

DATA SHEET

WIREWOUND RESISTORS

High Power
PNP V Series

$\pm 1\%$, $\pm 2\%$, $\pm 5\%$

1W to 7W

RoHS compliant & Halogen Free



YAGEO

Product specification – May 30, 2024 V.4





APPLICATIONS

- Power applications
- Home appliance
- Industry

FEATURES

- Wide resistance range
- High stable performance and high reliability
- Flameproof coating equivalent to UL-94V-0
- RoHS compliant & halogen free

ORDERING INFORMATION

Part number of the power wire wound resistor is identified by the series, power rating, tolerance, packing, temperature coefficient, forming and resistance value.

PART NUMBER

| | | | | | | |
|------------|------------|----------|----------|----------|------------|-------------|
| PNP | 3WV | J | T | - | 73- | 100R |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |

(1) SERIES

PNP Series

(2) POWER RATING

1WV = 1W

5WV = 5W

3WV = 3W

5SV = 5W

4WV = 4W

7WV = 7W

(3) TOLERANCE

F = $\pm 1\%$

J = $\pm 5\%$

G = $\pm 2\%$

(4) PACKAGING

R = Reel Pack

B = Bulk

T = Box Pack

(5) TEMPERATURE COEFFICIENT OF RESISTANCE

F = $\pm 100\text{ppm}/^\circ\text{C}$

- = Based on spec.

(6) FORMING

52- = 52.4mm

91- = 91mm

73- = 73mm

Note: 52.4mm, 73mm and 91mm represent dimension A of the axial type, please refer to the category of AXIAL/REEL TAPE SPECIFICATION for the detail.

(7) RESISTANCE VALUE

E24 & E96 Series

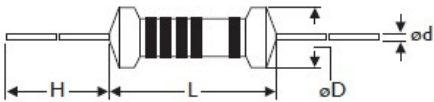
Example:

0R1 = 0.1 Ω , 100R = 100 Ω , 1K = 1,000 Ω

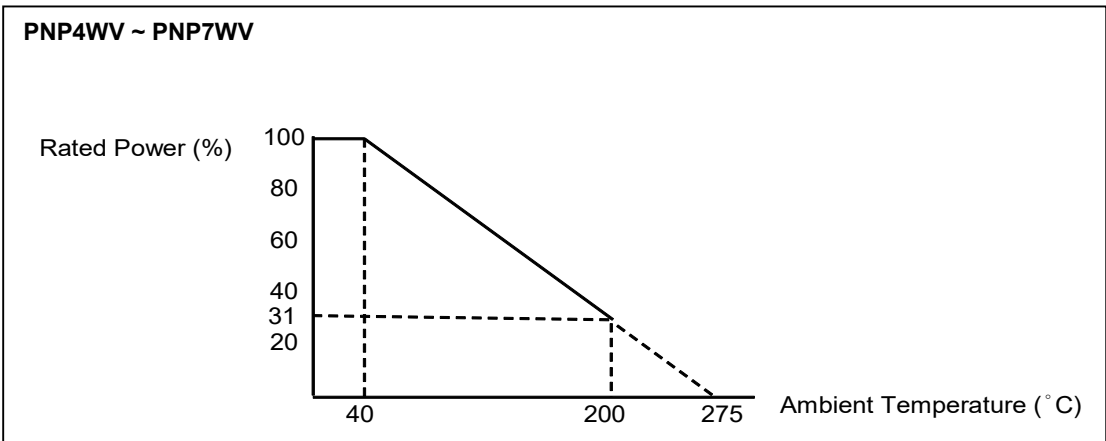
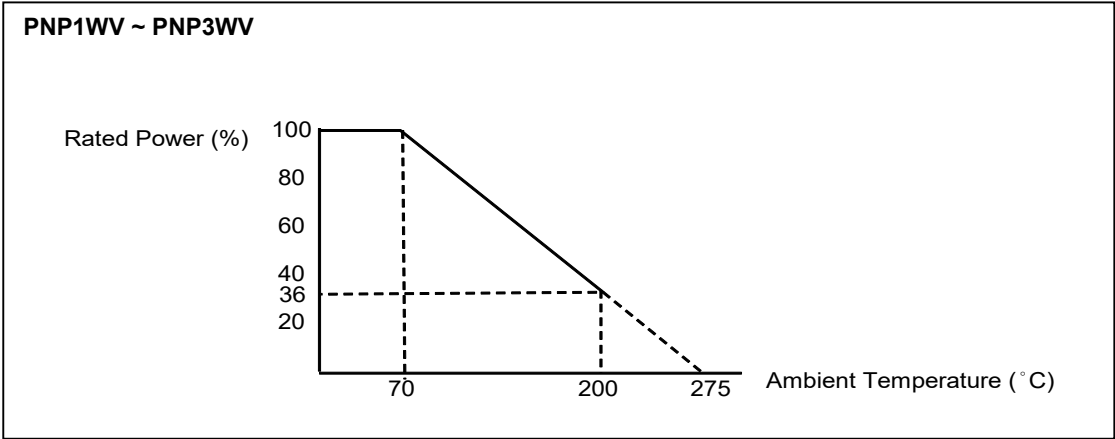
DIMENSIONS

