ACX
Advanced Ceramic X

ATR240 Series【Preliminary】

Multilayer Chip Antenna



Features

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

❖ Wide bandwidth

Applications

❖ Low power radio applications for 868MHz.

Specifications

Part Number	Operating Frequency (MHz)	Peak Gain (dBi typ.)	Average Gain (dBi typ.)	VSWR	Impedance
ATR240 -TR86HCA_	858~878	1.0 (XY-Total)	-2.0 (XY-Total)	3.0 max.	50 Ω

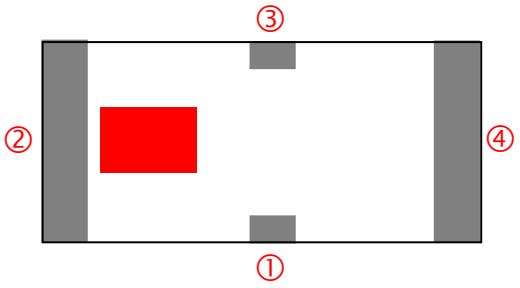
Q'ty/Reel (pcs) : 500 pcs
Operating Temperature Range : -40 ~ +85 °C
Storage Temperature Range : -40 ~ +85 °C
Storage Period : 12 months max.
Power Capacity : 2W max.

Part Number

AT	R240	-	T	R86	HCA	□	/LF
①	②		③	④	⑤	⑥	⑦

① Type	AT : Antenna	② Dimensions (L × W)	15.0× 4.0 mm
③ Material Code	T	④ Initial center frequency	R86=868MHz
⑤ Specification Code	HCA	⑥ Packaging	T: Tape & Reel B: Bulk
⑦ Soldering	=lead-containing /LF=lead-free		

