

SPECIFICATION

Part No.	:	SWLP.2450.12.4.B.02
Product Name	:	12mm*12mm*4mm 2.4GHz SMD Patch Antenna
Features	:	2.4 - 2.5 GHz Patch Antenna For Wi-Fi/WLAN/ISM/Zigbee Industrial Applications High Gain 2dBi Linearly Polarized ROHS Compliant



Top



Bottom

1. Introduction

This 12mm*12mm*4mm high gain 2.4GHz patch antenna is ideally suited for high performance industrial applications in the 2.4 GHz Wi-Fi, ISM, and 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.

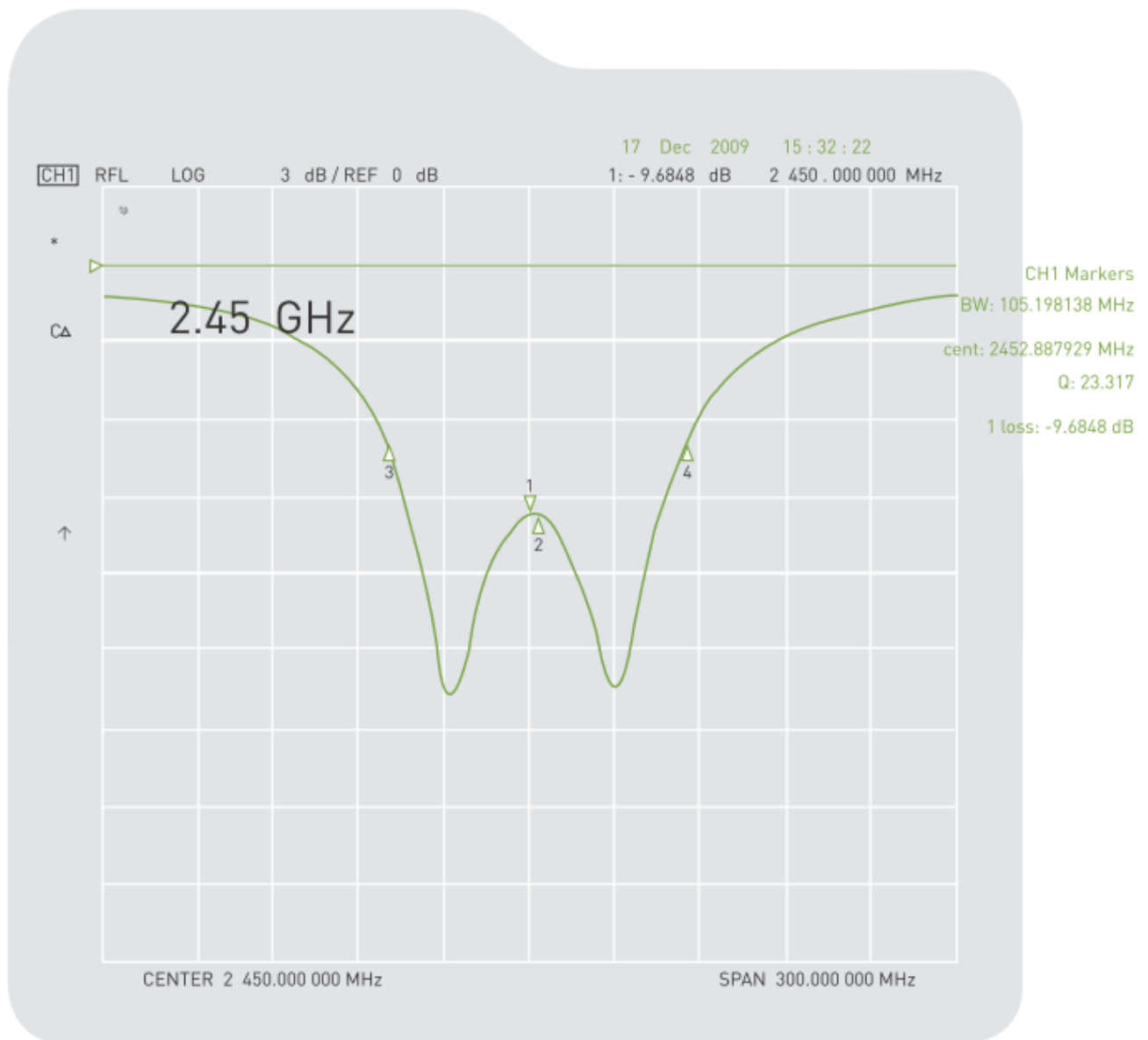
2. Key Antenna Performance Indicators*

ELECTRICAL	
Frequency Range	2400 MHz to 2500 MHz
Bandwidth	100 MHz @ -7dB
Efficiency	80.12% @ 2450 MHz
Polarization	Linear
VSWR	3.0 max @ Center Frequency
Peak Gain	+2 dBi typ.
Impedance	50 Ohms
MECHANICAL	
Dimensions	12mm x 12mm x 4mm
Weight	4g
ENVIRONMENTAL	
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
Termination	Ag (Environmentally Friendly Pb Free)

