

**Aluminum Electrolytic Capacitors  
(Radial Lead Type)**

Japan  
Malaysia

Series: **NHG**  
Type: **A (Radial Leads)**  
Style: **04/JIS C 5141**



Standard

■ Features

- Smaller than Series NHE
- Lifetime: 2000 h at +105 °C

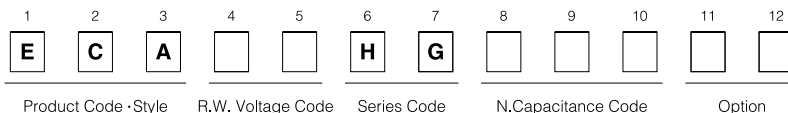
■ Recommended Applications

- AV (TV, Video, Audio), Office, Home appliance

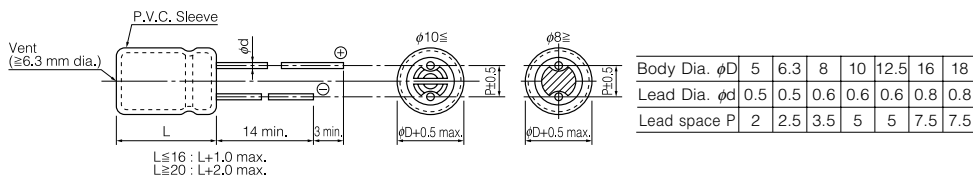
■ Specifications

|   |  |  |                    |                                 |      |                                    |                    |                           |      |      |      |      |      |      |        |                 |     |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |        |
|---|--|--|--------------------|---------------------------------|------|------------------------------------|--------------------|---------------------------|------|------|------|------|------|------|--------|-----------------|-----|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------|
| Operating Temp. Range                                 | -55 to +105 °C   | -25 to +105 °C   |                    |                                 |      |                                    |                    |                           |      |      |      |      |      |      |        |                 |     |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |        |
| Rated W.V. Range                                      | 6.3 to 100 V.DC  | 160 to 450 V.DC  |                    |                                 |      |                                    |                    |                           |      |      |      |      |      |      |        |                 |     |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |        |
| Nominal Cap. Range                                    | 0.1 to 22000 μF  | 1.0 to 330 μF  |                    |                                 |      |                                    |                    |                           |      |      |      |      |      |      |        |                 |     |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |        |
| Capacitance Tolerance                                 | ±20 % (120 Hz/+20 °C)  |  |                    |                                 |      |                                    |                    |                           |      |      |      |      |      |      |        |                 |     |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |        |
| DC Leakage Current                                    | I ≤ 0.01 CV or 3 (μA) after 2 minutes application of rated working voltage at +20 °C   | I ≤ 0.06 CV + 10 (μA) after 2 minutes application of rated working voltage at +20 °C |                    |                                 |      |                                    |                    |                           |      |      |      |      |      |      |        |                 |     |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |        |
| Dissipation Factor                                    | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">W.V. (V)</td> <td style="text-align: center;">6.3</td> <td style="text-align: center;">10</td> <td style="text-align: center;">16</td> <td style="text-align: center;">25</td> <td style="text-align: center;">35</td> <td style="text-align: center;">50</td> <td style="text-align: center;">63</td> <td style="text-align: center;">100</td> <td style="text-align: center;">160</td> <td style="text-align: center;">200</td> <td style="text-align: center;">250</td> <td style="text-align: center;">350</td> <td style="text-align: center;">400</td> <td style="text-align: center;">450</td> <td style="text-align: center;">(120 Hz/+20 °C)</td> </tr> <tr> <td style="text-align: center;">D.F.</td> <td style="text-align: center;">0.28</td> <td style="text-align: center;">0.24</td> <td style="text-align: center;">0.20</td> <td style="text-align: center;">0.16</td> <td style="text-align: center;">0.14</td> <td style="text-align: center;">0.12</td> <td style="text-align: center;">0.10</td> <td style="text-align: center;">0.08</td> <td style="text-align: center;">0.15</td> <td style="text-align: center;">0.15</td> <td style="text-align: center;">0.15</td> <td style="text-align: center;">0.20</td> <td style="text-align: center;">0.24</td> <td style="text-align: center;">0.24</td> <td style="text-align: center;">(max.)</td> </tr> </table> |  | W.V. (V)           | 6.3                             | 10   | 16                                 | 25                 | 35                        | 50   | 63   | 100  | 160  | 200  | 250  | 350    | 400             | 450 | (120 Hz/+20 °C) | D.F. | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.15 | 0.15 | 0.15 | 0.20 | 0.24 | 0.24 | (max.) |
|   | W.V. (V)   | 6.3  | 10                 | 16                              | 25   | 35                                 | 50                 | 63                        | 100  | 160  | 200  | 250  | 350  | 400  | 450    | (120 Hz/+20 °C) |     |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |        |
| D.F.  | 0.28   | 0.24   | 0.20               | 0.16                            | 0.14 | 0.12                               | 0.10               | 0.08                      | 0.15 | 0.15 | 0.15 | 0.20 | 0.24 | 0.24 | (max.) |                 |     |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |        |
| Add 0.02 per 1000 μF for products of 1000 μF or more. |  |  |                    |                                 |      |                                    |                    |                           |      |      |      |      |      |      |        |                 |     |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |        |
| Endurance   | <p>After following life test with DC voltage and +105 ±2 °C ripple current value applied (The sum of DC and ripple peak voltage shall not exceed the rated working voltage), the capacitors shall meet the limits specified bellow.<br/>Duration: 1000 hours (to φ8), 2000 hours (φ10 to) Post test requirements at +20 °C.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Capacitance change</td> <td style="text-align: center;">±20 % of initial measured value</td> </tr> <tr> <td style="text-align: center;">D.F.</td> <td style="text-align: center;">≤ 200 % of initial specified value</td> </tr> <tr> <td style="text-align: center;">DC leakage current</td> <td style="text-align: center;">≤ Initial specified value</td> </tr> </table>   |  | Capacitance change | ±20 % of initial measured value | D.F. | ≤ 200 % of initial specified value | DC leakage current | ≤ Initial specified value |      |      |      |      |      |      |        |                 |     |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |        |
| Capacitance change                                    | ±20 % of initial measured value  |  |                    |                                 |      |                                    |                    |                           |      |      |      |      |      |      |        |                 |     |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |        |
| D.F.  | ≤ 200 % of initial specified value   |  |                    |                                 |      |                                    |                    |                           |      |      |      |      |      |      |        |                 |     |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |        |
| DC leakage current                                    | ≤ Initial specified value  |  |                    |                                 |      |                                    |                    |                           |      |      |      |      |      |      |        |                 |     |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |        |
| Shelf Life  | <p>After storage for 1000 hours at +105±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in "Endurance".</p>   |  |                    |                                 |      |                                    |                    |                           |      |      |      |      |      |      |        |                 |     |                 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |        |

