AT5020 Series 【Preliminary】

Multilayer Chip Antenna

Features

❖ Monolithic SMD with small, low-profile and light-weight type.

❖ Wide bandwidth

Applications

❖2.4GHz WLAN, Home RF, Bluetooth Modules, etc.

Specifications

Part Number	Frequency Range (MHz)	Peak Gain (dBi typ.)	Average Gain (dBi typ.)	VSWR	Impedance
AT5020 -E3R0HBA_	2400~2500	0dBi (XZ-V)	-2dBi (XZ-V)	2 max.	50 Ω

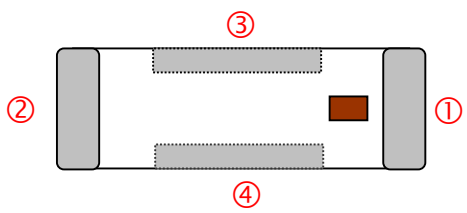
Q'ty/Reel (pcs) : 1,000 pcs
Operating Temperature Range : -40 ~ +85 °C
Storage Temperature Range : -40 ~ +85 °C
Power Capacity : 3W max.

Part Number

AT	5020	-	E	3R0	HBA	□
①	②		③	④	⑤	⑥

① Type	AT : Antenna	② Dimensions (L × W)	7.0× 2.0 mm
③ Material Code	E	④ Frequency Range	3R0=3000MHz
⑤ Specification Code	HBA	⑥ Packaging	T: Tape & Reel B: Bulk

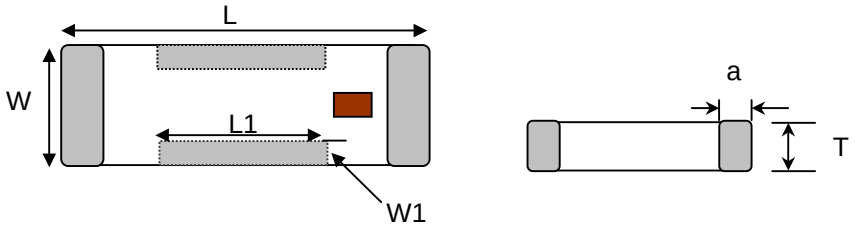
Terminal Configuration



No.	Terminal Name	No.	Terminal Name
①	Feeding Point	③	NC
②	NC	④	NC

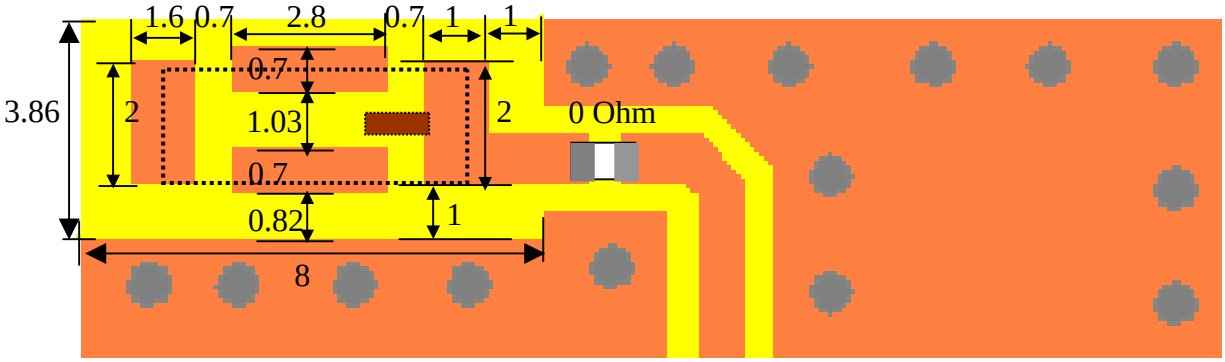
Dimensions and Recommended PC Board Pattern

