

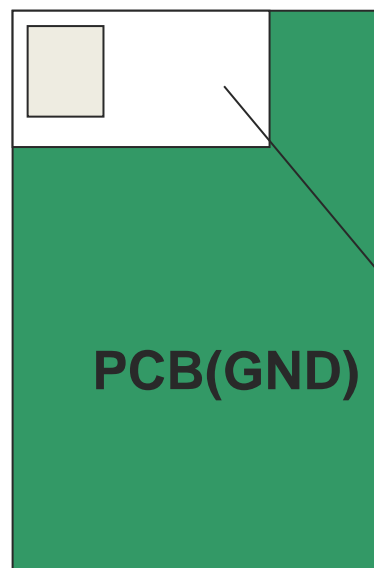
# TSA5NA6L5G55NS003T

## Antenna Design Guide

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# Wide Band Antenna for UWB



**TSA5NA6L5G55NS003T**



Keep out area  
(No GND Area)

**Keep Out Area**  
(No GND Area)

**Recommended Size**  
**9.5 x 16.5 mm (157mm<sup>2</sup>) or more**

**Antenna Layout**

**Corner of PCB**

**Radiation Pattern**

**Normal** (Omni)

# 8 x 6 mm Wideband monopole Antenna

TSA5NA6L5G55NS003T

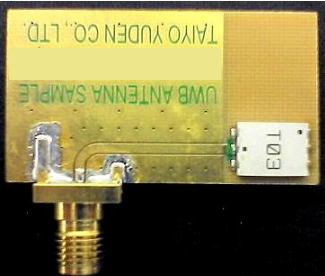
for UWB

## Shapes

L= 8.0 ± 0.3 mm  
W= 6.0 ± 0.3 mm  
T= 1.0 ± 0.3 mm

## Feature

- \* Small
- \* Wide Band
- \* High Performance

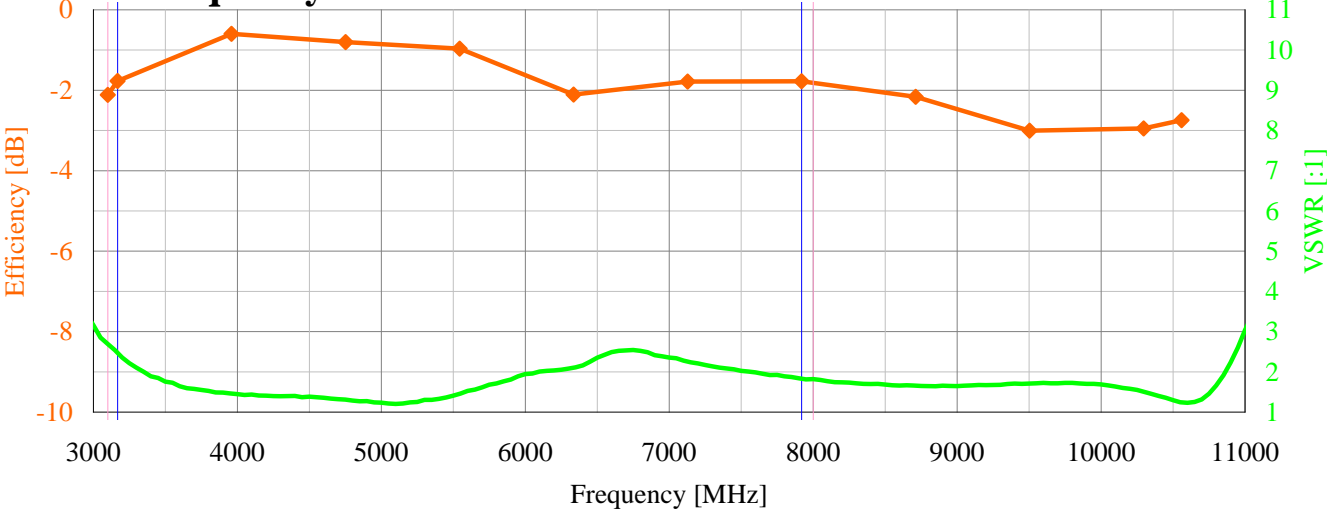


\*on Taiyo Yuden's Evaluation Board  
( 36 x 20 mm )  
\*Element-GND Distance : 1.5 mm

