

# Type WBR 85 °C, Industrial Grade, Axial Leaded, Aluminum

## 85 °C, Industrial Grade



Type WBR capacitors are the preferred choice for many varied industrial applications because they have high capacitance and extended life characteristics. The rugged construction delivers the high vibration resistance required in industrial applications

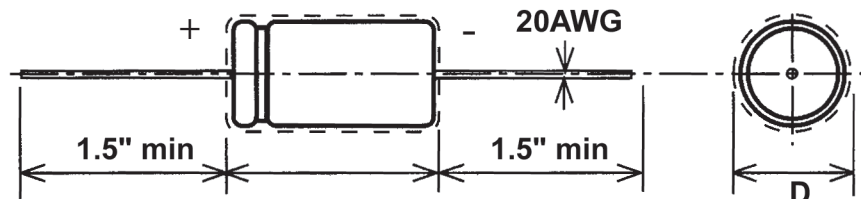
### Highlights

- High capacitance
- Extended life
- Rugged construction
- High vibration resistance

### Specifications

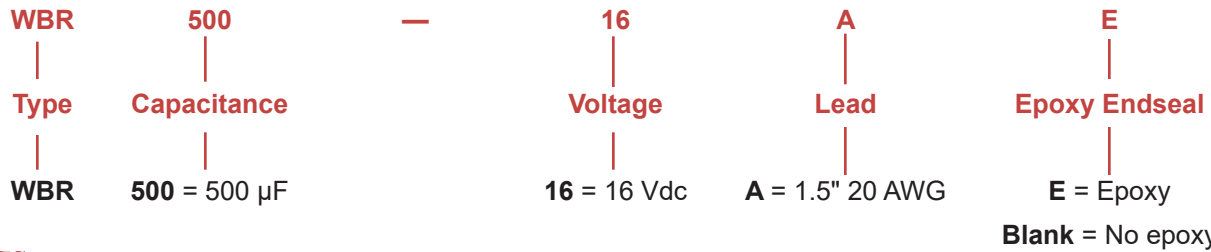
| Temperature Range             | -40 °C +85°C  |        |        |         |        |        |         |        |      |      |      |      |      |      |      |           |       |        |        |         |        |        |         |          |      |      |      |      |      |      |      |            |      |      |      |      |      |      |      |
|-------------------------------|---|--------|--------|---------|--------|--------|---------|--------|------|------|------|------|------|------|------|-----------|-------|--------|--------|---------|--------|--------|---------|----------|------|------|------|------|------|------|------|------------|------|------|------|------|------|------|------|
| Rated Voltage Range           | 16 to 450 Vdc   |        |        |         |        |        |         |        |      |      |      |      |      |      |      |           |       |        |        |         |        |        |         |          |      |      |      |      |      |      |      |            |      |      |      |      |      |      |      |
| Capacitance Range             | 1.0 to 5,000 µF   |        |        |         |        |        |         |        |      |      |      |      |      |      |      |           |       |        |        |         |        |        |         |          |      |      |      |      |      |      |      |            |      |      |      |      |      |      |      |
| Capacitance Tolerance         | 16 to 50 Vdc -10 + 150%, 75 to 350 Vdc -10 + 100%, 450 Vdc -10 + 50%  |        |        |         |        |        |         |        |      |      |      |      |      |      |      |           |       |        |        |         |        |        |         |          |      |      |      |      |      |      |      |            |      |      |      |      |      |      |      |
| Leakage Current               | 16-75 Vdc ≤ 0.01CV + 10 µA<br>150-450 Vdc ≤ 0.03CV + 20 µA  |        |        |         |        |        |         |        |      |      |      |      |      |      |      |           |       |        |        |         |        |        |         |          |      |      |      |      |      |      |      |            |      |      |      |      |      |      |      |
| Ripple Current Multipliers    | Ambient Temperature<br><table border="1"> <thead> <tr> <th>45 °C</th> <th>55 °C</th> <th>65 °C</th> <th>75 °C</th> <th>85 °C</th> <th>95 °C</th> <th>105 °C</th> </tr> </thead> <tbody> <tr> <td>1.50</td> <td>1.46</td> <td>1.32</td> <td>1.17</td> <td>1.00</td> <td>0.79</td> <td>0.50</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Frequency</th> <th>60 Hz</th> <th>120 Hz</th> <th>400 Hz</th> <th>1000 Hz</th> <th>10 kHz</th> <th>50 kHz</th> <th>100 kHz</th> </tr> </thead> <tbody> <tr> <td>0-60 Vdc</td> <td>0.85</td> <td>1.00</td> <td>1.10</td> <td>1.15</td> <td>1.15</td> <td>1.15</td> <td>1.15</td> </tr> <tr> <td>61-200 Vdc</td> <td>0.83</td> <td>1.00</td> <td>1.15</td> <td>1.20</td> <td>1.20</td> <td>1.20</td> <td>1.20</td> </tr> </tbody> </table> | 45 °C  | 55 °C  | 65 °C   | 75 °C  | 85 °C  | 95 °C   | 105 °C | 1.50 | 1.46 | 1.32 | 1.17 | 1.00 | 0.79 | 0.50 | Frequency | 60 Hz | 120 Hz | 400 Hz | 1000 Hz | 10 kHz | 50 kHz | 100 kHz | 0-60 Vdc | 0.85 | 1.00 | 1.10 | 1.15 | 1.15 | 1.15 | 1.15 | 61-200 Vdc | 0.83 | 1.00 | 1.15 | 1.20 | 1.20 | 1.20 | 1.20 |
