

## RP series, high-power metal film chip resistors

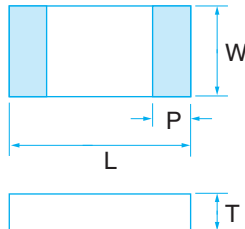


Resistors with high power at small size are realized as 1/3W for 2.0 x 1.25mm(0805) size, 1/5W for 1.6 x 0.8mm(0603) size and 1/6W for 1.0 x 0.5mm(0402) size). A tight resistance tolerance at  $\pm 1\%$  is achieved.



### SPECIFICATIONS

#### Mechanical



| Dimension (mm) | RP1005 (0402)   | RP1608 (0603) | RP2012 (0805)  |
|----------------|-----------------|---------------|----------------|
| L              | $1.0 \pm 0.05$  | $1.6 \pm 0.2$ | $2.0 \pm 0.2$  |
| W              | $0.5 \pm 0.05$  | $0.8 \pm 0.2$ | $1.25 \pm 0.2$ |
| P              | $0.2 \pm 0.10$  | $0.3 \pm 0.2$ | $0.4 \pm 0.2$  |
| T              | $0.35 \pm 0.05$ | $0.4 \pm 0.1$ | $0.4 \pm 0.1$  |

#### Electrical

| Type                                           | RP1005                 | RP1608                 | RP2012                 |             |
|------------------------------------------------|------------------------|------------------------|------------------------|-------------|
| Power                                          | 1/6W                   | 1/5W                   | 1/3W                   |             |
| Resistance Tolerance (code)                    | ±1 (F), ±2 (G), ±5 (J) | ±1 (F), ±2 (G), ±5 (J) | ±1 (F), ±2 (G), ±5 (J) |             |
| Resistance Range (Ω)                           | 0.1~47                 | 0.1~68                 | 0.1~10                 | 11~100      |
| Temperature Coefficient of Resistance (ppm/°C) | 0 ~+200 (S)            | 0 ~+200 (S)            | 0 ~+350 (T)            | 0 ~+200 (S) |
| Resistance Value                               | E-24                   | E-24                   | E-24                   |             |
| Maximum Operating Voltage for an element       | $\sqrt{P \cdot R}$     | $\sqrt{P \cdot R}$     | $\sqrt{P \cdot R}$     |             |
| Operating Temperature Rating                   | -40~125°C              |                        |                        |             |
| Package                                        | 10,000pcs/reel         | 5,000pcs/reel          | 5,000pcs/reel          |             |

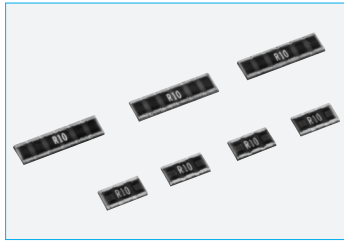
- Please contact us for specific resistance to surge voltage.
- Please contact us for 0.1 $\Omega$  or lower(TCR 0 - +350ppm/ $^{\circ}\text{C}$ ) resistance value.



### PART NUMBER

**RP 1608 S - 102 - F**

|    |      |   |   |     |   |   |                                       |
|----|------|---|---|-----|---|---|---------------------------------------|
| RP | 1608 | S | - | 102 | - | F |                                       |
|    |      |   |   |     |   |   | Resistance Tolerance                  |
|    |      |   |   |     |   |   | Resistance                            |
|    |      |   |   |     |   |   | Temperature Coefficient of Resistance |
|    |      |   |   |     |   |   | Dimensions                            |
|    |      |   |   |     |   |   | Part Code                             |



## RL series, PRL series <sup>NEW</sup> low resistance value chip resistors with long-side electrodes for high-precision current detection.

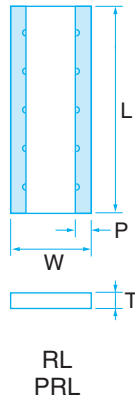


Excellent performance in resistance tolerance, noise, long term stability and heat dissipation. Our unique structure enables further miniaturization. This low resistance value chip resistor is useful in many current sensing applications. We offer 1/2, 1, 2 watt power handling thin film resistors. This product is completely lead free. <sup>NEW</sup> PRL1632 are realized as 1W for 3.2×1.6mm(1206)



