

# AN3216 Series

## Multilayer Chip Antenna

### Features

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



### Applications

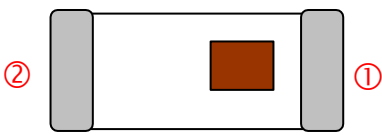
- ❖ Bluetooth/Wireless LAN/Home RF
- ❖ ISM band 2.4GHz applications

### Specifications

Part Number	Operating Frequency (MHz)	Peak Gain ( XZ-V )	Average Gain ( XZ-V )	VSWR	Impedance
AN3216A100	2400 ~ 2500	0.5 dBi typ.	-0.5 dBi typ.	2 max.	50 Ω
	5100 ~ 5850	1 dBi typ.	-3 dBi typ.	2 max.	50 Ω

Q'ty/Reel (pcs) : 3,000pcs  
 Operating Temperature Range : -40 ~ +85 °C  
 Storage Temperature Range : +5 ~ +35 °C, Humidity 45~75%RH  
 Storage Period : 12 months max.  
 Power Capacity : 2W max.

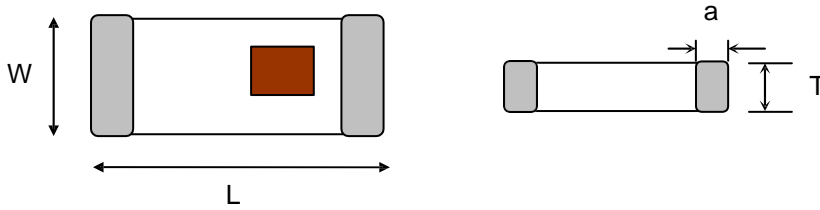
## Terminal Configuration



No.	Terminal Name	No.	Terminal Name
①	Feeding Point	②	NC

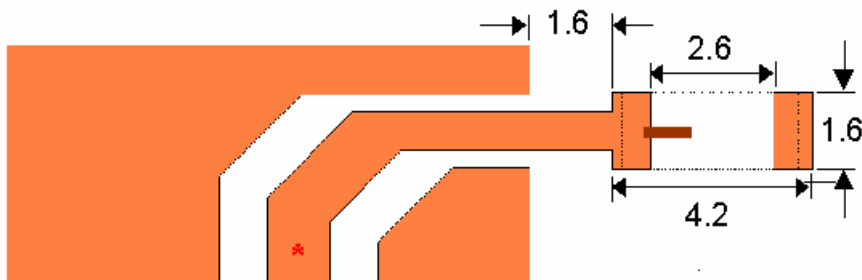
## Dimensions and Recommended PC Board Pattern

