

1.6X0.8X0.5 (mm) WiFi/Bluetooth Ceramic Chip Antenna (MB1608)

Engineering Specification

1. Product Number

MB 1608F06 - R

1 2 3 4 5



(1)Product Type	Chip Antenna
(2)Size Code	1.6X0.8 mm
(3)Type Code	F06
(4)Packing	Paper &Reel
(5)Frequency	2.45GHz



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2. Features

- *Stable and reliable in performances
- *Low temperature coefficient of frequency
- *Low profile, compact size
- *RoHS compliance
- *SMT processes compatible

3. 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

4. Description

LOTUS chip antenna series are specially designed for WiFi/Bluetooth applications. Based on LOTUS proprietary design and processes, this chip antenna has excellent stability and sensitivity to consistently provide high signal reception efficiency.

5. Electrical Specifications (80 x 40 mm² ground plane)

5-1. Electrical Table

Characteristics		Specifications	Unit
Outline Dimensions		1.6x0.8x0.8	mm
Working Frequency		2400~2500	MHz
VSWR		2 Max.	
Impedance		50	Ω
Polarization		Linear Polarization	
Gain	Peak	2.5 (typical)	dBi
	Efficiency	58 (typical)	%



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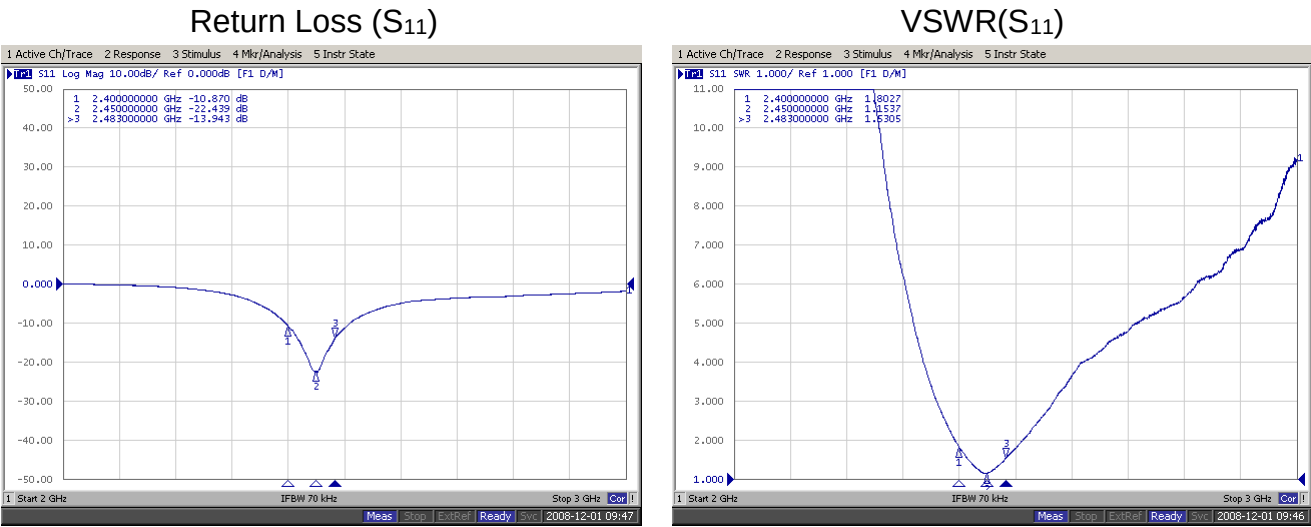
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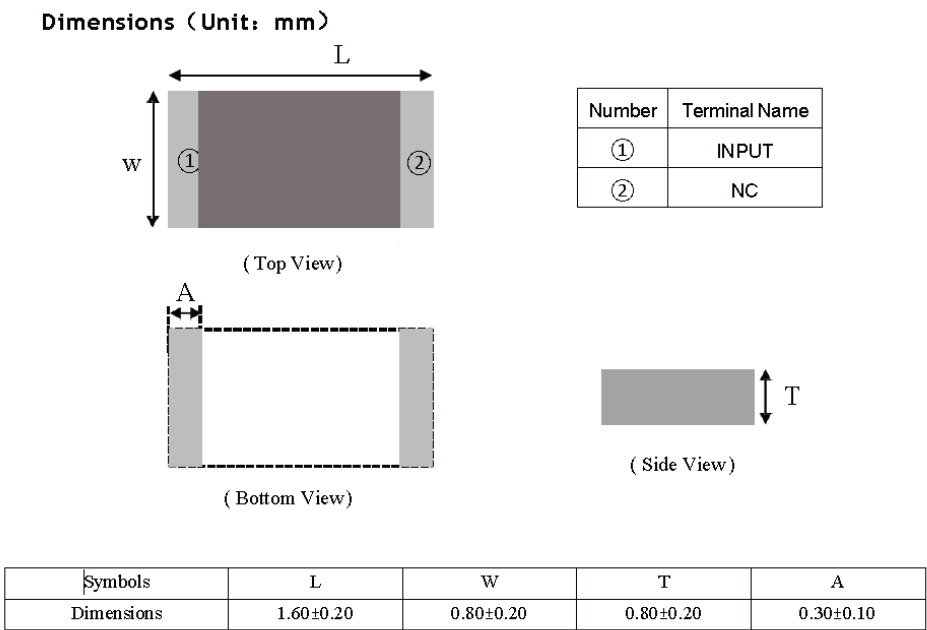
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5-2. Return Loss & VSWR



