

## Wirewound Resistors, Industrial Power, Tubular, Ribwound (RB), Fixed (RBEF, RBSF)



### FEATURES

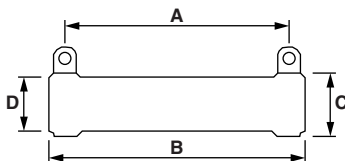
- High temperature silicone or vitreous enamel coatings
- Excellent for pulsing applications
- All welded construction
- Designed to meet heavy-duty requirements where space is at a premium
- Hardware mounting options and enclosures available
- Wirewound
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

| STANDARD ELECTRICAL SPECIFICATIONS |                    |                |                           |             |                |        |
|------------------------------------|--------------------|----------------|---------------------------|-------------|----------------|--------|
| GLOBAL MODEL                       | HISTORICAL MODEL   | POWER RATING W | RESISTANCE RANGE $\Omega$ | TOLERANCE % | TERMINAL STYLE |        |
|                                    |                    |                |                           |             | STANDARD       | OPTION |
| RBEF0040 <sup>(1)</sup>            | 9-32- $\Omega$ R   | 40             | 0.010 to 10.6             | 10          | D              | H      |
| RBEF0050 <sup>(1)</sup>            | 12-32- $\Omega$ R  | 50             | 0.020 to 8.2              | 10          | F              | H      |
| RBEF0075 <sup>(1)</sup>            | 12-48- $\Omega$ R  | 75             | 0.010 to 19.3             | 10          | F              | H      |
| RBEF0090 <sup>(1)</sup>            | 9-64- $\Omega$ R   | 90             | 0.015 to 28.3             | 10          | D              | H      |
| RBEF0100 <sup>(1)</sup>            | 12-56- $\Omega$ R  | 100            | 0.012 to 24.5             | 10          | F              | H      |
| RBEF0110 <sup>(1)</sup>            | 12-64- $\Omega$ R  | 110            | 0.015 to 30.6             | 10          | F              | H      |
| RBEF0120 <sup>(1)</sup>            | 12-72- $\Omega$ R  | 120            | 0.018 to 36.8             | 10          | F              | H      |
| RBEF0135 <sup>(1)</sup>            | 12-80- $\Omega$ R  | 135            | 0.021 to 42.9             | 10          | F              | H      |
| RBEF0150 <sup>(1)</sup>            | 18-64- $\Omega$ R  | 150            | 0.019 to 44.8             | 10          | F              | H      |
| RBEF0160 <sup>(1)</sup>            | 12-96- $\Omega$ R  | 160            | 0.027 to 55.0             | 10          | F              | H      |
| RBEF0175 <sup>(1)</sup>            | 18-72- $\Omega$ R  | 175            | 0.023 to 53.7             | 10          | F              | H      |
| RBEF0180 <sup>(1)</sup>            | 12-104- $\Omega$ R | 180            | 0.030 to 61.3             | 10          | F              | H      |
| RBEF0220 <sup>(1)</sup>            | 18-96- $\Omega$ R  | 220            | 0.035 to 80.6             | 10          | F              | H      |
| RBEF0225 <sup>(1)</sup>            | 18-98- $\Omega$ R  | 225            | 0.036 to 82.8             | 10          | F              | H      |
| RBEF0240 <sup>(1)</sup>            | 18-104- $\Omega$ R | 240            | 0.038 to 89.5             | 10          | F              | H      |
| RBEF0300 <sup>(1)</sup>            | 18-136- $\Omega$ R | 300            | 0.054 to 125              | 10          | F              | H      |
| RBEF0375 <sup>(1)</sup>            | 18-168- $\Omega$ R | 375            | 0.069 to 161              | 10          | F              | H      |
| RBEF0400 <sup>(1)</sup>            | 26-136- $\Omega$ R | 400            | 0.061 to 159              | 10          | G              | -      |
| RBEF0420 <sup>(1)</sup>            | 18-188- $\Omega$ R | 420            | 0.079 to 184              | 10          | F              | H      |
| RBEF0500 <sup>(1)</sup>            | 26-168- $\Omega$ R | 500            | 0.081 to 210              | 10          | G              | -      |
| RBEF0550 <sup>(1)</sup>            | 26-188- $\Omega$ R | 550            | 0.093 to 242              | 10          | G              | -      |
| RBSF0750                           | 40-192- $\Omega$ R | 750            | 0.128 to 166              | 10          | G              | -      |
| RBSF0850                           | -                  | 850            | 0.160 to 400              | 10          | F              | G, H   |
| RBSF1000                           | 40-240- $\Omega$ R | 1000           | 0.168 to 217              | 10          | G              | -      |
| RBSF1100                           | -                  | 1100           | 0.180 to 525              | 10          | G              | -      |
| RBSF1500                           | 40-320- $\Omega$ R | 1500           | 0.234 to 303              | 10          | G              | -      |
| RBSF1700                           | -                  | 1700           | 0.270 to 350              | 10          | G              | -      |
| RBSF2000                           | 52-320- $\Omega$ R | 2000           | 0.281 to 391              | 10          | G              | -      |

