Datasheet

2.4GHz LTCC Antenna

Part No:
WLA.04

Description:

2400MHz to 2500MHz WLAN/Wi-Fi/Bluetooth

Features:

Low Profile

Dimensions: 1.6*0.8*0.4mm

Peak gain 2dBi typ

50 Ohm Impedance

CE Certified

RoHS and REACH Compliant

1. Introduction

The WLA.04 is a compact size LTCC Antenna designed for use in 2.4GHz systems such as Bluetooth, Wi-Fi, BLE, WLAN, THREAD and ZigBee. It is perfect for devices with small ground planes due to it's miniature size of just 1.6*0.8mm. It is delivered on Tape and Reel for ease of integration through pick and place machines.

Typical Applications Include:

- Handheld Devices
- Wearables
- IoT development Kits
- Security
- Connected Health

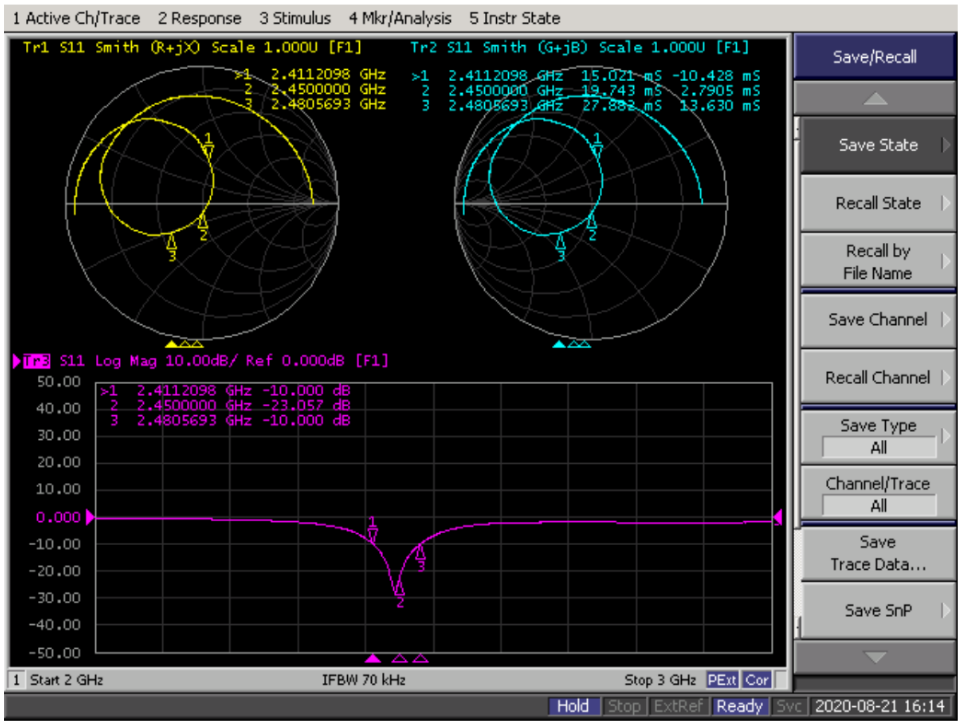
For further information regarding the integration of the WLA.04 into your device please contact your regional Taoglas customer support team.