Unit : mm

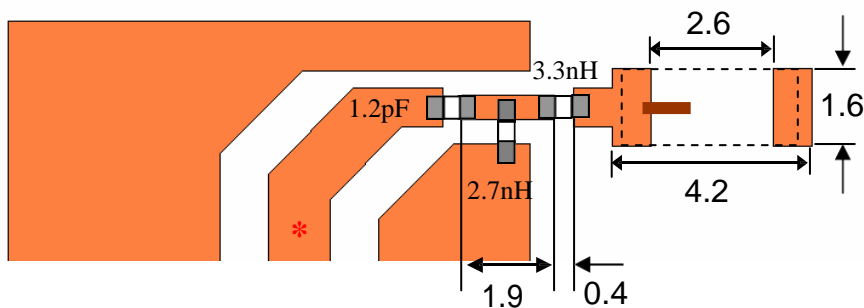


Mark	L	W	T	a
Dimensions	3.2±0.2	1.6±0.2	1.3+ 0.1/-0.2	0.5±0.3

### (a) Without Matching Circuits



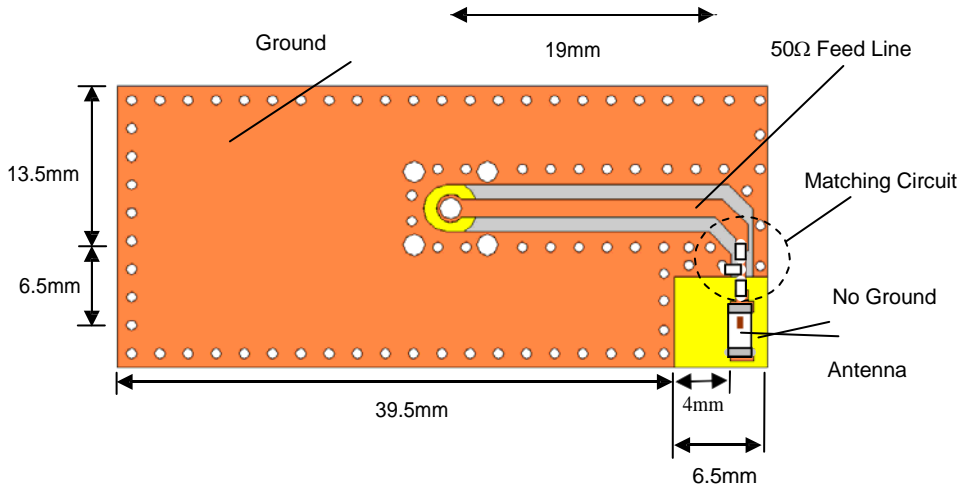
### (b) With Matching Circuits



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

# Typical Electrical Characteristics (T=25°C)

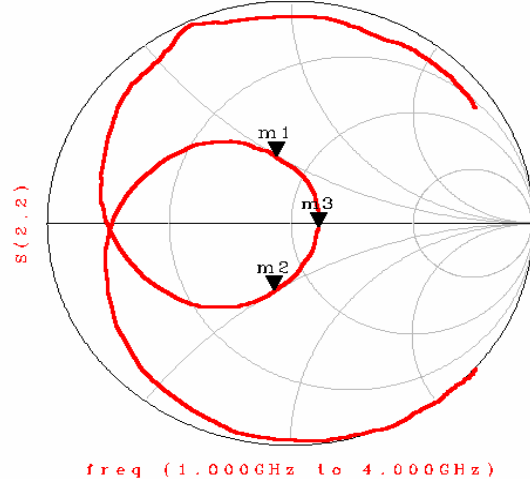
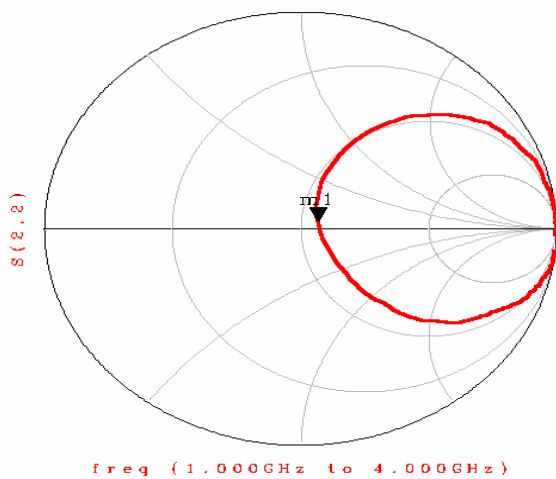
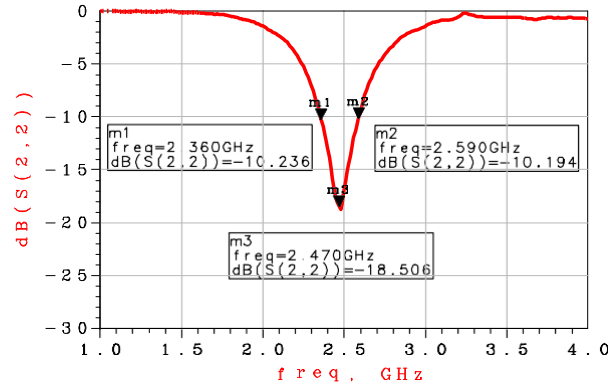
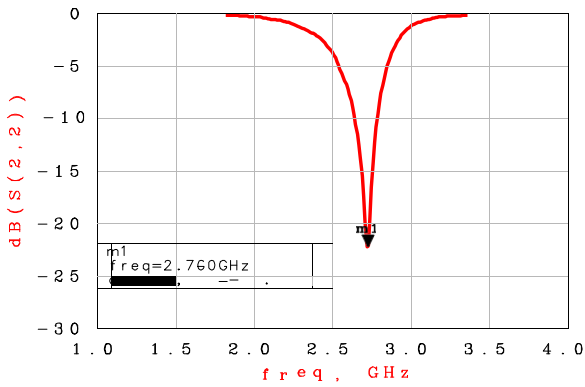
## ❖ Test Board



