

## **SAW Single Filter**

**for B1 / Unbalanced / 5pin /1109**

**Pinnacle PN: SA0111092G14AT**

**Key Feature:**

✓ **LTE B1 RX SAW Filter(2110-2170MHz)**

✓ **Low Insertion Loss**

## 1 Description

SA0111092G14AT is a high-performance Surface Acoustic Wave (SAW) Band pass filter optimized for FDD-LTE applications operating in the range of 2.110-2.170 GHz. It is designed to provide both low insertion loss in the Band 1 and high rejection in the adjacent cellular Bands for mobile devices.

SA0111092G14AT uses advanced Chip Scale Package (CSP) technology and is housed in an industry-standard, 5-pin 1.1 mm x 0.9 mm package with a low profile of 0.6 mm max.

## 2 Features

- Low Insertion Loss: 1.2dB at Mid-Band
- High Rejection in B1 TX Band (1920~1980MHz)
- Small Footprint:  $0.25 \pm 0.03\text{mm} \times 0.20 \pm 0.03\text{mm}$ .
- Package size  $1.1 \pm 0.05\text{mm} \times 0.9 \pm 0.05\text{mm}$
- Electrostatic Sensitive Device(ESD)
- Package height 0.6mm max.
- Single-Ended Operation
- RoHS Compliant

## 3 Package & Dimensions:

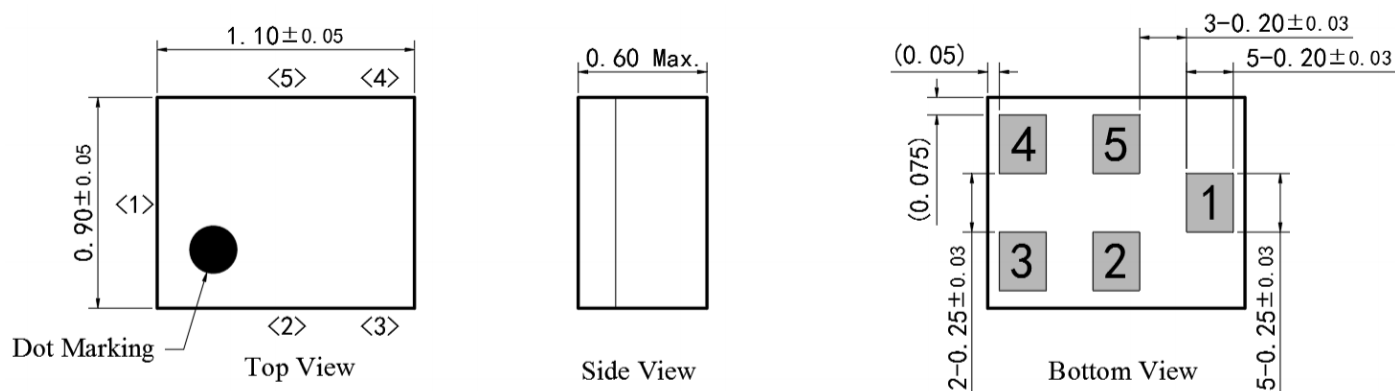


Figure 1: Drawing of Package with each tolerance range

## 4 Pin configuration

- 1 Input (recommended)
- 4 Output (recommended)
- 2,3,5 To be grounded

## 5 Matching Circuit(recommended)

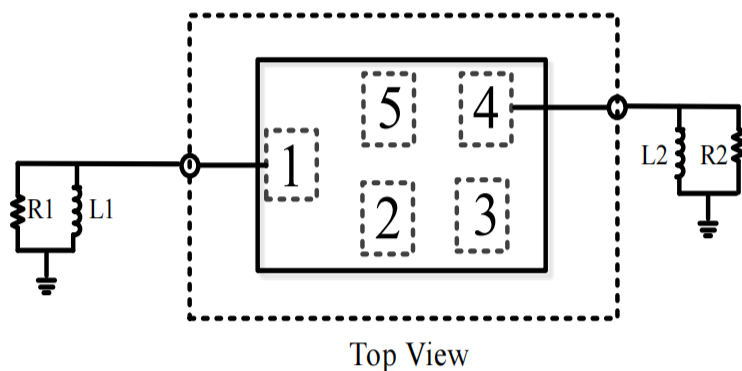


Figure 2: Schematic of matching circuit.

