

Document	Datasheet
Type	Dielectric Chip Antenna
Application	2.4GHz/5GHz
Part No.	AMAN1003030ST06
Revision	3.0

DATASHEET

Application

WLAN Dual-band(2.4GHz/5GHz)

Features

PIFA structure

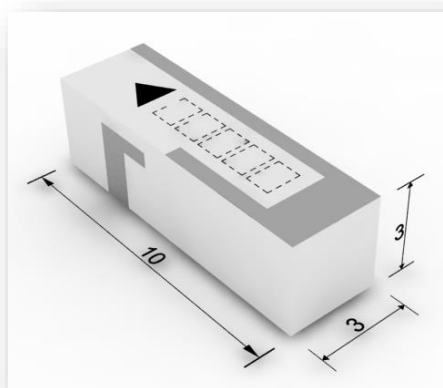
Size (10*3*3mm³)

Performance optimizing

with tuning the conductive pattern on the ceramic body

SMT available under Pb-free condition

RoHS compliant



AMOTECH

Notes

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

Revision History

Rev. No	Date	Title	Contents	Page
0	2011. 06. 29		New Published	
1	2014. 02. 07		Added Antenna Land Pattern & Length	3, 4
2	2015. 06. 08		Changed Operating Temperature Spec	3
3	2022. 06. 30		Changed PCB design guide (Pin assignment)	4

Table of Content

1. Specifications	3
1.1 Electrical Specifications	
1.2 Mechanical Specifications	
1.3 Appearance and Material	
2. PCB Design for Test	4
2.1 Evaluation Board Dimension	
2.2 PCB Design Guide	
3. Measurement Result	5
3.1 Typical Measurement Result (VSWR/RL, Smithchart)	
3.2 Typical Measurement Result (Gain, Radiation Pattern)	
4. Reliability	8
5. Cautions (Recommendations)	8
6. Soldering Reflow Profile	8
7. Packaging	9
7.1 Carrier Tape Dimension	
7.2 Packaging Quantity	
7.3 Packaging Label	

1. Specifications

1.1 Electrical Specifications

No	Item	Spec.		Remark
1	Frequency Range [GHz]	2.400 ~2.485 / 5.150~5.875		
2	VSWR	Max 3.0:1		
3	Avg. Gain [dBi]	2.45GHz	typ. -0.2	
		5.50Ghz	typ. -1.5	
4	Efficiency [%]	2.45GHz	typ. 94	
		5.50Ghz	typ. 70	
5	Polarization	Linear		
6	Impedance [Ω]	Nominal 50		

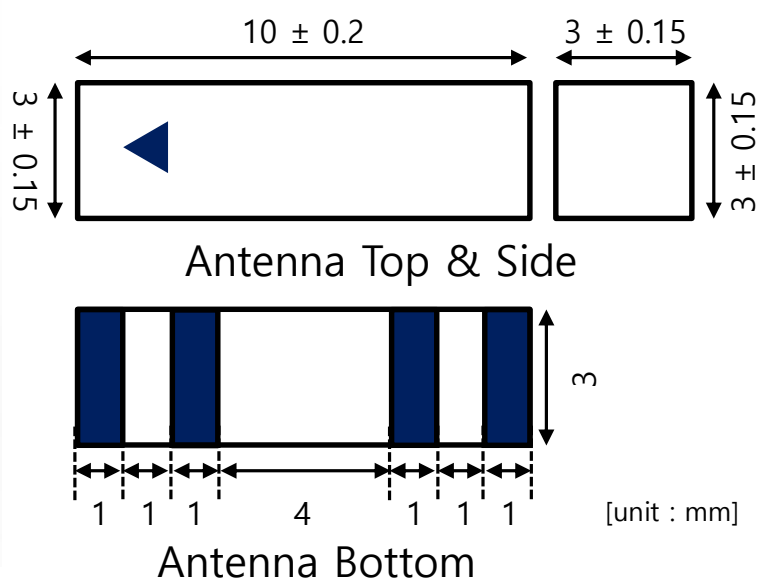
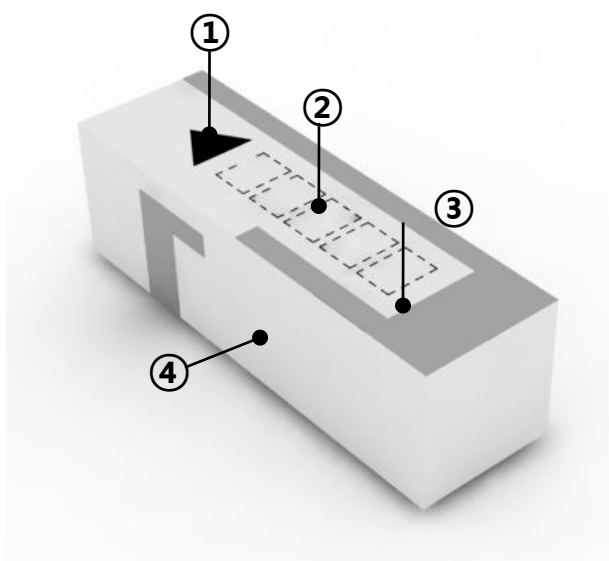
- ✓ The results are measured on the 100x50mm² evaluation board(EVB).
- ✓ See Page 6. for more detail gain parameter

