

## Type RP73 Series

### Key Features

High precision -  
Tolerance down to 0.05%  
and TCR down to 5PPM  
Power rating to 1.0W  
Up to 200V DC operating  
voltage  
Terminal finish –  
electroplated 100% matte  
Sn

### Applications

Communications  
Industrial Controls  
Instrumentation  
Medical



The RP73 resistor series is a stable thin film chip resistor range offering increased power dissipation, higher temperature capabilities and increased working voltages compared to the standard RN73 series. The resistor is produced by sputtering a metal film onto high grade alumina and protecting with three complete printed layers. Values are normally offered in E96 and E24 series. The RP73 resistor has accurate and uniform physical dimensions to reduce placement problems.

### Electrical Characteristics RP73 series

|                             |     |              |      |    |    |    |      |      |      |      |    |         |      |      |      |    |
|-----------------------------|-----|--------------|------|----|----|----|------|------|------|------|----|---------|------|------|------|----|
|                             |     | 0402         |      |    |    |    |      |      |      |      |    |         |      |      |      |    |
| Rated Power @ 70°C          |     | 0.063W       |      |    |    |    |      |      |      |      |    |         |      |      |      |    |
| Resistance range Ω          | Min | 49R9         | 49R9 |    |    |    | 49R9 | 49R9 | 49R9 | 10R  |    | 49R9    | 49R9 | 49R9 | 4R7  |    |
|                             | Max | 4K99         | 12K  |    |    |    | 4K99 | 60K  | 69K8 | 255K |    | 4K99    | 60K  | 69K8 | 511K |    |
| Tolerance (%)               |     | 0.05         |      |    |    |    | 0.1  |      |      |      |    | 0.5 / 1 |      |      |      |    |
| Code Letter                 |     | A            |      |    |    |    | B    |      |      |      |    | D / F   |      |      |      |    |
| TCR (PPM / °C)              |     | 5            | 10   | 15 | 25 | 50 | 5    | 10   | 15   | 25   | 50 | 5       | 10   | 15   | 25   | 50 |
| Code Letter                 |     | A            | C    | D  | F  | G  | A    | C    | D    | F    | G  | A       | C    | D    | F    | G  |
| Selection series            |     | E24 & E96    |      |    |    |    |      |      |      |      |    |         |      |      |      |    |
| Max. operating voltage      |     | 25V          |      |    |    |    |      |      |      |      |    |         |      |      |      |    |
| Max overload voltage        |     | 50V          |      |    |    |    |      |      |      |      |    |         |      |      |      |    |
| Operating temperature range |     | -55 ~ +155°C |      |    |    |    |      |      |      |      |    |         |      |      |      |    |
| Insulation resistance       |     | >1000MΩ      |      |    |    |    |      |      |      |      |    |         |      |      |      |    |
| Stability                   |     | 0.5%         |      |    |    |    |      |      |      |      |    |         |      |      |      |    |

|                             |     |              |      |    |    |    |      |      |    |    |    |         |    |      |      |    |  |  |     |
|-----------------------------|-----|--------------|------|----|----|----|------|------|----|----|----|---------|----|------|------|----|--|--|-----|
|                             |     | 0603         |      |    |    |    |      |      |    |    |    |         |    |      |      |    |  |  |     |
| Rated Power @ 70°C          |     | 0.1W         |      |    |    |    |      |      |    |    |    |         |    |      |      |    |  |  |     |
| Resistance range Ω          | Min | 24R9         | 4R7  |    |    |    | 24R9 | 4R7  |    |    |    | 4R7     |    | 24R9 | 4R7  |    |  |  | 4R7 |
|                             | Max | 15K          | 332K |    |    |    | 15K  | 332K |    |    |    | 1M0     |    | 15K  | 332K |    |  |  | 1M0 |
| Tolerance (%)               |     | 0.05         |      |    |    |    | 0.1  |      |    |    |    | 0.5 / 1 |    |      |      |    |  |  |     |
| Code Letter                 |     | A            |      |    |    |    | B    |      |    |    |    | D / F   |    |      |      |    |  |  |     |
| TCR (PPM / °C)              |     | 5            | 10   | 15 | 25 | 50 | 5    | 10   | 15 | 25 | 50 | 5       | 10 | 15   | 25   | 50 |  |  |     |
| Code Letter                 |     | A            | C    | D  | F  | G  | A    | C    | D  | F  | G  | A       | C  | D    | F    | G  |  |  |     |
| Selection series            |     | E24 & E96    |      |    |    |    |      |      |    |    |    |         |    |      |      |    |  |  |     |
| Max. operating voltage      |     | 75V          |      |    |    |    |      |      |    |    |    |         |    |      |      |    |  |  |     |
| Max overload voltage        |     | 150V         |      |    |    |    |      |      |    |    |    |         |    |      |      |    |  |  |     |
| Operating temperature range |     | -55 ~ +155°C |      |    |    |    |      |      |    |    |    |         |    |      |      |    |  |  |     |
| Insulation resistance       |     | >1000MΩ      |      |    |    |    |      |      |    |    |    |         |    |      |      |    |  |  |     |
| Stability                   |     | 0.5%         |      |    |    |    |      |      |    |    |    |         |    |      |      |    |  |  |     |

