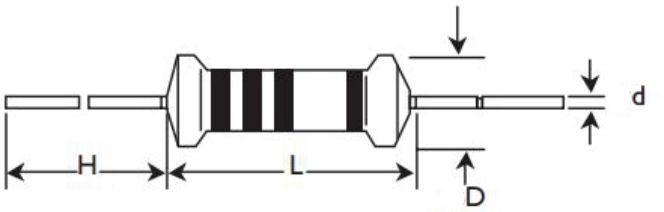
Wire Wound Resistors
(N)KNP Series: Standard Axial Leaded



INTRODUCTION

- Excellent heat dissipation,
- Small linear temperature Coefficient
- Instant overload capability
- Flameproof construction in accordance with UL-1412

FEATURES

- Operating Temperature: -55°C to +350°C
- Power Range: 0.5W ~ 20W
- Resistance Range: 0.01Ω~ 3KΩ
- UL94V-0 Flameproof coating

POWER RATING AND DIMENSIONS (mm)

Code	Rated Wattage (W)	Dielectric Voltage (V)	Dimensions				Resistance Range (Ω)	Standard TCR (ppm/°C) other TCRs are available
			L	D	H ± 2	d ± .05		
KNP50	0.5W	300	9.0 ± 0.5	3.5 ± 0.5	26	0.52	0.01 ~ 0.099	±500~1800
KNP1WS	1.0W	500					0.1 ~ 22	±50 (KNP2WM is 100 ppm)
KNP2WM	2.0W						22 ~ 150	±300(KNP2WM is 400 ppm)
							151 ~ 300	±350 (KNP2WM is 400 ppm)
KNP1W	1.0W	300	11.5 ± 1.0	3.5 ± 0.5	35	0.65	0.01 ~ 0.099	±500~1800
KNP2WS	2.0W	500					0.1 ~ 22	±50 (KNP3WM is 100 ppm)
KNP3WM	3.0W						22 ~ 470	±300 (KNP3WM is 400 ppm)
							471 ~ 499	±350 (KNP3WM is 400 ppm)
KNP2W	2.0W	400	15.5 ± 1.0	5.0 ± 0.5	32	0.72	0.01 ~ 0.099	±500~1800
KNP3WS	3.0W	500					0.1 ~ 22	
							22 ~ 470	±300
							471 ~ 1.5K	±350
KNP3W	3.0W	400	17.5 ± 1.0	6.0 ± 0.5	32	0.72	0.01 ~ 0.099	±500~1800
KNP5WS	5.0W	500					0.1 ~ 22	±50
							22 ~ 470	±300
							471 ~ 1.5K	±350
KNP5W	5.0W	400	24.5 ± 1.0	8.0 ± 0.5	38	0.72	0.01 ~ 0.099	±500~1800
KNP7WS	7.0W	500					0.1 ~ 22	±50
							22 ~ 560	±300
							561 ~ 3K	±350
KNP7W	7.0W	400	40.0 ± 1.0	8.0 ± 0.5	35	0.72	0.01 ~ 0.099	±500~1800
KNP10WS	10W	500					0.1 ~ 22	±50
							22 ~ 560	±300
							561 ~ 3K	±350
KNP8W	8.0W	800	42.0 ± 1.0	8.0 ± 1.0	38	0.72	1 ~ 3K	±350
KNP10W	10W	400	53.0 ± 1.0	8.0 ± 0.5	35	0.72	0.01 ~ 0.099	±500~1800
KNP12WS	12W	500					0.1 ~ 22	±50
							22 ~ 560	±300
							561 ~ 3K	±350
KNP15W	15W	400	66.0 ± 1.0	8.0 ± 0.5	35	0.72	0.01 ~ 0.099	±500~1800
KNP20WS	20W						0.1 ~ 22	±50
							22 ~ 500	±300

1. Resistance Range for standard resistance, below or over this resistance range on request.
2. Above resistance range is based on ±5% tolerance. Other tolerance is available on request.
3. *Use prefix N for non-inductive Ayrton-Perry wound wire. (See last page for Ayrton-Perry wiring method).

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■ ELECTRICAL CHARACTERISTICS (Ta=25℃ Unless otherwise specified)

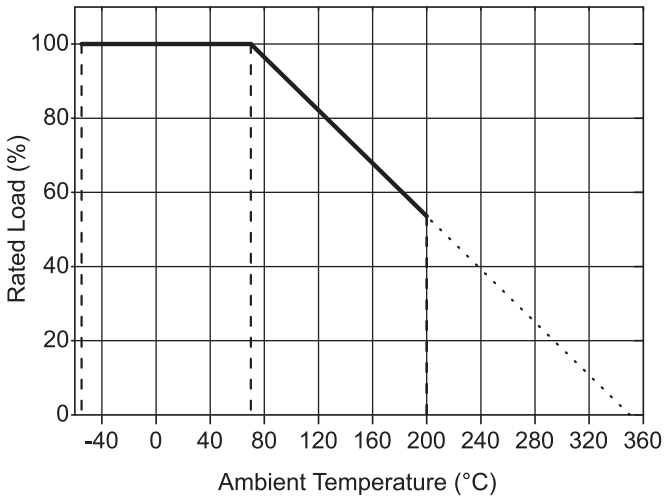
ITEMS	Test Method	Specification
Short Time Overload	Rated Voltage x 2.5 or maximum overload volume, whichever is lower, for 5 seconds.	ΔR ≤ ±(2.0% +0.05Ω)
Load Life	70°C at RCWV (1.5hrs ON, 0.5hrs OFF) for 1000 hours	ΔR ≤ ±(5% +0.05Ω)
Insulation Resistance	JIS-C5202 5.6 In V-Block >10,000MΩ	
Load Life in Humidity	40 ± 2°C, 90% ~ 95% RH, 1000hrs, 1.5 hours ON, 0.5 hour OFF	ΔR ≤ ±(5% +0.05Ω)
Soldering Ability	260°C ± 5°C for 2 ± 0.5 seconds	95% min. coverage
Terminal Strength	Direct load for 10 second in the direction off the terminal leads	Tensile : ≥ 2.5Kg

Storage Temperature : 25 ± 3°C ; Humidity < 80% RH

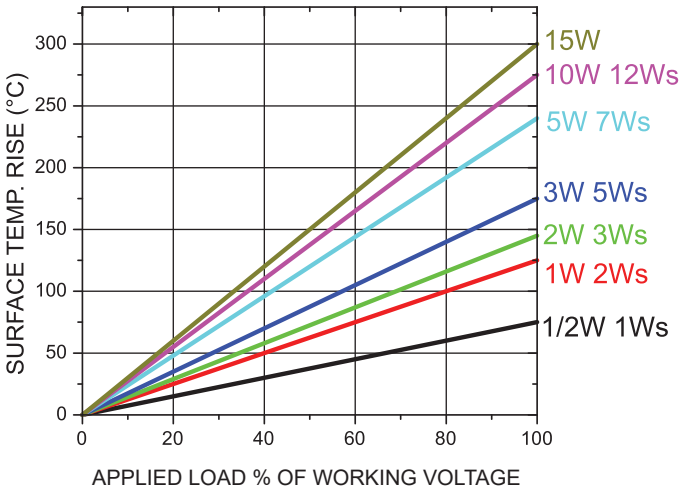
Rated continuous Working Voltage (RCWV) = $\sqrt{POWER.RATING.* \ RESISTANCE.VALUE}$

■ CHARACTERISTICS (TYPICAL)

DERATING CURVE



HOT-SPOT TEMPERATURE



■ PART NUMBER EXAMPLE

KNP 50 R - 22R0 - J 100-T73

- KNP — Series
- 50 — Size Code
- R — Packaging
- 22R0 — Resistance
- J — Tolerance
- 100 — Temperature Coefficient (omit for standard)
- T73 — tape to tape spec. code (omit for standard)

*Use prefix N for non-inductive Ayrton - Perry wound wire.

■ TOLERANCE

±%	5	2	1
Code	J	G	F

■ RESISTANCE

Ohms	0.5	1.5	10	100	1K
Code	0R50	1R50	10R0	100R	1K00

■ PACKAGING

Packaging Code	R	A	B	C
Description	Tape & Reel	Taped Box	Loose (Bulk)	Cut & Form
Special Taping Suffix	T52, T73			

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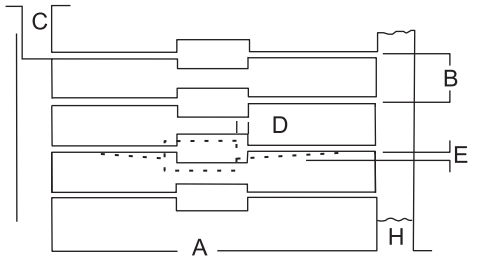
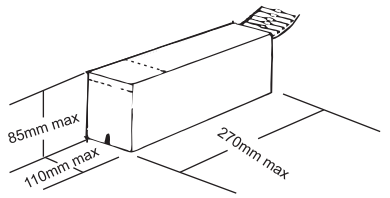
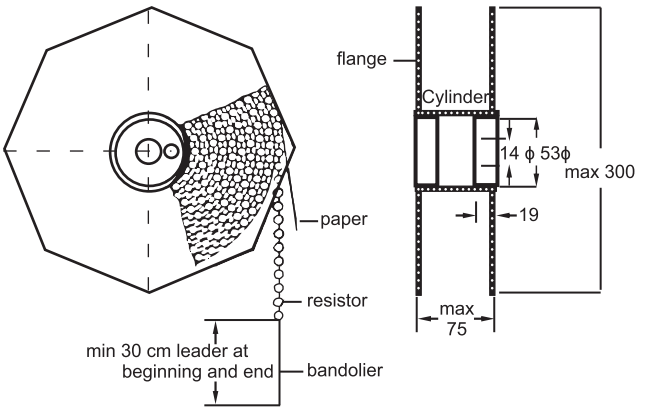
■ TAPE, REEL, & AMMO SPECIFICATIONS



Body Diameter	Size Code	A	B	C	D	E	H
< 5mm	T-52	52 ± 1	5 ± 0.5	4.0 min.	0.8 max.	1.2 max.	6 ± 1
> 5mm	T-52	52 ± 1	10 ± 0.5	4.0 min.	0.8 max.	1.2 max.	6 ± 1
	T-73	73 ± 1					

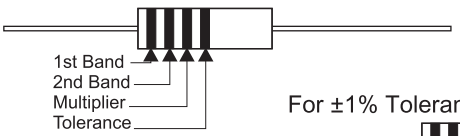




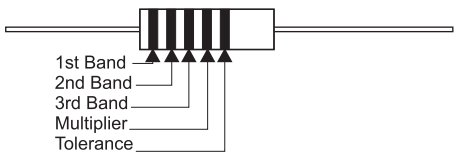
■ COLOR CODE CHART

Color	1st Band	2nd Band	3rd Band (B ~ F Tol)	Multiplier	Tolerance	Tolerance Code
Black	0	0	0	10^{0}		
Brown	1	1	1	10^{1}	±1%	F
Red	2	2	2	10^{2}	±2%	G
Orange	3	3	3	10^{3}		
Yellow	4	4	4	10^{4}		
Green	5	5	5	10^{5}	±0.5%	D
Blue	6	6	6	10^{6}	±0.25%	C
Violet	7	7	7	10^{7}	±0.10%	B
Gray	8	8	8	10^{8}	±0.05%	A
White	9	9	9	10^{9}		
Gold				10^{-1}	±5%	J
Silver				10^{-2}	±10%	K

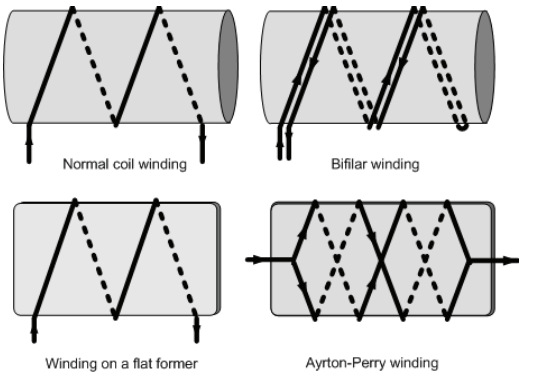
For ±5% Tolerance



For ±1% Tolerance



■ AYRTON-PERRY WIRE WINDING EXAMPLE



The non-inductive wire winding method by Ayrton-Perry. Use prefix 'N' for non-inductive Ayrton-Perry wiring winding method*.

■ RESISTANCE DECADE TABLE

Resistance Tolerance	Resistance Values																							
M (20%)	1.0				1.5				2.2				3.3				4.7				6.8			
K (10%)	1.0		1.2		1.5		1.8		2.2		2.7		3.3		3.9		4.7		5.6		6.8		8.2	
G (2%), J (5%)	1.0	1.1	1.2	1.3	1.5	1.6	1.8	2.0	2.2	2.4	2.7	3.0	3.3	3.6	3.9	4.3	4.7	5.1	5.6	6.2	6.8	7.5	8.2	9.1
F (1%)	1.00	1.10	1.21	1.33	1.47	1.62	1.78	1.96	2.15	2.37	2.61	2.87	3.16	3.48	3.83	4.22	4.64	5.11	5.62	6.19	6.81	7.50	8.25	9.09
	1.02	1.13	1.24	1.37	1.50	1.65	1.82	2.00	2.21	2.43	2.67	2.94	3.24	3.57	3.92	4.32	4.75	5.23	5.76	6.34	6.98	7.68	8.45	9.31
	1.05	1.15	1.27	1.40	1.54	1.69	1.87	2.05	2.26	2.49	2.74	3.01	3.32	3.65	4.02	4.42	4.87	5.36	5.90	6.49	7.15	7.87	8.66	9.53
	1.07	1.18	1.30	1.43	1.58	1.74	1.91	2.10	2.32	2.55	2.80	3.09	3.40	3.74	4.12	4.53	4.99	5.49	6.04	6.65	7.32	8.06	8.87	9.76