APPROVAL SHEET

Messrs DreamTech

Product Chip Antenna for BT.

Part Number IMABE01

Date : 2008-07-21

	Drawn	Checked	Approved
Dreamtech			
Cando Electronics			

CDE 캔두 전자(CANDO ELECTRONICS)

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Approval Sheet for Product Specification

Issued Date **July 17, 2008**

Product Description	**Chip Antenna** **For Bluetooth Application**
Customer	**DREAMTECH**
Customer Part No(Model)	**QL200**
IMTech Part No	**IMABE01**

Date: Company: Dept. :
Approved by (Signature)

Written by _____

Jae nam Han

Checked by _____

Sang moon Kim

Approved by _____

Jong tak Yu

Integrated Microsystems Technology Inc.

1. FEATURES

- ▶ Surface Mounted Devices
- ▶ Multi-Layer Ceramic Chip Antenna
  (Low Temperature Co-fired Ceramic Process Technology)
- ▶ High Stability in Temperature
- ▶ Small Size Dimension

2. SPECIFICATION

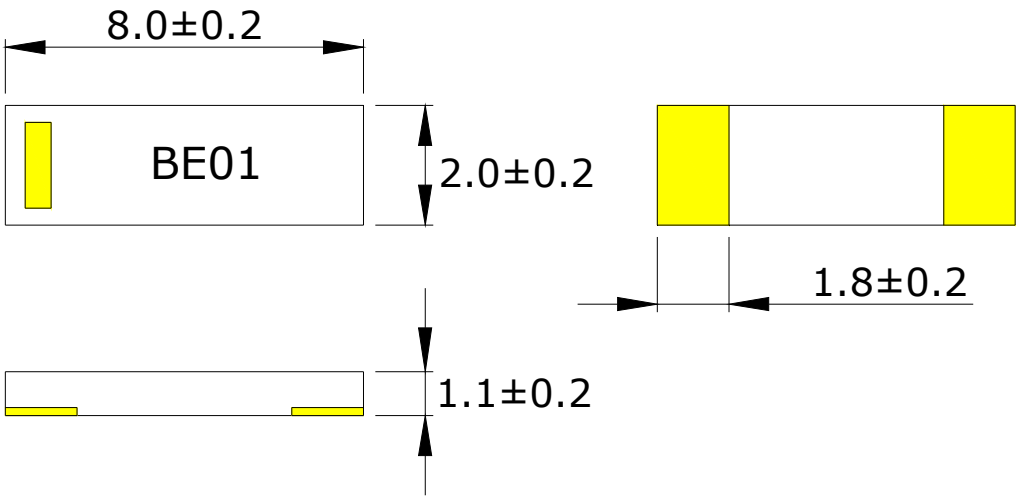
2.1 Electrical Characteristics

ITEM	Specification
Central Frequency(nominal)	2.450 GHz
BandWidth(Typical)	100 MHz
Gain(dBi)	0 Max
VSWR	2 : 1 Max
Polarization	Linear
Azimuth Beam Pattern	Omni-directional
Impedance (Ω)	50 Ω

2.2 Mechanical Characteristics

ITEM	Specification
Dimension (mm)	8.0 x 2.0 x 1.1
Weight (g)	0.5
Termination Plate	Au
Operating Temperature (℃)	-35 ~ +85

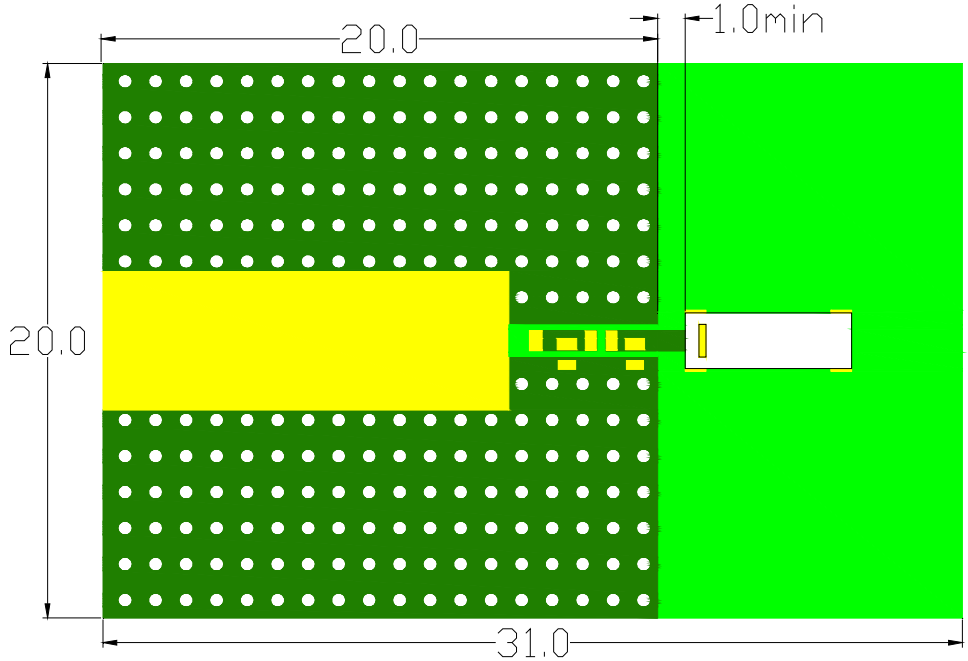
2.3 Marking and Dimension (Unit : mm)



