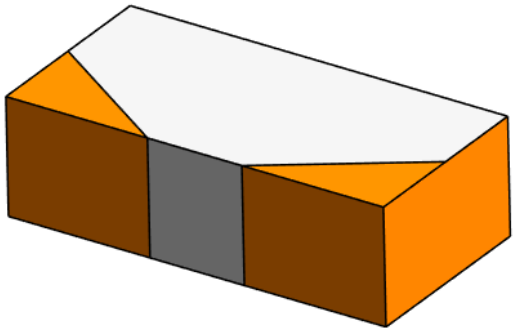
Document	Datasheet
Type	Chip Antenna
Application	**U**ltra **W**ide **B**and
Part No.	AMAN402012ST02
Revision	3.0

DATASHEET



Application

UWB (Ultra Wide Band, 6200~8250MHz)

Features

Monopole Structure
Size (4.0*2.0*1.2mm^3)
Performance Optimizing
with external lumped matching components
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	2018. 09. 10		New Published	
1	2019. 09. 05		Added dimension of bottom pattern	
2	2020. 11. 05		Added dimension of antenna bottom pattern	
			Changed PCB design guide	
3	2021. 07. 26		Changed Frequency range and measured results	

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 GND Fill Cut Area Dimension	
2.3 PCB Design Guide	
3. Measurement Results	6
3.1 Typical Measurement Results (VSWR & Return-loss)	
3.2 Measured Antenna Gain	
3.3 Measured Radiation Patterns	
4. Reliability	8
5. Cautions (Recommendations)	8
6. Soldering Reflow Profile	8
7. Packing	9
7.1 Carrier Tape Dimension	
7.2 Packing Quantity	
7.3 Packing Label	

1. Specifications

1.1 Electrical Specifications

No	Item	Spec.	Remark
1	Frequency Range [MHz]	6200 ~ 8250	
2	VSWR	Max 2.0:1	
3	Polarization	Linear	
4	Impedance [Ω]	Nominal 50	

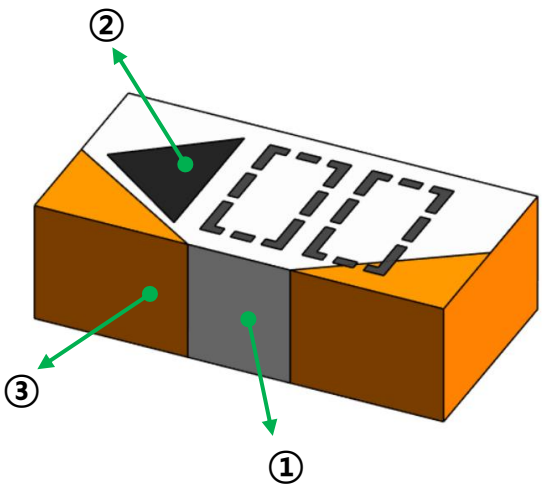
✓ The results are measured on the 30 * 20mm^2 evaluation board(EVB).

