

# AT3216 Series

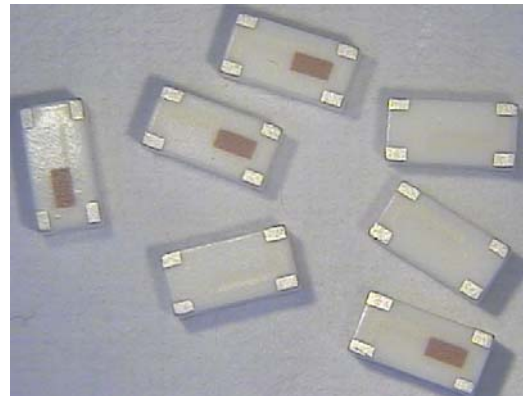
## Multilayer Chip Antenna

### Features

- ❖ Monolithic SMD with small, low-profile and light-weight type.
- ❖ Wide bandwidth
- ❖ RoHS compliant

### Applications

- ❖ Bluetooth/Wireless LAN/Home RF
- ❖ ISM band 2.4GHz applications



### Specifications

| Part Number                       | Operating Frequency (MHz) | Peak Gain (XZ-total) | Average Gain (XZ-total) | VSWR     | Impedance |
|-----------------------------------|---------------------------|----------------------|-------------------------|----------|-----------|
| <b>AT3216</b><br><b>-A2R4PAA_</b> | 2400 ~ 2500               | 1.5 dBi typ.         | -1.0 dBi typ.           | 3.0 max. | 50Ω       |

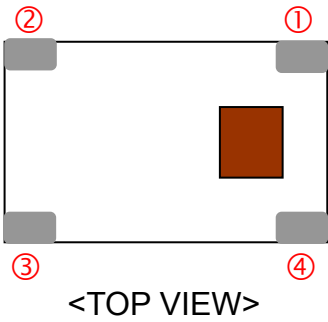
Q'ty/Reel (pcs) : 3,000pcs  
 Operating Temperature Range : -40 ~ +85 °C  
 Storage Temperature Range : -40 ~ +85 °C  
 Storage Period : 12 months max.  
 Power Capacity : 3W max.

### Part Number

AT   3216   -   A   2R4   PAA   □   □  
 ①   ②   ③   ④   ⑤   ⑥   ⑦

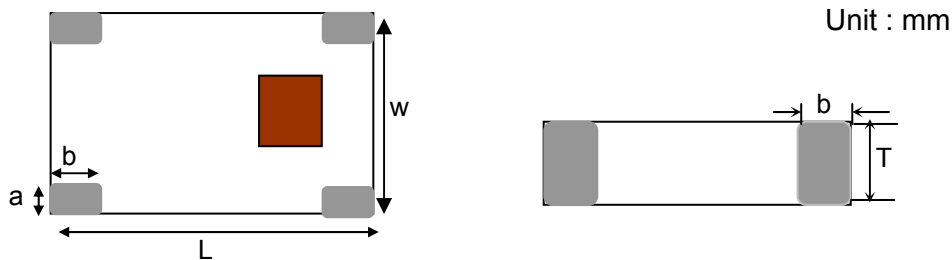
|                      |               |                            |                           |
|----------------------|---------------|----------------------------|---------------------------|
| ① Type               | AT : Antenna  | ② Dimensions ( L × W )     | 3.2× 1.6 mm               |
| ③ Material Code      | A             | ④ Initial center frequency | 2R4=2400MHz               |
| ⑤ Specification Code | PAA           | ⑥ Packaging                | T: Tape & Reel<br>B: Bulk |
| ⑦ Soldering          | /LF=lead-free |                            |                           |

