

# PH series

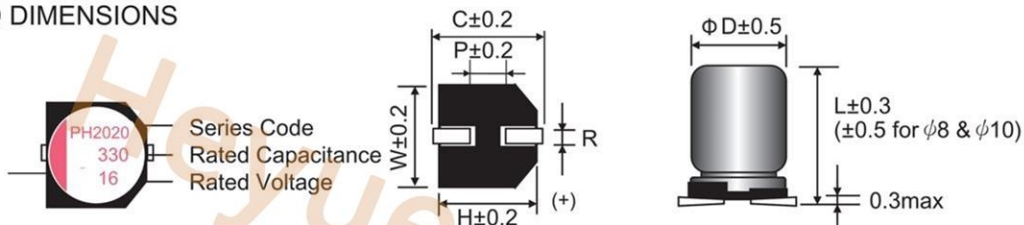
- Super low ESR, Long Life capability
- Rated voltage :4.0~50V.
- Endurance:20,000hours at 105°C
- Applications:DC/DC Converter, Voltage Regulators, Decoupling Applications for Computer Motherboards, etc.
- ROHS compliant
- Halogen Free compliant

## SPECIFICATIONS

| Items   | Conditions  | Characteristics  |
|---|---|--|
| Category Temperature Range                            | —   | -55 to +105°C  |
| Rated Voltage Range                                   | —   | 4.0~50V  |
| Capacitance Tolerance                                 | at 20°C, 120HZ  | ±20%(M)  |
| Surge Voltage   | at 105°C  | Rated voltage ×1.15V   |
| Leakage Current                                       | at 20°C After 2 minutes   | I ≤ 0.2CV or 300(μA) Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C. |
| Dissipation Factor ( tan δ)                           | at 20°C, 120Hz  | Please see the attached characteristics list   |
| Characteristics of Impedance at low, high temperature | at -55°C, 100kHz  | Z(-55°C)/Z(+20°C) ≤ 1.25   |
|   | at -25°C, 100kHz  | Z(-25°C)/Z(+20°C) ≤ 1.15   |
| Endurance   | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 20,000 hours at 105°C.  | Appearance NO significant damage.  |
|   |   | Capacitance change ≤ ±20% of the initial value.  |
|   |   | DF(tanδ) ≤ 150% of the initial specified value.  |
|   |   | ESR ≤ 150% of the initial specified value.   |
|   |   | Leakage current ≤ The initial specified value.   |
| Damp Heat (Steady State)                              | The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours, without DC applied.                                | Appearance NO significant damage.  |
|   |   | Capacitance change ≤ ±20% of the initial value.  |
|   |   | DF(tanδ) ≤ 150% of the initial specified value.  |
|   |   | ESR ≤ 150% of the initial specified value.   |
|   |   | Leakage current ≤ The initial specified value.   |
| Surge Voltage   | The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltages specified at 105°C for 30 seconds through a protective resistor (R=1kΩ) and discharge for 5 minutes 30seconds | Appearance NO significant damage.  |
|   |   | Capacitance change ≤ ±20% of the initial value.  |
|   |   | DF(tanδ) ≤ 150% of the initial specified value.  |
|   |   | ESR ≤ 150% of the initial specified value.   |
|   |   | Leakage current ≤ The initial specified value.   |

※ Note: If any doubt arises, measure the leakage current after following voltage treatment.  
Voltage treatment :DC rated voltage are applied to the capacitors for 120 minutes at 105°C.

## MARKING AND DIMENSIONS



(Unit:mm)

| Size Code | φD   | L    | W    | H    | C    | R       | P   |
|-----------|------|------|------|------|------|---------|-----|
| 6.3×6     | 6.3  | 6.0  | 6.6  | 6.6  | 7.3  | 0.5~0.8 | 2.1 |
| 6.3×7     | 6.3  | 7.0  | 6.6  | 6.6  | 7.3  | 0.5~0.8 | 2.1 |
| 6.3×9.5   | 6.3  | 9.5  | 6.6  | 6.6  | 7.3  | 0.5~0.8 | 2.1 |
| 8×7       | 8.0  | 7.0  | 8.3  | 8.3  | 9.3  | 0.5~0.8 | 3.2 |
| 8×9.5     | 8.0  | 9.5  | 8.3  | 8.3  | 9.3  | 0.8~1.1 | 3.2 |
| 8×12      | 8.0  | 12.0 | 8.3  | 8.3  | 9.0  | 0.8~1.1 | 3.2 |
| 10×10.5   | 10.0 | 10.5 | 10.3 | 10.3 | 11.0 | 0.8~1.1 | 4.6 |
| 10×12.5   | 10.0 | 12.5 | 10.3 | 10.3 | 11.0 | 0.8~1.1 | 4.6 |

