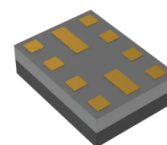


### Maximum Rating:

- Input Power Level: 15dBm.
- DC Voltage : 0 V
- Operating Temperature: -40°C to +105°C
- Storage Temperature: -40°C to +100°C
- Moisture Sensitivity Level: Level 1 (MSL 1)
- AEC-Q200 Qualified

**1176.45/1582.47  
SAW Diplexer**



SM1511-10

### Electrical Characteristics

#### Filter 1

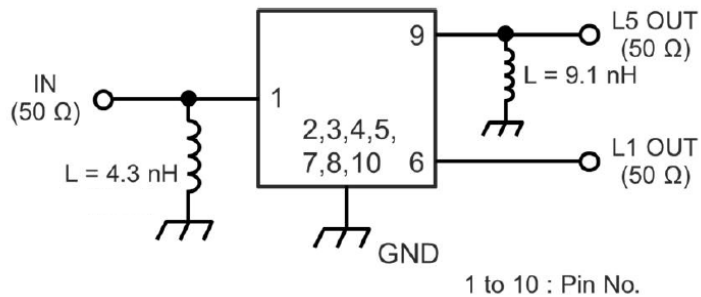
| Item                |                    | Unit               | Min | Typ     | Max | Remarks |
|---------------------|--------------------|--------------------|-----|---------|-----|---------|
| Center frequency    |                    | MHz                |     | 1176.45 |     |         |
| Insertion Loss (*1) | 1166.22-1186.68MHz | dB                 | -   | 1.7     | 2.1 |         |
| Amplitude Ripple    | 1166.22-1186.68MHz | dB                 | -   | 0.3     | 0.7 |         |
| VSWR                | Input              | 1166.22-1186.68MHz | -   | -       | 1.4 | 2.0     |
|                     | Output             | 1166.22-1186.68MHz | -   | -       | 1.5 | 2.0     |
| Attenuation         | 10-824 MHz         | dB                 | 44  | 47      | -   |         |
|                     | 824-960 MHz        | dB                 | 41  | 44      | -   |         |
|                     | 1427-1463 MHz      | dB                 | 37  | 40      | -   |         |
|                     | 1710-1785 MHz      | dB                 | 40  | 43      | -   |         |
|                     | 1850-2025 MHz      | dB                 | 36  | 39      | -   |         |
|                     | 2300-2690 MHz      | dB                 | 30  | 33      | -   |         |
|                     | 2400-2483 MHz      | dB                 | 31  | 34      | -   |         |
|                     | 3400-3800 MHz      | dB                 | 26  | 29      | -   |         |
|                     | 4400-4900 MHz      | dB                 | 22  | 25      | -   |         |
|                     | 5150-5925 MHz      | dB                 | 21  | 24      | -   |         |

## Filter2

| Item                   |                     | Unit                | Min        | Typ     | Max | Remarks     |  |
|------------------------|---------------------|---------------------|------------|---------|-----|-------------|--|
| Center frequency       |                     | MHz                 |            | 1582.47 |     |             |  |
| Insertion Loss (*1)    | 1574.39-1576.45 MHz | dB                  | -          | 1.9     | 2.3 |             |  |
|                        | 1559.05-1563.15 MHz | dB                  | -          | 2.5     | 2.9 |             |  |
|                        | 1597.55-1605.89 MHz | dB                  | -          | 2.3     | 2.7 |             |  |
| Amplitude Ripple       | 1574.39-1576.45 MHz | dB                  | -          | 0.1     | 0.5 |             |  |
|                        | 1559.05-1563.15 MHz | dB                  | -          | 0.5     | 1.0 |             |  |
|                        | 1597.55-1605.89 MHz | dB                  | -          | 0.5     | 1.0 |             |  |
| VSWR                   | Input               | 1574.39-1576.45 MHz | -          | -       | 1.7 | 2.0         |  |
|                        |                     | 1559.05-1563.15 MHz | -          | -       | 1.4 | 1.7         |  |
|                        |                     | 1597.55-1605.89 MHz | -          | -       | 1.6 | 1.9         |  |
|                        | Output              | 1574.39-1576.45 MHz | -          | -       | 1.9 | 2.2         |  |
|                        |                     | 1559.05-1563.15 MHz | -          | -       | 1.6 | 1.9         |  |
|                        |                     | 1597.55-1605.89 MHz | -          | -       | 1.7 | 2.0         |  |
| Attenuation            | 10-824 MHz          | dB                  | 38         | 41      | -   |             |  |
|                        | 824-960 MHz         | dB                  | 35         | 38      | -   |             |  |
|                        | 1427-1463 MHz       | dB                  | 36         | 39      | -   |             |  |
|                        | 1710-1785 MHz       | dB                  | 37         | 40      | -   |             |  |
|                        | 1850-2025 MHz       | dB                  | 37         | 40      | -   |             |  |
|                        | 2300-2690 MHz       | dB                  | 40         | 43      | -   |             |  |
|                        | 2400-2483 MHz       | dB                  | 46         | 49      | -   |             |  |
|                        | 3400-3800 MHz       | dB                  | 37         | 40      | -   |             |  |
|                        | 4400-4900 MHz       | dB                  | 32         | 35      | -   |             |  |
|                        | 5150-5925 MHz       | dB                  | 32         | 35      | -   |             |  |
| Item                   |                     | Unit                | Min        | Typ     | Max | Remarks     |  |
| Terminating Impedance  | Filter1 Output port | $\Omega$            | 50//9.1nH  |         |     |             |  |
|                        | Filter2 Output port | $\Omega$            | 50         |         |     |             |  |
|                        | Common Input port   | $\Omega$            | 50//4.3 nH |         |     |             |  |
| DC Impedance to ground |                     | M $\Omega$          | 100        |         |     | Device only |  |

