

Low Profile Dual Band WiFi Chip Antenna



ACAR0301-SW2



3.05 x 1.60 x 0.55 mm
RoHS/RoHS II Compliant
MSL = 1

Features

- Dual band WiFi 2.4 GHz/5.5 GHz
- Low profile
- Gain of 1.0/2.5 dBi
- Omnidirectional pattern
- Low VSWR of 2.0

Applications

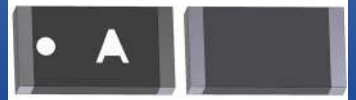
- WiFi
- Bluetooth
- ISM
- Wearables
- IoT
- AR/VR
- Drones
- Broadband connectivity

Electrical Characteristics

Item	Spec*		Comments
Working Frequency	2400~2500MHz	5150~5825MHz	Dual 2.4GHz and 5GHz bands
VSWR	2:1	2:1	
Peak Gain (2400~2500MHz)	Typ 1.0 dBi	Typ 2.5 dBi	
Efficiency	75%	80%	
Polarization	Linear		
Impedance	50 Ω		
Operating Temperature	-40°C ~ 85°C		
Storage Temperature	-40°C ~ 85°C		

* Data collected per Table on standard evaluation board, and under the environmental conditions of +40°C and 0-95% relative humidity.

Low Profile Dual Band WiFi Chip Antenna

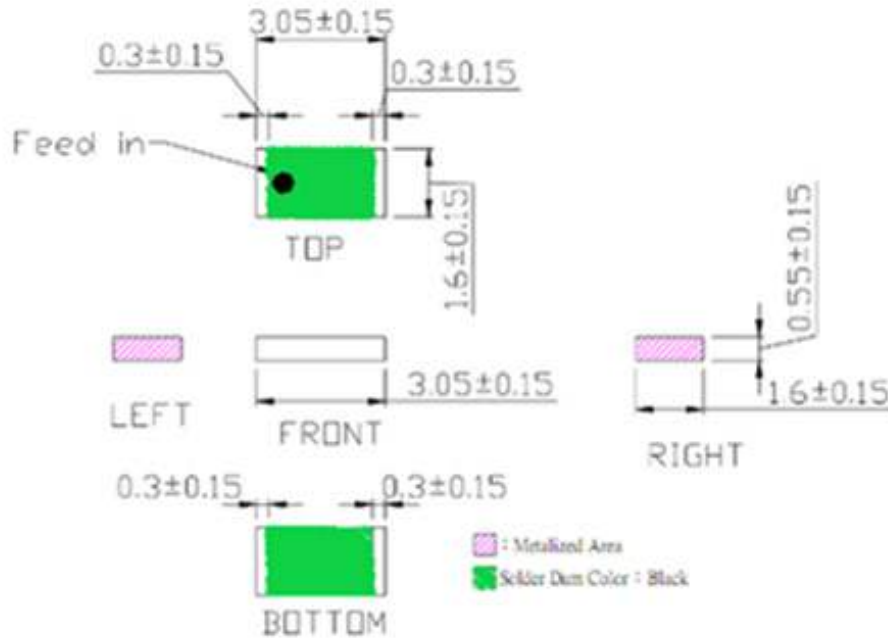


ACAR0301-SW2



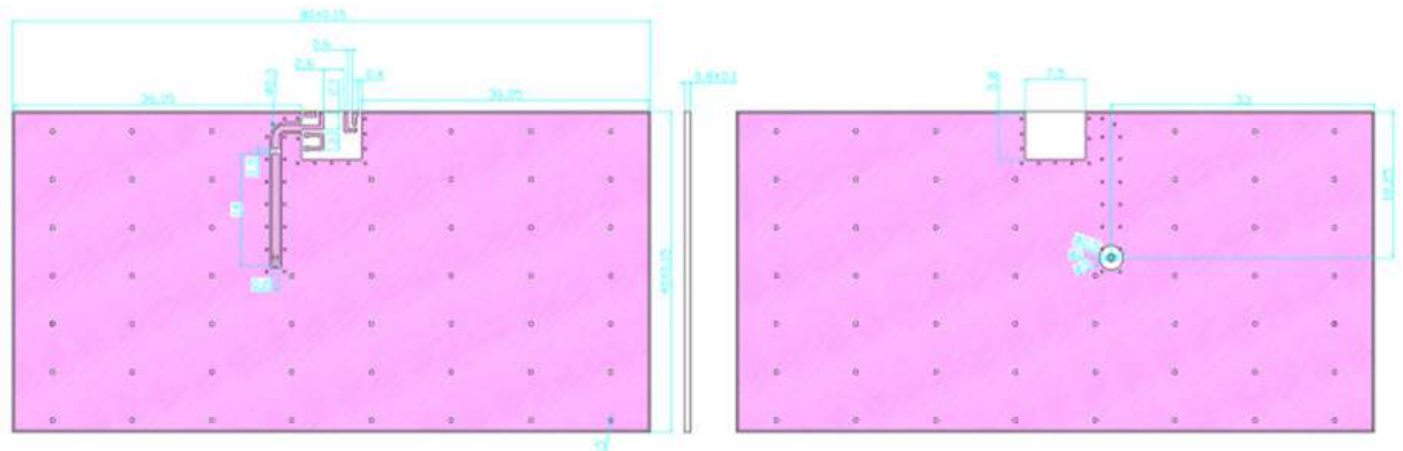
3.05 x 1.60 x 0.55 mm
RoHS/RoHS II Compliant
MSL = 1