6. Antenna Dimensions & Test Board (unit: mm)

a. Antenna Dimensions



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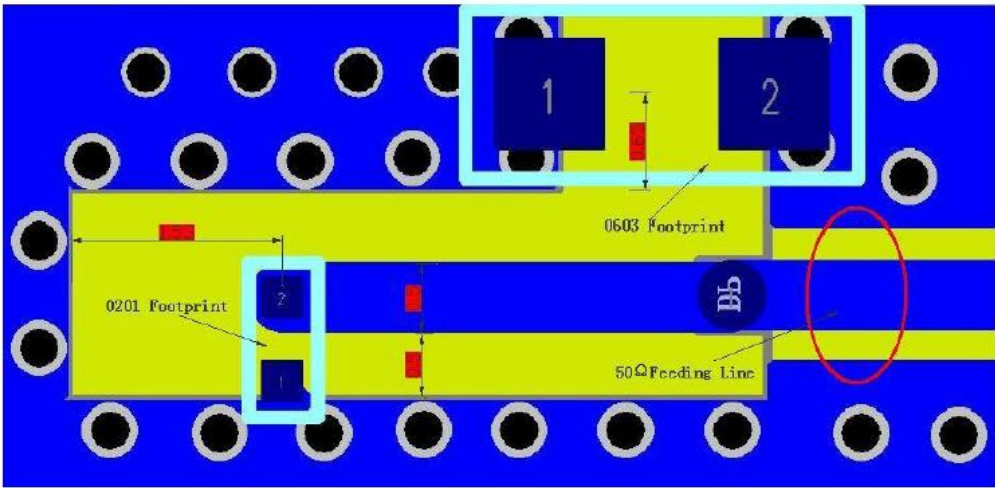
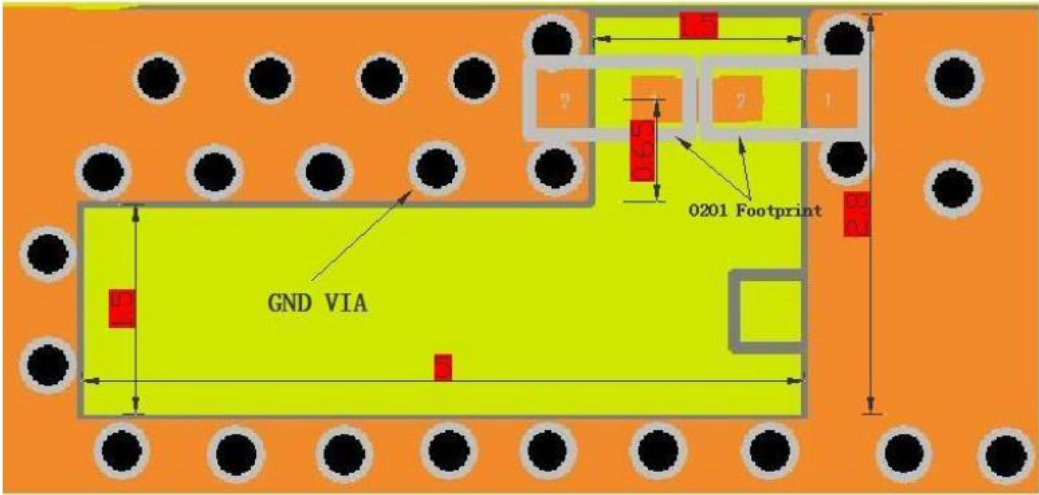
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b. Test Board with Antenna