|            |                             |
|------------|-----------------------------|
| R1: 50 Ohm | L1: 4.3 nH (Q≈30 @2.140GHz) |
| R2: 50 Ohm | L2: 4.3 nH (Q≈30 @2.140GHz) |

## 6 Absolute Maximum Ratings

| Parameter                    | Rating                                          | Unit |
|------------------------------|-------------------------------------------------|------|
| Operating Temperature        | -30 to +85                                      | °C   |
| Storage Temperature          | -40 to +85                                      | °C   |
| Maximum Input Power          | +15                                             | dBm  |
| Maximum DC Voltage           | 5                                               | V    |
| Input terminating impedance  | 50                                              | Ω    |
| Output terminating impedance | 50                                              | Ω    |
| Input Power@input port       | Pin=15dBm<br>Continuous wave for<br>5000h@55 °C |      |

## 7 Recommended Soldering Profile

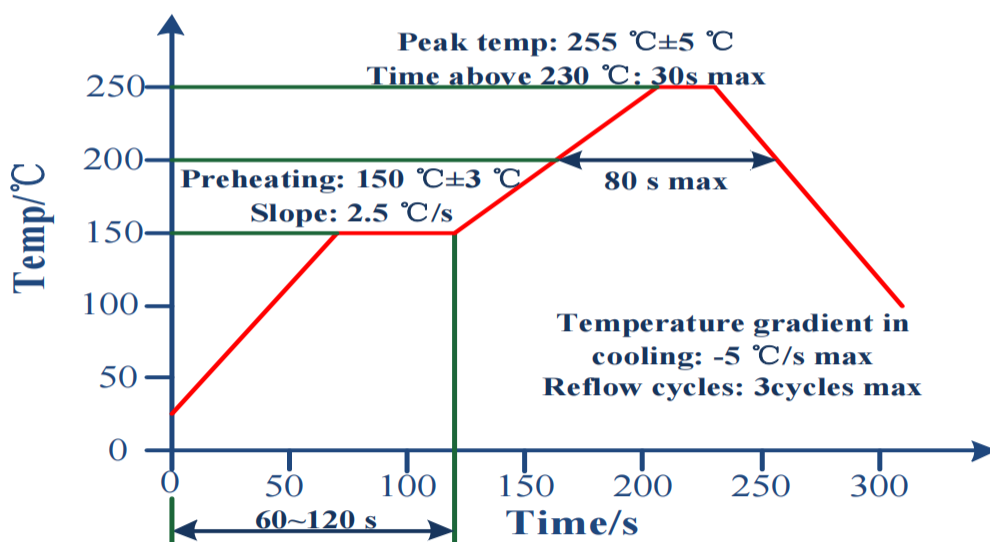


Figure 3: Recommended Reflow profile for convection and infrared soldering-lead-free solder.

## 8 Electrical Specifications

| Parameter       | Conditions      | Min | Typ. | Max  | Unit | Note             |
|-----------------|-----------------|-----|------|------|------|------------------|
| Insertion Loss  | 2110 - 2170 MHz | -   | 1.50 | 2.00 | dB   |                  |
| Passband Ripple | 2110 - 2170 MHz | -   | 0.50 | 1.00 | dB   |                  |
| Attenuation     | 100 - 824 MHz   | 45  | 50   | -    | dB   |                  |
|                 | 824 - 925 MHz   | 40  | 45   | -    | dB   |                  |
|                 | 1710 - 1755 MHz | 25  | 30   | -    | dB   |                  |
|                 | 1920 - 1980 MHz | 30  | 35   | -    | dB   | +23 °C to +85 °C |
|                 | 2400 - 2484 MHz | 25  | 30   | -    | dB   | +23 °C to +85 °C |
|                 | 4222 - 4340 MHz | 30  | 35   | -    | dB   |                  |
|                 | 4340 - 6000 MHz | 24  | 26   | -    | dB   |                  |
| VSWR(input)     | 2110 - 2170 MHz | -   | 1.3  | 2.00 | -    |                  |
| VSWR(output)    | 2110 - 2170 MHz | -   | 1.3  | 2.00 | -    |                  |

