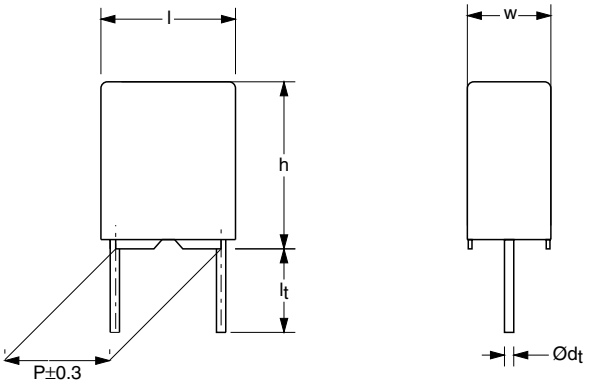
# Metallized Polypropylene Film Capacitors
# MKP Radial Potted Type




Dimensions in mm

## APPLICATIONS

Low losses due to low contact resistance and low loss dielectric result in applications where high frequency occur or high stability is preferred. Their small dimensions make them suitable for circuits with high packaging density.

## MARKING

C-value; rated voltage; tolerance; code for manufacturer; year and week of manufacture; manufacturers type designation

## DIELECTRIC

Polypropylene film

## ELECTRODES

Vacuum deposited aluminum

## ENCAPSULATION

Flame retardant plastic case and epoxy resin (UL-class 94 V-0)

## CONSTRUCTION

Wound mono construction

## LEADS

Tinned wire

## CAPACITANCE RANGE (E24 SERIES)

0.001 to 1.2 µF

## FEATURES

5, 10 and 15 mm lead pitch. Supplied loose in box, in ammopack and taped on reel. Intermediate values are available of the E96 series

Lead (Pb)-free product

RoHS-compliant product

Pb-free

e3

RoHS COMPLIANT

## CAPACITANCE TOLERANCE

± 5 %; ± 2 %

## RATED (DC) VOLTAGE

63 V; 160 V; 250 V; 400 V; 630 V

## RATED (AC) VOLTAGE

25 V; 63 V;100 V; 125 V; 160 V

## RATED PEAK-TO-PEAK VOLTAGE

70 V; 180 V; 280 V; 350 V; 450 V

## CLIMATIC CATEGORY

55/085/56

## RATED TEMPERATURE (DC)

85 °C

## RATED TEMPERATURE (AC)

85 °C

## MAXIMUM APPLICATION TEMPERATURE

85 °C

## REFERENCE SPECIFICATIONS

IEC 60384-16

## PERFORMANCE GRADE

Grade 1 (long life)

## STABILITY GRADE

Grade 1

## DETAIL SPECIFICATION

For more detailed data and test requirements contact: filmcaps.roeselare@vishay.com

## COMPOSITION OF CATALOG NUMBER

| TYPE AND PITCHES | |
|---|---|
| 416 | 5.0/10.0/15.0 mm |
| 417 | 5.0/10.0/15.0 mm |
| 418 | 5.0/10.0/15.0 mm |
| 419 | 5.0/10.0/15.0 mm |
| 420 | 5.0/10.0/15.0 mm |

**CAPACITANCE (numerically)**

| MULTIPLIER (nF) | |
|---|---|
| 0.01 | 2 |
| 0.1 | 3 |
| 1 | 4 |

Example:
1004 = 100 x 1 = 100 nF

| | | | | |
|---|---|---|---|---|
| 2222 | 4.. | XX | XX | X |
| BFC2* | 4.. | XX | XX | X |

* Use this partnumber for those with access to the Vishay's SAP system and Partners website within the Americas

| TYPE | PACKAGING | PITCH (mm) | LEAD CONFIGURATION | PREFERRED TYPES | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | C-TOL | 63 V | 160 V | 250 V | 400 V | 630 V |
| 416 | Taped; see note | 5/10/15 | H = 18.5 mm; $P_0$ = 12.7 mm | ± 2 % | 1 | | | | |
| | Loose in box | 15 | lead length 3.5 ± 0.3 mm | ± 2 % | 7 | | | | |
| 417 | Taped; see note | 5/10/15 | H = 18.5 mm; $P_0$ = 12.7 mm | ± 2 % | | 1 | | | |
| | Loose in box | 15 | lead length 3.5 ± 0.3 mm | ± 2 % | | 7 | | | |
| 418 | Taped; see note | 5/10/15 | H = 18.5 mm; $P_0$ = 12.7 mm | ± 2 % | | | 1 | | |
| | Loose in box | 15 | lead length 3.5 ± 0.3 mm | ± 2 % | | | 7 | | |
| 419 | Taped; see note | 5/10/15 | H = 18.5 mm; $P_0$ = 12.7 mm | ± 2 % | | | | 1 | |
| | Loose in box | 15 | lead length 3.5 ± 0.3 mm | ± 2 % | | | | 7 | |
| 420 | Taped; see note | 5/10/15 | H = 18.5 mm; $P_0$ = 12.7 mm | ± 2 % | | | | | 1 |
| | Loose in box | 15 | lead length 3.5 ± 0.3 mm | ± 2 % | | | | | 7 |
| | | | | | ON REQUEST | | | | |
| 416 | Taped; see note | 5/10/15 | H = 18.5 mm; $P_0$ = 12.7 mm | ± 5 % | 0 | | | | |
| | Loose in box | 5/10 | lead length 4.0 + 1.0/– 0.5 mm | ± 5 % | 3 | | | | |
| | | | | ± 2 % | 4 | | | | |
| | | 15 | lead length 3.5 ± 0.3 mm | ± 5 % | 6 | | | | |
| 417 | Taped; see note | 5/10/15 | H = 18.5 mm; $P_0$ = 12.7 mm | ± 5 % | | 0 | | | |
| | Loose in box | 5/10 | lead length 4.0 + 1.0/– 0.5 mm | ± 5 % | | 3 | | | |
| | | | | ± 2 % | | 4 | | | |
| | | 15 | lead length 3.5 ± 0.3 mm | ± 5 % | | 6 | | | |
| 418 | Taped; see note | 5/10/15 | H = 18.5 mm; $P_0$ = 12.7 mm | ± 5 % | | | 0 | | |
| | Loose in box | 5/10 | lead length 4.0 + 1.0/– 0.5 mm | ± 5 % | | | 3 | | |
| | | | | ± 2 % | | | 4 | | |
| | | 15 | lead length 3.5 ± 0.3 mm | ± 5 % | | | 6 | | |
| 419 | Taped; see note | 5/10/15 | H = 18.5 mm; $P_0$ = 12.7 mm | ± 5 % | | | | 0 | |
| | Loose in box | 5/10 | lead length 4.0 + 1.0/– 0.5 mm | ± 5 % | | | | 3 | |
| | | | | ± 2 % | | | | 4 | |
| | | 15 | lead length 3.5 ± 0.3 mm | ± 5 % | | | | 6 | |
| 420 | Taped; see note | 5/10/15 | H = 18.5 mm; $P_0$ = 12.7 mm | ± 5 % | | | | | 0 |
| | Loose in box | 5/10 | lead length 4.0 + 1.0/– 0.5 mm | ± 5 % | | | | | 3 |
| | | | | ± 2 % | | | | | 4 |
| | | 15 | lead length 3.5 ± 0.3 mm | ± 5 % | | | | | 6 |

