



SPECIFICATION

Part No. : **SWLP.2450.12.4.B.02**

Product Name : **12mm*12mm*4mm 2.4GHz SMD Patch Antenna**

Features : For Wi-Fi/WLAN/ISM/Zigbee Industrial Applications
ROHS Compliant
High Gain 2dBi



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REVISION STATUS

Version	Date	Page	Revision Description	Prepared	Approved
01	Nov 25 th 2009	All	Release	TW Product Centre	Ronan Quinlan



1.0 Introduction

This 12mm*12mm*4mm high gain 2.4GHz patch antenna is ideally suited for high performance industrial applications in Wi-fi, ISM, Zigbee bands. This product has highest gain in the XZ (azimuth) plane direction, most suitable for fixed wireless applications where transmission and reception is focused to one hemisphere of the device, for example a wireless meter on a reinforced concrete wall. It can also be placed anywhere on the device ground-plane, unlike most chip or loop antennas which need to be edge mounted.

2.0 Key Antenna Performance Indicators*

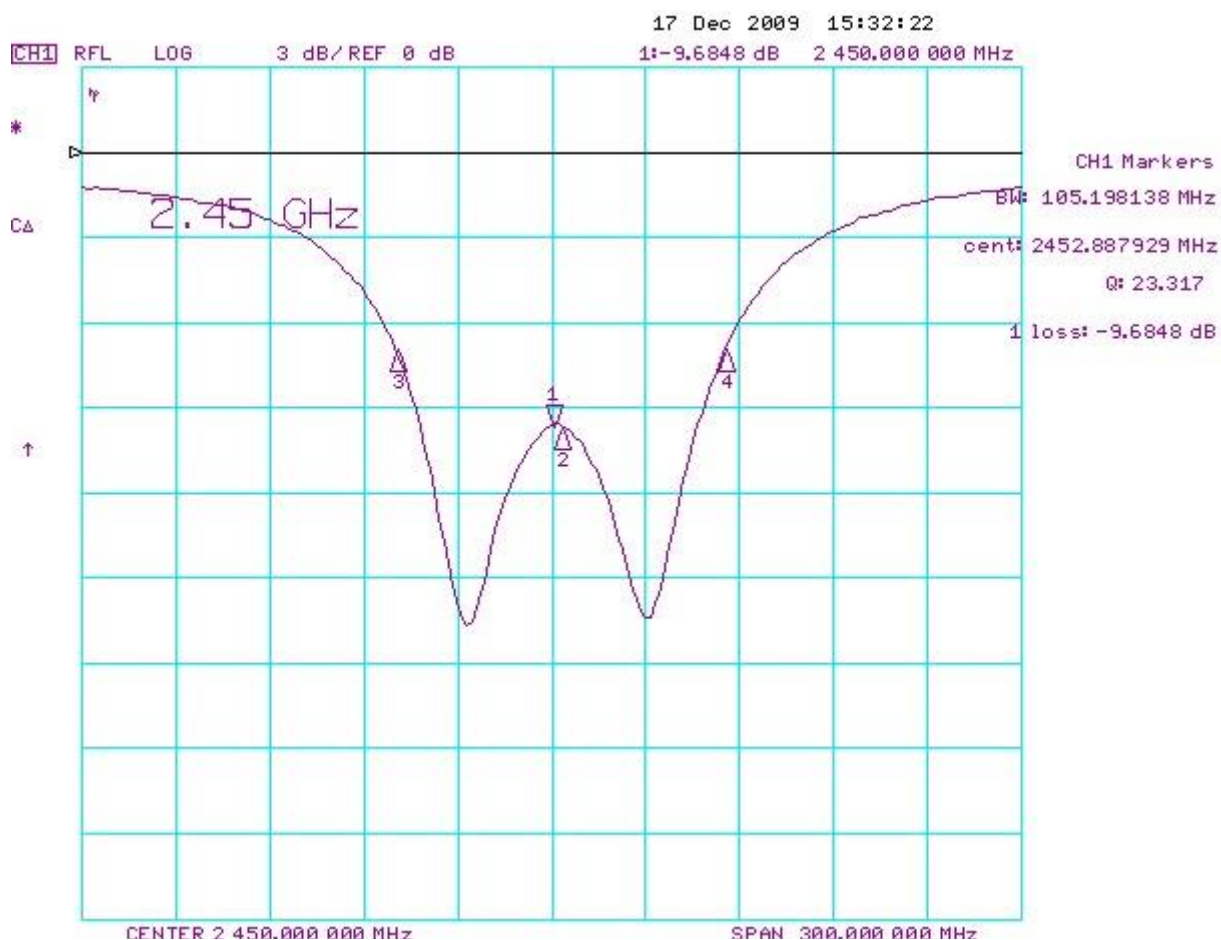
No	Parameter	Specification
1	Range of Receiving Frequency	2400 MHz to 2500 MHz
2	Bandwidth	100 MHz @ -7dB
3	Polarization	Linear
	VSWR	3.0 max @ Center Frequency
	Peak Gain	+2 dBi typ.
	Impedance	50 Ohms
4	Dimensions	12mm x 12mm x 4mm
5	Operating Temperature	-40°C to +105°C
6	Storage Temperature	-40°C to +105°C
	Termination	Ag (Environmentally Friendly Pb Free)

