

2.4 GHz Chip Antenna
For WiFi and Bluetooth

KH-3216-C32-A

3.2x1.6x0.6 mm

Applications

1. 2.4 GHz WiFi device
2. Bluetooth gadget
3. Zigbee device
4. ISM band equipment



Features

1. Compact size
2. Omni-directional radiation
3. Tape & reel automatic mounting
4. Reflow process compatible
5. RoHS compliance (Pb-Free)

Description

The antenna is designed for superior performance, and can be widely used for wireless applications. We provide comprehensive antenna design support such as simulation, testing and manufacturing for custom antenna solutions to meet your specific application needs.

Electrical Specification

Table 1. Electrical Specification

Item	Min.	Type	Max.	Unit
Frequency Range	2400		2500	MHz
VSWR	1.0		2.5	
Efficiency	60		68	%
Peak Gain		1.79		dBi
Polarization		Linear		
Nominal Impedance		50		Ω

• Ta: +25±5°C

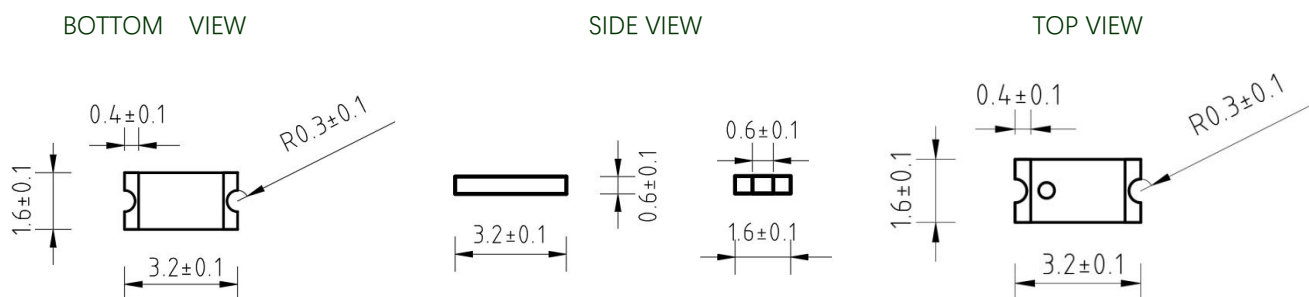
Mechanical Specification

Table 2. Mechanical Specification

Item	Min.	Type	Max.	Unit
Antenna Size		3.2*1.6* 0.6		Mm
Temperature	-40		+85	°C
Operating temperature	-40		+85	°C

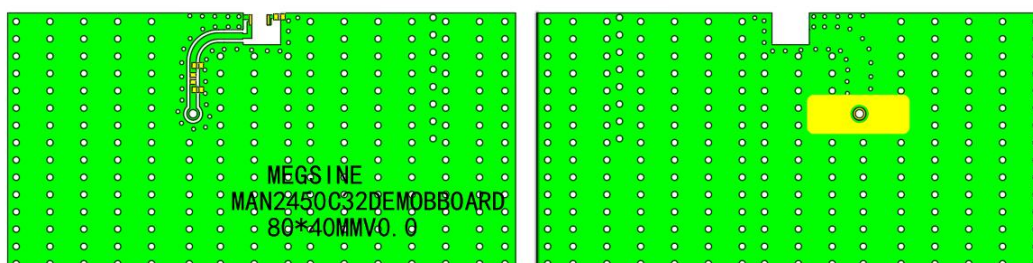
Outline Drawing

Figure 1. View (Unit: mm)



Recommend PCB Layout

Figure 2. PCB Layout (Unit: mm)



Size80*40mm

Figure 3. Antenna Layout (Unit: mm)

