868 and 915MHz dual (wideband) ISM band SMD chip antenna

P/N 0900AT43A0070


General Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Number</td>
<td>0900AT43A0070</td>
</tr>
<tr>
<td>Frequency (MHz)</td>
<td>858 - 928</td>
</tr>
<tr>
<td>Peak Gain (XZ-total)</td>
<td>-0.5 dBi typ.</td>
</tr>
<tr>
<td>Average Gain (XZ-total)</td>
<td>-2.5 dBi typ.</td>
</tr>
<tr>
<td>Radiated Efficiency</td>
<td>48% ave.</td>
</tr>
<tr>
<td>Return Loss</td>
<td>-4 dB min.</td>
</tr>
<tr>
<td>impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>Reel Quantity</td>
<td>1,000</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40 to +85°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40 to +85°C</td>
</tr>
<tr>
<td>Power Capacity</td>
<td>2W max. (CW)</td>
</tr>
</tbody>
</table>

Recommended Storage Conditions of unused product on T&R

+5 to +35°C, Humidity 45-75%RH

Storage Period

18 months max.

Part Number Explanation

<table>
<thead>
<tr>
<th>P/N Suffix</th>
<th>Packing Style</th>
<th>Bulk (loose)</th>
<th>Suffix = S</th>
<th>eg. 0900AT43A0070S</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T &amp; R</td>
<td>Suffix = E</td>
<td>eg. 0900AT43A0070E</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100% Tin</td>
<td>Suffix = E or S</td>
<td>eg. 0900AT43A0070(E or S)</td>
<td></td>
</tr>
</tbody>
</table>

Mechanical Dimensions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>In (mm)</th>
<th>±</th>
<th>mm (±)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>0.276</td>
<td>±0.008</td>
<td>7.00 ± 0.20</td>
</tr>
<tr>
<td>W</td>
<td>0.079</td>
<td>±0.008</td>
<td>2.00 ± 0.20</td>
</tr>
<tr>
<td>T</td>
<td>0.031</td>
<td>±0.004/-0.008</td>
<td>0.80 ± 0.1/-0.2</td>
</tr>
<tr>
<td>a</td>
<td>0.020</td>
<td>±0.012</td>
<td>0.50 ± 0.30</td>
</tr>
</tbody>
</table>

Terminal Configuration

<table>
<thead>
<tr>
<th>No.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RF Feed Point</td>
</tr>
<tr>
<td>2</td>
<td>To trace element</td>
</tr>
</tbody>
</table>

Layout Recommendation #1

Test board p/n: 0900AT43A0070-EB1SMA

- Orderable EVB for evaluation, it comes with a female SMA connector. Go to: www.johansontechnology.com/request-a-sample and ask for p/n 0900AT43A0070-EB1SMA
- Need help laying out the antenna, want us to review your antenna design (free!), require the Gerber files for this EVB, or would like us to validate the new tuning values of your PCB (fee may apply) go to: www.johansontechnology.com/ask-a-question www.johansontechnology.com/ipc-antenna-services
- The total antenna area usage for this EVB is approx. 25x10mm (due to trace element), but the trace can be re-shaped to reduce effective area and conform to the designer's PCB!

www.johansontechnology.com
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**Layout Recommendation #1**

- Attention: Matching circuits and component values will be different on the client's design, depending on PCB layout, geometry, etc. It is recommended that the designer leave available slots for a "pi" (or shunt-series-shunt) network. The antenna matching network values you see here are used when antenna is mounted on Johanson's evaluation board.

- Need help laying out the antenna, want us to review your antenna design (free!), require the Gerber files for this EVB, or would like us to validate the new tuning values of your PCB (fee may apply) go to: www.johansontechnology.com/ask-a-question

**Typical Electrical Characteristics S11 return loss (T=25 °C) on Layout #1**

* Line width should be designed to match 50ohm characteristic impedance, depending on your PCB material and thickness (distance to GND)

This antenna has about 20MHz of guard-band on each side
868 and 915MHz dual (wideband) ISM band SMD chip antenna

Typical Radiation Patterns (@25C) of Layout Recommendation #1

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Typical Radiation Patterns (@25C) of Layout Recommendation #1

Y : $\phi(\Phi) = 90^\circ$

X : $\phi(\Phi) = 0^\circ$

Z : $\theta(\Theta) = 0^\circ$

XY-plane @915MHz
Total

YZ-Plane @915MHz
Total

XZ-Plane @915MHz
Total

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"High Frequency Ceramic Solutions"

868 and 915MHz dual (wideband) ISM band SMD chip antenna

P/N 0900AT43A0070


Recommended Application ISM

**Layout Recommendation #2**

Test board p/n: 0900AT43A0070-EB2SMA

- **Ground plane**
- **50Ω Feed Line**
- **No Ground**

- The total antenna area usage for this EVB is approx. 25x10mm (due to trace element), but the trace can be re-shaped to reduce effective area and conform to the designer's PCB!

- Orderable EVB for evaluation, it comes with a female SMA connector. Go to: www.johansontechnology.com/request-a-sample and ask for p/n 0900AT43A0070-EB2SMA

- Need help laying out the antenna, want us to review the design (free!), require the Gerber files for this EVB, or would like us to validate the new tuning values of your PCB (fee may apply) go to: www.johansontechnology.com/ask-a-question

- **Line width should be designed to match 50ohm characteristic impedance, depending on your PCB material and thickness (dist to GND)**

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Typical Electrical Characteristics S11 return loss (T=25 °C) on Layout #2

- M15 freq=858.0MHz
  - dB(S(1,1))=-4.527

- M25 freq=893.0MHz
  - dB(S(1,1))=-9.776

- M35 freq=928.0MHz
  - dB(S(1,1))=-6.947

This antenna has about 20MHz of guard-band on each side.

Typical Radiation Patterns (@25C) of Layout Recommendation #2

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Typical Radiation Patterns (@25°C) of Layout Recommendation #2

**XY-plane @915MHz**
- **Total**

**XZ-Plane @915MHz**
- **Total**

**YZ-Plane @915MHz**
- **Total**

**Alternative layout with reduced effective area**

No EVB available for this layout

Total radiated efficiency will be reduced by about 10%.

Do you have more questions about this layout?
Contact our apps team at:

[www.johansontechnology.com/ask-a-question](http://www.johansontechnology.com/ask-a-question)

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<table>
<thead>
<tr>
<th>Product Code:</th>
<th>P/N 0900AT43A0070</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Detail Specification:</strong></td>
<td>6/13/2016</td>
</tr>
<tr>
<td><strong>Recommended Application:</strong></td>
<td>ISM</td>
</tr>
</tbody>
</table>

### Antenna tuning, optimization, and validation Services
www.johansontechnology.com/ipc-antenna-services

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