

### Radial Lead Type

Series: **M** Type: **A**



#### ■ Features

- Endurance : 85 °C 2000 h
- Smaller than series SU
- RoHS directive compliant

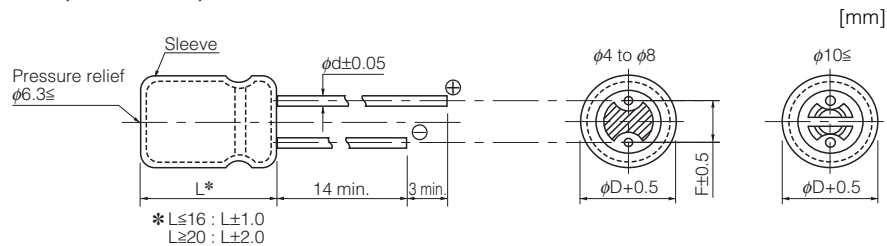
#### ■ Specifications

|                       |  |  |
|-----------------------|--|--|
| Category Temp. Range  | -40 °C to + 85 °C  | -25 °C to +85 °C                           |
| Rated W.V. Range      | 6.3 V.DC to 100 V.DC   | 160 V.DC to 450 V.DC                       |
| Nominal Cap. Range    | 0.1 μF to 22000 μF   | 1 μF to 470 μF                             |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C)  |  |
| DC Leakage Current    | $I \leq 0.01 CV$ or 3 (μA) After 2 minutes<br>(Whichever is greater)   | $I \leq 0.06 CV + 10$ (μA) After 2 minutes |
| tan δ                 | Please see the attached standard products list   |  |
| Endurance             | After applying rated working voltage for 2000 hours at +85°C±2 °C, when the capacitors are restored to 20 °C, capacitors shall meet the following limits.                                  |  |
|                       | Capacitance change   | ±20 % of initial measured value            |
|                       | tan δ  | ≤150 % of initial specified value          |
|                       | DC leakage current   | ≤initial specified value                   |
| Shelf Life            | After storage for 1000 hours at +85 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) |  |

#### ■ Frequency correction factor for ripple current

|                   | Frequency (Hz) |      |      |         |
|-------------------|----------------|------|------|---------|
|                   | 50, 60         | 120  | 1 k  | 10 k to |
| Correction factor | 0.70           | 1.00 | 1.30 | 1.70    |

#### ■ Dimensions in mm (not to scale)



(mm)

|              | 5   | 6.3 | 8   | 10  | 12.5 | 16  | 18  |
|--------------|-----|-----|-----|-----|------|-----|-----|
| Body Dia. φD | 5   | 6.3 | 8   | 10  | 12.5 | 16  | 18  |
| Lead Dia. φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6  | 0.8 | 0.8 |
| Lead space F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0  | 7.5 | 7.5 |

