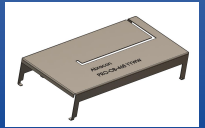


GSM/UMTS - ProAnt OnBoard Antenna



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49.93 x 24.97 x 10 mm
RoHS/RoHS II Compliant
MSL Level = 1

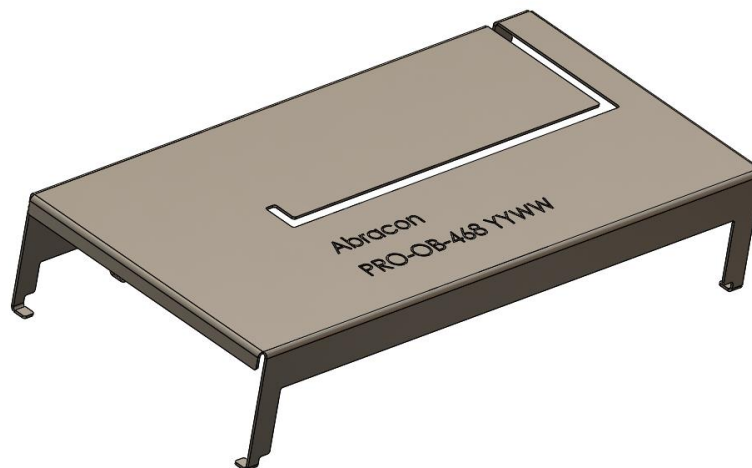
Features

- Supports 824-960 + 1710-2170 MHz
- Peak Gain of 4.9 dBi
- Efficiency >58%
- Surface Mount
- Durable-Shelf life of up to 10 years

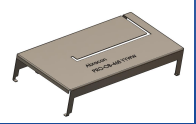
Applications

- 2G/3G/GSM/UMTS Applications
- IoT
 - Industrial
 - Medical / Telemetry
 - Consumer
- M2M
- Metering
- Wireless Remote Control

Product Image



GSM/UMTS - ProAnt OnBoard Antenna



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49.93 x 24.97 x 10 mm
RoHS/RoHS II Compliant
MSL Level = 1

Electrical Specification

Parameter	Specification		Unit
Operating Frequency	824 - 960	1710 - 2170	MHz
Return Loss	< -7.3	< -6.2	dB
Polarization	Mixed Linear		
Peak Gain	3.3	4.9	dBi
Efficiency	> 58	> 60	%
Impedance	50		Ω

Note: All measurements were conducted on the evaluation board in free space. Performance will vary depending on the ground plane, application, and environment.

Mechanical Specification

Parameter	Specification
Antenna Dimension	49.93 x 24.97 x 10.00 mm
Mounting Type	Surface Mount

Environmental Specification

Parameter	Specification
Operating Temperature	-40°C to +125°C
Storage Temperature	
Maximum Temperature	400°C
RoHS Compliance	Yes Compliant with EU directive 2011/65/EU and 2015/863
Shelf life	10 years
MSL	Level 1, unlimited

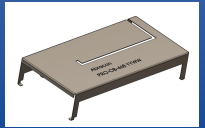


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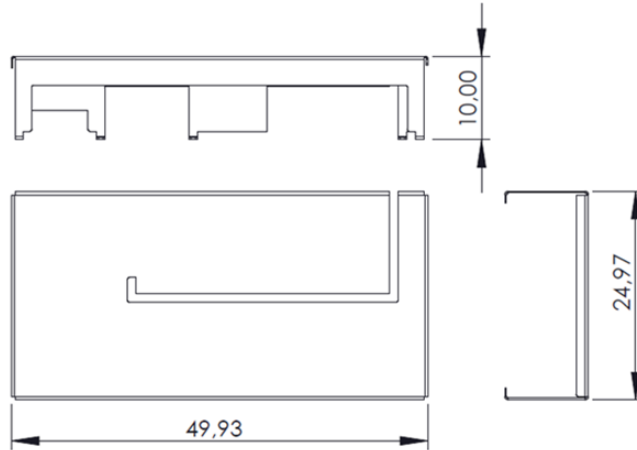


