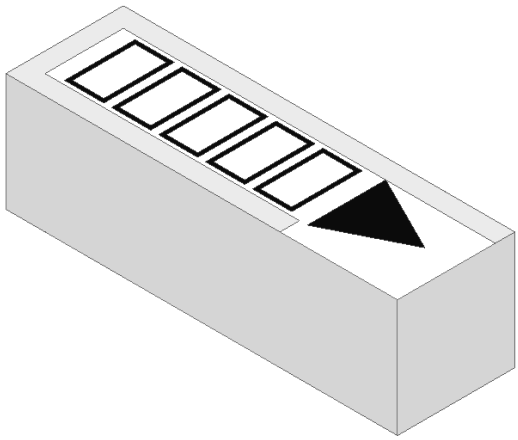
Document	Datasheet
Type	Dielectric Chip Antenna
Application	2.4 GHz
Part No.	AMAN1003030ST10
Revision	New

DATASHEET



Application

Bluetooth
Zigbee
WLAN (IEEE 802.11 b/g)
ISM 2.4GHz Wireless Devices

Features

PIFA structure
Size (10*3*3mm^3)
Optimized for on-ground condition
SMT available under Pb-free condition
RoHS compliant
AEC-Q200 Qualified (for Automotive)

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	2024. 01. 15		New published	

Table of Content

1. Specifications

1.1 Electrical Specifications

No	Item	Specification	Remark
1	Frequency Range [GHz]	2.4 ~ 2.485	
2	VSWR	Max 2 : 1	Non-GND
		Max 3 : 1	On-GND
3	Total Avg. Gain [dBi]	Typ. -1.20	
4	Efficiency [%]	Typ. 75	
5	Polarization	Linear	
6	Impedance [Ω]	Nominal 50	

✓ The results are measured on the 70 x 50mm^2 evaluation board(EVB).

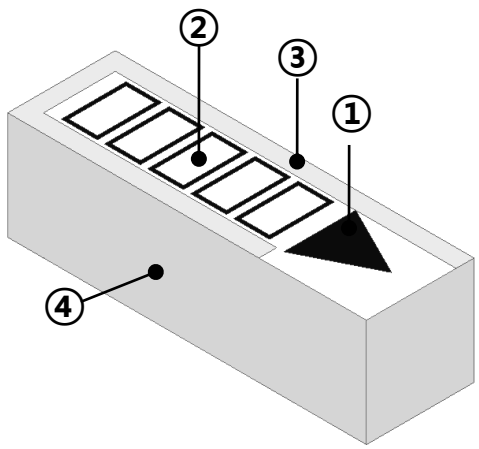
✓ See Page 6. for more detail gain parameter

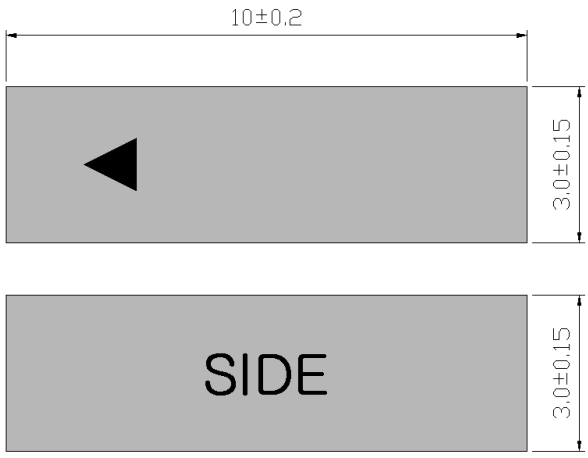
1.2 Mechanical Specifications

No	Item	Spec.	Remark
1	Dimensions [L * W * H]	10.0 * 3.0 * 3.0 mm^3	
2	Unit Weight	typ. 0.3 g	
3	Operating Temperature	-40 ~ +125 ℃	