### Explanation of Part Numbers



### Dimensions in mm (not to scale)



### Frequency correction factor for ripple current

| W.V. (V.DC) | Cap. ( $\mu\text{F}$ ) | Frequency (Hz) |     |      |      |       |
|-------------|------------------------|----------------|-----|------|------|-------|
|             |                        | 60             | 120 | 1 k  | 10 k | 100 k |
| 6.3 to 100  | 0.1 to 30              | 0.75           | 1   | 1.55 | 1.80 | 2.00  |
|             | 47 to 470              | 0.80           | 1   | 1.35 | 1.50 | 1.50  |
|             | 1000 to 22000          | 0.85           | 1   | 1.10 | 1.15 | 1.15  |
| 160 to 450  | 1 to 330               | 0.80           | 1   | 1.35 | 1.50 | 1.50  |

### Case size/Ripple current

$\phi D \times L$  (mm)/(mA) r.m.s. (120 Hz/+105 °C)

| Cap. ( $\mu\text{F}$ ) | W.V. (V.DC) | 6.3 (0J) | 10 (1A)  | 16 (1C)  | 25 (1E)  | 35 (1V)  | 50 (1H)  | 63 (1J)  | 100 (2A) |
|------------------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|
| 0.1 (0R1)              |             |          |          |          |          |          | 5 x11    | 1.1      |          |
| 0.22 (R22)             |             |          |          |          |          |          | 5 x11    | 2.3      |          |
| 0.33 (R33)             |             |          |          |          |          |          | 5 x11    | 3.5      |          |
| 0.47 (R47)             |             |          |          |          |          |          | 5 x11    | 5        | 5 x11    |
| 1.0 (010)              |             |          |          |          |          |          | 5 x11    | 10       | 5 x11    |
| 2.2 (2R2)              |             |          |          |          |          |          | 5 x11    | 18       | 5 x11    |
| 3.3 (3R3)              |             |          |          |          |          |          | 5 x11    | 22       | 5 x11    |
| 4.7 (4R7)              |             |          |          |          |          |          | 5 x11    | 26       | 5 x11    |
| 10 (100)               |             |          |          |          |          |          | 5 x11    | 39       | 5 x11    |
| 22 (220)               |             |          |          |          |          |          | 5 x11    | 65       | 5 x11    |
| 33 (330)               |             |          |          |          |          |          | 5 x11    | 90       | 6.3x11.2 |
| 47 (470)               |             |          |          |          | 5 x11    | 91       | 5 x11    | 90       | 6.3x11.2 |
| 100 (101)              |             |          |          | 5 x11    | 110      | 6.3x11.2 | 130      | 6.3x11.2 | 150      |
| 220 (221)              | 5 x11       | 140      |          | 6.3x11.2 | 180      | 8 x11.5  | 230      | 8 x11.5  | 270      |
| 330 (331)              |             |          | 6.3x11.2 | 200      | 8 x11.5  | 260      | 8 x11.5  | 310      | 10 x12.5 |
| 470 (471)              | 6.3x11.2    | 230      | 8 x11.5  | 250      | 8 x11.5  | 310      | 10 x12.5 | 380      | 10 x16   |
| 1000 (102)             | 8 x11.5     | 380      | 10 x12.5 | 460      | 10 x16   | 560      | 10 x20   | 680      | 12.5x20  |
| 2200 (222)             | 10 x16      | 710      | 10 x20   | 760      | 12.5x20  | 920      | 12.5x25  | 1090     | 16 x25   |
| 3300 (332)             | 10 x20      | 840      | 12.5x20  | 1000     | 12.5x25  | 1170     | 16 x25   | 1400     | 16 x31.5 |
| 4700 (472)             | 12.5x20     | 1090     | 12.5x25  | 1260     | 16 x25   | 1480     | 16 x31.5 | 1750     | 18 x35.5 |
| 6800 (682)             | 12.5x25     | 1350     | 16 x25   | 1570     | 16 x25   | 1780     | 18 x35.5 | 2040     |          |
| 10000 (103)            | 16 x25      | 1650     | 16 x31.5 | 1890     | 18 x35.5 | 2060     |          |          |          |
| 15000 (153)            | 16 x31.5    | 2010     | 18 x35.5 | 2180     |          |          |          |          |          |
| 22000 (223)            | 18 x35.5    | 2350     |          |          |          |          |          |          |          |