Check Inventory



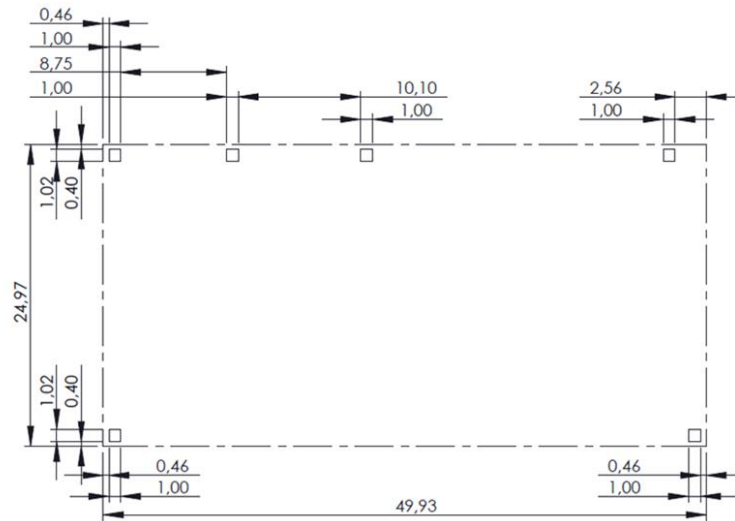
49.93 x 24.97 x 10 mm
RoHS/RoHS II Compliant
MSL Level = 1

Product Dimension



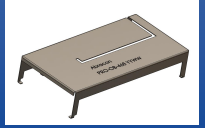
Unit : mm

Antenna pins and keep-out block



Unit : mm

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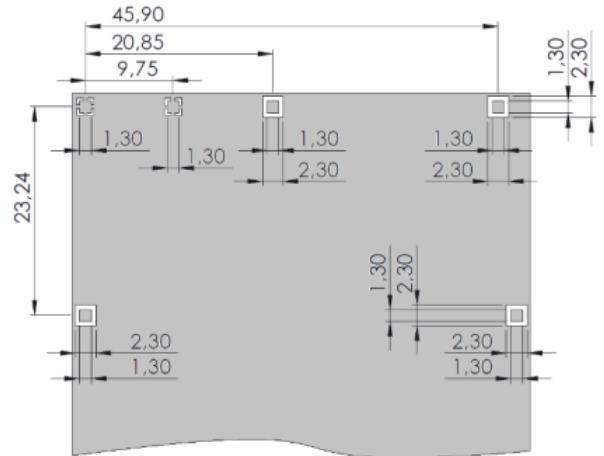
49.93 x 24.97 x 10 mm
RoHS/RoHS II Compliant
MSL Level = 1

PCB layout and antenna pin numbering

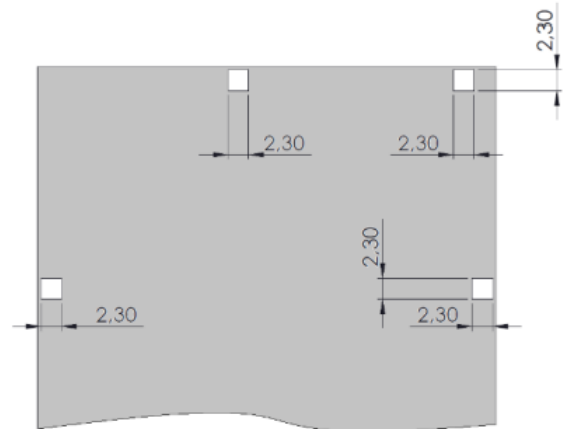
The antenna uses PIFA technology and should thus be mounted on a ground plane. If there are several layers in the PCB, there is an advantage to add vias for smooth interconnection of the ground areas to avoid splits in the ground plane. It is also important that there is a ground clearance around the NC pads and the RF feed pad, through all layers of the PCB. It is recommended to implement a matching network to optimize the antenna impedance in your application. The components can be positioned under the antenna. See recommendations in the figures below.



PCB Layout (from evaluation board)



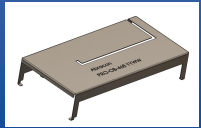
Pin configuration



Clearance through all layers

Unit: mm

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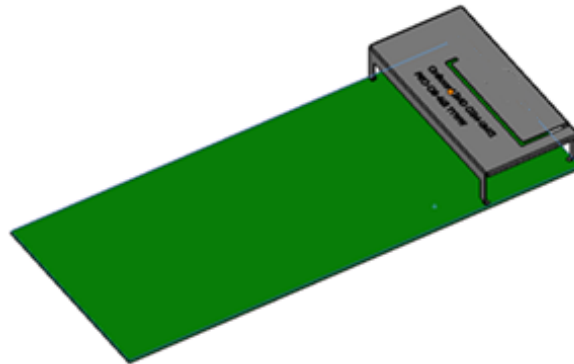
Check Inventory



49.93 x 24.97 x 10 mm
RoHS/RoHS II Compliant
MSL Level = 1

Measurement Setup

The antenna measurements were all done in free space with the evaluation board (PCB size of 120 x 52 mm).





