

# Product Specification

Number: L-KLS6-KNP  
Name: Inductive winding resistor  
Specification: \_\_\_\_\_  
Customer: \_\_\_\_\_  
Date: 2025-09-28

Customer Signature:



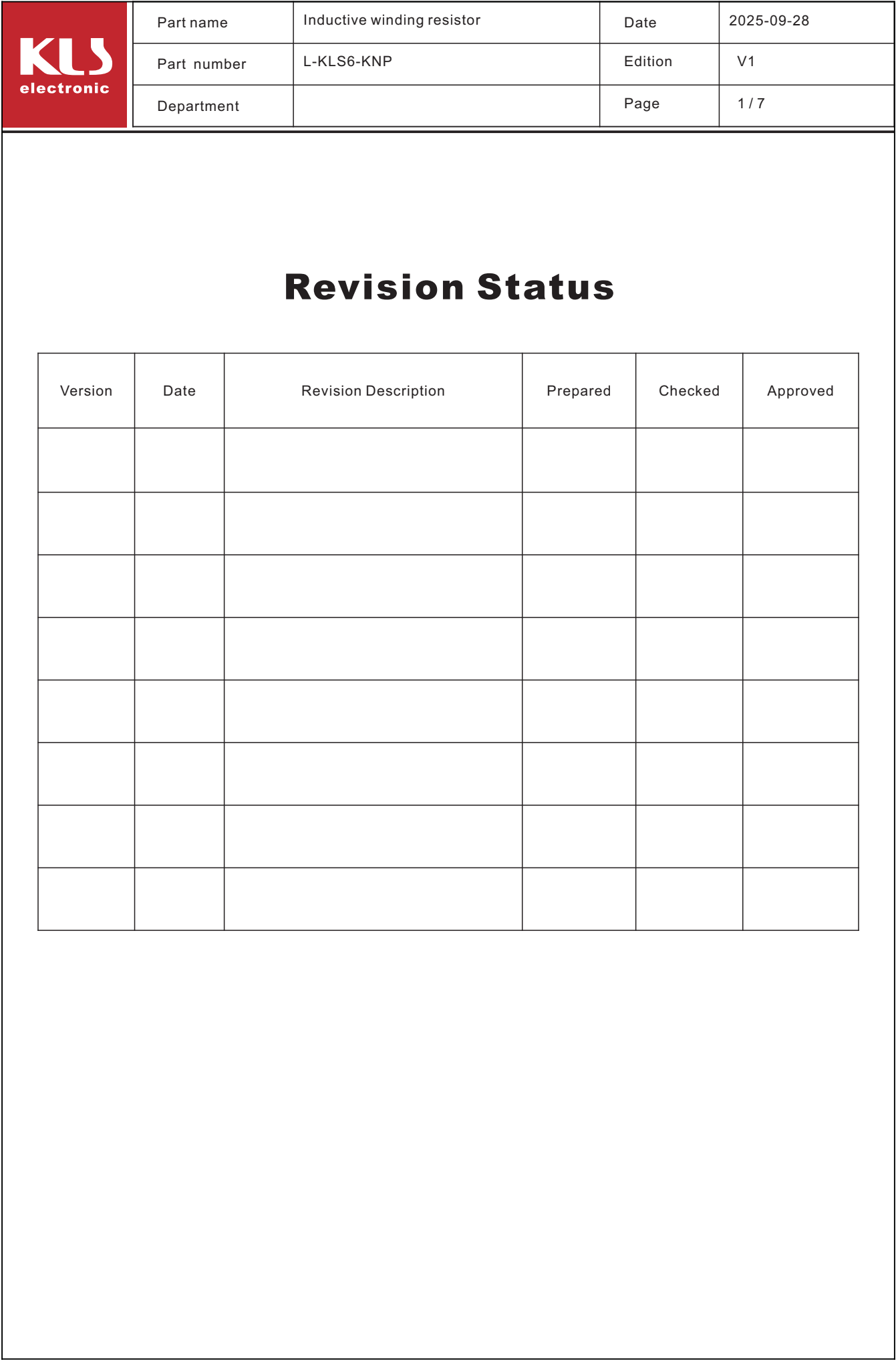
**NINGBO KLS ELECTRONIC CO; LTD**

**Tel : 0086-574-86828566**

**Fax : 0086-574-86824882**

**ADD : NO. 8-1, RONGXIA RD. XIAPU SHANQIAN  
INDUSTRIAL ZONE BEILUN NINGBO ZHEJIANG.**

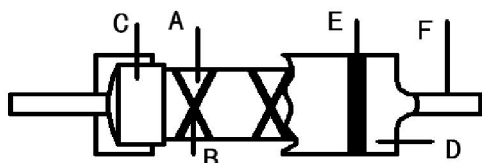
|       |        |        |         |
|-------|--------|--------|---------|
| Compi | Check  | Review | Approva |
| Jenny | Jack.C |        |         |



|             |                            |         |            |
|-------------|----------------------------|---------|------------|
| Part name   | Inductive winding resistor | Date    | 2025-09-28 |
| Part number | L-KLS6-KNP                 | Edition | V1         |
| Department  |                            | Page    | 2 / 7      |

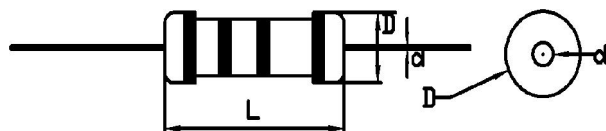
## Features

1. Good heat resistance, low noise and high load power.
2. Excellent Long-Time stability, Miniaturization to gray or pink.
3. Resistance standard tolerance:  $\pm 5\%$ ,  $\pm 2\%$ ,  $\pm 1\%$
4. Use temperature range :  $-55^{\circ}\text{C} \sim +275^{\circ}\text{C}$ .
5. The last color ring is usually black ( Also available in other custom colors)



|   |                                          |   |                        |
|---|------------------------------------------|---|------------------------|
| A | Ceramic Rod                              | D | Silicone resin coating |
| B | Nickel chromium or constantan alloy wire | E | Color Code             |
| C | Tinned Iron Caps                         | F | Lead Wire              |

## Dimensions



Size unit: mm

| Type | Power | Resistance Range | size      |             |              | Max. Working Voltage | Max. Overload Voltage | Dielectric Withstanding Voltage |
|------|-------|------------------|-----------|-------------|--------------|----------------------|-----------------------|---------------------------------|
|      |       |                  | $L \pm 1$ | $D \pm 0.5$ | $d \pm 0.05$ |                      |                       |                                 |
| KNP  | 1/4W  | 0R01-50R         | 6         | 2.3         | 0.4          | 150V                 | 400V                  | 250V                            |
| KNP  | 1/2WS | 0R01-50R         | 6         | 2.3         | 0.4          | 150V                 | 400V                  | 250V                            |
| KNP  | 1/2W  | 0R01-50R         | 9         | 3.2         | 0.48         | 150V                 | 400V                  | 250V                            |
| KNP  | 1WS   | 0R01-50R         | 9         | 3.2         | 0.48         | 150V                 | 400V                  | 250V                            |
| KNP  | 1W    | 0R01-330R        | 11        | 4.5         | 0.68         | 150V                 | 400V                  | 250V                            |
| KNP  | 2WS   | 0R01-330R        | 11        | 4.5         | 0.68         | 150V                 | 400V                  | 250V                            |
| KNP  | 2W    | 0R01-1K2         | 15        | 5           | 0.68         | 250V                 | 400V                  | 350V                            |
| KNP  | 3WS   | 0R01-1K2         | 15        | 5           | 0.68         | 250V                 | 400V                  | 350V                            |
| KNP  | 3W    | 0R01-1K5         | 17        | 6           | 0.68/0.8     | 350V                 | 600V                  | 500V                            |
| KNP  | 5WS   | 0R01-1K5         | 17        | 6           | 0.68/0.8     | 350V                 | 600V                  | 500V                            |
| KNP  | 5W    | 0R01-1K5         | 25        | 8           | 0.75         | 350V                 | 600V                  | 500V                            |
| KNP  | 7WS   | 0R01-1K5         | 25        | 8           | 0.75         | 350V                 | 600V                  | 500V                            |

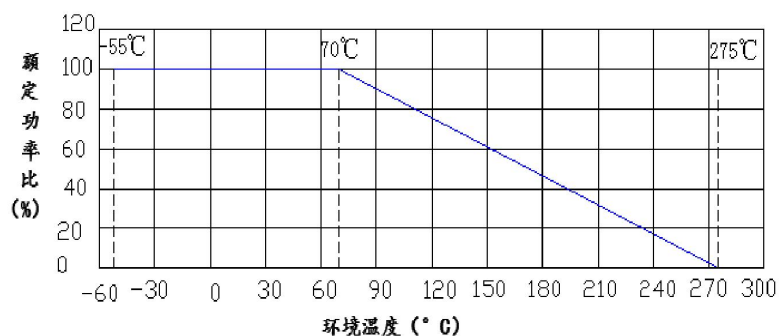
\*备注 a、“S” Express miniaturization。

b、Operating Voltage= $\sqrt{P \cdot R}$  or Max. operating voltage listed above, whichever is lower.

### ■ Environmental Characteristics

| Item                       | Test Method                                                                                                                                                  | Requirement                             |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| Temperature Coefficient    | Resistance value at room temperature and room Temperature+100° C                                                                                             | $\pm 300\text{ppm}^{\circ}\text{C}$     |
| Short Time Overload        | RCWV*5 or Max. overload voltage for 5 seconds                                                                                                                | $\Delta R \leq \pm (2\%R + 0.05\Omega)$ |
| Endurance                  | 70±2° C, Max. RCWV for 1000 hrs with 1.5 hrs “ON” and 0.5 hrs “OFF”                                                                                          | $\Delta R \leq \pm (5\%R + 0.05\Omega)$ |
| Damp Heat with Load        | 40±2° C, 90~95% R.H. RCWV for 1000 hrs with 1.5 hrs “ON” and 0.5 hrs “OFF”                                                                                   | $\Delta R \leq \pm (5\%R + 0.05\Omega)$ |
| Solderability              | 265±5° C for 3 seconds                                                                                                                                       | 95% min. Coverage                       |
| Resistance to welding heat | Immerse in a tin furnace at 350 °C ± 10 °C for 2 ~ 3 seconds.                                                                                                | $\Delta R \leq \pm (5\%R + 0.05\Omega)$ |
| Temperature cycle          | Leave at -55 °C for 30 minutes, then at + 25 °C for 10 ~ 15 minutes, then at + 125 °C for 30 minutes, then at + 25 °C for 10 ~ 15 minutes, 5 cycles in total | $\Delta R \leq \pm (5\%R + 0.05\Omega)$ |
| Flammability               | 5, 10, 15 times the rated voltage AC load for 5 minutes                                                                                                      | No obvious flame is allowed             |

### ■ Derating Curve



KLS

electronic

Part name

Inductive winding resistor

Date

2025-09-28

Part number

L-KLS6-KNP

Edition

V1

Department

Page

4 / 7

Part Numbering

Order Information:

L

-

KLS6

-

KNP

-

3W

-

100R

-

J

A

RoHS

Wire

wound

Resistors

Power (W)

1/2W

1W

2W

3W

5W

8W

12W

Resistance (Ω)

1R0

10R

100R

1K

1Ω

10Ω

100Ω

1000Ω

Tolerance (%)

F

G

J

±1%

±2%

±5%

Package

A

B

AMMO/Box

Bulk/Bags

Order standard list

| Power        | Copper wire | Iron wire | T26 | T52 | T63 | T68 | T71 | T83 | T91 | M | F | B | F | FK | pink | Painted feet |
|--------------|-------------|-----------|-----|-----|-----|-----|-----|-----|-----|---|---|---|---|----|------|--------------|
| 1/8W (1/4WS) | ○           | ◎         | ◎   | ○   |     |     |     |     |     | ◎ | ◎ | ◎ | ◎ | ◎  | ◎    | ◎            |
| 1/4W (1/2WS) | ○           | ◎         | ◎   | ○   |     |     |     |     |     | ◎ | ◎ | ◎ | ◎ | ◎  | ◎    | ◎            |
| 1/2W (1WS)   | ○           | ◎         |     | ○   |     |     |     |     |     | ◎ | ◎ | ◎ | ◎ | ◎  | ◎    | ◎            |
| 1W (2WS)     | ○           | ◎         |     | ◎   | ○   | ◎   |     |     |     | ◎ | ◎ | ◎ | ◎ | ◎  | ◎    | ◎            |
| 2W (3WS)     | ○           | ◎         |     |     | ◎   | ○   | ◎   |     |     | ◎ | ◎ | ◎ | ◎ | ◎  | ◎    | ◎            |
| 3W (5WS)     | ○           | ◎         |     |     |     |     | ○   |     |     | ◎ | ◎ | ◎ |   |    | ◎    | ◎            |
| 5W (7WS)     | ○           | ◎         |     |     |     |     |     | ○   | ◎   |   | ◎ | ◎ |   |    | ◎    | ◎            |

\*Remarks:

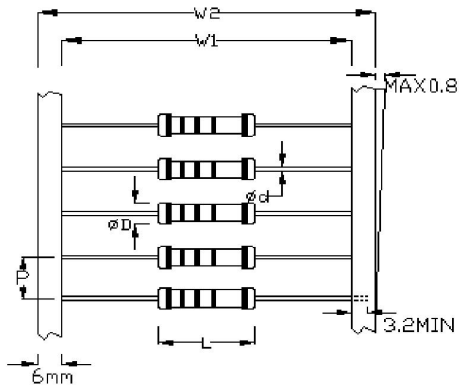
◎◎ Indicates that this specification can be produced

○ Our standard products

◎ It is a special product

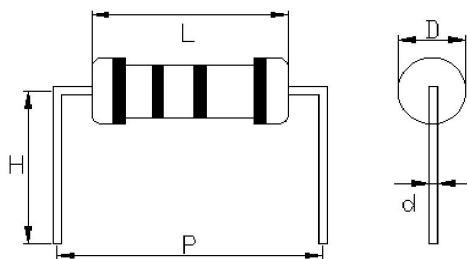
## ■ Encapsulation

### ◆ T



| Power        | T       | size (mm) |             |              |           |            |            |
|--------------|---------|-----------|-------------|--------------|-----------|------------|------------|
|              |         | $L \pm 1$ | $D \pm 0.5$ | $d \pm 0.05$ | $P \pm 1$ | $W1 \pm 1$ | $W2 \pm 1$ |
| 1/8 (1/4WS)  | T52     | 3.5       | 1.7         | 0.4          | 5         | 52         | 64         |
| 1/4W (1/2WS) | T52     | 6         | 2.3         | 0.4          | 5         | 52         | 64         |
| 1/2W (1WS)   | T52     | 9         | 3.2         | 0.48         | 5         | 52         | 64         |
| 1W (2WS)     | T63     | 11        | 4.5         | 0.68         | 5         | 63         | 75         |
| 2W (3WS)     | T68     | 15        | 5           | 0.68         | 5         | 68         | 80         |
| 3W (5WS)     | T71     | 17        | 6           | 0.68/0.8     | 10        | 71         | 83         |
| 5W (7WS)     | T83/T91 | 17        | 6           | 0.68         | 10        | 83/91      | 95/103     |

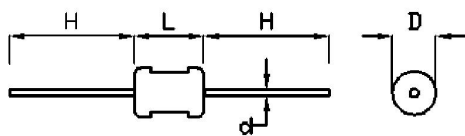
### ◆ M



| Power        | M | size (mm) |             |              |           |           |
|--------------|---|-----------|-------------|--------------|-----------|-----------|
|              |   | $L \pm 1$ | $D \pm 0.5$ | $d \pm 0.05$ | $P \pm 1$ | $H \pm 1$ |
| 1/8W (1/4WS) | M | 3.5       | 1.7         | 0.4          | 5         | 10        |
| 1/4W (1/2WS) | M | 6         | 2.3         | 0.4          | 10        | 10        |
| 1/2W (1WS)   | M | 9         | 3.2         | 0.48         | 12.5      | 10        |
| 1W (2WS)     | M | 11        | 4.5         | 0.68         | 15        | 10        |
| 2W (3WS)     | M | 15        | 5           | 0.68         | 20        | 10        |
| 3W (5WS)     | M | 17        | 6           | 0.68         | 25        | 10        |

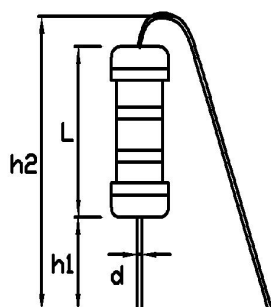
\*P and H can be customized, special length need to consult

### ◆ B 型



| Power        | B | size (mm) |             |              |           |
|--------------|---|-----------|-------------|--------------|-----------|
|              |   | $L \pm 1$ | $D \pm 0.5$ | $d \pm 0.05$ | $H \pm 2$ |
| 1/8W (1/4WS) | B | 3.5       | 1.7         | 0.4          | 27        |
| 1/4W (1/2WS) | B | 6         | 2.3         | 0.4          | 26        |
| 1/2W (1WS)   | B | 9         | 3.2         | 0.48         | 24        |
| 1W (2WS)     | B | 11        | 4.5         | 0.68         | 29        |
| 2W (3WS)     | B | 15        | 5           | 0.68         | 30        |
| 3W (5WS)     | B | 17        | 6           | 0.68         | 30        |
| 5W (7WS)     | B | 25        | 8           | 0.75         | 33        |

### ◆ F 型

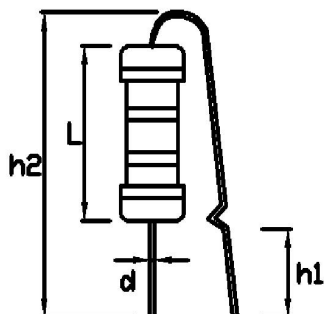


| Power        | F | size (mm) |              |              |            |
|--------------|---|-----------|--------------|--------------|------------|
|              |   | $L \pm 1$ | $d \pm 0.05$ | $h1 \pm 0.5$ | $h2 \pm 1$ |
| 1/8W (1/4WS) | F | 3.5       | 0.4          | 5            | 13         |
| 1/4W (1/2WS) | F | 6         | 0.4          | 5            | 16         |
| 1/2W (1WS)   | F | 9         | 0.48         | 5            | 19         |
| 1W (2WS)     | F | 11        | 0.68         | 5            | 21         |
| 2W (3WS)     | F | 15        | 0.68         | 5            | 25         |
| 5W           | F | 24        | 0.68         | 5            | 33         |

\*H1 can be customized, other lengths need to be consulted

|             |                            |         |            |
|-------------|----------------------------|---------|------------|
| Part name   | Inductive winding resistor | Date    | 2025-09-28 |
| Part number | L-KLS6-KNP                 | Edition | V1         |
| Department  |                            | Page    | 7 / 7      |

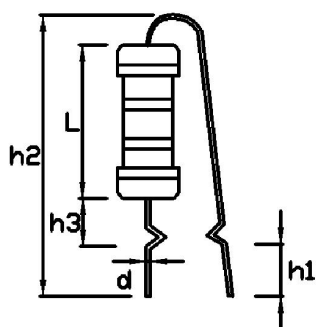
◆FK 型



| Power      | FK | size (mm) |              |              |            |
|------------|----|-----------|--------------|--------------|------------|
|            |    | $L \pm 1$ | $d \pm 0.05$ | $h1 \pm 0.5$ | $h2 \pm 1$ |
| 1/2W (1WS) | FK | 9         | 0.48         | 4.5          | 16         |
| 1W (2WS)   | FK | 11        | 0.68         | 3.5          | 18         |
| 2W (3WS)   | FK | 15        | 0.68         | 3.5          | 23         |
| 3W (5WS)   | FK | 17        | 0.68         | 3.5          | 25         |