|                             |     |              |      |    |    |    |      |      |     |     |    |         |      |     |     |    |
|-----------------------------|-----|--------------|------|----|----|----|------|------|-----|-----|----|---------|------|-----|-----|----|
|                             |     | 0805         |      |    |    |    |      |      |     |     |    |         |      |     |     |    |
| Rated Power @ 70°C          |     | 0.125W       |      |    |    |    |      |      |     |     |    |         |      |     |     |    |
| Resistance range Ω          | Min | 24R9         | 4R7  |    |    |    | 24R9 | 4R7  | 4R7 | 4R7 |    | 24R9    | 4R7  | 4R7 | 1R0 |    |
|                             | Max | 30K          | 511K |    |    |    | 30K  | 511K | 1M0 | 1M0 |    | 30K     | 511K | 1M0 | 1M0 |    |
| Tolerance (%)               |     | 0.05         |      |    |    |    | 0.1  |      |     |     |    | 0.5 / 1 |      |     |     |    |
| Code Letter                 |     | A            |      |    |    |    | B    |      |     |     |    | D / F   |      |     |     |    |
| TCR (PPM / °C)              |     | 5            | 10   | 15 | 25 | 50 | 5    | 10   | 15  | 25  | 50 | 5       | 10   | 15  | 25  | 50 |
| Code Letter                 |     | A            | C    | D  | F  | G  | A    | C    | D   | F   | G  | A       | C    | D   | F   | G  |
| Selection series            |     | E24 & E96    |      |    |    |    |      |      |     |     |    |         |      |     |     |    |
| Max. operating voltage      |     | 150V         |      |    |    |    |      |      |     |     |    |         |      |     |     |    |
| Max overload voltage        |     | 300V         |      |    |    |    |      |      |     |     |    |         |      |     |     |    |
| Operating temperature range |     | -55 ~ +155°C |      |    |    |    |      |      |     |     |    |         |      |     |     |    |
| Insulation resistance       |     | >1000MΩ      |      |    |    |    |      |      |     |     |    |         |      |     |     |    |
| Stability                   |     | 0.5%         |      |    |    |    |      |      |     |     |    |         |      |     |     |    |

|                             |     |              |     |    |    |    |      |     |    |    |    |         |     |    |    |    |
|-----------------------------|-----|--------------|-----|----|----|----|------|-----|----|----|----|---------|-----|----|----|----|
|                             |     | 1206         |     |    |    |    |      |     |    |    |    |         |     |    |    |    |
| Rated Power @ 70°C          |     | 0.25W        |     |    |    |    |      |     |    |    |    |         |     |    |    |    |
| Resistance range Ω          | Min | 24R9         | 4R7 |    |    |    | 24R9 | 4R7 |    |    |    | 24R9    | 4R7 |    |    |    |
|                             | Max | 49K9         | 1M0 |    |    |    | 49K9 | 1M0 |    |    |    | 49K9    | 1M0 |    |    |    |
| Tolerance (%)               |     | 0.05         |     |    |    |    | 0.1  |     |    |    |    | 0.5 / 1 |     |    |    |    |
| Code Letter                 |     | A            |     |    |    |    | B    |     |    |    |    | D / F   |     |    |    |    |
| TCR (PPM / °C)              |     | 5            | 10  | 15 | 25 | 50 | 5    | 10  | 15 | 25 | 50 | 5       | 10  | 15 | 25 | 50 |
| Code Letter                 |     | A            | C   | D  | F  | G  | A    | C   | D  | F  | G  | A       | C   | D  | F  | G  |
| Selection series            |     | E24 & E96    |     |    |    |    |      |     |    |    |    |         |     |    |    |    |
| Max. operating voltage      |     | 200V         |     |    |    |    |      |     |    |    |    |         |     |    |    |    |
| Max overload voltage        |     | 400V         |     |    |    |    |      |     |    |    |    |         |     |    |    |    |
| Operating temperature range |     | -55 ~ +155°C |     |    |    |    |      |     |    |    |    |         |     |    |    |    |
| Insulation resistance       |     | >1000MΩ      |     |    |    |    |      |     |    |    |    |         |     |    |    |    |
| Stability                   |     | 0.5%         |     |    |    |    |      |     |    |    |    |         |     |    |    |    |