PRO-OB-468

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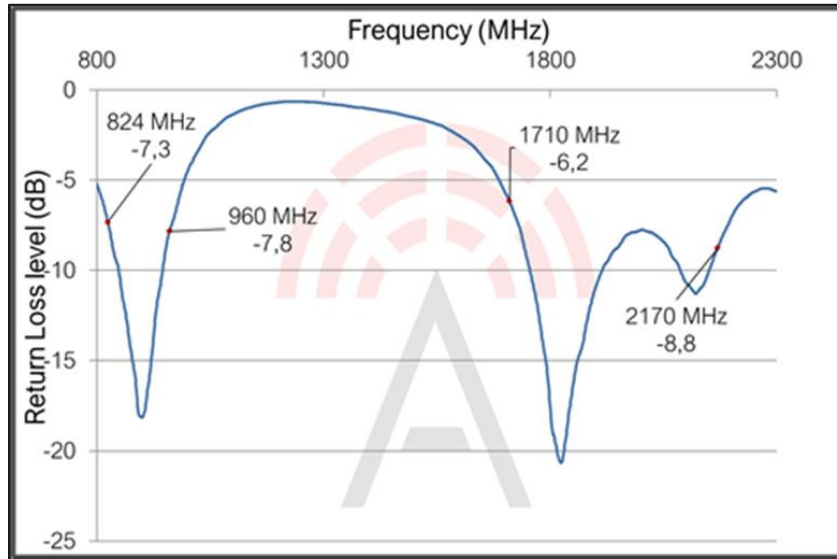


Check Inventory

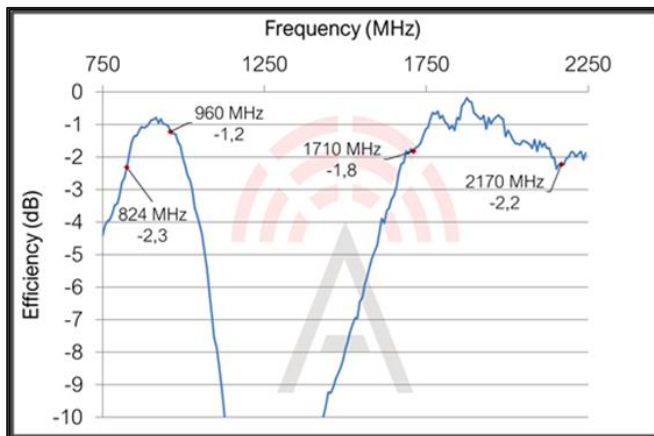


49.93 x 24.97 x 10 mm
RoHS/RoHS II Compliant
 MSL Level = 1

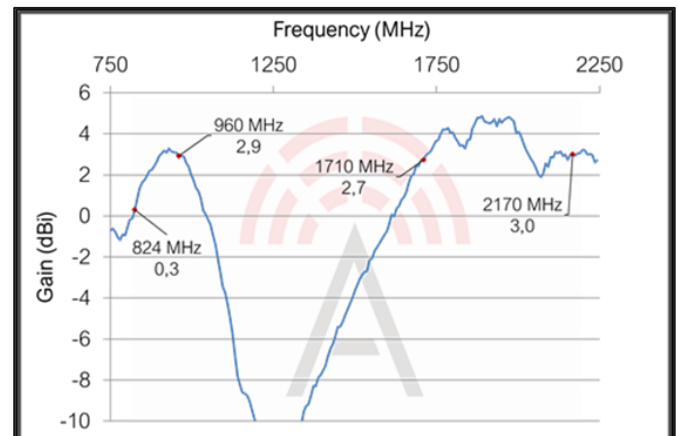
Reflection Characteristics – Return Loss

