



HANGZHOU SAPPLAND MICROELECTRONICS TECHNOLOGY CO., LTD

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# SAW Device Data Sheet

**Band 12 Duplexer / Unbalanced /1814**

**PN: [SPSD12SU11A](#)**

**Rev: 1.0**

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## **Feature:**

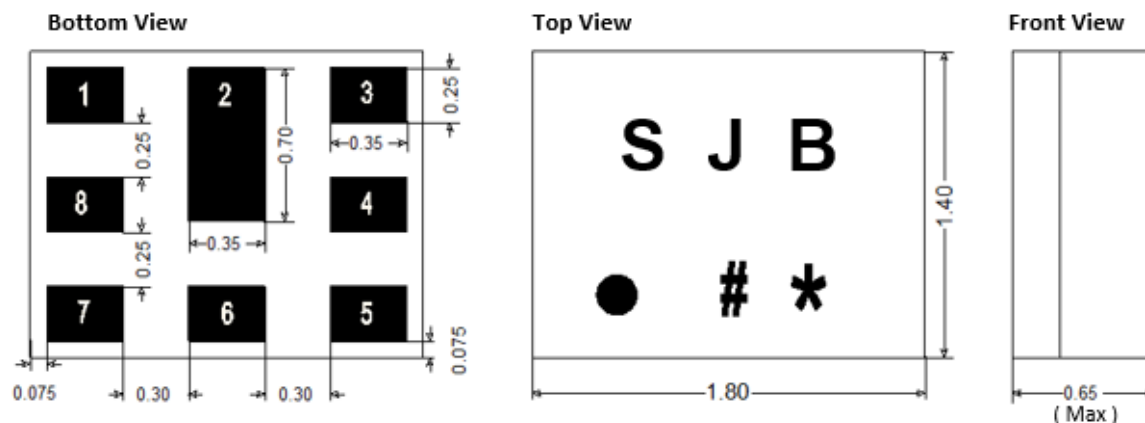
- low insertion loss
- high isolation between Tx and Rx

# 1.Revision History

| Revision | Date        | Comments        |
|----------|-------------|-----------------|
| 1.0      | Oct-27-2023 | Initial release |
|          |             |                 |
|          |             |                 |
|          |             |                 |
|          |             |                 |

## 2.Package and Pin map

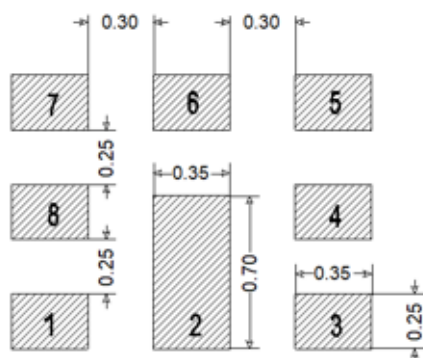
Package Dimensions(Unit: mm)



| Pin No.   | Pin definition |
|-----------|----------------|
| 1         | Rx Port        |
| 3         | Tx Port        |
| 6         | Ant Port       |
| 2,4,5,7,8 | GND            |

| Mark | Mark definition |
|------|-----------------|
| S    | Sapland         |
| J    | Band            |
| B    | Version         |
| # *  | Date code       |

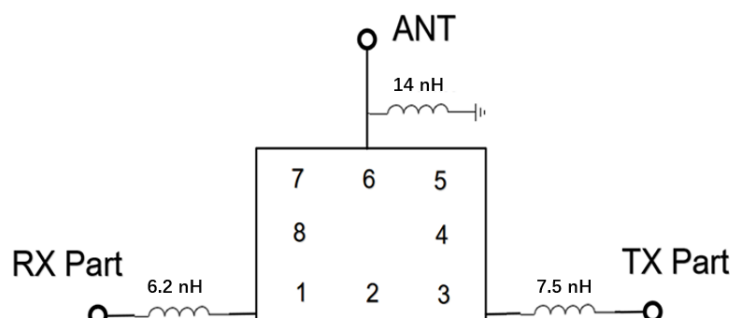
Recommended Land Pattern(Unit: mm)



**Notes:**

- 1, All dimensions are in millimeters
- 2, This drawing specifies the mounting pattern modification may be necessary to suit end user used on the Sapland evaluation board for this assembly material and process.