1.2 Mechanical Specifications

No	Item	Spec.	Remark
1	Dimensions (LxWxH)	10.0x3.0x3.0 mm ³	
2	Unit Weight	typ. 0.3g	
3	Operating Temperature	-40 ~ +125 °C	

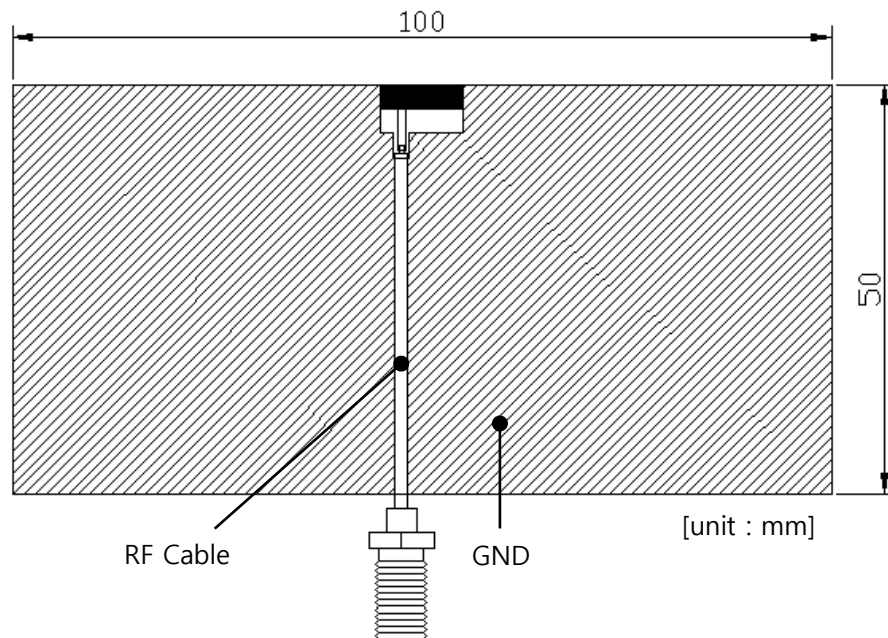
1.3 Appearance & Material

No	Item	Function	Material
①	Marking	Feeding Index	Ink
②	Marking	Week number	Ink
③	Electrode	Radiation Element	Ag
④	Ceramic Body	-	Ceramic