## Terminal Configuration



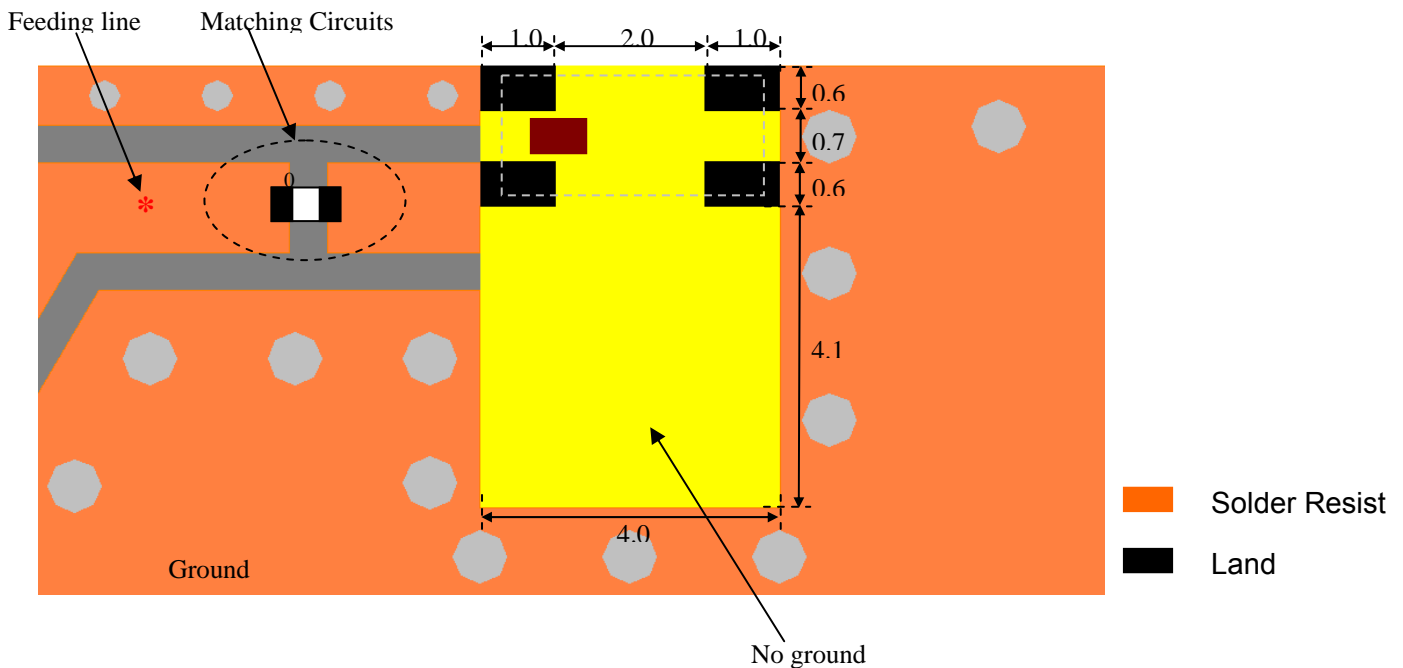
| No. | Terminal Name | No. | Terminal Name |
|-----|---------------|-----|---------------|
| ①   | Feeding Point | ②   | GND           |
| ③   | GND           | ④   | GND           |

## Dimensions and Recommended PC Board Pattern



| Mark       | L       | W       | T       | a                | b       |
|------------|---------|---------|---------|------------------|---------|
| Dimensions | 3.2±0.2 | 1.6±0.2 | 1.2±0.2 | 0.3+0.1<br>/-0.2 | 0.5±0.2 |

