

VGAP-CLB-AS-A1 Specification

1. Features and Application

- (1) This product is manufactured in ISO/TS16949 certified production factory.
- (2) This product is qualified according to AEC-Q200.
- (3) This product is for 2.4/5 GHz Dual Band WiFi, 802.11 b/g/n, Zigbee, Bluetooth,...

2. Explanation of Part Number

VGAP - $\frac{C}{(1)}$ $\frac{LB}{(2)}$ - $\frac{A}{(3)}$ $\frac{S}{(4)}$ - $\frac{A1}{(5)}$

- (1) Product Type: Chip Antenna
- (2) Center Frequency/Band Code: 2.4/5 GHz Dual Band
- (3) Size Code: 5.0*3.6 mm (Length*Width)
- (4) Special Code: RoHS Compliant
- (5) Design Revision Code: Rev.1

3. Electrical Specification

Item	Specification	
Frequency Band	2400 ~ 2500 MHz	5000 ~ 6000 MHz
Polarization	Linear	
Impedance	50 ohm Typ.	
VSWR	Less than 2.0	Less than 2.0
*Peak Gain	3.2 dBi Typ.	3.5 dBi Typ.
*Peak Efficiency	74.8% Typ.	81.6% Typ.

* Test condition: Test board size 80*40 mm
Matching circuit may be required

UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±

X.X=±

X.XX=

ANGLES=±

HOLEDIA=±



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SCALE : -----

UNIT : mm

DRAWN BY : 吳柏青

CHECKED BY : 宇恩佐

DESIGNED BY : 黃啓傑

APPROVED BY : 蘇志銘

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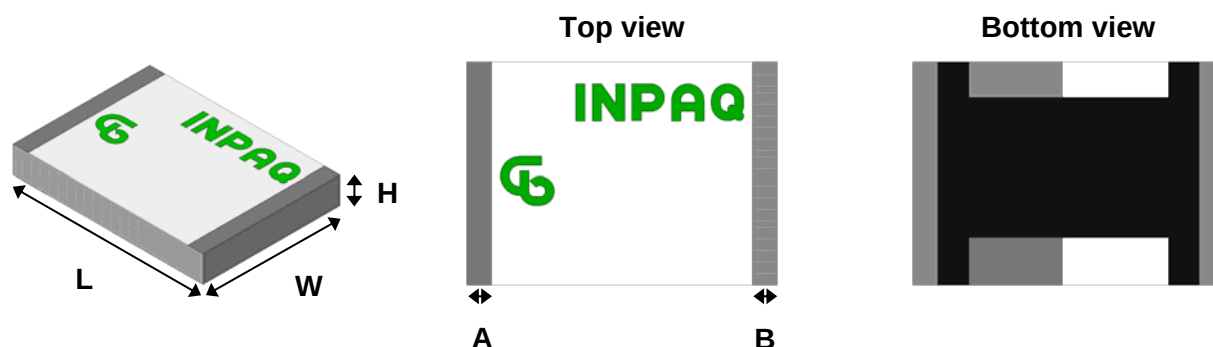
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4. Physical Dimension



(Unit: mm)

Chip Antenna	L	W	A	B	H
VGAP-CLB-AS-A1	5.2±0.3	3.7±0.3	0.45±0.25	0.45±0.25	0.70±0.15

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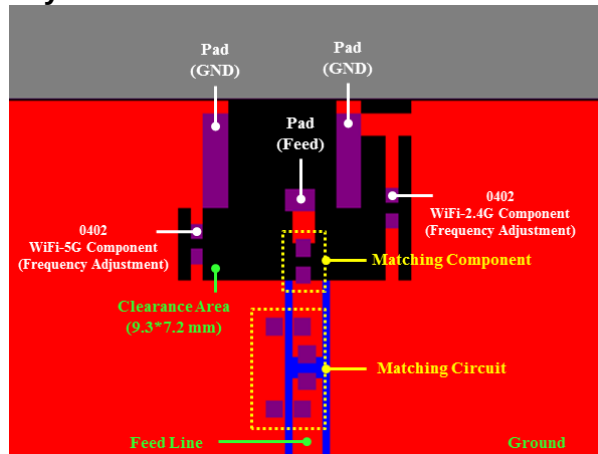
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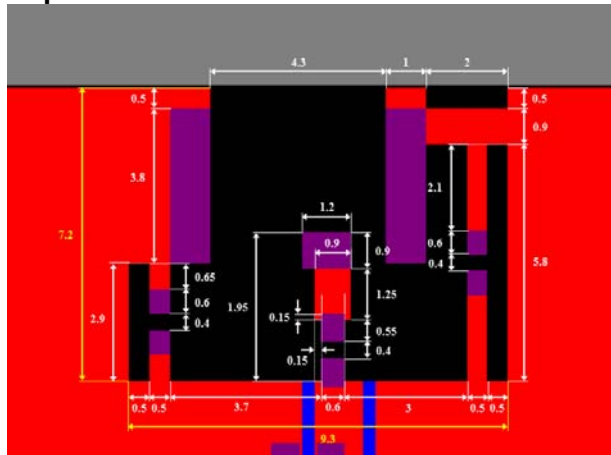
5. Recommend PCB Layout