| Cap. ( $\mu\text{F}$ ) | W.V. (V.DC) | 160 (2C) | 200 (2D) | 250 (2E) | 350 (2V) | 400 (2G) | 450 (2W) |
|------------------------|-------------|----------|----------|----------|----------|----------|----------|
| 1.0 (010)              | 6.3x11.2    | 17       | 6.3x11.2 | 17       | 6.3x11.2 | 17       | 6.3x11.2 |
| 2.2 (2R2)              | 6.3x11.2    | 25       | 6.3x11.2 | 25       | 6.3x11.2 | 29       | 8 x11.5  |
| 3.3 (3R3)              | 6.3x11.2    | 36       | 6.3x11.2 | 36       | 8 x11.5  | 42       | 10 x12.5 |
| 4.7 (4R7)              | 6.3x11.2    | 43       | 8 x11.5  | 50       | 8 x11.5  | 50       | 10 x16   |
| 10 (100)               | 10 x12.5    | 70       | 10 x16   | 80       | 10 x16   | 88       | 10 x20   |
| 22 (220)               | 10 x20      | 130      | 10 x20   | 140      | 12.5x20  | 155      | 12.5x20  |
| 33 (330)               | 10 x20      | 180      | 12.5x20  | 190      | 12.5x20  | 190      | 16 x25   |
| 47 (470)               | 12.5x20     | 220      | 12.5x20  | 220      | 12.5x25  | 230      | 16 x25   |
| 100 (101)              | 16 x25      | 335      | 16 x25   | 335      | 16 x31.5 | 365      | 18 x31.5 |
| 220 (221)              | 16 x31.5    | 540      | 18 x31.5 | 575      |          |          |          |
| 330 (331)              | 18 x31.5    | 705      |          |          |          |          |          |

( ) shows W.V. and capacitance code.