### Application circuit (with idea components)



## 3. Performance

### 3.1 Absolute maximum ratings

| Item                              | Rating      | Note             |
|-----------------------------------|-------------|------------------|
| Storage Temperature               | -40 ~ 85 °C |                  |
| Operating Temperature             | -20 ~ 85 °C |                  |
| Input Power Max                   | 30 dBm      | LTE, 5000h, 50°C |
| D.C Voltage between the terminals | 3 V         | 25±2deg.C        |

### 3.2 Electrical specification

#### Tx Electrical specification (-20 to +85 °C)

| TX to ANT            |                       | Characteristics |                   |     | Unit | Note |
|----------------------|-----------------------|-----------------|-------------------|-----|------|------|
|                      |                       | min             | Typ. <sup>1</sup> | max |      |      |
| Center Frequency     |                       | -               | 707.5             | -   | MHz  |      |
| Insertion Loss       | 699.25 ~ 715.75 MHz   |                 | 1.4               | 2.1 | dB   |      |
| Amplitude ripple     | 699.00 ~ 716.00 MHz   |                 | 0.3               | 1.2 | dB   |      |
| VSWR                 | 699.00 ~ 716.00 MHz   |                 | 1.5               | 2.0 | -    | Tx   |
|                      | 699.00 ~ 716.00 MHz   |                 | 1.5               | 2.0 | -    | ANT  |
| Absolute attenuation | 10.00 ~ 685.00 MHz    | 22              | 27                |     | dB   |      |
|                      | 722.00 ~ 729.00 MHz   | -               | 5                 |     | dB   |      |
|                      | 729.25 ~ 745.75 MHz   | 40              | 55                |     | dB   |      |
|                      | 746.00 ~ 768.00 MHz   | 20              | 28                |     | dB   |      |
|                      | 768.00 ~ 805.00 MHz   | 20              | 29                |     | dB   |      |
|                      | 824.00 ~ 849.00 MHz   | 20              | 27                |     | dB   |      |
|                      | 869.00 ~ 894.00 MHz   | 20              | 28                |     | dB   |      |
|                      | 1398.00 ~ 1432.00 MHz | 24              | 34                |     | dB   |      |
|                      | 1559.00 ~ 1607.00 MHz | 27              | 37                |     | dB   |      |
|                      | 1710.00 ~ 1755.00 MHz | 30              | 35                |     | dB   |      |
|                      | 1805.00 ~ 1880.00 MHz | 25              | 32                |     | dB   |      |
|                      | 1930.00 ~ 1990.00 MHz | 25              | 30                |     | dB   |      |
|                      | 2097.00 ~ 2170.00 MHz | 22              | 27                |     | dB   |      |
|                      | 2155.00 ~ 2170.00 MHz | 22              | 27                |     | dB   |      |
|                      | 2400.00 ~ 2484.00 MHz | 20              | 24                |     | dB   |      |
|                      | 2796.00 ~ 2864.00 MHz | 15              | 20                |     | dB   |      |
|                      | 4900.00 ~ 5950.00 MHz | 25              | 32                |     | dB   |      |