2. Specifications

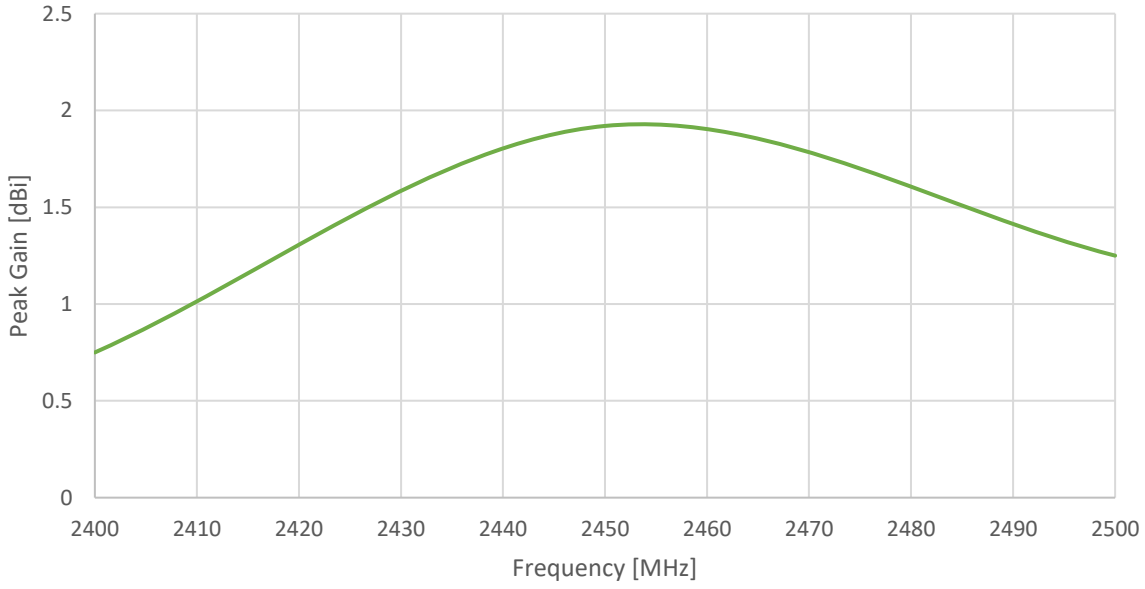
Electrical	
Centre Frequency	2400-2500MHz
VSWR	≤2.0
Radiation Pattern	Omnidirectional
Bandwidth	65MHz typ.
Peak Gain	2.7dBi typ.
Efficiency	69% typ.
Impedance	50 Ω
Mechanical	
Dimensions	1.6*0.8*0.4mm
Material	Ceramic
Environmental	
Temperature Range	25~+5°C
Relative Humidity range	55~75%RH
Operating Temperature	-40°C~+85°C
Storage Temperature	-40°C~+85°C
Moisture Sensitivity Level	1

3. Antenna Characteristcs

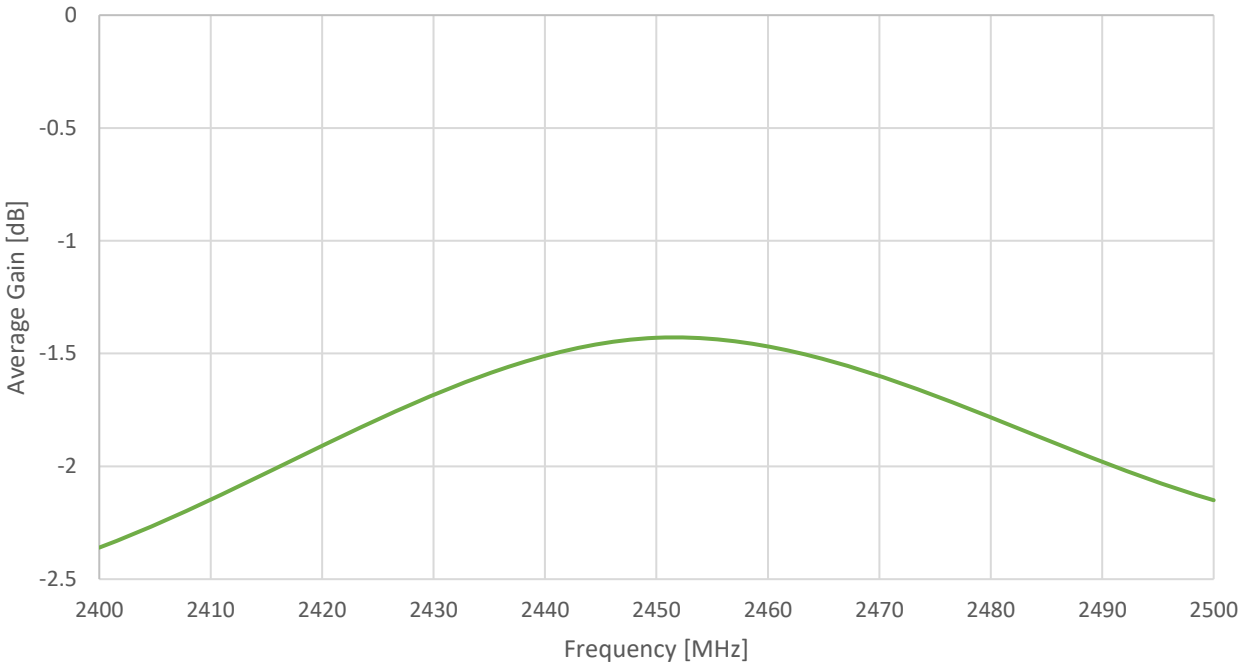
3.1 Characteristic curve Smith Chart + Return Loss



