

| \varnothing d ± 0.05 | p = 7.5 | p = 10 | p = 15 | 15 < p \leq 27.5 | p = 37.5 |
|-------------------------------|---------|--------|-------------|--------------------|----------|
| | 0.5 | 0.6 | 0.6 or 0.8* | 0.8 | 1 |

* See size table.
All dimensions are in mm.

GENERAL TECHNICAL DATA

Dielectric: polypropylene film.
Plates: metal layer deposited by evaporation under vacuum.
Winding: non-inductive type.
Leads: $\varnothing \geq 0.6$ tinned wire.
 $\varnothing = 0.5$ tinned wire, low thermal conductivity.
Protection: plastic case, thermosetting resin filled. Box material is solvent resistant and flame retardant according to UL94 V0.
Marking: Manufacturer's logo, series, capacitance, tolerance, rated voltage, capacitor class, dielectric code, climatic category, passive flammability category, manufacturing date code, approvals, manufacturing plant.
Climatic category: 40/110/56 IEC 60068-1

Operating temperature range: -40 to +110°C
Related documents: IEC 60384-14, EN 60384-14.

ELECTRICAL CHARACTERISTICS

Rated voltage (V_R): 300Vac / 1000Vdc; 50/60Hz
Capacitance range: 1000pF to 1.0 μ F
Capacitance values: E6 series (IEC 60063 Norm).
Capacitance tolerances (measured at 1 kHz):
 $\pm 10\%$ (K); $\pm 20\%$ (M).

Dissipation factor (DF):
 $\text{tg} \delta \times 10^{-4}$ at +25°C $\pm 5^\circ\text{C}$: ≤ 30 (20)* at 1kHz
 * Typical value

Insulation resistance:

Test conditions
 Temperature: +25°C $\pm 5^\circ\text{C}$
 Voltage charge time: 1 min
 Voltage charge: 100 Vdc

Performance
 $\geq 1 \times 10^5 \text{ M}\Omega$ ($5 \times 10^5 \text{ M}\Omega$)* for C $\leq 0.33\mu\text{F}$
 $\geq 30000 \text{ s}$ (150000 s)* for C $> 0.33\mu\text{F}$

* Typical value

Test voltage between terminations (on all pieces):
 2500Vac for 1 s + 5000Vdc for 1 s at +25°C $\pm 5^\circ\text{C}$

Y2 / X1 CLASS (IEC 60384-14) MKP Series METALLIZED POLYPROPYLENE FILM CAPACITOR SELF-HEALING PROPERTIES

Typical applications: Interference suppression and «across-the-line» applications. Suitable for use in situations where failure of the capacitor could lead to danger of electric shock.
PRODUCT CODE: R41

Note: R.41 series has replaced the R73 series (available only upon request). For new design we suggest the use of the R.41 series.

| Pitch (mm) | Box thickness (B) (mm) | Maximum dimensions (mm) | | |
|------------|------------------------|-------------------------|--------|--------|
| | | B max | H max | L max |
| 7.5 | All | B +0.1 | H +0.1 | L +0.2 |
| 10.0 | All | B +0.2 | H +0.1 | L +0.2 |
| 15.0 | <7.5 | B +0.2 | H +0.1 | L +0.3 |
| 15.0 | ≥ 7.5 | B +0.2 | H +0.1 | L +0.5 |
| 22.5 | All | B +0.2 | H +0.1 | L +0.3 |
| 27.5 | All | B +0.2 | H +0.1 | L +0.3 |
| 37.5 | All | B +0.3 | H +0.1 | L +0.3 |

TEST METHOD AND PERFORMANCE

Damp heat, steady state:

Test conditions

Temperature: +40 $\pm 2^\circ\text{C}$
 Relative humidity (RH): 93 $\pm 2\%$
 Test duration: 56 days

Performance

Dielectric strength: no dielectric breakdown or flashover at 1500Vac/1 min
 Capacitance change $|\Delta C/C|$: $\leq 5\%$
 Insulation resistance: $\geq 50\%$ of initial limit.