Unit: mm



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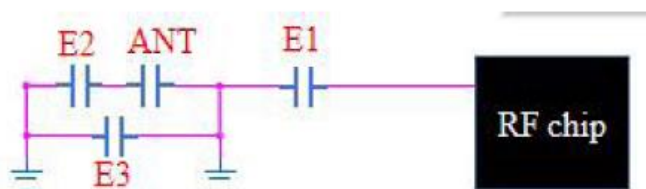
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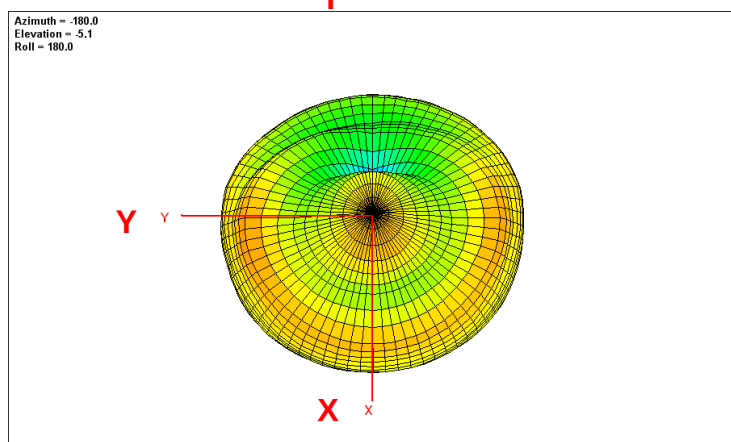
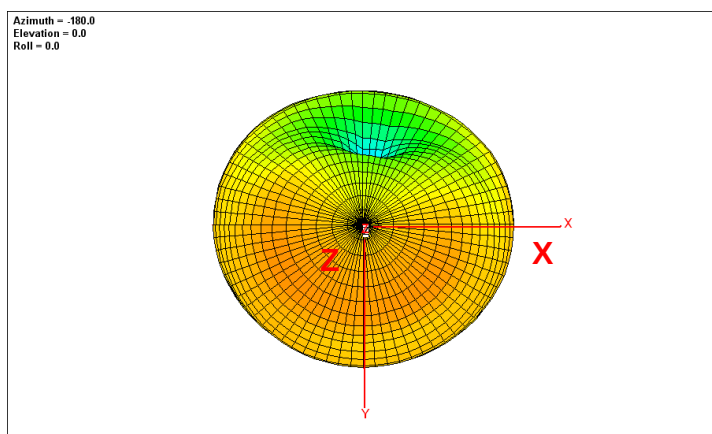
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原理图



7. Radiation Pattern (80 x 40 mm² ground plane)

7-1. 3D Gain Pattern @ 2442 MHz



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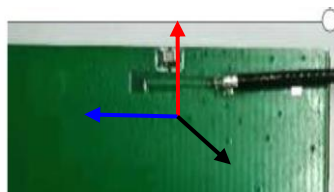
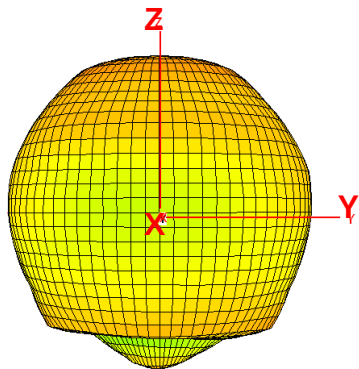
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Azimuth = 0.0
 Elevation = -90.0
 Roll = 180.0