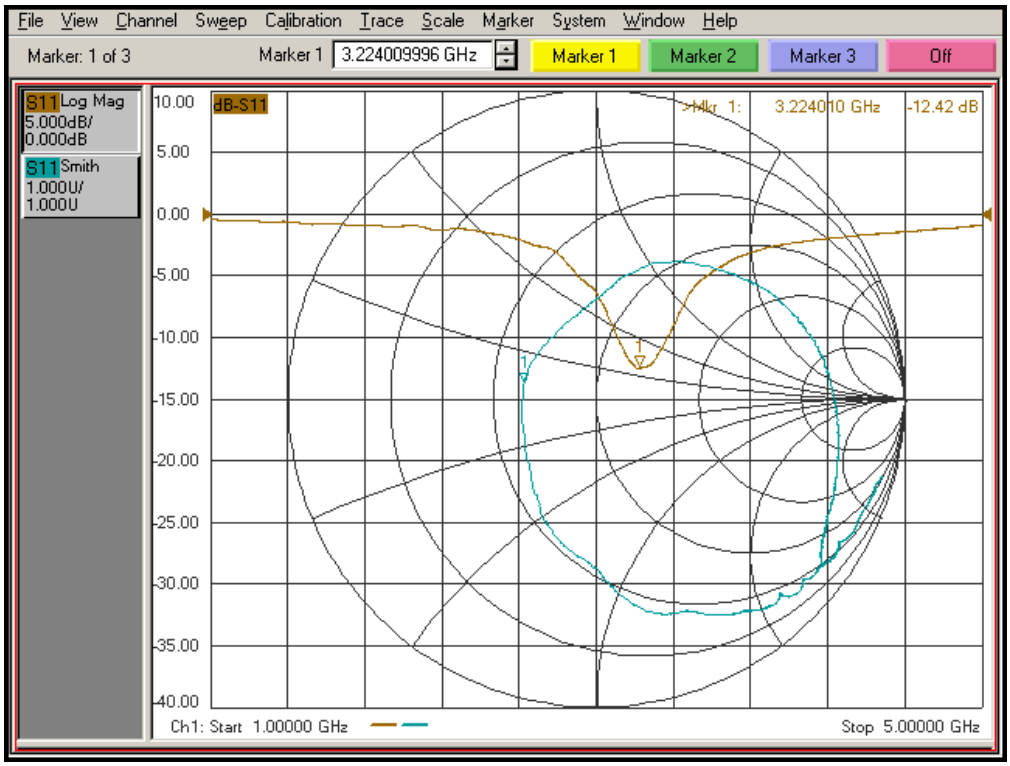
3. MEASUREMENTS

3.1 Measurements on Test board

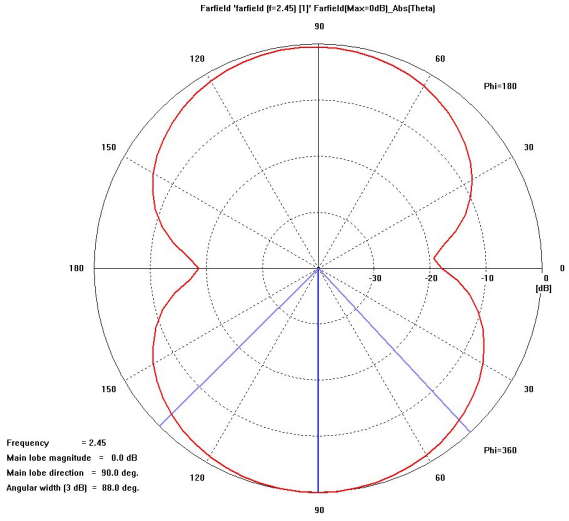
3.1.1 Test Board



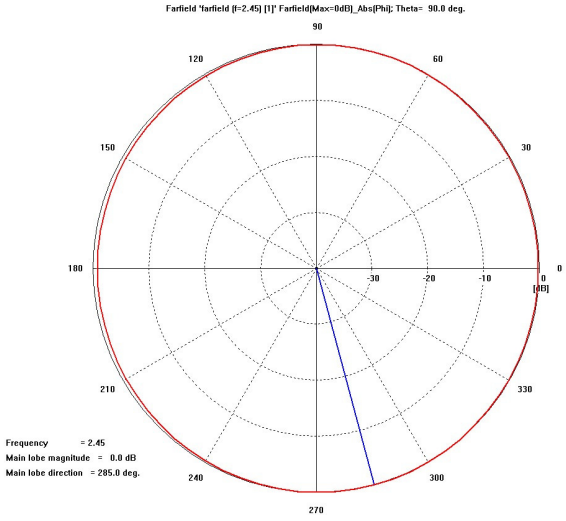
3.1.2 Electrical characteristic (Without matching circuit)



3.1.3 Radiation



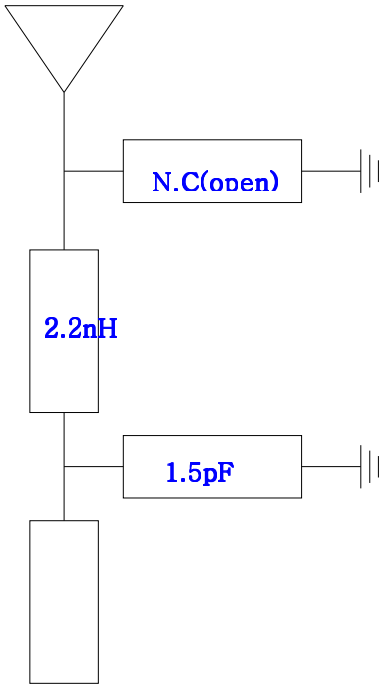
Elevation (E-plane)



Azimuth (H-plane)