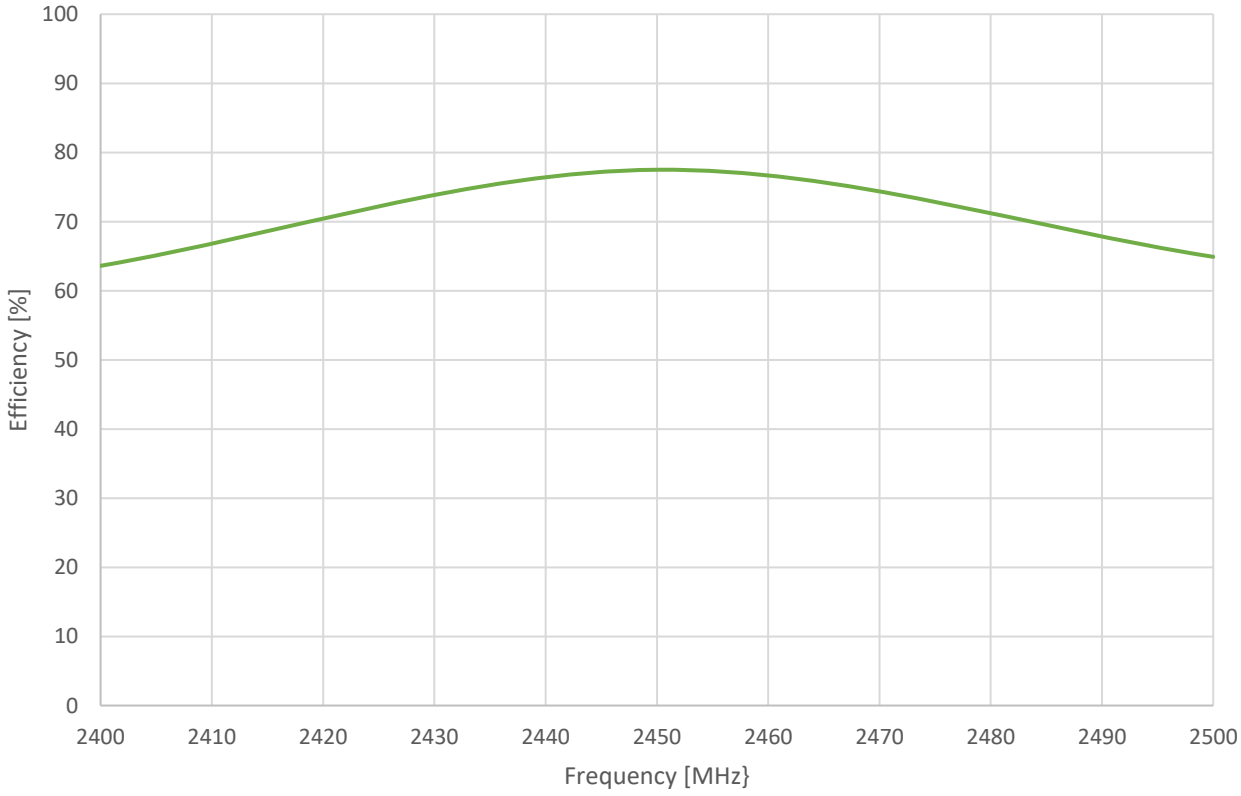
3.2 Peak Gain



3.3 Avergae Gain

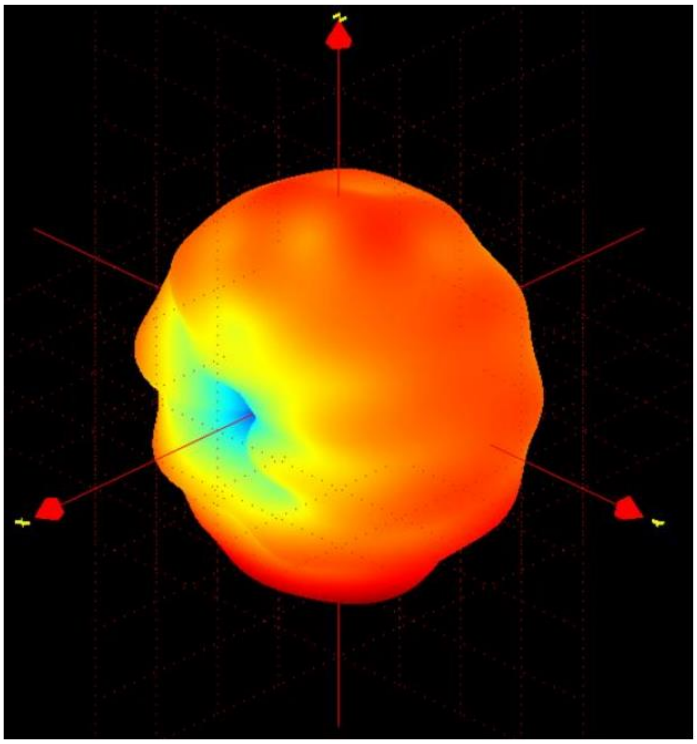