Unit : mm

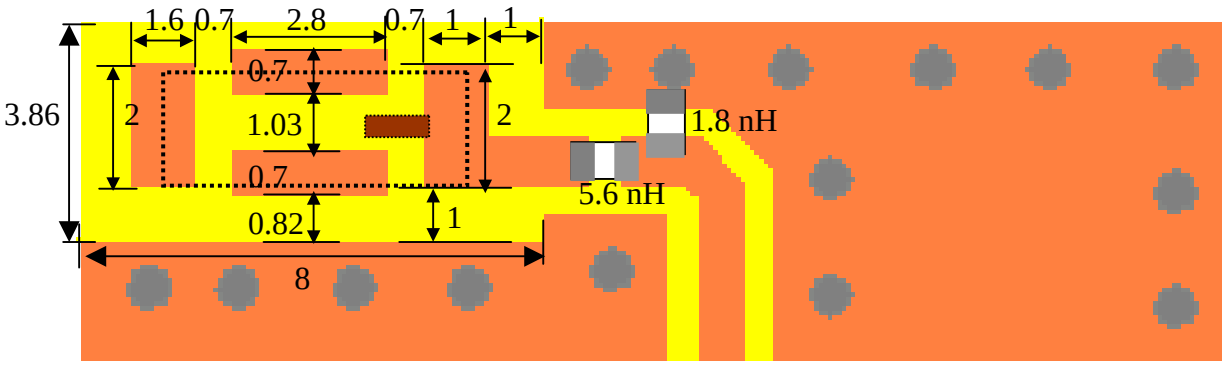


Mark	L	W	L1	W1	T	a
Dimensions	5.0±0.2	2.0±0.2	2.6±0.2	0.5±0.2	2.0+ 0.1/-0.2	0.5±0.3

(a) Without Matching Circuits (Unit in mm)



(b) With Matching Circuits

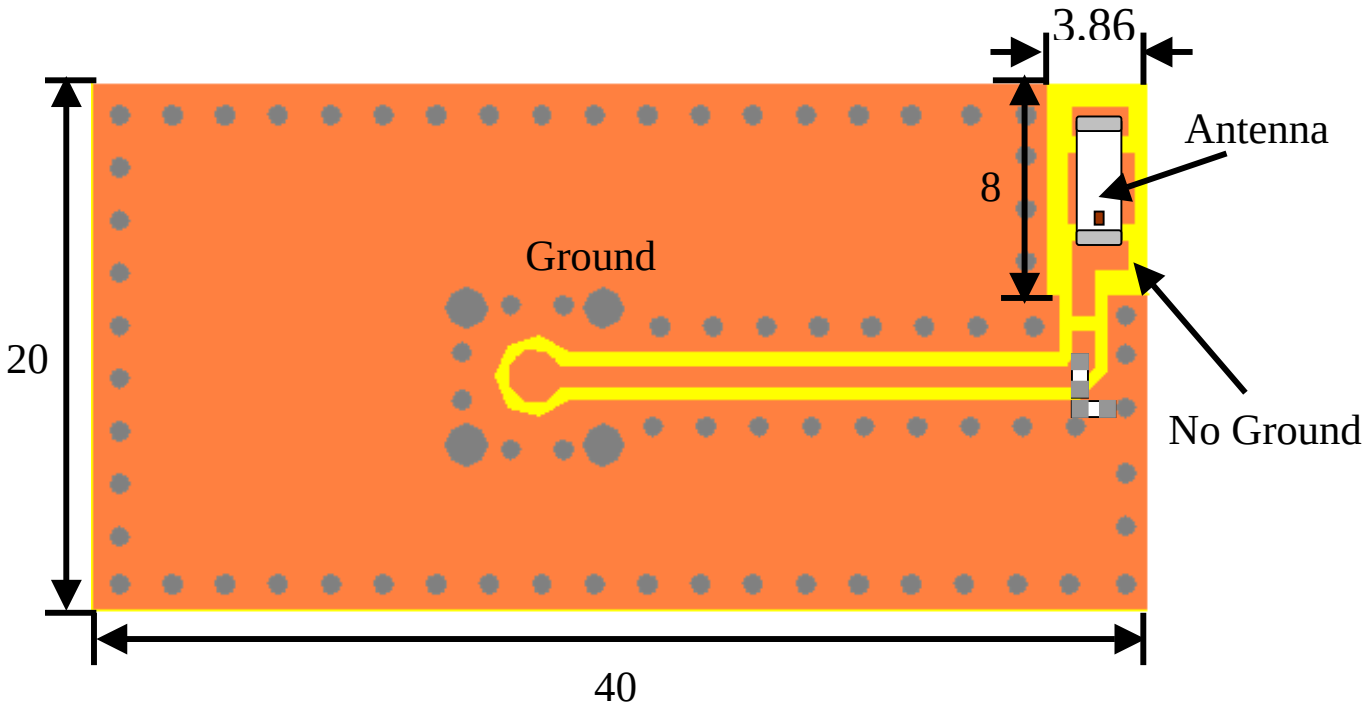


(Matching circuit and component values will be different, depending on PCB layout)