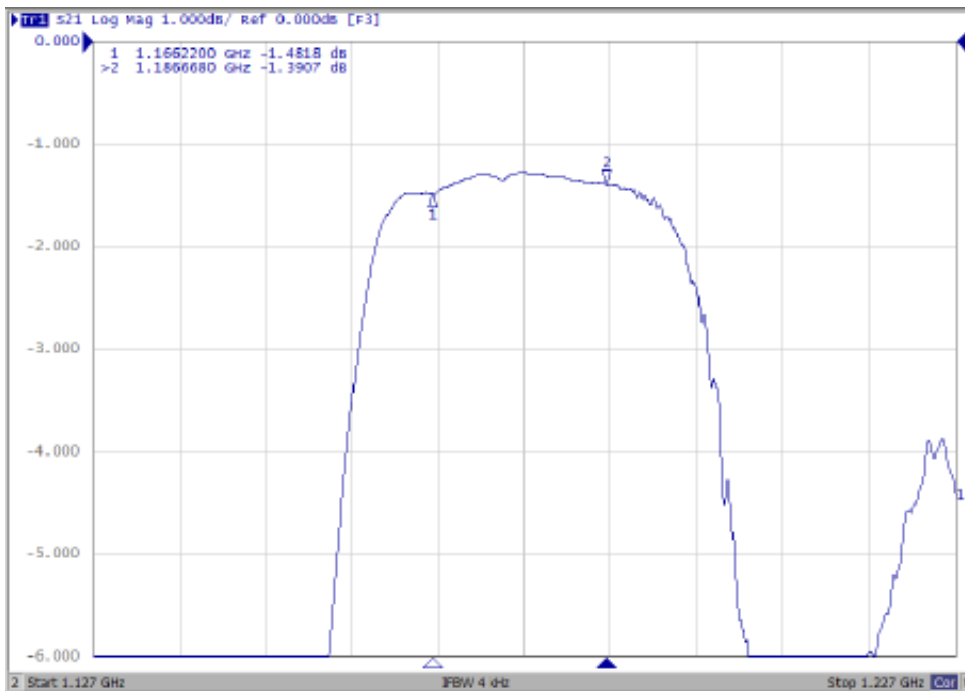
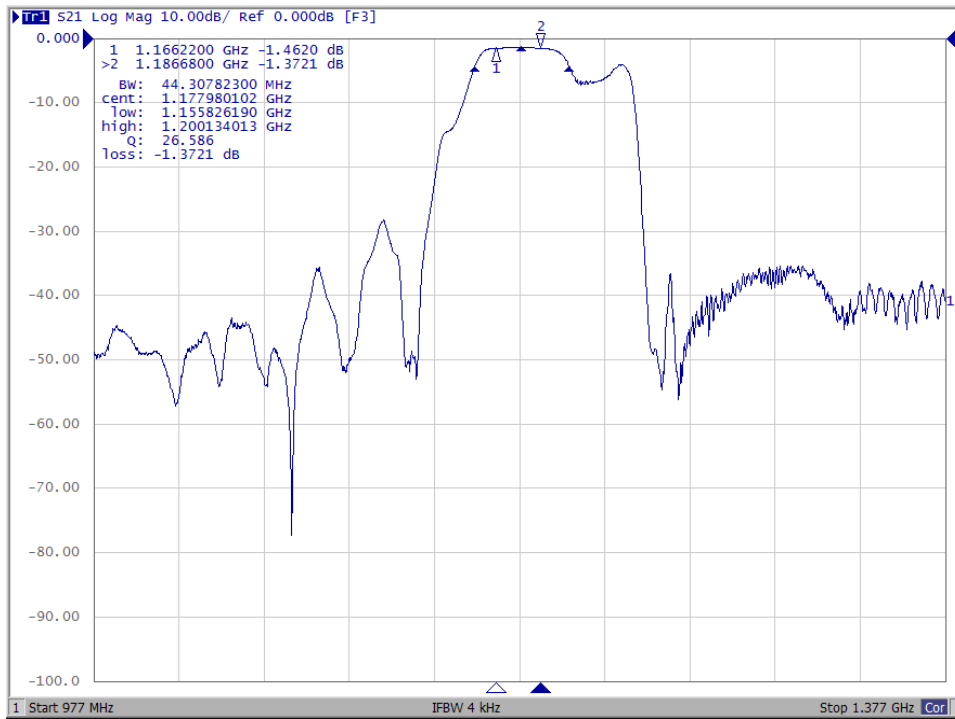
(\*1)Specification of insertion loss includes loss that comes from the test board.

