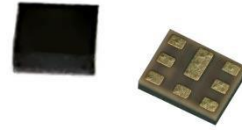


# Data Sheet for SAW Components

Band 1

Duplexer



Product ID: LBD2140B0F

Date: Mar. 17, 2022

Revision: 3.2

## Features

- ◆ Package Size : 1.8 x 1.4 x 0.55max mm
- ◆ Single-Ended Input and Output
- ◆ Terminating Impedance : 50  $\Omega$
- ◆ Moisture Sensitivity Level 3
- ◆ ESD Sensitive Device

## Electrical Specifications Band1 Duplexer

Temperature Range for Specification: -30 to +85 °C

| Tx to Ant            |                   |     | Min.            | Typ. | Max.              | Unit |
|----------------------|-------------------|-----|-----------------|------|-------------------|------|
| Insertion Loss       |                   |     |                 |      |                   |      |
|                      | 1920 - 1980       | MHz | -               | 1.7  | 2.2               | dB   |
| Pass Band Ripple     |                   |     |                 |      |                   |      |
|                      | 1920 - 1980       | MHz | -               | 0.2  | 0.5 <sup>*1</sup> | dB   |
| VSWR                 |                   |     |                 |      |                   |      |
|                      | 1920 - 1980       | MHz | -               | 1.4  | 2.0               | -    |
| Absolute Attenuation |                   |     |                 |      |                   |      |
|                      | 10 - 1574         | MHz | 29              | 41   | -                 | dB   |
|                      | 420 - 494         | MHz | 40              | 63   | -                 | dB   |
|                      | 814 - 849         | MHz | 30              | 48   | -                 | dB   |
|                      | 880 - 915         | MHz | 30              | 46   | -                 | dB   |
|                      | 925 - 960         | MHz | 30              | 45   | -                 | dB   |
|                      | 1226 - 1250       | MHz | 30              | 41   | -                 | dB   |
|                      | 1447.9 - 1462.9   | MHz | 30              | 42   | -                 | dB   |
|                      | 1475 - 1511       | MHz | 34              | 42   | -                 | dB   |
|                      | 1559 - 1563       | MHz | 42              | 44   | -                 | dB   |
|                      | 1565.42 - 1573.37 | MHz | 42              | 44   | -                 | dB   |
|                      | 1573.37 - 1577.47 | MHz | 42              | 44   | -                 | dB   |
|                      | 1577.47 - 1585.42 | MHz | 42              | 44   | -                 | dB   |
|                      | 1597.55 - 1605.89 | MHz | 42              | 44   | -                 | dB   |
|                      | 1605.88 - 1805    | MHz | 25              | 44   | -                 | dB   |
|                      | 1805 - 1865       | MHz | 20              | 42   | -                 | dB   |
|                      | 1865 - 1880       | MHz | 10              | 40   | -                 | dB   |
|                      | 1880 - 1895       | MHz | 8               | 25   | -                 | dB   |
|                      | 2010 - 2025       | MHz | 9 <sup>*2</sup> | 25   | -                 | dB   |
|                      | 2110 - 2170       | MHz | 44              | 51   | -                 | dB   |
|                      | 2300 - 2400       | MHz | 38              | 48   | -                 | dB   |
|                      | 2400 - 2500       | MHz | 34              | 45   | -                 | dB   |
|                      | 2620 - 2690       | MHz | 29              | 42   | -                 | dB   |
|                      | 3840 - 3960       | MHz | 20              | 36   | -                 | dB   |
|                      | 4900 - 5950       | MHz | 17              | 31   | -                 | dB   |

\*1: Over any 5 MHz in band.