|                             |     |              |     |    |    |    |      |     |    |    |    |         |     |    |    |    |
|-----------------------------|-----|--------------|-----|----|----|----|------|-----|----|----|----|---------|-----|----|----|----|
|                             |     | 1210         |     |    |    |    |      |     |    |    |    |         |     |    |    |    |
| Rated Power @ 70°C          |     | 0.33W        |     |    |    |    |      |     |    |    |    |         |     |    |    |    |
| Resistance range Ω          | Min | 24R9         | 4R7 |    |    |    | 24R9 | 4R7 |    |    |    | 24R9    | 4R7 |    |    |    |
|                             | Max | 49K9         | 1M0 |    |    |    | 49K9 | 1M0 |    |    |    | 49K9    | 1M0 |    |    |    |
| Tolerance (%)               |     | 0.05         |     |    |    |    | 0.1  |     |    |    |    | 0.5 / 1 |     |    |    |    |
| Code Letter                 |     | A            |     |    |    |    | B    |     |    |    |    | D / F   |     |    |    |    |
| TCR (PPM / °C)              |     | 5            | 10  | 15 | 25 | 50 | 5    | 10  | 15 | 25 | 50 | 5       | 10  | 15 | 25 | 50 |
| Code Letter                 |     | A            | C   | D  | F  | G  | A    | C   | D  | F  | G  | A       | C   | D  | F  | G  |
| Selection series            |     | E24 & E96    |     |    |    |    |      |     |    |    |    |         |     |    |    |    |
| Max. operating voltage      |     | 200V         |     |    |    |    |      |     |    |    |    |         |     |    |    |    |
| Max overload voltage        |     | 400V         |     |    |    |    |      |     |    |    |    |         |     |    |    |    |
| Operating temperature range |     | -55 ~ +155°C |     |    |    |    |      |     |    |    |    |         |     |    |    |    |
| Insulation resistance       |     | >1000MΩ      |     |    |    |    |      |     |    |    |    |         |     |    |    |    |
| Stability                   |     | 0.5%         |     |    |    |    |      |     |    |    |    |         |     |    |    |    |

|                             |     |              |     |    |    |      |     |    |    |         |     |   |    |    |    |    |
|-----------------------------|-----|--------------|-----|----|----|------|-----|----|----|---------|-----|---|----|----|----|----|
|                             |     | 2010         |     |    |    |      |     |    |    |         |     |   |    |    |    |    |
| Rated Power @ 70°C          |     | 0.33W        |     |    |    |      |     |    |    |         |     |   |    |    |    |    |
| Resistance range Ω          | Min | 24R9         | 4R7 |    |    | 24R9 | 4R7 |    |    | 24R9    | 4R7 |   |    |    |    |    |
|                             | Max | 49K9         | 1M0 |    |    | 49K9 | 1M0 |    |    | 49K9    | 1M0 |   |    |    |    |    |
| Tolerance (%)               |     | 0.05         |     |    |    | 0.1  |     |    |    | 0.5 / 1 |     |   |    |    |    |    |
| Code Letter                 |     | A            |     |    |    | B    |     |    |    | D / F   |     |   |    |    |    |    |
| TCR (PPM / °C)              |     | 5            | 10  | 15 | 25 | 50   | 5   | 10 | 15 | 25      | 50  | 5 | 10 | 15 | 25 | 50 |
| Code Letter                 |     | A            | C   | D  | F  | G    | A   | C  | D  | F       | G   | A | C  | D  | F  | G  |
| Selection series            |     | E24 & E96    |     |    |    |      |     |    |    |         |     |   |    |    |    |    |
| Max. operating voltage      |     | 200V         |     |    |    |      |     |    |    |         |     |   |    |    |    |    |
| Max overload voltage        |     | 400V         |     |    |    |      |     |    |    |         |     |   |    |    |    |    |
| Operating temperature range |     | -55 ~ +155°C |     |    |    |      |     |    |    |         |     |   |    |    |    |    |
| Insulation resistance       |     | >1000MΩ      |     |    |    |      |     |    |    |         |     |   |    |    |    |    |
| Stability                   |     | 0.5%         |     |    |    |      |     |    |    |         |     |   |    |    |    |    |

|                             |     |              |    |      |    |      |    |
|-----------------------------|-----|--------------|----|------|----|------|----|
|                             |     | 2512         |    |      |    |      |    |
| Rated Power @ 70°C          |     | 1.0W         |    |      |    |      |    |
| Resistance range Ω          | Min | 4R7          |    | 1R0  |    | 1R0  |    |
|                             | Max | 100R         |    | 100R |    | 100R |    |
| Tolerance (%)               |     | 0.1          |    | 0.5  |    | 1.0  |    |
| Code Letter                 |     | B            |    | D    |    | F    |    |
| TCR (PPM / °C)              |     | 25           | 50 | 25   | 50 | 25   | 50 |
| Code Letter                 |     | F            | G  | F    | G  | F    | G  |
| Selection series            |     | E24 & E96    |    |      |    |      |    |
| Max. operating voltage      |     | 200V         |    |      |    |      |    |
| Max overload voltage        |     | 400V         |    |      |    |      |    |
| Operating temperature range |     | -55 ~ +155°C |    |      |    |      |    |
| Insulation resistance       |     | >1000MΩ      |    |      |    |      |    |
| Stability                   |     | 0.5%         |    |      |    |      |    |

Operating Voltage= $V(P \cdot R)$  or Max. operating voltage listed above, whichever is lower.

Overload Voltage= $2.5 \cdot V(P \cdot R)$  or Max. overload voltage listed above, whichever is lower.