## 9 Transmission coefficient

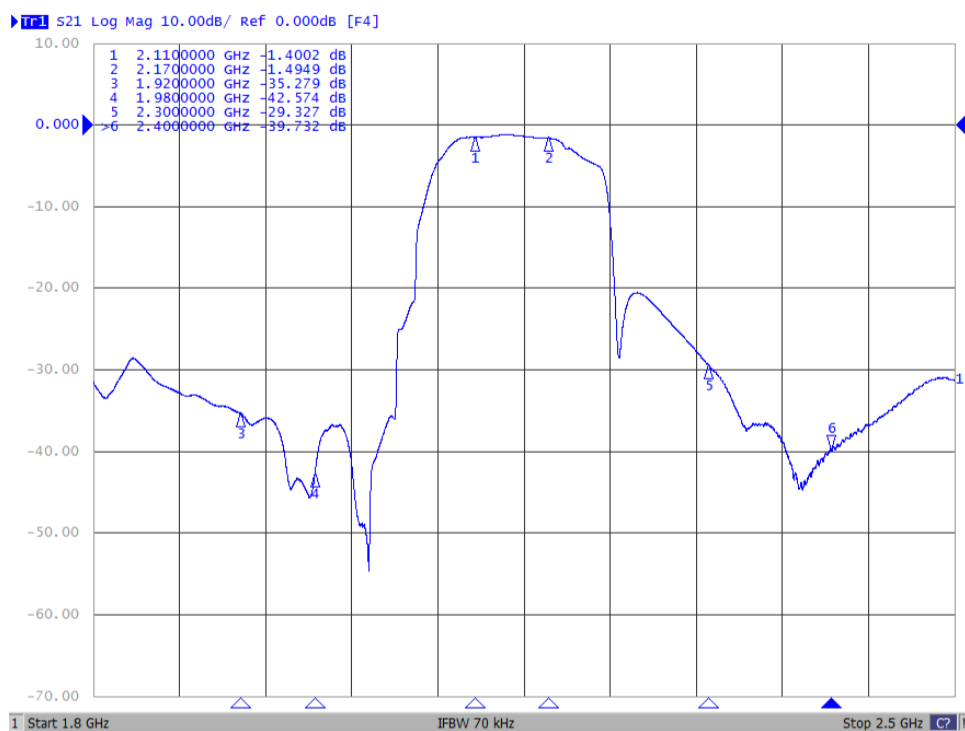


Figure 4: |S21|

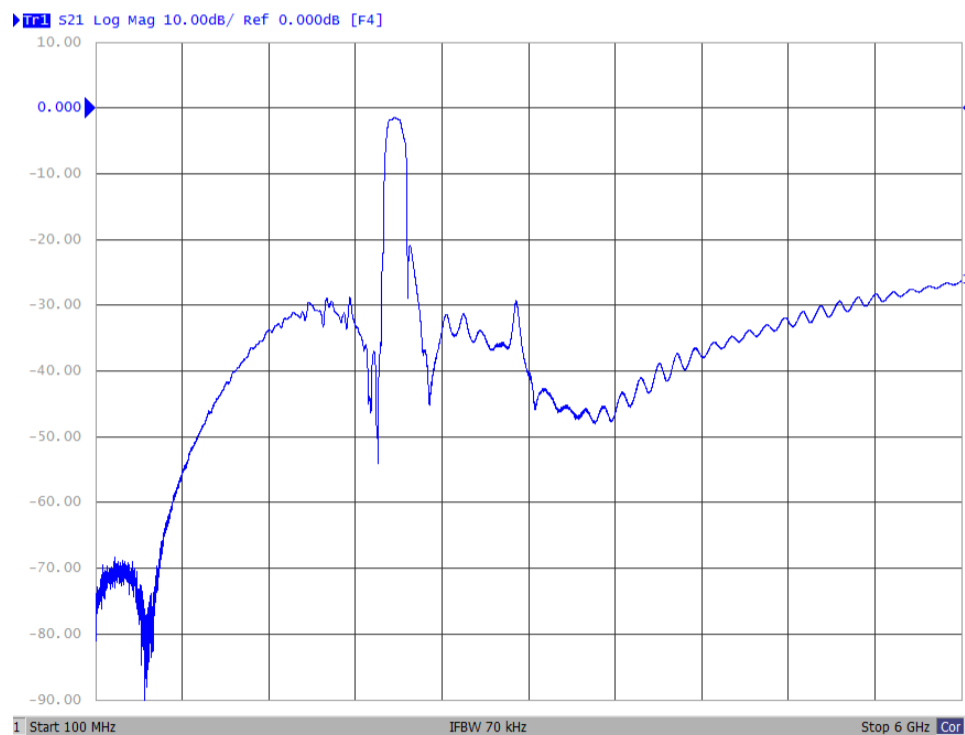


