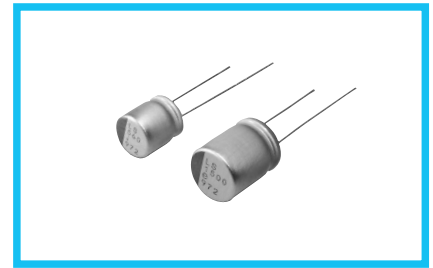


**LS** series Radial Lead Type, Long Life Assurance



- Ultra-low ESR, High ripple current.
- Load life of 5000 hours at 105°C.
- Radial lead type :  
Lead free flow soldering condition correspondence.
- Compliant to the RoHS directive (2011/65/EU).



## Specifications

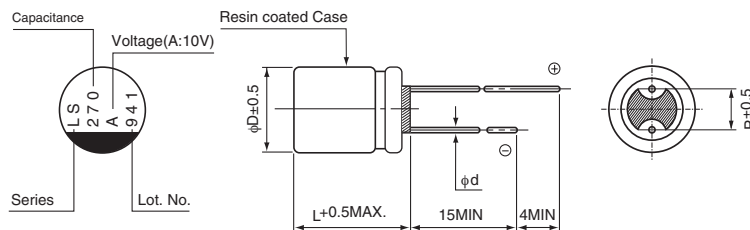
| Item                                              | Performance Characteristics                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                |                    |                                                     |       |                                               |           |                                               |                       |                                                   |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------|-------|-----------------------------------------------|-----------|-----------------------------------------------|-----------------------|---------------------------------------------------|
| Category Temperature Range                        | -55 to +105°C                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                |                    |                                                     |       |                                               |           |                                               |                       |                                                   |
| Rated Voltage Range                               | 2.5 to 16V                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                |                    |                                                     |       |                                               |           |                                               |                       |                                                   |
| Rated Capacitance Range                           | 100 to 1500μF                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                |                    |                                                     |       |                                               |           |                                               |                       |                                                   |
| 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 5000 hours at 105°C.                                                                                                                                                                                                   | <table><tr><td>Capacitance change</td><td>Within ± 20% of the initial capacitance value (※ 3)</td></tr><tr><td>tan δ</td><td>150% or less than the initial specified value</td></tr><tr><td>ESR (※ 1)</td><td>150% or less than the initial specified value</td></tr><tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr></table> | 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 |
| 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°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH.                                                                                                                                                                                            | <table><tr><td>Capacitance change</td><td>Within ± 20% of the initial capacitance value (※ 3)</td></tr><tr><td>tan δ</td><td>150% or less than the initial specified value</td></tr><tr><td>ESR (※ 1)</td><td>150% or less than the initial specified value</td></tr><tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr></table> | 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 |
| 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°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. | <table><tr><td>Capacitance change</td><td>Within ± 10% of the initial capacitance value (※ 3)</td></tr><tr><td>tan δ</td><td>130% or less than the initial specified value</td></tr><tr><td>ESR (※ 1)</td><td>130% or less than the initial specified value</td></tr><tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr></table> | 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 |
| 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                                           | Navy blue print on the case top                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                |                    |                                                     |       |                                               |           |                                               |                       |                                                   |

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

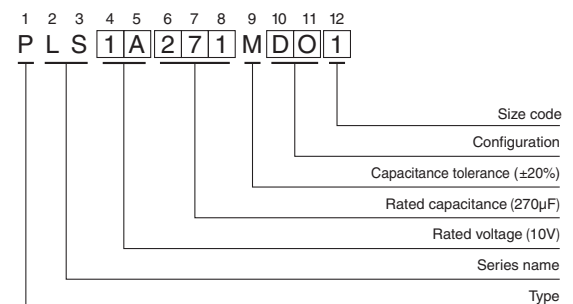
※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.

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

## Dimensions



## Type numbering system (Example : 10V 270μF)



(mm)

| Size | φ6.3 × 9L | φ6.3 × 10.5L | φ8 × 7L | φ8 × 9L | φ8 × 12L | φ10 × 13L |
|------|-----------|--------------|---------|---------|----------|-----------|
| φD   | 6.3       | 6.3          | 8.0     | 8.0     | 8.0      | 10.0      |
| L    | 8.5       | 10.0         | 6.5     | 8.5     | 11.5     | 12.5      |
| P    | 2.5       | 2.5          | 3.5     | 3.5     | 3.5      | 5.0       |
| φd   | 0.6       | 0.5          | 0.6     | 0.6     | 0.6      | 0.6       |

## Voltage

| V    | 2.5 | 4 | 6.3 | 10 | 16 |
|------|-----|---|-----|----|----|
| Code | e   | g | j   | A  | C  |

Please refer to page 20 about the end seal configuration.

