

# **GPS1003**

## **Multilayer Chip Antenna for GPS (Advanced Information)**

# GPS1003 Multilayer Chip Antenna

## ◆ Features

- Light weight and low profile 10.1mm(L)X3.1mm(W)X1.9mm(H)
- Omni-directional in azimuth
- Lead (Pb) Free

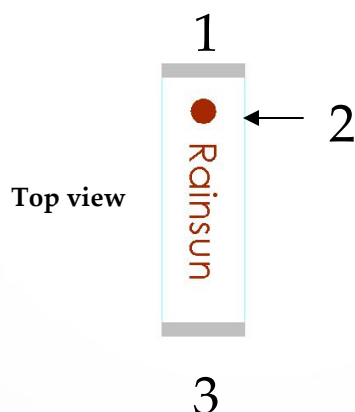
## ◆ Applications

- 1575MHz wireless communications
- GPS (Global Positioning System)

## Specifications

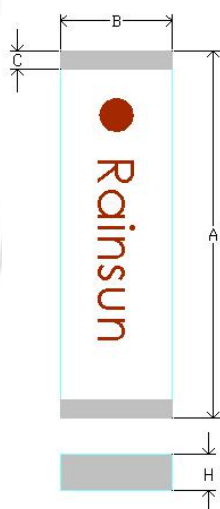
Center frequency	1575MHz
Peak gain	4.3 dBi (Typ)
Operation temperature	-40 ~ +85 °C
Storage temperature	-40 ~ +100 °C
VSWR	1.5 (Max)
Input Impedance	50 Ohm
Power handling	3W (Max)
Bandwidth	150MHz (Typ)
Azimuth beamwidth	Omni-directional
Polarization	Linear

## Pin configuration



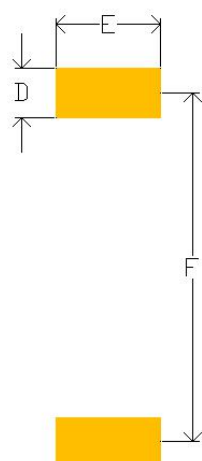
Pin No	Pin assignment
1	Feed termination
2	Feed point mark
3	Solder termination

## Dimensions



Symbol	Dimensions(mm)
A	10.1±0.2
B	3.1± 0.2
C	0.5 ±0.2
H	1.9±0.20

## Recommended PCB foot print



Symbol	Dimensions(mm)
D	1.4
E	3.0
F	10.0

## Recommended Test Board Pattern

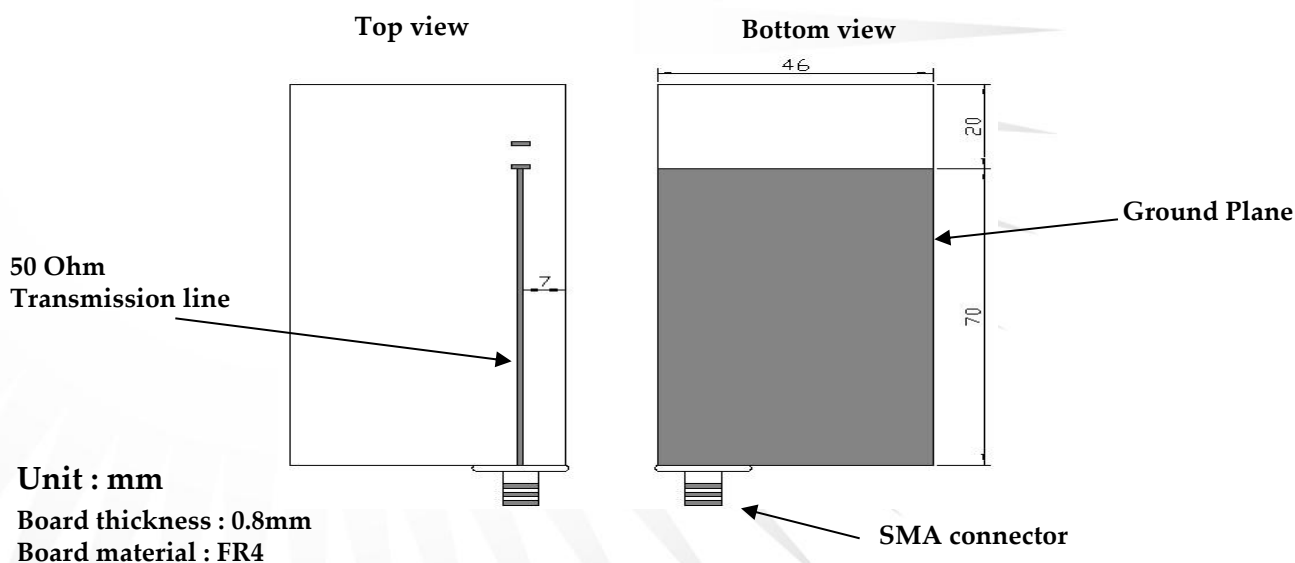
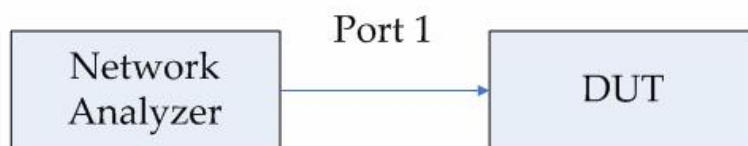