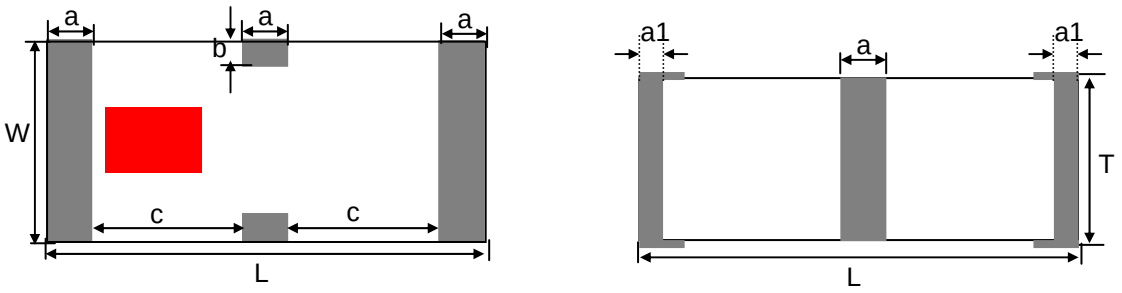
Terminal Configuration



No.	Terminal Name	No.	Terminal Name
①	NC	③	NC
②	Feeding point	④	GND

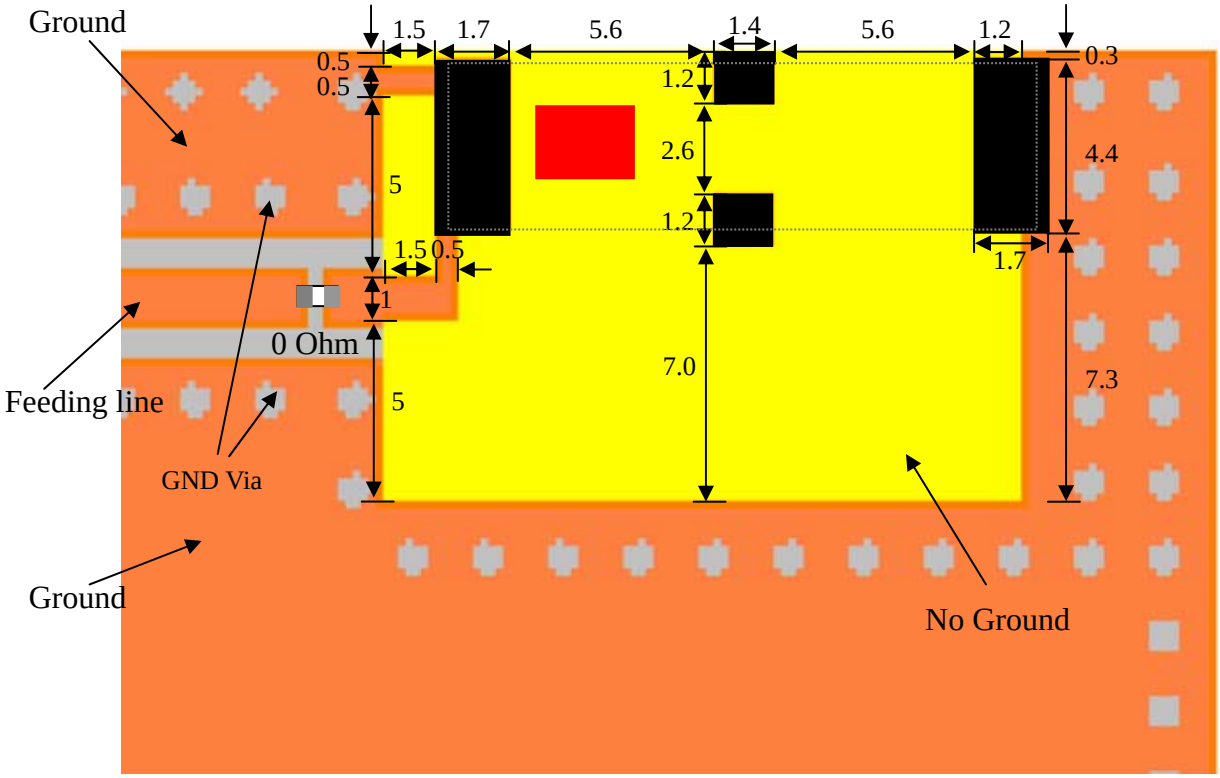
Dimensions and Recommended PC Board Pattern

Unit : mm



Mark	L	W	T	a	a1	b	c
Dimensions	15.0±0.2	4.0±0.2	3.2±0.2	1.0±0.2	0.5±0.2	0.5±0.2	6.0±0.2

❖Without Matching Circuits (Unit in mm)