Dimensions

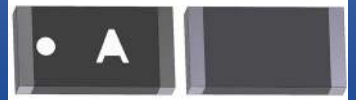


Dimensions (mm)

Evaluation Board and Dimensions



Low Profile Dual Band WiFi Chip Antenna

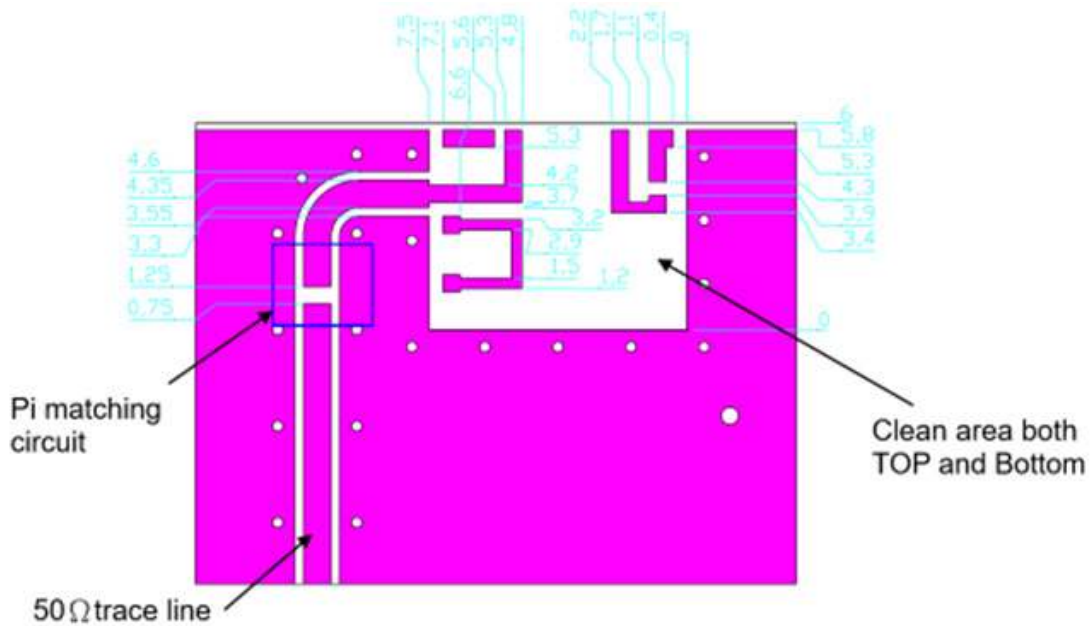


ACAR0301-SW2

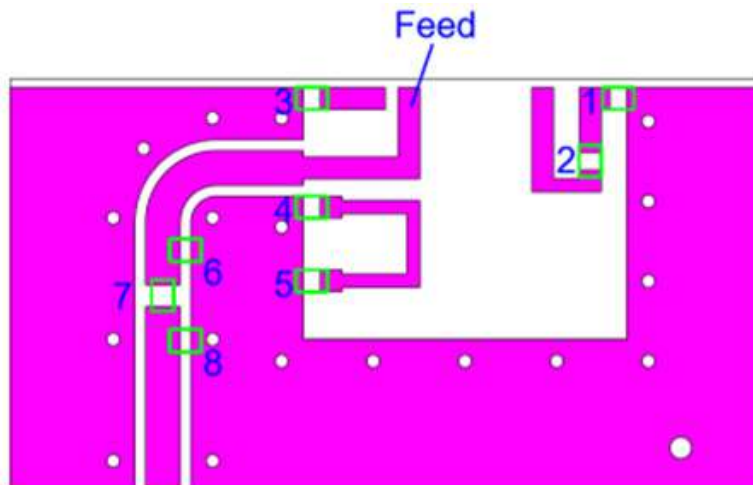


3.05 x 1.60 x 0.55 mm
RoHS/RoHS II Compliant
MSL = 1

Recommended Layout Dimensions

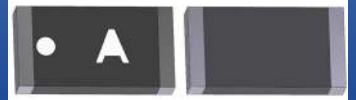


Recommended Matching Circuit



Matching Components								
No.	1	2	3	4	5	6	7	8
Value	1.2pF	1.0pF	NA	NA	NA	1.2nH	1.0nH	NA

