

AT5010 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	Frequency Range (MHz)	Peak Gain (XZ-V)	Average Gain (XZ-V)	VSWR	Impedance
AT5010 -A3R0HAA	2400 ~ 2500	2.2 dBi typ.	0.1 dBi typ.	2 max.	50

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

Part Number

AT 5010 - A 3R0 HAA □ □
 ① ② ③ ④ ⑤ ⑥ ⑦

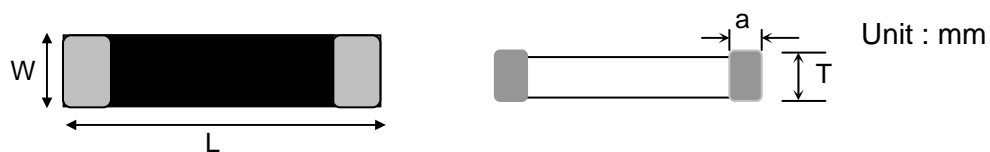
① Type	AT : Antenna	② Dimensions (L x W)	5.0x 1.0 mm
③ Material Code	A	④ Frequency Range	3R0=3000MHz
⑤ Specification Code	HAA	⑥ Packaging	T: Tape & Reel B: Bulk
⑦ Soldering	/LF=lead-free		

Terminal Configuration



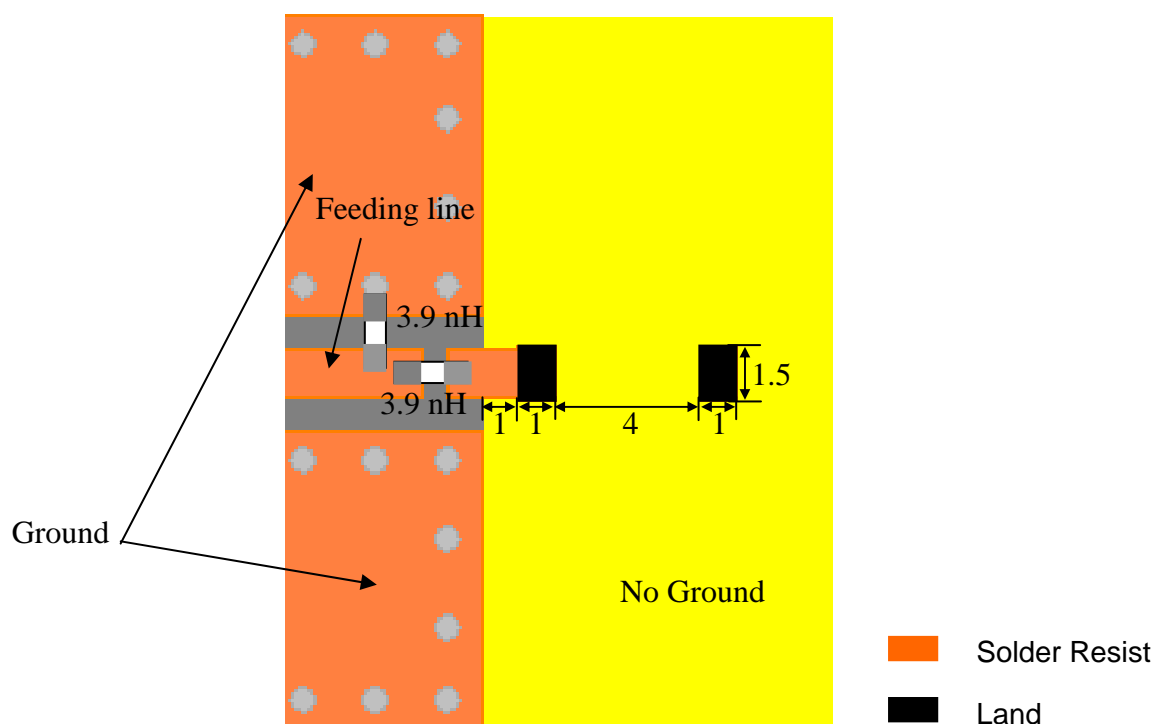
No.	Terminal Name	No.	Terminal Name
①	Feeding Point or NC	②	Feeding Point or NC