Figure 5: Wide Band |S21|

## 10 Reflection coefficients

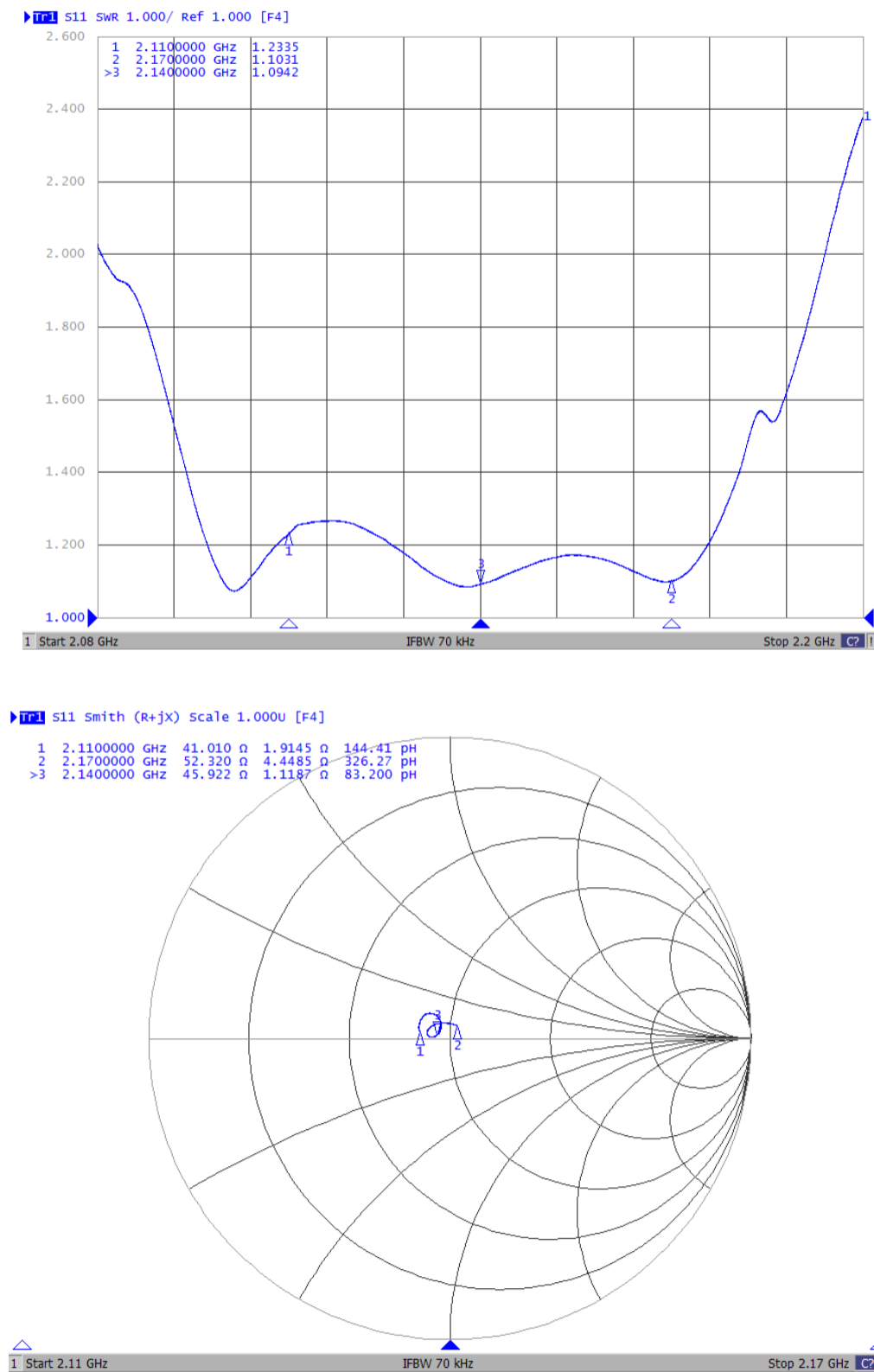