1.3 Appearance & Material

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

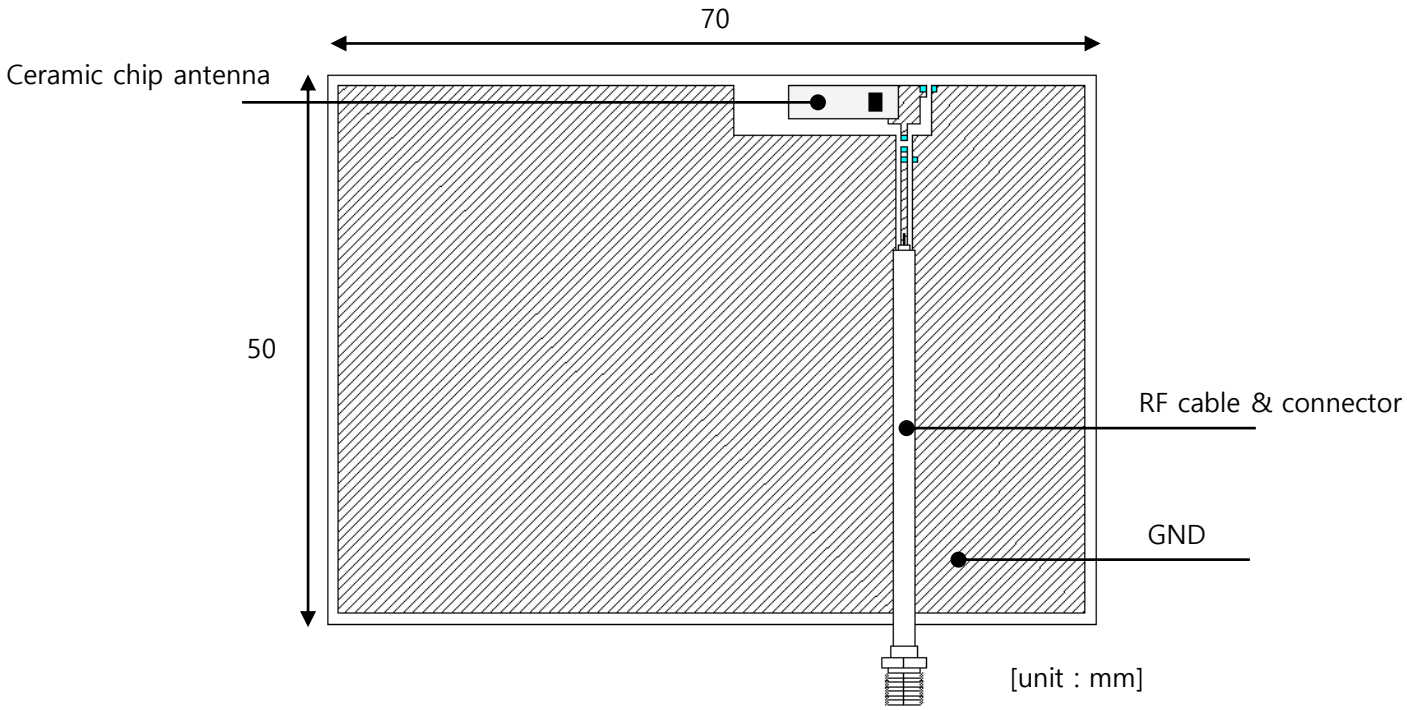




[unit : mm]

