

## SPH Series

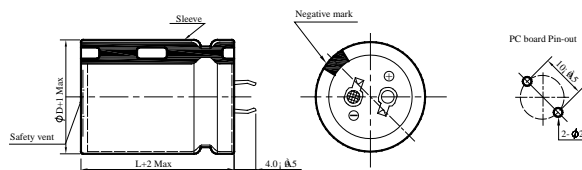
- The capacitor can be inserted into the PCB board.
- High ripple current and frame retardant type capacitor.
- Load life 2,000 hours at 105 °C

### ◆ SPECIFICATIONS

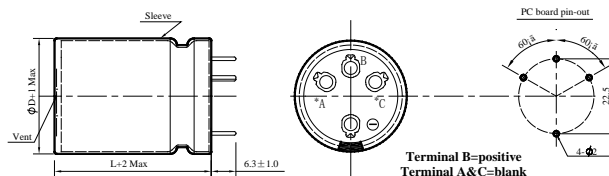
| Item  | Performance Characteristics  |                    |                             |                          |                               |                 |                               |
|---|--|--------------------|-----------------------------|--------------------------|-------------------------------|-----------------|-------------------------------|
| Category Temperature Range  | -25 ~ +105°C   |                    |                             |                          |                               |                 |                               |
| Working Voltage Range   | 400 ~ 450Vdc   |                    |                             |                          |                               |                 |                               |
| Capacitance Range   | 82 ~ 560μF   |                    |                             |                          |                               |                 |                               |
| Capacitance Tolerance   | ±20% (at 25°C and 120Hz)   |                    |                             |                          |                               |                 |                               |
| Dissipation Factor (tanδ)<br>(at 25°C, 120Hz)                           | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>400</td> <td>450</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.25</td> <td>0.25</td> </tr> </table>  | Rated Voltage (V)  | 400                         | 450                      | tanδ(Max)                     | 0.25            | 0.25                          |
|   | Rated Voltage (V)  | 400                | 450                         |                          |                               |                 |                               |
| tanδ(Max)   | 0.25   | 0.25               |                             |                          |                               |                 |                               |
| The above value should be increased by 0.02 for every additional 1000uF |  |                    |                             |                          |                               |                 |                               |
| Leakage Current   | $I=0.02CV$ or $3000\mu A$ , whichever is smaller<br>I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V)<br>Impress the rated voltage for 5 minutes.  |                    |                             |                          |                               |                 |                               |
| Endurance   | The following requirements shall be satisfied when the capacitor are restored to 25°C after the rated voltage applied for 2,000 hours (1,000 hours for WV ≒ 100V) at 105°C.  |                    |                             |                          |                               |                 |                               |
|   | <table border="1"> <tr> <td>Capacitance change</td> <td>≒ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≒ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≒ specified value</td> </tr> </table>             | Capacitance change | ≒ ±20% of the initial value | Dissipation factor(tanδ) | ≒ 200% of the specified value | Leakage current | ≒ specified value             |
| Capacitance change  | ≒ ±20% of the initial value  |                    |                             |                          |                               |                 |                               |
| Dissipation factor(tanδ)  | ≒ 200% of the specified value  |                    |                             |                          |                               |                 |                               |
| Leakage current   | ≒ specified value  |                    |                             |                          |                               |                 |                               |
| Shelf Life  | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied.  |                    |                             |                          |                               |                 |                               |
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| Dissipation factor(tanδ)  | ≒ 200% of the specified value  |                    |                             |                          |                               |                 |                               |
| Leakage current   | ≒ 200% of the specified value  |                    |                             |                          |                               |                 |                               |
| Others  | Conforms to JIS-C-5101-4 (1998), characteristic W.   |                    |                             |                          |                               |                 |                               |