1) Typical value at 25±2deg.C

**Rx Electrical specification (-20 to +85 °C)**

| ANT to RX            |                       | Characteristics |                   |     | Unit | Note |
|----------------------|-----------------------|-----------------|-------------------|-----|------|------|
|                      |                       | min             | Typ. <sup>1</sup> | max |      |      |
| Center Frequency     |                       | -               | 737.5             | -   | MHz  |      |
| Insertion Loss       | 729.25 ~ 745.75 MHz   |                 | 1.7               | 2.3 | dB   |      |
| Amplitude ripple     | 729.00 ~ 746.00 MHz   |                 | 0.5               | 1.2 | dB   |      |
| VSWR                 | 729.00 ~ 746.00 MHz   |                 | 1.7               | 2.1 | -    | Rx   |
|                      | 729.00 ~ 746.00 MHz   |                 | 1.7               | 2.1 | -    | ANT  |
| Absolute attenuation | 10.00 ~ 699.00 MHz    | 40              | 51                |     | dB   |      |
|                      | 30.00 ~ 30.00 MHz     | 45              | 51                |     | dB   |      |
|                      | 699.25 ~ 715.75 MHz   | 45              | 55                |     | dB   |      |
|                      | 716.00 ~ 722.00 MHz   | -               | 10                |     | dB   |      |
|                      | 776.00 ~ 793.00 MHz   | 29              | 38                |     | dB   |      |
|                      | 793.00 ~ 805.00 MHz   | 35              | 47                |     | dB   |      |
|                      | 824.00 ~ 849.00 MHz   | 40              | 56                |     | dB   |      |
|                      | 1710.00 ~ 1755.00 MHz | 40              | 46                |     | dB   |      |
|                      | 1850.00 ~ 1920.00 MHz | 40              | 45                |     | dB   |      |
|                      | 2187.00 ~ 2238.00 MHz | 40              | 44                |     | dB   |      |
|                      | 2400.00 ~ 2500.00 MHz | 40              | 44                |     | dB   |      |
|                      | 4900.00 ~ 5950.00 MHz | 35              | 45                |     | dB   |      |

1) Typical value at 25±2deg.C

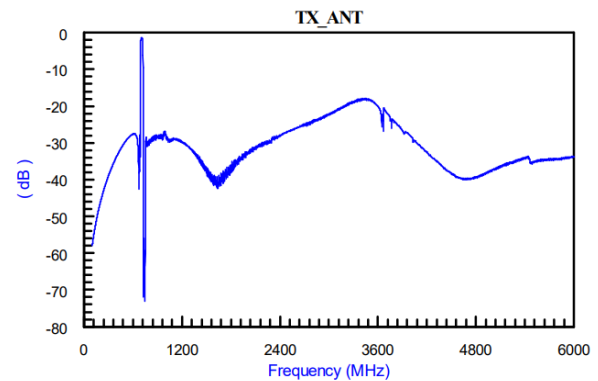
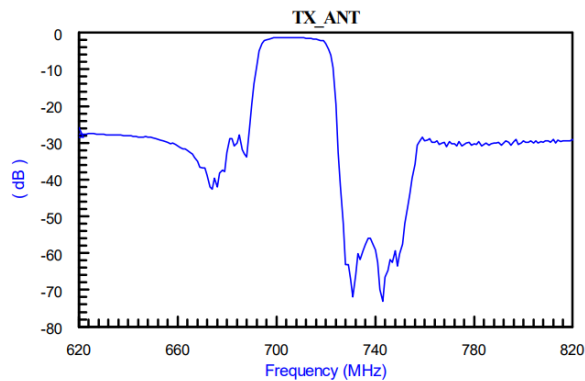
**Tx/Rx Electrical specification (-20 to +85 °C)**

| TX / RX   |                     | Characteristics |                   |     | Unit | Note |
|-----------|---------------------|-----------------|-------------------|-----|------|------|
|           |                     | min             | Typ. <sup>1</sup> | max |      |      |
| Isolation | 701.50 ~ 713.50 MHz | 54              | 57                |     | dB   |      |
|           | 731.50 ~ 743.50 MHz | 54              | 59                |     | dB   |      |

