

# 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 = ±1%	J = ±5%
G = ±2%	

**(4) PACKAGING**

R = Reel Pack	B = Bulk
T = Box Pack	

**(5) TEMPERATURE COEFFICIENT OF RESISTANCE**

F=±100ppm/°C	- = Based on spec.
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**(6) FORMING**

52- = 52.4mm	91- = 91mm
73- = 73mm	

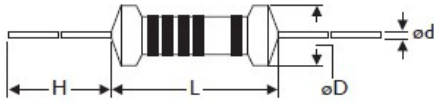
Note: 52.4mm,73mm and 91mm represent dimension A of the axial type, please refer to the category of AXIAL/REEL TAPE SPECIFICATION for the detail.

**(7) RESISTANCE VALUE**

E24 & E96 Series  
 Example:  
 0R1= 0.1Ω, 100R= 100Ω, 1K = 1,000Ω

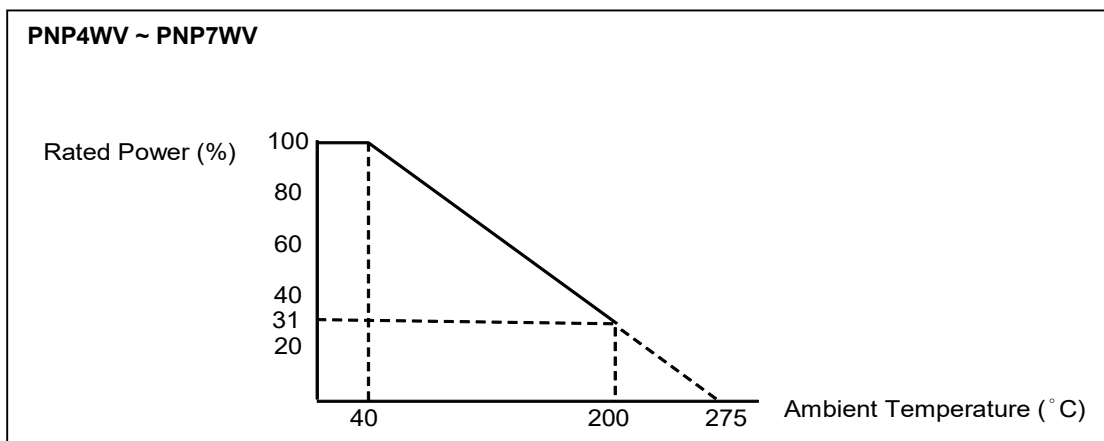
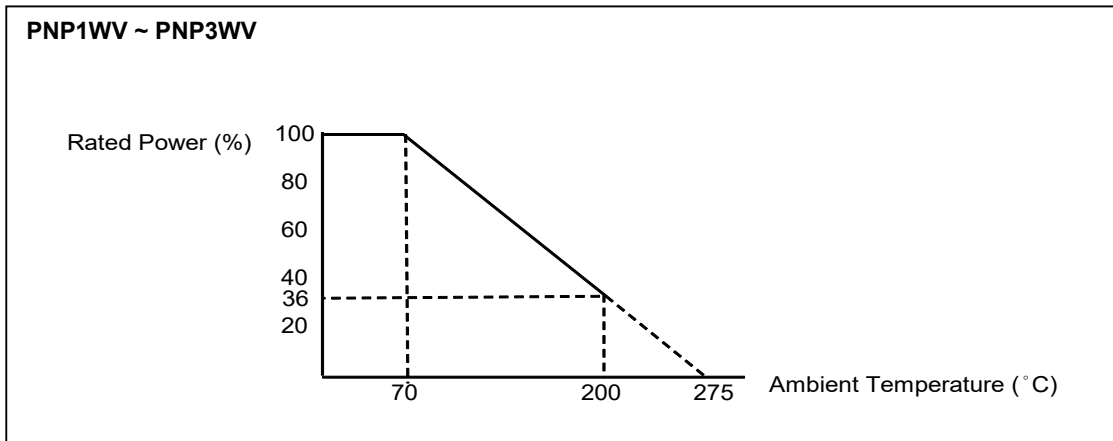
**DIMENSIONS**