Layout

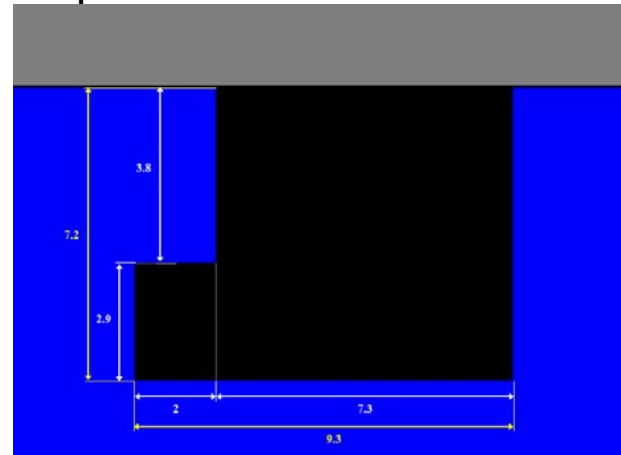


Pad Dimensions on PCB Layout

Top View



Perspective View



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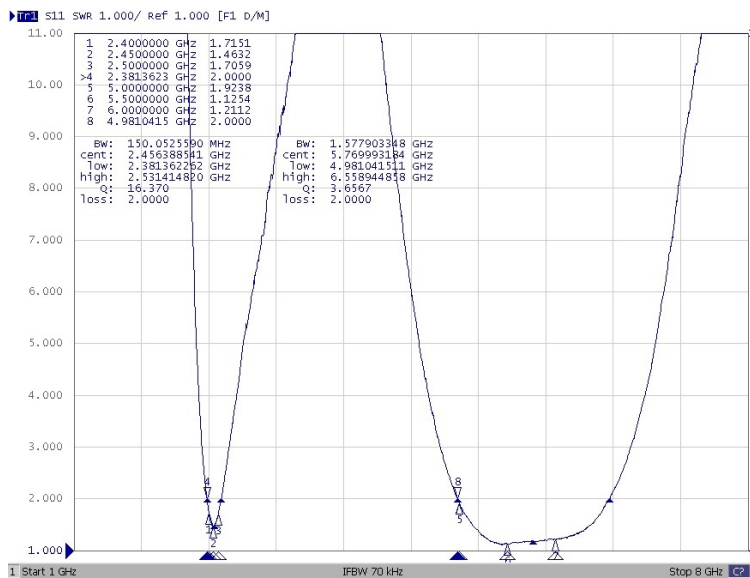
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6. Electrical Characteristics