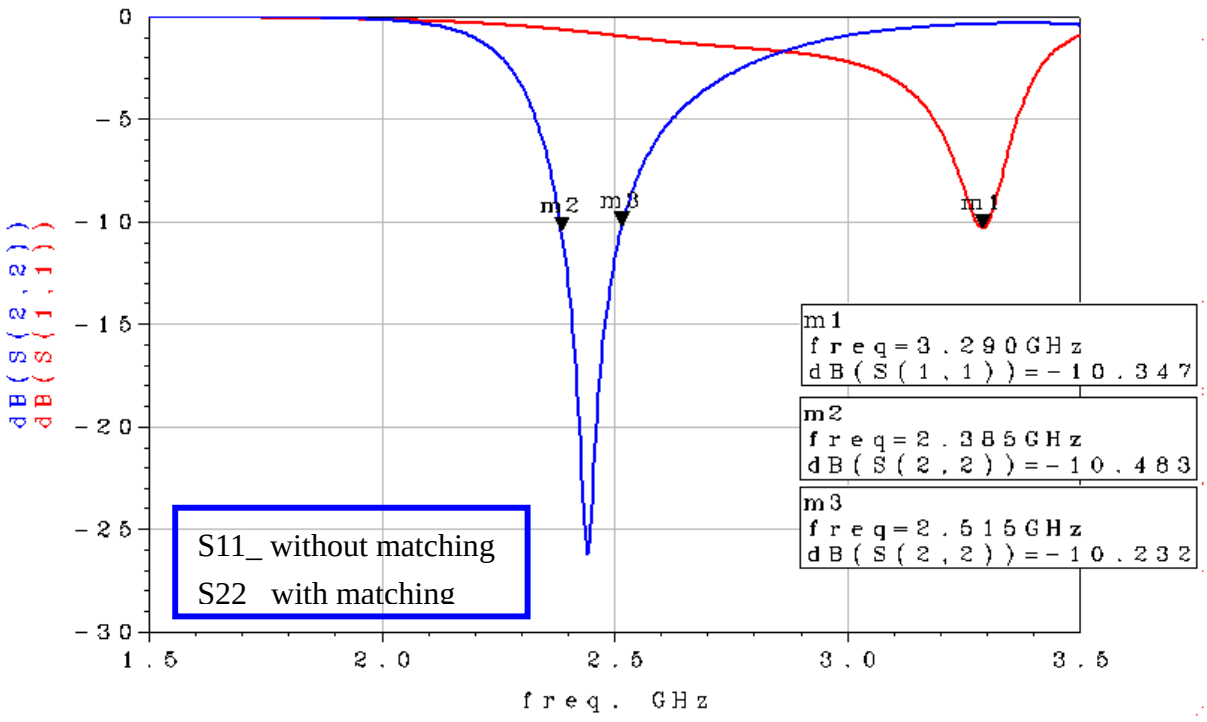
*Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.

Typical Electrical Characteristics (T=25°C)

❖Test Board (Unit in mm)

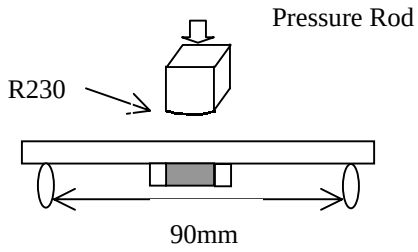


❖Return Loss



ACX
Advanced Ceramic X

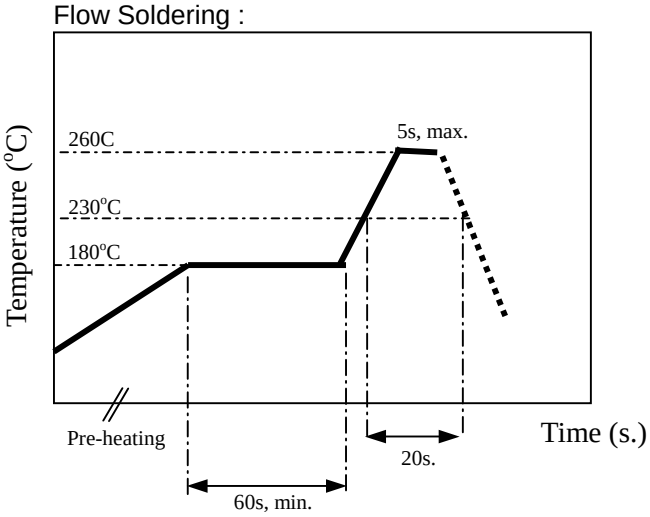
Mechanical & Environmental Characteristics

