



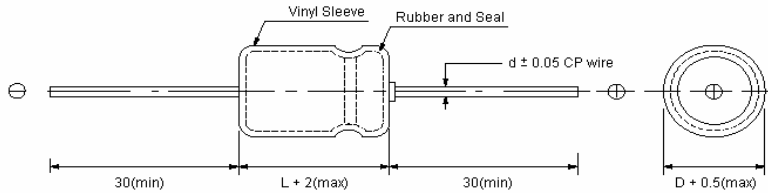
RoHS Compliant ALUMINIUM ELECTROLYTIC CAPACITOR

GA Series

■ **FEATURES**

Load life of 2000 hours at 105 °C.
 High temperature and high reliability.

■ **OUTLINE**



| | | | | | | | | | | |
|---|-----|---|----|----|----|-----|----|----|----|--|
| | mm | | | | | | | | | |
| D | 6 | 8 | 10 | 13 | 16 | 18 | 20 | 22 | 25 | |
| d | 0.6 | | | | | 0.8 | | | | |

■ **SPECIFICATIONS**

| Items | Characteristics | | | | | | | | | | | | | |
|--|--|-----------------------------------|------|----------------------------|------|------|------|---|------|------|------|------|------|------|
| Capacitance Tolerance (120Hz, 25°C) | ± 20% (M) | | | | | | | | | | | | | |
| Rated Working Voltage Range | 6.3 ~ 100VDC | | | | | | | 160 ~ 450VDC | | | | | | |
| Operation Temperature | -40°C ~ +105°C | | | | | | | -25°C ~ +105°C | | | | | | |
| Leakage Current (25°C) | (After 2 minutes applying the DC working voltage) | | | | | | | (After 5 minutes applying the DC working voltage) | | | | | | |
| | I ≤ 0.01CV or 3 (µA) | | | | | | | I ≤ 0.03CV + 10 (µA) | | | | | | |
| | I : Leakage Current (µA) | | | C : Rated Capacitance (µF) | | | | V : Working Voltage (V) | | | | | | |
| Surge Voltage (25°C) | W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 |
| | S.V. | 8 | 13 | 20 | 32 | 44 | 63 | 79 | 125 | 200 | 250 | 300 | 400 | 450 |
| Dissipation Factor (120Hz, 25°C) | W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 |
| | tan d | 0.25 | 0.20 | 0.17 | 0.15 | 0.12 | 0.10 | 0.10 | 0.10 | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 |
| | For capacitance exceeding 1000 µF, add 0.02 per increment of 1000 µF | | | | | | | | | | | | | |
| Temperature Characteristics | W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 |
| | - 25°C / + 25°C | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 6 | 6 |
| | - 40°C / + 25°C | 10 | 8 | 6 | 4 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 6 | 6 |
| | Impedance ratio at 120Hz | | | | | | | | | | | | | |
| Load Test | After 2000 hours application of WV at +105°C, the capacitor shall meet the following limits. | | | | | | | | | | | | | |
| | Capacitance Change | ≤ ± 20% of initial value | | | | | | | | | | | | |
| | tan d | ≤ 150% of initial specified value | | | | | | | | | | | | |
| | Leakage Current | ≤ initial specified value | | | | | | | | | | | | |
| Shelf Test | After 1000 hours, no voltage applied at +105°C, the capacitor shall meet the following limits. | | | | | | | | | | | | | |
| | Capacitance Change | ≤ ± 20% of initial value | | | | | | | | | | | | |
| | tan d | ≤ 200% of initial specified value | | | | | | | | | | | | |
| | Leakage Current | ≤ 200% of initial specified value | | | | | | | | | | | | |