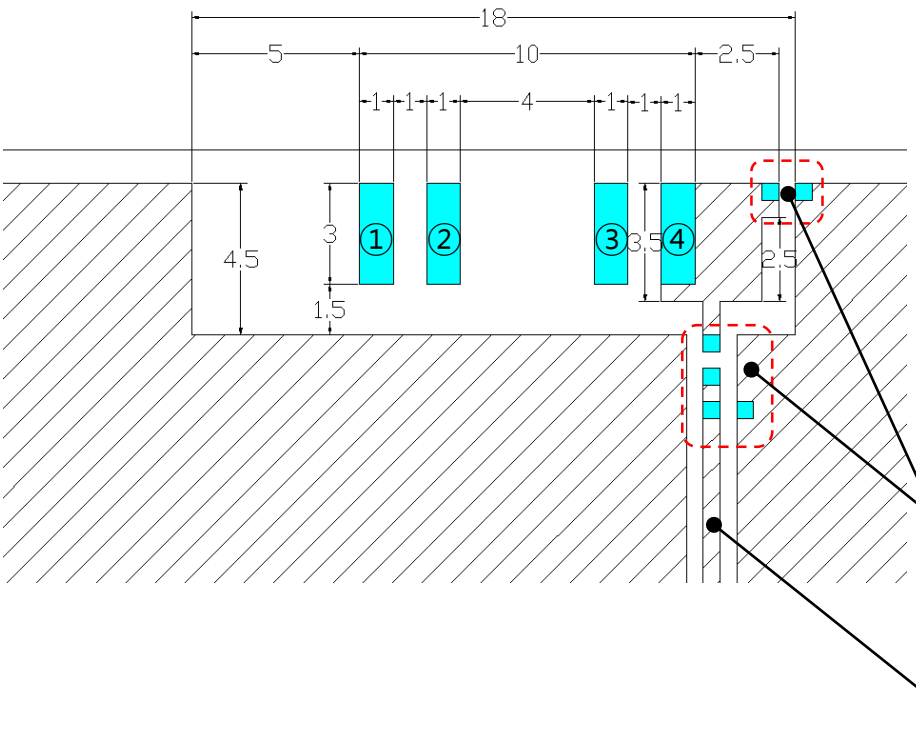
2. PCB Design for Test

2.1 Evaluation Board Dimension



✓ Evaluation board size ~ 70 x 50

2.2 PCB Design Guide



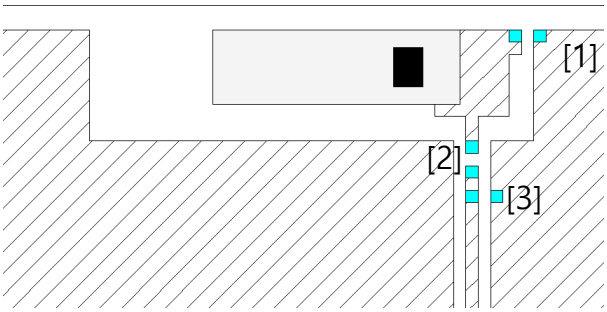
[Table] Pin Assignment

No	Pin Assignment
①	Dummy
②	
③	
④	Feeding

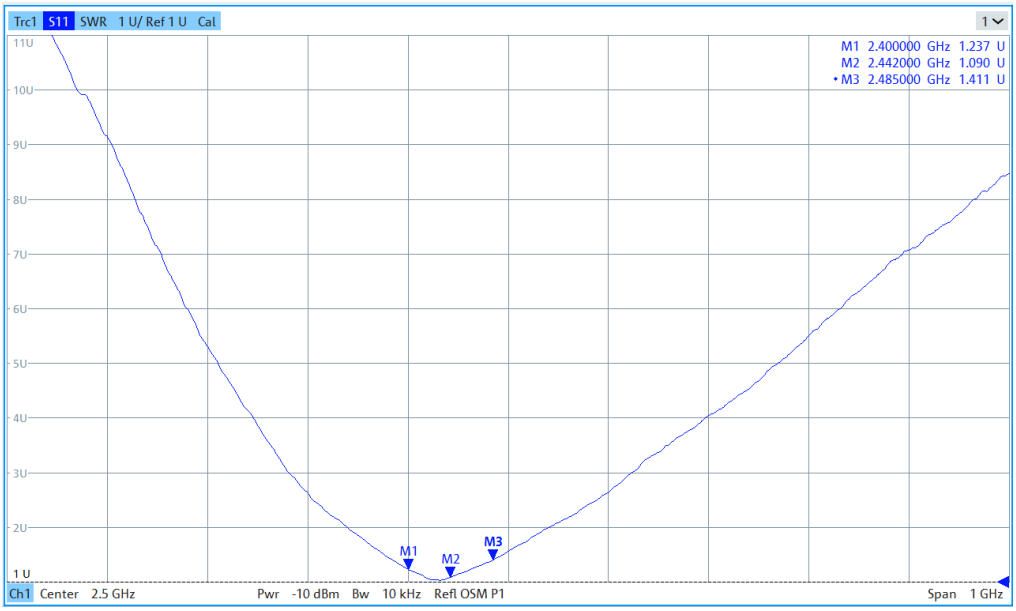
[unit : mm]