## ❖ Return Loss

(a) Without Matching Circuits

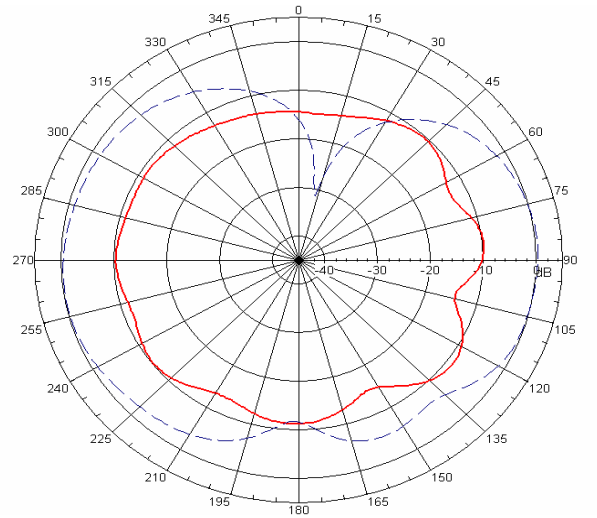
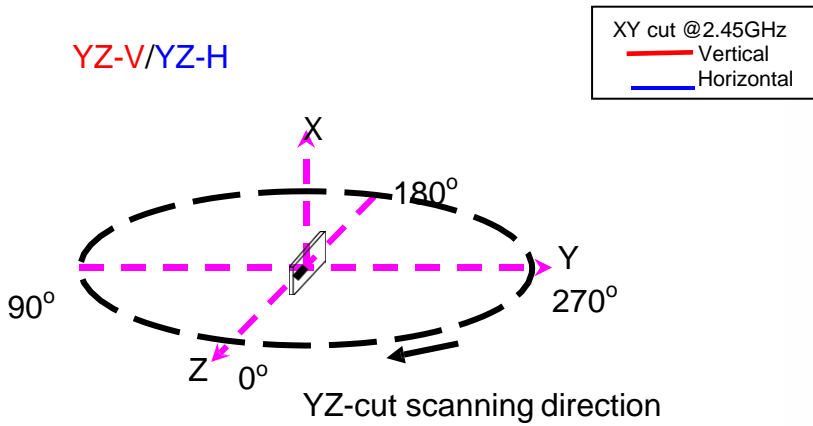
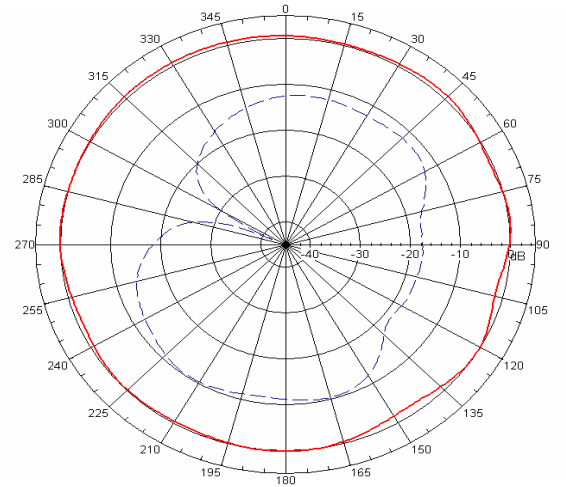
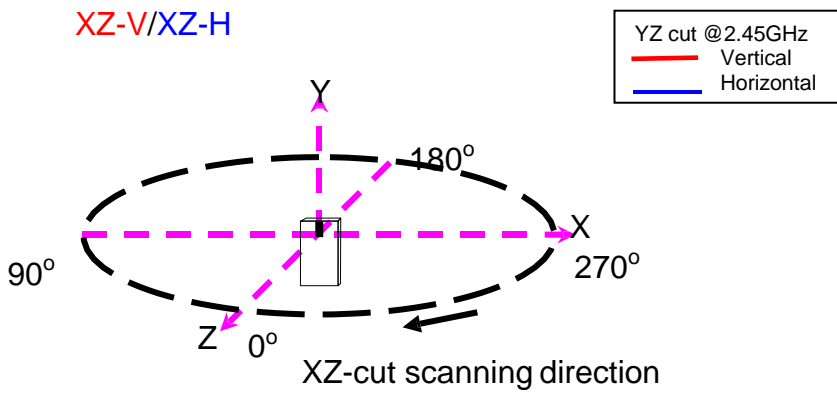
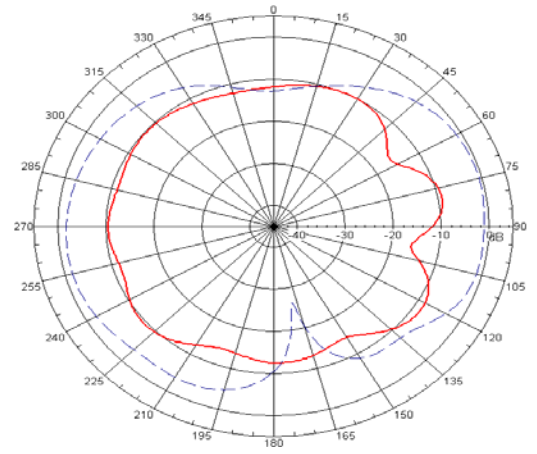
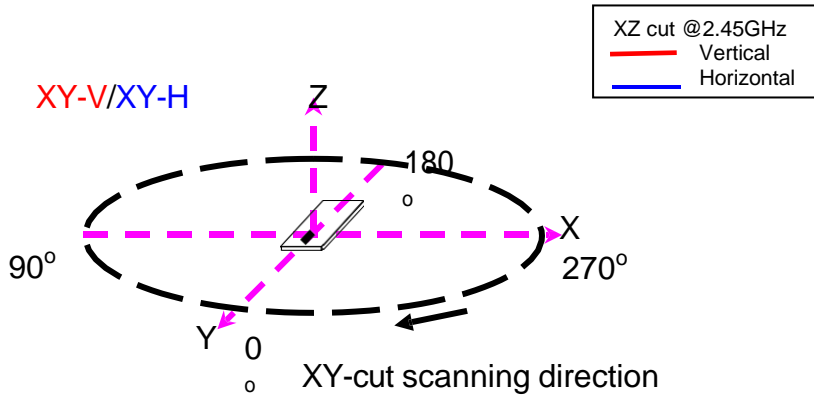
(b) With Matching Circuits