Low Profile Dual Band WiFi Chip Antenna

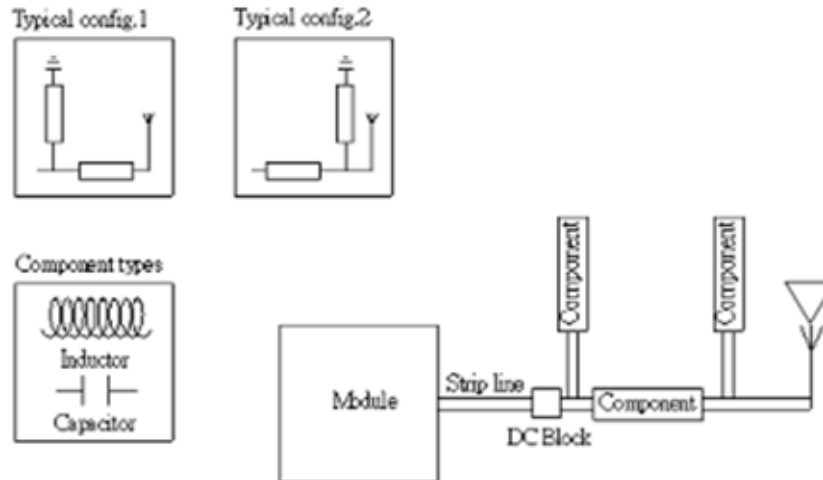


ACAR0301-SW2



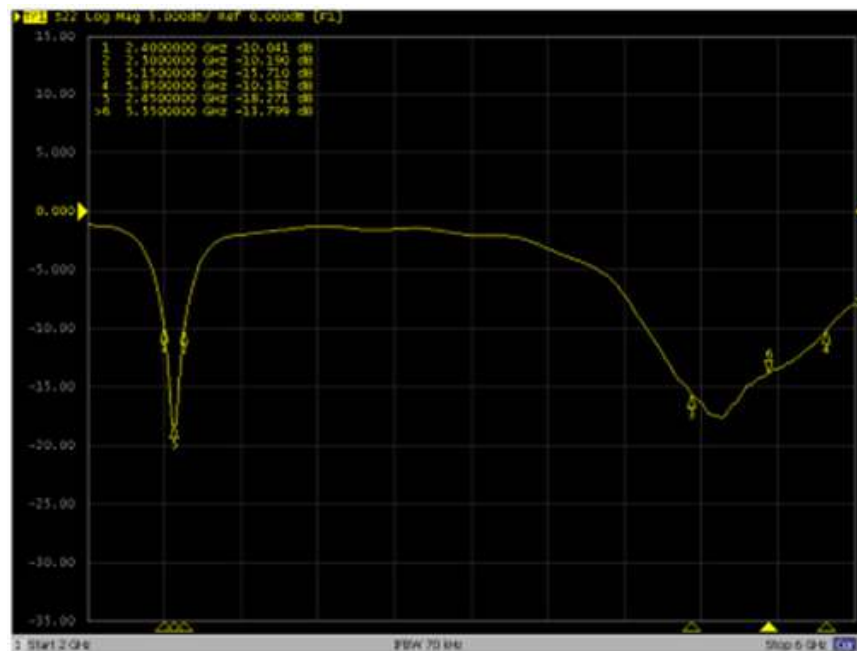
3.05 x 1.60 x 0.55 mm
RoHS/RoHS II Compliant
MSL = 1

Transmission Line Antenna Matching



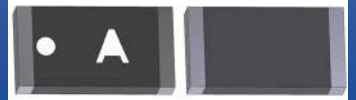
Matching should be considered using a Pi network where 1, 2 or 3 components could be used. This shall be matched to the transmission line and the ground plane in the design.

