

## WiFi/Bluetooth Metal Chip Antenna

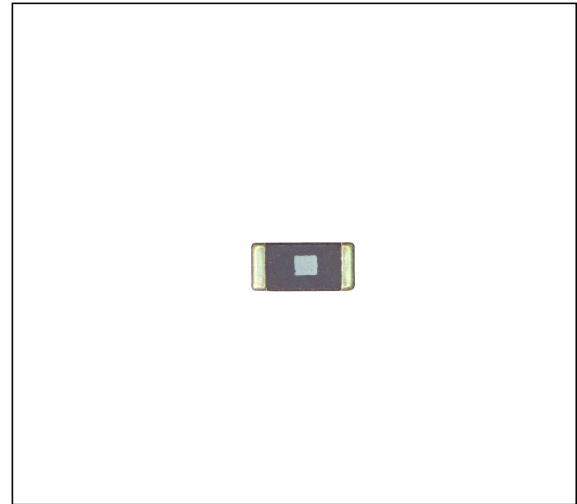
HCA5025A2450M25S

### Description

The HCA5025A2450M25S chip antenna is designed for WiFi/Bluetooth applications. This chip antenna has excellent stability consistently provide high signal reception efficiency.

### Features

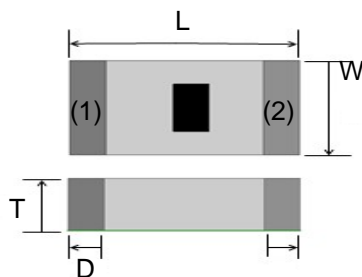
- Dimensions 5.0 x 2.5 x 0.6 (mm)
- Stable and reliable in performances
- Low temperature coefficient of frequency
- Low profile , compact size
- RoHS compliance
- SMT processes compatible



### Applications

- Bluetooth earphone systems
- Hand-held devices when WiFi /Bluetooth functions are needed, e.g., Smart phone.
- IEEE802.11 b/g/n
- ZigBee
- Wireless PCMCIA cards or USB dongle

### Shape and Dimensions / Recommended Pattern



NO.	Terminal Name
[1]	Signal pin
[2]	Single leg

Dimensions in mm

TYPE	L	W	D	T
HCA5025A2450M25S	5.0±0.2	2.5±0.2	0.5±0.2	0.6±0.2

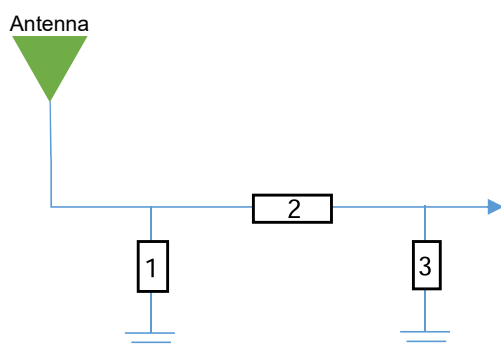
### Electrical Specifications

Electrical Table

Characteristics		Specifications	Unit
Outline Dimensions		5.0x2.5x0.6	mm
Working Frequency		2400~2500	MHz
VSWR		2.5 Max.	
Impedance		50	$\Omega$
Polarization		Linear Polarization	
Gain	Peak	0~2(typical)	dBi
	Efficiency	45 (typical)	%