Unit: mm

| | Normal | L | ψD | H | ψd |
|--------|--------|-----------|-----------|----------|------------|
| PNP1WV | | 10.0± 1.0 | 4.3 ± 0.5 | 26 ± 2.0 | 0.8 ± 0.05 |
| PNP3WV | | 13.0± 1.0 | 5.5 ± 0.5 | 34 ± 2.0 | 0.8 ± 0.05 |
| PNP4WV | | 17.5± 1.0 | 6.2 ± 0.5 | 32 ± 2.0 | 0.8 ± 0.05 |
| PNP5SV | | 17.5± 1.0 | 6.2 ± 0.5 | 32 ± 2.0 | 0.8 ± 0.05 |
| PNP5WV | | 17.0± 1.0 | 7.5 ± 0.5 | 32 ± 2.0 | 0.8 ± 0.05 |
| PNP7WV | | 25.0± 1.0 | 7.5 ± 0.5 | 38 ± 2.0 | 0.8 ± 0.05 |



DERATING CURVE



ELECTRICAL CHARACTERISTICS

| CHARACTERISTICS | PNP1WV | PNP3WV | PNP4WV | PNP5SV | PNP5WV | PNP7WV |
|------------------------------|------------------------|----------------|----------------|----------------|----------------|------------|
| Power Rating at 40 °C | | | 4W | 5W | 5W | 7W |
| Power Rating at 70 °C | 1W | 3W | | | | |
| Resistance Range (±1%) | 0.1Ω - 1KΩ | 0.1Ω - 2.8KΩ | 0.1Ω - 4.3KΩ | 0.1Ω - 4.3KΩ | 0.1Ω - 6.8KΩ | 0.1Ω - 6KΩ |
| Resistance Range (±2% & ±5%) | 0.047Ω - 1KΩ | 0.047Ω - 2.8KΩ | 0.047Ω - 4.3KΩ | 0.047Ω - 4.3KΩ | 0.047Ω - 6.8KΩ | 0.1Ω - 6KΩ |
| Voltage Proof on Insulation | 300V | 300V | 300V | 300V | 300V | 300V |
| Maximum working voltage | $\sqrt{(P \times R)}$ | | | | | |
| Operating Temp. Range | - 40°C to +200°C | | | | | |
| Temperature Coefficient | ±100ppm/°C, ±300ppm/°C | | | | | |

Note: For resistance value out of above range is by request.

