

UWB (3 GHz ~ 6 GHz) - Chip Antenna

ACR1004U

Request Samples



Check Inventory



10.0 x 4.0 x 1.5 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Features

- UWB 3 GHz ~ 6 GHz
- Compact Profile
- Omni-directional Pattern
- Efficiency > 60%
- Surface Mount (SMD)

Applications

- IoT
- M2M
- PDA/Wearables
- Precision Positioning and Tracking
- Industrial/Medical/Automotive Sensors
- Smart Home/Building

Electrical Specifications

Parameter	Specification			Unit
	Min	Typ	Max	
Operating Frequency	3		6	GHz
Peak Gain*		5.79		dBi
Efficiency	60			%
Impedance		50		Ω
Polarization		Linear		
Radiation Pattern		Omni-directional		

*All test measurements were conducted with antennas on an evaluation board of dimensions 45 x 18 mm.

Mechanical Specifications

Parameter	Specification
Antenna Dimension	10 x 4 x 1.5 mm
Material	Ceramic
Mounting Type*	Surface Mount (SMD)

*Do not mount the antenna on a metal surface.

Environmental Specifications

Parameter	Specification
Operating Temperature	-30°C to +85 °C
Operating Temperature	-30°C to +85 °C
Relative Humidity	0~95%



5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858
For terms and conditions of sales, please visit:
www.abracon.com

REVISED: 01-03-20

ABRACON IS
ISO9001-2015
CERTIFIED

UWB (3 GHz ~ 6 GHz) - Chip Antenna

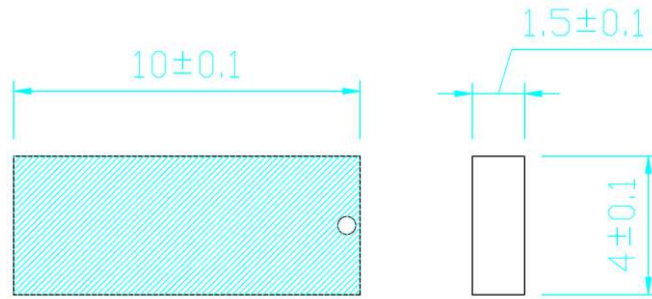
ACR1004U

Request Samples

Check Inventory

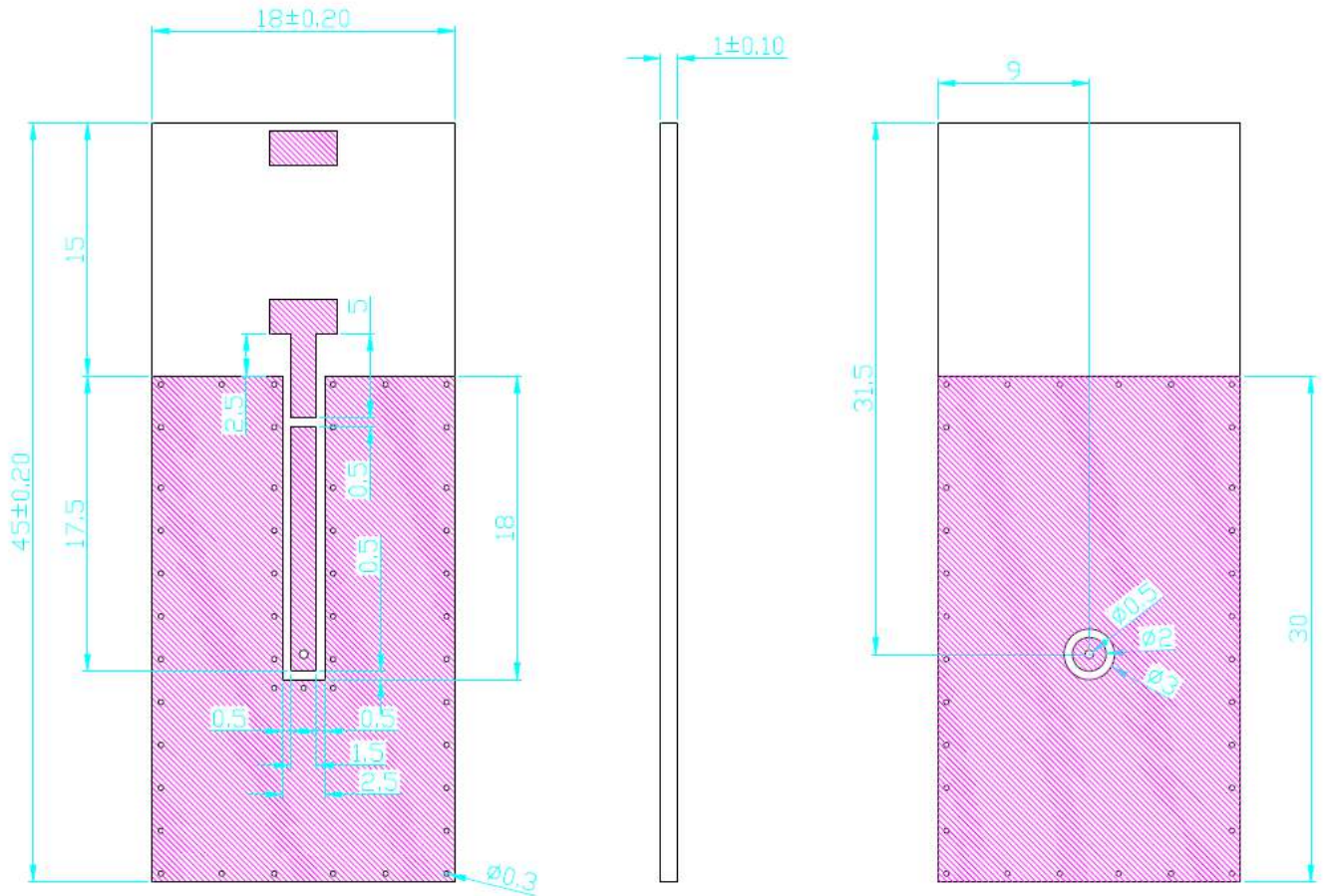
10.0 x 4.0 x 1.5 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Antenna Dimensions