| 45 °C                         | 55 °C   | 65 °C  | 75 °C  | 85 °C   | 95 °C  | 105 °C |         |        |      |      |      |      |      |      |      |           |       |        |        |         |        |        |         |          |      |      |      |      |      |      |      |            |      |      |      |      |      |      |      |
| 1.50                          | 1.46  | 1.32   | 1.17   | 1.00    | 0.79   | 0.50   |         |        |      |      |      |      |      |      |      |           |       |        |        |         |        |        |         |          |      |      |      |      |      |      |      |            |      |      |      |      |      |      |      |
| Frequency                     | 60 Hz   | 120 Hz | 400 Hz | 1000 Hz | 10 kHz | 50 kHz | 100 kHz |        |      |      |      |      |      |      |      |           |       |        |        |         |        |        |         |          |      |      |      |      |      |      |      |            |      |      |      |      |      |      |      |
| 0-60 Vdc                      | 0.85  | 1.00   | 1.10   | 1.15    | 1.15   | 1.15   | 1.15    |        |      |      |      |      |      |      |      |           |       |        |        |         |        |        |         |          |      |      |      |      |      |      |      |            |      |      |      |      |      |      |      |
| 61-200 Vdc                    | 0.83  | 1.00   | 1.15   | 1.20    | 1.20   | 1.20   | 1.20    |        |      |      |      |      |      |      |      |           |       |        |        |         |        |        |         |          |      |      |      |      |      |      |      |            |      |      |      |      |      |      |      |
| Load Life                     | 2,000 h @ +85 °C<br>Δ Capacitance ±20%<br>Δ ESR 150% of limit<br>Δ DCL 100% of limit  |        |        |         |        |        |         |        |      |      |      |      |      |      |      |           |       |        |        |         |        |        |         |          |      |      |      |      |      |      |      |            |      |      |      |      |      |      |      |
| Shelf Life                    | 500 h @ 85 °C<br>Δ Capacitance ±20%<br>Δ ESR 150% of limit<br>Δ DCL 100% of limit   |        |        |         |        |        |         |        |      |      |      |      |      |      |      |           |       |        |        |         |        |        |         |          |      |      |      |      |      |      |      |            |      |      |      |      |      |      |      |
| Vibration                     | 10 to 55 Hz; 0.06" and 10 g max, 2 h in each plane  |        |        |         |        |        |         |        |      |      |      |      |      |      |      |           |       |        |        |         |        |        |         |          |      |      |      |      |      |      |      |            |      |      |      |      |      |      |      |
| <b>Regulatory Information</b> |   |        |        |         |        |        |         |        |      |      |      |      |      |      |      |           |       |        |        |         |        |        |         |          |      |      |      |      |      |      |      |            |      |      |      |      |      |      |      |

