

# Kingtronics®

# GKT-AL

## Aluminum Electrolytic Capacitor– Axial

### FEATURES

- ◆ 85°C, 2000 hours assured.
- ◆ Voltage range of 6.3 ~ 450V
- ◆ Wide operating temperature range, from -40~+85°C



### SPECIFICATIONS

|   |   |          |            |      |           |      |             |      |   |      |        |      |                                   |      |      |    |
|---|---|----------|------------|------|-----------|------|-------------|------|---|------|--------|------|-----------------------------------|------|------|----|
| <b>OPERATING TEMPERATURE RANGE (°C)</b>   | -40°C~ +85°C  |          |            |      |           |      |             |      |   |      |        |      |                                   |      |      |    |
| <b>CAPACITANCE TOLERANCE (20°C, 120Hz)</b>  | ± 10%(K), ±20%(M)   |          |            |      |           |      |             |      |   |      |        |      |                                   |      |      |    |
| <b>RATED VOLTAGE</b>  | 6.3 ~ 100VDC  |          |            |      |           |      |             |      | 160 ~ 450VDC  |      |        |      |                                   |      |      |    |
| <b>(20°C)LEAKAGE CURRENT</b>  | I ≦ 0.02CV or 3 (u A) Whichever is greater<br>(after 2 minutes applying the rated DC working Voltage at 20 °C)  |          |            |      |           |      |             |      | I ≦ 0.03CV+15 (u A) for CV ≦ 1000,<br>I ≦ 0.02CV+25 (u A) for CV > 1000<br>(after 5 minutes applying the rated DC working Voltage at 20 °C) |      |        |      |                                   |      |      |    |
| Where: I=Leakage Current (u A) , C=rated Capacitance (µ F) , V= working Voltage (V) |   |          |            |      |           |      |             |      |   |      |        |      |                                   |      |      |    |
| <b>(at 20°C , 120Hz) DISSIPATION FACTOR (tan δ)</b>                                 | W. V  | 6.3      | 10         | 16   | 25        | 35   | 50          | 63   | 100   | 160  | 200    | 250  | 350                               | 400  | 450  |    |
|   | tanδ  | 0.23     | 0.20       | 0.17 | 0.15      | 0.12 | 0.10        | 0.09 | 0.08  | 0.15 | 0.15   | 0.20 | 0.20                              | 0.24 | 0.24 |    |
| Add 0.02 per 1000µ F for more than 1000µF.  |   |          |            |      |           |      |             |      |   |      |        |      |                                   |      |      |    |
| <b>(20°C)SURGE VOLTAGE</b>  | W. V  | 6.3      | 10         | 16   | 25        | 35   | 50          | 63   | 100   | 160  | 200    | 250  | 350                               | 400  | 450  |    |
|   | S. V  | 8        | 13         | 20   | 32        | 44   | 63          | 79   | 125   | 200  | 250    | 300  | 400                               | 450  | 500  |    |
| <b>LOW TEMPERATURE STABILITY</b>  | Impedance ratio at 120Hz.   |          |            |      |           |      |             |      |   |      |        |      |                                   |      |      |    |
|   | Rated Voltage (V)   | 6.3      | 10         | 16   | 25        | 35   | 50          | 63   | 100   | 160  | 200    | 250  | 350                               | 400  | 450  |    |
|   | Z(-25°C)  | § D < 16 | 6          | 4    | 3         | 3    | 2           | 2    | 2   | 2    | 3      | 6    | 8                                 | 12   | 14   | 16 |
|   | / +20°C   | § D ≥ 16 | 8          | 6    | 4         | 4    | 3           | 3    | 3   | 3    | 4      | 8    | 10                                | -    | -    | -  |
| Z(-40°C)  | § D < 16  | 10       | 8          | 6    | 6         | 4    | 3           | 3    | 3   | 4    | 8      | 10   | -                                 | -    | -    |    |
| / +20°C   | § D ≥ 16  | 18       | 16         | 12   | 10        | 8    | 8           | 6    | 6   | 4    | 8      | 10   | -                                 | -    | -    |    |
| <b>LOAD LIFE TEST</b>   | After 2000 hours application of rated voltage at 85°C, capacitors meet the characteristics requirements listed at right                                       |          |            |      |           |      |             |      | Capacitance Change  |      |        |      | Within ±20% of initial value      |      |      |    |
|   |   |          |            |      |           |      |             |      | Dissipation Factor  |      |        |      | Less than 200% of specified value |      |      |    |
|   |   |          |            |      |           |      |             |      | Leakage Current   |      |        |      | Within specified value            |      |      |    |
| <b>SHELF LIFE TEST</b>  | After leaving capacitors under no load at 85°C for 1,000 hours and applying voltage they meet the specified value for load life characteristics listed above. |          |            |      |           |      |             |      |   |      |        |      |                                   |      |      |    |
| <b>FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT</b>                            | Freq.(Hz)   |          | 60         |      | 120       |      | 500         |      | 1K  |      | 10K up |      |                                   |      |      |    |
|   |   |          | Cap.( µ F) |      | Under 100 |      | 100 to 1000 |      | 1000 up above   |      |        |      |                                   |      |      |    |
|   |   |          | 0.70       |      | 1.00      |      | 1.30        |      | 1.40  |      | 1.50   |      |                                   |      |      |    |
|   |   |          | 0.75       |      | 1.00      |      | 1.20        |      | 1.30  |      | 1.35   |      |                                   |      |      |    |
|   |   | 0.80     |            | 1.00 |           | 1.10 |             | 1.12 |   | 1.15 |        |      |                                   |      |      |    |
| <b>ALLOWABLE RIPPLE CURRENT VS AMBIENT TEMPERATURE</b>                              | Temperature(°C)   |          |            |      | Under 50  |      |             |      | 70  |      |        |      | 85                                |      |      |    |
|   | Multiplier  |          |            |      | 1.78      |      |             |      | 1.40  |      |        |      | 1.00                              |      |      |    |