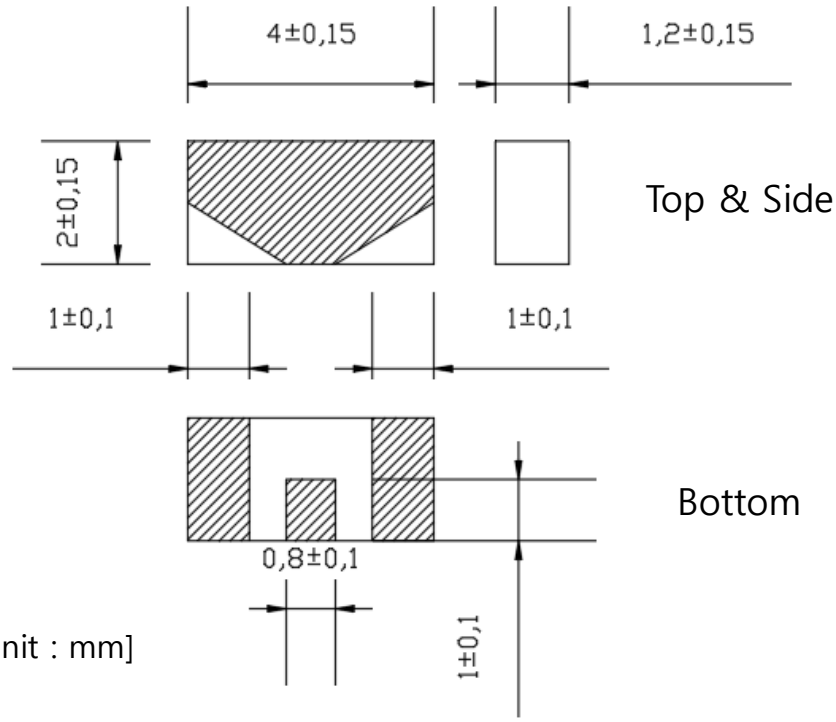
1.2 Mechanical Specifications

No	Item	Spec.	Remark
1	Dimensions (L*W*H)	4.0 * 2.0 * 1.2 mm^3	
2	Unit Weight	typ. 35 mg	
3	Operating Temperature	-40 ~ 125 ℃	

1.3 Appearance & Material

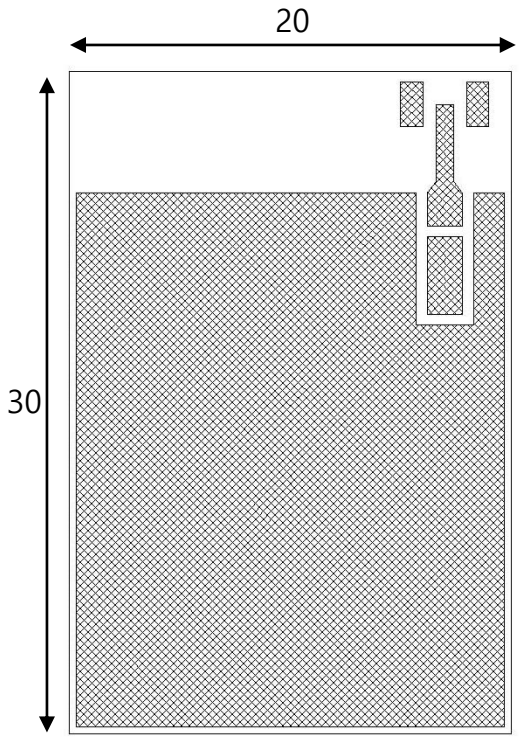
No	Name	Function	Material
1	Electrode	Radiation Element	Ag
2	Marking	Identification Mark	Ink
3	Ceramic Body	-	Ceramic