**C. Real Circuit:**

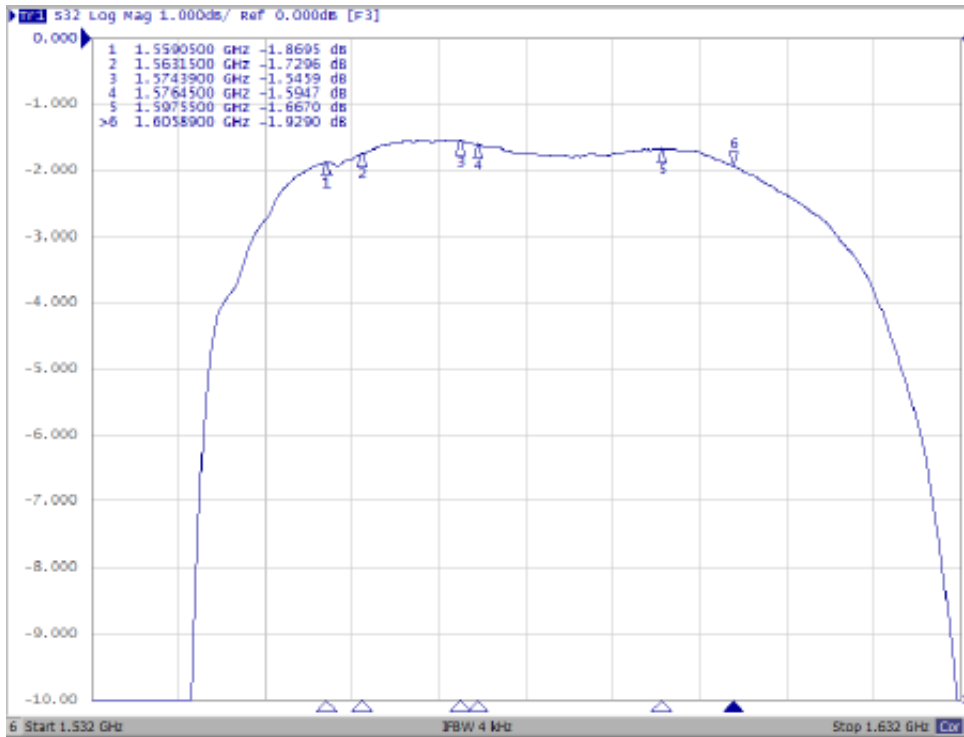
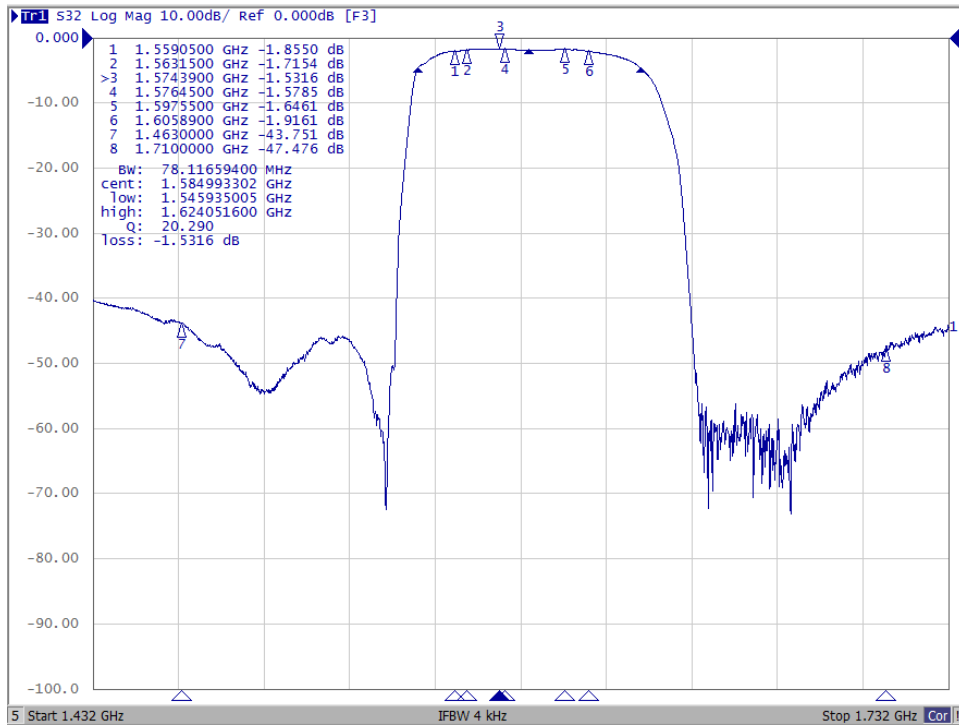


