

# SPECIFICATION FOR APPROVAL

## 承认书

CUSTOMER

客户名称: \_\_\_\_\_

CUSTOMER' S P/N

客户料号: \_\_\_\_\_

PART NUMBER

料号: \_\_\_\_\_

ISSUE DATE

日期: \_\_\_\_\_

CUSTOMER APPROVED

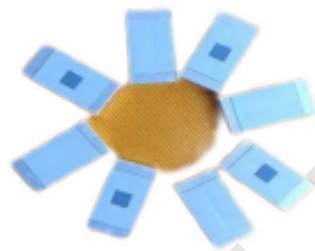
客户承认



LOTUS

# 3.2X1.6X0.5 (mm) WiFi/Bluetooth Ceramic Chip Antenna Engineering Specification

MB3216C03



## ※ Features:

- Monolithic SMD

with small, low-profile and light-weight type.

- Wide bandwidth
- RoHS compliant
- Size:3.2x1.6x0.5

## ※ Applications:

- Bluetooth/ Wireless LAN/ HomeRF
- ISM band 2.4GHz applications



明博电子有限公司

LOTUS ELECTRO NICS CO.

tel:14775633844

MB3216C2G46M300-03

## Specifications:

Center frequency	2.46GHz
Bandwidth	100MHz(typ.)
Peak gain	2.5dBi(typ.) (XZ-V)
Average Gain	0.5dBi(typ.) (XZ-V)
VSWR	<2.3
Impedance	50Ω
Power Capacity	3 W(max)
Operation temperature	-40 ~ +85 °C
Storage temperature	-40 ~ +85 °C

## Part Number Information :

MB 3216 C 2G46 M300-03

MB	Antenna	2G46	CenterFrequency=2.46G
3216	Size3.2x1.6	M300	Bandwidth300M
C	capacitive	03	Part Number



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Structuraldescription:



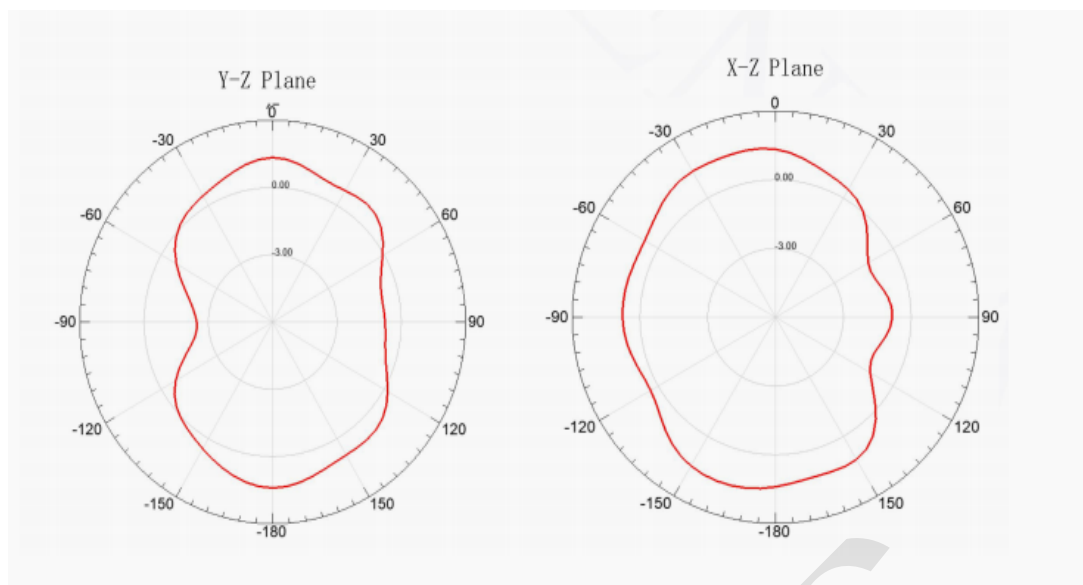
Pin No.	1	2
Pin assignment	Feeding Point	NC
Note: One of these two pads is connected with RF signal, and the other is used for fixing without receiving any signal. The left and right sides of these two pads are completely symmetric, and do not distinguish between positive and negative and left and right.		

