

# Capacitors



## 85°C Radial electrolytic capacitors

| Order Code | Voltage    | Value      | Ripple (mA) | Case Code |   |
|------------|------------|------------|-------------|-----------|---|
| 11-0305    | 10V        | 47 $\mu$   | 100         | A         |   |
| 11-0310    |            | 100 $\mu$  | 140         | A         |   |
| 11-1400    |            | 220 $\mu$  | 230         | B         |   |
| 11-0270    |            | 470 $\mu$  | 390         | C         |   |
| 11-0315    |            | 1000 $\mu$ | 670         | D         |   |
| 11-0320    |            | 2200 $\mu$ | 1080        | M         |   |
| 11-1402    |            | 4700 $\mu$ | 1610        | G         |   |
| 11-0325    |            | 16V        | 47 $\mu$    | 100       | A |
| 11-0245    | 100 $\mu$  |            | 170         | B         |   |
| 11-0260    | 220 $\mu$  |            | 290         | B         |   |
| 11-1404    | 330 $\mu$  |            | 350         | C         |   |
| 11-0275    | 470 $\mu$  |            | 460         | C         |   |
| 11-0290    | 1000 $\mu$ |            | 820         | E         |   |
| 11-0300    | 2200 $\mu$ |            | 1160        | G         |   |
| 11-1406    | 3300 $\mu$ |            | 1490        | H         |   |
| 11-0750    | 4700 $\mu$ |            | 1900        | I         |   |
| 11-0220    | 25V        |            | 10 $\mu$    | 50        | A |
| 11-0230    |            | 22 $\mu$   | 75          | A         |   |
| 11-1408    |            | 33 $\mu$   | 90          | A         |   |
| 11-0235    |            | 47 $\mu$   | 110         | A         |   |
| 11-0250    |            | 100 $\mu$  | 180         | B         |   |
| 11-0265    |            | 220 $\mu$  | 310         | C         |   |
| 11-1410    |            | 330 $\mu$  | 410         | D         |   |
| 11-0280    |            | 470 $\mu$  | 530         | E         |   |
| 11-0295    |            | 1000 $\mu$ | 880         | J         |   |
| 11-0330    |            | 2200 $\mu$ | 1350        | H         |   |
| 11-1412    |            | 3300 $\mu$ | 1790        | I         |   |
| 11-0755    |            | 4700 $\mu$ | 2040        | K         |   |
| 11-1414    |            | 35V        | 3 $\mu$ 3   | 35        | A |
| 11-0340    |            |            | 22 $\mu$    | 90        | A |
| 11-0345    | 47 $\mu$   |            | 140         | B         |   |
| 11-0350    | 100 $\mu$  |            | 230         | C         |   |
| 11-0355    | 220 $\mu$  |            | 370         | D         |   |
| 11-1416    | 330 $\mu$  |            | 500         | E         |   |
| 11-0360    | 470 $\mu$  |            | 670         | E         |   |
| 11-0760    | 1000 $\mu$ |            | 990         | G         |   |
| 11-0765    | 2200 $\mu$ |            | 1700        | I         |   |
| 11-1418    | 4700 $\mu$ |            | 2380        | L         |   |

| Order Code | Voltage   | Value      | Ripple (mA) | Case Code |   |
|------------|-----------|------------|-------------|-----------|---|
| 11-1420    | 63V       | 0 $\mu$ 47 | 15          | A         |   |
| 11-0205    |           | 1 $\mu$    | 22          | A         |   |
| 11-0210    |           | 2 $\mu$ 2  | 32          | A         |   |
| 11-0215    |           | 4 $\mu$ 7  | 47          | A         |   |
| 11-0225    |           | 10 $\mu$   | 60          | A         |   |
| 11-0335    |           | 22 $\mu$   | 100         | B         |   |
| 11-1422    |           | 33 $\mu$   | 130         | B         |   |
| 11-0240    |           | 47 $\mu$   | 170         | C         |   |
| 11-0255    |           | 100 $\mu$  | 270         | D         |   |
| 11-0385    |           | 220 $\mu$  | 500         | J         |   |
| 11-1424    |           | 330 $\mu$  | 620         | G         |   |
| 11-0390    |           | 470 $\mu$  | 820         | H         |   |
| 11-1426    |           | 1000 $\mu$ | 1360        | K         |   |
| 11-1428    |           | 100V       | 1 $\mu$     | 22        | A |
| 11-1430    |           |            | 2 $\mu$ 2   | 32        | A |
| 11-1432    |           |            | 3 $\mu$ 3   | 39        | A |
| 11-1434    | 4 $\mu$ 7 |            | 47          | A         |   |
| 11-1436    | 10 $\mu$  |            | 80          | B         |   |
| 11-1438    | 22 $\mu$  |            | 130         | C         |   |
| 11-1440    | 33 $\mu$  |            | 180         | D         |   |
| 11-1442    | 47 $\mu$  |            | 230         | E         |   |
| 11-1444    | 100 $\mu$ | 380        | J           |           |   |

