

GCK 105°C Standard Series

- For surface mounted and general-purpose use.
- Life guaranteed 2,000 hours/105°C.
- RoHS & REACH compliant, Halogen-Free.



• Specifications

| Item | Performance Characteristics | | | | | | | | | | | | |
|---|---|--|--------------------|------|------|------|------|------|------|------|------|---------|---------|
| Operating Temperature range | -40 + 105°C | | | | | | | | | | | | |
| Rated Voltage | 4V ~ 450V | | | | | | | | | | | | |
| Capacitance Range | 1 ~ 8,200 μF | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (120 Hz, 20°C) | | | | | | | | | | | | |
| Leakage Current | 6.3~100V | 4φ ~ 10φ | I ≤ 0.01CV or 3 μA | | | | | | | | | | |
| | | 12.5φ~18φ | I ≤ 0.03CV or 4 μA | | | | | | | | | | |
| | 160~450V | 10φ ~ 18φ | I ≤ 0.04CV+100 μA | | | | | | | | | | |
| Dissipation Factor (120 Hz, 20°C) | Rated voltage (V) | | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160~250 | 350~450 |
| | Tan δ (max.) | 4φ ~ 10φ | 0.42 | 0.30 | 0.26 | 0.22 | 0.16 | 0.14 | 0.12 | 0.10 | 0.10 | 0.20 | 0.25 |
| | | 12.5φ~18φ | 0.45 | 0.38 | 0.34 | 0.30 | 0.26 | 0.22 | 0.18 | 0.14 | 0.10 | 0.20 | 0.25 |
| Temperature Characteristics (120 Hz) | Impedance Ratio / Stability at Low Temperature | | | | | | | | | | | | |
| | Rated voltage (V) | | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160~250 | 350~450 |
| | 4φ ~ 10φ | Z(-25°C)/Z(20°C) | 7 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 3 |
| | | Z(-40°C)/Z(20°C) | 15 | 8 | 6 | 4 | 4 | 3 | 3 | 3 | 4 | 3 | 6 |
| | 12.5φ~18φ | Z(-25°C)/Z(20°C) | 7 | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 4 |
| Z(-40°C)/Z(20°C) | | 17 | 12 | 10 | 8 | 5 | 4 | 3 | 3 | 3 | 6 | 10 | |
| Load Life | After 2,000 hours application of WV at 105°C, capacitor shall meet the characteristics mentioned below. | | | | | | | | | | | | |
| | Capacitance change | Within ±20% of initial value (Except 4V : ± 30%) | | | | | | | | | | | |
| | Tan δ | 200% or less of initial specified value | | | | | | | | | | | |
| | Leakage current | Initial specified value or less | | | | | | | | | | | |
| Shelf Life | At 105°C, no voltage applied for 1,000 hours, the capacitor shall meet the limits as in load life. (With voltage treatment) | | | | | | | | | | | | |
| Resistance to Soldering Heat | Capacitor placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the following conditions after being cooled to room temperature. | | | | | | | | | | | | |
| | Capacitance change | Within ±10% of initial value | | | | | | | | | | | |
| | Tan δ | ≤ initial specified value | | | | | | | | | | | |
| | Leakage current | ≤ initial specified value | | | | | | | | | | | |

• Dimension (mm)

Fig. 1: 4φ ~ 6.3x7.7

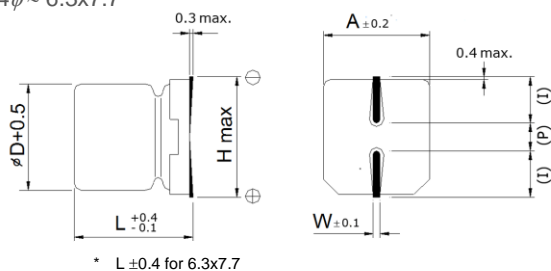
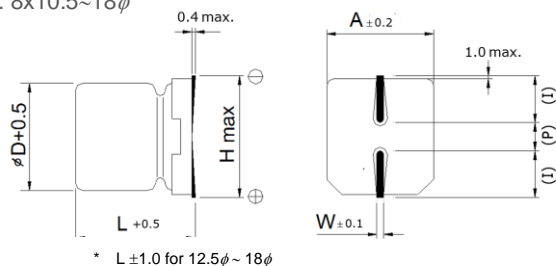