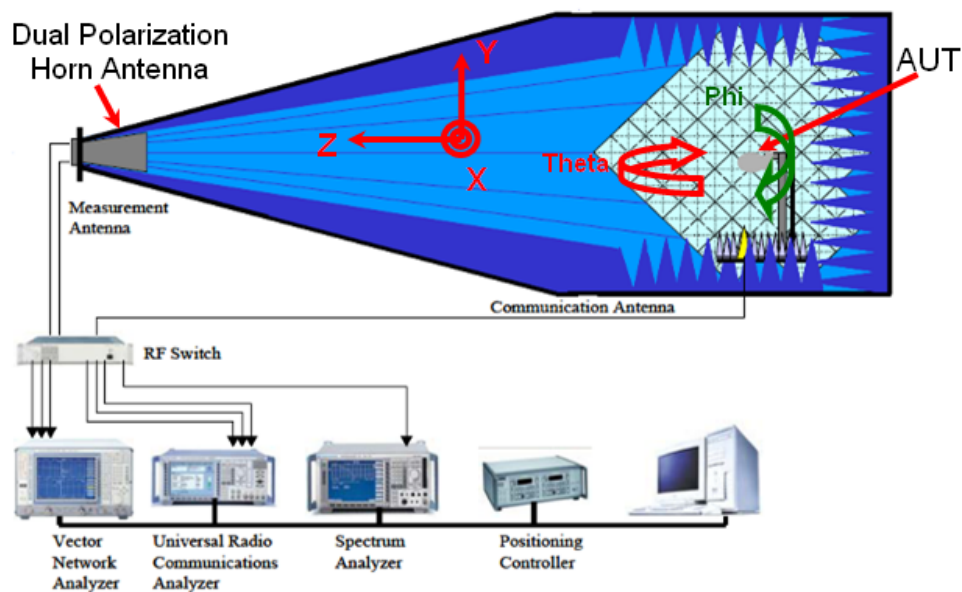
VSWR



Frequency (MHz)	VSWR
2400	1.7
2450	1.5
2500	1.7
5000	1.9
5500	1.1
6000	1.2

Radiation Pattern

The Gain pattern is measured in INPAQ's FAR-field chamber. DUT is placed on the table of rotator, a standard horn antenna and Vector Network Analyzer is used to collect data.



3D Chamber Definition

UNLESS OTHER SPECIFIED TOLERANCES ON :

X=± X.X=± X.XX=

ANGLES=± HOLEDIA=±



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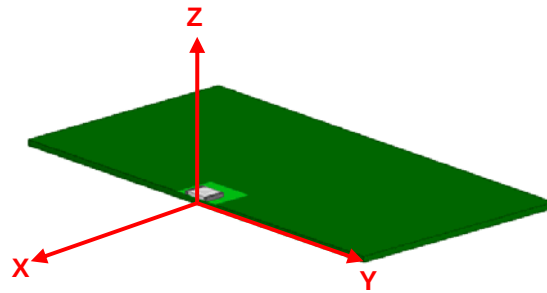
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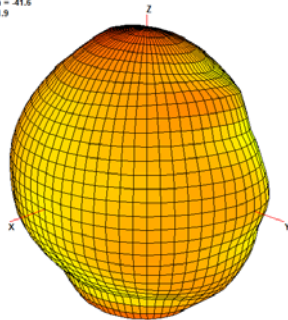
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3D Gain Pattern (2450 MHz)

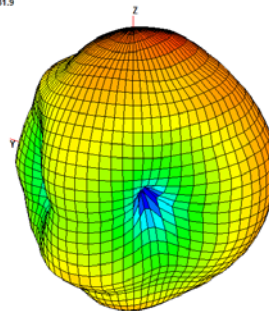


2450 MHz

Azimuth = 109.4
Elevation = -41.6
Roll = -61.9

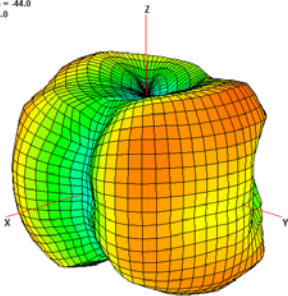


Azimuth = 74.4
Elevation = 31.9
Roll = -61.8

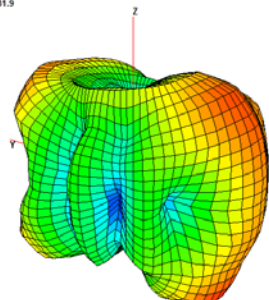


5500 MHz

Azimuth = 108.0
Elevation = -44.0
Roll = -64.0



Azimuth = 74.4
Elevation = 31.9
Roll = -61.8



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X=±

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X.XX=

ANGLES=±

HOLEDIA=±



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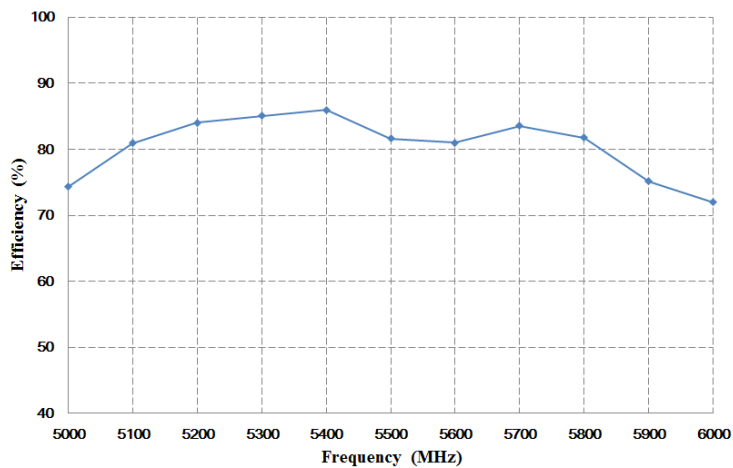
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Efficiency



