

## PR Radial Lead Type, Long Life Assurance Series

- High reliability, High voltage (to 50V).
- Low ESR, High ripple current.
- Long life of 3000 hours at 125°C.
- Radial lead type: lead free flow soldering condition correspondence.
- RoHS Compliance (2011/65/EU)



### SPECIFICATIONS

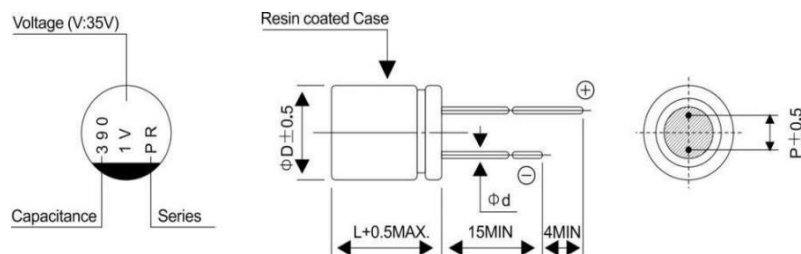
| Item                                               | Performance Characteristics                                                                                                                                                                                                                                                                                                                            |                     |                                                   |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------------------------|
| Category Temperature Range                         | -55 ~ +125°C                                                                                                                                                                                                                                                                                                                                           |                     |                                                   |
| Rated Voltage Range                                | 16 ~ 50V                                                                                                                                                                                                                                                                                                                                               |                     |                                                   |
| Rated Capacitance Range                            | 22 to 390μF                                                                                                                                                                                                                                                                                                                                            |                     |                                                   |
| Capacitance Tolerance                              | ± 20 % (at 120Hz, 20°C)                                                                                                                                                                                                                                                                                                                                |                     |                                                   |
| Tangent of loss angle (tan δ)                      | Less than or equal to the specified value at 120Hz, 20°C                                                                                                                                                                                                                                                                                               |                     |                                                   |
| ESR(※1)                                            | Less than or equal to the specified value at 100kHz, 20°C                                                                                                                                                                                                                                                                                              |                     |                                                   |
| Leakage Current(※2)                                | Less than or equal to the specified value. After 2 minutes' application of rated voltage at 20°C                                                                                                                                                                                                                                                       |                     |                                                   |
| Temperature Characteristics (Max. Impedance Ratio) | Z+105°C / Z+20°C ≤ 1.25 (100kHz)<br>Z- 55°C / Z+20°C ≤ 1.25                                                                                                                                                                                                                                                                                            |                     |                                                   |
| Endurance                                          | The specifications listed at right shall be met when the capacitors are restored to 20 °C after the rated voltage is applied for 3000 hours at 125 °C                                                                                                                                                                                                  | Capacitance change  | Within ±20% of initial value(※3)                  |
|                                                    |                                                                                                                                                                                                                                                                                                                                                        | tan δ               | 150% or less of the initial specified value       |
|                                                    |                                                                                                                                                                                                                                                                                                                                                        | ESR(※1)             | 150% or less of 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 °C after the rated voltage is applied for 1000 hours at 60 °C, 90% RH.                                                                                                                                                                                          | Capacitance change  | Within ±20% of the initial value(※3)              |
|                                                    |                                                                                                                                                                                                                                                                                                                                                        | tan δ               | 150% or less of the initial specified value       |
|                                                    |                                                                                                                                                                                                                                                                                                                                                        | ESR(※1)             | 150% or less of 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°C for 60 to 180 seconds and peak temperature at 265°C 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.

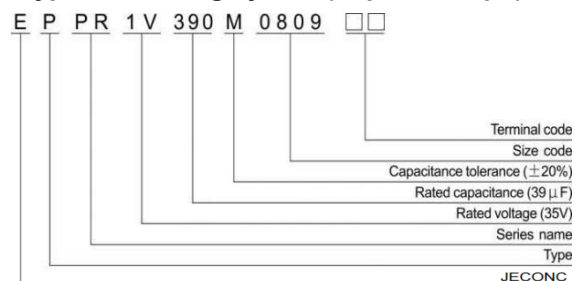
※2 Conditioning: If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105 °C

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

### Dimensions



### Type numbering system (Exp: 35V 39μF)



Φ x L (mm)

| Size | 8x9 | 8x12 | 10x13 |
|------|-----|------|-------|
| ΦD   | 8.0 | 8.0  | 10.0  |
| L    | 8.5 | 11.5 | 12.5  |
| P    | 3.5 | 3.5  | 5.0   |
| Φd   | 0.6 | 0.6  | 0.6   |

Voltage

| V    | 16 | 20 | 25 | 35 | 50 |
|------|----|----|----|----|----|
| Code | 1C | 1D | 1E | 1V | 1H |