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

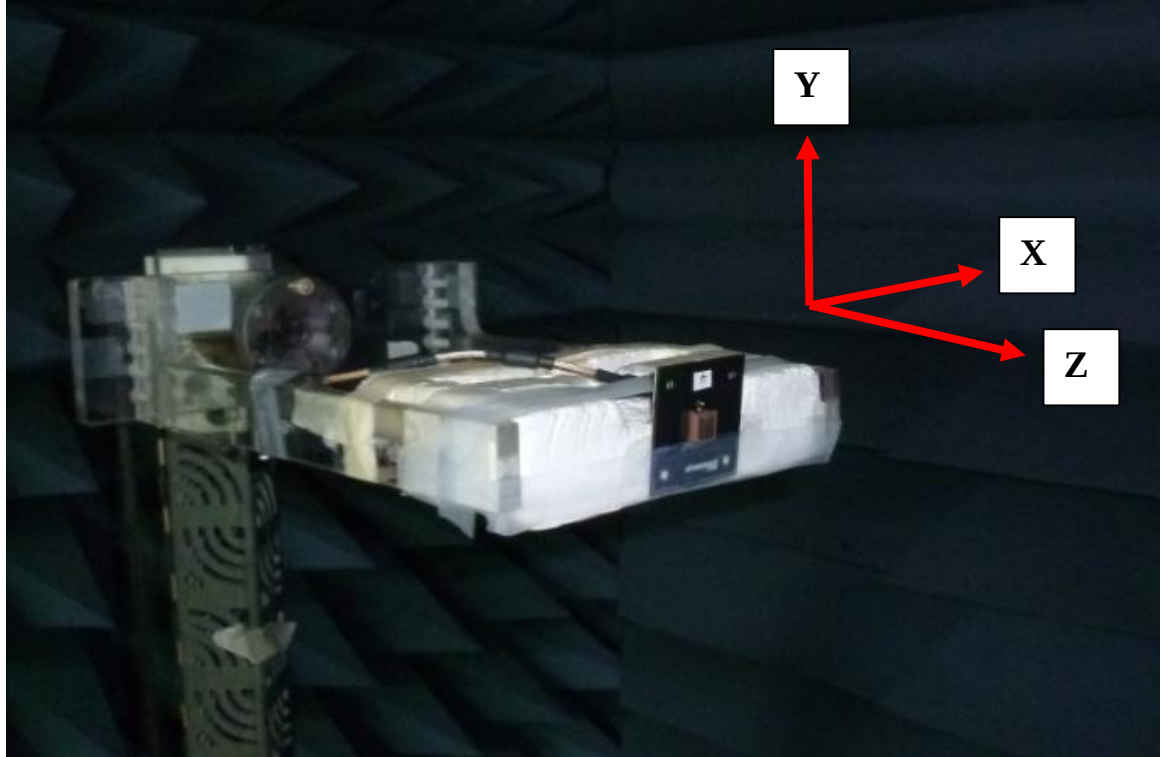
3. Electrical Specifications

3.1 Return Loss

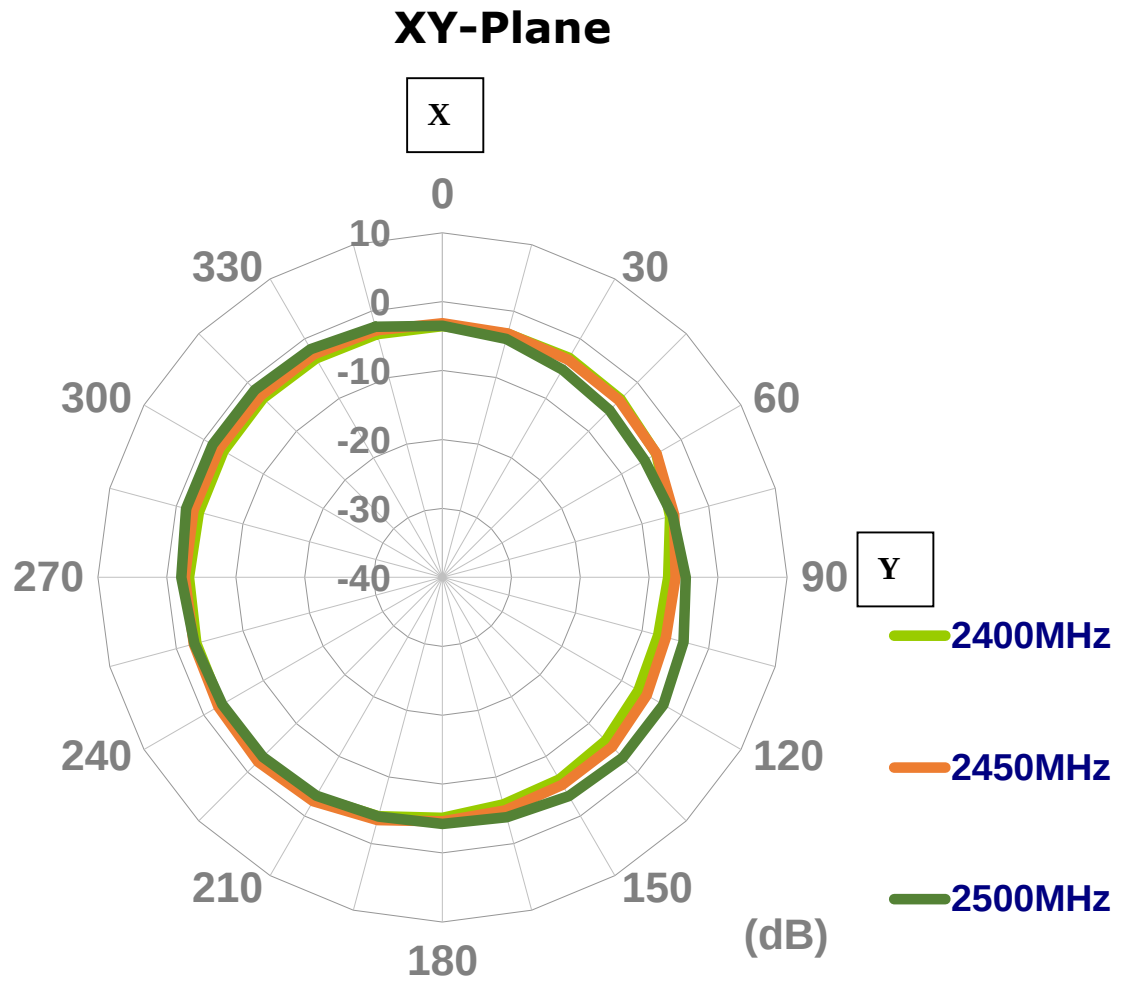


With 50×50mm² Evaluation board

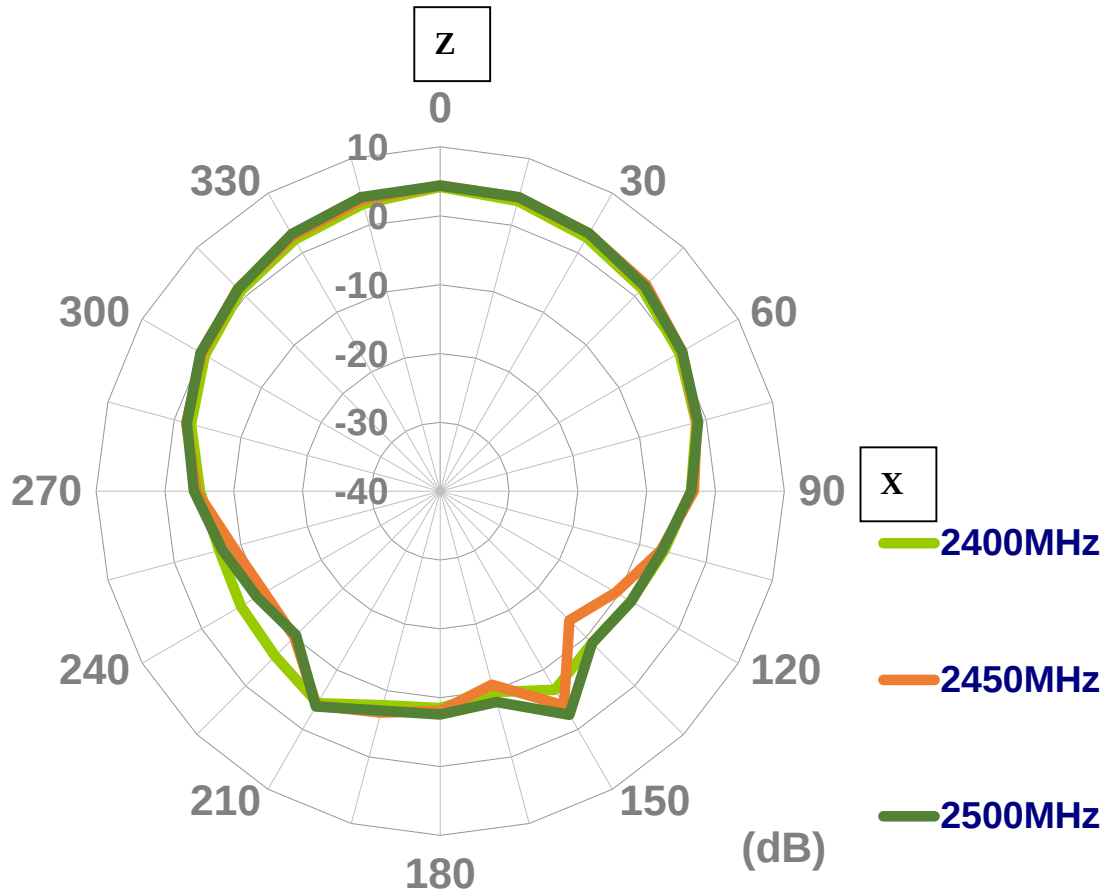
3.2 Definition of X-Y-Z Plane



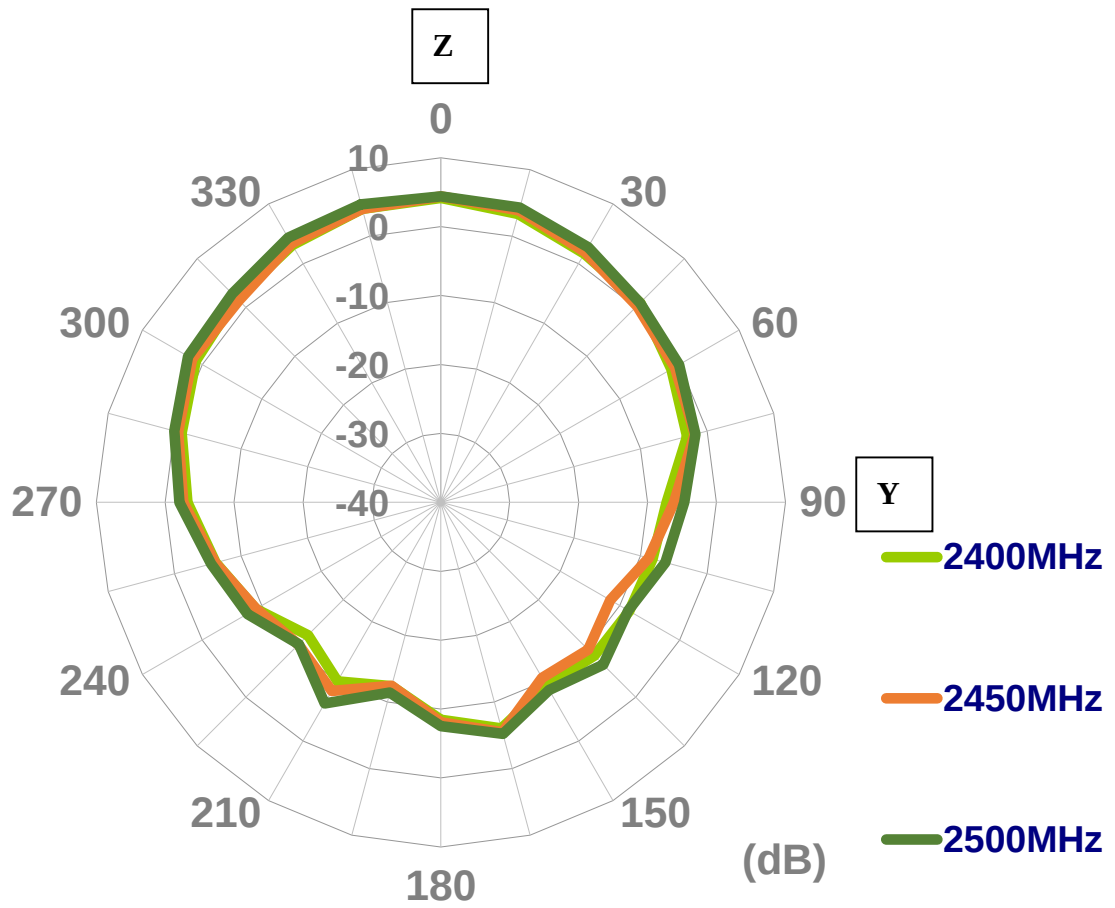
3.3 Radiation Patterns