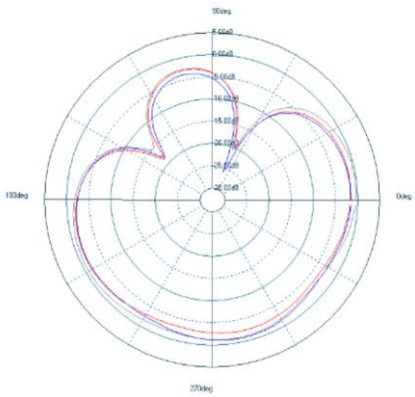
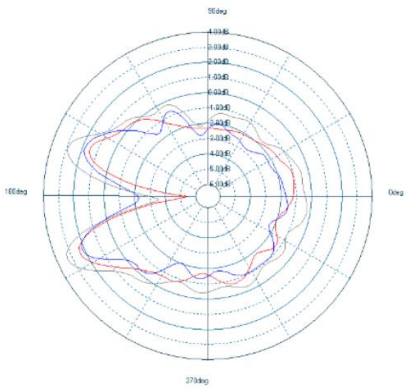
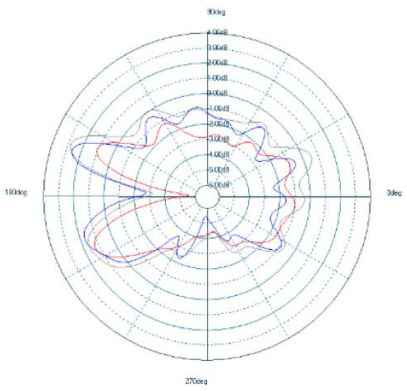
3.4 Efficiency