Unit : mm

Layout Dimensions on Evaluation Board



Unit : mm



5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858
For terms and conditions of sales, please visit:
www.abracon.com

REVISED: 01-03-20

ABRACON IS
ISO9001-2015
CERTIFIED

UWB (3 GHz ~ 6 GHz) - Chip Antenna

ACR1004U

Request Samples

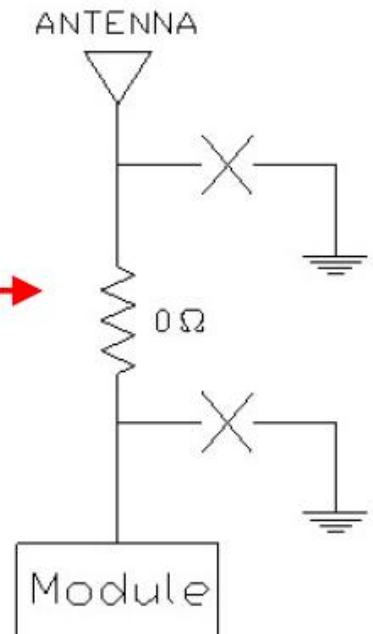
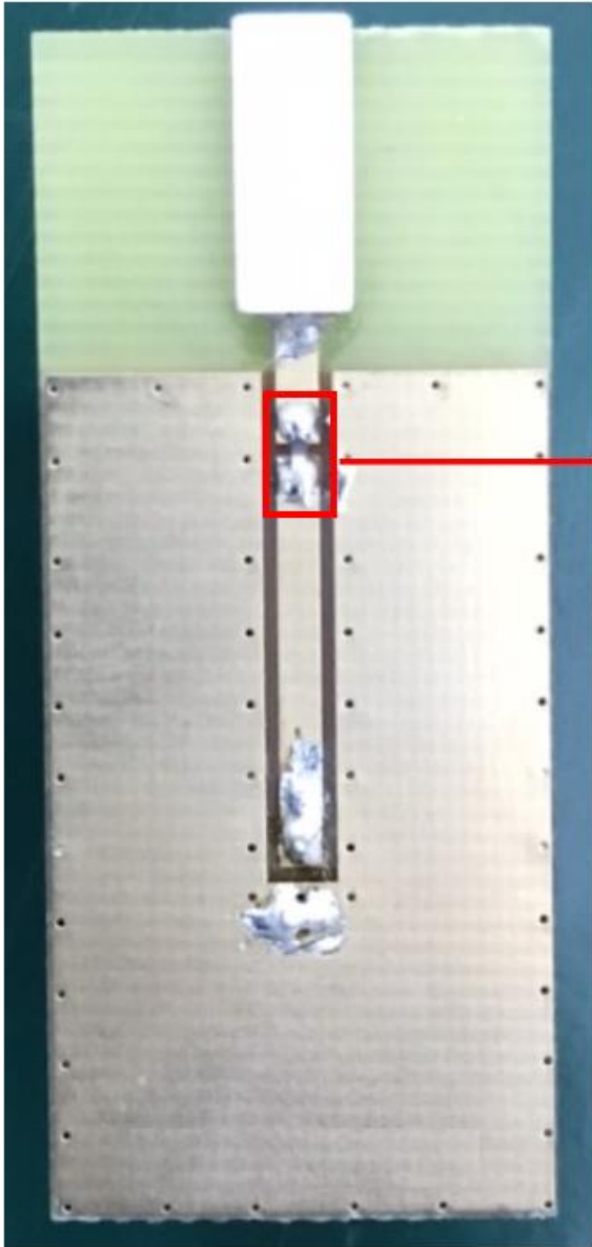