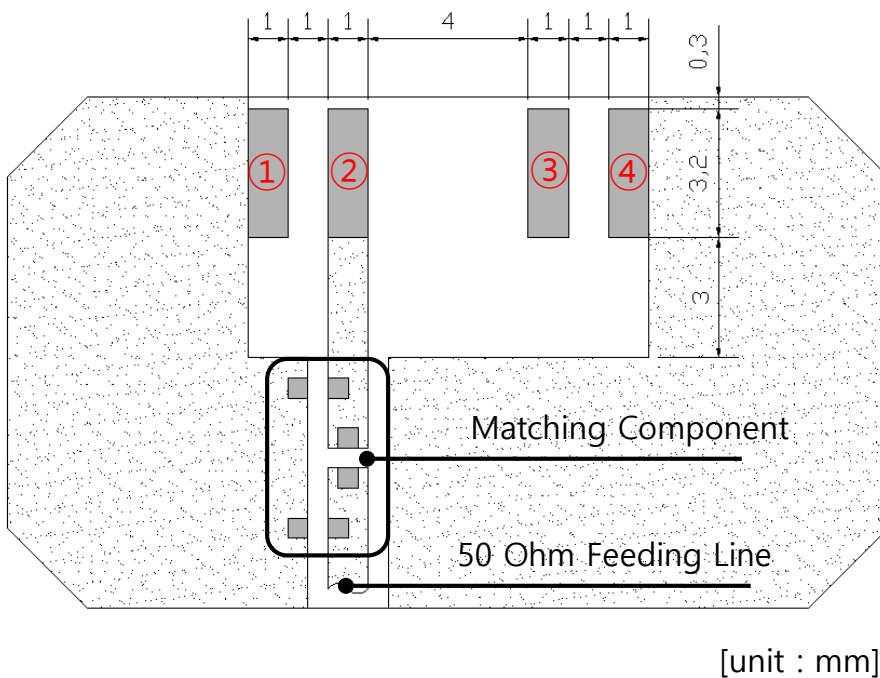
2. PCB Design for Test

2.1 Evaluation Board Dimension



- ✓ Evaluation board size ~ 100x50
- ✓ Fill Cut Area (GND Clearance) ~ 10.0x6.5

2.2 PCB Design Guide



Antenna Top

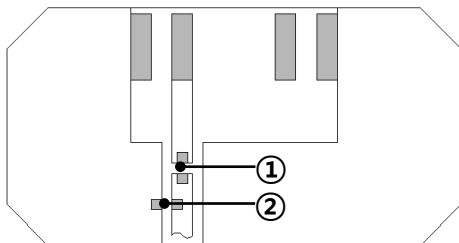