Endurance:

Test conditions

Temperature: 110°C $\pm 2^\circ\text{C}$
 Test duration: 1000 h
 Voltage applied: $1.7 \times V_R + 1000\text{Vac}$ 0.1 s/h

Performance

Dielectric strength: no dielectric breakdown or flashover at 1500Vac/1 min
 Capacitance change $|\Delta C/C|$: $\leq 10\%$
 Insulation resistance: $\geq 50\%$ of initial limit.

Resistance to soldering heat:

Test conditions

Solder bath temperature: +260°C $\pm 5^\circ\text{C}$
 Dipping time (with heat screen): 10 s $\pm 1 \text{ s}$

Performance

Capacitance change $|\Delta C/C|$: $\leq 2\%$

Y2 / X1 CLASS (IEC 60384-14) MKP Series
METALLIZED POLYPROPYLENE FILM CAPACITOR
 SELF-HEALING PROPERTIES

Typical applications: Interference suppression and across-the-line applications. Suitable for use in situations where failure of the capacitor could lead to danger of electric shock.
 PRODUCT CODE: **R41**

Table 1

| Rated Cap. | 300 Vac/1000Vdc Std dimensions | | | | Ø d | Max dv/dt at 420Vdc (V/µs) | Part Number |
|------------|-----------------------------------|------|------|------|-----|----------------------------|---------------------|
| | B | H | L | p | | | |
| 1000 pF | 4.0 | 9.0 | 10.0 | 7.5 | 0.5 | 800 | R413D 1100 -- 00 - |
| 2200 pF | 4.0 | 9.0 | 10.0 | 7.5 | 0.5 | 800 | R413D 1220 -- 00 - |
| 3300 pF | 5.0 | 10.5 | 10.0 | 7.5 | 0.5 | 800 | R413D 1330 -- 00 - |
| 4700 pF | 6.0 | 12.0 | 10.5 | 7.5 | 0.5 | 800 | R413D 1470 -- 00 - |
| 1000 pF | 4.0 | 9.0 | 13.0 | 10.0 | 0.6 | 800 | R413F 1100 -- 00 - |
| 1500 pF | 4.0 | 9.0 | 13.0 | 10.0 | 0.6 | 800 | R413F 1150 -- 00 - |
| 2200 pF | 4.0 | 9.0 | 13.0 | 10.0 | 0.6 | 800 | R413F 1220 -- 00 - |
| 3300 pF | 4.0 | 9.0 | 13.0 | 10.0 | 0.6 | 800 | R413F 1330 -- M1 - |
| 4700 pF | 5.0 | 11.0 | 13.0 | 10.0 | 0.6 | 800 | R413F 1470 -- M1 - |
| 6800 pF | 6.0 | 12.0 | 13.0 | 10.0 | 0.6 | 800 | R413F 1680 -- 00 - |
| 3300 pF | 5.0 | 11.0 | 18.0 | 15.0 | 0.6 | 600 | R413I 1330 -- 00 - |
| 4700 pF | 5.0 | 11.0 | 18.0 | 15.0 | 0.6 | 600 | R413I 1470 -- 00 - |
| 6800 pF | 5.0 | 11.0 | 18.0 | 15.0 | 0.6 | 600 | R413I 1680 -- 00 - |
| 0.010 µF | 5.0 | 11.0 | 18.0 | 15.0 | 0.6 | 600 | R413I 2100 -- 00 - |
| 0.015 µF | 5.0 | 11.0 | 18.0 | 15.0 | 0.6 | 600 | R413I 2150 -- M1 - |
| 0.022 µF | 6.0 | 12.0 | 18.0 | 15.0 | 0.6 | 600 | R413I 2220 -- M1 - |
| 0.033 µF | 7.5 | 13.5 | 18.0 | 15.0 | 0.6 | 600 | R413I 2330 -- M1 - |
| 0.047 µF | 8.5 | 14.5 | 18.0 | 15.0 | 0.6 | 600 | R413I 2470 -- M1 - |
| 0.068 µF | 11.0 | 19.0 | 18.0 | 15.0 | 0.8 | 600 | R413I 2680 -- 00 - |
| 0.047 µF | 6.0 | 15.0 | 26.5 | 22.5 | 0.8 | 500 | R413N 2470 -- 00 - |
| 0.068 µF | 6.0 | 15.0 | 26.5 | 22.5 | 0.8 | 500 | R413N 2680 -- M1M - |
| 0.068 µF | 7.0 | 16.0 | 26.5 | 22.5 | 0.8 | 500 | R413N 2680 -- 00 - |
| 0.10 µF | 8.5 | 17.0 | 26.5 | 22.5 | 0.8 | 500 | R413N 3100 -- M1 - |
| 0.15 µF | 10.0 | 18.5 | 26.5 | 22.5 | 0.8 | 500 | R413N 3150 -- M1 - |
| 0.22 µF | 13.0 | 22.0 | 26.5 | 22.5 | 0.8 | 500 | R413N 3220 -- 00 - |
| 0.22 µF | 13.0 | 22.0 | 32.0 | 27.5 | 0.8 | 400 | R413R 3220 -- 00 - |
| 0.33 µF | 14.0 | 28.0 | 32.0 | 27.5 | 0.8 | 400 | R413R 3330 -- 00 - |
| 0.47 µF | 18.0 | 33.0 | 32.0 | 27.5 | 0.8 | 400 | R413R 3470 -- 00 - |
| 0.68 µF | 18.0 | 33.0 | 32.0 | 27.5 | 0.8 | 400 | R413R 3680 -- 00 - |
| 0.47 µF | 13.0 | 24.0 | 41.5 | 37.5 | 1.0 | 300 | R413W 3470 -- 00 - |
| 0.68 µF | 16.0 | 28.5 | 41.5 | 37.5 | 1.0 | 300 | R413W 3680 -- 00 - |
| 1.0 µF | 20.0 | 40.0 | 41.5 | 37.5 | 1.0 | 300 | R413W 4100 -- 00 - |