Frequency (MHz)	Efficiency (%)
2400	72.9
2450	74.8
2500	73.0
5000	74.3
5500	81.6
6000	71.9



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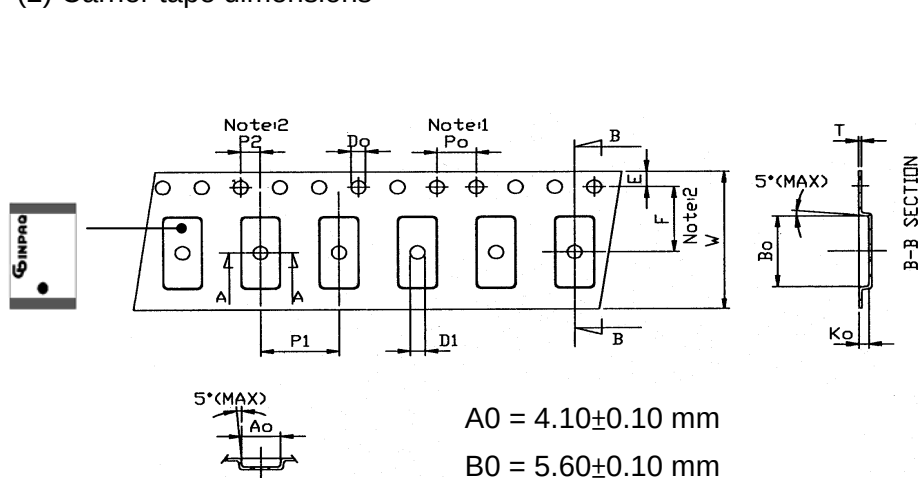
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7. Taping Package and Label Marking

- (1) Quantity/Reel: 2000pcs/Reel
(2) Carrier tape dimensions

(Unit: mm)



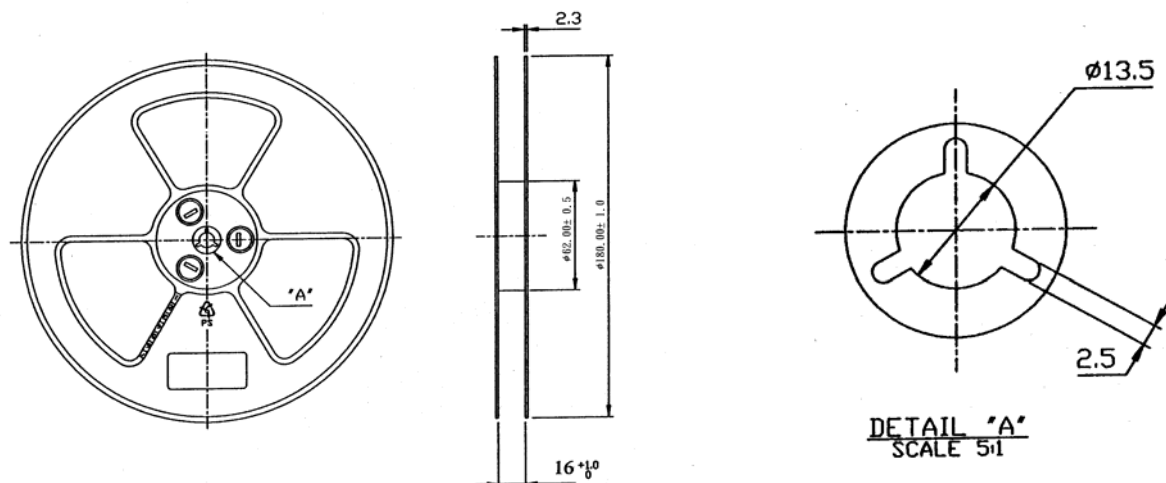
Symbol	Spec.
Po	4.00±0.1
P1	8.00±0.1
P2	2.00±0.05
Do	1.55±0.05
D1	1.50(MIN)
E	1.75±0.1
F	5.50±0.05
10Po	40.00±0.2
W	12.00±0.1
T	0.25±0.05