Note:
Pitch = 5 and 10 mm: taped on ammopack
Pitch = 15 mm: taped on reel with diameter = 356 mm

## SPECIFIC REFERENCE DATA

| DESCRIPTION | VALUE | | | | |
|---|---|---|---|---|---|
| Tangent of loss angle: | at 10 kHz | | | at 100 kHz | |
| $C \leq 0.0091\ \mu F$ | $\leq 5 \times 10^{-4}$ | | | $\leq 10 \times 10^{-4}$ | |
| $0.0091\ \mu F < C \leq 0.027\ \mu F$ | $\leq 5 \times 10^{-4}$ | | | $\leq 15 \times 10^{-4}$ | |
| $0.027\ \mu F < C \leq 0.075\ \mu F$ | $\leq 5 \times 10^{-4}$ | | | $\leq 20 \times 10^{-4}$ | |
| $0.075\ \mu F < C \leq 0.11\ \mu F$ | $\leq 5 \times 10^{-4}$ | | | $\leq 25 \times 10^{-4}$ | |
| $0.11\ \mu F < C \leq 0.18\ \mu F$ | $\leq 10 \times 10^{-4}$ | | | $\leq 30 \times 10^{-4}$ | |
| $0.18\ \mu F < C \leq 0.27\ \mu F$ | $\leq 10 \times 10^{-4}$ | | | $\leq 35 \times 10^{-4}$ | |
| $0.27\ \mu F < C \leq 0.39\ \mu F$ | $\leq 10 \times 10^{-4}$ | | | $\leq 40 \times 10^{-4}$ | |
| $0.39\ \mu F < C \leq 0.56\ \mu F$ | $\leq 10 \times 10^{-4}$ | | | $\leq 45 \times 10^{-4}$ | |
| $0.56\ \mu F < C \leq 0.75\ \mu F$ | $\leq 10 \times 10^{-4}$ | | | $\leq 50 \times 10^{-4}$ | |
| $0.75\ \mu F < C \leq 1.1\ \mu F$ | $\leq 10 \times 10^{-4}$ | | | $\leq 60 \times 10^{-4}$ | |
| Rated voltage pulse slope $(dU/dt)_R$ : | at 63 V (DC) | at 100 V (DC) | at 250 V (DC) | at 400 V (DC) | at 630 V (DC) |
| P = 5 mm | 50 V/µs | 50 V/µs | 50 V/µs | 50 V/µs | 50 V/µs |
| P = 10 mm | 20 V/µs | 20 V/µs | 20 V/µs | 20 V/µs | 50 V/µs |
| P = 15 mm | 50 V/µs | 50 V/µs | 50 V/µs | 50 V/µs | 50 V/µs |
| R between leads, for C ≤ 0.33 µF: | | | | | |
| at 50 V; 1 minute | > 100000 MΩ | | | | |
| at 100 V; 1 minute | | > 100000 MΩ | > 100000 MΩ | > 100000 MΩ | > 100000 MΩ |
| RC between leads, for C > 0.33 µF at 10 V; 1 minute | > 30000 s | >30000 s | >30000 s | >30000 s | |
| R between interconnecting leads and casing; 50 V; 1 minute | > 100000 MΩ | > 100000 MΩ | > 100000 MΩ | > 100000 MΩ | > 100000 MΩ |
| Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s | 100 V; 1 minute | 260 V; 1 minute | 400 V; 1 minute | 640 V; 1 minute | 1000 V; 1 minute |
| Withstanding (DC) voltage between leads and case | 2840 V; 1 minute | 2840 V; 1 minute | 2840 V; 1 minute | 2840 V; 1 minute | 1260 V; 1 minute |