Antenna Response – Return Loss S11



Return Loss	2400MHz	2450MHz	2500MHz	5150MHz	5550MHz	5850MHz
S11	-10.04dB	-18.27dB	-10.19dB	-15.71dB	-13.79dB	-10.18dB

Low Profile Dual Band WiFi Chip Antenna

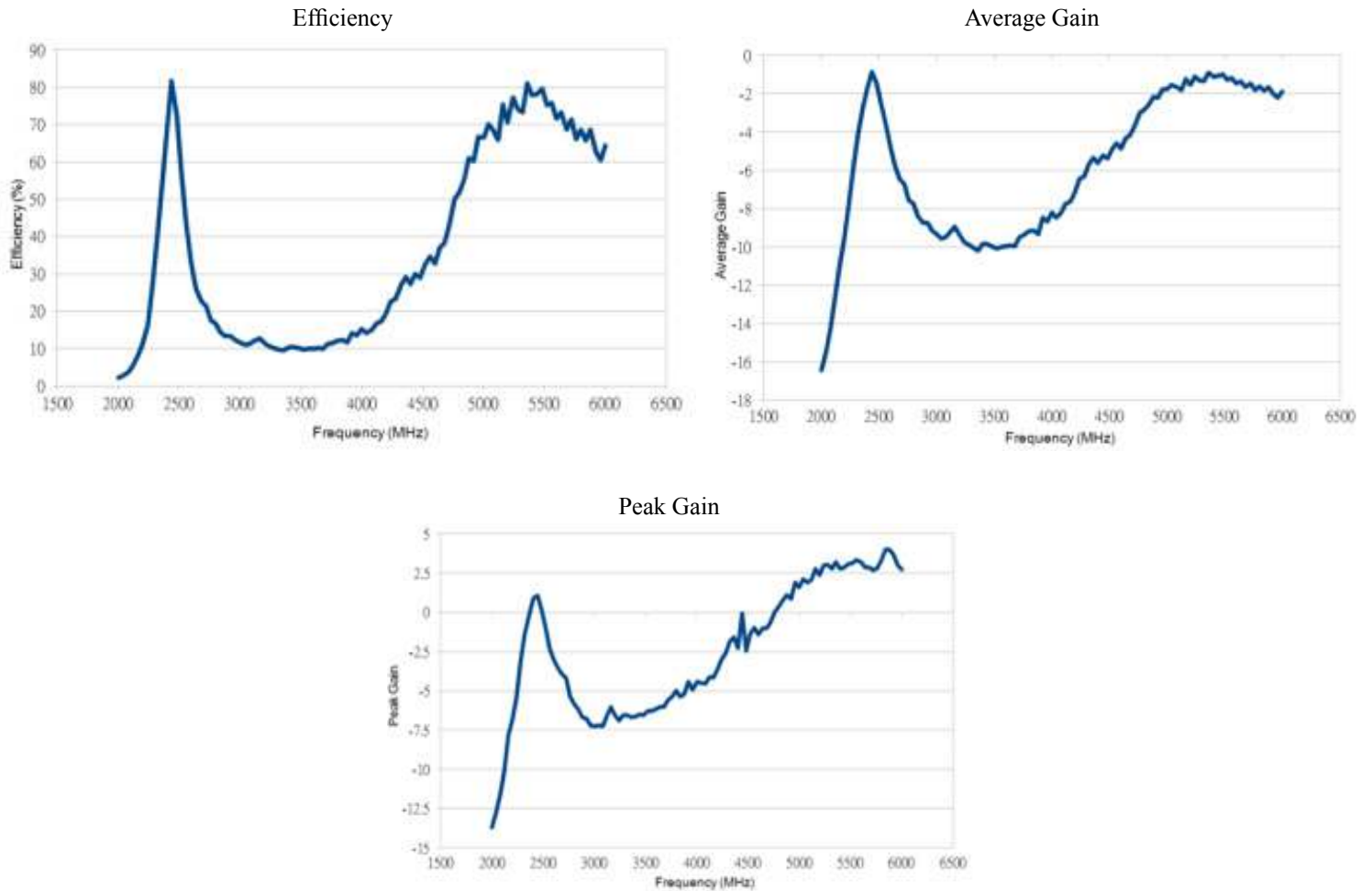


ACAR0301-SW2



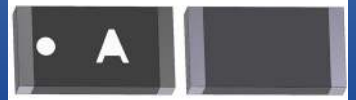
3.05 x 1.60 x 0.55 mm
RoHS/RoHS II Compliant
MSL = 1

Antenna Performance



WLAN	2400MHz	2450MHz	2500MHz	5150MHz	5850MHz
Efficiency (%)	68.02	79.73	65.16	75.38	65.62
Average Gain (dB)	-1.67	-0.98	-1.86	-1.22	-1.82
Peak Gain (dB)	0.88	1.05	-0.19	2.56	4.01