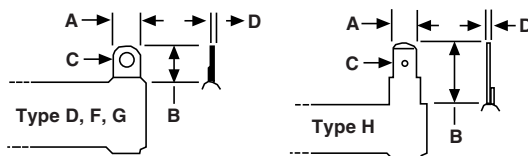
#### Note

<sup>(1)</sup> Vitreous enamel coating is standard (RBEF type), silicone coating is optional (RBSF type).

**DIMENSIONS** in inches (millimeters)


- For Terminal Data and Mounting Hardware, see [www.vishay.com/doc?31811](http://www.vishay.com/doc?31811)
- For Enclosures and Frames, see [www.vishay.com/doc?31810](http://www.vishay.com/doc?31810)

| GLOBAL MODEL | CORE DIMENSIONS (REF.) |                     |                     | A<br>DISTANCE<br>BETWEEN<br>TERMINAL (REF.) | WEIGHT<br>(TYP.)<br>g |
|--------------|------------------------|---------------------|---------------------|---------------------------------------------|-----------------------|
|              | B<br>LENGTH            | C<br>OUTER DIAMETER | D<br>INNER DIAMETER |                                             |                       |
| RBEF0040     | 2 (50.8)               | 0.5625 (14.2875)    | 0.3125 (7.9375)     | 1.25 (31.75)                                | 20                    |
| RBEF0050     | 2 (50.8)               | 0.75 (19.05)        | 0.5 (12.7)          | 1.15 (29.21)                                | 30                    |
| RBEF0075     | 3 (76.2)               | 0.75 (19.05)        | 0.5 (12.7)          | 2.13 (53.975)                               | 50                    |
| RBEF0090     | 4 (101.6)              | 0.5625 (14.2875)    | 0.3125 (7.9375)     | 3.50 (88.9)                                 | 65                    |
| RBEF0100     | 3.5 (88.9)             | 0.75 (19.05)        | 0.5 (12.7)          | 2.63 (66.675)                               | 58                    |
| RBEF0110     | 4 (101.6)              | 0.75 (19.05)        | 0.5 (12.7)          | 3.13 (79.375)                               | 62                    |
| RBEF0120     | 4.5 (114.3)            | 0.75 (19.05)        | 0.5 (12.7)          | 3.63 (92.075)                               | 68                    |
| RBEF0135     | 5 (127)                | 0.75 (19.05)        | 0.5 (12.7)          | 4.13 (104.775)                              | 75                    |
| RBEF0150     | 4 (101.6)              | 1.125 (28.575)      | 0.75 (19.05)        | 3.13 (79.375)                               | 127                   |
| RBEF0160     | 6 (152.4)              | 0.75 (19.05)        | 0.5 (12.7)          | 5.13 (130.175)                              | 95                    |
| RBEF0175     | 4.5 (114.3)            | 1.125 (28.575)      | 0.75 (19.05)        | 3.63 (92.075)                               | 140                   |
| RBEF0180     | 6.5 (165.1)            | 0.75 (19.05)        | 0.5 (12.7)          | 5.63 (142.875)                              | 100                   |
| RBEF0220     | 6 (152.4)              | 1.125 (28.575)      | 0.75 (19.05)        | 5.13 (130.175)                              | 165                   |
