

PF1004

Chip Antenna for Wireless Application

PF1004 Chip Antenna

◆ Features

- Size : 10.1mm(L)X4.2mm(W)X3.1mm(H)
 - Light weight and low profile
 - Linear Polarization
- Lead (Pb) Free

◆ Applications

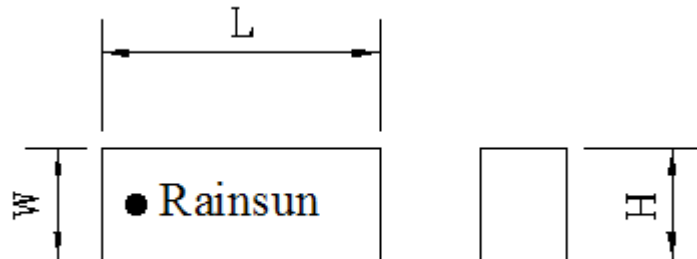
- 2.4 GHz & 5~6GHz Wireless communication
- 802.11a/b/g/n WLAN device, WLAN Router
- Netbook, Tablet PC, PDA

Specifications

Frequency range	2.45G & 5~6GHz
Peak gain	3 dBi
Operation temperature	-40 ~ +85 °C
Storage temperature	-40 ~ +100 °C
VSWR	2 (Max)
Input Impedance	50 Ohm
Power handling	5W (Max)
Polarization	Linear
Soldering pad	Natural tin

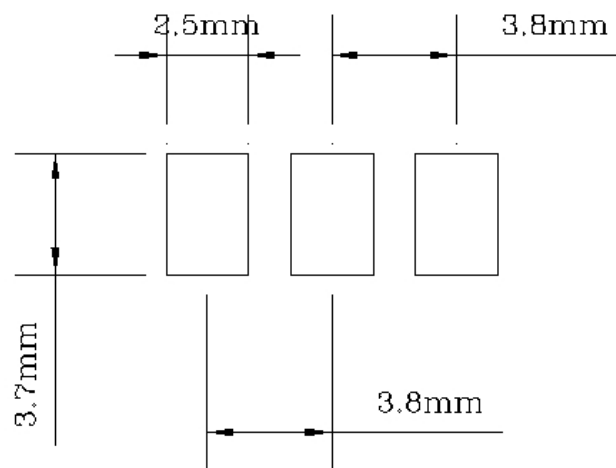
Dimension

Top view



L (Length)	$10.1 \pm 0.1\text{mm}$
W (Width)	$4.1 \pm 0.1\text{mm}$
H (Height)	$3.1 \pm 0.1\text{mm}$

PCB Foot printer



Recommended Test Board Pattern

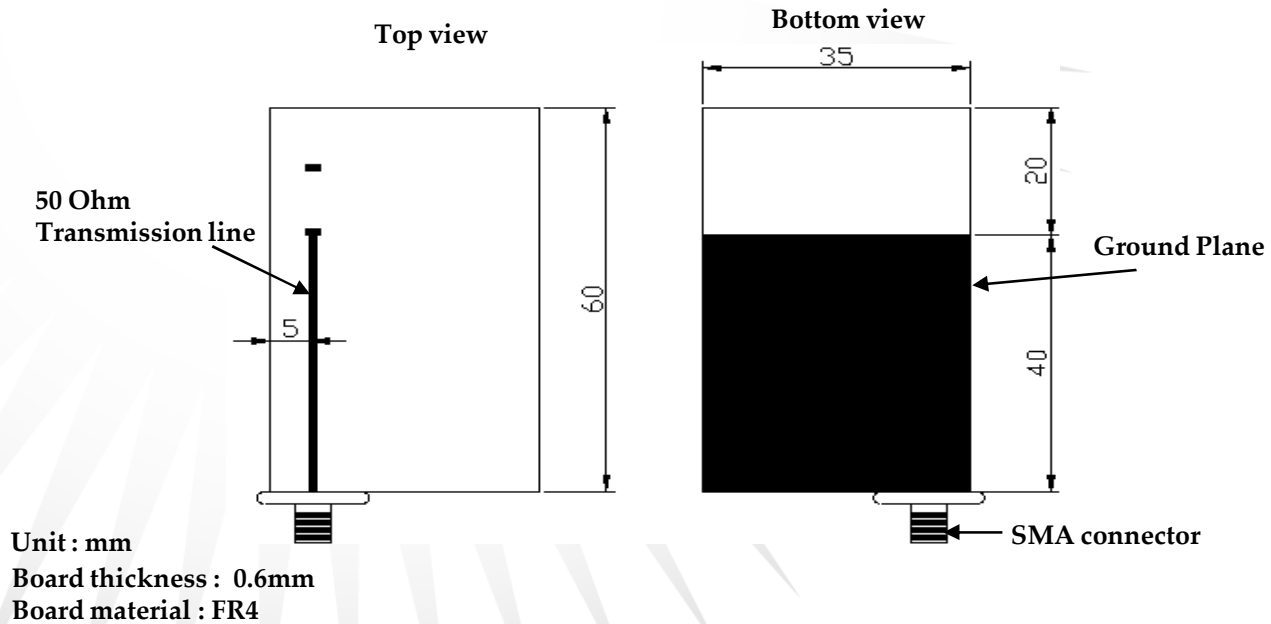
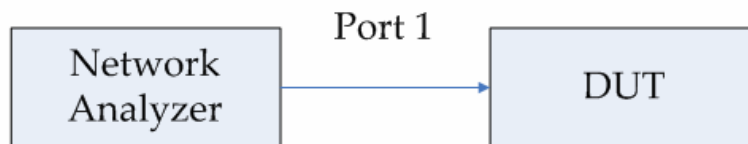


