Description: 902-928MHz Ceramic Directional 5dBi Antenna

PART NUMBER: W3215

Features:

- Frequency 902-928MHz
- Peak Gain +5dBi
- Polarization Linear
- Size 40 x 40 x 6 mm
- Pin feed
- Adhesive tape mount
- RoHS Compliant

Applications:

- ISM 915MHz radios
- IoT Devices
- Smart traffic signs
- Lighting controls
- Monitoring

All dimensions are in mm / inches

Issue: 1850

In the effort to improve our products, we reserve the right to make changes judged to be necessary.

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Tel: 86 512 6807 9998
**Description:** 902-928MHz Ceramic Directional 5dBi Antenna

**PART NUMBER:** W3215

### ELECTRICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antenna Type</strong></td>
<td>Patch Antenna</td>
</tr>
<tr>
<td><strong>Frequency</strong></td>
<td>902-928MHz</td>
</tr>
<tr>
<td><strong>Nominal Impedance</strong></td>
<td>50 Ω</td>
</tr>
<tr>
<td><strong>Peak Return Loss</strong></td>
<td>-20dB</td>
</tr>
<tr>
<td><strong>Return Loss (902M~928M)</strong></td>
<td>&lt;-4dB</td>
</tr>
<tr>
<td><strong>Peak Gain</strong></td>
<td>4.5 dBi</td>
</tr>
<tr>
<td><strong>Gain (902M~928M)</strong></td>
<td>&gt;1.4dBi</td>
</tr>
<tr>
<td><strong>Peak Efficiency</strong></td>
<td>70%</td>
</tr>
<tr>
<td><strong>Efficiency (902M~928M)</strong></td>
<td>&gt;37%</td>
</tr>
<tr>
<td><strong>Polarization</strong></td>
<td>Linear – Vertical</td>
</tr>
<tr>
<td><strong>Radiation Pattern – Vertical plane</strong></td>
<td>Omni</td>
</tr>
<tr>
<td><strong>Radiation Pattern – Horizontal plane</strong></td>
<td>Directional</td>
</tr>
</tbody>
</table>

### MECHANICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall size</strong></td>
<td>40 x 40 x 6.0 mm</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>37g</td>
</tr>
<tr>
<td><strong>Connection type</strong></td>
<td>Pin soldering, adhesive tape</td>
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</tbody>
</table>

### ENVIRONMENTAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td><strong>Operating Temperature</strong></td>
<td>-40~+85 °C</td>
</tr>
<tr>
<td><strong>Storage Temperature</strong></td>
<td>-40~+85 °C</td>
</tr>
<tr>
<td><strong>RoHS Compliant</strong></td>
<td>Yes</td>
</tr>
</tbody>
</table>
Description: 902-928MHz Ceramic Directional 5dBi Antenna

PART NUMBER: W3215

MECHANICAL DRAWING

<table>
<thead>
<tr>
<th>NO.</th>
<th>Description</th>
<th>Structure and material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Antenna Substrate</td>
<td>Dielectric Ceramics</td>
</tr>
<tr>
<td>2</td>
<td>Pin</td>
<td>Copper and tinplated</td>
</tr>
<tr>
<td>3</td>
<td>Electrode</td>
<td>Ag Plated</td>
</tr>
<tr>
<td>4</td>
<td>Ground Base</td>
<td>Ag Plated</td>
</tr>
<tr>
<td>5</td>
<td>Adhesive type</td>
<td>NITTO 5000NS</td>
</tr>
</tbody>
</table>
Description: 902-928MHz Ceramic Directional 5dBi Antenna

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TEST SETUP FOR RF MEASUREMENTS

Test PCB 150 x 150mm

Matching circuit:
6.8nH series inductor

Series inductor can be used to optimize center frequency on custom implementation.
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CHARTS

Return Loss

![Return Loss Chart](chart.png)
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Radiation Efficiency

![Radiation Efficiency Chart](image-url)
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CHARTS

Peak Gain

![Graph showing Peak Gain vs. Frequency for W3215 antenna](chart.png)
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CHARTS

Radiation pattern(2D)
XY Plane

XY Plane

902MHz
Avg(dBi) = 1.34
Peak(dBi) = 1.90
Avg -3(deg) = 359.5

915MHz
Avg (dBi) = 1.91
Peak (dBi) = 2.25
Avg -3 (deg) = 359.5

928MHz
Avg (dBi) = -0.75
Peak (dBi) = -0.08
Avg -3 (deg) = 359.5

Phi Angle (0-360°)
Theta (45°)

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Radiation pattern (2D)
ZX Plane

902MHz
Avg (dBi) = -1.63
Peak (dBi) = 3.60
Avg -3 (deg) = 95.5

915MHz
Avg (dBi) = -0.58
Peak (dBi) = 4.59
Avg -3 (deg) = 96.5

928MHz
Avg (dBi) = -3.80
Peak (dBi) = 1.42
Avg -3 (deg) = 98.5

Phi Angle (0°)
Theta (°)
Description: 902-928MHz Ceramic Directional 5dBi Antenna
PART NUMBER: W3215

Radiation pattern(2D)
YZ Plane

902MHz
Avg(dBi) = -1.63
Peak(dBi) = 3.60
Avg -3(deg) = 95.5

915MHz
Avg (dBi) = -0.58
Peak (dBi) = 4.59
Avg -3 (deg) = 96.5

928MHz
Avg(dBi) = -3.80
Peak(dBi) = 1.42
Avg -3 (deg) = 98.5

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PACKAGING

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per package tray</td>
<td>21 elements</td>
</tr>
<tr>
<td>Per vacuum bag</td>
<td>4 package bases</td>
</tr>
<tr>
<td>Per inner box</td>
<td>1 vacuum bag</td>
</tr>
<tr>
<td>Per package</td>
<td>4 inner boxes</td>
</tr>
<tr>
<td>Total: 336 pcs</td>
<td></td>
</tr>
<tr>
<td>Big box dimensions (MM): 365X365X160MM</td>
<td></td>
</tr>
</tbody>
</table>