Actual data

Efficiency : -0.6 ~ -2.1dB ( 87 ~ 62% )  
Peak Gain : 2.6 ~ 0.7dBi  
@3168~7920MHz

## Frequency characteristic



## Electrical Characteristics

			3100MHz	3168MHz	3960MHz	4752MHz	5544MHz	6336MHz	7128MHz	7920MHz	8712MHz	9504MHz	10296MHz	10560MHz
Efficiency [dB]			-2.1 ( 61%)	-1.8 ( 66%)	-0.6 ( 87%)	-0.8 ( 83%)	-1.0 ( 80%)	-2.1 ( 62%)	-1.8 ( 66%)	-1.8 ( 66%)	-2.2 ( 61%)	-3.0 ( 50%)	-2.9 ( 51%)	-2.7 ( 53%)
Peak gain [dBi]			1.8	2.0	2.6	2.1	1.5	0.8	1.0	0.7	0.4	-0.8	-0.1	0.5
Average gain [dBi]	XY-plane	TX-H	-4.1	-4.0	-2.1	-2.5	-4.3	-6.1	-7.0	-6.1	-5.6	-4.9	-4.7	-4.1
		TX-V	-5.5	-5.7	-4.3	-3.5	-2.7	-3.9	-3.3	-2.6	-3.3	-7.7	-11.7	-12.4
	YZ-plane	TX-H	-3.8	-3.4	-2.7	-2.6	-2.3	-3.4	-3.2	-3.5	-4.1	-5.0	-4.3	-4.3
		TX-V	-14.3	-14.8	-20.1	-19.7	-14.1	-13.9	-11.8	-13.0	-13.4	-14.8	-17.6	-17.0
	ZX-plane	TX-H	-9.8	-9.5	-8.3	-6.5	-5.3	-7.5	-7.7	-6.8	-6.8	-9.7	-14.0	-13.8
		TX-V	-1.1	-0.7	0.5	-0.9	-2.3	-3.5	-2.6	-3.6	-3.6	-3.2	-2.0	-1.6

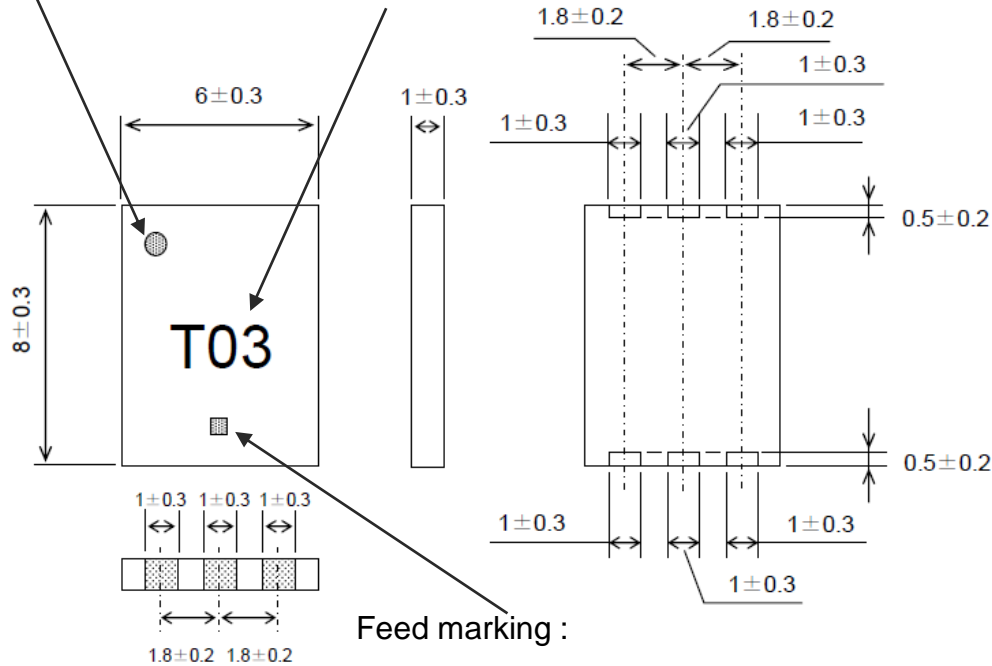
# Dimensions and Land pattern

## External Dimensions

Direction marking : 0.6mmφ

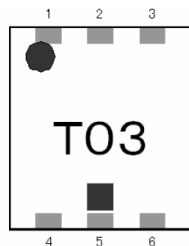
An intestinal pattern code:

1.6mm height 3-digit alpha numeric



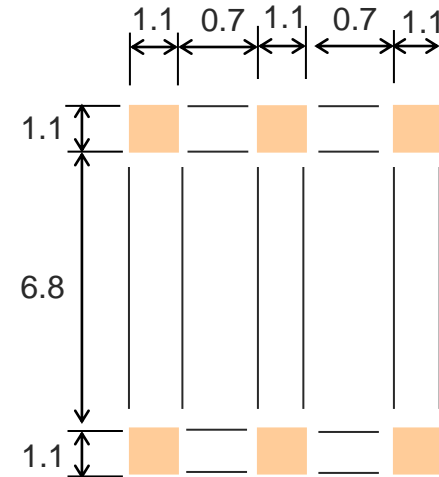
Feed marking :

Input terminal is prescribed 0.5mm□



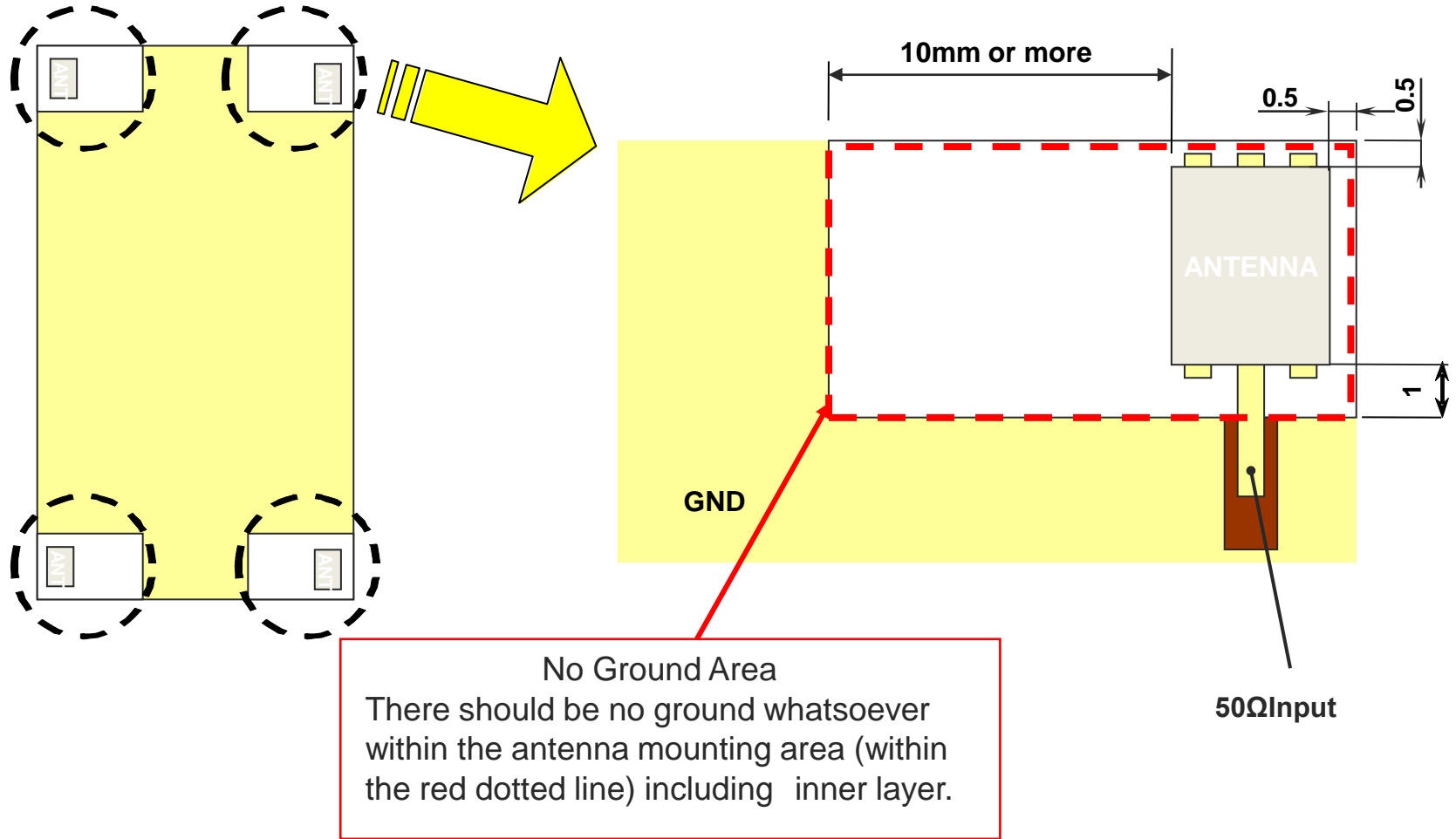
1	NC	4	NC
2	NC	5	FEED
3	NC	6	NC

## Example of Land Pattern



# Design Guide

## Recommended Pattern Layout



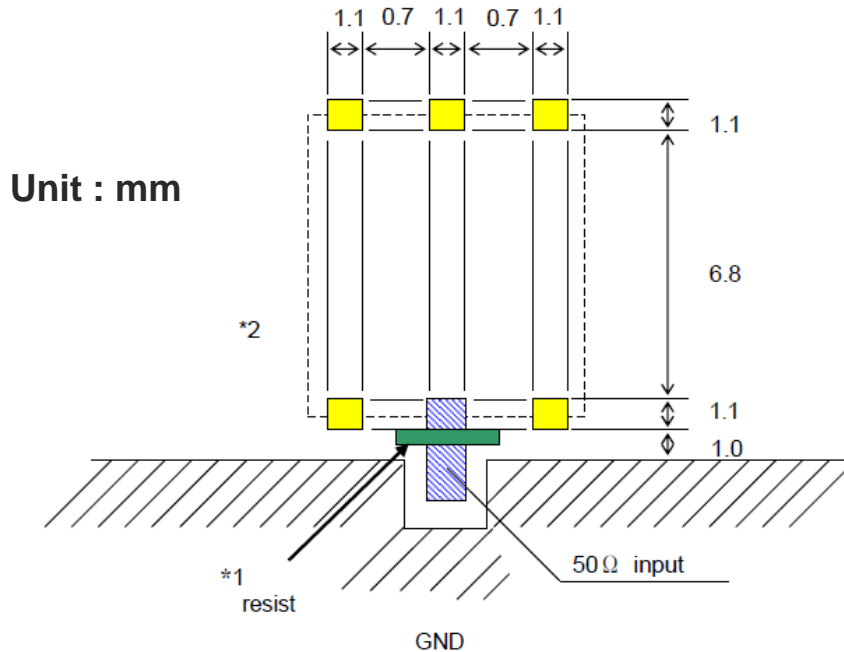
© Our recommendation is mounting position had better on the corner of PCB.