Antenna Bottom

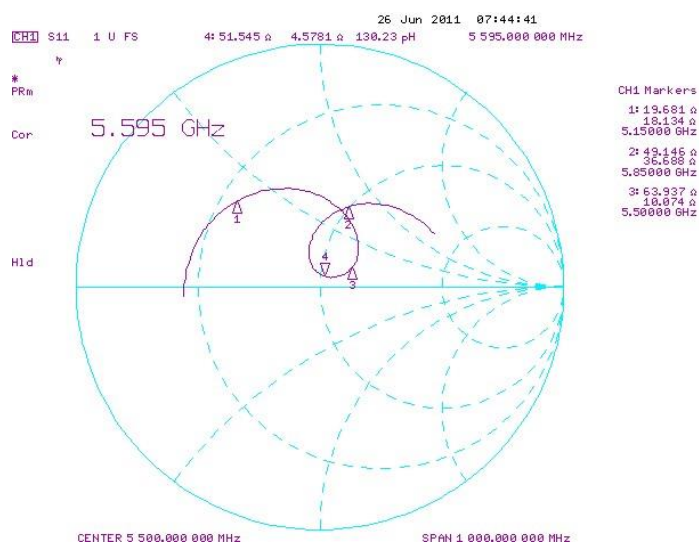
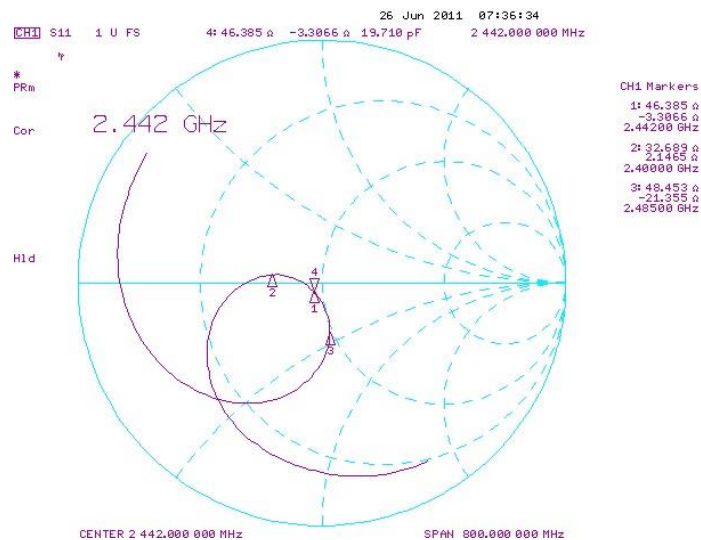
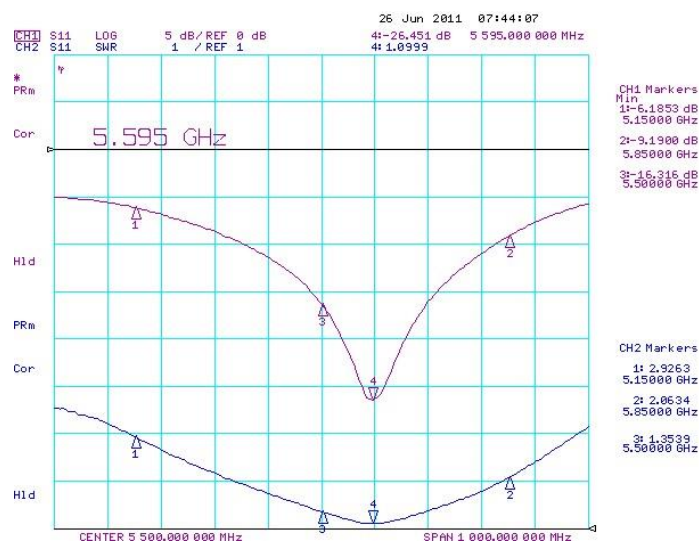
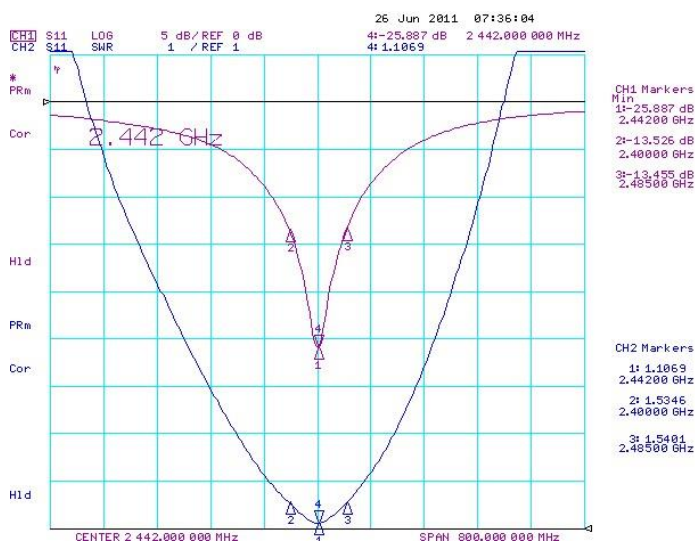
No	Pin Assignment
①	GND
②	Feeding
③	NC (Dummy)
④	GND

