

### PB Radial Lead Type, Ultra-low ESR Series

- Ultra-Low ESR, High ripple current.
- Load life of 2000 hours at 105℃.
- Radial lead type: lead free flow soldering condition correspondence.
- RoHS Compliance(2011/65/EU)



### SPECIFICATIONS

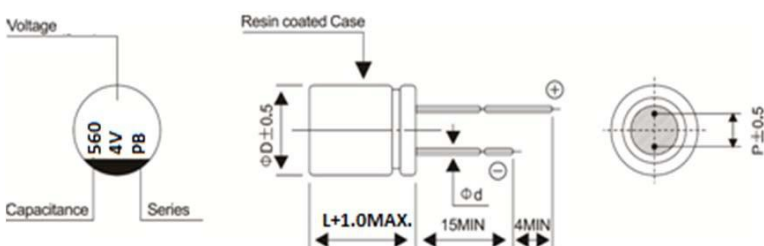
| Items  | Performance Characteristics  |                     |   |
|--|--|---------------------|---|
| Category Temperature Range                         | -55 ~ +105℃  |                     |   |
| Rated Voltage Range                                | 2.5 ~ 16V  |                     |   |
| Rated Capacitance Range                            | 270 ~ 1500μF   |                     |   |
| Capacitance Tolerance                              | ± 20 % (at 120Hz , 20℃)  |                     |   |
| Tangent of Loss Angle (tan δ)                      | Less than or equal to the specified value at 120Hz, 20℃  |                     |   |
| ESR(※1)  | Less than or equal to the specified value at 100KHz, 20℃   |                     |   |
| Leakage Current(※2)                                | Less than or equal to the specified value. After 2 minutes' application of rated voltage at 20℃  |                     |   |
| Temperature Characteristics (Max. Impedance Ratio) | Z+105℃ / Z+20℃ ≤1.25 (100kHz)<br>Z- 55℃ / Z+20℃ ≤1.25  |                     |   |
| Endurance  | The specifications listed at right shall be met when the capacitors are restored to 20℃ after the rated voltage is applied for 2000 hours at 105℃  | Capacitance change  | Within ±20% of the initial capacitance value(※3)  |
|  |  | tan δ               | 150% or less than the initial specified value     |
|  |  | ESR(※1)             | 150% or less than the initial specified value     |
|  |  | Leakage current(※2) | Less than or equal to the initial specified value |
| Damp Heat (Steady State)                           | The specifications listed at right shall be met when the capacitors are restored to 20℃ after the rated voltage is applied for 1000 hours at 60℃, 90% RH.  | Capacitance change  | Within ±20% of the initial capacitance value(※3)  |
|  |  | tan δ               | 150% or less than the initial specified value     |
|  |  | ESR(※1)             | 150% or less than the initial specified value     |
|  |  | Leakage current(※2) | Less than or equal to the initial specified value |
| Resistance to Soldering Heat                       | After soldering the capacitor under the soldering conditions prescribed here as preheat at 150 to 200℃ for 60 to 180 seconds and peak temperature at 265℃ for 10 seconds or less, the capacitor shall meet the specifications listed at right, provided that its temperature profile is measured at both of terminal ends facing the soldering side. | Capacitance change  | Within ±10% of the initial capacitance value(※3)  |
|  |  | tan δ               | 130% or less than the initial specified value     |
|  |  | ESR(※1)             | 130% or less than the initial specified value     |
|  |  | Leakage current(※2) | Less than or equal to the initial specified value |
|  |  |                     |   |
|  |  |                     |   |
| Marking  | Red print on the case top  |                     |   |

※1 ESR should be measured at both of the terminal ends closest to the capacitor body.

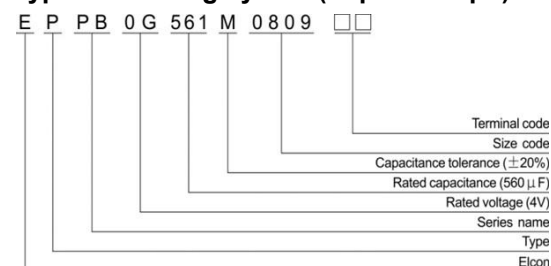
※2 Conditioning: If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105℃

※3 Initial value: The value before test of examination of resistance to soldering.