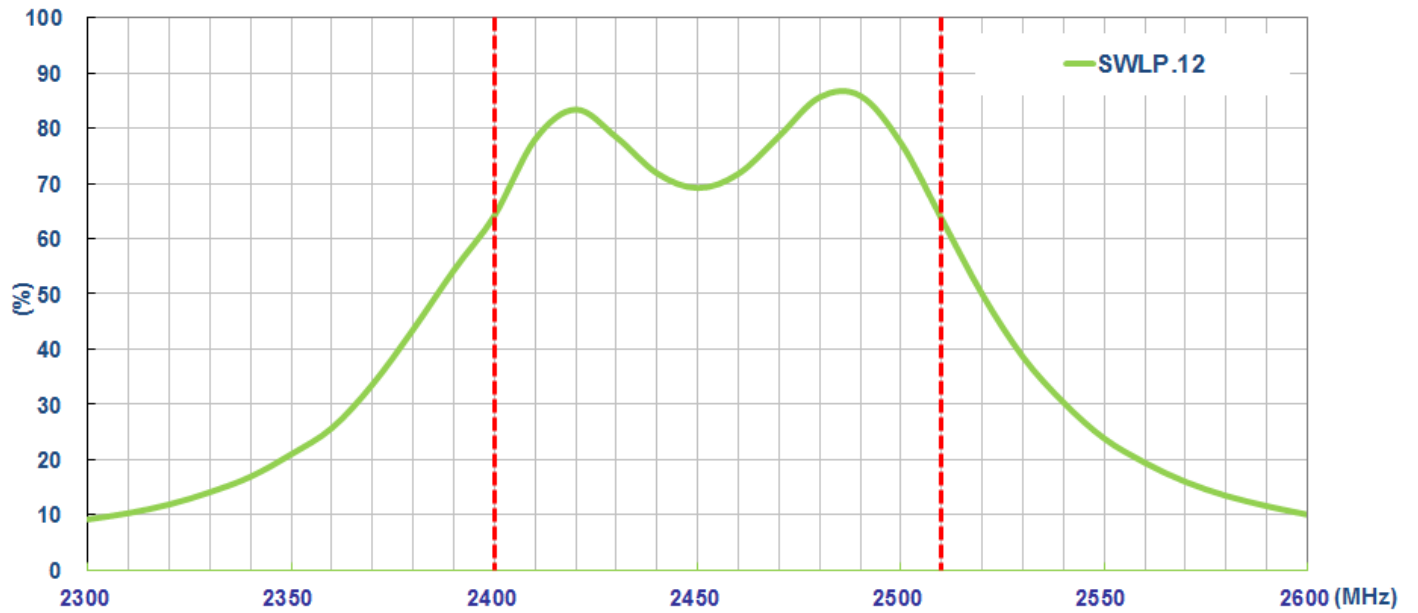
XZ-Plane



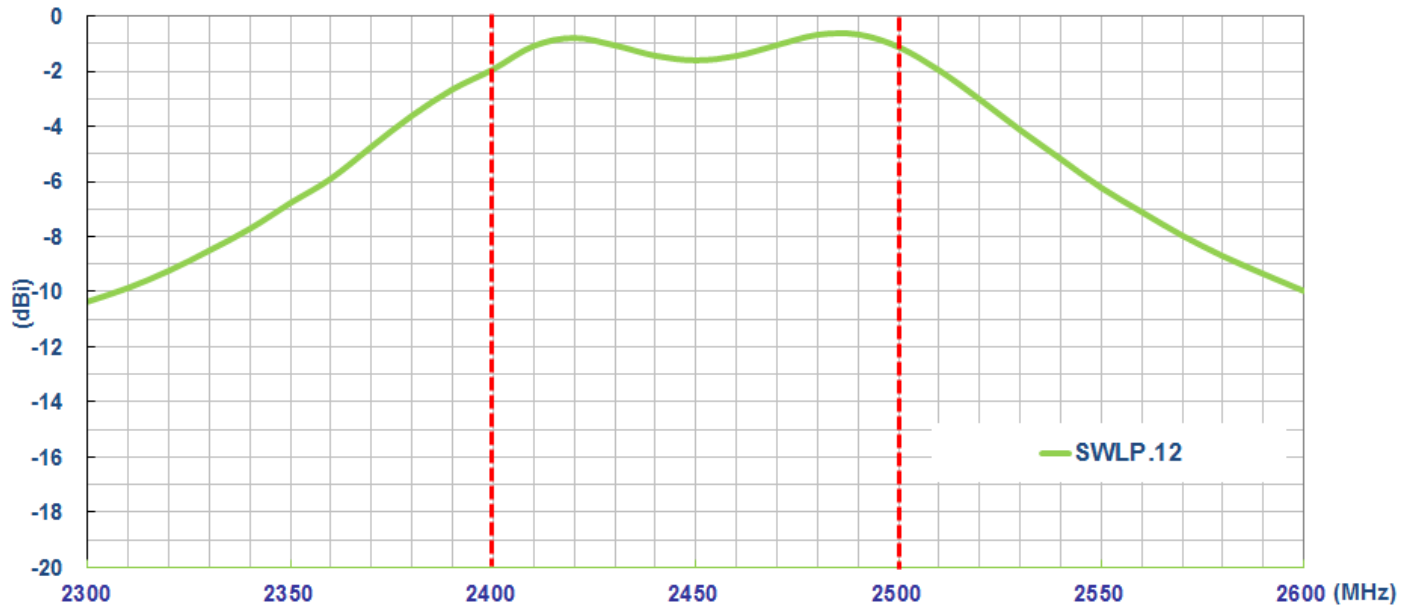
YZ-Plane



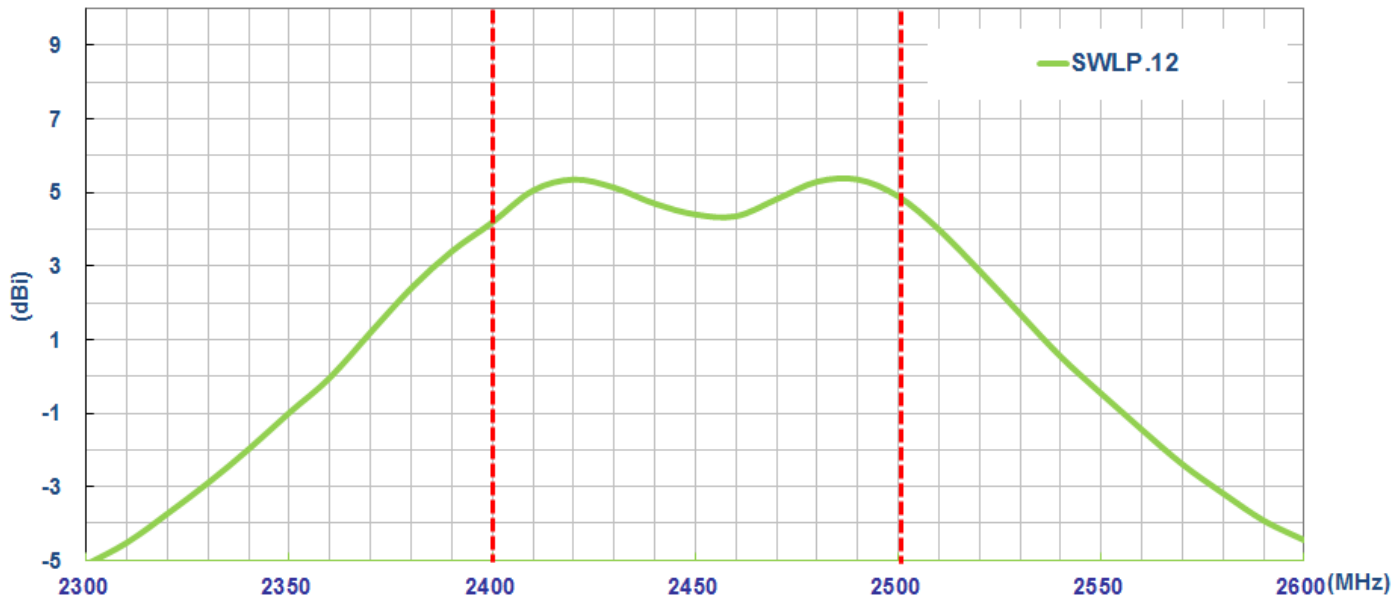
3.4 Efficiency



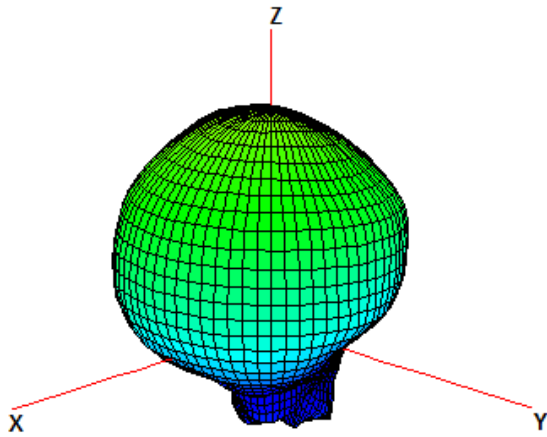
3.5 Average Gain



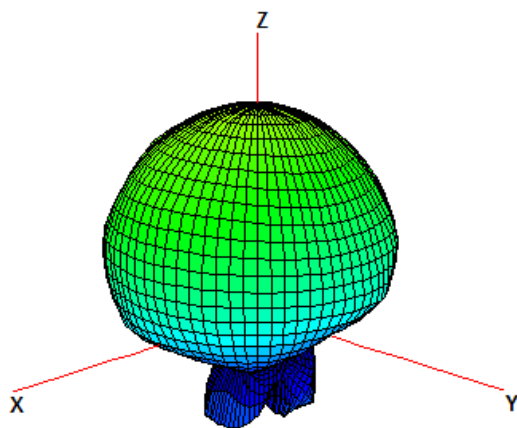
3.6 Peak Gain



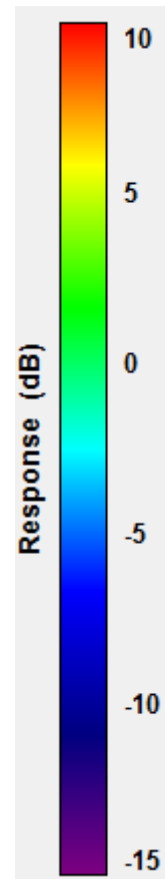
3.7 3D Radiation Pattern

