

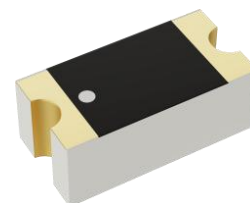
2.4 GHz Chip Antenna
For WiFi and Bluetooth

KH-3216-L32

3.2x1.6x1.2 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	1.22		2.21	
Efficiency	20		33	%
Peak Gain		-1.13		dBi
Polarization		Linear		
Nominal Impedance		50		Ω

• Ta: +25±5°C

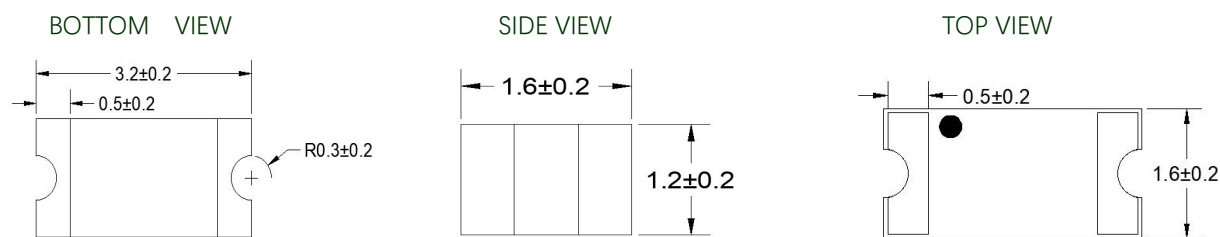
Mechanical Specification

Table 2. Mechanical Specification

Item	Min.	Type	Max.	Unit
Antenna Size		3.2*1.6* 1.2		Mm
Storage Temperature	-40		+85	°C
Operating temperature	-40		+85	°C

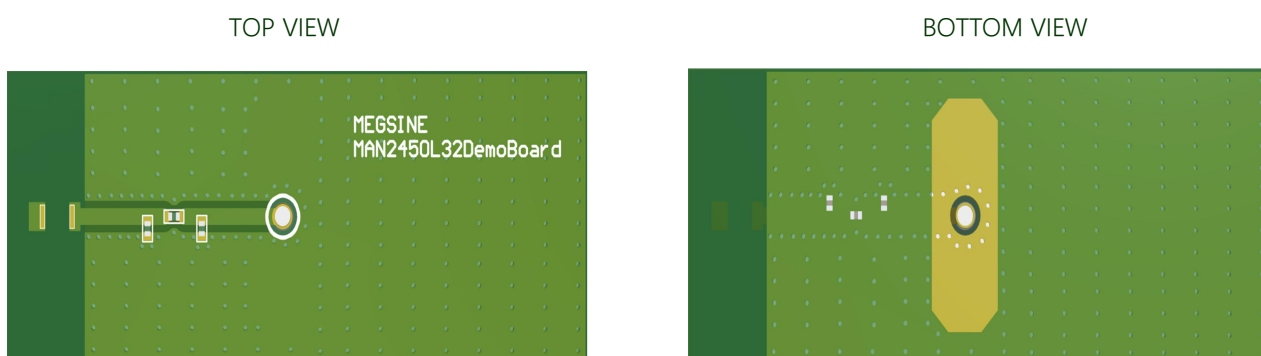
Outline Drawing

Figure 1. View (Unit: mm)



Recommend PCB Layout

Figure 2. PCB Layout (Unit: mm)



Size 53*20mm

Figure 3. Antenna Layout (Unit: mm)