Description of dimensions :



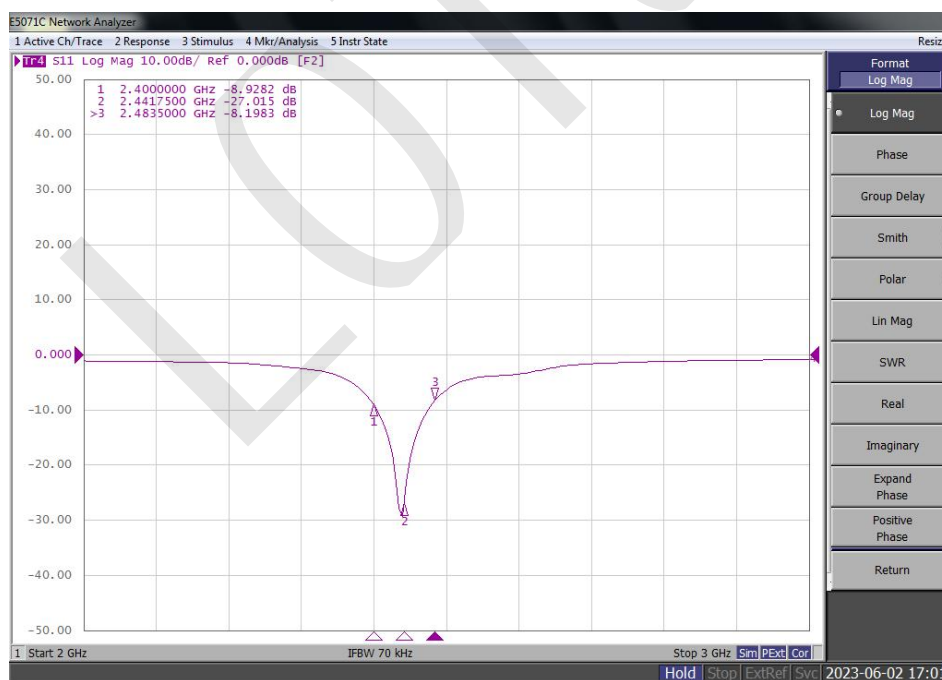
Symbol	L	W	H	A1
Dimensions(mm)	3.2±0.05	1.6 ± 0.05	0.5 ± 0.05	0.35 ± 0.05