Check Inventory



10.0 x 4.0 x 1.5 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Evaluation Board with Matching Circuit



UWB (3 GHz ~ 6 GHz) - Chip Antenna

ACR1004U

Request Samples

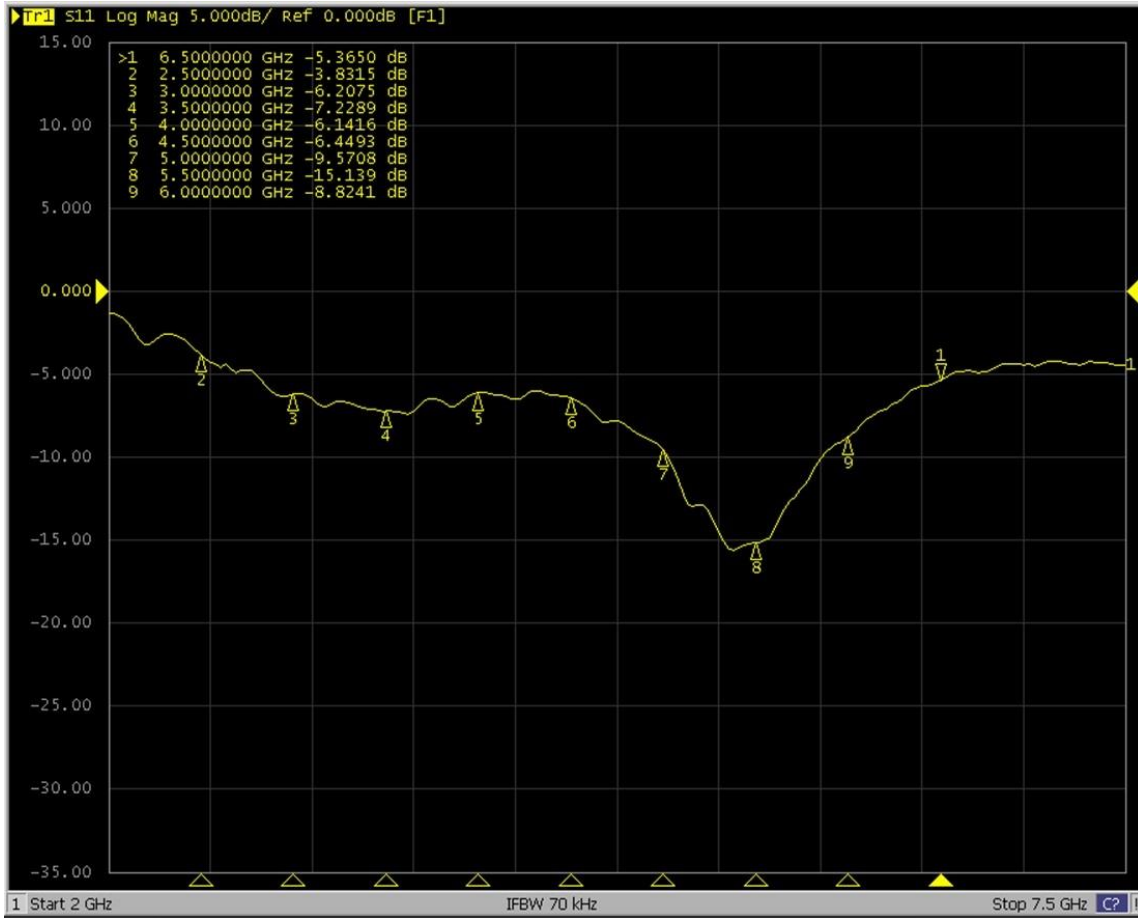


Check Inventory



10.0 x 4.0 x 1.5 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Test Measurement – Return Loss



