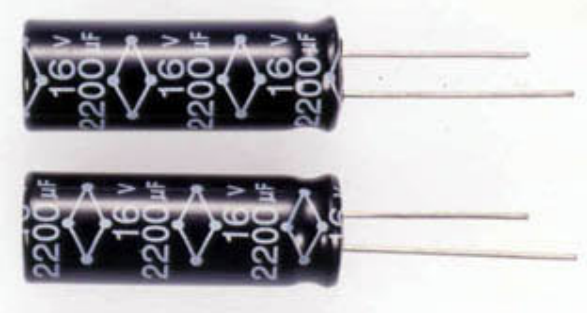
# GLR series miniature size

**LOW E.S.R.**

- GLR series aluminum electrolytic capacitors are high reliable with LOW IMPEDANCE, LOW ESR and guaranteed 2000 to 5000 hours at 105º C.
- Suitable for switching power and automobile industry.




## specifications

| No. | Item | Performance |
|---|---|---|
| 1 | Operating Temperature Range | -55 to+105ºc |
| 2 | Rated Working Voltage Range | 6.3 – 100v.DC |
| 3 | Nominal Capacitance Range | 0.47 – 4700μF |
| 4 | Capacitance Tolerance | ± 20% (at+20º c ,120Hz) |
| 5 | Leakage Current | I ≤ 0.01CV or 2(μA) after two minutes<br>Application of rated working voltage at +20ºc |
| 6 | Dissipation Factor (tanδ) (120Hz\+20ºc) | **Working Voltage(V)** 6.3 / 10 / 16 / 25 / 35 / 50 / 63 / 100<br>**tanδ max** 0.22 / 0.19 / 0.16 / 0.14 / 0.12 / 0.10 / 0.08 / 0.07 |
| 7 | Characteristics at low temperature (stability at 120 Hz) | Working Voltage(V) 6.3 / 10 / 16 / 25 / 35 / 50 / 63 / 100<br>-25º c/+25º c 4 / 3 / 2 / 2 / 1.5 / 1.5 / 1.5 / 1.5<br>-55º c/+25º c 8 / 6 / 5 / 5 / 4 / 4 / 4 / 4 |
| 8 | High Temperature Loading | After 5000hrs. application of DC rated working voltage at + 105º c,<br>The capacitor shall meet the following limits :<br>Post test requirements at +20ºc<br>Leakage current: ≤ the initial specified value<br>Capacitance change: ≤ ±15% of initial measured value<br>Dissipation Factor(tanδ): ≤150% of initial specified value |
| 9 | Shelf Life | After storage for 1000hrs. at + 105ºC with no voltage applied.<br>Post test requirements at +20º C<br>same limits as high temperature loading. |
| 10 | Solvent proof | This capacitor can withstand circuit-board cleaning within 5 min.<br>dipped in Freon TE,TES, at 40º C (ultrasonic also permitted)<br>or in the steam of these cleaners. |

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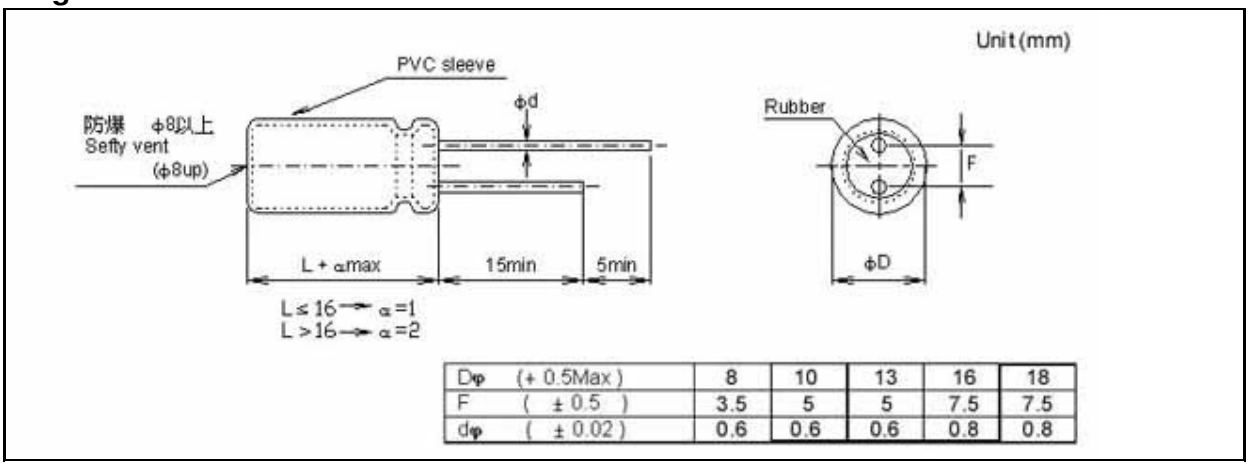
## Diagram of Dimensions




| Dφ (+ 0.5Max) | 8 | 10 | 13 | 16 | 18 |
|---|---|---|---|---|---|
| F ( ± 0.5 ) | 3.5 | 5 | 5 | 7.5 | 7.5 |
| dφ ( ± 0.02 ) | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |

## Case Size Table øD X L(mm)

| W.V. (SV) / μF | 6.3 (8) | 10 (13) | 16 (20) | 25 (32) | 35 (44) | 50 (63) | 63 (79) | 100 (125) |
|---|---|---|---|---|---|---|---|---|
| 0.47 | --- | --- | --- | --- | --- | 5 X 11 | 5 X 11 | 5 X 11 |
| 1.0 | --- | --- | --- | --- | --- | 5 X 11 | 5 X 11 | 5 X 11 |
| 2.2 | --- | --- | --- | --- | --- | 5 X 11 | 5 X 11 | 5 X 11 |
| 3.3 | --- | --- | --- | --- | --- | 5 X 11 | 5 X 11 | 5 X 11 |
| 4.7 | --- | --- | --- | --- | --- | 5 X 11 | 5 X 11 | 5 X 11 |
| 10 | --- | --- | --- | --- | 5 X 11 | 5 X 11 | 5 X 11 | 6.3 X 13 |
| 22 | --- | --- | --- | 5 X 11 | 5 X 11 | 5 X 11 | 6.3 X 11 | 8 X 13 |
| 33 | --- | --- | 5 X 11 | 5 X 11 | 5 X 11 | 8 X 11 | 8 X 11 | 10 X 12 |
| 47 | --- | 5 X 11 | 6.3 X 11 | 6.3 X 11 | 6.3 X 11 | 6.3 X 12 | 8 X 12 | 10 X 16 |
| 68 | --- | 5 X 11 | 5 X 11 | 6.3 X 15 | 6.3 X 15 | 8 X 12 | 8 X 16 | 10 X 26 |
| 100 | --- | 5 X 11 | 6.3 X 11 | 8 X 12 | 8 X 12 | 8 X 12 | 10 X 13 | 13 X 21 |
| 120 | | 6,3 X 12 | 6.3 X 12 | 6.3 X 15 | 8 X 12 | 10 X 13 | 10 X 20 | 13 X 25 |
| 220 | --- | 6.3 X 11 | 8 X 12 | 8 X 15 | 8 X 15 | 10 X 20 | 13 X 20 | 16 X 25 |
| 330 | --- | 8 X 12 | 8 X 12 | 8 X 12 | 10 X 12 | 10 X 20 | 13 X 25 | 16 X 31 |
| 470 | 6.3 X 15 | 8 X 12 | 8 X 20 | 10 X 16 | 10 X 16 | 13 X 21 | 16 X 20 | --- |
| 680 | 10 X 12 | 10 X 16 | 10 X 20 | 10 X 25 | 13 X 20 | 16 X 20 | 16 X 30 | --- |
| 1,000 | 10 X 12 | 10 X 16 | 10 X 20 | 10 X 25 | 13 X 25 | 16 X 25 | 16 X 31 | --- |
| 2,200 | 10 X 20 | 13 X 20 | 13 X 25 | 16 X 25 | 16 X 30 | 18 X 35 | --- | --- |
| 2,700 | 10 X 30 | 13 X 30 | 16 X 20 | 16 X 25 | 16 X 40 | 18 X 40 | | |
| 3,300 | 13 X 20 | 13 X 25 | 16 X 25 | 18 X 25 | --- | --- | --- | --- |
| 4,700 | 16 X 25 | 16 X 25 | 18 X 25 | 18 X 35 | --- | --- | --- | --- |

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**Maximum Ripple Current** [mA] rms max.(100kHz,+105ºc)

| WV (SV) / µF | 6.3 (8) | 10 (13) | 16 (20) | 25 (32) | 35 (44) | 50 (63) | 63 (79) | 100 (125) |
|---|---|---|---|---|---|---|---|---|
| 0.47 | --- | --- | --- | --- | --- | 5 | 5 | 7 |
| 1.0 | --- | --- | --- | --- | --- | 10 | 10 | 12 |
| 2.2 | --- | --- | --- | --- | --- | 25 | 25 | 28 |
| 3.3 | --- | --- | --- | --- | --- | 43 | 43 | 50 |
| 4.7 | --- | --- | --- | --- | --- | 48 | 48 | 53 |
| 10 | --- | --- | --- | --- | 70 | 79 | 81 | 90 |
| 22 | --- | --- | --- | 100 | 110 | 118 | 250 | 320 |
| 33 | --- | --- | 105 | 120 | 155 | 250 | 320 | 380 |
| 47 | --- | 105 | 150 | 160 | 250 | 360 | 380 | 450 |
| 68 | --- | 175 | 250 | 250 | 370 | 400 | 450 | 685 |
| 100 | --- | 250 | 300 | 390 | 400 | 500 | 600 | 795 |
| 120 | --- | 290 | 360 | 420 | 590 | 640 | 720 | 890 |
| 220 | --- | 410 | 450 | 610 | 735 | 985 | 1000 | 1250 |
| 330 | --- | 500 | 600 | 800 | 995 | 1200 | 1400 | 1650 |
| 470 | 395 | 650 | 750 | 1000 | 1200 | 1550 | 1985 | --- |
| 680 | 535 | 830 | 1000 | 1200 | 1600 | 2100 | 2125 | --- |
| 1,000 | 625 | 1000 | 1300 | 1800 | 2200 | 2500 | 2450 | --- |
| 2,200 | 990 | 1650 | 2500 | 2250 | 2920 | 2950 | --- | --- |
| 2,700 | 1680 | 1900 | 2230 | 2550 | 2860 | 3400 | | |
| 3,300 | 1460 | 2000 | 2700 | 3100 | --- | --- | --- | --- |
| 4,700 | 1950 | 2500 | 2990 | 3520 | --- | --- | --- | --- |

**Maximum Impedance** max.Ω(100kHz,+25ºc)

| WV (SV) / µF | 6.3 (8) | 10 (13) | 16 (20) | 25 (32) | 35 (44) | 50 (63) | 63 (79) | 100 (125) |
|---|---|---|---|---|---|---|---|---|
| 0.47 | --- | --- | --- | --- | --- | 5.1 | 5.1 | 5.1 |
| 1.0 | --- | --- | --- | --- | --- | 2.3 | 2.3 | 2.3 |
| 2.2 | --- | --- | --- | --- | --- | 1.9 | 1.9 | 1.8 |
| 3.3 | --- | --- | --- | --- | --- | 1.5 | 1.5 | 1.4 |
| 4.7 | --- | --- | --- | --- | --- | 1.4 | 1.4 | 1.3 |
| 10 | --- | --- | --- | --- | 1.1 | 1.2 | 0.80 | 0.70 |
| 22 | --- | --- | --- | 1 | 0.65 | 0.75 | 0.68 | 0.55 |
| 33 | --- | --- | 1 | 0.7 | 0.50 | 0.53 | 0.55 | 0.35 |
| 47 | --- | 1.2 | 0.60 | 0.50 | 0.450 | 0.460 | 0.452 | 0.25 |
| 68 | --- | 0.90 | 0.70 | 0.35 | 0.29 | 0.30 | 0.331 | 0.20 |
| 100 | --- | 0.60 | 0.29 | 0.250 | 0.19 | 0.21 | 0.261 | 0.16 |
| 120 | | 0,42 | 0,23 | 0,190 | 0,180 | 0,161 | 0,15 | 0,115 |
| 220 | --- | 0.190 | 0.182 | 0.12 | 0.092 | 0.085 | 0.13 | 0.09 |
| 330 | --- | 0.175 | 0.135 | 0.092 | 0.069 | 0.067 | 0.086 | 0.06 |
| 470 | 0.19 | 0.125 | 0.1 | 0.068 | 0.052 | 0.045 | 0.056 | --- |
| 680 | 0.13 | 0.094 | 0.07 | 0.051 | 0.039 | 0.038 | 0.046 | --- |
| 1,000 | 0.095 | 0.071 | 0.055 | 0.037 | 0.031 | 0.030 | 0.033 | --- |
| 2,200 | 0.06 | 0.039 | 0.03 | 0.023 | 0.021 | 0.025 | --- | --- |
| 2,700 | 0.038 | 0.030 | 0.025 | 0.019 | 0,019 | 0.020 | | |
| 3,300 | 0.05 | 0.035 | 0.025 | 0.02 | --- | --- | --- | --- |
| 4,700 | 0.039 | 0.038 | 0.021 | 0.016 | --- | --- | --- | --- |