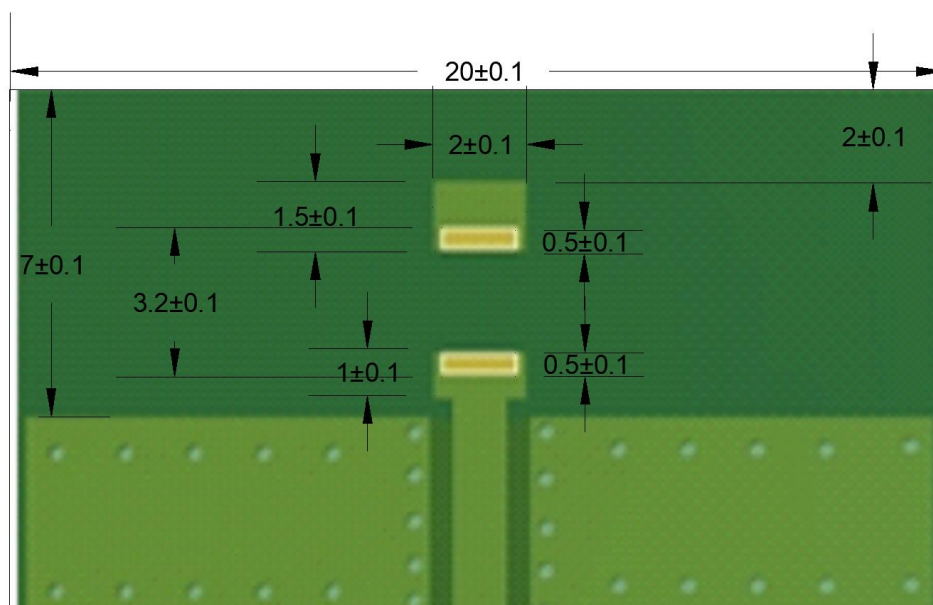


Figure 4. Matching Circuit (Unit: mm)