UWB (3 GHz ~ 6 GHz) - Chip Antenna

ACR1004U

Request Samples

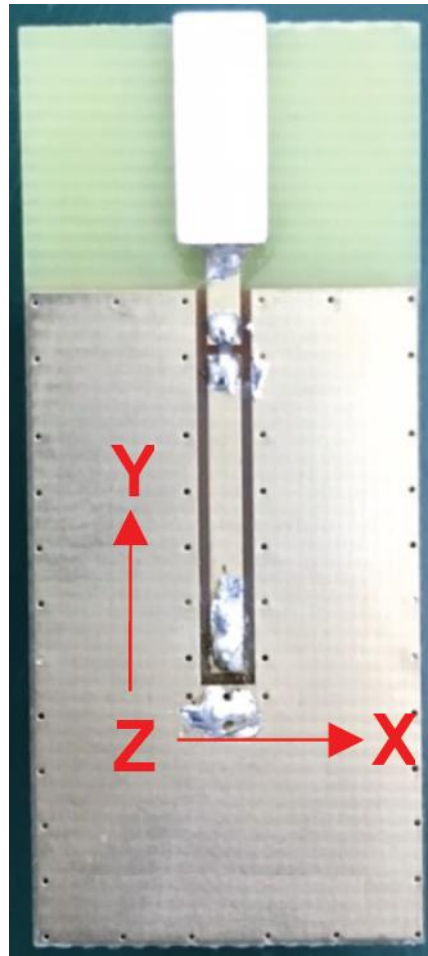


Check Inventory



10.0 x 4.0 x 1.5 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Radiation Measurement - Set-up



