Application Note

Rufa 2.4 GHz SMD Antenna

Application Note

Rev: AE020157-B/ January 28 2003

Features

- Designed for 2.4 GHz (Bluetooth™, WLAN 802.11b, Home RF)
- Intended for SMD mounting
- Supplied in tape on reel

Applications

- Mobile phones
- PDA's
- Headsets
- Laptops
- PC- Cards
- CF- Cards

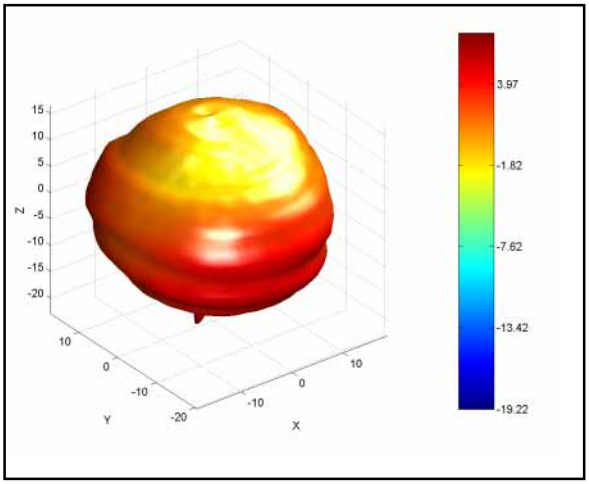
Description

The Rufa antenna is intended for use with all 2.4 GHz applications. The antenna requires a groundplane, i.e your device acts as an active part of the antenna and thus demand careful consideration concerning its placement

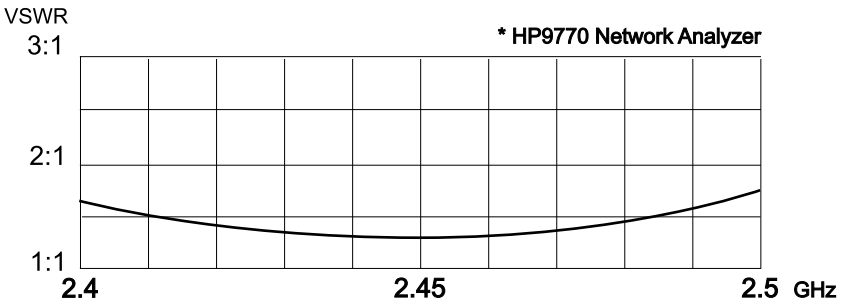
General data

Product name	Rufa 2.4 GHz
Article No	3030A5839-01 (Left)
	3030A5887-01 (Right)
Frequency	2.4-2.5 GHz
Polarization	Linear
Operating temperature	- 40 to 85 °C
Impedance	50 Ω
Weight	0.1 g
Antenna type	SMD
Peak Gain*	4 dBi
Efficiency*	65 %
VSWR*	<2:1
* Rufa reference board	

Radiation Pattern 2.45 GHz



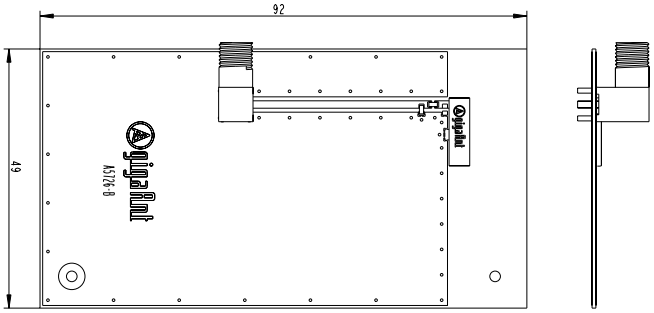
Voltage Standing Wave Ratio



Subject to changes without prior notice

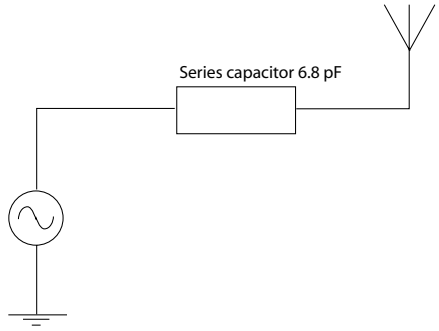
Rufa 2.4 GHz test board characteristics & RF performance