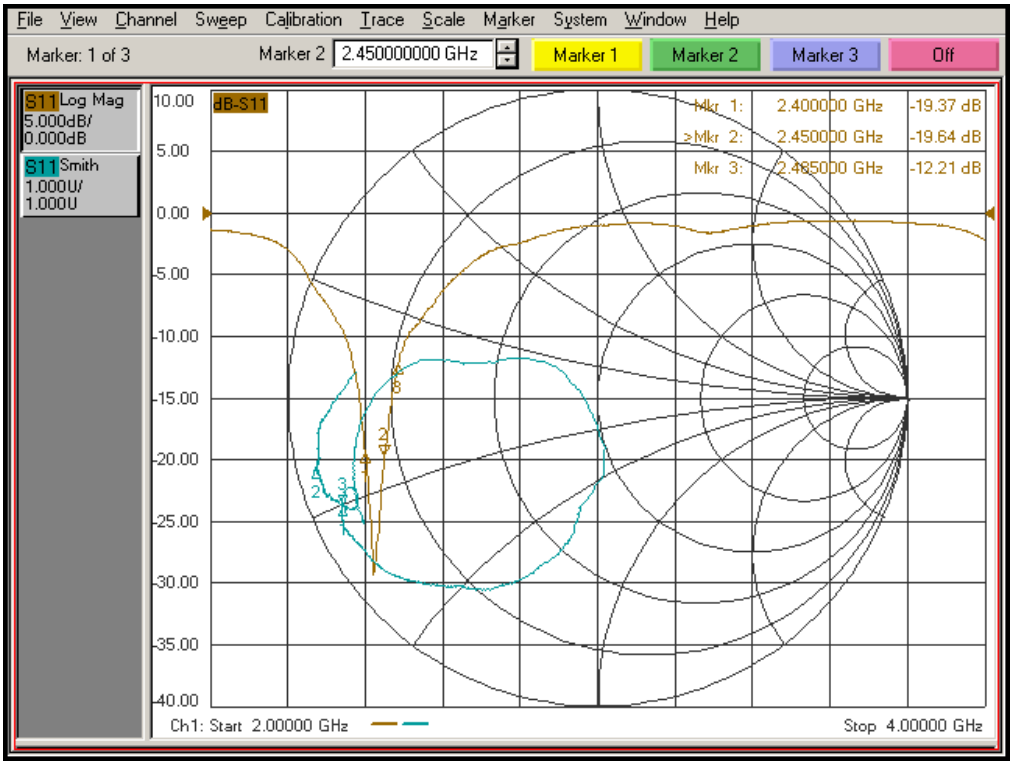
3.2 Measurements on QL200

3.2.1 Matching Circuit

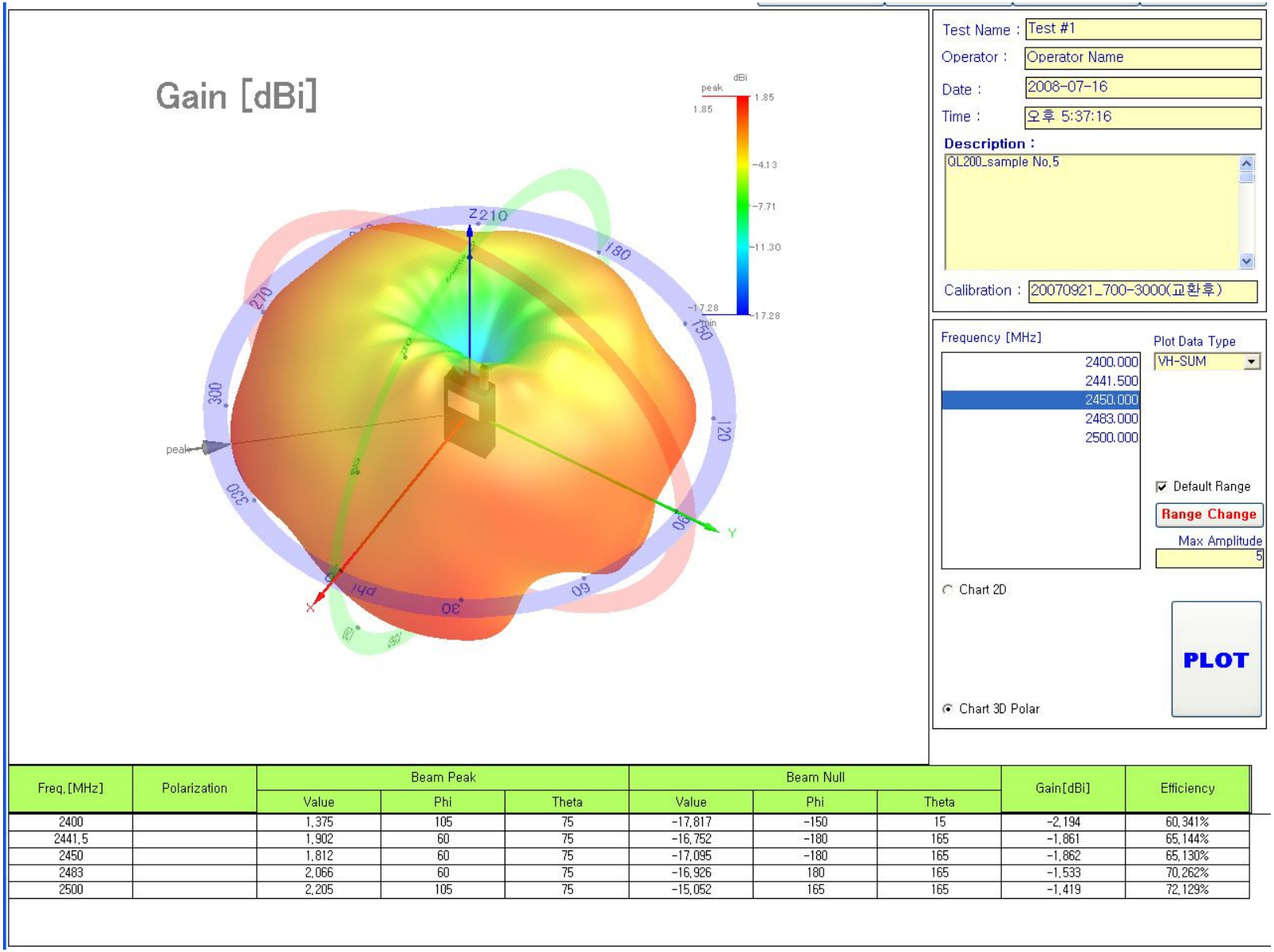


	Maker	Part No.
2.2nH	Ceratech	CI-B1005-22NSJT
1.5pF	Murata	GRM1555C1H1R5CZ01D

3.2.2 Electrical characteristic (With matching circuit)



3.2.3 Radiation



Freq.[MHz]	Polarization	Beam Peak			Beam Null			Gain[dBi]	Efficiency
		Value	Phi	Theta	Value	Phi	Theta		
2400		1.375	105	75	-17.817	-150	15	-2.194	60.341%
2441.5		1.902	60	75	-16.752	-180	165	-1.861	65.144%
2450		1.812	60	75	-17.095	-180	165	-1.862	65.130%
2483		2.066	60	75	-16.926	180	165	-1.533	70.262%
2500		2.205	105	75	-15.052	165	165	-1.419	72.129%