### Outline Drawing



# Type WBR 85 °C, Industrial Grade, Axial Leaded, Aluminum

## Part Numbering System



## Ratings

| Cap (µF)                       | Catalog Part Number | Max ESR 120 Hz (Ω) | Ripple @ 85 °C 120 Hz (A) | Max Case Size D x L (Inches) |      |
|--------------------------------|---------------------|--------------------|---------------------------|------------------------------|------|
| <b>16 Vdc ( 20 Vdc Surge )</b> |                     |                    |                           |                              |      |
| 100                            | WBR100-16A          | 5.30               | 0.057                     | 0.34                         | 0.76 |
| 250                            | WBR250-16A          | 2.10               | 0.118                     | 0.34                         | 0.88 |
| 500                            | WBR500-16A          | 1.10               | 0.270                     | 0.40                         | 1.00 |
| 1000                           | WBR1000-16A         | 0.53               | 0.420                     | 0.40                         | 1.32 |
| 2000                           | WBR2000-16A         | 0.27               | 0.660                     | 0.47                         | 1.57 |
| 3000                           | WBR3000-16A         | 0.18               | 0.820                     | 0.52                         | 1.83 |
| 4000                           | WBR4000-16A         | 0.13               | 1.000                     | 0.65                         | 1.83 |
| 5000                           | WBR5000-16A         | 0.11               | 1.200                     | 0.65                         | 1.83 |
| <b>25 Vdc ( 30 Vdc Surge )</b> |                     |                    |                           |                              |      |
| 10                             | WBR10-25A           | 48.00              | 0.018                     | 0.28                         | 0.57 |
| 25                             | WBR25-25A           | 19.00              | 0.031                     | 0.28                         | 0.57 |
| 50                             | WBR50-25A           | 9.50               | 0.044                     | 0.34                         | 0.76 |
| 100                            | WBR100-25A          | 4.80               | 0.074                     | 0.34                         | 0.76 |
| 250                            | WBR250-25A          | 1.80               | 0.155                     | 0.40                         | 1.00 |
| 500                            | WBR500-25A          | 0.95               | 0.280                     | 0.40                         | 1.32 |
| 1000                           | WBR1000-25A         | 0.48               | 0.450                     | 0.47                         | 1.57 |
| 2000                           | WBR2000-25A         | 0.23               | 0.720                     | 0.65                         | 1.83 |
| <b>35 Vdc ( 40 Vdc Surge )</b> |                     |                    |                           |                              |      |
| 100                            | WBR100-35A          | 4.40               | 0.086                     | 0.40                         | 0.88 |
| 150                            | WBR150-35A          | 2.95               | 0.114                     | 0.40                         | 1.00 |
| 300                            | WBR300-35A          | 1.45               | 0.195                     | 0.47                         | 1.32 |
| 500                            | WBR500-35A          | 0.87               | 0.285                     | 0.52                         | 1.67 |
| 1000                           | WBR1000-35A         | 0.44               | 0.450                     | 0.54                         | 1.67 |
| 2000                           | WBR2000-35A         | 0.22               | 0.910                     | 0.65                         | 1.83 |
| 3000                           | WBR3000-35A         | 0.15               | 1.150                     | 0.74                         | 1.69 |
| <b>50 Vdc ( 65 Vdc Surge )</b> |                     |                    |                           |                              |      |
| 1                              | WBR1-50A            | 390.00             | 0.010                     | 0.28                         | 0.57 |
| 2                              | WBR2-50A            | 195.00             | 0.012                     | 0.28                         | 0.57 |
| 5                              | WBR5-50A            | 77.00              | 0.014                     | 0.28                         | 0.57 |
| 10                             | WBR10-50A           | 39.00              | 0.020                     | 0.28                         | 0.57 |
| 25                             | WBR25-50A           | 15.50              | 0.035                     | 0.34                         | 0.76 |
| 50                             | WBR50-50A           | 7.70               | 0.060                     | 0.40                         | 0.88 |
| 100                            | WBR100-50A          | 3.90               | 0.140                     | 0.40                         | 1.00 |
| 150                            | WBR150-50A          | 2.50               | 0.160                     | 0.40                         | 1.00 |
| 250                            | WBR250-50A          | 1.50               | 0.220                     | 0.40                         | 1.32 |
| 500                            | WBR500-50A          | 0.77               | 0.340                     | 0.52                         | 1.57 |
| 1000                           | WBR1000-50A         | 0.39               | 0.530                     | 0.65                         | 1.83 |
| 1500                           | WBR1500-50A         | 0.25               | 0.740                     | 0.65                         | 1.83 |
| <b>75 Vdc ( 95 Vdc Surge )</b> |                     |                    |                           |                              |      |
| 150                            | WBR150-75A          | 2.50               | 0.180                     | 0.47                         | 1.32 |
| 275                            | WBR275-75A          | 1.30               | 0.280                     | 0.52                         | 1.57 |
| 500                            | WBR500-75A          | 0.72               | 0.400                     | 0.65                         | 1.83 |