### SPECIFICATIONS

#### Mechanical



| Dimension (mm) | RL3720    | RL3720W         | RL7520W         |
|----------------|-----------|-----------------|-----------------|
| L              | 3.75±0.30 | 3.75±0.30       | 7.50±0.30       |
| W              | 2.00±0.20 | 2.00±0.20       | 2.00±0.20       |
| P              | 0.40±0.20 | 0.40±0.20       | 0.40±0.20       |
| T              | 0.40±0.10 | 0.40+0.15/-0.10 | 0.40+0.15/-0.10 |

| Dimension (mm) | PRL0816    | PRL1220   | PRL1632   | PRL3264  |
|----------------|------------|-----------|-----------|----------|
| L              | 1.6±0.2    | 2.0±0.2   | 3.2±0.2   | 6.4±0.2  |
| W              | 0.8±0.2    | 1.25±0.2  | 1.6±0.2   | 3.2±0.2  |
| P              | 0.225±0.15 | 0.35±0.15 | 0.45±0.15 | 0.9±0.15 |
| T              | 0.5±0.15   | 0.5±0.15  | 0.5±0.15  | 0.5±0.15 |

#### Electrical

| Type                                               | RL3720           |             |           | RL3720W          |             |             |                     | RL7520W          |             |                     |
|----------------------------------------------------|------------------|-------------|-----------|------------------|-------------|-------------|---------------------|------------------|-------------|---------------------|
| Power                                              | 1/2W             |             |           | 1W               |             |             |                     | 2W               |             |                     |
| Resistance Tolerance (code)                        | ±1%(F)<br>±2%(G) |             |           | ±1%(F)<br>±2%(G) |             |             |                     | ±1%(F)<br>±2%(G) |             |                     |
| Resistance Range (Ω)                               | 0.01~0.018       | 0.022~0.068 | 0.1~2.2   | 0.002~0.004      | 0.005~0.009 | 0.010~0.091 | 0.1~1.0             | 0.001~0.009      | 0.010~0.091 | 0.1~0.47            |
| Temperature Coefficient of Resistance ppm/°C(code) | 0~350 (T)        | 0~200 (S)   | 0~100 (S) | 0~350 (T)        | 0~200 (S)   | 0~200 (S)   | 0~50(Q)<br>0~100(R) | 0~200 (S)        | 0~100 (R)   | 0~50(Q)<br>0~100(R) |
| Resistance Value                                   | E-6              |             |           | —                |             | E-24        |                     | —                | E-24        |                     |
| Package                                            | 4000pcs/reel     |             |           |                  |             |             |                     |                  |             |                     |

· 0.001 ohm for RL3720W is available.

| Type                                               | PRL0816                                                     | PRL1220          |                          | PRL1632                                                   |                          | PRL3264          |                  |                          |
|----------------------------------------------------|-------------------------------------------------------------|------------------|--------------------------|-----------------------------------------------------------|--------------------------|------------------|------------------|--------------------------|
| Power                                              | 1/3W                                                        | 1/2W             |                          | 1W                                                        |                          | 2W               |                  |                          |
| Resistance Tolerance (code)                        | ±0.5%(D)<br>±1%(F)±2%(G)                                    | ±1%(F)<br>±2%(G) | ±0.5%(D)<br>±1%(F)±2%(G) | ±1%(F)<br>±2%(G)                                          | ±0.5%(D)<br>±1%(F)±2%(G) | ±2%(G)<br>±5%(J) | ±1%(F)<br>±2%(G) | ±0.5%(D)<br>±1%(F)±2%(G) |
| Resistance Range (Ω)                               | 10m~100m                                                    | 7m~9m            | 10m~100m                 | 5m~9m                                                     | 10m~100m                 | 3m~4m            | 5m~9m            | 10m~100m                 |
| Temperature Coefficient of Resistance ppm/°C(code) | 12mΩ≥：0~350, 13m~33mΩ：0~200<br>36m~68mΩ：±100, 75m~100mΩ：±50 |                  |                          | 10mΩ>：0~350, 10m~18mΩ：0~200, 20m~51mΩ：±100, 56m~100mΩ：±50 |                          |                  |                  |                          |
| Resistance Value                                   | E-24series、25mΩ、50mΩ、10mΩ>:1mΩ step                         |                  |                          |                                                           |                          |                  |                  |                          |
| Package                                            | 1,000pcs/reel 5,000pcs/reel                                 |                  |                          |                                                           |                          |                  |                  |                          |

· PRL series with resistance value more than 100m ohm are also available.