| RBEF0225     | 6.125 (155.575)        | 1.125 (28.575)      | 0.75 (19.05)        | 5.25 (133.35)                               | 175                   |
| RBEF0240     | 6.5 (165.1)            | 1.125 (28.575)      | 0.75 (19.05)        | 5.63 (142.875)                              | 200                   |
| RBEF0300     | 8.5 (215.9)            | 1.125 (28.575)      | 0.75 (19.05)        | 7.63 (193.675)                              | 265                   |
| RBEF0375     | 10.5 (266.7)           | 1.125 (28.575)      | 0.75 (19.05)        | 9.63 (244.475)                              | 300                   |
| RBEF0400     | 8.5 (215.9)            | 1.625 (41.275)      | 1.125 (28.575)      | 7.63 (193.675)                              | 410                   |
| RBEF0420     | 11.75 (298.45)         | 1.125 (28.575)      | 0.75 (19.05)        | 10.88 (276.225)                             | 336                   |
| RBEF0500     | 10.5 (266.7)           | 1.625 (41.275)      | 1.125 (28.575)      | 9.00 (228.6)                                | 525                   |
| RBEF0550     | 11.75 (298.45)         | 1.625 (41.275)      | 1.125 (28.575)      | 10.25 (260.35)                              | 535                   |
| RBSF0750     | 12 (304.8)             | 2.5 (63.5)          | 1.75 (44.45)        | 10.50 (266.7)                               | 1200                  |
| RBSF0850     | 25 (635)               | 1.125 (28.575)      | 0.75 (19.05)        | 23.75 (603.25)                              | 715                   |
| RBSF1000     | 15 (381)               | 2.5 (63.5)          | 1.75 (44.45)        | 13.50 (342.9)                               | 1500                  |
| RBSF1100     | 25 (635)               | 1.625 (41.275)      | 1.125 (28.58)       | 23 (584.2)                                  | 1140                  |
| RBSF1500     | 20 (508)               | 2.5 (63.5)          | 1.75 (44.45)        | 18.50 (169.9)                               | 1900                  |
| RBSF1700     | 25 (635)               | 2.5 (63.5)          | 1.75 (44.45)        | 23 (584.2)                                  | 2450                  |
| RBSF2000     | 20 (508)               | 3.25 (82.55)        | 1.75 (44.45)        | 18.50 (169.9)                               | 3900                  |

**TERMINAL STYLE** in inches (millimeters)


| DIMENSIONS    | D (1/4" LUG) | F (3/8" LUG)   | G (1/2" LUG)     | H (1/4" SQC)   |
|---------------|--------------|----------------|------------------|----------------|
| Width (A)     | 0.25 (6.35)  | 0.375 (9.525)  | 0.5 (12.7)       | 0.25 (6.35)    |
| Height (B)    | 0.5 (12.7)   | 0.625 (15.875) | 0.9375 (23.8125) | 0.625 (15.875) |
| Diameter (C)  | 0.17 (4.318) | 0.2 (5.08)     | 0.26 (6.604)     | 0.065 (1.651)  |
| Thickness (D) | 0.02 (0.508) | 0.035 (0.889)  | 0.046 (1.1684)   | 0.032 (0.8128) |

**METRIC OPTIONS AVAILABLE****Metric Hardware on Terminal Lugs**

Use terminal designation "1" example: RBEF03001R000K1B00

**Metric Mounting Hardware**

Vertical mount: use special designation "VM" example: RBEF03001R000K1BVM

1 high bracket: use special designation "1A" example: RBEF03001R000K1B1M

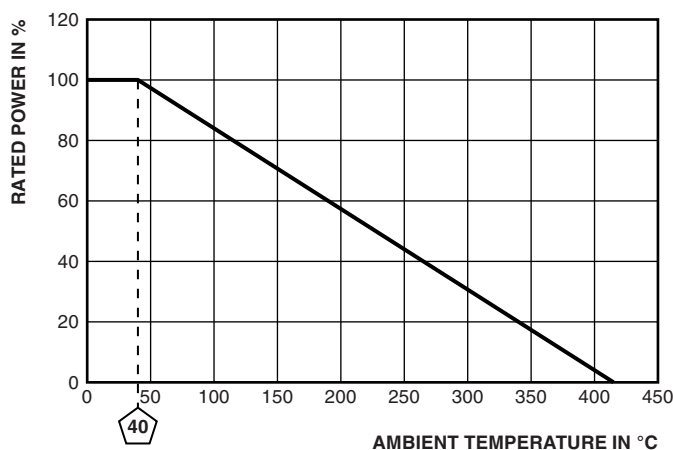
2 high bracket: use special designation "2A" example: RBEF03001R000K1B2M

3 high bracket: use special designation "3A" example: RBEF03001R000K1B3M

4 high bracket: use special designation "4A" example: RBEF03001R000K1B4M

**TECHNICAL SPECIFICATIONS**

| PARAMETER                              | UNIT                | RESISTOR CHARACTERISTICS                                                                                |
|----------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------|
| Power rating                           | W                   | 40 to 200                                                                                               |
| Resistance range                       | $\Omega$            | 0.01 to 391                                                                                             |
| Resistance tolerance                   | %                   | 10                                                                                                      |
| TCR                                    | ppm/°C              | $\pm 400, \pm 180, \pm 130, \pm 20$ (varies by wattage and resistance)                                  |
| Operating temperature                  | °C                  | -55 to +415                                                                                             |
| Temperature rise                       | °C                  | 375 above an ambient of 40 °C                                                                           |
| Maximum altitude                       | f.a.s.l. (m.a.s.l.) | derate above 4921 f.a.s.l. (1500 m.a.s.l.)                                                              |
| Short-term overload (surge)            |                     | 10 x rated power for 5 s                                                                                |
| Surge windings                         |                     | available                                                                                               |
| Maximum working voltage                |                     | $(P \times R)^{1/2}$                                                                                    |
| Insulation resistance                  | $\Omega$            | 1M                                                                                                      |
| Dielectric voltage                     | V <sub>RMS</sub>    | up to 1500 (upon request)                                                                               |
| Creepage                               | inch (mm)           | minimum 0.125 (3.175), typical (varies by wattage)                                                      |
| Terminal sleeves                       |                     | n/a                                                                                                     |
| Inductance                             | $\mu$ H             | 0.1 to 340 (varies by wattage and resistance)                                                           |
| Non-inductive winding                  |                     | consult factory: <a href="http://www.vishay.com/milwaukee/contact">www.vishay.com/milwaukee/contact</a> |
| Terminal strength                      | lb                  | 10                                                                                                      |
| Electrical or mechanical customization |                     | available: <a href="http://www.vishay.com/doc?31856">www.vishay.com/doc?31856</a>                       |

**DERATING CURVE****MATERIAL SPECIFICATIONS**

|                    |                                                      |
|--------------------|------------------------------------------------------|
| Element            | copper-nickel, nickel-chrome, iron-chrome-aluminum   |
| Core               | cordierite, steatite                                 |
| Coating            | special high temperature silicone or vitreous enamel |
| Standard terminals | nickel-iron                                          |
| Part marking       | value, date code, MRC                                |



| OPTIONS                       | EXAMPLE PHOTO                                                                     | EXAMPLE: 300 W                                                                | OPTIONS                                                       | EXAMPLE PHOTO                                                                      | EXAMPLE: 300 W                                                                                                             |
|-------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Standard<br>"00" option       |  | Part number ends with " <b>00</b> "<br>example:<br>RBEF0300xxxxxKGB <b>00</b> | Thru Bolt<br>"VT" option                                      |  | Part number ends with " <b>VT</b> "<br>example:<br>RBEF0300xxxxxKGB <b>VT</b>                                              |
| 1 High Bracket<br>"1A" option |  | Part number ends with " <b>1A</b> "<br>example:<br>RBEF0300xxxxxKGB <b>1A</b> | Clips<br>"CP" option                                          |  | Part number ends with " <b>CP</b> "<br>example:<br>RBEF0300xxxxxKGB <b>CP</b>                                              |
| 2 High Bracket<br>"2A" option |  | Part number ends with " <b>2A</b> "<br>example:<br>RBEF0300xxxxxKGB <b>2A</b> | Adjustable                                                    |  | Part model starts<br>with " <b>RBEA</b> "<br>example:<br><b>RBEA</b> 0300xxxxxKFB00                                        |
| 3 High Bracket<br>"3A" option |  | Part number ends with " <b>3A</b> "<br>example:<br>RBEF0300xxxxxKGB <b>3A</b> | Enclosures                                                    |  | Consult factory for options:<br><a href="mailto:vishaymilwaukeeresistor@vishay.com">vishaymilwaukeeresistor@vishay.com</a> |
| 4 High Bracket<br>"4A" option |  | Part number ends with " <b>4A</b> "<br>example:<br>RBEF0300xxxxxKGB <b>4A</b> | Electrical<br>customizations<br>(TCR,<br>inductance,<br>etc.) |  | Consult factory for options:<br><a href="mailto:vishaymilwaukeeresistor@vishay.com">vishaymilwaukeeresistor@vishay.com</a> |

**GLOBAL PART NUMBER INFORMATION**

Global Part Numbering example: RBSF150015R00JGB1A (RBSF1500-1A 15 5 % 1/2L B)

|                                                                                                |          |                                                                                                            |          |                                                 |          |                                                                                                           |          |                 |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |          |          |          |          |          |          |
|------------------------------------------------------------------------------------------------|----------|------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------|----------|-----------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|----------|----------|----------|
| <b>R</b>                                                                                       | <b>B</b> | <b>S</b>                                                                                                   | <b>F</b> | <b>1</b>                                        | <b>5</b> | <b>0</b>                                                                                                  | <b>0</b> | <b>1</b>        | <b>5</b> | <b>R</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>0</b> | <b>0</b> | <b>J</b> | <b>G</b> | <b>B</b> | <b>1</b> | <b>A</b> |
| GLOBAL MODEL                                                                                   |          | RESISTANCE VALUE                                                                                           |          | TOLERANCE                                       |          | TERMINAL                                                                                                  |          | PACKAGING CODE  |          | SPECIAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |          |          |          |          |          |          |          |
| <b>RBSF1500</b><br>(see "Standard Electrical Specifications" table above for additional P/N's) |          | <b>R</b> = decimal<br><b>K</b> = thousand<br><b>R1500</b> = 0.15 $\Omega$<br><b>1K500</b> = 1.5 k $\Omega$ |          | <b>J</b> = $\pm 5.0$ %<br><b>K</b> = $\pm 10$ % |          | <b>D</b> = 1/4" lug<br><b>F</b> = 3/8" lug<br><b>G</b> = 1/2" lug<br><b>H</b> = 1/4" single quick-connect |          | <b>B</b> = bulk |          | <b>00</b> = standard<br><b>SW</b> = surge winding<br><b>CP</b> = push in clips (bulk)<br><b>CA</b> = push in clips (assembled)<br><b>VT</b> = vertical mount<br><b>1A</b> = 1 high bracket zinc plated steel<br><b>2A</b> = 2 high bracket zinc plated steel<br><b>3A</b> = 3 high bracket zinc plated steel<br><b>4A</b> = 4 high bracket zinc plated steel<br><br><b>Note</b><br>2A, 3A, and 4A assemblies:<br>include identical resistors only wiring to be supplied by customer reference CS series for further customization<br><b>Note</b><br>3A and 4A limitations:<br>brackets fit 40 W to 550 W RB resistors |          |          |          |          |          |          |          |



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