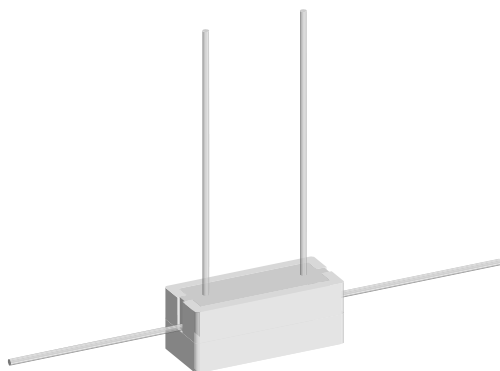


# Wirewound Resistors, Commercial Power, Four Terminal, Low Value



## FEATURES

- Low inductance
- Extremely low resistance values
- Current sensing
- Low temperature coefficients
- High power to size ratio
- Ceramic cases are available with circuit board stand-offs (designated with a -3 model ending)
- Superior surge capability
- Complete welded construction
- Special inorganic potting compound and ceramic case provide high thermal conductivity in a fireproof package
- Compliant to RoHS Directive 2002/95/EC

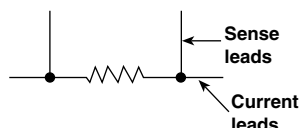


## Notes

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

\*\* Please see document "Vishay Material Category Policy": [www.vishay.com/doc?999902](http://www.vishay.com/doc?999902)

## SCHEMATIC



## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | HISTORICAL MODEL | POWER RATING $P_{40}^{\circ C}$<br>W | RESISTANCE RANGE<br>$\Omega$ | TOLERANCE<br>$\pm \%$ | WEIGHT (typical)<br>g |
|--------------|------------------|--------------------------------------|------------------------------|-----------------------|-----------------------|
| CPSL03...5   | CPSL-3-5         | 3                                    | 0.01 to 0.10                 | 1, 3, 5, 10           | 4.0                   |
| CPSL03...3   | CPSL-3-3         | 3                                    | 0.01 to 0.10                 | 1, 3, 5, 10           | 4.2                   |
| CPSL05...5   | CPSL-5-5         | 5                                    | 0.01 to 0.10                 | 1, 3, 5, 10           | 5.2                   |
| CPSL05...3   | CPSL-5-3         | 5                                    | 0.01 to 0.10                 | 1, 3, 5, 10           | 5.4                   |
| CPSL07...5   | CPSL-7-5         | 7                                    | 0.01 to 0.10                 | 1, 3, 5, 10           | 7.6                   |
| CPSL10...5   | CPSL-10-5        | 10                                   | 0.01 to 0.10                 | 1, 3, 5, 10           | 10.2                  |
| CPSL15...5   | CPSL-15-5        | 15                                   | 0.01 to 0.10                 | 1, 3, 5, 10           | 18.9                  |

## TECHNICAL SPECIFICATIONS

| PARAMETER                       | UNIT             | CPSL RESISTOR CHARACTERISTICS |
|---------------------------------|------------------|-------------------------------|
| Temperature Coefficient         | ppm/ $^{\circ}C$ | $\pm 100$ maximum             |
| Short Time Overload             | -                | 5 x rated power for 5 s       |
| Maximum Working Voltage         | V                | $(P \times R)^{1/2}$          |
| Operating Temperature Range     | $^{\circ}C$      | - 65 to + 275                 |
| Terminal Strength               | lb               | 10 minimum                    |
| Dielectric Withstanding Voltage | V <sub>AC</sub>  | 1000                          |

## GLOBAL PART NUMBER INFORMATION

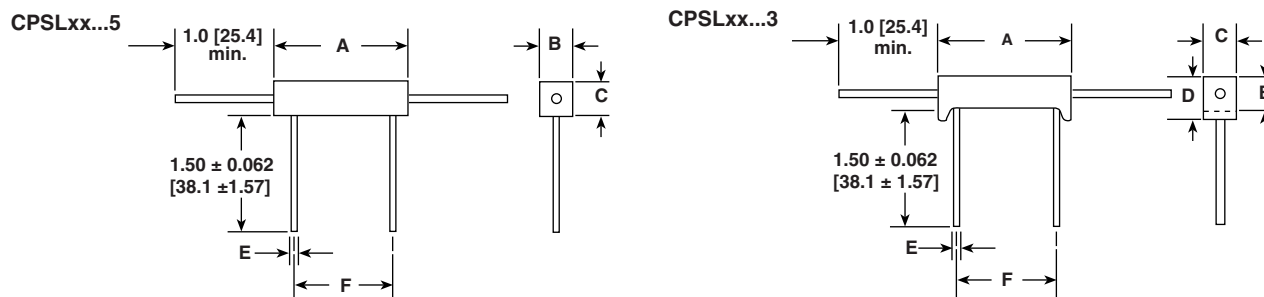
Global Part Numbering example: CPSL05R0500JB143

