

# Polymer PTC Resettable Fuse: KRG Series

## 6Vdc/16Vdc Radial Leded Type



### ■ Features

1. RoHS & Halogen-Free (HF) compliant
2. Radial leaded devices
3. Broadest range of resettable devices available in the industry
4. Hold current ratings from 0.75 to 15A
5. Maximum voltage: 6Vdc / 16Vdc
6. Operating & storage temperature range : -40 ~ +85°C
7. Agency Recognition : UL / cUL / TUV



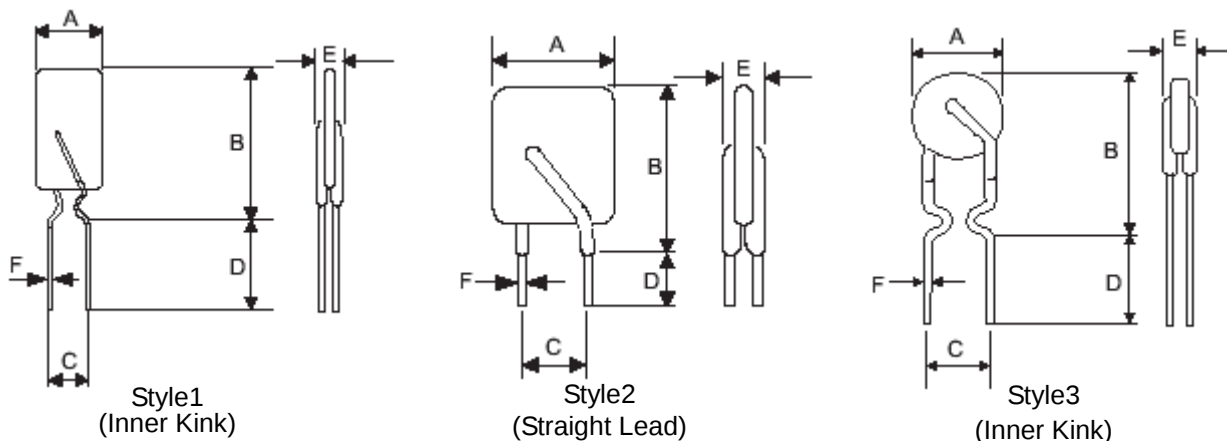
### ■ Recommended Applications

1. Motors / fans
2. Keyboard / mouse
3. Transformers
4. Industrial controls

### ■ Part Number Code

|              |                                            |             |        |       |         |                                |     |        |       |            |                 |           |             |                 |                       |  |
|--------------|--------------------------------------------|-------------|--------|-------|---------|--------------------------------|-----|--------|-------|------------|-----------------|-----------|-------------|-----------------|-----------------------|--|
| K            | R                                          | G           | 0      | 1     | 6       | 0                              | 1   | 3      | 5     | I          | B               | Y         |             |                 |                       |  |
| 1            | 2                                          | 3           | 4      | 5     | 6       | 7                              | 8   | 9      | 10    | 11         | 12              | 13        | 14          | 15              | 16                    |  |
| Product Type |                                            | Form Factor |        | Usage |         | Max. Operating Voltage (Vmax.) |     | I hold |       | Appearance |                 | Packaging |             | Optional Suffix |                       |  |
|              |                                            |             |        |       |         |                                |     |        |       |            |                 |           |             |                 |                       |  |
| K            | THINKING<br>Polymer PTC<br>Resettable Fuse | R           | Radial | G     | General | 006                            | 6V  | 0075   | 0.75A | S          | Straight lead   | B         | Bulk        | Y               | RoHS &HF<br>Compliant |  |
|              |                                            |             |        |       |         | 016                            | 16V | 0120   | 1.2A  | I          | Inner kink lead | A         | Ammo Taping |                 |                       |  |
|              |                                            |             |        |       |         |                                |     | 0135   | 1.35A |            |                 | R         | Reel Taping |                 |                       |  |
|              |                                            |             |        |       |         |                                |     | 0600   | 6A    |            |                 |           |             |                 |                       |  |
|              |                                            |             |        |       |         |                                |     | 1000   | 10A   |            |                 |           |             |                 |                       |  |
|              |                                            |             |        |       |         |                                |     | 1500   | 15A   |            |                 |           |             |                 |                       |  |

### ■ Structure and Dimensions



Marking: Device is marked with product type, Vmax, and I hold.