### 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>(120 Hz)<br>(+85 °C)<br>(mA r.m.s.) | tan δ<br>(120 Hz)<br>(+20 °C) | 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) |              |                         |                 |
| 6.3         | 220                     | 5            | 11             | 240   | 0.28                          | 0.5               | 2.0              | 5.0                  | 2.5                  | ECA0JM221( ) | 200                     | 2000            |
|             | 470                     | 6.3          | 11.2           | 380   | 0.28                          | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA0JM471( ) | 200                     | 2000            |
|             | 1000                    | 8            | 11.5           | 580   | 0.28                          | 0.6               | 3.5              | 5.0                  |                      | ECA0JM102( ) | 200                     | 1000            |
|             | 2200                    | 10           | 16             | 890   | 0.30                          | 0.6               | 5.0              | 5.0                  |                      | ECA0JM222( ) | 200                     | 500             |
|             | 3300                    | 10           | 20             | 1020  | 0.32                          | 0.6               | 5.0              | 5.0                  |                      | ECA0JM332( ) | 200                     | 500             |
|             | 4700                    | 12.5         | 20             | 1170  | 0.34                          | 0.6               | 5.0              | 5.0                  |                      | ECA0JM472( ) | 200                     | 500             |
|             | 6800                    | 12.5         | 25             | 1270  | 0.38                          | 0.6               | 5.0              | 5.0                  |                      | ECA0JM682( ) | 200                     | 500             |
|             | 10000                   | 16           | 25             | 1450  | 0.46                          | 0.8               | 7.5              | 7.5                  |                      | ECA0JM103( ) | 100                     | 250             |
|             | 15000                   | 16           | 31.5           | 1700  | 0.56                          | 0.8               | 7.5              |                      |                      | ECA0JM153    | 100                     |                 |
| 10          | 330                     | 6.3          | 11.2           | 330   | 0.24                          | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA1AM331( ) | 200                     | 2000            |
|             | 1000                    | 10           | 12.5           | 630   | 0.24                          | 0.6               | 5.0              | 5.0                  |                      | ECA1AM102( ) | 200                     | 500             |
|             | 2200                    | 10           | 20             | 920   | 0.26                          | 0.6               | 5.0              | 5.0                  |                      | ECA1AM222( ) | 200                     | 500             |
|             | 3300                    | 12.5         | 20             | 1090  | 0.28                          | 0.6               | 5.0              | 5.0                  |                      | ECA1AM332( ) | 200                     | 500             |
|             | 4700                    | 12.5         | 25             | 1200  | 0.30                          | 0.6               | 5.0              | 5.0                  |                      | ECA1AM472( ) | 200                     | 500             |
|             | 6800                    | 16           | 25             | 1400  | 0.34                          | 0.8               | 7.5              | 7.5                  |                      | ECA1AM682( ) | 100                     | 250             |
|             | 10000                   | 16           | 31.5           | 1600  | 0.42                          | 0.8               | 7.5              |                      |                      | ECA1AM103    | 100                     |                 |
|             | 15000                   | 18           | 35.5           | 1850  | 0.52                          | 0.8               | 7.5              |                      |                      | ECA1AM153    | 50                      |                 |
| 16          | 10                      | 5            | 11             | 30  | 0.20                          | 0.5               | 2.0              | 5.0                  | 2.5                  | ECA1CM100( ) | 200                     | 2000            |
|             | 22                      | 5            | 11             | 75  | 0.20                          | 0.5               | 2.0              | 5.0                  | 2.5                  | ECA1CM220( ) | 200                     | 2000            |
|             | 33                      | 5            | 11             | 110   | 0.20                          | 0.5               | 2.0              | 5.0                  | 2.5                  | ECA1CM330( ) | 200                     | 2000            |
