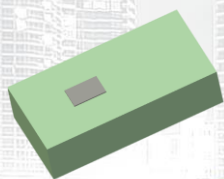




TAOGLAS®



Datasheet

2.4GHz Ceramic Chip 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

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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 its 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

The WLA.04 is a ceramic chip antenna for 2.4GHz applications, its miniature size allows it to be used in areas where larger antennas do not fit.

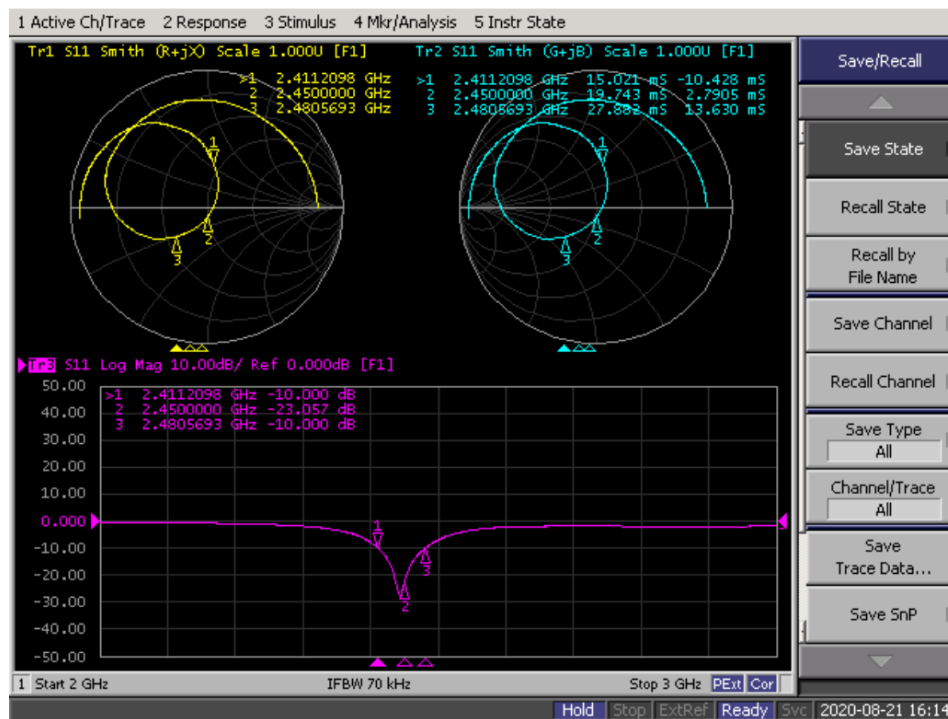
For further information regarding the integration of the WLA.04 into your device please contact your regional Taoglas customer support team.

2. Specifications

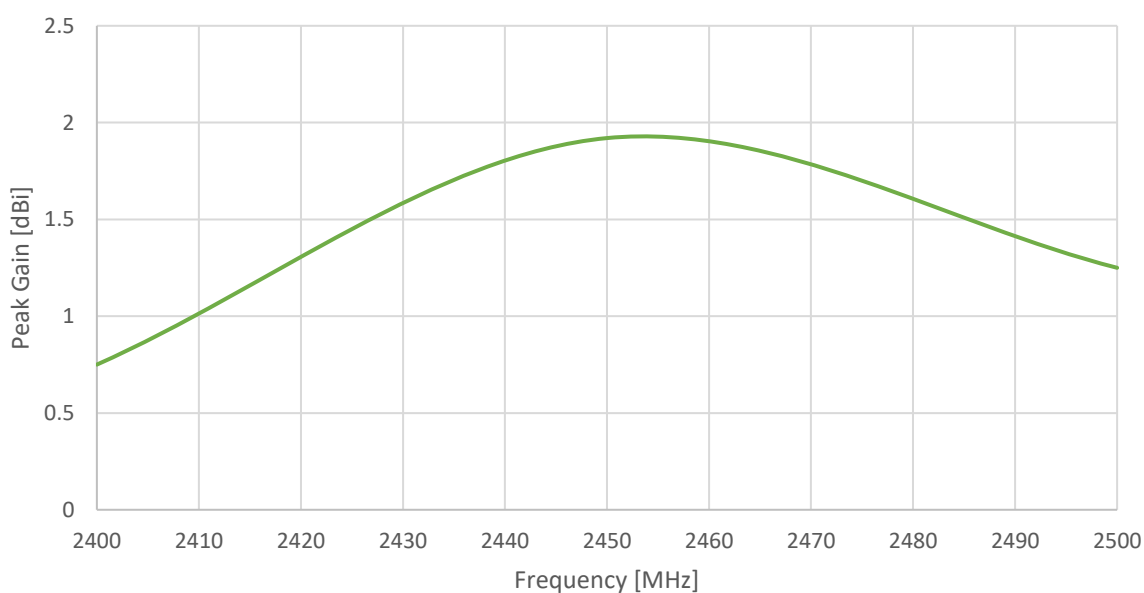
Electrical	
Centre Frequency	2400-2500MHz
VSWR	≤2.0
Radiation Pattern	Omnidirectional
Bandwidth	65MHz typ.
Peak Gain	2.7dBi typ.
Efficiency	69% typ.
Impedance	50 Ω
Mechanical	
Dimensions	1.6*0.8*0.4mm
Material	Ceramic
Environmental	
Temperature Range	25~+5°C
Relative Humidity range	55~75%RH
Operating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

