

### ■ 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)	TCR (ppm/°C)
			L	D	H ± 2	d ± .05		
KNP50 & KNP1WS	0.5W 1.0W	300	9.0 ± 0.5	3.5 ± 0.5	26	0.52	0.01 ~ 0.099	±500~1800
							0.1 ~ 22	±50
							22 ~ 150	±300
KNP1W & KNP2WS	1.0W 2.0W	300	11.5 ± 1.0	3.5 ± 0.5	35	0.65	0.01 ~ 0.099	±500~1800
							0.1 ~ 22	±50
							22 ~ 470	±300
KNP2W & KNP3WS	2.0W 3.0W	400	15.5 ± 1.0	5.0 ± 0.5	32	0.72	0.01 ~ 0.099	±500~1800
							0.1 ~ 22	±50
							22 ~ 470	±300
KNP3W & KNP5WS	3.0W 5.0W	400	17.5 ± 1.0	6.0 ± 0.5	32	0.72	0.01 ~ 0.099	±500~1800
							0.1 ~ 22	±50
							22 ~ 470	±300
KNP5W & KNP7WS	5.0W 7.0W	400	24.5 ± 1.0	8.0 ± 0.5	38	0.72	0.01 ~ 0.099	±500~1800
							0.1 ~ 22	±50
							22 ~ 560	±300
KNP7W & KNP10WS	7.0W 10W	400	40.0 ± 1.0	8.0 ± 0.5	35	0.72	0.01 ~ 0.099	±500~1800
							0.1 ~ 22	±50
							22 ~ 560	±300
KNP8W	8.0W	800	42.0 ± 1.0	8.0 ± 1.0	38	0.72	561 ~ 3K	±350
KNP10W & KNP12WS	10W 12W	400	53.0 ± 1.0	8.0 ± 0.5	35	0.72	0.01 ~ 0.099	±500~1800
							0.1 ~ 22	±50
							22 ~ 560	±300
KNP15W & KNP20WS	15W 20W	400	66.0 ± 1.0	8.0 ± 0.5	35	0.72	0.01 ~ 0.099	±500~1800
							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).

### ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C Unless otherwise specified)

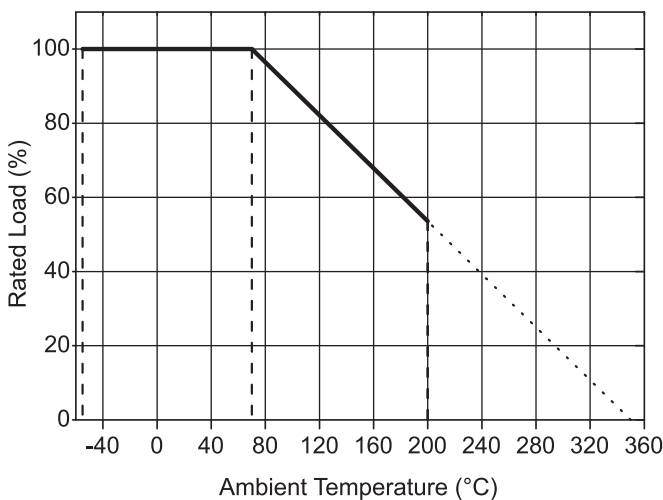
ITEMS	Test Method	Specification
Short Time Overload	Rated Voltage x 2.5 or maximum overload volume, whichever is lower, for 5 seconds.	$\Delta R \leq \pm(2.0\% + 0.05\Omega)$
Load Life	70°C at RCWV (1.5hrs ON, 0.5hrs OFF) for 1000 hours	$\Delta R \leq \pm(5\% + 0.05\Omega)$
Insulation Resistance	JIS-C5202 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	$\Delta R \leq \pm(5\% + 0.05\Omega)$
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

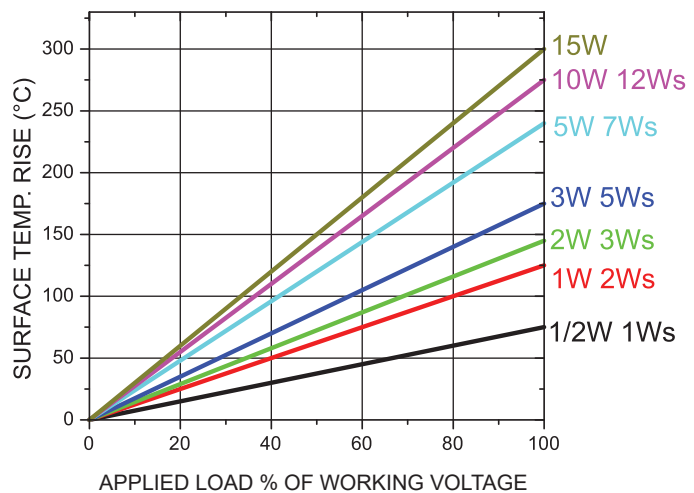
Rated continuous Working Voltage (RCWV) =  $\sqrt{POWER.RATING.* RESISTANCE.VALUE}$

### CHARACTERISTICS (TYPICAL)

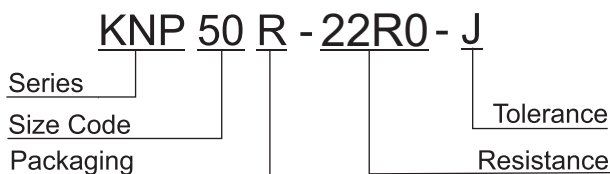
DERATING CURVE



HOT-SPOT TEMPERATURE



### PART NUMBER EXAMPLE



### TOLERANCE

±%	5	2	1
Code	J	G	F

### RESISTANCE

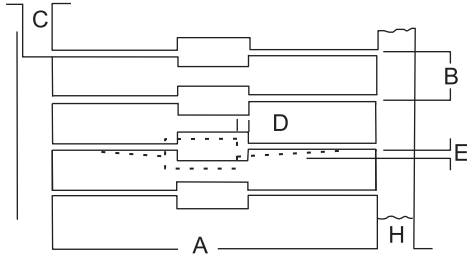
Ohms	0.5	1.5	10	100	1K
Code	0R50	1R50	10R0	100R	1K00

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

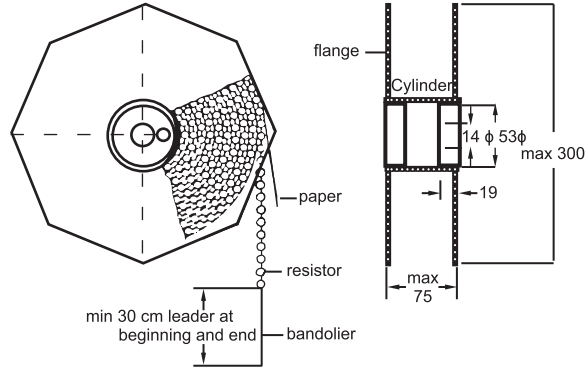
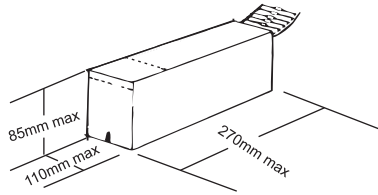
### PACKAGING

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

## ■ TAPE, REEL, & AMMO SPECIFICATIONS



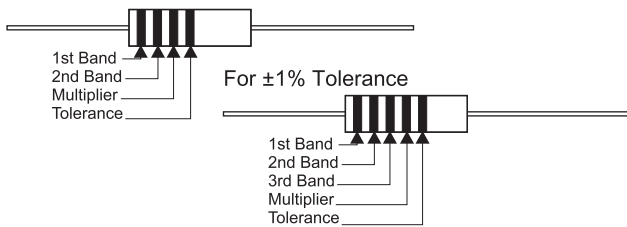
Body Diameter	Size Code	A	B	C	D	E	H
< 5mm	T-52	52 ± 1	5 ± 0.5	4.0 min.	0.8 max.	1.2 max.	6 ± 1
> 5mm	T-52	52 ± 1	10 ± 0.5	4.0 min.	0.8 max.	1.2 max.	6 ± 1
	T-73	73 ± 1					



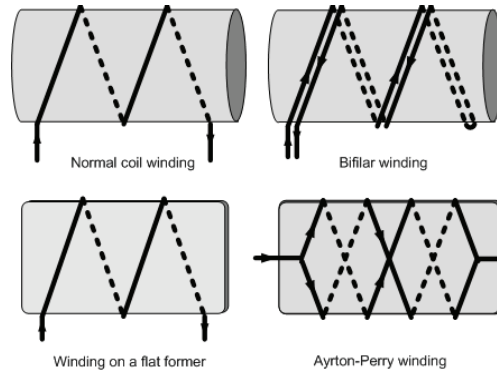
## ■ COLOR CODE CHART

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

For ±5% 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	
D (0.5%)	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	
C (0.25%)	1.01	1.11	1.23	1.35	1.49	1.64	1.80	1.98	2.18	2.40	2.64	2.91	3.20	3.52	3.88	4.27	4.70	5.17	5.69	6.26	6.90	7.59	8.35	9.20	
B (0.1%)	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	
A (0.05%)	1.04	1.14	1.26	1.38	1.52	1.67	1.84	2.03	2.23	2.46	2.71	2.98	3.28	3.61	3.97	4.37	4.81	5.30	5.83	6.42	7.06	7.77	8.56	9.42	
	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	
	1.06	1.17	1.29	1.42	1.56	1.72	1.89	2.08	2.29	2.52	2.77	3.05	3.36	3.70	4.07	4.48	4.93	5.42	5.97	6.57	7.23	7.96	8.76	9.65	
	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	
	1.09	1.20	1.32	1.45	1.60	1.76	1.93	2.13	2.34	2.58	2.84	3.12	3.44	3.79	4.17	4.59	5.05	5.56	6.12	6.73	7.41	8.16	8.98	9.88	