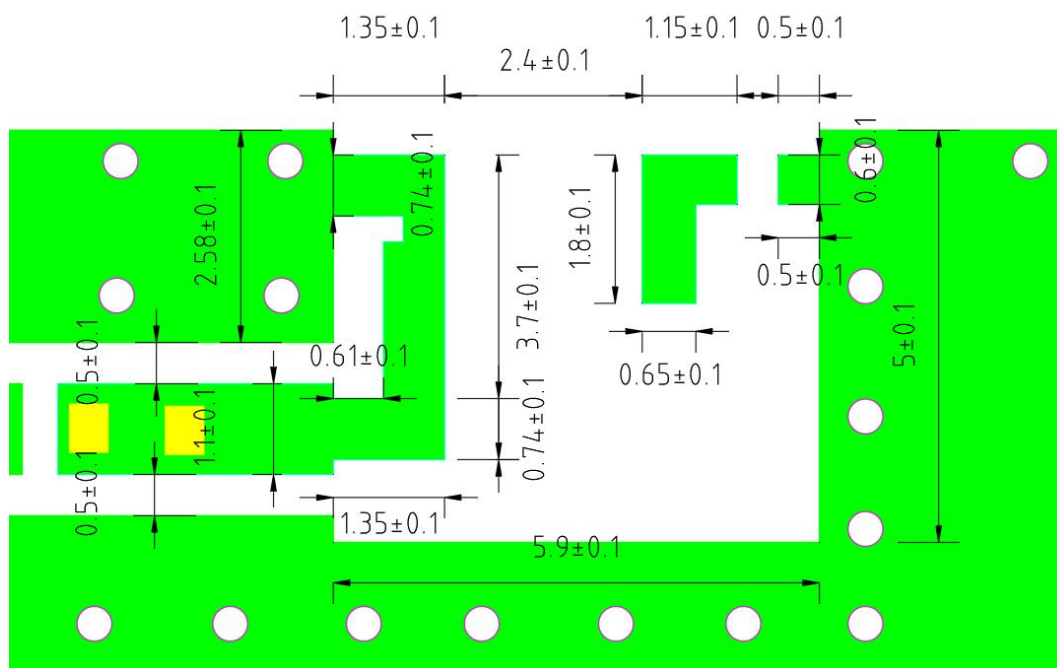


Figure 4. Foot Print (Unit: mm)