|             | 47                      | 5            | 11             | 130   | 0.20                          | 0.5               | 2.0              | 5.0                  | 2.5                  | ECA1CM470( ) | 200                     | 2000            |
|             | 100                     | 5            | 11             | 180   | 0.20                          | 0.5               | 2.0              | 5.0                  | 2.5                  | ECA1CM101( ) | 200                     | 2000            |
|             | 220                     | 6.3          | 11.2           | 280   | 0.20                          | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA1CM221( ) | 200                     | 2000            |
|             | 470                     | 8            | 11.5           | 440   | 0.20                          | 0.6               | 3.5              | 5.0                  |                      | ECA1CM471( ) | 200                     | 1000            |
|             | 1000                    | 10           | 16             | 680   | 0.20                          | 0.6               | 5.0              | 5.0                  |                      | ECA1CM102( ) | 200                     | 500             |
|             | 2200                    | 12.5         | 20             | 1000  | 0.22                          | 0.6               | 5.0              | 5.0                  |                      | ECA1CM222( ) | 200                     | 500             |
|             | 3300                    | 12.5         | 25             | 1200  | 0.24                          | 0.6               | 5.0              | 5.0                  |                      | ECA1CM332( ) | 200                     | 500             |
|             | 4700                    | 16           | 25             | 1360  | 0.26                          | 0.8               | 7.5              | 7.5                  |                      | ECA1CM472( ) | 100                     | 250             |
|             | 6800                    | 16           | 31.5           | 1600  | 0.30                          | 0.8               | 7.5              |                      |                      | ECA1CM682    | 100                     |                 |
| 10000       | 18                      | 35.5         | 1800           | 0.38  | 0.8                           | 7.5               |                  |                      | ECA1CM103            | 50           |                         |                 |
| 25          | 100                     | 6.3          | 11.2           | 180   | 0.16                          | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA1EM101( ) | 200                     | 2000            |
|             | 330                     | 8            | 11.5           | 390   | 0.16                          | 0.6               | 3.5              | 5.0                  |                      | ECA1EM331( ) | 200                     | 1000            |
|             | 470                     | 10           | 12.5           | 480   | 0.16                          | 0.6               | 5.0              | 5.0                  |                      | ECA1EM471( ) | 200                     | 500             |
|             | 1000                    | 10           | 20             | 850   | 0.16                          | 0.6               | 5.0              | 5.0                  |                      | ECA1EM102( ) | 200                     | 500             |
|             | 2200                    | 12.5         | 25             | 1200  | 0.18                          | 0.6               | 5.0              | 5.0                  |                      | ECA1EM222( ) | 200                     | 500             |
|             | 3300                    | 16           | 25             | 1300  | 0.20                          | 0.8               | 7.5              | 7.5                  |                      | ECA1EM332( ) | 100                     | 250             |
|             | 4700                    | 16           | 31.5           | 1500  | 0.22                          | 0.8               | 7.5              |                      |                      | ECA1EM472    | 100                     |                 |
|             | 6800                    | 18           | 35.5           | 1750  | 0.26                          | 0.8               | 7.5              |                      |                      | ECA1EM682    | 50                      |                 |
| 35          | 47                      | 5            | 11             | 130   | 0.14                          | 0.5               | 2.0              | 5.0                  | 2.5                  | ECA1VM470( ) | 200                     | 2000            |
|             | 100                     | 6.3          | 11.2           | 210   | 0.14                          | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA1VM101( ) | 200                     | 2000            |
|             | 220                     | 8            | 11.5           | 350   | 0.14                          | 0.6               | 3.5              | 5.0                  |                      | ECA1VM221( ) | 200                     | 1000            |