Fig-1

Testing Setup



Measurement



Testing Instrument:

Anritsu 37369C VNA(Vector Network Analyzer)

VNA calibrate with 1 path reflection only calibration sequence on test board feed point.

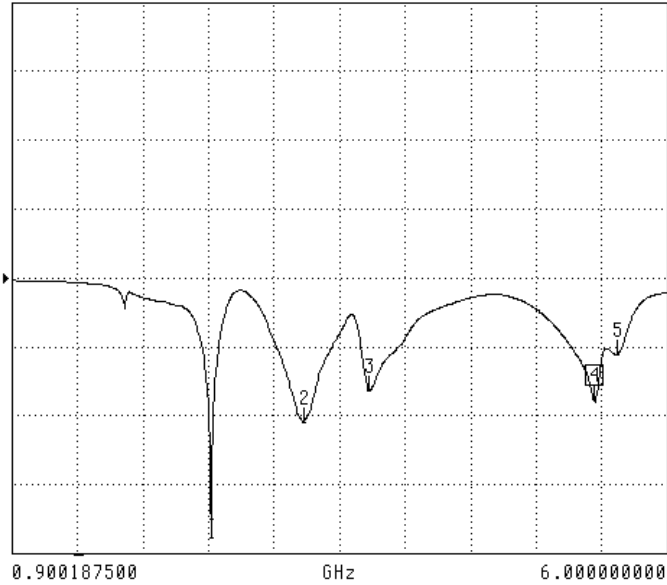
The test board dimension and it's layout is the same as Fig-1.

Typical Electrical Characteristics

Return loss

S11 FORWARD REFLECTION

LOG MAGNITUDE REF=0.000 dB 10.000 dB/DIV



CH 1 - S11
REFERENCE PLANE
0.0000 mm

MARKER 4
5.432125000 GHz
-17.781 dB

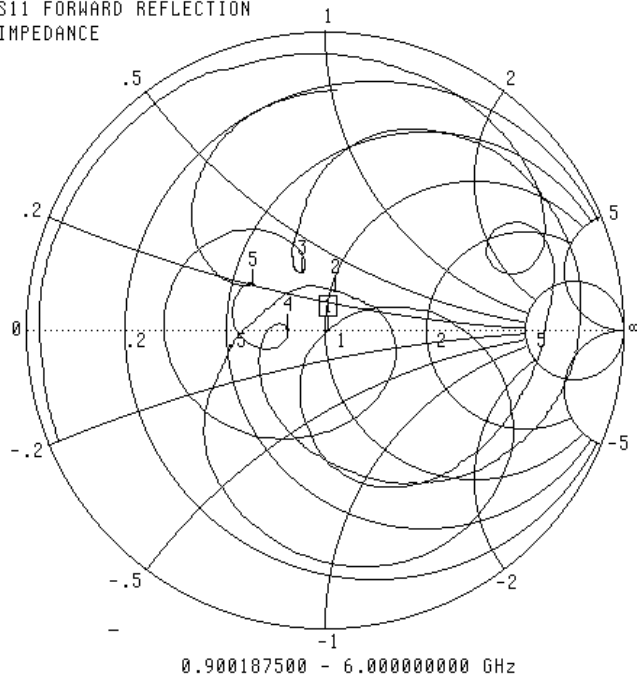
MARKER TO MAX
▶ MARKER TO MIN

- 1 2.452625000 GHz
-37.749 dB
- 2 3.179062500 GHz
-21.002 dB
- 3 3.684250000 GHz
-16.357 dB
- 5 5.609125000 GHz
-11.181 dB