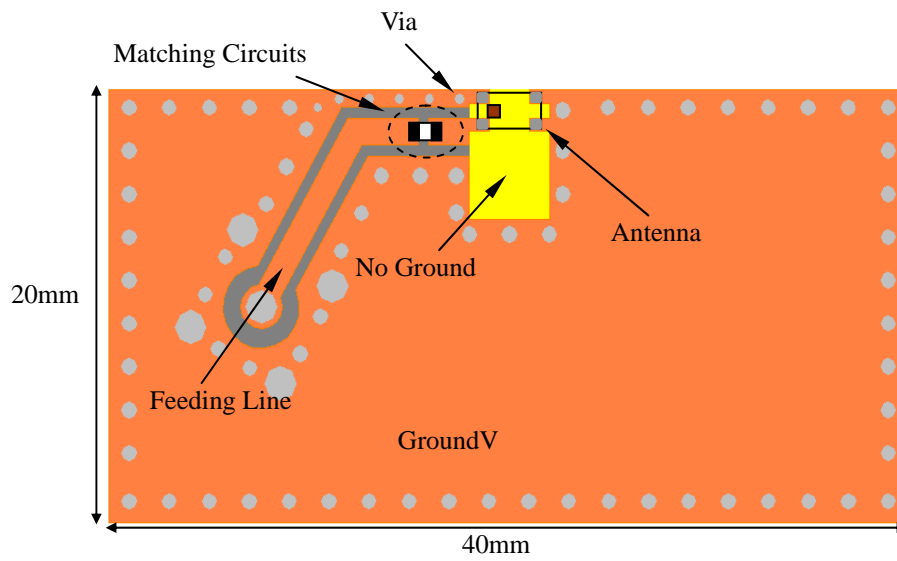
### ❖Without Matching Circuits - Unit in mm



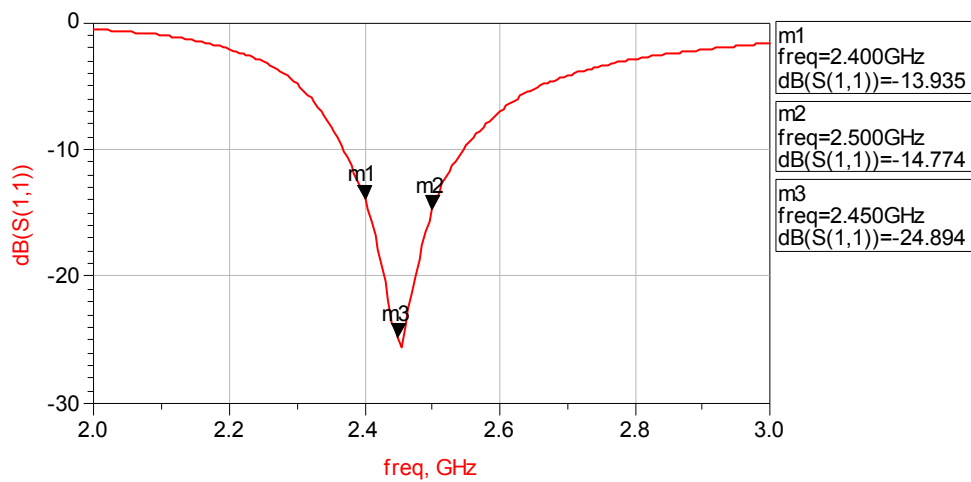
\*Line width should be designed to match 50 characteristic impedance, depending on PCB material and thickness.

## Typical Electrical Characteristics (T=25°C)

### ❖ Test Board



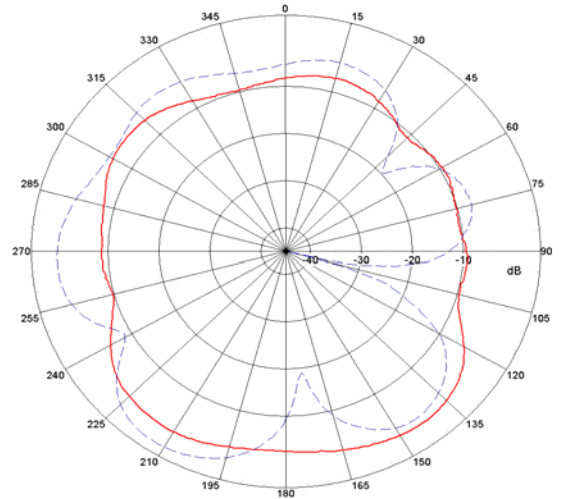
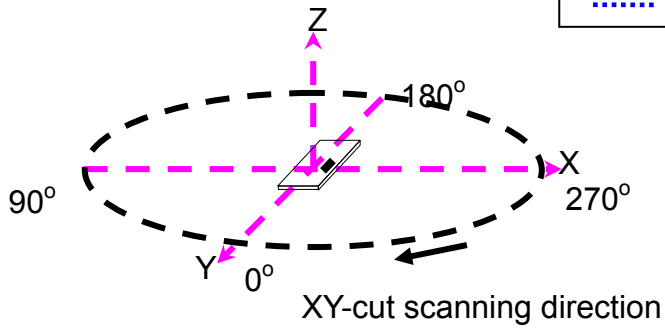
### ❖ Return Loss-without matching circuits



