

# Multi-layer Chip Triplexer



**ATRD-R-0003**

Request Samples



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**2.0 x 1.25 x 0.90 mm**  
**RoHS Compliant**

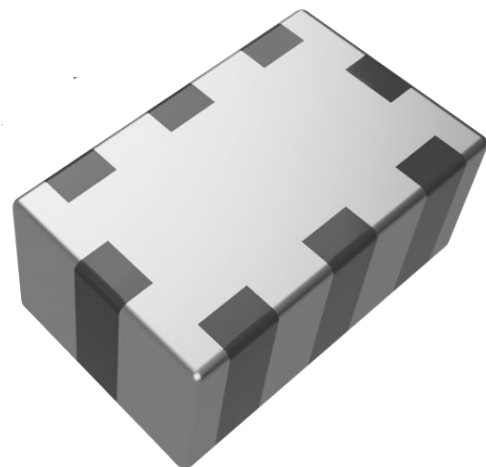
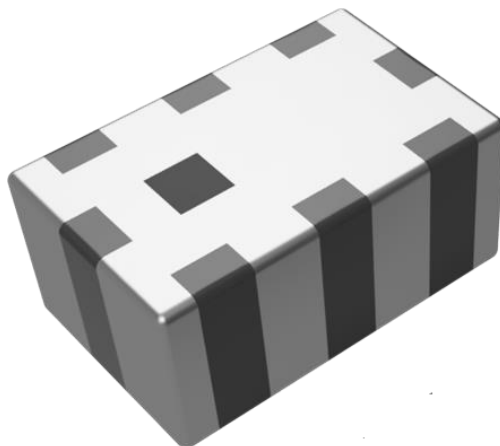
## Features

- LTCC diplexer supporting 1560 ~1606/2400~2500 / 4900~5950 MHz
- Small Form Factor 2.0 x 1.25 x 0.90 mm
- Low Insertion Loss 0.7 dB
- RoHS Compliant

## Applications

- Dual-band Wi-Fi and GPS, GNSS
- Wi-Fi Speakers and Sound Bars
- Video Streaming and Network Cameras
- VR Head Mount Displays
- Car Infotainment Systems
- Broadband Gateways

## Product Image



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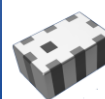


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## Electrical Specifications

Parameters	Specification			Units	Notes
Application	Low Band	Middle Band	High Band		
Insertion Loss (Max)	0.75 dB max. at 1560~1606	0.80 dB max. at 2400~2500	0.75 dB max. at 4900~5950	MHz	@25°C
Amplitude ripple at 20 MHz	0.3 dB max.	0.3 dB max.	0.3 dB max.	dB	
Min. RL in BW	12	12	12	dB	
Attenuation (Absolute value)	13 dB min. at 2400~2500 15 dB min. at 4800~6000	10 dB min. at 860~960 13 dB min. at 1545~1605 9 dB min. at 3600~3750 18 dB min. at 4800~5000 10 dB min. at 7200~7500	24 dB min. at 860~960 24 dB min. at 1545~1605 25 dB min. at 1710~1990 30 dB min. at 2170	MHz	
Isolation	15 dB min. at (LB-HB/MB-HB) 14 dB min. at LB-MB			dB	
Power Capacity	2.0 max.			W	
Characteristic Impedance	50			ohm	

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## Mechanical Specifications

Parameters	Specifications
Filter Dimension	2.0 x 1.25 x 0.90 mm
Mounting Type	SMD Mount

## Environmental Specifications

Parameters	Specifications
Operating Temperature	-40°C ~ +85°C
Storage Temperature	-10°C ~ +45°C