**$U_{Rdc}$ = 63 V; $U_{Rac}$ = 25 V; $U_{p-p}$ = 70 V**

| C (E 24) (µF) | DIMENSIONS w × h × l (mm) | MASS (g) | CATALOG NUMBER 2222 416 ..... AND PACKAGING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | AMMOPACK | | LOOSE IN BOX | | REEL | | LOOSE IN BOX | |
| | | | H = 18.5 mm; $P_0$ = 12.7 mm | | lt = 4.0 + 1.0/– 0.5 mm | | H = 18.5 mm; $P_0$ = 12.7 mm | | lt = 3.5 ± 0.3 mm | |
| | | | C-tol = ± 2 % | | C-tol = ± 2 % | | C-tol = ± 2 % | | C-tol = ± 2 % | |
| | | | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ |
| **Pitch = 5.0 ± 0.3 mm; $d_t$ = 0.50 ± 0.05 mm** | | | | | | | | | | |
| 0.036 | 4.5 × 9.0 × 7.2 | 0.45 | 13603 | 1000 | 43603 | 2000 | | | | |
| 0.039 | | | 13903 | | 43903 | | | | | |
| 0.043 | | | 14303 | | 44303 | | | | | |
| 0.047 | | | 14703 | | 44703 | | | | | |
| 0.051 | 6.0 × 11.0 × 7.2 | 0.60 | 15103 | 750 | 45103 | 1500 | | | | |
| 0.056 | | | 15603 | | 45603 | | | | | |
| 0.062 | | | 16203 | | 46203 | | | | | |
| 0.068 | | | 16803 | | 46803 | | | | | |
| 0.075 | | | 17503 | | 47503 | | | | | |
| 0.082 | | | 18203 | | 48203 | | | | | |
| 0.091 | | | 19103 | | 49103 | | | | | |
| 0.1 | | | 11004 | | 41004 | | | | | |
| 0.11 | | | 11104 | | 41104 | | | | | |
| 0.12 | | | 11204 | | 41204 | | | | | |
| **Pitch = 10.0 ± 0.4 mm; $d_t$ = 0.60 ± 0.06 mm** | | | | | | | | | | |
| 0.13 | 5.0 × 11.0 × 12.5 | 0.85 | 11304 | 600 | 41304 | 1000 | | | | |
| 0.15 | | | 11504 | | 41504 | | | | | |
| 0.16 | 6.0 × 12.0 × 12.5 | 1.10 | 11604 | 500 | 41604 | 750 | | | | |
| 0.18 | | | 11804 | | 41804 | | | | | |
| 0.20 | | | 12004 | | 42004 | | | | | |
| 0.22 | | | 12204 | | 42204 | | | | | |
| 0.24 | | | 12404 | | 42404 | | | | | |
| 0.27 | | | 12704 | | 42704 | | | | | |
| **Pitch = 15.0 ± 0.4 mm; $d_t$ = 0.60 ± 0.06 mm** | | | | | | | | | | |
| 0.3 | 6.0 × 12.0 × 17.5 | 1.4 | | | | | 13004 | 900 | 73004 | 1000 |
| 0.33 | | | | | | | 13304 | | 73304 | |
| 0.36 | | | | | | | 13604 | | 73604 | |
| 0.39 | | | | | | | 13904 | | 73904 | |
| **Pitch = 15.0 ± 0.4 mm; $d_t$ = 0.80 ± 0.08 mm** | | | | | | | | | | |
| 0.43 | 7.0 × 13.5 × 17.5 | 1.9 | | | | | 14304 | 800 | 74304 | 750 |
| 0.47 | | | | | | | 14704 | | 74704 | |
| 0.51 | | | | | | | 15104 | | 75104 | |
| 0.56 | | | | | | | 15604 | | 75604 | |
| 0.62 | 8.5 × 15.0 × 17.5 | 2.6 | | | | | 16204 | 650 | 76204 | 750 |
| 0.68 | | | | | | | 16804 | | 76804 | |
| 0.75 | | | | | | | 17504 | | 77504 | |
| 0.82 | | | | | | | 18204 | | 78204 | |
| 0.91 | 10.0 × 16.5 × 17.5 | 3.1 | | | | | 19104 | 600 | 79104 | 500 |
| 1.0 | | | | | | | 11005 | | 71005 | |
| 1.1 | | | | | | | 11105 | | 71105 | |