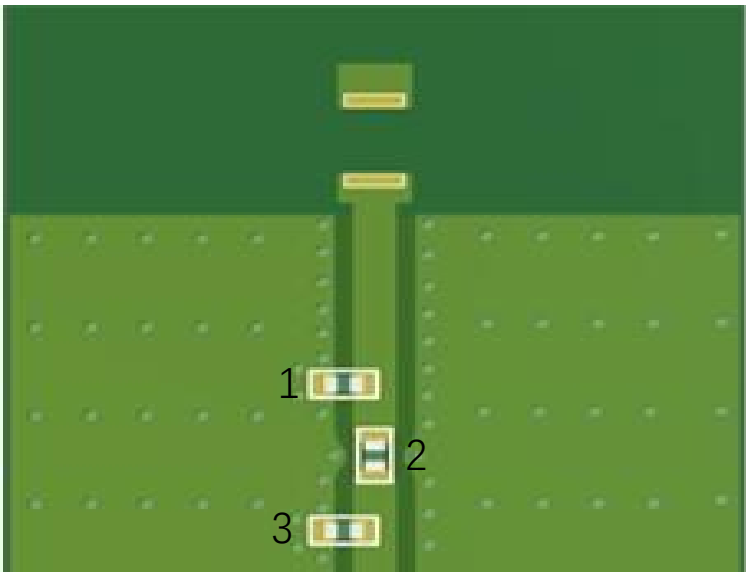


Table 3. Matching

Location	Description	Vendor
1	N/C	N/C
2	0Ω	MURATA
3	N/C	N/C

Typical Performance

Figure 5. VSWR

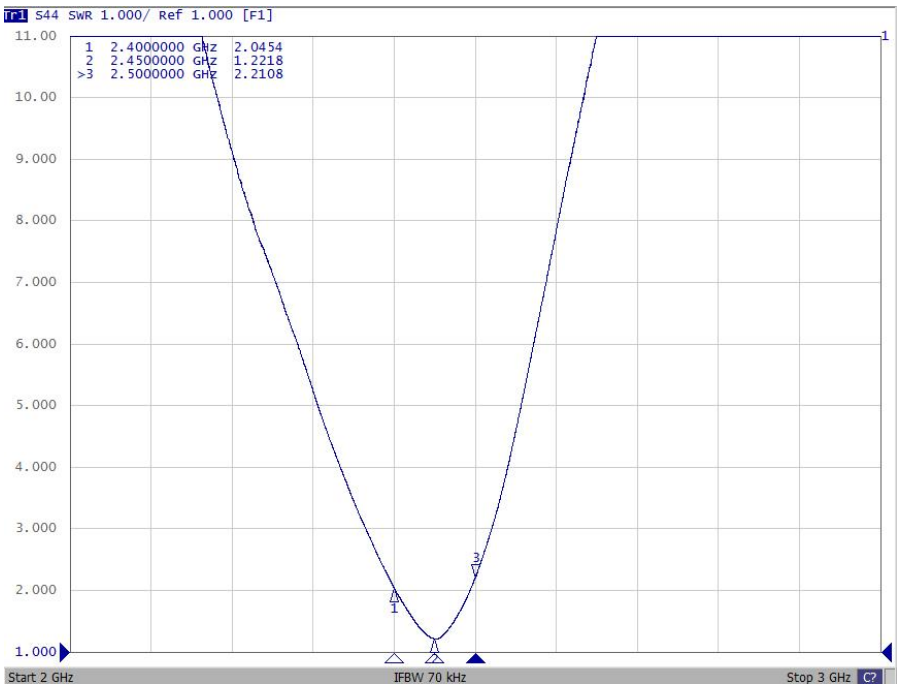
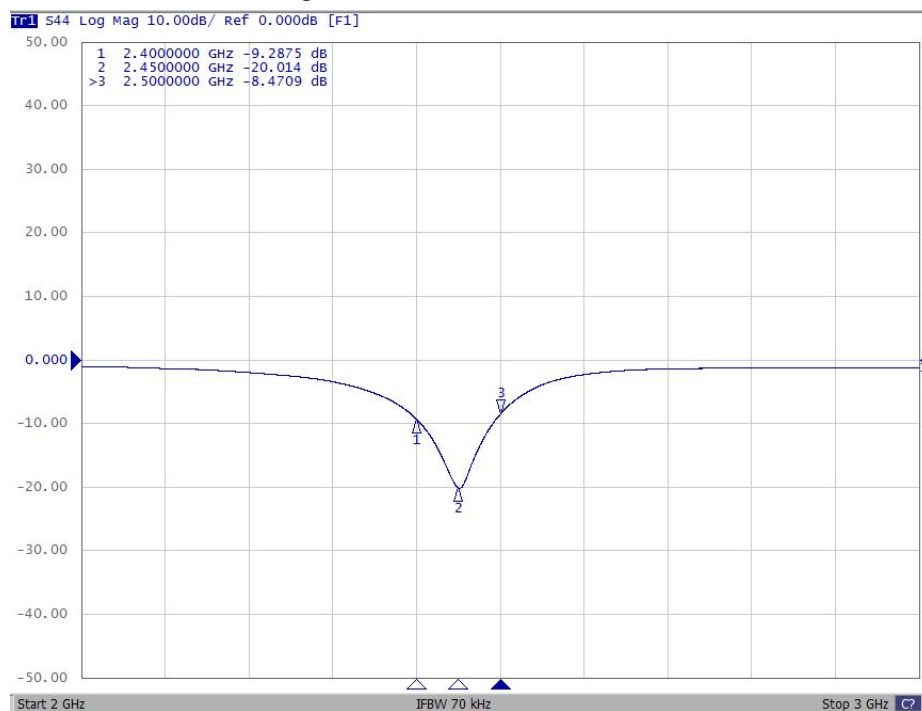