3. Antenna Characteristics

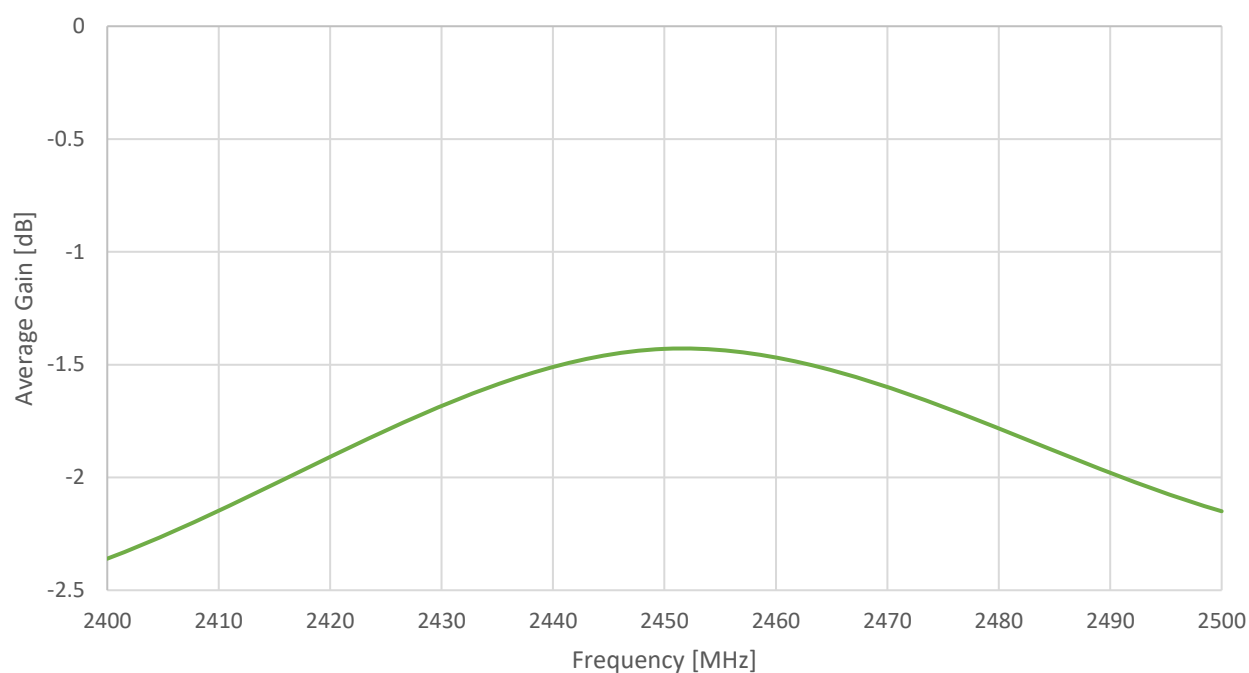
3.1 Characteristic curve Smith Chart + Return Loss



