



东莞市蓝霖电子科技有限公司

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SPECIFICATION FOR APPROVAL

规格书

NO 编号: _____

CUSTOMER 客 户: _____

PRODUCT 产 品: _____ Surface-mount ceramic antenna

P/N 料 号: _____ ZL-T2400-ANT-00061

MODEL NO 型 号: _____ SMD3216 2.4GHz 2dBi PF Ceramic Antenna

PREPARED 编 制: _____ 王美红 CHECKED 审 核: _____ 张高

APPROVED 批 准: _____ 张俊 DATE 日 期: _____ 2022-06-21

CUSTOMER 客户确认意见:

CHECKED 审 核: Mark

APPROVED 批 准: Mark

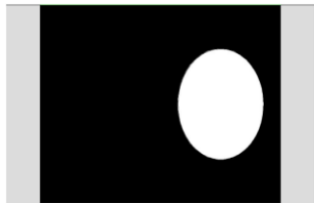
DATE 日 期: 2025-06-20

1.SCOPE :This specification applies to Chip series antenna

2.Rating:

Operating Temperature : -25 °C ~ 125 °C
Storage Temperature : 20 °C ~ 25 °C R.H. 65% (For Reference)

3.Marking:



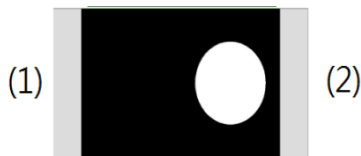
4.Standard Testing Condition:

	Unless otherwise specified	In case of doubt
Humidity	Ordinary Humidity(25 to 85% RH)	60 to 70 % RH
Temperature	Ordinary Temperature(15 to 35℃)	20±2℃

5.Configuration and Dimensions:

Figure	Dimensions(mm)	
A diagram showing the terminal configuration of the antenna. It includes a top view with dimensions L (length), W (width), and D (hole diameter), and a side view with dimension T (thickness). The top view shows a white circle on a black square with gray side bars. The side view shows a gray rectangle with a white circle in the center.	L	3.2±0.2
	W	1.6±0.2
	D	0.5±0.2
	T	0.5±0.2