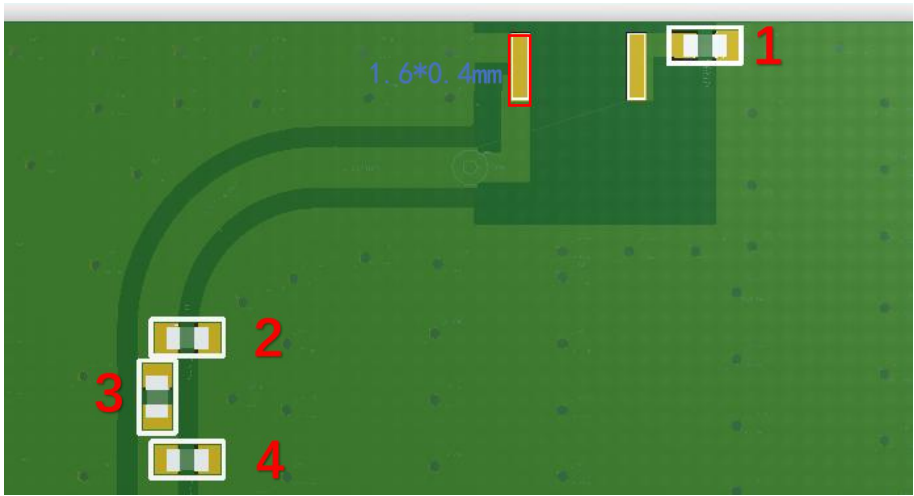


Table 3. Matching

Location	Description	Vendor
1	7pf	MURATA
2	N/C	N/C
3	2pf	MURATA
4	N/C	N/C

Typical Performance

Figure 5. VSWR

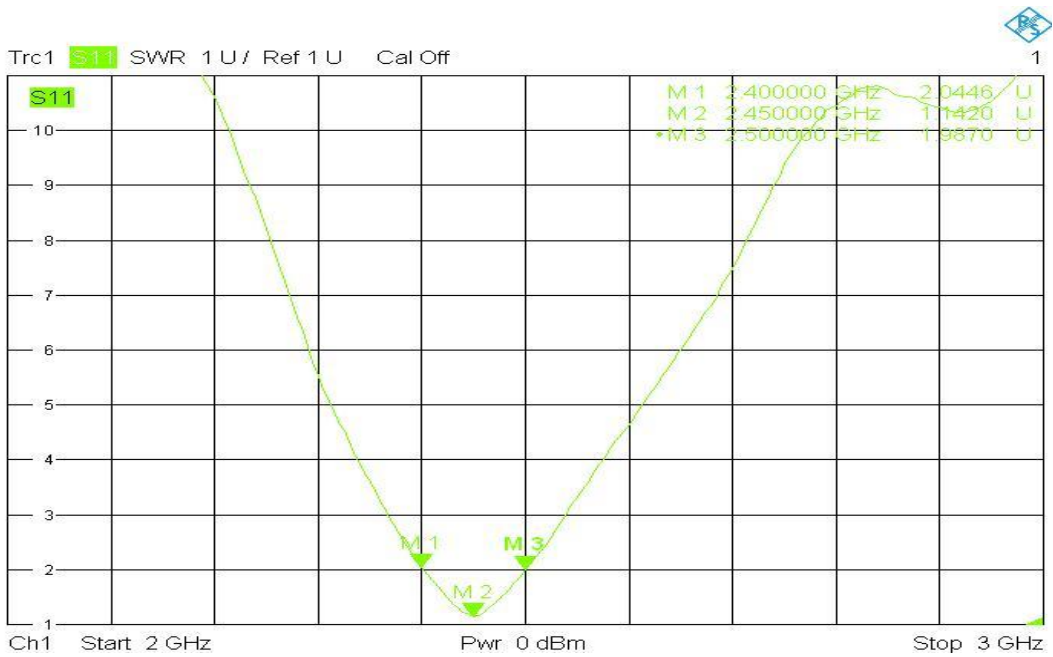
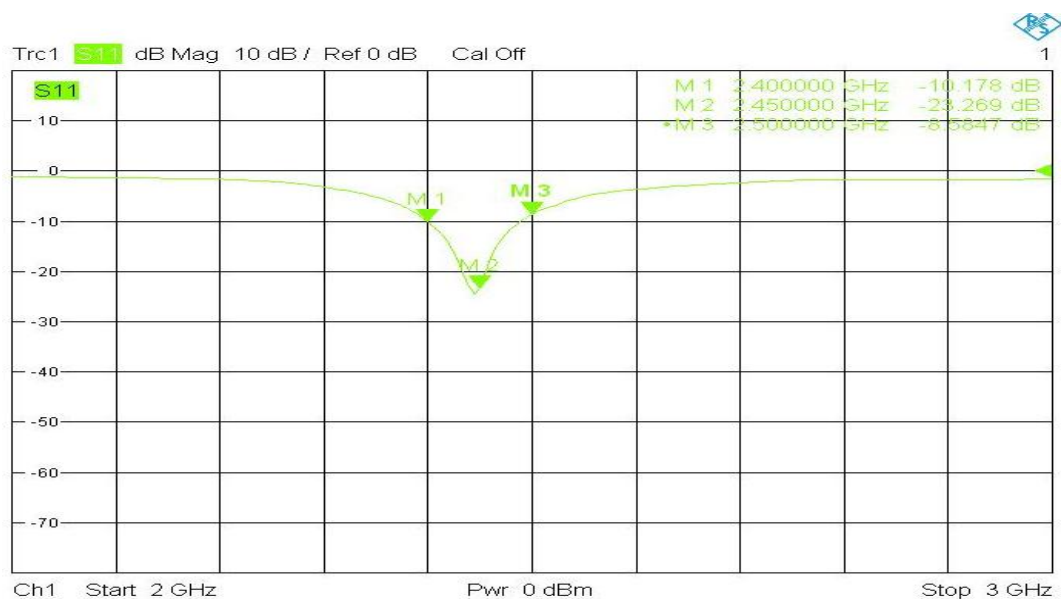