❖ Radiation Patterns

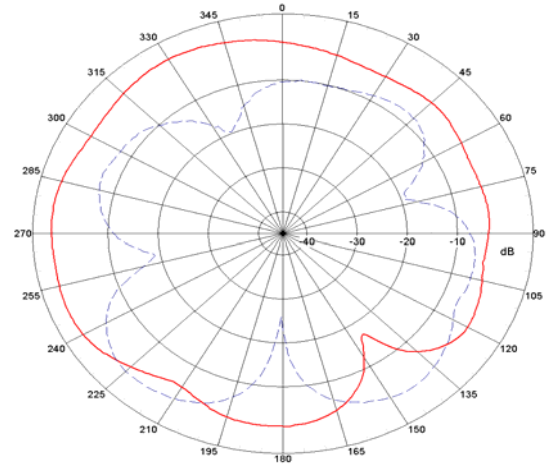
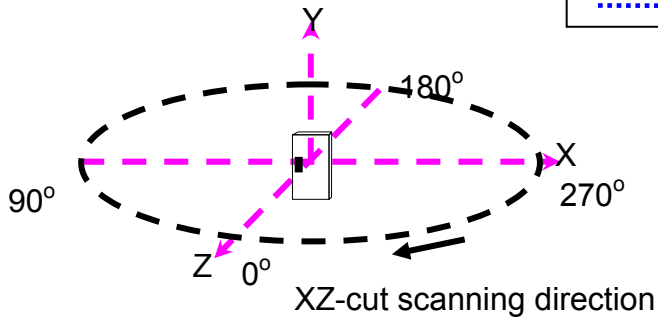
XY-V/XY-H

XY cut @ 2.45GHz  
— Vertical  
⋯ Horizontal



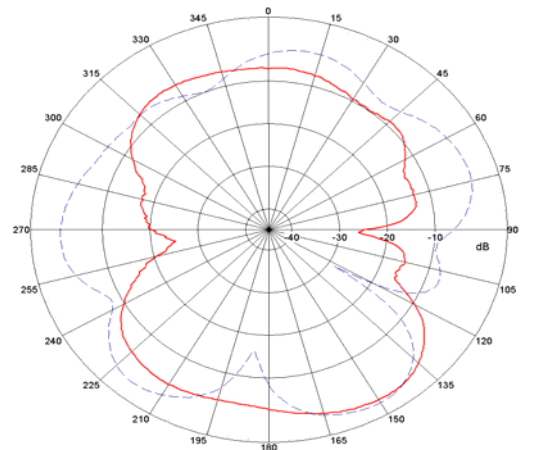
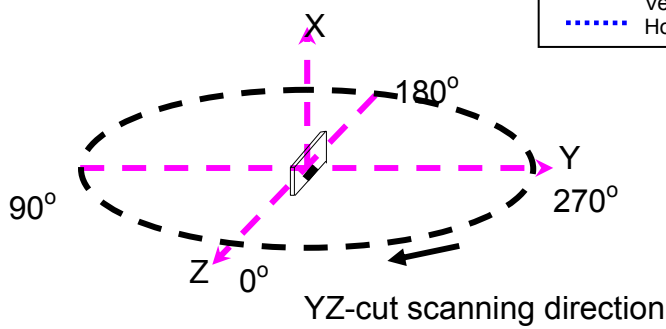
XZ-V/XZ-H