\*2: +15 to +85 °C

## Electrical Specifications Band1 Duplexer

Temperature Range for Specification: -30 to +85 °C

| Ant to Rx            |             |     | Min. | Typ. | Max.              | Unit |
|----------------------|-------------|-----|------|------|-------------------|------|
| Insertion Loss       |             |     |      |      |                   |      |
|                      | 2110 – 2170 | MHz | -    | 1.8  | 2.3               | dB   |
| Pass Band Ripple     |             |     |      |      |                   |      |
|                      | 2110 – 2170 | MHz | -    | 0.3  | 0.7 <sup>*1</sup> | dB   |
| VSWR                 |             |     |      |      |                   |      |
|                      | 2110 – 2170 | MHz | -    | 1.4  | 2.0               | -    |
| Absolute Attenuation |             |     |      |      |                   |      |
|                      | 1 – 1920    | MHz | 33   | 38   | -                 | dB   |
|                      | - 190       | MHz | 50   | 69   | -                 | dB   |
|                      | 718 – 748   | MHz | 40   | 46   | -                 | dB   |
|                      | 814 – 849   | MHz | 40   | 44   | -                 | dB   |
|                      | 880 – 915   | MHz | 40   | 43   | -                 | dB   |
|                      | 1427 – 1463 | MHz | 35   | 38   | -                 | dB   |
|                      | 1730 – 1790 | MHz | 35   | 40   | -                 | dB   |
|                      | 1710 – 1785 | MHz | 33   | 40   | -                 | dB   |
|                      | 1920 – 1980 | MHz | 45   | 55   | -                 | dB   |
|                      | 1980 – 2015 | MHz | 15   | 44   | -                 | dB   |
|                      | 2015 – 2075 | MHz | 5    | 10   | -                 | dB   |
|                      | 2300 – 2400 | MHz | 26   | 43   | -                 | dB   |
|                      | 2400 – 2500 | MHz | 30   | 45   | -                 | dB   |
|                      | 2500 – 2570 | MHz | 38   | 48   | -                 | dB   |
|                      | 4030 – 4150 | MHz | 10   | 17   | -                 | dB   |
|                      | 4220 – 4340 | MHz | 8    | 14   | -                 | dB   |
|                      | 4900 – 5950 | MHz | 5    | 8    | -                 | dB   |
|                      | 5950 – 6130 | MHz | 5    | 8    | -                 | dB   |
|                      | 6130 – 6330 | MHz | 5    | 8    | -                 | dB   |
|                      | 6330 – 6510 | MHz | 5    | 8    | -                 | dB   |

\*1: Over any 5 MHz in band.

## Electrical Specifications    Band1 Duplexer

Temperature Range for Specification: -30 to +85 °C

| Tx to Rx  |                    | Min. | Typ. | Max. | Unit |
|-----------|--------------------|------|------|------|------|
| Isolation |                    |      |      |      |      |
|           | 1920 – 1980    MHz | 54   | 57   | -    | dB   |
|           | 2110-2170    MHz   | 50   | 51   | -    | dB   |

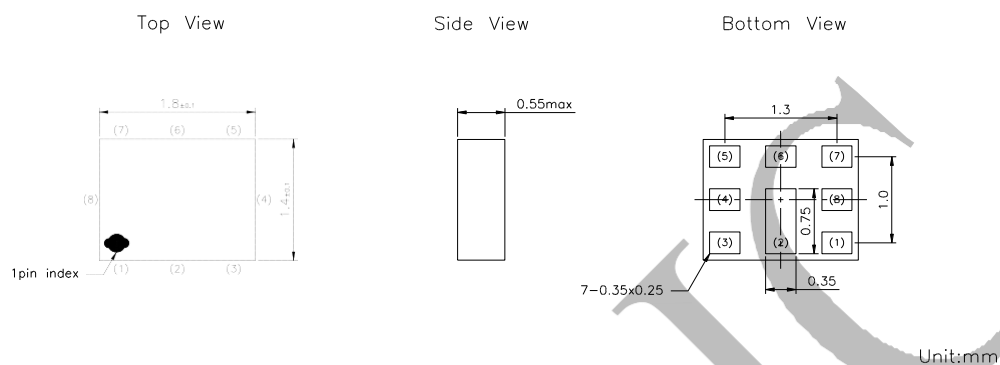
### Maximum Ratings

| Item                | Rating        | Condition / Remark    |
|---------------------|---------------|-----------------------|
| Storage Temperature | -40 to +85 °C |                       |
| DC Voltage          | 5 V           | +25 °C                |
| Input Power 1       | +29 dBm       | LTE , +55 °C , 5000 h |
| Input Power 2       | +30 dBm       | LTE , +55 °C , 2000 h |