TERMINAL CONFIGURATION

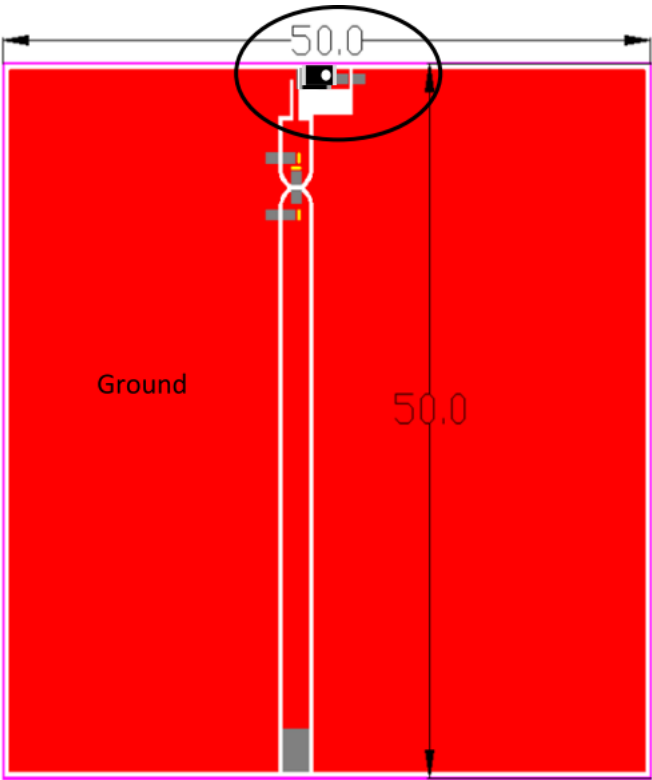


(1) Feed Termination
(2) Solder Termination

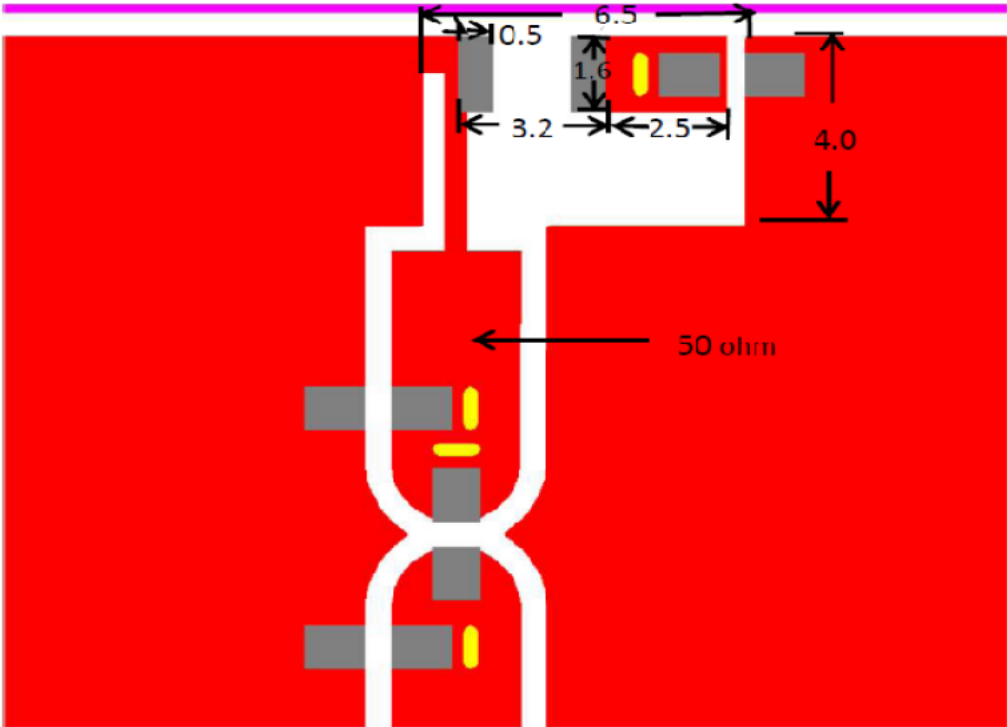
6. Electrical Characteristics:

Part No.	Impedance (Ω)	Test Freq. (GHz)	Bandwidth* (MHz)	Peak Gain* (dBi)	VSWR (max)	Polarization (Linear)
ZL-T2400-ANT-00061	50	2.4	100	2	2	Linear

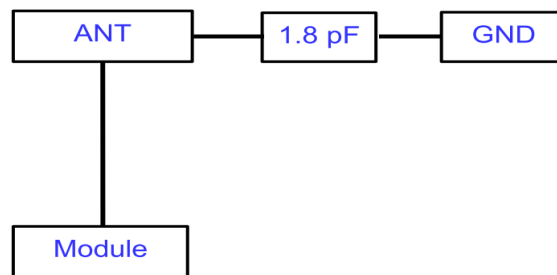
7.Dimensions and Recommended PC Board Pattern:



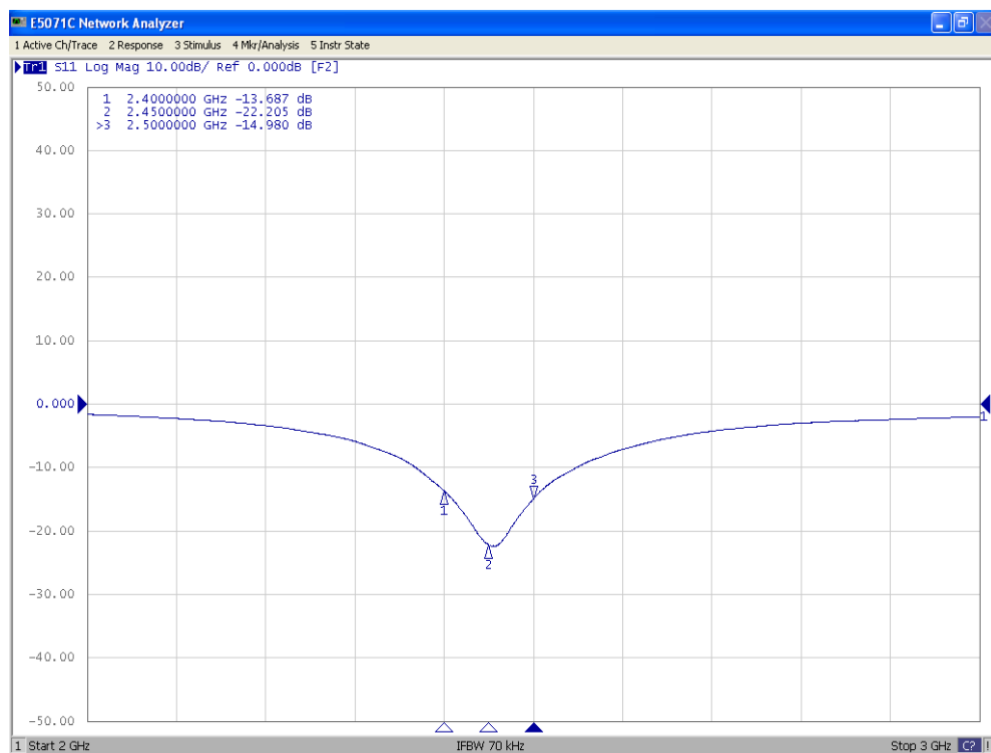
NOTE : Dimensions in mm



8. Matching Circuit:

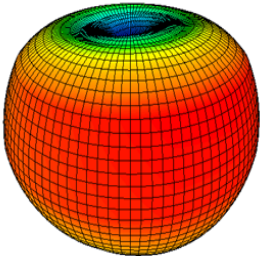


Return Loss



Radiation Pattern Test Data

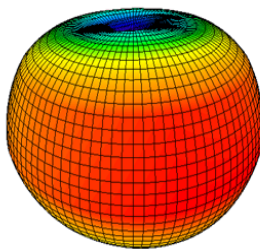
$\theta: 60^\circ$
 $\varphi: 45^\circ$



PASSIVE_TRP =
-43717692671063 dBm
Frequency(MHz) = 2400



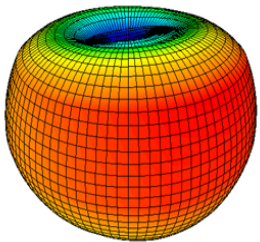
$\theta: 60^\circ$
 $\varphi: 45^\circ$



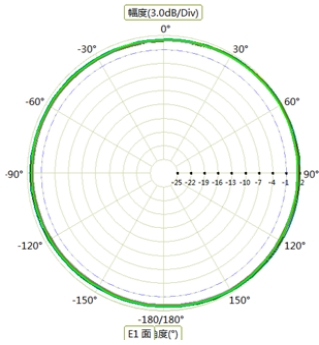
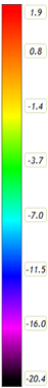
PASSIVE_TRP =
-698239478494561 dBm
Frequency(MHz) = 2450



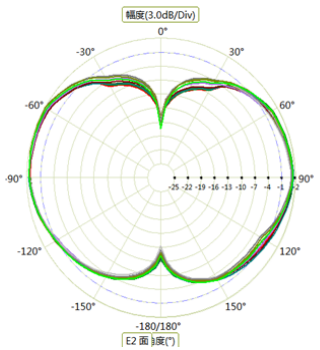
$\theta: 60^\circ$
 $\varphi: 45^\circ$



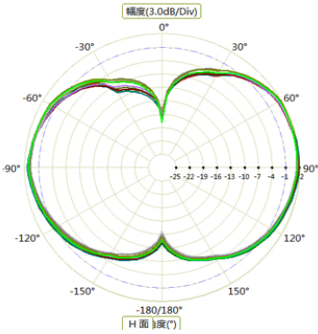
PASSIVE_TRP =
-531273473829231 dBm
Frequency(MHz) = 2500



hm_1_passive_trp(h)	2500M
hm_1_passive_trp(h)	2490M
hm_1_passive_trp(h)	2480M
hm_1_passive_trp(h)	2470M
hm_1_passive_trp(h)	2460M
hm_1_passive_trp(h)	2450M
hm_1_passive_trp(h)	2440M
hm_1_passive_trp(h)	2430M
hm_1_passive_trp(h)	2420M
hm_1_passive_trp(h)	2410M
hm_1_passive_trp(h)	2400M