XZ cut @ 2.45GHz  
— Vertical  
⋯ Horizontal

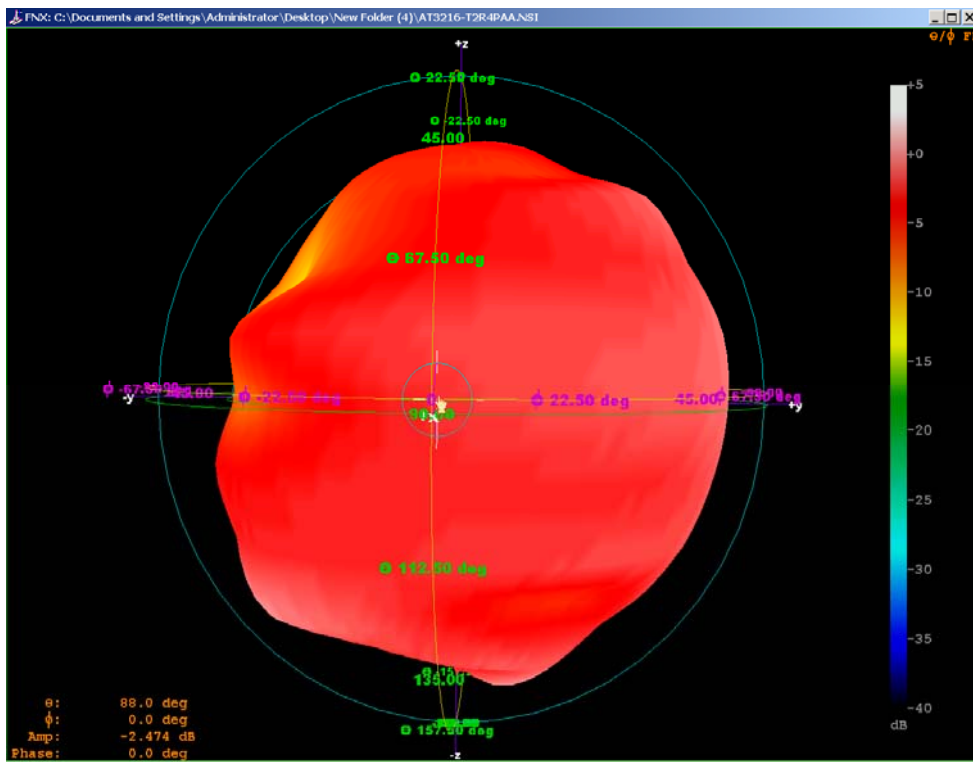


YZ-V/YZ-H

YZ cut @ 2.45GHz  
— Vertical  
⋯ Horizontal

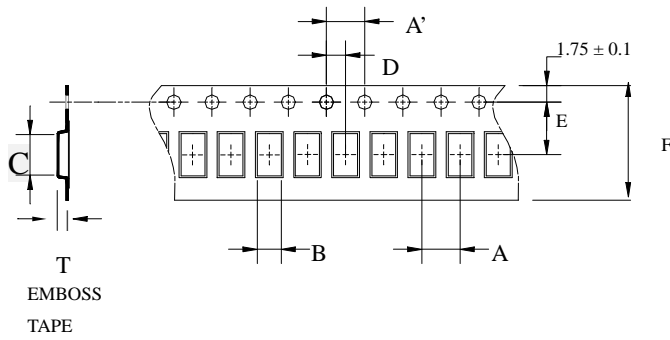


❖ Radiation Patterns - 3D Pattern



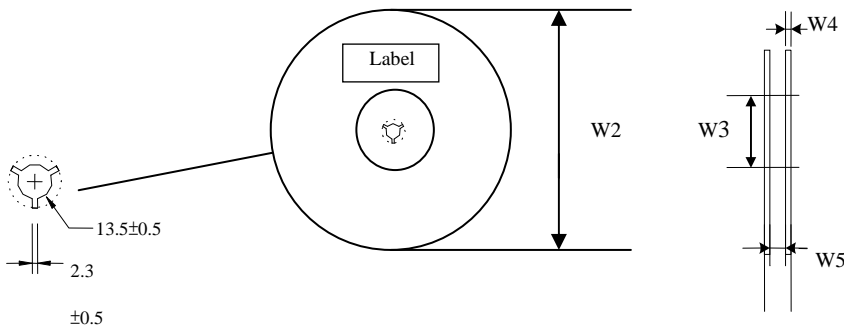
## Taping Specifications

### ❖Tape & Reel Dimensions (Unit: mm) vs. Quantity (pcs)



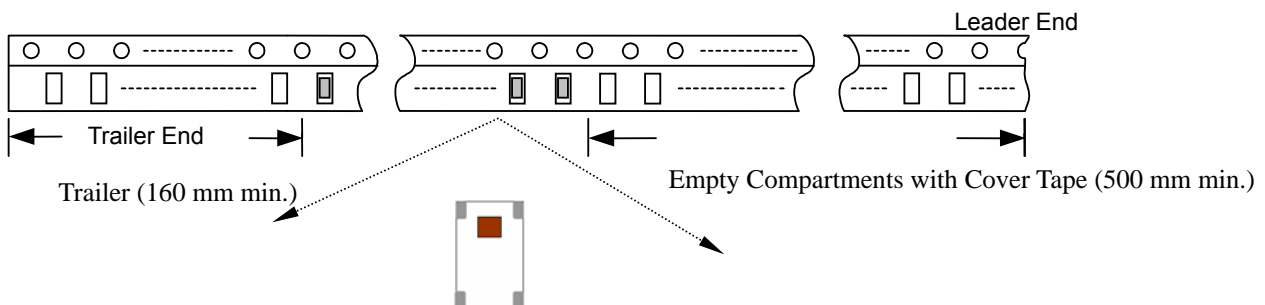
| Type   | A    | A'   | B     | C    | D    | E    | F     | T     | Quantity/per reel | Tape material         |
|--------|------|------|-------|------|------|------|-------|-------|-------------------|-----------------------|
| AT3216 | 4.0± | 4.0± | 1.88± | 3.5± | 2.0± | 3.5± | 8.00± | 1.27± | 3,000pcs          | Plastic<br>(Embossed) |
|        | 0.1  | 0.05 | 0.1   | 0.1  | 0.05 | 0.05 | 0.1   | 0.1   |                   |                       |

### ❖Reel Dimensions (Unit: mm)

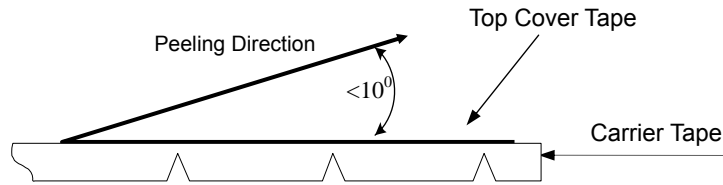


| Type   | W2    | W3   | W4      | W5     |
|--------|-------|------|---------|--------|
| AT3216 | 178±1 | 60±1 | 1.4±0.2 | 17±0.5 |

### ❖Leader and Trailer Tape (Plastic material)



❖ **Peel-off Force**



Peel-off force should be in the range of 0.1 – 0.6 N at a peel-off speed of  $300 \pm 10$  mm/min .