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|
| C | P | S | L | 0 | 5 | R | 0 | 5 | 0 | 0 | J | B | 1 | 4 | 3 |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|

| GLOBAL MODEL                                   | VALUE                                | TOLERANCE                                                                                         | PACKAGING                                                                                                                  | SPECIAL                                                             |
|------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| CPSL03<br>CPSL05<br>CPSL07<br>CPSL10<br>CPSL15 | R = Decimal<br>R1000 = 0.10 $\Omega$ | F = $\pm 1.0 \%$<br>G = $\pm 2.0 \%$<br>H = $\pm 3.0 \%$<br>J = $\pm 5.0 \%$<br>K = $\pm 10.0 \%$ | E14 = Lead (Pb)-free bulk<br>E31 = Lead (Pb)-free four layer bulk<br>B14 = Tin/lead bulk<br>B31 = Tin/lead four layer bulk | (Dash Number)<br>(up to 3 digits)<br>From 1 to 999<br>as applicable |

Historical Part Numbering example: CPSL-5-3 0.05  $\Omega$  5 % B14

|                  |                  |                |           |
|------------------|------------------|----------------|-----------|
| CPSL-5-3         | 0.05 $\Omega$    | 5 %            | B14       |
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

**DIMENSIONS** in inches [millimeters]


| GLOBAL MODEL | DIMENSIONS in inches [millimeters]  |                      |                      |                      |                      |                     |
|--------------|-------------------------------------|----------------------|----------------------|----------------------|----------------------|---------------------|
|              | A <sup>(1)</sup><br>± 0.031 [0.794] | B<br>± 0.031 [0.794] | C<br>± 0.031 [0.794] | D<br>± 0.031 [0.794] | E<br>± 0.001 [0.025] | F<br>± 0.063 [1.59] |
| CPSL03...5   | 0.875 [22.22]                       | 0.313 [7.94]         | 0.313 [7.94]         | -                    | 0.036 [0.914]        | 0.563 [14.30]       |
| CPSL03...3   | 0.875 [22.22]                       | 0.313 [7.94]         | 0.313 [7.94]         | 0.375 [9.52]         | 0.036 [0.914]        | 0.563 [14.30]       |
| CPSL05...5   | 0.875 [22.22]                       | 0.375 [9.52]         | 0.344 [8.73]         | -                    | 0.036 [0.914]        | 0.563 [14.30]       |
| CPSL05...3   | 0.875 [22.22]                       | 0.375 [9.52]         | 0.344 [8.73]         | 0.438 [11.11]        | 0.036 [0.914]        | 0.563 [14.30]       |
| CPSL07...5   | 1.391 [35.32]                       | 0.375 [9.52]         | 0.344 [8.73]         | -                    | 0.036 [0.914]        | 1.000 [25.40]       |
| CPSL10...5   | 1.875 [47.62]                       | 0.375 [9.52]         | 0.344 [8.73]         | -                    | 0.036 [0.914]        | 1.375 [34.93]       |
| CPSL15...5   | 1.875 [47.62]                       | 0.500 [12.70]        | 0.500 [12.70]        | -                    | 0.036 [0.914]        | 1.375 [34.93]       |

**Note**

(1) Potting compound may extend outside of ceramic case up to 0.060 [1.52] maximum per side.

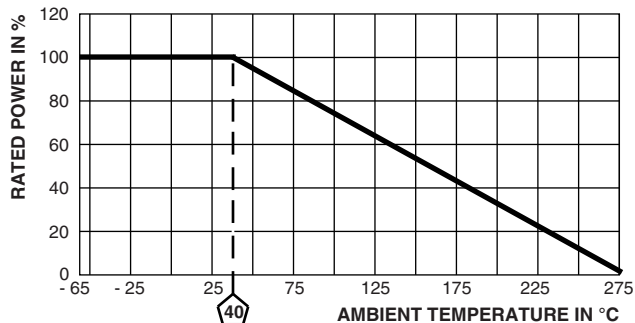
**MATERIAL SPECIFICATIONS**

**Element:** Self-supporting copper-nickel alloy or nickel-chrome alloy, depending on resistance value

**Body:** Steatite ceramic case with inorganic potting compound

**Terminals:** Tinned copper

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

**DERATING**


| PERFORMANCE                     |                                                                                    |                       |
|---------------------------------|------------------------------------------------------------------------------------|-----------------------|
| TEST                            | CONDITIONS OF TEST                                                                 | TEST LIMITS           |
| Thermal Shock                   | - 55 °C to + 275 °C, 5 cycles, 30 min dwell time                                   | ± (5.0 % + 0.05 Ω) ΔR |
| Short Time Overload             | 5 x rated power for 5 s                                                            | ± (4.0 % + 0.05 Ω) ΔR |
| Dielectric Withstanding Voltage | 1000 V <sub>RMS</sub> for 1 min                                                    | ± (2.0 % + 0.05 Ω) ΔR |
| Low Temperature Operation       | - 65 °C, full rated working voltage for 45 min                                     | ± (3.0 % + 0.05 Ω) ΔR |
| Bias Humidity                   | 75 °C, 90 % to 100 % RH, 240 h                                                     | ± (5.0 % + 0.05 Ω) ΔR |
| Load Life                       | 1000 h at rated power, + 40 °C, 1.5 h "ON", 0.5 h "OFF"                            | ± (5.0 % + 0.05 Ω) ΔR |
| Terminal Strength               | 5 s to 10 s 10 pound pull test, torsion test - 3 alternating directions, 360° each | ± (1.0 % + 0.05 Ω) ΔR |
| Resistance to Solder Heat       | Terminal immersed 3.5 s in molten solder at 1/8" to 3/16" from body                | ± (1.0 % + 0.05 Ω) ΔR |



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