(Unit: mm)

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## 6Vdc/16Vdc Radial Leaded Type



| Part No.   | A    | B             |            | C        | D    | E    | F        | Figure |
|------------|------|---------------|------------|----------|------|------|----------|--------|
|            | Max. | Max.          |            | Typ.     | Min. | Max. | Typ.     | Style  |
|            |      | Straight Lead | Inner Kink |          |      |      |          |        |
| KRG0060075 | 7.0  | --            | 11.4       | 5.0±0.8  | 7.6  | 3.1  | 0.5±0.02 | 3      |
| KRG0060120 | 7.0  | --            | 11.7       | 5.0±0.8  | 7.6  | 3.1  | 0.5±0.02 | 3      |
| KRG0060155 | 6.9  | --            | 11.7       | 5.0±0.8  | 7.6  | 3.1  | 0.5±0.02 | 3      |
| KRG0160090 | 7.4  | 12.2          | 12.2       | 5.0±0.8  | 7.6  | 3.1  | 0.5±0.02 | 1,2    |
| KRG0160110 | 7.4  | 14.2          | 14.2       | 5.0±0.8  | 7.6  | 3.1  | 0.5±0.02 | 1,2    |
| KRG0160135 | 8.9  | 13.5          | 13.5       | 5.0±0.8  | 7.6  | 3.1  | 0.5±0.02 | 1,2    |
| KRG0160160 | 8.9  | 15.2          | 15.2       | 5.0±0.8  | 7.6  | 3.1  | 0.5±0.02 | 1,2    |
| KRG0160185 | 10.2 | 15.7          | 15.7       | 5.0±0.8  | 7.6  | 3.1  | 0.5±0.02 | 1,2    |
| KRG0160250 | 11.4 | 18.3          | 20.5       | 5.0±0.8  | 7.6  | 3.1  | 0.5±0.02 | 1,2    |
| KRG0160300 | 7.1  | 11.0          | 14.0       | 5.0±0.8  | 7.6  | 3.1  | 0.8±0.02 | 1,2    |
| KRG0160400 | 8.9  | 12.8          | 14.8       | 5.0±0.8  | 7.6  | 3.1  | 0.8±0.02 | 1,2    |
| KRG0160500 | 10.4 | 14.3          | 16.0       | 5.0±0.8  | 7.6  | 3.1  | 0.8±0.02 | 1,2    |
| KRG0160600 | 10.7 | 17.1          | 19.0       | 5.0±0.8  | 7.6  | 3.1  | 0.8±0.02 | 1,2    |
| KRG0160700 | 11.2 | 19.7          | 22.0       | 5.0±0.8  | 7.6  | 3.1  | 0.8±0.02 | 1,2    |
| KRG0160800 | 12.7 | 20.9          | 23.0       | 5.0±0.8  | 7.6  | 3.1  | 0.8±0.02 | 1,2    |
| KRG0160900 | 14.0 | 21.9          | 24.0       | 5.0±0.8  | 7.6  | 3.1  | 0.8±0.02 | 1,2    |
| KRG0161000 | 16.5 | 25.2          | 28.0       | 5.0±0.8  | 7.6  | 3.1  | 0.8±0.02 | 1,2    |
| KRG0161100 | 17.5 | 26.0          | 29.0       | 5.0±0.8  | 7.6  | 3.1  | 0.8±0.02 | 1,2    |
| KRG0161200 | 17.5 | 28.0          | 31.0       | 10.0±0.8 | 7.6  | 3.1  | 1.0±0.02 | 1,2    |
| KRG0161300 | 21.6 | 29.2          | 32.0       | 10.0±0.8 | 7.6  | 3.1  | 1.0±0.02 | 1,2    |
| KRG0161400 | 23.5 | 27.9          | 30.0       | 10.0±0.8 | 7.6  | 3.1  | 1.0±0.02 | 1,2    |
| KRG0161500 | 25.1 | 29.0          | 32.0       | 10.0±0.8 | 7.6  | 3.1  | 1.0±0.02 | 1,2    |