### ■ Standard Products

| W.V.<br>(V) | Cap.<br>(±20%)<br>(μF) | Case size    |                | Specification                                 |      |                      | Lead Length       |                  |                      | Part No. | Min. Packaging Qty<br>Straight Leads | Taping     |                      |
|-------------|------------------------|--------------|----------------|---|------|----------------------|-------------------|------------------|----------------------|----------|--------------------------------------|------------|----------------------|
|             |                        | Dia.<br>(mm) | Length<br>(mm) | Ripple current<br>(120Hz)<br>(+105°C)<br>(mA) | D.F. | Life Time<br>(hours) | Lead Dia.<br>(mm) | Lead Space       |                      |          |                                      |            |                      |
|             |                        |              |                |   |      |                      |                   | Straight<br>(mm) | Taping<br>*B<br>(mm) |          |                                      |            | Taping<br>*i<br>(mm) |
| 6.3         | 220                    | 5            | 11             | 140   | 0.28 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5      | ECA0JHG221( )                        | 200        | 2000                 |
|             | 470                    | 6.3          | 11.2           | 230   | 0.28 | 1000                 | 0.5               | 2.5              | 5.0                  | 2.5      | ECA0JHG471( )                        | 200        | 2000                 |
|             | 1000                   | 8            | 11.5           | 380   | 0.28 | 1000                 | 0.6               | 3.5              | 5.0                  |          | ECA0JHG102( )                        | 200        | 1000                 |
|             | 2200                   | 10           | 16             | 710   | 0.30 | 2000                 | 0.6               | 5.0              | 5.0                  |          | ECA0JHG222( )                        | 200        | 500                  |
|             | 3300                   | 10           | 20             | 840   | 0.32 | 2000                 | 0.6               | 5.0              | 5.0                  |          | ECA0JHG332( )                        | 200        | 500                  |
|             | 4700                   | 12.5         | 20             | 1090  | 0.34 | 2000                 | 0.6               | 5.0              | 5.0                  |          | ECA0JHG472( )                        | 200        | 500                  |
|             | 6800                   | 12.5         | 25             | 1350  | 0.38 | 2000                 | 0.6               | 5.0              | 5.0                  |          | ECA0JHG682( )                        | 200        | 500                  |
|             | 10000                  | 16           | 25             | 1650  | 0.46 | 2000                 | 0.8               | 7.5              | 7.5                  |          | ECA0JHG103( )                        | 100        | 250                  |
|             | 15000                  | 16           | 31.5           | 2010  | 0.56 | 2000                 | 0.8               | 7.5              |                      |          | ECA0JHG153                           | 100        |                      |
|             | 22000                  | 18           | 35.5           | 2350  | 0.70 | 2000                 | 0.8               | 7.5              |                      |          | ECA0JHG223                           | 50         |                      |
| 10          | 330                    | 6.3          | 11.2           | 200   | 0.24 | 1000                 | 0.5               | 2.5              | 5.0                  | 2.5      | ECA1AHG331( )                        | 200        | 2000                 |
|             | 470                    | 8            | 11.5           | 250   | 0.24 | 1000                 | 0.6               | 3.5              | 5.0                  |          | ECA1AHG471( )                        | 200        | 1000                 |
|             | 1000                   | 10           | 12.5           | 460   | 0.24 | 2000                 | 0.6               | 5.0              | 5.0                  |          | ECA1AHG102( )                        | 200        | 500                  |
|             | 2200                   | 10           | 20             | 760   | 0.26 | 2000                 | 0.6               | 5.0              | 5.0                  |          | ECA1AHG222( )                        | 200        | 500                  |
|             | 3300                   | 12.5         | 20             | 1000  | 0.28 | 2000                 | 0.6               | 5.0              | 5.0                  |          | ECA1AHG332( )                        | 200        | 500                  |
|             | 4700                   | 12.5         | 25             | 1260  | 0.30 | 2000                 | 0.6               | 5.0              | 5.0                  |          | ECA1AHG472( )                        | 200        | 500                  |
|             | 6800                   | 16           | 25             | 1570  | 0.34 | 2000                 | 0.8               | 7.5              | 7.5                  |          | ECA1AHG682( )                        | 100        | 250                  |
|             | 10000                  | 16           | 31.5           | 1890  | 0.42 | 2000                 | 0.8               | 7.5              |                      |          | ECA1AHG103                           | 100        |                      |
|             |                        | 15000        | 18             | 35.5  | 2180 | 0.52                 | 2000              | 0.8              | 7.5                  |          |                                      | ECA1AHG153 | 50                   |
