



**THE DATASHEET OF  
RSF100JB-73-47K**



# DATA SHEET

## METAL OXIDE FILM RESISTORS

General Purpose, Flameproof

RSF Series

±2%, ±5%

1/4W to 5W

RoHS compliant & Halogen Free





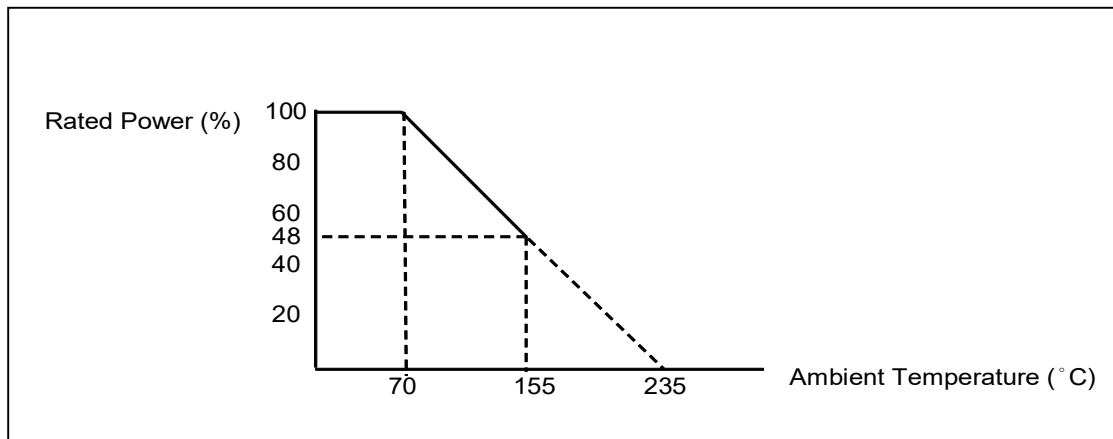
**DIMENSIONS**

Unit: mm



| Normal | Miniature | L          | ψD        | H        | ψd          |
|--------|-----------|------------|-----------|----------|-------------|
| RSF-50 | RSF1WS    | 9.0 ± 0.5  | 3.3 ± 0.3 | 26 ± 2.0 | 0.55 ± 0.05 |
| RSF100 | RSF2WS    | 11.5 ± 1.0 | 4.5 ± 0.5 | 35 ± 2.0 | 0.8 ± 0.05  |
| RSF200 | RSF3WS    | 15.5 ± 1.0 | 5.0 ± 0.5 | 33 ± 2.0 | 0.8 ± 0.05  |
| RSF3WM | RSF5SS    | 17.5 ± 1.0 | 6.5 ± 1.0 | 32 ± 2.0 | 0.8 ± 0.05  |
| RSF300 | RSF5WS    | 24.5 ± 1.0 | 8.5 ± 1.0 | 38 ± 2.0 | 0.8 ± 0.05  |
| RSF500 | -         | 24.5 ± 1.0 | 8.5 ± 1.0 | 38 ± 2.0 | 0.8 ± 0.05  |

**DERATING CURVE**



**ELECTRICAL CHARACTERISTICS**

| CHARACTERISTICS             | RSF-50                        | RSF100 | RSF200 | RSF3WM | RSF300 | RSF500 |
|-----------------------------|-------------------------------|--------|--------|--------|--------|--------|
| Power Rating at 70 °C       | 1/2W                          | 1W     | 2W     | 3W     | 3W     | 5W     |
| Maximum working voltage     | 250V                          | 350V   | 350V   | 450V   | 500V   | 750V   |
| Maximum overload voltage    | 400V                          | 600V   | 600V   | 700V   | 800V   | 1000V  |
| Voltage Proof on Insulation | 350V                          | 500V   | 500V   | 500V   | 500V   | 500V   |
| Resistance Range            | 1Ω – 1MΩ for E24 series value |        |        |        |        |        |
| Operating Temp. Range       | - 55°C to +155°C              |        |        |        |        |        |
| Temperature Coefficient     | ±300ppm/°C                    |        |        |        |        |        |

Note: For resistance value out of above range is by request. Below 10Ω and over 20K(excluded) are using alloy film

| CHARACTERISTICS             | RSF1WS                        | RSF2WS | RSF3WS | RSF5SS | RSF5WS |
|-----------------------------|-------------------------------|--------|--------|--------|--------|
| Power Rating at 70 °C       | 1W                            | 2W     | 3W     | 5W     | 5W     |
| Maximum working voltage     | 300V                          | 350V   | 350V   | 500V   | 700V   |
| Maximum overload voltage    | 500V                          | 600V   | 600V   | 800V   | 900V   |
| Voltage Proof on Insulation | 400V                          | 500V   | 500V   | 500V   | 500V   |
| Resistance Range            | 1Ω – 1MΩ for E24 series value |        |        |        |        |
| Operating Temp. Range       | - 55°C to +155°C              |        |        |        |        |
| Temperature Coefficient     | ±300ppm/°C                    |        |        |        |        |

Note: For resistance value out of above range is by request. Below 10Ω and over 20K(excluded) are using alloy film

**TEST AND REQUIREMENTS**

| TEST                          | TEST METHOD      | PROCEDURE  | APPRAISE  |
|-------------------------------|------------------|--|---|
| Short Time Overload           | IEC 60115-1 4.13 | 2.5 times RCWV for 5 sec.<br>(Not more than maximum overload voltage)          | ±1%+0.05Ω for normal style<br>±2%+0.05Ω for miniature style |
| Voltage Proof on Insulation   | IEC 60115-1 4.7  | In V-Block for 60 sec. test voltage as above table                             | No Breakdown  |
| Temperature Coefficient       | IEC 60115-1 4.8  | Between -55°C to +155°C  | By Type   |
| Insulation Resistance         | IEC 60115-1 4.6  | In V-Block for 60 sec.   | >1,000MΩ  |
| Solderability                 | IEC 60115-1 4.17 | 245±5°C for 3±0.5 Sec.   | 95% Min. coverage   |
| Solvent Resistance of Marking | IEC 60115-1 4.30 | IPA for 5±0.5 Min. with ultrasonic   | No deterioration of coatings and markings                   |
| Robustness of Terminations    | IEC 60115-1 4.16 | Direct load for 10 Sec. in the direction of the terminal leads                 | ≥2.5Kg(24.5N)   |
| Periodic-pulse Overload       | IEC 60115-1 4.39 | 4 times RCWV 10,000 cycles (1 Sec. on, 25 Sec. off)                            | ±2.0%+0.05Ω   |
| Damp Heat Steady State        | IEC 60115-1 4.24 | 40±2°C, 90-95% RH for 56 days, loaded with 0.1 times RCWV                      | ±5.0%+0.05Ω   |
| Endurance at 70°C             | IEC 60115-1 4.25 | 70±2°C at RCWV(or Umax., whichever less) for 1,000 Hr.(1.5 Hr.on, 0.5 Hr. off) | ±5.0%+0.05Ω   |
| Temperature Cycling           | IEC 60115-1 4.19 | → -55°C → Room Temp. → +155°C Room Temp.(5 cycles)                             | ±1.0%+0.05Ω   |
| Resistance to Soldering Heat  | IEC 60115-1 4.18 | 260±3°C for 10±1 Sec., immersed to a point 3±0.5mm from the body               | ±1.0 %+0.05Ω  |
| Accidental Overload Test      | IEC 60115-1 4.26 | 4 times RCWV for 1 Min.  | No evidence of flaming or arcing                            |

Note:

**RCWV (Rated Continuous Working Voltage):**

The DC or AC (rms) continuous working voltage corresponding to the rated power is determined by the following formula:

$$V = \sqrt{P \times R}$$

or max. working voltage whichever is less

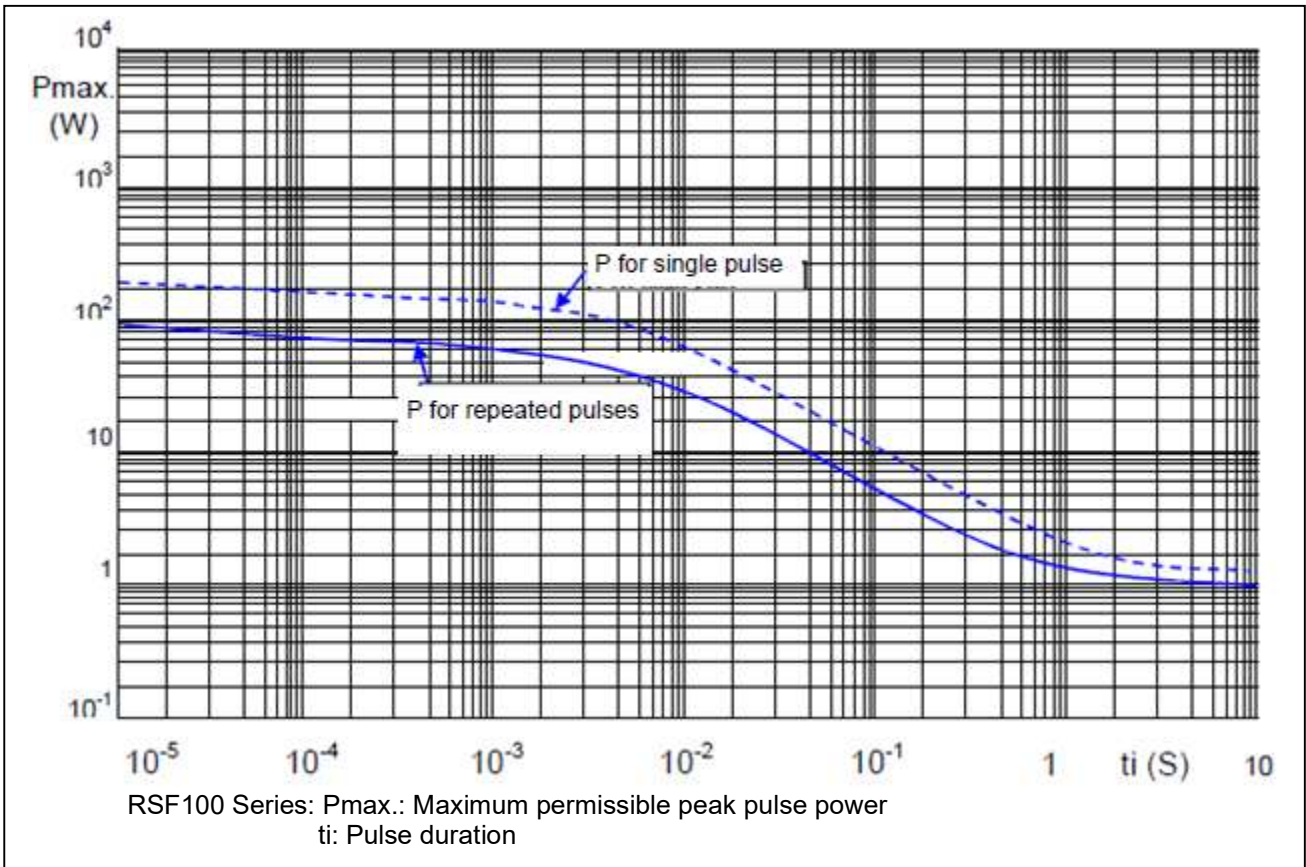
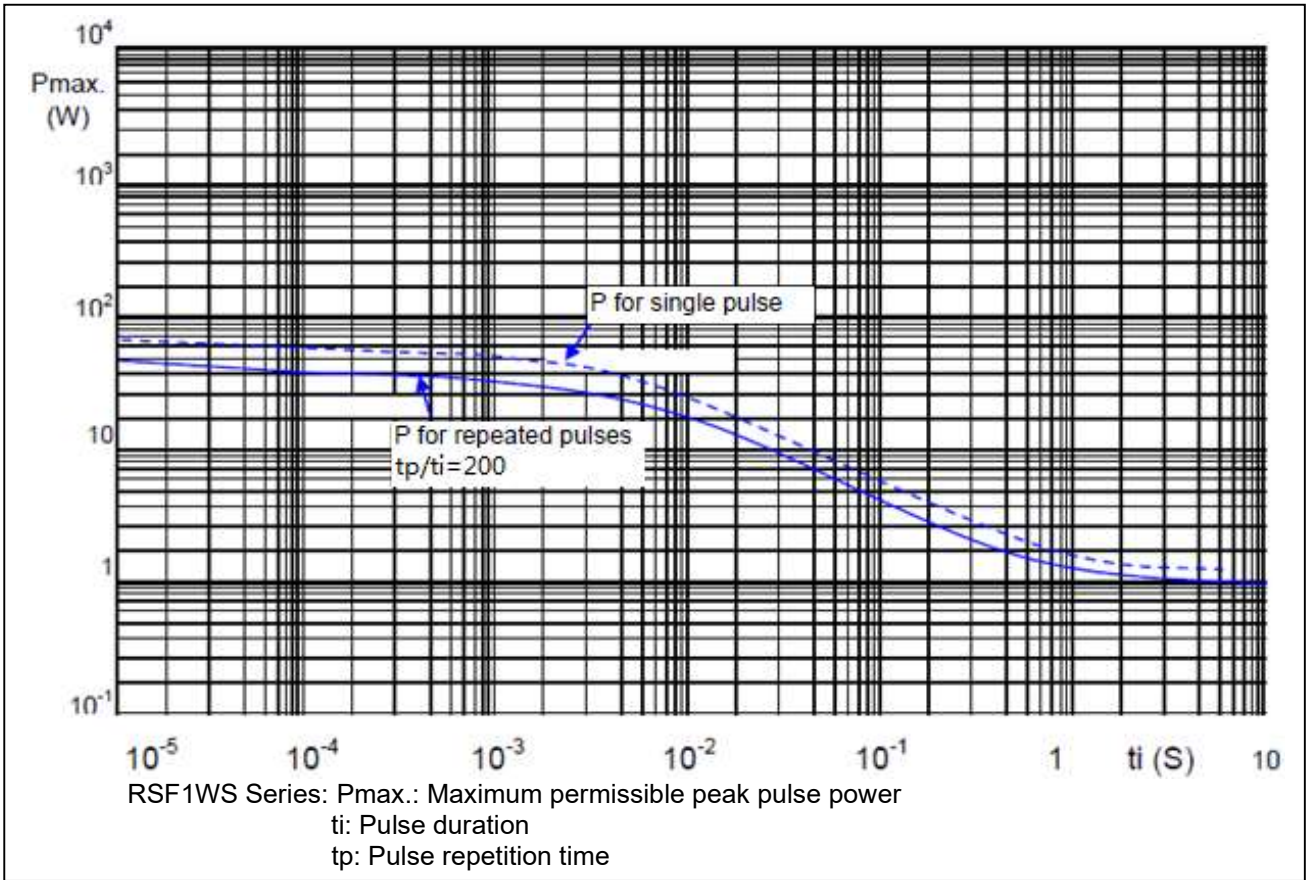
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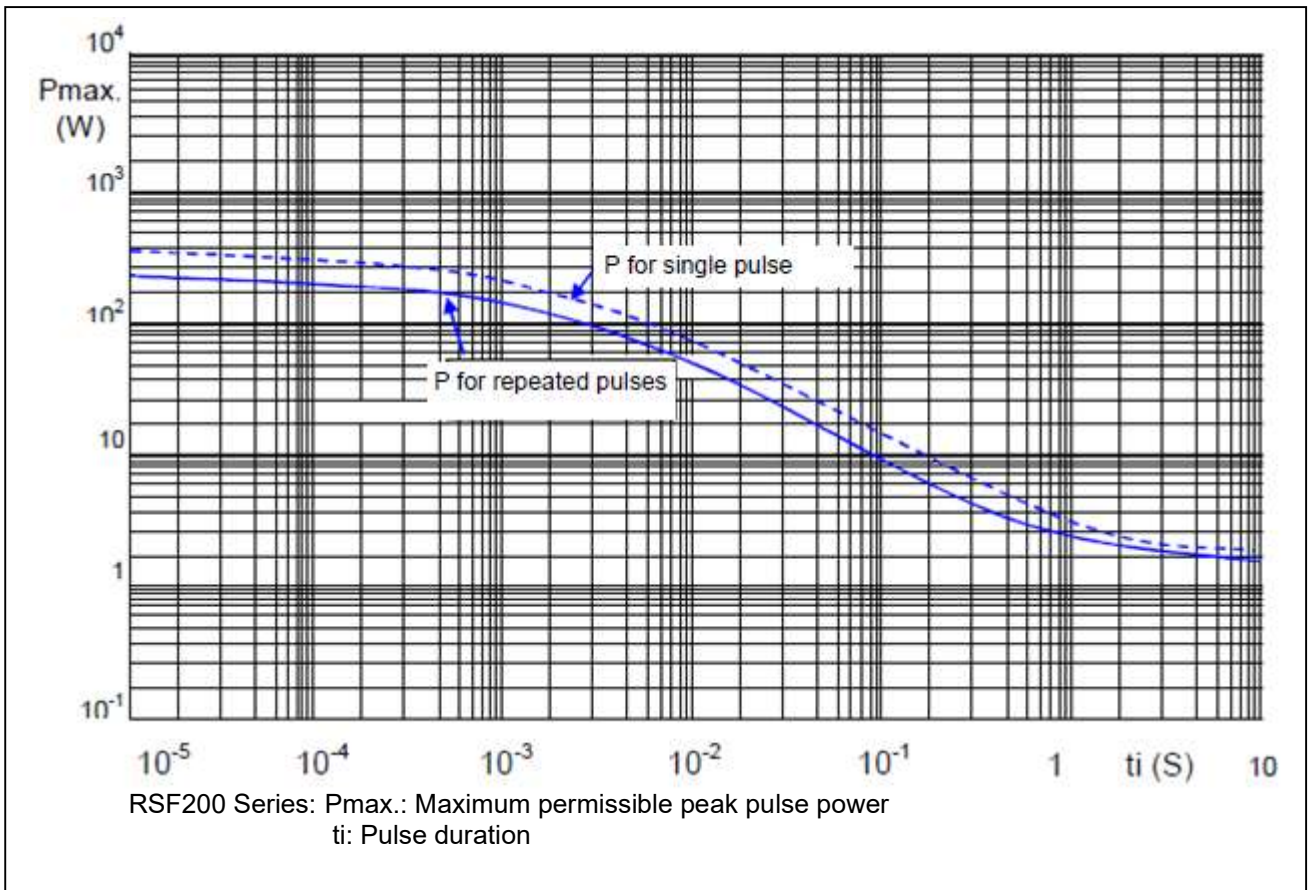
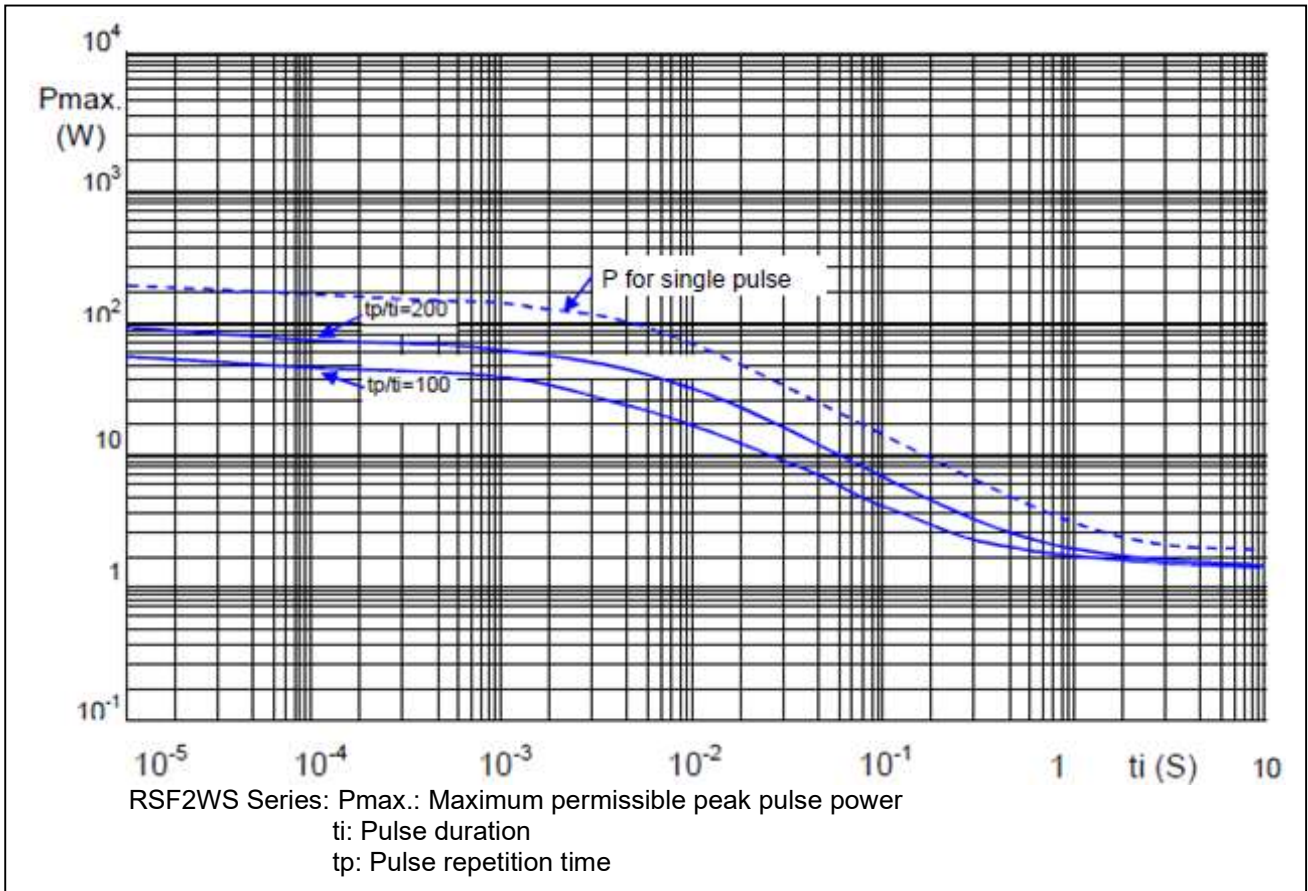
V=Continuous rated DC or  
AC (rms) working voltage (V)