**$U_{Rdc}$ = 160 V; $U_{Rac}$ = 63 V; $U_{p-p}$ = 180 V**

| C (E 24) (µF) | DIMENSIONS w × h × l (mm) | MASS (g) | CATALOG NUMBER 2222 417 ..... AND PACKAGING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | AMMOPACK | | LOOSE IN BOX | | REEL | | LOOSE IN BOX | |
| | | | H = 18.5 mm; $P_0$ = 12.7 mm | | lt = 4.0 + 1.0/– 0.5 mm | | H = 18.5 mm; $P_0$ = 12.7 mm | | lt = 3.5 ± 0.3 mm | |
| | | | C-tol = ± 2 % | | C-tol = ± 2 % | | C-tol = ± 2 % | | C-tol = ± 2 % | |
| | | | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ |
| **Pitch = 5.0 ± 0.3 mm; $d_t$ = 0.50 ± 0.05 mm** | | | | | | | | | | |
| 0.024 | 4.5 × 9.0 × 7.2 | 0.45 | 12403 | 1000 | 42403 | 2000 | | | | |
| 0.027 | | | 12703 | | 42703 | | | | | |
| 0.03 | | | 13003 | | 43003 | | | | | |
| 0.033 | | | 13303 | | 43303 | | | | | |
| 0.036 | 6.0 × 11.0 × 7.2 | 0.60 | 13603 | 750 | 43603 | 1500 | | | | |
| 0.039 | | | 13903 | | 43903 | | | | | |
| 0.043 | | | 14303 | | 44303 | | | | | |
| 0.047 | | | 14703 | | 44703 | | | | | |
| 0.051 | | | 15103 | | 45103 | | | | | |
| 0.056 | | | 15603 | | 45603 | | | | | |
| 0.062 | | | 16203 | | 46203 | | | | | |
| 0.068 | | | 16803 | | 46803 | | | | | |
| **Pitch = 10.0 ± 0.4 mm; $d_t$ = 0.60 ± 0.06 mm** | | | | | | | | | | |
| 0.075 | 4.0 × 10.0 × 12.5 | 0.60 | 17503 | 750 | 47503 | 1000 | | | | |
| 0.082 | | | 18203 | | 48203 | | | | | |
| 0.091 | | | 19103 | | 49103 | | | | | |
| 0.1 | | | 11004 | | 41004 | | | | | |
| 0.11 | 5.0 × 11.0 × 12.5 | 0.85 | 11104 | 600 | 41104 | 1000 | | | | |
| 0.12 | | | 11204 | | 41204 | | | | | |
| 0.13 | | | 11304 | | 41304 | | | | | |
| 0.15 | | | 11504 | | 41504 | | | | | |
| 0.16 | 6.0 × 12.0 × 12.5 | 1.10 | 11604 | 500 | 41604 | 750 | | | | |
| 0.18 | | | 11804 | | 41804 | | | | | |
| 0.20 | | | 12004 | | 42004 | | | | | |
| 0.22 | | | 12204 | | 42204 | | | | | |
| 0.24 | | | 12404 | | 42404 | | | | | |
| **Pitch = 15.0 ± 0.4 mm; $d_t$ = 0.60 ± 0.06 mm** | | | | | | | | | | |
| 0.27 | 5.0 × 11.0 × 17.5 | 1.2 | | | | | 12704 | 1100 | 72704 | 1250 |
| 0.3 | 6.0 × 12.0 × 17.5 | 1.4 | | | | | 13004 | 900 | 73004 | 1000 |
| 0.33 | | | | | | | 13304 | | 73304 | |
| 0.36 | | | | | | | 13604 | | 73604 | |
| 0.39 | | | | | | | 13904 | | 73904 | |
| **Pitch = 15.0 ± 0.4 mm; $d_t$ = 0.80 ± 0.08 mm** | | | | | | | | | | |
| 0.43 | 7.0 × 13.5 × 17.5 | 1.9 | | | | | 14304 | 800 | 74304 | 750 |
| 0.47 | | | | | | | 14704 | | 74704 | |
| 0.51 | | | | | | | 15104 | | 75104 | |
| 0.56 | | | | | | | 15604 | | 75604 | |
| 0.62 | 8.5 × 15.0 × 17.5 | 2.6 | | | | | 16204 | 650 | 76204 | 750 |
| 0.68 | | | | | | | 16804 | | 76804 | |
| 0.75 | | | | | | | 17504 | | 77504 | |
| 0.82 | | | | | | | 18204 | | 78204 | |
| 0.91 | 10.0 × 16.5 × 17.5 | 3.1 | | | | | 19104 | 600 | 79104 | 500 |
| 1.0 | | | | | | | 11005 | | 71005 | |
| 1.1 | | | | | | | 11105 | | 71105 | |