## Electrical Characteristics RP73P series – High Power

|                             |     |              |    |      |    |      |    |
|-----------------------------|-----|--------------|----|------|----|------|----|
|                             |     | 0603         |    |      |    |      |    |
| Rated Power @ 70°C          |     | 0.166W       |    |      |    |      |    |
| Resistance range Ω          | Min | 10R          |    | 10R  |    | 10R  |    |
|                             | Max | 332K         |    | 332K |    | 332K |    |
| Tolerance (%)               |     | 0.1          |    | 0.5  |    | 1.0  |    |
| Code Letter                 |     | B            |    | D    |    | F    |    |
| TCR (PPM / °C)              |     | 25           | 50 | 25   | 50 | 25   | 50 |
| Code Letter                 |     | F            | G  | F    | G  | F    | G  |
| Selection series            |     | E24 & E96    |    |      |    |      |    |
| Max. operating voltage      |     | 100V         |    |      |    |      |    |
| Max overload voltage        |     | 150V         |    |      |    |      |    |
| Operating temperature range |     | -55 ~ +155°C |    |      |    |      |    |
| Insulation resistance       |     | >1000MΩ      |    |      |    |      |    |
| Stability                   |     | 0.5%         |    |      |    |      |    |

|                             |     |              |    |      |    |      |    |
|-----------------------------|-----|--------------|----|------|----|------|----|
|                             |     | 0805         |    |      |    |      |    |
| Rated Power @ 70°C          |     | 0.25W        |    |      |    |      |    |
| Resistance range Ω          | Min | 10R          |    | 10R  |    | 10R  |    |
|                             | Max | 499K         |    | 499K |    | 499K |    |
| Tolerance (%)               |     | 0.1          |    | 0.5  |    | 1.0  |    |
| Code Letter                 |     | B            |    | D    |    | F    |    |
| TCR (PPM / °C)              |     | 25           | 50 | 25   | 50 | 25   | 50 |
| Code Letter                 |     | F            | G  | F    | G  | F    | G  |
| Selection series            |     | E24 & E96    |    |      |    |      |    |
| Max. operating voltage      |     | 150V         |    |      |    |      |    |
| Max overload voltage        |     | 300V         |    |      |    |      |    |
| Operating temperature range |     | -55 ~ +155°C |    |      |    |      |    |
| Insulation resistance       |     | >1000MΩ      |    |      |    |      |    |
| Stability                   |     | 0.5%         |    |      |    |      |    |

|                             |     |              |    |     |    |     |    |
|-----------------------------|-----|--------------|----|-----|----|-----|----|
|                             |     | 1206         |    |     |    |     |    |
| Rated Power @ 70°C          |     | 0.33W        |    |     |    |     |    |
| Resistance range Ω          | Min | 10R          |    | 10R |    | 10R |    |
|                             | Max | 1M0          |    | 1M0 |    | 1M0 |    |
| Tolerance (%)               |     | 0.1          |    | 0.5 |    | 1.0 |    |
| Code Letter                 |     | B            |    | D   |    | F   |    |
| TCR (PPM / °C)              |     | 25           | 50 | 25  | 50 | 25  | 50 |
| Code Letter                 |     | F            | G  | F   | G  | F   | G  |
| Selection series            |     | E24 & E96    |    |     |    |     |    |
| Max. operating voltage      |     | 200V         |    |     |    |     |    |
| Max overload voltage        |     | 400V         |    |     |    |     |    |
| Operating temperature range |     | -55 ~ +155°C |    |     |    |     |    |
| Insulation resistance       |     | >1000MΩ      |    |     |    |     |    |
| Stability                   |     | 0.5%         |    |     |    |     |    |

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

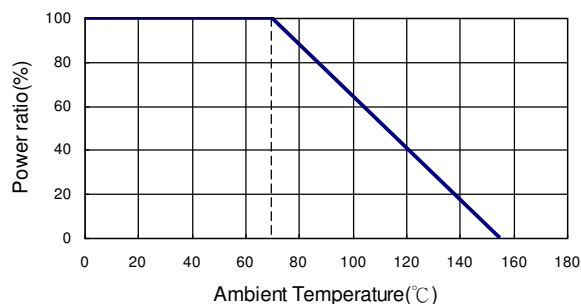
Overload Voltage= $2.5 \cdot \sqrt{P \cdot R}$  or Max. overload voltage listed above, whichever is lower.