Test board dimensions (mm)



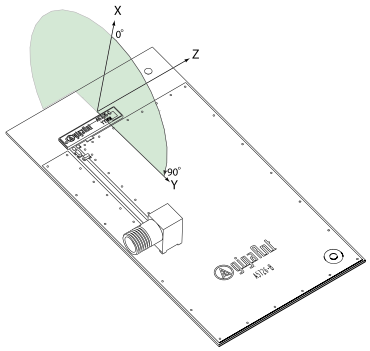
The testboard is designed for evaluation purposes for Rufa 2.4 GHz SMD antenna. The card has the same size as a typical PCMCIA card and is fitted with a SMA connector.

Test board matching

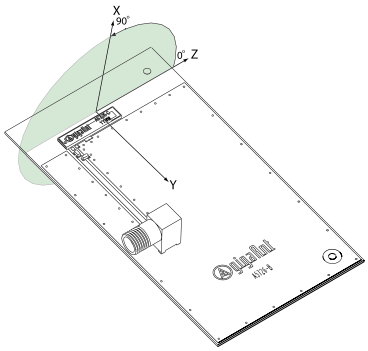


The testboard is matched with above specified component. Note! The component value(s) will vary depending on size of PCB, surrounding components etc.

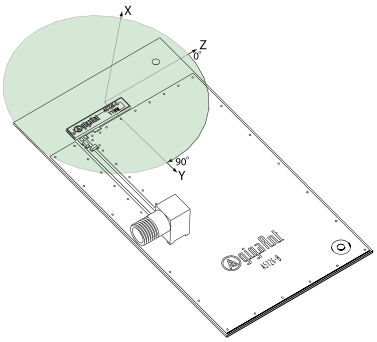
Radiation patterns



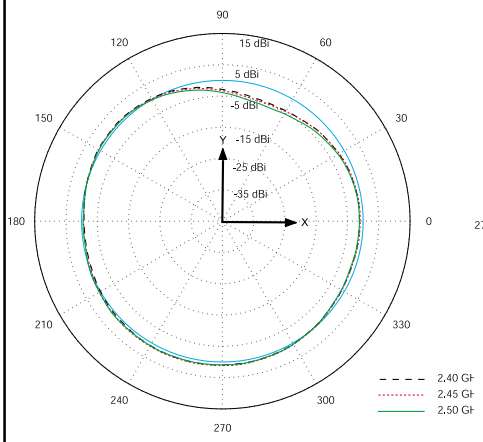