UWB (3 GHz ~ 6 GHz) - Chip Antenna

ACR1004U

Request Samples

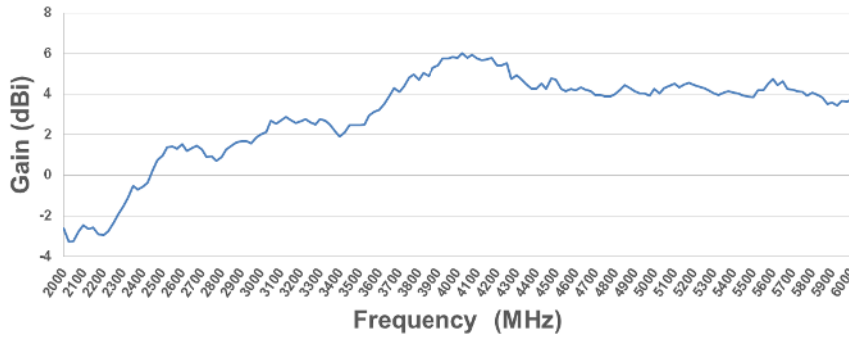


Check Inventory

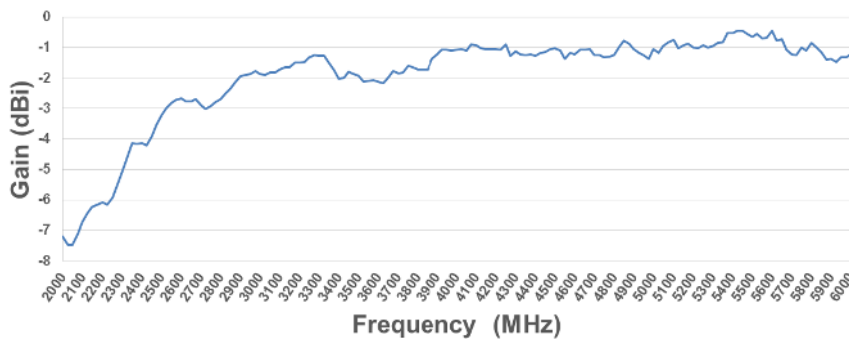


10.0 x 4.0 x 1.5 mm
RoHS/RoHS II Compliant
MSL Level = N/A

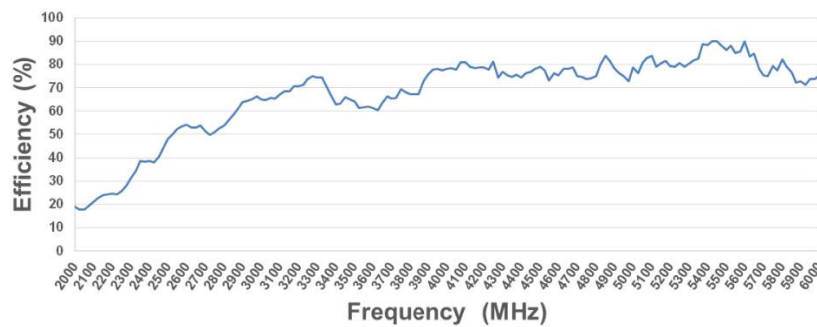
Peak Gain



Average Gain



Efficiency



Frequency (GHz)	3	3.5	4	4.5	5	5.5	6
Efficiency (%)	65.03	64.11	78.21	79.03	78.62	86.07	75.20
Average Gain (dBi)	-1.86	-1.93	-1.06	-1.02	-1.04	-0.65	-1.23
Peak Gain (dBi)	2.01	2.48	5.79	4.70	4.24	3.83	3.72



5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858
For terms and conditions of sales, please visit:
www.abracon.com

REVISED: 01-03-20

ABRACON IS
ISO9001-2015
CERTIFIED

UWB (3 GHz ~ 6 GHz) - Chip Antenna

ACR1004U

Request Samples



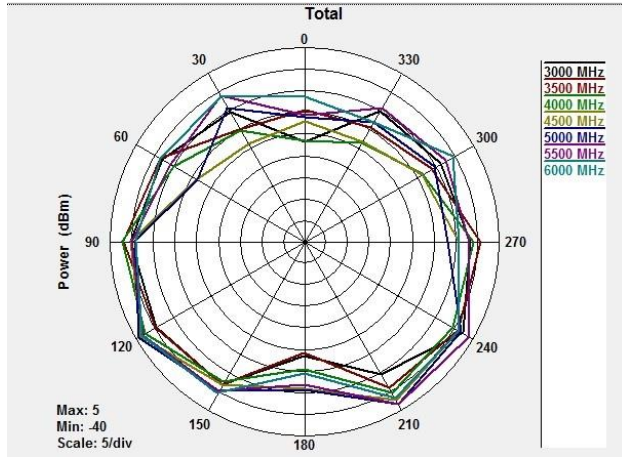
Check Inventory



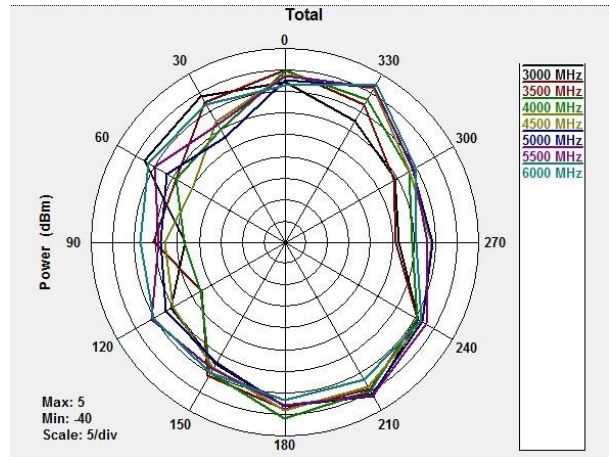
10.0 x 4.0 x 1.5 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Radiation Characteristics – 2D Pattern