## Environmental Characteristics

| Item                                        | Requirement                                                |                       | Test Method                                                                                                             |
|---------------------------------------------|------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------|
|                                             | Tol. $\leq 0.05\%$                                         | TOL. $> 0.05\%$       |                                                                                                                         |
| Temperature Coefficient of Resistance (TCR) | As per TCRs specified in Electrical Characteristics tables |                       | MIL-STD-202 Method 304<br>+25/-55/+25/+125/+25°C                                                                        |
| Short Time Overload                         | $\Delta R \pm 0.2\%$                                       | $\Delta R \pm 0.2\%$  | JIS-C-5201-1 5.5<br>RCWV*2.5 or Max. overload voltage whichever is lower for 5 seconds                                  |
| Insulation Resistance                       | $> 1000 \text{ M}\Omega$                                   |                       | MIL-STD-202 Method 302<br>Apply 100VDC for 1 minute                                                                     |
| Endurance                                   | $\Delta R \pm 0.5\%$                                       |                       | MIL-STD-202 Method 108A<br>70 $\pm 2^\circ\text{C}$ , RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"             |
| Damp Heat with Load                         | $\Delta R \pm 0.5\%$                                       | $\Delta R \pm 0.5\%$  | MIL-STD-202 Method 103B<br>40 $\pm 2^\circ\text{C}$ , 90~95% R.H. RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF" |
| Bending Strength                            | $\Delta R \pm 0.05\%$                                      | $\Delta R \pm 0.2\%$  | JIS-C-5201-1 6.1.4<br>Bending amplitude 3 mm for 10 seconds                                                             |
| Solderability                               | 95% min. coverage                                          |                       | MIL-STD-202 Method 208H<br>245 $\pm 5^\circ\text{C}$ for 3 seconds                                                      |
| Resistance to Soldering Heat                | $\Delta R \pm 0.05\%$                                      | $\Delta R \pm 0.2\%$  | MIL-STD-202 Method 210E<br>260 $\pm 5^\circ\text{C}$ for 10 seconds                                                     |
| Dielectric Withstand Voltage                | By Type                                                    |                       | MIL-STD-202 Method 301<br>Max. overload voltage for 1 minute                                                            |
| Thermal Shock                               | $\Delta R \pm 0.05\%$                                      | $\Delta R \pm 0.25\%$ | MIL-STD-202 Method 107G<br>-55°C ~ 150°C, 100 cycles                                                                    |
| Low Temperature Operation                   | $\Delta R \pm 0.5\%$                                       | $\Delta R \pm 0.5\%$  | JIS-C-5201-1 7.1<br>1 hour, -65°C, followed by 45 minutes of RCWV                                                       |

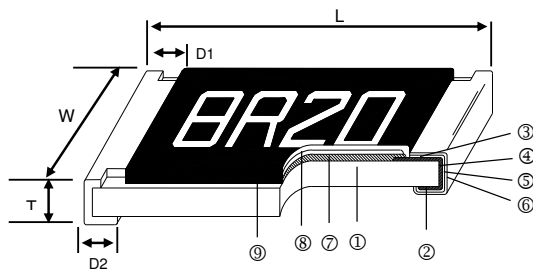
Storage Temperature: 25 $\pm 3^\circ\text{C}$ ; Humidity < 80%RH

## Derating Curve



For resistors operated in ambient temperatures above 70°C, power rating must be derated in accordance with this curve

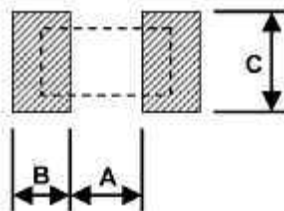
## Construction and dimensions



|   |                       |   |                         |   |                       |
|---|-----------------------|---|-------------------------|---|-----------------------|
| ① | Alumina Substrate     | ④ | Edge Electrode (NiCr)   | ⑦ | Resistor Layer (NiCr) |
| ② | Bottom Electrode (Ag) | ⑤ | Barrier Layer (Ni)      | ⑧ | Overcoat (Epoxy)      |
| ③ | Top Electrode (Ag)    | ⑥ | External Electrode (Sn) | ⑨ | Marking               |

| Size | L (mm)    | W (mm)    | T (mm)    | D1 (mm)   | D2 (mm)   | Weight (g)<br>(1000 Pcs.) |
|------|-----------|-----------|-----------|-----------|-----------|---------------------------|
| 0402 | 1.00±0.05 | 0.50±0.05 | 0.30±0.05 | 0.20±0.10 | 0.20±0.10 | 0.54                      |
| 0603 | 1.55±0.10 | 0.80±0.10 | 0.45±0.10 | 0.30±0.20 | 0.30±0.20 | 1.83                      |
| 0805 | 2.00±0.15 | 1.25±0.15 | 0.55±0.10 | 0.30±0.20 | 0.40±0.20 | 4.71                      |
| 1206 | 3.05±0.15 | 1.55±0.15 | 0.55±0.10 | 0.42±0.20 | 0.35±0.25 | 9.02                      |
| 1210 | 3.10±0.15 | 2.40±0.15 | 0.55±0.10 | 0.40±0.20 | 0.55±0.25 | 10                        |
| 2010 | 4.90±0.15 | 2.40±0.15 | 0.55±0.10 | 0.60±0.30 | 0.50±0.25 | 23.61                     |
| 2512 | 6.30±0.15 | 3.10±0.15 | 0.55±0.10 | 0.60±0.30 | 0.50±0.25 | 38.06                     |