\*H1 can be customized, other lengths need to be consulted

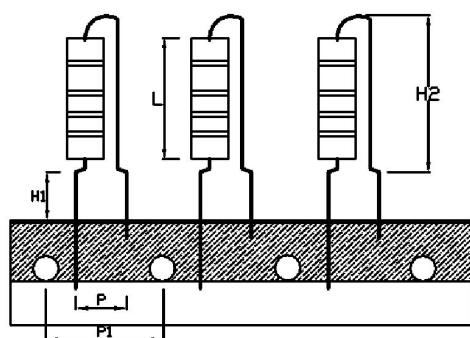
◆FKK 型



| Power    | FKK | size (mm) |              |              |            |            |
|----------|-----|-----------|--------------|--------------|------------|------------|
|          |     | $L \pm 1$ | $d \pm 0.05$ | $h1 \pm 0.5$ | $h2 \pm 1$ | $h3 \pm 1$ |
| 1W (2WS) | FKK | 11        | 0.68         | 3.5          | 22         | 4          |
| 2W (3WS) | FKK | 15        | 0.68         | 3.5          | 26         | 4          |
| 3W (5WS) | FKK | 17        | 0.68         | 3.5          | 28         | 4          |

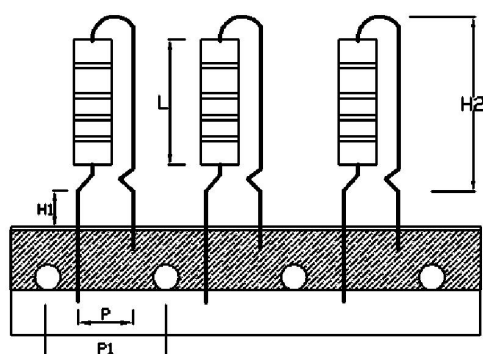
\*H1 can be customized, other lengths need to be consulted

◆FT 型



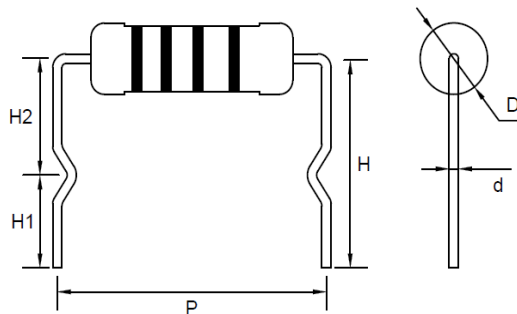
| Power        | FT | size (mm) |              |            |           |            |
|--------------|----|-----------|--------------|------------|-----------|------------|
|              |    | $L \pm 1$ | $H1 \pm 0.5$ | $H2 \pm 1$ | $P \pm 1$ | $P1 \pm 1$ |
| 1/8W (1/4WS) | FT | 3.5       | 6            | 9          | 5         | 12.7       |
| 1/4W (1/2WS) | FT | 6         | 6            | 12         | 5         | 12.7       |
| 1/2W (1WS)   | FT | 9         | 6            | 15         | 5         | 12.7       |
| 1W (2WS)     | FT | 11        | 6            | 17         | 5         | 12.7       |
| 2W (3WS)     | FT | 15        | 6            | 21         | 5         | 12.7       |

◆FKT



| e刀城踏诱        | ... | size (mm) |              |            |           |            |
|--------------|-----|-----------|--------------|------------|-----------|------------|
|              |     | $L \pm 1$ | $H1 \pm 0.5$ | $H2 \pm 1$ | $P \pm 1$ | $P1 \pm 1$ |
| 1/8W (1/4WS) | FKT | 3.5       | 6            | 9          | 5         | 12.7       |
| 1/4W (1/2WS) | FKT | 6         | 6            | 12         | 5         | 12.7       |
| 1/2W (1WS)   | FKT | 9         | 6            | 15         | 5         | 12.7       |
| 1W (2WS)     | FKT | 11        | 6            | 17         | 5         | 12.7       |
| 2W (3WS)     | FKT | 15        | 6            | 21         | 5         | 12.7       |