### ■ Electrical Characteristics at 23°C

| Part No.   | Vmax.              | I <sub>max</sub> . | I <sub>hold</sub> | I <sub>trip</sub> | P <sub>d</sub><br>(Typ.) | Maximum<br>Time to Trip |       | Resistance             |          |                             | Safety<br>Approvals |     |
|------------|--------------------|--------------------|-------------------|-------------------|--------------------------|-------------------------|-------|------------------------|----------|-----------------------------|---------------------|-----|
|            | (V <sub>dc</sub> ) | (A)                | (A)               | (A)               | (W)                      | Current                 | Time  | Initial R <sub>i</sub> |          | Post Trip<br>R <sub>1</sub> | UL/<br>cUL          | TUV |
|            |                    |                    |                   |                   |                          | (A)                     | (Sec) | Min. (Ω)               | Max. (Ω) | Max(Ω)                      |                     |     |
| KRG0060075 | 6                  | 40                 | 0.75              | 1.50              | 0.30                     | 8.00                    | 0.40  | 0.110                  | 0.175    | 0.230                       | √                   | √   |
| KRG0060120 | 6                  | 40                 | 1.20              | 2.40              | 0.60                     | 8.00                    | 0.50  | 0.065                  | 0.0975   | 0.140                       | √                   | √   |
| KRG0060155 | 6                  | 40                 | 1.55              | 3.10              | 0.70                     | 7.80                    | 2.20  | 0.043                  | 0.0705   | 0.100                       | √                   | √   |
| KRG0160090 | 16                 | 40                 | 0.90              | 1.80              | 0.60                     | 8.00                    | 1.20  | 0.070                  | 0.120    | 0.180                       | √                   | √   |
| KRG0160110 | 16                 | 40                 | 1.10              | 2.20              | 0.70                     | 8.00                    | 2.30  | 0.050                  | 0.095    | 0.140                       | √                   | √   |
| KRG0160135 | 16                 | 40                 | 1.35              | 2.70              | 0.80                     | 8.00                    | 4.50  | 0.040                  | 0.074    | 0.120                       | √                   | √   |
| KRG0160160 | 16                 | 40                 | 1.60              | 3.20              | 0.90                     | 8.00                    | 9.00  | 0.030                  | 0.061    | 0.110                       | √                   | √   |
| KRG0160185 | 16                 | 40                 | 1.85              | 3.70              | 1.00                     | 8.00                    | 10.00 | 0.030                  | 0.051    | 0.090                       | √                   | √   |
| KRG0160250 | 16                 | 40                 | 2.50              | 5.00              | 1.20                     | 8.00                    | 40.00 | 0.020                  | 0.036    | 0.070                       | √                   | √   |
| KRG0160300 | 16                 | 100                | 3.00              | 5.10              | 2.30                     | 15.00                   | 1.00  | 0.038                  | 0.065    | 0.098                       | √                   | √   |
| KRG0160400 | 16                 | 100                | 4.00              | 6.80              | 2.40                     | 20.00                   | 1.70  | 0.021                  | 0.038    | 0.060                       | √                   | √   |
| KRG0160500 | 16                 | 100                | 5.00              | 8.50              | 2.60                     | 25.00                   | 2.00  | 0.010                  | 0.023    | 0.034                       | √                   | √   |
| KRG0160600 | 16                 | 100                | 6.00              | 10.20             | 2.80                     | 30.00                   | 3.30  | 0.006                  | 0.018    | 0.028                       | √                   | √   |
| KRG0160700 | 16                 | 100                | 7.00              | 11.90             | 3.00                     | 35.00                   | 3.50  | 0.006                  | 0.013    | 0.020                       | √                   | √   |
| KRG0160800 | 16                 | 100                | 8.00              | 13.60             | 3.00                     | 40.00                   | 5.00  | 0.005                  | 0.011    | 0.018                       | √                   | √   |
| KRG0160900 | 16                 | 100                | 9.00              | 15.30             | 3.30                     | 45.00                   | 5.50  | 0.005                  | 0.009    | 0.014                       | √                   | √   |
| KRG0161000 | 16                 | 100                | 10.00             | 17.00             | 3.60                     | 50.00                   | 6.00  | 0.004                  | 0.007    | 0.010                       | √                   | √   |
| KRG0161100 | 16                 | 100                | 11.00             | 18.70             | 3.70                     | 55.00                   | 7.00  | 0.003                  | 0.006    | 0.009                       | √                   | √   |
| KRG0161200 | 16                 | 100                | 12.00             | 20.40             | 4.20                     | 60.00                   | 7.50  | 0.003                  | 0.006    | 0.009                       | √                   | √   |
| KRG0161300 | 16                 | 100                | 13.00             | 22.10             | 4.60                     | 65.00                   | 8.50  | 0.002                  | 0.006    | 0.008                       | √                   | √   |
| KRG0161400 | 16                 | 100                | 14.00             | 23.80             | 4.60                     | 70.00                   | 9.00  | 0.002                  | 0.005    | 0.007                       | √                   | √   |
| KRG0161500 | 16                 | 100                | 15.00             | 25.50             | 4.60                     | 75.00                   | 10.00 | 0.002                  | 0.005    | 0.007                       | √                   | √   |