**$U_{Rdc}$ = 250 V; $U_{Rac}$ = 25 V; $U_{p-p}$ = 70 V**

| C (E 24) (µF) | DIMENSIONS w × h × l (mm) | MASS (g) | CATALOG NUMBER 2222 418 ..... AND PACKAGING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | AMMOPACK | | LOOSE IN BOX | | REEL | | LOOSE IN BOX | |
| | | | H = 18.5 mm; $P_0$ = 12.7 mm | | lt = 4.0 + 1.0/– 0.5 mm | | H = 18.5 mm; $P_0$ = 12.7 mm | | lt = 3.5 ± 0.3 mm | |
| | | | C-tol = ± 2 % | | C-tol = ± 2 % | | C-tol = ± 2 % | | C-tol = ± 2 % | |
| | | | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ |
| **Pitch = 5.0 ± 0.3 mm; $d_t$ = 0.50 ± 0.05 mm** | | | | | | | | | | |
| 0.01 | 3.5 × 8.0 × 7.2 | 0.35 | 11003 | 1500 | 41003 | 3000 | | | | |
| 0.011 | | | 11103 | | 41103 | | | | | |
| 0.012 | | | 11203 | | 41203 | | | | | |
| 0.013 | | | 11303 | | 41303 | | | | | |
| 0.015 | | | 11503 | | 41503 | | | | | |
| 0.016 | 4.5 × 9.0 × 7.2 | 0.45 | 11603 | 1000 | 41603 | 2000 | | | | |
| 0.018 | | | 11803 | | 41803 | | | | | |
| 0.02 | | | 12003 | | 42003 | | | | | |
| 0.022 | | | 12203 | | 42203 | | | | | |
| 0.024 | | | 12403 | | 42403 | | | | | |
| 0.027 | 6.0 × 11.0 × 7.2 | 0.60 | 12703 | 750 | 42703 | 1500 | | | | |
| 0.03 | | | 13003 | | 43003 | | | | | |
| 0.033 | | | 13303 | | 43303 | | | | | |
| 0.036 | | | 13603 | | 43603 | | | | | |
| 0.039 | | | 13903 | | 43903 | | | | | |
| 0.043 | | | 14303 | | 44303 | | | | | |
| **Pitch = 10.0 ± 0.4 mm; $d_t$ = 0.60 ± 0.06 mm** | | | | | | | | | | |
| 0.047 | 4.0 × 10.0 × 12.5 | 0.60 | 14703 | 750 | 44703 | 1000 | | | | |
| 0.051 | | | 15103 | | 45103 | | | | | |
| 0.056 | | | 15603 | | 45603 | | | | | |
| 0.062 | | | 16203 | | 46203 | | | | | |
| 0.068 | | | 16803 | | 46803 | | | | | |
| 0.075 | 5.0 × 11.0 × 12.5 | 0.85 | 17503 | 600 | 47503 | 1000 | | | | |
| 0.082 | | | 18203 | | 48203 | | | | | |
| 0.091 | | | 19103 | | 49103 | | | | | |
| 0.1 | 6.0 × 12.0 × 12.5 | 1.10 | 11004 | 500 | 41004 | 750 | | | | |
| 0.11 | | | 11104 | | 41104 | | | | | |
| 0.12 | | | 11204 | | 41204 | | | | | |
| 0.13 | | | 11304 | | 41304 | | | | | |
| **Pitch = 15.0 ± 0.4 mm; $d_t$ = 0.60 ± 0.06 mm** | | | | | | | | | | |
| 0.15 | 5.0 × 11.0 × 17.5 | 1.2 | | | | | 11504 | 1100 | 71504 | 1250 |
| 0.16 | | | | | | | 11604 | | 71604 | |
| 0.18 | 6.0 × 12.0 × 17.5 | 1.4 | | | | | 11804 | 900 | 71804 | 1000 |
| 0.2 | | | | | | | 12004 | | 72004 | |
| 0.22 | | | | | | | 12204 | | 72204 | |
| 0.24 | | | | | | | 12404 | | 72404 | |
| **Pitch = 15.0 ± 0.4 mm; $d_t$ = 0.80 ± 0.08 mm** | | | | | | | | | | |
| 0.27 | 7.0 × 13.5 × 17.5 | 1.9 | | | | | 12704 | 800 | 72704 | 750 |
| 0.3 | | | | | | | 13004 | | 73004 | |
| 0.33 | | | | | | | 13304 | | 73304 | |
| 0.36 | | | | | | | 13604 | | 73604 | |
| 0.39 | 8.5 × 15.0 × 17.5 | 2.6 | | | | | 13904 | 650 | 73904 | 750 |
| 0.43 | | | | | | | 14304 | | 74304 | |
| 0.47 | | | | | | | 14704 | | 74704 | |
| 0.51 | | | | | | | 15104 | | 75104 | |
| 0.56 | 10.0 × 16.5 × 17.5 | 3.1 | | | | | 15604 | 600 | 75604 | 500 |
| 0.62 | | | | | | | 16204 | | 76204 | |
| 0.68 | | | | | | | 16804 | | 76804 | |