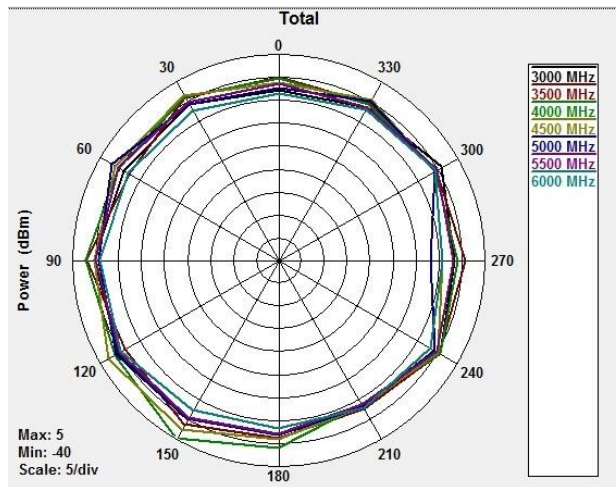
XY - Plane



XZ - Plane



YZ - Plane



UWB (3 GHz ~ 6 GHz) - Chip Antenna

ACR1004U

Request Samples



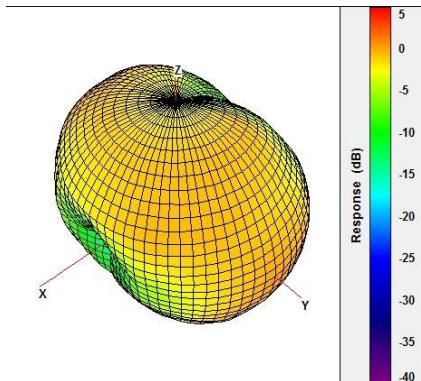
Check Inventory



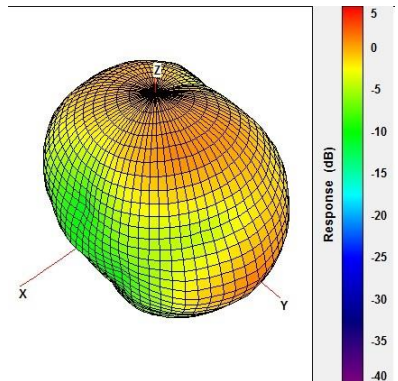
10.0 x 4.0 x 1.5 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Radiation Characteristics – 3D Pattern

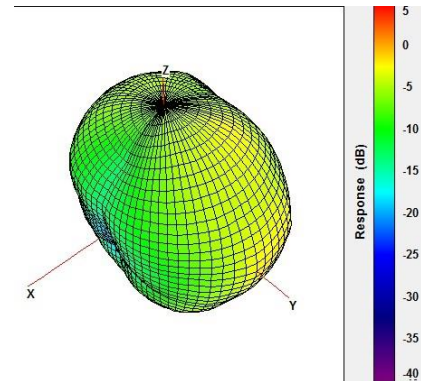
3 GHz



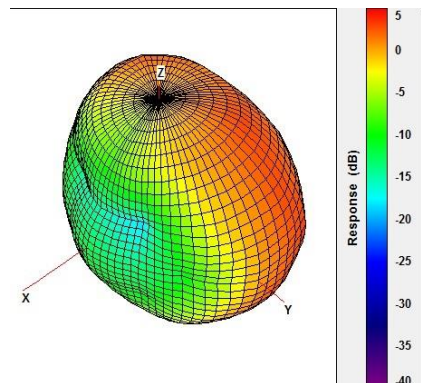
3.5 GHz



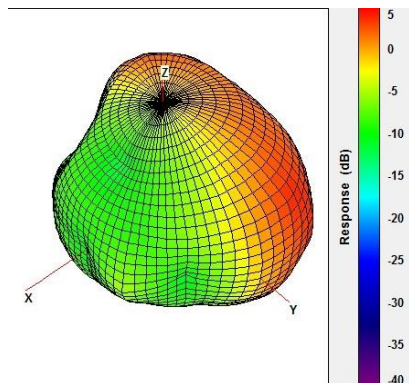
4 GHz



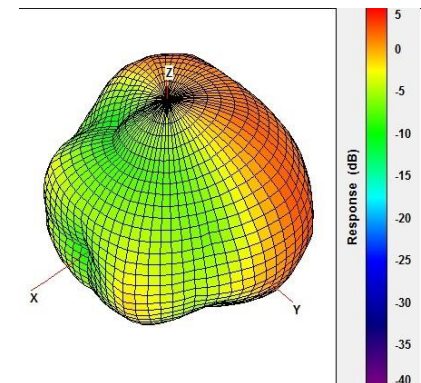
4.5 GHz



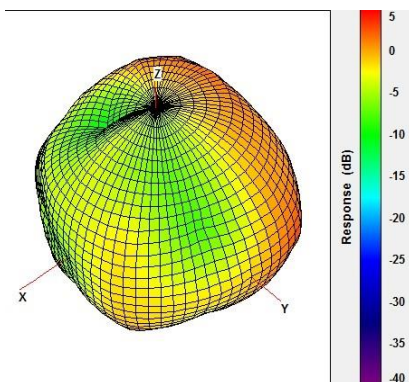
5 GHz



5.5 GHz



6 GHz



UWB (3 GHz ~ 6 GHz) - Chip Antenna

ACR1004U

Request Samples



Check Inventory



10.0 x 4.0 x 1.5 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Reliability Test Conditions