Note: UL&cUL File No: E138827

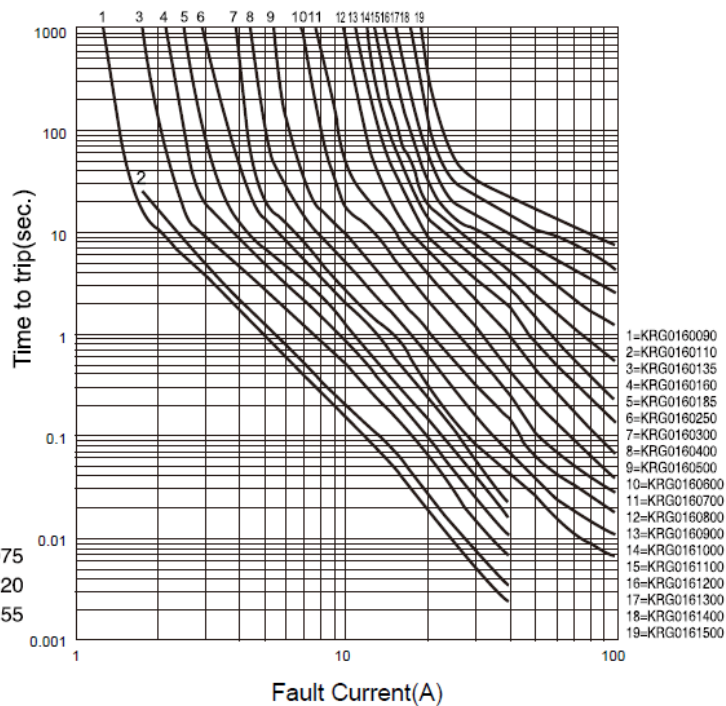
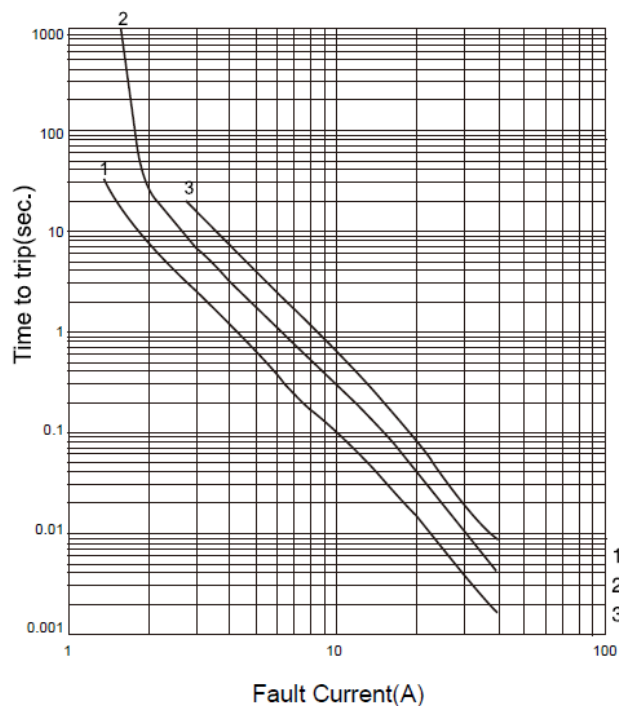
TUV File No: J 50161442, J 50231157

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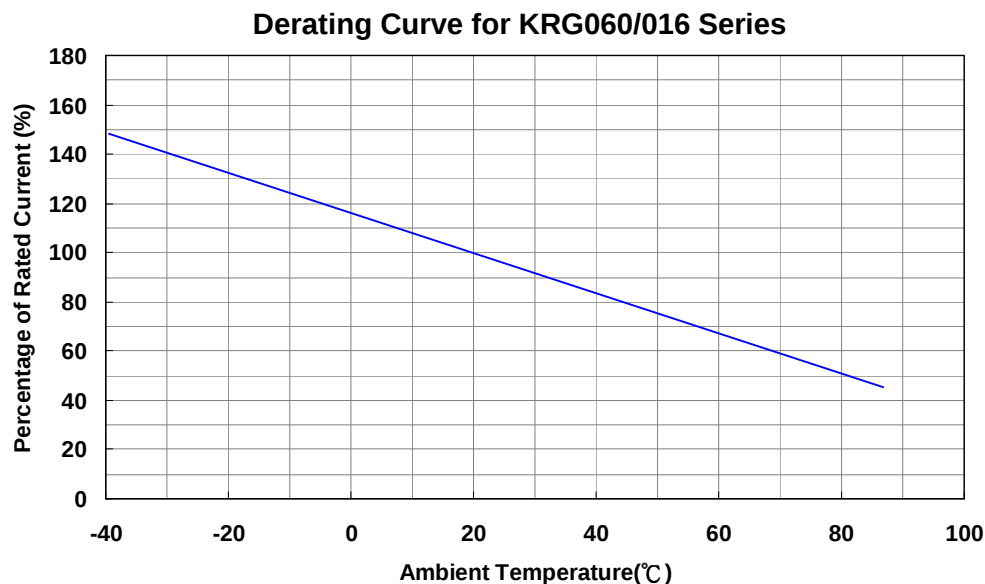
## 6Vdc/16Vdc Radial Leaded Type