## Suggested PCB Layout Plan



| Recommended Land Pattern |      |      |          |
|--------------------------|------|------|----------|
| Size                     | A    | B    | C        |
| 0402                     | 0.50 | 0.50 | 0.60±0.2 |
| 0603                     | 0.80 | 1.00 | 0.90±0.2 |
| 0805                     | 1.00 | 1.00 | 1.35±0.2 |
| 1206                     | 2.00 | 1.15 | 1.70±0.2 |
| 1210                     | 2.00 | 1.15 | 2.50±0.2 |
| 2010                     | 3.60 | 1.40 | 2.50±0.2 |
| 2512                     | 4.90 | 1.60 | 3.10±0.2 |

## Marking

Case sizes 0805 to 2512 IEC 4 Digit Marking:

| Resistance | 100R (100Ω) | 2K2 (2.2kΩ) | 10K (10kΩ) | 499K (499kΩ) | 100K (100kΩ) |
|------------|-------------|-------------|------------|--------------|--------------|
| Code       | 1000        | 2201        | 1002       | 4992         | 1003         |

Case Size 0603 E24 3 digit marking – Example 101 = 100R 102=1K0

| E24 | 10 | 11 | 12 | 13 | 15 | 16 | 18 | 20 | 22 | 24 | 27 | 30 |
|-----|----|----|----|----|----|----|----|----|----|----|----|----|
|     | 33 | 36 | 39 | 43 | 47 | 51 | 56 | 62 | 68 | 75 | 82 | 91 |

Case size 0603 E96 3 digit marking – Examples 14C = 13K7 68B = 4K99 68X = 49R9

| Code | E96 | Code | E96 | Code | E96 | Code | E96 |
|------|-----|------|-----|------|-----|------|-----|
| 01   | 100 | 25   | 178 | 49   | 316 | 73   | 562 |
| 02   | 102 | 26   | 182 | 50   | 324 | 74   | 576 |
| 03   | 105 | 27   | 187 | 51   | 332 | 75   | 590 |
| 04   | 107 | 28   | 191 | 52   | 340 | 76   | 604 |
| 05   | 110 | 29   | 196 | 53   | 348 | 77   | 619 |
| 06   | 113 | 30   | 200 | 54   | 357 | 78   | 634 |
| 07   | 115 | 31   | 205 | 55   | 365 | 79   | 649 |
| 08   | 118 | 32   | 210 | 56   | 374 | 80   | 665 |
| 09   | 121 | 33   | 215 | 57   | 383 | 81   | 681 |
| 10   | 124 | 34   | 221 | 58   | 392 | 82   | 698 |
| 11   | 127 | 35   | 226 | 59   | 402 | 83   | 715 |
| 12   | 130 | 36   | 232 | 60   | 412 | 84   | 732 |
| 13   | 133 | 37   | 237 | 61   | 422 | 85   | 750 |
| 14   | 137 | 38   | 243 | 62   | 432 | 86   | 768 |
| 15   | 140 | 39   | 249 | 63   | 442 | 87   | 787 |
| 16   | 143 | 40   | 255 | 64   | 453 | 88   | 806 |
| 17   | 147 | 41   | 261 | 65   | 464 | 89   | 825 |
| 18   | 150 | 42   | 267 | 66   | 475 | 90   | 845 |
| 19   | 154 | 43   | 274 | 67   | 487 | 91   | 866 |
| 20   | 158 | 44   | 280 | 68   | 499 | 92   | 887 |
| 21   | 162 | 45   | 287 | 69   | 511 | 93   | 909 |
| 22   | 165 | 46   | 294 | 70   | 523 | 94   | 931 |
| 23   | 169 | 47   | 301 | 71   | 536 | 95   | 953 |
| 24   | 174 | 48   | 309 | 72   | 549 | 96   | 976 |

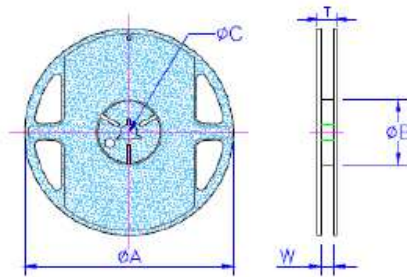
| Code       | A               | B               | C               | D               | E               | F               | G               | H               | X                | Y                | Z                |
|------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|------------------|
| Multiplier | 10 <sup>0</sup> | 10 <sup>1</sup> | 10 <sup>2</sup> | 10 <sup>3</sup> | 10 <sup>4</sup> | 10 <sup>5</sup> | 10 <sup>6</sup> | 10 <sup>7</sup> | 10 <sup>-1</sup> | 10 <sup>-2</sup> | 10 <sup>-3</sup> |

