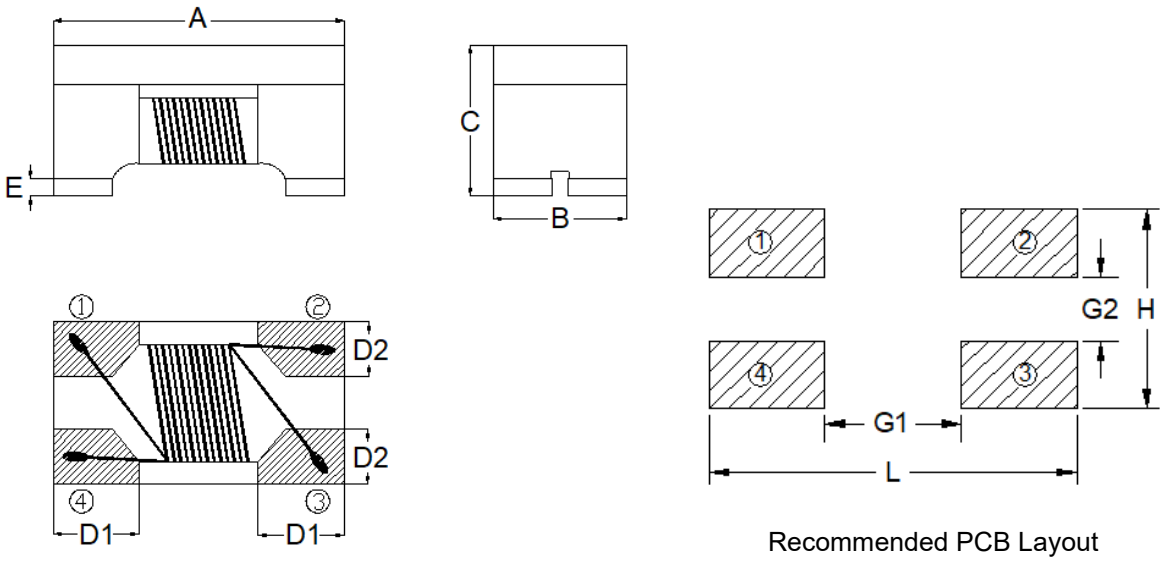
## 1. Part No. Expression

**W 4 F 3 0 0 - R D - 1 0**

(a) (b) (c) (d) (e) (f) (g)

(a) Series Code
(b) Dimension Code
(c) Material Code
(d) Impedance Code
(e) Packaging Code
(f) Current Code
(g Internal Code

## 2. Configuration & Dimensions (Unit: mm)

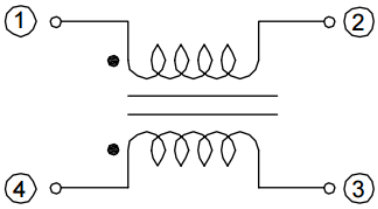



Recommended PCB Layout

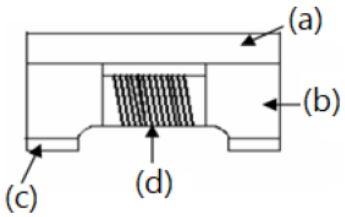
Note: The above PCB layout reference only.

| A | B | C | D1 | D2 |
|---|---|---|---|---|
| 3.20±0.20 | 1.60±0.20 | 2.00±0.20 | 0.50±0.10 | 0.50±0.10 |
| E | L | G1 | G2 | H |
| 0.15±0.10 | 3.70 Ref | 1.90 Ref | 0.40 Ref | 1.60 Ref |

## 3. Schematic




## 4. Material List




(a) Upper Plate
(b) Core
(c) Termination
(d) Wire

## 5. General Specifications

(a) Operating Temp.: -40°C to +125°C (including self-temperature rise)
(b) Storage Temp.: -40°C to +125°C (On board)
(c) Irms: Based on temperature rise ΔT 20°C Max at rated current < 1A and ΔT 40°C Max at rated current ≥ 1A
(d) Storage Condition (Component in its packaging)
  i) Temperature: Less than 40°C
  ii) Humidity: Less than 60% RH

NOTE: Specifications subject to change without notice. Please check our website for latest information.

## 6. Electrical Characteristics

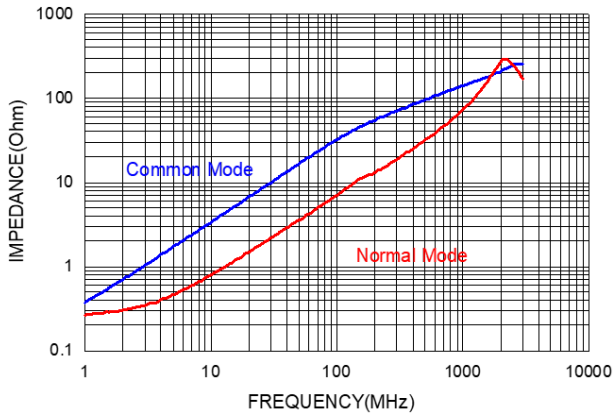
| Part Number | Impedance (Ω) ±25% | Test Frequency (MHz) | DCR (Ω) Max | Rated Current (mA) Max | Rated Voltage (Vdc) Max | Withstand Voltage (Vdc) Max | IR (MΩ) Min |
|---|---|---|---|---|---|---|---|
| W4F300-RD-10 | 30 | 100 | 0.20 | 400 | 50 | 125 | 10 |
| W4F670-RD-10 | 67 | 100 | 0.30 | 400 | 50 | 125 | 10 |
| W4F800-RD-10 | 80 | 100 | 0.30 | 400 | 50 | 125 | 10 |
| W4F900-RD-10 | 90 | 100 | 0.30 | 400 | 50 | 125 | 10 |
| W4F121-RD-10 | 120 | 100 | 0.30 | 350 | 50 | 125 | 10 |
| W4F161-RD-10 | 160 | 100 | 0.40 | 350 | 50 | 125 | 10 |
| W4F181-RD-10 | 180 | 100 | 0.40 | 340 | 50 | 125 | 10 |
| W4F221-RC-10 | 220 | 100 | 0.45 | 300 | 50 | 125 | 10 |
| W4F261-RC-10 | 260 | 100 | 0.50 | 300 | 50 | 125 | 10 |
| W4F281-RC-10 | 280 | 100 | 0.50 | 300 | 50 | 125 | 10 |
| W4F301-RC-10 | 300 | 100 | 0.60 | 300 | 50 | 125 | 10 |
| W4F361-RC-10 | 360 | 100 | 0.60 | 300 | 50 | 125 | 10 |
| W4F431-RC-10 | 430 | 100 | 0.80 | 300 | 50 | 125 | 10 |
| W4F471-RC-10 | 470 | 100 | 0.80 | 300 | 50 | 125 | 10 |
| W4F551-RC-10 | 550 | 100 | 0.80 | 300 | 50 | 125 | 10 |
| W4F601-RC-10 | 600 | 100 | 0.80 | 300 | 50 | 125 | 10 |
| W4F102-RB-10 | 1000 | 100 | 1.00 | 200 | 50 | 125 | 10 |
| W4F222-RB-10 | 2200 | 100 | 1.20 | 200 | 50 | 125 | 10 |

NOTE: Specifications subject to change without notice. Please check our website for latest information.