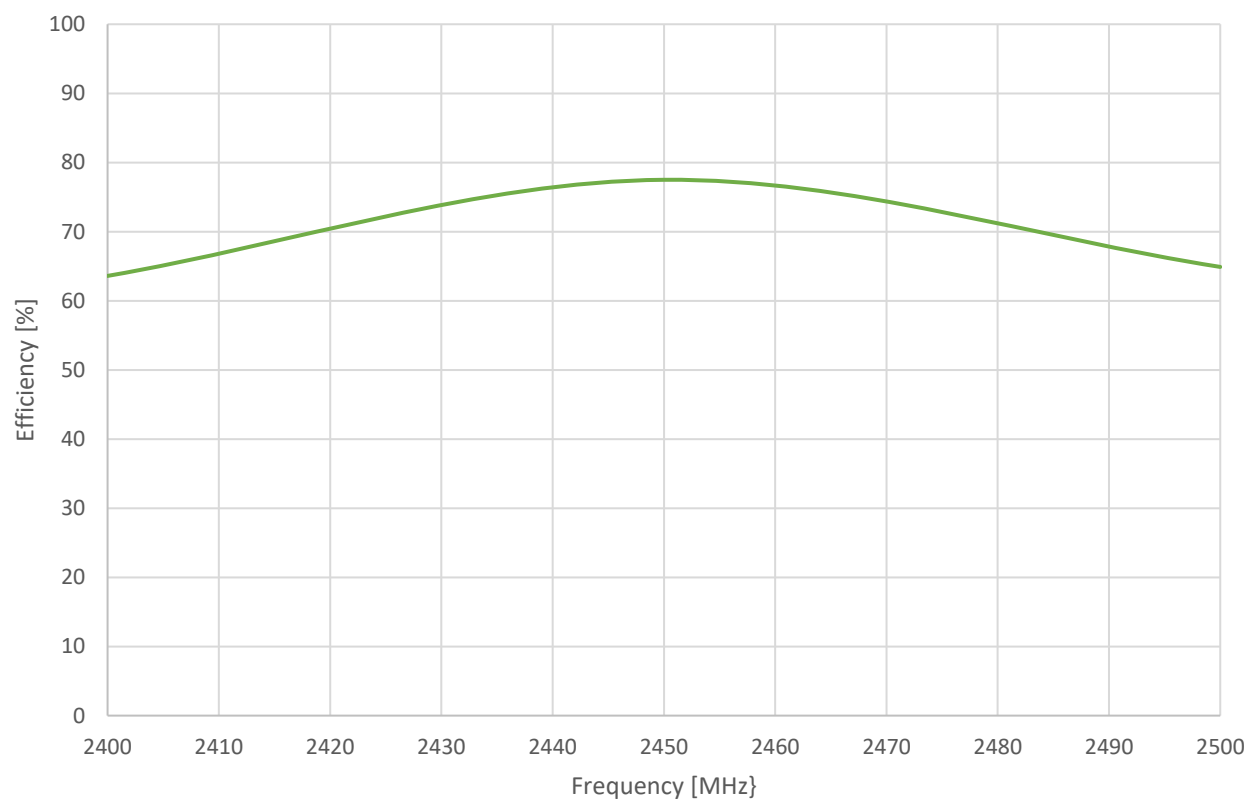
3.2 Peak Gain



3.3 Average Gain

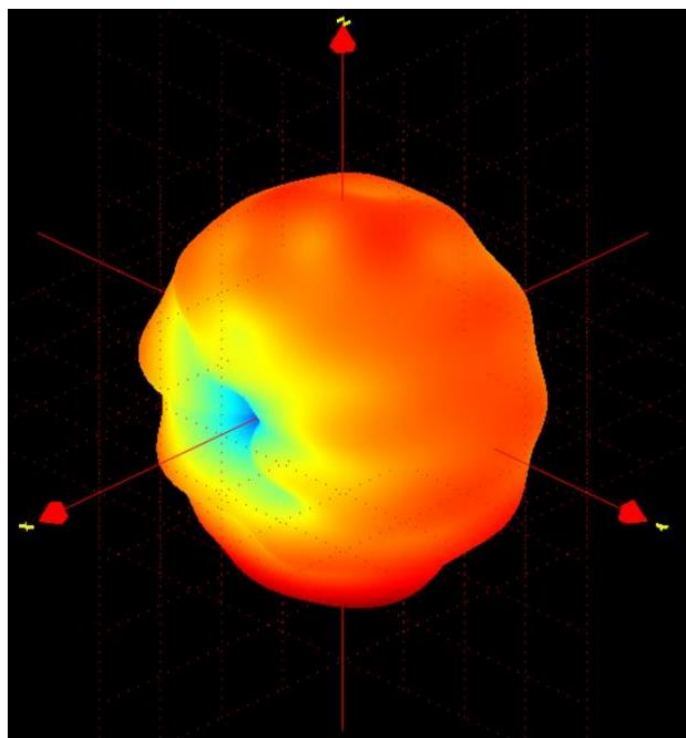


3.4 Efficiency



4. Radiation Patterns

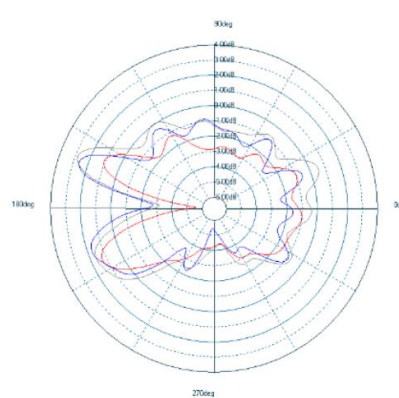
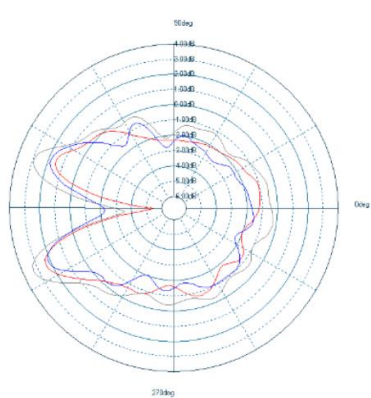
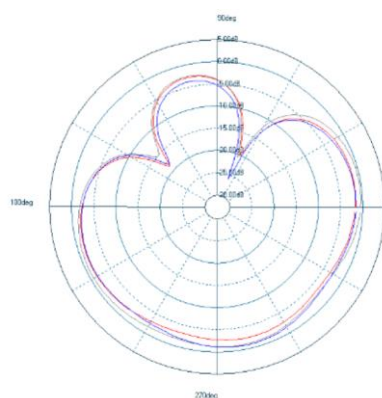
4.1 2400MHz 3D and 2D Radiation Patterns



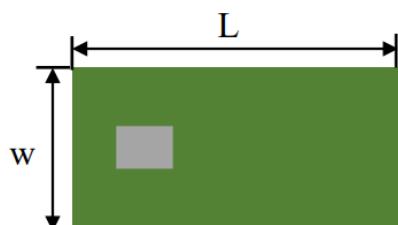
XY Plane

XZ Plane

YZ Plane

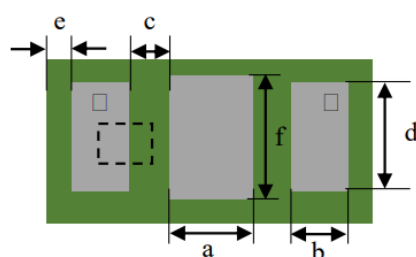


5. Mechanical Drawing (Units: mm)



(Top View)

Number	Terminal Name
①	INPUT+GND
②	NC
③	GND



(Bottom View)