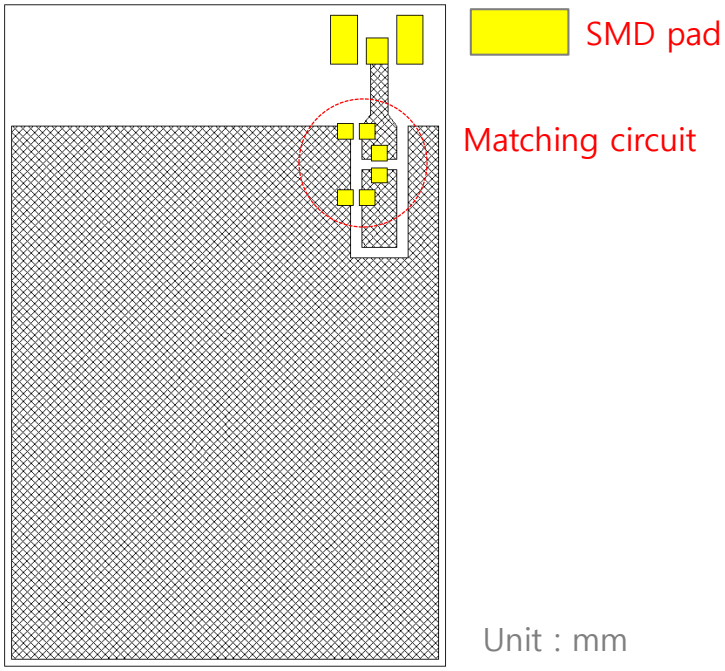


2. PCB Design for Test

2.1 Evaluation Board Dimension

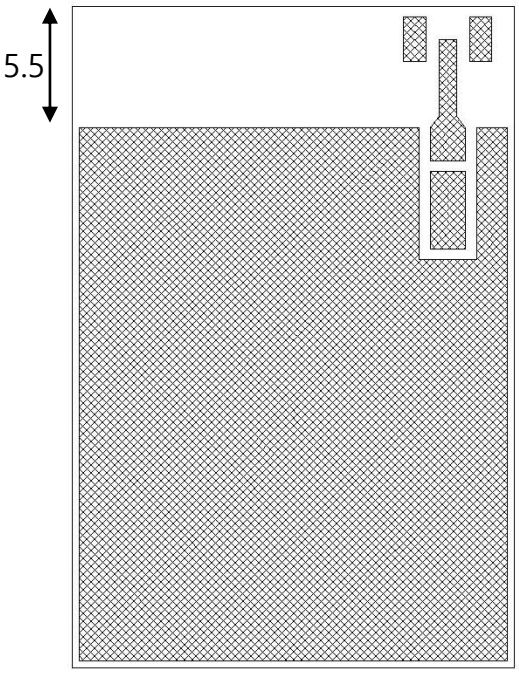


Antenna top pattern

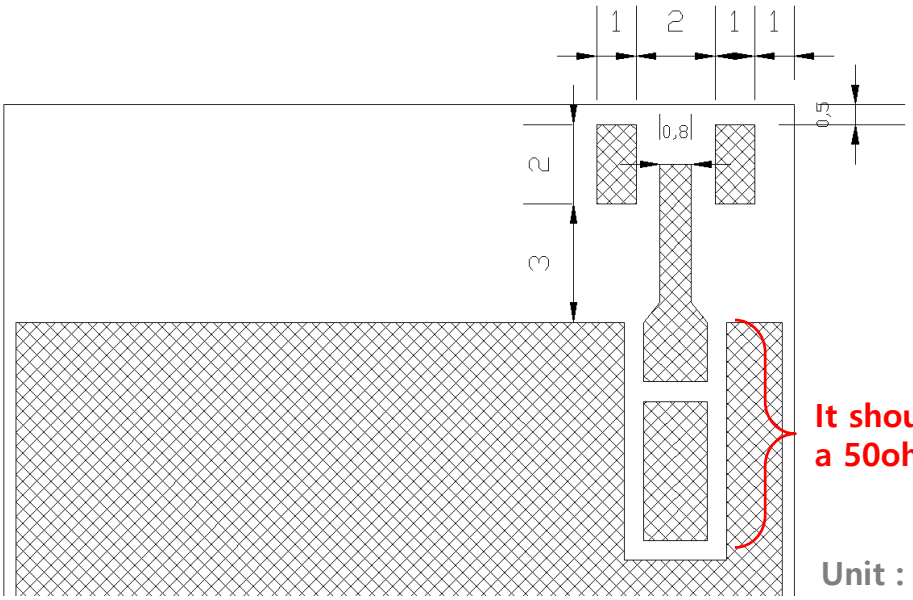