3. Measurement Result

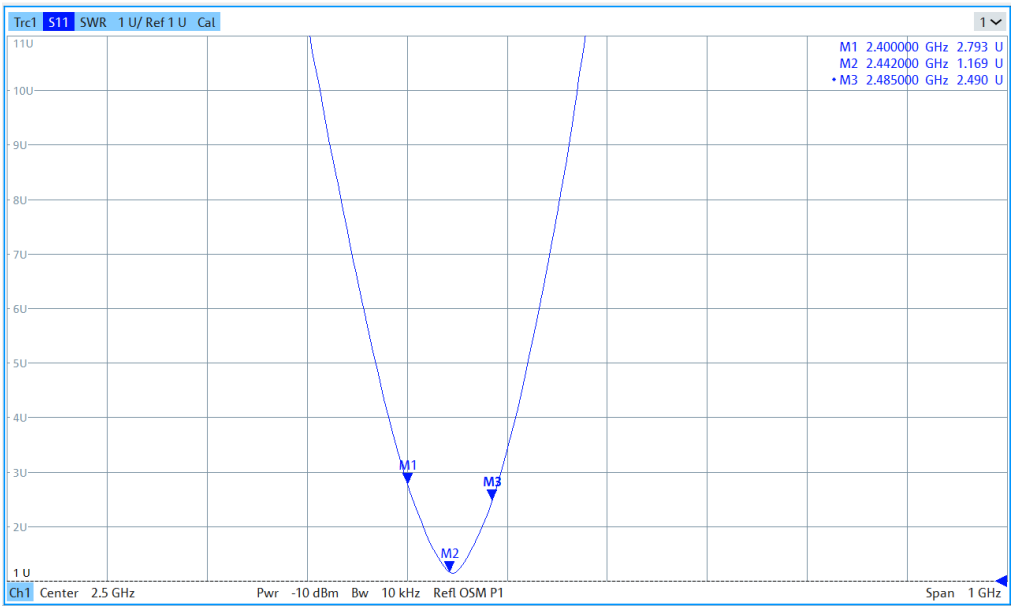
3.1 Typical Measurement Result (VSWR)



No	Matching Value	
	Non-GND	On-GND
[1]	1.2 nH	1.2 nH
[2]	3.0 nH	1.3 nH
[3]	0.5 pF	1.7 pF