| Cap (µF)                         | Catalog Part Number | Max ESR 120 Hz (Ω) | Ripple @ 85 °C 120 Hz (A) | Max Case Size D x L (Inches) |      |
|----------------------------------|---------------------|--------------------|---------------------------|------------------------------|------|
| <b>150 Vdc ( 175 Vdc Surge )</b> |                     |                    |                           |                              |      |
| 4                                | WBR4-150A           | 78.00              | 0.018                     | 0.34                         | 0.88 |
| 5                                | WBR5-150A           | 62.00              | 0.020                     | 0.34                         | 0.88 |
| 8                                | WBR8-150A           | 39.00              | 0.030                     | 0.40                         | 0.88 |
| 10                               | WBR10-150A          | 31.00              | 0.034                     | 0.40                         | 0.88 |
| 16                               | WBR16-150A          | 19.50              | 0.045                     | 0.40                         | 1.00 |
| 20                               | WBR20-150A          | 15.50              | 0.050                     | 0.40                         | 1.32 |
| 30                               | WBR30-150A          | 10.50              | 0.085                     | 0.40                         | 1.57 |
| 40                               | WBR40-150A          | 7.80               | 0.096                     | 0.47                         | 1.32 |
| 50                               | WBR50-150A          | 6.20               | 0.105                     | 0.47                         | 1.57 |
| 60                               | WBR60-150A          | 5.20               | 0.130                     | 0.65                         | 1.57 |
| 80                               | WBR80-150A          | 3.90               | 0.155                     | 0.65                         | 1.83 |
| 100                              | WBR100-150A         | 3.10               | 0.190                     | 0.65                         | 1.83 |
| 150                              | WBR150-150A         | 2.05               | 0.230                     | 0.74                         | 1.69 |
| <b>180 Vdc ( 250 Vdc Surge )</b> |                     |                    |                           |                              |      |
| 125                              | WBR125-180A         | 2.30               | 0.300                     | 0.74                         | 1.69 |
| <b>250 Vdc ( 300 Vdc Surge )</b> |                     |                    |                           |                              |      |
| 4                                | WBR4-250A           | 64.00              | 0.035                     | 0.40                         | 1.00 |
| 8                                | WBR8-250A           | 32.00              | 0.056                     | 0.40                         | 1.32 |
| 12                               | WBR12-250A          | 21.50              | 0.062                     | 0.40                         | 1.32 |
| 16                               | WBR16-250A          | 16.00              | 0.065                     | 0.47                         | 1.57 |
| 20                               | WBR20-250A          | 12.50              | 0.075                     | 0.47                         | 1.57 |
| 30                               | WBR30-250A          | 8.40               | 0.105                     | 0.52                         | 1.57 |
| 40                               | WBR40-250A          | 6.30               | 0.125                     | 0.52                         | 1.83 |
| 50                               | WBR50-250A          | 5.00               | 0.140                     | 0.65                         | 1.83 |
| 60                               | WBR60-250A          | 4.20               | 0.180                     | 0.65                         | 1.83 |
| 80                               | WBR80-250A          | 3.10               | 0.200                     | 0.74                         | 1.69 |
| <b>350 Vdc ( 400 Vdc Surge )</b> |                     |                    |                           |                              |      |
| 4                                | WBR4-350A           | 51.00              | 0.036                     | 0.40                         | 1.00 |
| 8                                | WBR8-350A           | 26.00              | 0.050                     | 0.47                         | 1.32 |
| 20                               | WBR20-350A          | 10.00              | 0.090                     | 0.52                         | 1.57 |
| 40                               | WBR40-350A          | 5.10               | 0.135                     | 0.65                         | 1.83 |
| <b>450 Vdc ( 525 Vdc Surge )</b> |                     |                    |                           |                              |      |
| 1                                | WBR1-450A           | 205.00             | 0.023                     | 0.40                         | 1.00 |
| 2                                | WBR2-450A           | 102.00             | 0.030                     | 0.40                         | 1.00 |
| 4                                | WBR4-450A           | 51.00              | 0.038                     | 0.47                         | 1.57 |
| 5                                | WBR5-450A           | 40.00              | 0.042                     | 0.47                         | 1.57 |
| 8                                | WBR8-450A           | 26.00              | 0.053                     | 0.47                         | 1.57 |
| 10                               | WBR10-450A          | 20.00              | 0.058                     | 0.52                         | 1.57 |
| 12                               | WBR12-450A          | 17.00              | 0.062                     | 0.65                         | 1.83 |
| 16                               | WBR16-450A          | 12.50              | 0.084                     | 0.65                         | 1.83 |
| 20                               | WBR20-450A          | 10.00              | 0.105                     | 0.65                         | 1.83 |
| 30                               | WBR30-450A          | 6.70               | 0.130                     | 0.74                         | 1.69 |

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OBSOLETE