433 / 450~470 MHz Chip Antenna

ACR2005I4

Request Samples | Check Inventory

20.1 x 5.0 x 1.6 mm
RoHS/RoHS II Compliant
MSL Level = N/A

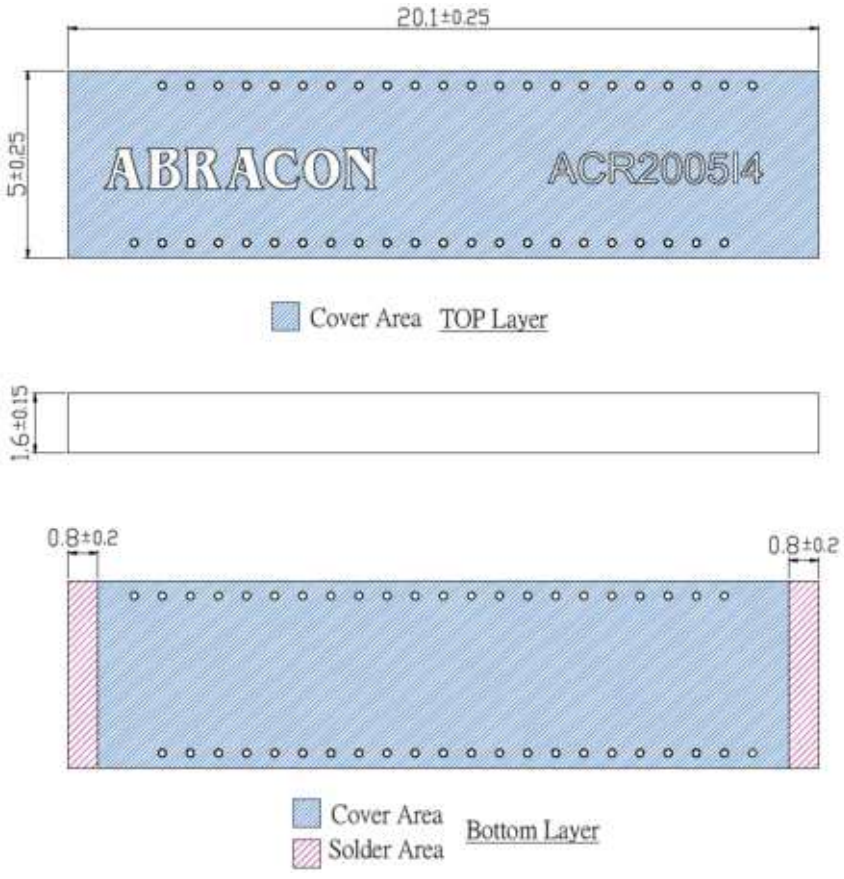
Features

- 433 MHz - Monopole Chip Antenna Design
- Can be matched for 450~470 MHz Band
- Low Profile
- Peak Gain of 0.3 dBi (433 MHz)
- Omni-directional pattern
- Linear Polarization
- Surface mount device

Applications

- LPWA - LoRA/ SigFox/ ISM
- IoT
  - Industrial
  - Infrastructure
- M2M
- Smart City
- Medical devices
- Home and Vehicle Automation
- TPMS (Tire Pressure Monitoring Systems)

Product Image



Unit : mm

ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

REVISED: 07-19-21

ABRACON IS ISO9001-2015 CERTIFIED

For terms and conditions of sales, please visit:
www.abracon.com

433 / 450~470 MHz Chip Antenna

ACR2005I4

Request Samples Check Inventory

20.1 x 5.0 x 1.6 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Electrical Specification

Parameter	Specification			Unit
	433 MHz	450 ~ 470 MHz		
Operating Frequency	433	450	470	MHz
Impedance	50			Ω
Return Loss	-23.26	-7.98		dB
Efficiency	33.2	33.9	29.5	%
Peak Gain	0.3	-0.3	-0.4	dBi
Average Gain	-4.7	-4.6	-5.3	
Polarization	Linear			
Azimuth Pattern	Omni-directional			

Mechanical Specification

Parameter	Specification
Antenna Dimension	20.1 x 5.0 x 1.6 mm
Mounting Type	Surface Mount

Environmental Specification

Parameter	Specification
Operating Temperature	-40ºC to +85ºC
Storage Temperature	0ºC to +40ºC
Relative Humidity	20% ~ 80%
RoHS Compliance	Yes
Pb-Free	Yes

ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

REVISED: 07-19-21

ABRACON IS ISO9001-2015 CERTIFIED

For terms and conditions of sales, please visit:
www.abracon.com

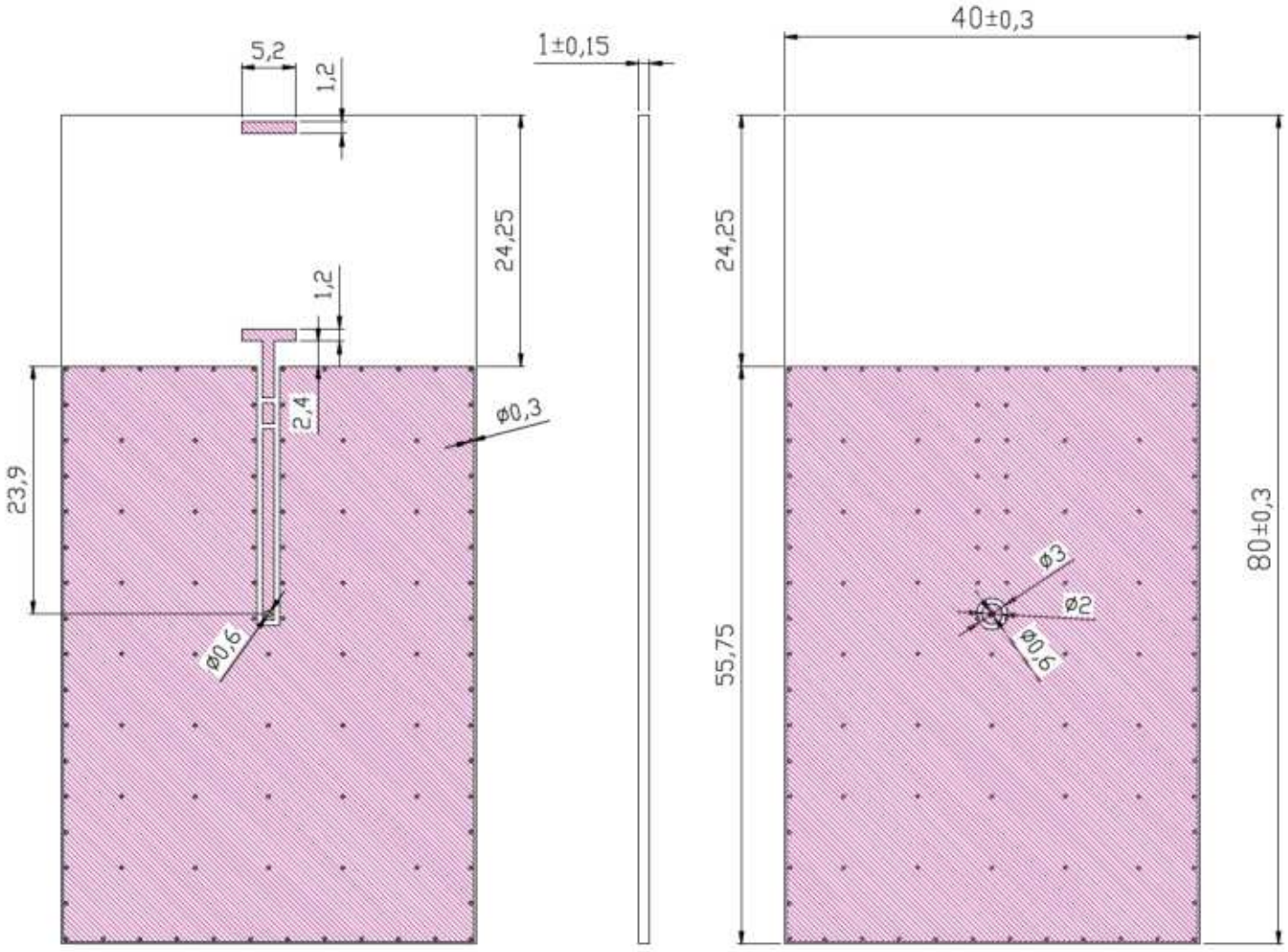
433 / 450~470 MHz Chip Antenna

ACR2005I4

Request Samples | Check Inventory

20.1 x 5.0 x 1.6 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Evaluation Board Dimensions