MARKER READOUT
FUNCTIONS

Smith Chart

S11 FORWARD REFLECTION
IMPEDANCE



CH 1 - S11
REFERENCE PLANE
0.0000 mm

MARKER 1
2.452625000 GHz
51.607 Ω
-465.298 jΩ

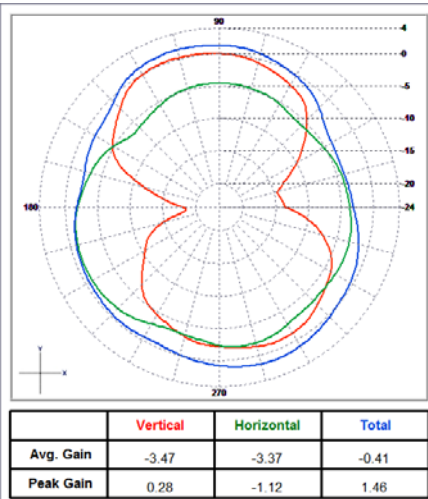
MARKER TO MAX
▶ MARKER TO MIN

- 2 3.190125000 GHz
52.250 Ω
13.648 jΩ
- 3 3.699000000 GHz
40.373 Ω
16.051 jΩ
- 4 5.424750000 GHz
39.131 Ω
168.208 jΩ
- 5 5.594375000 GHz
29.522 Ω
9.744 jΩ

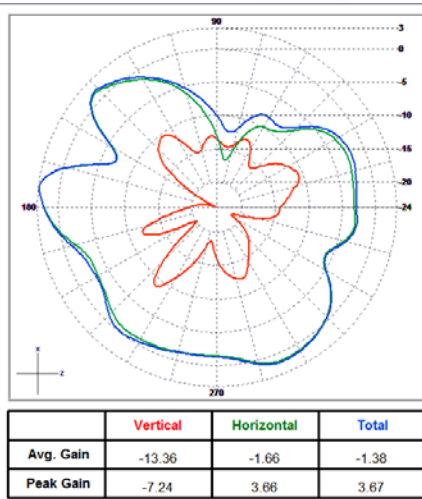
MARKER READOUT
FUNCTIONS

2.4GHz Radiation Pattern

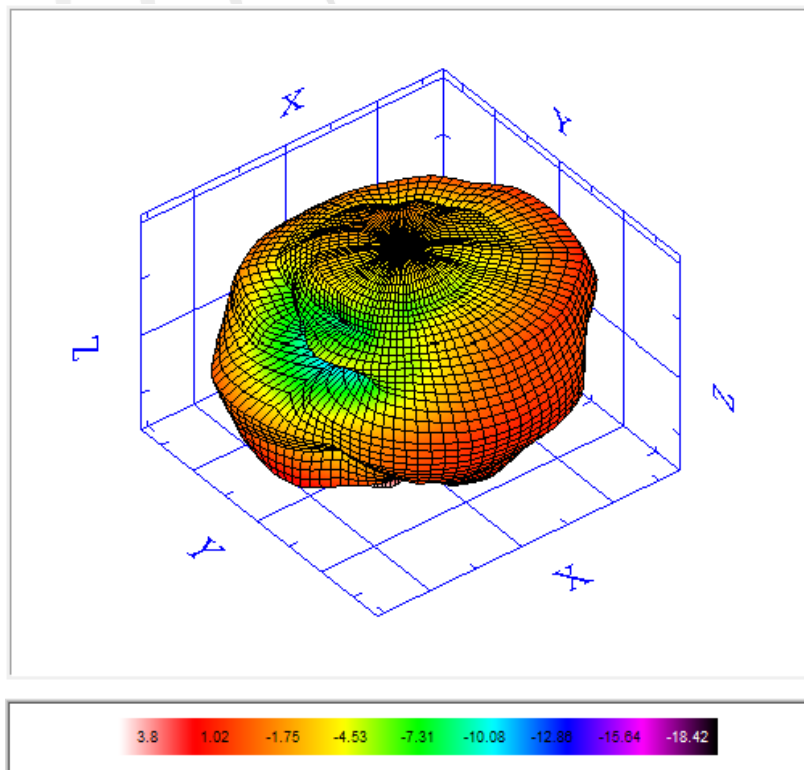
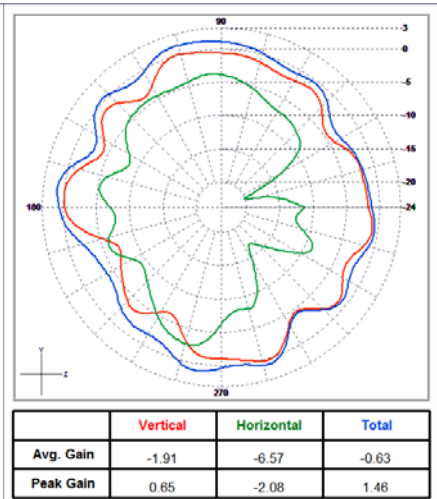
X-Y



