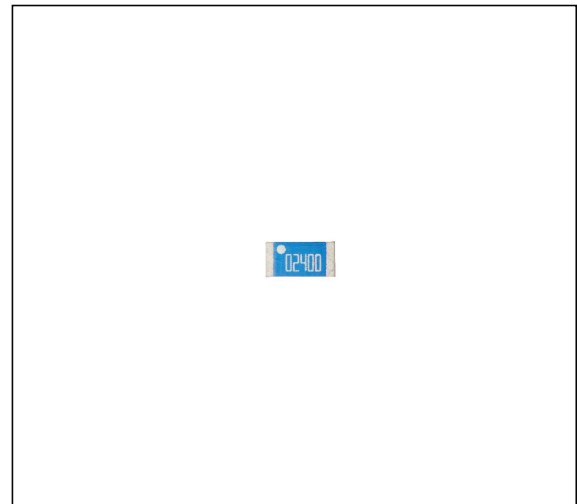


### Description

The HCA3216B2450C11S chip antenna is designed for WiFi/Bluetooth applications. This chip antenna has excellent stability consistently provide high signal reception efficiency.

### Features

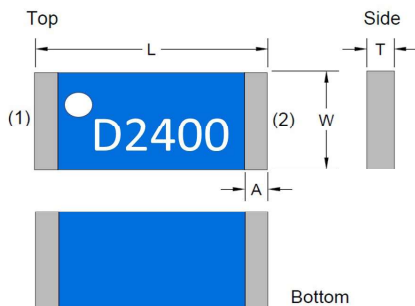
- Dimensions 3.2 x 1.6 x 0.5 (mm)
- Stable and reliable in performances
- Low temperature coefficient of frequency
- Low profile , compact size
- RoHS compliance
- SMT processes compatible



### 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]	Feeding point
[2]	GND

Dimensions in mm

TYPE	L	W	D	T
HCA3216B2450C11S	3.2±0.2	1.6±0.2	0.5±0.2	0.5±0.2

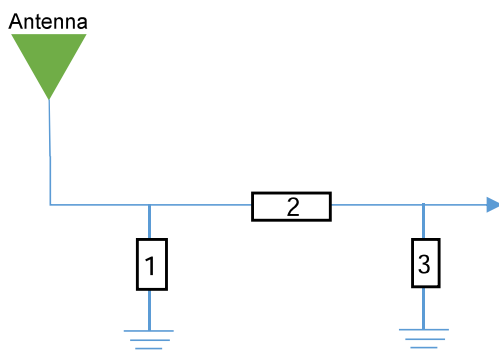
### Electrical Specifications

Electrical Table

Characteristics		Specifications	Unit
Outline Dimensions		3.2x1.6x0.5	mm
Working Frequency		2400~2500	MHz
VSWR		2 Max.	
Impedance		50	$\Omega$
Polarization		Linear Polarization	
Gain	Peak	3.66 (typical)	dBi
	Efficiency	77 (typical)	%

### Matching Circuit

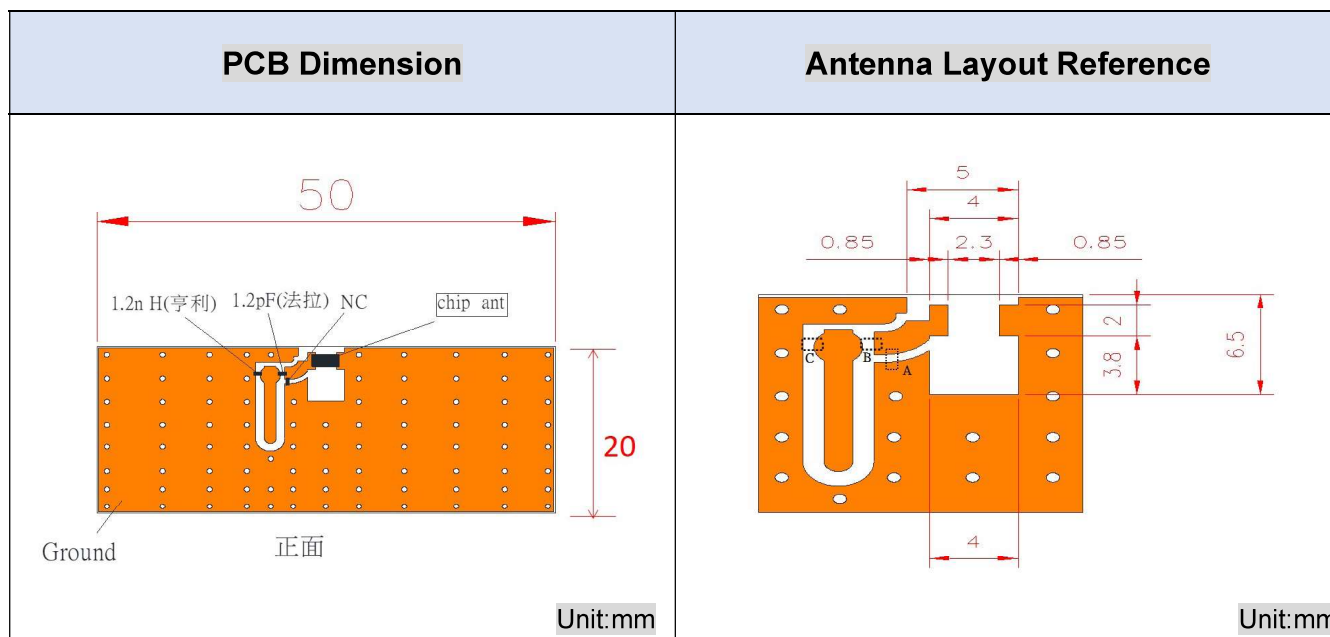
With the following recommended values of matching and tuning components, the center frequencies will be about 2450 MHz at our standard 50x20 mm<sup>2</sup> evaluation board . However, these are reference values, may need to be changed when the circuit boards or part vendors are different.