Fig. 2: 8x10.5~18φ



| Dφ | L | A | H | I | W | P | Fig |
|------|------|------|------|-----|---------|-----|-----|
| 4 | 5.4 | 4.3 | 4.4 | 2.0 | 0.5~0.8 | 1.0 | 1 |
| 5 | 5.4 | 5.3 | 5.4 | 2.2 | 0.5~0.8 | 1.4 | 1 |
| 6.3 | 5.4 | 6.6 | 6.7 | 2.6 | 0.5~0.8 | 1.9 | 1 |
| 6.3 | 7.7 | 6.6 | 6.7 | 2.6 | 0.5~0.8 | 1.9 | 1 |
| 8 | 10.5 | 8.4 | 8.5 | 3.0 | 0.8~1.2 | 3.1 | 2 |
| 10 | 10.5 | 10.4 | 10.5 | 3.3 | 0.8~1.2 | 4.7 | 2 |
| 10 | 13.5 | 10.4 | 10.5 | 3.3 | 0.8~1.2 | 4.7 | 2 |
| 12.5 | 13.5 | 13.0 | 13.1 | 4.9 | 1.1~1.4 | 4.7 | 2 |
| 12.5 | 16 | 13.0 | 13.1 | 4.9 | 1.1~1.4 | 4.7 | 2 |
| 16 | 16.5 | 17.0 | 17.1 | 5.8 | 1.1~1.4 | 6.4 | 2 |
| 18 | 16.5 | 19.0 | 19.1 | 6.2 | 1.1~1.4 | 6.4 | 2 |
| 18 | 18.5 | 19.0 | 19.1 | 6.2 | 1.1~1.4 | 6.4 | 2 |

• Standard Products Table

D ϕ x L (mm)

| Cap (μ F) \ WV(SV) | 4 (5) | | 6.3 (8) | | 10 (13) | | 16 (20) | | 25 (32) | |
|-------------------------|-------------|-----|-------------|------|-------------|------|-------------|------|-------------|------|
| 4.7 | | | | | | | 4 x 5.4 | 13 | 4 x 5.4 | 17 |
| 10 | | | | | | | 4 x 5.4 | 20 | 5 x 5.4 | 23 |
| | | | | | | | | | 4 x 5.4 | 20 |
| 22 | 4 x 5.4 | 20 | 4 x 5.4 | 23 | 5 x 5.4 | 29 | 5 x 5.4 | 32 | 6.3 x 5.4 | 39 |
| | | | | | 4 x 5.4 | 22 | 4 x 5.4 | 25 | 5 x 5.4 | 32 |
| 33 | 5 x 5.4 | 30 | 5 x 5.4 | 34 | 5 x 5.4 | 35 | 6.3 x 5.4 | 45 | 6.3 x 5.4 | 48 |
| | 4 x 5.4 | 25 | 4 x 5.4 | 30 | 4 x 5.4 | 30 | 5 x 5.4 | 35 | 5 x 5.4 | 35 |
| 47 | 5 x 5.4 | 36 | 5 x 5.4 | 38 | 5 x 5.4 | 38 | 6.3 x 5.4 | 55 | 6.3 x 5.4 | 60 |
| | | | 4 x 5.4 | 35 | | | 5 x 5.4 | 40 | | |
| 100 | 6.3 x 5.4 | 64 | 6.3 x 5.4 | 69 | 6.3 x 5.4 | 80 | 6.3 x 5.4 | 80 | 6.3 x 7.7 | 100 |
| | 5 x 5.4 | 54 | 5 x 5.4 | 59 | 5 x 5.4 | 60 | | | 6.3 x 5.4 | 80 |
| 150 | 6.3 x 5.4 | 80 | 6.3 x 5.4 | 85 | 6.3 x 5.4 | 85 | 6.3 x 7.7 | 105 | 8 x 10.5 | 240 |
| | | | | | | | | | 6.3 x 7.7 | 120 |
| 220 | 6.3 x 5.4 | 90 | 6.3 x 7.7 | 120 | 6.3 x 7.7 | 120 | 8 x 10.5 | 270 | 8 x 10.5 | 270 |
| | | | 6.3 x 5.4 | 95 | 6.3 x 5.4 | 95 | 6.3 x 7.7 | 120 | | |
| 330 | 6.3 x 7.7 | 120 | 6.3 x 7.7 | 120 | 8 x 10.5 | 290 | 8 x 10.5 | 290 | 10 x 10.5 | 380 |
| | | | | | 6.3 x 7.7 | 135 | | | 8 x 10.5 | 290 |
| 470 | 6.3 x 7.7 | 120 | 8 x 10.5 | 320 | 10 x 10.5 | 380 | 10 x 10.5 | 380 | 10 x 10.5 | 380 |
| | | | 6.3 x 7.7 | 120 | 8 x 10.5 | 320 | 8 x 10.5 | 290 | | |
| 680 | 8 x 10.5 | 320 | 8 x 10.5 | 350 | 10 x 10.5 | 380 | | | 10 x 13.5 | 400 |
| | | | | | 8 x 10.5 | 350 | 10 x 10.5 | 380 | | |
| 1000 | 8 x 10.5 | 320 | 10 x 10.5 | 410 | 10 x 10.5 | 410 | 12.5 x 13.5 | 550 | 12.5 x 13.5 | 580 |
| | | | 8 x 10.5 | 350 | | | 10 x 13.5 | 460 | | |
| | | | | | | | 10 x 10.5 | 410 | | |
| 1500 | 10 x 10.5 | 410 | 10 x 13.5 | 450 | 10 x 13.5 | 460 | 12.5 x 13.5 | 550 | 12.5 x 16 | 850 |
| | | | 10 x 10.5 | 410 | | | | | | |
| 2200 | 10 x 13.5 | 440 | 12.5 x 13.5 | 680 | 12.5 x 13.5 | 680 | 16 x 16.5 | 900 | 16 x 16.5 | 1050 |
| | 10 x 10.5 | 410 | 10 x 13.5 | 560 | | | 12.5 x 13.5 | 750 | | |
| 3300 | 10 x 13.5 | 600 | 12.5 x 16 | 850 | 16 x 16.5 | 1000 | 16 x 16.5 | 1000 | 18 x 16.5 | 1150 |
| | | | 12.5 x 13.5 | 810 | | | | | | |
| 4700 | 12.5 x 13.5 | 600 | 16 x 16.5 | 1000 | 16 x 16.5 | 1000 | 18 x 16.5 | 1225 | 18 x 18.5 | 1300 |
| 6800 | 16 x 16.5 | 950 | 18 x 16.5 | 1290 | 18 x 16.5 | 1290 | | | | |
| | 12.5 x 16 | 650 | | | | | | | | |
| 8200 | | | 18 x 18.5 | 1450 | 18 x 18.5 | 1450 | | | Case size | R.C. |
| | | | | | | | | | | |