**$U_{Rdc}$ = 400 V; $U_{Rac}$ = 125 V; $U_{p-p}$ = 350 V**

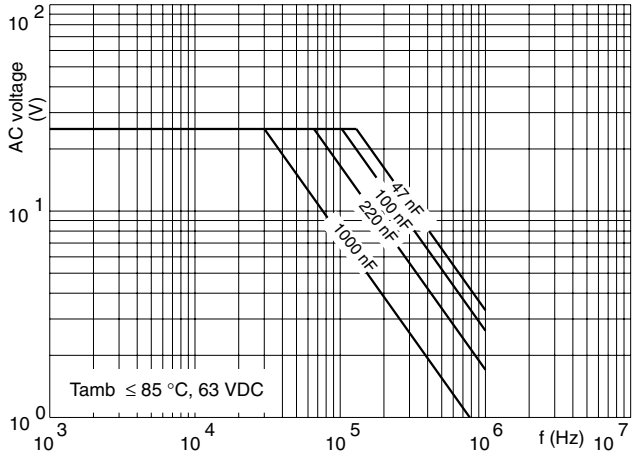
| C (E 24) (µF) | DIMENSIONS w × h × l (mm) | MASS (g) | CATALOG NUMBER 2222 419 ..... AND PACKAGING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | AMMOPACK | | LOOSE IN BOX | | REEL | | LOOSE IN BOX | |
| | | | H = 18.5 mm; $P_0$ = 12.7 mm | | lt = 4.0 + 1.0/– 0.5 mm | | H = 18.5 mm; $P_0$ = 12.7 mm | | lt = 3.5 ± 0.3 mm | |
| | | | C-tol = ± 2 % | | C-tol = ± 2 % | | C-tol = ± 2 % | | C-tol = ± 2 % | |
| | | | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ |
| **Pitch = 5.0 ± 0.3 mm; $d_t$ = 0.50 ± 0.05 mm** | | | | | | | | | | |
| 0.001 | 3.5 × 8.0 × 7.2 | 0.35 | 11002 | 1500 | 41002 | 3000 | | | | |
| 0.0011 | | | 11102 | | 41102 | | | | | |
| 0.0012 | | | 11202 | | 41202 | | | | | |
| 0.0013 | | | 11302 | | 41302 | | | | | |
| 0.0015 | | | 11502 | | 41502 | | | | | |
| 0.0016 | | | 11602 | | 41602 | | | | | |
| 0.0018 | | | 11802 | | 41802 | | | | | |
| 0.002 | | | 12002 | | 42002 | | | | | |
| 0.0022 | | | 12202 | | 42202 | | | | | |
| 0.0024 | | | 12402 | | 42402 | | | | | |
| 0.0027 | | | 12702 | | 42702 | | | | | |
| 0.003 | | | 13002 | | 43002 | | | | | |
| 0.0033 | | | 13302 | | 43302 | | | | | |
| 0.0036 | | | 13602 | | 43602 | | | | | |
| 0.0039 | | | 13902 | | 43902 | | | | | |
| 0.0043 | 4.5 × 9.0 × 7.2 | 0.45 | 14302 | 1000 | 44302 | 2000 | | | | |
| 0.0047 | | | 14702 | | 44702 | | | | | |
| 0.0051 | | | 15102 | | 45102 | | | | | |
| 0.0056 | | | 15602 | | 45602 | | | | | |
| 0.0062 | | | 16202 | | 46202 | | | | | |
| 0.0068 | | | 16802 | | 46802 | | | | | |
| 0.0075 | | | 17502 | | 47502 | | | | | |
| 0.0082 | | | 18202 | | 48202 | | | | | |
| 0.0091 | | | 19102 | | 49102 | | | | | |
| 0.01 | | | 11003 | | 41003 | | | | | |
| 0.011 | | | 11103 | | 41103 | | | | | |
| 0.012 | | | 11203 | | 41203 | | | | | |
| 0.013 | 6.0 × 11.0 × 7.2 | 0.60 | 11303 | 750 | 41303 | 1500 | | | | |
| 0.015 | | | 11503 | | 41503 | | | | | |
| 0.016 | | | 11603 | | 41603 | | | | | |
| 0.018 | | | 11803 | | 41803 | | | | | |
| 0.02 | | | 12003 | | 42003 | | | | | |
| **Pitch = 10.0 ± 0.4 mm; $d_t$ = 0.60 ± 0.06 mm** | | | | | | | | | | |
| 0.022 | 4.0 × 10.0 × 12.5 | 0.60 | 12203 | 750 | 42203 | 1000 | | | | |
| 0.024 | | | 12403 | | 42403 | | | | | |
| 0.027 | | | 12703 | | 42703 | | | | | |
| 0.03 | | | 13003 | | 43003 | | | | | |
| 0.033 | | | 13303 | | 43303 | | | | | |
| 0.036 | 5.0 × 11.0 × 12.5 | 0.85 | 13603 | 600 | 43603 | 1000 | | | | |
| 0.039 | | | 13903 | | 43903 | | | | | |
| 0.043 | | | 14303 | | 44303 | | | | | |

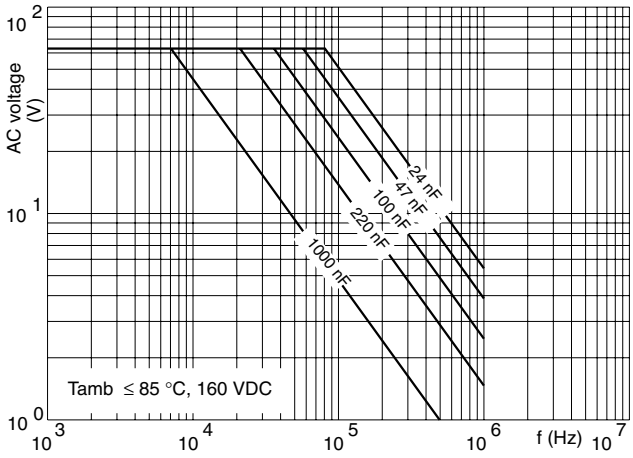
| C (E 24) (µF) | DIMENSIONS w × h × l (mm) | MASS (g) | CATALOG NUMBER 2222 419 ..... AND PACKAGING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | AMMOPACK | | LOOSE IN BOX | | REEL | | LOOSE IN BOX | |
| | | | H = 18.5 mm; $P_0$ = 12.7 mm | | lt = 4.0 + 1.0/– 0.5 mm | | H = 18.5 mm; $P_0$ = 12.7 mm | | lt = 3.5 ± 0.3 mm | |
| | | | C-tol = ± 2 % | | C-tol = ± 2 % | | C-tol = ± 2 % | | C-tol = ± 2 % | |
| | | | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ |
| 0.047 | 6.0 × 12.0 × 12.5 | 1.10 | 14703 | 500 | 44703 | 750 | | | | |
| 0.051 | | | 15103 | | 45103 | | | | | |
| 0.056 | | | 15603 | | 45603 | | | | | |
| 0.062 | | | 16203 | | 46203 | | | | | |
| 0.068 | | | 16803 | | 46803 | | | | | |
| **Pitch = 15.0 ± 0.4 mm; $d_t$ = 0.60 ± 0.06 mm** | | | | | | | | | | |
| 0.075 | 5.0 × 11.0 × 17.5 | 1.2 | | | | | 17503 | 1100 | 77503 | 1250 |
| 0.082 | | | | | | | 18203 | | 78203 | |
| 0.091 | 6.0 × 12.0 × 17.5 | 1.4 | | | | | 19103 | 900 | 79103 | 1000 |
| 0.1 | | | | | | | 11004 | | 71004 | |
| 0.11 | | | | | | | 11104 | | 71104 | |
| 0.12 | | | | | | | 11204 | | 71204 | |
| 0.13 | | | | | | | 11304 | | 71304 | |
| **Pitch = 15.0 ± 0.4 mm; $d_t$ = 0.80 ± 0.08 mm** | | | | | | | | | | |
| 0.15 | 7.0 × 13.5 × 17.5 | 1.9 | | | | | 11504 | 800 | 71504 | 750 |
| 0.16 | | | | | | | 11604 | | 71604 | |
| 0.18 | | | | | | | 11804 | | 71804 | |
| 0.2 | 8.5 × 15.0 × 17.5 | 2.6 | | | | | 12004 | 650 | 72004 | 750 |
| 0.22 | | | | | | | 12204 | | 72204 | |
| 0.24 | | | | | | | 12404 | | 72404 | |
| 0.27 | | | | | | | 12704 | | 72704 | |
| 0.3 | 10.0 × 16.5 × 17.5 | 3.1 | | | | | 13004 | 600 | 73004 | 500 |
| 0.33 | | | | | | | 13304 | | 73304 | |
| 0.36 | | | | | | | 13604 | | 73604 | |