TEST AND REQUIRMENTS

| TEST | TEST METHOD | PROCEDURE | APPRAISE |
|-------------------------------|------------------|--|---|
| Short Time Overload | IEC 60115-1 4.13 | 10 times rated power for 5 sec. | ±2%+0.05Ω |
| 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 -40°C to +155°C | By Type |
| Insulation Resistance | IEC 60115-1 4.6 | In V-Block for 60 sec. | >100MΩ |
| 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) |
| 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

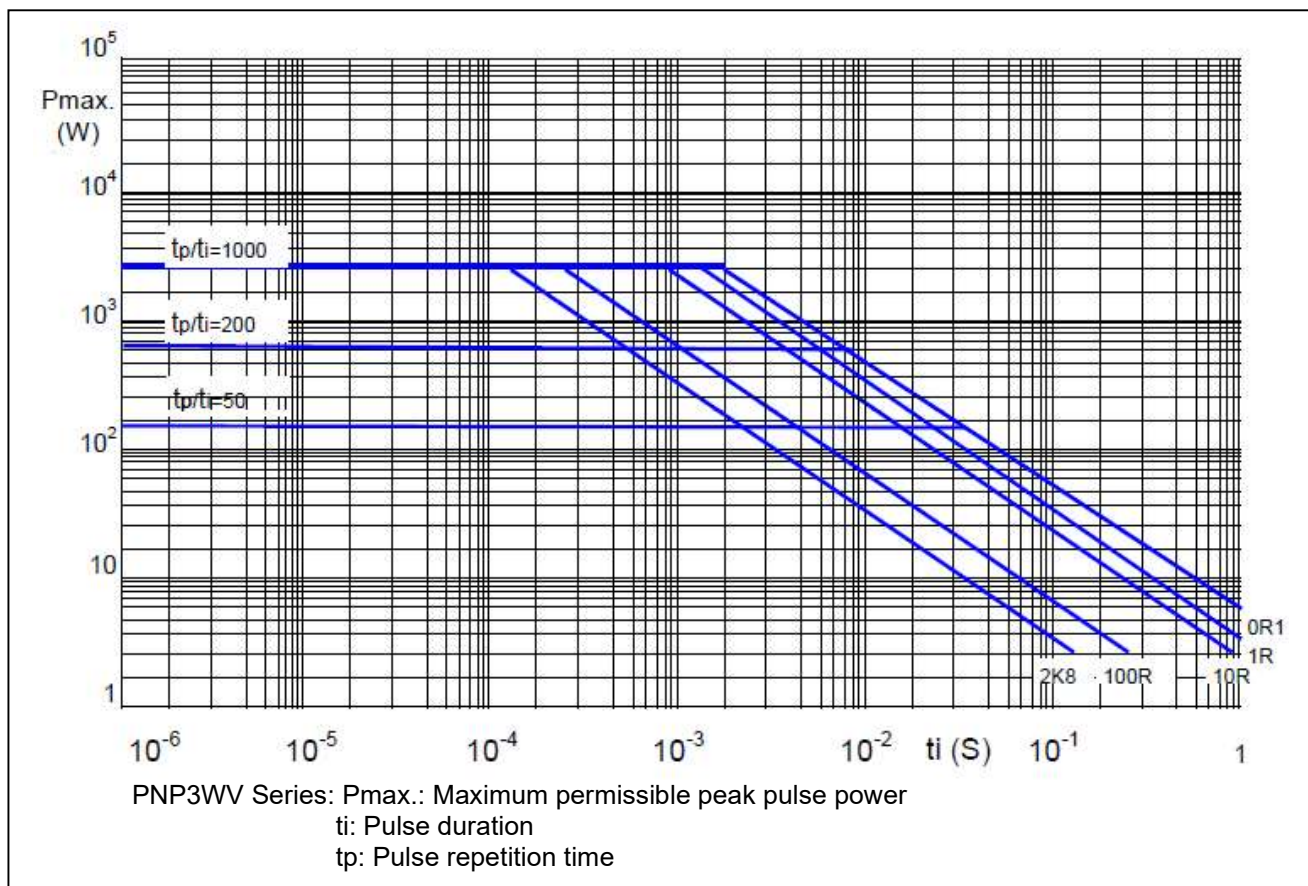
Where

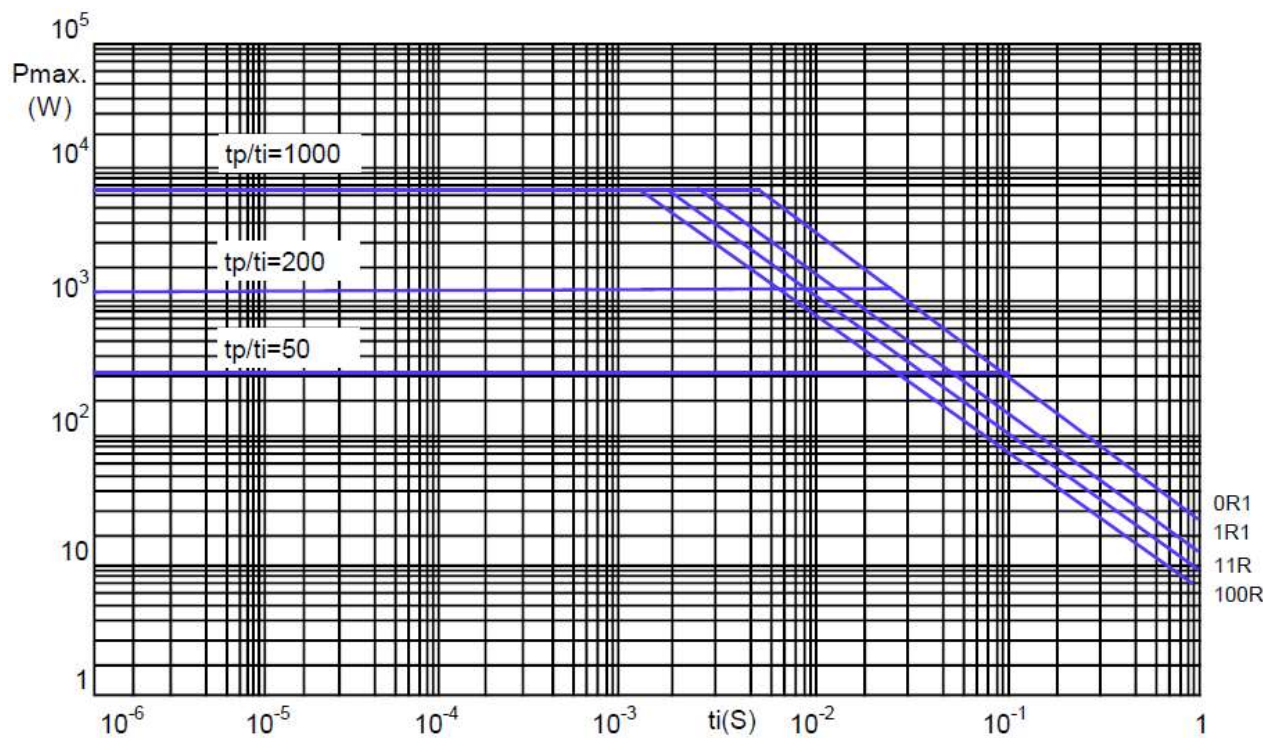
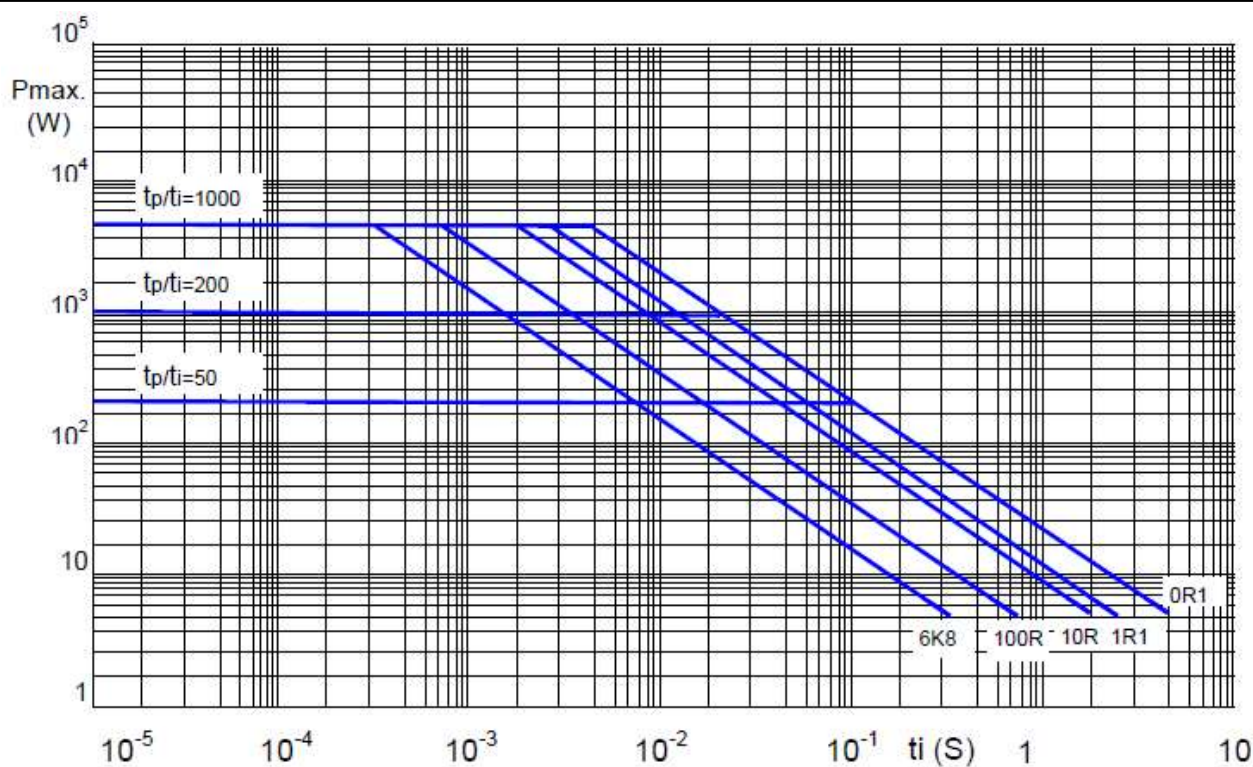
V=Continuous rated DC or
AC (rms) working voltage (V)