Mask open pad for SMD

2.2 GND Fill Cut Area Dimension

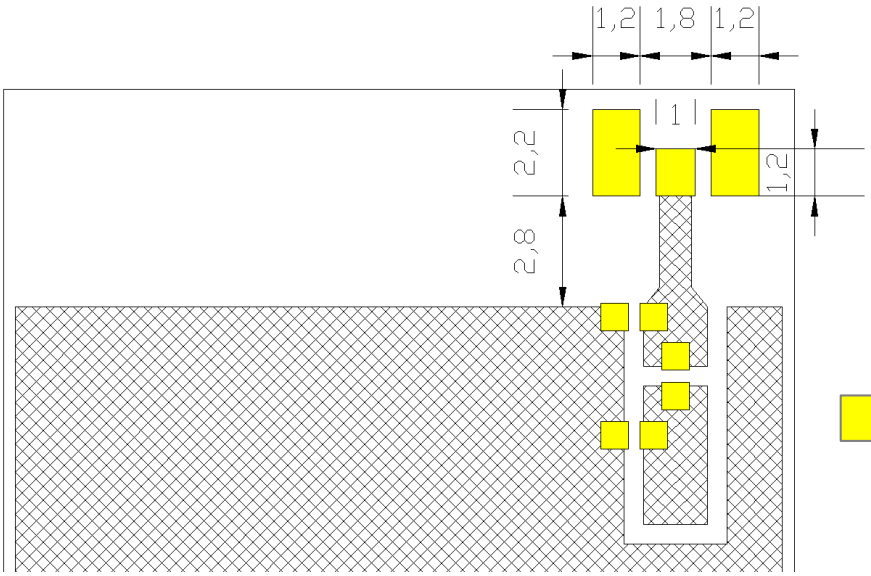


2.3 PCB Design Guide

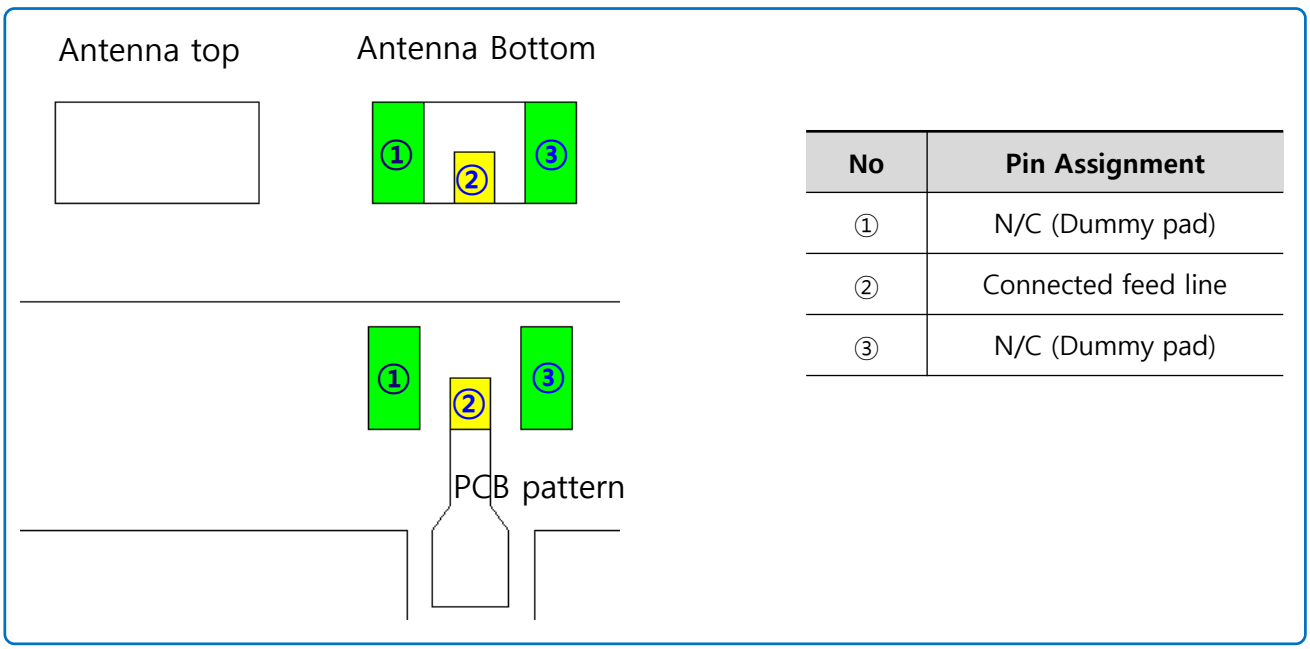


It should be designed with a 50ohm impedance line.