### ■ Typical Time to Trip Curves at 23°C



### ■ Ihold & Itrip Thermal Derating Curve



# Polymer PTC Resettable Fuse: KRG Series

## 6Vdc/16Vdc Radial Leaded Type



### ■ Hold Thermal Derating Chart

(Unit: A)

| Part No.   | Ambient Temperature |       |       |              |       |       |       |      |      |
|------------|---------------------|-------|-------|--------------|-------|-------|-------|------|------|
|            | -40℃                | -20℃  | 0℃    | 23℃          | 40℃   | 50℃   | 60℃   | 70℃  | 85℃  |
| KRG0060075 | 1.05                | 0.95  | 0.85  | <b>0.75</b>  | 0.64  | 0.58  | 0.51  | 0.44 | 0.35 |
| KRG0060120 | 1.69                | 1.52  | 1.36  | <b>1.20</b>  | 1.02  | 0.92  | 0.82  | 0.71 | 0.56 |
| KRG0060155 | 2.17                | 1.96  | 1.75  | <b>1.55</b>  | 1.32  | 1.19  | 1.05  | 0.91 | 0.73 |
| KRG0160090 | 1.33                | 1.20  | 1.05  | <b>0.90</b>  | 0.77  | 0.69  | 0.61  | 0.53 | 0.42 |
| KRG0160110 | 1.63                | 1.46  | 1.29  | <b>1.10</b>  | 0.94  | 0.85  | 0.75  | 0.65 | 0.52 |
| KRG0160135 | 2.00                | 1.80  | 1.58  | <b>1.35</b>  | 1.15  | 1.04  | 0.92  | 0.80 | 0.63 |
| KRG0160160 | 2.37                | 2.13  | 1.87  | <b>1.60</b>  | 1.36  | 1.23  | 1.09  | 0.94 | 0.75 |
| KRG0160185 | 2.74                | 2.46  | 2.16  | <b>1.85</b>  | 1.57  | 1.42  | 1.26  | 1.09 | 0.87 |
| KRG0160250 | 3.63                | 3.25  | 2.88  | <b>2.50</b>  | 2.08  | 1.93  | 1.70  | 1.48 | 1.18 |
| KRG0160300 | 4.40                | 3.96  | 3.60  | <b>3.00</b>  | 2.55  | 2.31  | 2.10  | 1.77 | 1.35 |
| KRG0160400 | 5.90                | 5.28  | 4.80  | <b>4.00</b>  | 3.40  | 3.08  | 2.80  | 2.36 | 1.80 |
| KRG0160500 | 7.30                | 6.60  | 6.00  | <b>5.00</b>  | 4.25  | 3.85  | 3.60  | 2.95 | 2.25 |
| KRG0160600 | 8.80                | 7.92  | 7.20  | <b>6.00</b>  | 5.10  | 4.62  | 4.20  | 3.54 | 2.70 |
| KRG0160700 | 10.30               | 9.24  | 8.40  | <b>7.00</b>  | 5.95  | 5.39  | 5.00  | 4.13 | 3.15 |
| KRG0160800 | 11.70               | 10.56 | 9.60  | <b>8.00</b>  | 6.80  | 6.16  | 5.60  | 4.72 | 3.60 |
| KRG0160900 | 13.20               | 11.88 | 10.70 | <b>9.00</b>  | 7.65  | 6.93  | 6.40  | 5.31 | 4.05 |
| KRG0161000 | 14.70               | 13.20 | 12.00 | <b>10.00</b> | 8.50  | 7.70  | 7.00  | 5.90 | 4.50 |
| KRG0161100 | 16.10               | 14.52 | 13.10 | <b>11.00</b> | 9.35  | 8.47  | 7.80  | 6.49 | 4.95 |
| KRG0161200 | 17.60               | 15.84 | 14.40 | <b>12.00</b> | 10.20 | 9.24  | 8.40  | 7.08 | 5.40 |
| KRG0161300 | 17.70               | 16.30 | 14.80 | <b>13.00</b> | 11.05 | 10.01 | 9.60  | 7.67 | 5.85 |
| KRG0161400 | 20.50               | 18.48 | 16.80 | <b>14.00</b> | 11.90 | 10.78 | 9.80  | 8.26 | 6.30 |
| KRG0161500 | 20.40               | 18.80 | 17.10 | <b>15.00</b> | 12.75 | 11.55 | 11.10 | 8.85 | 6.75 |