Original Patch Specification measured on EVB 50*50mm, actual value depends on ground-plane and housing



3.0 Mechanical Specifications

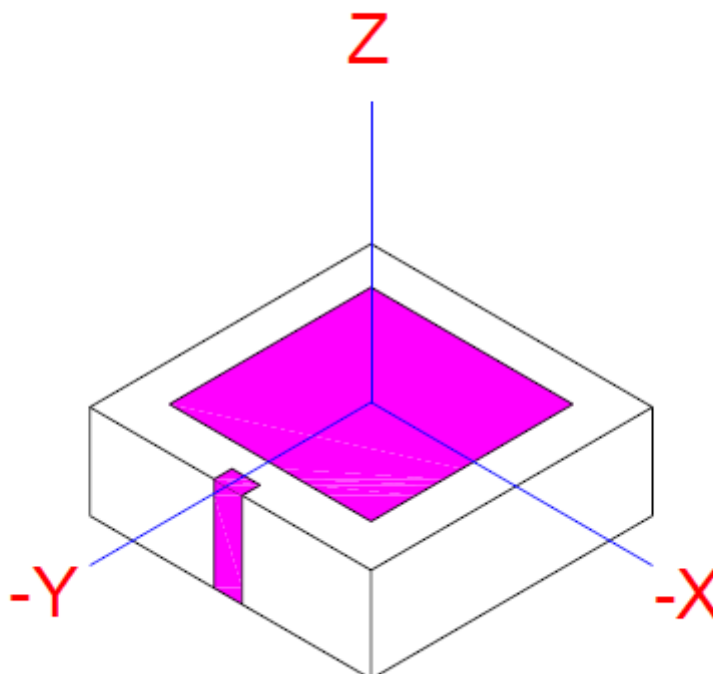
3.1 Return Loss



With 50×50mm₂ Evaluation board