Figure 6: Reflection coefficient for S11

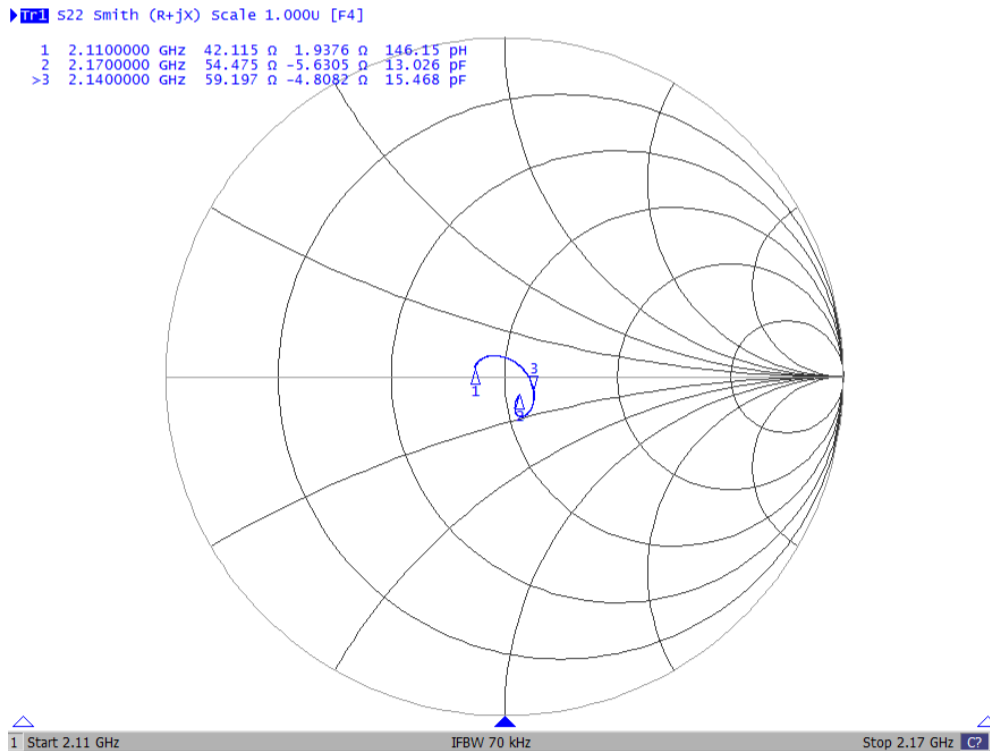
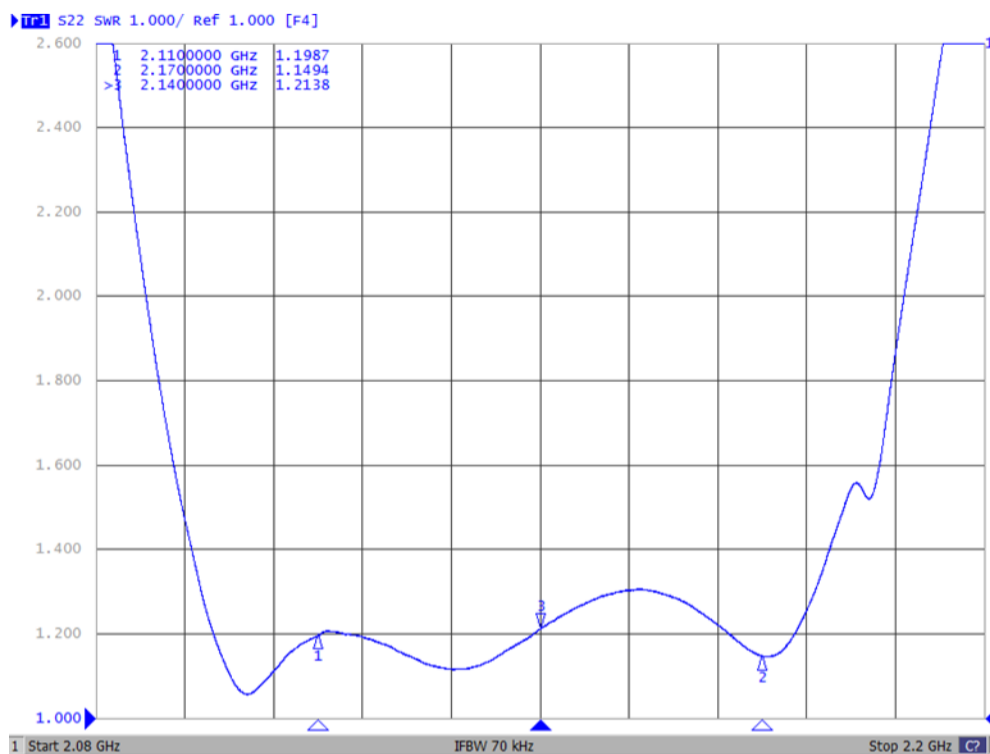


