

Description

The HCA5020A2450YF06 chip antenna is designed for WIFI /Bluetooth applications. This chip antenna has excellent stability consistently provide high signal reception efficiency.



Features

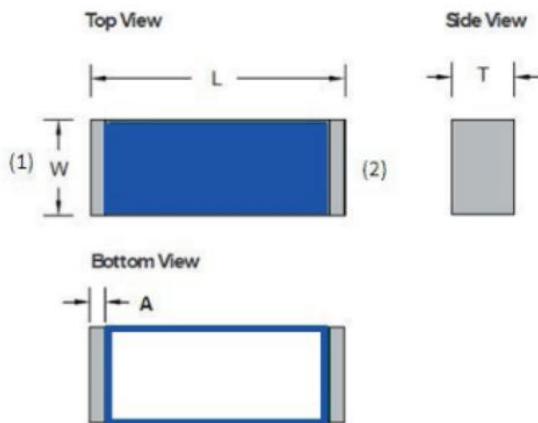
- Dimensions 5.0 x 2.0 x 0.6 (mm)
- Stable and reliable in performances
- Low temperature coefficient of frequency
- Low profile, compact size
- RoHS compliance
- SMT processes compatible

Dimensions /Recommended Pattern

Applications

- Bluetooth earphone systems
- Hand-held devices when WIFI/Bluetooth functions are needed, e.g., Smart phone
- ZigBee, Wireless PCMCIA cards or USB dongle

Product Identification



NO.	Terminal Name
[1]	Feeding
[2]	Soldering

TYPE	L	W	T	A
HCA5020A2450YF06	5.0±0.2	2.0±0.2	0.6±0.2	0.2±0.2

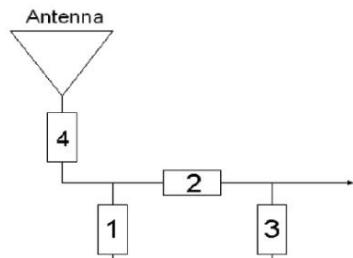
Dimensions in mm

Electrical Characteristics

Working Frequency Range	2400 ~ 2500 MHz
Peak Gain	2.5 dBi
Impedance	50 Ohm
V.S.W.R	2MAX
Polarization	Linear

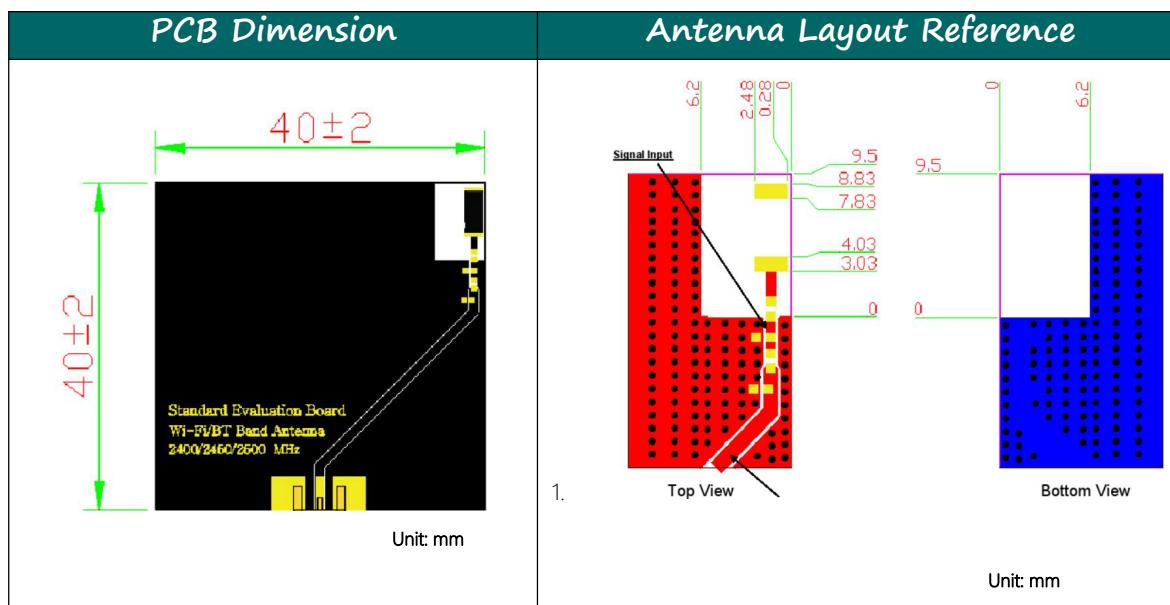
Matching Circuit

With the following recommended values of matching and tuning components, the center frequencies will be about 2450 MHZ at our standard 50x20 mm² evaluation board. However, these are reference values, may need to be changed when the circuit boards or part vendors are different.



