Multilayer Antenna (Triple Band type)
For 1574-1577MHz / 2400-2484MHz / 5150-5850MHz

ANT161575TT-3000A1

1.6x0.8mm [EIA 0603]*
* Dimensions Code JIS[EIA]
Multilayer Antenna
For 1574-1577MHz / 2400-2484MHz / 5150-5850MHz
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- All specifications are subject to change without notice.
- Before using these products, be sure to request the delivery specifications.

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EVALUATION BOARD

PCB size: 120mm x 65mm x 1mm
Antenna area: 13 x 6 mm

Component P/N

<table>
<thead>
<tr>
<th>Port</th>
<th>Component</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ft GPS</td>
<td>4.3pF</td>
<td></td>
</tr>
<tr>
<td>Mt GPS</td>
<td>1.5nH(MLG0603P1NS; TDK)</td>
<td></td>
</tr>
<tr>
<td>Ft 2.4GHz</td>
<td>7.5pF</td>
<td></td>
</tr>
<tr>
<td>Ft 5.5GHz</td>
<td>0.6pF(MLG0603P0N6C; TDK)</td>
<td></td>
</tr>
<tr>
<td>Mt 2.4GHz</td>
<td>2.7nH(MLG0603P2N7C; TDK)</td>
<td></td>
</tr>
<tr>
<td>Mt 5.5GHz</td>
<td>1.5nH(MLG0603P1NSC; TDK)</td>
<td></td>
</tr>
<tr>
<td>Ft Common</td>
<td>0Ω</td>
<td></td>
</tr>
</tbody>
</table>

Measurement condition for Radiation Pattern

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ELECTRICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Item</th>
<th>Frequency Range (MHz)</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VSWR</td>
<td>1574 to 1577</td>
<td>—</td>
<td>1.20</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>2400 to 2484</td>
<td>—</td>
<td>1.81</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>5150 to 5850</td>
<td>—</td>
<td>3.26</td>
<td>4.0</td>
</tr>
</tbody>
</table>

- This is typical antenna performance with the standard PCB.

TEMPERATURE RANGE

<table>
<thead>
<tr>
<th>Operating temperature ℃</th>
<th>Storage temperature ℃</th>
</tr>
</thead>
<tbody>
<tr>
<td>–40 to +85</td>
<td>–40 to +85</td>
</tr>
</tbody>
</table>

FREQUENCY CHARACTERISTICS

GPS BAND

- Tested antenna has been soldered. Evaluation board size is 120x65x1 mm.

2.4GHz BAND

5.5GHz WLAN BAND

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## RADIATION PATTERNS

**GPS BAND**

**RHCP**

<table>
<thead>
<tr>
<th>Z-X plane</th>
<th>Z-Y plane</th>
<th>X-Y plane</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Diagram Z-X plane" /></td>
<td><img src="image2" alt="Diagram Z-Y plane" /></td>
<td><img src="image3" alt="Diagram X-Y plane" /></td>
</tr>
</tbody>
</table>

**Specifications:**

- **Frequency (GHz):** 1.5755
- **Average (dBi):**
  - Z-X plane: -6.6 dBic
  - Z-Y plane: -6.8 dBic
  - X-Y plane: -13.7 dBic
- **Maximum (dBi):**
  - Z-X plane: -2.3 dBic
  - Z-Y plane: -2.3 dBic
  - X-Y plane: -36.8 dBic
- **Minimum (dBi):**
  - Z-X plane: -18.7 dBic
  - Z-Y plane: -18.7 dBic
  - X-Y plane: -13.7 dBic

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**ANT161575TT-3000A1**

**RADIATION PATTERNS**

**2.4GHz ISM BAND**

- **Horizontal polarization**
  - Frequency(GHz): 2.400, 2.442, 2.484
  - Average(dBi): -13.6, -13.4, -15.6
  - Maximum(dBi): -8.7, -8.3, -8.1
  - Minimum(dBi): -34.5, -34.3, -35.7

- **Vertical polarization**
  - Frequency(GHz): 2.400, 2.442, 2.484
  - Average(dBi): -4.1, -3.5, -3.7
  - Maximum(dBi): -0.2, 0.2, 0.0
  - Minimum(dBi): -17.4, -16.8, -15.5

• Tested antenna has been soldered. Evaluation board size is 120x65x1 mm.