Low Profile Dual Band WiFi Chip Antenna



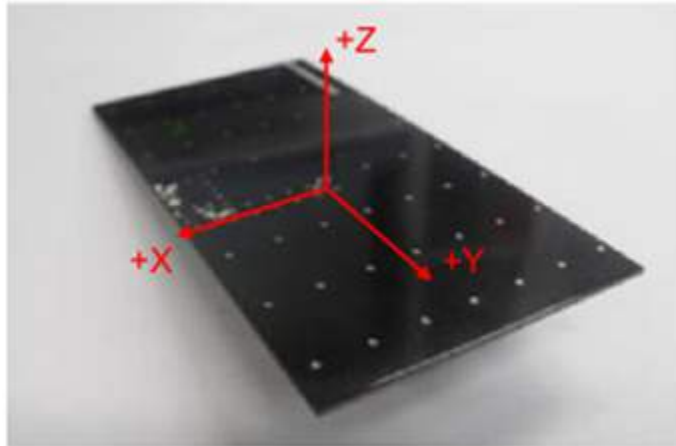
ACAR0301-SW2



3.05 x 1.60 x 0.55 mm
RoHS/RoHS II Compliant
MSL = 1

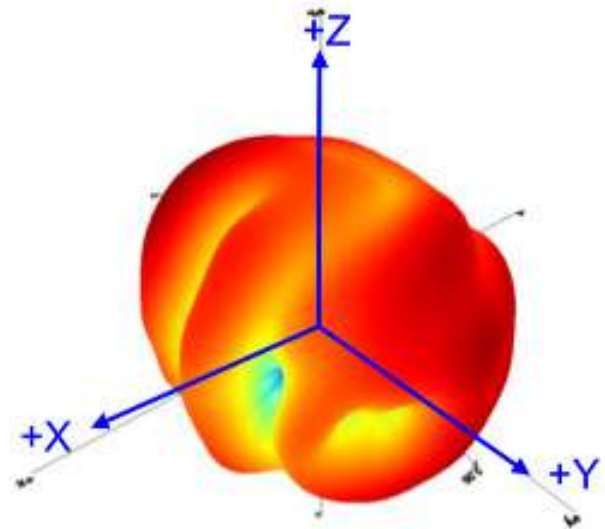
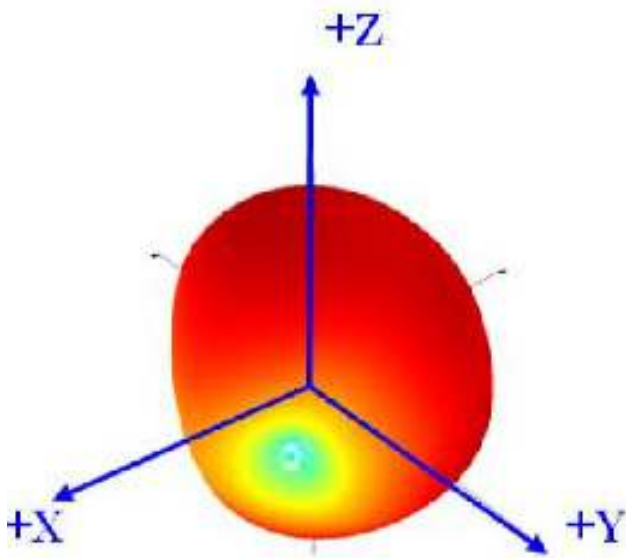
Antenna 3D Radiation Patterns – Evaluation Board

Coordinates

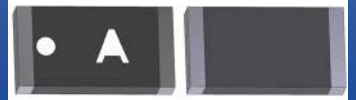


Radiation patterns 2450MHz (3D)

Radiation patterns 5550MHz (3D)