Ripple current (mA) at 105°C 120 Hz

| WV(SV) Cap (μF) | 35 (44) | | 50 (63) | | 63 (75) | | 100 (125) | | 160 (200) | |
|--------------------|-------------|------|-------------|-----|-------------|-----|--------------|-----|--------------|------|
| 1 | | | 4 x 5.4 | 8 | 4 x 5.4 | 8 | 4 x 5.4 | 8 | | |
| 2.2 | | | | | 4 x 5.4 | 12 | 6.3 x 5.4 | 14 | | |
| | | | 4 x 5.4 | 12 | | | 5 x 5.4 | 12 | | |
| 3.3 | | | 4 x 5.4 | 14 | 5 x 5.4 | 17 | 6.3 x 7.7 | 25 | | |
| | 4 x 5.4 | 13 | | | | | 6.3 x 5.4 | 20 | | |
| 4.7 | | | 5 x 5.4 | 20 | 5 x 5.4 | 20 | 6.3 x 7.7 | 27 | | |
| | 4 x 5.4 | 17 | 4 x 5.4 | 14 | | | 6.3 x 5.4 | 22 | | |
| 10 | 5 x 5.4 | 27 | 6.3 x 5.4 | 32 | 6.3 x 7.7 | 58 | 8 x 10.5 | 77 | | |
| | 4 x 5.4 | 18 | 5 x 5.4 | 27 | 6.3 x 5.4 | 32 | 6.3 x 7.7 | 58 | | |
| 22 | 6.3 x 5.4 | 44 | 6.3 x 7.7 | 58 | 8 x 10.5 | 100 | 10 x 10.5 | 126 | 10 x 13.5 | 50 |
| | 5 x 5.4 | 36 | 6.3 x 5.4 | 44 | 6.3 x 7.7 | 58 | 8 x 10.5 | 100 | | |
| 33 | 6.3 x 5.4 | 50 | 6.3 x 7.7 | 65 | 8 x 10.5 | 140 | 10 x 10.5 | 150 | 12.5 x 13.5 | 95 |
| 47 | 6.3 x 7.7 | 80 | 8 x 10.5 | 170 | 10 x 10.5 | 200 | 12.5 x 13.5 | 250 | 16 x 16.5 | 240 |
| | 6.3 x 5.4 | 58 | 6.3 x 7.7 | 70 | 8 x 10.5 | 140 | 10 x 13.5 | 180 | 12.5 x 13.5 | 205 |
| 68 | | | | | | | 10 x 10.5 | 160 | | |
| | | | | | | | 12.5 x 13.5 | 300 | | |
| 100 | | | | | | | 10 x 13.5 | 180 | | |
| | 8 x 10.5 | 240 | 10 x 10.5 | 250 | 12.5 x 13.5 | 400 | 16 x 16.5 | 450 | 16 x 16.5 | 250 |
| 150 | 6.3 x 7.7 | 92 | 8 x 10.5 | 210 | 10 x 13.5 | 350 | 12.5 x 13.5 | 380 | | |
| | | | | | 10 x 10.5 | 310 | | | | |
| 220 | 8 x 10.5 | 240 | 10 x 10.5 | 300 | 10 x 13.5 | 350 | | | | |
| 330 | 10 x 10.5 | 260 | 10 x 13.5 | 380 | 16 x 16.5 | 560 | 16 x 16.5 | 550 | | |
| | 8 x 10.5 | 240 | 10 x 10.5 | 330 | 12.5 x 13.5 | 470 | | | | |
| 470 | 10 x 10.5 | 370 | 16 x 16.5 | 600 | 16 x 16.5 | 700 | 18 x 16.5 | 590 | | |
| | | | 12.5 x 13.5 | 490 | 12.5 x 16 | 510 | | | | |
| | | | 10 x 13.5 | 295 | | | | | | |
| 680 | 12.5 x 13.5 | 520 | 16 x 16.5 | 700 | 16 x 16.5 | 750 | 18 x 18.5 | 980 | | |
| | 10 x 13.5 | 400 | 12.5 x 16 | 550 | | | | | | |
| | 10 x 10.5 | 370 | 12.5 x 13.5 | 470 | | | | | | |
| 1000 | 12.5 x 13.5 | 530 | 16 x 16.5 | 750 | 18 x 16.5 | 790 | | | | |
| 1500 | 16 x 16.5 | 800 | 18 x 16.5 | 990 | | | | | | |
| | 12.5 x 16 | 600 | | | | | | | | |
| 2200 | 16 x 16.5 | 750 | | | | | | | Case size | R.C. |
| 2200 | 18 x 16.5 | 1050 | | | | | | | | |

Ripple current (mA) at 105°C 120 Hz

| WV(SV) Cap (μF) | 200 (250) | | 250 (300) | | 350 (400) | | 400 (450) | | 450 (500) | |
|--------------------|--------------|-----|--------------|-----|--------------|-----|--------------|-----|--------------|------|
| 3.3 | | | | | | | 10 x 13.5 | 40 | 10 x 13.5 | 40 |
| | | | | | | | 8 x 10.5 | 35 | 8 x 10.5 | 38 |
| 4.7 | | | 10 x 13.5 | 65 | 10 x 13.5 | 45 | 12.5 x 13.5 | 48 | 12.5 x 13.5 | 45 |
| | | | | | | | 10 x 13.5 | 45 | 10 x 13.5 | 42 |
| 10 | 10 x 13.5 | 75 | 10 x 13.5 | 70 | 12.5 x 13.5 | 50 | 12.5 x 13.5 | 50 | 12.5 x 13.5 | 70 |
| 22 | 12.5 x 13.5 | 105 | 12.5 x 13.5 | 105 | 16 x 16.5 | 55 | 16 x 16.5 | 85 | 16 x 16.5 | 85 |
| 33 | 12.5 x 13.5 | 120 | 16 x 16.5 | 180 | 18 x 16.5 | 100 | 18 x 16.5 | 100 | 18 x 16.5 | 100 |
| 47 | 16 x 16.5 | 220 | 16 x 16.5 | 220 | | | | | | |
| 100 | 18 x 16.5 | 280 | 18 x 16.5 | 260 | | | | | Case size | R.C. |

Ripple current (mA) at 105°C 120 Hz

• Frequency coefficient of allowable ripple current

| | Diameter | Cap(μF) / Frequency | 50 Hz | 120 Hz | 300 Hz | 1KHz | 10 KHz~ |
|-------------|-----------|---------------------|-------|--------|--------|------|---------|
| Coefficient | 4φ ~ 10φ | 1 ~ 68 | 0.70 | 1 | 1.17 | 1.36 | 1.50 |
| | | 100 ~ 3300 | 0.85 | 1 | 1.08 | 1.20 | 1.30 |
| | 12.5φ~18φ | ~ 68 | 0.75 | 1 | 1.35 | 1.57 | 2.00 |
| | | 100 ~ 680 | 0.80 | 1 | 1.23 | 1.34 | 1.50 |
| | | 1000 ~ 6,800 | 0.85 | 1 | 1.10 | 1.13 | 1.15 |