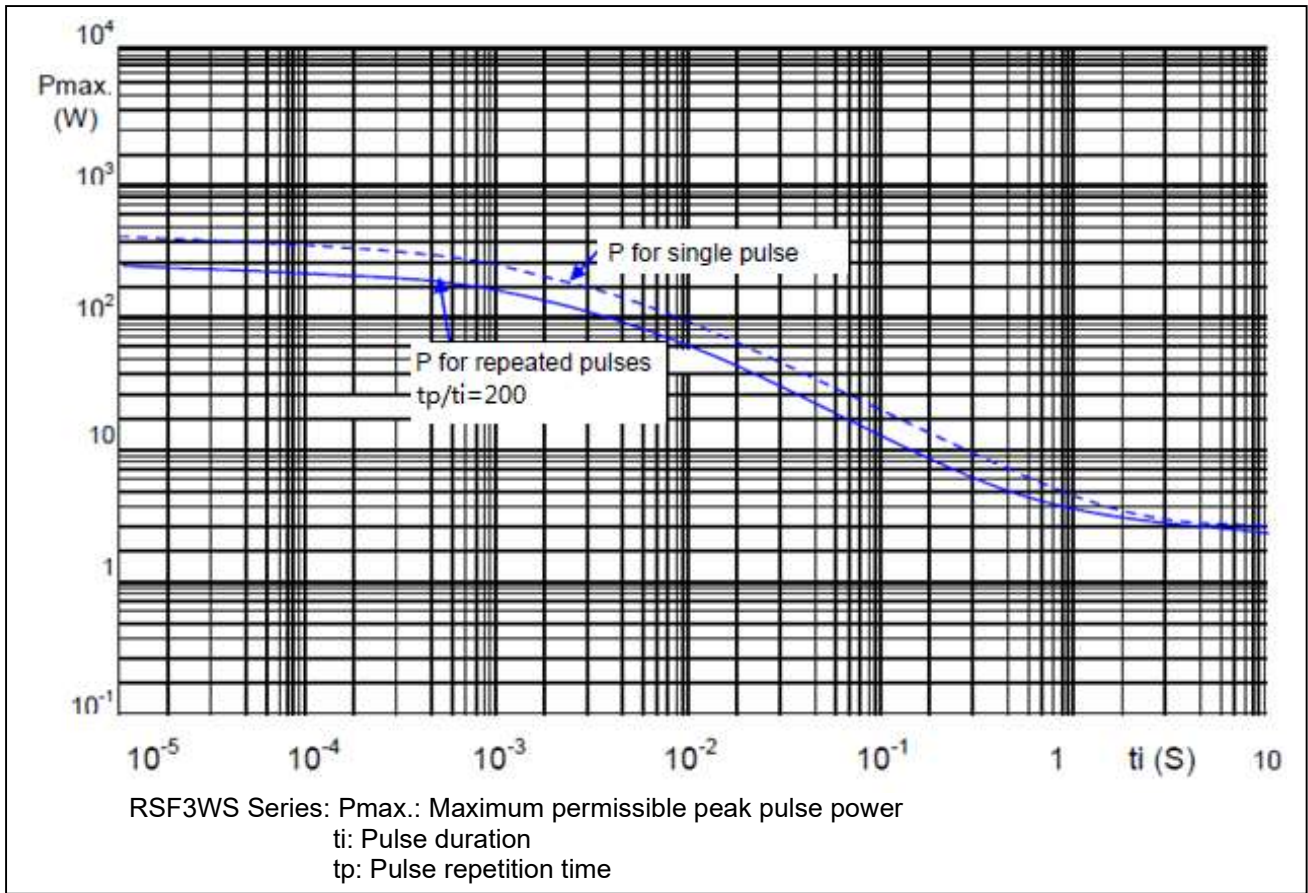
P=Rated power (W)

