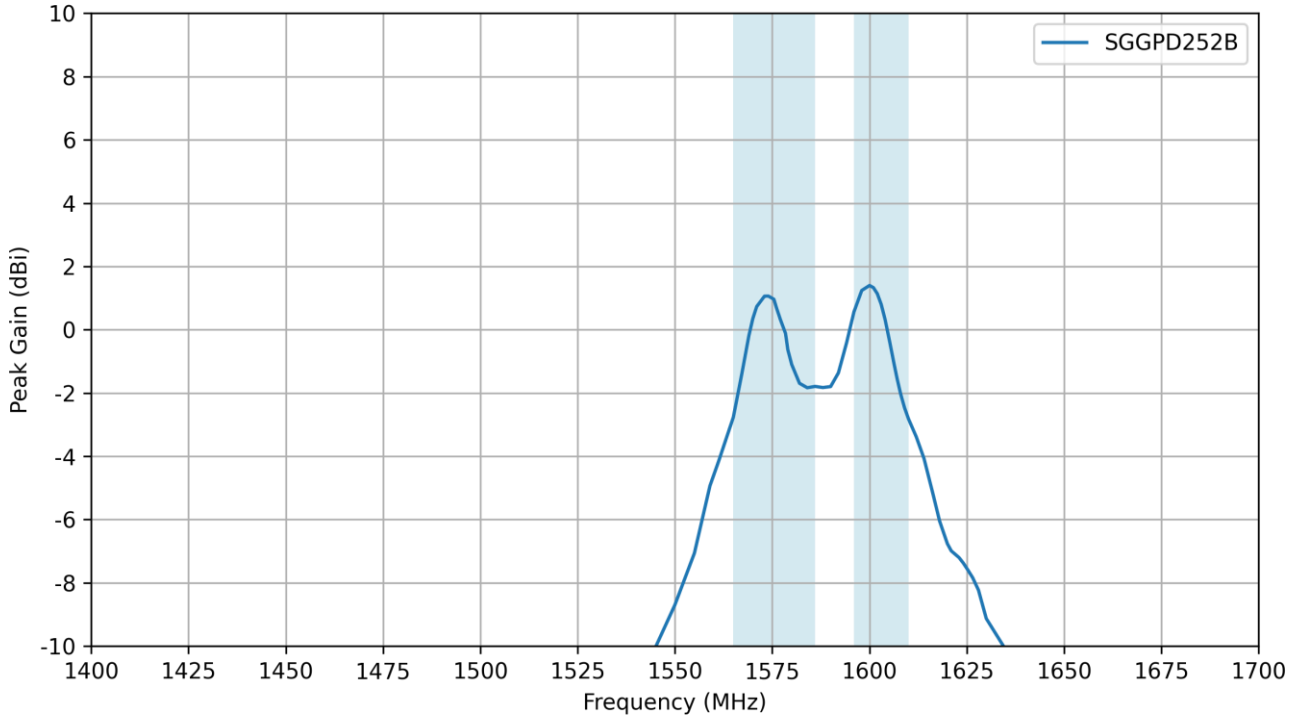
6.4 Efficiency



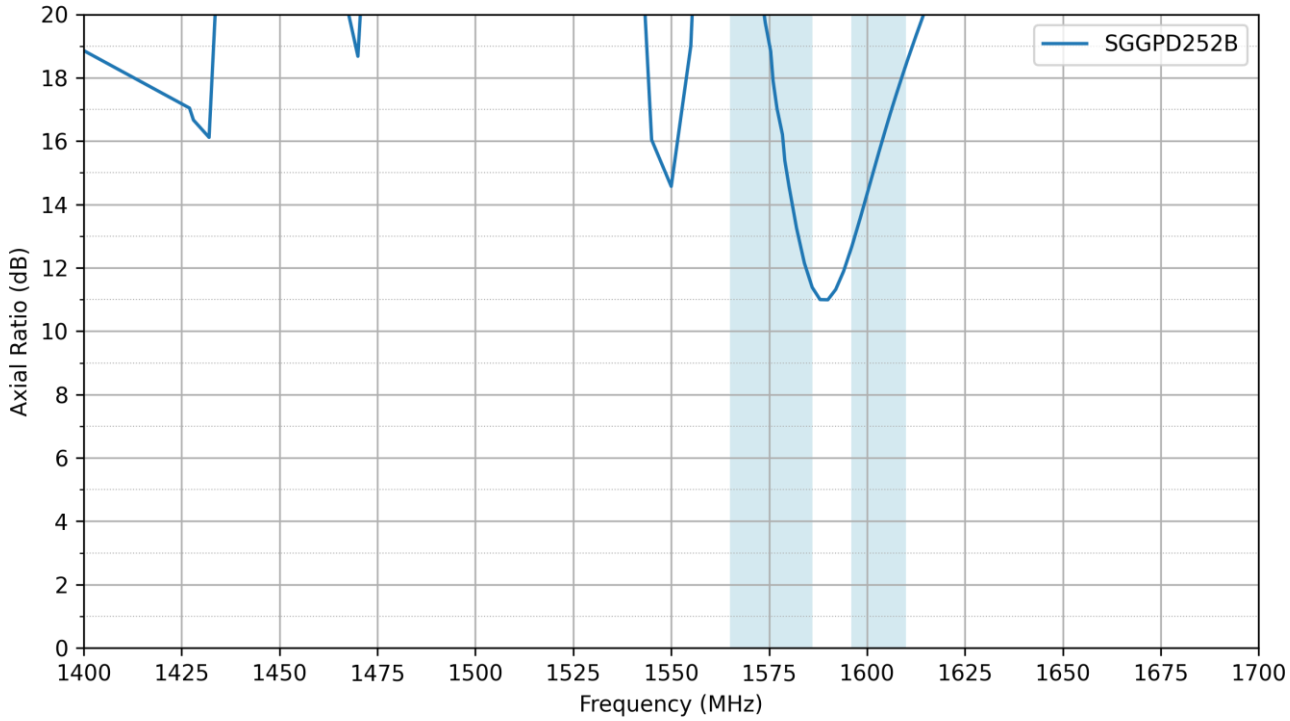
6.5 Average Gain



6.6 Peak Gain