Figure 6. Return Loss



Radiation Pattern & Efficiency & Peak Gain

Figure 7. The Gain pattern is measured in FAR-field chamber

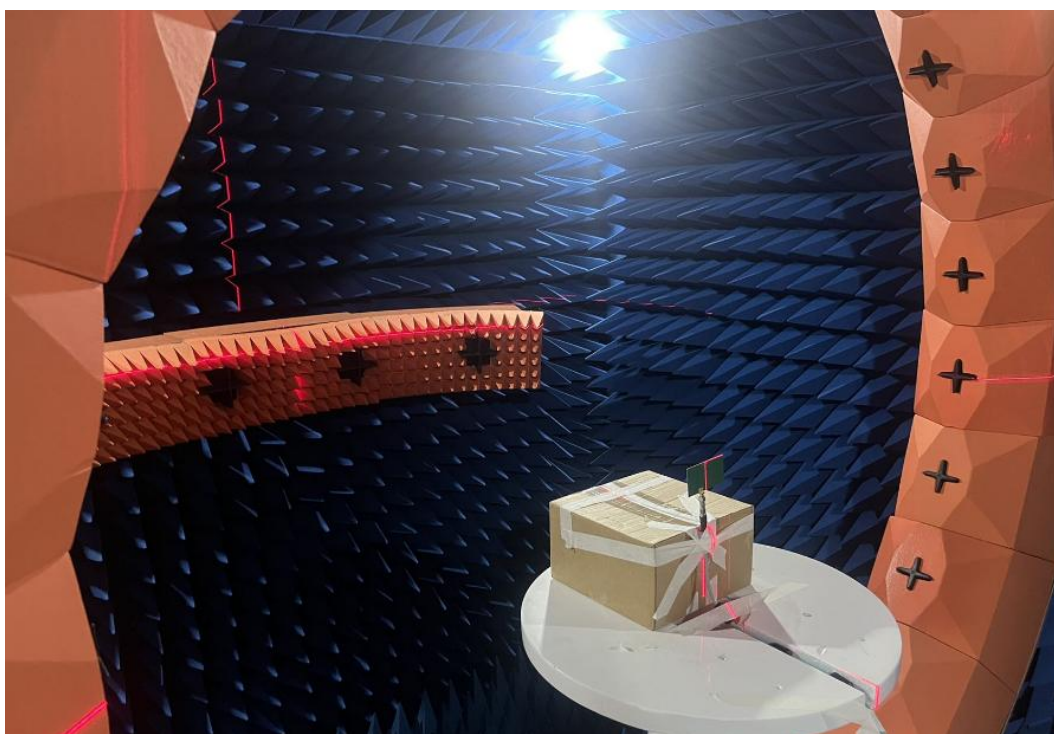


Table 4. Radiation Efficiency&Peak Gain

Item (MHz)	Efficiency (%)	Peak Gain (dBi)	Avg gain (dB)
2400	60	0.80	-2.25
2410	62	0.84	-2.05
2420	66	1.07	-1.82
2430	68	1.53	-1.69
2440	67	1.23	-1.71
2450	66	1.27	-1.82
2460	64	1.79	-1.93
2470	63	1.75	-2.01
2480	62	1.36	-2.06
2490	61	0.72	-2.11
2500	60	0.37	-2.20

*Antenna performance can also vary across different demo boards and in different environments. It is recommended to consult the relevant technical personnel to confirm the layout before use to ensure optimal performance.