Dimensions and Recommended PC Board Pattern



Mark	L	W	T	a
Dimensions	5.0±0.2	1.0±0.2	1.0±0.2	0.5±0.2

❖ With Matching Circuits (Unit in mm)

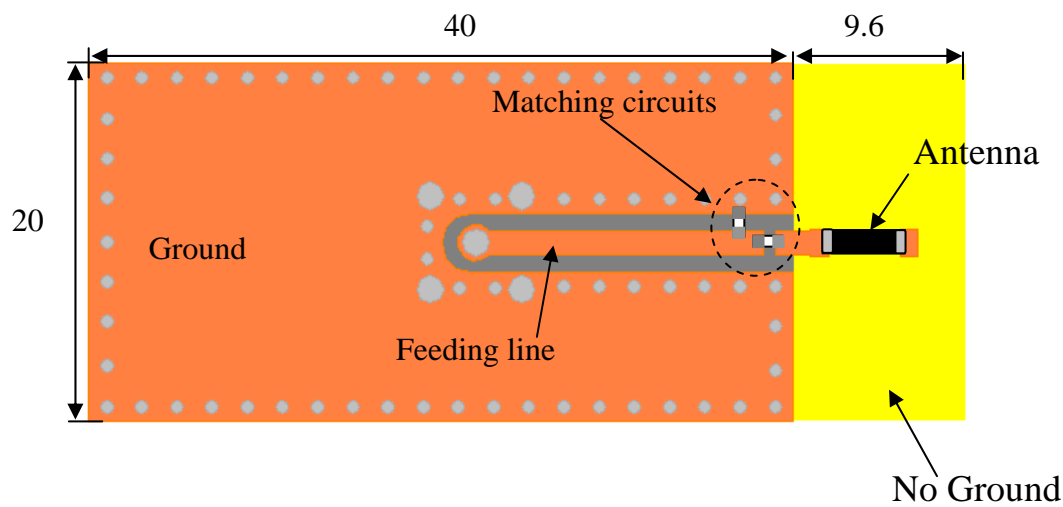


(Matching circuit and component values will be different, depending on PCB layout)

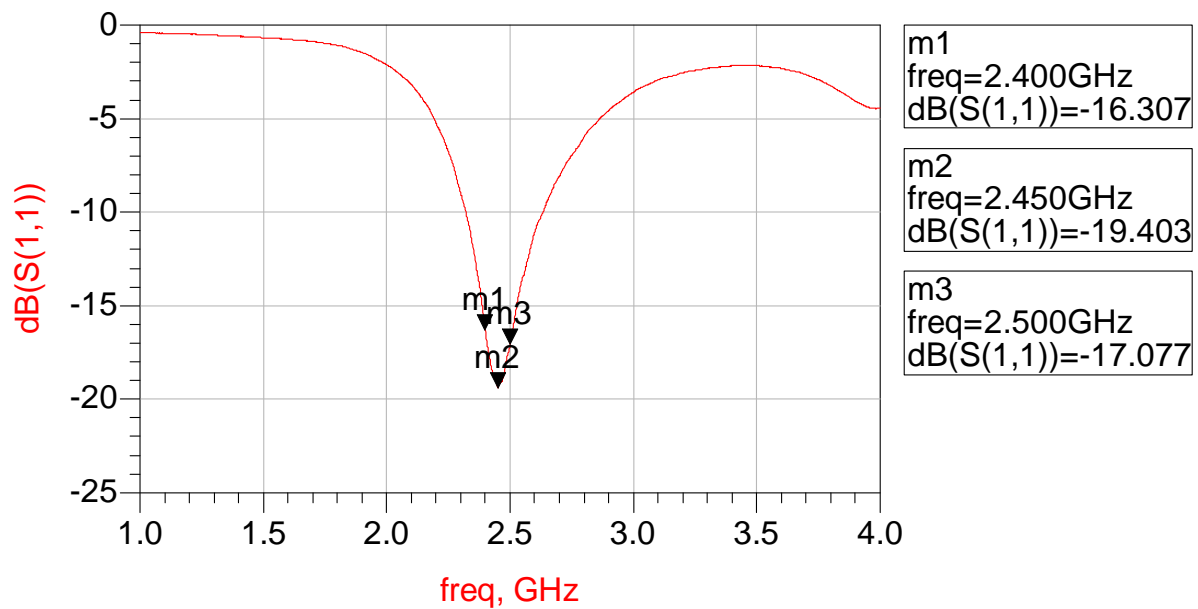
*Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.