Measured VSWR with Non-GND condition

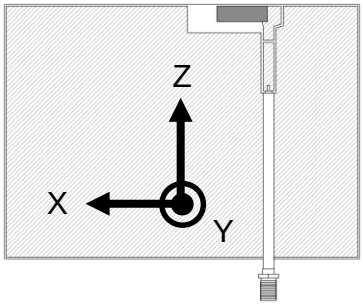


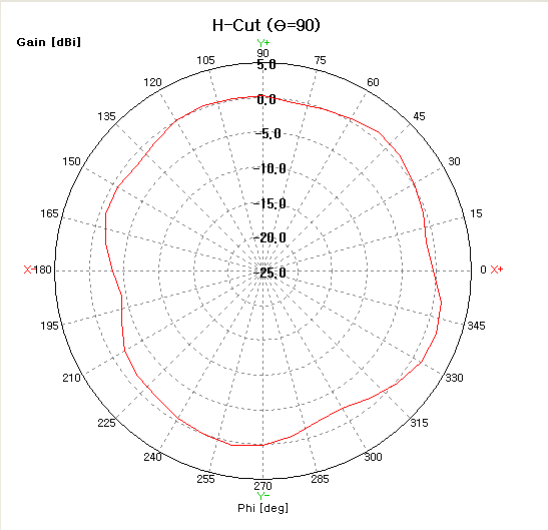
Measured VSWR with On-GND condition

✓ The results are measured on the 60x40mm^2 evaluation board (EVB).

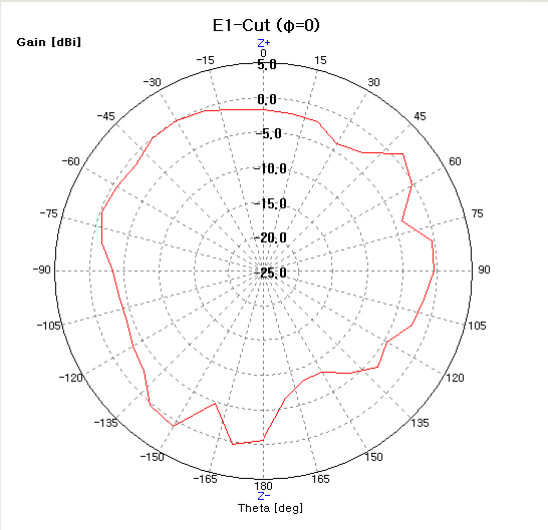
3.2 Typical Measurement Result of Non-GND type (Gain, Radiation Pattern)

Frequency [MHz]	Peak Gain [dBi]	Avg. Gain [dBi]	Efficiency [%]
2400	75.58	-1.21	2.89
2442	82.93	-0.81	3.00
2485	76.67	-1.15	2.33

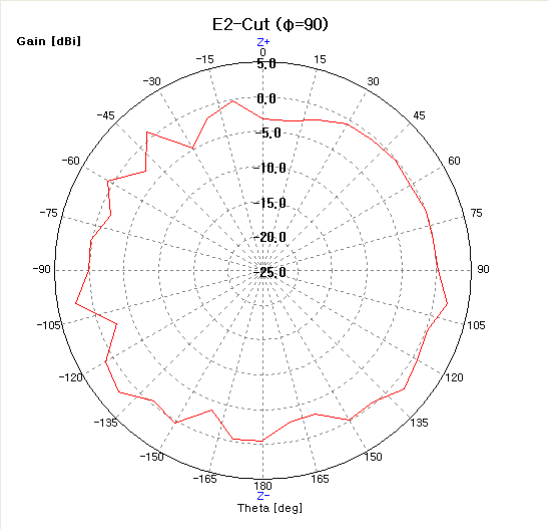




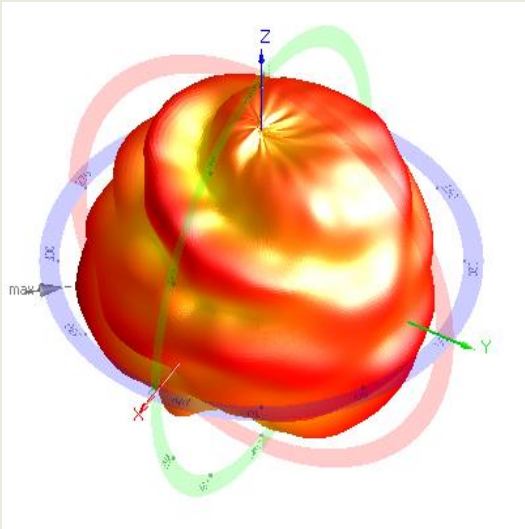
[Azimuth plane @2.442GHz]