Unit : mm

ABRACON

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: 07-19-21

ABRACON IS
ISO9001-2015
CERTIFIED

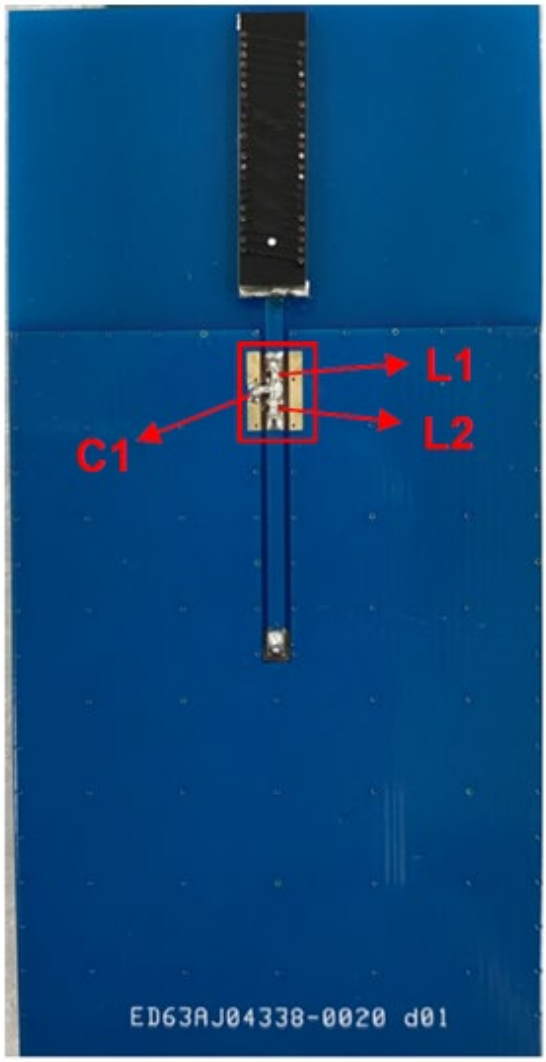
433 / 450~470 MHz Chip Antenna

ACR2005I4

Request Samples | Check Inventory

20.1 x 5.0 x 1.6 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Evaluation Board with Matching Circuit



Component	Specification	
	433 MHz	450 ~ 490 MHz
L1	68 nH	47 nH
L2	1.8 nH	2.7 nH
C1	8.2 pF	6.8 nH

ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

REVISED: 07-19-21

ABRACON IS ISO9001-2015 CERTIFIED

For terms and conditions of sales, please visit:
www.abracon.com

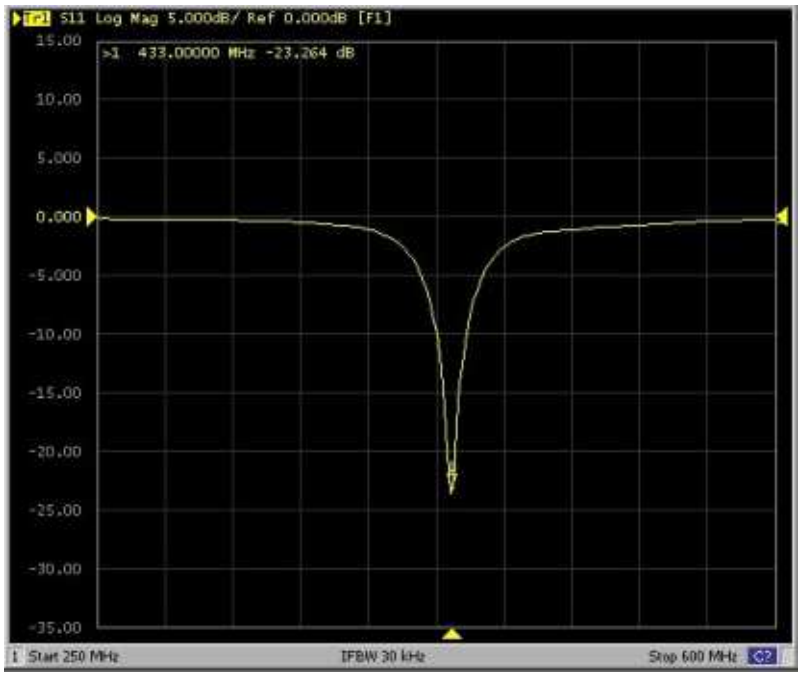
433 / 450~470 MHz Chip Antenna

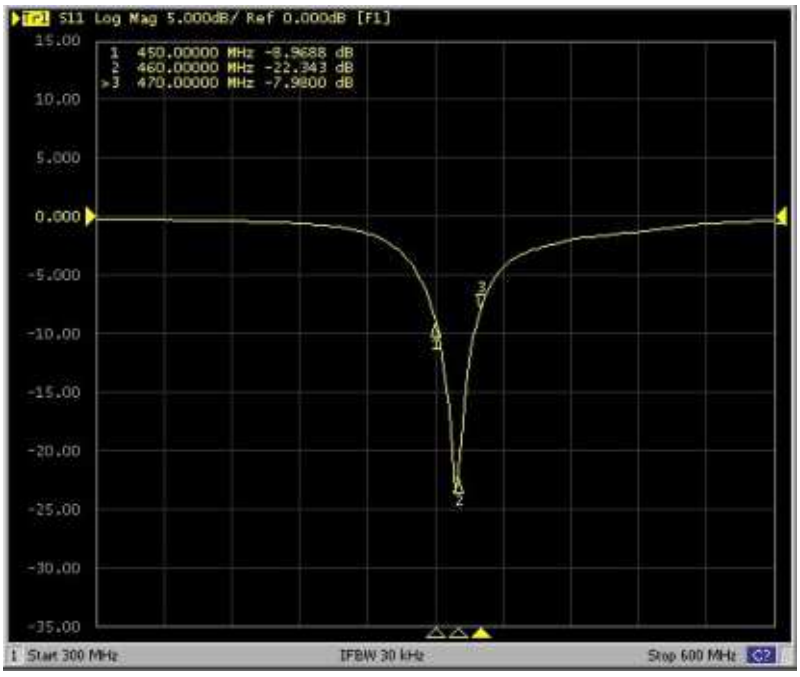
ACR2005I4

Request Samples | Check Inventory

20.1 x 5.0 x 1.6 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Reflection Characteristics – Return Loss





ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

REVISED: 07-19-21

ABRACON IS ISO9001-2015 CERTIFIED

For terms and conditions of sales, please visit:
www.abracon.com

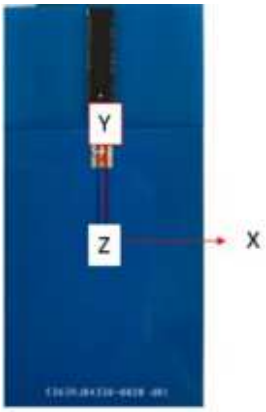
433 / 450~470 MHz Chip Antenna

ACR2005I4

Request Samples | Check Inventory

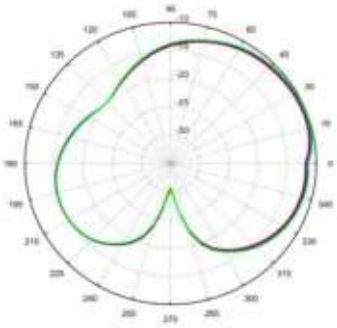
20.1 x 5.0 x 1.6 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Radiation Characteristics – 2D Pattern