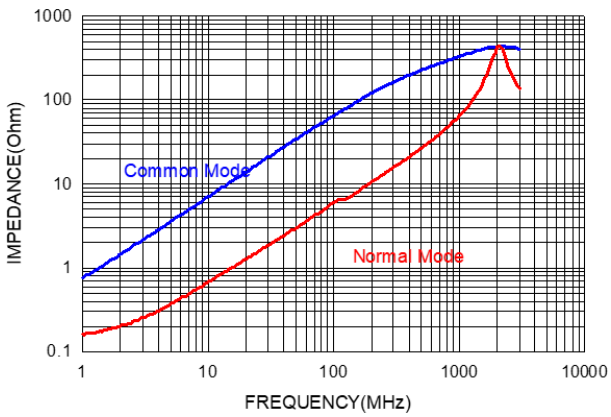
## 7. Characteristics Curve

### 7-1. Impedance versus Frequency

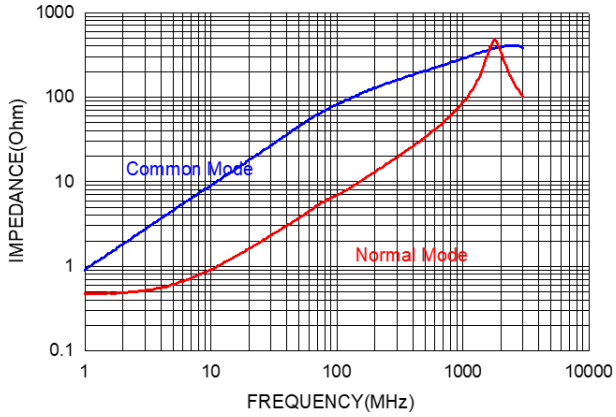
W4F300-RD-10



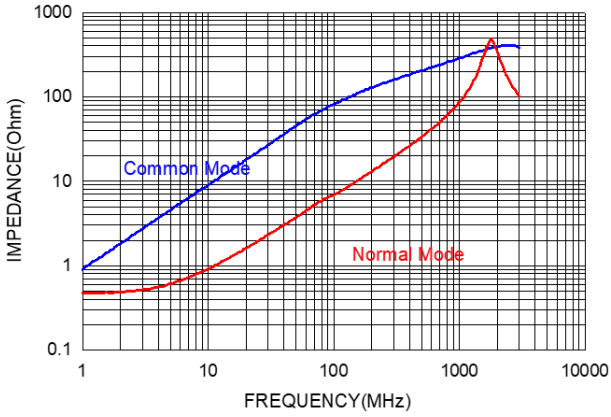

W4F670-RD-10



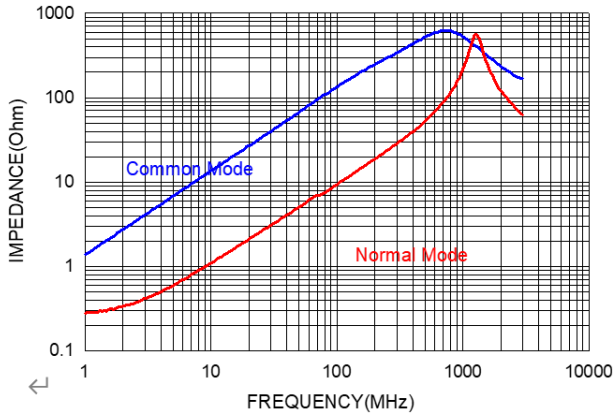

W4F800-RD-10



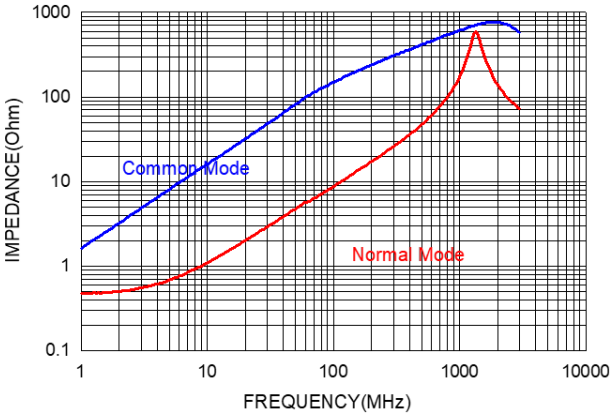

W4F900-RD-10




W4F121-RD-10

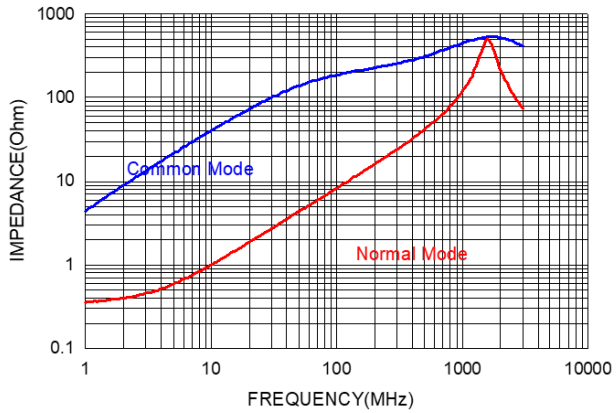



W4F161-RD-10

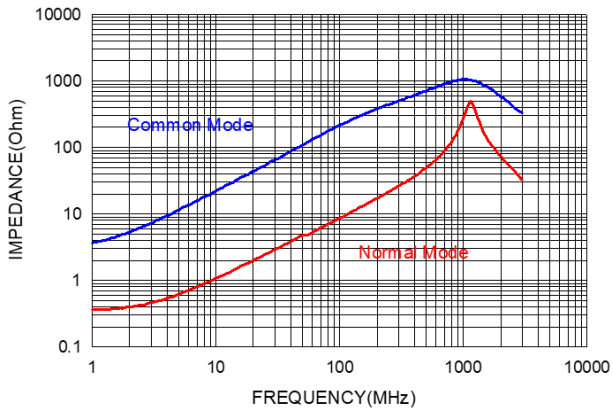



NOTE: Specifications subject to change without notice. Please check our website for latest information.

W4F181-RD-10




W4F221-RC-10

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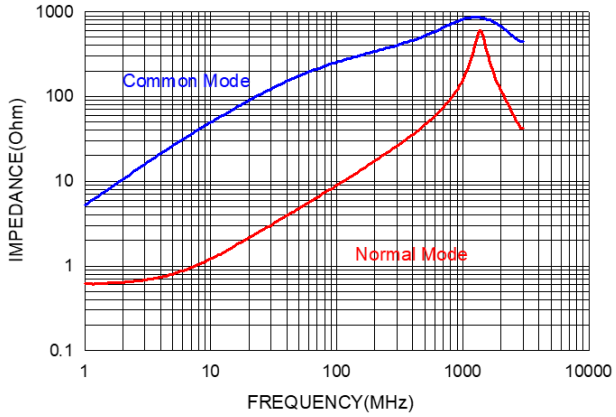
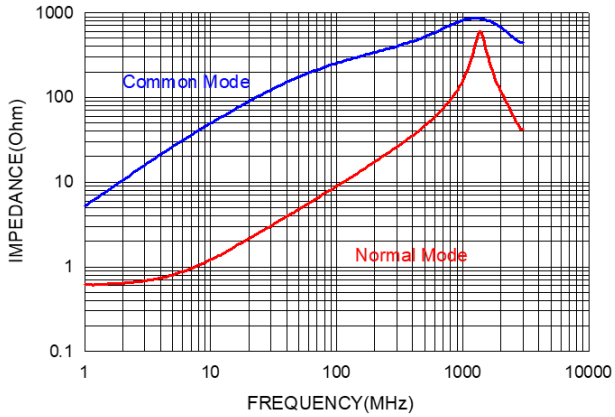
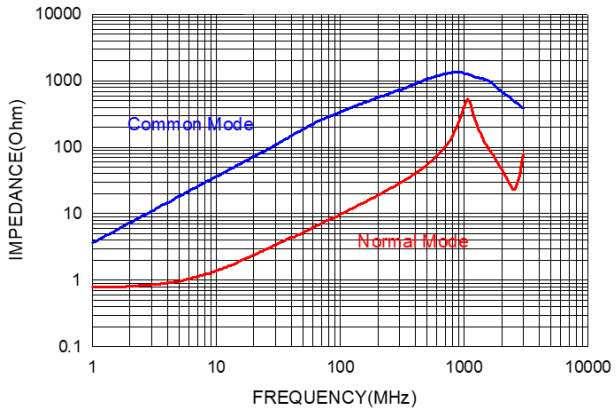


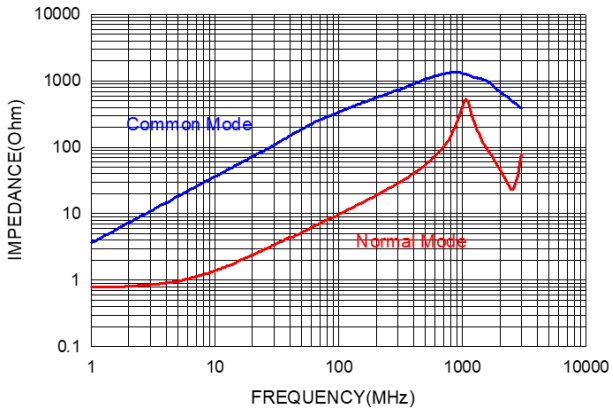

W4F281-RC-10




W4F301-RC-10




W4F361-RC-10




NOTE: Specifications subject to change without notice. Please check our website for latest information.

