



# UHF CHIP ANTENNA

VJ 3505



## Multilayer Ceramic Chip Antenna for Mobile Devices

### KEY BENEFITS

- Small outline (35 mm x 5 mm x 1.2 mm)
- Omni-directional, linear polarization
- Complete UHF band coverage (470 MHz to 860 MHz) up to 1.1 GHz
- UHF receivers for DVB-T, DVB-H, ISDB-T, CMMB, MediaFLO, ATSC devices
- Standard SMT assembly
- 50  $\Omega$  unbalanced interface
- RoHS-compliant

### APPLICATIONS

- Mobile phones
- Portable multimedia devices
- Notebooks
- GPS
- Alarm systems
- Meters (gas, water)
- Medical monitoring devices
- RFID

### VJ 3505 UHF Chip Antenna for Mobile Devices



The company's products are covered by one or more of the following:  
 W02008250262 (A1), US2008303720 (A1),  
 US2008305750 (A1), WO2008154173 (A1).  
 Other patents pending.

#### DESCRIPTION

The VJ 3505 multi-layer ceramic chip antenna is a small form-factor, high-performance, chip-antenna designed for TV reception in mobile devices in the UHF band. It allows mobile TV device manufacturers to design high quality products that do not bear the penalty of a large external antenna. Utilizing Vishay's unique materials and manufacturing technologies, this product complies with the MBRAI standard while maintaining a small outline. Focusing on consumer applications, the antenna is designed to be assembled onto a PC board in the standard reflow process.

Target customers of the VJ 3505 are mobile phone makers, portable multimedia device makers, notebook OEMs and ODMs, and accessory card OEMs and ODMs.

#### FEATURES

- Small outline (35 mm x 5 mm x 1.2 mm)
- Omni-directional, linear polarization
- Complies with MBRAI standard
- Complete UHF band coverage (470 MHz to 860 MHz) up to 1.1 GHz
- Requires a tuning circuit and ground plane for optimal performance
- Standard SMT assembly
- 50 Ω unbalanced interface
- Operating temperature range (-40 °C to +85 °C)
- Reference design and evaluation boards available upon request
- Compliant to RoHS directive 2002/95/EC

**RoHS COMPLIANT**

#### APPLICATIONS

- Mobile UHF TV receivers including DVB-T, DVB-H, ISDB-T, CMMB, ATSC, and MediatFLO devices

#### ANTENNA PERFORMANCE

**Peak gain and efficiency**  
 The antenna radiation characteristics are influenced by several factors including ground plane dimensions and impedance matching network.

The antenna parameters presented hereafter were simulated according to the ground plane configuration suggested by the VJ 3505 evaluation board.

Figure 1. shows simulated peak gain and radiation efficiency over frequency throughout the UHF band, compared with the MBRAI requirements.

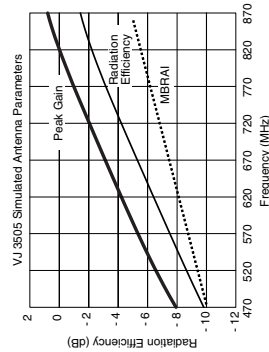
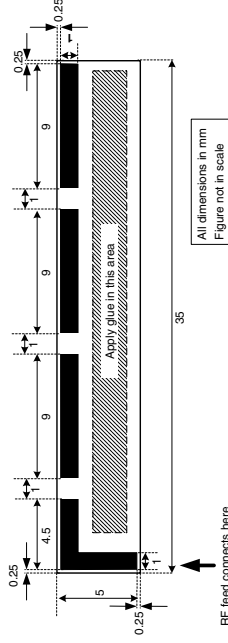


Fig. 1 - Peak Gain and Efficiency vs. Frequency

#### FOOTPRINT AND MECHANICAL DIMENSIONS

The antenna footprint and mechanical dimensions are presented in figure 6. For mechanical support, it is recommended to add one or two drops of heat curing epoxy glue. The glue dot should not overlap with any of the soldering pads. It is recommended to apply the glue dot at the center of the antenna, as shown by the diagonal pattern. For more details see "VJ 3505 assembly guidelines" section below.



All dimensions in mm  
 Figure not in scale

RF feed connects here

Fig. 4 - VJ 3505 Footprint

DIMENSIONS	(mm)
Length	35 ± 0.5/-0
Width	5 ± 0.5/-0
Height	1.2 ± 0.1

Revision 15-Jun-10

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