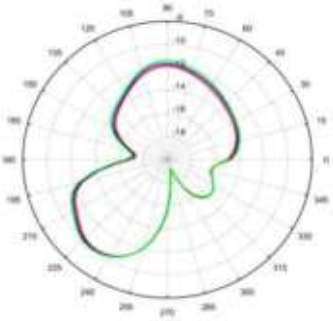


433 MHz

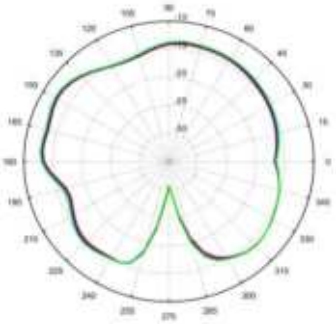
XY - Plane



XZ – Plane

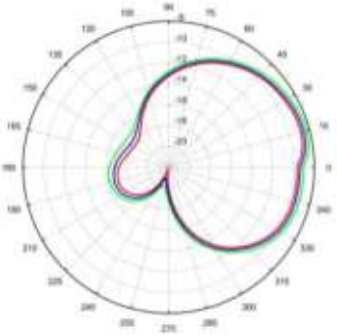


YZ - Plane

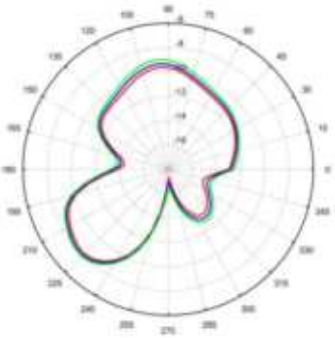


450 ~ 470 MHz

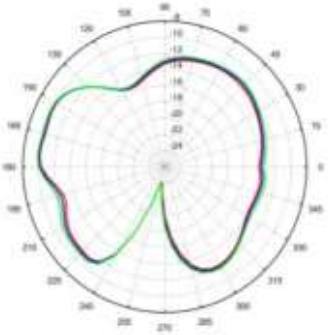
XY - Plane



XZ – Plane



YZ - Plane



ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

REVISED: 07-19-21

ABRACON IS ISO9001-2015 CERTIFIED

For terms and conditions of sales, please visit:
www.abracon.com

433 / 450~470 MHz Chip Antenna

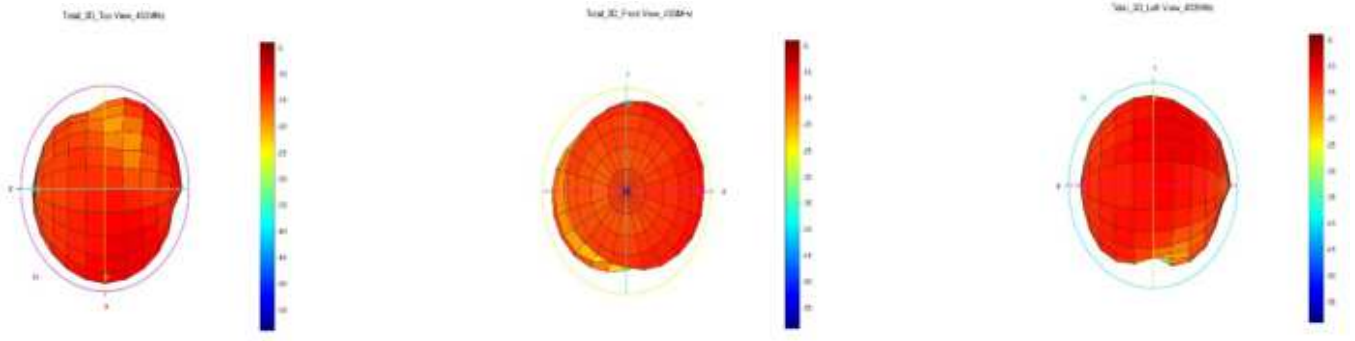
ACR2005I4

Request Samples | Check Inventory

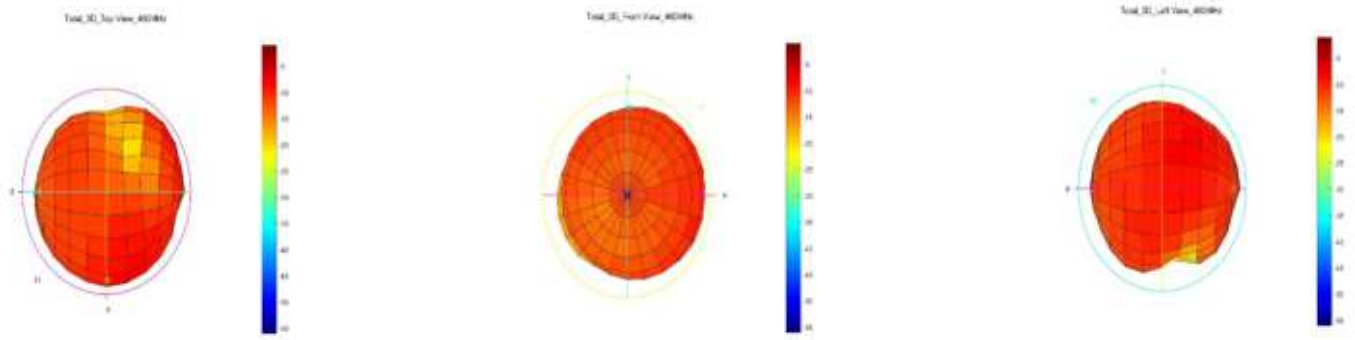
20.1 x 5.0 x 1.6 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Radiation Characteristics – 3D Pattern