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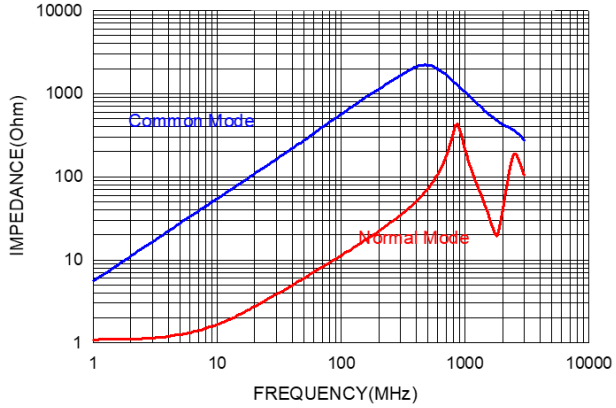


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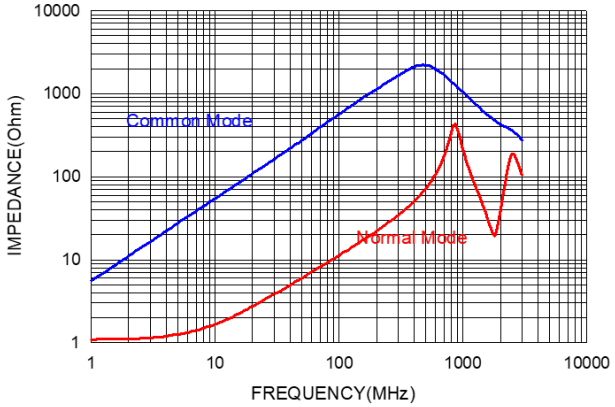
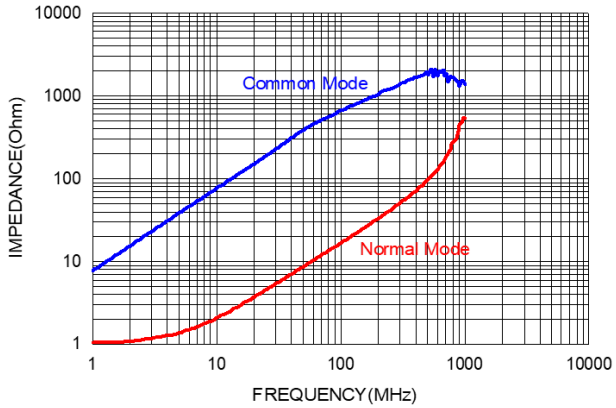
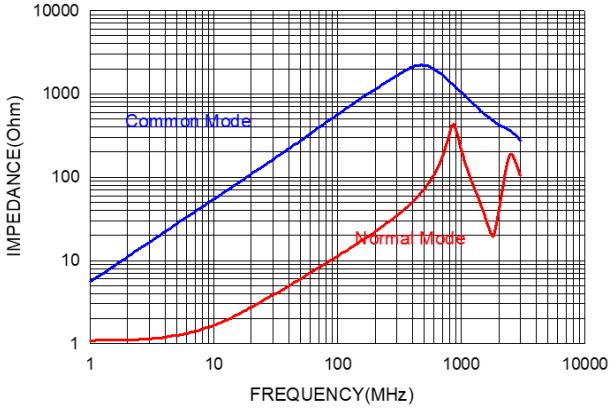


