



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<br>I = 0.03CV + 15(μA) | CV > 1,000<br>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

| φ D | 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

| $\mu\text{F}$ | 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 |                   |       |                   |       |                   |       |                   |       |                   |       |

| $\mu\text{F}$ | 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             | 460   | 18×35.5           | 540 | 18×40             | 560 |
| 330           | 331      | 18×35.5           | 820   | 18×20             | 360   | 18×20             | 415   | 16×35.5           | 430   | 18×35.5           | 540 | 18×40             | 560 |
| 470           | 330      | 22×40             | 1,130 | 22×40             | 1,130 | 25×40             | 1,325 | 25×40             | 1,070 |                   |     |                   |     |

Part Numbering System

|            |                   |                       |               |                              |             |                              |                              |
|------------|-------------------|-----------------------|---------------|------------------------------|-------------|------------------------------|------------------------------|
| RGA series | 470 $\mu\text{F}$ | $\pm 20\%$            | 6.3V          | Bulk Package                 | Gas Type    | 6.3 $\phi \times 11\text{L}$ | Pb-free and PET coating case |
| <b>RGA</b> | <b>471</b>        | <b>M</b>              | <b>0J</b>     | <b>BK</b>                    | -           | <b>0611</b>                  |                              |
| 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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## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

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