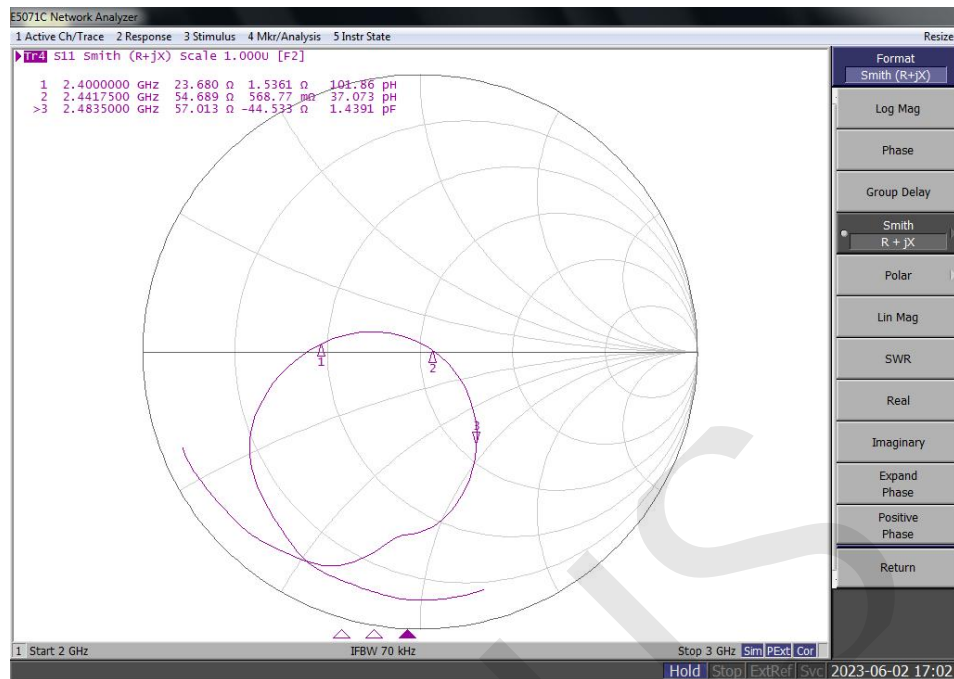


2、 The performance parameters after antenna matching and debugging are shown in the following figure:

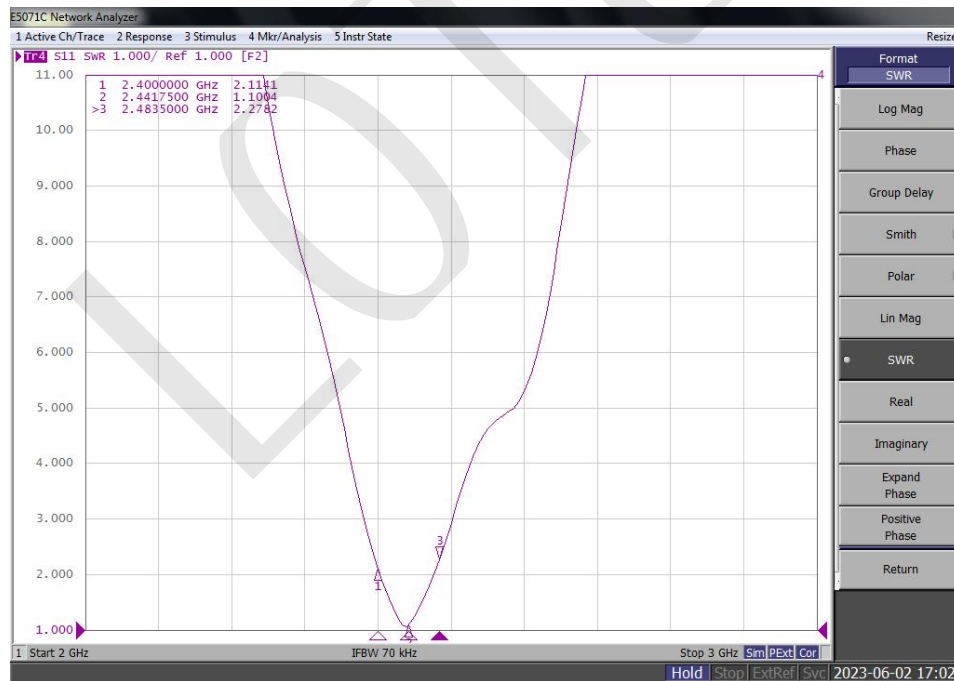
**S11 Log Mag :**



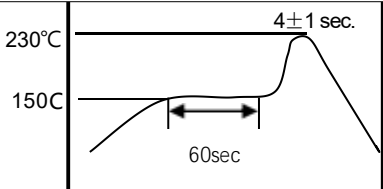
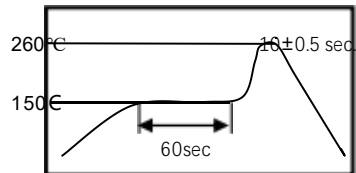
## S11 Smith R+jx :