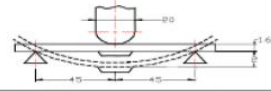
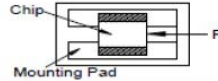
vm_1_passive_trp(e1)	2500M
vm_1_passive_trp(e1)	2490M
vm_1_passive_trp(e1)	2480M
vm_1_passive_trp(e1)	2470M
vm_1_passive_trp(e1)	2460M
vm_1_passive_trp(e1)	2450M
vm_1_passive_trp(e1)	2440M
vm_1_passive_trp(e1)	2430M
vm_1_passive_trp(e1)	2420M
vm_1_passive_trp(e1)	2410M
vm_1_passive_trp(e1)	2400M



vm_2_passive_trp(e2)	2500M
vm_2_passive_trp(e2)	2490M
vm_2_passive_trp(e2)	2480M
vm_2_passive_trp(e2)	2470M
vm_2_passive_trp(e2)	2460M
vm_2_passive_trp(e2)	2450M
vm_2_passive_trp(e2)	2440M
vm_2_passive_trp(e2)	2430M
vm_2_passive_trp(e2)	2420M
vm_2_passive_trp(e2)	2410M
vm_2_passive_trp(e2)	2400M

9. Dimensions and Recommended PC Board

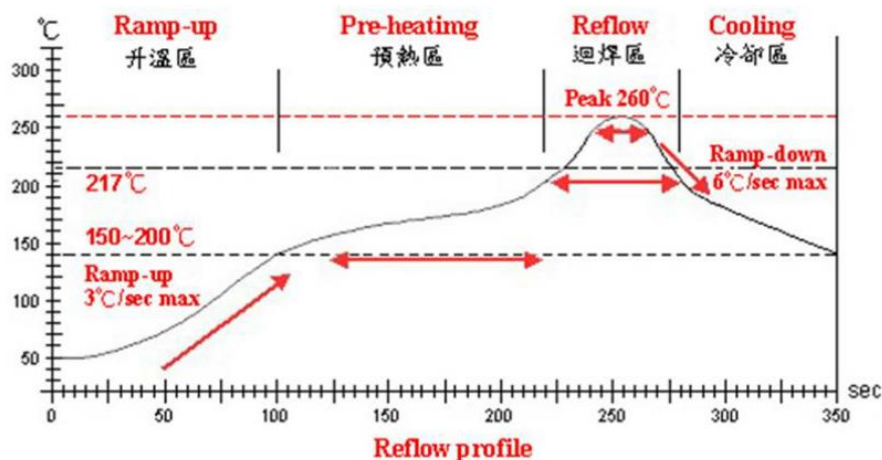
1-1. Mechanical Performance

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	Test device shall be soldered on the substrate Substrate Dimension: 100x40x1.6mm Deflection: 2.0mm Keeping Time: 60 sec 
1-1-2	Resistance to Soldering Heat	Meet the electrical Specification after test	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
1-1-3	Solder ability	The electrodes shall be at least 95% covered with new solder coating	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
1-1-4	Terminal Strength Test	The chip must not damage the terminal electrode and the ferrite	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 the other series. 
1-1-5	Vibration Test	Meet the electrical Specification after test	Refer to MIL-STD-202 Method 204 Vibration waveform: Sine waveform Vibration frequency: 10Hz~2000Hz Vibration acceleration: 5g 10Hz~20KHz and back to 10Hz should be down in 20 minutes Duration of test: 12 cycles each of 3 orientations, 20 minutes for each cycle, 12 hr total Vibration axes: X, Y & Z
1-1-6	Resistance to Solvent	There must be no change in appearance or obliteration of marking	Refer to MIL-STD-202 Method 215 Inductors must withstand 6 minutes of alcohol or water.

Dimensions and Recommended PC Board

1-2.Environmental Performance

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℃ 30 minutes exposure to 125℃ 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℃ 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℃ / 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℃ / Relative Humidity : 0% Applied Current: Rated Current/ Time: 1000hrs Measured after exposure in the room condition for 24 hrs



Lead-Free(LF) 標準溫度分析範圍

Refer to J-STD-020C

管制項目 Item.	升溫區 Ramp-up	預熱區 Pre-heating	迴焊區 Reflow	Peak Temp	冷卻區 Cooling
溫度範圍 Temp. scope	R.T. ~ 150℃	150℃ ~ 200℃	217℃	260±5℃	Peak Temp. ~ 150℃
標準時間 Time spec.	—	60 ~ 180 sec	60 ~ 150 sec	20 ~ 40 sec	—
實際時間 Time result	—	75 ~ 100 sec	90 ~ 120 sec	20 ~ 35 sec	—