## Ordering Information

### Part Identification

ATRD-R-0003



Packaging
Blank: Bulk
T: Tape & Reel

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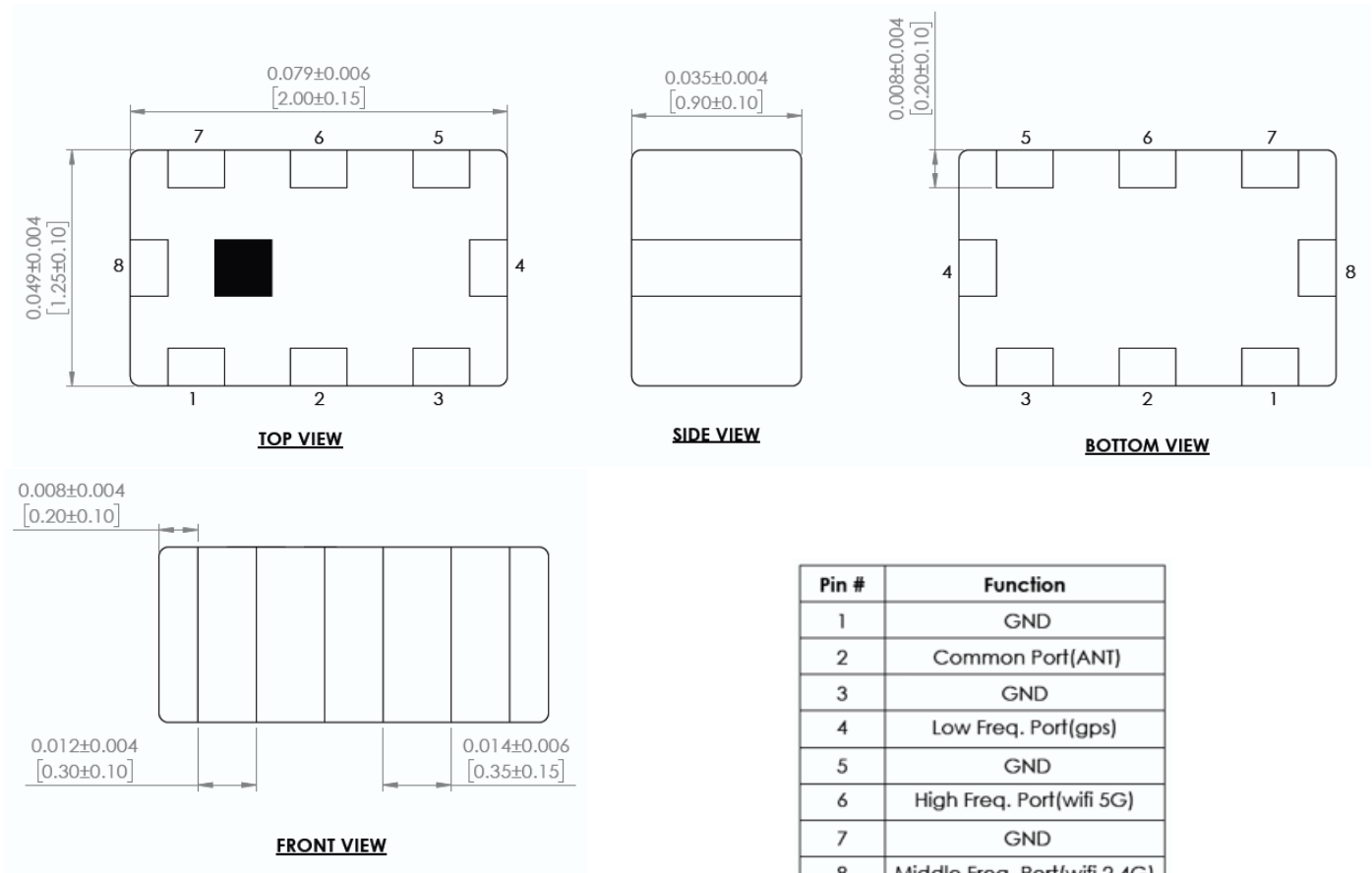


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## Package Dimensions & PCB Footprint