[Elevation1 plane @2.442GHz]



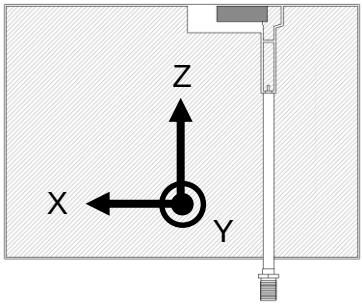
[Elevation2 plane @2.442GHz]

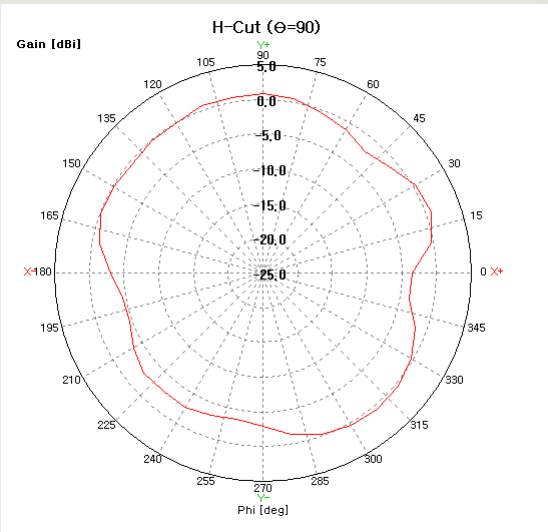


[3D Radiation Pattern]

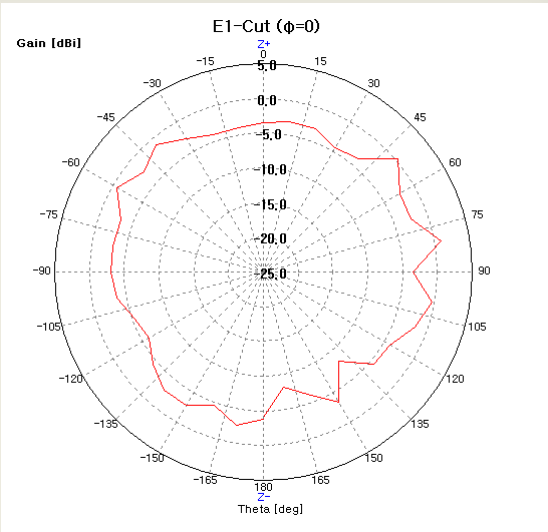
3.3 Typical Measurement Result of On-GND type (Gain, Radiation Pattern)

Frequency [MHz]	Peak Gain [dBi]	Avg. Gain [dBi]	Efficiency [%]
2400	53.69	-2.70	1.58
2442	68.16	-1.66	2.64
2485	54.88	-2.61	1.77