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**ANT161575TT-3000A1**

**RADIATION PATTERNS**

**5.5GHz BAND**

- **Horizontal polarization**
  - **Frequency (GHz):** 5.150, 5.250, 5.350, 5.450, 5.500, 5.600, 5.700, 5.850
  - **Average (dBi):**
    - 5.150 GHz: -4.5, -5.3, -5.0, -4.8, -4.6, -4.4, -4.2, -4.0
    - 5.500 GHz: -3.5, -4.0, -3.5, -4.0, -3.5, -4.0, -3.5, -4.0
    - 5.850 GHz: -2.3, -2.8, -2.3, -2.8, -2.3, -2.8, -2.3, -2.8
  - **Maximum (dBi):**
    - 5.150 GHz: -0.6, -1.0, -0.4, -0.8, -0.6, -1.0, -0.4, -0.8
    - 5.500 GHz: 0.0, 0.4, 0.0, 0.4, 0.0, 0.4, 0.0, 0.4
    - 5.850 GHz: -0.2, -0.6, -0.2, -0.6, -0.2, -0.6, -0.2, -0.6
  - **Minimum (dBi):**
    - 5.500 GHz: -28.6, -29.1, -28.6, -29.1, -28.6, -29.1, -28.6, -29.1

- **Vertical polarization**
  - **Frequency (GHz):** 5.150, 5.250, 5.350, 5.450, 5.500, 5.600, 5.700, 5.850
  - **Average (dBi):**
    - 5.500 GHz: -12.3, -12.0, -11.7, -11.4, -11.1, -10.8, -10.5, -10.2
    - 5.850 GHz: -10.7, -10.4, -10.1, -9.8, -9.5, -9.2, -8.9, -8.6
  - **Maximum (dBi):**
    - 5.150 GHz: -9.2, -8.9, -8.6, -8.3, -8.0, -7.7, -7.4, -7.1
    - 5.500 GHz: -7.7, -7.4, -7.1, -6.8, -6.5, -6.2, -5.9, -5.6
    - 5.850 GHz: -5.5, -5.2, -4.9, -4.6, -4.3, -4.0, -3.7, -3.4
  - **Minimum (dBi):**
    - 5.150 GHz: -33.5, -33.2, -32.9, -32.6, -32.3, -32.0, -31.7, -31.4
    - 5.500 GHz: -31.5, -31.2, -29.9, -29.6, -29.3, -29.0, -28.7, -28.4

**Note:**
- Tested antenna has been soldered. Evaluation board size is 120×65×1 mm.
- All specifications are subject to change without notice.
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RECOMMENDED REFLOW PROFILE

<table>
<thead>
<tr>
<th>Preheating</th>
<th>Soldering Critical zone (T3 to T4)</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1 150°C</td>
<td>T2 200°C</td>
<td>T3 217°C</td>
</tr>
<tr>
<td>t1 60 to 120sec</td>
<td>t2 60 to 120sec</td>
<td>t4 240 to 260°C</td>
</tr>
<tr>
<td>t3 30sec max.</td>
<td></td>
<td>t3*</td>
</tr>
</tbody>
</table>

* t3 : Time within 5°C of actual peak temperature
The maximum number of reflow is 3.

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- **PACKAGING STYLE**

- **REEL DIMENSIONS**

  ![Reel Dimensions Diagram]

  Dimensions in mm

- **TAPE DIMENSIONS**

  ![Tape Dimensions Diagram]

  Material of carrier tape: PS

  Dimensions in mm

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.97±0.05</td>
<td>1.8±0.05</td>
<td>8.0±0.2</td>
<td>3.5±0.05</td>
<td>1.75±0.1</td>
<td>4.0±0.1</td>
<td>2.0±0.05</td>
<td>4.0±0.1</td>
<td>1.5+0.1/-0</td>
<td>0.55max</td>
<td>0.25±0.05</td>
</tr>
</tbody>
</table>

- **PACKAGE QUANTITY**

  | Standard package quantity (pieces/reel) | 4,000 |

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REMINDERS FOR USING THESE PRODUCTS

Before using these products, be sure to request the delivery specifications.

SAFETY REMINDERS

Please pay sufficient attention to the warnings for safe designing when using these products.

⚠️ REMINDERS

The products listed on this catalog are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.

The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property.

Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below or for any other use exceeding the range or conditions set forth in this catalog.

(1) Aerospace/Aviation equipment
(2) Transportation equipment (cars, electric trains, ships, etc.)
(3) Medical equipment
(4) Power-generation control equipment
(5) Atomic energy-related equipment
(6) Seabed equipment
(7) Transportation control equipment
(8) Public information-processing equipment
(9) Military equipment
(10) Electric heating apparatus, burning equipment
(11) Disaster prevention/crime prevention equipment
(12) Safety equipment
(13) Other applications that are not considered general-purpose applications

When using this product in general-purpose applications, you are kindly requested to take into consideration securing protection circuit/equipment or providing backup circuits, etc., to ensure higher safety.