3. Measurement Result

3.1 Typical Measurement Result (VSWR/RL, Smithchart)



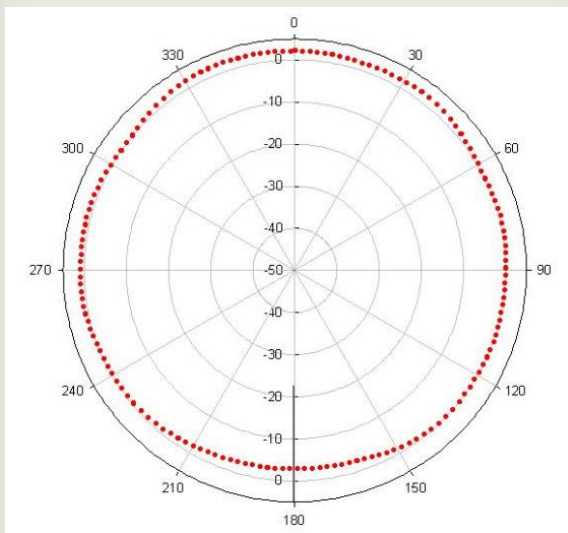
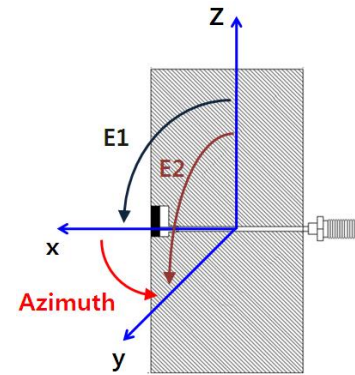
No	Matching Value
①	100 pF
②	N.C



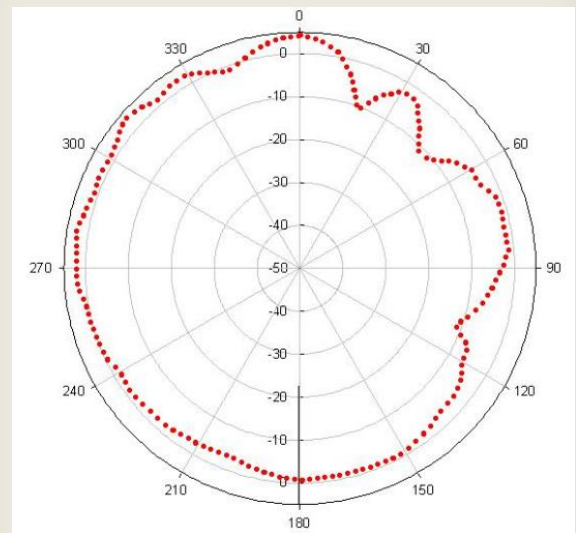
✓ The results are measured on the 100x50mm² evaluation board(EVB).

3.2 Typical Measurement Result (Gain, Radiation Pattern)

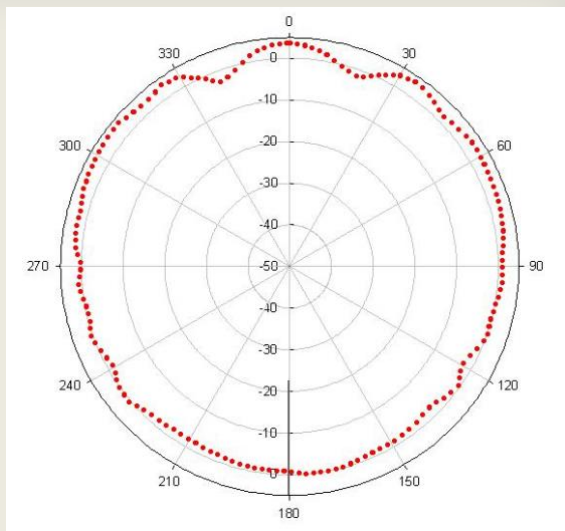
	Peak Gain (dBi)	Avg. Gain (dBi)	Efficiency(%)
Azimuth	1.60	-0.08	94
Elevation 1	3.94	-0.95	
Elevation 2	3.46	0.59	



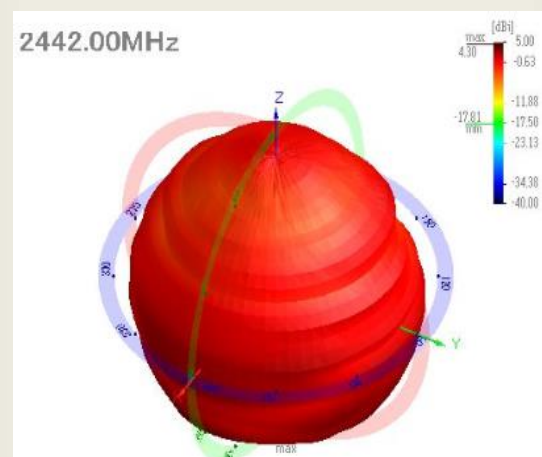
[Azimuth plane @2.442GHz]