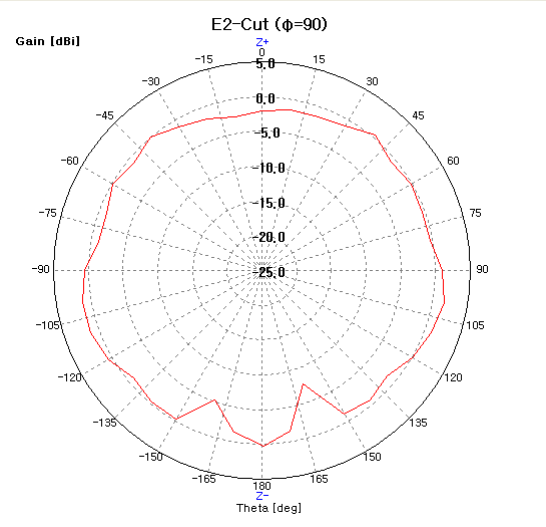




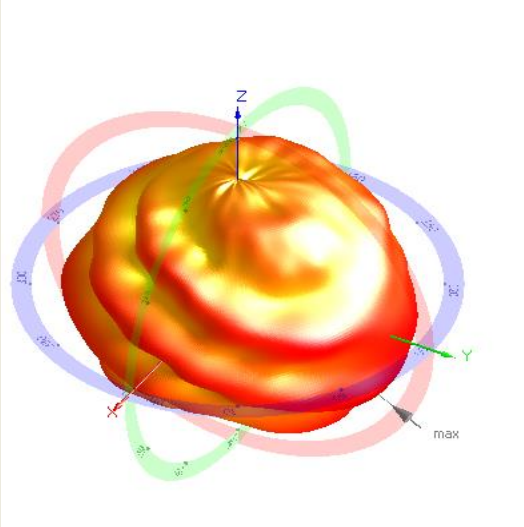
[Azimuth plane @2.442GHz]



[Elevation1 plane @2.442GHz]

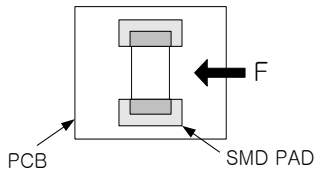


[Elevation2 plane @2.442GHz]



[3D Radiation Pattern]

4. Reliability

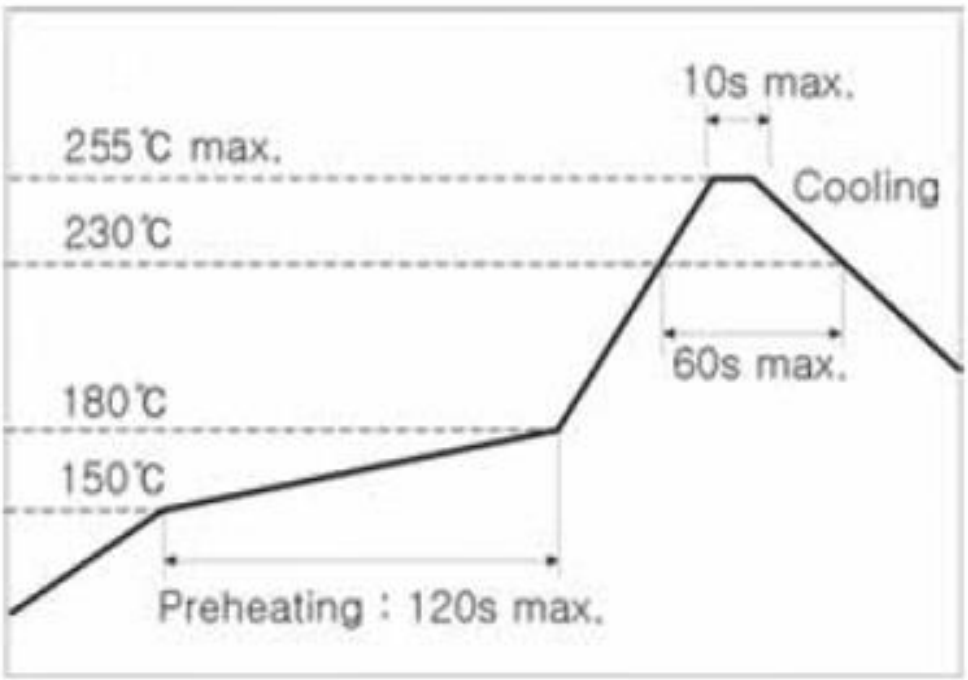
No	Item	Test Condition	Test Requirements
1	Adhesive Strength of Termination	1. Applied force on SMT chip till detached point from PCB. 	1. No mechanical damage by applied force 2. Strength (F) > 5 kgf
2	Thermal Shock (Cycle)	1. Step 1 : -40 ± 3℃, 30 min Step 2 : +125 ± 3℃, 30 min 2. Number of cycle : 30	1. No visual damage 2. Within electric spec (VSWR)
3	High Temperature Resistance	1. Temperature : +125 ± 5 ℃ 2. Time : 1000 ± 24 hrs	1. No visual damage 2. Within electric spec (VSWR)
4	Humidity	1. Humidity : 85 % RH Temperature : +85 ± 3℃ 2. Time : 1000 ± 24 hrs	1. No visual damage 2. Within electric spec (VSWR)
5	Vibration	1. 10-2000 Hz, Amp 1.5 mm, 5 g, 20 min 2. 12 cycles each of 3 orientations	1. No visual damage 2. Within electric spec (VSWR)
6	Resistance to Solvents	1. Dipping glass cleaner 2. 2 hrs	1. Cracks, peeling, and damage should not occur
7	Resistance to Soldering Heat	1. Reflow simulation 260 ℃ 2. 10 sec	1. No visual damage 2. Within electric spec (VSWR)
8	Solderability	1. Dipping 245±5 ℃ 2. 5 sec	1. More than 95% lead on SMT area
9	Board Flex	1. 2mm, 60 sec	1. Cracks should not occur
10	ESD	1. 8 KV, Contact discharge 2. 100 times	1. No visual damage 2. Within electric spec (VSWR)
11	Mechanical Shock	1. 100 g, 6 ms 2. 3 times each of orientations	1. No visual damage 2. Within electric spec (VSWR)