## Performance Plots:

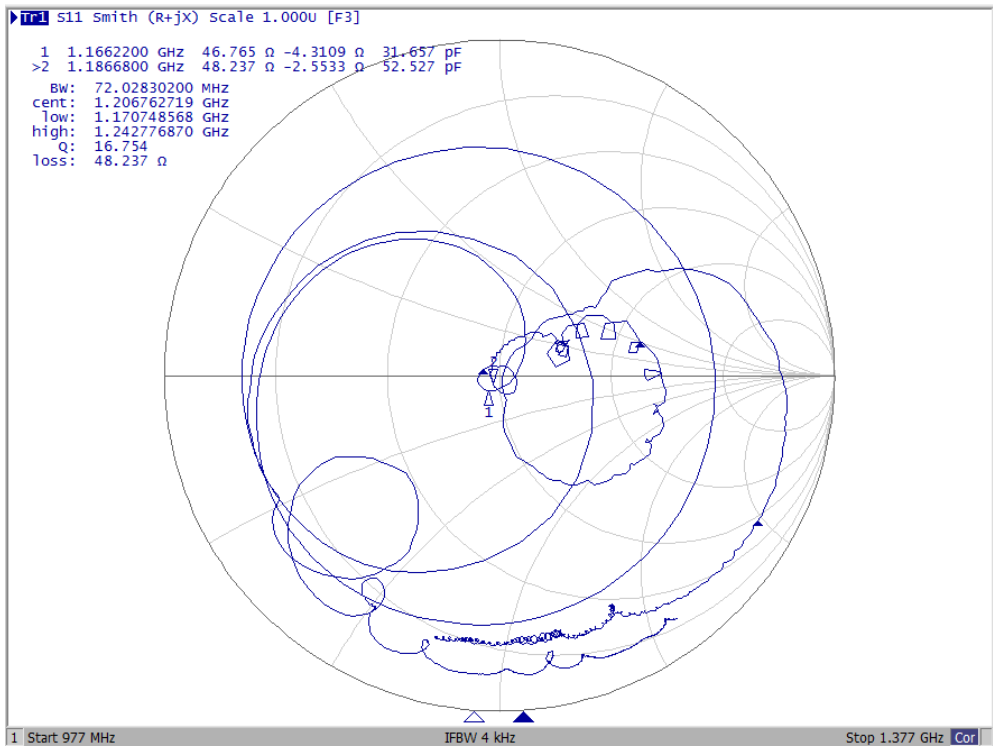
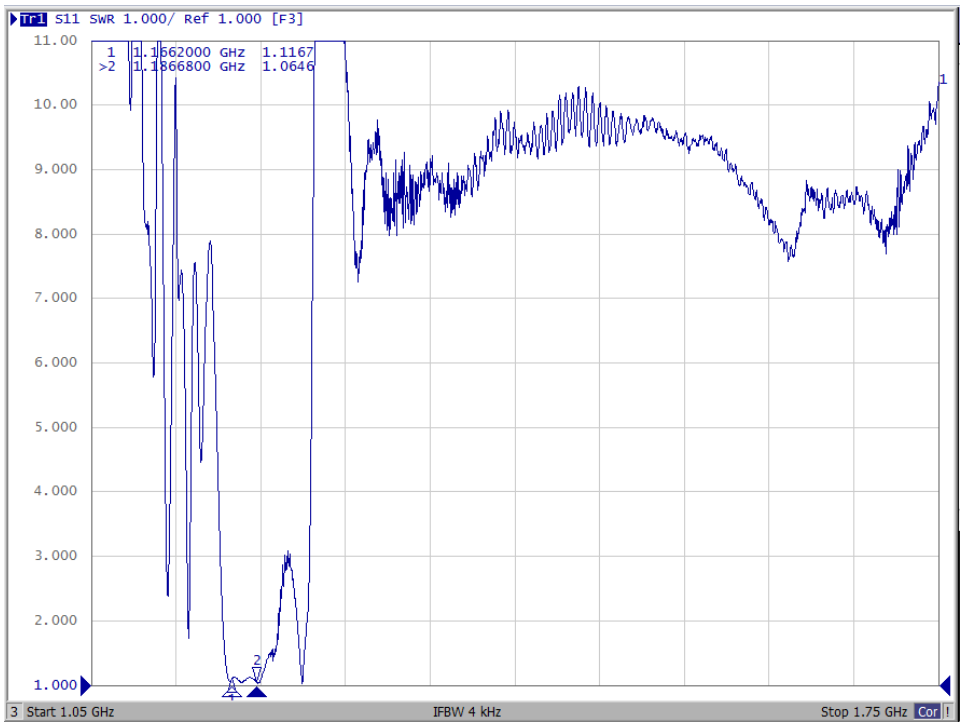
### L5- Passband