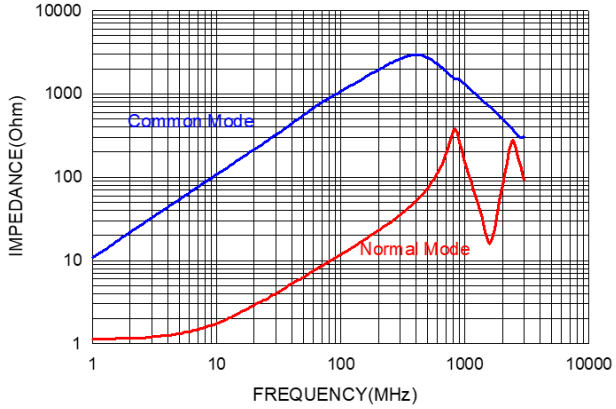

W4F551-RC-10



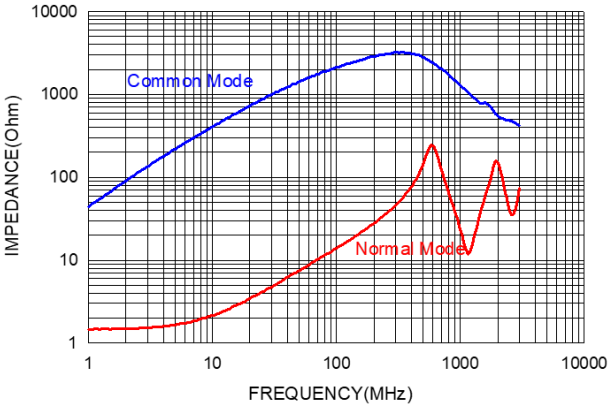

W4F601-RC-10




W4F102-RB-10



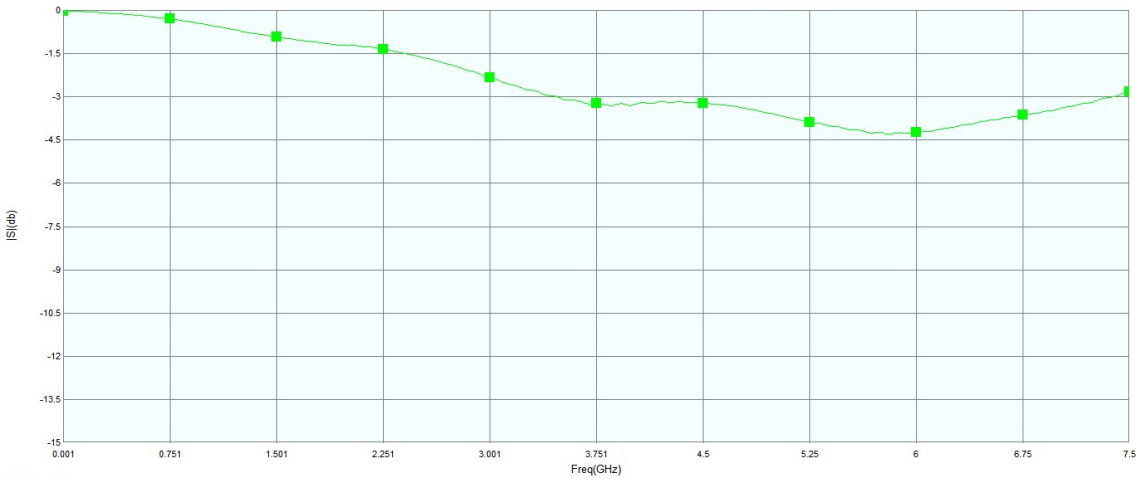

W4F222-RB-10



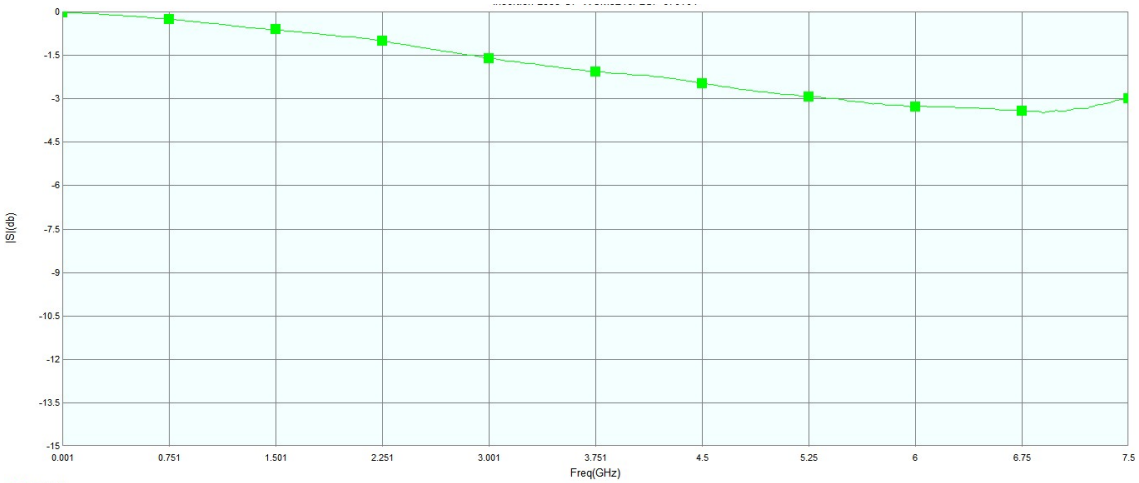

NOTE: Specifications subject to change without notice. Please check our website for latest information.

### 7-2. Insertion Loss Test

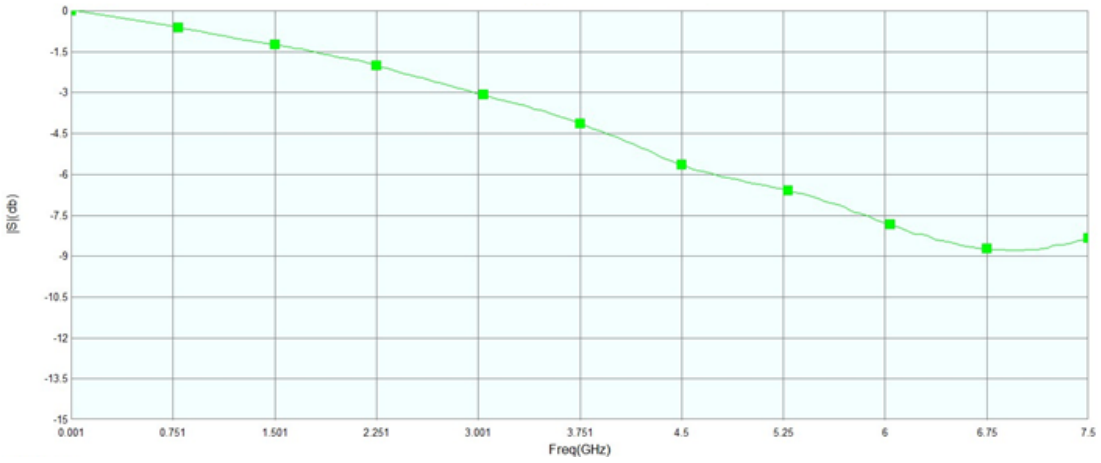
W4F300-RD-10




W4F670-RD-10

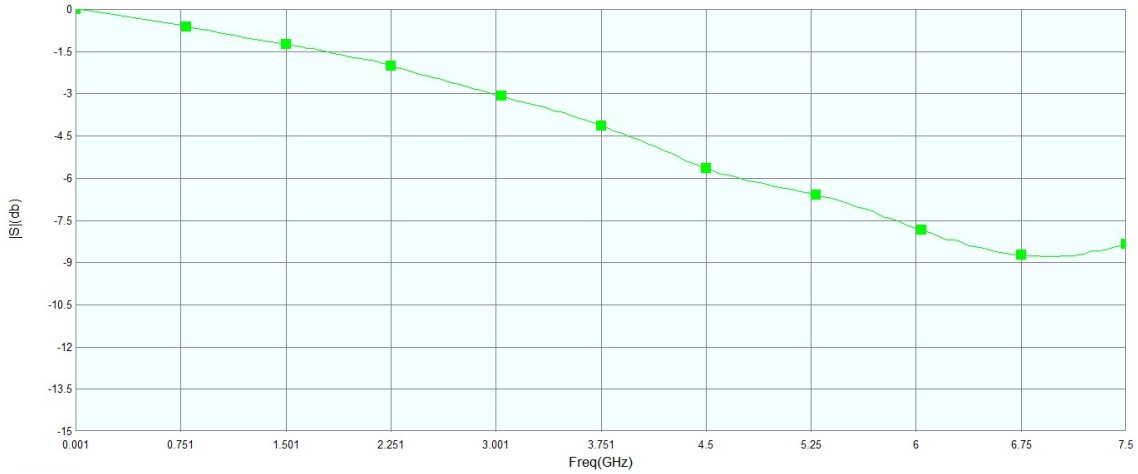



W4F800-RD-10

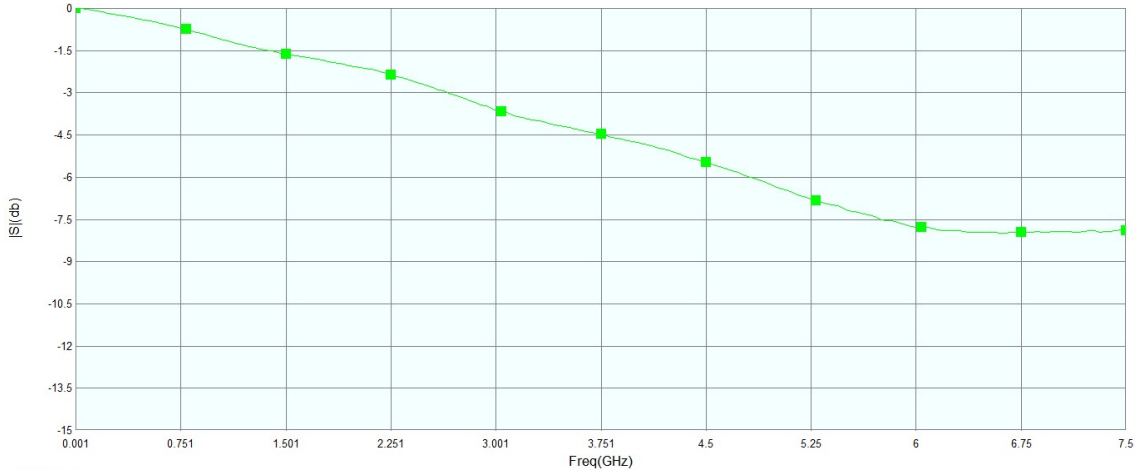



NOTE: Specifications subject to change without notice. Please check our website for latest information.