Figure 8. Total Efficiency

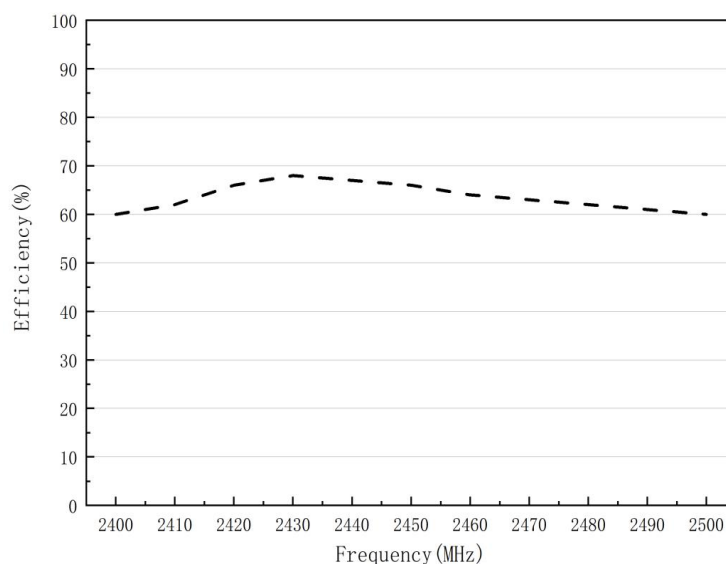


Figure 9. Peak Gain

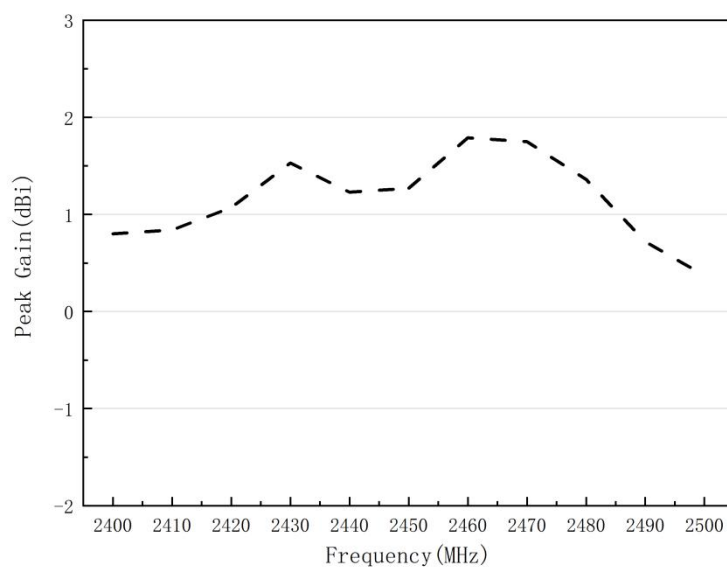
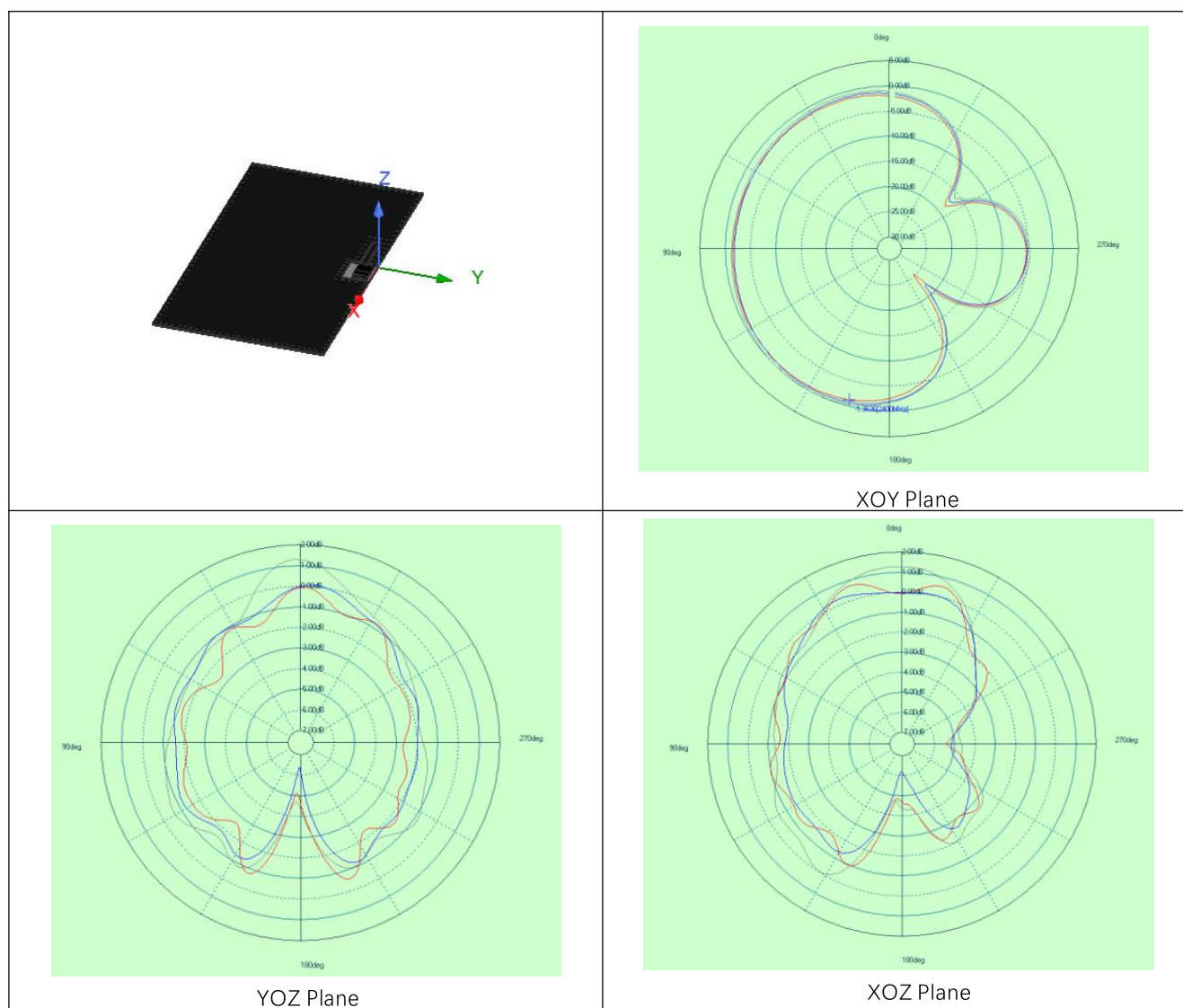