### ◆ DIMENSIONS (mm)

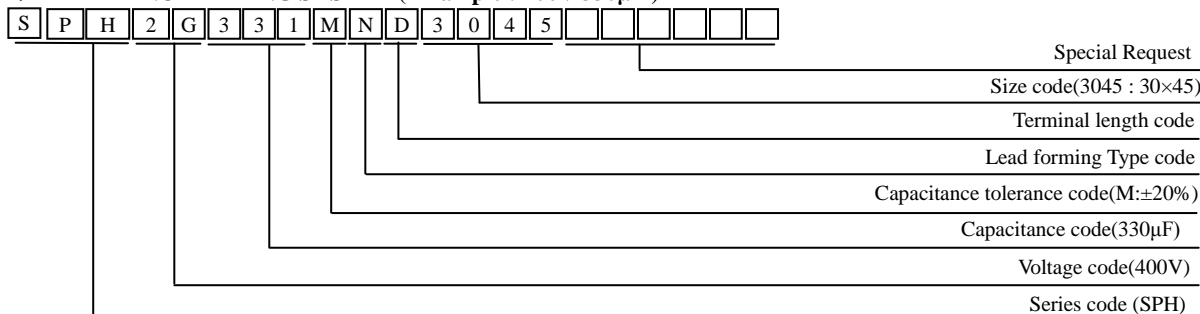
Terminal Code : ND : Standard



Terminal Code :K6 (ø35)



### ◆ PART NUMBERING SYSTEM( Example : 400V 330μF )



# SPH Series

◆ Case size & Permissible rated ripple current (mA rms) 120Hz / 105°C:

| Vdc<br>ΦD<br>uF | 400   |     |       |      |       |      |       |      | Vdc<br>ΦD<br>uF | 450   |     |       |      |       |      |       |      |
|-----------------|-------|-----|-------|------|-------|------|-------|------|-----------------|-------|-----|-------|------|-------|------|-------|------|
|                 | Φ 22  |     | Φ 25  |      | Φ 30  |      | Φ 35  |      |                 | Φ 22  |     | Φ 25  |      | Φ 30  |      | Φ 35  |      |
|                 | ΦD×L  | RC  | ΦD×L  | RC   | ΦD×L  | RC   | ΦD×L  | RC   |                 | ΦD×L  | RC  | ΦD×L  | RC   | ΦD×L  | RC   | ΦD×L  | RC   |
| 82              | 22×30 | 580 |       |      |       |      |       |      | 82              | 22×35 | 670 | 25×30 | 650  | 30×25 | 620  |       |      |
| 100             | 22×30 | 640 | 25×25 | 640  |       |      |       |      | 100             | 22×40 | 780 | 25×35 | 760  | 30×25 | 690  |       |      |
| 120             | 22×35 | 670 | 25×30 | 690  | 30×25 | 730  |       |      | 120             | 22×45 | 900 | 25×40 | 890  | 30×30 | 810  | 35×25 | 720  |
| 150             | 22×40 | 770 | 25×35 | 780  | 30×30 | 760  |       |      | 150             |       |     | 25×45 | 1040 | 30×35 | 970  | 35×30 | 860  |
| 180             | 22×45 | 920 | 25×40 | 810  | 30×30 | 820  | 35×25 | 900  | 180             |       |     | 25×50 | 1200 | 30×40 | 1120 | 35×35 | 1000 |
| 220             |       |     | 25×45 | 930  | 30×35 | 910  | 35×30 | 1080 | 220             |       |     |       |      | 30×45 | 1300 | 35×35 | 1100 |
| 270             |       |     | 25×50 | 1210 | 30×40 | 1100 | 35×35 | 1120 | 270             |       |     |       |      | 30×50 | 1510 | 35×45 | 1360 |
| 330             |       |     |       |      | 30×45 | 1390 | 35×35 | 1180 | 330             |       |     |       |      |       |      | 35×50 | 1580 |
| 390             |       |     |       |      | 30×50 | 1550 | 35×40 | 1270 | 390             |       |     |       |      |       |      |       |      |
| 470             |       |     |       |      |       |      | 35×45 | 1620 | 470             |       |     |       |      |       |      |       |      |
| 560             |       |     |       |      |       |      | 35×50 | 1720 | 560             |       |     |       |      |       |      |       |      |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc       | Frequency (Hz) |      |      |      |      |
|-----------|----------------|------|------|------|------|
|           | 50/60          | 120  | 1K   | 10K  | 100K |
| 400 ~ 450 | 0.70           | 1.00 | 1.10 | 1.12 | 1.15 |