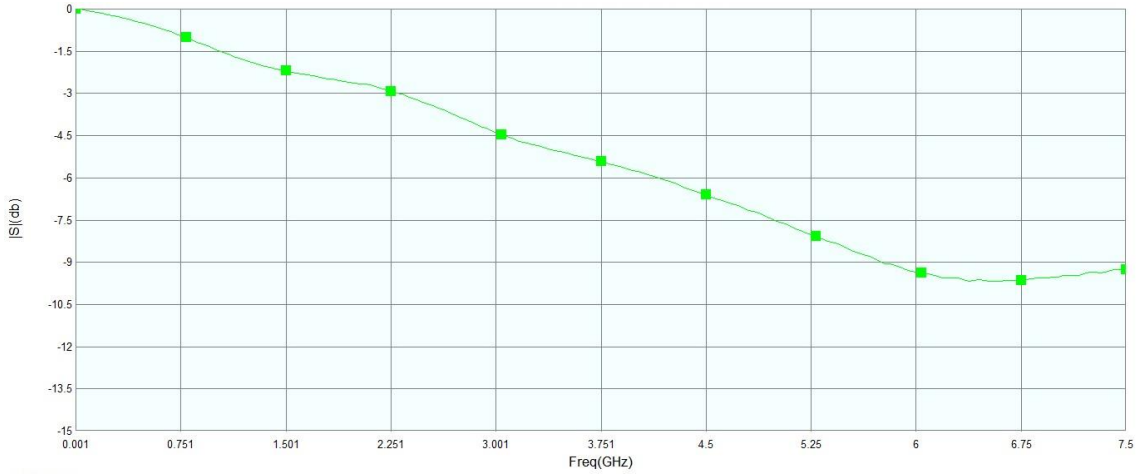
W4F900-RD-10




W4F121-RD-10

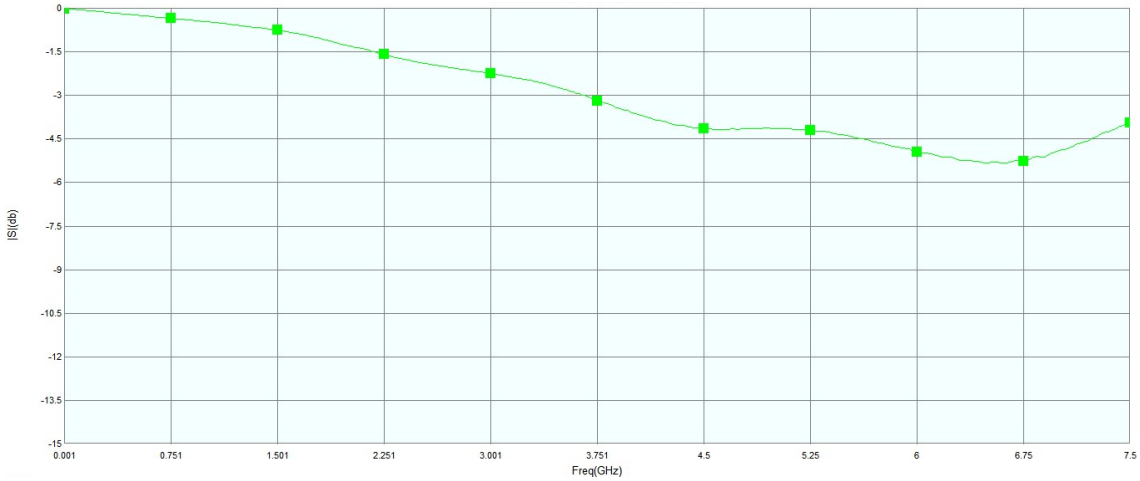



W4F161-RD-10




NOTE: Specifications subject to change without notice. Please check our website for latest information.

W4F181-RD-10

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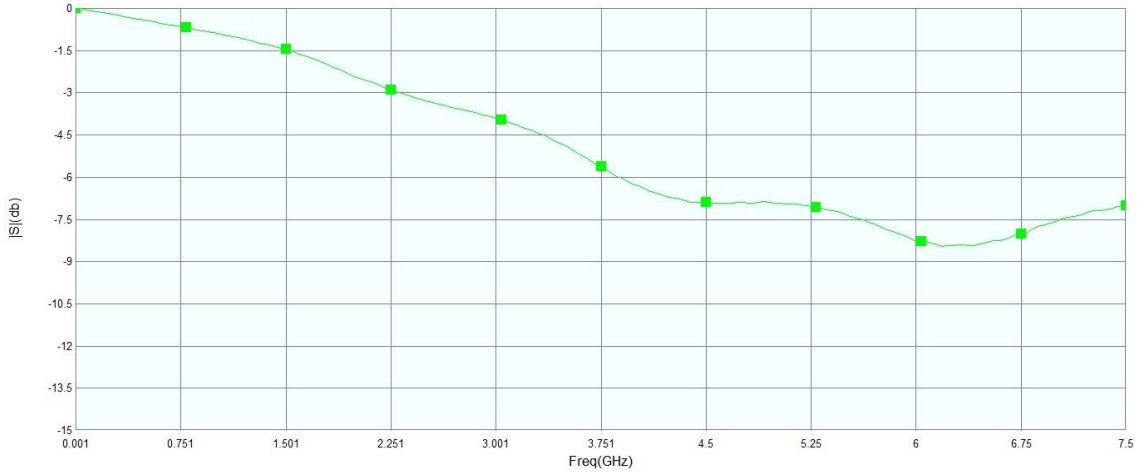


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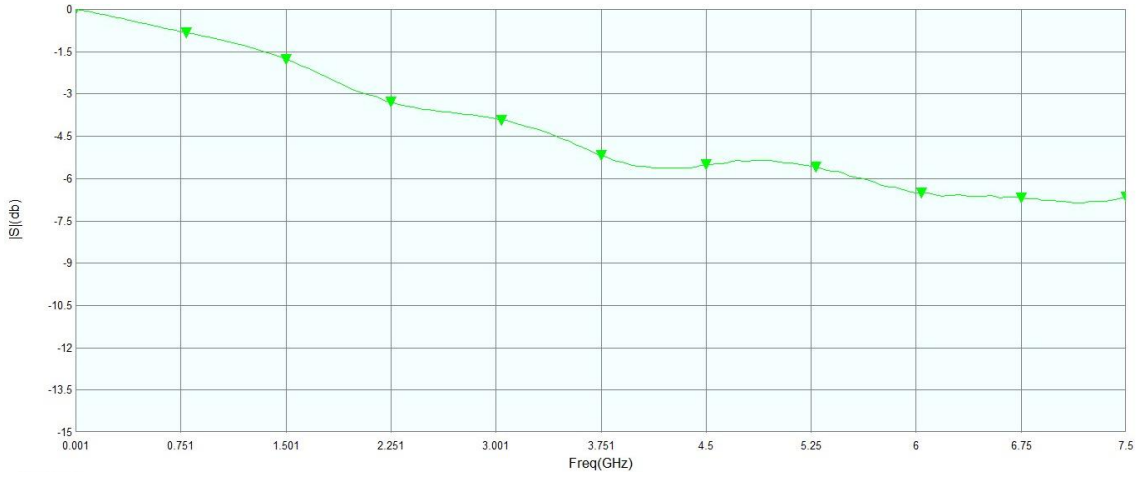
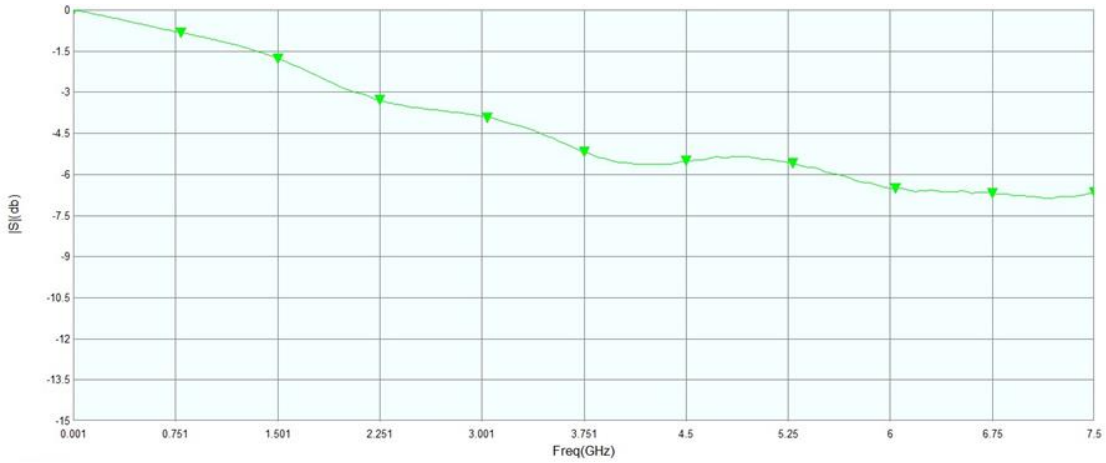
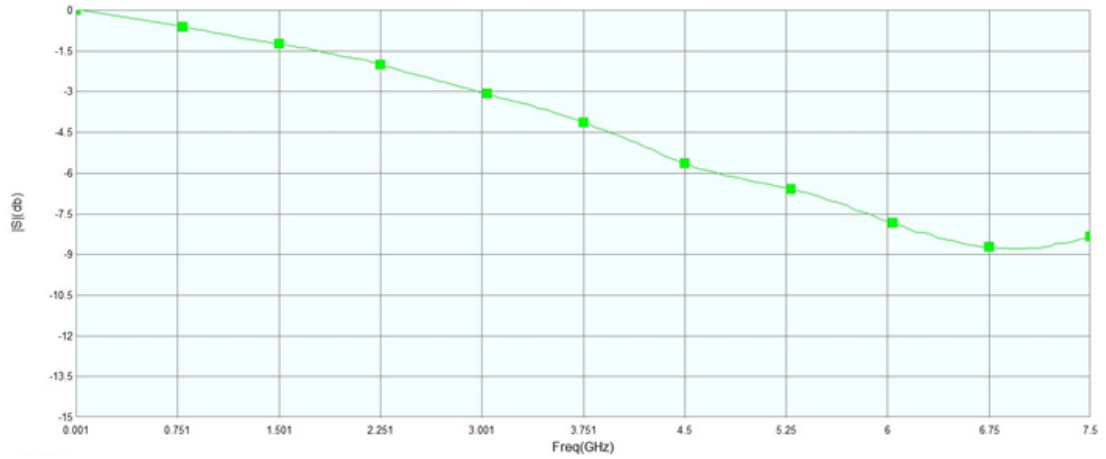