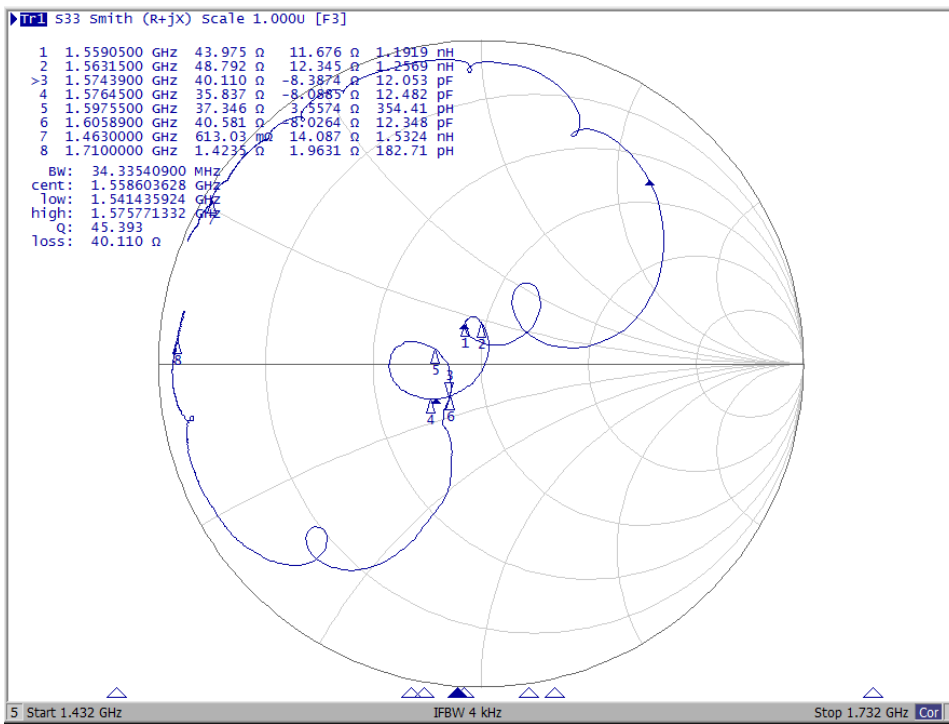
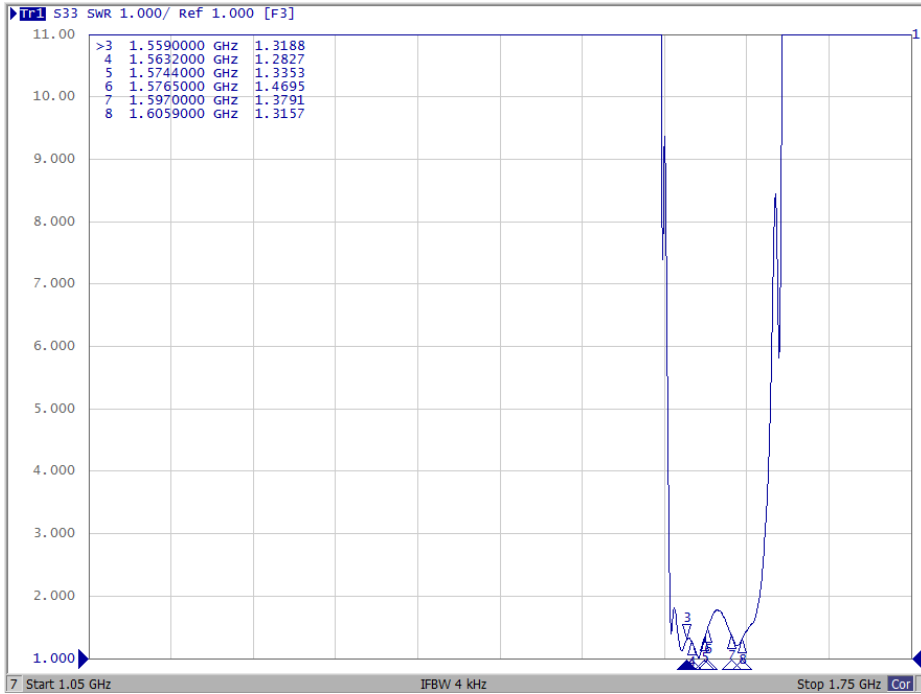
# L1- Passband