P=Rated power (W)

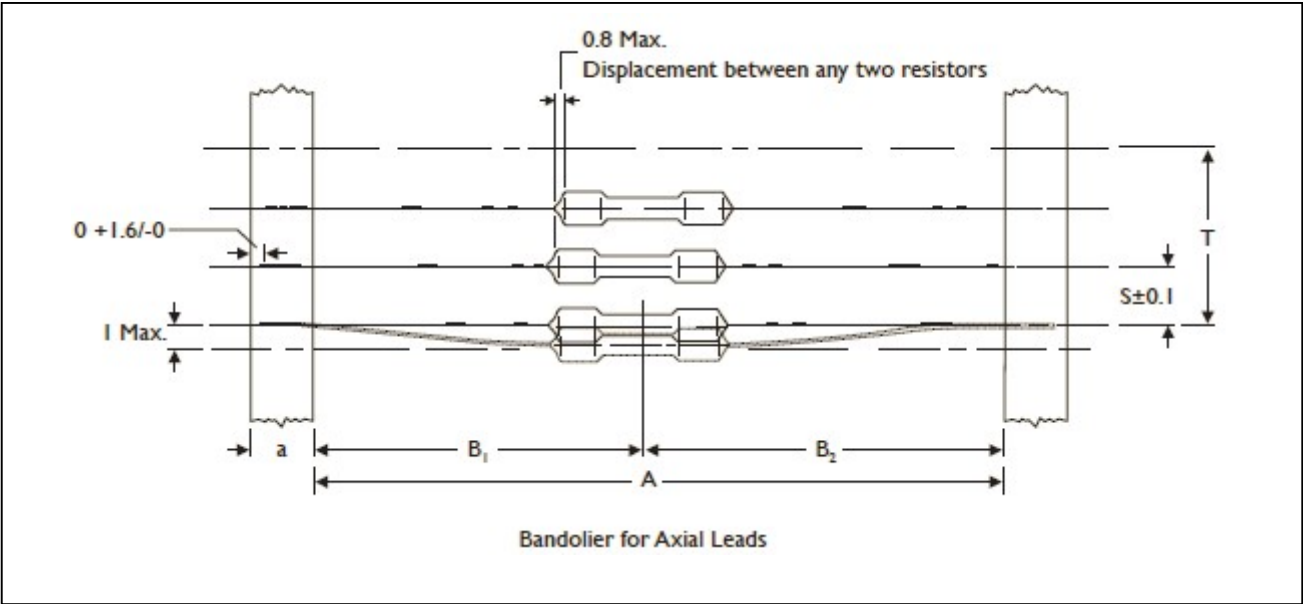
R=Resistance value (Ω)