	Requirements	Procedure
Solderability	1. No apparent damage 2. More than 75% of the terminal electrode shall be covered with new solder	1. Preheat: 120± 5 °C 2. Solder: 230± 5°C for 5± 1 sec
Thermal shock (Temperature Cycle)	1. No apparent damage 2. Fulfill the electrical specification after test	1. One cycle/ step 1: 85 ± 5 °C for 20sec step 2: -40 ± 3 °C for 20sec 2. Cycle time: 30min 3. No. of cycles: 100 4. Recovery: 1-2hrs
Heat Resistance	1. No apparent damage 2. Fulfill the electrical specification after test	1. Temperature: 85± 2 °C 2. Duration: 24±2hrs 3. Recovery: 1-2hrs
Low Temperature Resistance	1. No apparent damage 2. Fulfill the electrical specification after test	1. Temperature: -40°± 5 °C 2. Duration: 24 ±2hrs 3. Recovery: 1-2hrs
Humidity Resistance	1. No apparent damage 2. Fulfill the electrical specification after test	1. Temperature: 85± 2°C 2. Humidity: 80% ~ 85% RH 3. Duration: 1000±48hrs 4. Recovery: 1-2hrs
Soldering strength (Push strength)	1. 9.8N minimum	1. Solder specimen onto test jig. 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
Deflection (Bending)	1. No apparent damage 2. Fulfill the electrical specification	1. Solder specimen onto test jig (FR4, 0.8mm) using the recommend soldering profile. 2. Apply a bending force of 2mm deflection 、 
Drop Shock	1. No apparent damage	1. Dropped onto hard wood from height of 50 cm for 3 times ; each x,y and z direction except terminal direction

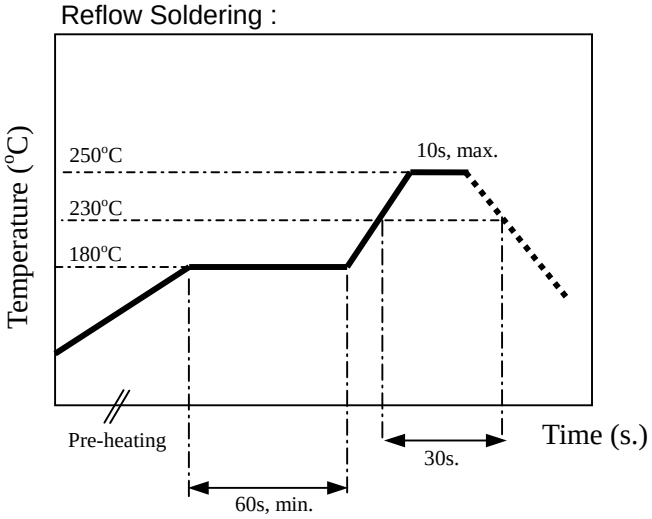
Typical Soldering Profile

❖Typical Soldering Profile for Lead-free Process

Flow Soldering :



Reflow Soldering :



The sample must be pre-heated before soldering .The temperature difference between preheating and soldering must be within 150 ℃.

Notes

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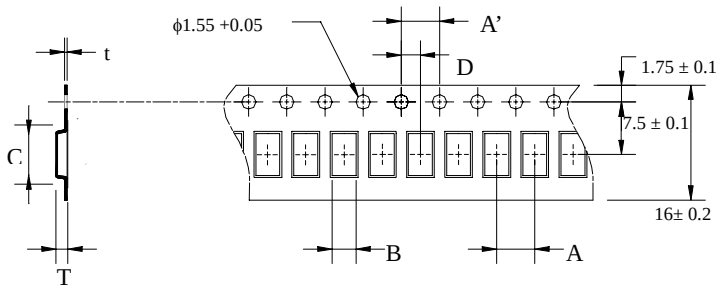
ACX
Advanced Ceramic X