**DIMENSIONS: INCHES [mm]**

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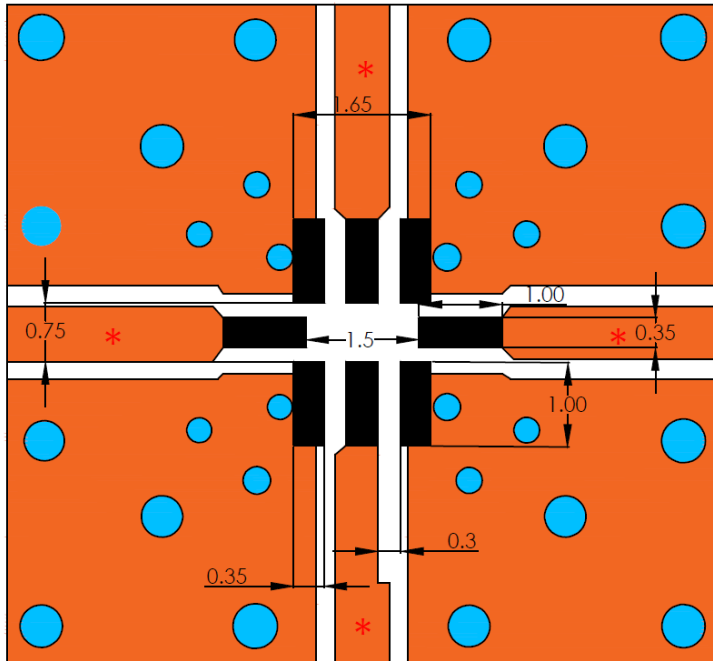


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RoHS Compliant

## Recommended Footprint (PCB Layout)



Solder Resist



Land



Through-hole ( $\varnothing 0.35/0.55$ )

Unit: mm

**Note:** Line width to be designed to match  $50\Omega$  characteristic impedance, depending on PCB material and thickness.

The transmission line is Ground Coplanar Waveguide (GCPW)

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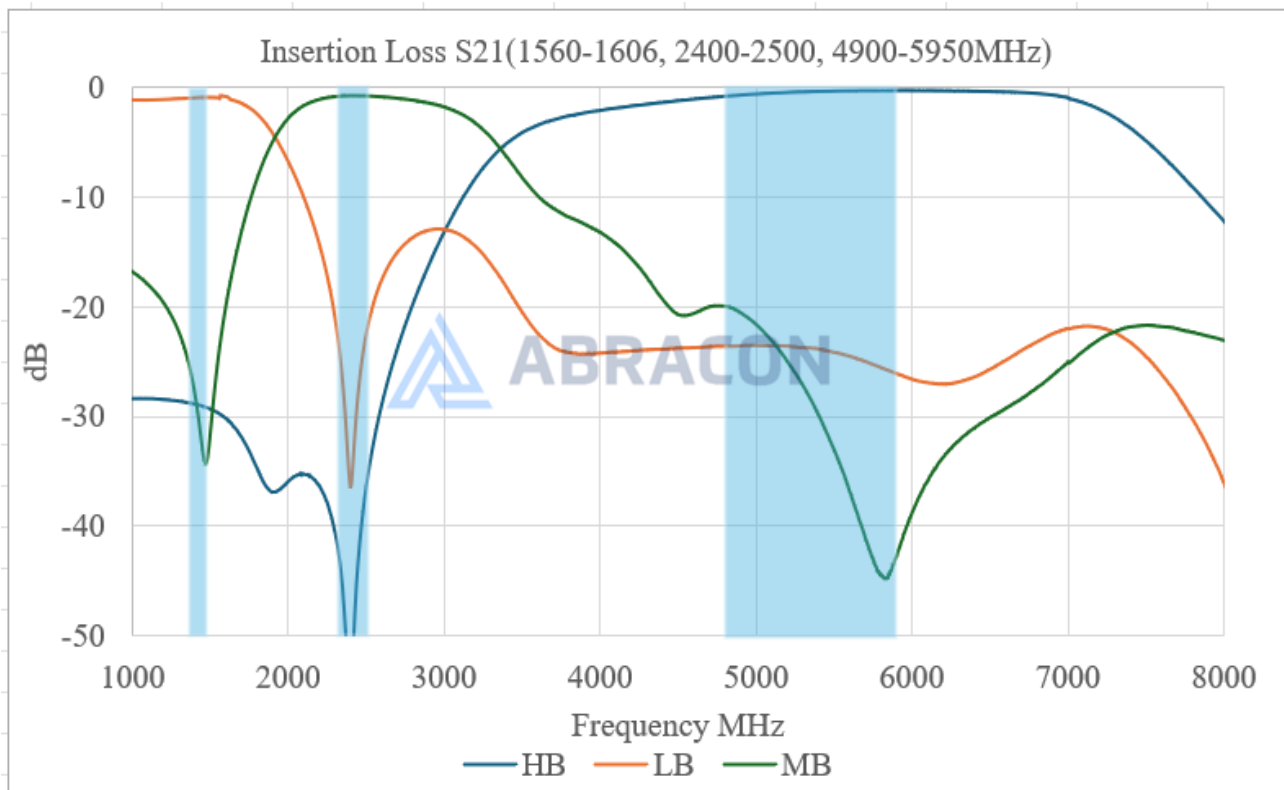
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## Frequency Characteristics