Fig-1

## 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.

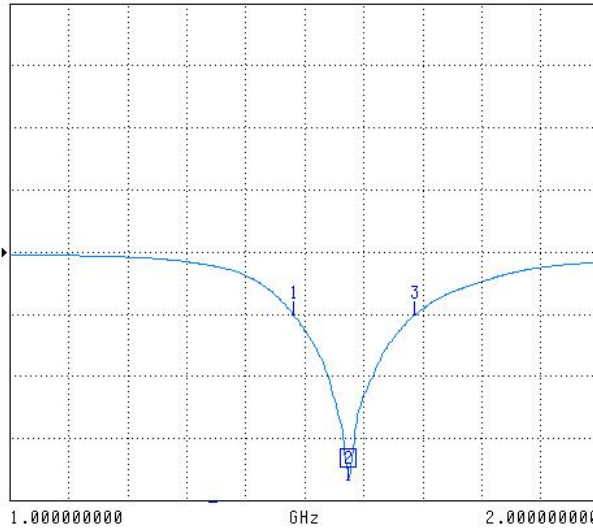
The test board dimension and it's layout is the same as Fig-1.

# Typical Electrical Characteristics

## Return loss

S11 FORWARD REFLECTION

LOG MAGNITUDE REF=0.000 dB 10.000 dB/DIV



CH 1 - S11  
REFERENCE PLANE  
0.000 mm

MARKER 2  