Low Profile Dual Band WiFi Chip Antenna



ACAR0301-SW2

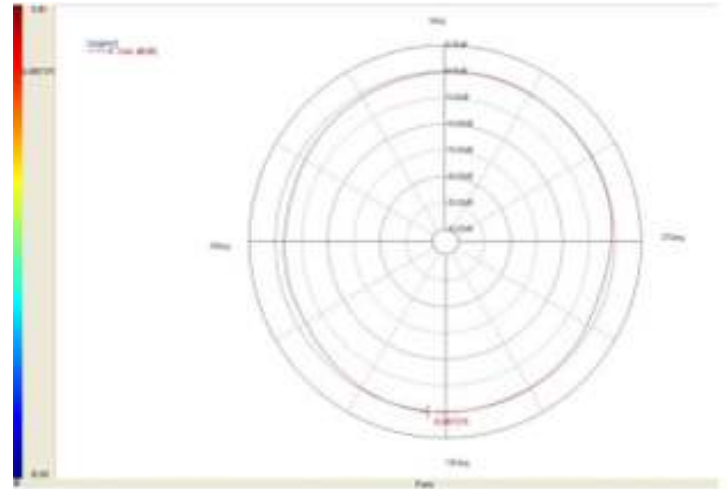
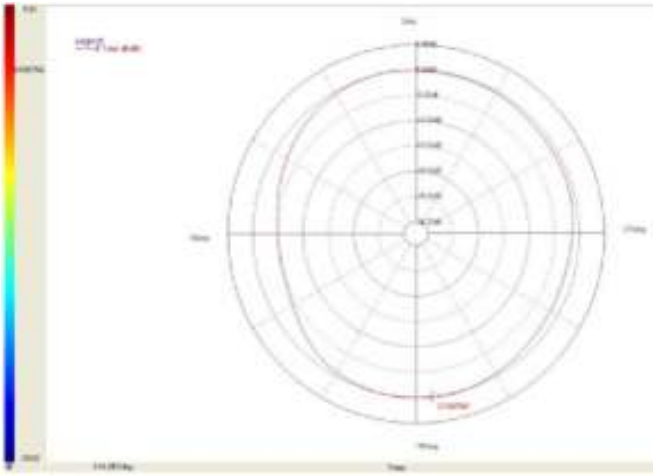


3.05 x 1.60 x 0.55 mm
RoHS/RoHS II Compliant
MSL = 1

Antenna 2D Radiation Patterns @ 2450MHz

2D Radiation Pattern X-Z Plane 2450MHz

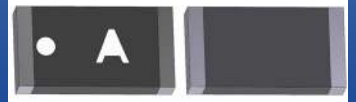
2D Radiation Pattern Y-Z Plane 2450MHz



2D Radiation Pattern X-Y Plane 2450MHz



Low Profile Dual Band WiFi Chip Antenna



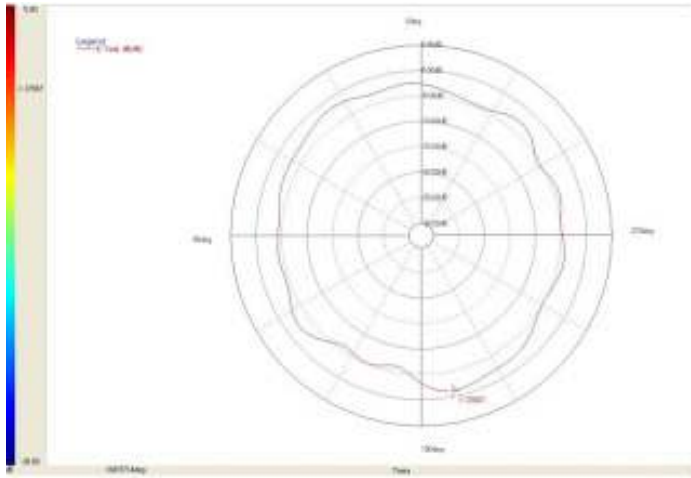
ACAR0301-SW2



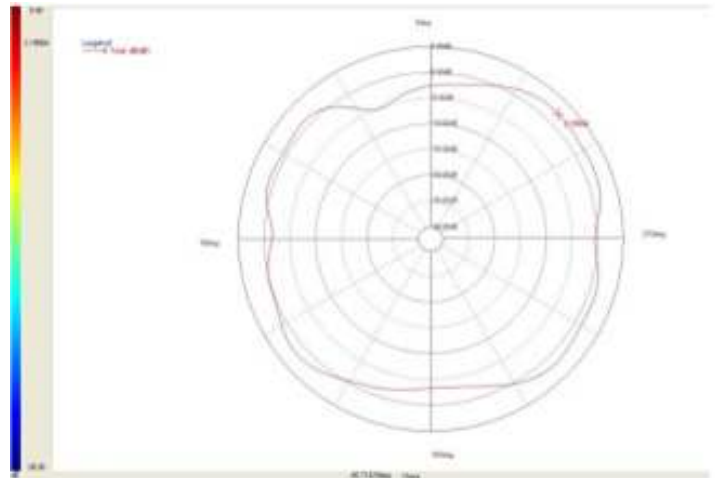
3.05 x 1.60 x 0.55 mm
RoHS/RoHS II Compliant
MSL = 1