### Recommended Operating Conditions

| Item                                     | Rating        | Condition / Remark |
|------------------------------------------|---------------|--------------------|
| Operating Temperature, T <sub>CASE</sub> | -30 to +85 °C |                    |

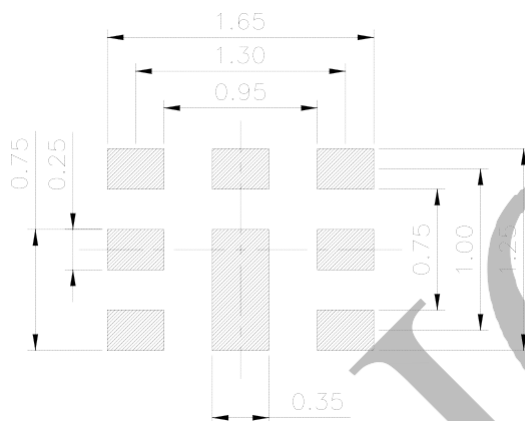
## Package Information



### Pin Configuration

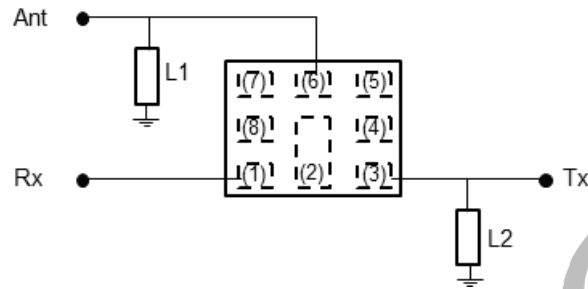
1 : Rx  
 3 : Tx  
 6 : Ant  
 Other : GND

## Land Pattern



Unit:mm

## Application Circuit



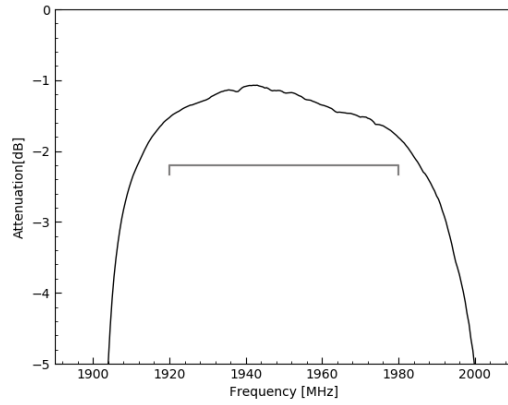
| Port | Terminating Z | Matching Component             |
|------|---------------|--------------------------------|
| Ant  | 50 $\Omega$   | L1 : 2.7nH<br>(Ideal inductor) |
| Tx   | 50 $\Omega$   | L1 : 7nH<br>(Ideal inductor)   |
| Rx   | 50 $\Omega$   |                                |

For ESD protection, external shunt inductor at all ports is recommended.