3.2 Definition of X-Y-Z Plane





3.3 Radiation Patterns

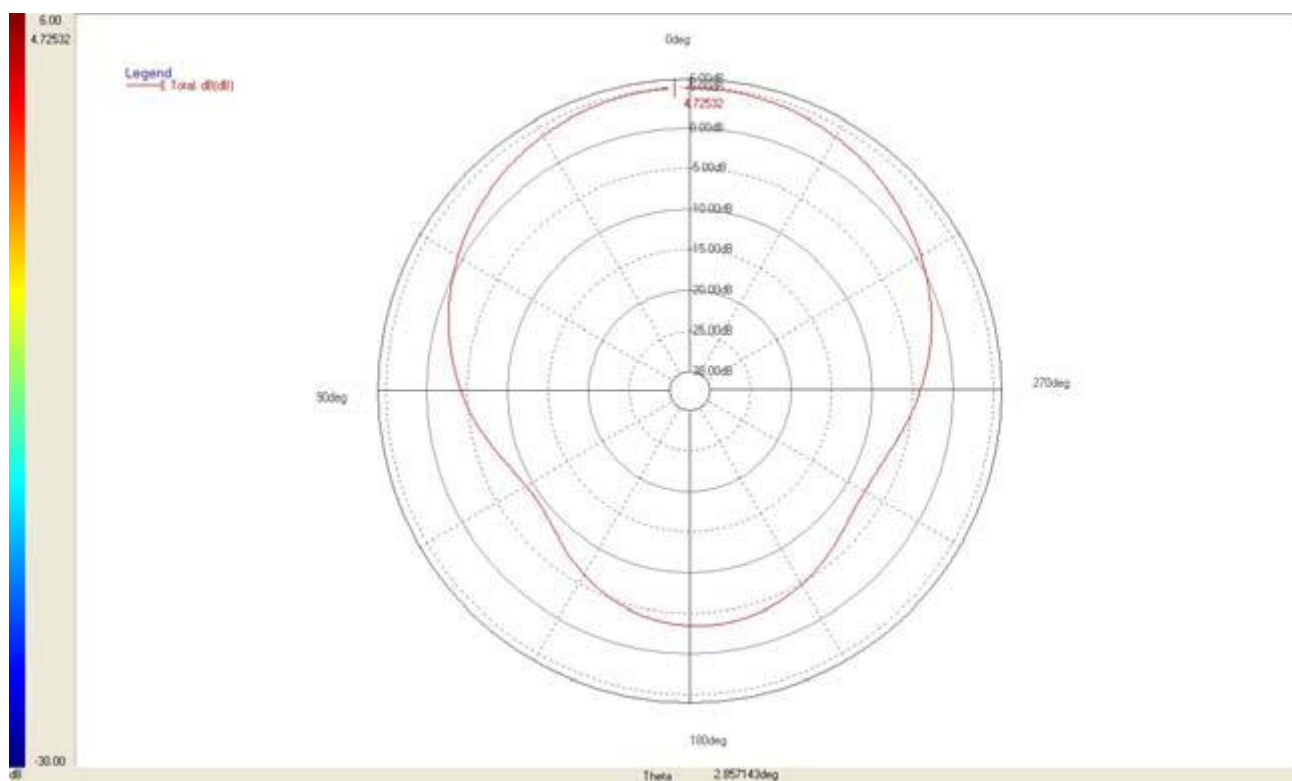
XY Plane



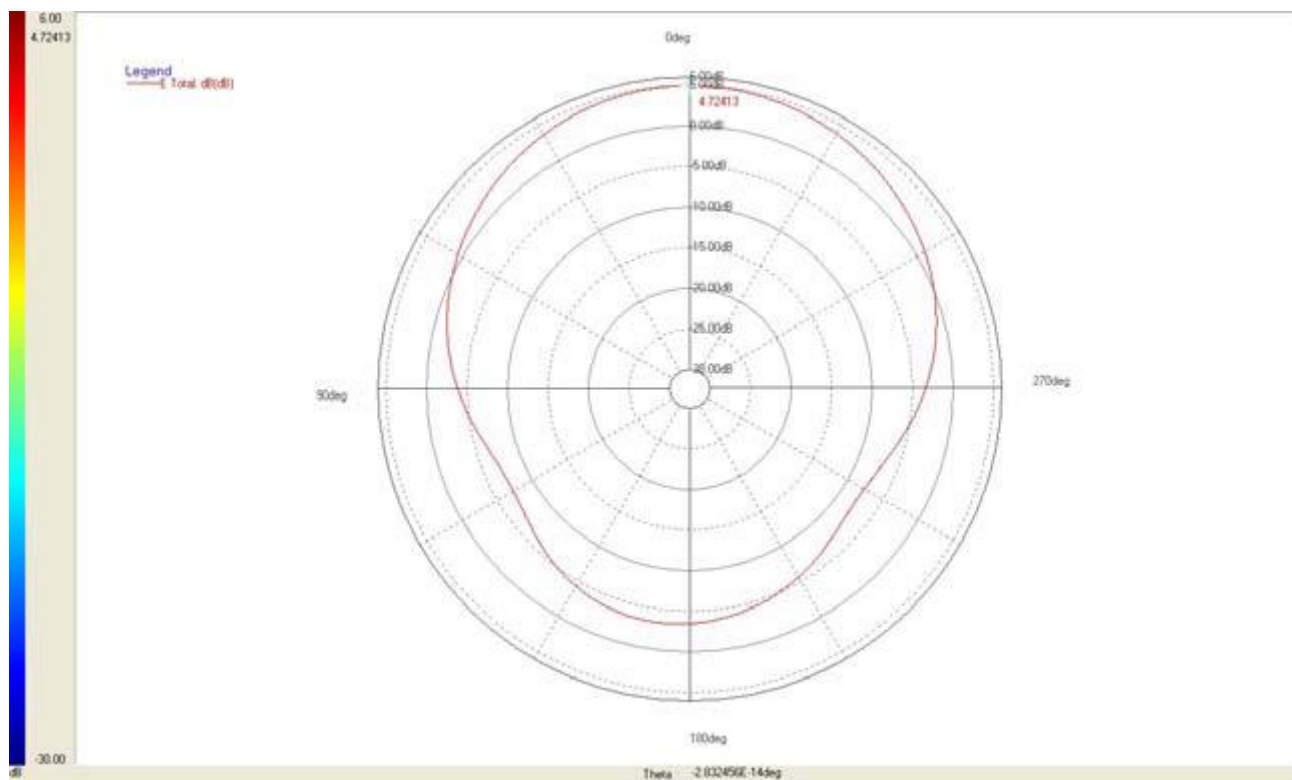


Specification

XZ Plane

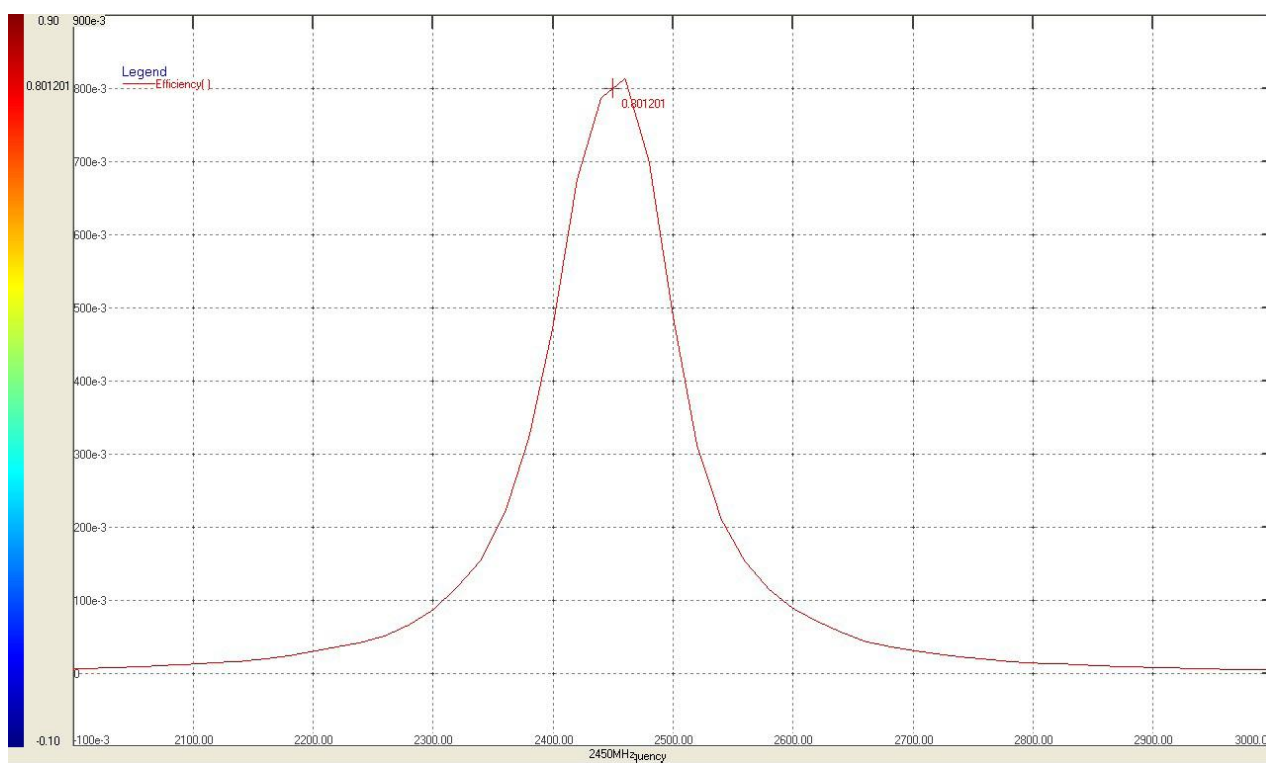


YZ Plane