※ Reliability test items and conditions are subject to change by customer request.

5. Cautions (Recommendations)

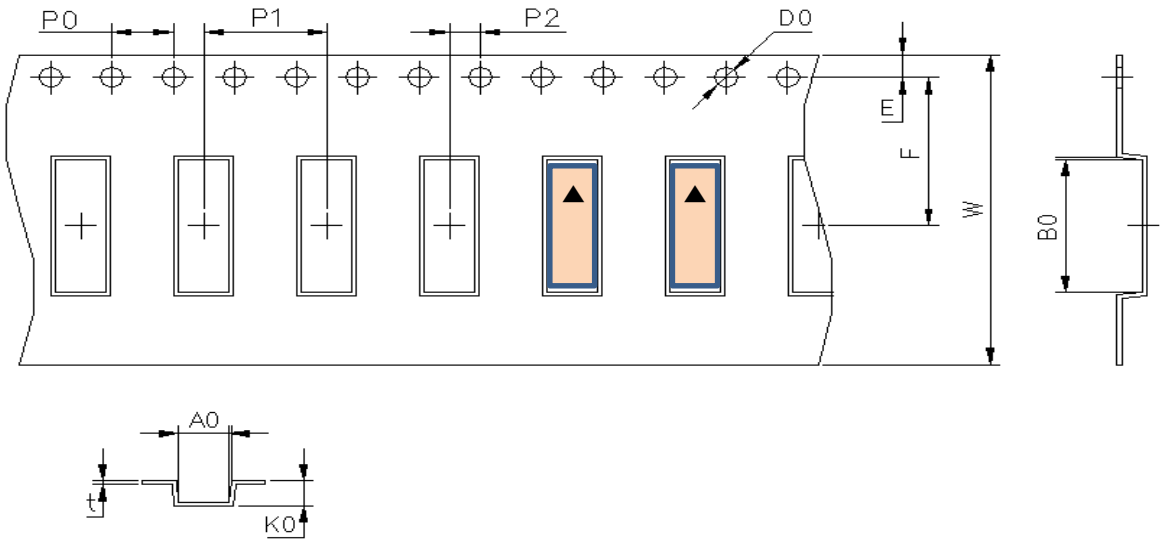
- ✓ Storage environment of parts must be at ambient temperatures of 5 to 40℃ and maximum 60%RH humidity
- ✓ The parts should be used within 6 months from the time of delivery. If stored for over 6 months, check for solder ability before use.

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	1,000 ea	Φ13" * 24mm
Inner	1,000 ea (1 Reel)	350 * 350 * 90 (mm3)
Outer Box	3,000 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 : AMAN1003030ST10

Lot No :

Quantity : 1,000 pcs Date : 2023/06/14