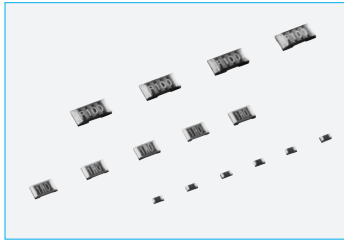


### PART NUMBER

**RL 3720W T - R10 - F - (T1)** — Taping Quantity Unit: PRL: T1(1000pcs) T5(5000pcs)

Resistance Value: RL series: 3 digits, PRL series: 4 digits

Temperature Coefficient of Resistance: To be added as for RL series



## RL series, low resistance value chip resistors with short-side electrodes for high-precision current detection.



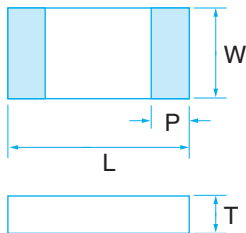
These thin film low resistance value chip resistors are offered in international standard sizes. They exhibit excellent performance in resistance, noise performance, surface heat distribution and a lower surface temperature. Useful in many current sensing applications. Available in 1/10, 1/8 and 1/4 watt package.

**NEW** Smallest in the market 0201 low resistance value chip resistor. This product is completely lead free.



### SPECIFICATIONS

#### Mechanical



| Dimension (mm) | RL0603 (0201)   | RL0510 (0402)   | RL0816 (0603)   | RL1220 (0805)   |
|----------------|-----------------|-----------------|-----------------|-----------------|
| L              | $0.60 \pm 0.05$ | $1.00 \pm 0.10$ | $1.60 \pm 0.10$ | $2.00 \pm 0.20$ |
| W              | $0.30 \pm 0.05$ | $0.50 \pm 0.10$ | $0.80 \pm 0.10$ | $1.25 \pm 0.20$ |
| P              | $0.12 \pm 0.05$ | $0.20 \pm 0.10$ | $0.20 \pm 0.15$ | $0.40 \pm 0.20$ |
| T              | $0.23 \pm 0.05$ | $0.35 \pm 0.10$ | $0.45 \pm 0.10$ | $0.40 \pm 0.20$ |

#### Equivalent circuit



#### Electrical

| Type                                                          | RL0603                         | RL0510                         | RL0816                         |               | RL1220                         |             |           |
|---------------------------------------------------------------|--------------------------------|--------------------------------|--------------------------------|---------------|--------------------------------|-------------|-----------|
| Power                                                         | 1/10W                          | 1/8W                           | 1/8W                           |               | 1/4W                           |             |           |
| Resistance Tolerance (code)                                   | $\pm 2\%$ (G)<br>$\pm 5\%$ (J) | $\pm 1\%$ (F)<br>$\pm 2\%$ (G) | $\pm 1\%$ (F)<br>$\pm 2\%$ (G) | $\pm 1\%$ (F) | $\pm 1\%$ (F)<br>$\pm 2\%$ (G) |             |           |
| Resistance Range( $\Omega$ )                                  | 0.1~4.7                        | 0.05~4.7                       | 0.02~0.091                     | 0.1~6.8       | 0.01~0.039                     | 0.043~0.091 | 0.1~10    |
| Temperature Coefficient of Resistance ppm/ $^{\circ}$ C(code) | 0~200 (S)                      |                                | 0~200 (S)                      | 0~100 (S)     | 0~350 (T)                      | 0~200 (S)   | 0~100 (S) |
| Resistance Value                                              | E-24                           |                                |                                |               |                                |             |           |
| Package                                                       | 10,000pcs/reel                 |                                | 5,000pcs/reel                  |               |                                |             |           |

·Please contact us for tolerance  $\pm 1\%$  in RL0603.

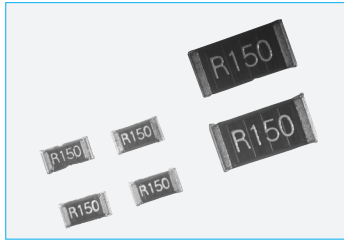
·Please contact us for tolerance  $\pm 0.5\%$  for 0.1 $\Omega$  or more in RL0816, as well as  $\pm 0.5\%$  for 0.047 $\Omega$  or more in RL1220.