Figure 6. Return Loss



Radiation Pattern & Efficiency & Peak Gain

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

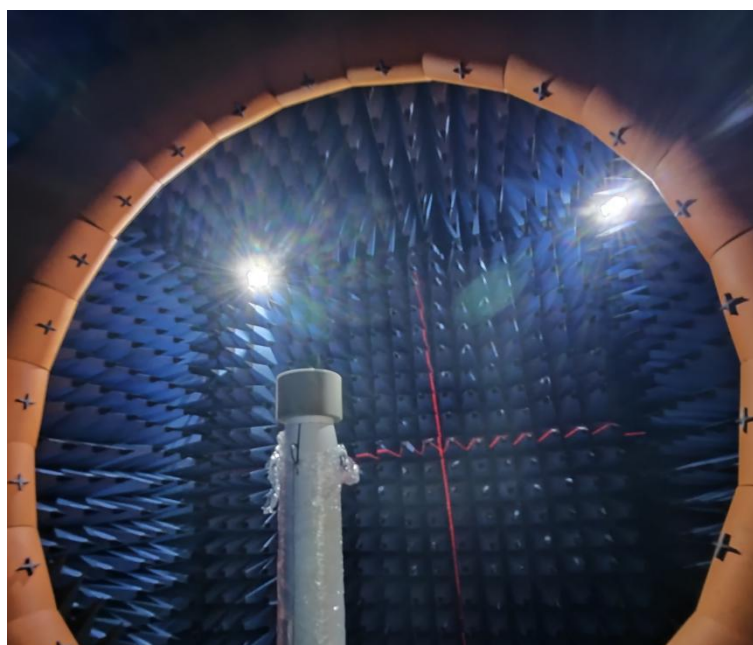


Table 4. Total Efficiency&Peak Gain

Item (MHz)	Efficiency (%)	Peak Gain (dBi)	Avg gain (dB)
2400	30.50	-1.38	-5.16
2410	30.96	-1.21	-5.09
2420	33.02	-1.13	-4.81
2430	33.36	-1.17	-4.77
2440	33.23	-1.30	-4.78
2450	32.30	-1.56	-4.91
2460	30.17	-1.80	-5.20
2470	27.00	-2.35	-5.69
2480	24.27	-2.75	-6.15
2490	21.99	-3.06	-6.58
2500	20.02	-3.42	-6.99

