

## Insulated Precision Wirewound Resistors Axial Leads

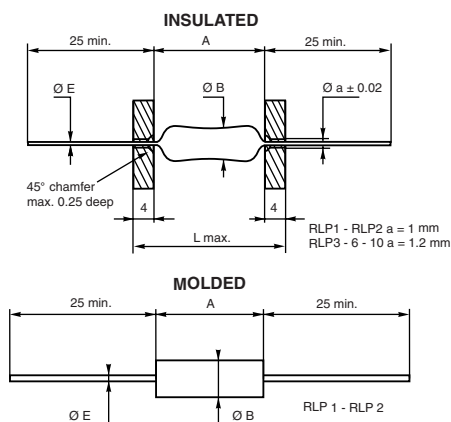


In wirewound precision resistors, the RLP series holds a leading position in professional applications whenever an excellent stability of the ohmic value and a correspondingly low temperature coefficient are required at the same time.

The RLP model resistors comply with the most stringent requirements of the EN 140-100 specification. The series consists of 5 models covering the power range from 1 W to 10 W.

Non-inductive versions can be supplied on request by specifying RLP-NI. For higher power dissipations, the use of RH series resistors is recommended.

### DIMENSIONS in millimeters



### FEATURES

- 1 W to 10 W at 25 °C
- CECC 40201-006
- Conforms to EN 140-100
- Excellent stability  $< \pm 0.3 \%$  after 1000 h
- High power up to 10 W at 25 °C
- Low ohmic values 10 m $\Omega$  available
- Low temperature coefficient  $\leq \pm 50$  ppm/°C
- Electrical insulation
- Climatic protection
- Termination = Pure matte tin or Sn/Ag/Cu according to the ohmic value



**RoHS**  
COMPLIANT

### DIMENSIONS in millimeters

|                  | MOLDED                 |       | INSULATED |       |        |
|------------------|------------------------|-------|-----------|-------|--------|
| SERIES AND STYLE | RLP 1                  | RLP 2 | RLP 3     | RLP 6 | RLP 10 |
| A max.           | 7                      | 10.2  | 14        | 23.82 | 46.78  |
| Ø B max.         | R > 0.15 $\Omega$      | 2.5   | 4.0       | 5.54  | 8.71   |
|                  | R $\leq$ 0.15 $\Omega$ | -     | 6         | 9     | 11     |
| E $\pm 0.1$      | 0.6                    | 0.6   | 0.8       | 0.8   | 0.8    |
| Weight in g      | 0.27                   | 0.48  | 1.3       | 3.4   | 8.6    |

### TECHNICAL SPECIFICATIONS

| VISHAY SFERNICE SERIES AND STYLE     |                        | RLP1  | RLP2  | RLP3  | RLP6                            | RLP10                           |
|--------------------------------------|------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------|---------------------------------|
| NF C 83-210                          |                        | RP8                                                                                      | RP7                                                                                      | RP4                                                                                        | -                               | -                               |
| CECC 40201-006                       |                        | A                                                                                        | B                                                                                        | C                                                                                          | -                               | -                               |
| Power Rating at + 25 °C              | VISHAY SFERNICE Limits | 1 W                                                                                      | 2 W                                                                                      | 3 W                                                                                        | 6 W                             | 10 W                            |
| Ohmic Range in Relation to Tolerance | $\pm 5 \%$ E24         | 0.05 $\Omega$<br>2 k $\Omega$                                                            | 0.025 $\Omega$<br>6.8 k $\Omega$                                                         | 0.01 $\Omega$<br>15 k $\Omega$                                                             | 0.02 $\Omega$<br>59 k $\Omega$  | 0.06 $\Omega$<br>150 k $\Omega$ |
|                                      | $\pm 2 \%$ E48         | 0.05 $\Omega$<br>2 k $\Omega$                                                            | 0.025 $\Omega$<br>6.8 k $\Omega$                                                         | 0.03 $\Omega$<br>15 k $\Omega$                                                             | 0.02 $\Omega$<br>59 k $\Omega$  | 0.06 $\Omega$<br>150 k $\Omega$ |
|                                      | $\pm 1 \%$ E96         | 0.05 $\Omega$<br>2 k $\Omega$                                                            | 0.025 $\Omega$<br>6.8 k $\Omega$                                                         | 0.03 $\Omega$<br>15 k $\Omega$                                                             | 0.02 $\Omega$<br>59 k $\Omega$  | 0.06 $\Omega$<br>150 k $\Omega$ |
|                                      | $\pm 0.5 \%$ E96       | 0.4 $\Omega$<br>2 k $\Omega$                                                             | 0.4 $\Omega$<br>6.8 k $\Omega$                                                           | 0.0499 $\Omega$<br>15 k $\Omega$                                                           | 0.3 $\Omega$<br>59 k $\Omega$   | 0.3 $\Omega$<br>150 k $\Omega$  |
|                                      | $\pm 0.1 \%$ E96       | Please consult VISHAY SFERNICE                                                           |                                                                                          |                                                                                            |                                 |                                 |
| Qualified Ohmic Range NF C 83-210    |                        | 1 $\Omega$<br>470 $\Omega$                                                               | 0.2 $\Omega$<br>1.78 k $\Omega$                                                          | 0.1 $\Omega$<br>3.57 k $\Omega$                                                            | 0.1 $\Omega$<br>12.1 k $\Omega$ | 0.1 $\Omega$<br>40.2 k $\Omega$ |
| Limiting Element Voltage             |                        | 50 V                                                                                     | 120 V                                                                                    | 200 V                                                                                      | 300 V                           | 720 V                           |
| Critical Resistance                  |                        | out of nominal ohmic range                                                               |                                                                                          |                                                                                            | 17 800 $\Omega$                 | 51 100 $\Omega$                 |

