

# VA series

- Standard SMD type
- Rated voltage : 2.5~25V
- Endurance : 2,000 hours at 105°C
- Applications : motherboards, server, VGA, etc.
- RoHS compliance
- Halogen Free compliant

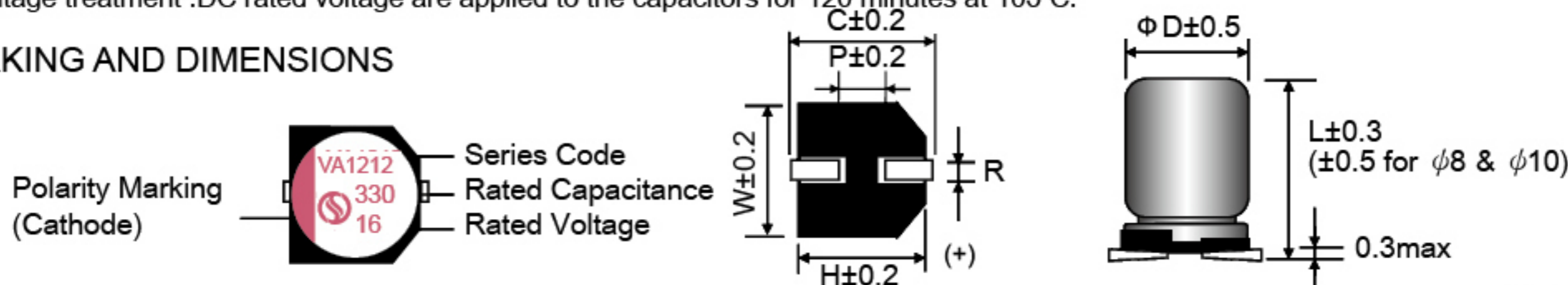


## SPECIFICATIONS

| Items   | Conditions  | Characteristics  |
|---|---|--|
| Category Temperature Range                            | —   | -55 to +105°C  |
| Rated Voltage Range                                   | —   | 2.5 ~ 25V  |
| 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   | $I \leq 0.2CV$ or $300(\mu A)$ Whichever is greater measured,after 2minutes application of rated working voltage at +20°C.<br>Please see the attached characteristics list |
| 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   | $Z(-55^\circ C)/Z(+20^\circ C) \leq 1.25$  |
|   | at -25°C,100kHz   | $Z(-25^\circ C)/Z(+20^\circ C) \leq 1.15$  |
| Endurance   | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2,000 hours at 105°C.   | Appearance NO significant damage.  |
|   |   | Capacitance change $\leq \pm 20\%$ of the initial value.   |
|   |   | DF ( tan δ) $\leq 150\%$ of the initial specified value.   |
|   |   | ESR $\leq 150\%$ of the initial specified value.   |
|   |   | Leakage current $\leq$ The initial specified value.  |
| Damp Heag (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 $\leq \pm 20\%$ of the initial value.   |
|   |   | DF ( tan δ) $\leq 150\%$ of the initial specified value.   |
|   |   | ESR $\leq 150\%$ of the initial specified value.   |
|   |   | Leakage current $\leq$ 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 30 seconds. | Appearance NO significant damage.  |
|   |   | Capacitance change $\leq \pm 20\%$ of the initial value.   |
|   |   | DF ( tan δ) $\leq 150\%$ of the initial specified value.   |
|   |   | ESR $\leq 150\%$ of the initial specified value.   |
|   |   | Leakage current $\leq$ 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)

| φ DxL   | φ D  | L    | W    | H    | C    | R       | P   |
|---------|------|------|------|------|------|---------|-----|
| 5×6     | 5.0  | 6.0  | 5.3  | 5.3  | 6.0  | 0.5~0.8 | 1.4 |
| 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  | 9.0  | 0.5~0.8 | 3.2 |
| 8×9.5   | 8.0  | 9.5  | 8.3  | 8.3  | 9.0  | 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 |