Mechanical version and packaging (Table1) _____
 Tolerance: K (±10%); M (±20%) _____




E12 Series available upon request

All dimensions are in mm.

| Standard packaging style | Lead length (mm) | Taping style | | | Ordering code (Digit 10 to 11) |
|----------------------------|---|---------------------|------------|------------|--------------------------------|
| | | P ₂ (mm) | Fig. (No.) | Pitch (mm) | |
| AMMO-PACK | | 6.35 | 1 | 7.5 | DQ |
| AMMO-PACK | | 12.70 | 1 | 10.0/15.0 | DQ |
| AMMO-PACK | | 19.05 | 2 | 22.5 | DQ |
| REEL Ø 355mm | | 6.35 | 1 | 7.5 | CK |
| REEL Ø 500mm | | 12.70 | 1 | 10.0/15.0 | CK |
| REEL Ø 500mm | | 19.05 | 2 | 22.5/27.5 | CK |
| Loose, short leads | 4 ⁺² | | | | 00 |
| Loose, long leads (p<10mm) | 17 ^{+1/-2} | | | | Z3 |
| Loose, long leads (p=10mm) | 25 ^{±1} | | | | JY |
| Loose, long leads (p≥15mm) | 25 ^{+2/-1} 30 ⁺⁵ | | | | 50 40 |

Note: Ammo-pack is the preferred packaging for taped version

APPROVALS

| | | | |
|---|-------------------------|--------------------------------------|---|
|  | ENEC IEC 60384-14 | Class Y2 / X1 | File No. V4160 (in progress for pitch 7.5 mm) |
|  | CSA C22.2 N°1 (250Vac) | Across-the-line | File No. LR83890 (in progress for pitch 7.5 mm) |
| | UL 1283 (300 Vac 110°C) | Electromagnetic Interference Filters | File No. E85238 in progress |
| | UL 1414 (85°C; 250Vac) | Across-the-line | File No. E 97797 (in progress for pitch 7.5 mm) |
|  | GB IT 14472 | Class Y2 / X1 | File CQC3001006820 CQC3001006821 (in progress for pitch 7.5 mm) |

Approved according to IEC 60384-14 (ex-former EN 132400)
 According to IEC 60065.

(*) ENEC mark has replaced all the following European National marks:

