

# Wirewound Resistors, Industrial High Power, Vitreous Tubular



“CS” Type 1 Collars

## FEATURES

- 95 W to 800 W at 25 °C
- NF C 93-214
- RB 25 x 168, RB 30 x 250
- Rugged construction for use in severe environmental conditions
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

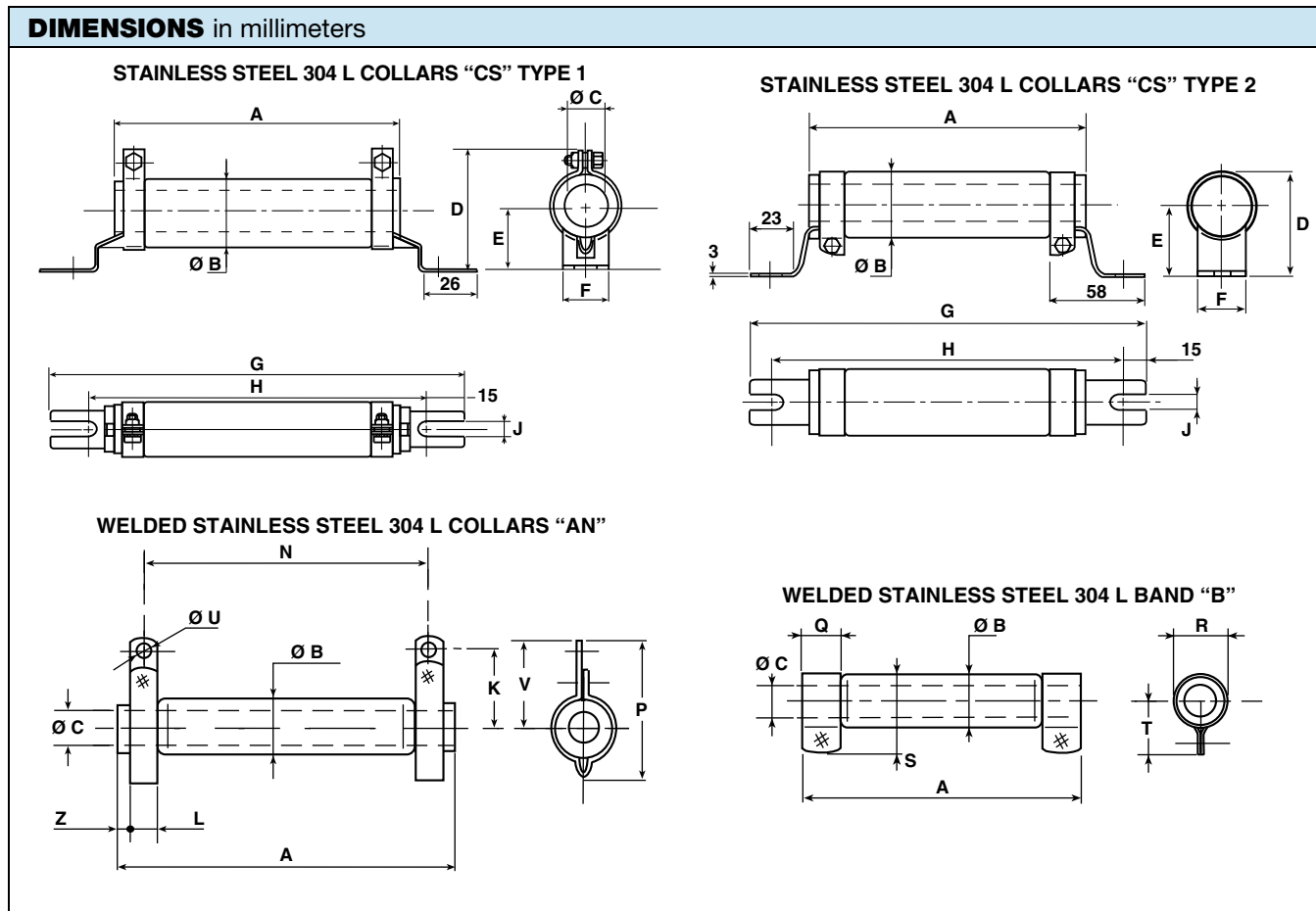


**RoHS**  
COMPLIANT

The RWST vitreous wirewound high power resistors are known for their excellent reliability which has developed out of the Vishay Sfernice experience over several decades in the field of high current applications.

