Quad Band Monopole Ceramic Chip Antenna

Pulse Part Number CW3073

Features
- Low profile
- Compact size W x L x H (10 x 3.2 x 4 mm)
- Low weight (600 mg)
- Lead free materials
- Fully SMD compatible
- Lead free soldering compatible
- Tape and reel packing
- RoHS Compliant Product

Applications
- Version 1: GSM850, PCN1800, PCS1900 and WCDMA I- radios
- Version 2: EGSM900, PCN1800, PCS1900 and WCDMA I- radios

Electrical specifications @ +25 ° C

Note: Electrical characteristics depend on test board (GP) size and antenna positioning on GP and Ground Clearance area size.

Version 1: Typical performance (test board size 105 mm x 40 mm, PWB ground clearance area 40 mm x 10 mm) 4.5nH and 10nH series-inductors used for frequency tuning and 15nH shunt-inductor used for impedance matching.

<table>
<thead>
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<tbody>
<tr>
<td>824-894</td>
<td>-5.2;-5.3</td>
<td>65/-1.9(peak) 44/-3.6;42/-3.8(band edges)</td>
<td>1.6(peak) -0.3;-0.2(band edges)</td>
<td>50</td>
<td>-40 to +85</td>
</tr>
<tr>
<td>1710-1880</td>
<td>-3.1;-5.5</td>
<td>54/-2.7(peak) 38/-4.2;54/-2.7(band edges)</td>
<td>2.5(peak) 0.7;2.5(band edges)</td>
<td>50</td>
<td>-40 to +85</td>
</tr>
<tr>
<td>1850-1990</td>
<td>-5.2;-5.6</td>
<td>62/-2.0(peak) 54/-2.7;62/-2.0(band edges)</td>
<td>2.9(peak) 2.3;2.9(band edges)</td>
<td>50</td>
<td>-40 to +85</td>
</tr>
<tr>
<td>1920-2170</td>
<td>-5.8;-4.0</td>
<td>64/-1.9(peak) 58/-2.4;53/-2.8(band edges)</td>
<td>3.0(peak) 2.8;1.9(band edges)</td>
<td>50</td>
<td>-40 to +85</td>
</tr>
</tbody>
</table>

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**Version 2:** Typical performance (test board size 105 mm x 40 mm, PWB ground clearance area 40 mm x 10 mm)
8.2nH and 10nH series-inductors used for frequency tuning and 15nH shunt-inductor used for impedance matching.

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<tbody>
<tr>
<td>880-960</td>
<td>-5.1;-5.4</td>
<td>68 / -1.7(peak) 45/-3.5;45 / -3.5(band edges )</td>
<td>1.7(peak) 0.1;-0.2(band edges )</td>
<td>50</td>
<td>-40 to +85</td>
</tr>
<tr>
<td>1710-1880</td>
<td>-4.5;-7.3</td>
<td>68 / -1.7(peak) 50/-3.6;68 / -1.7(band edges)</td>
<td>2.9(peak) 1.8;3.2(band edges )</td>
<td>50</td>
<td>-40 to +85</td>
</tr>
<tr>
<td>1850-1990</td>
<td>-7;-6.7</td>
<td>68 / -1.7(peak) 65/-1.9;68 / -1.7(band edges)</td>
<td>3.2(peak) 3.0;3.0(band edges )</td>
<td>50</td>
<td>-40 to +85</td>
</tr>
<tr>
<td>1920-2170</td>
<td>-7.7;-4.5</td>
<td>71 / -1.5(peak) 67/-1.7;57 / -2.5(band edges)</td>
<td>3.2(peak) 3.2;1.8(band edges )</td>
<td>50</td>
<td>-40 to +85</td>
</tr>
</tbody>
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Terminal Configuration and antenna dimensions

<table>
<thead>
<tr>
<th>No.</th>
<th>Terminal Name</th>
<th>Terminal Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Feed</td>
<td>1.50 x 2.75 mm</td>
</tr>
<tr>
<td>2</td>
<td>Support pad</td>
<td>1.50 x 2.75 mm</td>
</tr>
</tbody>
</table>

Antenna is symmetrical and orientation on footprint can be rotated 180 degrees without change in performance

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Quad Band Monopole Ceramic Chip Antenna

Pulse Part Number CW3073

Terminal Configuration PWB Layout

Version 1: GSM850, PCN1800, PCS1900 and WCDMA I

Ground Clearance Area (10.00mm x 40.00mm)

GSM850 frequency tuning area
PWB layout depends on application and surrounding mechanics / materials.

antenna location

Layout in Top Copper

Stub for PCN1800, PCS1900 and WCDMA I
frequency tuning Length depends on application and surrounding mechanics / materials.

Layout in Bottom Copper

2pcs of Cu Via holes to top side of PWB

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Quad Band Monopole Ceramic Chip Antenna

Pulse Part Number CW3073

Version 2: EGSM900, PCN1800, PCS1900 and WCDMA I

Ground Clearance Area (10.00mm x 40.00mm)

GSM900 frequency tuning area
PWB layout depends on application and surrounding mechanics / materials.

antenna location

Layout in Top Copper

Layout in Bottom Copper

2pcs of Cu Via holes to top side of PWB

Stub for PCN1800, PCS1900 and WCDMA I frequency tuning. Length depends on application and surrounding mechanics / materials.

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Pulse Part Number CW3073

3D- view of Test Setup
Version 1: GSM850, PCN1800, PCS1900 and WCDMA I

- 15nH shunt-inductor for impedance matching. Value depends on application and surrounding mechanics and materials.
- 10nH series inductor. Value depends on application and surrounding mechanics and materials.
- Ceramic Chip Antenna

3D- view of Test Setup
Version 2: EGSM900, PCN1800, PCS1900 and WCDMA I

- 15nH shunt-inductor for impedance matching. Value depends on application and surrounding mechanics and materials.
- 10nH series inductor. Value depends on application and surrounding mechanics and materials.
- Ceramic Chip Antenna
- 8.2nH series inductor. Value depends on application and surrounding mechanics and materials.

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Quad Band Monopole Ceramic Chip Antenna
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**Typical Electrical Characteristics (T=25 °C)**

**Version 1**: Typical performance (test board size 105 mm x 40 mm, PWB ground clearance area 40 mm x 10 mm)
4.5nH and 10nH series-inductors used for frequency tuning and 15nH shunt-inductor used for impedance matching.

**Version 2**: Typical performance (test board size 105 mm x 40 mm, PWB ground clearance area 40 mm x 10 mm)
8.2nH and 10nH series-inductors used for frequency tuning and 15nH shunt-inductor used for impedance matching.

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**Version 1: Typical Return Loss S11**

![Return Loss Graph](image1)

**Version 2: Typical Return Loss S11**

![Return Loss Graph](image2)

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Version 1: Typical free Space Total Efficiencies [%]

![Free Space Total Efficiencies Graph](image)

Version 2: Typical free Space Total Efficiencies [%]

![Free Space Total Efficiencies Graph](image)

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Version 1: Typical free Space Total Efficiencies [dB] and Maximum Gain [dBi]

![Graph showing free space total efficiencies and maximum gain for Version 1.]

Version 2: Typical free Space Total Efficiencies [dB] and Maximum Gain [dBi]

![Graph showing free space total efficiencies and maximum gain for Version 2.]

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*Version 1: GSM850 Band Typical Free Space Radiation Patterns*

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Version 1: PCN1800, PCS1900 and WCDMA I Bands

Typical Free Space Radiation Patterns

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Version 2: EGSM900 Band  Typical Free Space Radiation Patterns

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Quad Band Monopole Ceramic Chip Antenna

*Pulse Part Number CW3073*

**Version 2: PCN1800, PCS1900 and WCDMA I Bands**

**Typical Free Space Radiation Patterns**

**XZ-PLANE**

**ZY-PLANE**

**XY-PLANE**

Z+: \( \theta \) (Theta) = 0°

X+: \( \phi \) (Phi) = 0°

Y+: \( \phi \) (Phi) = +90°

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