Items	Test Method	Standard
Sinusoidal Vibration Test	<ol style="list-style-type: none"> Vibration Frequency: 5-200-5 Hz Peak:4.5G (2 mm amplitude) Sweep Direction: X, Y (2H), Z (4H) Sweep Duration : 10 min/axis Examine the appearance and functions after the test. 	<ol style="list-style-type: none"> Specimens shall be free of any traffic discontinuities during the test. The appearance of the product, and electrical properties to meet the requirements. <p>The appearance of the product, and electrical properties to meet the requirements.</p>
Vibration Test in Packaged Condition	<ol style="list-style-type: none"> Vibration Frequency: 15-60-15 Hz Peak:4G (2 mm amplitude) Sweep Direction: X, Y, Z Sweep Duration : 10 min/axis Examine the appearance and functions after the test. 	
Thermal Shock	<ol style="list-style-type: none"> Low temperature: -30°C High temperature: +85°C Cycle time: 30 min each temperature Number of Cycles: 5 Expose to normal temperature/humidity for 24H or more. 	
Free Fall Test in Packaged Condition	<ol style="list-style-type: none"> Drop the object onto a concrete surface from a height of 90 cm. Test once for one corner, three edges and six faces : 10 times in total. Examine the appearance and functions after the test. 	
High Temperature	<ol style="list-style-type: none"> Temperature: 85°C Time: 16H Examine the appearance and functions after taken out at room temperature for 24H. 	
Low Temperature	<ol style="list-style-type: none"> Temperature: -30°C Time: 16H Examine the appearance and functions after taken out at room temperature for 24H. 	
Solder Heat Resistance	<ol style="list-style-type: none"> Lead pins of the unit are soaked in solder bath. IR Reflow - Temperature: 270±5°C, Time: 10±0.5s. Examine the appearance and functions after the test. 	
High Humidity	<ol style="list-style-type: none"> Temperature range: 85°C Humidity Range: 90%~95% R.H. Cycle times: 96H Examine the appearance and functions after taken out at room temperature for 24H. 	
Adhesion Test	<ol style="list-style-type: none"> Subject the soldered device on test PCB. (Reflow) Then apply 0.5Kg(5N) of force for 10±1 sec in the direction of parallel to the substrate. 	

UWB (3 GHz ~ 6 GHz) - Chip Antenna

ACR1004U

Request Samples



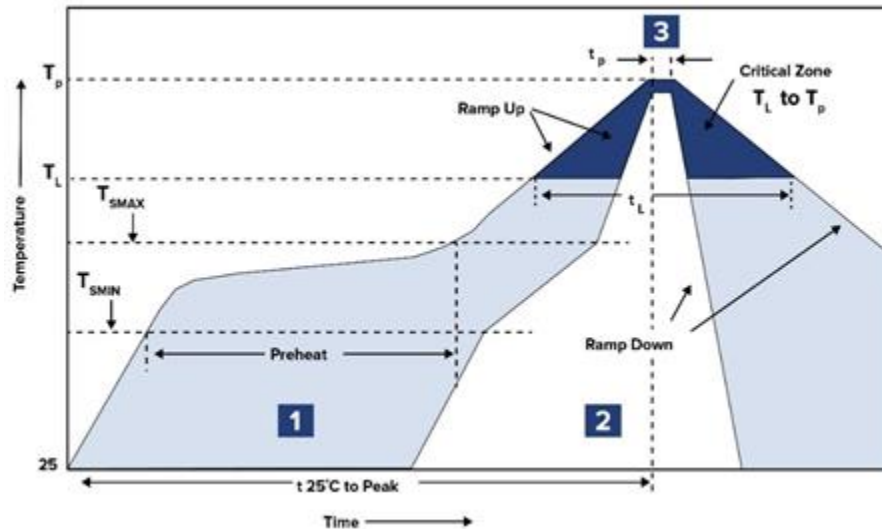
Check Inventory



10.0 x 4.0 x 1.5 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Reflow Profile

The chip antenna can be assembled using the following Pb-free assembly. According to the standard IPC/JEDEC J-STD-020C, the temperature profile suggested is as follows :



Zone	Description	Temperature	Times
1	Preheat	$T_{SMIN} \sim T_{SMAX}$ 150°C ~ 200°C	60 ~ 120 sec
2	Ramp-Up	$T_{SMAX} \sim T_P : 3 \text{ } ^\circ\text{C/s}$	
3	Reflow	T_L 217°C	30 ~ 100 sec
	Peak heat	T_P 260°C	5 sec (max)
	Ramp-Down	6 °C/s	
Time from 25°C to Peak Temperature		8 minutes (max)	
Composition of solder paste		96.5Sn/3Ag/0.5Cu	
Solder Paste Model		SHENMAO PF606-P26	

Soldering with Iron

- Soldering Iron Temperature : 270±10 °C
- Apply pre-heating at 120 °C for 2~3 min.
- Complete soldering for each terminal within 3 s .
 - If the soldering iron temperature exceeds 270±10 °C or 3 seconds, it can damage the component.