### Matching Circuit

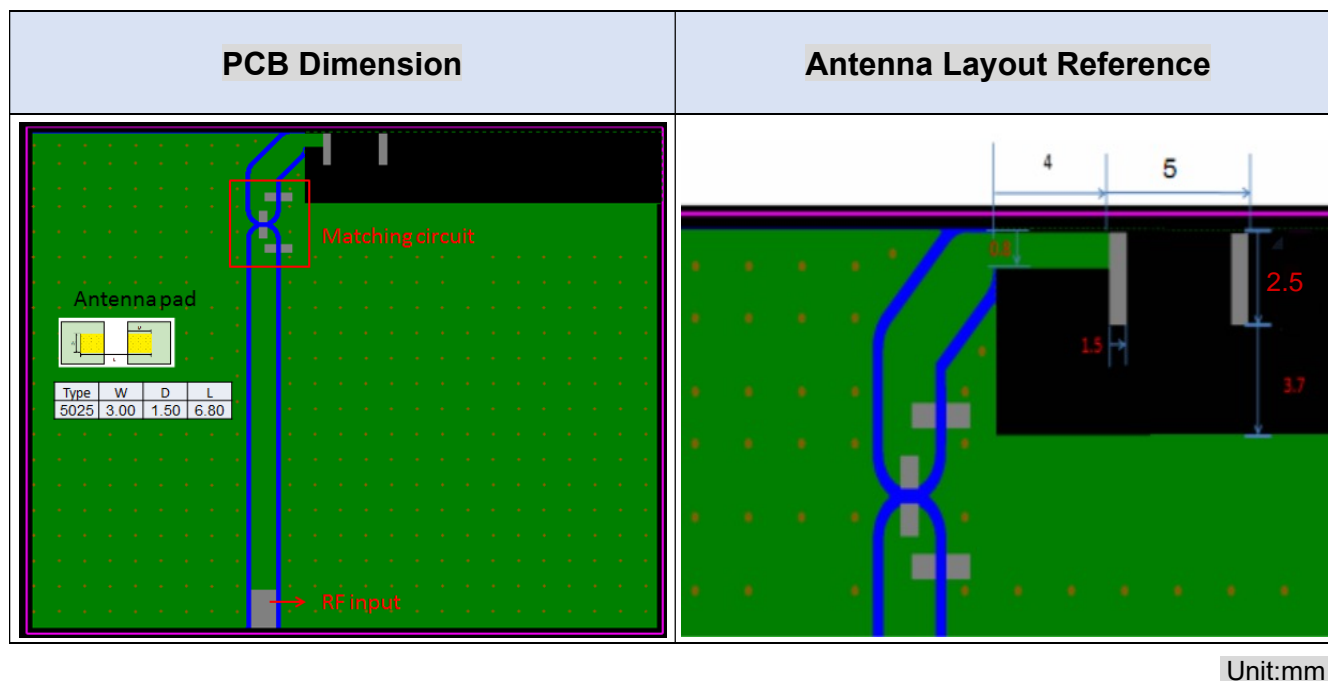
With the following recommended values of matching and tuning components, the center frequencies will be about 2450 MHz at our standard 50x50 mm<sup>2</sup> evaluation board . However, these are reference values, may need to be changed when the circuit boards or part vendors are different.



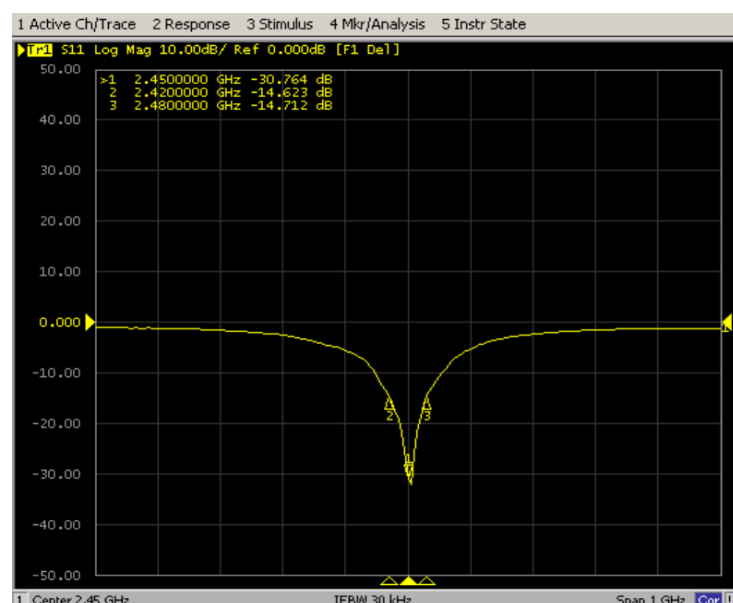
System Matching Circuit Component

Location	Description	Vendor
1	N/A*	-
2	1.2pF, (0402)	MURATA
3	1.2nH, (0402)	DARFON

