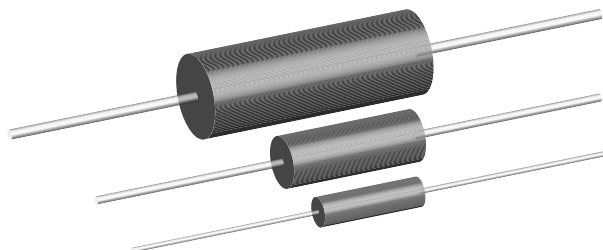


# Wirewound Resistors, Precision Power, Low Value, Commercial, Axial Lead



## FEATURES

- Ideal for all types of current sensing applications including switching and linear power supplies, instruments and power amplifiers
- Proprietary processing technique produces extremely low resistance values
- Excellent load life stability
- Low temperature coefficient
- Low inductance
- Cooler operation for high power to size ratio
- MIL-PRF-49465 qualified, type RLV resistors can be found at: [www.vishay.com/doc?30283](http://www.vishay.com/doc?30283)
- Compliant to RoHS Directive 2002/95/EC



## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | HISTORICAL MODEL | POWER RATING<br>$P_{25^{\circ}\text{C}}$ W | RESISTANCE RANGE <sup>(1)</sup><br>$\Omega$ | TOLERANCE<br>$\pm \%$ | TECHNOLOGY      |
|--------------|------------------|--------------------------------------------|---------------------------------------------|-----------------------|-----------------|
| LVR01        | LVR-1            | 1                                          | 0.01 to 0.1 <sup>(2)</sup>                  | 1, 3, 5, 10           | Metal strip     |
| LVR03        | LVR-3            | 3                                          | 0.005 to 0.2                                | 1, 3, 5, 10           | Metal strip     |
| LVR05        | LVR-5            | 5                                          | 0.005 to 0.3                                | 1, 3, 5, 10           | Metal strip     |
| LVR10        | LVR-10           | 10                                         | 0.01 to 0.8                                 | 1, 3, 5, 10           | Coil spacewound |

### Notes

- (1) Resistance is measured 3/8" [9.52 mm] from the body of the resistor, or at 1.183" [30.05 mm], 1.315" [33.40 mm], 1.675" [42.545 mm] or 2.575" [65.405 mm] spacing for the LVR01, LVR03, LVR05 and LVR10 respectively.
- (2) LVR01: Standard resistance values are 0.01  $\Omega$ , 0.015  $\Omega$ , 0.02  $\Omega$ , 0.025  $\Omega$ , 0.03  $\Omega$ , 0.033  $\Omega$ , 0.04  $\Omega$ , 0.05  $\Omega$ , 0.051  $\Omega$ , 0.06  $\Omega$ , 0.068  $\Omega$ , 0.07  $\Omega$ , 0.08  $\Omega$ , 0.09  $\Omega$  and 0.1  $\Omega$  with 1 % tolerance. Other resistance values may be available upon request.

## TECHNICAL SPECIFICATIONS

| PARAMETER                       | UNIT                    | LVR01                              | LVR03         | LVR05 | LVR10                    |
|---------------------------------|-------------------------|------------------------------------|---------------|-------|--------------------------|
| Operating Temperature Range     | $^{\circ}\text{C}$      | - 65 to + 175                      | - 65 to + 275 |       |                          |
| Dielectric Withstanding Voltage | $V_{\text{RMS}}$        | 1000                               | 1000          | 1000  | 1000                     |
| Insulation Resistance           | $\Omega$                | 10 000 M $\Omega$ minimum dry      |               |       |                          |
| Short Time Overload             | -                       | 5 x rated power for 5 s            |               |       | 10 x rated power for 5 s |
| Terminal Strength (minimum)     | lb                      | 5                                  | 10            | 10    | 10                       |
| Temperature Coefficient         | ppm/ $^{\circ}\text{C}$ | See TCR vs. Resistance Value chart |               |       |                          |
| Maximum Working Voltage         | V                       | $(P \times R)^{1/2}$               |               |       |                          |
| Weight (maximum)                | g                       | 0.5                                | 2             | 5     | 11                       |

## GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: LVR055L000FS73

|                                  |   |                                                                                 |   |                                                                                         |   |                                                                                                                                                                                                                                                                                                                                            |   |   |   |   |   |   |   |                                                                     |  |  |
|----------------------------------|---|---------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---------------------------------------------------------------------|--|--|
| L                                | V | R                                                                               | 0 | 5                                                                                       | 5 | L                                                                                                                                                                                                                                                                                                                                          | 0 | 0 | 0 | F | S | 7 | 3 |                                                                     |  |  |
| GLOBAL MODEL                     |   | VALUE                                                                           |   | TOLERANCE                                                                               |   | PACKAGING                                                                                                                                                                                                                                                                                                                                  |   |   |   |   |   |   |   | SPECIAL                                                             |  |  |
| LVR01<br>LVR03<br>LVR05<br>LVR10 |   | R = Decimal<br>L = mΩ<br>(values < 0.010 Ω)<br>R1500 = 0.15 Ω<br>7L000 = 0.007Ω |   | D = ± 0.5 %<br>F = ± 1.0 %<br>G = ± 2.0 %<br>H = ± 3.0 %<br>J = ± 5.0 %<br>K = ± 10.0 % |   | E12 = Lead (Pb)-free bulk<br>E03 = Lead (Pb)-free lacer pack (LVR10)<br>E70 = Lead (Pb)-free, tape/reel 1000 pieces (LVR01, 03)<br>E73 = Lead (Pb)-free, tape/reel 500 pieces<br><br>B12 = Tin/lead bulk<br>L03 = Tin/lead lacer pack (LVR10)<br>S70 = Tin/lead, tape/reel 1000 pieces (LVR01, 03)<br>S73 = Tin/lead, tape/reel 500 pieces |   |   |   |   |   |   |   | (Dash Number)<br>(up to 3 digits)<br>From 1 to 999<br>as applicable |  |  |

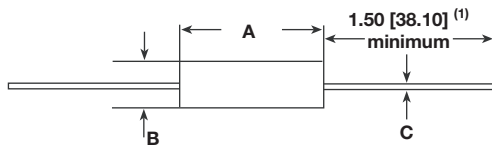
Historical Part Numbering example: LVR-5 0.005  $\Omega$  1 % S73

|                  |                  |                |           |
|------------------|------------------|----------------|-----------|
| LVR-5            | 0.005 $\Omega$   | 1 %            | S73       |
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

\* Pb containing terminations are not RoHS compliant, exemptions may apply

\*\* Please see document "Vishay Material Category Policy": [www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)

## DIMENSIONS in inches [millimeters]



### Note

(1) On some standard reel pack methods, the leads may be trimmed to a shorter length than shown

## MATERIAL SPECIFICATIONS

**Element:** Self-supporting nickel-chrome alloy  
(LVR10 also utilizes manganin)

**Encapsulation:** High temperature mold compound

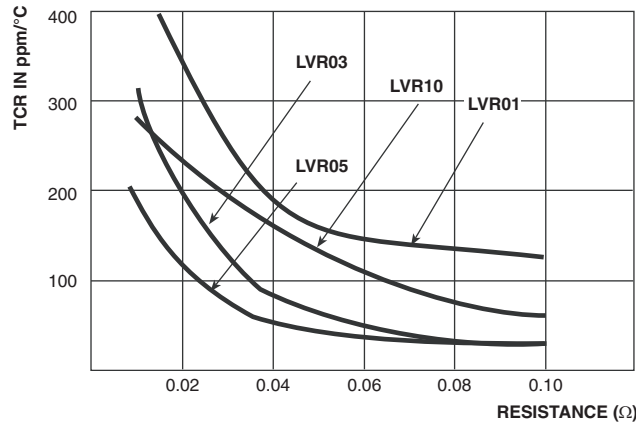
**Terminals:** Tinned copper

**Part Marking:** Dale, model, wattage, value, tolerance, date code

**Packaging:** Reference "Wirewound Through Hole Resistor Packaging" ([www.vishay.com/doc?21028](http://www.vishay.com/doc?21028))

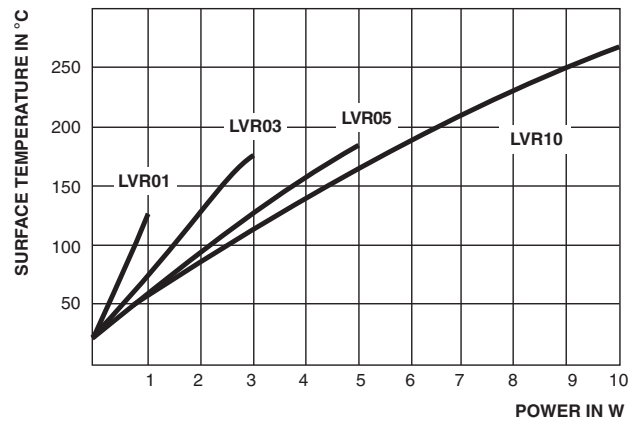
The improved TCR characteristics of these LVR models from - 55 °C to + 125 °C (reference to + 25 °C) are as follows:

## TCR vs. RESISTANCE VALUE

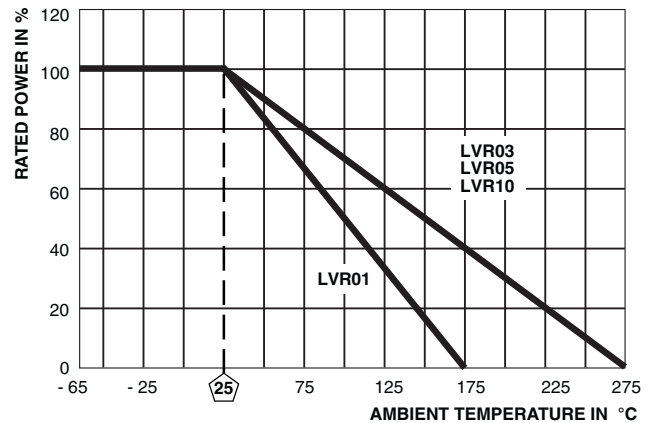


| MODEL | DIMENSIONS in inches [millimeters] |                      |                      |
|-------|------------------------------------|----------------------|----------------------|
|       | A<br>± 0.010 [0.254]               | B<br>± 0.010 [0.254] | C<br>± 0.002 [0.051] |
| LVR01 | 0.427 [10.85]                      | 0.115 [2.92]         | 0.020 [0.508]        |
| LVR03 | 0.560 [14.22]                      | 0.205 [5.21]         | 0.032 [0.813]        |
| LVR05 | 0.925 [23.50]                      | 0.330 [8.38]         | 0.040 [1.02]         |
| LVR10 | 1.828 [46.43]                      | 0.392 [9.96]         | 0.040 [1.02]         |

## SURFACE TEMPERATURE vs. POWER



## DERATING



| PERFORMANCE                     |                                                                     |                         |
|---------------------------------|---------------------------------------------------------------------|-------------------------|
| TEST                            | CONDITIONS OF TEST                                                  | TEST LIMITS             |
| Thermal Shock                   | - 65 °C to + 125 °C, 5 cycles, 15 min at each extreme               | ± (0.2 % + 0.0005 Ω) ΔR |
| Short Time Overload             | 5 x rated power (LVR01, 03, 05), 10 x rated power (LVR10) for 5 s   | ± (0.5 % + 0.0005 Ω) ΔR |
| Low Temperature Storage         | - 65 °C for 24 h                                                    | ± (0.2 % + 0.0005 Ω) ΔR |
| High Temperature Exposure       | 250 h at + 275 °C (+ 175 °C for LVR01)                              | ± (2.0 % + 0.0005 Ω) ΔR |
| Dielectric Withstanding Voltage | 1000 V <sub>RMS</sub> , 1 min                                       | ± (0.1 % + 0.0005 Ω) ΔR |
| Insulation Resistance           | MIL-STD-202 Method 302, 100 V                                       | 1000 MΩ minimum         |
| Moisture Resistance             | MIL-STD-202 Method 106, 7b not applicable                           | ± (0.2 % + 0.0005 Ω) ΔR |
| Shock, Specified Pulse          | MIL-STD-202 Method 213, 100 g's for 6 ms, 10 shocks                 | ± (0.1 % + 0.0005 Ω) ΔR |
| Vibration, High Frequency       | Frequency varied 10 Hz to 2000 Hz, 20 g peak, 2 directions 6 h each | ± (0.1 % + 0.0005 Ω) ΔR |
| Load Life                       | 2000 h at rated power, + 25 °C, 1.5 h "ON", 0.5 h "OFF"             | ± (2.0 % + 0.0005 Ω) ΔR |
| Bias Humidity                   | + 85 °C, 85 % RH, 10 % bias, 1000 h                                 | ± (1.0 % + 0.0005 Ω) ΔR |



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**Наши контакты:**

**Телефон:** +7 812 627 14 35

**Электронная почта:** [sales@st-electron.ru](mailto:sales@st-electron.ru)

**Адрес:** 198099, Санкт-Петербург,  
Промышленная ул, дом № 19, литера Н,  
помещение 100-Н Офис 331