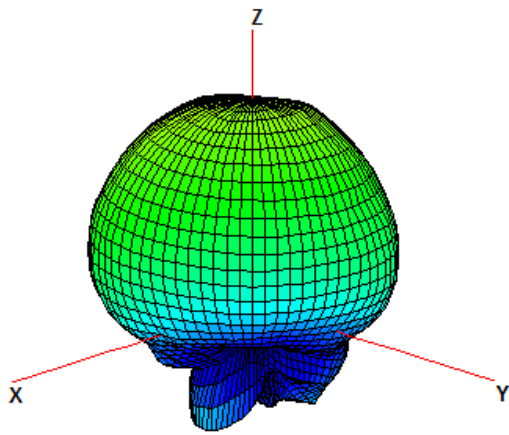


2400MHz



2450MHz

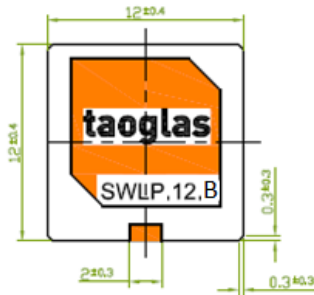




2500MHz

4. Shape and Dimensions

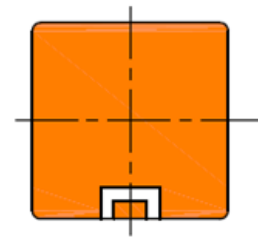
Top View



Side View

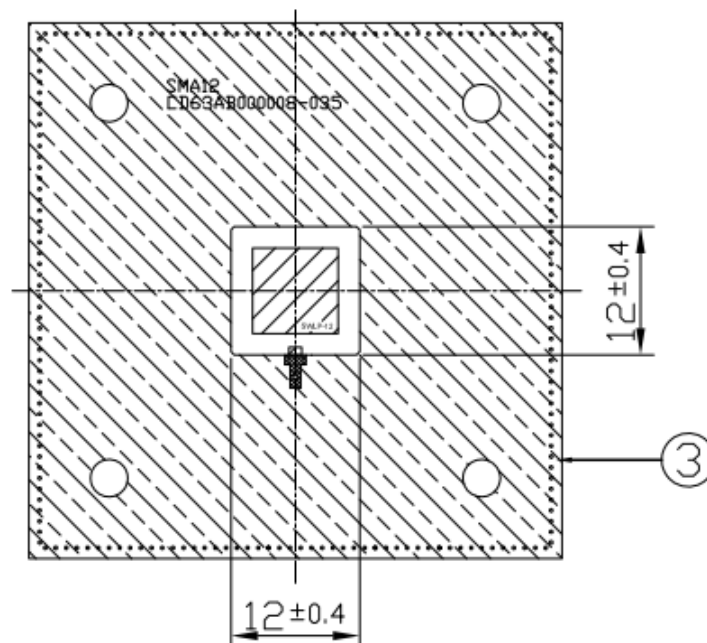


Bottom View

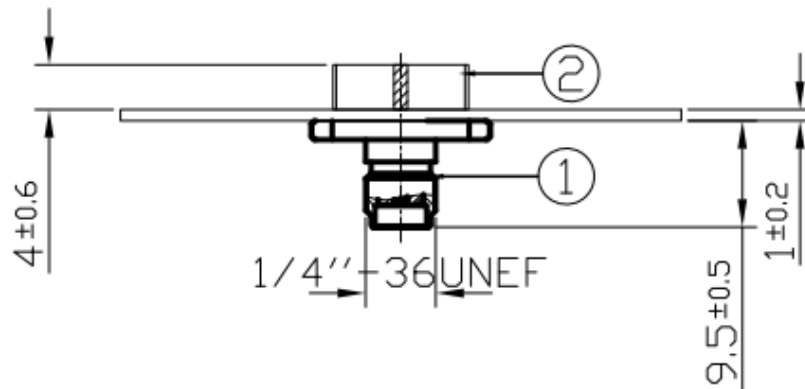


4.1 Evaluation Board Dimensions

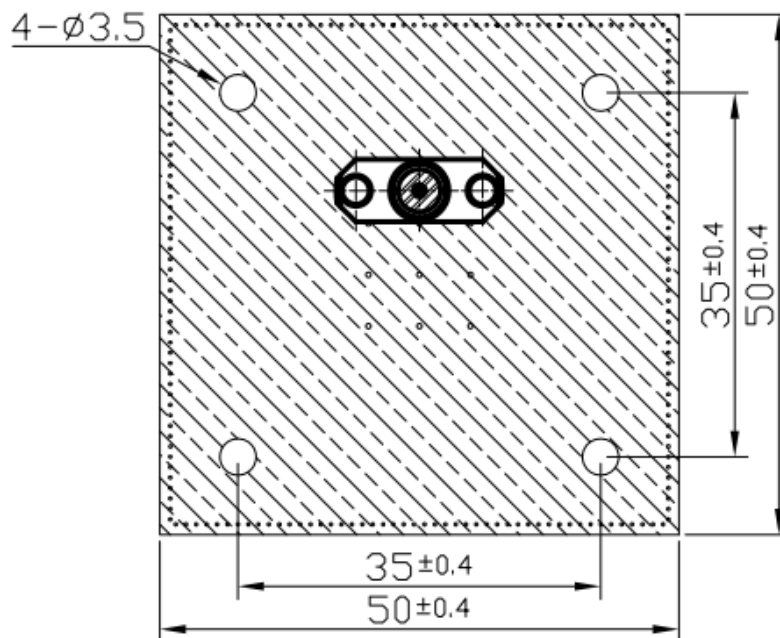