Typical Electrical Characteristics (T=25°C)

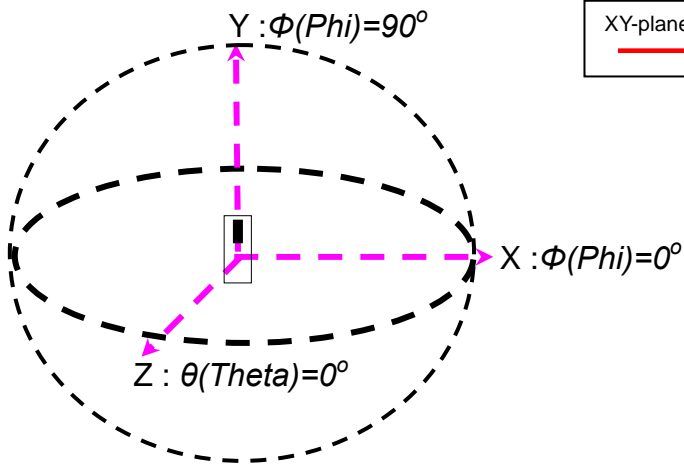
❖ Test Board (Unit in mm)



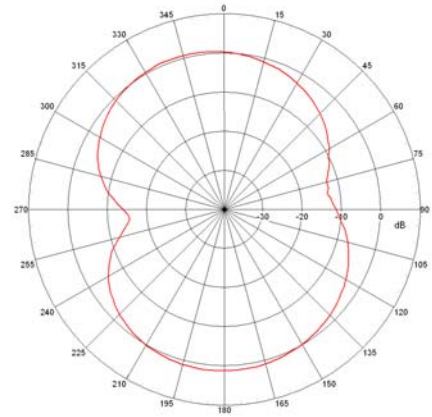
❖ Return Loss / With Matching Circuits



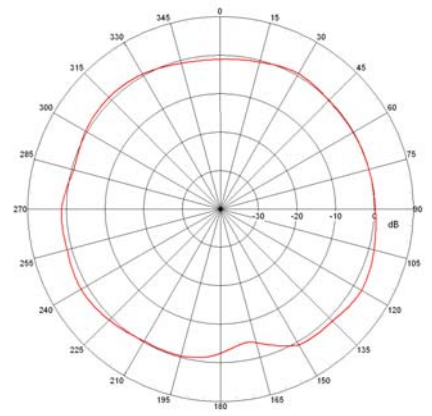
❖ Radiation Patterns - (Antenna Efficiency 70% @ 2.4GHz; 74% @2.45GHz ; 64% @2.5GHz)