[Elevation1 plane @2.442GHz]



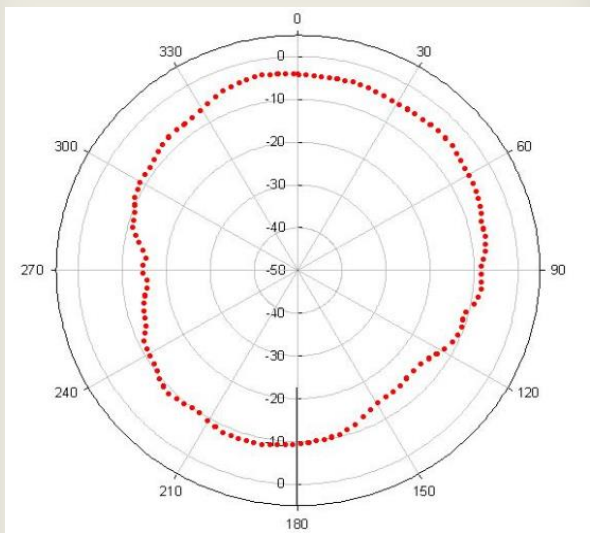
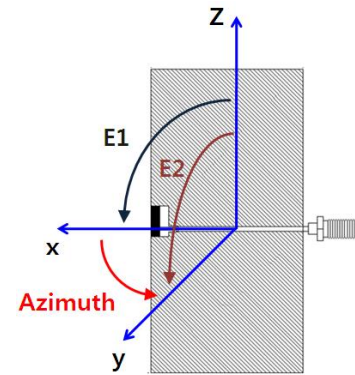
[Elevation2 plane @2.442GHz]



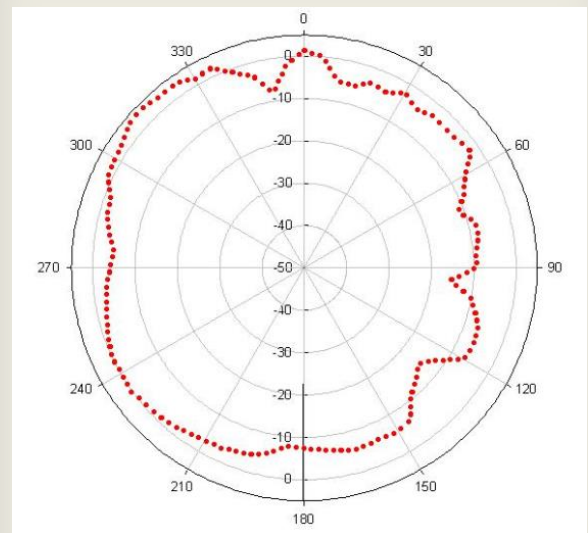
[3D Radiation Pattern]

3.2 Typical Measurement Result (Gain, Radiation Pattern)

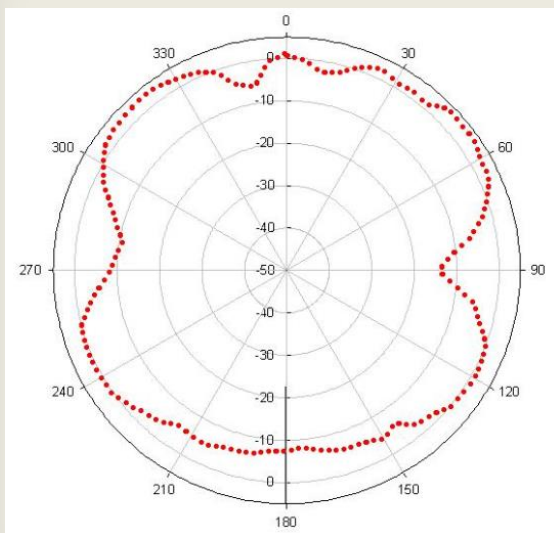
	Peak Gain (dBi)	Avg. Gain (dBi)	Efficiency(%)
Azimuth	-3.61	-7.63	70
Elevation 1	3.79	-2.27	
Elevation 2	3.94	-0.80	