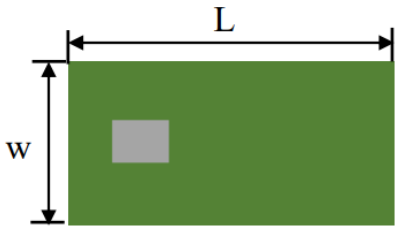
4. Radiation Patterns

4.1 2400MHz 3D and 2D Radiation Patterns



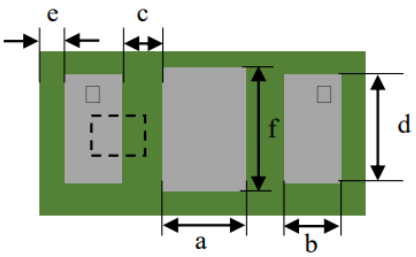
XY Plane	XZ Plane	YZ Plane
		

5. Mechanical Drawing (Units: mm)



(Top View)

Number	Terminal Name
①	INPUT+GND
②	NC
③	GND



(Bottom View)

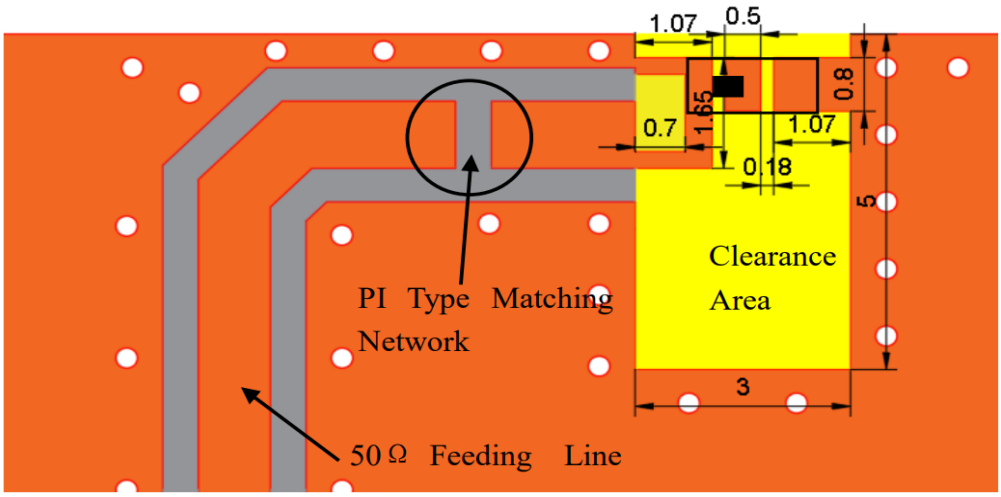
(Side View)

Symbol	L	W	T	a	b	c	d	e	f
Dimension(mm)	1.6±0.1	0.8±0.1	0.4±0.1	0.5±0.1	0.25±0.1	0.18±0.05	0.55±0.1	0.12±0.05	0.6±0.1