### Dimensions and Recommended PC Board pattern

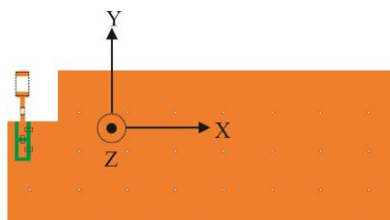
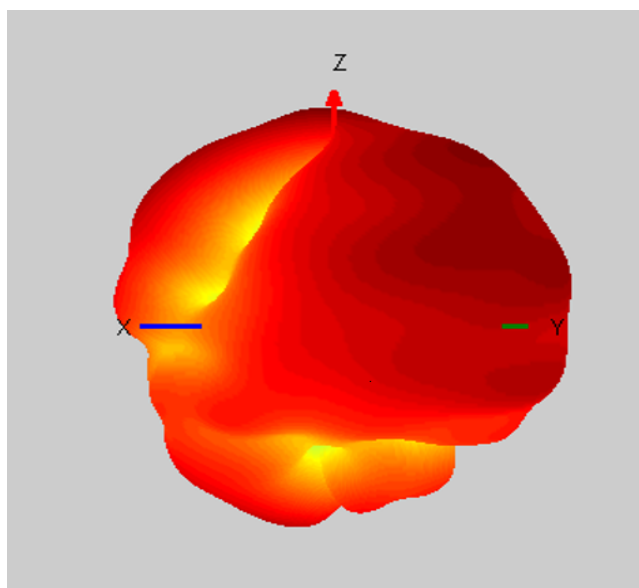


### Return Loss & Radiation



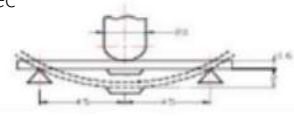
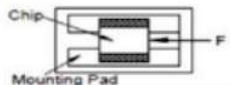
Frequency (MHz)	Return Loss (dB)
2420	14.6
2450	30.7
2500	14.7

### 3D Radiation



Frequency (MHz)	Average Gain (dBi)	Peak Gain (dBi)	Efficiency (%)
2400	-0.74	3.7	45
2450	-0.22	3.21	48
2500	-0.79	4.28	46

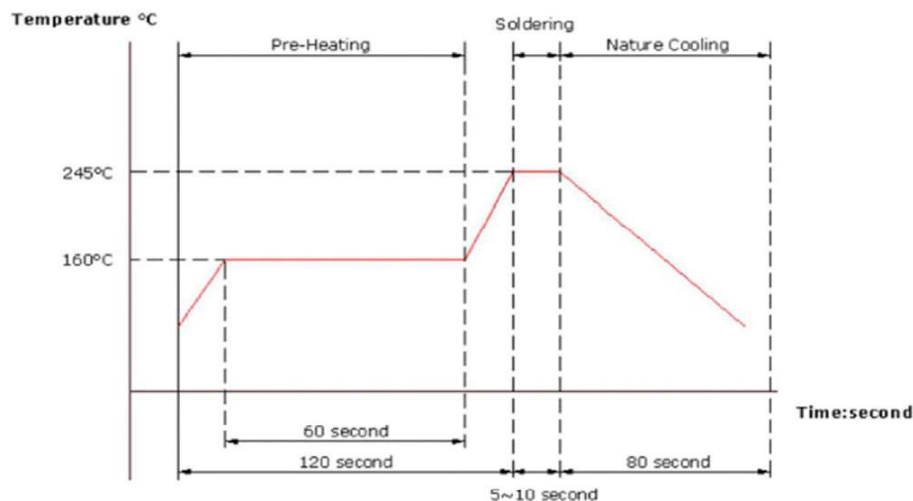
### Reliability Of Ferrite Multilayer Chip Bead