R=Resistance value (Ω)

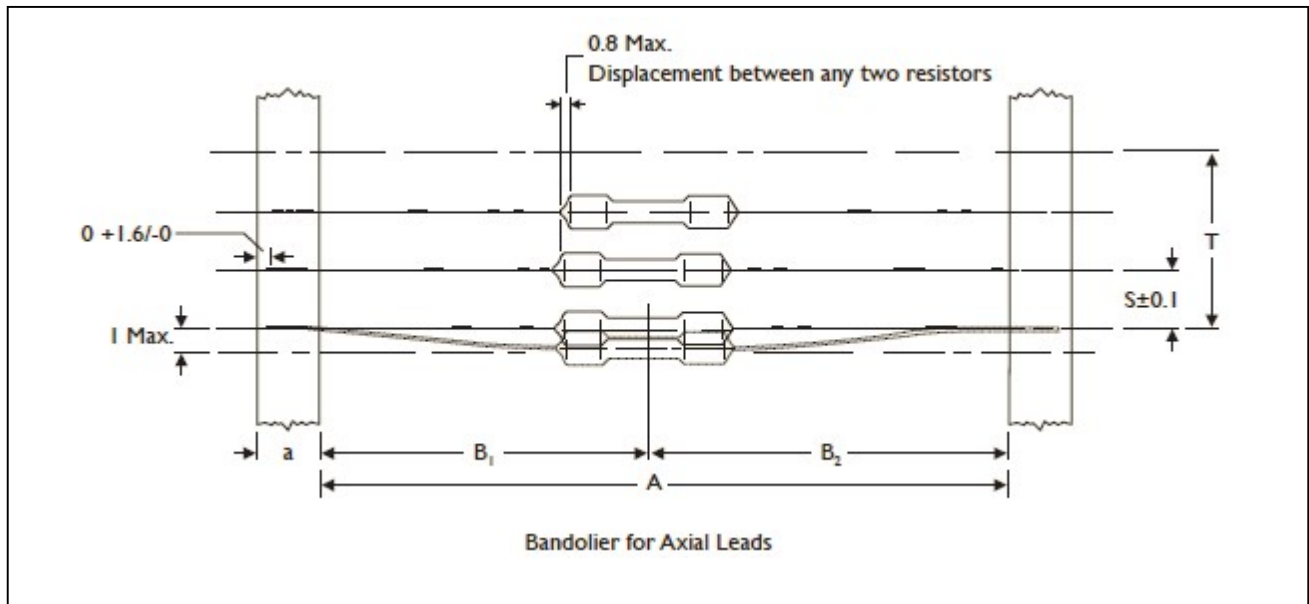
**PULSE DIAGRAMS**







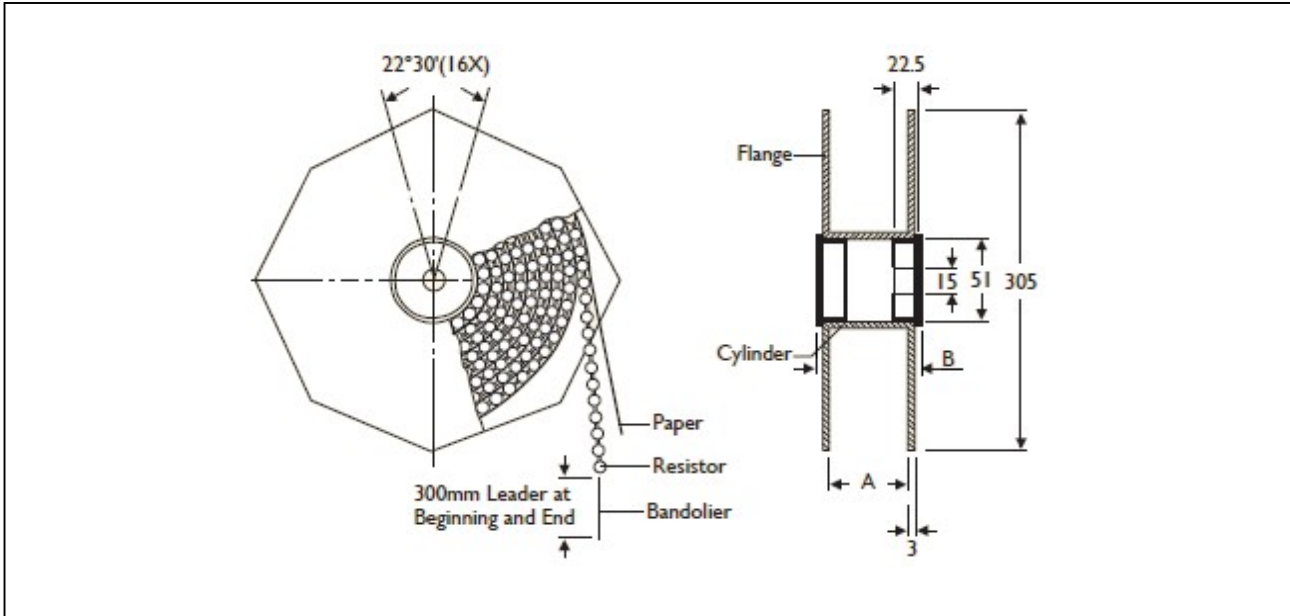
**AXIAL / REEL TAPE SPECIFICATION**



Unit: mm

| Normal | Miniature | a       | A                        | B1-B2 (Max.) | S (spacing) | T (max. deviation of spacing)                |
|--------|-----------|---------|--------------------------|--------------|-------------|--|
| RSF-50 | RSF1WS    | 6 ± 0.5 | 52.4 ± 1.5               | 1.2          | 5           | 1 mm per 10 spacing,<br>0.5 mm per 5 spacing |
| RSF100 | RSF2WS    | 6 ± 0.5 | 73.0 ± 1.5<br>52.4 ± 1.5 | 1.5<br>1.2   | 5           |  |
| RSF200 | RSF3WS    | 6 ± 0.5 | 73.0 ± 1.5<br>52.4 ± 1.5 | 1.5<br>1.2   | 10          |  |
| RSF3WM | RSF5SS    | 6 ± 0.5 | 73.0 ± 1.5               | 1.5          | 10          |  |
| RSF300 | RSF5WS    | 6 ± 0.5 | 91.0 ± 1.5               | 1.5          | 10          |  |
| RSF500 | -         | 6 ± 0.5 | 91.0 ± 1.5               | 1.5          | 10          |  |

**TAPE ON REEL PACKING**

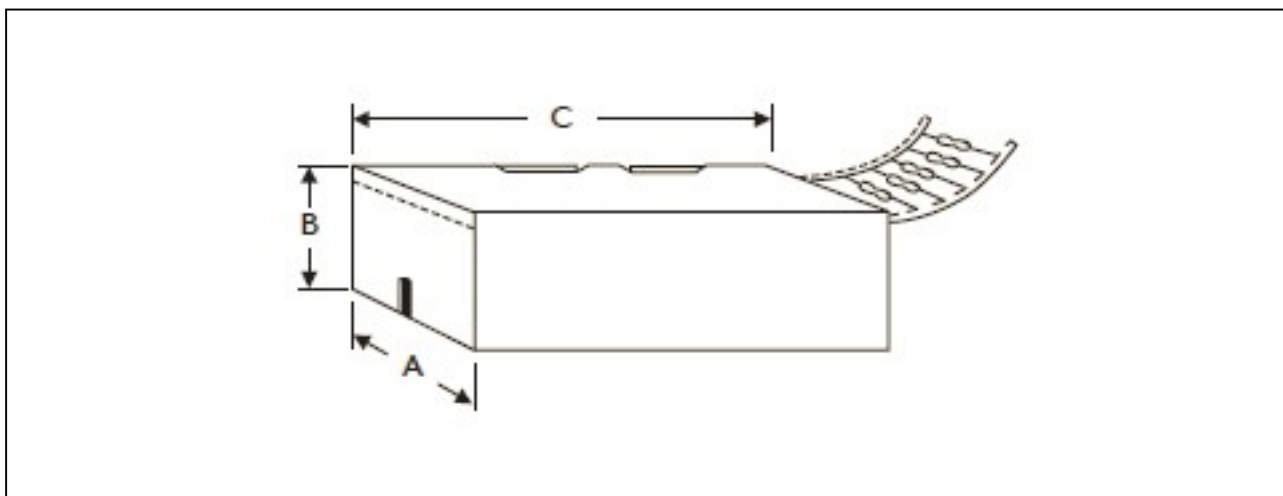


TYPE

Unit: mm/piece

| Normal | Miniature | Across Flange(A) | B    | Quantity Per Reel |
|--------|-----------|------------------|------|-------------------|
| RSF-50 | RSF1WS    | 66.5             | 75.5 | 2,500             |
| RSF100 | RSF2WS    | 87               | 96   | 2,000             |
| RSF200 | RSF3WS    | 87               | 96   | 1,000             |
| RSF3WM | RSF5SS    | 87               | 96   | 1,000             |

**TAPE ON BOX PACKING**



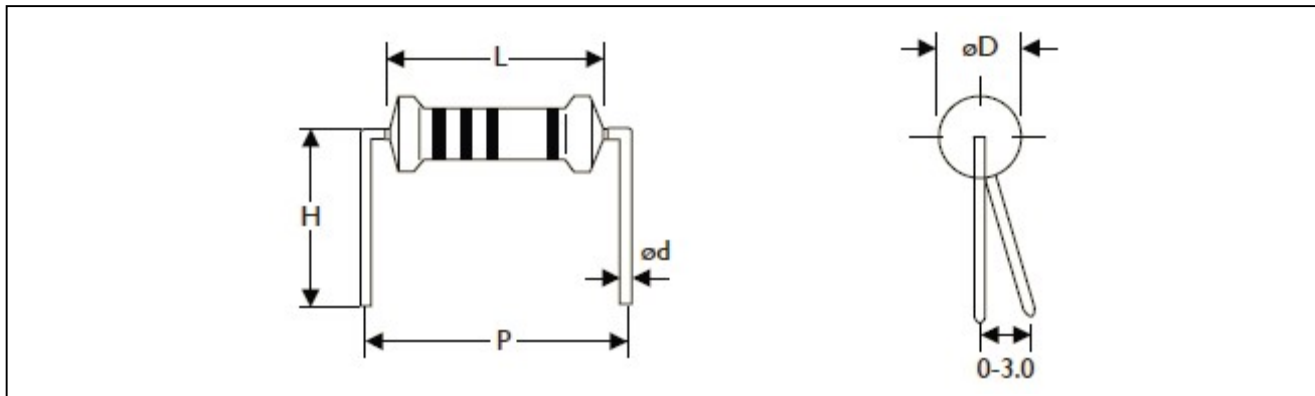
| TYPE   |           | DIMENSIONS |    |     | Unit: mm/piece   |
|--------|-----------|------------|----|-----|------------------|
| Normal | Miniature | A          | B  | C   | Quantity Per Box |
| RSF-50 | RSF1WS    | 73         | 45 | 258 | 1,000            |
| RSF100 | RSF2WS    | 81         | 91 | 260 | 1,000            |
| RSF100 | RSF2WS    | 103        | 78 | 260 | 1,000            |
| RSF200 | RSF3WS    | 81         | 91 | 260 | 1,000            |
| RSF200 | RSF3WS    | 103        | 94 | 260 | 1,000            |
| RSF3WM | RSF5SS    | 103        | 78 | 260 | 500              |
| RSF300 | RSF5WS    | 116        | 79 | 255 | 250              |
| RSF500 | -         | 116        | 79 | 255 | 250              |

**BULK PACKING**

| Normal | Miniature | Piece/Per Inner Box | Bag/Per Inner Box | Piece Per Bag |
|--------|-----------|---------------------|-------------------|---------------|
| RSF-50 | RSF1WS    | 5,000               | 5                 | 1,000         |
| RSF100 | RSF2WS    | 2,000               | 4                 | 500           |
| RSF200 | RSF3WS    | 1,000               | 2                 | 500           |
| RSF3WM | RSF5SS    | 1,000               | 2                 | 500           |
| RSF300 | RSF5WS    | 500                 | 10                | 50            |
| RSF500 | -         | 500                 | 10                | 50            |