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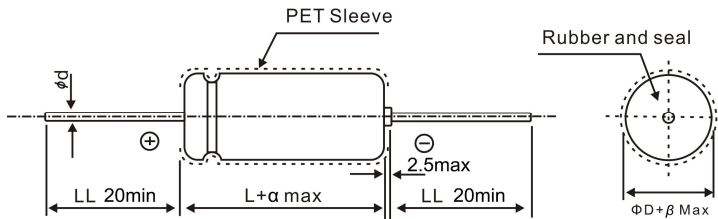
Website: [www.kingtronics.com](http://www.kingtronics.com) Email: [info@kingtronics.com](mailto:info@kingtronics.com) Tel: (852) 8106 7033 Fax: (852) 8106 7099

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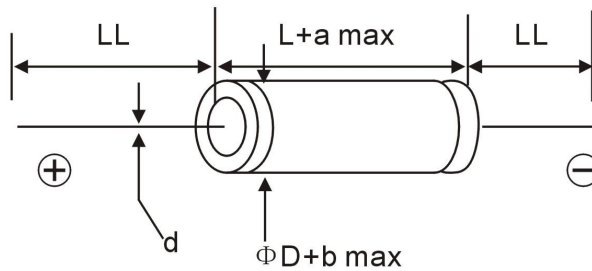
## Aluminum Electrolytic Capacitor— Axial

### DIMENSIONS (mm)



### LEAD DIAMETER

|    |     |     |     |     |     |     |     |     |     |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ØD | 5   | 6.3 | 8   | 10  | 13  | 16  | 18  | 22  | 25  |
| Ød | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 | 0.8 |
| α  | 1.5 | 1.5 | 1.5 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| β  | 0.5 | 0.5 | 0.5 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |



**DIMENSIONS: Diameter (DØ) x Length (L) mm**

**RIPPLE CURRENT. mA at 85°C, 120Hz**

| V.DC  | 6.3V   |      | 10V    |      | 16V    |      | 25V    |      | 35V    |      |
|-------|--------|------|--------|------|--------|------|--------|------|--------|------|
|       | ØDxL   | mA   | ØDxL   | mA   | ØDxL   | mA   | ØDxL   | mA   | ØDxL   | mA   |
| 10    | --     | --   | --     | --   | --     | --   | 5x12   | 40   | 5x12   | 55   |
| 22    | --     | --   | --     | --   | 5x12   | 71   | 6.3x13 | 76   | 6.3x13 | 70   |
| 33    | --     | --   | --     | --   | 5x12   | 85   | 6.3x13 | 80   | 6.3x13 | 115  |
| 47    | 5x12   | 87   | 5x12   | 94   | 6.3x13 | 88   | 6.3x13 | 100  | 6.3x13 | 138  |
| 100   | 6.3x13 | 121  | 6.3x13 | 145  | 6.3x13 | 160  | 8x13   | 215  | 8x16   | 232  |
| 220   | 6.3x13 | 215  | 8x13   | 231  | 8x13   | 298  | 8x16   | 319  | 10x17  | 401  |
| 330   | 8x16   | 305  | 8x16   | 327  | 8x16   | 365  | 10x17  | 454  | 10x21  | 514  |
| 470   | 8x16   | 364  | 8x16   | 390  | 8x16   | 460  | 10x21  | 524  | 13x22  | 613  |
| 1000  | 10x17  | 662  | 10x17  | 671  | 10x21  | 775  | 13x22  | 873  | 13x27  | 955  |
| 2200  | 13x22  | 929  | 13x22  | 1051 | 13x27  | 1125 | 16x28  | 1344 | 16x33  | 1421 |
| 3300  | 13x27  | 1150 | 13x27  | 1288 | 16x28  | 1454 | 16x33  | 1611 | 18x40  | 1640 |
| 4700  | 13x27  | 1354 | 16x28  | 1552 | 16x33  | 1650 | 18x40  | 1881 | 22x40  | 2280 |
| 6800  | 16x28  | 1762 | 16x33  | 1930 | 16x40  | 2040 | 18x40  | 2170 | 22x40  | 2470 |
| 10000 | 16x40  | 2062 | 18x40  | 2122 | 18x40  | 2503 | 22x40  | 2893 | 25x41  | 3180 |

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**RIPPLE CURRENT. mA at 85°C, 120Hz**

| V.DC | 50V    |      | 63V    |      | 100V   |      | 160V   |      | 200V   |     |      |
|------|--------|------|--------|------|--------|------|--------|------|--------|-----|------|
|      | μF     | ØDxL | mA     | μF   | ØDxL   | mA   | μF     | ØDxL | mA     | μF  | ØDxL |
| 1    | 5x12   | 10   | 5x12   | 15   | 5x12   | 15   | 6.3x13 | 7    | 6.3x13 | 9   |      |
| 2.2  | 5x12   | 20   | 5x12   | 30   | 5x12   | 30   | 6.3x13 | 15   | 8x13   | 16  |      |
| 3.3  | 5x12   | 30   | 5x12   | 36   | 5x12   | 40   | 8x16   | 21   | 8x16   | 26  |      |
| 4.7  | 5x12   | 42   | 5x12   | 44   | 6.3x13 | 41   | 8x16   | 31   | 10x17  | 33  |      |
| 10   | 5x12   | 50   | 6.3x13 | 55   | 6.3x13 | 72   | 10x17  | 60   | 10x21  | 66  |      |
| 22   | 6.3x13 | 85   | 6.3x13 | 109  | 8x16   | 133  | 10x21  | 121  | 13x22  | 121 |      |
| 33   | 6.3x13 | 126  | 8x13   | 154  | 10x17  | 190  | 13x22  | 154  | 13x27  | 167 |      |
| 47   | 8x13   | 174  | 8x16   | 214  | 10x21  | 237  | 13x27  | 198  | 16x33  | 214 |      |
| 100  | 10x17  | 296  | 10x17  | 326  | 13x22  | 377  | 16x33  | 345  | 16x33  | 368 |      |
| 220  | 10x21  | 459  | 13x22  | 527  | 16x28  | 625  | 18x40  | 586  | 22x40  | 609 |      |
| 330  | 13x22  | 613  | 13x22  | 675  | 16x33  | 793  | 22x40  | 632  | --     | --  |      |
| 470  | 13x22  | 731  | 13x27  | 780  | 16x36  | 942  | --     | --   | --     | --  |      |
| 1000 | 16x33  | 1111 | 16x40  | 1249 | 22x40  | 1452 | --     | --   | --     | --  |      |
| 2200 | 18x40  | 1699 | 22x40  | 1744 | 25x43  | 2430 | --     | --   | --     | --  |      |
| 3300 | 22x40  | 2027 | 25x43  | 2309 | --     | --   | --     | --   | --     | --  |      |
| 4700 | 25x41  | 2347 | 25x43  | 2710 | --     | --   | --     | --   | --     | --  |      |
| 6800 | 25x52  | 2650 | --     | --   | --     | --   | --     | --   | --     | --  |      |

| V.DC | 250V   |      | 350V  |     | 400V  |     | 450V  |      |
|------|--------|------|-------|-----|-------|-----|-------|------|
|      | μF     | ØDxL | mA    | μF  | ØDxL  | mA  | μF    | ØDxL |
| 1    | 6.3x13 | 12   | 8x16  | 13  | 8x16  | 14  | 8x16  | 15   |
| 2.2  | 8x16   | 17   | 10x17 | 19  | 10x17 | 21  | 10x21 | 23   |
| 3.3  | 10x17  | 31   | 10x17 | 33  | 10x17 | 34  | 10x21 | 36   |
| 4.7  | 10x17  | 38   | 10x21 | 44  | 10x21 | 45  | 13x22 | 46   |
| 10   | 10x21  | 72   | 13x22 | 72  | 13x22 | 80  | 13x27 | 82   |
| 22   | 13x27  | 126  | 13x27 | 132 | 16x33 | 137 | 16x36 | 143  |
| 33   | 16x28  | 178  | 16x33 | 186 | 16x40 | 192 | 16x40 | 201  |
| 47   | 16x33  | 241  | 16x40 | 253 | 18x40 | 339 | 18x40 | 339  |
| 100  | 16x40  | 391  | 22x40 | 402 | 22x43 | 424 | 22x43 | 448  |
| 220  | 22x40  | 632  | --    | --  | --    | --  | --    | --   |

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**HOW TO ORDER**

| <b>GKT</b> | <b>AL</b>  | <b>0J</b>     | <b>0R1</b>  | <b>M</b>              | <b>00500110</b> | <b>000</b>  | <b>B</b> | <b>R</b> |
|------------|------------|---------------|-------------|-----------------------|-----------------|-------------|----------|----------|
| Series     | Sub Series | Rated Voltage | Capacitance | Capacitance Tolerance | Dimension       | Lead Length | Packing  | Pb       |
|            |            | 1.            | 2.          | 3.                    | 4.              | 5.          | 6.       | 7.       |

**NOTE:****1. Rated Voltage**

| Code    | 0J   | 1A   | 1C   | 1D   | 1E   | 1V   | 1G   | 1H  | 1J  |
|---------|------|------|------|------|------|------|------|-----|-----|
| Voltage | 6.3V | 10V  | 16V  | 20V  | 25V  | 35V  | 40V  | 50V | 63V |
| Code    | 2A   | 2C   | 2D   | 2E   | 2V   | 2G   | 2W   |     |     |
| Voltage | 100V | 160V | 200V | 250V | 350V | 400V | 450V |     |     |

**2. Capacitance**

| Code             | 0R1 | R22  | R33  | R47  | 010 | 2R2 | 3R3 | 4R7  | 100  | 220  | 330  | 470   | 101   |
|------------------|-----|------|------|------|-----|-----|-----|------|------|------|------|-------|-------|
| Capacitance (µF) | 0.1 | 0.22 | 0.33 | 0.47 | 1   | 2.2 | 3.3 | 4.7  | 10   | 22   | 33   | 47    | 100   |
| Code             | 221 | 271  | 331  | 391  | 471 | 561 | 681 | 102  | 222  | 332  | 472  | 103   | 223   |
| Capacitance (µF) | 220 | 270  | 330  | 390  | 470 | 560 | 680 | 1000 | 2200 | 3300 | 4700 | 10000 | 22000 |

**3. Capacitance Tolerance**

| Code      | K    | M    |
|-----------|------|------|
| Tolerance | ±10% | ±20% |

**4. Dimension**

| Code           | 00500110 | 00630120 | 01300200 | 01600300 |
|----------------|----------|----------|----------|----------|
| Dimension (mm) | 5x11     | 6.3x12   | 13x20    | 16x30    |

**5. Lead Length**

| Code        | 000      |
|-------------|----------|
| Lead Length | Standard |

**6. Packing**

| Code    | B    | T           |
|---------|------|-------------|
| Packing | Bulk | Tape & Reel |

**7. Pb**

| Code | L      | R    |
|------|--------|------|
| Pb   | Leaded | RoHS |

Note: Specifications are subject to change without notice.

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