Endurance : 85 °C 2000 h

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00 Sep. 2010

### Standard Products

| W.V. | Cap.<br>(±20 %) | Case size |        | Specification   |                               | Lead Length |            |              |              | Part No.     | Min. Packaging Qty |        |
|------|-----------------|-----------|--------|---|-------------------------------|-------------|------------|--------------|--------------|--------------|--------------------|--------|
|      |                 | Dia.      | Length | Ripple Current<br>(120 Hz)<br>(+85 °C)<br>(mA r.m.s.) | tan δ<br>(120 Hz)<br>(+20 °C) | Lead Dia.   | Lead Space |              |              |              | Straight Leads     | Taping |
|      |                 |           |        |   |                               |             | Straight   | Taping<br>*B | Taping<br>*i |              |                    |        |
| (V)  | (μF)            | (mm)      | (mm)   | (mA r.m.s.)   |                               | (mm)        | (mm)       | (mm)         |              |              | (pcs)              | (pcs)  |
| 35   | 330             | 10        | 12.5   | 440   | 0.14                          | 0.6         | 5.0        | 5.0          |              | ECA1VM331( ) | 200                | 500    |
|      | 470             | 10        | 16     | 550   | 0.14                          | 0.6         | 5.0        | 5.0          |              | ECA1VM471( ) | 200                | 500    |
|      | 1000            | 12.5      | 20     | 900   | 0.14                          | 0.6         | 5.0        | 5.0          |              | ECA1VM102( ) | 200                | 500    |
|      | 2200            | 16        | 25     | 1250  | 0.16                          | 0.8         | 7.5        | 7.5          |              | ECA1VM222( ) | 100                | 250    |
|      | 3300            | 16        | 31.5   | 1400  | 0.18                          | 0.8         | 7.5        |              |              | ECA1VM332    | 100                |        |
|      | 4700            | 18        | 35.5   | 1600  | 0.20                          | 0.8         | 7.5        |              |              | ECA1VM472    | 50                 |        |
| 50   | 0.1             | 5         | 11     | 1.3   | 0.12                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA1HM0R1( ) | 200                | 2000   |
|      | 0.22            | 5         | 11     | 2.9   | 0.12                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA1HMR22( ) | 200                | 2000   |
|      | 0.33            | 5         | 11     | 4.4   | 0.12                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA1HMR33( ) | 200                | 2000   |
|      | 0.47            | 5         | 11     | 5   | 0.12                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA1HMR47( ) | 200                | 2000   |
|      | 1               | 5         | 11     | 10  | 0.12                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA1HM010( ) | 200                | 2000   |
|      | 2.2             | 5         | 11     | 20  | 0.12                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA1HM2R2( ) | 200                | 2000   |
|      | 3.3             | 5         | 11     | 35  | 0.12                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA1HM3R3( ) | 200                | 2000   |
|      | 4.7             | 5         | 11     | 45  | 0.12                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA1HM4R7( ) | 200                | 2000   |
|      | 10              | 5         | 11     | 65  | 0.12                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA1HM100( ) | 200                | 2000   |
|      | 22              | 5         | 11     | 100   | 0.12                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA1HM220( ) | 200                | 2000   |
|      | 33              | 5         | 11     | 110   | 0.12                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA1HM330( ) | 200                | 2000   |
|      | 47              | 6.3       | 11.2   | 130   | 0.12                          | 0.5         | 2.5        | 5.0          | 2.5          | ECA1HM470( ) | 200                | 2000   |
|      | 100             | 8         | 11.5   | 250   | 0.12                          | 0.6         | 3.5        | 5.0          |              | ECA1HM101( ) | 200                | 1000   |
|      | 220             | 10        | 12.5   | 400   | 0.12                          | 0.6         | 5.0        | 5.0          |              | ECA1HM221( ) | 200                | 500    |
|      | 330             | 10        | 16     | 500   | 0.12                          | 0.6         | 5.0        | 5.0          |              | ECA1HM331( ) | 200                | 500    |
|      | 470             | 10        | 20     | 650   | 0.12                          | 0.6         | 5.0        | 5.0          |              | ECA1HM471( ) | 200                | 500    |
|      | 1000            | 12.5      | 25     | 1050  | 0.12                          | 0.6         | 5.0        | 5.0          |              | ECA1HM102( ) | 200                | 500    |
|      | 2200            | 16        | 31.5   | 1300  | 0.14                          | 0.8         | 7.5        |              |              | ECA1HM222    | 100                |        |
| 3300 | 18              | 35.5      | 1500   | 0.16  | 0.8                           | 7.5         |            |              | ECA1HM332    | 50           |                    |        |
| 63   | 10              | 5         | 11     | 70  | 0.11                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA1JM100( ) | 200                | 2000   |
|      | 22              | 5         | 11     | 105   | 0.11                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA1JM220( ) | 200                | 2000   |
|      | 33              | 6.3       | 11.2   | 130   | 0.11                          | 0.5         | 2.5        | 5.0          | 2.5          | ECA1JM330( ) | 200                | 2000   |
|      | 47              | 6.3       | 11.2   | 160   | 0.11                          | 0.5         | 2.5        | 5.0          | 2.5          | ECA1JM470( ) | 200                | 2000   |
|      | 100             | 8         | 11.5   | 270   | 0.11                          | 0.6         | 3.5        | 5.0          |              | ECA1JM101( ) | 200                | 1000   |
|      | 220             | 10        | 16     | 450   | 0.11                          | 0.6         | 5.0        | 5.0          |              | ECA1JM221( ) | 200                | 500    |
|      | 330             | 10        | 20     | 550   | 0.11                          | 0.6         | 5.0        | 5.0          |              | ECA1JM331( ) | 200                | 500    |
|      | 470             | 12.5      | 20     | 750   | 0.11                          | 0.6         | 5.0        | 5.0          |              | ECA1JM471( ) | 200                | 500    |
|      | 1000            | 16        | 25     | 1100  | 0.11                          | 0.8         | 7.5        | 7.5          |              | ECA1JM102( ) | 100                | 250    |
| 2200 | 18              | 35.5      | 1400   | 0.13  | 0.8                           | 7.5         |            |              | ECA1JM222    | 50           |                    |        |
| 100  | 0.47            | 5         | 11     | 10  | 0.10                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA2AMR47( ) | 200                | 2000   |
|      | 1               | 5         | 11     | 20  | 0.10                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA2AM010( ) | 200                | 2000   |
|      | 2.2             | 5         | 11     | 30  | 0.10                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA2AM2R2( ) | 200                | 2000   |
|      | 3.3             | 5         | 11     | 40  | 0.10                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA2AM3R3( ) | 200                | 2000   |
|      | 4.7             | 5         | 11     | 50  | 0.10                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA2AM4R7( ) | 200                | 2000   |
|      | 10              | 5         | 11     | 70  | 0.10                          | 0.5         | 2.0        | 5.0          | 2.5          | ECA2AM100( ) | 200                | 2000   |
|      | 22              | 6.3       | 11.2   | 115   | 0.10                          | 0.5         | 2.5        | 5.0          | 2.5          | ECA2AM220( ) | 200                | 2000   |