Figure 8. Total Efficiency

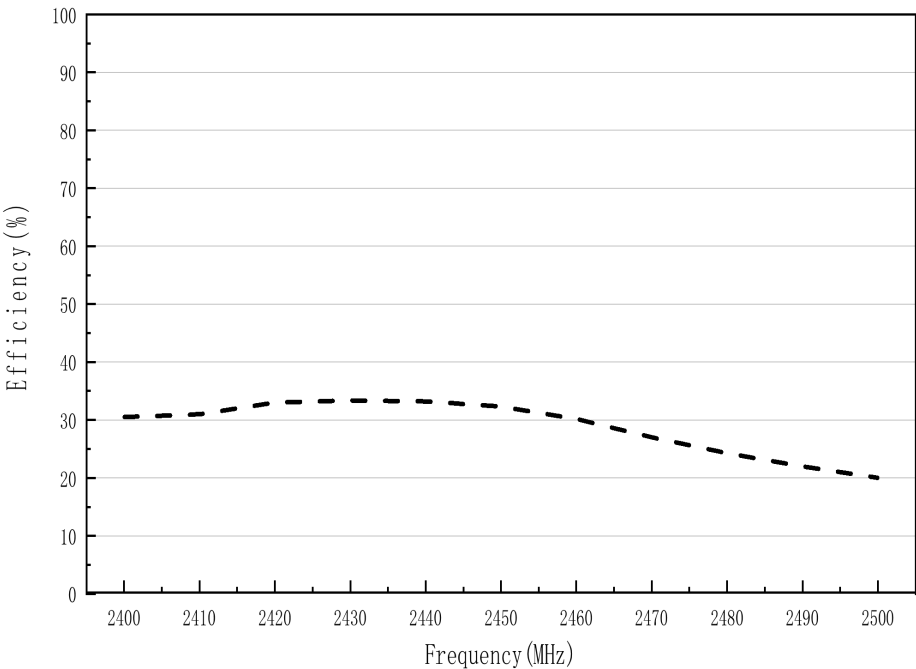


Figure 9. Peak Gain

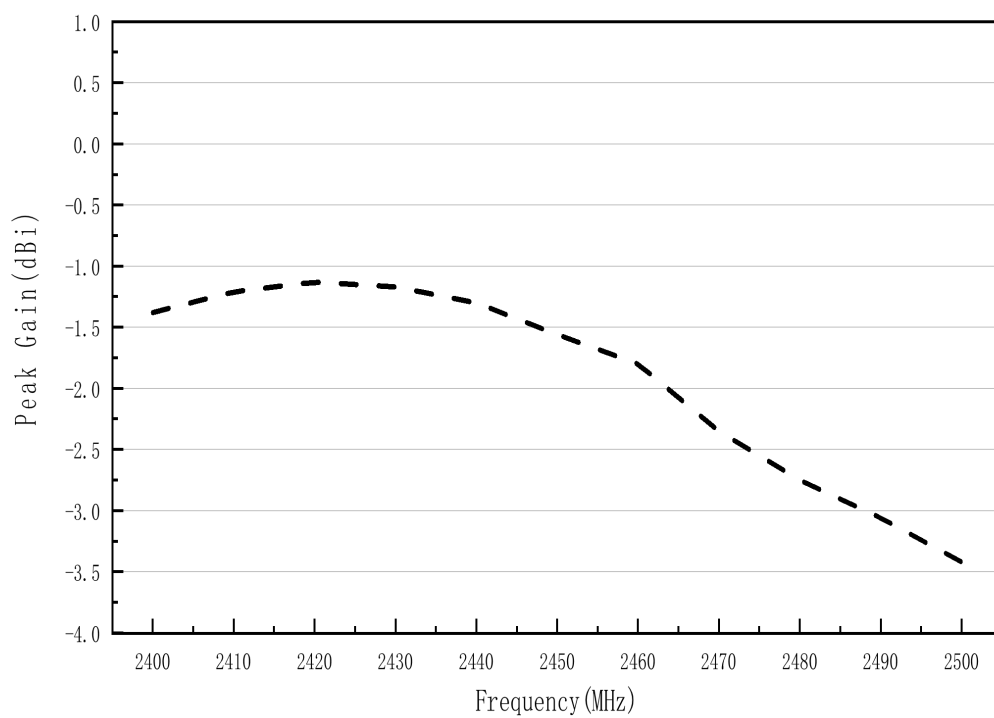


Figure 10. Antenna Pattern