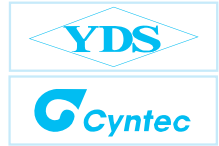
### PART NUMBER

**RL 1220 S - 1R0 - F**





## RL series, low resistance value chip resistors with short-side electrodes for high-precision current detection.

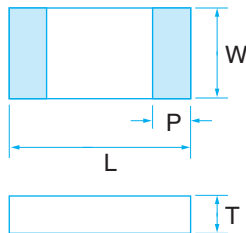


These low resistance value chip resistors are offered in international standard sizes. They exhibit excellent performance in resistance, noise performance, surface heat distribution and a lower surface temperature. Useful in many current sensing applications. Available in 1/2 and 1 watt package. This product is completely lead free.



### SPECIFICATIONS

#### Mechanical



| Dimension (mm) | RL1632    | RL3264    | RL1632H<br>NEW | RL-1632-6<br>NEW | RL-3264-6                                                             |
|----------------|-----------|-----------|----------------|------------------|-----------------------------------------------------------------------|
| L              | 3.20±0.20 | 6.40±0.20 | 3.20±0.20      | 3.20±0.33        | 6.50±0.33                                                             |
| W              | 1.60±0.20 | 3.20±0.20 | 1.60±0.20      | 1.60±0.33        | 3.20±0.20                                                             |
| P              | 1.00±0.15 | 2.00±0.15 | 0.50±0.15      | 0.95±0.20        | 2.50±0.15(1mΩ)<br>1.90±0.15(2mΩ)<br>1.0±0.15(≥3mΩ)                    |
| T              | 0.50±0.15 | 0.50±0.15 | 0.80±0.15      | 0.50±0.15        | 0.70±0.15(1mΩ)<br>0.65±0.15(2mΩ)<br>0.95±0.15(3mΩ)<br>0.80±0.15(≥4mΩ) |

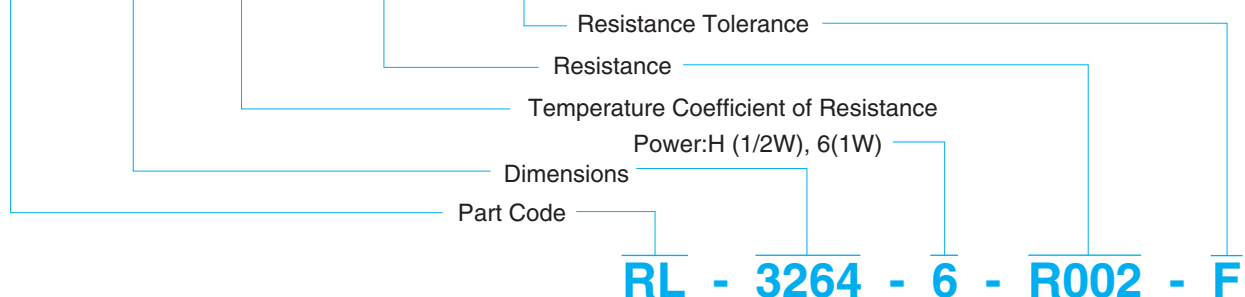
#### Electrical

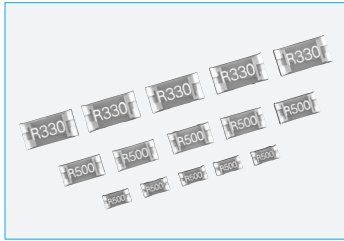
| Type                                                | RL1632        |             |                  |             |            | RL3264        |             |                  |                           |            | RL1632H<br><small>New Fixed metal foil</small> | RL-1632-6<br><small>New Fixed metal foil</small> | RL-3264-6<br><small>Fixed metal foil</small> |                  |                  |        |  |
|-----------------------------------------------------|---------------|-------------|------------------|-------------|------------|---------------|-------------|------------------|---------------------------|------------|------------------------------------------------|--------------------------------------------------|----------------------------------------------|------------------|------------------|--------|--|
| Power                                               | 1/2W          |             |                  |             |            | 1W            |             |                  |                           |            | 1/2W                                           | 1W                                               | 1W                                           |                  |                  |        |  |
| Resistance Tolerance(code)                          | ±2%(G)        |             | ±1%(F)<br>±2%(G) |             |            | ±2%(G)        |             | ±1%(F)<br>±2%(G) |                           |            | ±1%(F)<br>±2%(G)<br>±5%(J)                     | ±5%(J)                                           | ±5%(J)                                       | ±1%(F)<br>±5%(J) | ±1%(F)<br>±5%(J) |        |  |
| Resistance Range (Ω)                                | 0.01~0.015    | 0.018~0.022 | 0.027            | 0.033~0.047 | 0.051~4.7  | 0.01~0.015    | 0.018~0.022 | 0.027            | 0.033~0.047               | 0.056~0.47 | 5m~0.5                                         | 1~4m                                             | 1,2m                                         | 3,4,5m           | 5.1~10m          | 11~47m |  |
| Temperature Coefficient of Resistance ppm/°C (code) | 0~+500 (T)    | 0~+350 (T)  | 0~+200 (S)       | ±100 (R)    | 0~+500 (T) | 0~+350 (T)    | 0~+200 (S)  | ±100 (R)         | ±100(10mΩ≥)<br>±50(10mΩ<) |            |                                                | ±100                                             | ±200                                         | ±100             | ±100             | ±50    |  |
| Resistance Value                                    | E-24          |             |                  |             |            | E-12          |             |                  |                           |            | 1mΩ step<br>(9mΩ≥)<br>E-24series<br>(10mΩ≤)    | 1mΩ step                                         | —                                            |                  | E-24             |        |  |
| Package                                             | 5,000pcs/reel |             |                  |             |            | 5,000pcs/reel |             |                  |                           |            | 2,000pcs/reel                                  |                                                  |                                              |                  |                  |        |  |