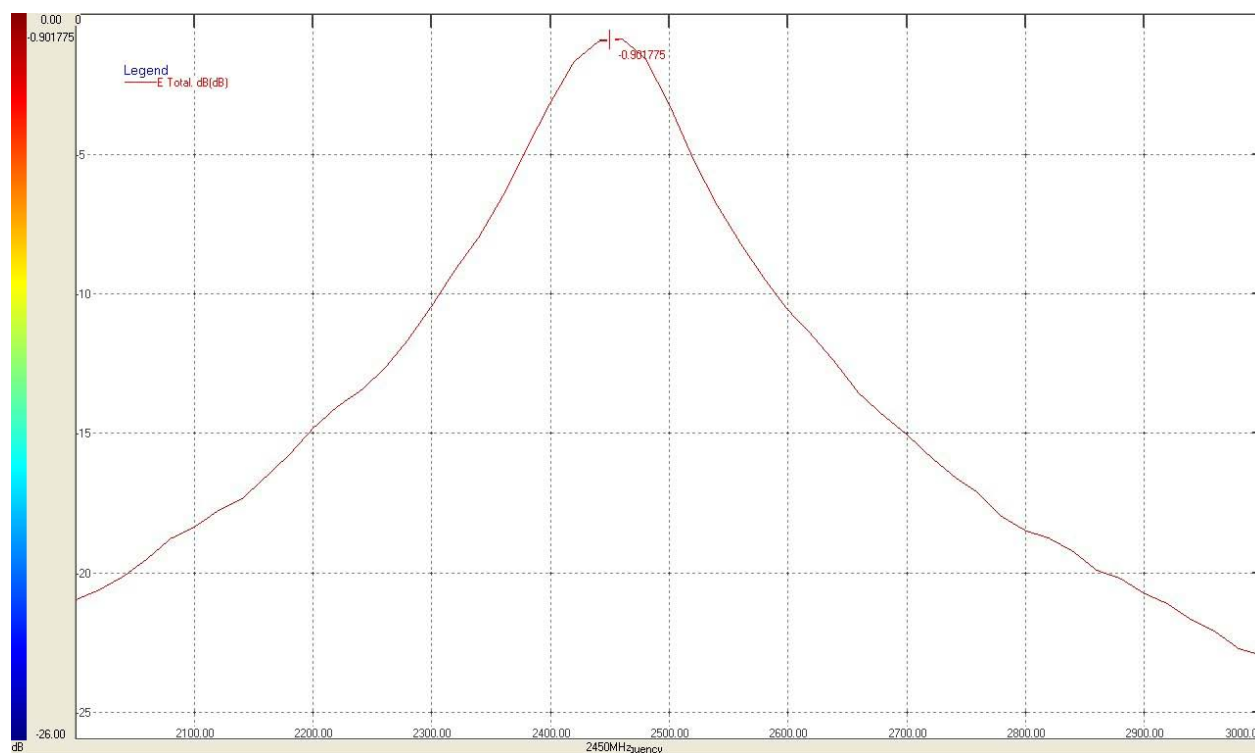




3.3 Efficiency Chart

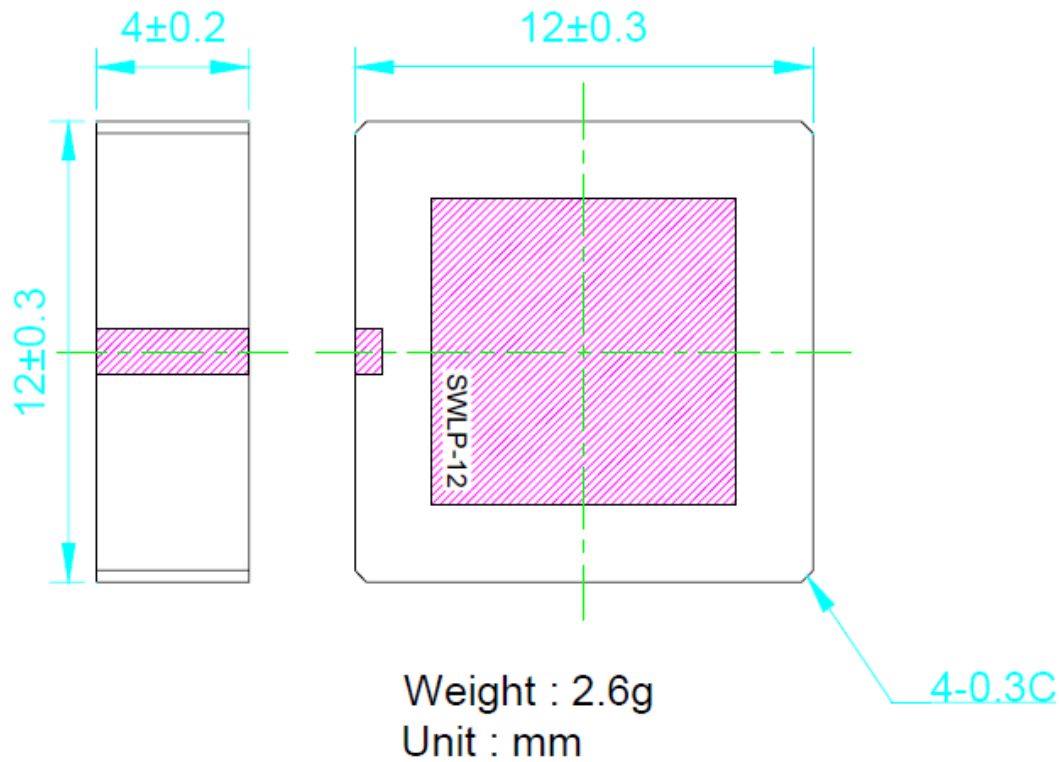


3.4 Average Gain



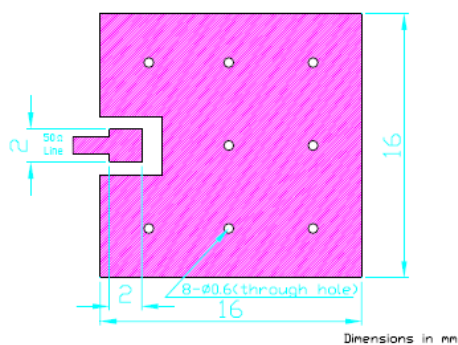


4.0 Shape and Dimensions

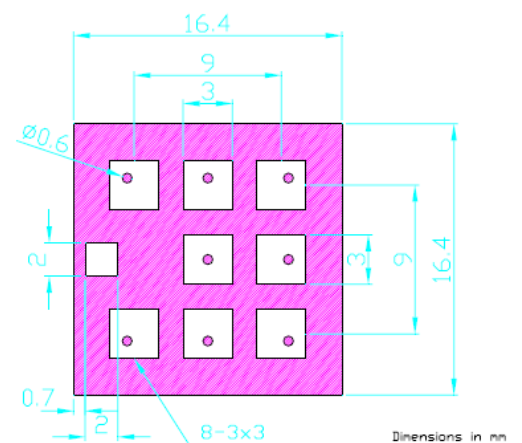


Recommended PC Board Patterns

Electrode



Solder Resist

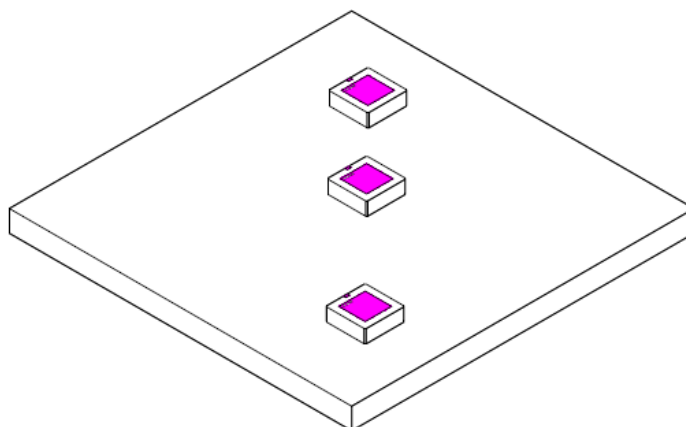




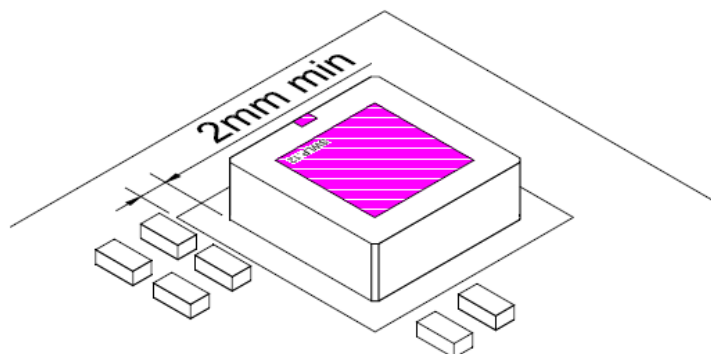
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Antenna mounting method