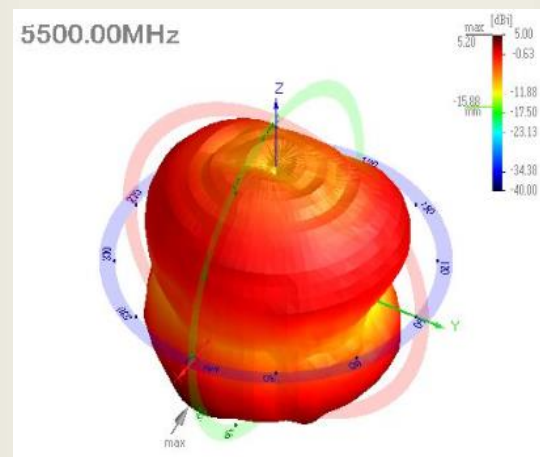
[Azimuth plane @5.5GHz]



[Elevation1 plane @5.5GHz]

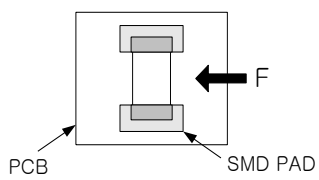


[Elevation2 plane @5.5GHz]



[3D Radiation Pattern]

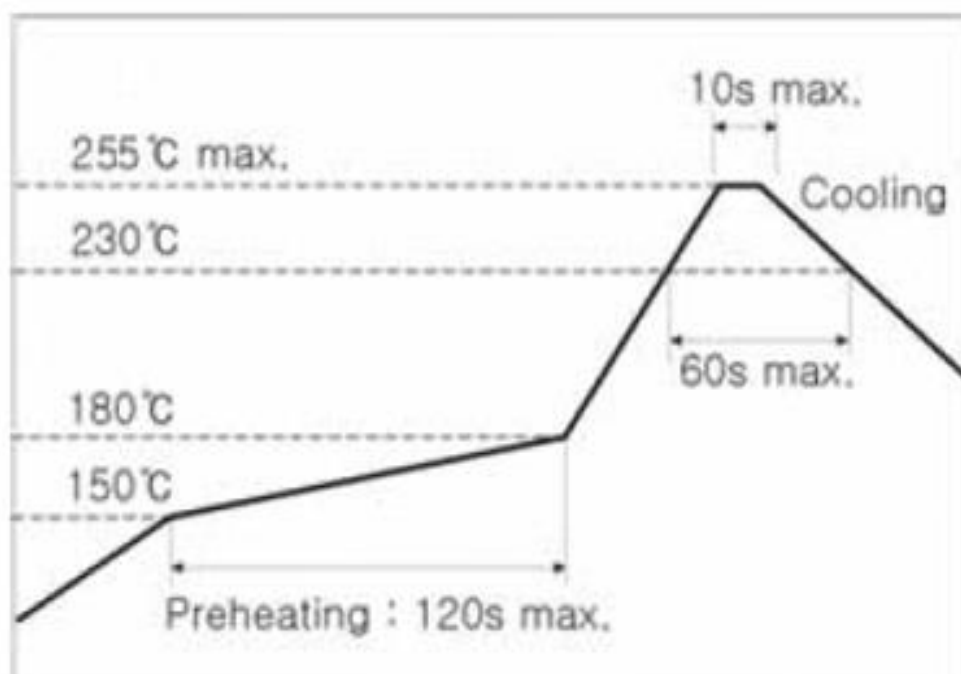
4. Reliability

No	Item	Test Condition	Test Requirements
1	Adhesive Strength of Termination	1. Applied force on SMT chip till detached point from PCB. 	1. No mechanical damage on chip within applied force ($F \leq 5$ kgf). 2. Force ($F > 5$ kgf) should be applied till the chip is detached or damaged
2	Thermal Shock (Cycle)	1. Step 1 : $-40 \pm 3^{\circ}\text{C}$, 30 min Step 2 : $+125 \pm 3^{\circ}\text{C}$, 30 min 2. Number of cycle : 30	1. No visual damage 2. Within electric spec (VSWR)
3	High Temperature Resistance	1. Temperature : $+125 \pm 5^{\circ}\text{C}$ 2. Time : 1000 ± 24 hrs	1. No visual damage 2. Within electric spec (VSWR)
4	Low Temperature Resistance	1. Temperature : $-40 \pm 5^{\circ}\text{C}$ 2. Time : 1000 ± 24 hrs	1. No visual damage 2. Within electric spec (VSWR)
5	Humidity	1. Humidity : 85 % RH Temperature : $+85 \pm 3^{\circ}\text{C}$ 2. Time : 1000 ± 24 hrs	1. No visual damage 2. Within electric spec (VSWR)