### Dimensions



### Type numbering system(Exp:4V 560μF)



Φ x L(mm)

| Size | 6.3x8 | 6.3x11 | 8x8 | 8x11 | 10x12 | 10x16 |
|------|-------|--------|-----|------|-------|-------|
| ΦD   | 6.3   | 6.3    | 8.0 | 8    | 10.0  | 10    |
| L    | 8     | 11     | 8   | 11   | 12    | 16    |
| P    | 2.5   | 2.5    | 3.5 | 3.5  | 5.0   | 5     |
| Φd   | 0.6   | 0.6    | 0.6 | 0.6  | 0.6   | 0.6   |

Voltage

| V    | 2.5 | 4  | 6.3 | 16 |
|------|-----|----|-----|----|
| Code | 0E  | 0G | 0J  | 1C |

**PB Series****■ STANDARD RATINGS**

| Rated voltage<br>(V)(code) | Surge Voltage<br>(V) | Rated Capacitance<br>(μF) | Case Size<br>ΦD x L(mm) | tan δ | Leakage Current<br>(μA) | ESR(mΩ)<br>(at 100kHz 20℃) | Rated Ripple<br>(mArms) | Part Number    |
|----------------------------|----------------------|---------------------------|-------------------------|-------|-------------------------|----------------------------|-------------------------|----------------|
| 2.5<br>(0E)                | 2.8                  | 560                       | 6.3x8                   | 0.08  | 280                     | 7                          | 5900                    | EPPB0E561M6308 |
|                            |                      | 820                       | 6.3x8                   | 0.08  | 410                     | 7                          | 5900                    | EPPB0E821M6308 |
|                            |                      | 820                       | 8x8                     | 0.08  | 410                     | 7                          | 5900                    | EPPB0E821M0808 |
|                            |                      | 1000                      | 6.3x8                   | 0.08  | 500                     | 7                          | 5900                    | EPPB0E102M6308 |
|                            |                      | 1500                      | 8X8                     | 0.08  | 750                     | 7                          | 6100                    | EPPB0E152M0808 |
| 4<br>(0G)                  | 4.6                  | 560                       | 6.3x8                   | 0.08  | 448                     | 9                          | 5900                    | EPPB0G561M6308 |
|                            |                      | 680                       | 6.3x8                   | 0.08  | 544                     | 9                          | 5900                    | EPPB0G681M6308 |
|                            |                      | 820                       | 6.3x11                  | 0.08  | 656                     | 7                          | 6150                    | EPPB0G821M6311 |
|                            |                      | 1200                      | 6.3x11                  | 0.08  | 960                     | 7                          | 6150                    | EPPB0G122M6311 |
| 6.3<br>(0J)                | 7.2                  | 270                       | 5x8                     | 0.08  | 340                     | 10                         | 3200                    | EPPB0J271M0508 |
|                            |                      | 330                       | 5x8                     | 0.08  | 415                     | 10                         | 3200                    | EPPB0J331M0508 |
|                            |                      | 330                       | 6.3x5.5                 | 0.08  | 415                     | 9                          | 4800                    | EPPB0J331M6355 |
|                            |                      | 330                       | 6.3x6                   | 0.08  | 415                     | 9                          | 4800                    | EPPB0J331M6306 |
|                            |                      | 330                       | 6.3x8                   | 0.08  | 415                     | 9                          | 5000                    | EPPB0J331M6308 |
|                            |                      | 390                       | 5x9                     | 0.08  | 491                     | 12                         | 3100                    | EPPB0J391M0509 |
|                            |                      | 390                       | 6.3x8                   | 0.08  | 491                     | 12                         | 3300                    | EPPB0J391M6308 |
|                            |                      | 470                       | 5x9                     | 0.08  | 592                     | 12                         | 3600                    | EPPB0J471M0509 |
|                            |                      | 470                       | 6.3x8                   | 0.08  | 592                     | 9                          | 5900                    | EPPB0J471M6308 |
|                            |                      | 560                       | 6.3x8                   | 0.08  | 705                     | 9                          | 5900                    | EPPB0J561M6308 |
|                            |                      | 560                       | 8x8                     | 0.08  | 705                     | 8                          | 5900                    | EPPB0J561M0808 |
|                            |                      | 680                       | 5x12                    | 0.08  | 857                     | 15                         | 5500                    | EPPB0J681M0512 |
|                            |                      | 680                       | 6.3x8                   | 0.08  | 857                     | 9                          | 5900                    | EPPB0J681M6308 |
|                            |                      | 820                       | 6.3x9                   | 0.08  | 1033                    | 9                          | 5900                    | EPPB0J821M6309 |
|                            |                      | 820                       | 6.3x11                  | 0.08  | 1033                    | 7                          | 6150                    | EPPB0J821M6311 |
|                            |                      | 820                       | 8x8                     | 0.08  | 1033                    | 9                          | 5900                    | EPPB0J821M0808 |