### ■ Reliability

| Item                         | Standard       | Test Condition/methods                                    | Criteria                      |
|------------------------------|----------------|-----------------------------------------------------------|-------------------------------|
| Resistance to Soldering Heat | IEC 60068-2-58 | 260 ± 5 °C , 10 ± 1 sec                                   | Rf<R1max<br>No visible damage |
| Passive Aging                | IEC 60738-1    | 85±5℃, 1000±24hrs                                         | ±5% typical resistance change |
| Humidity Aging               | IEC 60068-2-78 | 85±5℃, 80~85%RH, 1000±5hrs                                | ±5% typical resistance change |
| Rapid Change of Temperature  | IEC 60738-1    | 85±5/-40±5℃, 10 cycles, Duration:30min                    | ±5% typical resistance change |
| Overload Endurance           | UL 1434        | Vmax,120% Imax ,50 cycles<br>Vmax,300% Itrip ,6000 cycles | No visible damage             |
| Trip endurance               | UL 1434        | Vmax, Itrip ≤ I ≤ Imax , 1000±24hrs                       | No visible damage             |

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## 6Vdc/16Vdc Radial Leaded Type



### ■ Packaging

Devices taped using IEC 60286-2 standards. See table below and Fig. 1~4 for details.

| Dimension description                                                                              | IEC Mark       | Dimension (mm) | Tolerance (mm) |
|----------------------------------------------------------------------------------------------------|----------------|----------------|----------------|
| Sprocket hole pitch                                                                                | P <sub>0</sub> | 12.70          | ±0.3           |
| Ordinate to adjacent component lead<br>KRG0060075, KRG0060120, KRG0060155<br>KRG0160090~KRG0161100 | P <sub>1</sub> | 3.85           | ±0.7           |
| Ordinate to adjacent component lead<br>KRG0161200~KRG0161500                                       |                | 7.70           | ±0.7           |
| Device pitch<br>KRG0060075, KRG0060120, KRG0060155<br>KRG0160090~KRG0160600                        | P              | 12.70          | ±1.0           |
| Device pitch KRG0160700~KRG0161400                                                                 |                | 25.40          | ±1.0           |
| Device pitch KRG0161500                                                                            |                | 38.10          | ±1.0           |
| Lead spacing<br>KRG0060075, KRG0060120, KRG0060155<br>KRG0160090~KRG0161100                        | F              | 5.00           | ±0.8           |
| Lead spacing KRG0161200~KRG0161500                                                                 |                | 10.00          |                |
| Lead diameter<br>KRG0060075, KRG0060120, KRG0060155<br>KRG0160090~KRG0160250                       | d              | 0.50           | ±0.02          |
| Lead diameter KRG0160300~KRG0161500                                                                |                | 0.80           |                |
| Carrier tape width                                                                                 | W              | 18.00          | +1/-0.5        |
| Top distance between tape edges                                                                    | W <sub>2</sub> | 3.00           | Max            |
| Hold-down tape width                                                                               | W <sub>0</sub> | 12.00          | ±1.0           |
| Sprocket hole position                                                                             | W <sub>1</sub> | 9.00           | +0.75/-0.5     |
| Abscissa to top<br>KRG0060075, KRG0060120, KRG0060155<br>KRG0160090~KRG0160600                     | H <sub>1</sub> | 32.20          | Max.           |
| Abscissa to top KRG0160700~KRG0161500                                                              |                | 47.50          |                |
| Abscissa to plane (straight lead)                                                                  | H              | 18.00          | +2/-0          |
| Abscissa to plane (kinked lead)                                                                    | H <sub>0</sub> | 16.00          | ±0.5           |
| Sprocket hole diameter                                                                             | D <sub>0</sub> | 4.00           | ±0.2           |
| Lead protrusion                                                                                    | L <sub>1</sub> | 0.50           | Max.           |
| Tape thickness                                                                                     | T              | 0.60           | ±0.2           |
| Body lateral deviation                                                                             | Δh             | 2.00           | Max.           |
| Body tape plane deviation                                                                          | Δp             | 1.00           | Max.           |
| Reel width                                                                                         | W <sub>3</sub> | 56.00          | Max.           |
| Reel diameter                                                                                      |                | 340.00         | ±10            |
| Arbor hole diameter                                                                                | n <sub>0</sub> | 31.00          | ±1             |
| Core diameter                                                                                      | n              | 80.00          | Min.           |