This antenna can be mounted in any position on a main board.



Other components should be mounted about 2mm apart from the antenna (Our recommended land pattern is 16×16mm).



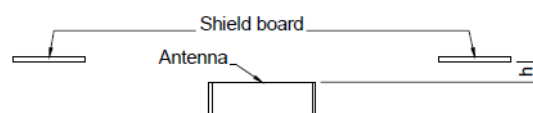
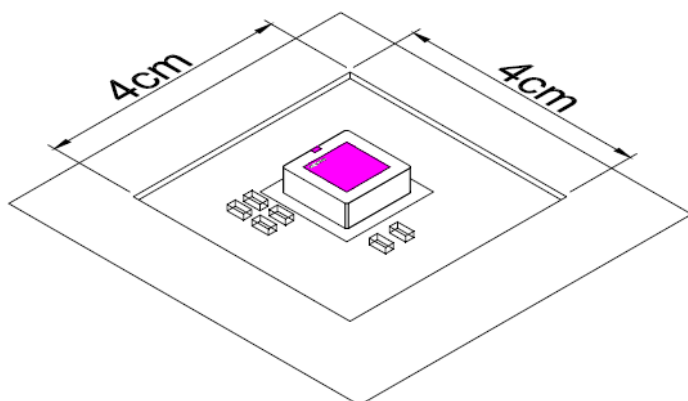