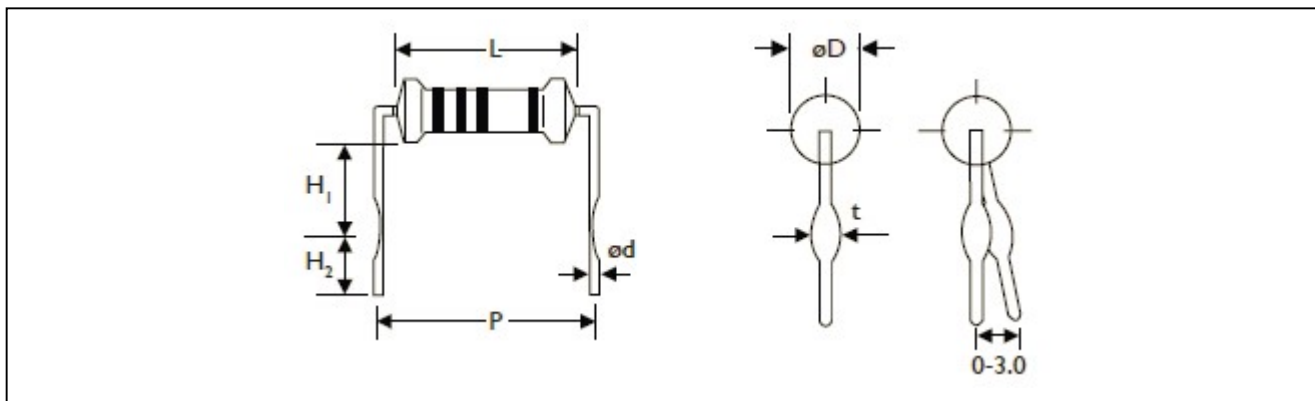
**FORMING**

**M TYPE**



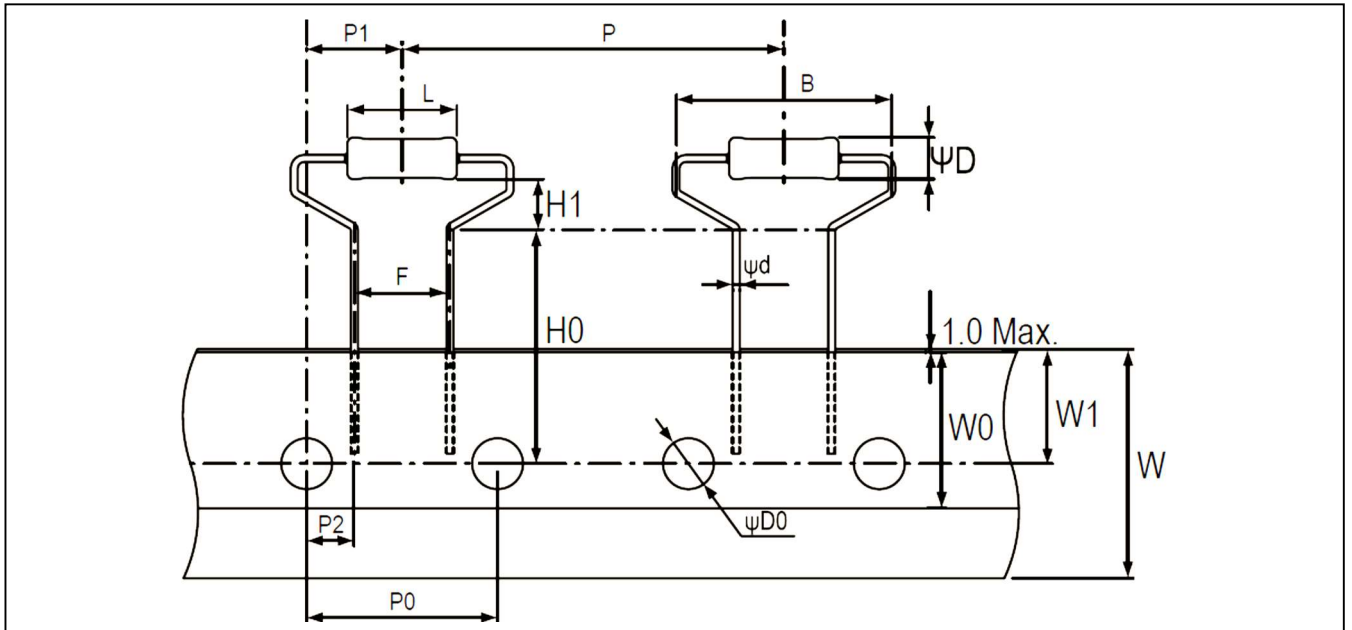
| TYPE   |           | DIMENSIONS |           |             |          |          | Unit: mm |
|--------|-----------|------------|-----------|-------------|----------|----------|----------|
| Normal | Miniature | L          | ψD        | ψd          | P        | H        |          |
| RSF-50 | RSF1WS    | 9.0 ± 0.5  | 3.3 ± 0.3 | 0.55 ± 0.05 | 12.5 ± 1 | 10.0 ± 1 |          |
| RSF100 | RSF2WS    | 11.5 ± 1.0 | 4.5 ± 0.5 | 0.8 ± 0.05  | 15.0 ± 1 | 12.5 ± 1 |          |
| RSF200 | RSF3WS    | 15.5 ± 1.0 | 5.0 ± 0.5 | 0.8 ± 0.05  | 20.0 ± 1 | 15.0 ± 1 |          |
| RSF3WM | RSF5SS    | 17.5 ± 1.0 | 6.5 ± 1.0 | 0.8 ± 0.05  | 25.0 ± 1 | 15.0 ± 1 |          |

**MB TYPE**



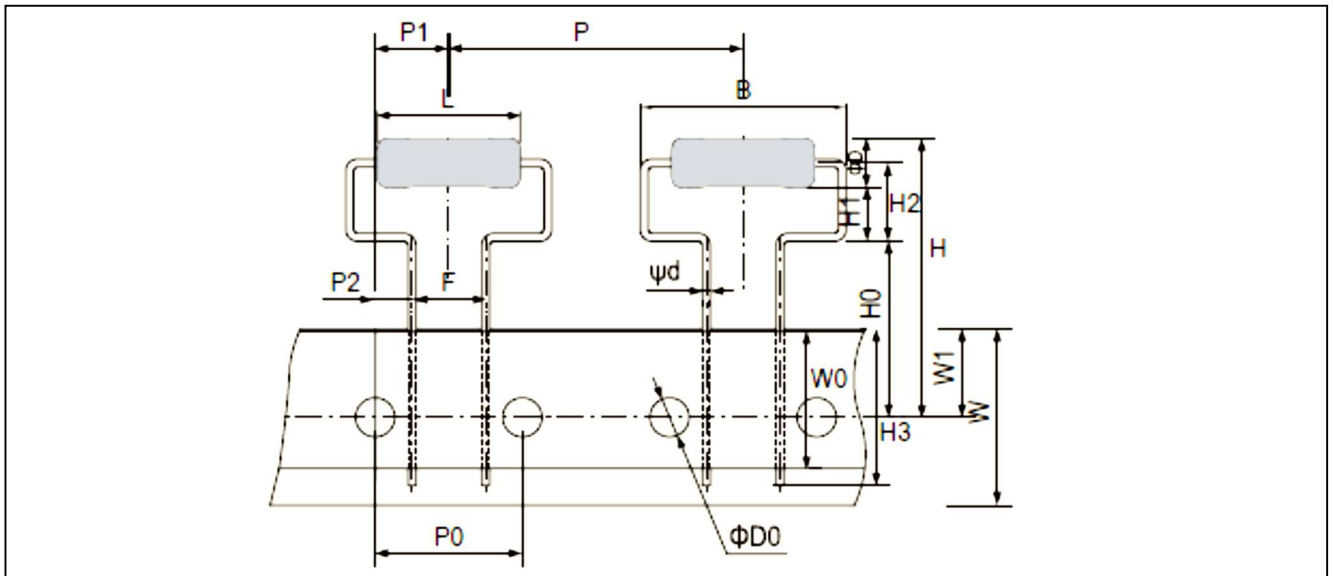
| TYPE   |           | DIMENSIONS |           |             |          |          |         |           | Unit: mm |
|--------|-----------|------------|-----------|-------------|----------|----------|---------|-----------|----------|
| Normal | Miniature | L          | ψD        | ψd          | P        | H1       | H2      | t         |          |
| RSF-50 | -         | 9.0 ± 0.5  | 3.3 ± 0.3 | 0.55 ± 0.05 | 12.5 ± 1 | 6.0 ± 1  | 5.0 ± 1 | 1.2 ± 0.2 |          |
| -      | RSF1WS    | 9.0 ± 0.5  | 3.3 ± 0.3 | 0.8 ± 0.05  | 12.5 ± 1 | 6.0 ± 1  | 5.0 ± 1 | 1.4 ± 0.2 |          |
| RSF100 | RSF2WS    | 11.5 ± 1.0 | 4.5 ± 0.5 | 0.8 ± 0.05  | 15.0 ± 1 | 6.0 ± 1  | 5.0 ± 1 | 1.4 ± 0.2 |          |
| RSF200 | RSF3WS    | 15.5 ± 1.0 | 5.0 ± 0.5 | 0.8 ± 0.05  | 20.0 ± 1 | 10.0 ± 1 | 5.0 ± 1 | 1.4 ± 0.2 |          |
| RSF3WM | RSF5SS    | 17.5 ± 1.0 | 6.5 ± 1.0 | 0.8 ± 0.05  | 25.0 ± 1 | 10.0 ± 1 | 5.0 ± 1 | 1.4 ± 0.2 |          |