Insertion Loss 1560-1606, 2400-2500, 4900- 5950MHz



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## Return Loss (1560-1606, 2400-2500, 4900- 5950MHz)



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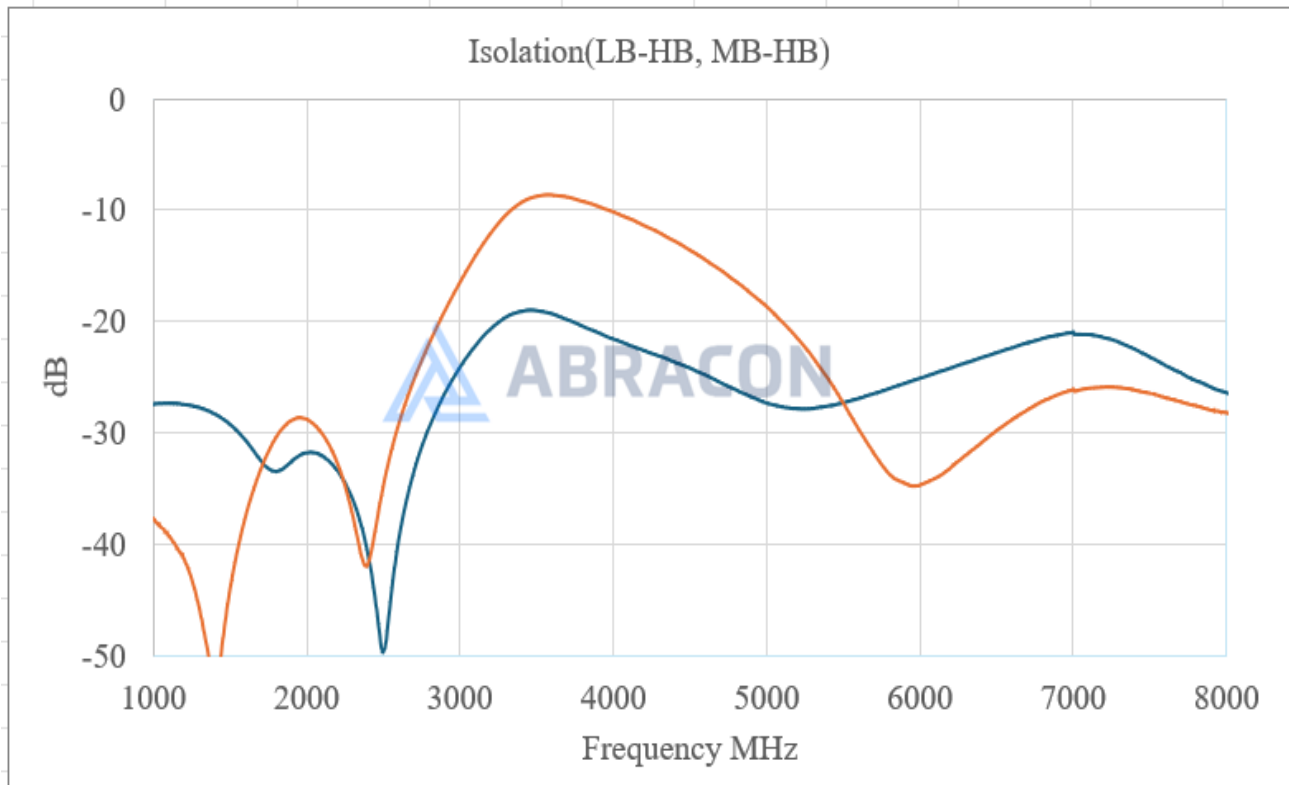