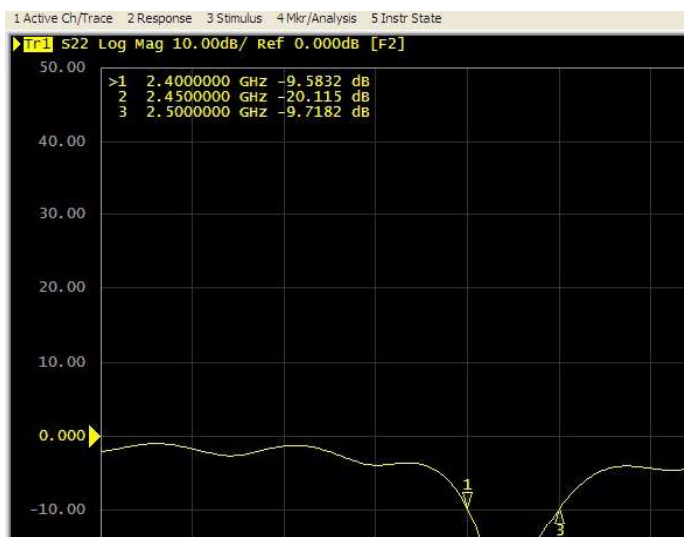
System Matching Circuit Component

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



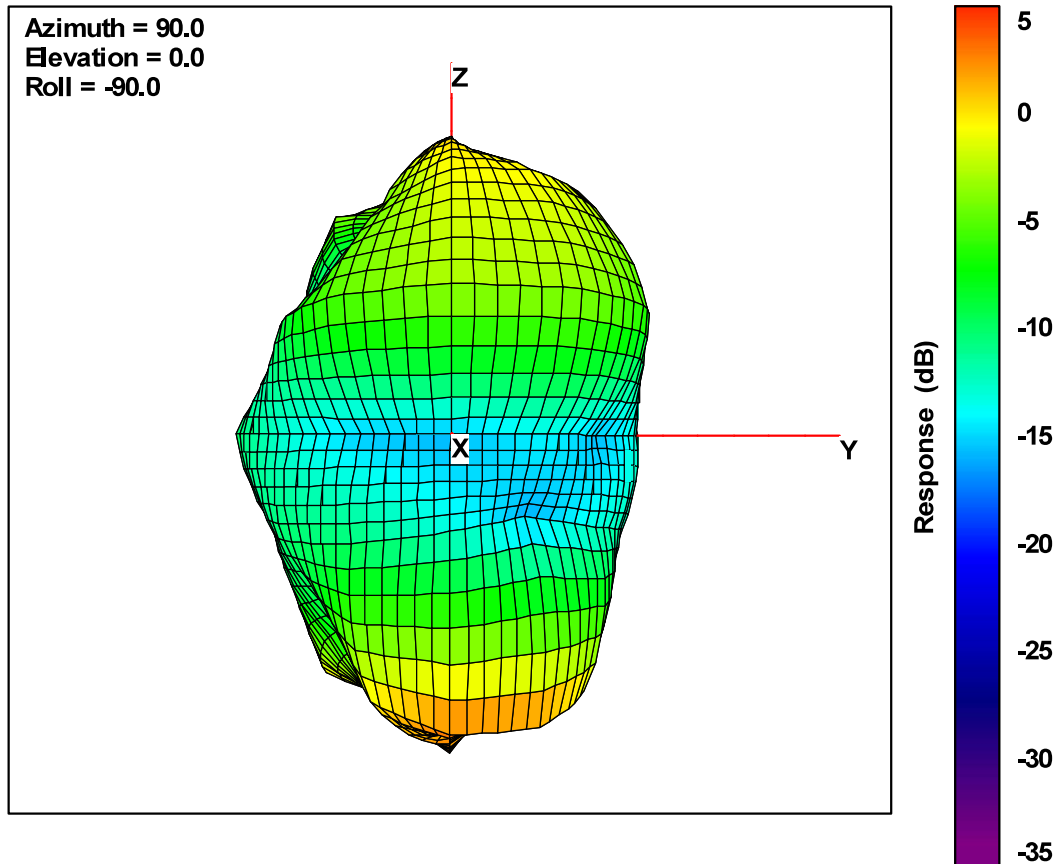
Frequency (MHz)	Return Loss (dB)
2400	9.5
2450	20.1
2500	9.7