4. Part Numbering

(Part Number)

IM	A	B	E	01
①	②	③	④	⑤

① Product Company - IM : IMTECH	④ Dimension (L * W * T) - E : 8.0 * 2.0 * 1.1
② Function - A : Monopole type Antenna	⑤ Version - 01 (two decimal)
③ Application - B : Bluetooth	

5. Notice

5.1 Storage Conditions

To avoid damaging the solderability of the external electrodes, be sure to observe the following points.

-Store products where the ambient temperature is 15℃ to 35℃ and humidity 45 to 75% RH. (Packing materials, In particular, may be deformed at the temperature over 40℃)

-Store products in non corrosive gas (Cl2 ,NH3 ,SO2 ,Nox ,etc.)

-Stored products should be used within 6 months of receipt. Solderability should be verified if this period is exceeded.

5.2 Handling Conditions:

Be careful in handling or transporting products because excessive stress or mechanical shock may break products due to the nature of ceramics structure.

Handle with care if products may wave cracks on damages on their terminals, the characteristics products may change. Do not touch products with bear hands that may result in poor solderability.

5.3 Standard PCB Design (Land Pattern and Dimensions):

All the ground terminals should be connected to the ground patterns. Furthermore, the ground pattern should be provided between IN and OUT terminals.

The recommended land pattern and dimensions is as IMTech's standard. The characteristics of products may vary depending on the pattern drawing method, grounding method, land dimensions, land forming method of the NC terminals and the PCB material and thickness. Therefore, be sure to verify the characteristics in the actual set. When using non-standard lands, contact IMTech beforehand.

5.4 Notice for Chip Placer

When placing products on the PCB, products may be stressed and broken by uneven forces from a worn-out chucking locating claw or a suction nozzle. To prevent products from damages, be sure to follow the specifications for the maintenance of the chip placer being used. For the positioning of products on the PCB, be aware that mechanical chucking may damage products

5.5 Soldering Conditions:

Carefully perform preheating so that the temperature difference (△T) between the solder and products surface should be in the following range. When products are immersed on solvent after mounting, pay special attention to maintain the temperature difference within 100℃. Soldering must be carried out by the above mentioned conditions to prevent products from damage. Contact IMTech before use if concerning other soldering conditions.

Soldering method	Temperature
Soldering iron method	△T ≤ 130
Reflow method	

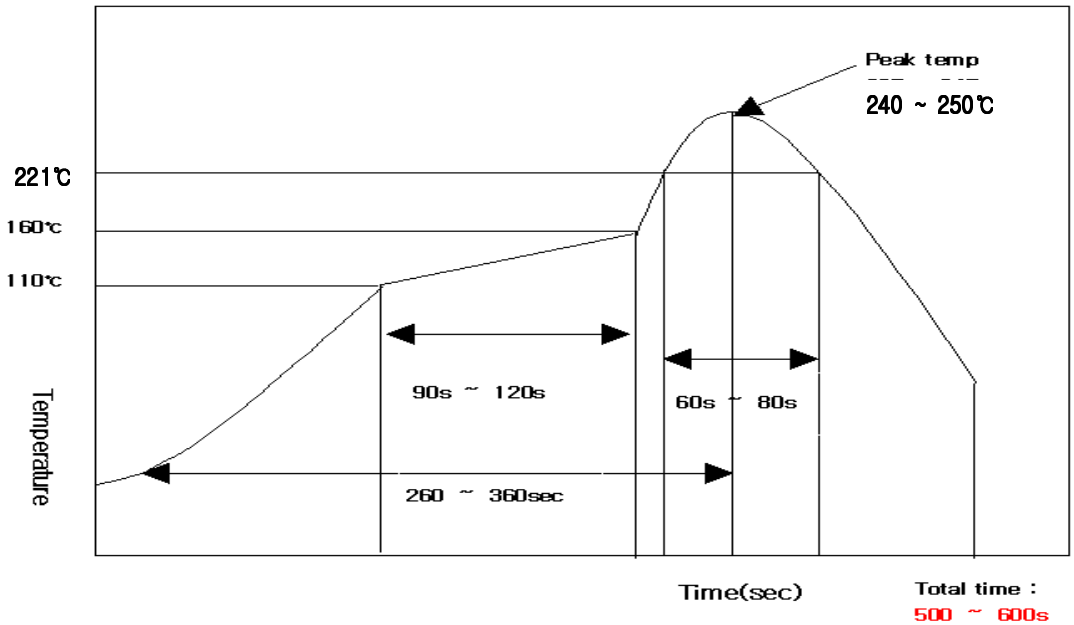
-Soldering iron method conditions are indicated below.