Antenna 2D Radiation Patterns @ 5550MHz

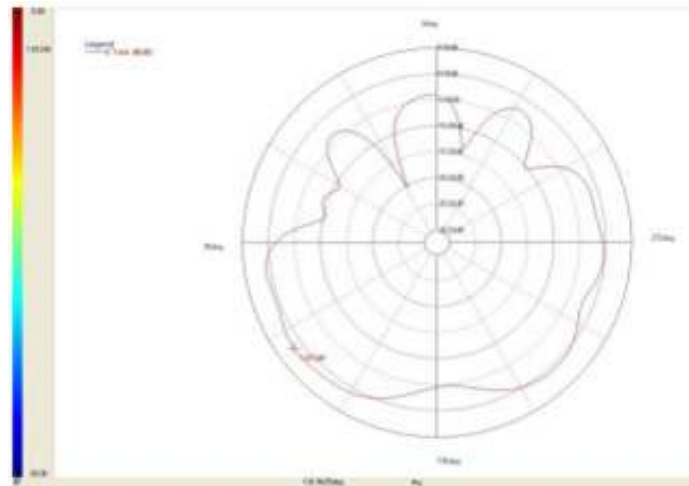
2D Radiation Pattern X-Z Plane 5550MHz



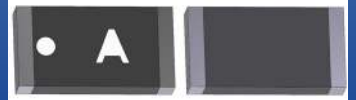
2D Radiation Pattern Y-Z Plane 5550MHz



2D Radiation Pattern X-Y Plane 5550MHz



Low Profile Dual Band WiFi Chip Antenna



ACAR0301-SW2



3.05 x 1.60 x 0.55 mm
RoHS/RoHS II Compliant
MSL = 1

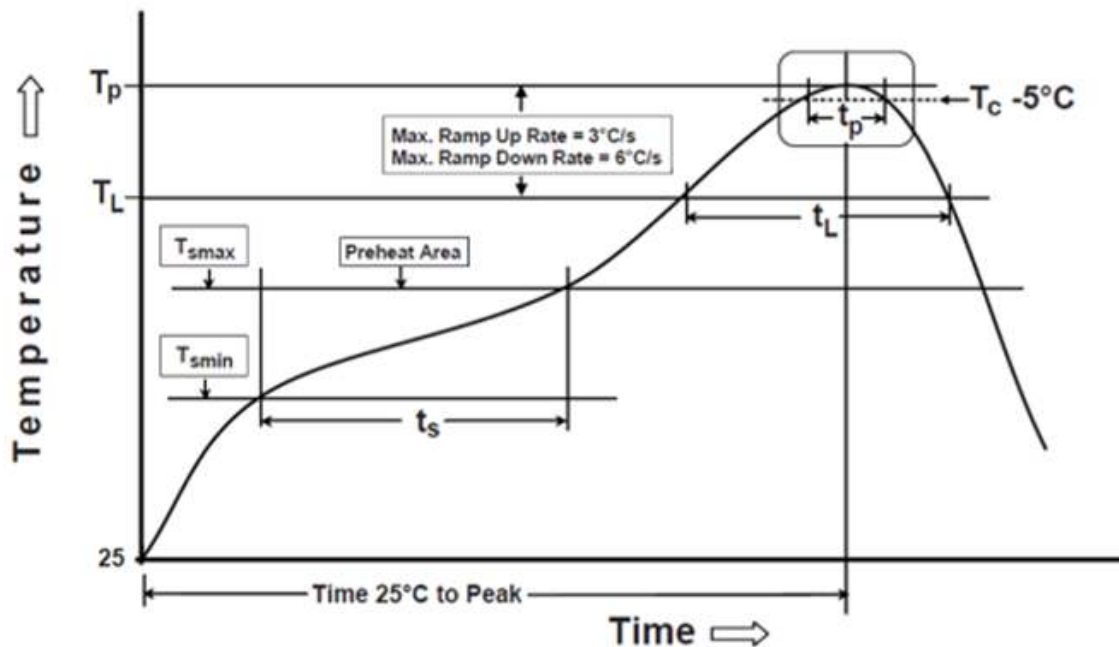
Reflow Soldering Standard Condition

Abrakon products can be assembled following Pb-free assembly.

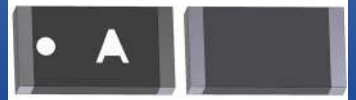
According to the Standard IPC/JEDEC J-STD-020C, the temperature profile suggested is as follow:

Phase	Profile Features	Pb-Free Assembly (SnAgCu)
Pre-Heat	-Temperature Min (T _{smin}) -Temperature Max (T _{smax}) -Time (ts) from (T _{smin} to T _{smax})	150°C 200°C 60-120 seconds
Ramp-Up	Avg. Ramp-up Rate (T _{smax} to TP)	3°C /second(max)
Reflow	-Temperature (TL) -Total Time above TL (tL)	217°C 30-100 seconds
Peak	-Temperature (TP) -Time (tp)	260°C 5-10 second RAMP
Ramp-Down	Rate	6°C / second max.
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

Note : All the temperature measure point is on top surface of the component, if temperature over recommend, it will make component surface peeling or damage.