NOTE: Specifications subject to change without notice. Please check our website for latest information.

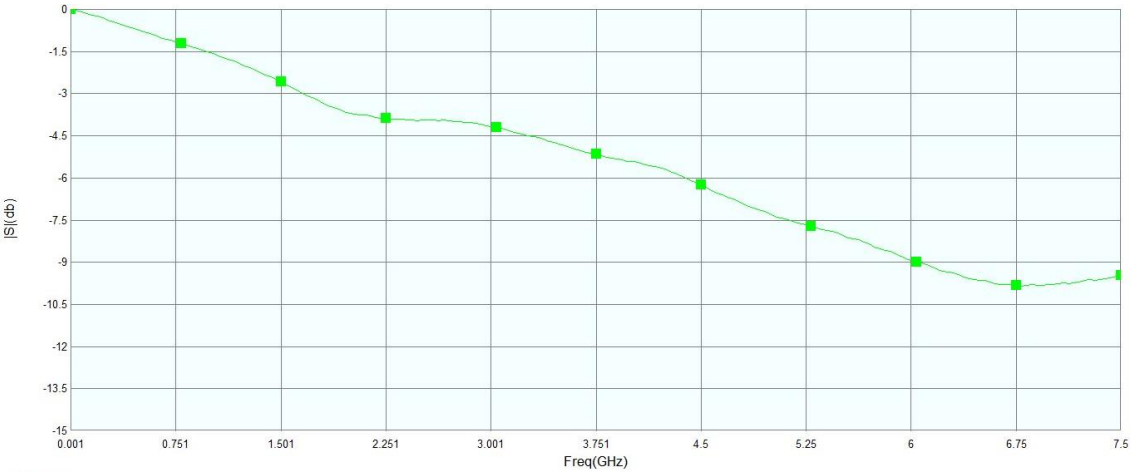
W4F281-RC-10




W4F301-RC-10

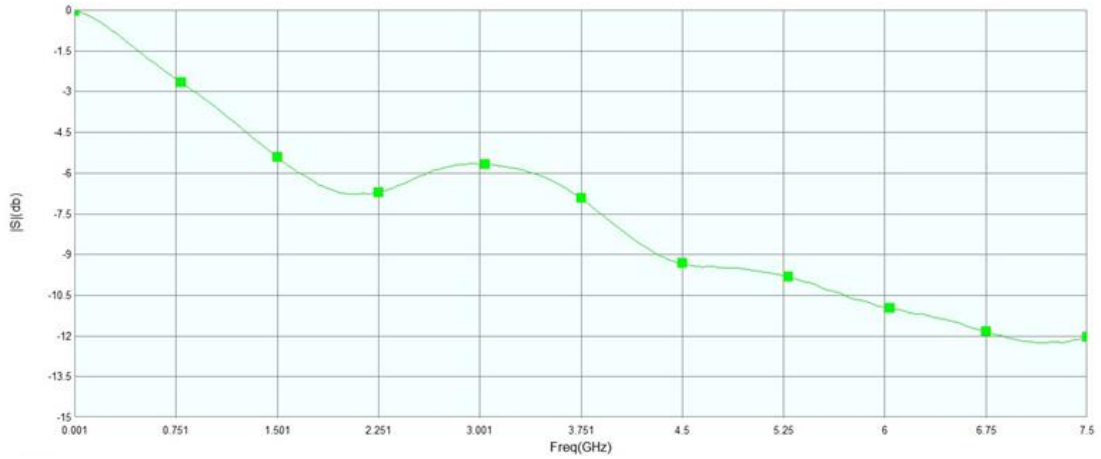



W4F361-RC-10

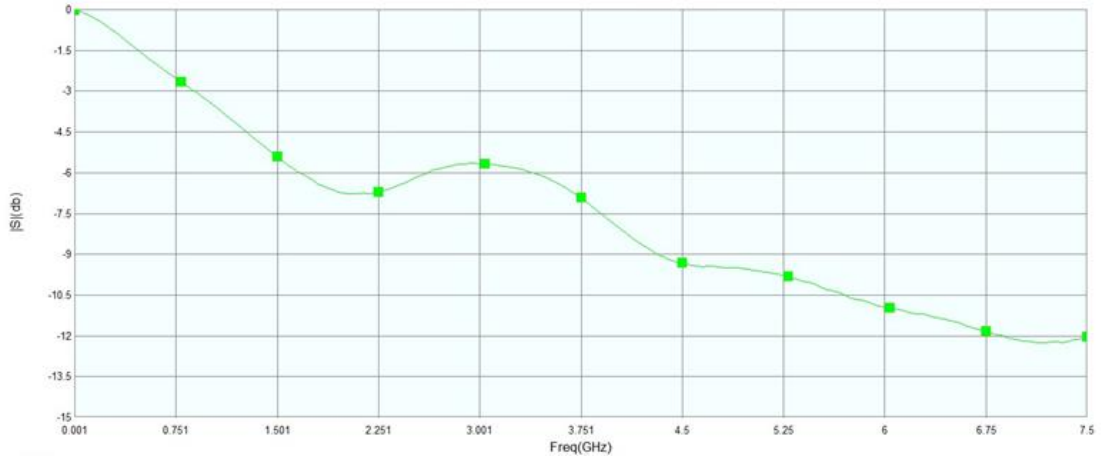



NOTE: Specifications subject to change without notice. Please check our website for latest information.