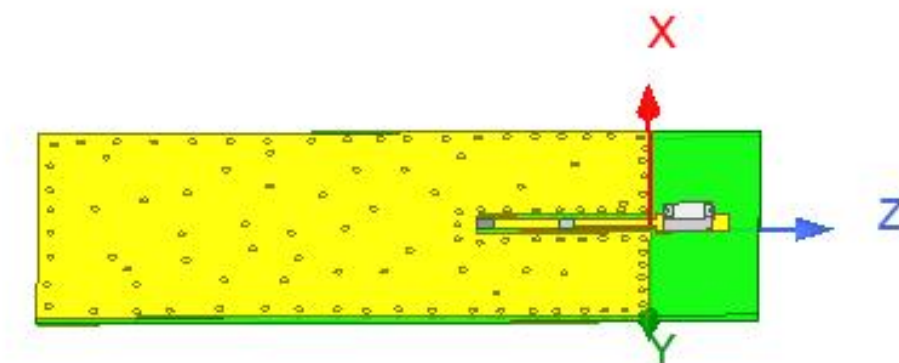
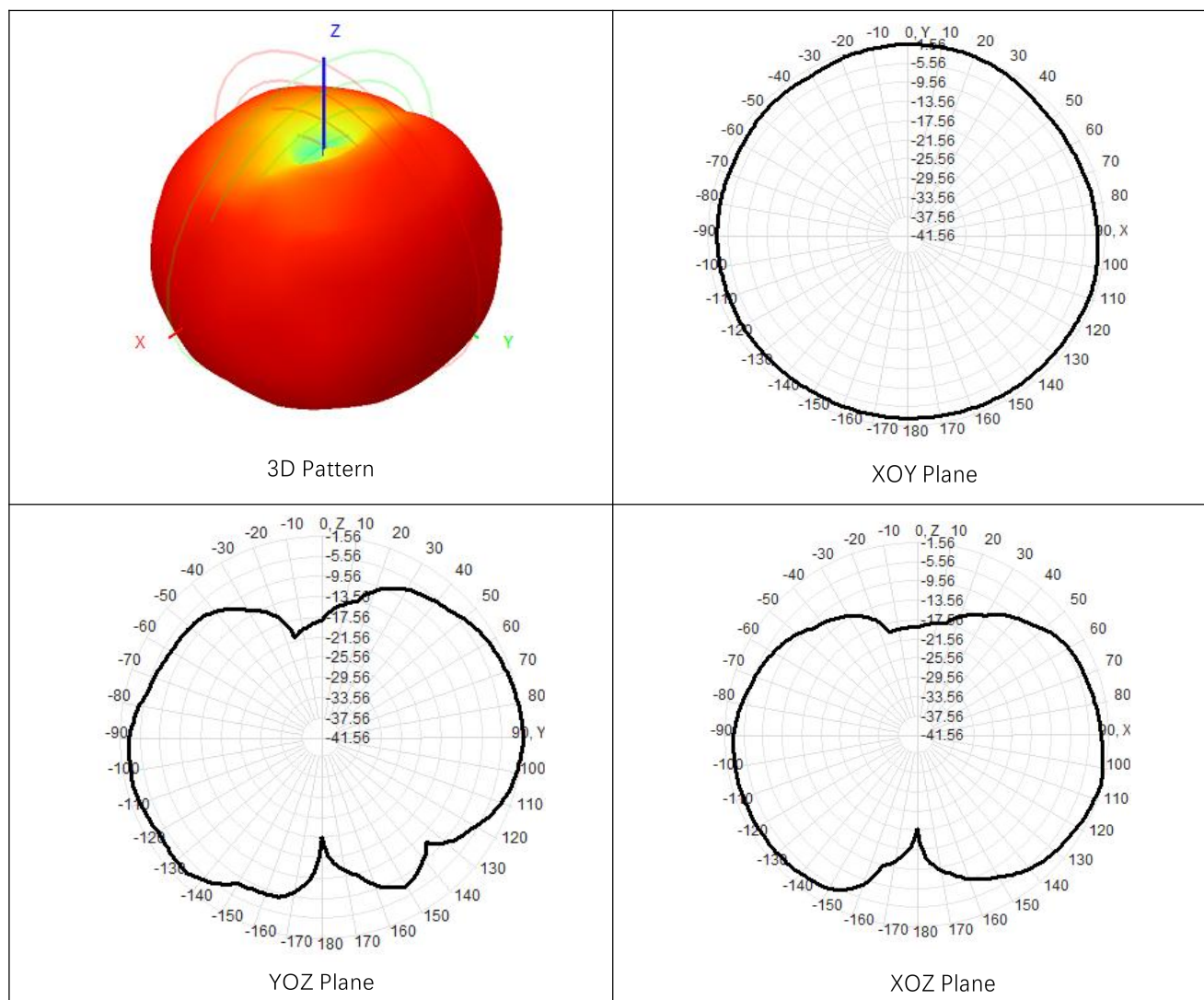


Figure 11. Radiation Pattern



*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.