| 16          | 100                    | 5            | 11             | 110   | 0.20 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5      | ECA1CHG101( )                        | 200        | 2000                 |
|             | 220                    | 6.3          | 11.2           | 180   | 0.20 | 1000                 | 0.5               | 2.5              | 5.0                  | 2.5      | ECA1CHG221( )                        | 200        | 2000                 |
|             | 330                    | 8            | 11.5           | 260   | 0.20 | 1000                 | 0.6               | 3.5              | 5.0                  |          | ECA1CHG331( )                        | 200        | 1000                 |
|             | 470                    | 8            | 11.5           | 310   | 0.20 | 1000                 | 0.6               | 3.5              | 5.0                  |          | ECA1CHG471( )                        | 200        | 1000                 |
|             | 1000                   | 10           | 16             | 560   | 0.20 | 2000                 | 0.6               | 5.0              | 5.0                  |          | ECA1CHG102( )                        | 200        | 500                  |
|             | 2200                   | 12.5         | 20             | 920   | 0.22 | 2000                 | 0.6               | 5.0              | 5.0                  |          | ECA1CHG222( )                        | 200        | 500                  |
|             | 3300                   | 12.5         | 25             | 1170  | 0.24 | 2000                 | 0.6               | 5.0              | 5.0                  |          | ECA1CHG332( )                        | 200        | 500                  |
|             | 4700                   | 16           | 25             | 1480  | 0.26 | 2000                 | 0.8               | 7.5              | 7.5                  |          | ECA1CHG472( )                        | 100        | 250                  |
|             |                        | 6800         | 16             | 31.5  | 1780 | 0.30                 | 2000              | 0.8              | 7.5                  |          |                                      | ECA1CHG682 | 100                  |
|             | 10000                  | 18           | 35.5           | 2060  | 0.38 | 2000                 | 0.8               | 7.5              |                      |          | ECA1CHG103                           | 50         |                      |
| 25          | 47                     | 5            | 11             | 91  | 0.16 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5      | ECA1EHG470( )                        | 200        | 2000                 |
|             | 100                    | 6.3          | 11.2           | 130   | 0.16 | 1000                 | 0.5               | 2.5              | 5.0                  | 2.5      | ECA1EHG101( )                        | 200        | 2000                 |
|             | 220                    | 8            | 11.5           | 230   | 0.16 | 1000                 | 0.6               | 3.5              | 5.0                  |          | ECA1EHG221( )                        | 200        | 1000                 |
|             | 330                    | 8            | 11.5           | 310   | 0.16 | 1000                 | 0.6               | 3.5              | 5.0                  |          | ECA1EHG331( )                        | 200        | 1000                 |
|             | 470                    | 10           | 12.5           | 380   | 0.16 | 2000                 | 0.6               | 5.0              | 5.0                  |          | ECA1EHG471( )                        | 200        | 500                  |
|             | 1000                   | 10           | 20             | 680   | 0.16 | 2000                 | 0.6               | 5.0              | 5.0                  |          | ECA1EHG102( )                        | 200        | 500                  |
|             | 2200                   | 12.5         | 25             | 1090  | 0.18 | 2000                 | 0.6               | 5.0              | 5.0                  |          | ECA1EHG222( )                        | 200        | 500                  |
|             | 3300                   | 16           | 25             | 1400  | 0.20 | 2000                 | 0.8               | 7.5              | 7.5                  |          | ECA1EHG332( )                        | 100        | 250                  |
|             |                        | 4700         | 16             | 31.5  | 1750 | 0.22                 | 2000              | 0.8              | 7.5                  |          |                                      | ECA1EHG472 | 100                  |
|             | 6800                   | 18           | 35.5           | 2040  | 0.26 | 2000                 | 0.8               | 7.5              |                      |          | ECA1EHG682                           | 50         |                      |
| 35          | 47                     | 5            | 11             | 90  | 0.14 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5      | ECA1VHG470( )                        | 200        | 2000                 |
|             | 100                    | 6.3          | 11.2           | 150   | 0.14 | 1000                 | 0.5               | 2.5              | 5.0                  | 2.5      | ECA1VHG101( )                        | 200        | 2000                 |
|             | 220                    | 8            | 11.5           | 270   | 0.14 | 1000                 | 0.6               | 3.5              | 5.0                  |          | ECA1VHG221( )                        | 200        | 1000                 |