VA 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 |
|----------------------|----------|----------|------------------------------|-------------------------------------|--|-------------------------------|
| 2.5<br>(2.9)         | 220      | 6.3x6    | 300                          | 25                                  | 2,390  | 0.12                          |
|                      | 330      | 6.3x6    | 300                          | 25                                  | 2,390  | 0.12                          |
|                      | 560      | 6.3x7    | 300                          | 25                                  | 2,390  | 0.12                          |
|                      | 820      | 6.3x9.5  | 410                          | 20                                  | 3,000  | 0.12                          |
|                      | 1,200    | 8x9.5    | 600                          | 20                                  | 4,520  | 0.12                          |
|                      | 1,500    | 8x9.5    | 750                          | 20                                  | 4,520  | 0.12                          |
|                      | 1,800    | 8x12     | 900                          | 13                                  | 4,520  | 0.12                          |
|                      | 2,200    | 10x10.5  | 1,100                        | 18                                  | 4,520  | 0.12                          |
|                      | 2,700    | 10x12.5  | 1,350                        | 15                                  | 5,200  | 0.12                          |
| 4<br>(4.6)           | 220      | 6.3x6    | 300                          | 25                                  | 2,000  | 0.12                          |
|                      | 560      | 6.3x9.5  | 448                          | 20                                  | 4,500  | 0.12                          |
|                      | 820      | 8x9.5    | 656                          | 20                                  | 4,500  | 0.12                          |
|                      | 1,000    | 8x9.5    | 800                          | 20                                  | 4,500  | 0.12                          |
|                      | 1,200    | 8x12     | 960                          | 15                                  | 4,820  | 0.12                          |
|                      | 1,500    | 10x10.5  | 1,200                        | 15                                  | 4,820  | 0.12                          |
|                      | 2,200    | 10x12.5  | 1,760                        | 15                                  | 5,200  | 0.12                          |
| 6.3<br>(7.2)         | 100      | 6.3x6    | 300                          | 25                                  | 2,400  | 0.12                          |
|                      | 220      | 6.3x6    | 300                          | 25                                  | 2,400  | 0.12                          |
|                      | 220      | 8x7      | 300                          | 25                                  | 3,020  | 0.12                          |
|                      | 560      | 6.3x9.5  | 705                          | 20                                  | 3,020  | 0.12                          |
|                      | 820      | 8x9.5    | 1,033                        | 20                                  | 4,500  | 0.12                          |
|                      | 1,000    | 8x9.5    | 1,260                        | 20                                  | 4,500  | 0.12                          |
|                      | 1,200    | 8x12     | 1,512                        | 15                                  | 4,800  | 0.12                          |
|                      | 1,500    | 10x10.5  | 1,890                        | 15                                  | 4,950  | 0.12                          |
|                      | 2,200    | 10x12.5  | 2,772                        | 15                                  | 5,200  | 0.12                          |
| 10<br>(11.5)         | 33       | 5x6      | 300                          | 45                                  | 1,100  | 0.12                          |
|                      | 100      | 6.3x6    | 300                          | 30                                  | 1,700  | 0.12                          |
|                      | 150      | 6.3x6    | 300                          | 45                                  | 1,700  | 0.12                          |
|                      | 330      | 6.3x9.5  | 660                          | 45                                  | 2,050  | 0.12                          |
|                      | 560      | 8x9.5    | 1,120                        | 35                                  | 2,560  | 0.12                          |
|                      | 680      | 8x9.5    | 1,360                        | 35                                  | 2,560  | 0.12                          |
|                      | 820      | 8x12     | 1,640                        | 17                                  | 3,950  | 0.12                          |
|                      | 1,000    | 10x10.5  | 2,000                        | 15                                  | 3,950  | 0.12                          |
|                      | 1,500    | 10x12.5  | 3,000                        | 13                                  | 5,230  | 0.12                          |
| 16<br>(18.4)         | 22       | 5x6      | 300                          | 40                                  | 1,000  | 0.12                          |
|                      | 100      | 6.3x6    | 320                          | 35                                  | 1,620  | 0.12                          |
|                      | 270      | 6.3x9.5  | 864                          | 20                                  | 2,500  | 0.12                          |
|                      | 270      | 8x9.5    | 864                          | 20                                  | 3,200  | 0.12                          |
|                      | 330      | 8x9.5    | 1,056                        | 20                                  | 3,690  | 0.12                          |
|                      | 470      | 8x9.5    | 1,504                        | 20                                  | 3,890  | 0.12                          |
|                      | 560      | 8x12     | 1,792                        | 20                                  | 3,940  | 0.12                          |
|                      | 680      | 10x10.5  | 2,176                        | 20                                  | 4,220  | 0.12                          |
|                      | 820      | 10x12.5  | 2,624                        | 16                                  | 4,720  | 0.12                          |
|                      | 1,000    | 10x12.5  | 3,200                        | 16                                  | 5,200  | 0.12                          |

※ 1. Capacitance tolerance : ±20% (M)  
 ※ 2. After 2 minutes

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|----------------------|----------|----------|------------------------------|-------------------------------------|--|-------------------------------|
| 20<br>(23.0)         | 68       | 6.3×6    | 300                          | 38                                  | 1,450  | 0.12                          |
|                      | 180      | 6.3×9.5  | 720                          | 30                                  | 2,450  | 0.12                          |
|                      | 330      | 8×9.5    | 1,320                        | 30                                  | 3,000  | 0.12                          |
|                      | 470      | 8×12     | 1,880                        | 28                                  | 3,320  | 0.12                          |
|                      | 560      | 10×10.5  | 2,240                        | 28                                  | 3,320  | 0.12                          |
|                      | 680      | 10×12.5  | 2,720                        | 28                                  | 4,220  | 0.12                          |
| 25<br>(28.8)         | 47       | 6.3×6    | 300                          | 40                                  | 1,200  | 0.12                          |
|                      | 100      | 6.3×9.5  | 500                          | 30                                  | 2,000  | 0.12                          |
|                      | 100      | 8×7      | 500                          | 40                                  | 2,000  | 0.12                          |
|                      | 150      | 8×9.5    | 750                          | 35                                  | 3,000  | 0.12                          |
|                      | 220      | 8×12     | 1,100                        | 28                                  | 3,500  | 0.12                          |
|                      | 330      | 10×10.5  | 1,650                        | 30                                  | 3,800  | 0.12                          |
|                      | 470      | 10×12.5  | 2,350                        | 28                                  | 4,000  | 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                | 1.0                 |

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