## Radiation Patterns

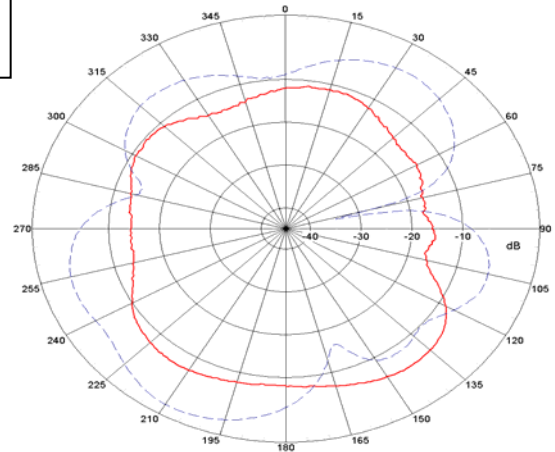
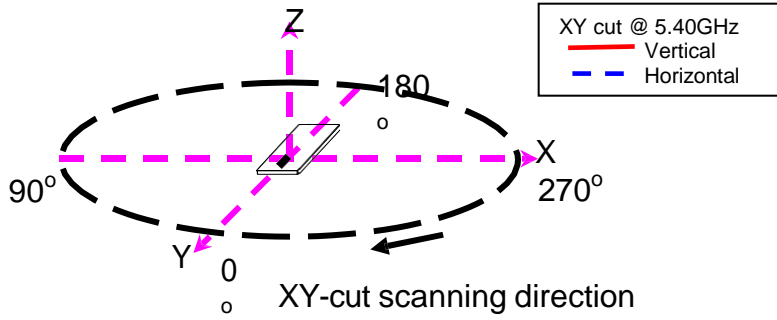
Test Results;