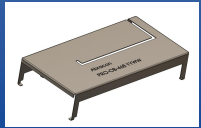


Total Radiation Efficiency



Maximum Radiation Gain





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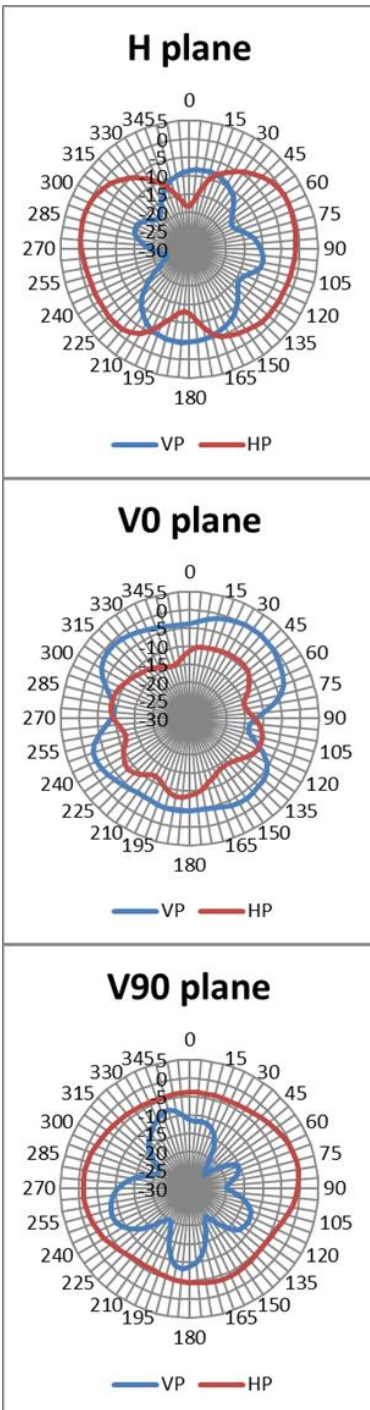


Check Inventory

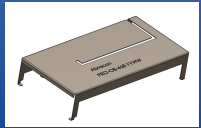


49.93 x 24.97 x 10 mm
RoHS/RoHS II Compliant
 MSL Level = 1

Radiation Characteristics – 2D Pattern (824 MHz)



Unit: dBi



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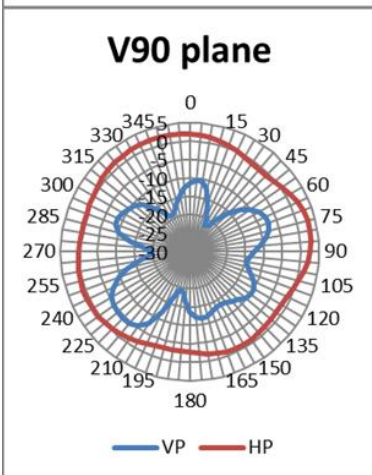
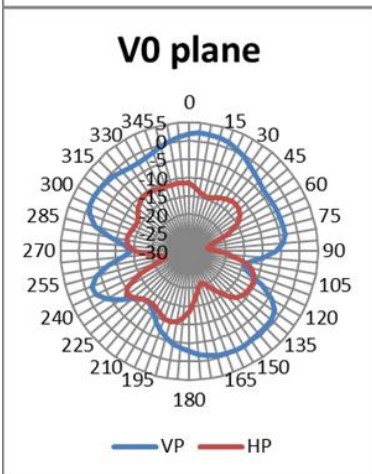
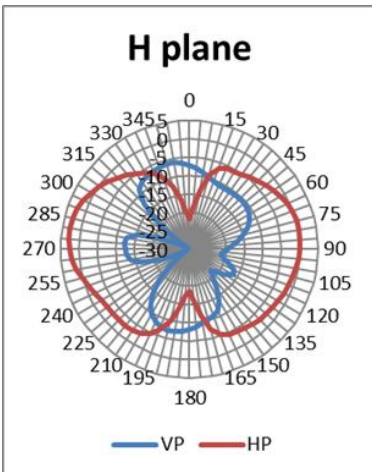


Check Inventory



49.93 x 24.97 x 10 mm
RoHS/RoHS II Compliant
 MSL Level = 1

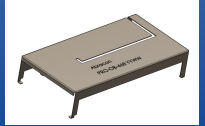
Radiation Characteristics – 2D Pattern (960 MHz)