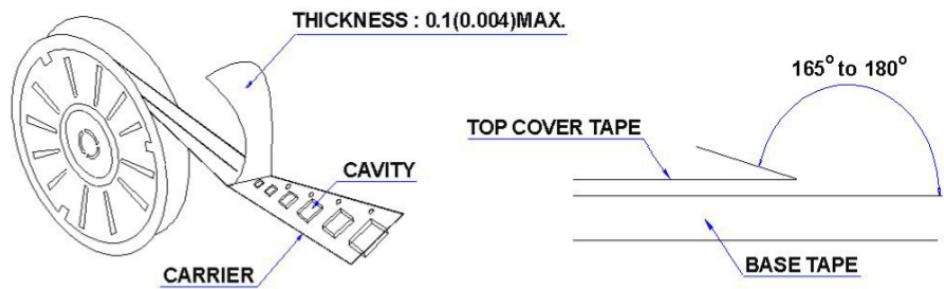
NOTE :

1. Re-flow possible times : within 2 times
2. Nitrogen adopted is recommended while in re-flow

10. Packaging:

Packaging - Cover tape

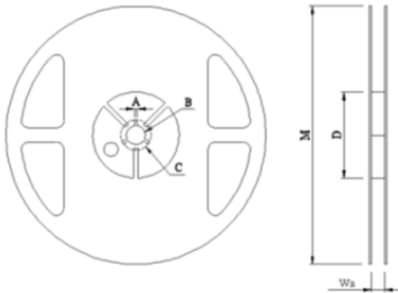
The force for tearing off cover tape is 10 to 60 grams in the arrow direction.



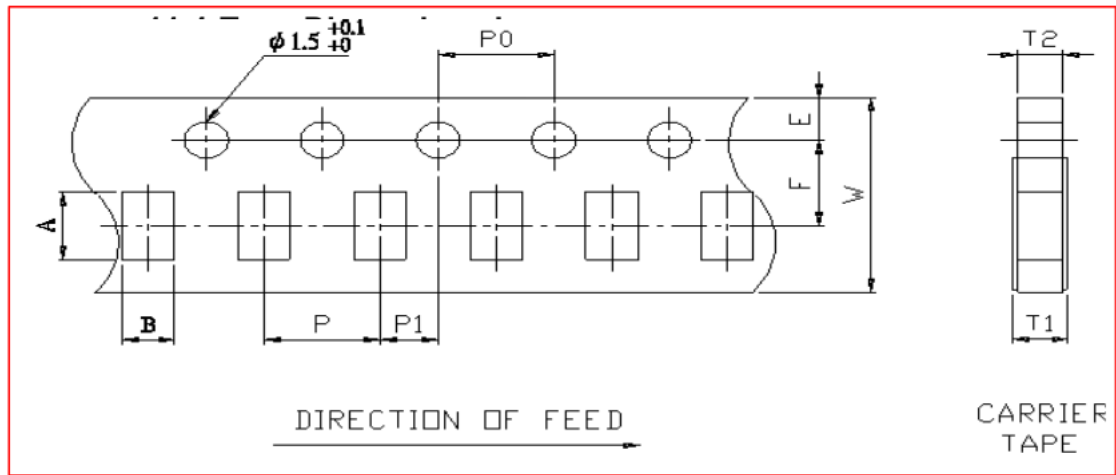
11.2 Packaging Quantity

TYPE	BULK	PCS/REEL
BTCA321605	X	5000

11.3 Reel Dimensions in mm

						
Unit: mm						
Reel Type / Tape	W	M	A	B	C	D
7" reel for 8 mm tape	12.00± 0.5	178 ± 1.0	2.0 ± 0.5	13.2 ± 0.5	17.7 ± 0.5	60.0 ± 1.0

Tape Dimensions in mm



Unit: mm											
DIM Item	A	B	W	E	F	T1	T2	P	P0	10*P0	P1
BTCA321605	3.50±0.20	1.90±0.20	8.0±0.20	1.75±0.10	3.5±0.05	0.75+0.2/-0	0.75±0.10	4.0±0.10	4.0±0.10	40.0±0.20	2.0±0.05

Note: The moisture sensitivity level (MSL) of products is classified as level 1.