Specification

Patent Pending

Part No. : GGBTP.35.3.A.40

Description : Terrablast - Lightweight
GPS/GLONASS/GALILEO/BEIDOU
35mm Patch Antenna

Features : GPS L1 / GLONASS L1 / GALILEO E1 / BEIDOU B1
Low Profile – 3.5mm Height
Pin Type Terrablast Patch Antenna
10g Ultra-Lightweight Patch
Peak Gain: 4dBi
Efficiency: 70%
Ultra-Impact Resistant
Low Axial Ratio
Dimensions: 35x35x3.72mm
Patent Pending Design
RoHS compliant
1. Introduction

The Terrablast GGBTP.35.3.A.40 is a revolutionary new antenna developed to meet the unique needs of the UAV and automotive industries. It uses a patent pending antenna technology which results in much lighter weight and withstands impacts. The GGBTP.35.3.A.40 weights just 10g, compared with 15.5g for an equivalent ceramic patch antenna. Its impact-resistant characteristics make it ideal for applications such as automotive e-call systems or UAVs, where the antenna’s mechanical and electrical integrity should survive after a crash.

The GGBTP.35.3.A.40 is mounted via a pin and double-sided adhesive. This antenna works well without modifications in most environments but can be tuned and further optimized to different ground-planes and enclosures if required. Custom antenna modifications are subject to possible NRE and minimum order quantity.

Terrablast antennas are not suitable for SMD reflow. The correct method is manual soldering at a soldering temperature of 380°C +/- 20°C for a duration of 3 to 5 seconds. All Terrablast antennas undergo rigorous temperature, vibration and impact tests and exceed the highest ISO16750 standards.

For further information, or support to test and integrate Taoglas Terrablast technology please contact your regional Taoglas facility.
# 2. Specification

### ELECTRICAL*

<table>
<thead>
<tr>
<th>Application Bands</th>
<th>Beidou B1</th>
<th>GPS L1</th>
<th>GLONASS L1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Frequency (MHz)</td>
<td>1561</td>
<td>1575.42</td>
<td>1602</td>
</tr>
<tr>
<td>Efficiency (%)</td>
<td>72.58</td>
<td>69.81</td>
<td>70.27</td>
</tr>
<tr>
<td>Peak Gain (dBi)</td>
<td>4.12</td>
<td>4.03</td>
<td>4.33</td>
</tr>
<tr>
<td>Average Gain (dBi)</td>
<td>-1.39</td>
<td>-1.56</td>
<td>-1.53</td>
</tr>
<tr>
<td>Impedance</td>
<td>50 ohms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return Loss (dB)</td>
<td>&lt; -10 across operating bands</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polarization</td>
<td>RHCP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MECHANICAL

<table>
<thead>
<tr>
<th>Patch Dimension (mm)</th>
<th>35 x 35 x 3.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin Diameter (mm)</td>
<td>0.9</td>
</tr>
<tr>
<td>Pin Length (mm)</td>
<td>2.0</td>
</tr>
<tr>
<td>Weight (g)</td>
<td>9.7</td>
</tr>
</tbody>
</table>

### ENVIRONMENTAL

<table>
<thead>
<tr>
<th>Storage Temperature</th>
<th>-40°C to 85°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Temperature</td>
<td>-40°C to 85°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>Non-condensing 65°C 95% RH</td>
</tr>
</tbody>
</table>

### RELIABILITY TEST

| Low Temperature | -40°C, 24hrs |
| High Temperature | +85°C, 48hrs |
| Temperature Cycling | ISO16750 standard, total 240hrs |
| Temperature Step | ISO16750 standard, total 300mins |
| Free fall | 12m |
| Shock | 10 shocks per axis on 6 faces |
| Vibration | ISO16750 standard, 8 hours / axis |
| Pin pull force | >5kg-f |
| Production life testing (+105°C) | AECQ200 standard, total 1000hrs |

* Antenna properties were measured with the antenna mounted on 70*70mm Ground Plane
3. Antenna Characteristics

3.1 Return Loss

3.2 Efficiency
3.3 Average Gain

3.4 Peak Gain
4. Antenna Radiation Pattern

4.1. Measurement Setup

The GGBTP.35.3.A.40 antenna is tested with 70*70mm ground plane in a CTIA certified Anechoic Chamber. The test setup is shown below.
4.2. 2D Radiation Pattern

XY Plane

XZ Plane

YZ Plane
4.3. 3D Radiation Pattern

![3D Radiation Pattern at 1561 MHz](image)

![3D Radiation Pattern at 1575.42 MHz](image)

![3D Radiation Pattern at 1602 MHz](image)
4.4.  BeiDou Axial Ratio (0° is towards Zenith)

4.5.  GPS Axial Ratio (0° is towards Zenith)

4.6.  GLONASS Axial Ratio (0° is towards Zenith)
5. Mechanical Drawing (Unit: mm)

NOTES:
1. Double sided adhesive area.

<table>
<thead>
<tr>
<th>Name</th>
<th>Material</th>
<th>Finish</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>GGBTP.35 Patch</td>
<td>Terroblast</td>
<td>Clear</td>
<td>1</td>
</tr>
<tr>
<td>Double Sided Adhesive</td>
<td>NITTO 5015</td>
<td>White Liner</td>
<td>1</td>
</tr>
</tbody>
</table>
6. PCB Footprint Recommendation

**Top View**

- Ø 3
- Ø 1 Thru Hole

**Bottom View**

- Ø 2.5
- Ø 1 Thru Hole
- Ø 3.5

Tolerance: +/- 0.20
Unit:mm

7. Soldering Method Recommendation

Soldering Method: Manually soldering
Soldering Temperature: 380°C +/- 20°C
Soldering Duration: 3~5 seconds
8. Packaging

72 pcs GGBTP.35.3.A.40 per box
Box Dimensions - 261*152*118mm
Total Weight - 1.17kg

4 boxes / 288 pcs GTP.35.3.A.40 per carton
Carton Dimensions - 330*280*270
Weight - 4.94Kg

Pallet Dimensions 1200mm*1000mm*1480mm
48 Cartons per pallet
12 Cartons per layer
4 Layers
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