VP: Vertical Polarization
 HP: Horizontal Polarization



Unit: dBi



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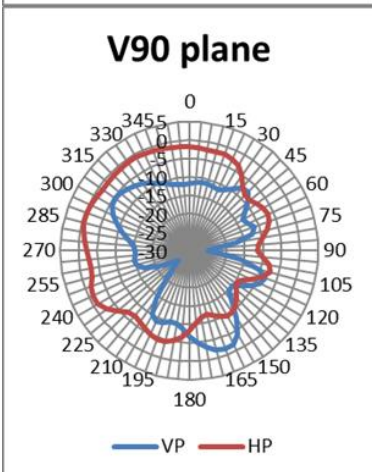
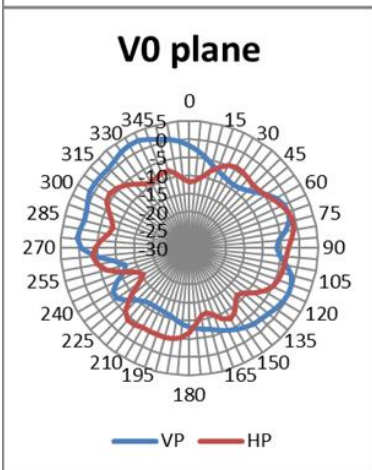
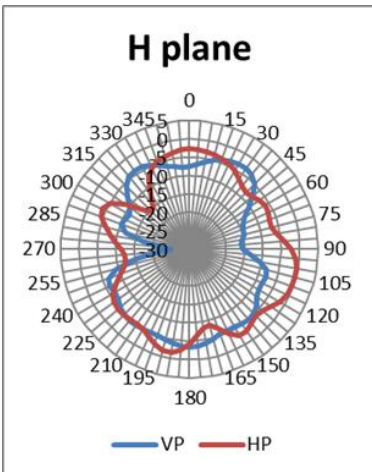


Check Inventory



49.93 x 24.97 x 10 mm
RoHS/RoHS II Compliant
 MSL Level = 1

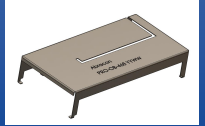
Radiation Characteristics – 2D Pattern (1710 MHz)



VP: Vertical Polarization
 HP: Horizontal Polarization



Unit: dBi



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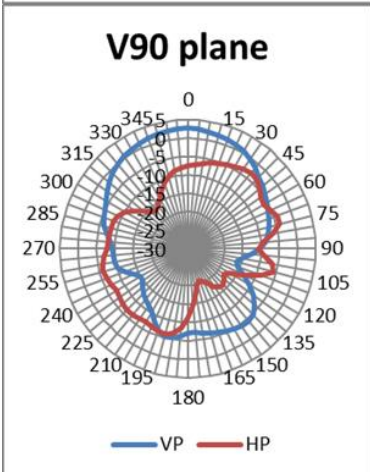
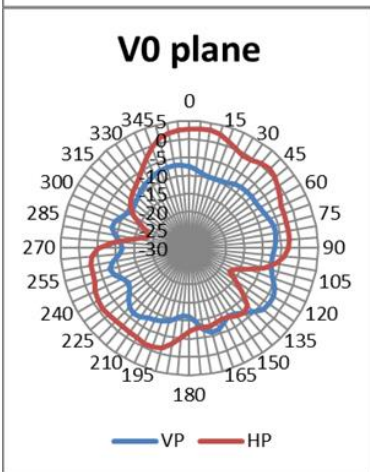
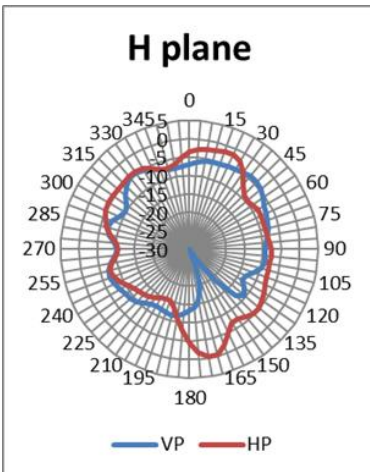


Check Inventory



49.93 x 24.97 x 10 mm
RoHS/RoHS II Compliant
 MSL Level = 1

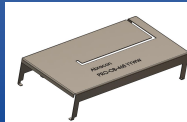
Radiation Characteristics – 2D Pattern (2170 MHz)