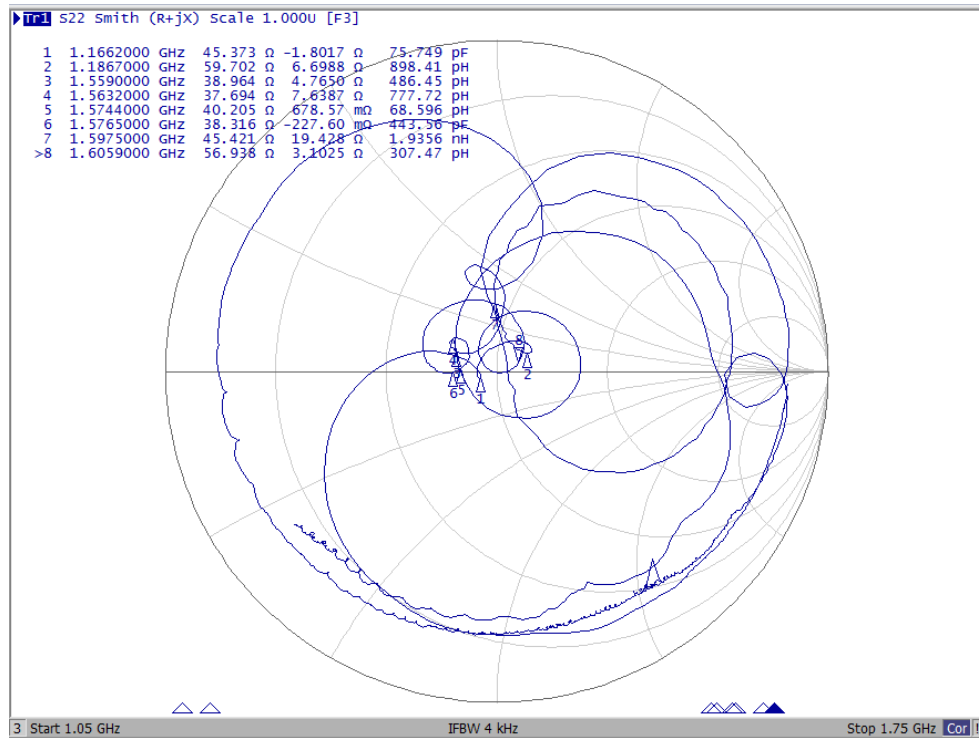
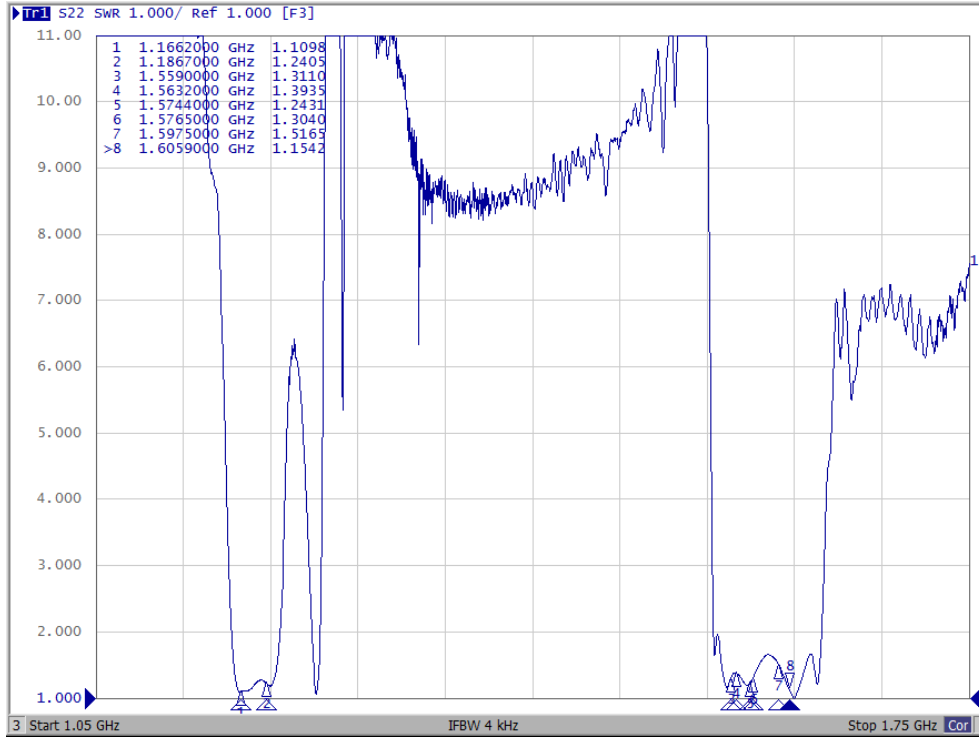
# L5- Output Port