Unit : mm



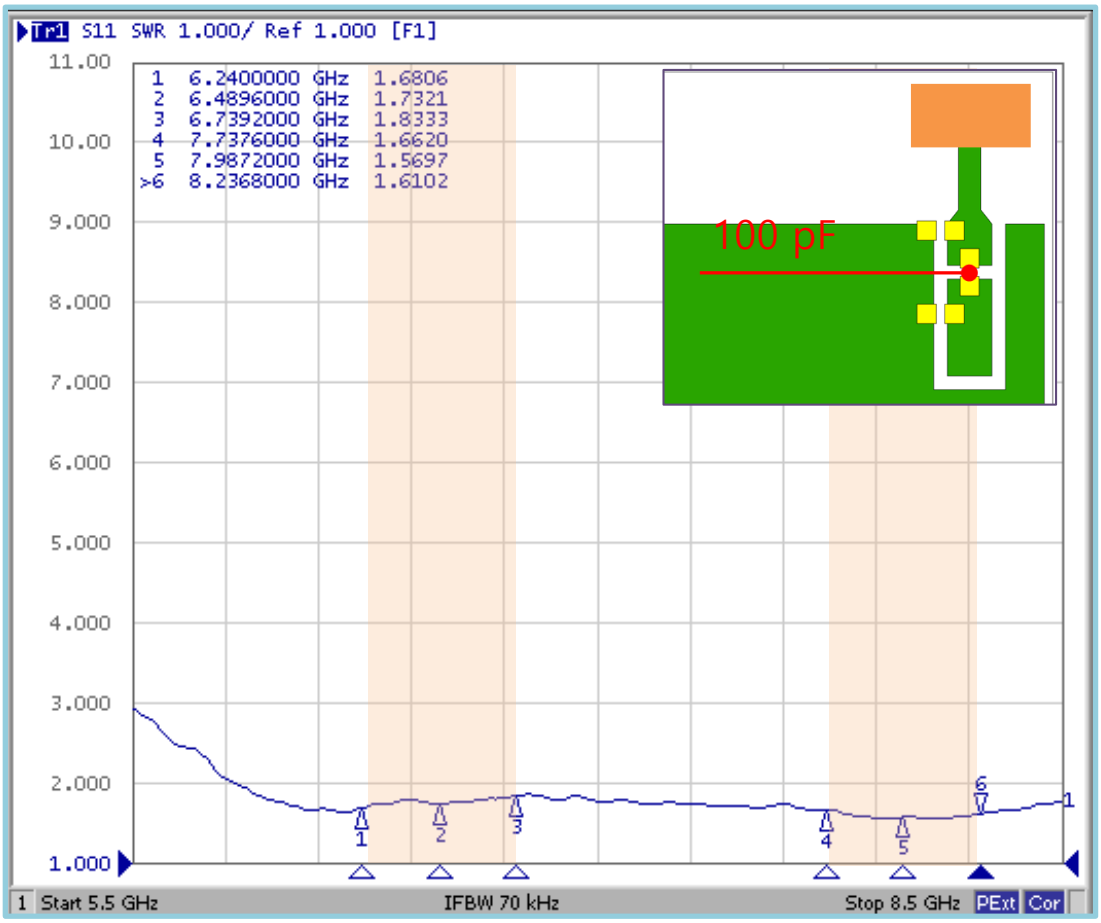
Mask open for SMD



No	Pin Assignment
①	N/C (Dummy pad)
②	Connected feed line
③	N/C (Dummy pad)