VP: Vertical Polarization
 HP: Horizontal Polarization



Unit: dBi



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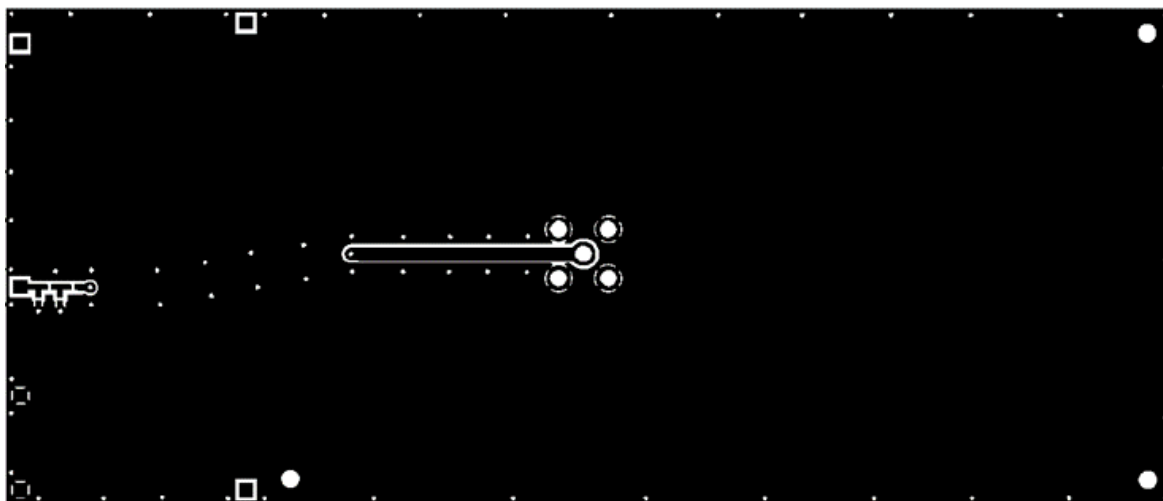
Check Inventory



49.93 x 24.97 x 10 mm
RoHS/RoHS II Compliant
MSL Level = 1

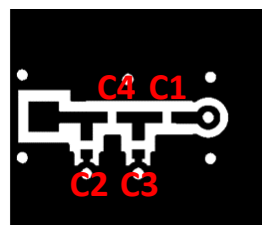
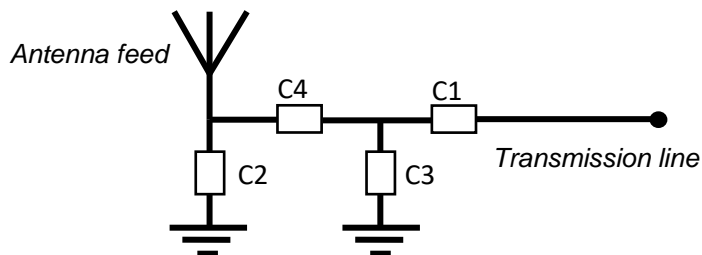
Evaluation Board Outline & Matching Circuit

The evaluation board is developed to simplify antenna testing and evaluation. It has an arbitrary size of 120 x 52 mm and includes an SMA connector. The purpose is to give a reference design for an optimal antenna implementation. The evaluation board can also be used to test other implementations by cutting and soldering the PCB into any device.



Evaluation board outline

The evaluation board has a matching circuit implemented next to the antenna. This is aimed to enable optimization possibilities for the user. The component positions are sized for 0402 (1005 metric) SMD components.



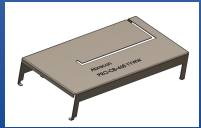
Matching circuit

The antenna needs a matching circuit to adjust the resonant frequency balance. When delivered, the evaluation board is tuned for optimum balance at the GSM/UMTS frequency bands using the following (can be replaced by equivalent):

C1 = 2.4nH (Murata LQW15AN2N4B00)
 C2 = N/A

C3 = 0.5pF (Murata GJM1555C1HR50WB01)
 C4 = 5.6pF (Murata GJM1555C1H5R6WB01)

However, it is common that the resonant frequency will shift during implementation in an arbitrary device. Therefore, this matching may be changed with other values/components/brands for compensation of such effects. This is further described in the General Implementation Guidelines section below.