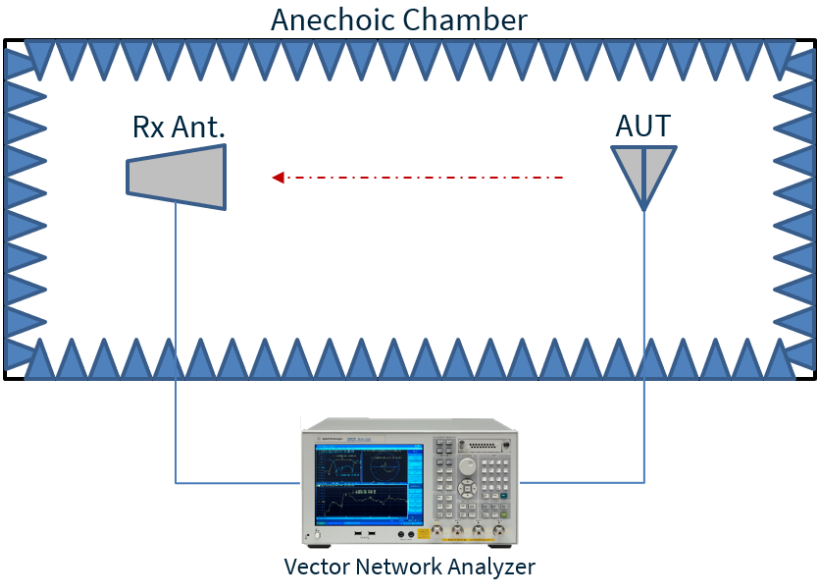


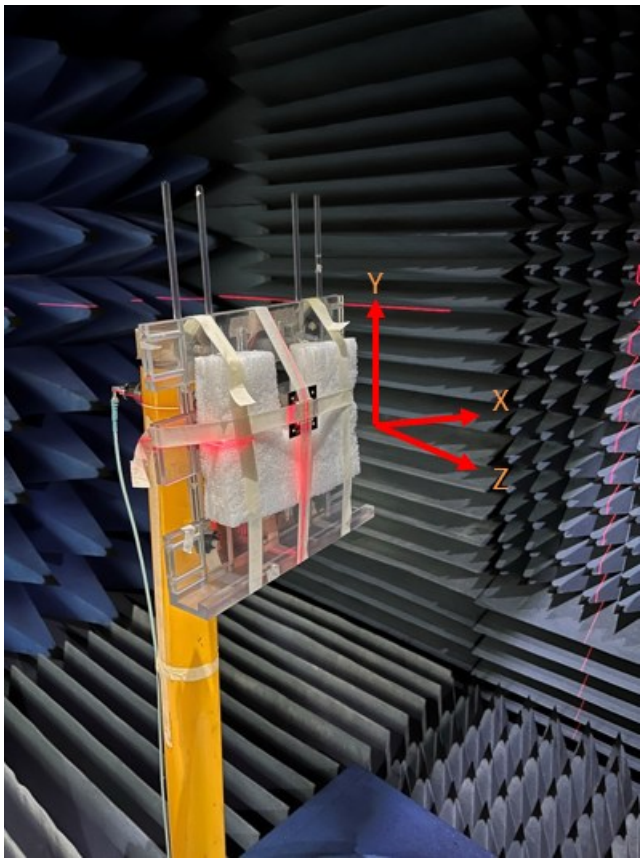
6.7 Axial Ratio



7. Radiation Patterns

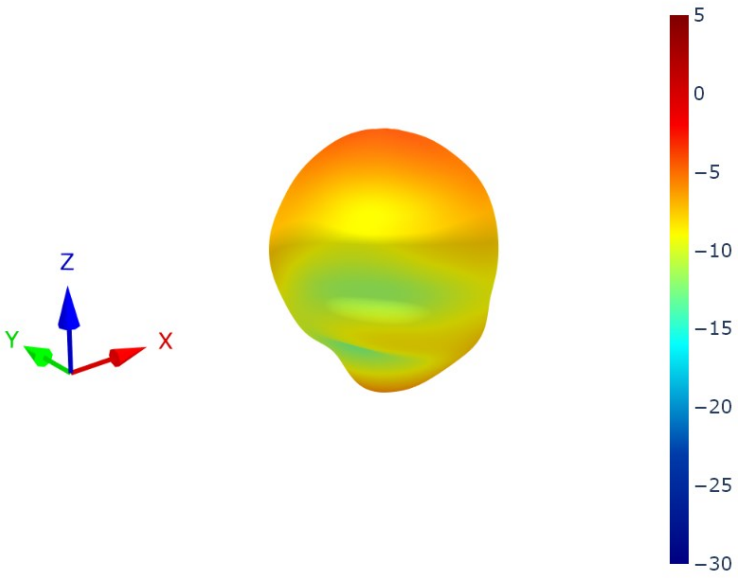