Figure 10. Radiation Pattern



Packaging and Ordering Information

Figure 11. Packaging Information

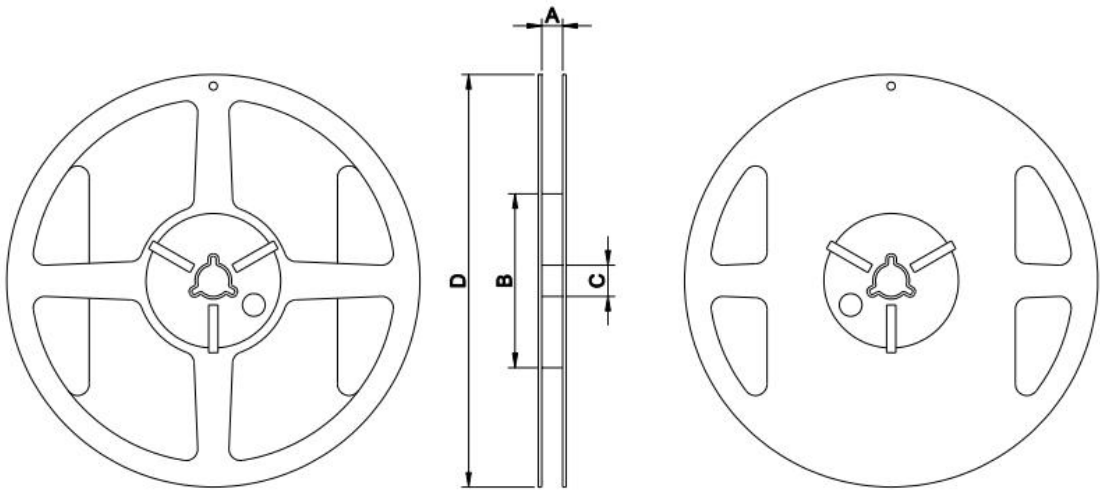
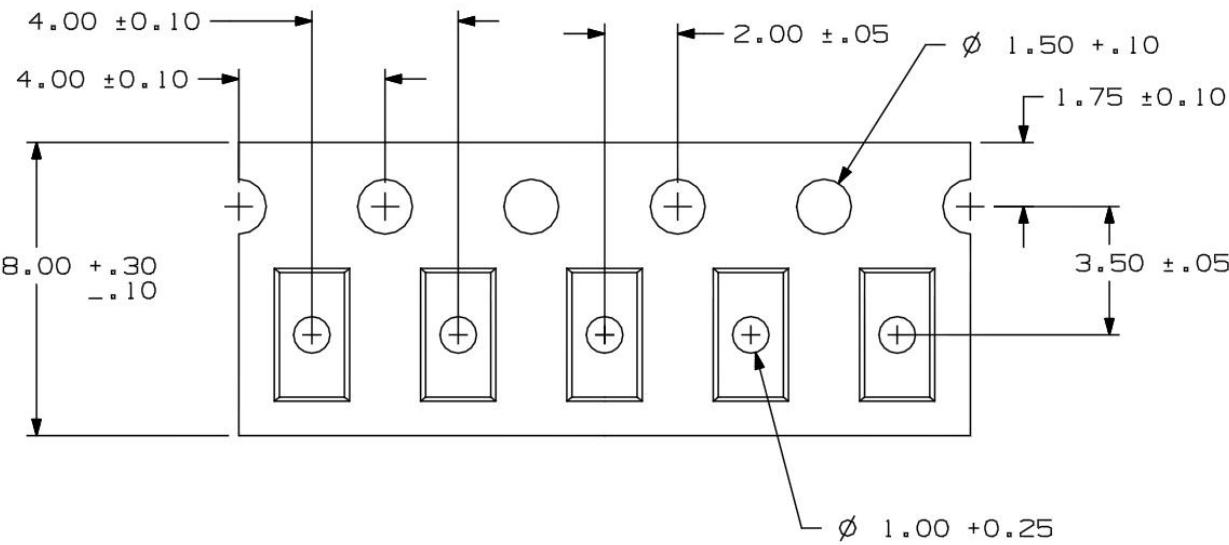


Table 5. Packaging and Shipping

Device	Packaging	Reel	Shipping
	SMD	7"	3000/Reel

Revision	Description	Date
Rev0	Preliminary	2023/6/7
Rev1	formality	2023/6/30
Rev2	Modify image	2025/9/9