|                            |                      | 820                       | 8x11                    | 0.08  | 1033                    | 9                          | 6150                    | EPPB0J821M0811 |
|                            |                      | 1000                      | 6.3x11                  | 0.08  | 1260                    | 12                         | 6150                    | EPPB0J102M6311 |
|                            |                      | 1000                      | 8x8                     | 0.08  | 1260                    | 10                         | 6000                    | EPPB0J102M0808 |
|                            |                      | 1000                      | 8x11                    | 0.08  | 1260                    | 9                          | 6150                    | EPPB0J102M0811 |
|                            |                      | 1200                      | 6.3x12                  | 0.08  | 1512                    | 9                          | 6100                    | EPPB0J122M6312 |
|                            |                      | 1200                      | 8x12                    | 0.08  | 1512                    | 9                          | 6150                    | EPPB0J122M0812 |
|                            |                      | 1500                      | 8x12                    | 0.08  | 1890                    | 9                          | 6150                    | EPPB0J152M0812 |
|                            |                      | 1500                      | 10x12                   | 0.08  | 1890                    | 9                          | 6200                    | EPPB0J152M1012 |
|                            |                      | 2200                      | 10x12                   | 0.08  | 2772                    | 9                          | 6200                    | EPPB0J222M1012 |
| 7.5<br>(0T)                | 8.6                  | 500                       | 5x9                     | 0.08  | 750                     | 11                         | 3800                    | EPPB0J501M0509 |
|                            |                      | 500                       | 6.3x9                   | 0.08  | 750                     | 9                          | 5900                    | EPPB0J501M6309 |
|                            |                      | 560                       | 5x9                     | 0.08  | 840                     | 11                         | 4000                    | EPPB0J561M0509 |
|                            |                      | 560                       | 6.3x9                   | 0.08  | 840                     | 9                          | 5900                    | EPPB0J561M6309 |
|                            |                      | 680                       | 6.3x9                   | 0.08  | 1020                    | 9                          | 5900                    | EPPB0J681M6309 |
|                            |                      | 820                       | 6.3x9                   | 0.08  | 1230                    | 9                          | 5900                    | EPPB0J821M6309 |
| 10<br>(1A)                 | 11.5                 | 270                       | 6.3x8                   | 0.08  | 540                     | 10                         | 4100                    | EPPB1A271M6308 |
|                            |                      | 330                       | 6.3x8                   | 0.08  | 660                     | 12                         | 4500                    | EPPB1A331M6308 |
|                            |                      | 330                       | 8x8                     | 0.08  | 660                     | 12                         | 4620                    | EPPB1A331M0808 |
|                            |                      | 470                       | 6.3x8                   | 0.08  | 940                     | 9                          | 5400                    | EPPB1A471M6308 |
|                            |                      | 470                       | 8X8                     | 0.08  | 940                     | 10                         | 5600                    | EPPB1A471M0808 |
|                            |                      | 560                       | 8X8                     | 0.08  | 1120                    | 9                          | 5600                    | EPPB1A561M0808 |
|                            |                      | 680                       | 6X12                    | 0.08  | 1360                    | 13                         | 3650                    | EPPB1A681M0612 |
|                            |                      | 680                       | 8X8                     | 0.08  | 1360                    | 9                          | 5600                    | EPPB1A681M0808 |
|                            |                      | 680                       | 8X11                    | 0.08  | 1360                    | 9                          | 6100                    | EPPB1A681M0811 |
|                            |                      | 820                       | 8X11                    | 0.08  | 1640                    | 9                          | 6100                    | EPPB1A821M0811 |
|                            |                      | 1000                      | 8X11                    | 0.08  | 2000                    | 9                          | 6200                    | EPPB1A102M0811 |
|                            |                      | 1500                      | 8X12                    | 0.08  | 3000                    | 10                         | 5700                    | EPPB1A152M0812 |
|                            |                      | 1500                      | 10X12                   | 0.08  | 3000                    | 9                          | 6100                    | EPPB1A152M1012 |
|                            |                      | 2200                      | 10X12                   | 0.08  | 4400                    | 9                          | 6500                    | EPPB1A222M1012 |