 Undergoes European Quality Insurance System (CECC)

Insulated Precision Wirewound Resistors  
Axial Leads

Vishay Sfernice

| PERFORMANCE             |                                                        |                                                                           |                                                                |                                                                               |
|-------------------------|--------------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------------------------------------------------------------|
| TESTS                   | CONDITIONS                                             | REQUIREMENTS                                                              |                                                                | TYPICAL VALUES<br>AND DRIFTS                                                  |
|                         |                                                        | MIL-R-26 E                                                                | CECC40201-06                                                   |                                                                               |
| Dielectric w/s Voltage  | 500 VRMS for RLP 1-2-3<br>1000 VRMS for RLP 6-10       | $\pm (0.1 \% + 0.05 \Omega)$                                              | -                                                              | $\pm (0.05 \% + 0.05 \Omega)$                                                 |
| Short Time Overload     | 5 Pn/5 s for Pn < 5 W<br>10 Pn/5 s for Pn $\geq$ 5 W   | $\pm (0.2 \% + 0.05 \Omega)$                                              | $\pm 0.25 \% + 0.05 \Omega$                                    | $\pm (0.1 \% + 0.05 \Omega)$                                                  |
| Climatic Sequence       | EN 140-201<br>fasc. 19A - 55 °C/+ 200 °C<br>5 cycles   | -                                                                         | $\pm 0.5 \% + 0.05 \Omega$<br>Insulation R > 100 M $\Omega$    | $\pm (0.2 \% + 0.05 \Omega)$<br>Ins. resistance > 10 <sup>3</sup> M $\Omega$  |
| Humidity (Steady State) | EN 140-201<br>fasc. 3A 56 days 95 % R.H.               | -                                                                         | $\pm 0.5 \% + 0.05 \Omega$<br>Insulation R > 100 M $\Omega$    | $\pm (0.25 \% + 0.05 \Omega)$<br>Ins. resistance > 10 <sup>3</sup> M $\Omega$ |
| Vibration               | MIL-STD-202<br>Method 204 - Test D: 20 g<br>10/2000 Hz | $\pm (0.1 \% + 0.05 \Omega)$                                              | $\pm 0.25 \% + 0.05 \Omega$                                    | $\pm (0.05 \% + 0.05 \Omega)$                                                 |
| Load Life               | MIL-STD-202<br>Method 108 Pn 1000 h                    | $\pm (0.5 \% + 0.05 \Omega)$                                              | $\pm 0.5 \% + 0.05 \Omega$<br>Insulation R $\geq$ 1 G $\Omega$ | $\pm (0.3 \% + 0.05 \Omega)$                                                  |
| Moisture Resistance     | MIL-STD-202<br>Method 106                              | $\pm (0.2 \% + 0.05 \Omega)$<br>Insulation resistance<br>> 100 M $\Omega$ | -                                                              | $\pm (1 \% + 0.05 \Omega)$<br>Ins. resistance > 10 <sup>3</sup> M $\Omega$    |
| High Temperature        | 250 h at + 275 °C                                      | $\pm (0.5 \% + 0.05 \Omega)$                                              | $\pm 0.5 \% + 0.05 \Omega$<br>Insulation R $\geq$ 1 G $\Omega$ | $\pm (0.25 \% + 0.05 \Omega)$                                                 |
| Shock                   | MIL-STD-202<br>100 g Method 205 - Test C               | $\pm (0.1 \% + 0.05 \Omega)$                                              | $\pm 0.25 \% + 0.05 \Omega$                                    | $\pm (0.05 \% + 0.05 \Omega)$                                                 |

