Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

Features
- Multipurpose for various frequencies
- Omni directional radiation
- Low profile
- Compact size $W \times L \times H$ (7 x 1.6 x 1.6 mm)
- Low weight (86 mg)
- Lead free materials
- Fully SMD compatible
- Lead free soldering compatible
- Tape and reel packing
- RoHS compliant product

Applications
- Bluetooth, WLAN, WiFi
- IEEE 802.11b/g
- ZigBee IEEE 802.15.4
- 2.4 GHz WLAN
- 2.4 GHz ISM Band System
- 868 MHz ISM Band Systems
- GPS 1.575 GHz

Electrical specifications @ +25 °C

Note: Electrical characteristics depend on test board (GP) size and antenna positioning on GP and ground clearance area size. Matching and tuning circuit component values are case depended.
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

### Monopole 1.575 GHz
Typical performance

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<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Case #1 11x40mm</td>
<td>-3.5 (Peak) -3.9 (Band edges)</td>
<td>0.1 (Peak) -0.2 (Band edges)</td>
<td>50/-3 (Peak) 45/-3.5 (Band edges)</td>
<td>-12</td>
<td>50</td>
<td>-40 to +85</td>
<td></td>
</tr>
<tr>
<td>Case #2 20x30mm</td>
<td>-3.9 (Peak) -4.1 (Band edges)</td>
<td>0.3 (Peak) 0 (Band edges)</td>
<td>50/-3 (Peak) 45/-3.5 (Band edges)</td>
<td>-15</td>
<td>50</td>
<td>-40 to +85</td>
<td></td>
</tr>
<tr>
<td>Case #3 37x80mm</td>
<td>-2.7 (Peak) -2.9 (Band edges)</td>
<td>2.0 (Peak) 1.7 (Band edges)</td>
<td>70/-1.55 (Peak) 65/-1.9 (Band edges)</td>
<td>-18</td>
<td>50</td>
<td>-40 to +85</td>
<td></td>
</tr>
</tbody>
</table>

### Monopole 2.4 GHz
Typical performance

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>Case #1 11x40mm</td>
<td>-4.1 (Peak) -3.7 (Band edges)</td>
<td>1.4 (Peak) 1.9 (Band edges)</td>
<td>65/-0.3 (Peak) 55/-0.6 (Band edges)</td>
<td>-18</td>
<td>50</td>
<td>-40 to +85</td>
<td></td>
</tr>
<tr>
<td>Case #2 20x30mm</td>
<td>-4.0 (Peak) -4.3 (Band edges)</td>
<td>2.2 (Peak) 1.5 (Band edges)</td>
<td>52/-2.9 (Peak) 46/-3.4 (Band edges)</td>
<td>-12</td>
<td>50</td>
<td>-40 to +85</td>
<td></td>
</tr>
</tbody>
</table>

### ISM 868 MHz
Typical performance

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>Case #1 20x40mm Vertical</td>
<td>-6.5 (Peak) -7 (Band edges)</td>
<td>-1.8 (Peak) -2.5 (Band edges)</td>
<td>29/-5.4 (Peak) 25/-6 (Band edges)</td>
<td>-10</td>
<td>50</td>
<td>-40 to +85</td>
<td></td>
</tr>
<tr>
<td>Case #2 20x40mm Horizontal</td>
<td>-6.5 (Peak) -6.8 (Band edges)</td>
<td>-1.4 (Peak) -2 (Band edges)</td>
<td>30/-5.3 (Peak) 28/-5.55 (Band edges)</td>
<td>-10</td>
<td>50</td>
<td>-40 to +85</td>
<td></td>
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</tbody>
</table>
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

Terminal Configuration and Dimensions

<table>
<thead>
<tr>
<th>No.</th>
<th>Terminal name</th>
<th>Terminal Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Feed / GND</td>
<td>1.00 x 1.36 mm</td>
</tr>
<tr>
<td>2</td>
<td>Feed / GND</td>
<td>1.00 x 1.36 mm</td>
</tr>
</tbody>
</table>

Antenna features

Antenna is symmetrical.
Either of terminals 1 or 2 can be feed / GND
Ceramic Monopole Antenna
Ground cleared under antenna. Pulse Part Number: W3000

Packing Form

CARRIER TAPE H85-00192
width=16.00 depth=1.70
COVER TAPE H85-00193
width=13.40

LENGTH OF TAPE:
- Leader section: min 350 mm before component section
- Trailer section: min 40 mm after component section.