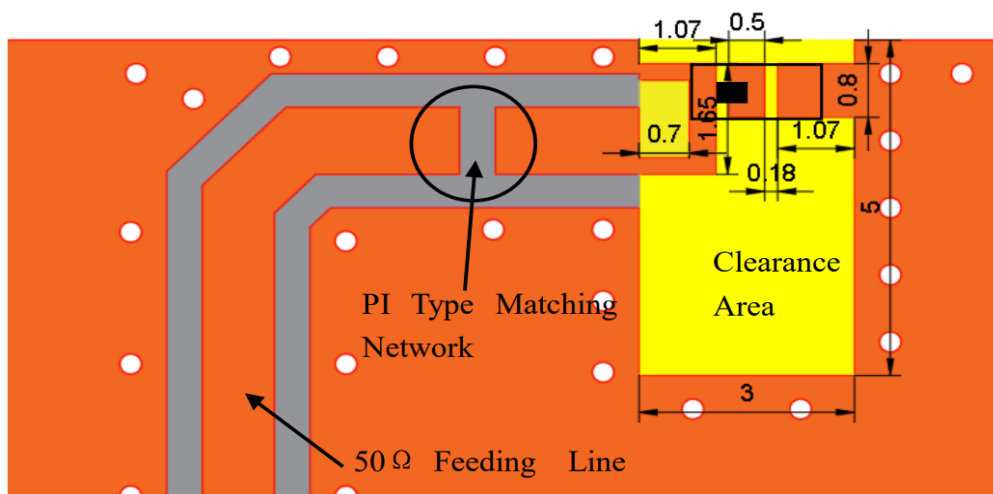
(Side View)

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

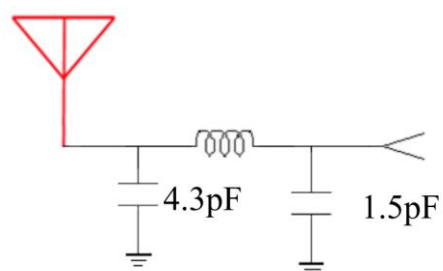
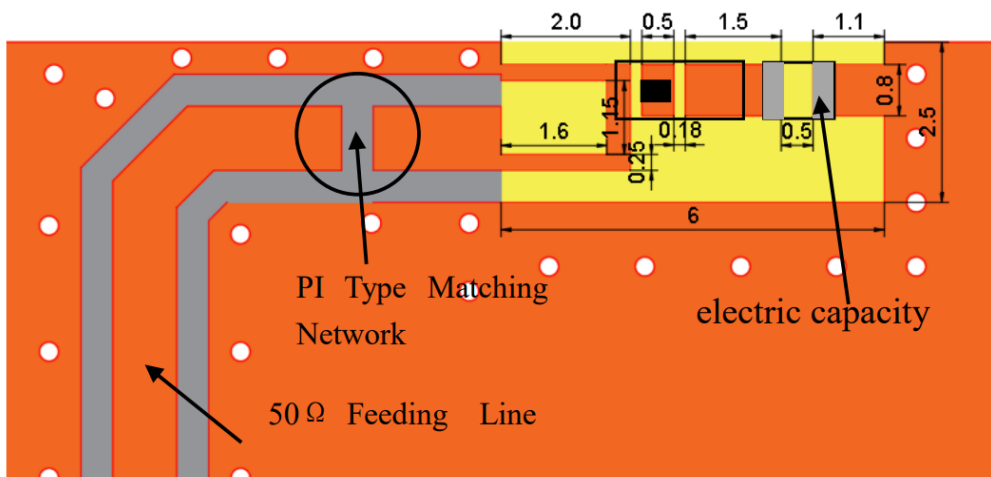
5. Antenna Integration

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.

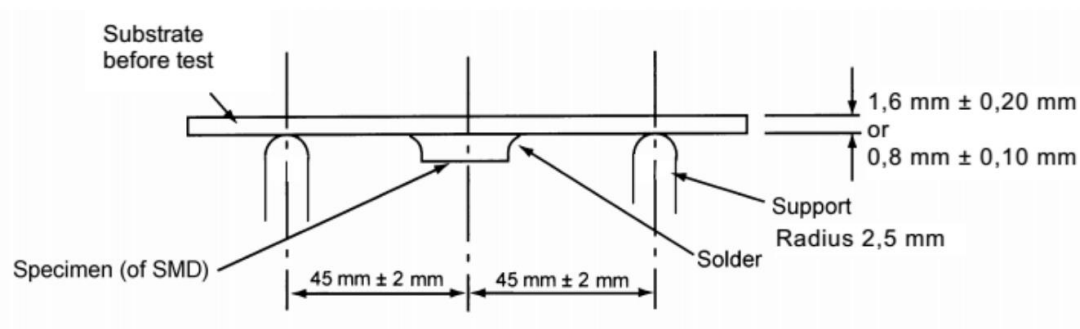
5.4 Solder Heat Proof

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

5.5 Adhesive Strength of Termination

The device have no remarkable damage or removal of the termination after horizontal force of 5N($\leq$ 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 $60\pm 2^{\circ}\text{C}$ 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 $85\pm 5^{\circ}\text{C}$ for 96 ± 2 hours and 1~2 hours recovery time under normal temperature.