7-2. 3D Efficiency Table

Frequency(MHz)	2400	2410	2420	2430	2442	2450	2460	2470	2480	2490	2500
Efficiency (dB)	-1.4	-1.0	-0.9	-0.7	-0.7	-0.8	-0.9	-1.1	-1.2	-1.3	-1.4
Efficiency (%)	53.8	54.7	55.3	56.4	57.5	58.0	57.0	56.6	55.1	54.6	54.5
Gain (dBi)	2.1	2.2	2.3	2.4	2.5	2.5	2.4	1.8	1.7	1.6	1.4



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Temperature Cycle Test

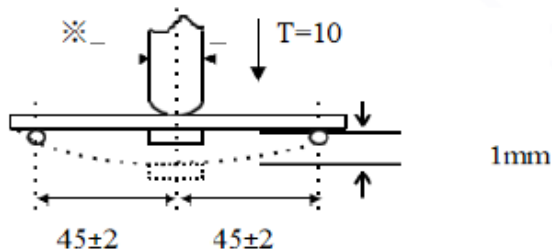
10 ± 1 S Applied Force: 5 N Duration: 10 ± 1 S
Preheating conditions: up-category temperature, 1 h
Recovery time: 24 ± 1 h
Initial Measurement
Cycling Times: 5 times, 1 cycle, 4 steps:

阶段	温度 (℃)	时间 (分钟)
第 1 步	下限温度 (参考值: 150~160℃) (V10-21 ZH)=30	30
第 2 步	常温 (+20)	2~3
第 3 步	上限温度 (参考值: 170~180℃) (V10-21 ZH)=30	30
第 4 步	常温 (+20)	2~3

Resistance to Soldering Heat

Preheating 80 to 120°C, 10~30s. Solder Temperature: 235±5°C, Duration: 2±0.5s, Solder Temperature: 245±5°C
Duration: 2±0.5s, Preheating 100 to 200°C, 10±2min.
Solder Temperature: 265±5°C, Duration: 10±1s
Clean the capacitor with solvent and examine it with a 10X(min.) microscope.
Recovery Time: 24±2h
Recovery condition: Room temperature

Resistance to Flexure of Substrate



Test Board: Al₂O₃ or PCB Warp: 1mm Speed: 0.5mm/sec.
Unit: mm

The measurement should be made with the board in the bending position.



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Dependability Test

Test Temperature	25°C ± 3°C
Operating Temperature	-25°C~+85°C
Temperature	5~40°C
Relative Humidity	20~70%

Moisture Proof

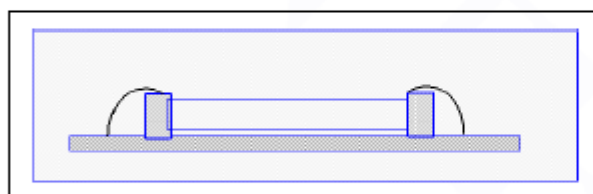
Temperature: 40 ± 2°C Humidity: 90~95%RH
Duration: 500h
Recovery conditions: Room temperature Recovery Time: 24h (Class1) or 48h (Class2)

Solderability

At least 95% of the terminal electrode is covered by new solder.
Preheating conditions: 80 to 120°C; 10~30s.
Solder Temperature: 235 ± 5°C Duration 2 ± 0.5s, Solder Temperature 245 ± 5°C Duration 2 ± 0.5s

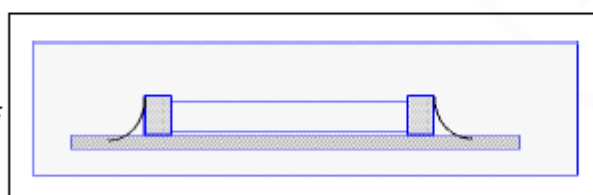
Optimum Solder Amount for Reflow Soldering

Too much solder



Cracks tend to occur due to large stress.