Top View



Side View

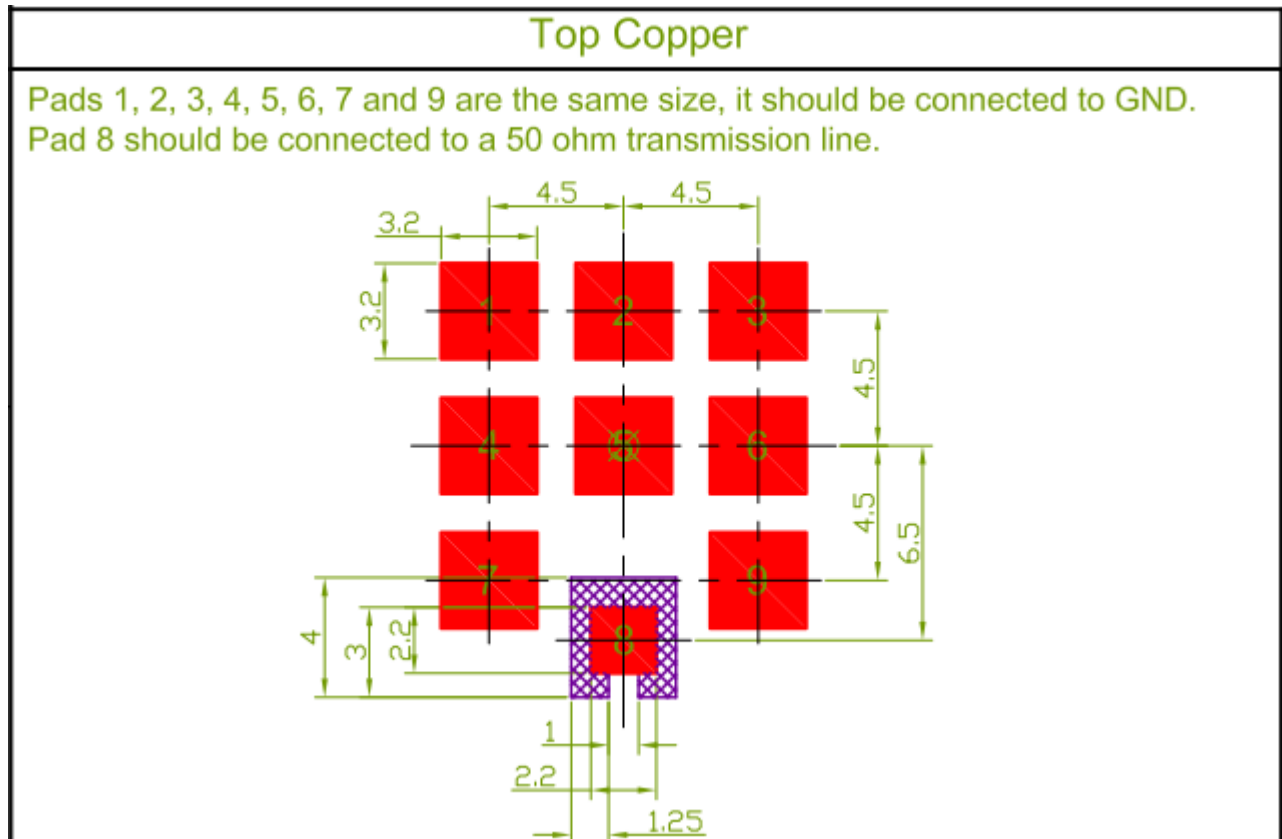


Bottom View



5. Footprint

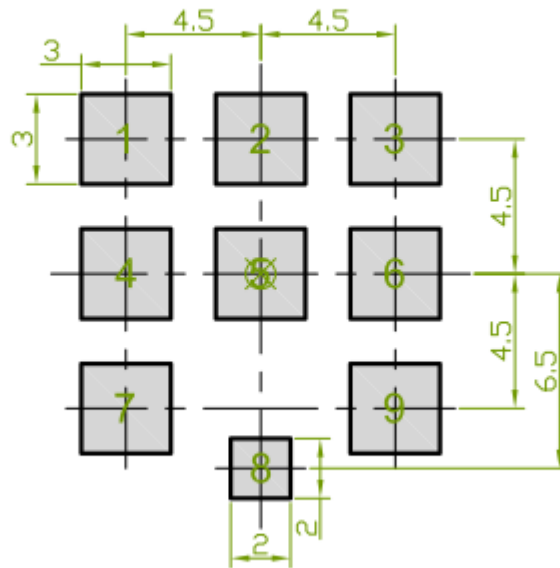
5.1 Top Copper



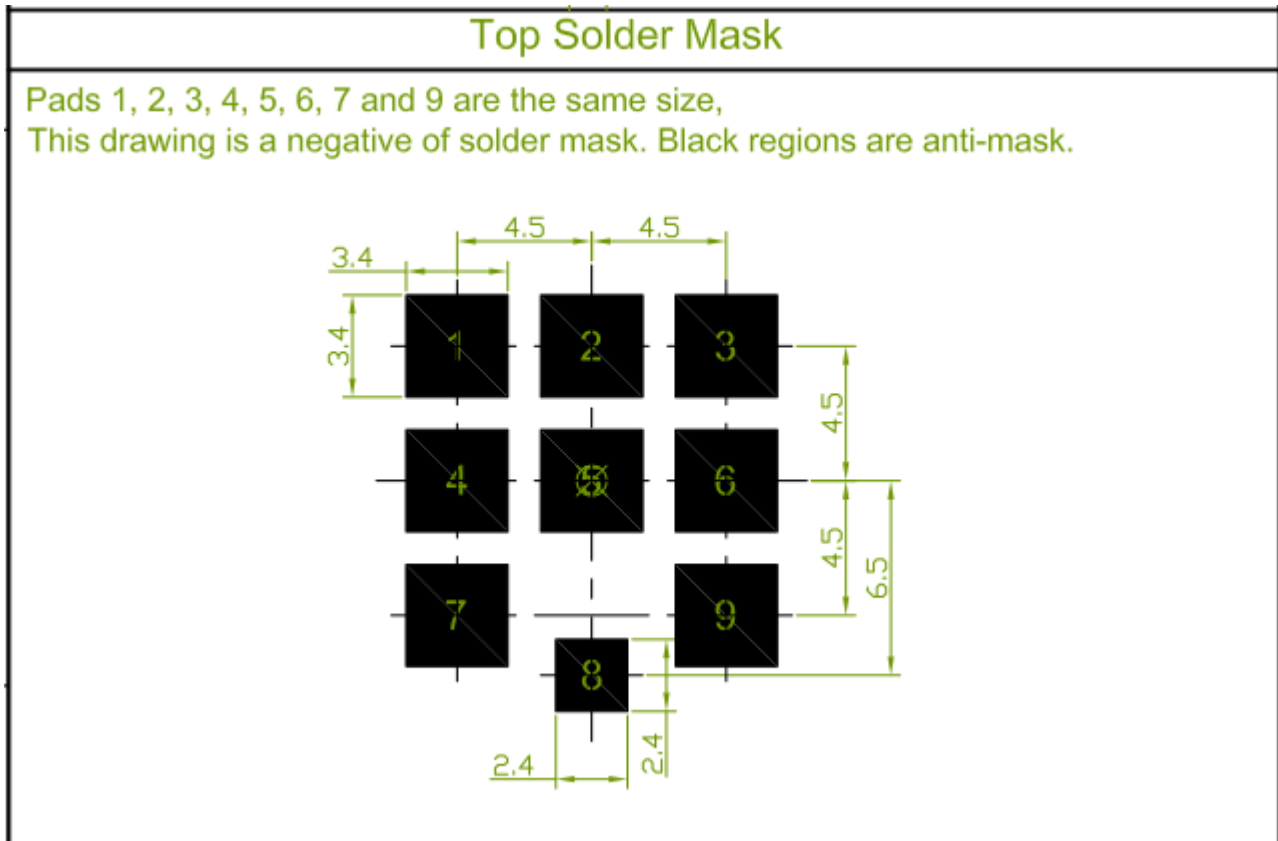
5.2 Top Solder paste

Top Solder Paste

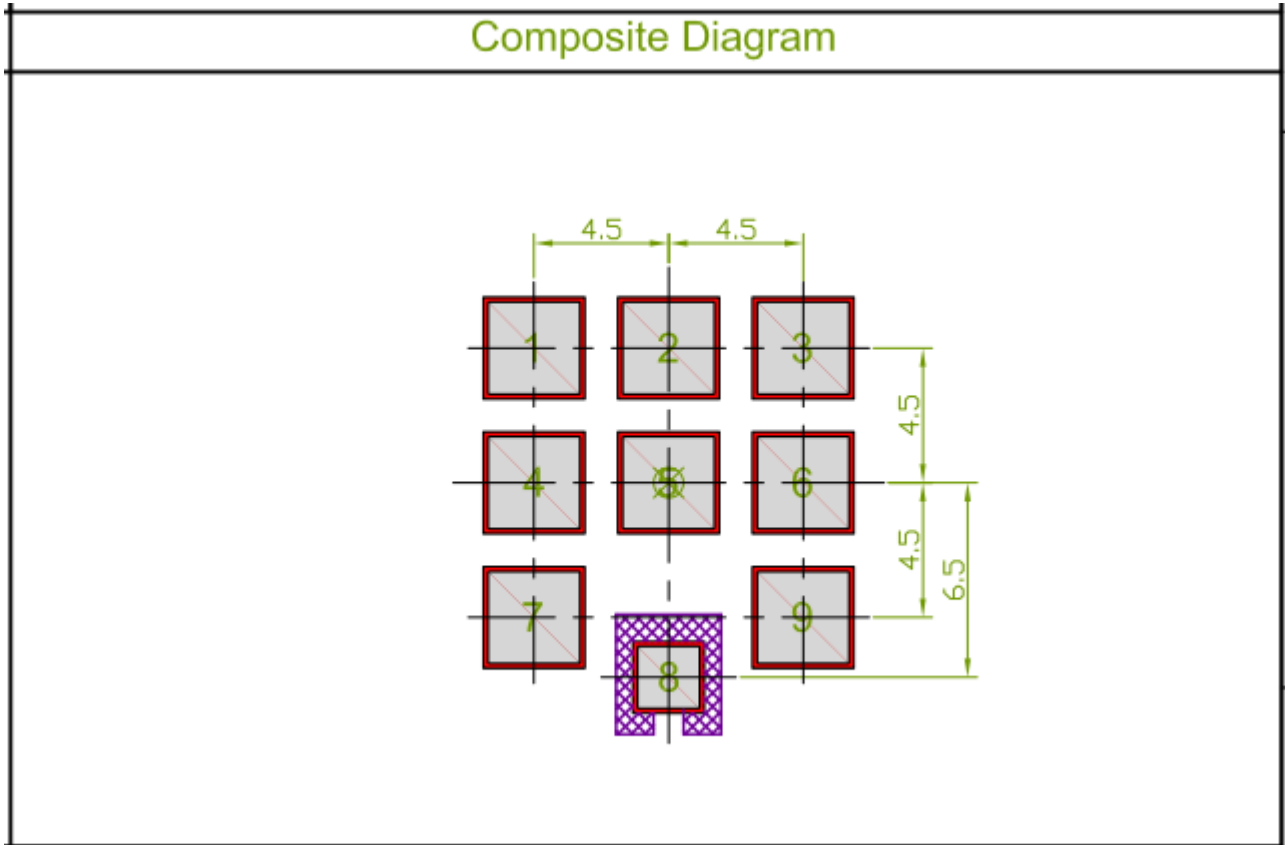
Pads 1, 2, 3, 4, 5, 6, 7 and 9 are the same size.



5.3 Top Solder Mask



