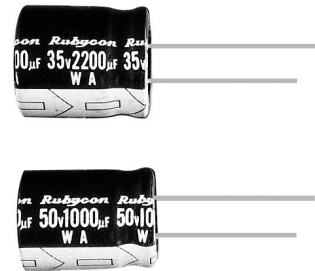


**WA SERIES**
**85°C 9mm~25mm Height**

\*Load Life : 85°C 2000 hours.

 RoHS  
compliance

**◆SPECIFICATIONS**

| Items                                                                                                        | Characteristics                                                                                                                     |      |      |                                            |                   |      |      |      |                                                    |      |      |                                                      |      |              |
|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------|------|--------------------------------------------|-------------------|------|------|------|----------------------------------------------------|------|------|------------------------------------------------------|------|--------------|
| Category Temperature Range                                                                                   | -40~+85℃                                                                                                                            |      |      |                                            |                   |      |      |      | -25~+85℃                                           |      |      |                                                      |      |              |
| Rated Voltage Range                                                                                          | 6.3~250Vdc                                                                                                                          |      |      |                                            |                   |      |      |      | 350~450Vdc                                         |      |      |                                                      |      |              |
| Capacitance Tolerance                                                                                        | ±20%(20℃, 120Hz)                                                                                                                    |      |      |                                            |                   |      |      |      |                                                    |      |      |                                                      |      |              |
| Leakage Current(MAX)                                                                                         | 6.3~50Vdc                                                                                                                           |      |      |                                            |                   |      |      |      | 160~450Vdc                                         |      |      |                                                      |      |              |
|                                                                                                              | I=0.01CV or 3μA whichever is greater.<br>(After 2 minutes application of rated voltage)                                             |      |      |                                            |                   |      |      |      | CV≤1000                                            |      |      | CV>1000                                              |      |              |
|                                                                                                              |                                                                                                                                     |      |      |                                            |                   |      |      |      | I=0.1CV+40μA (1minute)<br>I=0.03CV+15μA (5minutes) |      |      | I=0.04CV+100μA (1minute)<br>I=0.02CV+25μA (5minutes) |      |              |
|                                                                                                              | I=Leakage Current(μA)                                                                                                               |      |      |                                            | C=Capacitance(μF) |      |      |      | V=Rated Voltage(Vdc)                               |      |      |                                                      |      |              |
| Dissipation Factor(MAX)<br>(tanδ)                                                                            | Rated Voltage<br>(Vdc)                                                                                                              | 6.3  | 10   | 16                                         | 25                | 35   | 50   | 160  | 200                                                | 250  | 350  | 400                                                  | 450  | (20℃, 120Hz) |
|                                                                                                              | tanδ                                                                                                                                | 0.26 | 0.22 | 0.18                                       | 0.16              | 0.14 | 0.12 | 0.20 | 0.20                                               | 0.20 | 0.20 | 0.20                                                 | 0.20 |              |
| When capacitance is over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF. |                                                                                                                                     |      |      |                                            |                   |      |      |      |                                                    |      |      |                                                      |      |              |
| Endurance                                                                                                    | After applying rated voltage with rated ripple current for 2000 hours at 85℃, the capacitors shall meet the following requirements. |      |      |                                            |                   |      |      |      |                                                    |      |      |                                                      |      |              |
|                                                                                                              | Capacitance Change                                                                                                                  |      |      | Within ±25% of the initial value.          |                   |      |      |      |                                                    |      |      |                                                      |      |              |
|                                                                                                              | Dissipation Factor                                                                                                                  |      |      | Not more than 200% of the specified value. |                   |      |      |      |                                                    |      |      |                                                      |      |              |
|                                                                                                              | Leakage Current                                                                                                                     |      |      | Not more than the specified value.         |                   |      |      |      |                                                    |      |      |                                                      |      |              |
| Low Temperature Stability<br>Impedance Ratio(MAX)                                                            | Rated Voltage<br>(Vdc)                                                                                                              | 6.3  | 10   | 16                                         | 25                | 35   | 50   | 160  | 200                                                | 250  | 350  | 400                                                  | 450  | (120Hz)      |
|                                                                                                              | Z(-25℃)/Z(20℃)                                                                                                                      | 6    | 4    | 4                                          | 3                 | 2    | 2    | 3    | 3                                                  | 3    | 5    | 5                                                    | 7    |              |
|                                                                                                              | Z(-40℃)/Z(20℃)                                                                                                                      | 12   | 10   | 8                                          | 6                 | 4    | 3    | —    | —                                                  | —    | —    | —                                                    | —    |              |