# Design Guide

## Precautions

- I . Surface GND layer around the antenna area should be connected with inner GND layer via through hole.
- II . Thickness of PCB can be flexible.

## Recommended land pattern

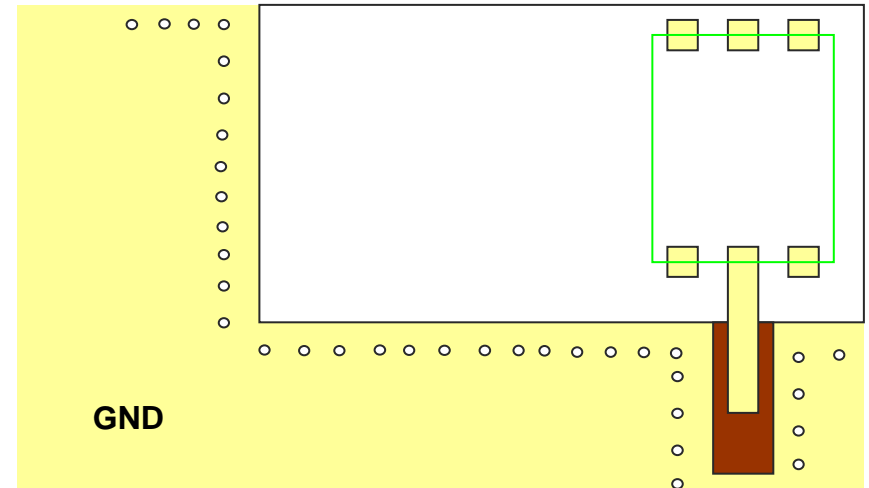


- Land for input terminal
- Land for NC terminal

\*1: Soldering area shall be ensured by the solder resist.

