GPS & BeiDou Stacked Patch Multi-Band Antenna

Part No: GPVBSF.25.8.A

Description:
GPS L1 / L5 & BeiDou B1 Single Feed Stacked Patch Antenna

Features:
Single Feed Stacked Patch Assembly
Covering Bands
- GPS L1 & L5
- BeiDou B1
Low Axial Ratio
Pin Mount
Dimensions: 25*25*8.12mm
RoHS & REACH Compliant
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The GPVBSF.25.8.A, with Taoglas Sure Technology, is a multi-band GPS, BeiDou/Compass and IRNSS, high-performance directional antenna for high precision GPS and BeiDou accuracy and fast positioning. It utilizes a 25*25*8mm advanced wide-band dual stacked ceramic patch antenna with optimized gain for GPS L1/L5, Galileo and BeiDou bands.

Typical Applications Include:

- RTK
- Wearables
- Transportation
- Agriculture
- Navigation
- Security
- Autonomous Vehicles

The GPVBSF.25.8.A has been tuned and tested on a 70 x 70 mm ground plane and exhibits excellent radiation patterns.

Patch antennas can be specifically tuned to customer-specific device environments, subject to NRE and MOQ. Contact your regional Taoglas customer support team to request these services or additional support to integrate and test this antenna’s performance in your device.
## 2. Specifications

### GNSS Frequency Bands Covered

<table>
<thead>
<tr>
<th></th>
<th>L1</th>
<th>L2</th>
<th>L5</th>
<th>L6</th>
</tr>
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<tbody>
<tr>
<td>GPS/QZSS</td>
<td></td>
<td>1575.42MHz</td>
<td>1227.6MHz</td>
<td>1176.45MHz</td>
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<tr>
<td>GLONASS</td>
<td></td>
<td>1176.45MHz</td>
<td>1201.5MHz</td>
<td>1246MHz</td>
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<tr>
<td>Galileo</td>
<td>L5R</td>
<td>E5a</td>
<td>E5b</td>
<td>E4</td>
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<tr>
<td></td>
<td>1176.45MHz</td>
<td>1201.5MHz</td>
<td>1215MHz</td>
<td>1256MHz</td>
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<tr>
<td>BeiDou</td>
<td>B1</td>
<td>B2</td>
<td>B3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1561MHz</td>
<td>1207.14MHz</td>
<td>1268.52MHz</td>
<td></td>
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<tr>
<td>Compass</td>
<td>E5B(B2)</td>
<td>E5B(B3)</td>
<td>E6(B2)</td>
<td>E6(B3)</td>
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<tr>
<td></td>
<td>1268.56MHz</td>
<td>1268.52MHz</td>
<td>1561MHz</td>
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<tr>
<td>SBAS</td>
<td>Omnistar</td>
<td>WAAS/EGN OS</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>1542.5MHz</td>
<td>1575.42MHz</td>
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### GNSS Electrical

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<tr>
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<th>Frequency (MHz)</th>
<th>1176.45</th>
<th>1561</th>
<th>1575.42</th>
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<tbody>
<tr>
<td>VSWR (max.)</td>
<td></td>
<td>2:1</td>
<td>2:1</td>
<td>2:1</td>
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<tr>
<td>Efficiency (%)</td>
<td></td>
<td>60.8</td>
<td>63.9</td>
<td>59.6</td>
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<tr>
<td>Peak Gain(dBi)</td>
<td></td>
<td>2.5</td>
<td>3.4</td>
<td>3.1</td>
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<tr>
<td>Average Gain(dB)</td>
<td></td>
<td>-3</td>
<td>-2</td>
<td>-2.3</td>
</tr>
<tr>
<td>Polarization</td>
<td></td>
<td>R.H.C.P.</td>
<td></td>
<td></td>
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### Mechanical

<p>| | |</p>
<table>
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<tr>
<td>Planner Dimension</td>
<td>25<em>25</em>8mm</td>
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<tr>
<td>Ground Plane</td>
<td>70*70mm</td>
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<tr>
<td>Connection Type</td>
<td>Pin &amp; Adhesive Mount</td>
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### Environmental

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<tr>
<td>Temperature Range</td>
<td>-40°C to 85°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>Non-condensing 65°C 95% RH</td>
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</tbody>
</table>
3. Antenna Characteristics

3.1 VSWR

3.2 Efficiency
### 3.3 Average Gain

![Graph of Average Gain](image)

### 3.4 Peak Gain

![Graph of Peak Gain](image)
3.5 Axial Ratio – X-Z

![Graph X-Z](image)

3.6 Axial Ratio – Y-Z

![Graph Y-Z](image)
4. Radiation Patterns

4.1 Test Setup

Tested on 70*70mm Ground Plane Evaluation Board
4.2 2D Radiation Patterns

XY Plane

[Diagram showing 2D radiation pattern in the XY plane]

XZ Plane

[Diagram showing 2D radiation pattern in the XZ plane]

YZ Plane

[Diagram showing 2D radiation pattern in the YZ plane]
4.3 3D Radiation Patterns

TOTAL POWER 1176.45 MHz

TOTAL POWER 1561 MHz

TOTAL POWER 1575.42 MHz
5. Mechanical Drawing (Units: mm)

### Notes:
1. Double Sided Adhesive Area
2. Soldermask Area
3. * * Critical Dimensions

### Specification:
- **Name:** Patch
- **P/N:** 013xxxxxx
- **Material:** Ceramic
- **Finish:** Clear
- **QTY:** 1
- **Date:** 2019/11/22

### Dimensions:
- Front View:
  - *25±0.4
  - *18±0.3
  - 2.5±0.3
  - 0.5 MAX
- Side View:
  - *28±0.4
- Bottom View:
  - φ0.8±0.15
  - 21.5±0.5
  - 21.5±0.5

### Design Details:
- Liner

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6. Footprint

Top View

Ground

Ø 3

Ø 1 Thru Hole

Bottom View

Ground

Ø 2.5

Ø 3.5

Ø 0.9 Thru Hole

Tolerance: +/- 0.20
Unit: mm

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7. Packaging

24pcs GPVBSF.25.8.A per Tray
Tray Dimensions: 255*144*8mm
Weight: 0.460Kg

96pcs GPVBSF.25.8.A per Inner Carton
Dimensions: 263*154*96mm
Weight: 2Kg

384pcs GPVBSF.25.8.A per Large Carton
Dimensions: 327*280*218mm
Weight: 9Kg

Pallet Dimensions:
1200*1000*1280mm
36 Cartons Per Pallet
9 Cartons Per Layer; 4 Layers
# Changelog for the datasheet

**SPE-19-8-139 – GPVBSF.25.8.A**

## Revision: A (Original First Release)

<table>
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<th>Date</th>
<th>Notes</th>
<th>Author</th>
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<td>2019-11-07</td>
<td>Initial Release</td>
<td>Jack Conroy</td>
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## Previous Revisions

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