1.575000000 GHz  
-36.654 dB

MARKER TO MAX  
▶ MARKER TO MIN

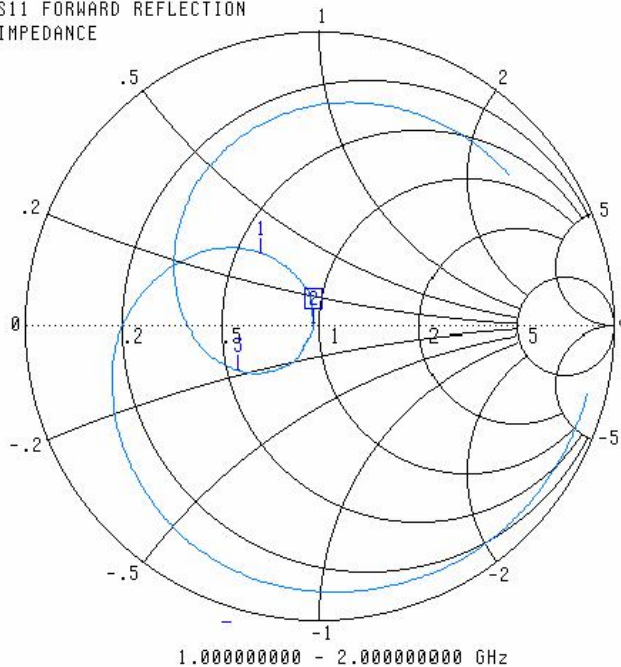
1 1.481250000 GHz  
-10.099 dB

3 1.687500000 GHz  
-10.147 dB

MARKER READOUT  
FUNCTIONS

## Smith Chart

S11 FORWARD REFLECTION  
IMPEDANCE



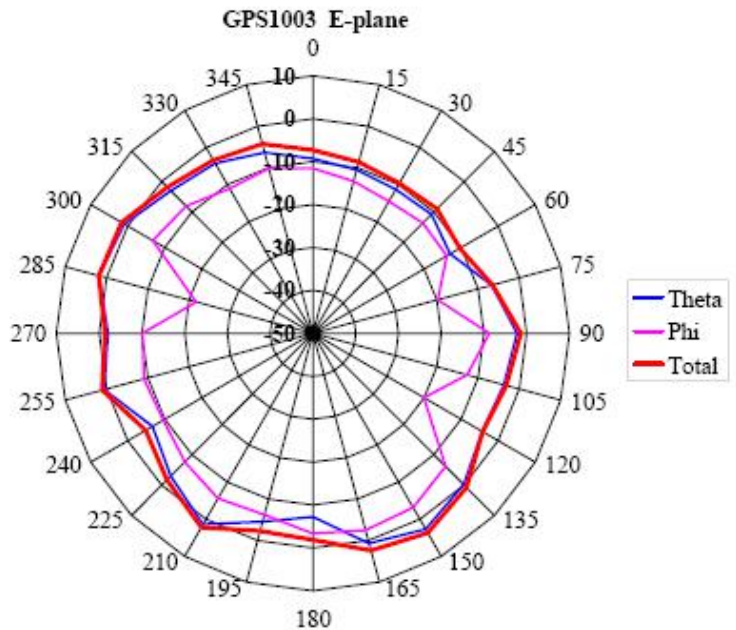
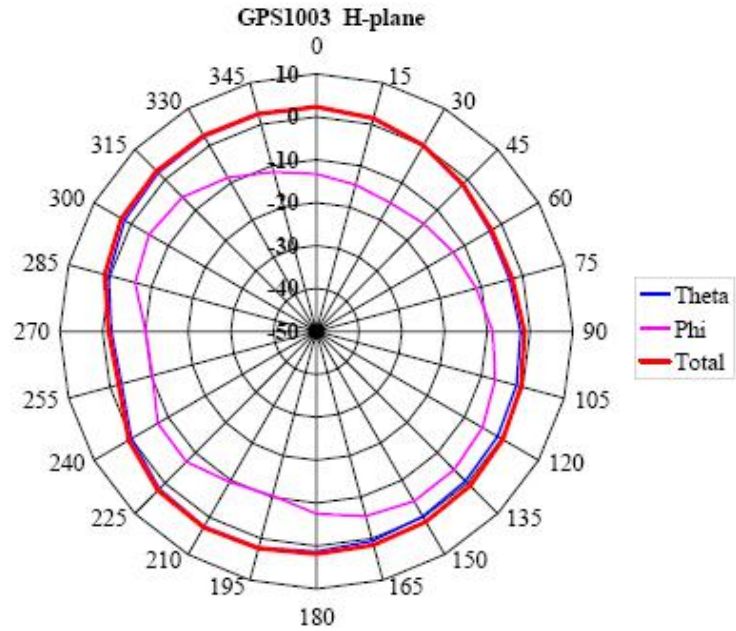
**Marker data:**