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

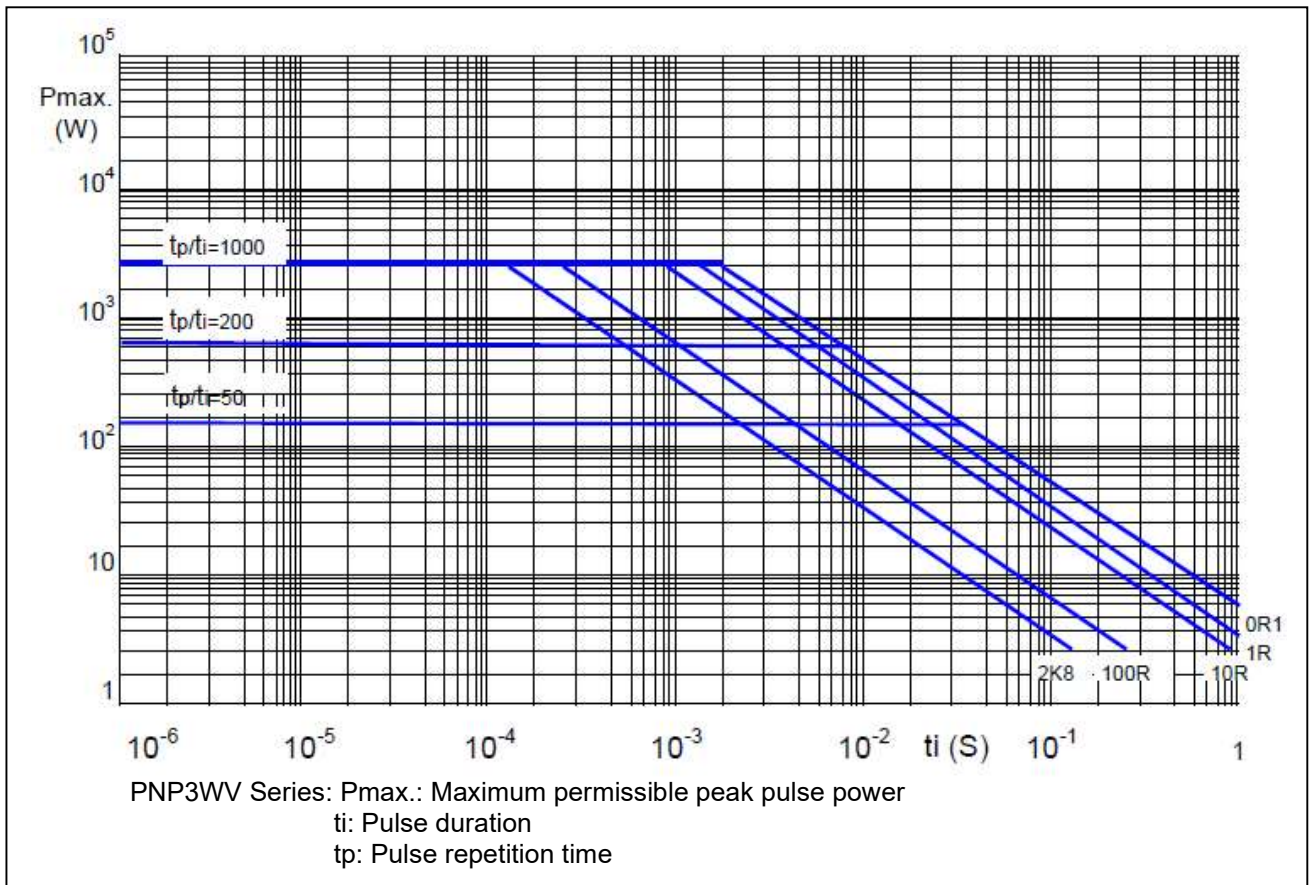