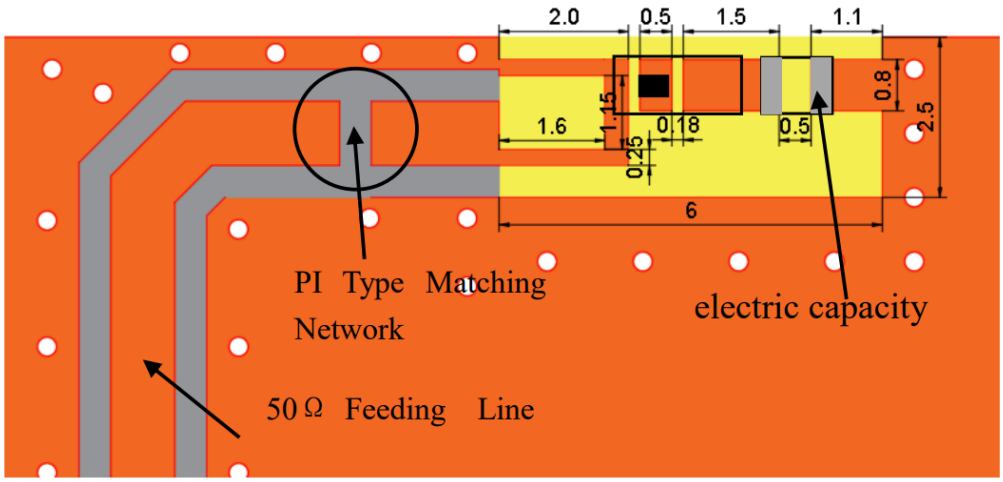
5. Antenna Integration

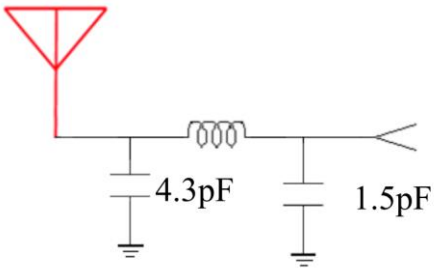
5.1 Evaluation Board Matching Circuit

Layout 1 (mm)



Layout 2





5.2 Vibration Resist

The device should fulfill the electrical specification after applied to the vibration of 10 to 55Hz with amplitude of 1.5mm for 2 hours each in X , Y and Z directions.

5.3 Drop Shock

The device should have no mechanical damage after dropping onto the hard wooden board from the height of 100cm for 3 times each facet of the 3 dimensions of the device.

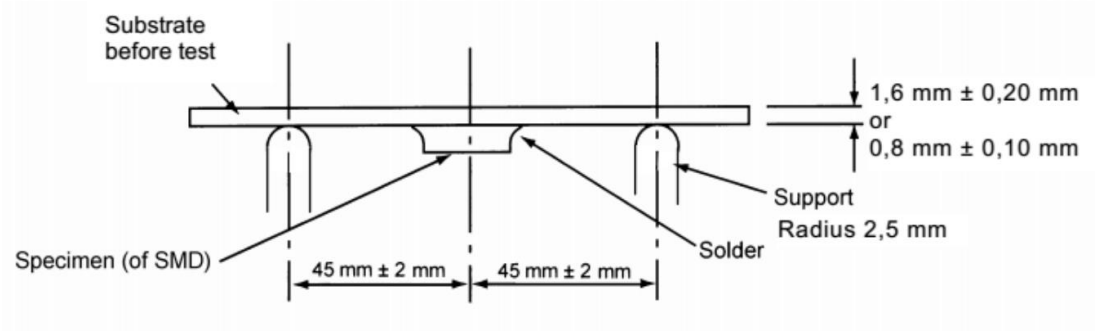
5.4 Solder Heat Proof

The device should be satisfied after preheating at 120℃~150℃ for 120 seconds and dipping in soldering Sn at 255℃+10℃ for 5±0.5 seconds ， or electric iron 300℃-10℃ for 3±0.5 seconds ， without damnify.

5.5 Adhesive Strength of Termination

The device have no remarkable damage or removal of the termination after horizontal force of 5N(≦0603) ； 10N(>0603)with 10±1 seconds.

5.6 Bending Resist Test



Weld the product to the center part of the PCB with the thickness 1.6±0.2mm or 0.8±0.1mm as the illustration shows, and keep exerting force arrow-ward on it at speed of :1mm/S , and hold for 5±1S at the position of 1.5mm bending distance , so far , any peeling off of the product metal coating should not be detected.

5.7 Moisture Proof

The device should fulfill the electrical specification after exposed to the temperature 60±2℃and the relative humidity 90~95% RH for 96 hours and 1~2 hours recovery time under normal condition.

5.8 Hight Temperature Endurance

The device should fulfill the electrical specification after exposed to temperature 85±5℃for 96±2 hours and 1~2 hours recovery time under normal temperature.