\*2: Do not arrange the surface pattern and internal layer pattern on antenna mounting area and its surrounding area.

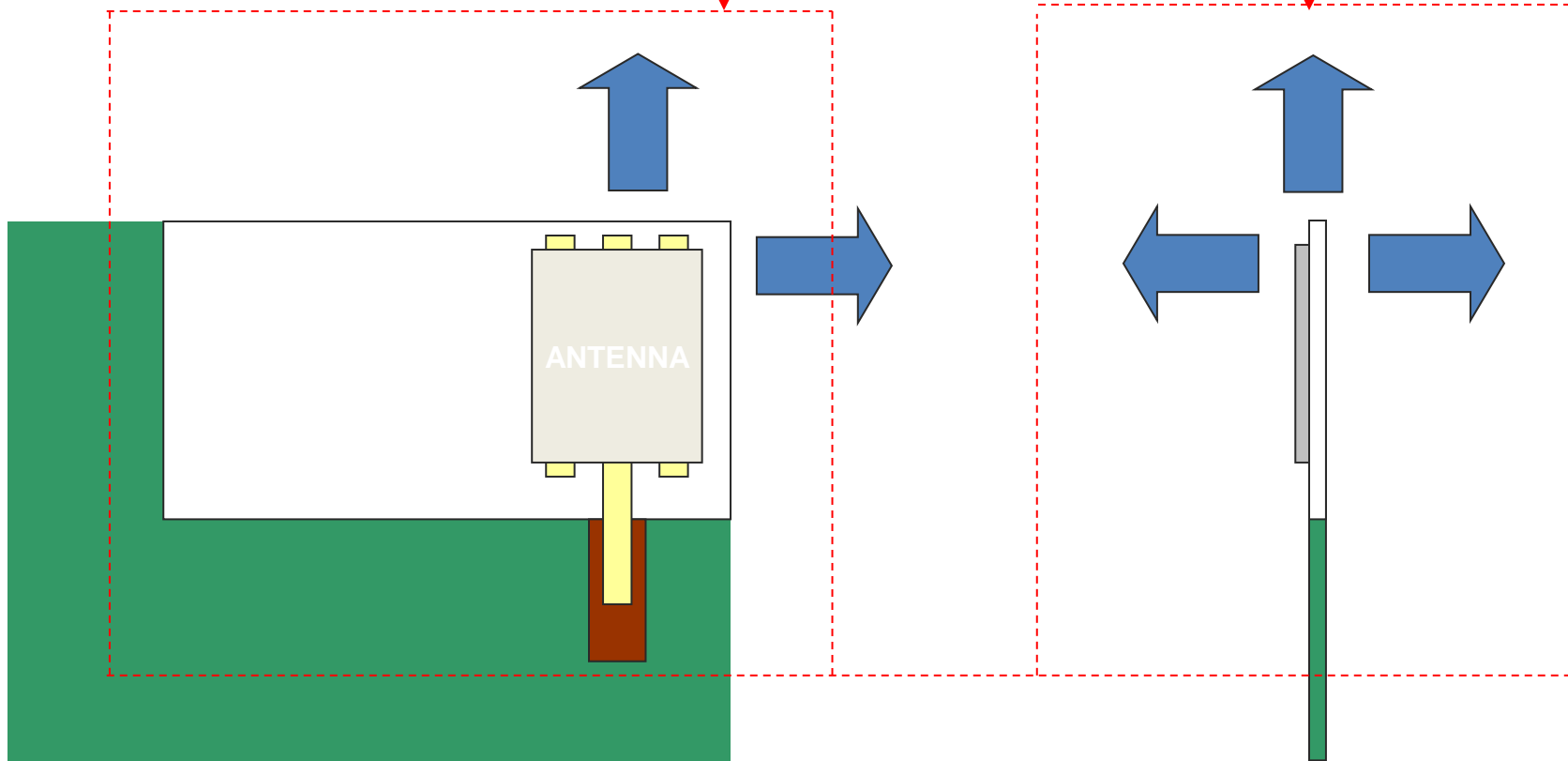
## Example of through hole



# Design Guide

## Metal Avoidance Area

Please do not set close to a metal housing, paint including the metal, board GND, the metal chassis, etc.



Front or Back

Side

**TAIYO YUDEN**