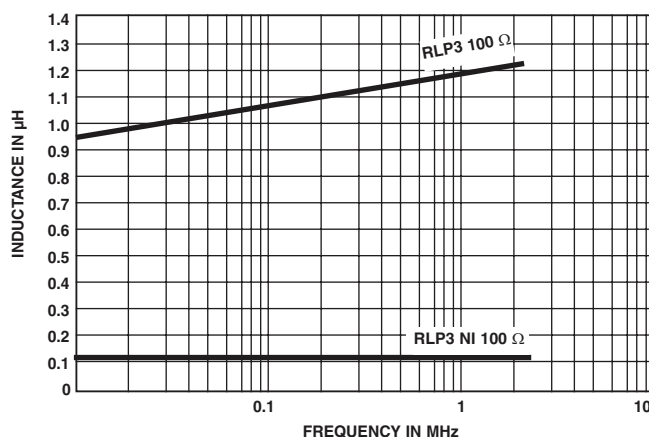
| TEMPERATURE COEFFICIENT IN THE RANGE - 55 °C TO + 200 °C |                                      |                                     |                                     |
|----------------------------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|
| OHMIC RANGE                                              | LIMITS                               |                                     | TYPICAL VALUE                       |
|                                                          | NF C                                 | MIL                                 |                                     |
| < 1 $\Omega$                                             | $\pm 100 \text{ ppm}/^\circ\text{C}$ | $\pm 90 \text{ ppm}/^\circ\text{C}$ | $\pm 50 \text{ ppm}/^\circ\text{C}$ |
| 1 $\Omega$ to < 10 $\Omega$                              | $\pm 50 \text{ ppm}/^\circ\text{C}$  | $\pm 50 \text{ ppm}/^\circ\text{C}$ |                                     |
| $\geq 10 \Omega$                                         | $\pm 25 \text{ ppm}/^\circ\text{C}$  | $\pm 30 \text{ ppm}/^\circ\text{C}$ | + 0 to - 20 ppm/°C                  |

## STABILITY AND POWER RATING

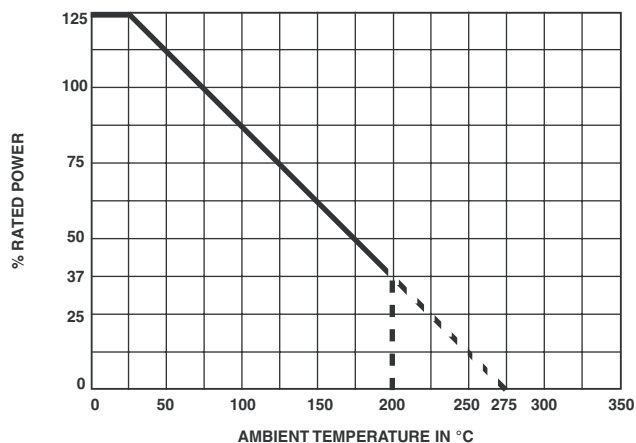
Stability changes slightly according to power rating and ambient temperature. This fact is especially important for users needing a life drift lower than the initial resistance tolerance. Typical drifts, after 2000 hours life test made under the 90°/30° conditions and at an ambient temperature of 25 °C, are:

| OHMIC RANGE | RLP1  | RLP2 | RLP3  | RLP6  | RLP10 | $\frac{\Delta R \%}{R \%}$ |
|-------------|-------|------|-------|-------|-------|----------------------------|
| Pn          | 1 W   | 2 W  | 3 W   | 5 W   | 10 W  | 0.3                        |
| 0.5 Pn      | 0.5 W | 1 W  | 1.5 W | 2.5 W | 5 W   | 0.15                       |

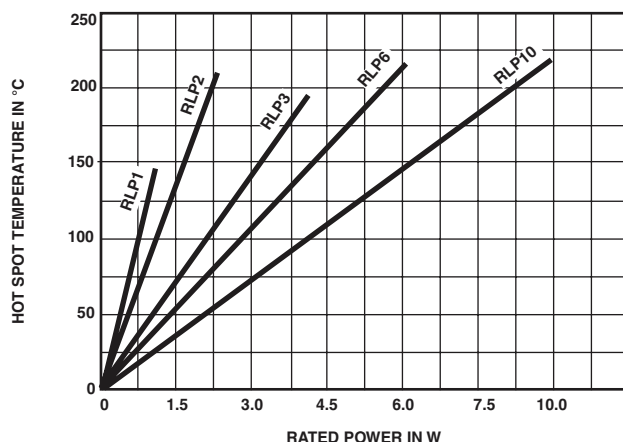
## INDUCTANCE (Example)



## POWER RATING CHART



## TEMPERATURE RISE



## MARKING

SFERNICE trademark, series, style, CECC style (if applicable) nominal resistance (in  $\Omega$ , k $\Omega$ ), tolerance (in %), manufacturing date.

### ORDERING INFORMATION

|       |       |                          |                       |                                                                                                |           |           |                                   |
|-------|-------|--------------------------|-----------------------|------------------------------------------------------------------------------------------------|-----------|-----------|-----------------------------------|
| RLP   | 1     |                          | XXX                   | 5U5                                                                                            | $\pm 5\%$ | TR100     | e1 (e3: RLP1 < 1R<br>RLP2 < 3R52) |
| MODEL | STYLE | NON INDUCTIVE<br>WINDING | SPECIAL<br>DESIGN     | OHMIC VALUE                                                                                    | TOLERANCE | PACKAGING | LEAD (Pb)-FREE                    |
|       |       | Optional<br>(NI)         | Method N°<br>Optional | Custom items<br>are subject to<br>extra-charge<br>and min. order.<br>Please see price<br>list. |           | Optional  |                                   |

### SAP PART NUMBERING GUIDELINES

|       |       |             |           |           |
|-------|-------|-------------|-----------|-----------|
| RLP   | 01    | 5R500       | J         | R15       |
| MODEL | STYLE | OHMIC VALUE | TOLERANCE | PACKAGING |



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