Empty part cavities at leader and trailer section of the tape must be sealed with top cover tape.

<table>
<thead>
<tr>
<th>BOX H85-00128 (182x182x125)</th>
<th>1 pcs</th>
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</thead>
<tbody>
<tr>
<td>LABEL</td>
<td>1 pcs/BOX</td>
</tr>
<tr>
<td>REEL H85-00164 (D180, W28)</td>
<td>6 pcs</td>
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<tr>
<td>REEL LABEL</td>
<td>1 pcs/REEL</td>
</tr>
</tbody>
</table>

Material Handling

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>H90-0Y838</th>
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<tbody>
<tr>
<td>DENOMINATION</td>
<td>PACKING FORM</td>
</tr>
</tbody>
</table>

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Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

Antenna PWB Layout Specifications

Ground cleared under antenna, clearance area 11.00 x 6.00 mm

Matching and tuning component values depend on application and surrounding mechanics / materials. Feed line should be designed to match 50 Ω characteristic impedance, depending on PWB material and thickness. Recommended test board layout for electrical characteristic measurement, test board outline size 11 x 40 mm. Recommended PWB manufacturing tolerances according to standard: IPC-A-600, revision G

PWB layout for W3000 Monopole Antenna

Note: All dimensions are in metric system.
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

PWB Pad Dimensions

Ground clearance area

All metallization should be removed from all PWB layers on ground clearance area.
Ceramic Monopole Antenna
Ground cleared under antenna. Pulse Part Number: W3000

GPS Antenna Case #1

Board Size 40 x 11 mm
Recommended antenna position on PWB for W3000 MONOPOLE Antenna
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

GPS Antenna Case #1, Test Set Up and Measurement Performance

Ground cleared under antenna, clearance area 11.00 x 6.00 mm.

Typical Electrical Characteristics (T=25 °C)

Measured on the 11 x 40 mm test board with matching circuit. Measured in antenna position 1 on PWB layout, see previous page. Typical Return Loss S11/impedance, free space efficiency and gain.

GPS 1.575 GHz Case #1

11 Feb 2009 11:44:05

CH1 S11&M 1 U FS

1. -16.052 dB 1.58550 GHz
2. -15.292 dB 1.57500 GHz
3. -13.199 dB 1.58500 GHz

GPS 1.575 GHz #1

24 Feb 2009 12:55:57

1. 68.536 Q 3.1875 Q 1.58550 GHz
2. 66.637 Q 11.001 Q 1.1147 nH
3. 65.742 Q 20.102 Q 1.58500 GHz

Hello
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

GPS Antenna Case #1

Typical Free Space Radiation Patterns

XZ-PLANE

ZY-PLANE

XY-PLANE
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

GPS Antenna Case #2

Board Size 20x30
Recommended antenna position on PWB for W3000 MONOPOLE Antenna
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

GPS Antenna Case #2, Test Set Up and Measurement Performance

Ground cleared under antenna, clearance area 20.00 x 6.00 mm.