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### Standard Products

| W.V. | Cap.<br>(±20 %) | Case size |        | Specification                          |                               | Lead Length |            |           |           | Part No.     | Min. Packaging Qty |        |
|------|-----------------|-----------|--------|--|-------------------------------|-------------|------------|-----------|-----------|--------------|--------------------|--------|
|      |                 | Dia.      | Length | Ripple Current<br>(120 Hz)<br>(+85 °C) | tan δ<br>(120 Hz)<br>(+20 °C) | Lead Dia.   | Lead Space |           |           |              | Straight Leads     | Taping |
|      |                 |           |        |  |                               |             | Straight   | Taping *B | Taping *i |              |                    |        |
| (V)  | (μF)            | (mm)      | (mm)   | (mA r.m.s.)                            |                               | (mm)        | (mm)       | (mm)      |           | (pcs)        | (pcs)              |        |
| 100  | 33              | 8         | 11.5   | 145                                    | 0.10                          | 0.6         | 3.5        | 5.0       |           | ECA2AM330( ) | 200                | 1000   |
|      | 47              | 8         | 11.5   | 180                                    | 0.10                          | 0.6         | 3.5        | 5.0       |           | ECA2AM470( ) | 200                | 1000   |
|      | 100             | 10        | 16     | 350                                    | 0.10                          | 0.6         | 5.0        | 5.0       |           | ECA2AM101( ) | 200                | 500    |
|      | 220             | 12.5      | 20     | 550                                    | 0.10                          | 0.6         | 5.0        | 5.0       |           | ECA2AM221( ) | 200                | 500    |
|      | 330             | 12.5      | 25     | 700                                    | 0.10                          | 0.6         | 5.0        | 5.0       |           | ECA2AM331( ) | 200                | 500    |
|      | 470             | 16        | 25     | 900                                    | 0.10                          | 0.8         | 7.5        | 7.5       |           | ECA2AM471( ) | 100                | 250    |
|      | 1000            | 18        | 35.5   | 1300                                   | 0.10                          | 0.8         | 7.5        |           |           | ECA2AM102    | 50                 |        |
| 160  | 1               | 6.3       | 11.2   | 36                                     | 0.16                          | 0.5         | 2.5        | 5.0       | 2.5       | ECA2CM010( ) | 200                | 2000   |
|      | 2.2             | 6.3       | 11.2   | 53                                     | 0.16                          | 0.5         | 2.5        | 5.0       | 2.5       | ECA2CM2R2( ) | 200                | 2000   |
|      | 3.3             | 6.3       | 11.2   | 66                                     | 0.16                          | 0.5         | 2.5        | 5.0       | 2.5       | ECA2CM3R3( ) | 200                | 2000   |
|      | 4.7             | 6.3       | 11.2   | 78                                     | 0.16                          | 0.5         | 2.5        | 5.0       | 2.5       | ECA2CM4R7( ) | 200                | 2000   |
|      | 10              | 10        | 12.5   | 105                                    | 0.16                          | 0.6         | 5.0        | 5.0       |           | ECA2CM100( ) | 200                | 500    |
|      | 22              | 10        | 16     | 175                                    | 0.16                          | 0.6         | 5.0        | 5.0       |           | ECA2CM220( ) | 200                | 500    |
|      | 33              | 10        | 20     | 235                                    | 0.16                          | 0.6         | 5.0        | 5.0       |           | ECA2CM330( ) | 200                | 500    |
|      | 47              | 12.5      | 20     | 320                                    | 0.16                          | 0.6         | 5.0        | 5.0       |           | ECA2CM470( ) | 200                | 500    |
|      | 100             | 12.5      | 25     | 515                                    | 0.16                          | 0.6         | 5.0        | 5.0       |           | ECA2CM101( ) | 200                | 500    |
|      | 220             | 16        | 31.5   | 830                                    | 0.16                          | 0.8         | 7.5        |           |           | ECA2CM221    | 100                |        |
|      | 330             | 18        | 31.5   | 1090                                   | 0.16                          | 0.8         | 7.5        |           |           | ECA2CM331    | 50                 |        |
| 470  | 18              | 40        | 1440   | 0.16                                   | 0.8                           | 7.5         |            |           | ECA2CM471 | 50           |                    |        |