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

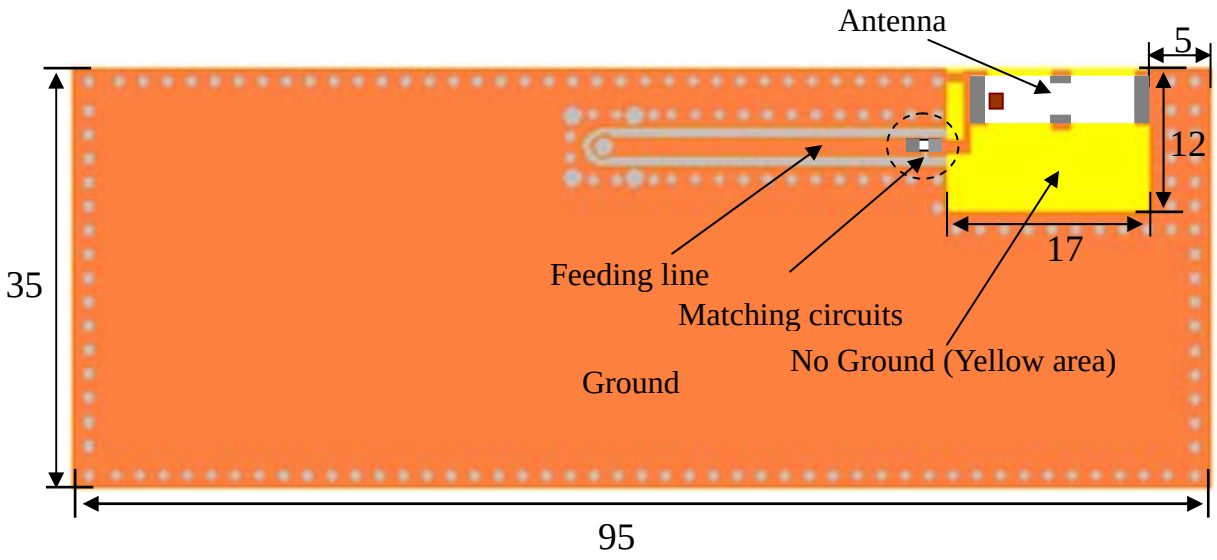
Solder Resist

Land

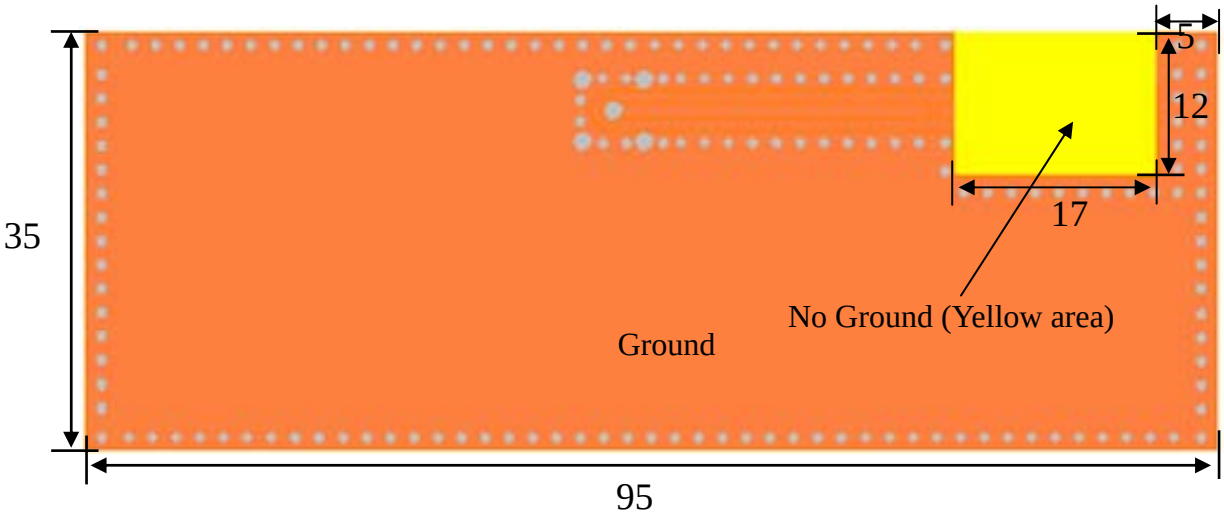
*Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.

Typical Electrical Characteristics (T=25°C)

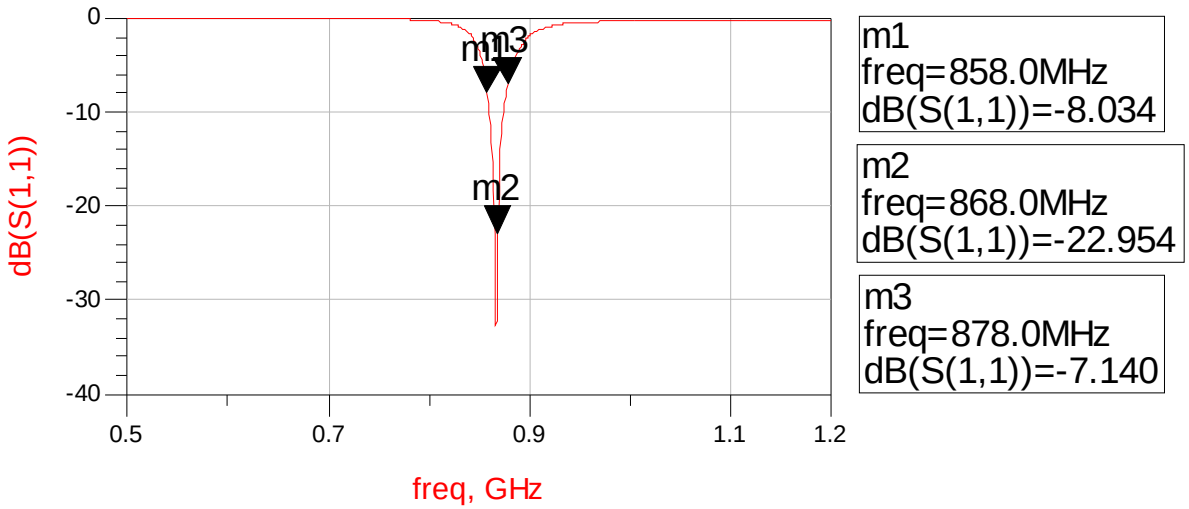
❖Test Board-Top View (Unit in mm)