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Request Samples



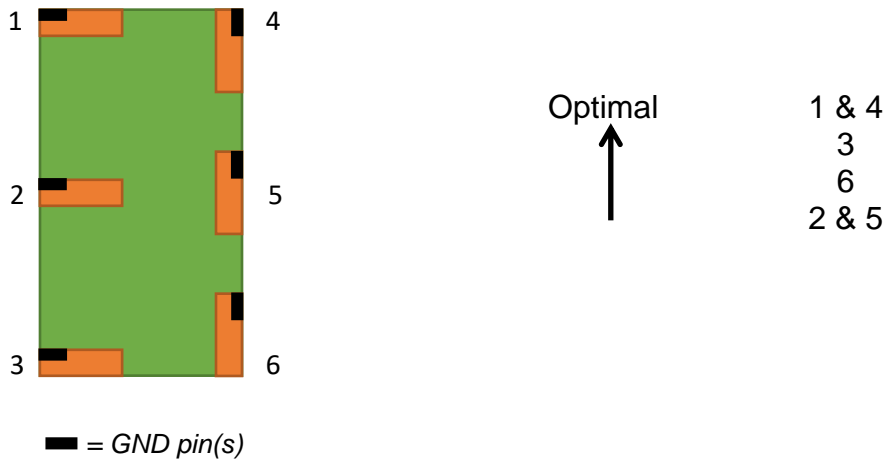
Check Inventory



49.93 x 24.97 x 10 mm
RoHS/RoHS II Compliant
 MSL Level = 1

General Implementation Guidelines

The antenna can be positioned in different ways, although there are some positions which are more beneficial. Below picture shows a typical PCB with examples on different antenna positions. The optimal position is option 1 or 4.



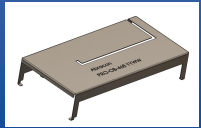
The antenna should be aligned with the PCB edge if possible, preferably with the GND pin(s) close to a corner.

The antenna enables that small electrical components are mounted inside the antenna keep-out block. This is a space-efficient solution which has very little influence on the performance. It may have an impact on the antenna tuning, but is fully possible if there is limited space on the PCB.

Another general aspect on surface mounted antennas is regarding the PCB population. If other electrical components are positioned in the surrounding area of the antenna, some impact on the antenna tuning and radiated performance may be expected. It is recommended that such components are distributed below a topographical slope that starts on PCB level at the antenna keep-out block, and slowly increases the height.

It shall also be highlighted that plastic and metal parts in the near proximity of antennas may influence the antenna tuning and/or performance. This aspect should be noted as a general guideline for all antennas. The effects are difficult to estimate without detailed information, but it is common that a plastic housing above the antenna shifts the resonant frequency down. It is recommended to measure the antenna in the actual device after implementation.