# L1- Output Port

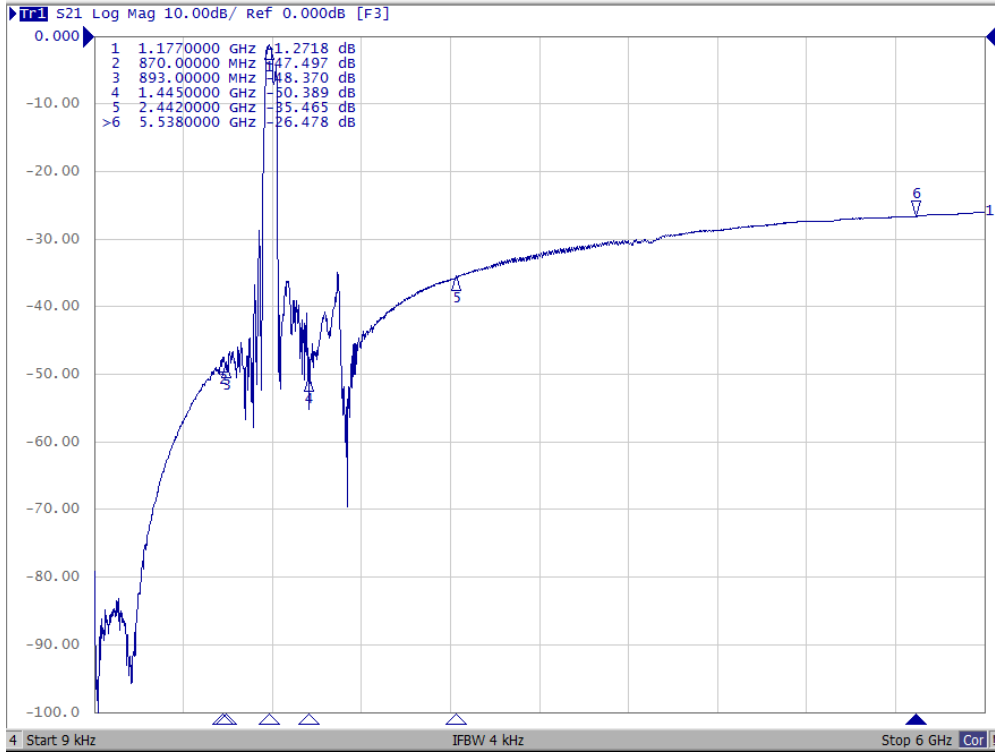


# Input Port

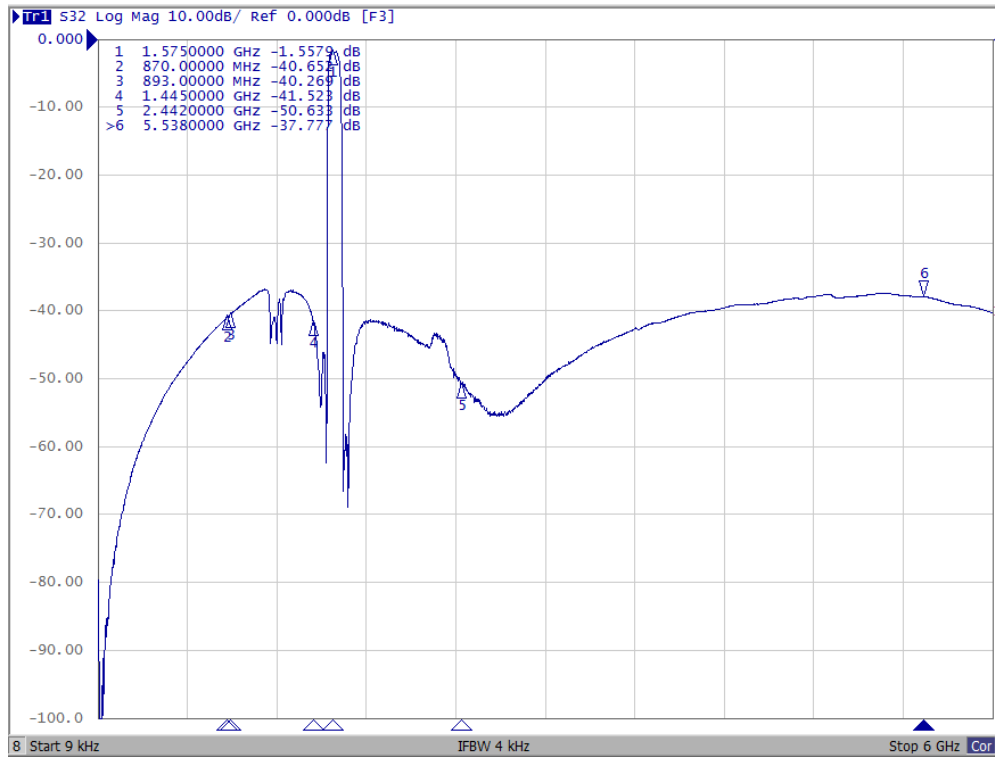




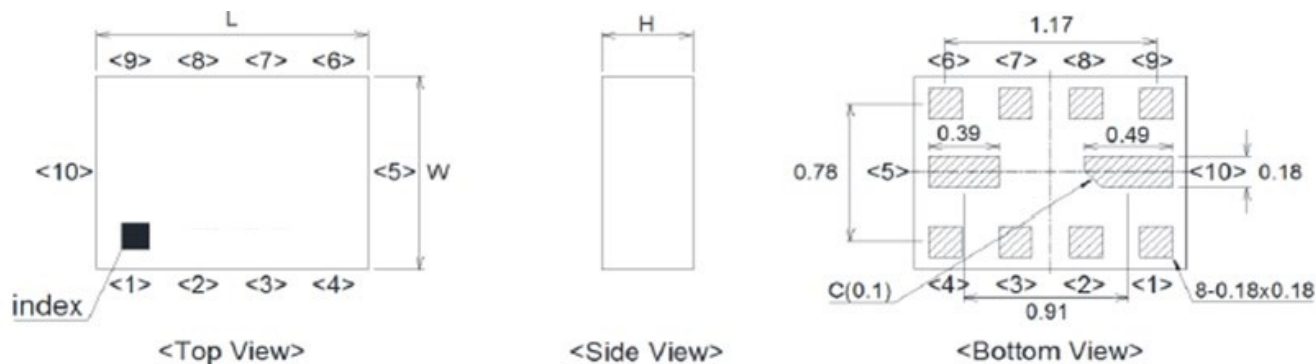
## L5- Wide Span



## L1- Wide Span



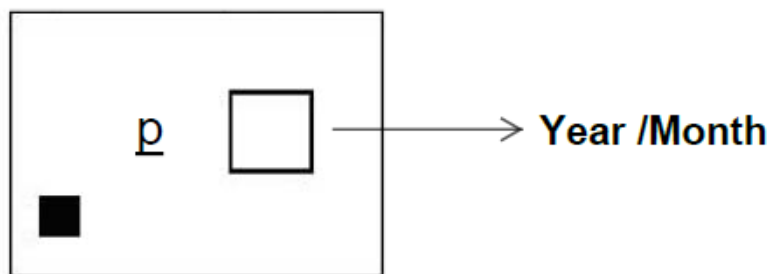
# Package Drawing and Pin Description



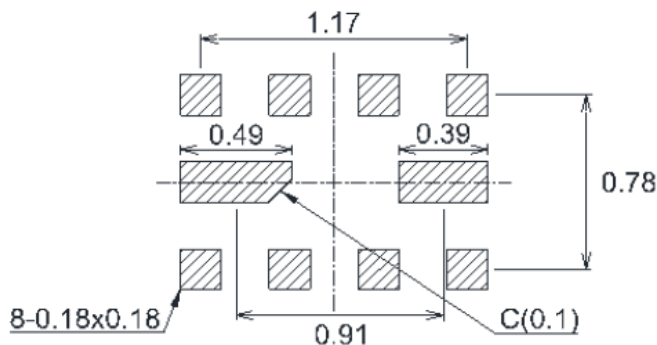
L = 1.5 +/- 0.1 mm  
 W = 1.1 +/- 0.1 mm  
 H = 0.44 mm Max

Unit : mm  
 1 to 10 : Pin No.