❖Test Board-Bottom View (Unit in mm)



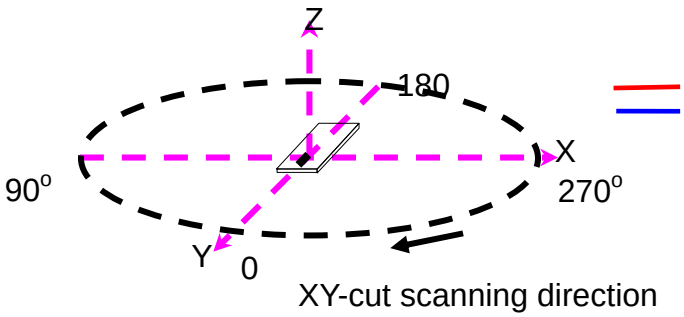
❖Return Loss / Without Matching Circuits

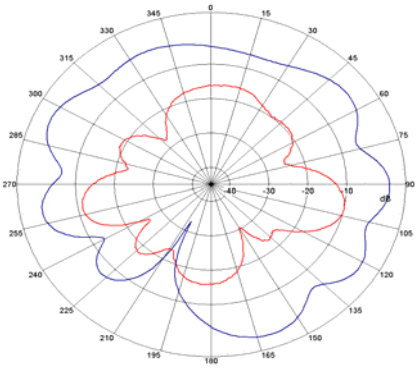


❖Radiation Patterns

XY cut @ 868MHz
Vertical
Horizontal

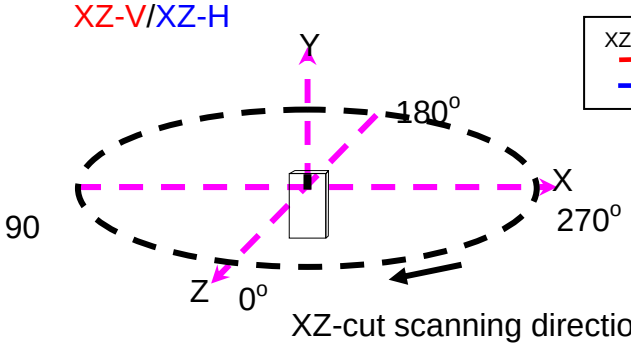
XY-V/XY-H

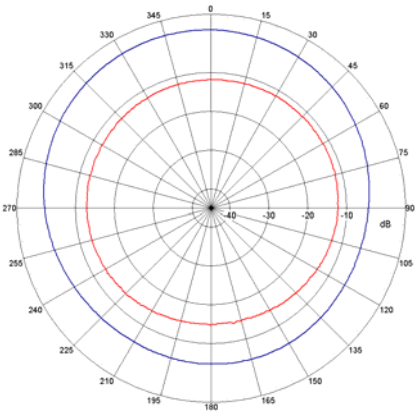




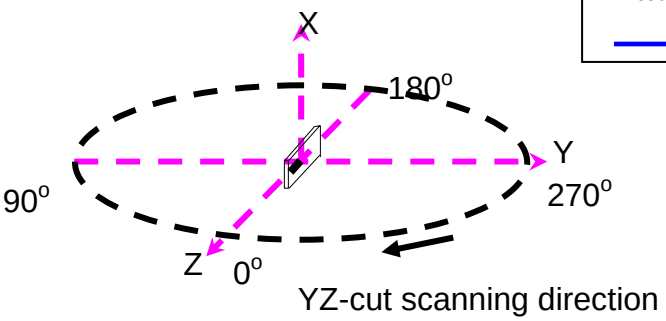
XZ-V/XZ-H

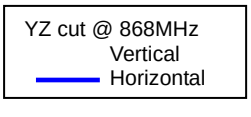
XZ cut @ 868MHz
Vertical
Horizontal

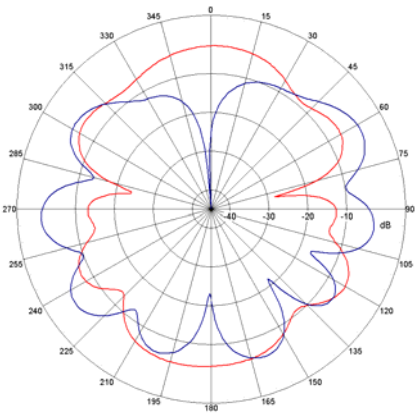