Kind of iron Item	Nichrome heater	Ceramics heater
Soldering iron wattage	≤ 30 W	≤ 18 W
Temperature	≤ 280℃	≤ 250 ℃

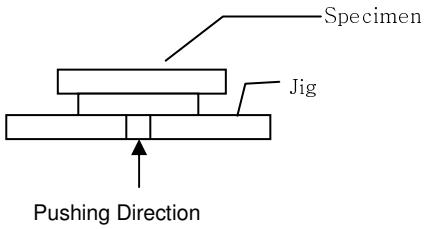
-Diameter of iron-tip : ϕ3.0 mm max.

-Do not allow the iron-tip to directly touch the ceramic element.

Reflow soldering standard conditions(Example)



6. OTHER SPECIFICATION AND METHODS

No.	Items		Specifications	Test Methods
1	Vibration Resistance	Appearance	No sever damages	Solder specimens on the testing jig (glass-fluorine boards) by an eutectic solder. The soldering shall be done either by iron or reflow and be conducted with care so that the soldering is uniform and free of defect such as by heat shock. Frequency : 10~2000~10 Hz Acceleration : 196m/ s^2 Direction : X,Y,Z 3 axis Period : 2h on each direction Total 6 h.
		Electrical Specifications	Satisfy specifications listed in paragraph 5 over operational temperature range.	
2	Shock	Appearance	No severe damage	Solder specimens on the testing jig (glass-fluorine boards) by an eutectic solder. The soldering shall be done either by iron or reflow and be conducted with care so that the soldering is uniform and free of defect such as by heat shock. Acceleration : 980 m/ s^2 Height : 1.5m. Cycle : 10 times
		Electrical Specifications	Satisfy specifications listed in paragraph 5 over operational temperature range	
3	Deflection		No damage with 1mm deflection	Solder specimens on the testing jig (glass epoxy boards) by an eutectic solder. The soldering shall be done either by iron or reflow and be conducted with care so that the soldering is uniform and free of defect such as by heat shock.
4	Soldering Strength (Push Strength)		9.8 N Minimum	Solder specimens onto test jig show below. Apply pushing force at 0.5mm/s until electrode pads are pealed off or ceramics are broken. Pushing force is applied to longitudinal direction. 