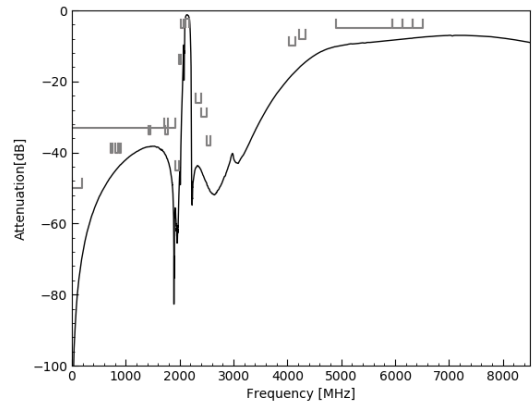
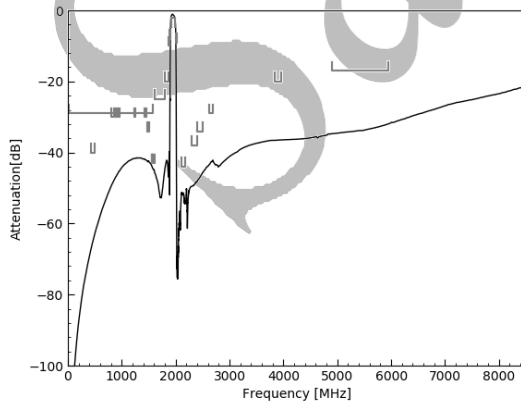
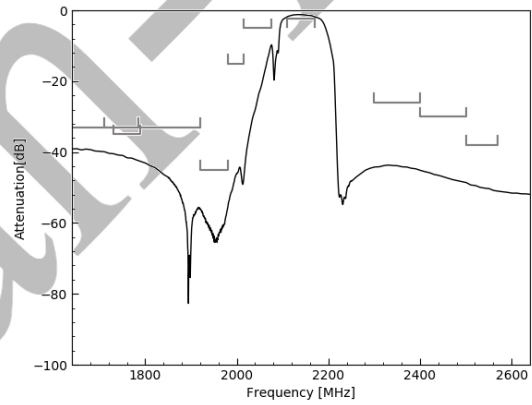
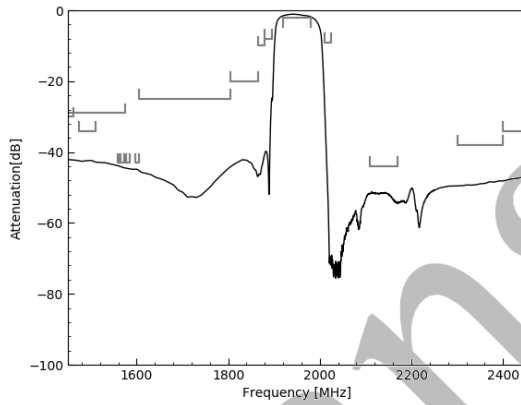
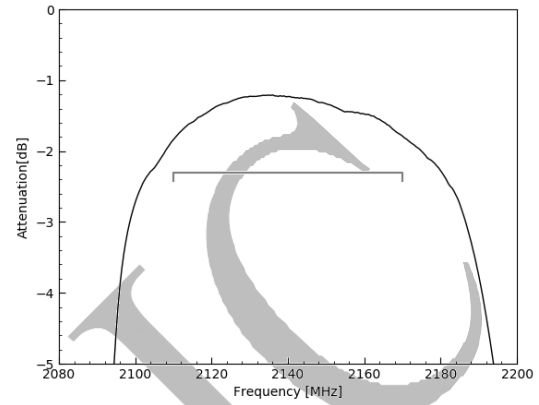
Electrical Characteristics

Band1 Duplexer

**Tx to Ant**



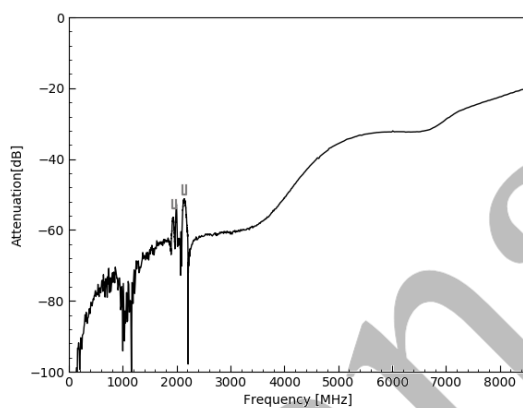
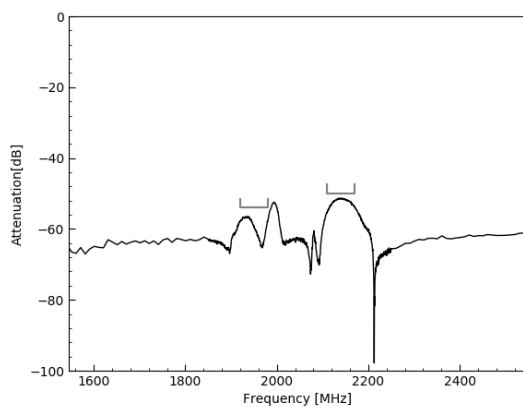
**Ant to Rx**