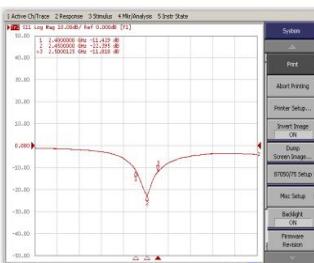
System Matching Circuit Component		
Location	Description	Vendor
1	N/A*	-
2	3.3nH, (0402)	DARFON
3	1.5pF, (0402)	MURATA
4	0Ω, (0402)	-

Dimensions and Recommended PC Board pattern

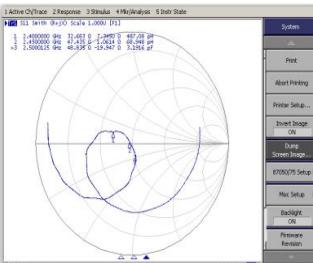


Return Loss & Radiation

Return Loss (S_{11})

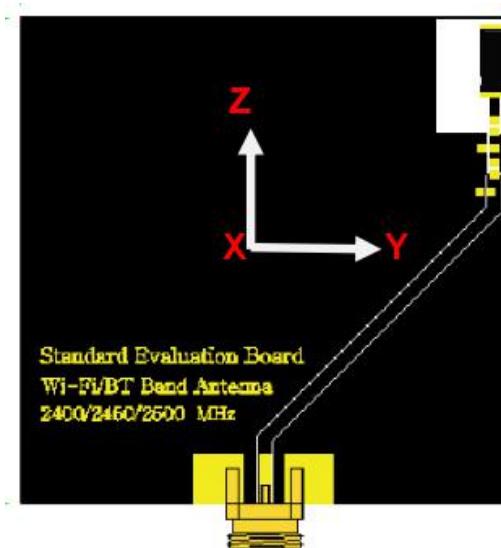
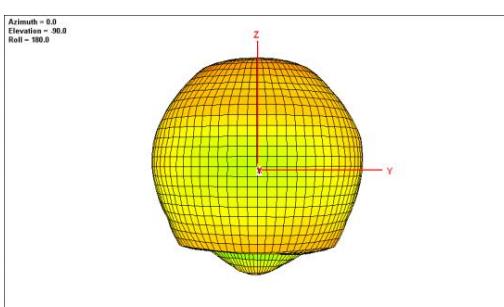
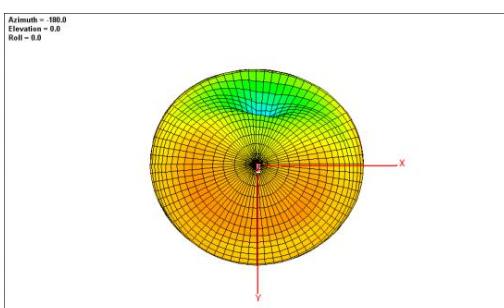
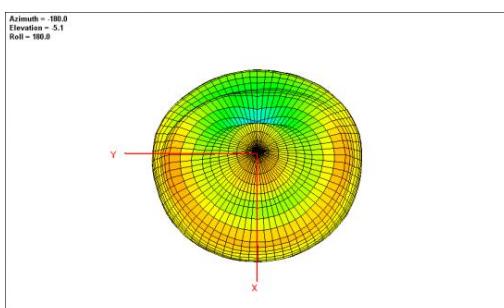


Smith Chart(S_{11})



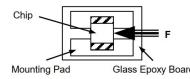
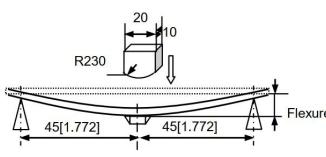
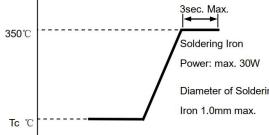
Frequency (MHz)	Return Loss (dB)
2400	11.429
2442	22.395
2485	11.818