## Specification

| Item   | Rating   |                                   |      |      |        |     |      |
|--|--|-----------------------------------|------|------|--------|-----|------|
| Operating temperature range                  | -40°C ~ +85°C  |                                   |      |      |        |     |      |
| Rated Working Voltage                        | See table above  |                                   |      |      |        |     |      |
| Capacitance tolerance (120Hz @ 25°C)         | ±20% (M)   |                                   |      |      |        |     |      |
| Leakage Current (@ 25°C)                     | I = 0.01CV or 3(μA) max. <sup>1</sup>  |                                   |      |      |        |     |      |
| Surge Voltage                                | Working Voltage  | 10                                | 16   | 25   | 35     | 63  | 100  |
|  | Surge Voltage  | 13                                | 20   | 32   | 44     | 79  | 125  |
| Dissipation Factor<br>(120Hz @ 25°C) (tan δ) | Add 0.02 per 1000μF for more than 1000μF   |                                   |      |      |        |     |      |
|  | Working Voltage  | 10                                | 16   | 25   | 35     | 63  | 100  |
|  | tan δ  | 0.2                               | 0.17 | 0.15 | 0.12   | 0.1 | 0.08 |
| Low temperature stability                    | Impedance ratio at 120Hz   |                                   |      |      |        |     |      |
|  | Rated Voltage (V)  | 10                                | 16   | 25   | 35-100 |     |      |
|  | -25°C / +25°C  | 3                                 | 2    | 2    | 2      |     |      |
|  | -40°C / +25°C  | 8                                 | 6    | 4    | 3      |     |      |
| Load life                                    | After 2000 hours application of working voltage at +85°C the capacitor shall meet the following limits |                                   |      |      |        |     |      |
|  | Capacitance charge   | ≤ ±20% of initial value           |      |      |        |     |      |
|  | Dissipation factor   | ≤ 150% of initial specified value |      |      |        |     |      |
|  | Leakage current  | ≤ initial specified value         |      |      |        |     |      |
| Shelf Life                                   | At 85°C no voltage applied after 500 hours the capacitor shall meet the following limits               |                                   |      |      |        |     |      |
|  | Capacitance charge   | ≤ ±20% of initial value           |      |      |        |     |      |
|  | Dissipation factor   | ≤ 200% of initial specified value |      |      |        |     |      |
|  | Leakage current  | ≤ 200% of initial specified value |      |      |        |     |      |

### Frequency coefficient of allowable ripple current

| V        | Capacitance<br>(μF) | Frequency |       |       |      |       |
|----------|---------------------|-----------|-------|-------|------|-------|
|          |                     | 50Hz      | 120Hz | 300Hz | 1kHz | 10kHz |
| 10 – 100 | -47                 | 0.75      | 1.00  | 1.35  | 1.57 | 2.00  |
|          | 100-470             | 0.80      | 1.00  | 1.23  | 1.34 | 1.50  |
|          | 1000-4700           | 0.85      | 1.00  | 1.10  | 1.13 | 1.15  |

### Allowable ripple current Vs. ambient temperature

|                    |        |      |
|--------------------|--------|------|
| Ambient temp. (°C) | ~ + 70 | + 85 |
| Coefficient        | 1.27   | 1.00 |

### Dimensions

| Case Code | L  | D   | F   | D Max. |
|-----------|----|-----|-----|--------|
| A         | 11 | 5   | 2   | 1      |
| B         | 11 | 6.3 | 2.5 | 1      |
| C         | 11 | 8   | 3.5 | 1      |
| D         | 12 | 10  | 5   | 1      |
| E         | 16 | 10  | 5   | 1      |
| G         | 20 | 13  | 5   | 1      |
| H         | 26 | 13  | 5   | 1      |
| I         | 26 | 16  | 7.5 | 1      |
| J         | 21 | 10  | 5   | 1      |
| K         | 32 | 16  | 7.5 | 1      |
| L         | 36 | 18  | 7.5 | 1      |
| M         | 20 | 10  | 5.0 | 1      |