7.1 Test Setup

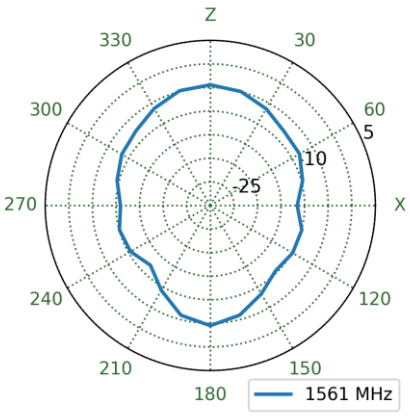
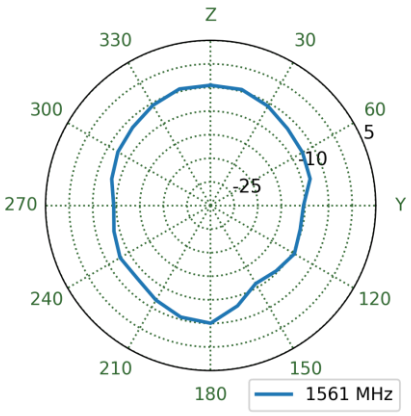
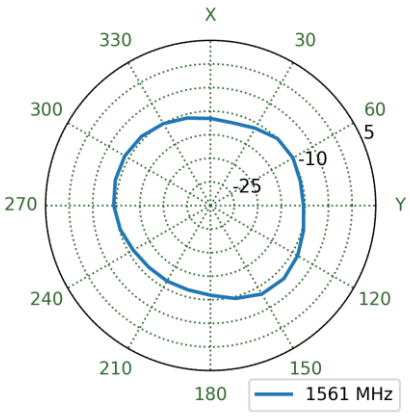