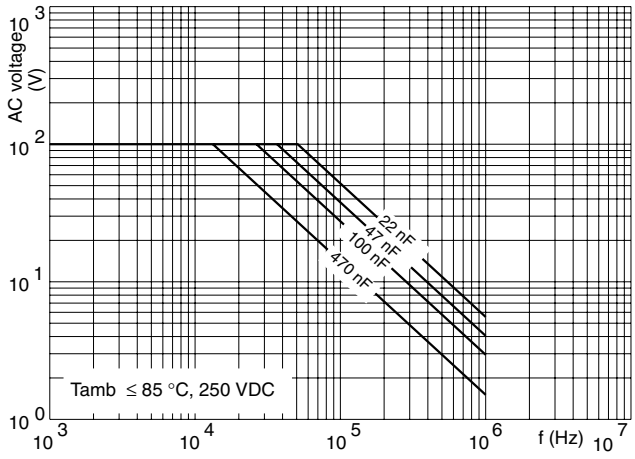
**$U_{Rdc}$ = 630 V; $U_{Rac}$ = 160 V; $U_{p-p}$ = 450 V**

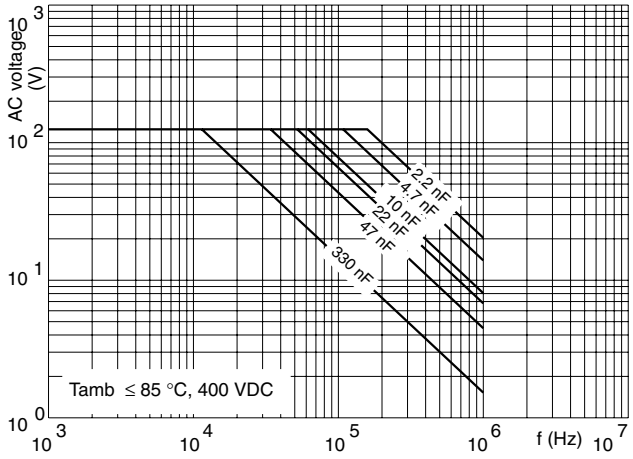
| C (E 24) (µF) | DIMENSIONS w × h × l (mm) | MASS (g) | CATALOG NUMBER 2222 420 ..... AND PACKAGING | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | AMMOPACK | | LOOSE IN BOX | | REEL | | LOOSE IN BOX | |
| | | | H = 18.5 mm; $P_0$ = 12.7 mm | | lt = 4.0 + 1.0/– 0.5 mm | | H = 18.5 mm; $P_0$ = 12.7 mm | | lt = 3.5 ± 0.3 mm | |
| | | | C-tol = ± 2 % | | C-tol = ± 2 % | | C-tol = ± 2 % | | C-tol = ± 2 % | |
| | | | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ | last 5 digits of catalog number | SPQ |
| **Pitch = 5.0 ± 0.3 mm; $d_t$ = 0.50 ± 0.05 mm** | | | | | | | | | | |
| 0.0015 | 3.5 × 8.0 × 7.2 | 0.35 | 11502 | 1500 | 41502 | 3000 | | | | |
| 0.0016 | | | 11602 | | 41602 | | | | | |
| 0.0018 | | | 11802 | | 41802 | | | | | |
| 0.002 | | | 12002 | | 42002 | | | | | |
| 0.0022 | | | 12202 | | 42202 | | | | | |
| 0.0024 | | | 12402 | | 42402 | | | | | |
| 0.0027 | | | 12702 | | 42702 | | | | | |
| 0.003 | 4.5 × 9.0 × 7.2 | 0.45 | 13002 | 1000 | 43002 | 2000 | | | | |
| 0.0033 | | | 13302 | | 43302 | | | | | |
| 0.0036 | | | 13602 | | 43602 | | | | | |
| 0.0039 | | | 13902 | | 43902 | | | | | |
| 0.0043 | 6.0 × 11.0 × 7.2 | 0.60 | 14302 | 750 | 44302 | 1500 | | | | |
| 0.0047 | | | 14702 | | 44702 | | | | | |
| 0.0051 | | | 15102 | | 45102 | | | | | |
| 0.0056 | | | 15602 | | 45602 | | | | | |
| 0.0062 | | | 16202 | | 46202 | | | | | |
| 0.0068 | | | 16802 | | 46802 | | | | | |
| **Pitch = 10.0 ± 0.4 mm; $d_t$ = 0.60 ± 0.06 mm** | | | | | | | | | | |
| 0.01 | 4.0 × 10.0 × 12.5 | 0.60 | 11003 | 750 | 41003 | 1000 | | | | |
| 0.011 | | | 11103 | | 41103 | | | | | |
| 0.012 | | | 11203 | | 41203 | | | | | |
| 0.013 | | | 11303 | | 41303 | | | | | |
| 0.015 | | | 11503 | | 41503 | | | | | |
| 0.016 | | | 11603 | | 41603 | | | | | |
| 0.018 | 5.0 × 11.0 × 12.5 | 0.85 | 11803 | 600 | 41803 | 1000 | | | | |
| 0.02 | | | 12003 | | 42003 | | | | | |
| 0.022 | | | 12203 | | 42203 | | | | | |
| 0.024 | | | 12403 | | 42403 | | | | | |
| 0.027 | 6.0 × 12.0 × 12.5 | 1.10 | 12703 | 500 | 42703 | 750 | | | | |
| 0.03 | | | 13003 | | 43003 | | | | | |
| 0.033 | | | 13303 | | 43303 | | | | | |
| 0.036 | | | 13603 | | 43603 | | | | | |
| 0.039 | | | 13903 | | 43903 | | | | | |
| 0.043 | | | 14303 | | 44303 | | | | | |
| 0.047 | | | 14703 | | 44703 | | | | | |
| **Pitch = 15.0 ± 0.4 mm; $d_t$ = 0.60 ± 0.06 mm** | | | | | | | | | | |
| 0.051 | 6.0 × 12.0 × 17.5 | 1.4 | | | | | 15103 | 900 | 75103 | 1000 |
| 0.056 | | | | | | | 15603 | | 75603 | |
| **Pitch = 15.0 ± 0.4 mm; $d_t$ = 0.80 ± 0.08 mm** | | | | | | | | | | |
| 0.062 | 7.0 × 13.5 × 17.5 | 1.9 | | | | | 16203 | 800 | 76203 | 750 |
| 0.068 | | | | | | | 16803 | | 76803 | |
| 0.075 | | | | | | | 17503 | | 77503 | |
| 0.082 | | | | | | | 18203 | | 78203 | |
| 0.091 | 8.5 × 15.0 × 17.5 | 2.6 | | | | | 19103 | 650 | 79103 | 750 |
| 0.1 | | | | | | | 11004 | | 71004 | |
| 0.11 | | | | | | | 11104 | | 71104 | |
| 0.12 | | | | | | | 11204 | | 71204 | |
| 0.13 | 10.0 × 16.5 × 17.5 | 3.1 | | | | | 11304 | 600 | 71304 | 500 |
| 0.15 | | | | | | | 11504 | | 71504 | |
| 0.16 | | | | | | | 11604 | | 71604 | |