Figure 7: Reflection coefficient for S22

## 11 Packing material

### 11.1 Tape

Tensile Strength of Carrier Tape: Carrier tape 10N or more; Cover tape 5N or more. Packaging quantities: 5000 PCS / Reel.

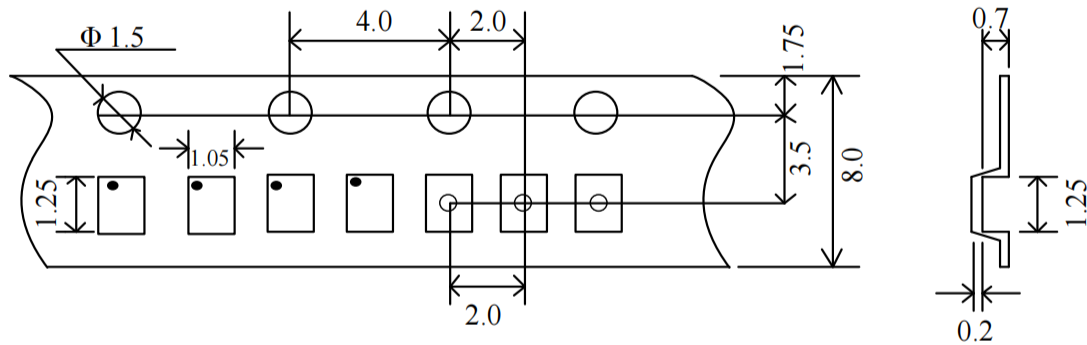


Figure 8: Drawing of tape with tape dimensions according above.

### 11.2 Reel with diameter of 178mm

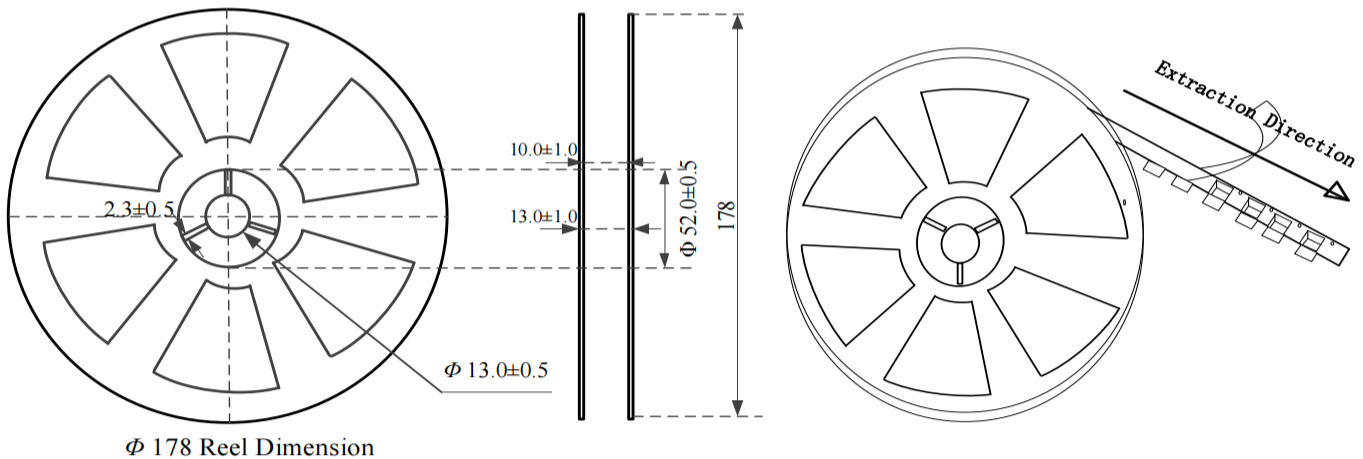


Figure 9: Drawing of reel with diameter of 178mm.