W4F431-RC-10




W4F471-RC-10

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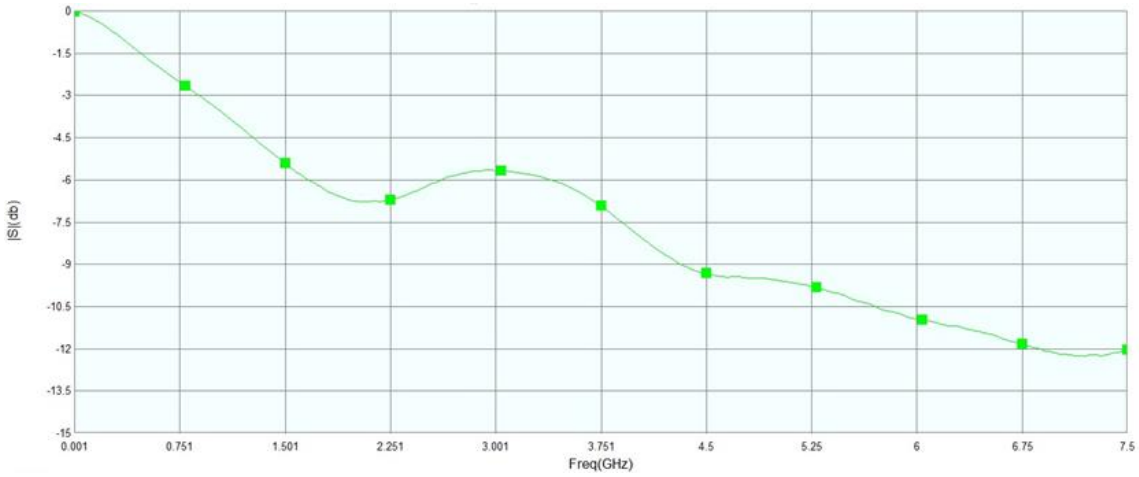
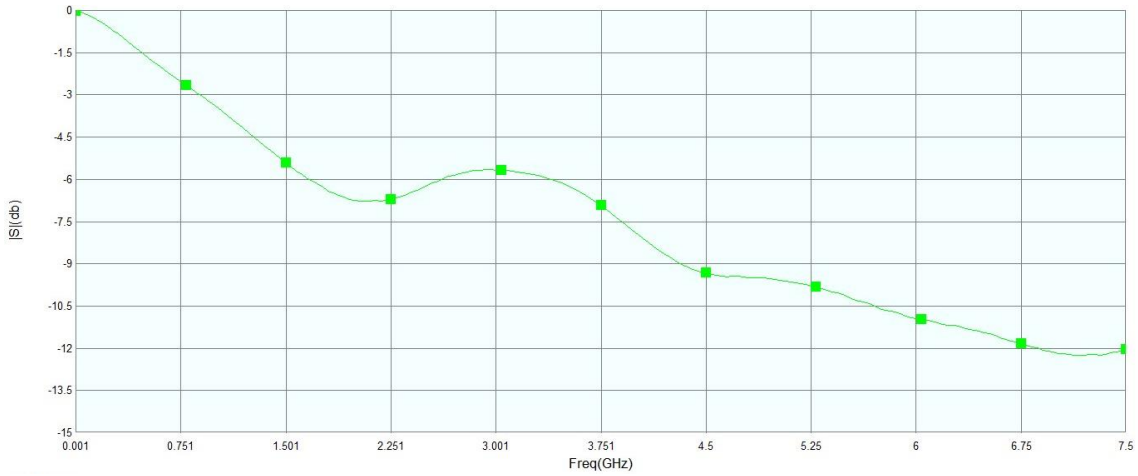



NOTE: Specifications subject to change without notice. Please check our website for latest information.

W4F601-RC-10

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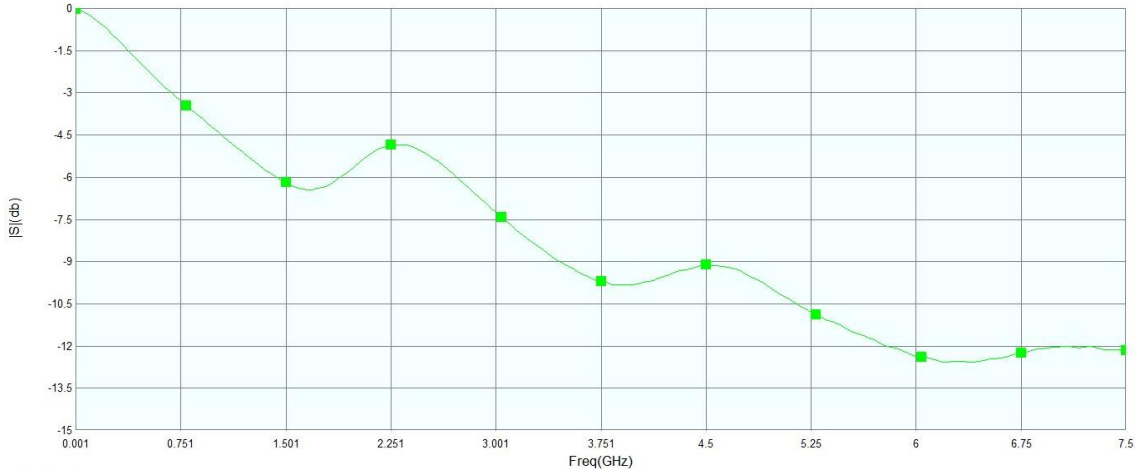
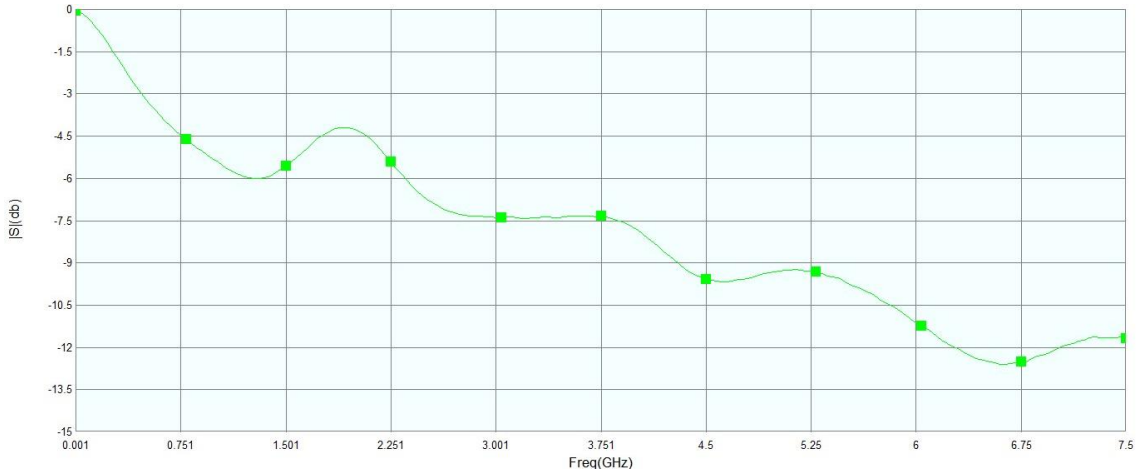



W4F222-RB-10




NOTE: Specifications subject to change without notice. Please check our website for latest information.

## 8. Soldering Specification

Mildly activated rosin fluxes are preferred. Our terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

### 8-1. IR Soldering Reflow

Recommended temperature profiles for lead free re-flow soldering in Figure 1, Table 1.1 & 1.2 (J-STD-020E).

### 8-2. Iron Reflow

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended (Figure 2).

Note:

(a) Preheat circuit and products to 150°C.

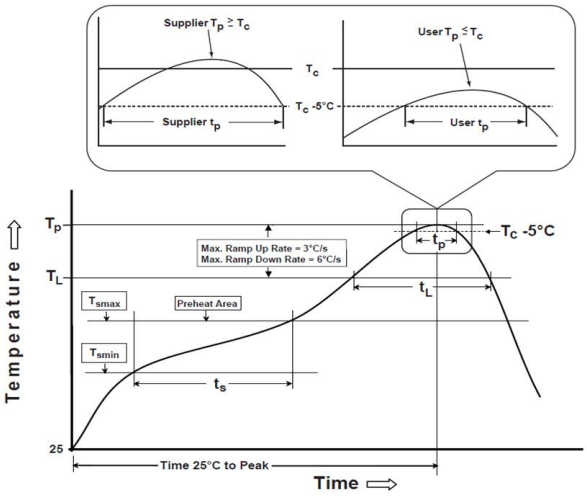
(b) 355°C tip temperature (Max.)

(c) Never contact the ceramic with the iron tip

(d) 1.0mm tip diameter (Max.)