3. Measurement Result

3.1 Typical Measurement Result (VSWR & Return-loss)



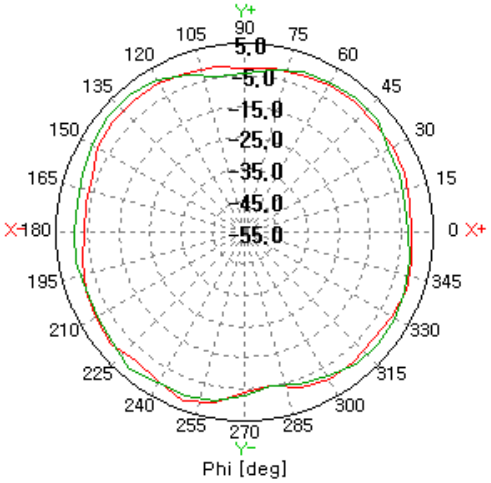
Measured VSWR of AMAN402012ST02 EVB

3.2 Measured Antenna Gain

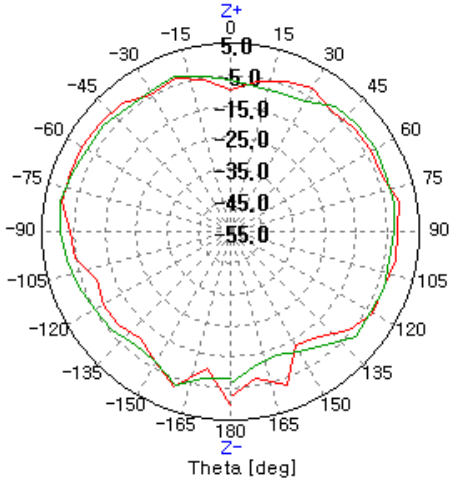
Freq. [MHz]	Peak Gain [dBi]	Avg. Gain [dBi]	Efficiency [%]	Remark
6200	1.48	-3.49	44.8	
6246	2.28	-2.81	52.4	CH5
6490	2.70	-1.96	63.4	
6740	3.57	-1.32	73.8	
7738	3.36	-1.12	77.3	CH9
7987	2.58	-2.21	60.1	
8237	1.80	-3.00	50.0	
8250	1.89	-3.17	48.1	

3.3 Measured Radiation Patterns

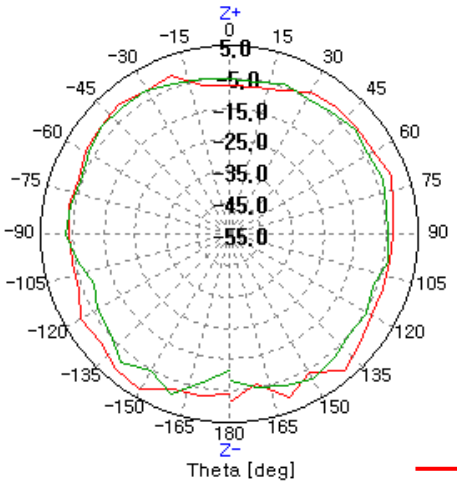
2D H-Cut [θ=90, XY plane]

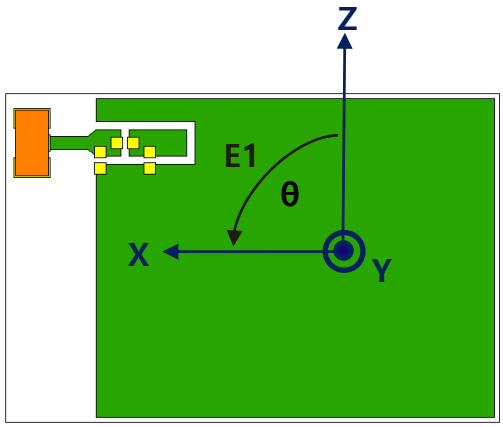


2D E1-Cut [φ=0, ZX plane]



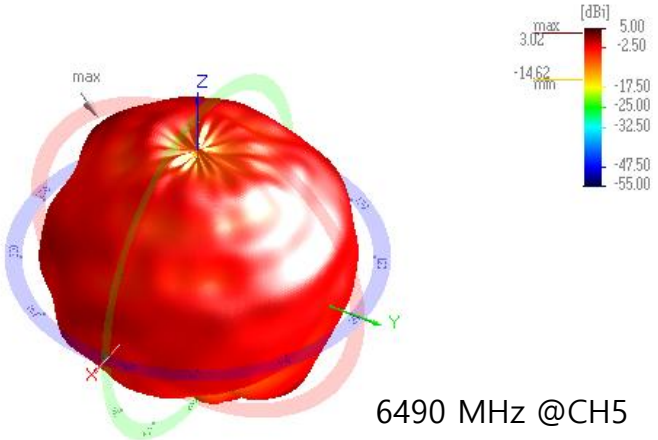
2D E2-Cut [φ=90, YZ plane]