### PART NUMBER

**RL 1632 S - R033 - F**





# High-precision current-detection elements

## RL·L series: four-terminal type

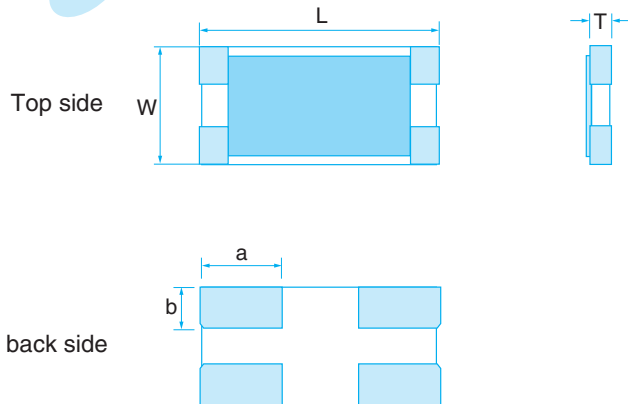


Newly released: A four-terminal structure with separate voltage- and current-terminals assures high-precision TCR of 50ppm/°C and 0.5% tolerance.



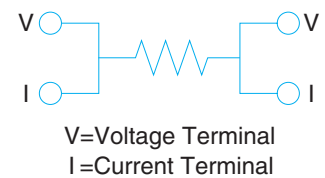
### SPECIFICATIONS

#### Mechanical



| Dimension (mm) | RL1632L4 (1206) | RL2550L4 (2010) | RL3264L4 (2512) |
|----------------|-----------------|-----------------|-----------------|
| L              | 3.2±0.2         | 5.0±0.2         | 6.4±0.2         |
| W              | 1.6±0.2         | 2.5±0.2         | 3.2±0.2         |
| T              | 0.5±0.15        | 0.5±0.15        | 0.5±0.15        |
| a              | 1.0±0.2         | 1.7±0.2         | 2.1±0.2         |
| b              | 0.55±0.2        | 0.9±0.2         | 1.2±0.2         |

#### Equivalent circuit



#### Electrical

|                                       |                         |              |                                           |             |              |
|---------------------------------------|-------------------------|--------------|-------------------------------------------|-------------|--------------|
| Type                                  | RL1632L4                | RL2550L4     | RL3264L4                                  |             |              |
| Power                                 | 1/2W                    | 3/4W         | 1W                                        |             |              |
| Resistance Tolerance (code)           | ±0.5%(D) ±1%(F)         |              |                                           |             |              |
| Resistance Range (Ω)                  | 10~500m                 |              | 3~5m                                      | 6~500m      |              |
| Temperature Coefficient of Resistance | ±50ppm/°C               |              | ±100ppm/°C                                | ±50ppm/°C   |              |
| Terminal Resistance (Ω)               | 10~47m                  | 50~500m      | 3~8m                                      | 10~47m      | 50~500m      |
|                                       | 5 M or less             | 20 M or less | 1 M or less                               | 5 M or less | 20 M or less |
| Resistance Value (Ω)                  | E-12 series<br>50, 500m |              | E-12 series<br>3, 4, 5, 6, 7, 8, 50, 500m |             |              |
| Package                               | 5,000pcs/reel           |              |                                           |             |              |

· Contact us for even lower resistance values.



### PART NUMBER

**RL 1632 L4 - R033 - F**