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**Isolation (dB) 1560-1606, 2400-2500, 4900- 5950MHz**





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## Reflow Profile

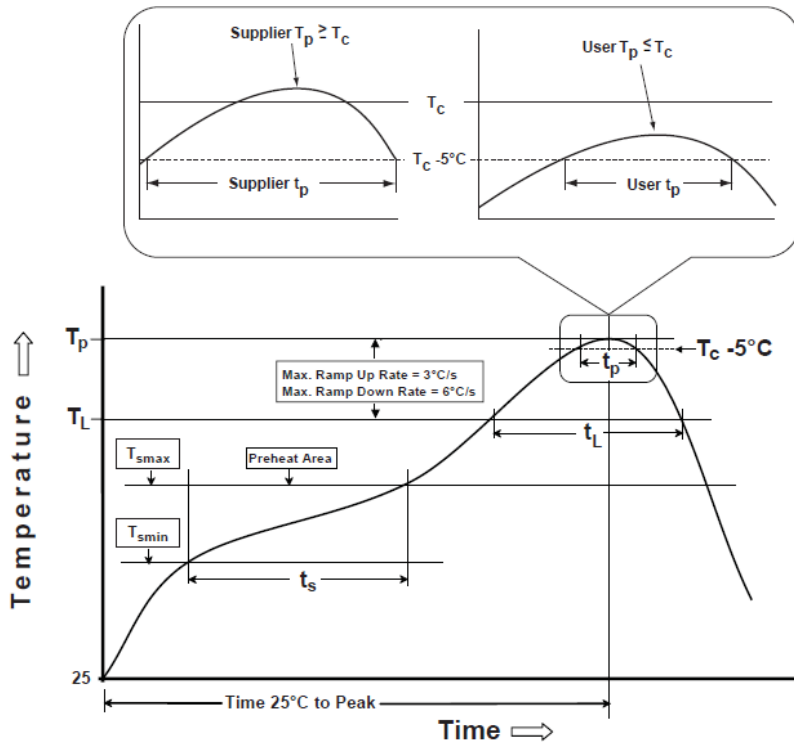


Table 1

SnPb Eutectic Process Classification Temperatures ( $T_c$ )		
Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2

Pb-Free Process Classification Temperatures ( $T_c$ )			
Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350-2000	Volume mm <sup>3</sup> >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 mm - 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat / soak		
Temperature minimum ( $T_{smin}$ )	100°C	150°C
Temperature maximum ( $T_{smax}$ )	150°C	200°C
Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )	60 - 120 sec.	60 - 120 sec.
Average ramp-up rate ( $T_{smax}$ to $T_p$ )	3°C/sec. max	3°C/sec. max
Liquidous temperature ( $T_L$ )	183°C	217°C
Time at liquidous ( $t_L$ )	60 - 150 sec.	60 - 150 sec.
Peak package body temperature ( $T_p$ )*	see Table 1	see Table 2
Time ( $t_p$ )** within 5°C of the specified classification temperature ( $T_c$ )	20 sec.	30 sec.
Ramp-down rate ( $T_p$ to $T_{smax}$ )	6°C/sec. max	6°C/sec. max
Time 25°C to peak temperature	6 min. max	8 min. max
Reflow cycles	2 max	2 max

\*Tolerance for peak profile temperature ( $T_p$ ) is defined as a supplier minimum and a user maximum.

\*\*Tolerance for time at peak profile temperature ( $t_p$ ) is defined as supplier minimum and a user maximum.