| 200  | 1               | 6.3       | 11.2   | 34                                     | 0.18                          | 0.5         | 2.5        | 5.0       | 2.5       | ECA2DM010( ) | 200                | 2000   |
|      | 2.2             | 6.3       | 11.2   | 50                                     | 0.18                          | 0.5         | 2.5        | 5.0       | 2.5       | ECA2DM2R2( ) | 200                | 2000   |
|      | 3.3             | 6.3       | 11.2   | 62                                     | 0.18                          | 0.5         | 2.5        | 5.0       | 2.5       | ECA2DM3R3( ) | 200                | 2000   |
|      | 4.7             | 8         | 11.5   | 86                                     | 0.18                          | 0.6         | 3.5        | 5.0       |           | ECA2DM4R7( ) | 200                | 1000   |
|      | 10              | 10        | 12.5   | 100                                    | 0.18                          | 0.6         | 5.0        | 5.0       |           | ECA2DM100( ) | 200                | 500    |
|      | 22              | 10        | 20     | 180                                    | 0.18                          | 0.6         | 5.0        | 5.0       |           | ECA2DM220( ) | 200                | 500    |
|      | 33              | 10        | 20     | 220                                    | 0.18                          | 0.6         | 5.0        | 5.0       |           | ECA2DM330( ) | 200                | 500    |
|      | 47              | 12.5      | 20     | 300                                    | 0.18                          | 0.6         | 5.0        | 5.0       |           | ECA2DM470( ) | 200                | 500    |
|      | 100             | 16        | 25     | 475                                    | 0.18                          | 0.8         | 7.5        | 7.5       |           | ECA2DM101( ) | 100                | 250    |
|      | 220             | 18        | 31.5   | 835                                    | 0.18                          | 0.8         | 7.5        |           |           | ECA2DM221    | 50                 |        |
|      | 330             | 18        | 40     | 1140                                   | 0.18                          | 0.8         | 7.5        |           |           | ECA2DM331    | 50                 |        |
| 250  | 1               | 6.3       | 11.2   | 34                                     | 0.18                          | 0.5         | 2.5        | 5.0       | 2.5       | ECA2EM010( ) | 200                | 2000   |
|      | 2.2             | 6.3       | 11.2   | 50                                     | 0.18                          | 0.5         | 2.5        | 5.0       | 2.5       | ECA2EM2R2( ) | 200                | 2000   |
|      | 3.3             | 8         | 11.5   | 72                                     | 0.18                          | 0.6         | 3.5        | 5.0       |           | ECA2EM3R3( ) | 200                | 1000   |
|      | 4.7             | 8         | 11.5   | 86                                     | 0.18                          | 0.6         | 3.5        | 5.0       |           | ECA2EM4R7( ) | 200                | 1000   |
|      | 10              | 10        | 16     | 110                                    | 0.18                          | 0.6         | 5.0        | 5.0       |           | ECA2EM100( ) | 200                | 500    |
|      | 22              | 10        | 20     | 180                                    | 0.18                          | 0.6         | 5.0        | 5.0       |           | ECA2EM220( ) | 200                | 500    |
|      | 33              | 12.5      | 20     | 250                                    | 0.18                          | 0.6         | 5.0        | 5.0       |           | ECA2EM330( ) | 200                | 500    |
|      | 47              | 12.5      | 25     | 330                                    | 0.18                          | 0.6         | 5.0        | 5.0       |           | ECA2EM470( ) | 200                | 500    |
|      | 100             | 16        | 31.5   | 530                                    | 0.18                          | 0.8         | 7.5        |           |           | ECA2EM101    | 100                |        |
|      | 220             | 18        | 40     | 930                                    | 0.18                          | 0.8         | 7.5        |           |           | ECA2EM221    | 50                 |        |
| 350  | 1               | 6.3       | 11.2   | 32                                     | 0.20                          | 0.5         | 2.5        | 5.0       | 2.5       | ECA2VM010( ) | 200                | 2000   |
|      | 2.2             | 8         | 11.5   | 55                                     | 0.20                          | 0.6         | 3.5        | 5.0       |           | ECA2VM2R2( ) | 200                | 1000   |