### Voltage Standing Wave Ratio (VSWR)



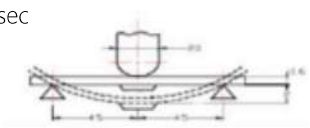
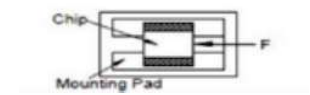
Frequency (MHz)	VSWR
2400	1.99
2450	1.21
2500	1.97

## 3D Radiation



Frequency (MHz)	Average Gain (dBi)	Peak Gain (dBi)	Efficiency (%)
2400	-2.2	3.09	60
2450	-1.16	3.43	77
2500	-1.74	3.66	66

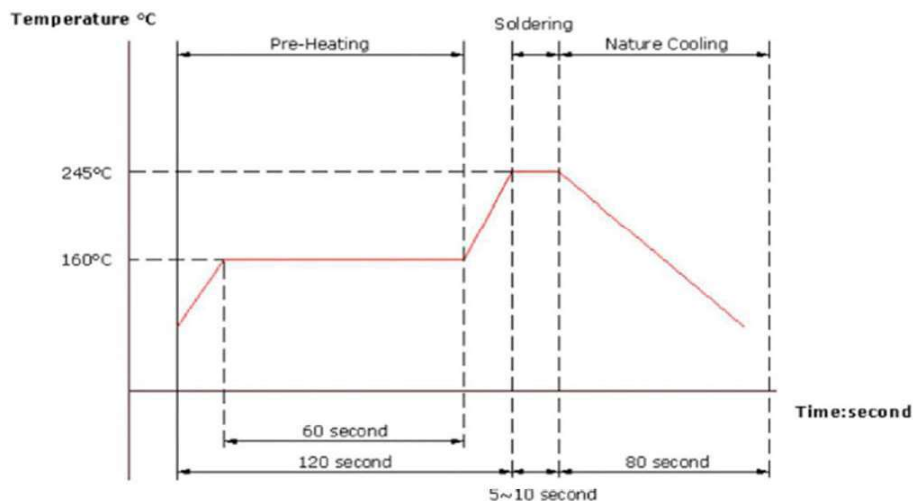
### Reliability Of Ferrite Multilayer Chip Bead

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 Vbration waveform: Sine waveform Vbration frequency: 10Hz~2000Hz Vbration 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 ablation of marking	<p>Refer to MIL-STD-202 Method 215 Inductors must withstand 6 mimutes 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 afer 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)		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

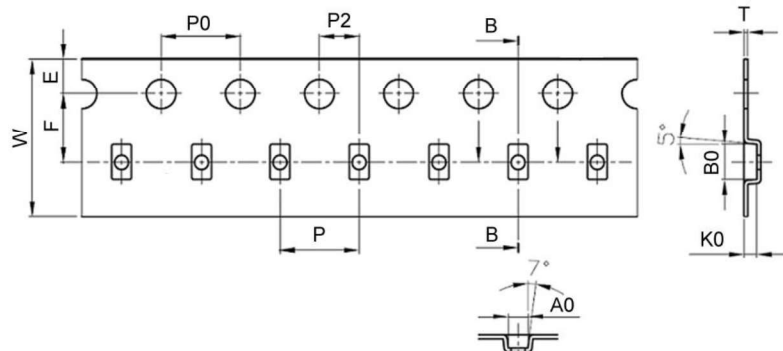
### Slodering Conditions



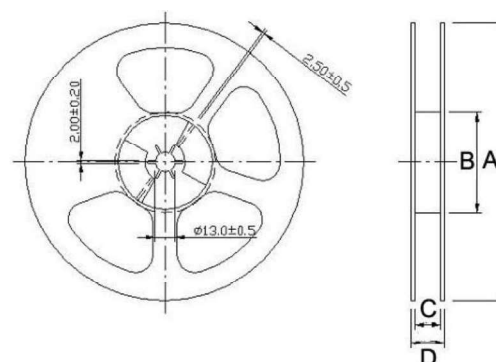
Lead Free Common Mode Fliter IR Reflow Temperature Profile

### 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
HCA3216B2450C11S	1.9	3.50	0.75	1.75	8	4	4	2	3.5	0.73	178	62	8.4	14.4	5000