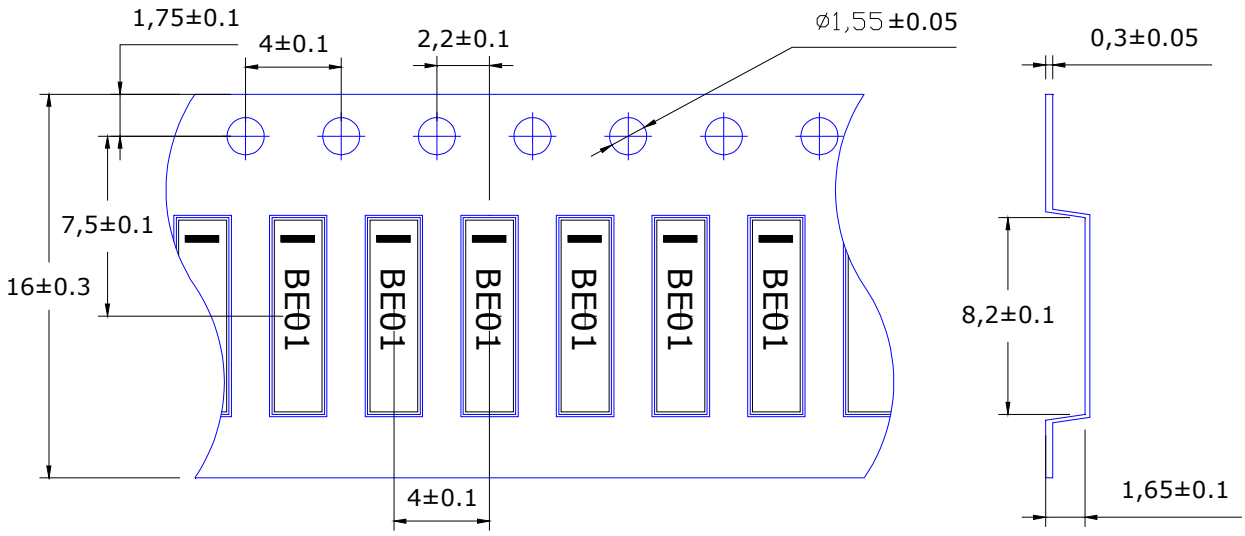
<table>
<tr><td>5</td><td colspan="2">Solderability of Termination</td><td>75% of terminations is to be soldered evenly and continuously.</td><td>Immerse specimens first an ethanol (JIS-K-8101) solution of rosin (JIS-K-5902) (25% rosin in weight proportion), then in an eutectic solder solution
for 2±0.5 s at 230±5°C
Preheat : 100~120°C ,60 s
Solder Paste : Eutectic solder
Flux : Solution of ethanol and rosin
(25% rosin in weight proportion)</td></tr>
<tr><td>6</td><td>Resistance to Soldering Heat (Dipping)</td><td>Appearance</td><td>No severe damages</td><td>Immerse the chip in the eutectic solder solution of 270±5°C for 10 ±0.5 s (flow soldering bath) after preheating for 1 min at 120 to 150°C
Then set it for 2 to 24 h at room temperature and measure.</td></tr>
<tr><td rowspan="2">7</td><td rowspan="2">Resistance to Soldering Heat (Reflow)</td><td>Appearance</td><td>No severe damages</td><td rowspan="2">Preheat Temperature : 150±10°C
Preheat Period : 60 s. min
Peak Temperature : 230±5°C
Peak Temp. Period : 10 s
Specimens are soldered twice with the above condition, then kept in room condition for 24 h before measurement.</td></tr>
<tr><td>Electrical specifications</td><td>Satisfy specifications listed in paragraph over operational temperature range</td></tr>