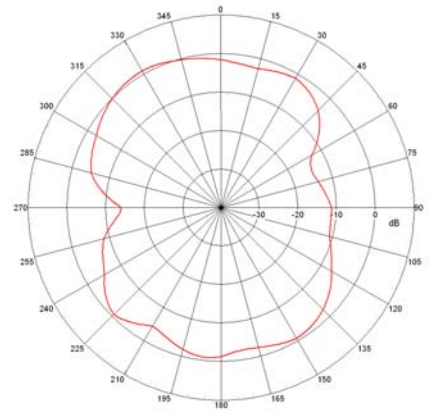
XY-plane @2450MHz
— Total



XZ-plane @2450MHz
— Total

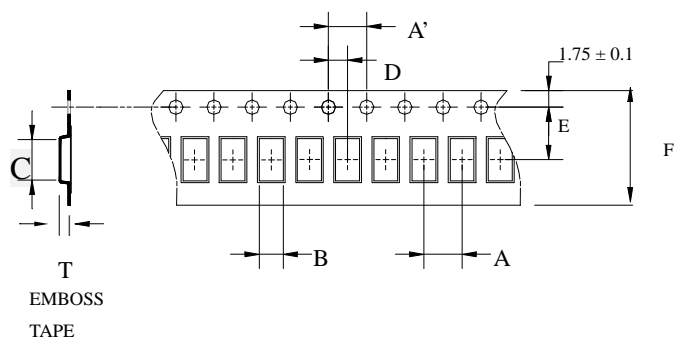


YZ-plane @2450MHz
— Total



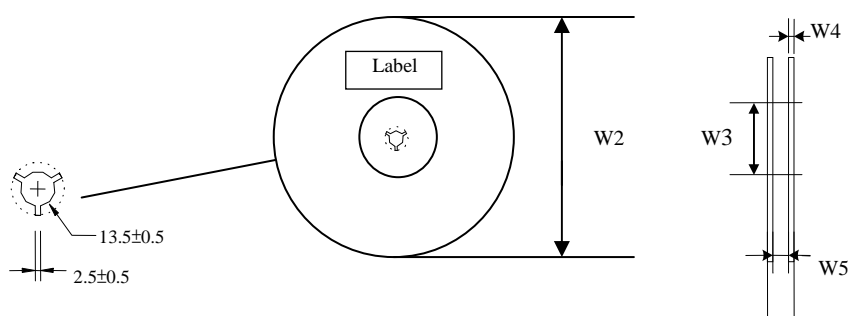
Taping Specifications

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



Type	A	A'	B	C	D	E	F	T	Quantity/per reel	Tape material
AT5010	4.0±	4.0±	1.25±	5.35±	2.0±	5.5±	12.0±	1.15±	2,000pcs	Plastic (Embossed)
	0.10	0.10	0.10	0.10	0.10	0.10	0.15	0.10		

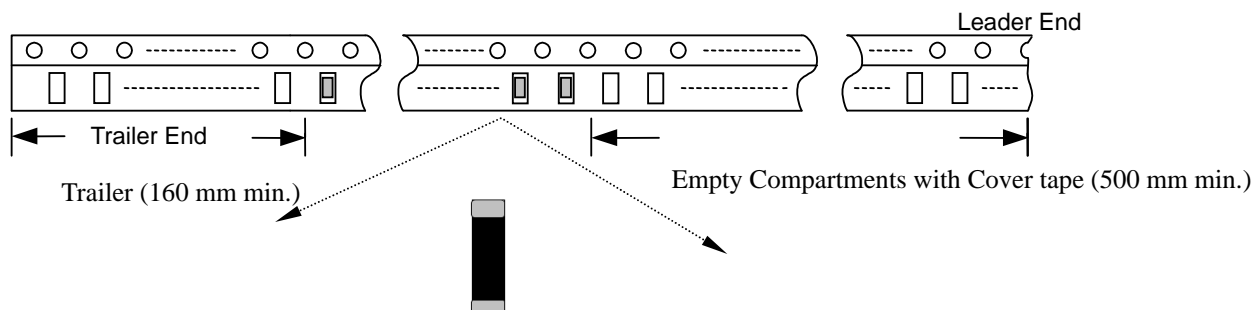
❖Reel Dimensions (Unit: mm)



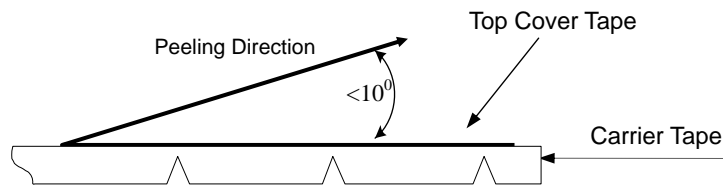
Label: Customer's Name,
ACX P/N, Q'ty, Date,
ACX Corp.