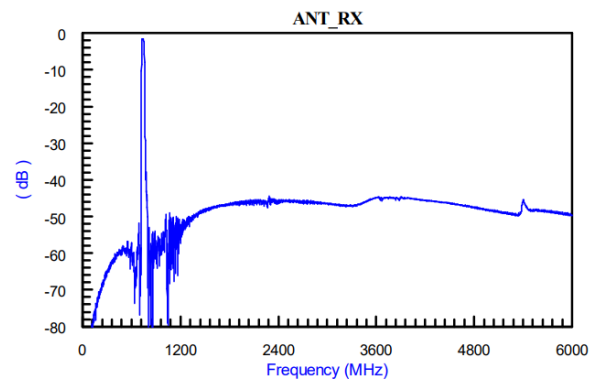
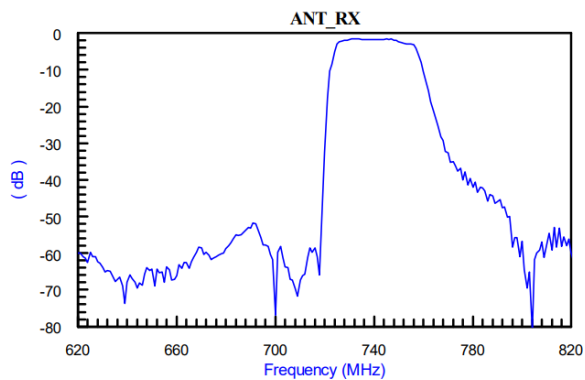
1) Typical value at 25±2deg.C

### 3.3 Plots

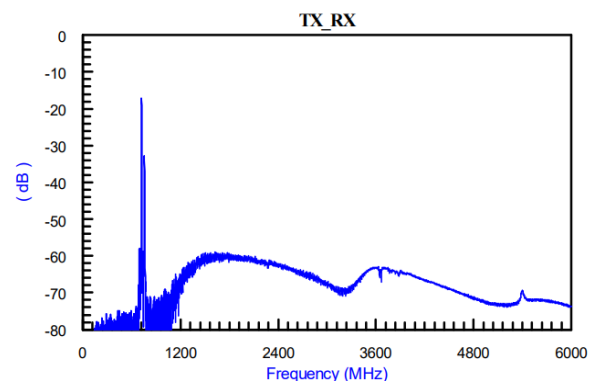
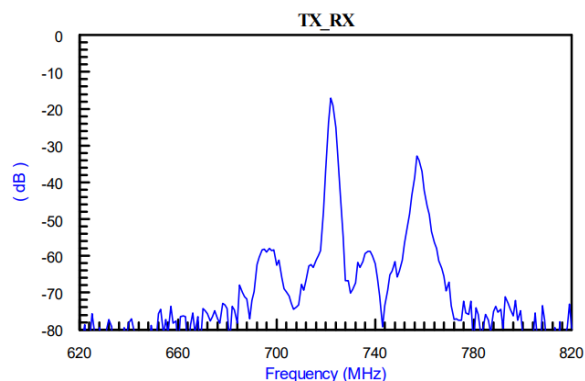
#### Tx-Ant