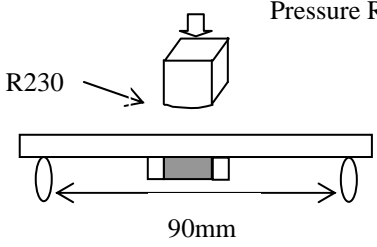
❖ **Storage Conditions**

- (1) Temperature:  $5 \sim 35^{\circ}\text{C}$ , relative humidity (RH): 45~75%.
- (2) Non-corrosive environment

**Notes**

❖ The contents of this data sheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

## Mechanical & Environmental Characteristics

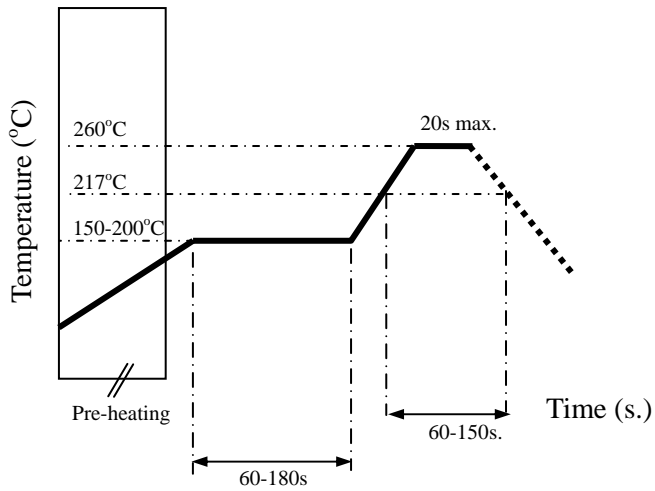
| Item   | Requirements   | Procedure  |
|--|--|--|
| Solderability                                | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>More than 95% of the terminal electrode shall be covered with new solder</li> </ol> | <ol style="list-style-type: none"> <li>Preheat: <math>120 \pm 5^\circ\text{C}</math></li> <li>Solder: <math>245 \pm 5^\circ\text{C}</math> for <math>5 \pm 1</math> sec</li> </ol>   |
| Soldering strength<br>(Termination Adhesion) | <ol style="list-style-type: none"> <li>1kg minimum</li> </ol>  | <ol style="list-style-type: none"> <li>Solder specimen onto test jig.</li> <li>Apply push force at 0.5mm/s until electrode pads are peeled off or ceramic are broken. Pushing force is applied to longitude direction</li> </ol>   |
| Deflection<br>(Substrate Bending)            | <ol style="list-style-type: none"> <li>No apparent damage</li> </ol>   | <ol style="list-style-type: none"> <li>Solder specimen onto test jig (FR4, 0.8mm) using the recommend soldering profile.</li> <li>Apply a bending force of 2mm deflection</li> </ol>  |
| Heat/Humidity Resistance                     | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>Fulfill the electrical specification after test</li> </ol>                          | <ol style="list-style-type: none"> <li>Temperature: <math>85 \pm 2^\circ\text{C}</math></li> <li>Humidity: 90% ~ 95% RH</li> <li>Duration: <math>1000 \pm 48</math>hrs</li> <li>Recovery: 1-2hrs</li> </ol>  |
| Thermal shock<br>(Temperature Cycle)         | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>Fulfill the electrical specification after test</li> </ol>                          | <ol style="list-style-type: none"> <li>One cycle/step 1 : <math>125 \pm 5^\circ\text{C}</math> for 30 min<br/>step 2 : <math>-40 \pm 5^\circ\text{C}</math> for 30 min</li> <li>No of cycles : 100</li> <li>Recovery: 1-2 hrs</li> </ol>                                 |
| Low Temperature Resistance                   | <ol style="list-style-type: none"> <li>No apparent damage</li> <li>Fulfill the electrical specification after test</li> </ol>                          | <ol style="list-style-type: none"> <li>Temperature: <math>-40 \pm 5^\circ\text{C}</math></li> <li>Duration: <math>500 \pm 24</math>hrs</li> <li>Recovery: 1-2hrs</li> </ol>  |



## Soldering Conditions

### ❖ Typical Soldering Profile for Lead-free Process

Reflow Soldering :



## Notes

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### **Advanced Ceramic X Corp.**

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