**◆MULTIPLIER FOR RIPPLE CURRENT**

| Frequency(Hz) |              | 60(50) | 120  | 500  | 1k   | 10k≤ |
|---------------|--------------|--------|------|------|------|------|
| Coefficient   | 1.5~6.8μF    | 0.65   | 1.00 | 1.20 | 1.30 | 1.50 |
|               | 10~68μF      | 0.80   | 1.00 | 1.20 | 1.30 | 1.50 |
|               | 100~1000μF   | 0.80   | 1.00 | 1.10 | 1.15 | 1.20 |
|               | 2200~10000μF | 0.80   | 1.00 | 1.05 | 1.10 | 1.15 |

**◆OPTION**

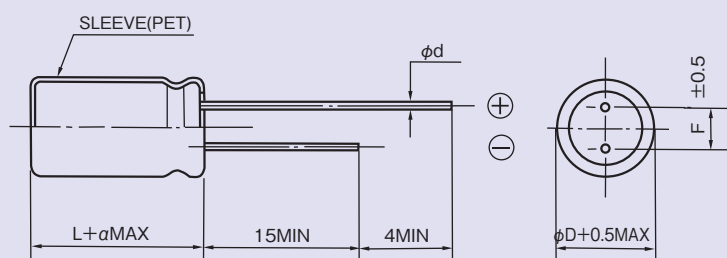
|            |      |
|------------|------|
|            | Code |
| PET Sleeve | EFC  |

**◆PART NUMBER**

|               |        |             |                       |        |              |           |
|---------------|--------|-------------|-----------------------|--------|--------------|-----------|
| □□□           | WA     | □□□□□       | M                     | □□□    | □□           | D×L       |
| Rated Voltage | Series | Capacitance | Capacitance Tolerance | Option | Lead Forming | Case Size |

## ◆ DIMENSIONS

(mm)



|          |                            |     |      |     |    |
|----------|----------------------------|-----|------|-----|----|
| $\phi D$ | 8                          | 10  | 12.5 | 16  | 18 |
| $\phi d$ | 0.6                        |     |      | 0.8 |    |
| F        | 3.5                        | 5.0 |      | 7.5 |    |
| $\alpha$ | L≤16 :α=1.5<br>L≥20 :α=2.0 |     |      |     |    |

◆ **STANDARD SIZE**

Size  $\phi D \times L$ (mm), Rated Ripple Current (mA r.m.s./85°C, 120Hz)

| Vdc<br>Cap(μF) | 6.3     |        | 10      |        | 16    |        | 25      |        | 35      |        | 50      |        |
|----------------|---------|--------|---------|--------|-------|--------|---------|--------|---------|--------|---------|--------|
|                | Size    | Ripple | Size    | Ripple | Size  | Ripple | Size    | Ripple | Size    | Ripple | Size    | Ripple |
| 100            |         |        |         |        |       |        |         |        |         |        | 8×9     | 240    |
| 150            |         |        |         |        |       |        |         |        | 8×9     | 260    | 10×9    | 320    |
| 220            |         |        |         |        |       |        | 8×9     | 320    | 10×9    | 360    |         |        |
| 330            |         |        |         |        | 8×9   | 350    | 10×9    | 410    | 10×9    | 420    |         |        |
| 470            | 8×9     | 380    | 8×9     | 380    | 8×9   | 380    | 10×9    | 460    |         |        | 12.5×16 | 700    |
| 680            | 8×9     | 420    | 10×9    | 510    | 10×9  | 510    | 12.5×16 | 760    | 12.5×16 | 760    | 16×16   | 810    |
| 1000           | 10×9    | 550    | 10×9    | 550    |       |        | 12.5×16 | 940    | 16×16   | 950    | 16×20   | 1050   |
| 2200           | 12.5×16 | 1080   | 12.5×16 | 1080   | 16×16 | 1100   | 16×20   | 1400   | 18×20   | 1500   | 18×25   | 1650   |
| 3300           | 12.5×16 | 1100   | 16×16   | 1120   | 16×20 | 1500   | 18×20   | 1550   | 18×25   | 1850   |         |        |
| 4700           | 18×16   | 1200   | 16×20   | 1550   | 18×20 | 1600   | 18×25   | 2000   |         |        |         |        |
| 6800           | 16×20   | 1550   | 18×20   | 1650   | 18×25 | 2050   |         |        |         |        |         |        |
| 10000          | 18×20   | 1700   | 18×25   | 2150   |       |        |         |        |         |        |         |        |

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