5.4 Composite Diagram

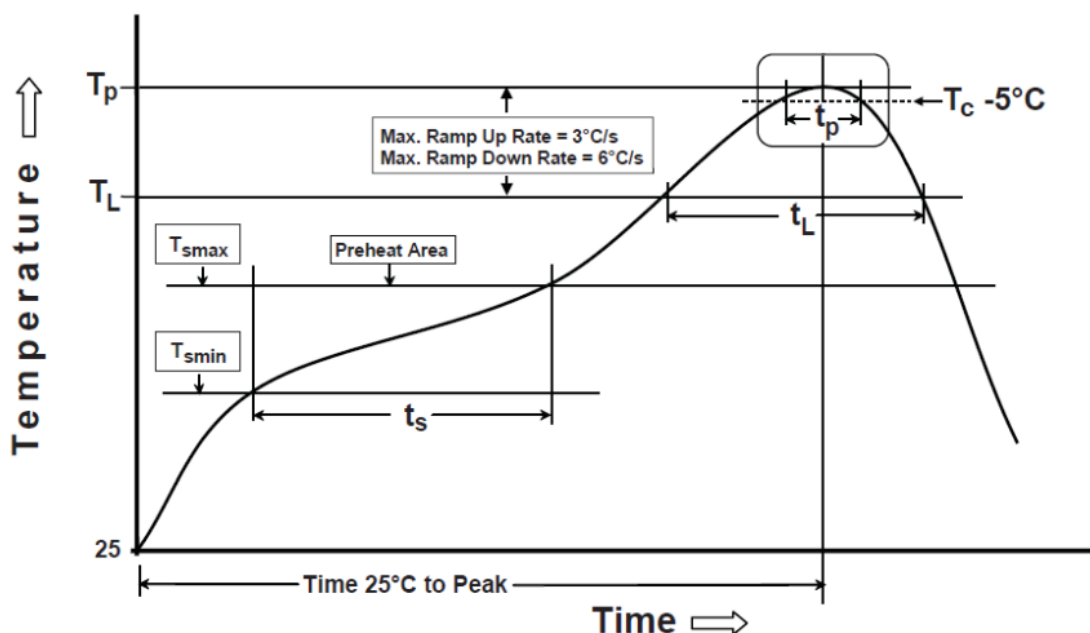


6. Recommended Reflow Temperature Profile

SWLP.12B can be assembled following Pb-free assembly. According to the Standard IPC/JEDEC J-STD-020C, the temperature profile suggested is as follow:

Phase	Profile Features	Pb-Free Assembly (SnAgCu)
PREHEAT	Temperature Min(T_{smin})	150°C
	Temperature Max(T_{smax})	200°C
	Time(t_s) from (T_{smin} to T_{smax})	60-120 seconds
RAMP-UP	Avg. Ramp-up Rate (T_{smax} to TP)	3°C/second(max)
REFLOW	Temperature(T_L)	217°C
	Total Time above T_L (t_L)	30-100 seconds
PEAK	Temperature(T_P)	260°C
	Time(t_p)	2-5 seconds
RAMP-DOWN	Rate	3°C/second(max)
Time from 25°C to Peak Temperature		8 minutes max.
Composition of solder paste		96.5Sn/3Ag/0.5Cu
Solder Paste Model		SHENMAO PF606-P26

The graphic shows temperature profile for component assembly process in reflow ovens



Sold

Apply preheating at 120°C for 2-3 minutes. Finish soldering for each terminal within 3 seconds, if soldering iron temperature over 270°C±10°C or 3 seconds, it will make cause component surface peeling or damage.