<tr><td rowspan="2">8</td><td rowspan="2">Temperature Cycle</td><td>Appearance</td><td>No severe damages</td><td rowspan="2">Set the specimens to the supporting jig in the same manner and under the some conditions as Fig,1 and conduct the 100 cycles according to the temperatures and tie shown in the following table. Set it for 2 to 24 h at room temperature, then measure.
<table>
<tr><td>Step</td><td>1</td><td>2</td></tr>
<tr><td>Temp.(°C)</td><td>Min. Operating Temp. +0/-3</td><td>Max. Operating Temp. +3/-0</td></tr>
<tr><td>Time(min)</td><td>30±3</td><td>30±3</td></tr>
</table></td></tr>
<tr><td>Electrical specification</td><td>Satisfy specifications listed in paragraph 5 over operational temperature range</td></tr>
<tr><td rowspan="2">9</td><td rowspan="2">Humidity (Steady State)</td><td>Appearance</td><td>No severe damages</td><td rowspan="2">Temperature : 85± 2°C
Humidity : 80~85 % RH
Period : 1000 +48/-0 h
Room Condition: 2~24 h</td></tr>
<tr><td>Electrical specifications</td><td>Satisfy specifications listed in paragraph 5 over operational temperature range</td></tr>
<tr><td rowspan="2">10</td><td rowspan="2">High Temp. Load Life</td><td>Appearance</td><td>No severe damages</td><td rowspan="2">Temperature : 85± 2°C
Period : 1000 +48/-0 h
Room Condition : 2~24 h</td></tr>
<tr><td>Electrical specifications</td><td>Satisfy specifications listed in paragraph 5 over operational temperature range</td></tr>
</table>

Excessive mechanical force or thermal stress may damage the products. Appropriate handling is required.

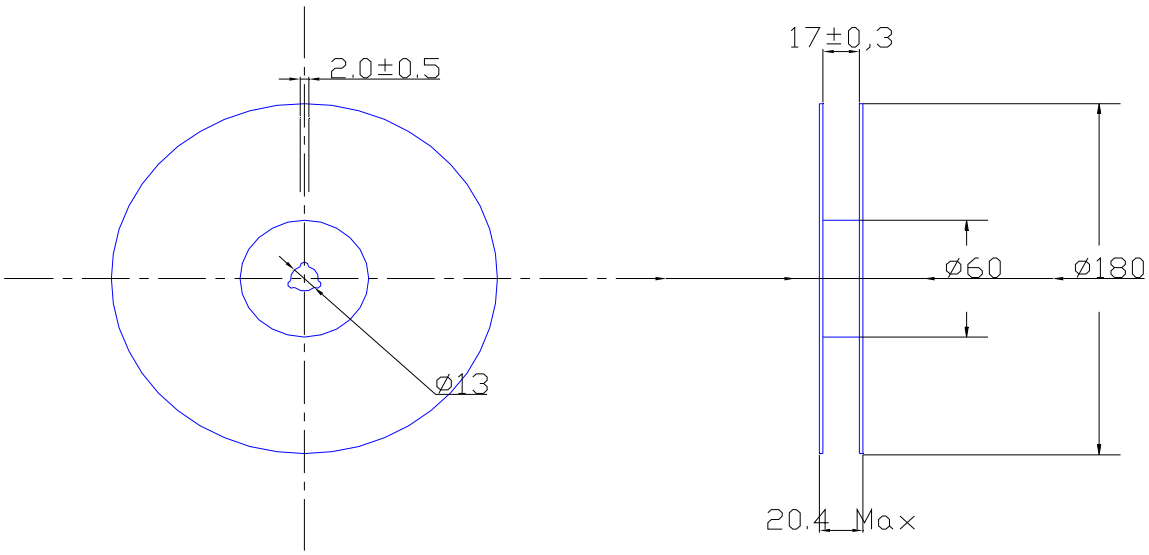
Production Site IMTech, Inc.