## PR 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<br>20℃) | Rated Ripple<br>(mArms) |               | Part Number    |
|----------------------------|----------------------|---------------------------|-------------------------|-------|-------------------------|-------------------------------|-------------------------|---------------|----------------|
|                            |                      |                           |                         |       |                         |                               | ≤105℃(*3)               | 105℃≤125℃(*3) |                |
| 6.3<br>(0J)                |                      | 100                       | 5x8                     | 0.12  | 63                      | 18                            | 1900                    | 730           | EPJR0J101M0508 |
|                            |                      | 330                       | 5x8                     | 0.12  | 208                     | 14                            | 2300                    | 880           | EPJR0J331M0508 |
|                            |                      | 820                       | 6.3x11                  | 0.12  | 516                     | 12                            | 4800                    | 1846          | EPJR0J821M6311 |
|                            |                      | 1500                      | 8x12                    | 0.12  | 945                     | 12                            | 4000                    | 1535          | EPJR0J152M0812 |
|                            |                      | 2200                      | 10x12                   | 0.12  | 1386                    | 10                            | 5600                    | 2150          | EPJR0J222M1012 |
| 10V (1A)                   |                      | 470                       | 8X8                     | 0.12  | 470                     | 15                            | 4500                    | 1800          | EPJR1A471M0808 |
| 16<br>(1C)                 | 18.4                 | 100                       | 5x8                     | 0.12  | 160                     | 13                            | 2000                    | 770           | EPJR1C101M0508 |
|                            |                      | 150                       | 8x9                     | 0.12  | 240                     | 26                            | 2100                    | 810           | EPJR1C151M0809 |
|                            |                      | 220                       | 8x12                    | 0.12  | 352                     | 25                            | 2400                    | 930           | EPJR1C221M0812 |
|                            |                      | 270                       | 8X8                     | 0.12  | 423                     | 22                            | 3300                    | 1040          | EPJR1C271M0808 |
|                            |                      | 330                       | 8x8                     | 0.12  | 528                     | 13                            | 4700                    | 1570          | EPJR1C331M0808 |
|                            |                      | 390                       | 10x13                   | 0.12  | 624                     | 23                            | 2900                    | 1130          | EPJR1C391M1013 |
|                            |                      | 1000                      | 10X12                   | 0.12  | 1600                    | 12                            | 4500                    | 1730          | EPJR1C102M1012 |
|                            |                      | 1000                      | 10x13                   | 0.12  | 1600                    | 12                            | 4500                    | 1730          | EPJR1C102M1013 |
| 20<br>(1D)                 | 23                   | 120                       | 8x9                     | 0.12  | 240                     | 27                            | 2000                    | 800           | EPJR1D121M0809 |
|                            |                      | 150                       | 8x12                    | 0.12  | 300                     | 26                            | 2300                    | 910           | EPJR1D151M0812 |
|                            |                      | 270                       | 10x13                   | 0.12  | 540                     | 24                            | 2800                    | 1110          | EPJR1D271M1013 |
| 25<br>(1E)                 | 28.7                 | 82                        | 8x9                     | 0.12  | 205                     | 28                            | 2000                    | 780           | EPJR1E820M0809 |
|                            |                      | 100                       | 6.3X8                   | 0.12  | 250                     | 30                            | 2500                    | 961           | EPJR1E101M6308 |
|                            |                      | 120                       | 8x12                    | 0.12  | 300                     | 27                            | 2300                    | 890           | EPJR1E121M0812 |
|                            |                      | 180                       | 10x13                   | 0.12  | 450                     | 25                            | 2800                    | 1080          | EPJR1E181M1013 |
|                            |                      | 470                       | 8X12                    | 0.12  | 1175                    | 20                            | 2800                    | 1080          | EPJR1E471M0812 |
|                            |                      | 680                       | 10X16                   | 0.12  | 1700                    | 16                            | 4700                    | 1880          | EPJR1E681M1016 |
|                            |                      | 680                       | 10X12.5                 | 0.12  | 1700                    | 13                            | 4250                    | 1635          | EPJR1E680M1012 |
|                            |                      | 1000                      | 8X16                    | 0.12  | 2500                    | 25                            | 4500                    | 1730          | EPJR1E102M0816 |
|                            |                      | 1000                      | 10x16                   | 0.12  | 2500                    | 14                            | 5000                    | 2000          | EPJR1E102M1016 |
| 35<br>(1V)                 | 40.2                 | 39                        | 8x9                     | 0.12  | 136                     | 33                            | 1800                    | 720           | EPJR1V390M0809 |
|                            |                      | 56                        | 8x12                    | 0.12  | 196                     | 31                            | 2100                    | 830           | EPJR1V560M0812 |
|                            |                      | 100                       | 6.3X8                   | 0.12  | 350                     | 28                            | 2200                    | 846           | EPJR1E101M6308 |
|                            |                      | 100                       | 10x13                   | 0.12  | 350                     | 28                            | 2700                    | 1040          | EPJR1V101M1013 |
| 50<br>(1H)                 | 57.5                 | 22                        | 8x9                     | 0.12  | 110                     | 35                            | 1800                    | 700           | EPJR1H220M0809 |
|                            |                      | 27                        | 8x12                    | 0.12  | 135                     | 33                            | 2000                    | 810           | EPJR1H270M0812 |
|                            |                      | 47                        | 10x13                   | 0.12  | 235                     | 29                            | 2600                    | 1020          | EPJR1H470M1013 |
|                            |                      | 100                       | 8X8                     | 0.12  | 500                     | 32                            | 2250                    | 900           | EPJR1H101M0808 |
|                            |                      | 120                       | 8X12                    | 0.12  | 600                     | 32                            | 2250                    | 900           | EPJR1H121M0812 |
|                            |                      | 120                       | 10X12                   | 0.12  | 600                     | 20                            | 4300                    | 1350          | EPJR1H121M1012 |
|                            |                      | 220                       | 10X12                   | 0.12  | 1100                    | 28                            | 2620                    | 1040          | EPJR1H221M1012 |