Type	W2	W3	W4	W5
AT5010	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 0.2 – 1.20 N at a peel-off speed of 300 ± 10 mm/min .

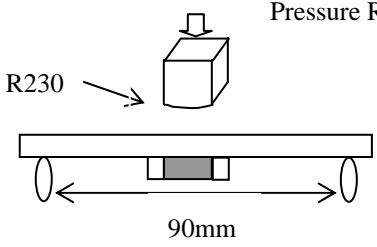
❖ Storage Conditions

- (1) Temperature: 5 ~35°C , relative humidity (RH): 45~75%.
- (2) Non-corrosive environment.

Notes

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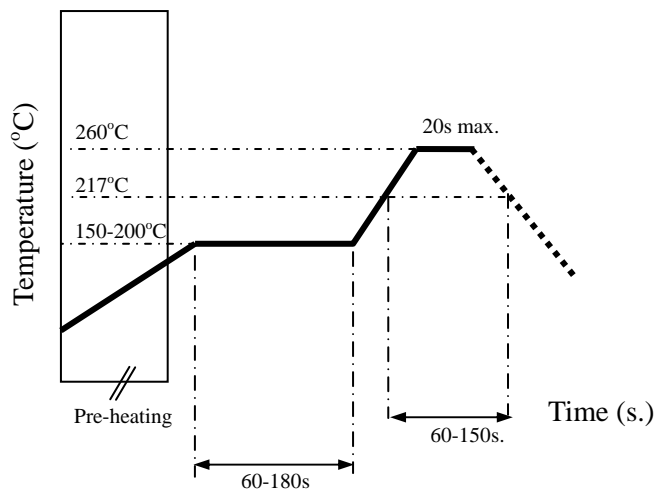
Mechanical & Environmental Characteristics

Item	Requirements	Procedure
Solderability	<ol style="list-style-type: none"> No apparent damage More than 95% of the terminal electrode shall be covered with new solder 	<ol style="list-style-type: none"> Preheat: $120 \pm 5^\circ\text{C}$ Solder: $245 \pm 5^\circ\text{C}$ for 5 ± 1 sec
Soldering strength (Termination Adhesion)	<ol style="list-style-type: none"> 10N minimum 	<ol style="list-style-type: none"> Solder specimen onto test jig. Apply push force at 0.5mm/s until electrode pads are peeled off or ceramic are broken. Pushing force is applied to longitude direction
Deflection (Substrate Bending)	<ol style="list-style-type: none"> No apparent damage 	<ol style="list-style-type: none"> Solder specimen onto test jig (FR4, 0.8mm) using the recommend soldering profile. Apply a bending force of 1mm deflection. 
Heat/Humidity Resistance	<ol style="list-style-type: none"> No apparent damage Fulfill the electrical specification after test 	<ol style="list-style-type: none"> Temperature: $85 \pm 2^\circ\text{C}$ Humidity: 90% ~ 95% RH Duration: 1000 ± 48hrs Recovery: 1-2hrs
Thermal shock (Temperature Cycle)	<ol style="list-style-type: none"> No apparent damage Fulfill the electrical specification after test 	<ol style="list-style-type: none"> One cycle/step 1 : $125 \pm 5^\circ\text{C}$ for 30 min step 2 : $-40 \pm 5^\circ\text{C}$ for 30 min No of cycles : 100 Recovery: 1-2 hrs
Low Temperature Resistance	<ol style="list-style-type: none"> No apparent damage Fulfill the electrical specification after test 	<ol style="list-style-type: none"> Temperature: $-40 \pm 5^\circ\text{C}$ Duration: 500 ± 24hrs Recovery: 1-2hrs

Soldering Conditions

❖ Typical Soldering Profile for Lead-free Process

Reflow Soldering :



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