When requesting taped product, please put the letter "B" or "i" between the "( )". Lead wire pitch B=5mm, 7.5mm. i=2.5mm.

The taping dimensions are explained on p. of our Catalog. Please use it as a reference guide.

■ Standard Products

| W.V.<br>(V) | Cap.<br>(±20%)<br>(μF) | Case size    |                | Specification                                 |      |                      | Lead Length       |                  |                      |                         | Part No.      | Min. Packaging Qty |                      |
|-------------|------------------------|--------------|----------------|---|------|----------------------|-------------------|------------------|----------------------|-------------------------|---------------|--------------------|----------------------|
|             |                        | Dia.<br>(mm) | Length<br>(mm) | Ripple current<br>(120Hz)<br>(+105°C)<br>(mA) | D.F. | Life Time<br>(hours) | Lead Dia.<br>(mm) | Lead Space       |                      | Straight Leads<br>(pcs) |               | Taping<br>(pcs)    |                      |
|             |                        |              |                |   |      |                      |                   | Straight<br>(mm) | Taping<br>*B<br>(mm) |                         |               |                    | Taping<br>*I<br>(mm) |
| 35          | 330                    | 10           | 12.5           | 350   | 0.14 | 2000                 | 0.6               | 5.0              | 5.0                  |                         | ECA1VHG331( ) | 200                | 500                  |
|             | 470                    | 10           | 16             | 460   | 0.14 | 2000                 | 0.6               | 5.0              | 5.0                  |                         | ECA1VHG471( ) | 200                | 500                  |
|             | 1000                   | 12.5         | 20             | 810   | 0.14 | 2000                 | 0.6               | 5.0              | 5.0                  |                         | ECA1VHG102( ) | 200                | 500                  |
|             | 2200                   | 16           | 25             | 1260  | 0.16 | 2000                 | 0.8               | 7.5              | 7.5                  |                         | ECA1VHG222( ) | 100                | 250                  |
|             | 3300                   | 16           | 31.5           | 1610  | 0.18 | 2000                 | 0.8               | 7.5              |                      |                         | ECA1VHG332    | 100                |                      |
|             | 4700                   | 18           | 35.5           | 1910  | 0.20 | 2000                 | 0.8               | 7.5              |                      |                         | ECA1VHG472    | 50                 |                      |
| 50          | 0.1                    | 5            | 11             | 1.1   | 0.12 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA1HHG0R1( ) | 200                | 2000                 |
|             | 0.22                   | 5            | 11             | 2.3   | 0.12 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA1HHGR22( ) | 200                | 2000                 |
|             | 0.33                   | 5            | 11             | 3.5   | 0.12 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA1HHGR33( ) | 200                | 2000                 |
|             | 0.47                   | 5            | 11             | 5   | 0.12 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA1HHGR47( ) | 200                | 2000                 |
|             | 1                      | 5            | 11             | 10  | 0.12 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA1HHG010( ) | 200                | 2000                 |
|             | 2.2                    | 5            | 11             | 18  | 0.12 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA1HHG2R2( ) | 200                | 2000                 |
|             | 3.3                    | 5            | 11             | 22  | 0.12 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA1HHG3R3( ) | 200                | 2000                 |
|             | 4.7                    | 5            | 11             | 26  | 0.12 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA1HHG4R7( ) | 200                | 2000                 |
|             | 10                     | 5            | 11             | 39  | 0.12 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA1HHG100( ) | 200                | 2000                 |
|             | 22                     | 5            | 11             | 65  | 0.12 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA1HHG220( ) | 200                | 2000                 |
|             | 33                     | 5            | 11             | 90  | 0.12 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA1HHG330( ) | 200                | 2000                 |
|             | 47                     | 6.3          | 11.2           | 110   | 0.12 | 1000                 | 0.5               | 2.5              | 5.0                  | 2.5                     | ECA1HHG470( ) | 200                | 2000                 |
|             | 100                    | 8            | 11.5           | 180   | 0.12 | 1000                 | 0.6               | 3.5              | 5.0                  |                         | ECA1HHG101( ) | 200                | 1000                 |
|             | 220                    | 10           | 12.5           | 300   | 0.12 | 2000                 | 0.6               | 5.0              | 5.0                  |                         | ECA1HHG221( ) | 200                | 500                  |
|             | 330                    | 10           | 16             | 410   | 0.12 | 2000                 | 0.6               | 5.0              | 5.0                  |                         | ECA1HHG331( ) | 200                | 500                  |
| 470         | 10                     | 20           | 530            | 0.12  | 2000 | 0.6                  | 5.0               | 5.0              |                      | ECA1HHG471( )           | 200           | 500                |                      |
| 1000        | 12.5                   | 25           | 950            | 0.12  | 2000 | 0.6                  | 5.0               | 5.0              |                      | ECA1HHG102( )           | 200           | 500                |                      |
| 2200        | 16                     | 31.5         | 1470           | 0.14  | 2000 | 0.8                  | 7.5               |                  |                      | ECA1HHG222              | 100           |                    |                      |
| 3300        | 18                     | 35.5         | 1770           | 0.16  | 2000 | 0.8                  | 7.5               |                  |                      | ECA1HHG332              | 50            |                    |                      |
| 63          | 10                     | 5            | 11             | 46  | 0.10 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA1JHG100( ) | 200                | 2000                 |
|             | 22                     | 5            | 11             | 71  | 0.10 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA1JHG220( ) | 200                | 2000                 |
|             | 33                     | 6.3          | 11.2           | 100   | 0.10 | 1000                 | 0.5               | 2.5              | 5.0                  | 2.5                     | ECA1JHG330( ) | 200                | 2000                 |
|             | 47                     | 6.3          | 11.2           | 120   | 0.10 | 1000                 | 0.5               | 2.5              | 5.0                  | 2.5                     | ECA1JHG470( ) | 200                | 2000                 |
|             | 100                    | 10           | 12.5           | 215   | 0.10 | 2000                 | 0.6               | 5.0              | 5.0                  |                         | ECA1JHG101( ) | 200                | 500                  |
|             | 220                    | 10           | 16             | 335   | 0.10 | 2000                 | 0.6               | 5.0              | 5.0                  |                         | ECA1JHG221( ) | 200                | 500                  |
|             | 330                    | 10           | 20             | 510   | 0.10 | 2000                 | 0.6               | 5.0              | 5.0                  |                         | ECA1JHG331( ) | 200                | 500                  |
|             | 470                    | 12.5         | 20             | 640   | 0.10 | 2000                 | 0.6               | 5.0              | 5.0                  |                         | ECA1JHG471( ) | 200                | 500                  |
|             | 1000                   | 16           | 25             | 930   | 0.10 | 2000                 | 0.8               | 7.5              | 7.5                  |                         | ECA1JHG102( ) | 100                | 250                  |
| 2200        | 18                     | 35.5         | 1610           | 0.12  | 2000 | 0.8                  | 7.5               |                  |                      | ECA1JHG222              | 50            |                    |                      |
| 100         | 0.47                   | 5            | 11             | 9   | 0.08 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA2AHGR47( ) | 200                | 2000                 |
|             | 1                      | 5            | 11             | 14  | 0.08 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA2AHG010( ) | 200                | 2000                 |
|             | 2.2                    | 5            | 11             | 21  | 0.08 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA2AHG2R2( ) | 200                | 2000                 |
|             | 3.3                    | 5            | 11             | 31  | 0.08 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA2AHG3R3( ) | 200                | 2000                 |
|             | 4.7                    | 5            | 11             | 38  | 0.08 | 1000                 | 0.5               | 2.0              | 5.0                  | 2.5                     | ECA2AHG4R7( ) | 200                | 2000                 |
|             | 10                     | 6.3          | 11.2           | 54  | 0.08 | 1000                 | 0.5               | 2.5              | 5.0                  | 2.5                     | ECA2AHG100( ) | 200                | 20.0                 |
|             | 22                     | 6.3          | 11.2           | 93  | 0.08 | 1000                 | 0.5               | 2.5              | 5.0                  | 2.5                     | ECA2AHG220( ) | 200                | 2000                 |

When requesting taped product, please put the letter "B" or "I" between the "( )". Lead wire pitch B=5mm, 7.5mm. I=2.5mm.

The taping dimensions are explained on p.25 of our Catalog. Please use it as a reference guide.

### ■ Standard Products

| W.V.<br>(V) | Cap.<br>(±20%)<br>(μF) | Case size    |                | Specification                                 |      |                      | Lead Length       |                  |                      |                      | Part No.      | Min. Packaging Qty      |                 |
|-------------|------------------------|--------------|----------------|---|------|----------------------|-------------------|------------------|----------------------|----------------------|---------------|-------------------------|-----------------|
|             |                        | Dia.<br>(mm) | Length<br>(mm) | Ripple current<br>(120Hz)<br>(+105°C)<br>(mA) | D.F. | Life Time<br>(hours) | Lead Dia.<br>(mm) | Lead Space       |                      |                      |               | Straight Leads<br>(pcs) | Taping<br>(pcs) |
|             |                        |              |                |   |      |                      |                   | Straight<br>(mm) | Taping<br>*B<br>(mm) | Taping<br>*i<br>(mm) |               |                         |                 |
| 100         | 33                     | 8            | 11.5           | 130   | 0.08 | 1000                 | 0.6               | 3.5              | 5.0                  |                      | ECA2AHG330( ) | 200                     | 1000            |
|             | 47                     | 10           | 12.5           | 165   | 0.08 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2AHG470( ) | 200                     | 500             |
|             | 100                    | 10           | 20             | 265   | 0.08 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2AHG101( ) | 200                     | 500             |
|             | 220                    | 12.5         | 25             | 440   | 0.08 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2AHG221( ) | 200                     | 500             |
|             | 330                    | 16           | 25             | 540   | 0.08 | 2000                 | 0.8               | 7.5              | 7.5                  |                      | ECA2AHG331( ) | 100                     | 250             |
|             | 470                    | 16           | 25             | 715   | 0.08 | 2000                 | 0.8               | 7.5              | 7.5                  |                      | ECA2AHG471( ) | 100                     | 250             |
|             | 1000                   | 18           | 35.5           | 985   | 0.08 | 2000                 | 0.8               | 7.5              |                      |                      | ECA2AHG102    | 50                      |                 |
| 160         | 1                      | 6.3          | 11.2           | 17  | 0.15 | 2000                 | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA2CHG010( ) | 200                     | 2000            |
|             | 2.2                    | 6.3          | 11.2           | 25  | 0.15 | 2000                 | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA2CHG2R2( ) | 200                     | 2000            |
|             | 3.3                    | 6.3          | 11.2           | 36  | 0.15 | 2000                 | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA2CHG3R3( ) | 200                     | 2000            |
|             | 4.7                    | 6.3          | 11.2           | 43  | 0.15 | 2000                 | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA2CHG4R7( ) | 200                     | 2000            |
|             | 10                     | 10           | 12.5           | 70  | 0.15 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2CHG100( ) | 200                     | 500             |
|             | 22                     | 10           | 20             | 130   | 0.15 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2CHG220( ) | 200                     | 500             |
|             | 33                     | 10           | 20             | 180   | 0.15 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2CHG330( ) | 200                     | 500             |
|             | 47                     | 12.5         | 20             | 220   | 0.15 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2CHG470( ) | 200                     | 500             |
|             | 100                    | 16           | 25             | 335   | 0.15 | 2000                 | 0.8               | 7.5              | 7.5                  |                      | ECA2CHG101( ) | 100                     | 250             |
|             | 220                    | 16           | 31.5           | 540   | 0.15 | 2000                 | 0.8               | 7.5              |                      |                      | ECA2CHG221    | 100                     |                 |
|             | 330                    | 18           | 31.5           | 705   | 0.15 | 2000                 | 0.8               | 7.5              |                      |                      | ECA2CHG331    | 50                      |                 |
| 200         | 1                      | 6.3          | 11.2           | 17  | 0.15 | 2000                 | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA2DHG010( ) | 200                     | 2000            |
|             | 2.2                    | 6.3          | 11.2           | 25  | 0.15 | 2000                 | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA2DHG2R2( ) | 200                     | 2000            |
|             | 3.3                    | 6.3          | 11.2           | 36  | 0.15 | 2000                 | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA2DHG3R3( ) | 200                     | 2000            |
|             | 4.7                    | 8            | 11.5           | 50  | 0.15 | 2000                 | 0.6               | 3.5              | 5.0                  |                      | ECA2DHG4R7( ) | 200                     | 1000            |
|             | 10                     | 10           | 16             | 80  | 0.15 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2DHG100( ) | 200                     | 500             |
|             | 22                     | 10           | 20             | 140   | 0.15 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2DHG220( ) | 200                     | 500             |
|             | 33                     | 12.5         | 20             | 190   | 0.15 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2DHG330( ) | 200                     | 500             |
|             | 47                     | 12.5         | 20             | 220   | 0.15 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2DHG470( ) | 200                     | 500             |
|             | 100                    | 16           | 25             | 335   | 0.15 | 2000                 | 0.8               | 7.5              | 7.5                  |                      | ECA2DHG101( ) | 100                     | 250             |
|             | 220                    | 18           | 31.5           | 575   | 0.15 | 2000                 | 0.8               | 7.5              |                      |                      | ECA2DHG221    | 50                      |                 |
| 250         | 1                      | 6.3          | 11.2           | 17  | 0.15 | 2000                 | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA2EHG010( ) | 200                     | 2000            |
|             | 2.2                    | 6.3          | 11.2           | 29  | 0.15 | 2000                 | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA2EHG2R2( ) | 200                     | 2000            |
|             | 3.3                    | 8            | 11.5           | 42  | 0.15 | 2000                 | 0.6               | 3.5              | 5.0                  |                      | ECA2EHG3R3( ) | 200                     | 1000            |
|             | 4.7                    | 8            | 11.5           | 50  | 0.15 | 2000                 | 0.6               | 3.5              | 5.0                  |                      | ECA2EHG4R7( ) | 200                     | 1000            |
|             | 10                     | 10           | 16             | 88  | 0.15 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2EHG100( ) | 200                     | 500             |
|             | 22                     | 12.5         | 20             | 155   | 0.15 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2EHG220( ) | 200                     | 500             |
|             | 33                     | 12.5         | 20             | 190   | 0.15 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2EHG330( ) | 200                     | 500             |
|             | 47                     | 12.5         | 25             | 230   | 0.15 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2EHG470( ) | 200                     | 500             |
|             | 100                    | 16           | 31.5           | 365   | 0.15 | 2000                 | 0.8               | 7.5              |                      |                      | ECA2EHG101    | 100                     |                 |
| 350         | 1                      | 6.3          | 11.2           | 18  | 0.20 | 2000                 | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA2VHG010( ) | 200                     | 2000            |
|             | 2.2                    | 8            | 11.5           | 31  | 0.20 | 2000                 | 0.6               | 3.5              | 5.0                  |                      | ECA2VHG2R2( ) | 200                     | 1000            |
|             | 3.3                    | 10           | 12.5           | 38  | 0.20 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2VHG3R3( ) | 200                     | 500             |
|             | 4.7                    | 10           | 16             | 50  | 0.20 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2VHG4R7( ) | 200                     | 500             |
|             | 10                     | 10           | 20             | 82  | 0.20 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2VHG100( ) | 200                     | 500             |

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• i Standard Products

| W.V. | Cap.<br>(±20%)<br><br>(V) | Case size |        | Specification                                 |      |                      | Lead Length       |                  |                      |                      | Part No.      | Min. Packaging Qty      |                 |
|------|---------------------------|-----------|--------|---|------|----------------------|-------------------|------------------|----------------------|----------------------|---------------|-------------------------|-----------------|
|      |                           | Dia.      | Length | Ripple current<br>(120Hz)<br>(+105°C)<br>(mA) | D.F. | Life Time<br>(hours) | Lead Dia.<br>(mm) | Lead Space       |                      |                      |               | Straight Leads<br>(pcs) | Taping<br>(pcs) |
|      |                           |           |        |   |      |                      |                   | Straight<br>(mm) | Taping<br>*B<br>(mm) | Taping<br>*i<br>(mm) |               |                         |                 |
| 350  | 22                        | 12.5      | 20     | 130   | 0.20 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2VHG220( ) | 200                     | 500             |
|      | 33                        | 16        | 25     | 195   | 0.20 | 2000                 | 0.8               | 7.5              | 7.5                  |                      | ECA2VHG330( ) | 100                     | 250             |
|      | 47                        | 16        | 25     | 230   | 0.20 | 2000                 | 0.8               | 7.5              | 7.5                  |                      | ECA2VHG470( ) | 100                     | 250             |
|      | 100                       | 18        | 31.5   | 375   | 0.20 | 2000                 | 0.8               | 7.5              |                      |                      | ECA2VHG101    | 50                      |                 |
| 400  | 1                         | 6.3       | 11.2   | 18  | 0.24 | 2000                 | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA2GHG010( ) | 200                     | 2000            |
|      | 2.2                       | 8         | 11.5   | 30  | 0.24 | 2000                 | 0.6               | 3.5              | 5.0                  |                      | ECA2GHG2R2( ) | 200                     | 1000            |
|      | 3.3                       | 10        | 12.5   | 40  | 0.24 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2GHG3R3( ) | 200                     | 500             |
|      | 4.7                       | 10        | 16     | 50  | 0.24 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2GHG4R7( ) | 200                     | 500             |
|      | 10                        | 10        | 20     | 80  | 0.24 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2GHG100( ) | 200                     | 500             |
|      | 22                        | 12.5      | 25     | 145   | 0.24 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2GHG220( ) | 200                     | 500             |
|      | 33                        | 16        | 25     | 195   | 0.24 | 2000                 | 0.8               | 7.5              | 7.5                  |                      | ECA2GHG330( ) | 100                     | 250             |
| 450  | 1                         | 8         | 11.5   | 18  | 0.24 | 2000                 | 0.6               | 3.5              | 5.0                  |                      | ECA2WHG010( ) | 200                     | 1000            |
|      | 2.2                       | 10        | 12.5   | 29  | 0.24 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2WHG2R2( ) | 200                     | 500             |
|      | 3.3                       | 10        | 16     | 41  | 0.24 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2WHG3R3( ) | 200                     | 500             |
|      | 4.7                       | 10        | 20     | 49  | 0.24 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2WHG4R7( ) | 200                     | 500             |
|      | 10                        | 12.5      | 20     | 75  | 0.24 | 2000                 | 0.6               | 5.0              | 5.0                  |                      | ECA2WHG100( ) | 200                     | 500             |
|      | 22                        | 16        | 25     | 115   | 0.24 | 2000                 | 0.8               | 7.5              | 7.5                  |                      | ECA2WHG220( ) | 100                     | 250             |
|      | 33                        | 16        | 31.5   | 155   | 0.24 | 2000                 | 0.8               | 7.5              |                      |                      | ECA2WHG330    | 100                     |                 |

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