#### Ant-Rx

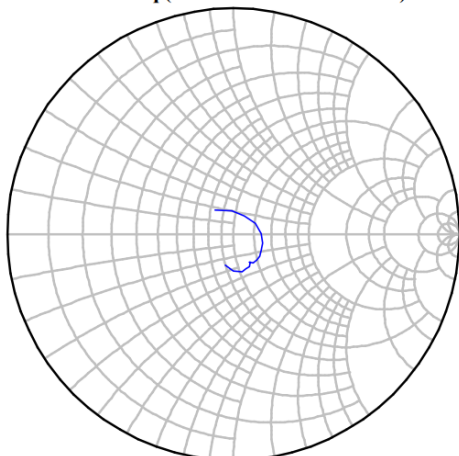


#### Tx-Rx

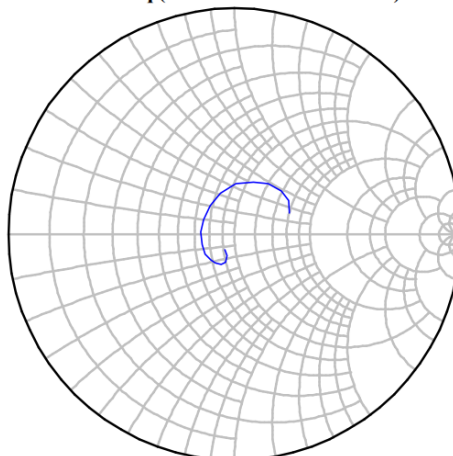


**ANT – Tx Impedance**

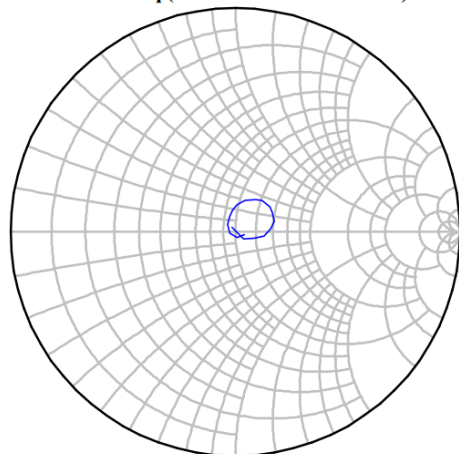
ANT: Freq (699.0 MHz to 716.0 MHz)



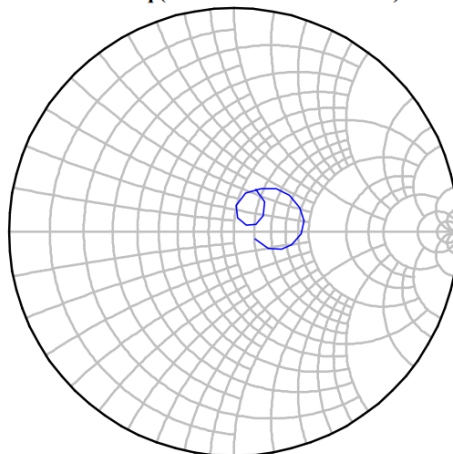
TX: Freq (699.0 MHz to 716.0 MHz)

**ANT- Rx Impedance**

ANT: Freq (729.0 MHz to 746.0 MHz)



RX: Freq (729.0 MHz to 746.0 MHz)