5. Cautions (Recommendations)

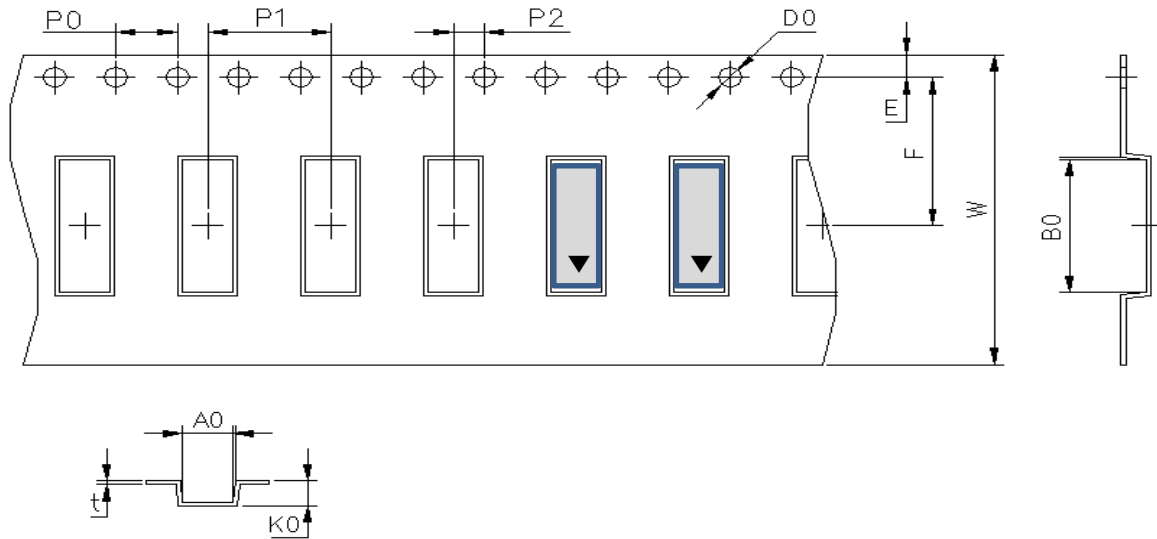
- ✓ Storage environment of parts must be at ambient temperatures of 5 to 40°C and maximum 60%RH humidity
- ✓ The parts should be used within 6 months from the time of delivery. If stored for over 6 months, check for solder ability before use.

6. Soldering Reflow Profile



7. Packaging

7.1 Carrier Tape Dimension



Item	Spec.	Item	Spec.	Item	Spec.
A0	3.30 ±0.10	P0	4.00 ±0.10	E	1.75 ±0.10
B0	10.30 ±0.10	P1	8.00 ±0.10	F	11.50 ±0.10
K0	3.25 ±0.10	P2	2.00 ±0.10	W	24.00 ±0.30
D0	1.55 ±0.05	-	-	t	0.30 ±0.05

7.2 Packaging Quantity

Item	Quantity	Dimension
Reel	2,000 ea	Φ13" * 24mm
Inner	2,000 ea (1 Reel)	350 * 350 * 90 (mm3)
Outer Box	6,000 ea (3 Inner Box)	390 * 390 * 280 (mm3)

7.3 Packaging Label

AMOTECH Co., Ltd.

5BL-1Lot, 617, Namchon-Dong, Namdong-Gu, Incheon, Korea

Dielectric Chip Antenna

P/N : AMAN1003030ST06

Lot No :

Quantity : 2,000 pcs Date : 2011/06/29