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## Packaging

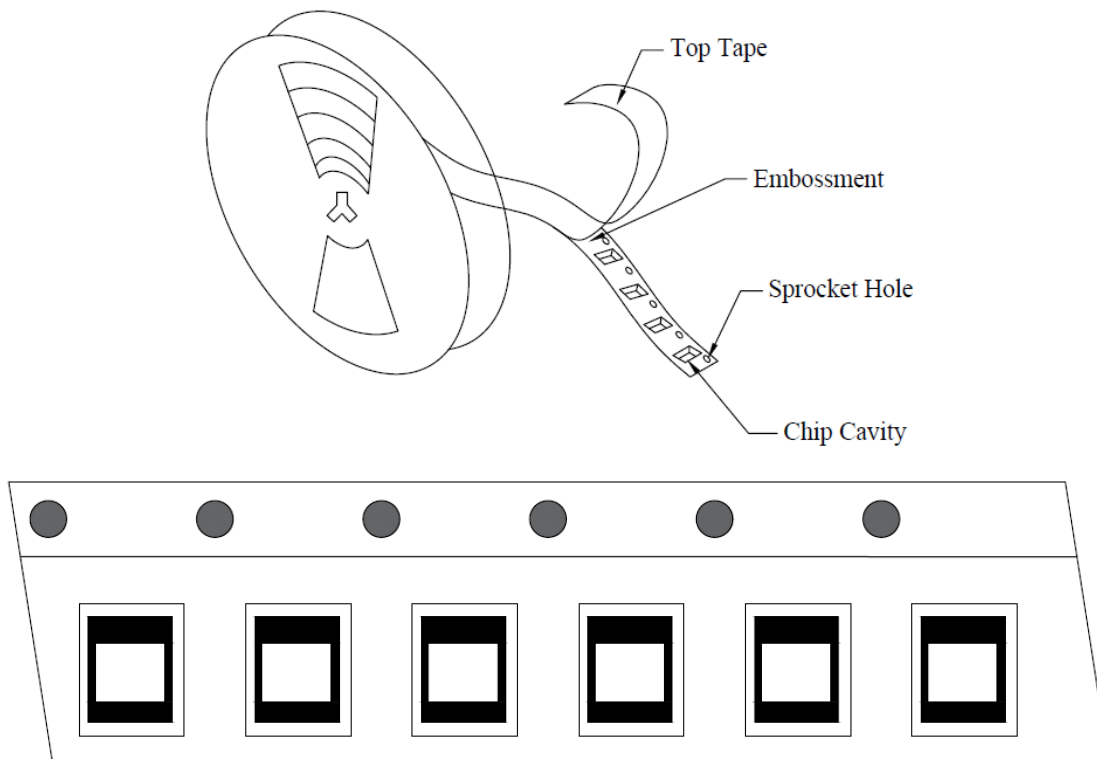
### Tape Carrier Packaging:

Tape carrier packaging quantity please see the following table:

Type	2012[0805]
Tape	Embossed Tape
Quantity	4K

### Taping Drawings (Unit: mm)

Embossed Tape



Remark: The sprocket holes are to the right as the tape is pulled toward the user.

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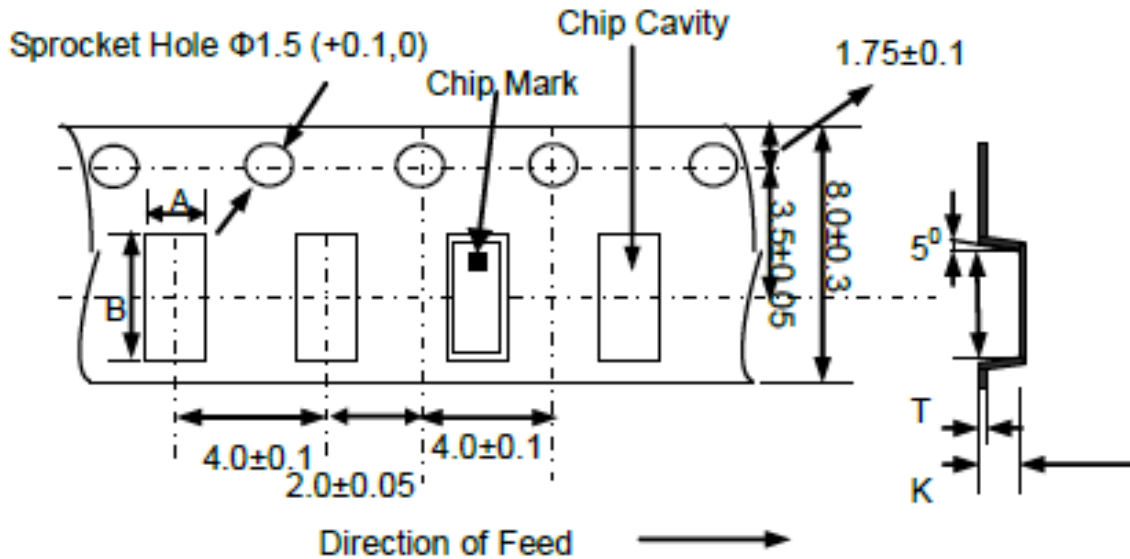