注：以上所提供的设计及特性参数仅供参考，任何修改不作预先通知，如有使用上任何疑问，请在采购前与我们联系，以便提供技术上的协助。

**PH SERIES STANDARD CHARACTERISTICS LIST**

| Rated Voltage (S.V.) | Cap (μF)  | Size DxL | Leakage current (μA) max. ※2 | ESR (mΩ) max. 100k to 300kHz / 20°C | Rated Ripple Current (mA rms) 100kHz / 105°C | D.F. (tanδ) max. 120Hz / 20°C |
|----------------------|-----------|----------|------------------------------|-------------------------------------|--|-------------------------------|
| 4 (4.6)              | 220       | 6.3X6    | 300                          | 20                                  | 2,800  | 0.12                          |
|                      | 560       | 6.3X9.5  | 448                          | 20                                  | 3,500  | 0.12                          |
|                      | 560       | 8X7      | 448                          | 18                                  | 3,700  | 0.12                          |
|                      | 820       | 8X9.5    | 656                          | 15                                  | 3,500  | 0.12                          |
|                      | 1200      | 8X12     | 960                          | 15                                  | 4,450  | 0.12                          |
|                      | 1500      | 10×10.5  | 1,200                        | 13                                  | 4,200  | 0.12                          |
|                      | 2200      | 10X12.5  | 1,760                        | 13                                  | 5,400  | 0.12                          |
| 6.3 (7.2)            | 100       | 6.3X6    | 300                          | 35                                  | 2,400  | 0.12                          |
|                      | 220       | 6.3X6    | 300                          | 22                                  | 2,600  | 0.12                          |
|                      | 470       | 6.3X9.5  | 592                          | 22                                  | 3,200  | 0.12                          |
|                      | 560       | 6.3X9.5  | 705                          | 22                                  | 3,200  | 0.12                          |
|                      | 820       | 8X9.5    | 1,033                        | 20                                  | 3,850  | 0.12                          |
|                      | 1000      | 8X12     | 1,260                        | 20                                  | 4,250  | 0.12                          |
|                      | 1200      | 10×10.5  | 1,512                        | 18                                  | 4,350  | 0.12                          |
|                      | 1800      | 10X12.5  | 2,268                        | 18                                  | 5,200  | 0.12                          |
| 10 (11.5)            | 68        | 6.3X6    | 300                          | 30                                  | 2,400  | 0.12                          |
|                      | 100       | 6.3X6    | 300                          | 30                                  | 2,400  | 0.12                          |
|                      | 220       | 6.3X7    | 440                          | 30                                  | 2,500  | 0.12                          |
|                      | 330       | 6.3X9.5  | 660                          | 30                                  | 3,150  | 0.12                          |
|                      | 560       | 8X9.5    | 1,120                        | 25                                  | 3,850  | 0.12                          |
|                      | 680       | 8x12     | 1,360                        | 25                                  | 4,150  | 0.12                          |
|                      | 820       | 10×10.5  | 1,640                        | 20                                  | 4,250  | 0.12                          |
|                      | 1000      | 10×10.5  | 2,000                        | 20                                  | 4,250  | 0.12                          |
|                      | 1200      | 10x12.5  | 2,400                        | 20                                  | 5,100  | 0.12                          |
|                      | 16 (18.4) | 100      | 6.3X6                        | 320                                 | 30   | 2,200                         |
| 220                  | 6.3X9.5   | 704      | 30                           | 3,050                               | 0.12   |                               |
| 330                  | 8X9.5     | 1,056    | 20                           | 3,450                               | 0.12   |                               |
| 470                  | 8x12      | 1,504    | 22                           | 4,050                               | 0.12   |                               |
| 680                  | 10×10.5   | 2,176    | 20                           | 4,150                               | 0.12   |                               |
| 820                  | 10x12.5   | 2,624    | 20                           | 5,100                               | 0.12   |                               |
| 25 (28.8)            | 47        | 6.3×6    | 300                          | 40                                  | 1,500  | 0.12                          |
|                      | 100       | 6.3×9.5  | 500                          | 40                                  | 2,800  | 0.12                          |
|                      | 180       | 8×9.5    | 900                          | 30                                  | 3,250  | 0.12                          |
|                      | 220       | 8×12     | 1100                         | 30                                  | 3,900  | 0.12                          |
|                      | 330       | 10×10.5  | 1650                         | 20                                  | 4,100  | 0.12                          |
|                      | 470       | 10×12.5  | 2350                         | 25                                  | 4,500  | 0.12                          |
| 35 (40.3)            | 22        | 6.3×6    | 300                          | 70                                  | 1,450  | 0.12                          |
|                      | 68        | 6.3×9.5  | 476                          | 60                                  | 1,500  | 0.12                          |
|                      | 120       | 8×9.5    | 840                          | 50                                  | 1,800  | 0.12                          |
|                      | 150       | 8×12     | 1050                         | 50                                  | 2,850  | 0.12                          |
|                      | 220       | 10×10.5  | 1540                         | 40                                  | 2,950  | 0.12                          |
|                      | 270       | 10×12.5  | 1890                         | 40                                  | 3,200  | 0.12                          |
|                      | 50 (57.5) | 10       | 6.3×6                        | 300                                 | 60   | 1,400                         |
| 33                   | 6.3×9.5   | 330      | 30                           | 1,700                               | 0.12   |                               |
| 47                   | 8×9.5     | 470      | 30                           | 2,000                               | 0.12   |                               |
| 68                   | 8×12      | 680      | 28                           | 2,200                               | 0.12   |                               |
| 100                  | 10×10.5   | 1000     | 30                           | 2,300                               | 0.12   |                               |
| 100                  | 10×12.5   | 1000     | 28                           | 2,650                               | 0.12   |                               |

※ 1. Capacitance tolerance : ±20%(M)

※ 2. After 2 minutes

**FREQUENCY COEFFICIENT FOR RIPPLE CURRENT**

| Frequency   | 120Hz ≤ f < 1kHz | 1kHz ≤ f < 10kHz | 10kHz ≤ f < 100kHz | 100kHz ≤ f < 500kHz |
|-------------|------------------|------------------|--------------------|---------------------|
| Coefficient | 0.05             | 0.3              | 0.7                | 1                   |

注: 以上所提供的设计及特性参数仅供参考, 任何修改不作预先通知, 如有使用上任何疑问, 请在采购前与我们联系, 以便提供技术上的协助.