Where

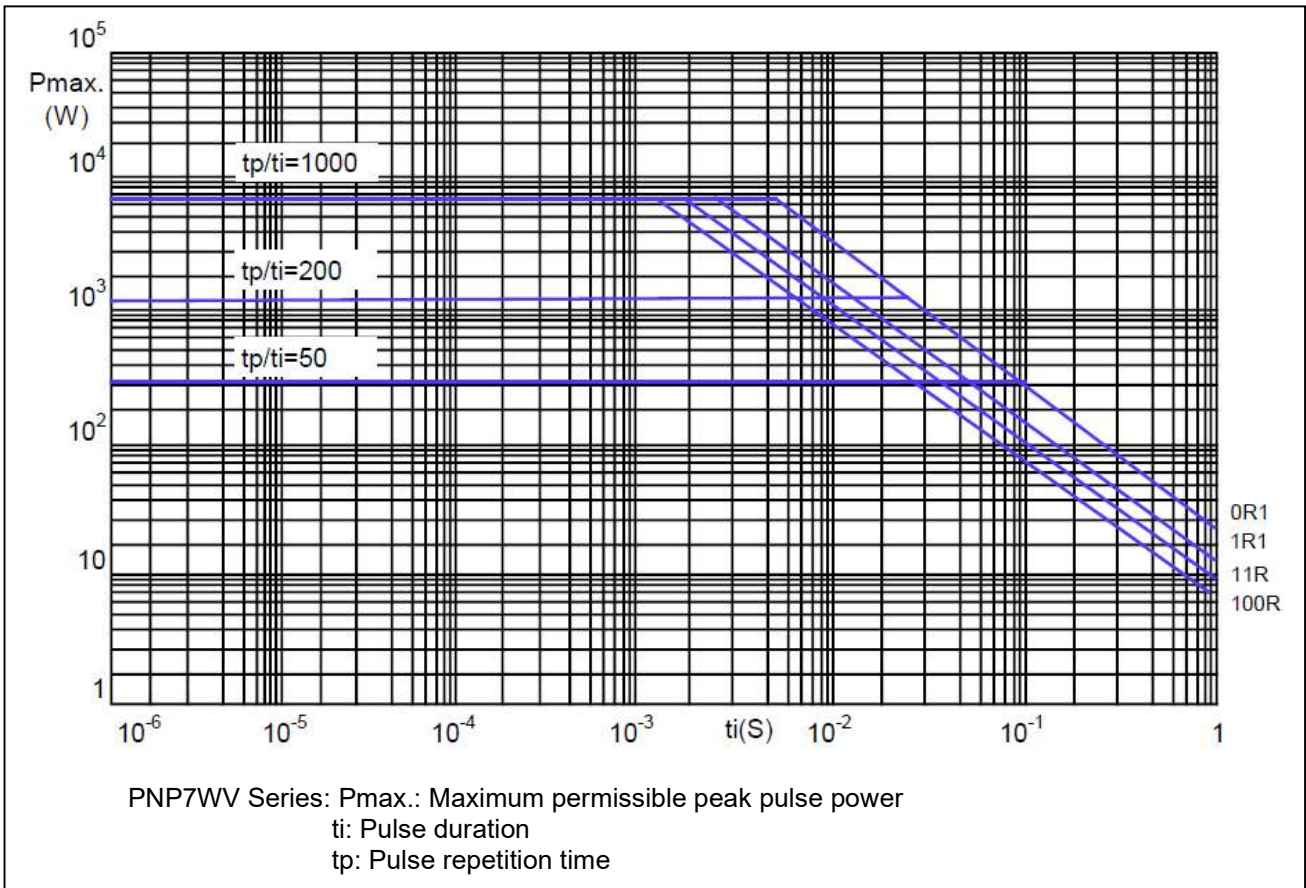