YZ-V/YZ-H

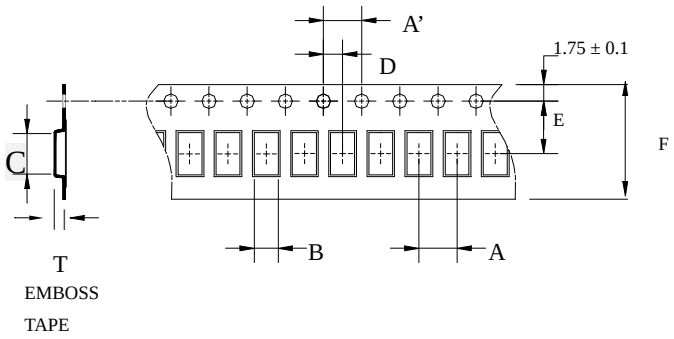

X
180°
Y
90°
270°
Z
0°
YZ-cut scanning direction


YZ cut @ 868MHz
Vertical
Horizontal



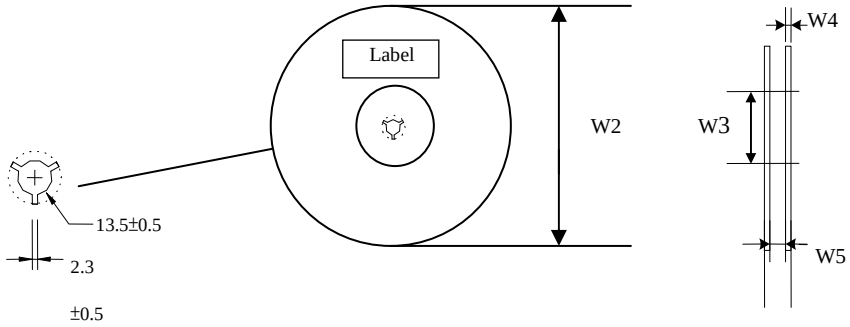
Taping Specifications

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



Type	A	A'	B	C	D	E	F	T	Quantity/per reel	Tape material
ATR240	8.0± 0.1	4.0± 0.1	4.35± 0.1	15.4± 0.1	2.0± 0.1	11.5± 0.1	24.0± 0.3	3.50± 0.1	500pcs	Plastic (Embossed)

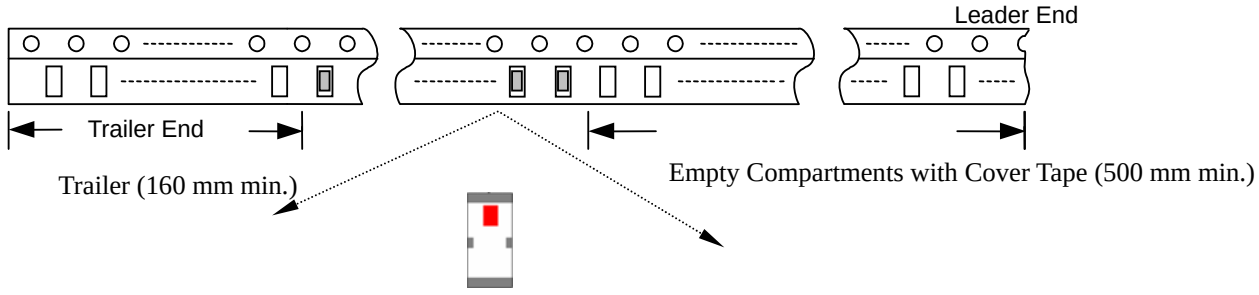
❖Reel Dimensions (Unit: mm)