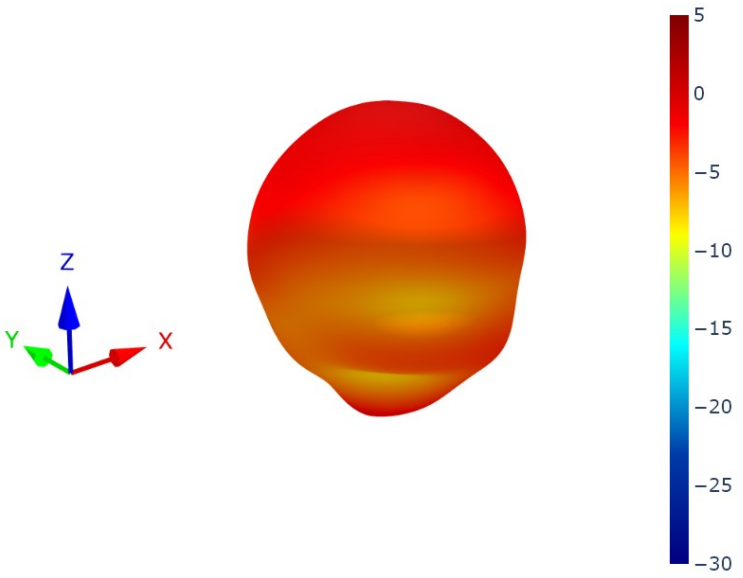
Chamber Test Set-up

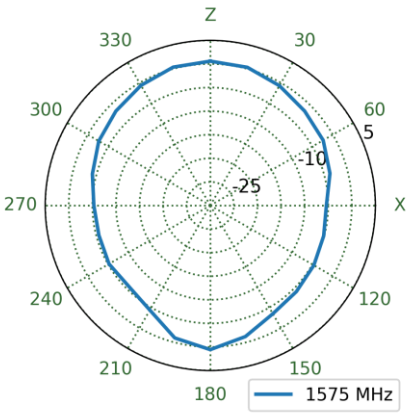
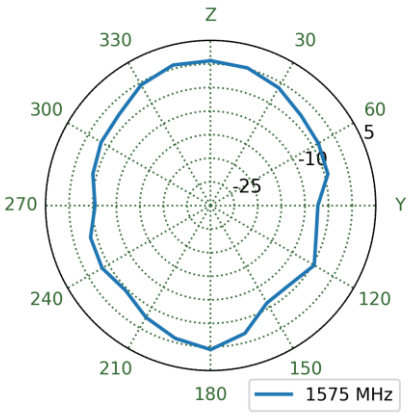
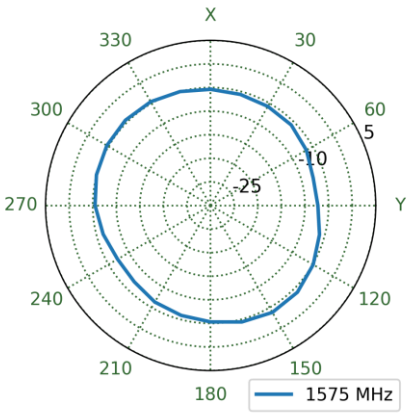
7.2 Patterns at 1561 MHz