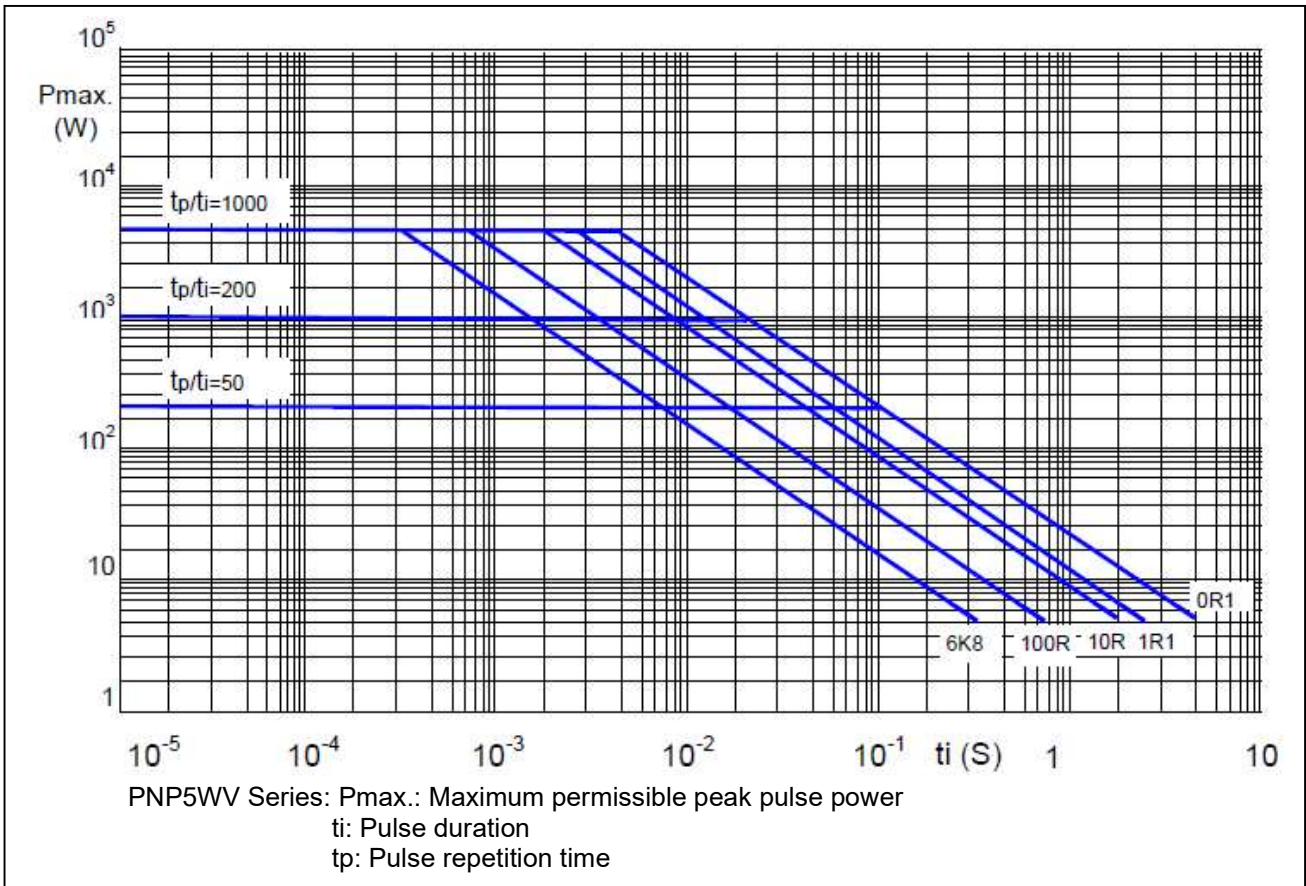
V=Continuous rated DC or AC (rms) working voltage (V)

P=Rated power (W)

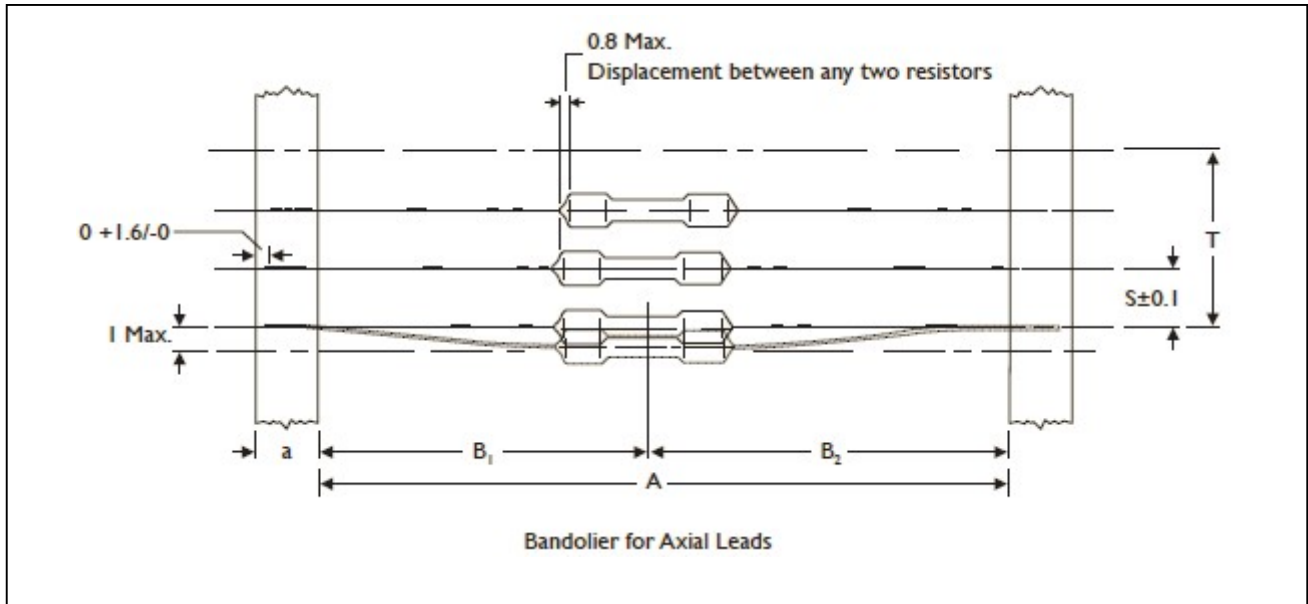
R=Resistance value ( $\Omega$ )

**PULSE DIAGRAMS**





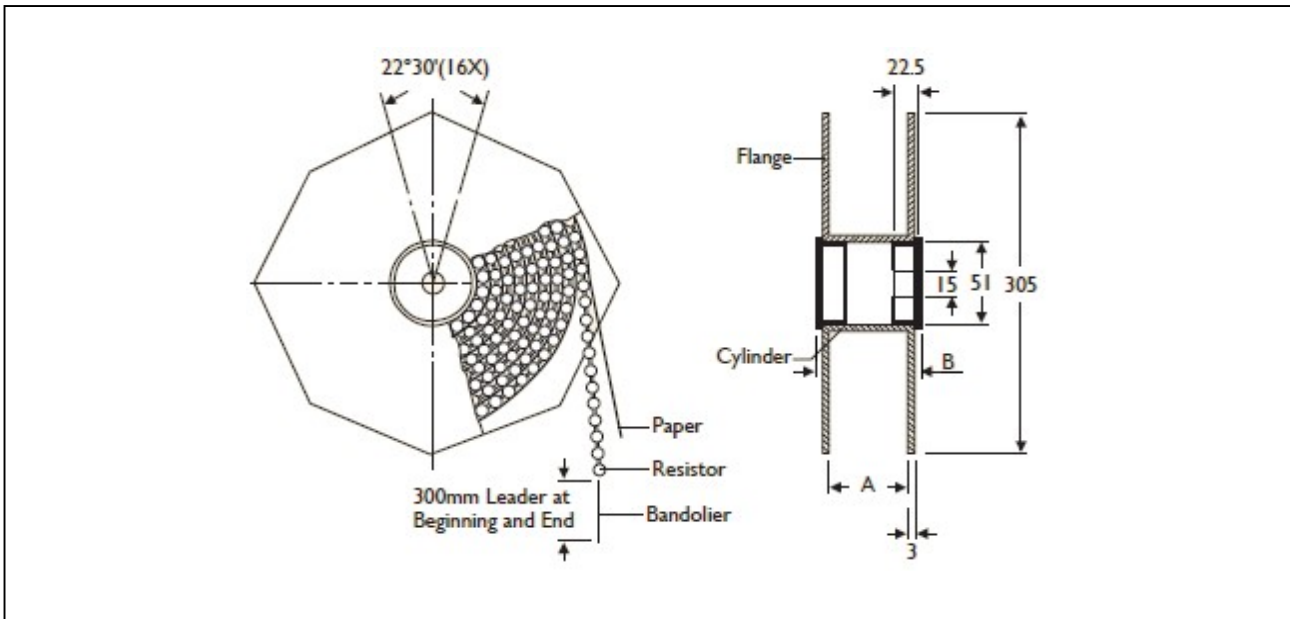
**AXIAL / REEL TAPE SPECIFICATION**



Unit: mm

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

**TAPE ON REEL PACKING**



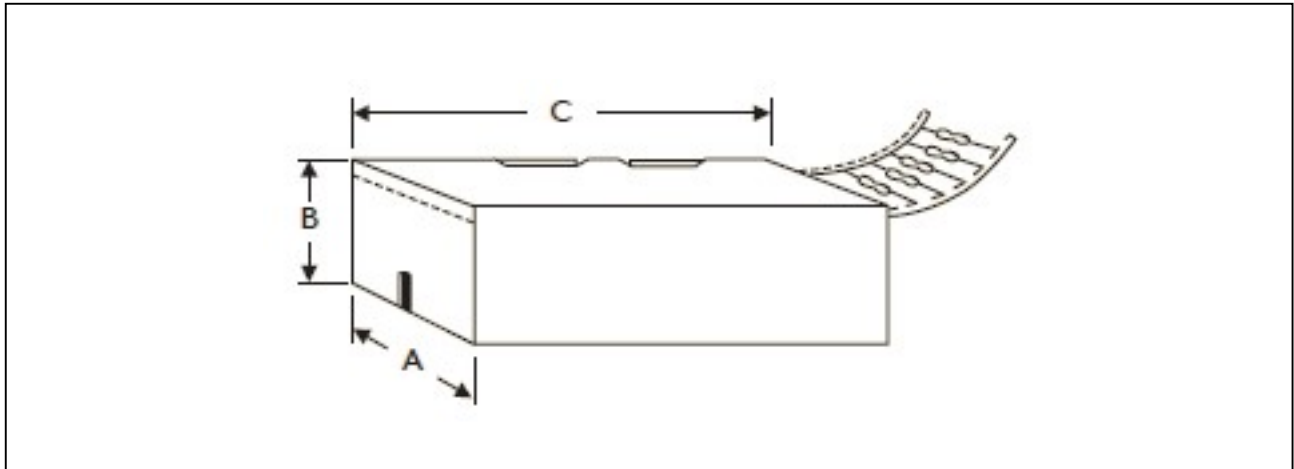
TYPE

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**

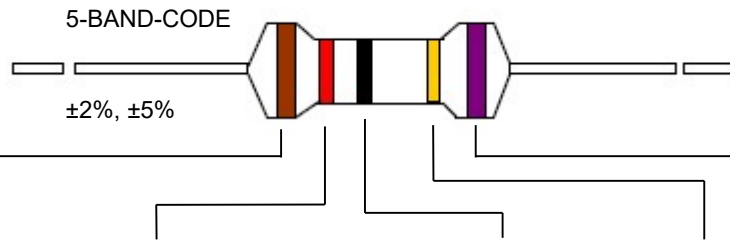


TYPE	DIMENSIONS			Quantity Per Box
	A	B	C	
Normal				
PNP1WV	73	45	258	1,000
PNP3WV	103	78	260	500
PNP4WV	103	78	260	500
PNP5SV	103	78	260	500
PNP5WV	103	94	260	250
PNP7WV	115	70	263	250

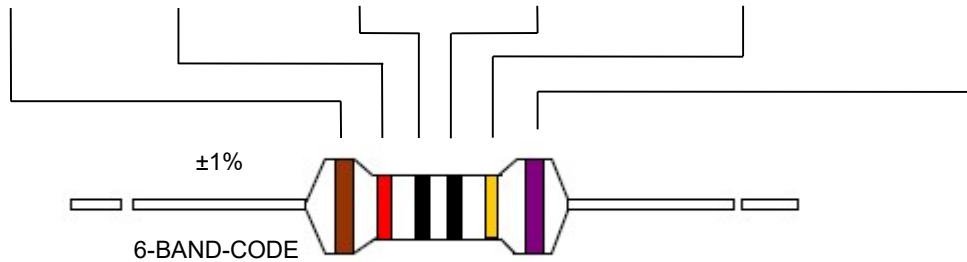
**BULK PACKING**

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**



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		



**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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