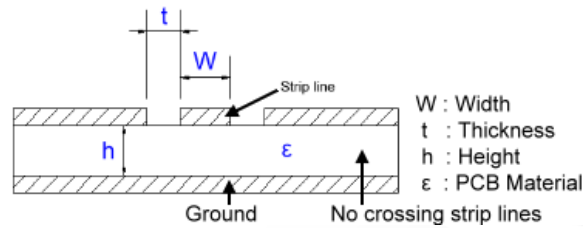
X-Z



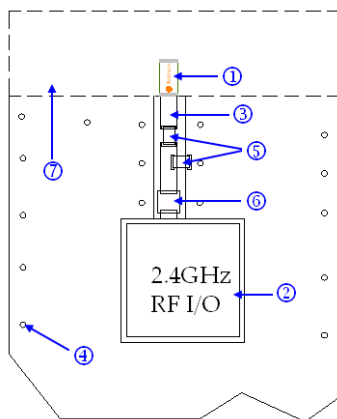
Y-Z



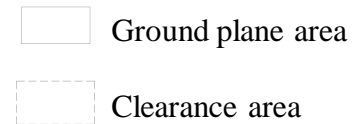
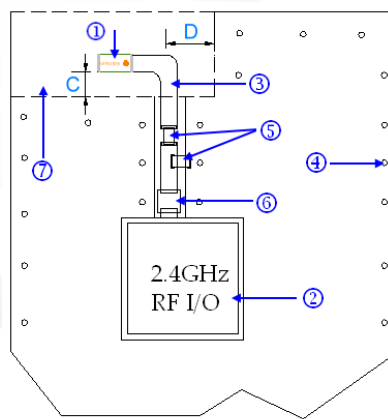
4. Application design guide



Best Choice



Acceptable



1. Placement of the antenna

The antenna shall be placed on a area without underlying ground plane at the edge of the PCB oriented as above. Ground plane area surrounding the antenna should be with minimum clearance 3mm.

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 impedance must be dimensioned according to your specific PCB (see fig.2) to 50 Ohm. No crossing strip lines are allowed between the strip line and its ground plane.

4. Via Connections on PCB

To avoid spurious effects via connections must be made to analogue ground. Via connection depends on PCB layout design. Figure 2 for reference only.

5. Component matching

Component values are depending on antenna placement, PCB dimensions and location of other components. PCB dimension and antenna location will effect the antenna frequency.

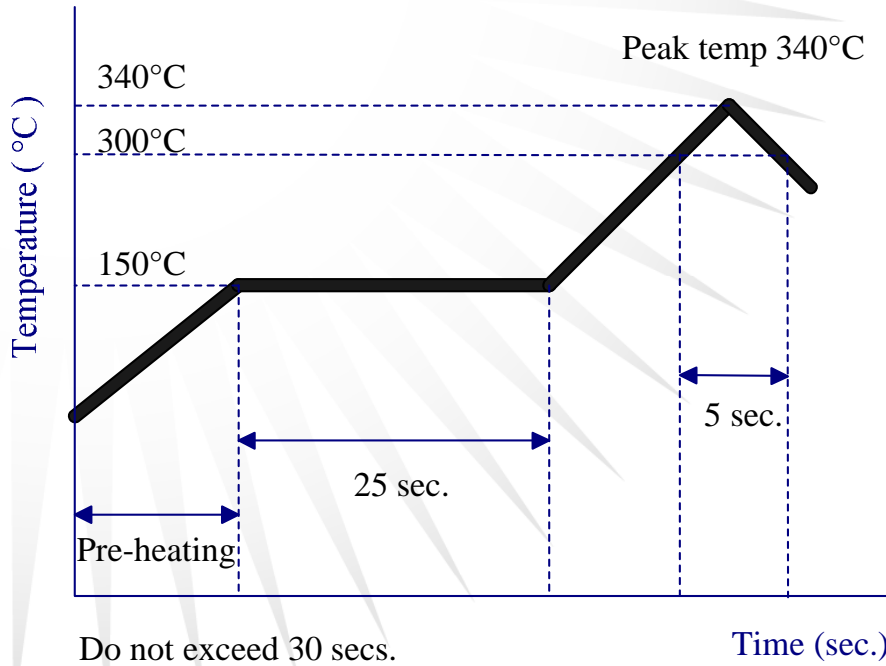
6. DC Block

It might be needed depending on RF Module or chip hardware design.