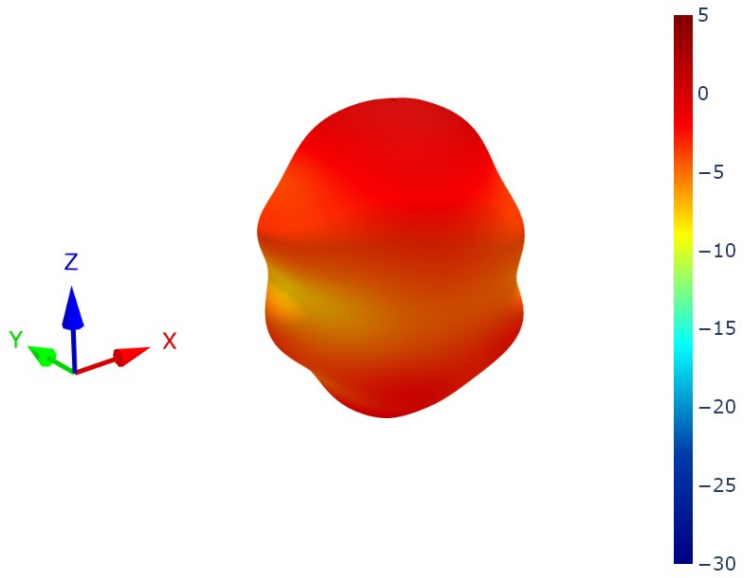
XZ Plane	YZ Plane	XY Plane
		

7.3 Patterns at 1575 MHz

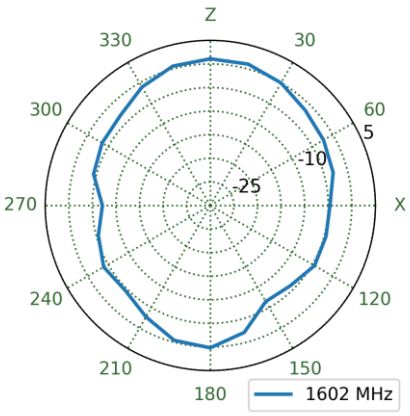


XZ Plane	YZ Plane	XY Plane
		

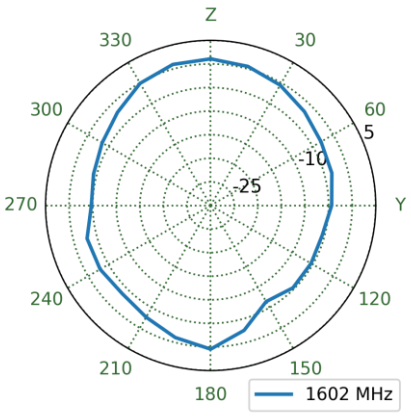
7.4 Patterns at 1602 MHz



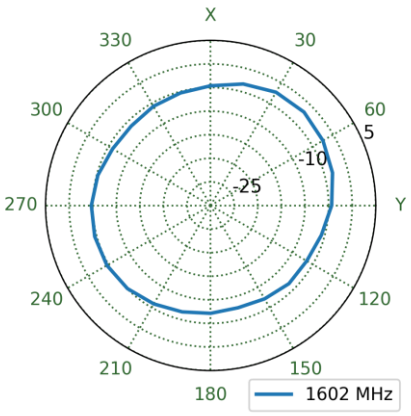
XZ Plane



YZ Plane

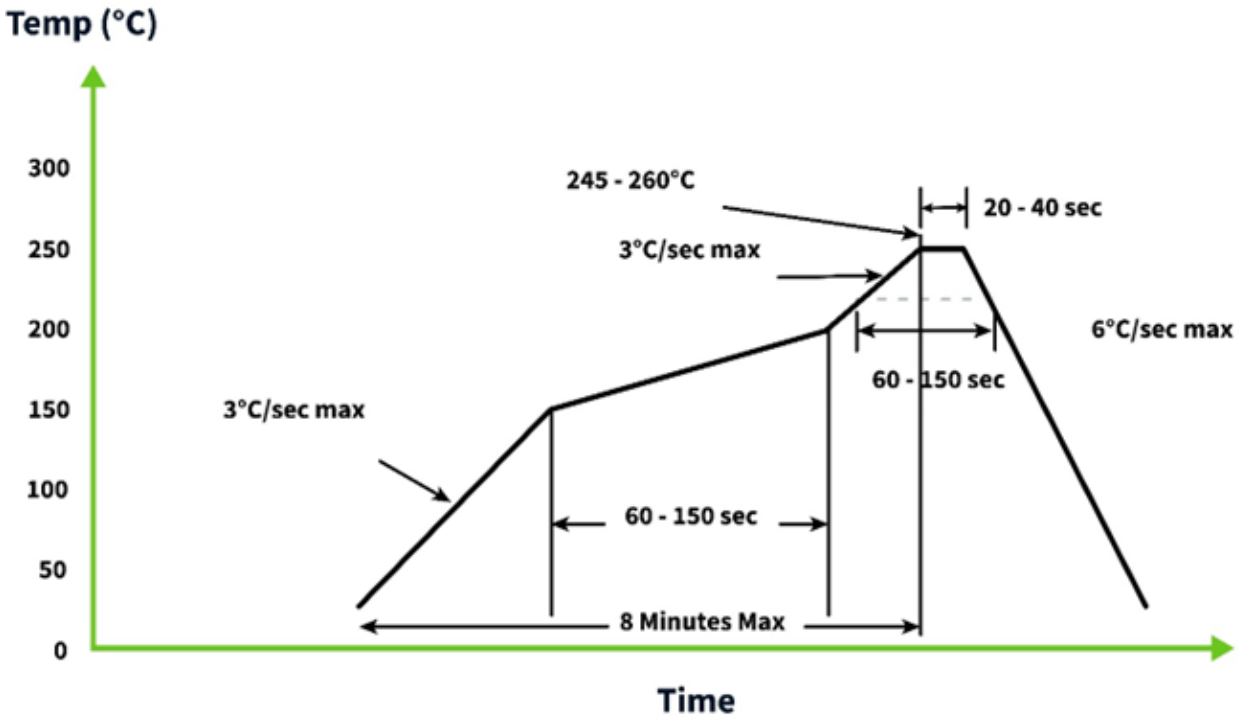


XY Plane



8. Solder Reflow Profile

The SGGP252B can be assembled by following the recommended soldering temperatures are as follows:



*Temperatures listed within a tolerance of +/- 10º C

Smaller components are typically mounted on the first pass, however, we do advise mounting the SGGP252B when placing larger components on the board during subsequent reflows.

Note: Soldering flux classified ROL0 under IPC J-STD-004 is recommended.

Changelog for the datasheet

SPE-25-8-116 – SGGP252B

Revision: A (Original First Release)	