## S11SWR :



### 3、Reliability and Test Conditions

ITEM	REQUIREMENTS	TEST CONDITION															
Solderability	1. Wetting shall exceed 90% coverage 2. No visible mechanical damage TEMP (C) 	Pre-heating temperature:150C/60sec. Solder temperature:230±5C Duration:4±1sec. Solder:Sn-Ag3.0-Cu0.5 Flux for lead free: rosin															
Solder heat Resistance	1. No visible mechanical damage 2. Central Freq. change :within ± 6% TEMP (C) 	Pre-heating temperature:150C/60sec. Solder temperature:260±5C Duration:10±0.5sec. Solder:Sn-Ag3.0-Cu0.5 Flux for lead free: rosin															
Component Adhesion (Push test)	1. No visible mechanical damage	The device should be reflow soldered(230±5C for 10sec.) to a tinned copper substrate A dynameter force gauge should be applied the side of the component. The device must with-ST-F 0.5 Kg without failure of the termination attached to component.															
Component Adhesion (Pull test)	1. No visible mechanical damage	Insert 10cm wire into the remaining open eye bend ,the ends of even wire lengths upward and wind together. Terminal shall not be remarkably damaged.															
Thermal shock	1. No visible mechanical damage 2. Central Freq. change :within ±6% <table border="1" data-bbox="352 1370 780 1630"> <thead> <tr> <th>Phase</th><th>Temperature( C)</th><th>Time(min)</th></tr> </thead> <tbody> <tr> <td>1</td><td>+110±5C</td><td>30±3</td></tr> <tr> <td>2</td><td>Room Temperature</td><td>Within 3sec</td></tr> <tr> <td>3</td><td>-40±2C</td><td>30±3</td></tr> <tr> <td>4</td><td>Room Temperature</td><td>Within 3sec</td></tr> </tbody> </table>	Phase	Temperature( C)	Time(min)	1	+110±5C	30±3	2	Room Temperature	Within 3sec	3	-40±2C	30±3	4	Room Temperature	Within 3sec	+110C=>30±3min -40C=>30±3min Test cycle:10 cycles The chip shall be stabilized at normal condition for 2~3 hours before measuring.
Phase	Temperature( C)	Time(min)															
1	+110±5C	30±3															
2	Room Temperature	Within 3sec															
3	-40±2C	30±3															
4	Room Temperature	Within 3sec															
Resistance to High Temperature	1. No visible mechanical damage 2. Central Freq. change :within ±6% 3. No disconnection or short circuit.	Temperature: +110±5C Duration: 1000±12hrs The chip shall be stabilized at normal condition for 2~3 hours before measuring.															
Resistance to Low Temperature	1. No visible mechanical damage 2. Central Freq. change :within ±6% 3. No disconnection or short circuit.	Temperature: -40±5C Duration: 1000±12hrs The chip shall be stabilized at normal condition for 2~3 hours before measuring.															