PULSE DIAGRAMS



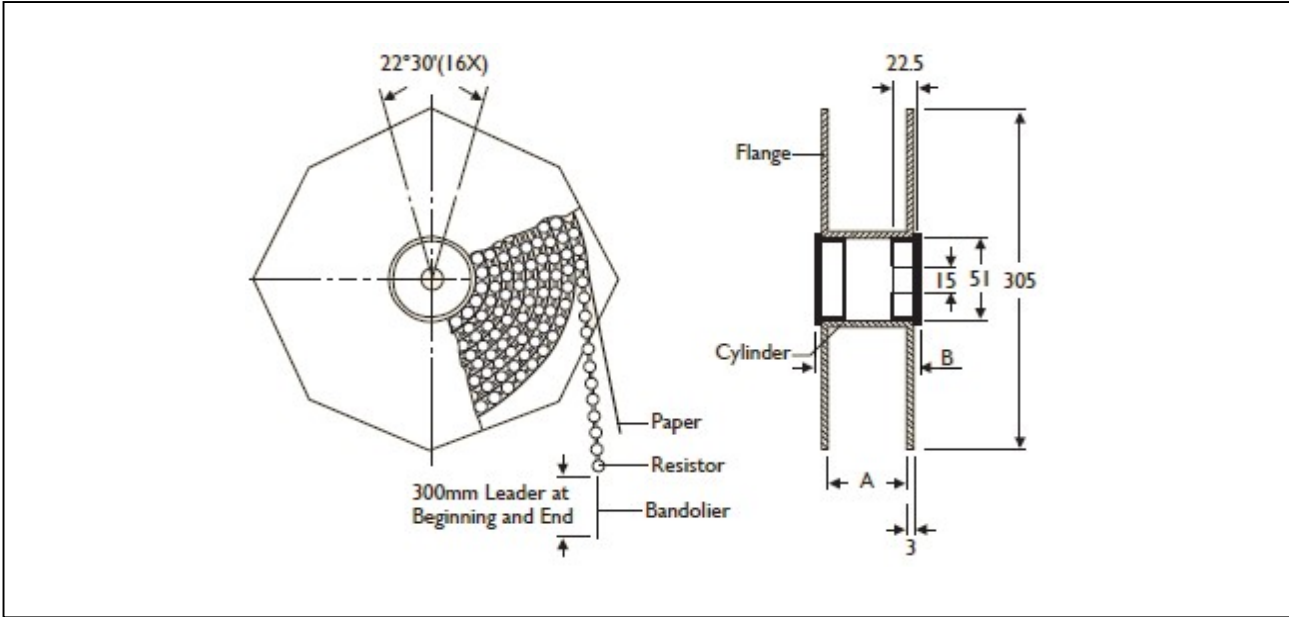


AXIAL / REEL TAPE SPECIFICATION



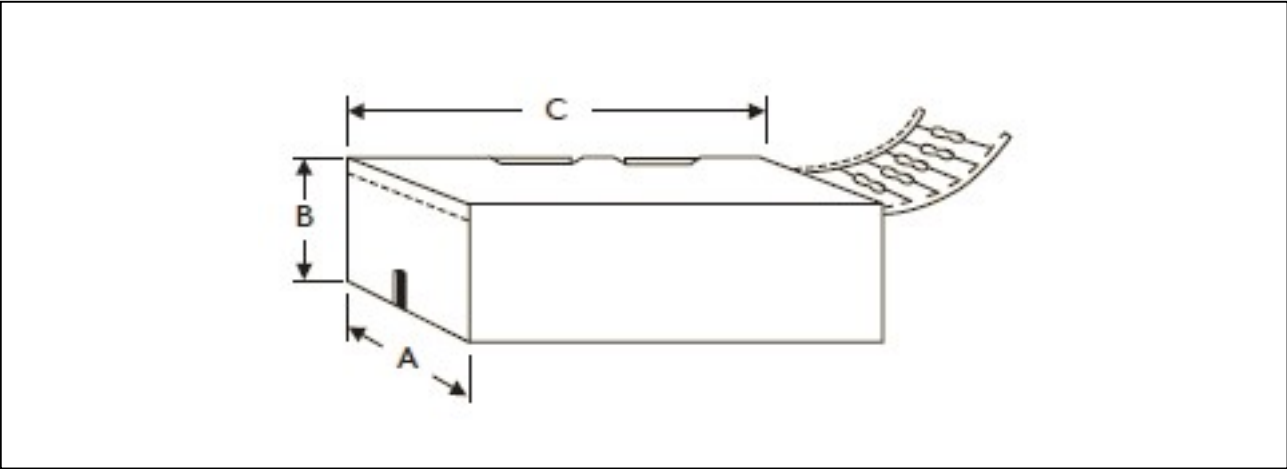
| | | | | | Unit: mm |
|--------|---------|------------|--------------|-------------|--|
| Normal | a | A | B1-B2 (Max.) | S (spacing) | T (max. deviation of spacing) |
| PNP1WV | 6 ± 0.5 | 52.4 ± 1.5 | 1.2 | 10 | 1 mm per 10 spacing, 0.5 mm per 5 spacing |
| PNP3WV | 6 ± 0.5 | 73.0 ± 1.5 | 1.5 | 10 | |
| | | 52.4 ± 1.5 | 1.2 | | |
| PNP4WV | 6 ± 0.5 | 73.0 ± 1.5 | 1.5 | 10 | |
| | | 52.4 ± 1.5 | 1.2 | | |
| PNP5SV | 6 ± 0.5 | 73.0 ± 1.5 | 1.5 | 10 | |
| | | 52.4 ± 1.5 | 1.2 | | |
| PNP5WV | 6 ± 0.5 | 73.0 ± 1.5 | 1.5 | 10 | |
| | | 52.4 ± 1.5 | 1.2 | | |
| PNP7WV | 6 ± 0.5 | 91.0 ± 1.5 | 1.5 | 10 | |

TAPE ON REEL PACKING



| TYPE | | | Unit: mm/piece |
|--------|------------------|------|-------------------|
| Normal | Across Flange(A) | B | Quantity Per Reel |
| PNP1WV | 66.5 | 75.5 | 2,500 |
| PNP3WV | 66.5 | 75.5 | 1,000 |
| PNP4WV | 87 | 96 | 1,000 |
| PNP5SV | 87 | 96 | 1,000 |
| PNP5WV | 87 | 96 | 500 |

TAPE ON BOX PACKING



| TYPE | DIMENTIONS | | | Unit: mm/piece |
|--------|------------|----|-----|------------------|
| Normal | A | B | C | Quantity Per Box |
| PNP1WV | 73 | 45 | 258 | 1,000 |
| PNP3WV | 103 | 78 | 260 | 500 |
| PNP4WV | 103 | 78 | 260 | 500 |
| PNP5SV | 103 | 78 | 260 | 500 |
| PNP5WV | 103 | 94 | 260 | 250 |
| PNP7WV | 115 | 70 | 263 | 250 |