Date:	2025-04-07
Notes:	Initial Release
Author:	Gary West

TAOGLAS®

www.taoglas.com

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Antennas ***category:***

Click to view products by Taoglas ***manufacturer:***

Other Similar products are found below :

108-00014-50 66089-2406 A09-F8NF-M RGFRA1903041A1T 108-00016-050 W1049B090 WTL2449CQ1-FRSMM CPL9C 0600-00060 GD53-25 S9025PLSMF GPSCPMM00 ANTDOM-05-01-WPM ANT-WP868SMA-Y CBNC58 ABFT LP800NMOW NMOQ88C NMOQB NMOQC ANT-GSMGPSPUKS 60210 60140 ANT-8WPIG-UFL A21H0 29000863 29000848 955179003 22100003 DL-T022-2.4G DL-T023-4G T1-915M DL-T021-2.4GW DL-T021-2.4G BWGNSCNX16-6B1Y2L120 BWGNSCNX15-15B1Y4L120 DL-T023-4GW J008-GSM 3N0401LG-021 KHA(RG1.13)-TX90B-IPEX KH-GPS181804-WY TX5800-JZ-5 3E0301BK-006 PRO-OB-440 ACR0301U BWGNSCNX9-9B1Y4L120 BWGPSCNX20-20B1Y4L120 DL-J023-5GB 3N0101BK-017 3N0301BK-003