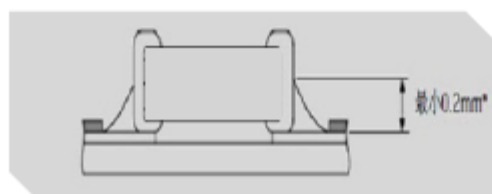
Not enough solder



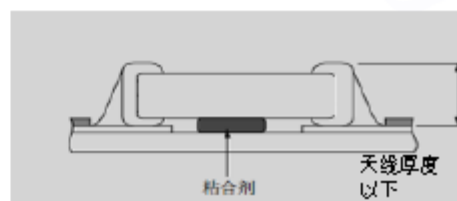
Weak holding force may cause bad connection between the chip and PCB.

Recommended Soldering Amounts

The optimal solder fillet amounts for re-flow soldering



The optimal solder fillet amounts for wave soldering



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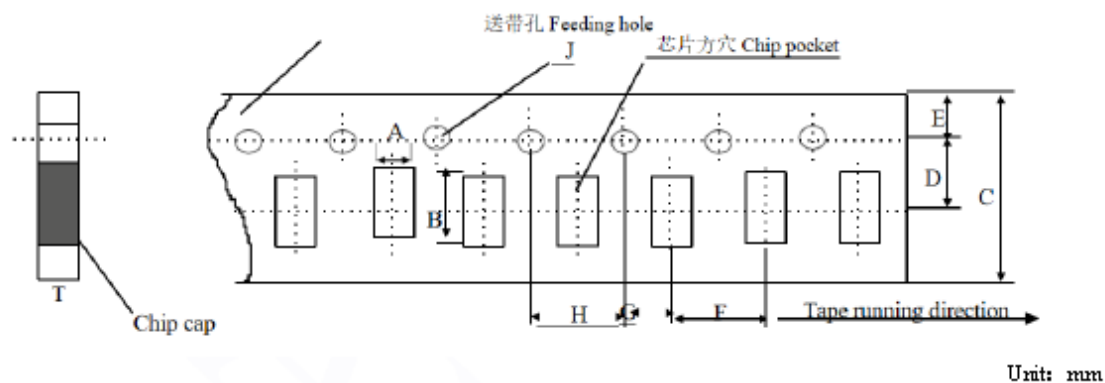
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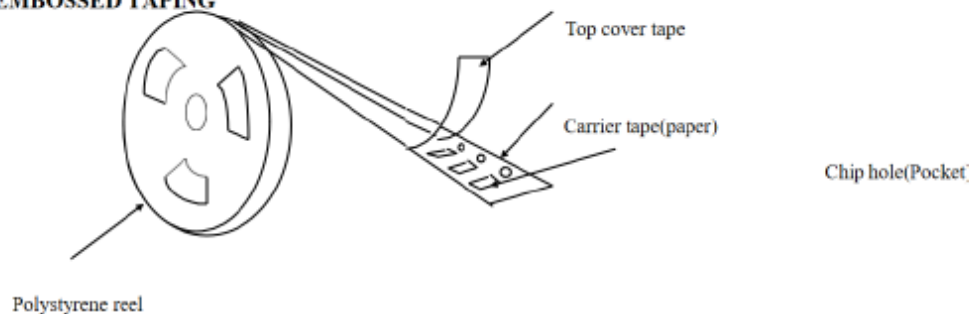
Dimensions of paper taping



代号 Code 纸带规格 papersize	A	B	C	D*	E	F	G*	H	J	T
尺寸	1.10 ±0.10	1.90 ±0.10	8.00 ±0.10	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.10	4.00 ±0.10	1.50 +0/-0.10	1.10 Max

Reel (4000 pcs/Reel)

EMBOSED TAPING



Storage Period

The guaranteed period for solderability is 6 months (Under deliver package condition).
Temperature: 5~40°C /Relative Humidity: 20~70%



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