



RGA Series

Features

- 105°C, 2,000 hours assured
- 105°C standard series for general purposes
- RoHS Compliance
- If there is any requirement on ESR, it's suggested to use low ESR series instead of RGA. Please consult us for any inquiry.



Sleeve & Marking Color: Black & White

Specifications

| Items | Performance | | | | | | | | | | | | | | | | |
|---|---|---|-----------------------------------|-----------------------------------|------|------|--------|------|------|------|------|------|------|------|------|-----|----|
| Category Temperature Range | 6.3~400V | 450V | | | | | | | | | | | | | | | |
| | -40°C ~ +105°C | -25°C ~ +105°C | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 120Hz, 20°C) | | | | | | | | | | | | | | | | |
| Leakage Current (at 20°C) | Rated voltage | ≤ 100V | > 100V | | | | | | | | | | | | | | |
| | Time | after 2 minutes | after 5 minutes | | | | | | | | | | | | | | |
| | Leakage Current | I = 0.01CV or 3 (μA) whichever is greater | CV ≤ 1,000 I = 0.03CV + 15(μA) | CV > 1,000 I = 0.02CV + 25(μA) | | | | | | | | | | | | | |
| Where, C = rated capacitance in μF V = rated DC working voltage in V | | | | | | | | | | | | | | | | | |
| Tanδ (at 120 Hz, 20°C) | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | | |
| | Tanδ (max) | 0.23 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.12 | 0.14 | 0.17 | 0.20 | 0.25 | 0.25 | | |
| When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase. | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | | | | | | | | | | | |
| | Rated Voltage | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | |
| | Impedance Ratio | Z(-25°C) | φ D < 16 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 6 | 8 | 12 | 14 | 16 |
| | | /Z(+20°C) | φ D ≥ 16 | 6 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 8 | 10 | 16 | 18 | - |
| | | Z(-40°C) | φ D < 16 | 8 | 6 | 6 | 4 | 4 | 3 | 3 | 3 | 4 | 8 | 10 | 16 | 18 | - |
| /Z(+20°C) | | φ D ≥ 16 | 12 | 10 | 8 | 8 | 8 | 8 | 6 | 6 | | | | | | | |
| Endurance | Test Time | 2,000 Hrs | | | | | | | | | | | | | | | |
| | Capacitance Change | Within ±20% of initial value | | | | | | | | | | | | | | | |
| | Tanδ | Less than 200% of specified value | | | | | | | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | | | | | | | |
| | * The above Specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied with rated ripple current for 2,000 hours at 105°C. | | | | | | | | | | | | | | | | |
| Shelf Life Test | Test Time | 1,000 Hrs | | | | | | | | | | | | | | | |
| | Capacitance Change | With in ±20% of initial value | | | | | | | | | | | | | | | |
| | Tanδ | Less than 200% of specified value | | | | | | | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | | | | | | | |
| | * The above Specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements for 160 ~ 450V (Refer to JIS C 5101-4 4.1). | | | | | | | | | | | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) | | 60 (50) | 120 | 500 | 1k | 10k up | | | | | | | | | | |
| | Cap. (μF) | Under 100 | 0.70 | 1.00 | 1.30 | 1.40 | 1.50 | | | | | | | | | | |
| | | 100 < C ≤ 1,000 | 0.75 | 1.00 | 1.20 | 1.30 | 1.35 | | | | | | | | | | |
| | | 1,000 up above | 0.80 | 1.00 | 1.10 | 1.12 | 1.15 | | | | | | | | | | |

Diagram of Dimensions



Lead Spacing and Diameter

Unit: mm

| φD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 | 22 | 25 |
|-----|--------------------------|-----|-----|-----|------|-----|-----|-----|------|
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10 | 12.5 |
| φ d | 0.5 | | 0.6 | | | 0.8 | | 1.0 | |
| α | L < 20: 1.5, L ≥ 20: 2.0 | | | | | | | | 2.0 |
| β | 0.5 | | | | | | | | |

The case size of 12.5×16, 16×16, 16×20, 18×16, 18×20 and 18×25 are suitable for below diagram:





Dimension: $\phi D \times L(\text{mm})$
Ripple Current: mA/rms at 120 Hz, 105°C

Dimension & Permissible Ripple Current

| μF | Contents | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | | 50V (1H) | | 63V (1J) | | 100V (2A) | |
|---------------|----------|-------------------|-------|-------------------|-------|-------------------|-------|-------------------|-------|-------------------|-------|-------------------|-------|-------------------|-------|-------------------|-------|
| | | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA |
| 2.2 | 2R2 | | | | | | | | | | | 5×11 | 20 | | | 5×11 | 30 |
| 3.3 | 3R3 | | | | | | | | | | | 5×11 | 30 | | | 5×11 | 31 |
| 4.7 | 4R7 | | | | | | | | | | | 5×11 | 33 | | | 5×11 | 36 |
| 10 | 100 | | | | | | | | | | | 5×11 | 50 | | | 6.3×11 | 54 |
| 22 | 220 | | | | | | | | | | | 5×11 | 78 | 6.3×11 | 86 | 6.3×11 | 93 |
| 33 | 330 | | | | | | | | | 5×11 | 75 | 5×11 | 90 | 6.3×11 | 100 | 8×11.5 | 130 |
| 47 | 470 | | | | | | | 5×11 | 97 | 5×11 | 90 | 6.3×11 | 120 | 6.3×11 | 130 | 10×12.5 | 165 |
| 100 | 101 | | | | | 5×11 | 110 | 6.3×11 | 142 | 6.3×11 | 150 | 8×11.5 | 188 | 10×12.5 | 235 | 10×20 | 265 |
| 220 | 221 | 5×11 | 140 | 6.3×11 | 175 | 6.3×11 | 190 | 8×11.5 | 236 | 8×11.5 | 270 | 10×12.5 | 300 | 10×16 | 335 | 12.5×25 | 440 |
| 330 | 331 | | | 6.3×11 | 200 | 8×11.5 | 270 | 8×11.5 | 310 | 10×12.5 | 350 | 10×16 | 410 | 10×20 | 510 | 16×25 | 620 |
| 470 | 471 | 6.3×11 | 230 | 8×11.5 | 290 | 8×11.5 | 310 | 10×12.5 | 380 | 10×16 | 460 | 10×20 | 530 | 12.5×20 | 640 | 16×31.5 | 715 |
| 1,000 | 102 | 8×11.5 | 380 | 10×12.5 | 460 | 10×16 | 560 | 10×20 | 680 | 12.5×20 | 810 | 12.5×25 | 950 | 16×25 | 930 | 18×40 | 1,275 |
| 2,200 | 222 | 10×16 | 690 | 10×20 | 760 | 12.5×16 | 780 | 12.5×25 | 1,110 | 16×25 | 1,260 | 16×35.5 | 1,470 | 18×40 | 2,280 | 25×45 | 2,400 |
| 3,300 | 332 | 10×20 | 840 | 12.5×20 | 1,100 | 12.5×25 | 1,170 | 16×25 | 1,440 | 16×31.5 | 1,420 | 18×35.5 | 1,770 | 22×40 | 2,510 | | |
| 4,700 | 472 | 12.5×20 | 1,090 | 12.5×25 | 1,260 | 16×20 | 1,185 | 16×31.5 | 1,650 | 18×25 | 1,550 | 18×35.5 | 1,900 | 22×40 | 2,340 | 25×40 | 3,000 |
| 6,800 | 682 | 12.5×25 | 1,460 | 16×20 | 1,270 | 16×31.5 | 1,930 | 16×40 | 2,000 | 18×25 | 1,550 | 18×40 | 2,250 | 25×40 | 2,530 | | |
| 10,000 | 103 | 16×20 | 1,340 | 16×31.5 | 2,220 | 16×35.5 | 2,210 | 22×40 | 2,720 | 18×25 | 1,800 | 18×31.5 | 2,330 | 18×45 | 2,410 | | |
| 15,000 | 153 | 16×31.5 | 2,365 | 18×25 | 2,290 | 16×35.5 | 2,590 | 18×40 | 2,950 | 25×40 | 3,200 | | | | | | |
| 22,000 | 223 | 16×40 | 2,800 | 18×35.5 | 2,930 | 18×40 | 3,230 | 22×40 | 3,460 | | | | | | | | |
| 33,000 | 333 | 18×45 | 3,080 | 22×40 | 4,090 | 25×45 | 4,500 | | | | | | | | | | |

| μF | Contents | 160V (2C) | | 200V (2D) | | 250V (2E) | | 350V (2V) | | 400V (2G) | | 450V (2W) | |
|---------------|----------|-------------------|-------|-------------------|-------|-------------------|-------|-------------------|-----|-------------------|-----|-------------------|-----|
| | | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA |
| 1 | 010 | | | | | | | | | 6.3×11 | 21 | 8×11.5 | 27 |
| 2.2 | 2R2 | | | 6.3×11 | 30 | 6.3×11 | 35 | 6.3×11 | 35 | 8×11.5 | 39 | 8×11.5 | 39 |
| 3.3 | 3R3 | | | 6.3×11 | 39 | 6.3×11 | 40 | 8×11.5 | 43 | 8×11.5 | 45 | 8×11.5 | 45 |
| 4.7 | 4R7 | | | 6.3×11 | 43 | 8×11.5 | 45 | 8×11.5 | 45 | 8×11.5 | 50 | 8×11.5 | 50 |
| 10 | 100 | 8×11.5 | 65 | 8×11.5 | 65 | 10×12.5 | 92 | 10×16 | 95 | 10×16 | 95 | 10×20 | 105 |
| 22 | 220 | 10×12.5 | 110 | 10×16 | 140 | 10×16 | 140 | 12.5×20 | 220 | 12.5×20 | 160 | 12.5×20 | 160 |
| 33 | 330 | 10×16 | 150 | 10×20 | 170 | 12.5×16 | 175 | 12.5×25 | 215 | 16×20 | 225 | 16×20 | 225 |
| 47 | 470 | 10×20 | 195 | 12.5×16 | 215 | 12.5×20 | 230 | 16×16 | 205 | 16×20 | 225 | 18×16 | 220 |
| 68 | 680 | 12.5×20 | 275 | 12.5×20 | 265 | 16×20 | 320 | 16×16 | 245 | 16×20 | 255 | 16×25 | 280 |
| 100 | 101 | 12.5×25 | 355 | 16×20 | 365 | 16×25 | 425 | 18×25 | 360 | 18×25 | 360 | 16×35.5 | 400 |
| 150 | 151 | 16×25 | 470 | 18×16 | 360 | 18×20 | 415 | 16×31.5 | 370 | 16×31.5 | 375 | 18×20 | 285 |
| 220 | 221 | 16×31.5 | 660 | 18×20 | 510 | 16×31.5 | 550 | 18×25 | 370 | 18×25 | 375 | 16×35.5 | 400 |
| 330 | 331 | 18×35.5 | 820 | 18×40 | 965 | 18×40 | 965 | 16×35.5 | 430 | 18×35.5 | 540 | 18×31.5 | 420 |
| 470 | 330 | 22×40 | 1,130 | 22×40 | 1,130 | 25×40 | 1,325 | 18×20 | 600 | 22×40 | 730 | 22×40 | 770 |

Part Numbering System

| | | | | | | | |
|------------|-------------------|-----------------------|---------------|------------------------------|-------------|------------------------------|------------------------------|
| RGA series | 470 μF | $\pm 20\%$ | 6.3V | Bulk Package | Gas Type | 6.3 $\phi \times 11\text{L}$ | Pb-free and PET coating case |
| RGA | 471 | M | 0J | BK | - | 0611 | |
| Series | Capacitance | Capacitance Tolerance | Rated Voltage | Lead Configuration & Package | Rubber Type | Case Size | Lead Wire and Coating Type |

Note: For more details, please refer to "Part Numbering System (Radial Type)" on page 10.

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