XY- Plane

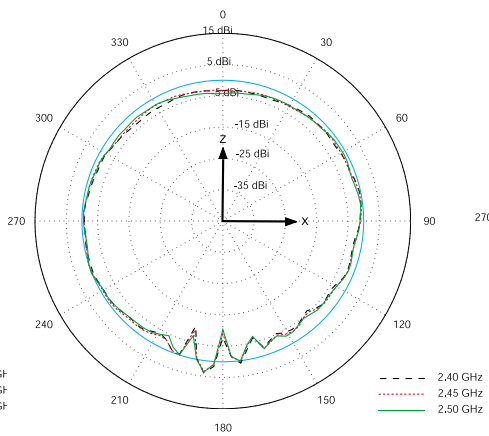


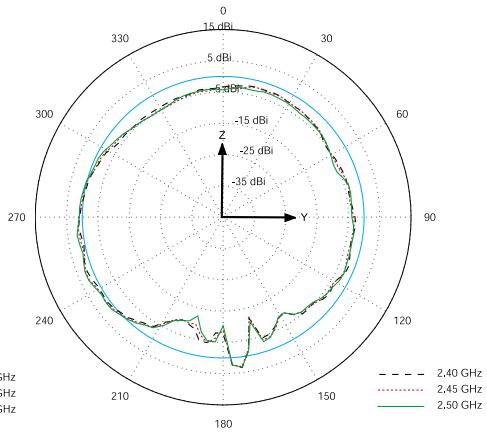
XZ- Plane



YZ- Plane



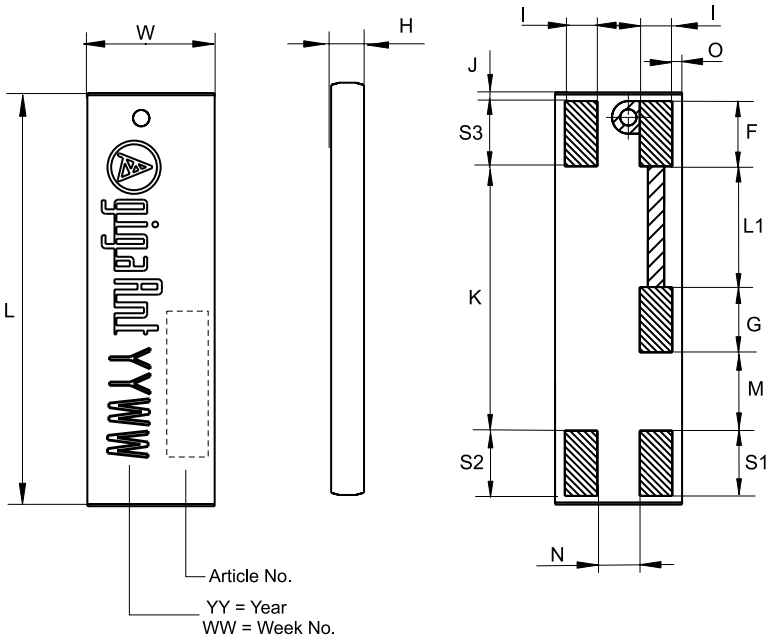




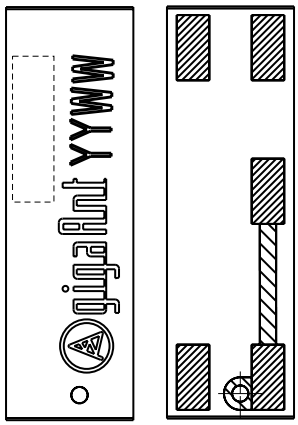
Subject to changes without prior notice

Antenna Dimensions

Art no: 3030A5839-01 (Left)



Art no: 3030A5887-01 (Left)

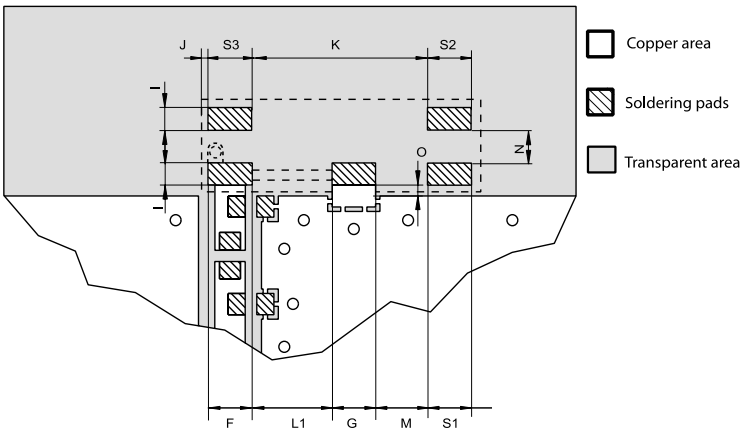


L	W	H	G	F	S1 S2 S3	I	J	K	L1	M	N	O
Length	Width	Height	Ground	Feed	Solder							
12.8 ±0.2	3.9 ±0.2	1.0 ±0.15	2.0 ±0.1	2.0 ±0.1	2.0 ±0.1	1.0±0.1	0.25±0.1	8.1 ±0.1	3.7±0.1	2.4±0.1	1.3±0.1	0.3±0.15