GSM/UMTS - ProAnt OnBoard Antenna



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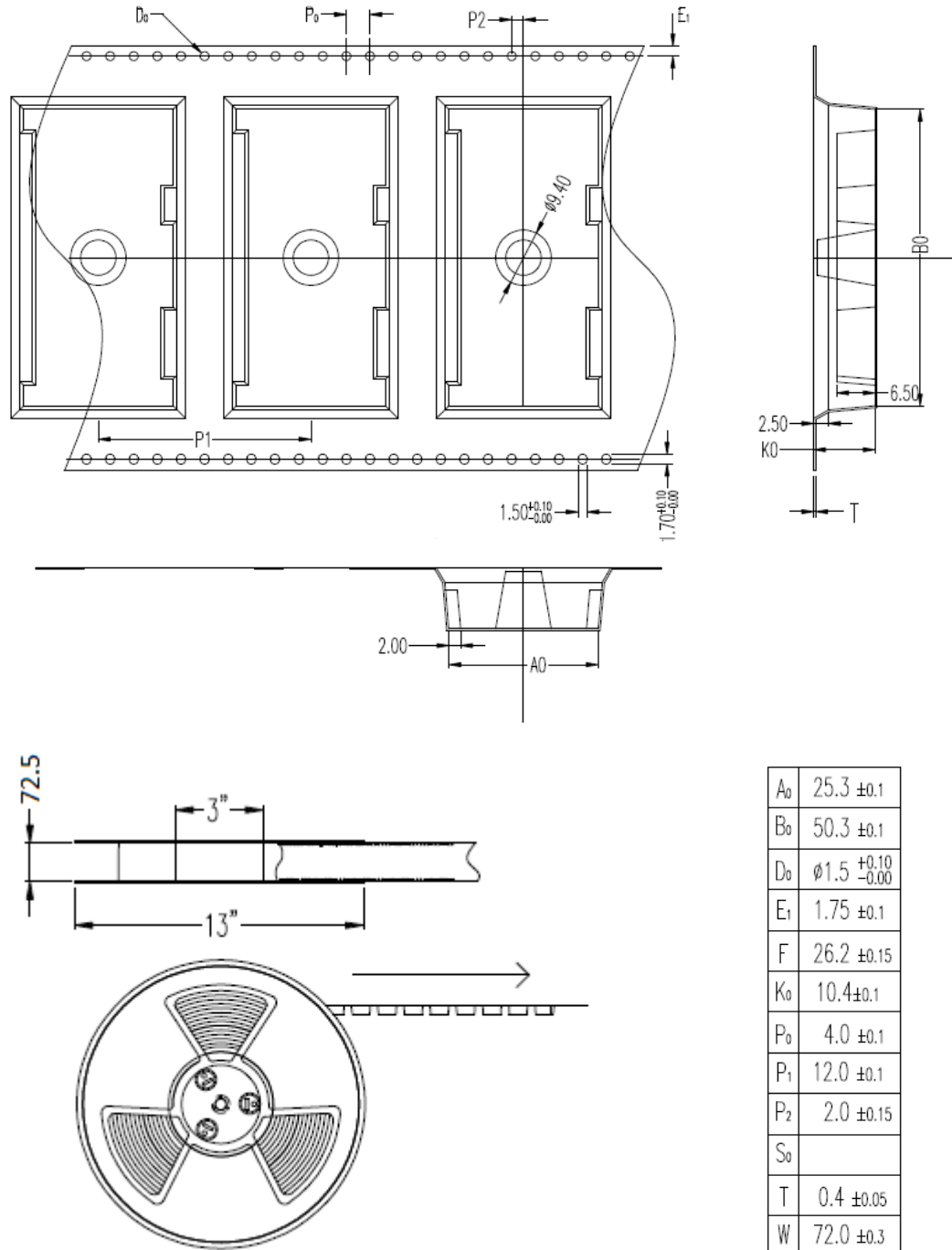
Check Inventory



49.93 x 24.97 x 10 mm
RoHS/RoHS II Compliant
MSL Level = 1

Packaging

The antenna is delivered on tape and reel according to following specifications. The quantity per 13" reel is 100 pcs.



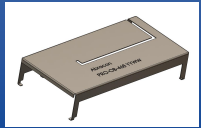
Unit: mm (unless otherwise noted)



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MSL Level = 1

Part Marking

The top marking of the antenna is arranged according to the following illustration.

Abracon

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Product part number

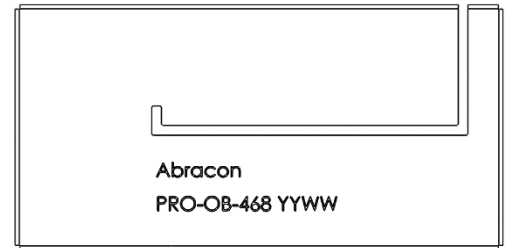
Example top marking

YYWW

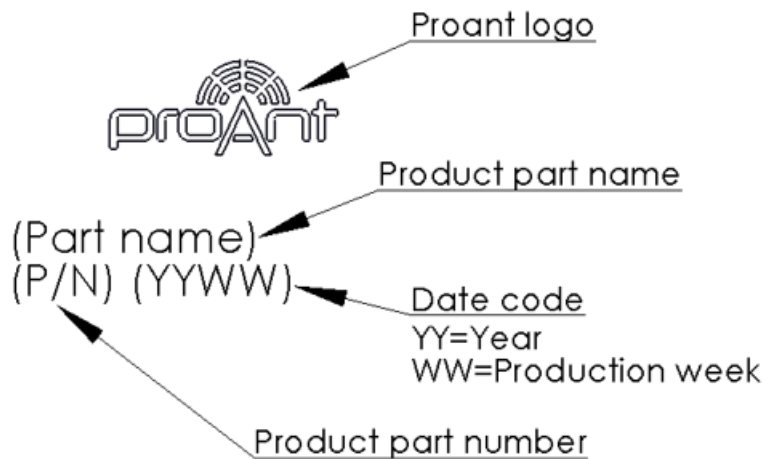
Date code

YY=Year

WW=Week



There will be a transition period for the part marking until production batches after 2222 (YYWW). Produced batches before 2222 are marked according to the below illustration.



Example top marking

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