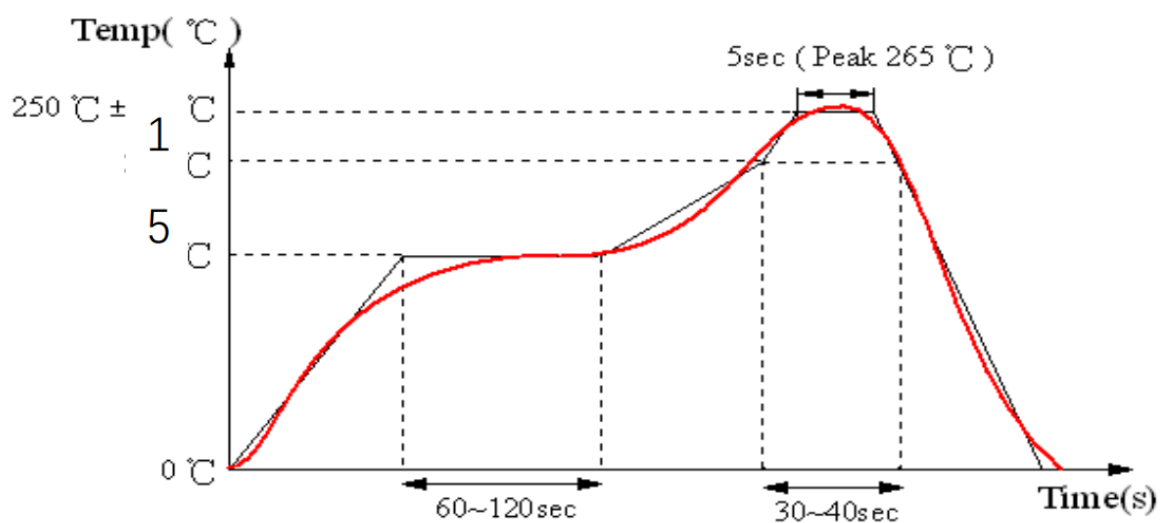
5.9 Low Temperature Endurance

The device should fulfill the electrical specification after exposed to the temperature $-40^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for 96 ± 2 hours and to 2 hours recovery time under normal temperature.

5.10 Temperature Cycle Test

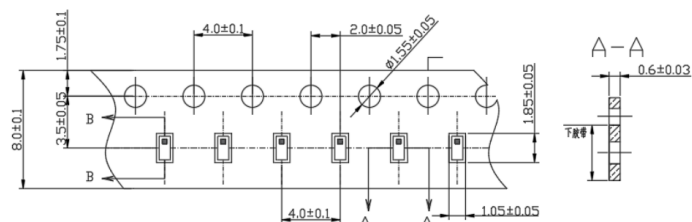
The device should fulfill the electrical specification after exposed to the low temperature -40°C and high temperature $+85^{\circ}\text{C}$ for 30 ± 2 min each by 5 cycles and 1 to 2 hours recovery time under normal temperature.

5.11 Reflow Soldering Standard Condition

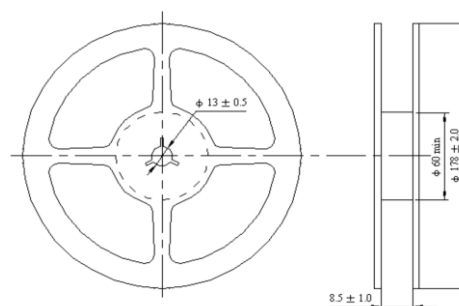


6. Packaging

1pc WLA.04 per Tape



6000pcs WLA.04 per reel



Changelog for the datasheet

SPE-23-8-135 – WLA.04

Revision: A (Original First Release)

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

Previous Revisions



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