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### ● Taping Specification

Fig.1. For KRG0060075, KRG0060120 and KRG0060155

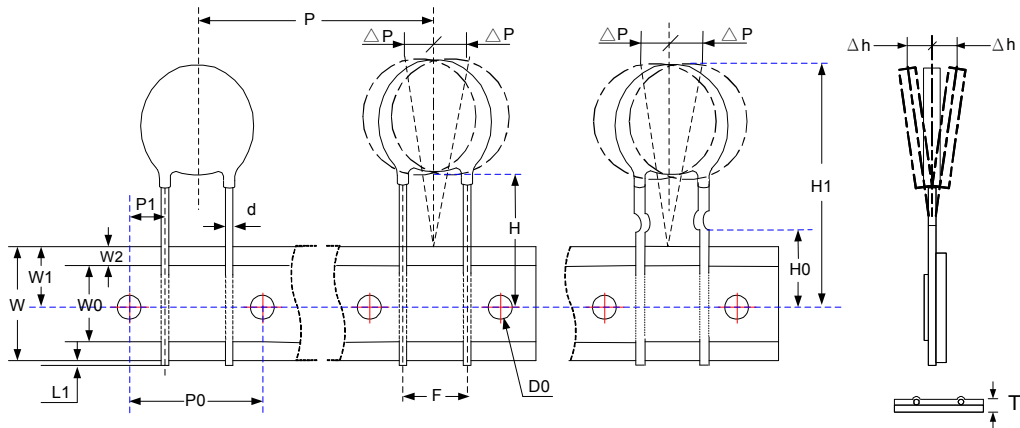


Fig.2. For KRG0160090 ~ KRG0161100

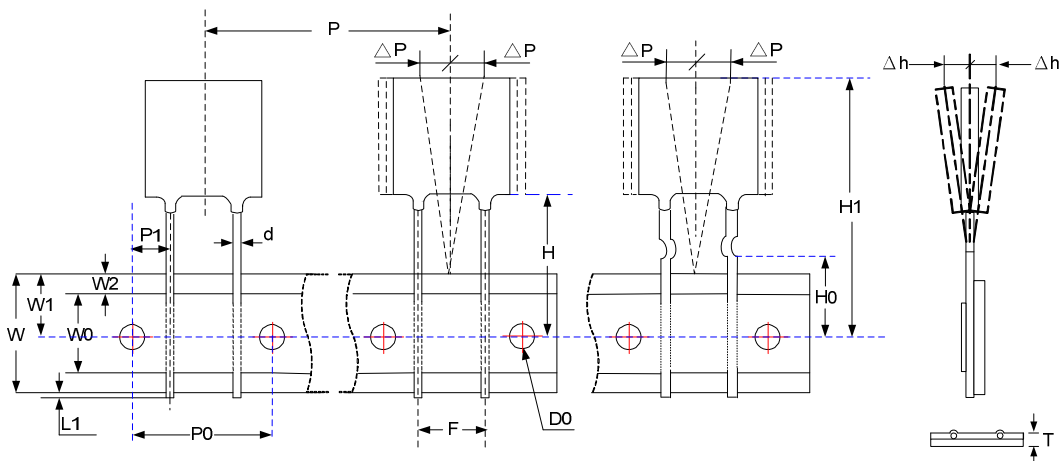
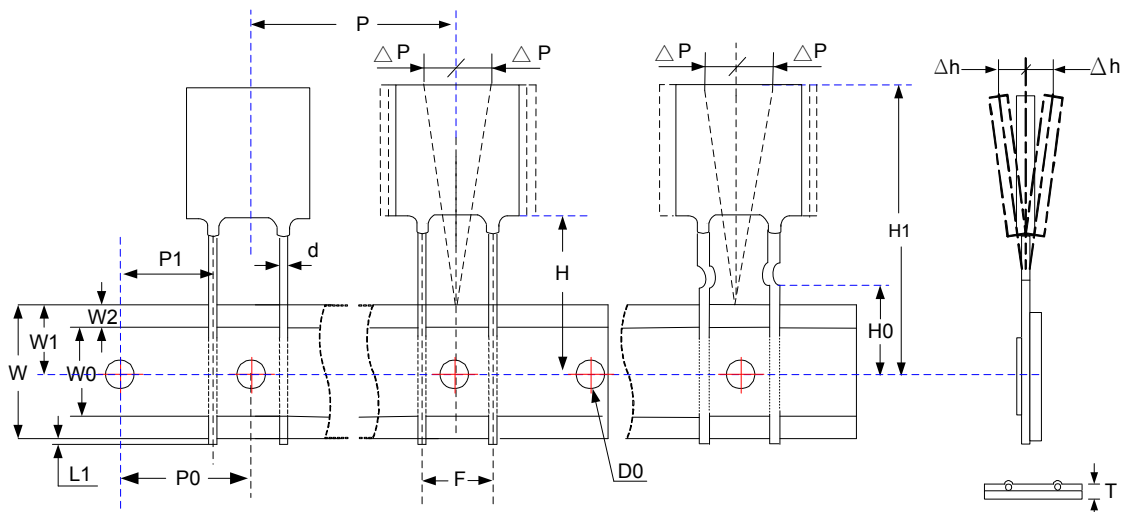