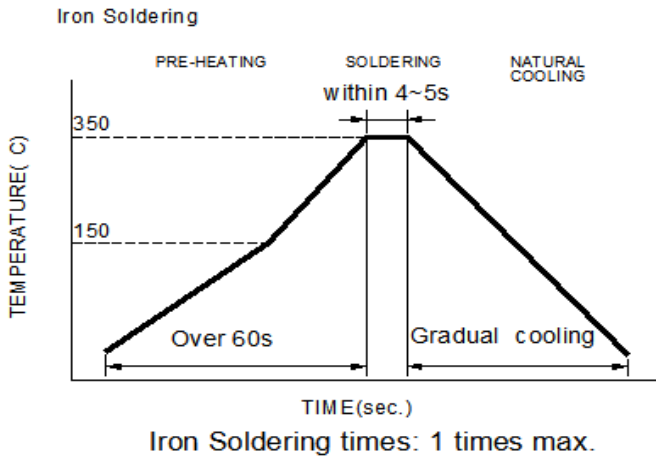
(e) Use a 20 watt soldering iron with tip diameter of 1.0mm

(f) Limit soldering time to 4~5 sec.




Reflow times: 3 times Max

Figure 1: IR Soldering Reflow




Soldering iron method: 350±5°C Max

Figure 2: Iron soldering temperature profiles

NOTE: Specifications subject to change without notice. Please check our website for latest information.

**Table (1.1) Reflow Profiles**

| Profile Type: | Pb-Free Assembly |
|---|---|
| Preheat<br>-Temperature Min ($T_{smin}$)<br>-Temperature Max ($T_{smax}$)<br>-Time ($t_s$) from ($T_{smin}$ to $T_{smax}$) | <br>150°C<br>200°C<br>60-120seconds |
| Ramp-up rate ($T_L$to $T_p$) | 3°C /second max. |
| Liquids temperature ($T_L$)<br>Time ($t_L$) maintained above $T_L$ | 217°C<br>60-150 seconds |
| Classification temperature ($T_c$) | See Table (1.2) |
| Time ($t_p$) at Tc- 5°C (Tp should be equal to or less than Tc.) | *< 30 seconds |
| Ramp-down rate ($T_p$ to $T_L$) | 6°C /second max. |
| Time 25°C to peak temperature | 8 minutes max. |

**Tp**: maximum peak package body temperature, **Tc**: the classification temperature.

For user (customer) **Tp** should be equal to or less than **Tc.**

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

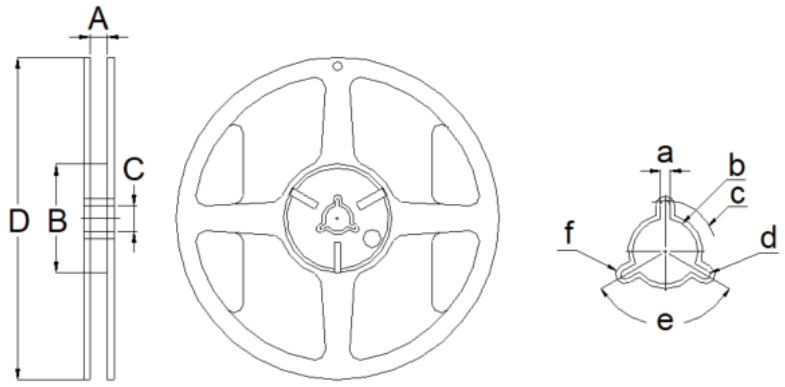
**Table (1.2) Package Thickness/Volume and Classification Temperature ($T_c$)**

| | Package Thickness | Volume $mm^3$ <350 | Volume $mm^3$ 350-2000 | Volume $mm^3$ >2000 |
|---|---|---|---|---|
| PB-Free Assembly | <1.6mm | 260°C | 260°C | 260°C |
| | 1.6-2.5mm | 260°C | 250°C | 245°C |
| | ≥2.5mm | 250°C | 245°C | 245°C |

Reflow is referred to standard IPC/JEDEC J-STD-020E.

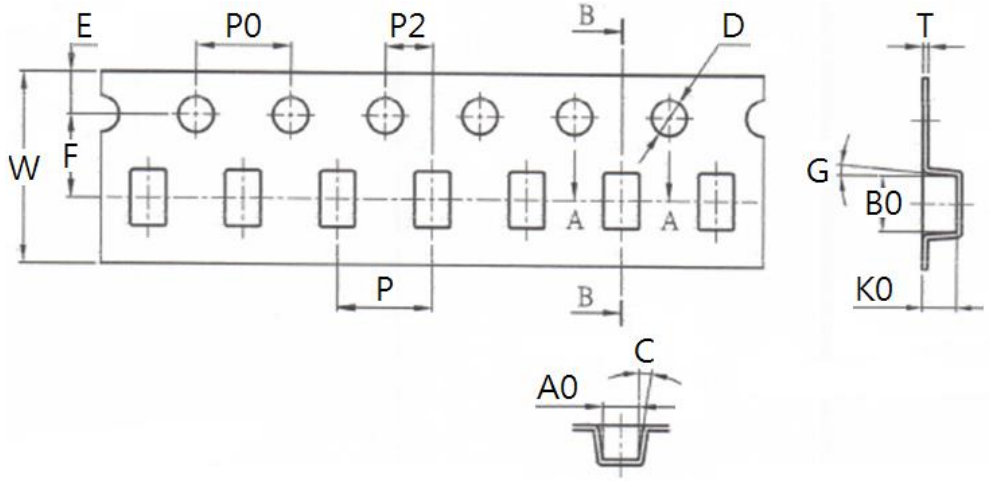
## 9. Packaging Information

### 9-1. Reel Dimension (Unit: mm)




| Type | A | B | C | D | a |
|---|---|---|---|---|---|
| | 9.0±0.5 | 60.0±2.0 | 13.5 Ref | 178.0±2.0 | 2.0 Ref |
| 7"x8mm | b | c | d | e | f |
| | 13.5 Ref | R10.5 | R0.5 | 120° | R1.9 |

### 9-2. Tape Dimension (Unit: mm)



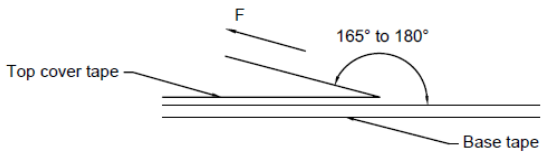

| W | P | E | F | P2 | D | D1 |
|---|---|---|---|---|---|---|
| 8.00±0.10 | 4.00±0.10 | 1.75±0.10 | 3.50±0.05 | 2.00±0.05 | 1.50+0.10/-0.00 | 1.00±0.10 |
| P0 | A0 | B0 | K0 | T | C | G |
| 4.00±0.10 | 1.88±0.10 | 3.50±0.10 | 2.20±0.10 | 0.26±0.05 | 8° | 5° |

NOTE: Specifications subject to change without notice. Please check our website for latest information.

### 9-3. Packaging Quantity (Unit: Pcs)

| | |
|---|---|
| Chip/ Reel | 2,000 |
| Inner Box | 10,000 |
| Middle Box | 50,000 |
| Carton | 100,000 |

### 9-4. Tearing Off Force




The force for tearing off cover tape is according to the follow table, in the arrow direction under the following conditions.

(Referenced ANSI/EIA-481-D-2008 of 4.11 standard)

| Room Temp. (°C) | Room Humidity (%) | Room atm (hPa) | Tearing Speed (mm/min) |
|---|---|---|---|
| 5~35 | 45~85 | 860~1060 | 300±10 |

| Tape Size | 8 mm | 12 to 56 mm | 72 mm or Wider |
|---|---|---|---|
| Tearing Off Force (grams) | 10~100 | 10~130 | 10~150 |

## Application Notice

1. Storage Conditions

To maintain the solderability of terminal electrodes:

(a) Recommended products should be used within 12 months from the time of delivery.

(b) The packaging material should be kept where no chlorine or sulfur exists in the air.

2. Transportation

(a) Products should be handled with care to avoid damage or contamination from perspiration and skin oils.

(b) Vacuum pick up is strongly recommended for individual components.

(c) Bulk handling should ensure that abrasion and mechanical shock are minimized.