1 : f=1.481 GHz

2 : f=1.575 GHz

3 : f=1.687 GHz

# Typical Radiation Patterns

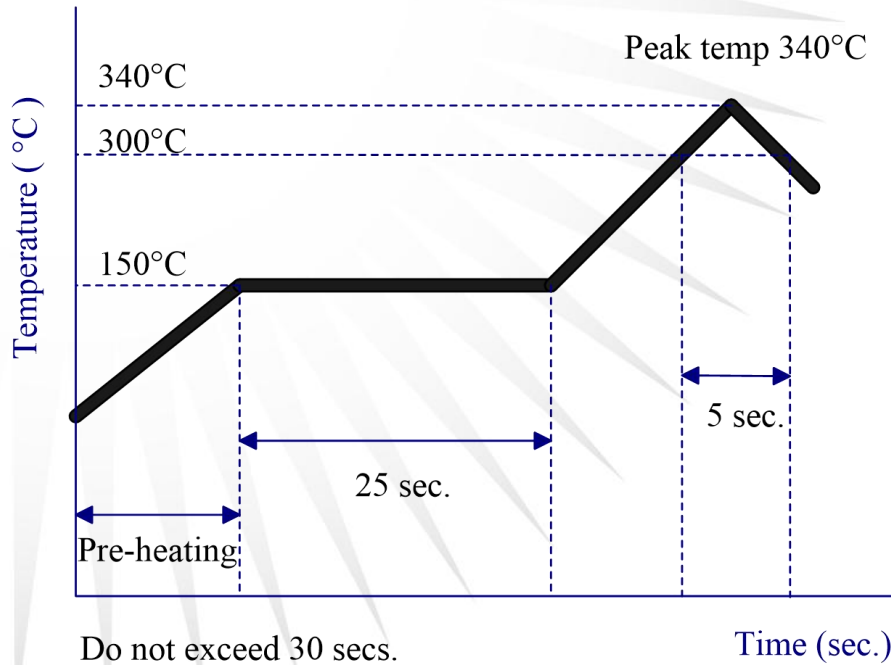


Theta: Co-polarization of antenna

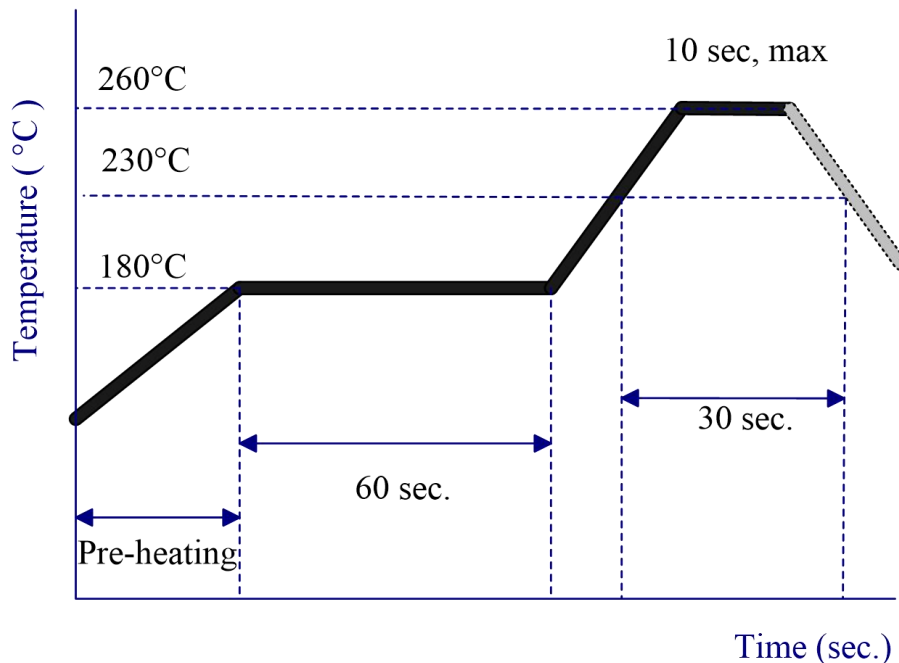
Phi: X-polarization of antenna

Total: Total power of antenna

## Typical Soldering Profile for Lead-free Process

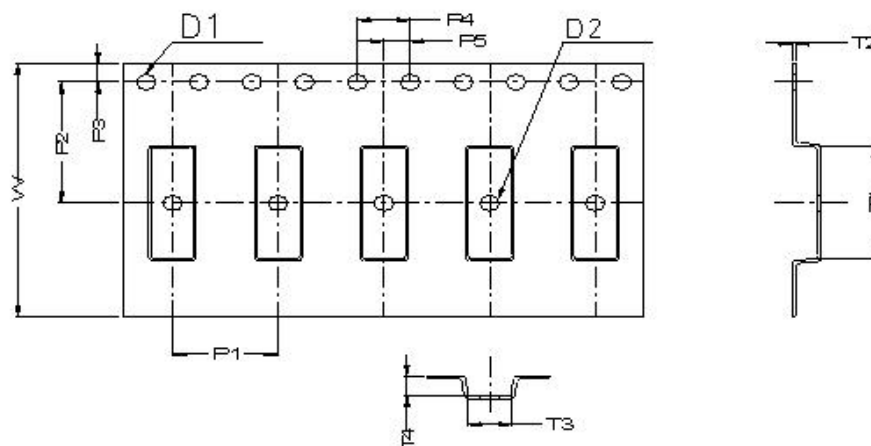


### Reflow Soldering



# Packing

## Blister Tape Specifications



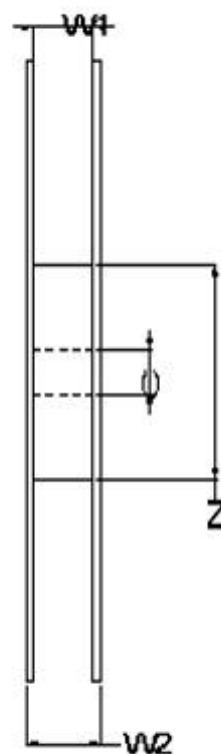
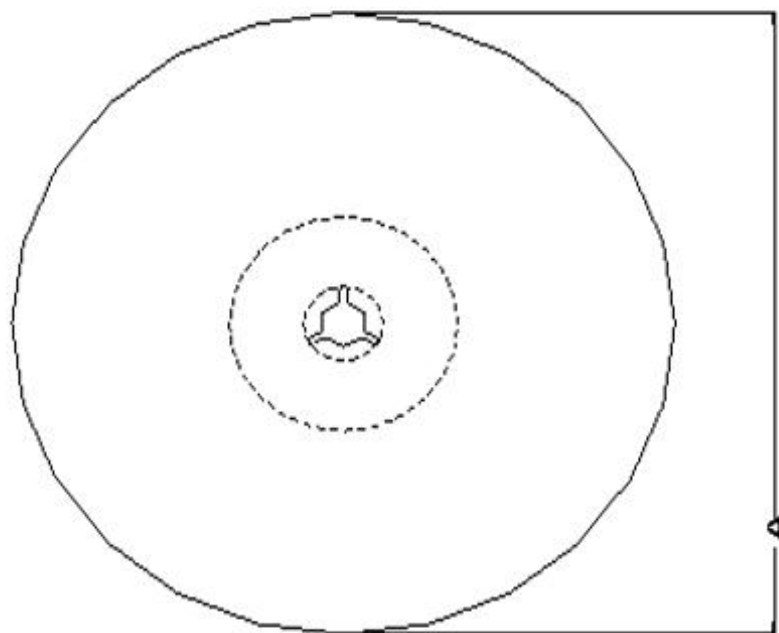
Symbol	Dimension	Tolerance	Unit
W	24.0	± 0.30	mm
P1	8.0	± 0.10	mm
P2	11.5	± 0.10	mm
P3	1.75	± 0.10	mm
P4	4.0	± 0.10	mm
P5	2.0	± 0.10	mm
D1	1.5	± 0.10	mm
D2	1.5	± 0.10	mm
T1	10.6	± 0.10	mm
T2	0.3	± 0.05	mm
T3	3.3	± 0.10	mm
T4	1.9	± 0.10	mm

### Notes

1. Possible product displacement in pocket.
2. P<sub>0</sub> pitch tolerance over any 10 pitches is ± 0.2mm



# Reel Specifications



Quantity Per Reel	Tape Width (mm)	A (mm)	C (mm)	N (mm)	W1 (mm)	W2 (mm)
3,000	24	330±0.1	13.0±0.5	100±0.1	24±0.2	28.8±0.2