Extremely severe conditions of use are encountered in electrical traction including repeated overloads. To withstand such conditions the new RWST model is extremely rugged and is manufactured to a very carefully monitored process using the best materials.

NF F 16101, 10/1988 and 16102, 04/1992: Not applicable (our parts are made of metallic and refractory materials).  
NF C 93-214. Performances according to NF C 93-214.





| DIMENSIONS in millimeters |                |         |            |          |             |          |         |         |          |         |                                       |           |
|---------------------------|----------------|---------|------------|----------|-------------|----------|---------|---------|----------|---------|---------------------------------------|-----------|
| SERIES                    | CONNECTIONS    | A ± 2   | Ø B MAX.   | Ø C MIN. | D           | E        | F ± 0.5 | G -4 +0 | H -4 +0  | J ± 0.5 | K                                     | L +0.5 +0 |
| RWST 25 x 138             | AN-B CS type 1 | 138     | 28         | 12       | 50 ± 1.5    | 27 ± 1   | 24      | 199     | 169      | 6.5     | 28.5 ± 1                              | 9         |
| RWST 25 x 168             | AN-B CS type 1 | 168     | 28         | 12       | 50 ± 1.5    | 27 ± 1   | 24      | 229     | 199      | 6.5     | 28.5 ± 1                              | 9         |
| RWST 30 x 250             | AN-B CS type 1 | 250     | 33         | 17       | 60 ± 1.5    | 30 ± 1   | 25      | 317     | 287      | 9       | 31 ± 1                                | 13        |
| RWST 40 x 370             | AN CS type 2   | 370     | 45         | 22       | 69 max.     | 45 ± 1.5 | 30      | 432     | 405      | 9       | 45 ± 1.5                              | 18        |
| RWST 50 x 373             | AN CS type 2   | 373     | 53         | 27.1     | 80 max.     | 51 ± 1.5 | 30      | 432     | 405      | 9       | 51 ± 1.5                              | 18        |
| SERIES                    | CONNECTIONS    | N ± 2   | P          | Q -0 +5  | R -0.3 +0.9 | S MAX.   | T ± 1   | Ø U     | V        | Z       | AVERAGE UNIT WEIGHT IN g (CS collars) |           |
| RWST 25 x 138             | AN-B CS type 1 | 117 ± 2 | 51.5 ± 1.5 | 15       | 26          | 38.5     | 23.5    | 5.7     | 33.5 ± 1 | 6       | 225                                   |           |
| RWST 25 x 168             | AN-B CS type 1 | 147 ± 2 | 50 ± 1.5   | 15       | 26          | 38.5     | 23.5    | 5.7     | 33.5 ± 1 | 6       | 250                                   |           |
| RWST 30 x 250             | AN-B CS type 1 | 227 ± 2 | 55 ± 1.5   | 18       | 31          | 43.5     | 26      | 5.7     | 36 ± 1   | 5       | 445                                   |           |
| RWST 40 x 370             | AN CS type 2   | 332 ± 3 | 81.5 max.  | -        | -           | -        | -       | 9.2     | 57 ± 1.5 | 10      | 1400                                  |           |
| RWST 50 x 373             | AN CS type 2   | 332 ± 3 | 92.5 max.  | -        | -           | -        | -       | 9.2     | 63 ± 1.5 | 11.5    | 2200                                  |           |

| STANDARD ELECTRICAL SPECIFICATIONS |       |                    |                                  |               |
|------------------------------------|-------|--------------------|----------------------------------|---------------|
| MODEL                              | SIZE  | RESISTANCE RANGE Ω | RATED POWER P <sub>25 °C</sub> W | TOLERANCE ± % |
| RWST 25 x 138                      | 25138 | 2.7 to 82K         | 95                               | 5             |
| RWST 25 x 168                      | 25168 | 2.7 to 100K        | 160                              | 5             |
| RWST 30 x 250                      | 30250 | 4.7 to 220K        | 280                              | 5             |
| RWST 40 x 370                      | 40370 | 8.2 to 360K        | 500                              | 5             |
| RWST 50 x 373                      | 50373 | 12 to 390K         | 700                              | 5             |

| MECHANICAL SPECIFICATIONS |                       |
|---------------------------|-----------------------|
| Mechanical Protection     | Vitreous enamel       |
| Resistive Element         | Ni-Cr wire            |
| Connections               | CS supporting collars |
| AN Collar or B            | on request            |
| Average Unit Weight       | 225 g to 2200 g       |

| TECHNICAL SPECIFICATIONS      |  |
|-------------------------------|--|
| Resistance Range              | 2.7 Ω to 430 kΩ (E12, E24 preferred series values) |
| Resistance Tolerance Standard | ± 5 %  |
| Power Rating                  | 95 W to 800 W at 25 °C                             |
| Temperature Coefficient       | 75 ppm/°C (typical)                                |
| Shelf Life                    | 0.1 % year (typical)                               |

| ENVIRONMENTAL SPECIFICATIONS |                            |
|------------------------------|----------------------------|
| Temperature Range            | -55 °C +450 °C             |
| Climatic Category            | -55 °C / +200 °C / 56 days |

| PERFORMANCE             |  |   |                           |
|-------------------------|--|---|---------------------------|
| TESTS                   | CONDITIONS   | REQUIREMENTS                                  | TYPICAL VALUES AND DRIFTS |
| Short Time Overload     | 10 P <sub>r</sub> during 5 s<br>Voltage limited at < 5000 V                        | 2 % or 0.05 Ω                                 | 0.5 %                     |
| Climatic Sequence       | -55 °C, +200 °C  | 2 % or 0.05 Ω<br>Insulation resistance 100 MΩ | 0.5 %                     |
| Humidity (Steady State) | 56 days<br>95 % relative humidity  | 3 % or 0.05 Ω<br>Insulation resistance 100 MΩ | 0.5 %                     |
| Thermal Shock           | Load at 100 % P <sub>r</sub> followed by cold temperature exposure at -55 °C / 15' | 2 % or 0.05 Ω                                 | 0.5 %                     |
| Shock                   | Severity 50 A<br>9 shocks/each side  | 1 % or 0.05 Ω                                 | 0.25 %                    |
| Vibration               | Severity 55B   | 1 % or 0.05 Ω                                 | 0.25 %                    |
| Terminal Strength       | AN<br>B<br>Traction 40 Ncm<br>Torque 60 Ncm  | 1 % or 0.05 Ω                                 | 0.5 %                     |
| Load Life               | 90' / 30' cycle<br>1000 h at P <sub>r</sub> 25 °C                                  | 5 %   | 1000 h 1 %                |
|                         |  |   | 5000 h 2 %                |



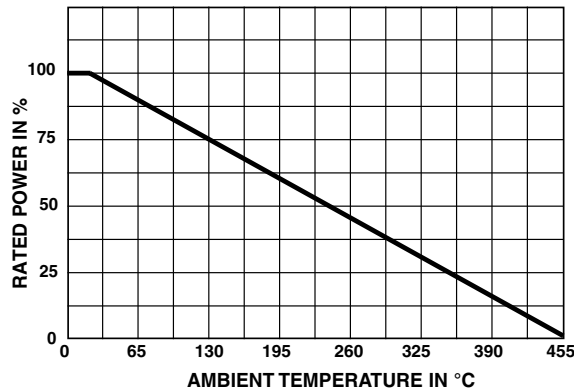
| <b>SPECIAL FEATURES</b>       |                 |                 |                 |                 |                 |
|-------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| <b>RWST STYLE</b>             | <b>25 x 138</b> | <b>25 x 168</b> | <b>30 x 250</b> | <b>40 x 370</b> | <b>50 x 373</b> |
| Designation NF C 93-214       | -               | RB 25 x 168     | RB 30 x 250     | -               | -               |
| Maximum Power Rating at 25 °C | 110 W           | 180 W           | 320 W           | 600 W           | 800 W           |
| Ohmic Range (E12, E24 series) | 2.7 Ω to 82 kΩ  | 2.7 Ω to 100 kΩ | 4.7 Ω to 220 kΩ | 8.2 Ω to 360 kΩ | 12 Ω to 430 kΩ  |
| Limiting Element Voltage      | 1400 V          | 1900 V          | 3000 V          | 4500 V          | 5000 V          |
| Critical Resistance           | 18 kΩ           | 20 kΩ           | 30 kΩ           | 36 kΩ           | 30 kΩ           |