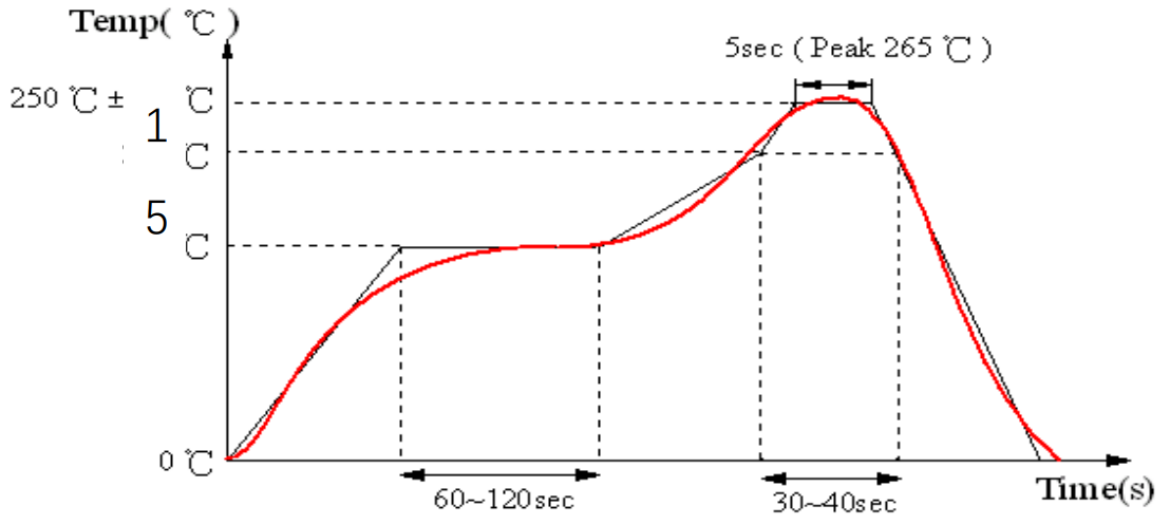
5.9 Low Temperature Endurance

The device should fulfill the electrical specification after exposed to the temperature -40℃±5℃ for 96 ±2 hours and to 2 hours recovery time under normal temperature.

5.10 Temperature Cycle Test

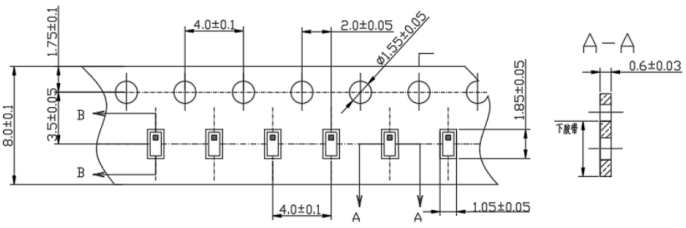
The device should fulfill the electrical specification after exposed to the low temperature -40℃ and high temperature +85℃ for 30±2 min each by 5 cycles and 1 to 2 hours recovery time under normal temperature.

5.11 Reflow Soldering Standard Condition

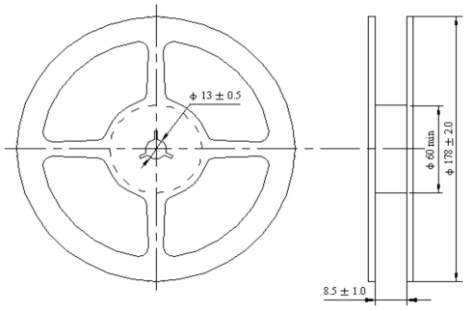


6. Packaging

1pc WLA.04 per Tape



6000pcs WLA.04 per reel



Changelog for the datasheet

SPE-23-8-135 – WLA.04

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Date:	2023-05-23
Notes:	First Release
Author:	Cesar Sousa

Previous Revisions

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