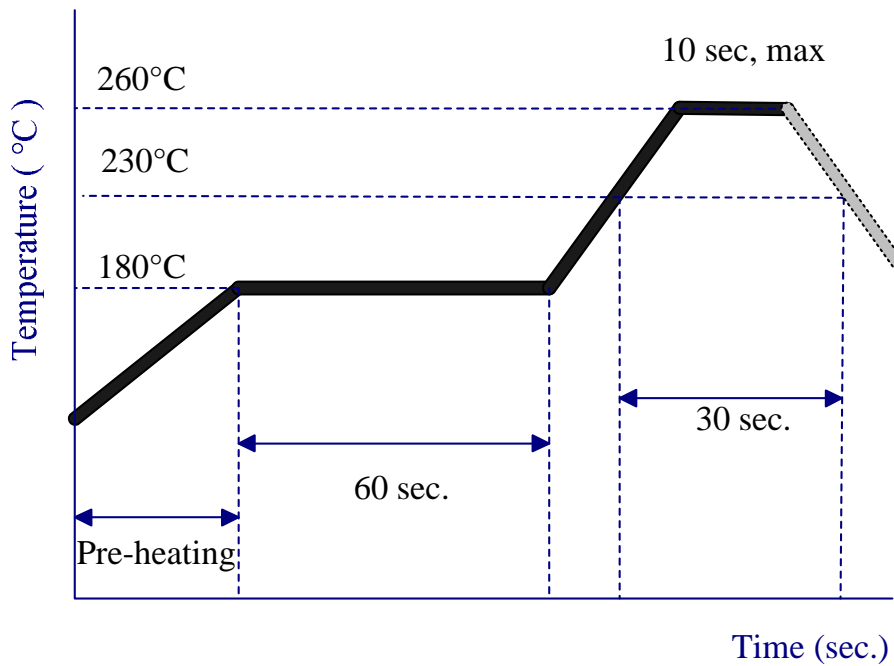
7. Clearance

No components allowed within the clearance area with a minimum distance to other components. The minimum distance is 3mm.

Typical Soldering Profile for Lead-free Process

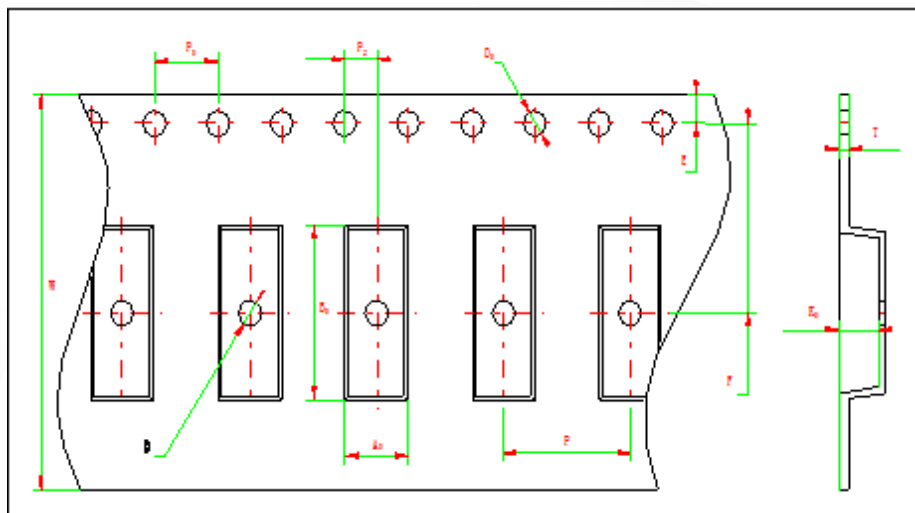


Reflow Soldering



Packing

Blister Tape Specifications



Symbol	Dimension (mm)
w	$24^{\pm 0.3}$
P	$8^{\pm 0.1}$
E	$1.75^{\pm 0.1}$
F	$11.5^{\pm 0.05}$
ΦD_0	$1.5^{+0.1}_{-0}$
ΦD_1	1.5MIN
P_0	$4^{\pm 0.1}$
$10P_0$	$40^{\pm 0.2}$
P_2	$2^{\pm 0.05}$
A_0	$4.3^{\pm 0.1}$
B_0	$10.6^{\pm 0.1}$
K_0	$3.5^{\pm 0.1}$
t	$0.3^{\pm 0.05}$