Electrical Characteristics

Band1 Duplexer

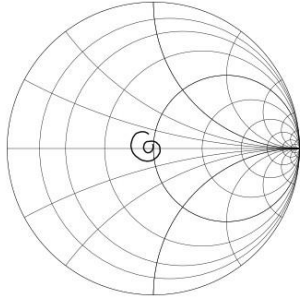
Tx to Rx



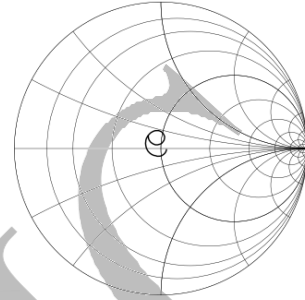
Electrical Characteristics

Band1 Duplexer

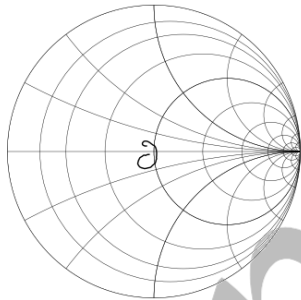
Ant Port Impedance (Tx)



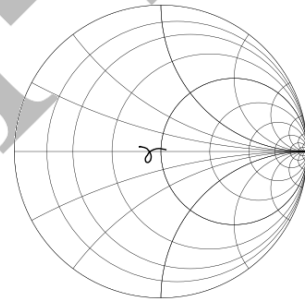
Ant Port Impedance (Rx)



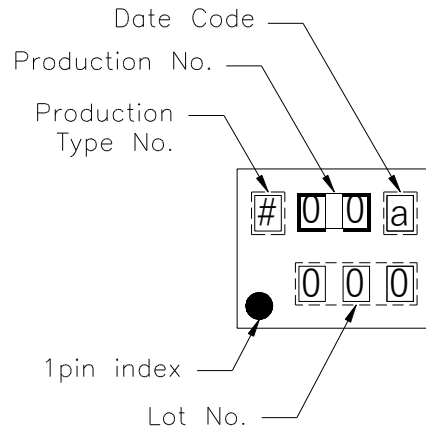
Tx Port Impedance



Rx Port Impedance



## Marking Information



Production type No. ( S: Sample, P: Production )

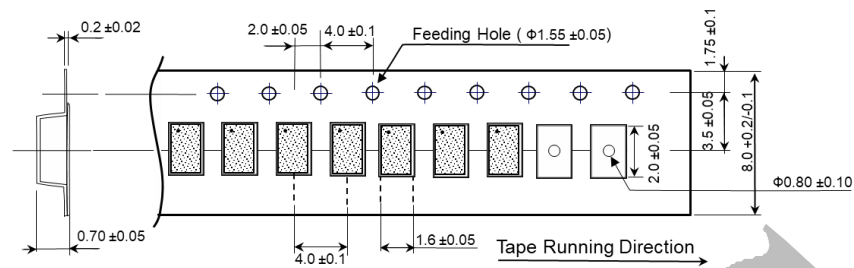
Production No. : 0F

Lot No. ( Indicated by 0 ~ 9 or A to Z and a to z, except I, O, i, o and l )

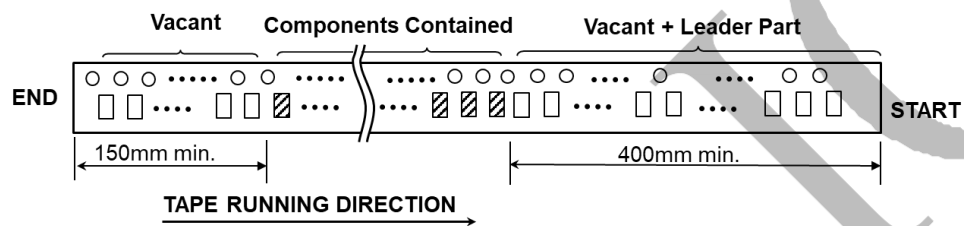
Product date code :