**PB** Series

## ■ STANDARD RATINGS

| Rated voltage<br>(V)(code) | Surge Voltage<br>(V) | Rated Capacitance<br>(μF) | Case Size<br>ΦD x L(mm) | tan δ | Leakage Current<br>(μA) | ESR(mΩ)<br>(at 100kHz 20℃) | Rated Ripple<br>(mArms) | Part Number    |
|----------------------------|----------------------|---------------------------|-------------------------|-------|-------------------------|----------------------------|-------------------------|----------------|
| 12( 1R)                    | 13.8                 | 330                       | 5X9                     | 0.08  | 792                     | 14                         | 3800                    | EPPB1R331M0509 |
|                            |                      | 330                       | 5.5X9                   | 0.08  | 792                     | 14                         | 3800                    | EPPB1R331M5509 |
|                            |                      | 330                       | 6.3X8                   | 0.08  | 792                     | 12                         | 2690                    | EPPB1C331M6308 |
| 16( 1C)                    | 18.4                 | 100                       | 6.3X7                   | 0.08  | 320                     | 16                         | 3250                    | EPPB1C101M6307 |
|                            |                      | 270                       | 6.3X8                   | 0.08  | 864                     | 10                         | 4100                    | EPPB1C271M6308 |
|                            |                      | 270                       | 8X8                     | 0.08  | 864                     | 10                         | 5000                    | EPPB1C271M0808 |
|                            |                      | 270                       | 8X11                    | 0.08  | 864                     | 10                         | 5000                    | EPPB1C271M0811 |
|                            |                      | 330                       | 6.3X9                   | 0.08  | 1056                    | 12                         | 4500                    | EPPB1C331M6309 |
|                            |                      | 330                       | 6.3X11                  | 0.08  | 1056                    | 12                         | 4300                    | EPPB1C331M6311 |
|                            |                      | 330                       | 8X8                     | 0.08  | 1056                    | 10                         | 5000                    | EPPB1C331M0808 |
|                            |                      | 330                       | 10X12                   | 0.08  | 1056                    | 9                          | 6100                    | EPPB1C331M1012 |
|                            |                      | 390                       | 8X8                     | 0.08  | 1248                    | 10                         | 5000                    | EPPB1C391M0808 |
|                            |                      | 470                       | 6.3X11                  | 0.08  | 1504                    | 12                         | 4100                    | EPPB1C471M6310 |
|                            |                      | 470                       | 6.3X12                  | 0.08  | 1504                    | 10                         | 5200                    | EPPB1C471M6312 |
|                            |                      | 470                       | 8X8                     | 0.08  | 1504                    | 13                         | 5000                    | EPPB1C471M0808 |
|                            |                      | 470                       | 8X11                    | 0.08  | 1504                    | 10                         | 5400                    | EPPB1C471M0811 |
|                            |                      | 470                       | 10X12                   | 0.08  | 1504                    | 9                          | 5800                    | EPPB1C471M1012 |
|                            |                      | 560                       | 8X9                     | 0.08  | 1792                    | 12                         | 5200                    | EPPB1C561M0809 |
|                            |                      | 560                       | 8X11                    | 0.08  | 1792                    | 10                         | 5400                    | EPPB1C561M0811 |
|                            |                      | 680                       | 8X11                    | 0.08  | 2176                    | 10                         | 5400                    | EPPB1C681M0811 |
|                            |                      | 820                       | 8X12                    | 0.08  | 2624                    | 10                         | 5700                    | EPPB1C821M0812 |
|                            |                      | 820                       | 10X12                   | 0.08  | 2624                    | 10                         | 5800                    | EPPB1C821M1012 |
|                            |                      | 1000                      | 8X12                    | 0.08  | 3200                    | 10                         | 6000                    | EPPB1C102M0812 |
|                            |                      | 1000                      | 10X12                   | 0.08  | 3200                    | 9                          | 6500                    | EPPB1C102M1012 |
|                            |                      | 1200                      | 10X12                   | 0.08  | 3840                    | 9                          | 6500                    | EPPB1C121M1012 |
|                            |                      | 1500                      | 10X12                   | 0.08  | 4800                    | 9                          | 6500                    | EPPB1C152M1012 |
|                            |                      | 1500                      | 10X16                   | 0.08  | 4800                    | 9                          | 6500                    | EPPB1C152M1016 |
|                            |                      | 2200                      | 10X16                   | 0.08  | 7040                    | 10                         | 5800                    | EPPB1C222M1016 |