3D Radiation

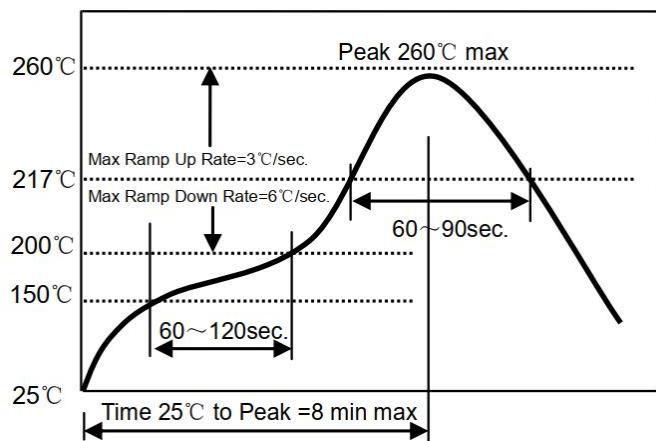


Frequency (MHz)	2400	2410	2420	2430	2442	2450	2460	2470	2480	2490	2500	2400
Efficiency (dB)	-1.4	-1.0	-0.9	-0.7	-0.7	-0.8	-0.9	-1.1	-1.2	-1.3	-1.4	-1.4
Efficiency (%)	70.8	71.7	72.3	74.4	74.5	75.0	74.0	73.6	72.1	71.6	70.5	70.8
Gain (dBi)	1.9	2.1	2.3	2.4	2.5	2.5	2.4	2.3	2.2	2.1	1.8	1.9

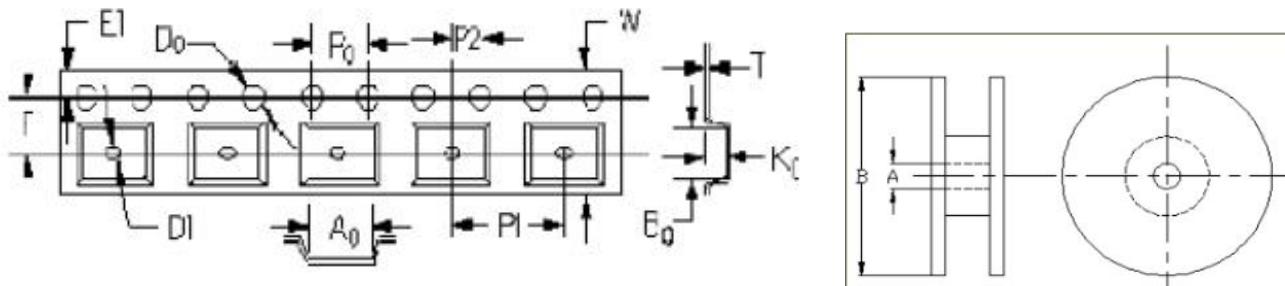
Reliability Test and Requirement

Item	Test Methods	Specifications
Solder Ability	Solder: Sn/3.0Ag/0.5Cu Temperature: 240°C±2°C Flux: 25% Resin and 75% ethanol in weight Duration: 3±0.5s	No visible mechanical damage. More than 95% of termination should be covered with new solder.
Leaching Resistance	Solder: Sn/3.0Ag/0.5Cu Temperature: 260°C±3°C Flux: 25% Resin and 75% ethanol in weight Duration: 5±0.5s The chip shall be stabilized at normal condition for 1~2 hours before measuring	No visible mechanical damage. More than 95% of termination should be covered with new solder. Inductance change: Within ±20%.
Terminal Strength	The device should not be broken after tensile force of 1.0kg is slowly applied to pull a lead pin of the fixed device in the lead axis direction for 10±1 seconds.	The terminal and body should be no damage. 
Bending Strength	Weld the product to the center part of the PCB with the thickness 1.6±0.2mm as the illustration shows, and keep exerting force arrow ward on it at speed of 0.5mm/sec, and hold for 5±1s at the position of 2mm bending distance. 	No visible mechanical damage. 
Drop	Drop 10 times on a concrete floor from a height of 1m.	No visible mechanical damage. Inductance change: Within ±20%
Vibration	Frequency: 10 to 55 Hz Amplitude: 1.5mm Direction and time: X, Y and Z directions for 2 hours each.	
Humidity	Test condition: 1) temperature, 60°C±2°C, 2) humidity, 90%-95%RH; 3) test time, 96±2h. Measurement method: the component should be stabilized at normal condition for (24±2) hours before test.	
High temperature Exposure	Test condition: 1) temperature, 85°C±2°C, 2) test time, 96±2h. Measurement method: the component should be stabilized at normal condition for (24±2) hours before test.	
Low Temperature Storage	Test condition: 1) temperature, -40°C±2°C, 2) test time, 96±2h. Measurement method: the component should be stabilized at normal condition for (24±2) hours before test.	
Thermal shock	Test condition: 1) -40°C±2°C for 30±3min; 2) 85°C±2°C for 30±3min; 3) 50 cycles. Measurement method: the component should be stabilized at normal condition for (24±2) hours before test.	

Soldering Conditions



Packaging Specifications



TYPE	Tape Dimensions (mm)										Reel Dimensions (mm)				Quantity
	A0	B0	T	E1	W	P0	P1	P2	F	K0	A	B	F	D0	
HCA5020A2450YF06	2.28	5.70	0.23	1.75	12	4	4	2	5.5	1.58	60.2	178	5.5	1.5	3000