7. PACKING

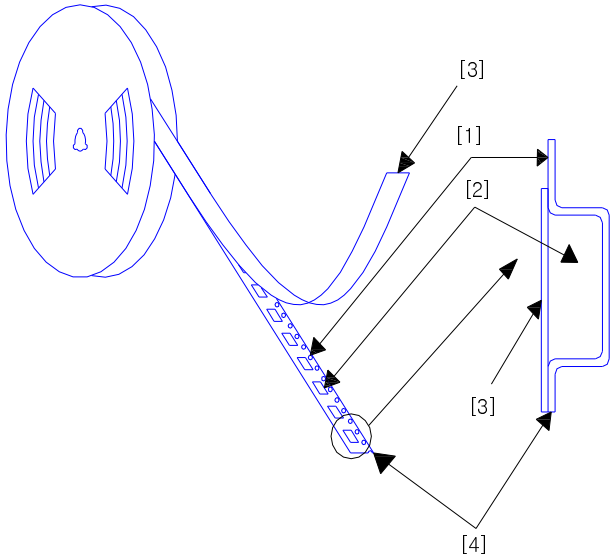
7.1 Tape Dimension (Unit : mm)



7.2 Reel Dimension



7.3 Tape Diagram

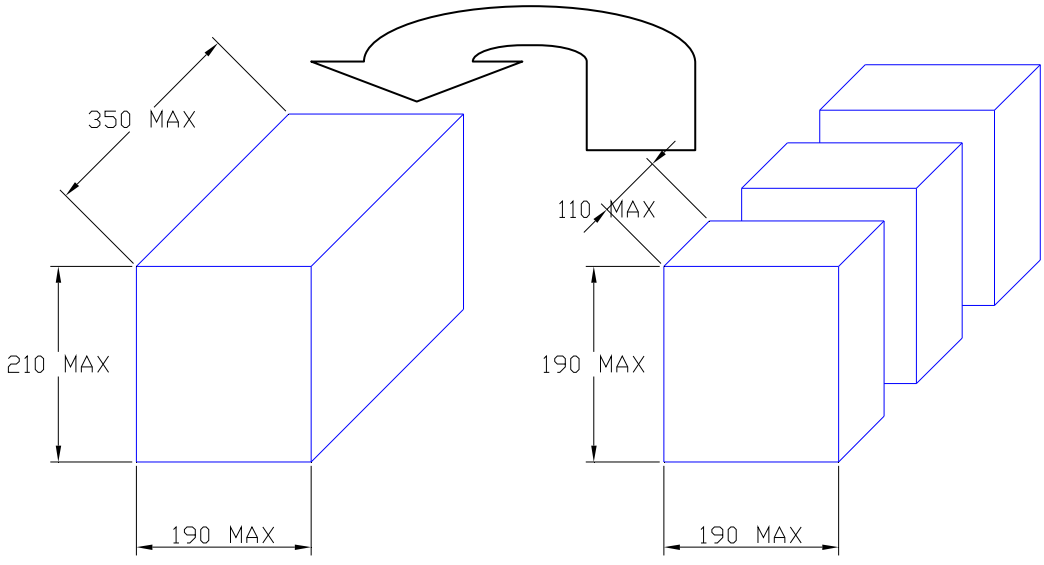


[1]Feeding Hole : As specified in (1)
[2]Hole for chip : As specified in (1)
[3]Cover tape : 62㎛ in thickness
[4]Base tape : As specified in (1)

7.4 Packing quantity

2000 pcs / Reel

7.5 Box Dimension



Units per the Packing Box(Max) : 30,000 pcs (each small box : 10,000pcs)