**NON INDUCTIVE WINDING**

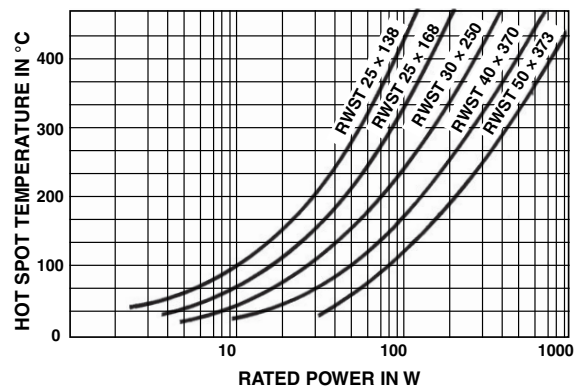
For high frequencies, low self induction resistors are available with special windings. RWSTNI designation.

| <b>MODEL AND STYLE</b>   | <b>RWSTNI<br/>25 x 138</b> | <b>RWSTNI<br/>25 x 168</b> | <b>RWSTNI<br/>30 x 250</b> | <b>RWSTNI<br/>40 x 370</b> | <b>RWSTNI<br/>50 x 373</b> |
|--------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Ohmic Range (E12 series) | 22 Ω<br>2.5 kΩ             | 22 Ω<br>4 kΩ               | 120 Ω<br>6.8 kΩ            | 120 Ω<br>8.2 kΩ            | 150 Ω<br>8.2 kΩ            |

**POWER RATING**



**TEMPERATURE RISE**



**MARKING**

Vishay Sfernice trademark, model, style, nominal resistance (in Ω), tolerance (in %), manufacturing date.

**PACKAGING**

Box: Fixed quantity depending on size and connections

| <b>ORDERING INFORMATION</b> |                 |                       |                |             |             |              |            |                |
|-----------------------------|-----------------|-----------------------|----------------|-------------|-------------|--------------|------------|----------------|
| <b>RWST</b>                 | <b>25 x 138</b> |                       |                | <b>B</b>    | <b>56U</b>  | <b>± 5 %</b> | <b>B06</b> | <b>e</b>       |
| MODEL                       | STYLE           | NON-INDUCTIVE WINDING | SPECIAL DESIGN | CONNECTIONS | OHMIC VALUE | TOLERANCE    | PACKAGING  | LEAD (Pb)-FREE |
|                             |                 | Optional              | Optional       |             |             |              |            |                |

Custom items are subject to extra-charge and min. order. Please see price list.

| <b>GLOBAL PART NUMBER INFORMATION</b> |  |   |                                  |   |          |          |          |                  |  |                                    |          |          |          |          |          |          |          |  |  |
|---------------------------------------|--|---|----------------------------------|---|----------|----------|----------|------------------|--|------------------------------------|----------|----------|----------|----------|----------|----------|----------|--|--|
| <b>R</b>                              | <b>W</b>   | <b>S</b>  | <b>T</b>                         | <b>2</b>  | <b>5</b> | <b>1</b> | <b>6</b> | <b>8</b>         | <b>C</b>   | <b>4</b>                           | <b>7</b> | <b>0</b> | <b>0</b> | <b>J</b> | <b>B</b> | <b>0</b> | <b>4</b> |  |  |
| GLOBAL MODEL                          | SIZE   | LEADS   | OPTION                           | OHMIC VALUE   |          |          |          | TOLERANCE        | PACKAGING  | SPECIAL                            |          |          |          |          |          |          |          |  |  |
| <b>RWST</b>                           | 25 x 138<br>25 x 168<br>30 x 250<br>40 x 370<br>50 x 373 | <b>A</b> = AN<br><b>B</b> = B<br><b>C</b> = CS<br><b>F</b> = faston | <b>N</b> = non inductive winding | The first three digits are significant figures and the last digit specifies the number of zeros to follow. R designates decimal point.<br><b>4700</b> = 470 Ω<br><b>48R8</b> = 48.7 Ω<br><b>R010</b> = 0.01 Ω<br><b>R470</b> = 0.47 Ω |          |          |          | <b>J</b> = 5.0 % | <b>Box:</b><br>B01<br>B02<br>B02NA<br>B04<br>B04NA<br>B06<br>B06NA | As applicable. Example: <b>BA7</b> |          |          |          |          |          |          |          |  |  |

| <b>RELATED DOCUMENTS</b> |  |
|--------------------------|--|
| <b>APPLICATION NOTES</b> |  |
| Packaging Information    | <a href="http://www.vishay.com/doc?50033">www.vishay.com/doc?50033</a> |



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