## 4. Packing Information

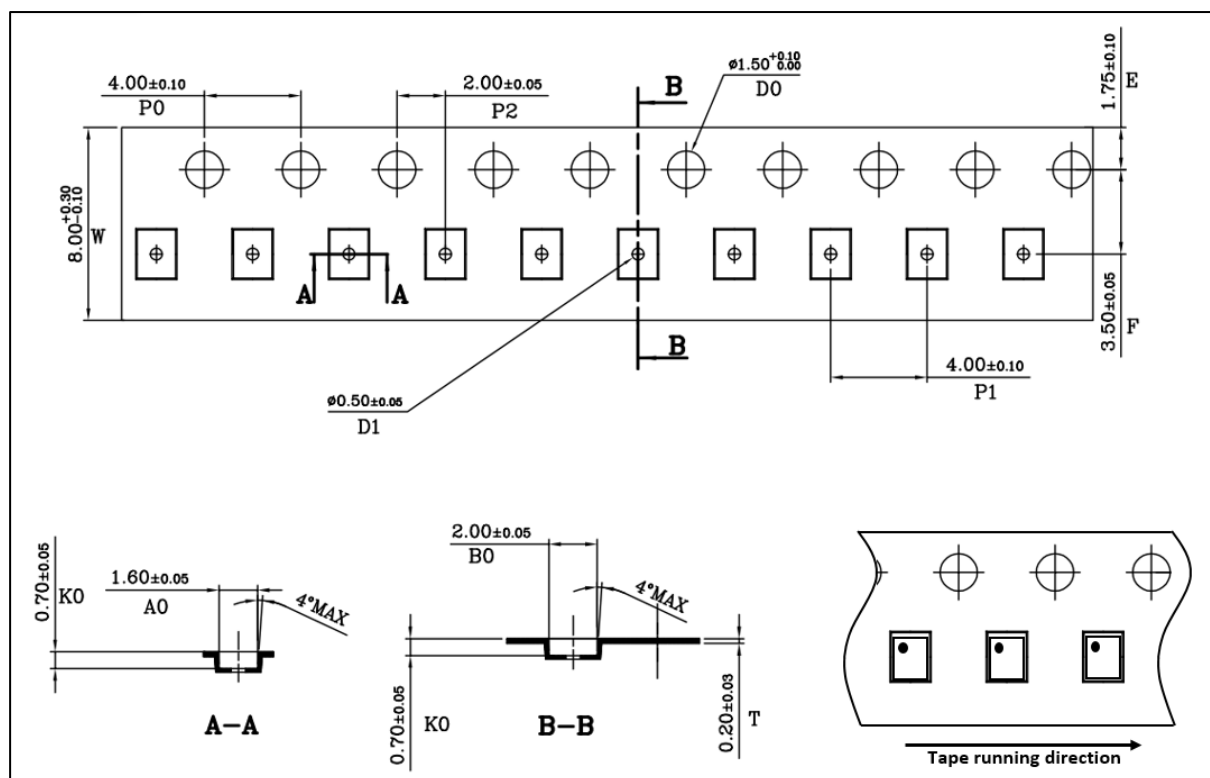


Figure 4-1 Carrier Tape Drawing (unit: mm)

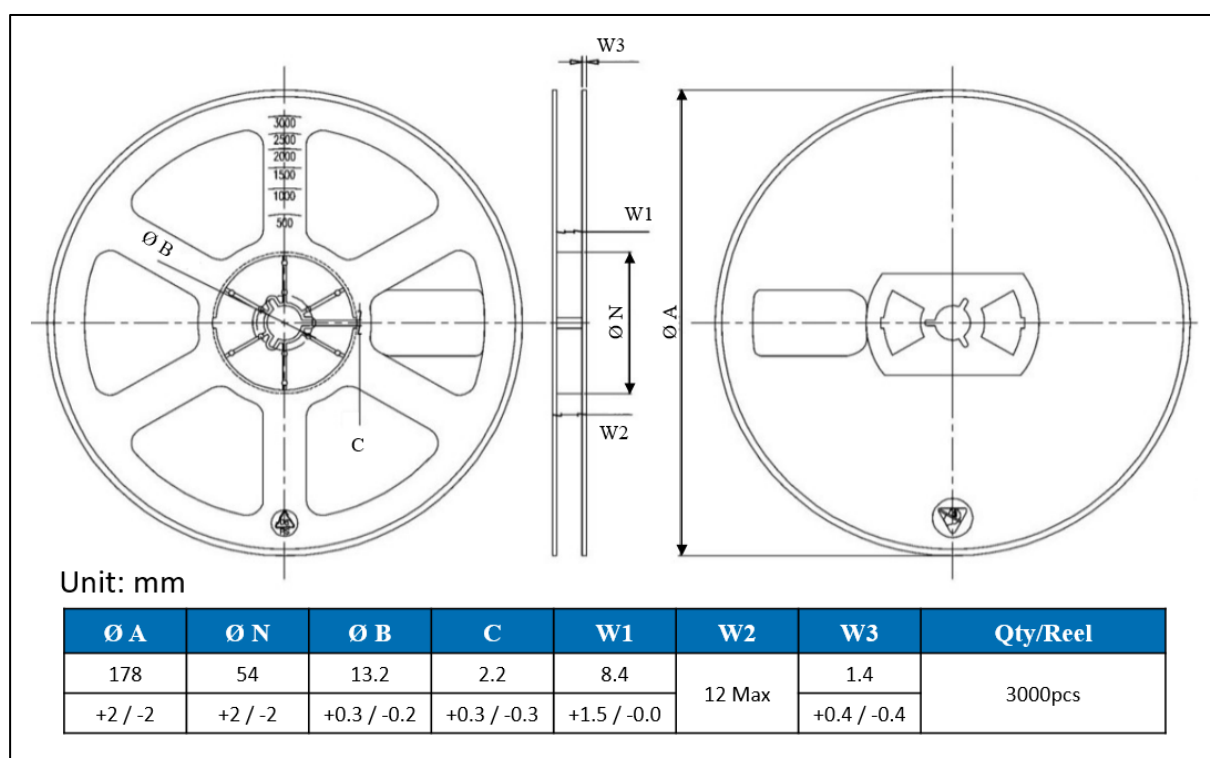


Figure 4-2 Reel Dimensions (Unit: mm) and Reeling Qty'