Specification

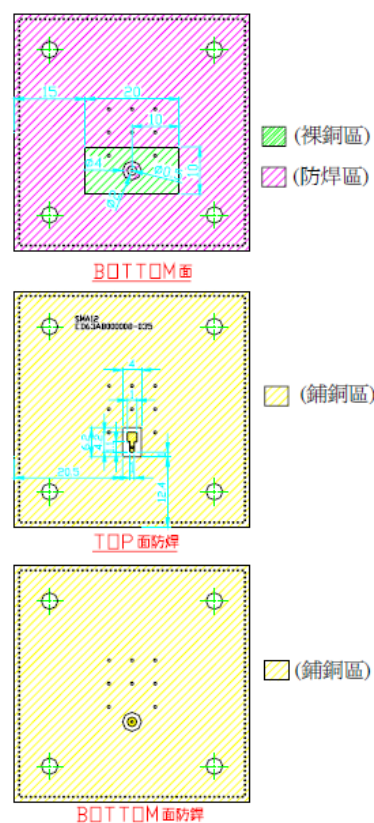
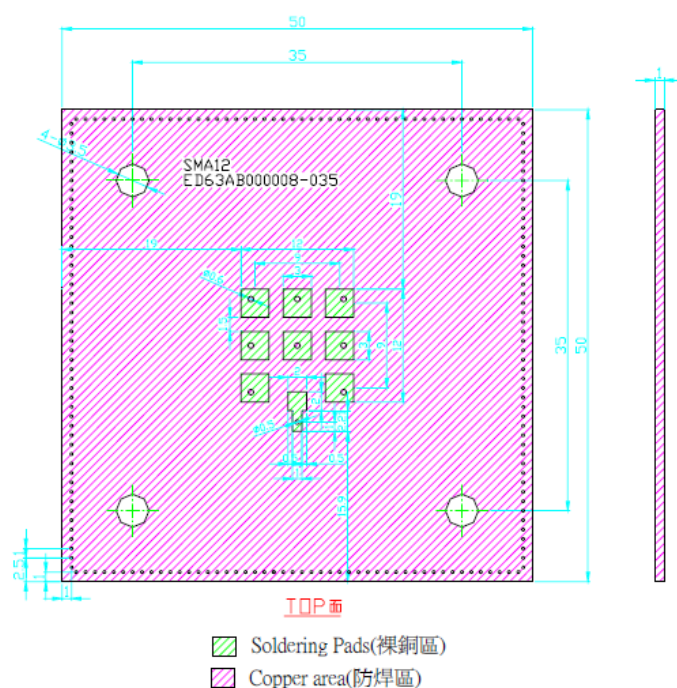
Surroundings around mounted antenna

The surroundings around the mounted antenna should be preferably free from any metal piece, because the gain and directivity are affected by a metal piece.

If the antenna is incorporated in equipment with electromagnetic shielding, open a 4×4cm or larger window through the shielding($h=0\text{mm}$). Then its gain hardly lower(If h is high, make the window larger).