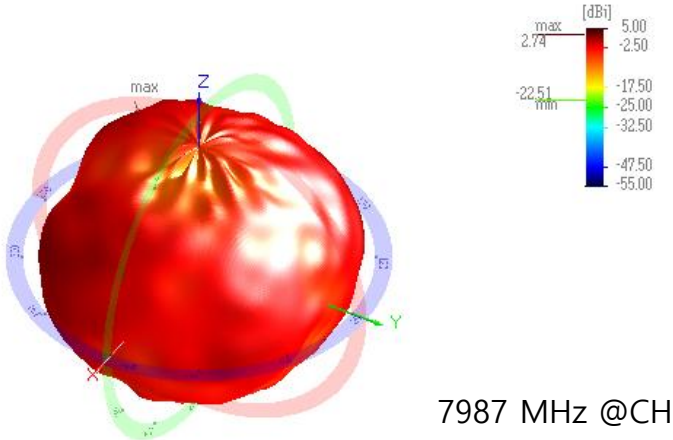


6490 MHz 7987 MHz

3D radiation pattern

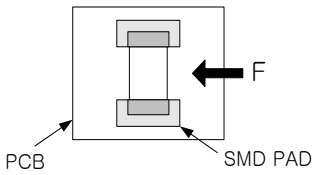


6490 MHz @CH5



7987 MHz @CH9

4. Reliability

No	Item	Test Condition	Test Requirements
1	Adhesive Strength of Termination	Apply force on SMT chip till detached from PCB. 	1. The chip shouldn't be detached from PCB within force (F) 5 kgf. 2. The force (F) when the chip is detached from PCB is should be greater than 5 kgf.
2	Thermal Shock (Cycle)	1. Step 1 : -40 ± 3℃, 30 min Step 2 : +85 ± 3℃, 30 min 2. Number of cycle : 30	1. No visual damage 2. Within electric specification (VSWR)
3	High Temperature Resistance	1. Temperature : +85 ± 5℃ 2. Time : 96 ± hrs.	1. No visual damage 2. Within electric specification (VSWR)
4	Humidity	1. Humidity : 85 % RH Temperature : +85 ± 3℃ 2. Time : 96 ± hrs.	1. No visual damage 2. Within electric specification (VSWR)
5	Vibration	1. 10-2000㎐, Amp 1.5mm, 5g 2. Time : 20 minutes, 3. 12 cycles each of 3 orientations	1. No visual damage 2. Within electric specification (VSWR)

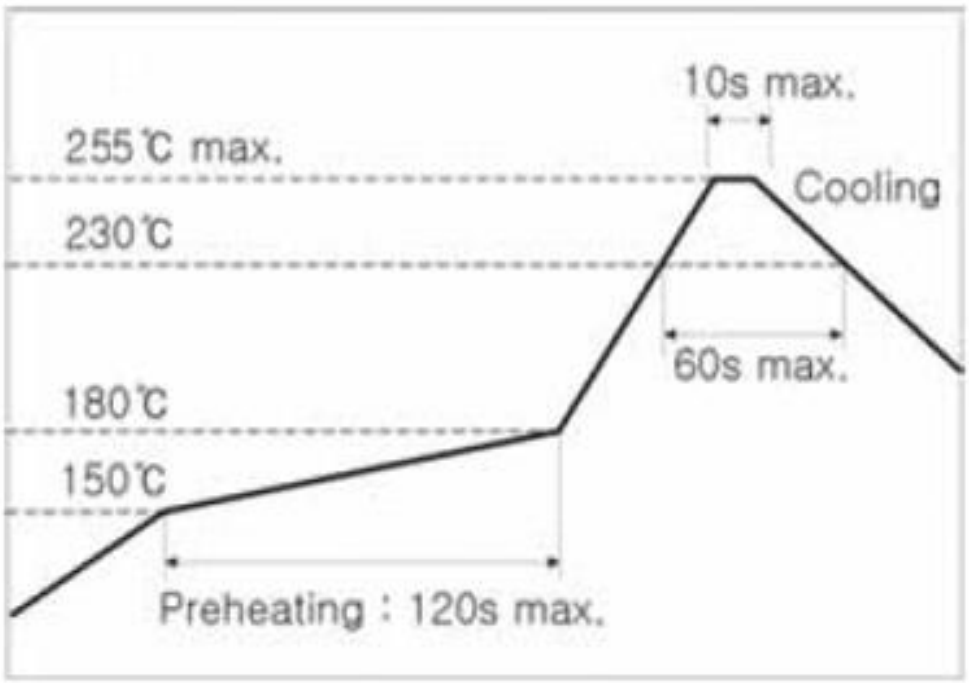
✓ Condition of reliability would be changed by customer's request.