## Marking



## PCB Mounting Pattern



Unit : mm

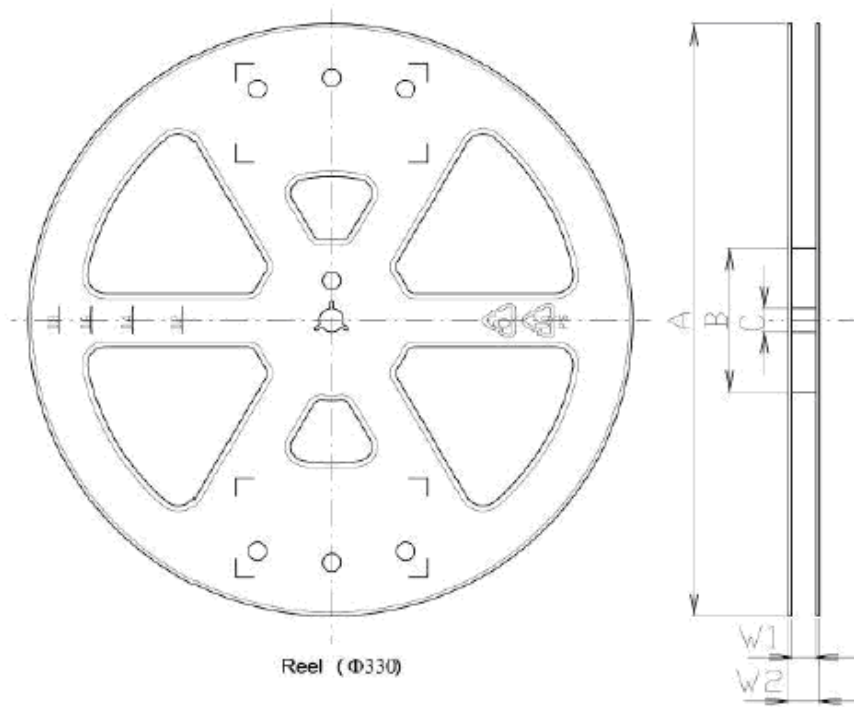
| Pin No. | Symbol | Function       |
|---------|--------|----------------|
| 1       | IN     | Common Input   |
| 2       | GND    | Ground         |
| 3       | GND    | Ground         |
| 4       | GND    | Ground         |
| 5       | GND    | Ground         |
| 6       | L1 OUT | Filter2 Output |
| 7       | GND    | Ground         |
| 8       | GND    | Ground         |
| 9       | L5 OUT | Filter1 Output |
| 10      | GND    | Ground         |

### Notes:

- All units are in mm unless otherwise stated
- General Tolerance
  - Linear: X.XXX = ±0.050mm
  - X.XX = ±0.10mm
- Terminations
  - Au: 0.10 um min.
  - Pd: 0.10 um min.
  - Ni: 2-5 um
- Pin 1 indicated by 0.100 mm Chamfer

# Reel Dimension

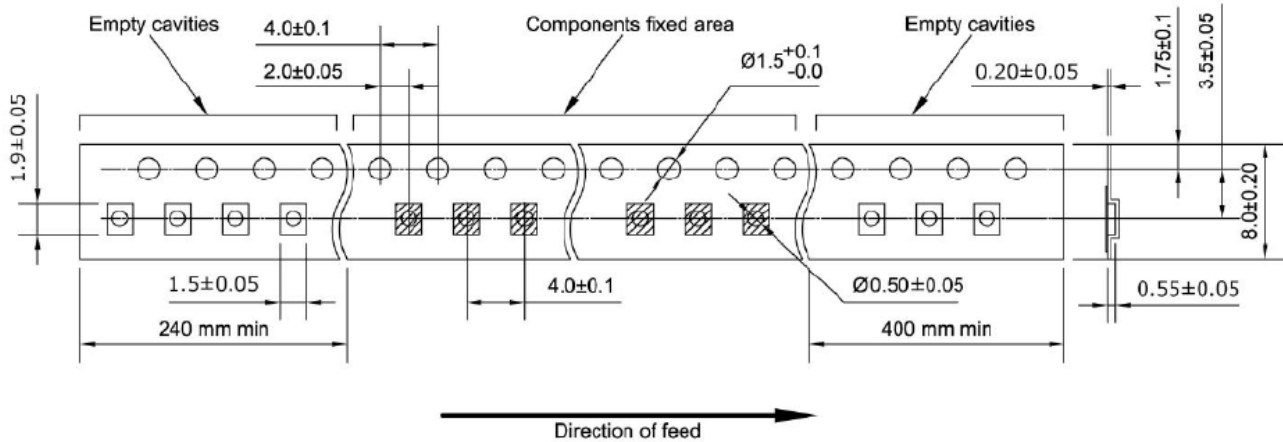
Reel Count: 7" = 3000



| Order    | Code | Quantity (pcs./reel) | A    | B    | C       | W1         | W2       | Tape Pitch |
|----------|------|----------------------|------|------|---------|------------|----------|------------|
| Standard | Y    | 15,000               | φ330 | φ100 | φ13±0.2 | 9.4±1.0    | 13.4±1.0 | 4.0±0.1    |
| Option   | J    | 5,000                | φ180 | φ60  | φ13±0.2 | 9+1.0/-0.0 | 11.4±1.0 | 4.0±0.1    |

Unit:mm

## Dimensions of Tape (Standard)



**RECOMMENDED REFLOW PROFILE :**

- 1. Preheating shall be fixed at 150~180°C for 60~90 seconds.
- 2. Ascending time to preheating temperature 150°C shall be 30 seconds min.
- 3. Heating shall be fixed at 220°C for 50~80 seconds and at 260°C+0/-5°C peak (20~40sec).
- 4. Time: 2 times.