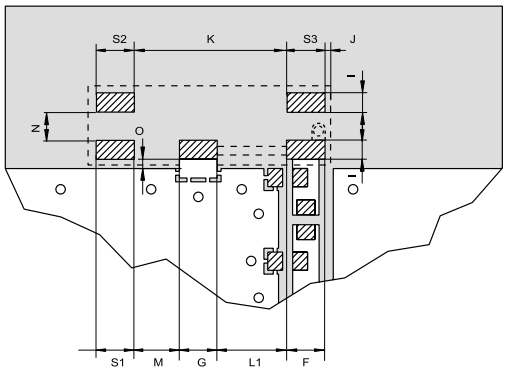
Dimensions in millimeters

Antenna Foot print

Art no: 3030A5839-01 (Left)



Art no: 3030A5887-01 (Left)

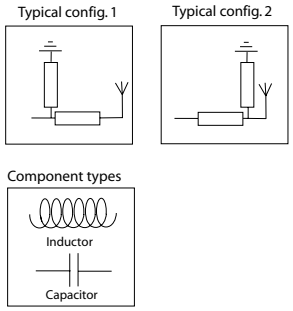


G	F	S1 S2 S3	I	J	K	L1	M	N	O
Ground	Feed	Solder							
2.0 ±0.1	2.0 ±0.1	2.0 ±0.1	1.0 ±0.1	0.25 ±0.1	8.1 ±0.1	3.7 ±0.1	2.4±0.1	1.3±0.1	0.5±0.1

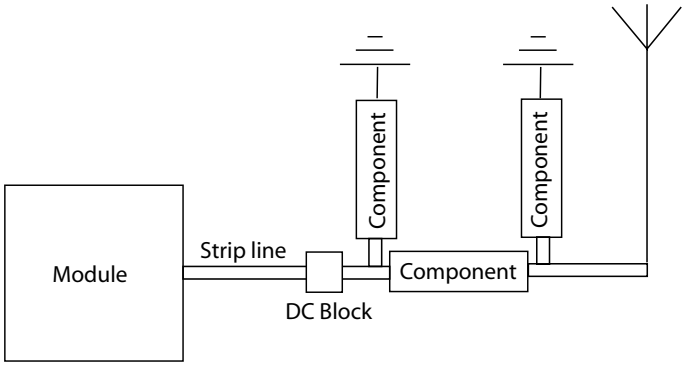
Dimensions in millimeters

Subject to changes without prior notice

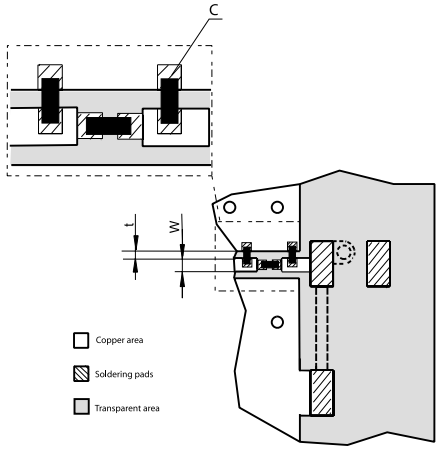
Electrical interface



The matching network has to be individually designed using one, two or three components.