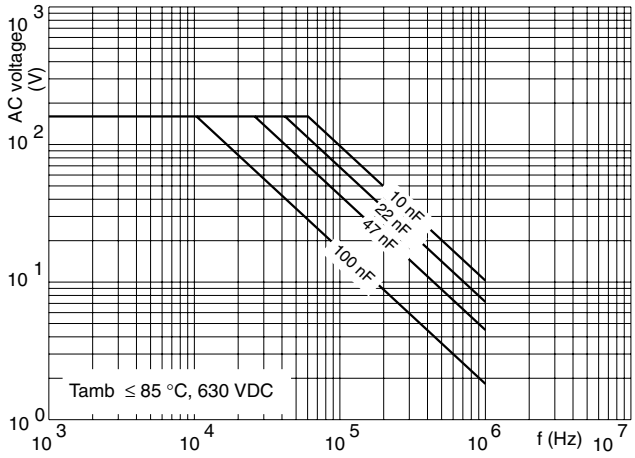
## MAXIMUM RMS VOLTAGE (SINEWAVE) AS A FUNCTION OF FREQUENCY



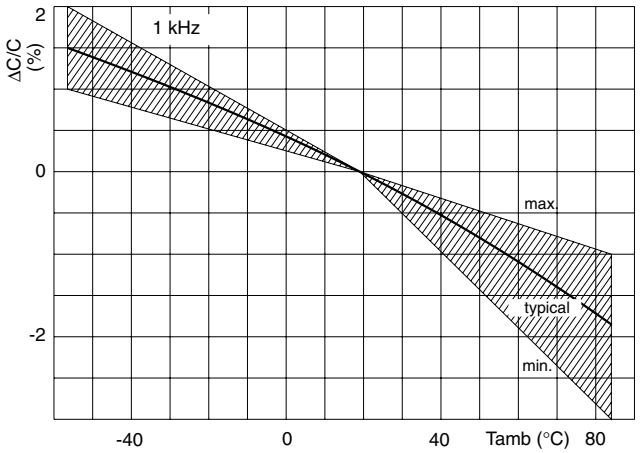



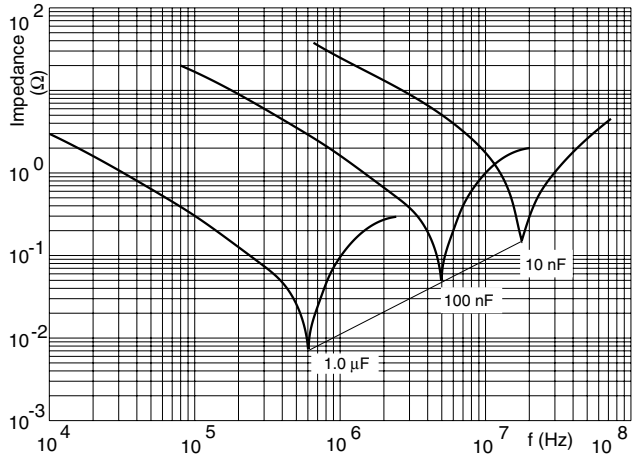



## CAPACITANCE




## IMPEDANCE



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