Frequency (MHz)	Peak Antenna Gain (dBi)	AV Antenna Gain (dBi)
2400	0.123	-0.771
2410	0.194	-0.731
2420	0.151	-0.667
2430	0.275	-0.798
2440	0.253	-0.831
2450	<b>0.500</b>	<b>-0.500</b>
2460	0.158	-0.611
2470	0.263	-0.66
2480	0.154	-0.698
2490	0.323	-0.630
2500	0.320	-0.739
5100	0.853	-3.196
5200	0.999	-3.348
5300	0.855	-3.229
5400	<b>1.000</b>	<b>-3.000</b>
5500	0.856	-3.198
5600	0.967	-3.104
5700	0.818	-3.113
5800	0.819	-3.335

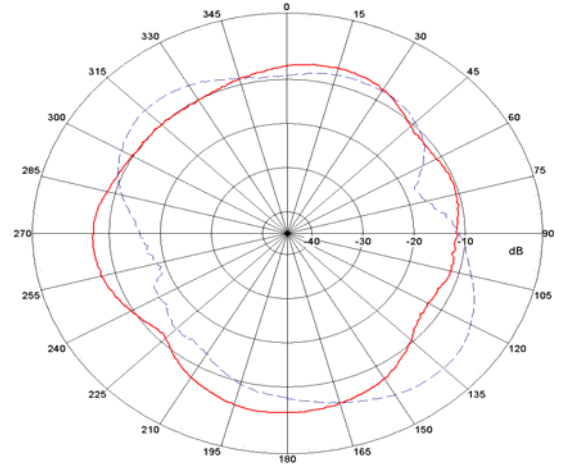
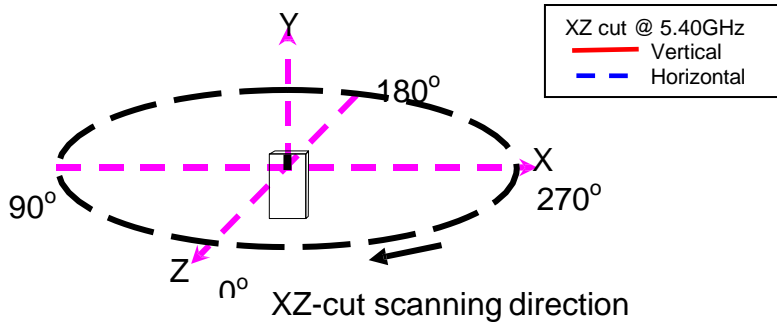


❖ Radiation Patterns

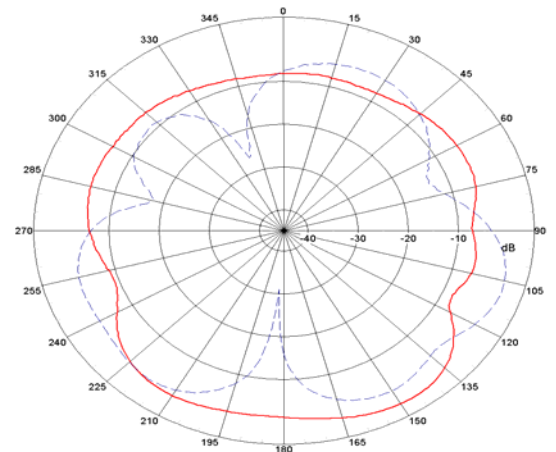
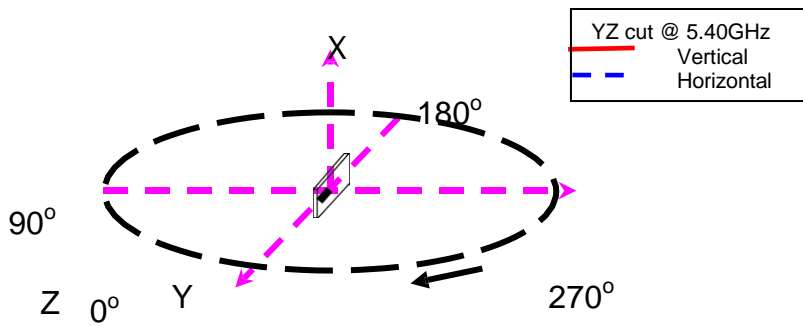
XY-V/XY-H