Packaging and Ordering Information

Figure 12. Packaging Information

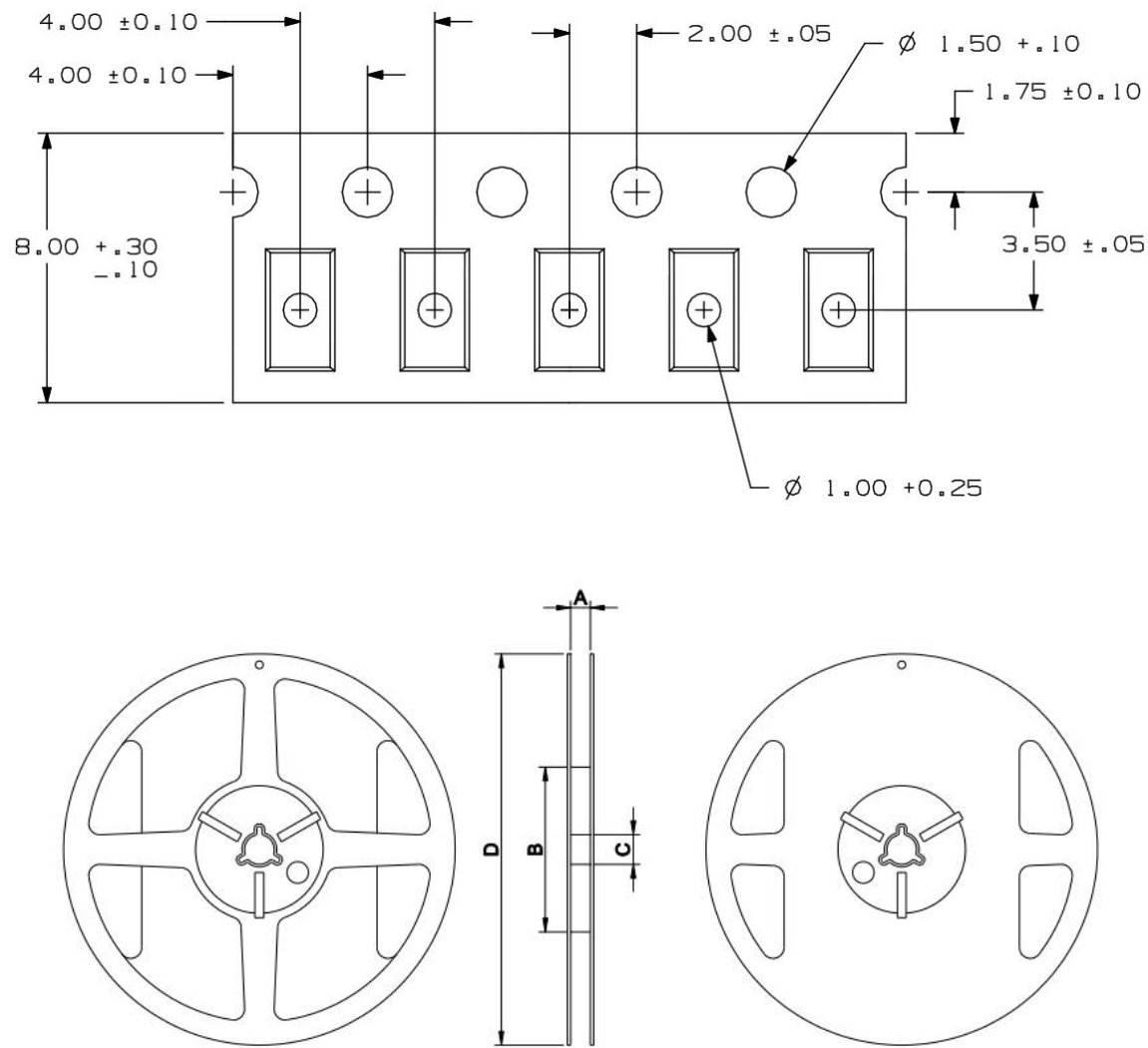


Table 5. Packaging and Shipping

Device	Packaging	Reel	Shipping
	SMD	7"	3000/Reel

Revision	Description	Date
Rev0	Preliminary	2025/11/11