Endurance : 85 °C 2000 h

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Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

00 Sep. 2010

### Standard Products

| W.V.<br>(V) | Cap.<br>(±20 %)<br>(μF) | Case size    |                | Specification   |                               | Lead Length       |                  |                      |                      | Part No.     | Min. Packaging Q'ty     |                 |
|-------------|-------------------------|--------------|----------------|---|-------------------------------|-------------------|------------------|----------------------|----------------------|--------------|-------------------------|-----------------|
|             |                         | Dia.<br>(mm) | Length<br>(mm) | Ripple Current<br>(120 Hz)<br>(+85 °C)<br>(mA r.m.s.) | tan δ<br>(120 Hz)<br>(+20 °C) | 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         | 3.3                     | 8            | 11.5           | 60  | 0.20                          | 0.6               | 3.5              | 5.0                  |                      | ECA2VM3R3( ) | 200                     | 1000            |
|             | 4.7                     | 10           | 12.5           | 65  | 0.20                          | 0.6               | 5.0              | 5.0                  |                      | ECA2VM4R7( ) | 200                     | 500             |
|             | 10                      | 10           | 20             | 115   | 0.20                          | 0.6               | 5.0              | 5.0                  |                      | ECA2VM100( ) | 200                     | 500             |
|             | 22                      | 12.5         | 20             | 195   | 0.20                          | 0.6               | 5.0              | 5.0                  |                      | ECA2VM220( ) | 200                     | 500             |
|             | 33                      | 16           | 25             | 300   | 0.20                          | 0.8               | 7.5              | 7.5                  |                      | ECA2VM330( ) | 100                     | 250             |
|             | 47                      | 16           | 25             | 325   | 0.20                          | 0.8               | 7.5              | 7.5                  |                      | ECA2VM470( ) | 100                     | 250             |
|             | 100                     | 18           | 31.5           | 535   | 0.20                          | 0.8               | 7.5              |                      |                      | ECA2VM101    | 50                      |                 |
| 400         | 1                       | 6.3          | 11.2           | 32  | 0.20                          | 0.5               | 2.5              | 5.0                  | 2.5                  | ECA2GM010( ) | 200                     | 2000            |
|             | 2.2                     | 8            | 11.5           | 50  | 0.20                          | 0.6               | 3.5              | 5.0                  |                      | ECA2GM2R2( ) | 200                     | 1000            |
|             | 3.3                     | 10           | 12.5           | 54  | 0.20                          | 0.6               | 5.0              | 5.0                  |                      | ECA2GM3R3( ) | 200                     | 500             |
|             | 4.7                     | 10           | 16             | 72  | 0.20                          | 0.6               | 5.0              | 5.0                  |                      | ECA2GM4R7( ) | 200                     | 500             |
|             | 10                      | 10           | 20             | 115   | 0.20                          | 0.6               | 5.0              | 5.0                  |                      | ECA2GM100( ) | 200                     | 500             |
|             | 22                      | 12.5         | 25             | 215   | 0.20                          | 0.6               | 5.0              | 5.0                  |                      | ECA2GM220( ) | 200                     | 500             |
|             | 33                      | 16           | 25             | 275   | 0.20                          | 0.8               | 7.5              | 7.5                  |                      | ECA2GM330( ) | 100                     | 250             |
|             | 47                      | 16           | 31.5           | 350   | 0.20                          | 0.8               | 7.5              |                      |                      | ECA2GM470    | 100                     |                 |
| 100         | 18                      | 40           | 600            | 0.20  | 0.8                           | 7.5               |                  |                      | ECA2GM101            | 50           |                         |                 |
| 450         | 1                       | 8            | 11.5           | 37  | 0.20                          | 0.6               | 3.5              | 5.0                  |                      | ECA2WM010( ) | 200                     | 1000            |
|             | 2.2                     | 10           | 12.5           | 44  | 0.20                          | 0.6               | 5.0              | 5.0                  |                      | ECA2WM2R2( ) | 200                     | 500             |
|             | 3.3                     | 10           | 16             | 60  | 0.20                          | 0.6               | 5.0              | 5.0                  |                      | ECA2WM3R3( ) | 200                     | 500             |
|             | 4.7                     | 10           | 20             | 79  | 0.20                          | 0.6               | 5.0              | 5.0                  |                      | ECA2WM4R7( ) | 200                     | 500             |
|             | 10                      | 12.5         | 20             | 130   | 0.20                          | 0.6               | 5.0              | 5.0                  |                      | ECA2WM100( ) | 200                     | 500             |
|             | 22                      | 16           | 25             | 210   | 0.20                          | 0.8               | 7.5              | 7.5                  |                      | ECA2WM220( ) | 100                     | 250             |
|             | 33                      | 16           | 31.5           | 285   | 0.20                          | 0.8               | 7.5              |                      |                      | ECA2WM330    | 100                     |                 |

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