



$\emptyset$ 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: $\emptyset \geq 0.6$ tinned wire.

$\emptyset = 0.5$ 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 ± 1 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:

