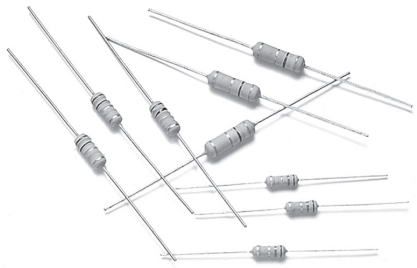
Wirewound Resistors

General Type

Normal & Miniature Style [KNP Series]



FEATURES

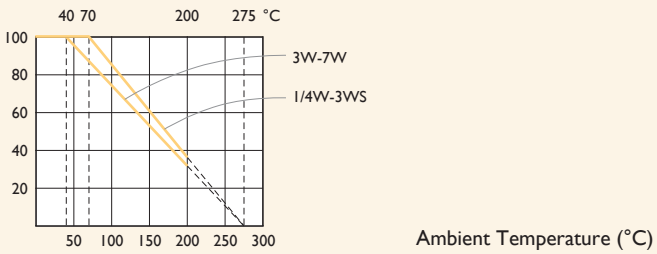
Power Rating	1/4W, 1/2W, 1W, 2W, 3W, 4W, 5W, 7W
Resistance Tolerance	±1%, ±5%
T.C.R.	±300ppm/°C
Flameproof Multi-layer Coating Meets	UL-94V-0
Flameproof Feature Meets Overload Test	UL-1412

INTRODUCTION

The resistor element is a resistive wire which is wound in a single layer on a ceramic rod, with tinned connecting wires of electrolytic copper welded to the end-caps. The ends of the resistive wire are connected to the caps by welding. The resistors are coated with layers of green color flame-proof lacquer.

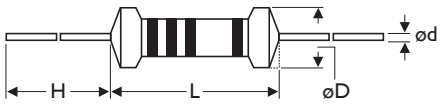
DERATING CURVE

For resistors operated in ambient temperatures above 40°C, power rating must be derated in accordance with the curve below.



DIMENSIONS

Unit: mm



STYLE		DIMENSION			
Normal	Miniature	L	øD	H	ød
KNP-25	KNP50S	6.3±0.5	2.5±0.3	28±2.0	0.55±0.05
KNP-50	KNP1WS	9.0±0.5	3.5±0.3	26±2.0	0.55±0.05
KNP100	KNP2WS KNP3SS	11.5±1.0	4.6±0.5	35±2.0	0.8±0.05
KNP200	KNP3WS	15.5±1.0	5.2±0.5	33±2.0	0.8±0.05
KNP300 KNP400	KNP5WS	17.5±1.0	6.2±0.5	32±2.0	0.8±0.05
KNP500 KNP600	KNP7WS	24.5±1.0	8.2±0.5	38±2.0	0.8±0.05
KNP700	-	24.5±1.0	8.2±0.5	38±2.0	0.8±0.05

Note: KNP1WS (for MB Type) ød = 0.8±0.05 mm

ELECTRICAL CHARACTERISTICS

NORMAL STYLE

STYLE	KNP-25	KNP-50	KNP100	KNP200	KNP300	KNP400	KNP500	KNP600	KNP700
Power Rating at 40°C					3W	4W	5W	6W	7W
Power Rating at 70°C	1/4W	1/2W	1W	2W					
Maximum working voltage	$\sqrt{PxR}$								
Voltage Proof on Insulation	250V	300V	400V						
Resistance Range (±1%)	0.1Ω - 150Ω	0.1Ω - 750Ω	0.1Ω - 1.5KΩ	0.1Ω - 2.4KΩ	0.1Ω - 3.3KΩ		0.1Ω - 6.2KΩ		
Resistance Range (±5%)	0.1Ω - 200Ω	0.1Ω - 800Ω	0.1Ω - 2.2KΩ	0.1Ω - 2.7KΩ	0.1Ω - 3.9KΩ		0.1Ω - 6.8KΩ		
Operating Temp. Range	-40°C to +200°C								
Temperature Coefficient	±300ppm/°C								

Note: Special value is available on request

MINIATURE STYLE

STYLE	KNP50S	KNP1WS	KNP2WS	KNP3SS	KNP3WS	KNP5WS	KNP7WS
Power Rating at 40°C						5W	7W
Power Rating at 70°C	1/2W	1W	2W	3W			
Maximum working voltage	$\sqrt{PxR}$						
Voltage Proof on Insulation	200V	300V	400V				
Resistance Range (±1%)	0.1Ω - 150Ω	0.1Ω - 750Ω	0.1Ω - 1.5KΩ		0.1Ω - 2.4KΩ	0.1Ω - 3.3KΩ	
Resistance Range (±5%)	0.1Ω - 200Ω	0.1Ω - 800Ω	0.1Ω - 2.2KΩ		0.1Ω - 2.7KΩ	0.1Ω - 3.9KΩ	
Operating Temp. Range	-40°C to +200°C						
Temperature Coefficient	±300ppm/°C						

Note: Special value is available on request

ENVIRONMENTAL CHARACTERISTICS

PERFORMANCE TEST	TEST METHOD		APPRAISE
Short Time Overload	IEC 60115-1 4.13	10 times rated power for 5 Sec.	±2.0%+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	235±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. (1.5Hr.on, 0.5Hr. 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: Rated Continuous Working Voltage (RCWV) = $\sqrt{\text{Power Rating} \times \text{Resistance Value}}$ or Max. working voltage listed above, whichever less.