No	Item	Specification	Test Method
1-1-1	Board Flex	The forces applied on the right conditions must not damage the terminal electrode and the ferrite	<p>Test device shall be soldered on the substrate Substrate Dimension: 100x40x1.6mm Deflection: 2.0mm Keeping Time: 60 sec</p> 
1-1-2	Resistance to Soldering Heat	Meet the electrical Specification after test	<p>Refer to MIL-STD-202 Method 210 Pre-heating:150-200°C ,60-100 sec Above 217°C,60-150 secs Peak Temperature: 260±5°C ,20-40 sec Cycles: 2 times</p>
1-1-3	Solder ability	The electrodes shall be at least 95% covered with new solder coating	<p>Refer to J-STD-002 Pre-heating:150 °C , 1min Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free) Solder Temperature: 245±5°C ,(Pb-Free) Immersion Time: 4 ±1sec</p>
1-1-4	Terminal Strength Test	The chip must not damage the terminal electrode and the ferrite	<p>Test device shall be soldered on the substrate Force 2N for 60± 1 seconds for 0603 series Force 5N for 60± 1 seconds for 1005 series Force 10N for 60± 1 seconds for 1608 series Force 1.8Kg for 60± 1 seconds for other series</p> 
1-1-5	Vibration Test	Meet the electrical Specification after test	<p>Refer to MIL-STD-202 Method 204 Vibration waveform: Sine waveform Vibration frequency: 10Hz~2000Hz Vibration acceleration:5g 10Hz-20Hz and back to 10Hz should be in 20 minutes Duration of test:12cycles each of 3 orientations 20 minutes for each cycle, 12 hr total Vibration axes:X, Y, &amp; Z</p>
1-1-6	Resistance to Solvent	There must be no change in appearance or obliteration of marking	<p>Refer to MIL-STD-202 Method 215 Inductors must withstand 6 minutes of alcohol or water</p>

## Reliability Of Ferrite Multilayer Chip Bead

No	Item	Specification	Test Method
1-2-1	Temperature Cycle	Meet the electrical Specification after test	Refer to JESD Method JA-104 Total cycles: 1000 cycles 30 minutes exposure to -40°C 30 minutes exposure to 125°C 1 min maximum transition between temperatures Measured after exposure in the room condition for 24hrs
1-2-2	Biased Humidity Resistance		Refer to MIL-STD-202 Method 103 Temperature: 85± 2 °C Relative Humidity : 85%/ Time:1000hrs  Measured after exposure in the room condition for 24hrs
1-2-3	High Temperature Exposure (Storage)		Refer to MIL-STD-202 Method 108 Temperature: 125± 3 °C /Relative Humidity: 0% Time:1000hrs  Measured after exposure in the room condition for 24hrs
1-2-4	Low Temperature Exposure (Storage)	Meet the electrical Specification after test	Refer to MIL-STD-202 Method 108 Temperature: -40± 3 °C /Relative Humidity: 0% Applied Current: Rated Current Time:1000hrs  Measured after exposure in the room condition for 24hrs

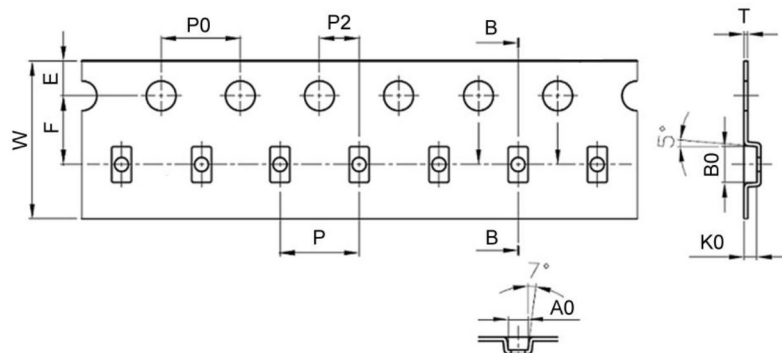
### Soldering Conditions



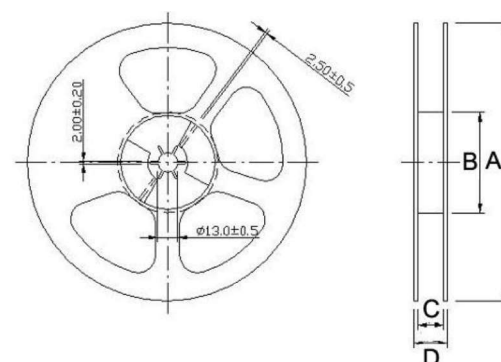
Lead Free Common Mode Filter IR Reflow Temperature Profile

### Packaging Specifications

Tape Dimensions



Reel Dimensions



Dimensions in mm

TYPE	Tape Dimensions										Reel Dimensions				Quantity
	A0	B0	T	E	W	P	P0	P2	F	K0	A	B	C	D	PCS / REEL
HCA5025A2450M25S	2.8	5.50	0.75	1.75	12	4	4	2	5.5	0.73	254	100	13.8	20.0	4000