Typical Electrical Characteristics (T=25 °C)

Measured on the 30 x 20 mm test board with matching circuit. Measured in antenna position1 on PWB layout, see previous page. Typical Return Loss S11/ impedance, free space efficiency and gain.
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

GPS Antenna Case #2

Typical Free Space Radiation Patterns

XZ-PLANE

ZY-PLANE

XY-PLANE

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Ceramic Monopole Antenna
Ground cleared under antenna. Pulse Part Number: W3000

GPS Antenna Case #3

Board Size 37 x 80 mm
Recommended antenna position on PWB for W3000 MONOPOLE Antenna
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

GPS Antenna Case #3, Test Set Up and Measurement Performance

Ground cleared under antenna, clearance area 20.00 x 6.00 mm.

Typical Electrical Characteristics (T=25 °C)

Measured on the 30 x 20 mm test board with matching circuit. Measured in antenna position1 on PWB layout, see previous page. Typical Return Loss S11/ impedance, free space efficiency and gain.
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

GPS Antenna Case #3

Typical Free Space Radiation Patterns

XZ-PLANE

ZY-PLANE

XY-PLANE
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

WiFi Antenna Case #1

Board Size 40 x 11 mm

Recommended antenna position on PWB for W3000 MONOPOLE Antenna
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

WiFi Antenna Case #1, Test Set Up and Measurement Performance

Ground cleared under antenna, clearance area 11.00 x 6.00 mm.

Typical Electrical Characteristics (T=25 °C)

Measured on the 11 x 40 mm test board with matching circuit. Measured in antenna position1 on PWB layout, see previous page. Typical Return Loss S11/ impedance, free space efficiency and gain.

2.4 GHz WiFi Case #1

2.4 GHz WiFi #1

2.4 GHz WiFi Case #1
Ceramic Monopole Antenna
Ground cleared under antenna. Pulse Part Number: W3000

WiFi Antenna Case #1

Typical Free Space Radiation Patterns

XZ-PLANE

ZY-PLANE

XY-PLANE

Zθ: θ (Theta) = 0°
Xθ: θ (Theta) = 0°
Yθ: θ (Theta) = +90°
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

WiFi Antenna Case #2

Board Size 20 x 30 mm
Recommended antenna position on PWB for W3000 MONOPOLE Antenna
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

WiFi Antenna Case #2, Test Set Up and Measurement Performance

Ground cleared under antenna, clearance area 20.00 x 6.00 mm.

Typical Electrical Characteristics (T=25 °C)

Measured on the 30 x 20 mm test board with matching circuit. Measured in antenna position1 on PWB layout, see previous page. Typical Return Loss S11/ impedance, free space efficiency and gain.
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

WiFi Antenna Case #2

Typical Free Space Radiation Patterns

XZ-PLANE

ZY-PLANE

XY-PLANE

Z+: @ (Theta) = 0°
X+: @ (Phi) = 0°
Y+: @ (Phi) = +90°
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

ISM 868 MHz Antenna Case #1

Board Size 20 x 40 mm
Recommended antenna position on PWB for W3000 MONOPOLE Antenna
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

ISM 868 MHz Antenna Case #1, Test Set Up and Measurement Performance

Typical Electrical Characteristics (T=25 °C)
Measured on the 20 x 40 mm test board with matching circuit. Measured in antenna position 1 on PWB layout, see previous page. Typical Return Loss S11/ impedance, free space efficiency and gain.
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

ISM 868 MHz Antenna Case #1

Typical Free Space Radiation Patterns
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

ISM 868 MHz Antenna Case #2

Board Size 20 x 40 mm
Recommended antenna position on PWB for W3000 MONOPOLE Antenna
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

ISM 868 MHz Antenna Case #2, Test Set Up and Measurement Performance

Typical Electrical Characteristics (T=25 °C)

Measured on the 20 x 40 mm test board with matching circuit. Measured in antenna position1 on PWB layout, see previous page. Typical Return Loss S11/ impedance, free space efficiency and gain
Ceramic Monopole Antenna

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ISM 868 MHz Antenna Case #2

Typical Free Space Radiation Patterns
Ceramic Monopole Antenna

Ground cleared under antenna. Pulse Part Number: W3000

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