Transmission line and matching



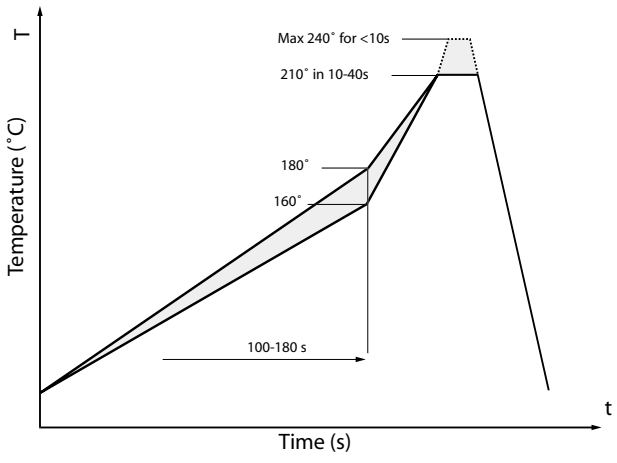
t	transmission line: Unique dimensioning according to your PCB *
W	transmission line: Unique dimensioning according to your PCB *
C	component matching: Inductor and capacitor values according to your specific device*

* gigaAnt provides this service upon request

Recomended soldering conditions

Reflow soldering

Max. temp: +240°C less than 10s.



Subject to changes without prior notice

Application example

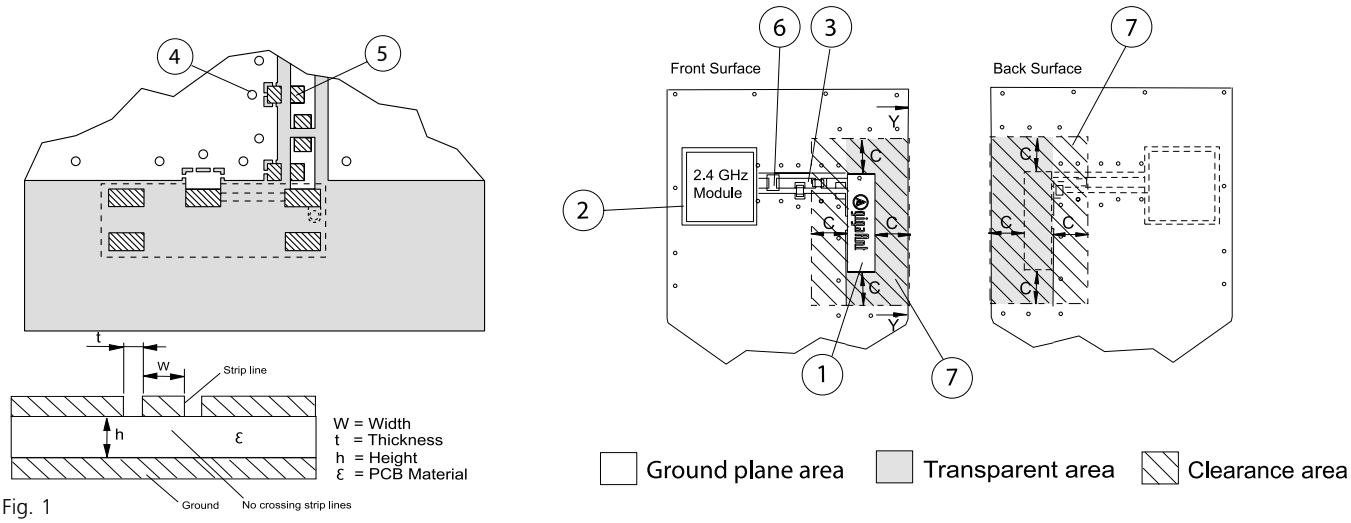


Fig. 1

General
The antenna is of a quarter wave type and is dependent of the groundplane area to complete the antenna function. The antenna performance is also dependent of the size of the groundplane and the transparent area.

1. Placement of the antenna
The antenna shall be placed on a transparent area without underlying groundplane at the edge of the PCB oriented as above. Components should not be placed in the clearance area surrounding the antenna, C= 5-10 mm. No ground allowed in the Y- direction, but the antenna can well be put just at the edge of the PCB.