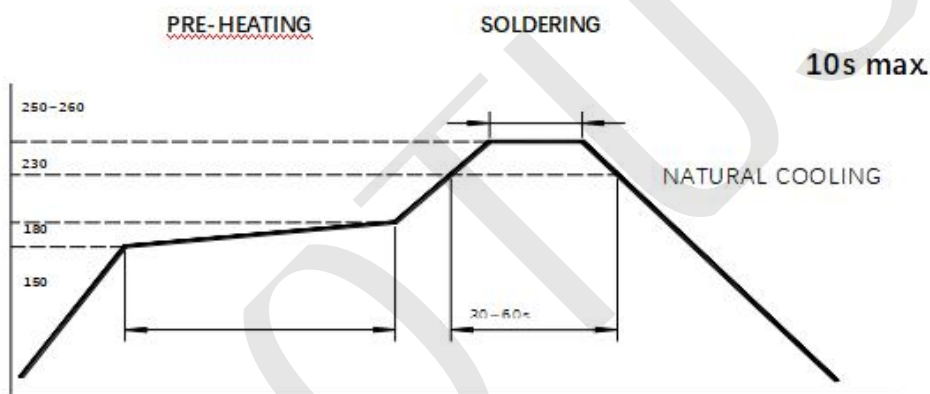


Humidity	1. No visible mechanical damage 2. Central Freq. change :within $\pm 6\%$ 3. No disconnection or short circuit.	Temperature: $40\pm 2^{\circ}\text{C}$ Humidity: 90% to 95% RH Duration: $1000\pm 12\text{hrs}$ The chip shall be stabilized at normal condition for 2~3 hours before measuring.
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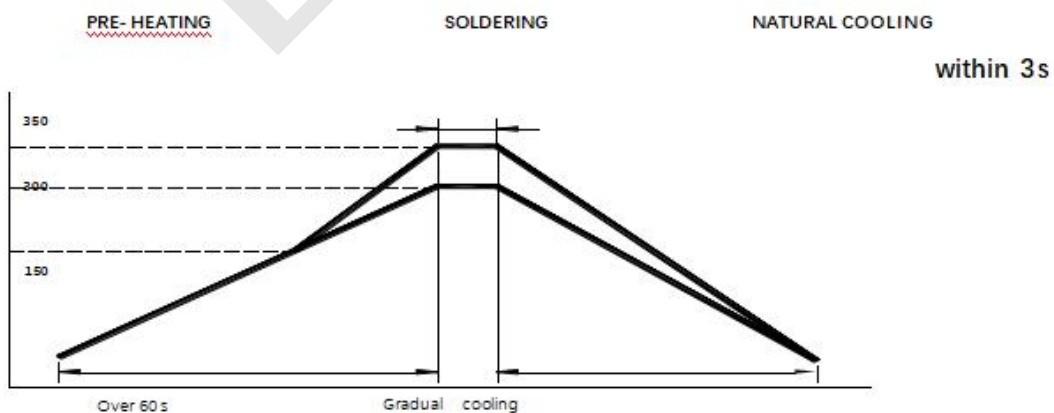
## 4、Soldering and Mounting

Mildly activated rosin fluxes are preferred. The minimum amount of solder can lead to damage from the stresses caused by the difference in coefficients of expansion between solder, chip and substrate. The terminations are suitable for all wave and re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools

Reflow Soldering



Iron Soldering



Recommended temperature profiles for re-flow soldering in Figure 1.





## MB3216C2G46M300-03

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

- Preheat circuit and products to 150°C
- Never contact the ceramic with the iron tip
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- 280C tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 3 sec.

## 5、 MB3216C2G46M300-03 ceramic chip antenna user reminder

1. The chip antenna is made of ceramic material, which is more rigid and brittle compared to the printed circuit board material. Bending of the circuit board where the chip antenna is located may cause cracking of the solder joint or the antenna itself.
2. The antenna should be placed at the corner of the PCB with sufficient clearance from other circuits and never place any components, planes, mounting screws or traces within the antenna exclusion zone of all layers, the actual forbidden area depends on the antenna used.
3. Ceramic antenna as a built-in antenna, should try to avoid the influence of the circuit board metal and shell, so direct use often has performance problems, can not be directly used, must be for their own products to debug.
4. Caution should be exercised when ultrasonic welding is required near the position of the chip antenna. Strong ultrasonic vibration may cause the chip antenna solder to crack.
5. The data shown above are measured on a reference PCB(ground) as shown in this specification. When the antenna position or size of the PCB changes, the antenna performance and the values of the matching elements may differ from the data shown here.



6. The information provided in this reference is considered to be correct as of the date of publication. shenzhen mingbo Technology Co., LTD reserves the right to change the reference specifications without notice due to technical improvement and other reasons. Please consult the company's engineering team for the latest information before using this product. Depending on the customer's requirements, we can provide advice and assistance for the installation of this antenna on the customer's equipment by performing simulated or actual measurements on the equipment of interest in our test facility.

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