Taping Specifications

❖Tape Dimensions (Unit: mm)

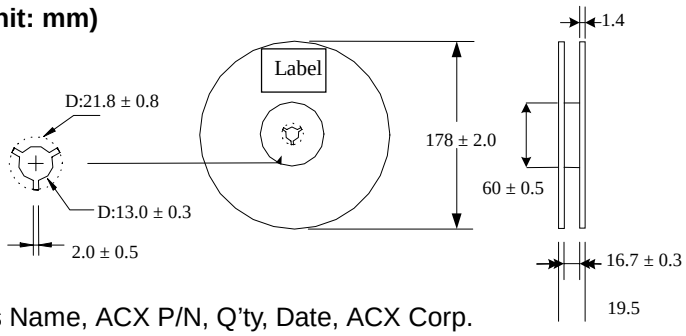


Type	A	A'	B	C	D	t	T
3216	4.0± 0.1	4.0± 0.1	1.9± 0.1	3.5± 0.1	2.0± 0.1	0.20± 0.05	Max. 1.4
5020	4.0± 0.1	4.0± 0.1	2.4± 0.1	5.5± 0.1	2.0± 0.1	0.20± 0.05	Max. 1.4
7020	4.0± 0.1	4.0± 0.1	2.4± 0.1	7.3± 0.1	2.0± 0.1	0.22± 0.05	Max. 1.55
7635	8.0± 0.1	4.0± 0.1	3.75± 0.1	7.85± 0.1	2.0± 0.1	0.30± 0.05	Max. 1.40
8516	4.0± 0.1	4.0± 0.1	1.85± 0.1	8.70± 0.1	2.0± 0.1	0.25± 0.05	Max. 1.40
9520	4.0± 0.1	4.0± 0.1	2.3± 0.1	9.7± 0.1	2.0± 0.1	0.22± 0.05	Max. 1.45
R130	8.0± 0.1	4.0± 0.1	3.35± 0.1	10.35 ±0.1	2.0± 0.1	0.25± 0.05	Max. 1.40

❖Quantity

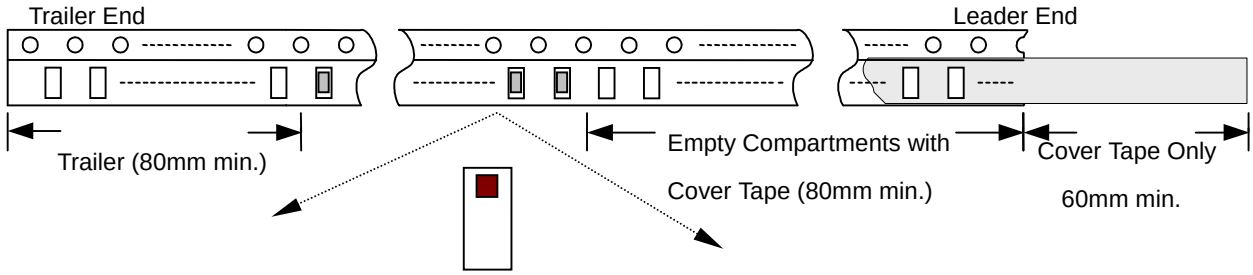
Type	3216	5020	7020	7635	8516	9520	R130
Quantity /per reel	3,000pcs	2,000	1,000 pcs	1,000 pcs	1000pcs	1,000 pcs	1,000 pcs

❖Reel Dimensions (Unit: mm)

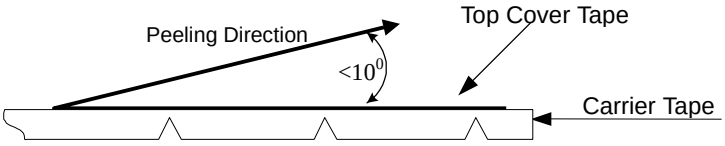


Label: Customer's Name, ACX P/N, Q'ty, Date, ACX Corp.

❖Leader and Trailer Tape (Plastic material)



❖Peel-off Force



Peel-off force should be in the range of 0.1 – 0.6 N at a peel-off speed of 300±10 mm/min .

❖**Storage Conditions**

(1) Temperature: 15 ~35℃, relative humidity (RH): 45~75%.
(2) Non-corrosive environment
(3) Products should be used within six months of receipt.

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