XZ-V/XZ-H

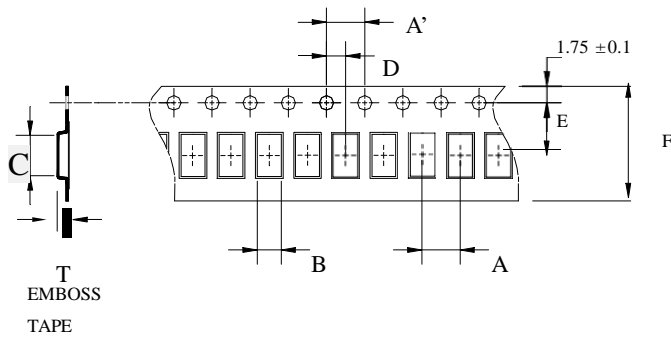


YZ-V/YZ-H



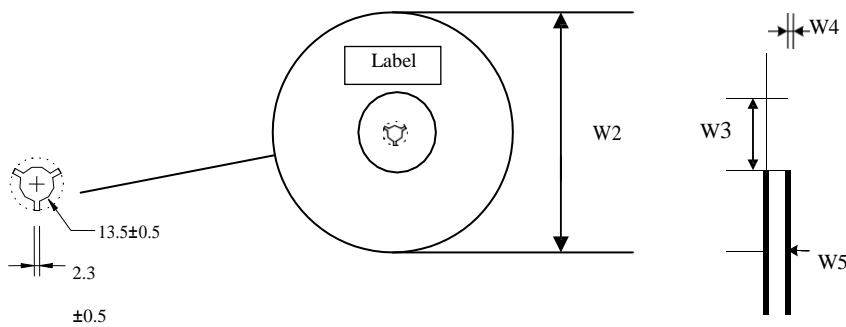
## Taping Specifications

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



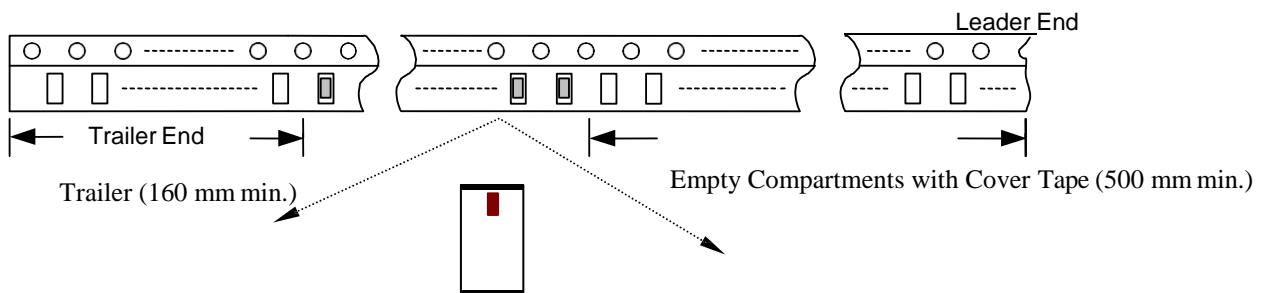
Type	A	A'	B	C	D	E	F	T	Quantity/per reel	Tape material
AN3216	4.0±	4.0±	1.95±	3.5±	2.0±	3.5±	8.00±	1.50±	3,000pcs	Plastic (Embossed)
	0.1	0.05	0.1	0.1	0.05	0.05	0.2	0.1		

### ❖Reel Dimensions (Unit: mm)

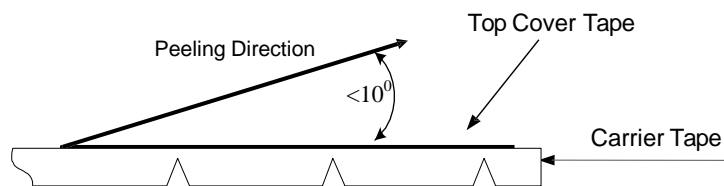


Type	W2	W3	W4	W5
AN3216	178±1	60±1	1.4±0.2	17±0.5

### ❖Leader and Trailer Tape



### ❖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

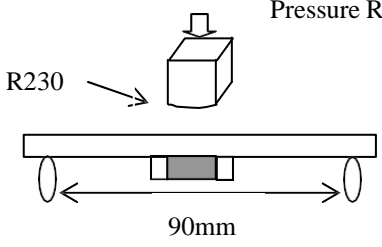
- (1) Temperature: 15 ~35°C, relative humidity (RH): 45~75%.
- (2) Non-corrosive environment