 $A0 = 4.10 \pm 0.10 \text{ mm}$
 $B0 = 5.60 \pm 0.10 \text{ mm}$
 $K0 = 1.02 \pm 0.10 \text{ mm}$

Notice:

1. 10 Sprocket hole pitch cumulative tolerance is $\pm 0.1 \text{ mm}$
2. Pocket position relative to sprocket hole measured as true position of pocket not pocket hole.
3. A0 & B0 measured on a plane 0.3mm above the bottom of the pocket to top surface of the carrier.
4. K0 measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
5. Carrier camber shall be not than 1mm per 100mm through a length of 250mm.

- (3) Taping reel dimensions



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8. Environmental Characteristics

This product is qualified according to AEC-Q200.

(1) Reliability Test

Item	Condition	Specification
Thermal shock	1. 30±3 minutes at -40°C±5°C, 2. Convert to +105°C (5 minutes) 3. 30±3 minutes at +105°C±5°C, 4. Convert to -40°C (5 minutes) 5. Total 100 continuous cycles	No damage
Humidity resistance	1. Humidity: 85% R.H. 2. Temperature: 85±5°C 3. Time: 1000 hours.	No damage
High temperature resistance	1. Temperature: 150°C±5°C 2. Time: 1000 hours.	No damage
Low temperature resistance	1. Temperature: -40°C±5°C 2. Time: 1000 hours.	No damage
Soldering heat resistance	1. Solder bath temperature: 260±5°C 2. Bathing time: 10±1 seconds	No damage
Solderability	The dipped surface of the terminal shall be at least 95% covered with solder after dipped in solder bath of 245±5°C for 3±1 seconds.	No damage

(2) Storage condition

(a) At warehouse:

The temperature should be within 0 ~ 30°C and humidity should be less than 60% RH.

The product should be used within 1 year from the time of delivery.

(b) On board:

The temperature should be within -40 ~ 85°C and humidity should be less than 85% RH.

(3) Operating temperature range

Operating temperature range: -40 ~ +105°C.

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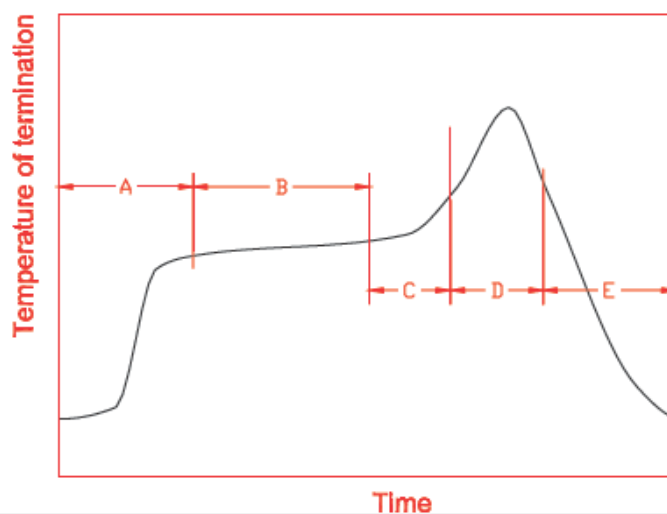
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9. Recommended reflow soldering

Reference: J-STD-020C



Time			
A	1 st rising temperature	The normal to Preheating temperature	30s to 60s
B	Preheating	140°C to 160°C	60s to 120s
C	2 nd rising temperature	Preheating to 200°C	20s to 40s
D	Main heating	if 220°C	50s~60s
		if 230°C	40s~50s
		if 240°C	30s~40s
		if 250°C	20s~40s
		if 260°C	20s~40s
E	Regular cooling	200°C to 100°C	1°C/s ~ 4°C/s

(1) Soldering gun procedure

Note the follows, in case of using solder gun for replacement.

- The tip temperature must be less than 350°C for the period within 3 seconds by using soldering gun under 30 W.
- The soldering gun tip shall not touch this product directly.

(2) Soldering volume

Note that excess of soldering volume will easily get crack the body of this product.

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X.XX=

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