2. Placement of 2.4 GHz module
To avoid losses in the strip line, the module shall be placed as close to the antenna as possible.

3. Strip line
The strip line must be dimensioned according to your specific PCB. (see fig 1). No crossing strip lines are allowed between the strip line and its ground plane.

4. Via Connections
To avoid spurious effects via connections must be made to analogue ground.

5. Component matching
Component values are depending on antenna placement, PCB dimensions and location of other components.

6. DC Block
Might be needed depending on RF Module configuration.

7. Clearence
Front surface : Minimum clearence to other components, C= 5-10 mm
Back surface: No components allowed within the clearence area

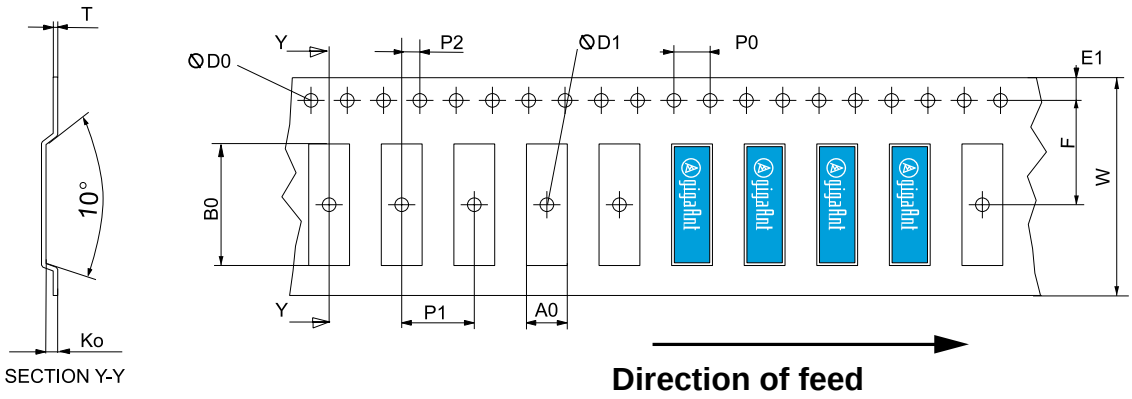
8. Casing material
No metal casing or plastics using metal flakes should be used, avoid also metallic based paint or laquer.

Note ! Incorrect implementation of the antenna will affect the performance.
Contact gigaAnt for implementation services.

Subject to changes without prior notice

Packaging

The antenna is supplied in Tape on Reel.

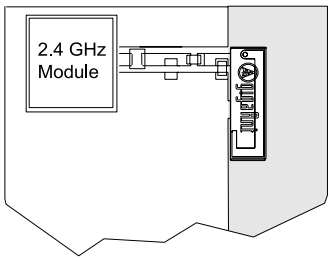


W	F	E1	PO	P1	P2	A0	B0	K0	T	D0	D1
24 ±0.3	11.5 ±0.1	1.75±0.1	4.0 ±0.1	8.0 ±0.1	2.0 ±0.1	4.5±0.1	13.4 ±0.1	1.5 ±0.1	0.3 ±0.05	1.5 ±0.1	1.5 +0.1

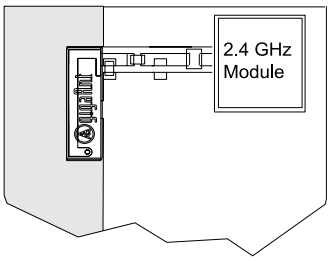
Dimensions in millimeters

Product Variants

Left feeding Art No . 3030A5839-01



Right feeding Art No . 3030A5887-01



Ordering Code

30 30 A5839 - 01

- **Drawing No.**
- **Technology** -PCB
- **Antenna Family** -SMD

30 30 A5887 - 01

- **Drawing No.**
- **Technology** -PCB
- **Antenna Family** -SMD

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