Note: All temperature measure points are on top surface of the component. If temperature goes over the recommend, it will cause surface peeling or damage to the component.



5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858
For terms and conditions of sales, please visit:
www.abracon.com

REVISED: 01-03-20

ABRACON IS
ISO9001-2015
CERTIFIED

UWB (3 GHz ~ 6 GHz) - Chip Antenna

ACR1004U

Request Samples



Check Inventory



10.0 x 4.0 x 1.5 mm
RoHS/RoHS II Compliant
MSL Level = N/A

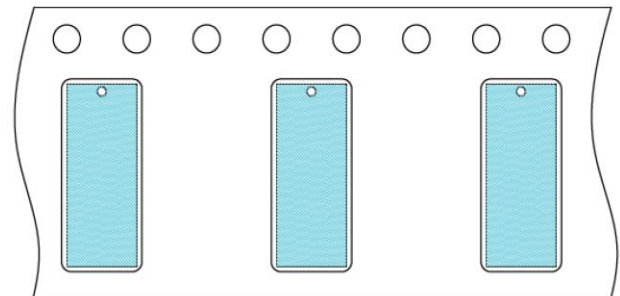
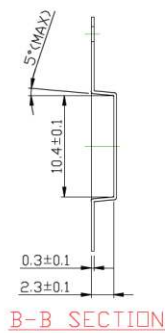
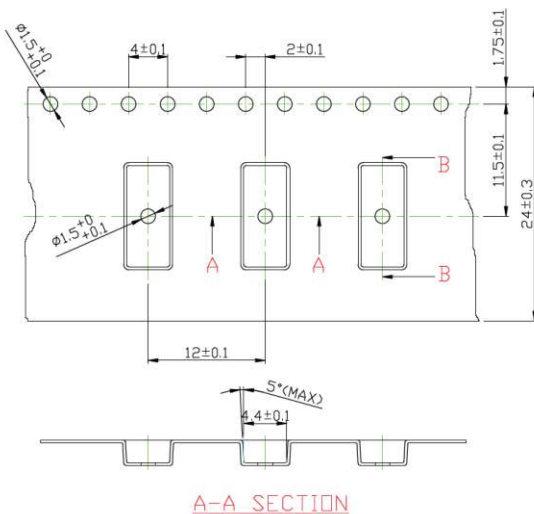
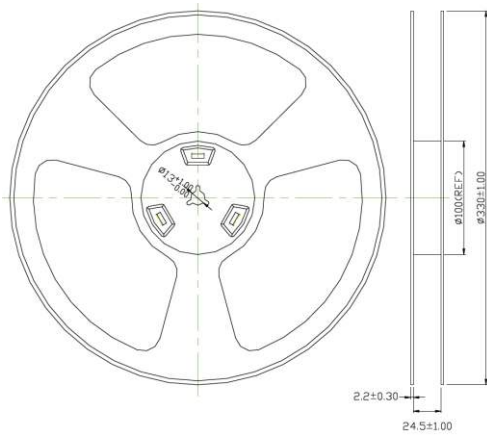
Precautions

- Do not direct solder onto the gold electrode of the antenna pattern.
- Do not use the chip antenna in a corrosive gaseous atmosphere for example sulfur gas, chlorine gas.

Packaging Information

Number of pieces/tape : 2000

Blister tape to IEC 286-3, Polyester



Unit : mm

ATTENTION: Abracon LLC's products are COTS – Commercial-Off-The-Shelf products; suitable for Commercial, Industrial and, where designated, Automotive Applications. Abracon's products are not specifically designed for Military, Aviation, Aerospace, Life-dependent Medical applications or any application requiring high reliability where component failure could result in loss of life and/or property. For applications requiring high reliability and/or presenting an extreme operating environment, written consent and authorization from Abracon LLC is required. Please contact Abracon LLC for more information.



5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858
For terms and conditions of sales, please visit:
www.abracon.com

REVISED: 01-03-20

ABRACON IS
ISO9001-2015
CERTIFIED