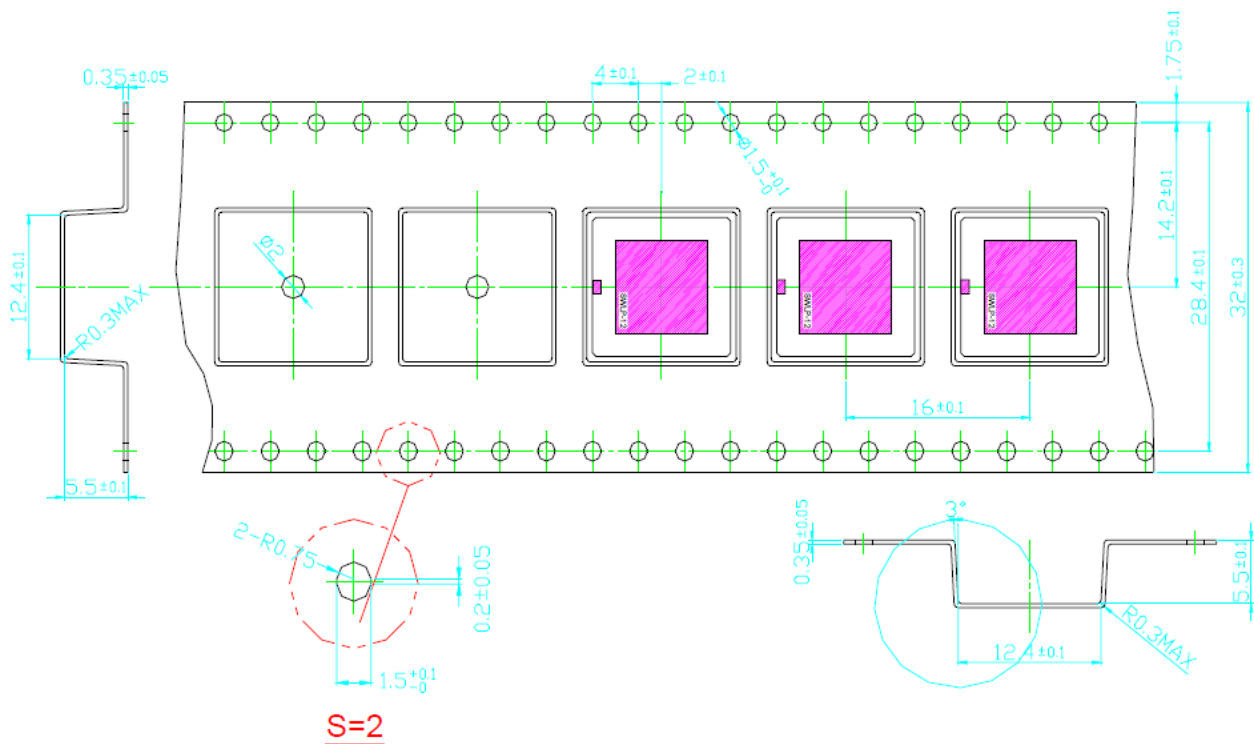
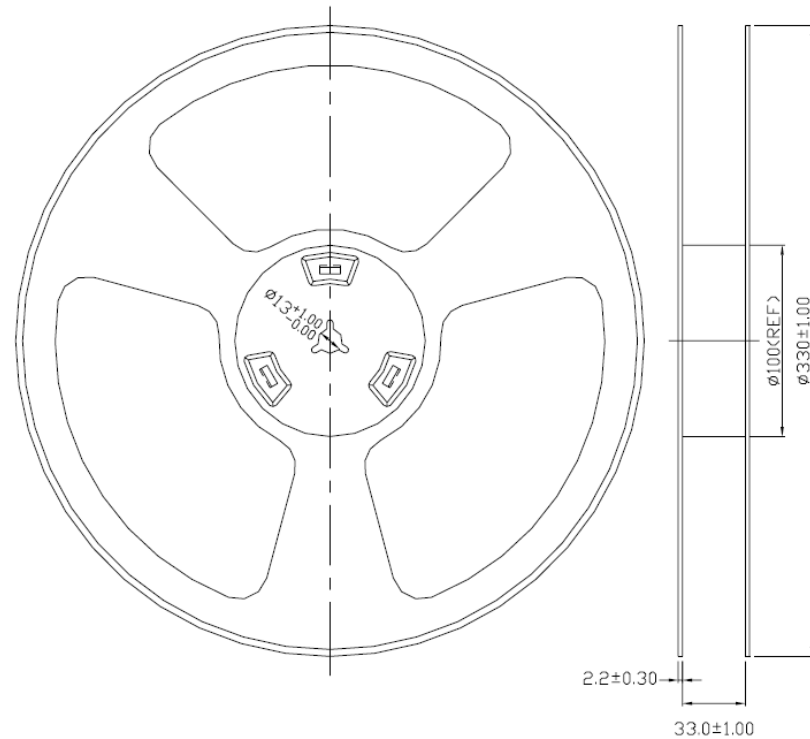


Evaluation Board Dimension





5.0 Packaging





6.0 Recommended Reflow Temperature Profile

The SWLP.12 can be assembled following either Sn-Pb or Pb-Free assembly processes. According to the Standard IPC/JEDEC J-STD-020C, the recommended soldering temperatures are as follows:

Phase	Profile Features	Sn-Pb Assembly	Pb-Free Assembly (SnAgCu)
Ramp-Up	Avg. Ramp-Up Rate ($T_{s_{max}}$ to TP)	3°C/second (max)	3°C/second (max)
Preheat	Temperature Min ($T_{s_{min}}$)	100°	100°
	Temperature Max ($T_{s_{max}}$)	150°	150°
	Time ($t_{s_{min}}$ to $t_{s_{max}}$)	60-120 seconds	60-120 seconds
Reflow	Temperature (T_L)	183°C	217°C
	Total Time Above T_L b(t_L)	60-150 seconds	60-150 seconds
Peak	Temperature (T_p)	235°C	260°C
	Time (t_p)	10-30 seconds	20-40 seconds
Ramp-Down	Rate	6°C/second (max)	6°C/second (max)
Time from 25°C to peak Temperature		6 minutes max	8 minutes max

Temperature profile – (green area) for the assembly process in reflow ovens



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