433 MHz



450 ~ 470 MHz



ABRACON

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858

REVISED: 07-19-21

For terms and conditions of sales, please visit:
www.abracon.com

ABRACON IS
ISO9001-2015
CERTIFIED

433 / 450~470 MHz Chip Antenna

ACR2005I4

Request Samples | Check Inventory

20.1 x 5.0 x 1.6 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Reliability Test Report

Test Condition	Test Exposure and Duration
Low Temperature test	Expose the specimen to -40°C for 16 hours and then to normal temperature/ humidity for 24 hours or more. After this test, examine its appearance and functions.
High-temperature test	Expose the specimen to +85°C for 16 hours and then to normal temperature / humidity for 24 hours or more. After this test, examine its appearance and functions.
High-temperature/high-humidity test	Subject the object to the environmental conditions of +85°C and 90-95% relative humidity for 96 hours, then expose it to normal temperature/humidity for 24 hours or more. After this test, examine its appearance and functions.
Thermal shock test	Subject the object to cyclic temperature change (-40°C for 30 minutes, then +85°C for 30 minutes) for 5 cycles, then expose to normal temperature/humidity for 24 hours or more.
Sinusoidal vibration test	Subject the object to vibrations of 5 to 200 to 5Hz swept in 10 minutes, 4.5G at maximum (2 mm amplitude), in X and Y directions for two hours each and in Z direction for four hours. After this test, examine its appearance functions.
Vibration test in packaged condition	Subject the object, which is packaged as illustrated, to vibrations of 15-60-15Hz swept in 6 minutes, 4G at maximum (2mm amplitude at maximum), applied in X, Y and Z directions for two hours each, i.e. six hours in total. After this test, examine its appearance and functions.
Free fall test in packaged condition	Drop the object, which is packaged as illustrated, to a concrete surface from the height of 90 cm, on one comer, three edges and six faces once each, i.e. 10 times in total. After this test, examine its appearance and functions.
Soldering heat resistance test	After the lead pins of the unit are soaked in solder bath at 270±5 °C for 10±0.5 seconds and then be left for more than 1 hr at 25±5 °C. After this test, examine its appearance and functions.
Adhesion test	The device is subjected to be soldered on test PCB. Then apply 0.5 Kg (5 N) of force for 10±1 second in the direction of parallel to the substrate (the soldering should be done by reflow and be conducted with care so that the soldering is uniform and free of defect by stress such as heat shock).

433 / 450~470 MHz Chip Antenna

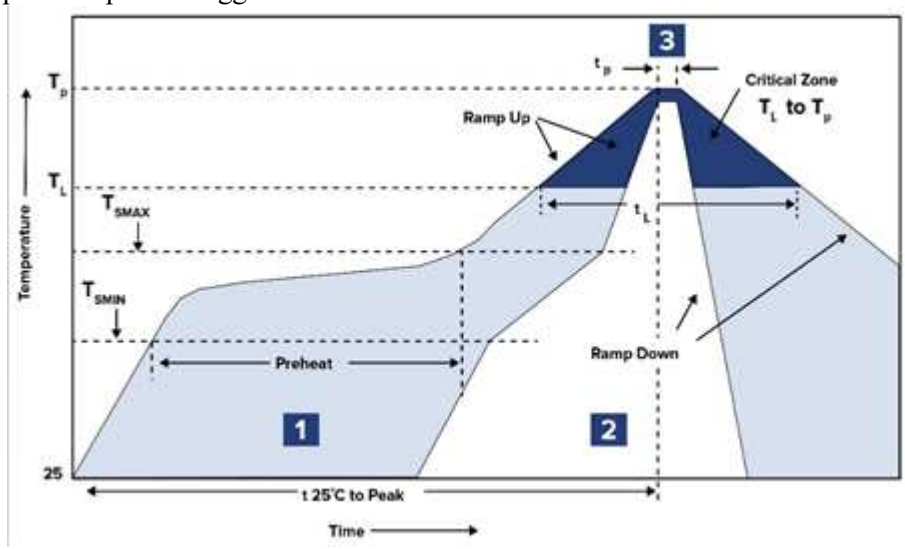
ACR2005I4

Request Samples | Check Inventory

20.1 x 5.0 x 1.6 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} ~ T_{SMAX} 150°C ~ 200°C	60 ~ 120 sec
2	Ramp-Up	T_{SMAX} ~ T_P : 3 °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 ℃
- Apply pre-heating at 120 ℃ for 2~3 min.
- Complete soldering for each terminal within 3 s .
    - If the soldering iron temperature exceeds 270±10 ℃ 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.