**MHA TYPE**



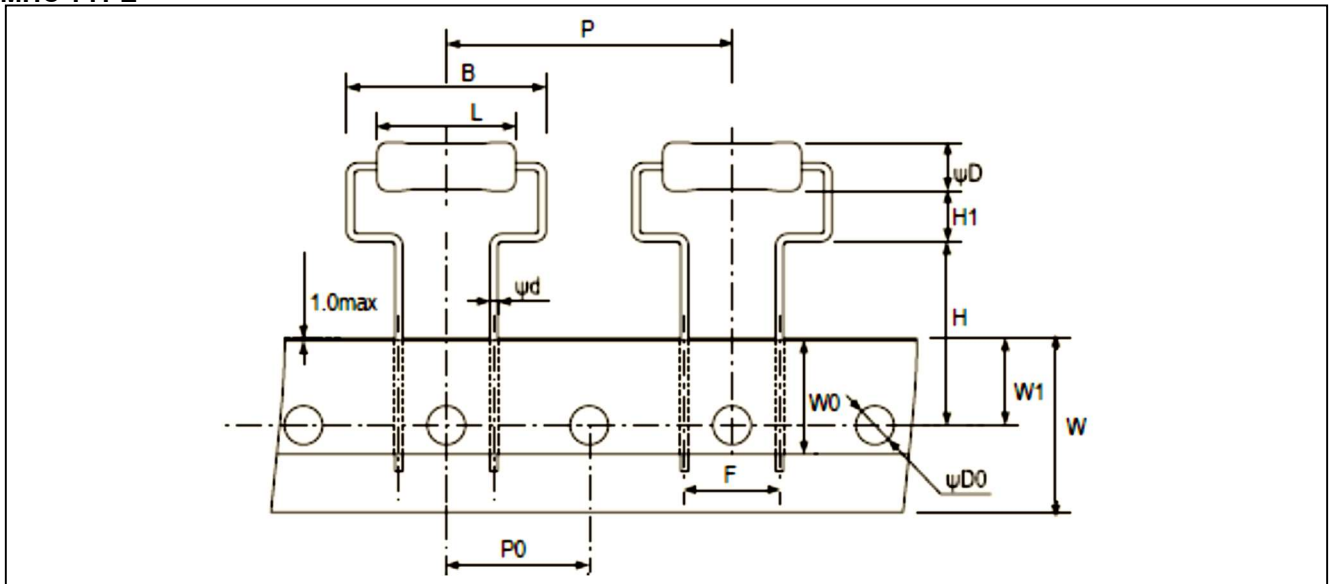
| TYPE          |                  | DIMENSIONS |                            |                            |          |           |           |                             |           | Unit: mm |
|---------------|------------------|------------|----------------------------|----------------------------|----------|-----------|-----------|-----------------------------|-----------|----------|
| <b>Normal</b> | <b>Miniature</b> | <b>L</b>   | <b><math>\psi D</math></b> | <b><math>\psi d</math></b> | <b>B</b> | <b>H0</b> | <b>H1</b> | <b>P</b>                    | <b>P0</b> |          |
|               |                  | 9.0±0.5    | 3.3±0.3                    | 0.55±0.05                  | 17.5Max  | 19.0±1.0  | 4.0±1.0   | 30.0±1.0                    | 15.0±0.3  |          |
| RSF-50        | RSF1WS           | <b>P1</b>  | <b>P2</b>                  | <b>F</b>                   | <b>W</b> | <b>W0</b> | <b>W1</b> | <b><math>\psi D0</math></b> |           |          |
|               |                  | 7.5±1.0    | 3.75±0.5                   | 7.5±0.5                    | 18.0±0.5 | 5.0Min    | 9.0±0.5   | 4.0±0.2                     |           |          |

**MHB TYPE**



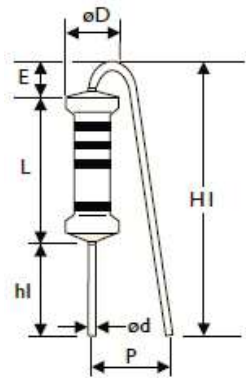
| TYPE          |                  | DIMENSIONS |                            |                            |           |          |           |           |           |                             | Unit: mm |
|---------------|------------------|------------|----------------------------|----------------------------|-----------|----------|-----------|-----------|-----------|-----------------------------|----------|
| <b>Normal</b> | <b>Miniature</b> | <b>L</b>   | <b><math>\psi D</math></b> | <b><math>\psi d</math></b> | <b>B</b>  | <b>H</b> | <b>H0</b> | <b>H1</b> | <b>H2</b> | <b>H3</b>                   |          |
|               |                  | 15.5±1.0   | 5.0±0.5                    | 0.8±0.05                   | 21.0Max.  | 30Max.   | 18.0±1.0  | 5.5(Ref.) | 8.0±1.5   | 16Max.                      |          |
| RSF200        | RSF3WS           | <b>P</b>   | <b>P0</b>                  | <b>P1</b>                  | <b>P2</b> | <b>F</b> | <b>W</b>  | <b>W0</b> | <b>W1</b> | <b><math>\psi D0</math></b> |          |
|               |                  | 30.0±1.0   | 15.0±0.3                   | 7.5±1.0                    | 3.75±0.8  | 7.5±0.5  | 18.0±0.5  | 5.0Min.   | 9.0±0.5   | 4.0±0.3                     |          |

**MHC TYPE**

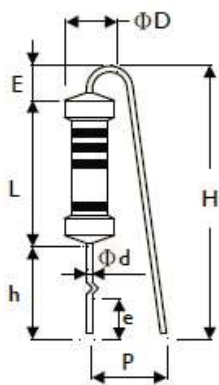


| TYPE          |                  | DIMENSIONS |           |           |           |            |           |          |           | Unit: mm |
|---------------|------------------|------------|-----------|-----------|-----------|------------|-----------|----------|-----------|----------|
| <b>Normal</b> | <b>Miniature</b> | <b>L</b>   | <b>ψD</b> | <b>ψd</b> | <b>B</b>  | <b>H</b>   | <b>H1</b> | <b>P</b> | <b>P0</b> |          |
|               |                  | 15.5±1.0   | 5.0±0.5   | 0.8±0.05  | 21.0Max.  | 19.0±1.0   | 5.25±1.0  | 30.0±1.0 | 15.0±0.3  |          |
| <b>RSF200</b> | <b>RSF3WS</b>    | <b>F</b>   | <b>W</b>  | <b>W0</b> | <b>W1</b> | <b>ψD0</b> |           |          |           |          |
|               |                  | 10.0±0.5   | 18.0±0.5  | 5.0Min.   | 9.0±0.5   | 4.0±0.2    |           |          |           |          |