Fig.3. For KRG0161200 ~ KRG0161500



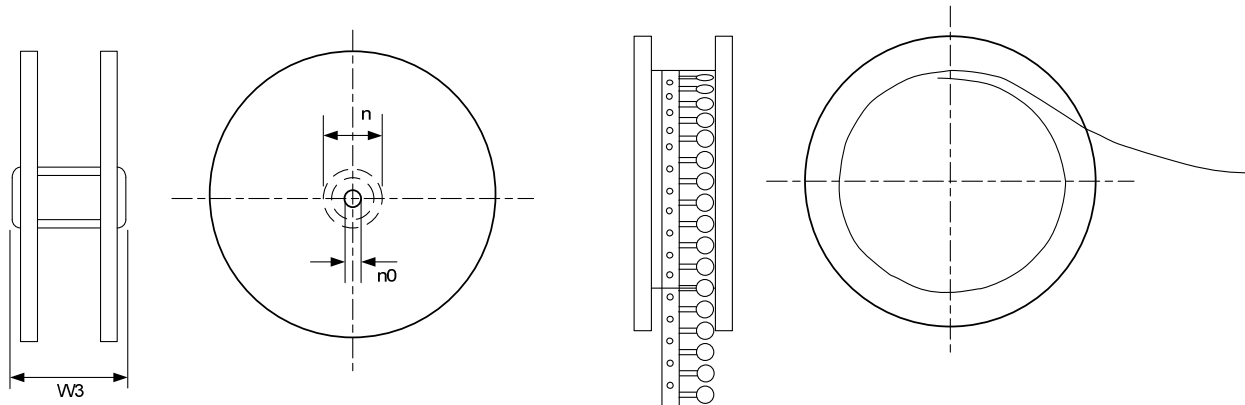
# Polymer PTC Resettable Fuse: KRG Series

## 6Vdc/16Vdc Radial Leaded Type



### ● Reel Specification

Fig.4



### ■ Quantity

#### ● Bulk Packing

| Series                             | Quantity (pcs/bag) |
|------------------------------------|--------------------|
| KRG0060075, KRG0060120, KRG0060155 | 1,000              |
| KRG016 (0090~0160)                 | 1,000              |
| KRG016 (0185~0900)                 | 500                |
| KRG016 (1000~1500)                 | 250                |

#### ● Reel Packing

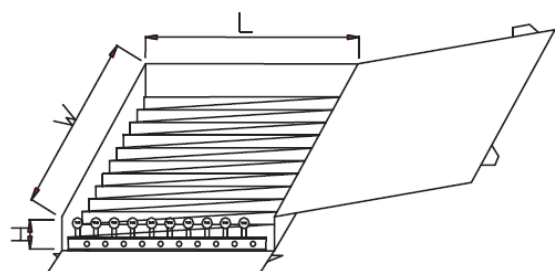
| Series                             | Quantity (pcs/reel) |
|------------------------------------|---------------------|
| KRG0060075, KRG0060120, KRG0060155 | 3,000               |
| KRG016 (0090~0185)                 | 3,000               |
| KRG016 (0250~0400)                 | 2,500               |
| KRG016 (0500~0700)                 | 1,500               |
| KRG016 (0800~1500)                 | 1,000               |

#### ● Ammo Packing

| Series                             | Quantity (pcs/box) |
|------------------------------------|--------------------|
| KRG0060075, KRG0060120, KRG0060155 | 1,000              |
| KRG016 (0090~0600)                 | 1,000              |
| KRG016 (0700~1500)                 | 500                |

# Polymer PTC Resettable Fuse: KRG Series

## 6Vdc/16Vdc Radial Leaded Type



(Unit:mm)

| Series                                | W   | L   | H  |
|---------------------------------------|-----|-----|----|
| KRG0060075, KRG0060120,<br>KRG0060155 | 348 | 185 | 50 |
| KRG0160090~KRG0160600                 | 348 | 185 | 50 |
| KRG0160700~KRG0161500                 | 348 | 185 | 73 |

### ■ Warehouse Storage Conditions of Products

- Storage Conditions:
  1. Storage Temperature:  $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$
  2. Relative Humidity:  $\leq 75\% \text{RH}$
  3. Keep away from corrosive atmosphere and sunlight.
- Period of Storage: 1 year