NB for 0603 size values other than E24 and E96 will be supplied unmarked

Case sizes smaller than 0603 will be supplied unmarked

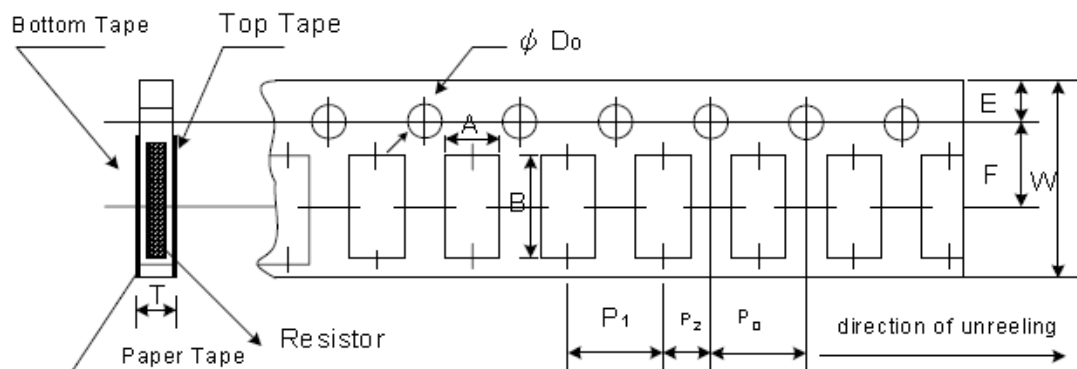
## Packaging

### Packing Quantity and Reel Specification



| Size | ØA ±1.0 | ØB ±1.0 | ØC ±0.7 | W ±1.0 | T ±1.0 | Paper Tape  | Embossed Plastic Tape |
|------|---------|---------|---------|--------|--------|-------------|-----------------------|
| 0402 | 178.0   | 60.0    | 13.5    | 9.5    | 11.5   | 1000 / 5000 | N/A                   |
| 0603 |         |         |         |        |        |             |                       |
| 0805 |         |         |         |        |        |             |                       |
| 1206 |         |         |         |        |        |             |                       |
| 1210 |         |         |         |        |        |             |                       |
| 2010 |         |         |         | 13.5   | 15.5   | N/A         | 4000                  |
| 2512 |         |         |         |        |        |             |                       |

### Paper tape Specification



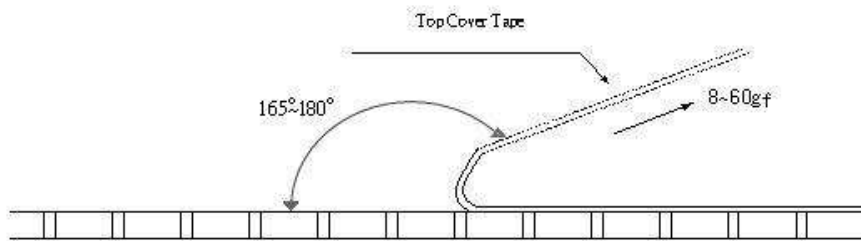
| Size | A ±0.05 | B ±0.05 | W<br>±0.10 | E<br>±0.05 | F ±0.05 | P <sub>0</sub> | P <sub>1</sub> | P <sub>2</sub> ±0.05 | ØD <sub>0</sub> | T             |
|------|---------|---------|------------|------------|---------|----------------|----------------|----------------------|-----------------|---------------|
| 0402 | 0.70    | 1.16    | 8.00       | 1.75       | 3.5     | 4.00 ±0.10     | 2.00<br>±0.05  | 2.00                 | 1.55 ±0.05      | 0.40<br>±0.03 |
| 0603 | 1.10    | 1.90    |            |            |         |                | 4.00<br>±0.10  |                      |                 | 0.60<br>±0.03 |
| 0805 | 1.60    | 2.37    |            |            |         |                |                |                      |                 |               |
| 1206 | 2.00    | 3.55    |            |            |         | 4.00<br>±0.05  | 0.75<br>±0.05  |                      |                 |               |
| 1210 | 2.75    | 3.40    |            |            |         |                |                |                      |                 |               |