433 / 450~470 MHz Chip Antenna

ACR2005I4

Request Samples | Check Inventory

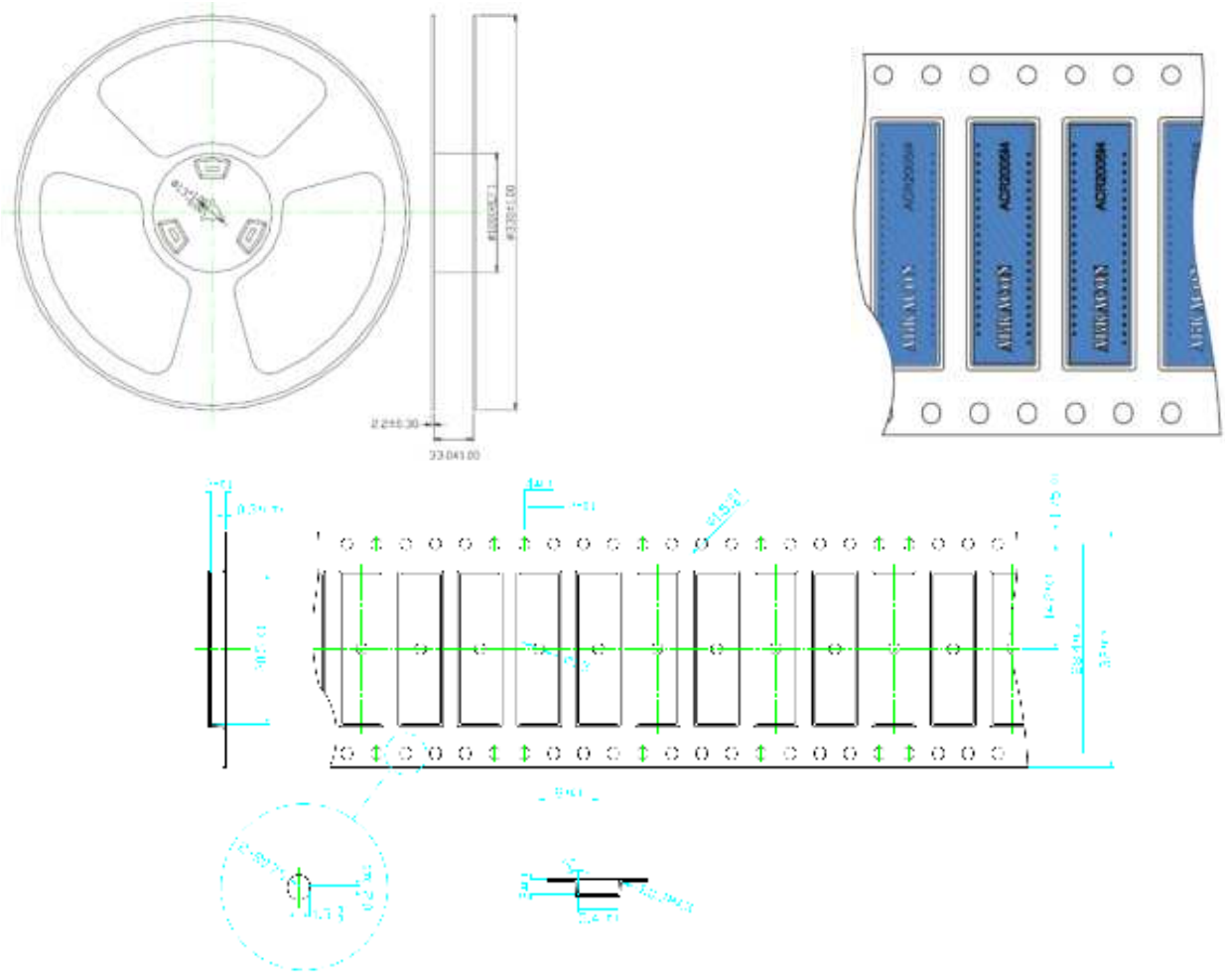
20.1 x 5.0 x 1.6 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Precautions

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

Packaging

Packaging type : Tape & Reel (Blister tape to IEC 286-3, Polyester)
Number of pieces per tape : 4000



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.

ABRACON

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: 07-19-21

ABRACON IS
ISO9001-2015
CERTIFIED