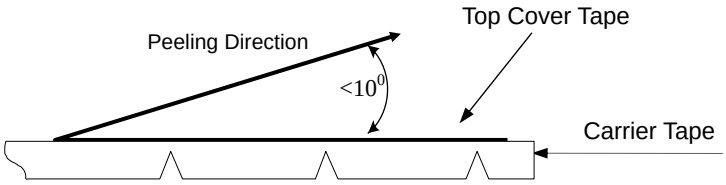
Label: Customer's Name,
ACX P/N, Q'ty, Date,
ACX Corp.

Type	W2	W3	W4	W5
ATR240	178±1	60±1	1.4±0.2	25±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 .

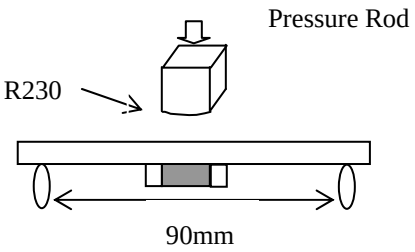
❖**Storage Conditions**

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

Notes

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

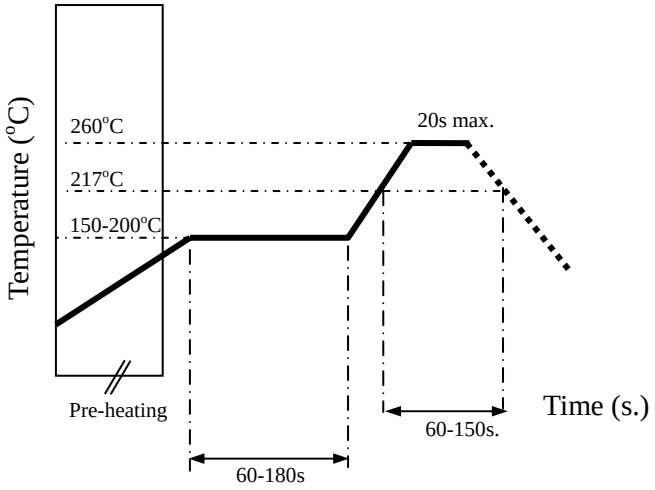
Mechanical & Environmental Characteristics

Item	Requirements	Procedure
Solderability	1. No apparent damage 2. More than 95% of the terminal electrode shall be covered with new solder	1. Preheat: 120± 5 °C 2. Solder: 245± 5°C for 5± 1 sec
Soldering strength (Termination Adhesion)	1. 1kg 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 (Substrate Bending)	1. No apparent damage	1. Solder specimen onto test jig (FR4, 0.8mm) using the recommend soldering profile. 2. Apply a bending force of 1mm deflection 
Heat/Humidity Resistance	1. No apparent damage 2. Fulfill the electrical specification after test	1. Temperature: 85± 2°C 2. Humidity: 90% ~ 95% RH 3. Duration: 1000±48hrs 4. Recovery: 1-2hrs
Thermal shock (Temperature Cycle)	1. No apparent damage 2. Fulfill the electrical specification after test	1. One cycle/step 1：125 ± 5°C for 30 min step 2：- 40 ± 5°C for 30 min 2. No of cycles：100 3. Recovery:1-2 hrs
Low Temperature Resistance	1. No apparent damage 2. Fulfill the electrical specification after test	1. Temperature: -40°± 5 °C 2. Duration: 500 ±24hrs 3. Recovery: 1-2hrs

Soldering Conditions

❖**Typical Soldering Profile for Lead-free Process**

Reflow Soldering :



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