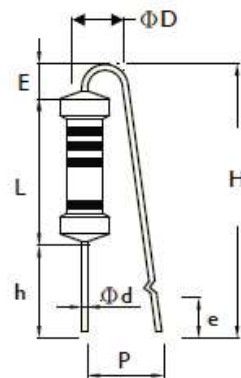
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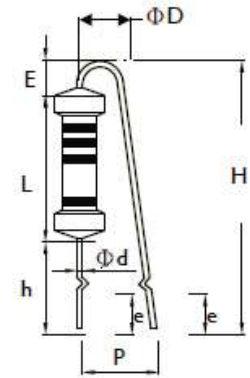
**FK TYPE**



**FFK TYPE**

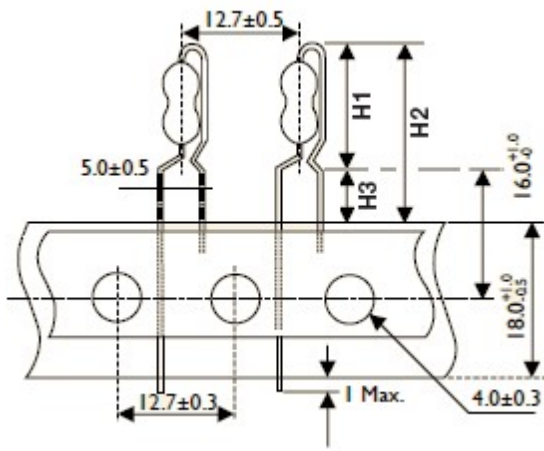


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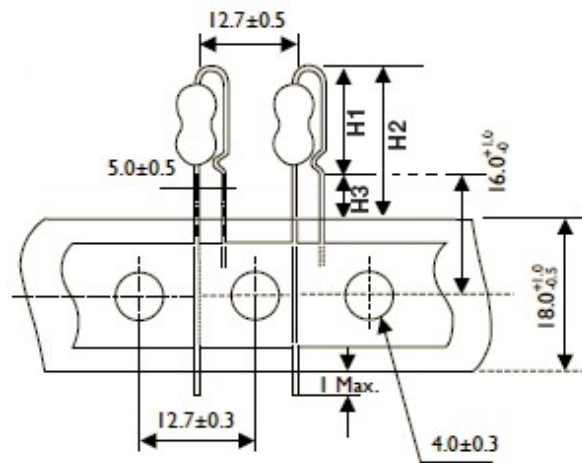


| TYPE          |                  | DIMENSIONS |           |           |          |          |               |           |                |               |          | Unit: mm |
|---------------|------------------|------------|-----------|-----------|----------|----------|---------------|-----------|----------------|---------------|----------|----------|
| <b>Normal</b> | <b>Miniature</b> | <b>L</b>   | <b>ψD</b> | <b>ψd</b> | <b>P</b> | <b>h</b> | <b>H Max.</b> | <b>h1</b> | <b>H1 Max.</b> | <b>E Max.</b> | <b>e</b> |          |
| RSF-50        | RSF1WS           | 9.0±0.5    | 3.3±0.3   | 0.55±0.05 | 6±1      | 8±1      | 22            | 5±1       | 18.5           | 3.5           | 3.5±1    |          |
| RSF100        | RSF2WS           | 11.5±1     | 4.5±0.5   | 0.8±0.05  | 6±1      | 8±1      | 24            | 5±1       | 20             | 3.5           | 3.5±1    |          |
| RSF200        | RSF3WS           | 15.5±1     | 5.0±0.5   | 0.8±0.05  | 8±1      | 8±1      | 28            | 5±1       | 25             | 3.5           | 3.5±1    |          |

**PN TYPE (Taping Pack)**



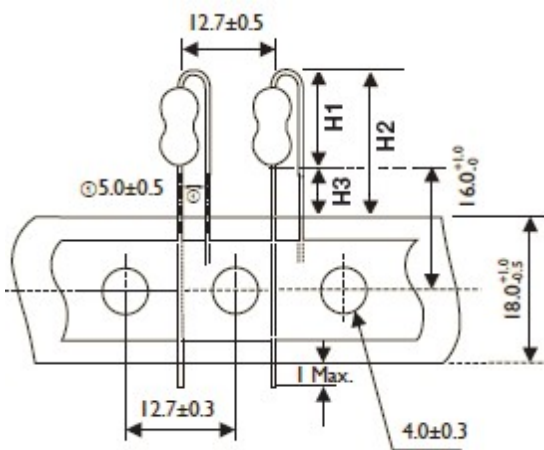
**AV TYPE (Taping Pack)**



| TYPE   |           | DIMENSIONS |            |            | Unit: mm |
|--------|-----------|------------|------------|------------|----------|
| Normal | Miniature | H1<br>Max. | H2<br>Max. | H3<br>Max. |          |
| RSF-50 | RSF1WS    | 17         | 25.5       | 8.5        |          |
| RSF100 | RSF2WS    | 19         | 27.5       | 8.5        |          |

| TYPE   |           | DIMENSIONS |            |            | Unit: mm |
|--------|-----------|------------|------------|------------|----------|
| Normal | Miniature | H1<br>Max. | H2<br>Max. | H3<br>Max. |          |
| RSF-50 | RSF1WS    | 14.5       | 23         | 8.5        |          |
| RSF100 | RSF2WS    | 17.5       | 26         | 8.5        |          |

**FT TYPE (Taping Pack)**



| TYPE   |           | DIMENSIONS |            |            | Unit: mm |
|--------|-----------|------------|------------|------------|----------|
| Normal | Miniature | H1<br>Max. | H2<br>Max. | H3<br>Max. |          |
| RSF-50 | RSF1WS    | 13         | 21.5       | 8.5        |          |
| RSF100 | RSF2WS    | 16         | 24.5       | 8.5        |          |

**MARKING**



| COLOR  | 1st BAND | 2nd BAND | 3rd BAND | MULTIPLIER | TOLERANCE  |
|--------|----------|----------|----------|------------|------------|
| BLACK  | 0        | 0        | 0        | 1Ω         |            |
| BROWN  | 1        | 1        | 1        | 10Ω        |            |
| RED    | 2        | 2        | 2        | 100Ω       | ± 2% ( G ) |
| ORANGE | 3        | 3        | 3        | 1KΩ        |            |
| YELLOW | 4        | 4        | 4        | 10KΩ       |            |
| GREEN  | 5        | 5        | 5        | 100K       |            |
| BLUE   | 6        | 6        | 6        | 1MΩ        |            |
| VIOLET | 7        | 7        | 7        | 10MΩ       |            |
| GREY   | 8        | 8        | 8        | 0.001Ω     |            |
| WHITE  | 9        | 9        | 9        | 0.0001Ω    |            |
| GOLD   |          |          |          | 0.1Ω       | ± 5% ( J ) |
| SILVER |          |          |          | 0.01Ω      |            |

**REVISION HISTORY**

| REVISION  | DATE         | CHANGE NOTIFICATION | DESCRIPTION                                      |
|-----------|--------------|---------------------|--|
| Version 4 | Apr.1, 2024  | -                   | - Added forming code description for part number |
| Version 3 | Mar.27, 2024 | -                   | - Delete M type for RSF300&RSF5WS                |
| Version 2 | Nov.10, 2023 | -                   | - Delete MB type for RSF300&RSF500&RSF5WS        |
| Version 1 | Aug.31, 2023 | -                   | - Revised LEGAL DISCLAIMER                       |
| Version 0 | Aug.16, 2021 | -                   | - First issue of this specification              |

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