■ **DIMENSIONS**

| WV uF | D x L (mm) | | | | | | | | | | | | |
|----------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 |
| 0.47 | | | | | ⇒ | 6x13 | 6x13 | 6x13 | 6x13 | 8x16 | 8x16 | 8x16 | 8x16 |
| 1 | | | | | ⇒ | 6x13 | 6x13 | 6x13 | 6x13 | 8x16 | 8x16 | 8x16 | 8x16 |
| 2.2 | | | | | ⇒ | 6x13 | 6x13 | 6x13 | 8x16 | 8x16 | 8x16 | 10x16 | 10x16 |
| 3.3 | | | | | ⇒ | 6x13 | 6x13 | 6x13 | 8x16 | 10x16 | 10x16 | 10x16 | 10x21 |
| 4.7 | | | | | ⇒ | 6x13 | 6x13 | 6x13 | 8x16 | 10x16 | 10x16 | 10x21 | 13x21 |
| 10 | | ⇒ | 6x13 | 6x13 | 6x13 | 6x13 | 6x13 | 8x16 | 10x21 | 10x21 | 10x21 | 13x21 | 13x24 |
| 22 | ⇒ | 6x13 | 6x13 | 6x13 | 6x13 | 6x13 | 6x16 | 8x20 | 13x21 | 13x21 | 13x27 | 16x33 | 16x33 |
| 33 | ⇒ | 6x13 | 6x13 | 6x13 | 6x13 | 8x16 | 8x16 | 8x20 | 13x21 | 16x28 | 13x33 | 16x33 | |
| 47 | ⇒ | 6x13 | 6x13 | 6x13 | 6x13 | 8x16 | 10x16 | 10x20 | 16x28 | 16x33 | 16x33 | | |
| 100 | ⇒ | 6x13 | 6x16 | 8x16 | 8x16 | 8x16 | 10x21 | 13x21 | 16x33 | 18x36 | 18x36 | | |
| 220 | ⇒ | 8x16 | 8x16 | 8x16 | 10x21 | 10x21 | 13x21 | 16x28 | 22x42 | 22x42 | 22x45 | | |
| 330 | ⇒ | 8x16 | 8x16 | 10x21 | 10x21 | 13x21 | 13x26 | 16x33 | 22x50 | 25x52 | 25x57 | | |
| 470 | 8x20 | 8x20 | 10x17 | 10x21 | 13x21 | 13x26 | 16x26 | 18x36 | | | | | |
| 1000 | 10x21 | 10x21 | 13x21 | 13x26 | 13x26 | 16x33 | 18x36 | | | | | | |
| 2200 | 13x21 | 13x21 | 13x26 | 16x33 | 16x36 | 18x36 | 22x42 | | | | | | |
| 3300 | 13x26 | 13x26 | 16x33 | 16x36 | 20x36 | 22x42 | | | | | | | |
| 4700 | 16x28 | 16x28 | 16x36 | 18x36 | 22x42 | 25x43 | | | | | | | |

■ **PERMISSIBLE RIPPLE CURRENT**

| WV uF | mA (rms) at 120Hz 105°C | | | | | | | | | | | | |
|----------|-------------------------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|
| | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 |
| 0.47 | | | | | ⇒ | 8 | 8 | 10 | 10 | 10 | 10 | 10 | 10 |
| 1 | | | | | ⇒ | 12 | 12 | 14 | 10 | 10 | 11 | 13 | 13 |
| 2.2 | | | | | ⇒ | 18 | 20 | 22 | 16 | 16 | 21 | 21 | 32 |
| 3.3 | | | | | ⇒ | 23 | 24 | 27 | 26 | 26 | 26 | 27 | 33 |
| 4.7 | | | | | ⇒ | 27 | 29 | 34 | 29 | 29 | 29 | 29 | 52 |
| 10 | | ⇒ | 40 | 40 | 40 | 40 | 48 | 58 | 44 | 48 | 80 | 84 | 87 |
| 22 | ⇒ | 48 | 48 | 48 | 59 | 62 | 81 | 100 | 78 | 78 | 86 | 86 | 89 |
| 33 | ⇒ | 56 | 58 | 65 | 69 | 88 | 99 | 135 | 105 | 116 | 116 | 116 | |
| 47 | ⇒ | 60 | 73 | 77 | 105 | 115 | 138 | 150 | 175 | 230 | 238 | | |
| 100 | ⇒ | 98 | 102 | 140 | 205 | 252 | 280 | 300 | 410 | 430 | 460 | | |
| 220 | ⇒ | 170 | 220 | 260 | 305 | 320 | 394 | 505 | 515 | 585 | 650 | | |
| 330 | ⇒ | 243 | 250 | 320 | 350 | 415 | 505 | 660 | 695 | 765 | 895 | | |
| 470 | 260 | 315 | 385 | 420 | 530 | 640 | 715 | 875 | | | | | |
| 1000 | 450 | 480 | 615 | 760 | 820 | 965 | 1150 | | | | | | |
| 2200 | 780 | 940 | 1000 | 1050 | 1165 | 1680 | 1835 | | | | | | |
| 3300 | 1000 | 1150 | 1340 | 1500 | 1800 | 1945 | | | | | | | |
| 4700 | 1250 | 1400 | 1580 | 1980 | 2075 | 2350 | | | | | | | |