Low Profile Dual Band WiFi Chip Antenna



ACAR0301-SW2



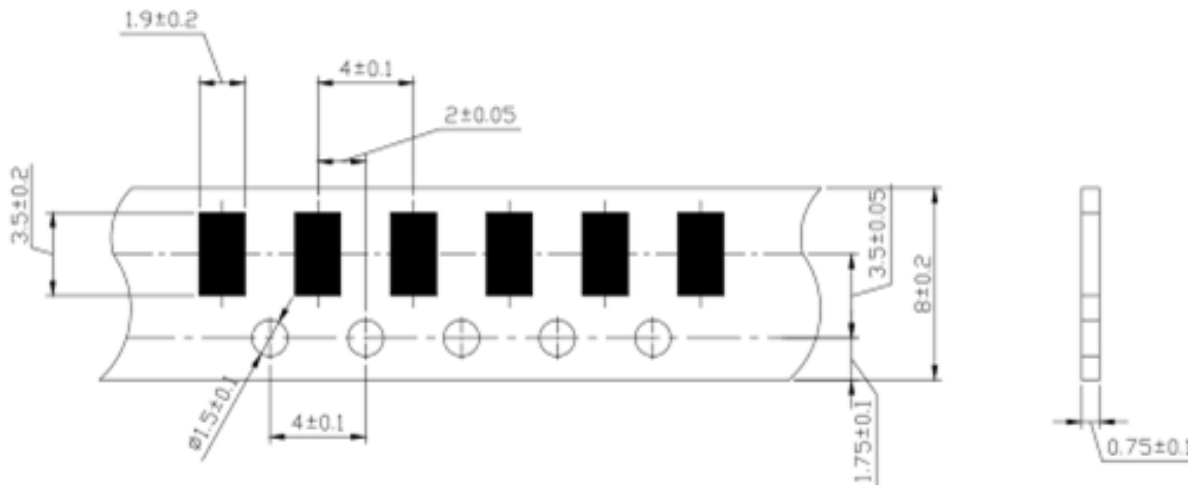
3.05 x 1.60 x 0.55 mm
RoHS/RoHS II Compliant
MSL = 1

Manual Soldering:

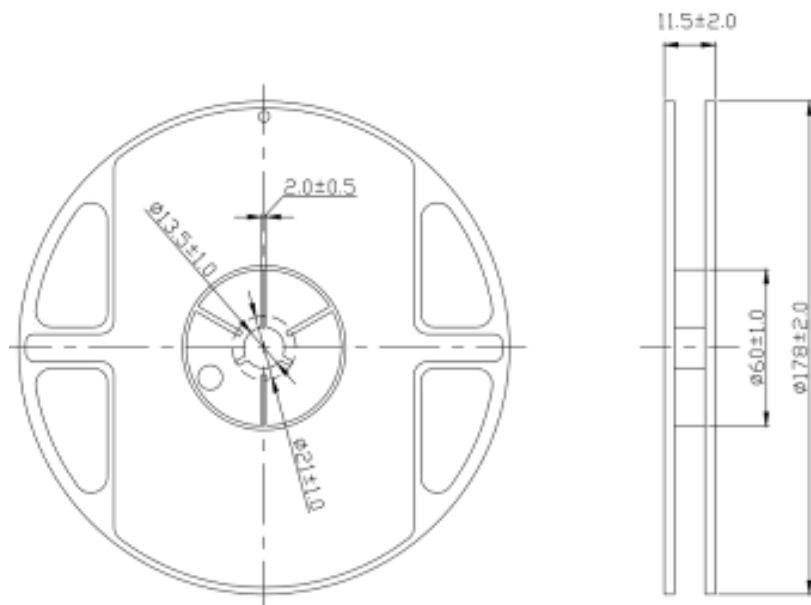
Soldering condition: Soldering iron temperature $270^{\circ}\text{C} \pm 10^{\circ}\text{C}$. Apply preheating at 120°C for 2-3 minutes. Finish soldering for each terminal within 3 seconds, if soldering iron over temperature $270 \pm 10^{\circ}\text{C}$ or 3 seconds, it will make component surface peeling or damage.

Packaging

Tape Dimensions (mm)



Reel Dimensions (mm)



1 Blister tape to IEC 286-3, polyester.
2 Pieces/tape: 5000

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-dependant 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: 11.09.2018

ABRACON IS
ISO9001-2015
CERTIFIED