● Dimension table in next page.



# Standard Ratings

| Rated Voltage<br>(V)<br>code | Surge Voltage<br>(V) | Rated Capacitance<br>(μF) | Case Size<br>φD × L (mm) | tan δ | Leakage Current<br>(μA) | ESR (mΩ)<br>(at 100kHz 20°C) | Rated Ripple<br>(mArms) | Part Number  |
|------------------------------|----------------------|---------------------------|--------------------------|-------|-------------------------|------------------------------|-------------------------|--------------|
| 2.5<br>(0E)                  | 2.8                  | 330                       | ○ 6.3 × 9                | 0.08  | 500                     | 8                            | 4800                    | PLS0E331MCO8 |
|                              |                      | 680                       | △ 8 × 7                  | 0.08  | 340                     | 15                           | 3900                    | PLS0E681MCL2 |
|                              |                      | 820                       | ○ 6.3 × 9                | 0.08  | 500                     | 8                            | 4800                    | PLS0E821MCO8 |
|                              |                      | 820                       | ▲ 8 × 9                  | 0.08  | 410                     | 7                            | 5200                    | PLS0E821MCO6 |
|                              |                      | 820                       | 8 × 12                   | 0.08  | 410                     | 7                            | 5800                    | PLS0E821MDO1 |
|                              |                      | 1500                      | 10 × 13                  | 0.08  | 750                     | 8                            | 5500                    | PLS0E152MDO1 |
| 4<br>(0G)                    | 4.6                  | 270                       | ○ 6.3 × 9                | 0.08  | 500                     | 8                            | 4800                    | PLS0G271MCO8 |
|                              |                      | 560                       | △ 8 × 7                  | 0.08  | 448                     | 15                           | 3900                    | PLS0G561MCL2 |
|                              |                      | 560                       | ▲ 8 × 9                  | 0.08  | 448                     | 7                            | 5200                    | PLS0G561MCO6 |
|                              |                      | 680                       | 8 × 12                   | 0.08  | 544                     | 7                            | 5800                    | PLS0G681MDO1 |
|                              |                      | 1200                      | 10 × 13                  | 0.08  | 960                     | 8                            | 5500                    | PLS0G122MDO1 |
| 6.3<br>(0J)                  | 7.2                  | 330                       | ■ 6.3 × 10.5             | 0.08  | 416                     | 20                           | 3000                    | PLS0J331MDL4 |
|                              |                      | 390                       | △ 8 × 7                  | 0.08  | 491                     | 15                           | 3900                    | PLS0J391MCL2 |
|                              |                      | 470                       | 8 × 12                   | 0.08  | 592                     | 7                            | 5500                    | PLS0J471MDO1 |
|                              |                      | 560                       | ○ 6.3 × 9                | 0.08  | 706                     | 9                            | 4300                    | PLS0J561MCO8 |
|                              |                      | 560                       | ▲ 8 × 9                  | 0.08  | 706                     | 8                            | 5000                    | PLS0J561MCO6 |
|                              |                      | 820                       | 10 × 13                  | 0.08  | 1033                    | 8                            | 5500                    | PLS0J821MDO1 |
| 10<br>(1A)                   | 11.5                 | 150                       | ■ 6.3 × 10.5             | 0.08  | 300                     | 20                           | 3000                    | PLS1A151MDL4 |
|                              |                      | 270                       | 8 × 12                   | 0.08  | 540                     | 8                            | 4900                    | PLS1A271MDO1 |
|                              |                      | 470                       | 10 × 13                  | 0.08  | 940                     | 8                            | 5500                    | PLS1A471MDO1 |
| 16<br>(1C)                   | 18.4                 | 100                       | ■ 6.3 × 10.5             | 0.08  | 320                     | 24                           | 2800                    | PLS1C101MDL4 |
|                              |                      | 270                       | 8 × 12                   | 0.08  | 864                     | 9                            | 4500                    | PLS1C271MDO1 |
|                              |                      | 330                       | 10 × 13                  | 0.08  | 1056                    | 9                            | 4700                    | PLS1C331MDO1 |
|                              |                      | 470                       | 10 × 13                  | 0.08  | 1504                    | 9                            | 4700                    | PLS1C471MDO1 |

Rated ripple current (mArms) at 105°C 100kHz

No marked, [1] will be put at 12th digit of type numbering system.  
 △: In this case, [2] will be put at 12th digit of type numbering system.  
 ■: In this case, [4] will be put at 12th digit of type numbering system.  
 ▲: In this case, [6] will be put at 12th digit of type numbering system.  
 ○: In this case, [8] will be put at 12th digit of type numbering system.

- Please refer to page 20, 21, 22 about the formed or taped product spec.
- Please refer to page 3 for the minimum order quantity.

# Mouser Electronics

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