### Notes

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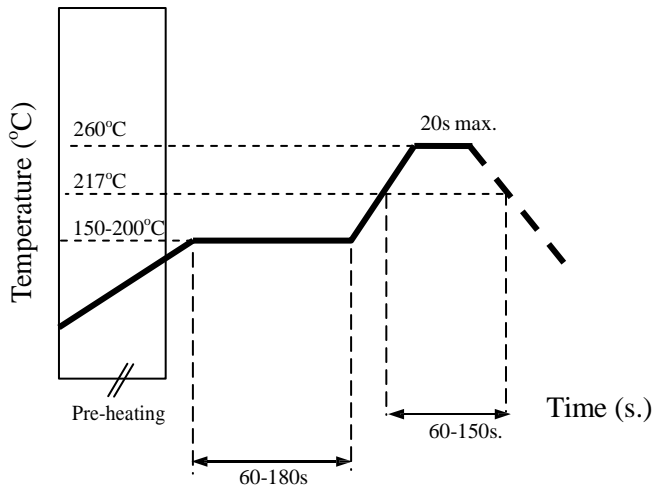
## Mechanical & Environmental Characteristics

Item	Requirements	Procedure
Solderability	<ol style="list-style-type: none"> <li>1. No apparent damage</li> <li>2. More than 95% of the terminal electrode shall be covered with new solder</li> </ol>	<ol style="list-style-type: none"> <li>1. Preheat: <math>120 \pm 5^{\circ}\text{C}</math></li> <li>2. Solder: <math>245 \pm 5^{\circ}\text{C}</math> for <math>5 \pm 1</math> sec</li> </ol>
Soldering strength (Termination Adhesion)	<ol style="list-style-type: none"> <li>1. 1kg minimum</li> </ol>	<ol style="list-style-type: none"> <li>1. Solder specimen onto test jig.</li> <li>2. 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 (Substrate Bending)	<ol style="list-style-type: none"> <li>1. No apparent damage</li> </ol>	<ol style="list-style-type: none"> <li>1. Solder specimen onto test jig (FR4, 0.8mm) using the recommend soldering profile.</li> <li>2. Apply a bending force of 2mm deflection</li> </ol> 
Heat/Humidity Resistance	<ol style="list-style-type: none"> <li>1. No apparent damage</li> <li>2. Fulfill the electrical specification after test</li> </ol>	<ol style="list-style-type: none"> <li>1. Temperature: <math>85 \pm 2^{\circ}\text{C}</math></li> <li>2. Humidity: 90% ~ 95% RH</li> <li>3. Duration: <math>1000 \pm 48</math> hrs</li> <li>4. Recovery: 1-2hrs</li> </ol>
Thermal shock (Temperature Cycle)	<ol style="list-style-type: none"> <li>1. No apparent damage</li> <li>2. Fulfill the electrical specification after test</li> </ol>	<ol style="list-style-type: none"> <li>1. One cycle/step 1 : <math>125 \pm 5^{\circ}\text{C}</math> for 30 min step 2 : <math>-40 \pm 5^{\circ}\text{C}</math> for 30 min</li> <li>2. No of cycles : 100</li> <li>3. Recovery: 1-2 hrs</li> </ol>
Low Temperature Resistance	<ol style="list-style-type: none"> <li>1. No apparent damage</li> <li>2. Fulfill the electrical specification after test</li> </ol>	<ol style="list-style-type: none"> <li>1. Temperature: <math>-40 \pm 5^{\circ}\text{C}</math></li> <li>2. Duration: <math>500 \pm 24</math> hrs</li> <li>3. Recovery: 1-2hrs</li> </ol>

## Soldering Conditions

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

Reflow Soldering :



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