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 2022 | a   | b   | c   | d   | e   | f   | g   | h   | j   | k   | l   | m   |
| 2023 | n   | p   | q   | r   | s   | t   | u   | v   | w   | x   | y   | z   |
| 2024 | A   | B   | C   | D   | E   | F   | G   | H   | J   | K   | L   | M   |
| 2025 | N   | P   | Q   | R   | S   | T   | U   | V   | W   | X   | Y   | Z   |

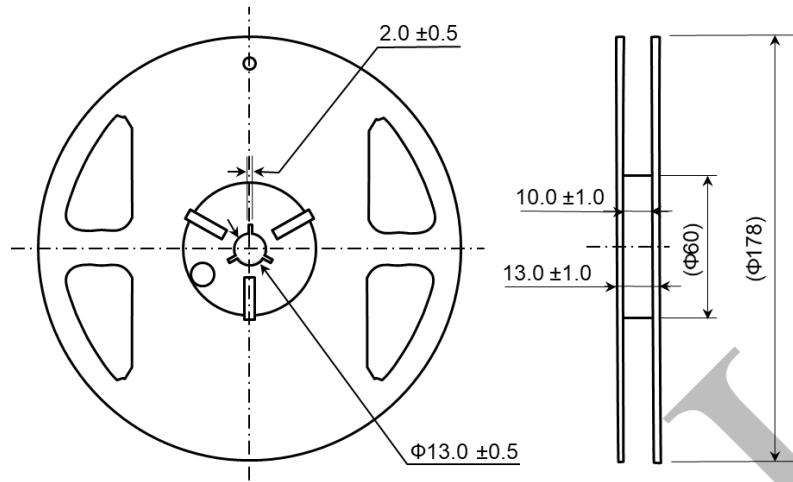
## Tape Information



UNIT: mm

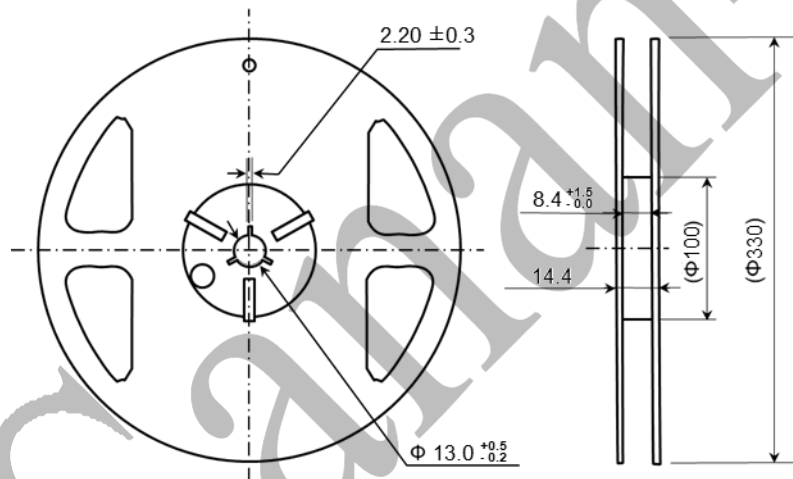


## Reel Information



$\Phi 178$  Reel Dimension

UNIT: mm



$\Phi 330$  Reel Dimension

UNIT: mm

### Ordering Code

| Part Number   | Description                 |
|---------------|-----------------------------|
| LBD2140B0F-SA | Bulk (few pieces)           |
| LBD2140B0F-MB | Tape & Reel 3,000 pcs/reel  |
| LBD2140B0F-MC | Tape & Reel 10,000 pcs/reel |
| LBD2140B0F-SZ | EVB                         |
|               |                             |

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### Revision History

| Revision | Date          | Description                                                             |
|----------|---------------|-------------------------------------------------------------------------|
| 1.0      | Feb. 10, 2020 | • Initial Release                                                       |
| 2.0      | Mar. 13, 2020 | • Updated “Electrical Specifications”,<br>“Electrical Characteristics”. |
| 3.0      | Jun. 29, 2020 | • Updated “Input power” and “Tx matching<br>component”                  |
| 3.1      | Dec. 21, 2020 | • Updated “Reel Information” and “Ordering<br>Code”                     |
| 3.2      | Mar. 17, 2022 | • Updated “Features”                                                    |
|          |               |                                                                         |

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