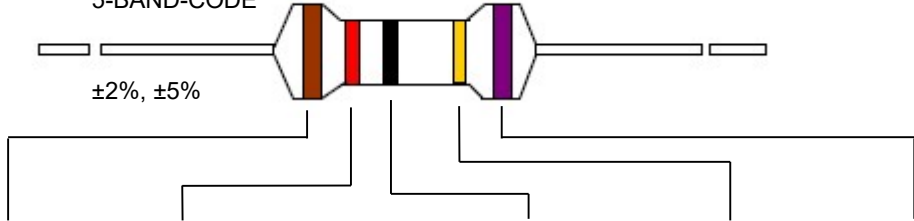
BULK PACKING

| Normal | Piece/Per Inner Box | Bag/Per Inner Box | Piece Per Bag |
|--------|---------------------|-------------------|---------------|
| PNP1WV | 5,000 | 5 | 1,000 |
| PNP3WV | 1,000 | 2 | 500 |
| PNP4WV | 1,000 | 2 | 500 |
| PNP5SV | 1,000 | 2 | 500 |
| PNP5WV | 500 | 10 | 50 |
| PNP7WV | 500 | 10 | 50 |

MARKING

5-BAND-CODE

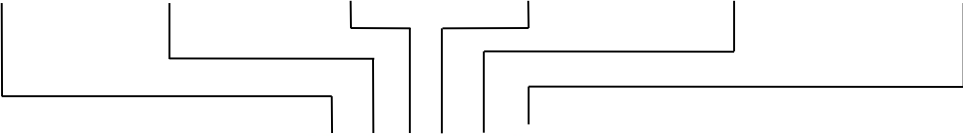
±2%, ±5%



| COLOR | 1st BAND | 2nd BAND | 3rd BAND | MULTIPLIER | TOLERANCE | SPECIAL CODE |
|--------|----------|----------|----------|------------|-----------|--------------|
| BLACK | 0 | 0 | 0 | 1Ω | | |
| BROWN | 1 | 1 | 1 | 10Ω | ± 1%(F) | |
| 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 | | PNP V Series |
| GREY | 8 | 8 | 8 | 0.001Ω | | |
| WHITE | 9 | 9 | 9 | 0.0001Ω | | |
| GOLD | | | | 0.1Ω | ± 5%(J) | |
| SILVER | | | | 0.01Ω | | |

±1%

6-BAND-CODE



REVISION HISTORY

| REVISION | DATE | CHANGE NOTIFICATION | DESCRIPTION |
|-----------|--------------|---------------------|---|
| Version 4 | May 30, 2024 | - | - Revised tape on box packing for PNP3WV and PNP4WV |
| Version 3 | Apr.1, 2024 | - | - Added forming code description for part number |
| Version 2 | Aug.31, 2023 | - | - Revised LEGAL DISCLAIMER |
| Version 1 | Feb.6, 2023 | - | - Revised resistance range ($\pm 1\%$) |
| Version 0 | Aug.2, 2021 | - | - First issue of this specification |

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[PNP5WVJT-73-27R](#) [PNP5WVJT-73-330R](#) [PNP5WVJT-73-0R22](#) [PNP1WVJT-52-1R5](#) [PNP5WVJT-73-0R82](#)
[PNP5WVJT-73-110R](#) [PNP3WVJT-73-100R](#) [PNP5WVJT-73-33R](#) [PNP3WVJT-73-15R](#) [PNP7WVJT-91-0R22](#)
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[PNP5WVJT-73-3R3](#) [PNP3WVJT-73-2K2](#) [PNP5WVJT-73-0R18](#) [PNP5WVJT-73-5R6](#) [PNP5WVJT-73-68R](#)
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