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## Taping Dimensions (Unit: mm)



Chip Thickness	A	B	K max	T max
$0.90 \pm 0.10$	$1.42 \pm 0.15$	$2.25 \pm 0.15$	1.25	0.27

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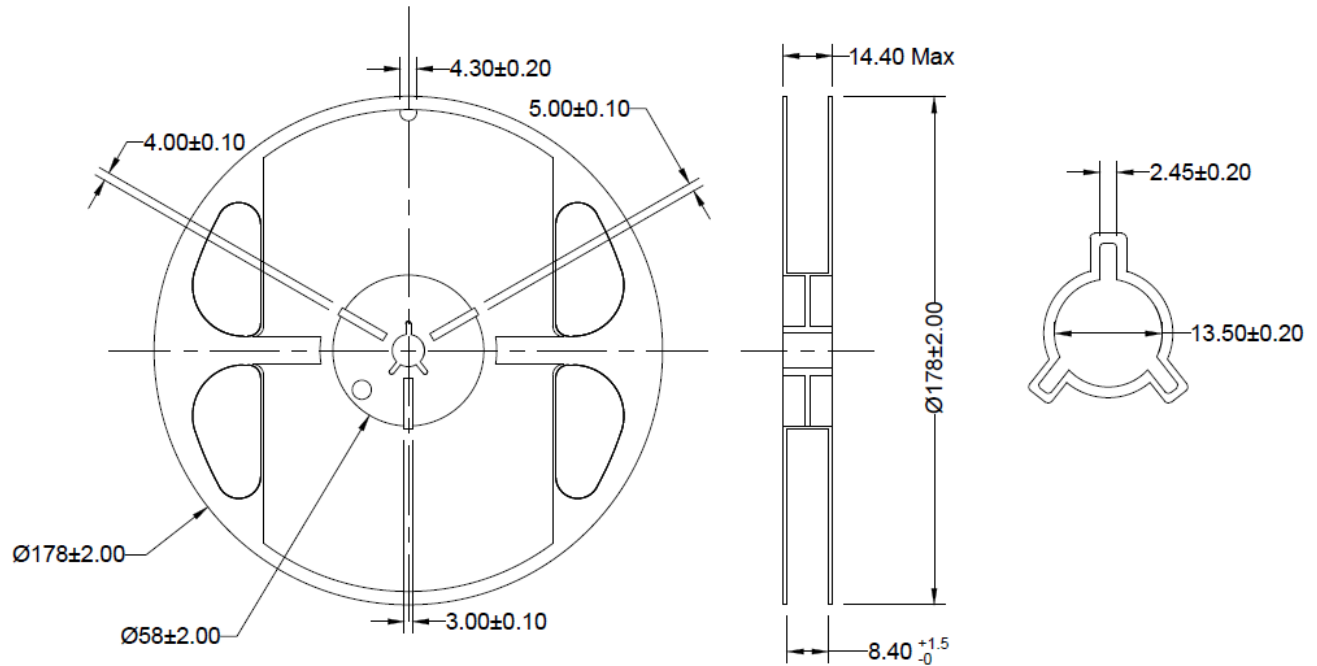


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## Reel Dimensions (Unit: mm)



Unit: mm

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