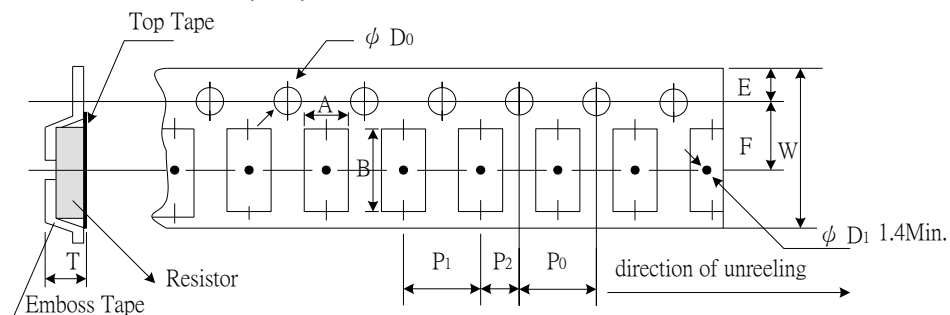
## Peel force of top cover tape

The peel speed shall be about 300mm/min $\pm$ 5%

The peel force of top cover tape shall be between 8gf to 60gf



## Embossed Plastic Tape Specifications

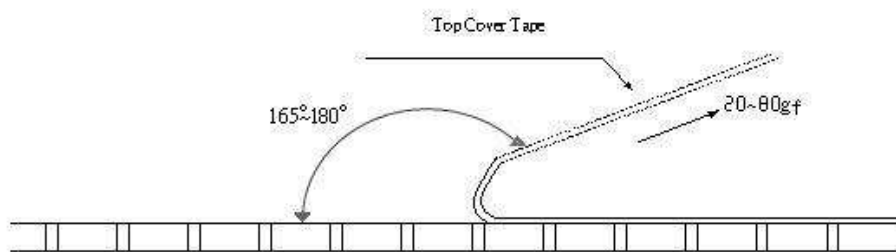


| Type | A               | B               | W               | E               | F              | P <sub>0</sub>  | P <sub>1</sub>  | P <sub>2</sub>  | ØD <sub>0</sub> | T               |
|------|-----------------|-----------------|-----------------|-----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 2010 | 2.85 $\pm$ 0.10 | 5.45 $\pm$ 0.10 | 12.0 $\pm$ 0.10 | 1.75 $\pm$ 0.10 | 5.5 $\pm$ 0.05 | 4.00 $\pm$ 0.05 | 4.00 $\pm$ 0.10 | 2.00 $\pm$ 0.05 | 1.50 $\pm$ 0.10 | 1.00 $\pm$ 0.20 |
| 2512 | 3.40 $\pm$ 0.10 | 6.65 $\pm$ 0.10 | 12.0 $\pm$ 0.10 | 1.75 $\pm$ 0.10 | 5.5 $\pm$ 0.05 | 4.00 $\pm$ 0.05 | 4.00 $\pm$ 0.10 | 2.00 $\pm$ 0.05 | 1.50 $\pm$ 0.10 | 1.00 $\pm$ 0.20 |

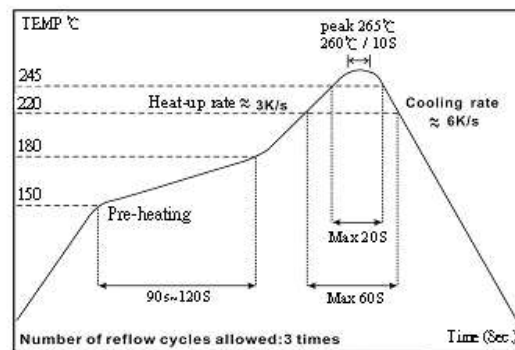
## Peel force of top cover tape

The peel speed shall be about 300mm/min $\pm$ 5%

The peel force of top cover tape shall be between 20gf to 80g

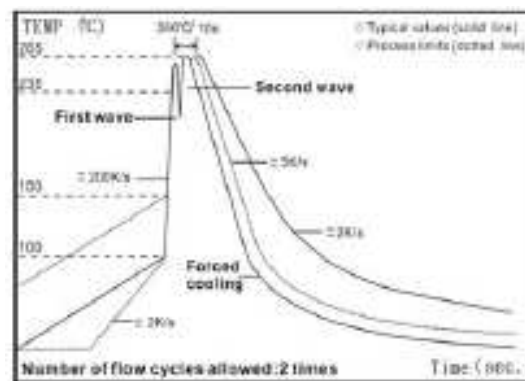


## Reflow Solder Profile



Time of Reflow soldering at maximum temperature point 260°C = 10s

## Wave Solder Profile



Time of Wave soldering at maximum temperature point 260°C = 10s

Time of Soldering Iron at maximum temperature point 410°C = 5s

## How To Order

| RP73               | C                                       | 2A           | 100R                     | B                | TD                                        |
|--------------------|-----------------------------------------|--------------|--------------------------|------------------|-------------------------------------------|
| Common Part        | TCR                                     | Package Size | Value                    | Tolerance        | Packaging                                 |
| RP73 – Standard    | A - $\pm 5\text{ppm}/^{\circ}\text{C}$  | 1E - 0402    | 100R (100 $\Omega$ )     | A - $\pm 0.05\%$ | TG – 250 cut tape length (1E, 1J, 2A, 2B) |
| RP73P – High Power | C - $\pm 10\text{ppm}/^{\circ}\text{C}$ | 1J – 0603    | 1K0 (1000 $\Omega$ )     | B - $\pm 0.1\%$  | TDF – 1000 reel (1E, 1J, 2A, 2B)          |
|                    | D - $\pm 15\text{PPM}$                  | 2A – 0805    | 100K (100,000 $\Omega$ ) | D - $\pm 0.5\%$  | TD – 5000 reel (1E, 1J, 2A, 2B, 2E)       |
|                    | F - $\pm 25\text{PPM}$                  | 2B – 1206    |                          | F - $\pm 1.0\%$  | TE – 4000 reel (2H, 3A only)              |
|                    | G - $\pm 50\text{PPM}$                  | 2E – 1210    |                          |                  |                                           |
|                    |                                         | 2H – 2010    |                          |                  |                                           |
|                    |                                         | 3A – 2512    |                          |                  |                                           |

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