5. Cautions (Recommendations)

✓ Storage environment of parts must be at ambient temperatures of 5 to 40℃ and maximum 60%RH humidity

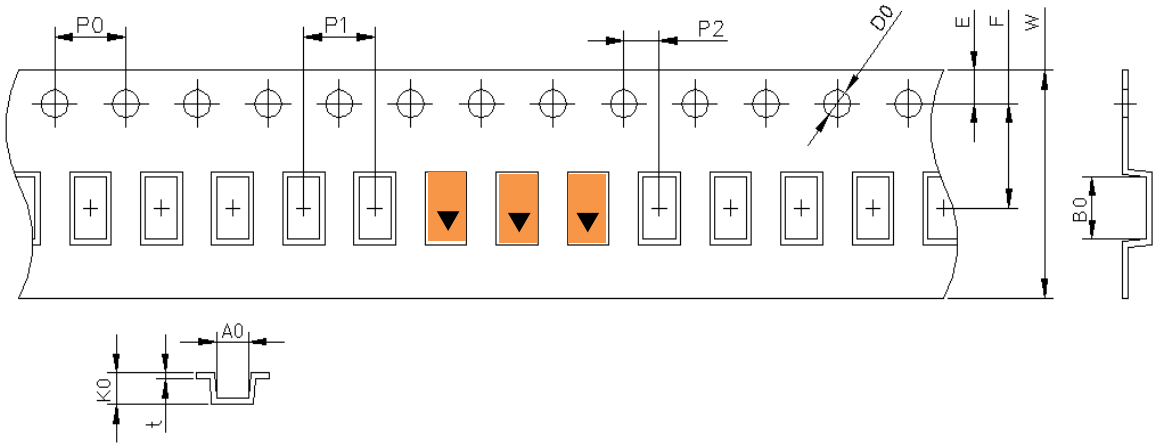
✓ The parts should be used within 6 months from the time of delivery. If stored for over 6 months, check for solder ability before use.

6. Soldering Reflow Profile



7. Packaging

7.1 Carrier Tape Dimension



Item	Spec.	Item	Spec.	Item	Spec.
A0	2.20 ±0.10	P0	4.00 ±0.10	E	1.75 ±0.10
B0	4.30 ±0.10	P1	4.00 ±0.10	F	7.50 ±0.10
K0	1.60 ±0.10	P2	2.00 ±0.10	W	12.00 ±0.30
D0	1.55 ±0.05	-	-	t	0.30 ±0.05

7.2 Packaging Quantity

Item	Quantity	Dimension
Reel	2,000ea	Φ7" * 16mm
Inner Box	6,000 ea (3 reel)	183 * 70 * 185 (mm^3)
Outer Box1	30,000 ea (5 Inner Box)	375 * 200 * 205 (mm^3)
Outer Box2	60,000 ea (10 Inner Box)	390 * 375 * 205 (mm^3)

7.3 Packaging Label

AMOTECH Co., Ltd.

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

Dielectric Chip Antenna

P/N : AMAN402012ST02

Lot No :

Quantity : 2,000 pcs Date : 2018/07/11