◆ MKK 型



| Power    | MKK | 尺寸mm |     |        |      |       |        |
|----------|-----|------|-----|--------|------|-------|--------|
|          |     | P±1  | H±1 | H1±0.5 | H2±1 | D±0.5 | d±0.05 |
| 1W (2WS) | MKK | 15   | 10  | 6.5    | 5.5  | 4.5   | 0.68   |
|          | MKK | 15   | 15  | 6.5    | 8.5  | 4.5   | 0.68   |
| 2W (3WS) | MKK | 20   | 15  | 6.5    | 8.5  | 5     | 0.68   |

\*H1 can be customized, other lengths need to be consulted

■ Color ring label

| Colour | Effective number | Multiplier | Accuracy |
|--------|------------------|------------|----------|
| black  | 0                | $10^0$     |          |
| brown  | 1                | $10^1$     | ±1%      |
| red    | 2                | $10^2$     | ±2%      |
| orange | 3                | $10^3$     |          |
| yellow | 4                | $10^4$     |          |
| green  | 5                | $10^5$     | ±0.5%    |
| blue   | 6                | $10^6$     |          |
| purple | 7                | $10^7$     | ±0.1%    |
| ash    | 8                | $10^8$     |          |
| white  | 9                | $10^{-3}$  |          |
| gold   |                  | $10^{-1}$  | ±5%      |
| silver |                  | $10^{-2}$  | ±10%     |

■ Resistance resistance standard

|        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| E24 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  |      |      |      |      |      |      |      |      |
| E48 2% | 1.00 | 1.05 | 1.10 | 1.15 | 1.21 | 1.27 | 1.33 | 1.40 | 1.47 | 1.54 | 1.62 | 1.69 | 1.78 | 1.87 | 1.96 | 2.05 |
|        | 2.15 | 2.26 | 2.37 | 2.49 | 2.61 | 2.74 | 2.87 | 3.01 | 3.16 | 3.32 | 3.48 | 3.65 | 3.83 | 4.02 | 4.22 | 4.42 |
|        | 4.64 | 4.87 | 5.11 | 5.36 | 5.62 | 5.90 | 6.19 | 6.49 | 6.81 | 7.15 | 7.50 | 7.87 | 8.25 | 8.66 | 9.09 | 9.53 |
| E96 1% | 1.00 | 1.02 | 1.05 | 1.07 | 1.10 | 1.13 | 1.15 | 1.18 | 1.21 | 1.24 | 1.27 | 1.30 | 1.33 | 1.37 | 1.40 | 1.43 |
|        | 1.47 | 1.50 | 1.54 | 1.58 | 1.62 | 1.65 | 1.69 | 1.74 | 1.78 | 1.82 | 1.87 | 1.91 | 1.96 | 2.00 | 2.05 | 2.10 |
|        | 2.15 | 2.21 | 2.26 | 2.32 | 2.37 | 2.43 | 2.49 | 2.55 | 2.61 | 2.67 | 2.74 | 2.80 | 2.87 | 2.94 | 3.01 | 3.09 |
|        | 3.16 | 3.24 | 3.32 | 3.40 | 3.48 | 3.57 | 3.65 | 3.74 | 3.83 | 3.92 | 4.02 | 4.12 | 4.22 | 4.32 | 4.42 | 4.53 |
|        | 4.64 | 4.75 | 4.87 | 4.99 | 5.11 | 5.23 | 5.36 | 5.49 | 5.62 | 5.76 | 5.90 | 6.04 | 6.19 | 6.34 | 6.49 | 6.65 |
|        | 6.81 | 6.98 | 7.15 | 7.32 | 7.50 | 7.68 | 7.87 | 8.06 | 8.25 | 8.45 | 8.66 | 8.87 | 9.09 | 9.31 | 9.53 | 9.76 |