

## Y2 / X1 CLASS (EN132400) MKP Series METALLIZED POLYPROPYLENE FILM CAPACITOR SELF-HEALING PROPERTIES

**Typical applications:** Interference suppression and «across-the-line» and «line to ground» 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.

∅ d ± 0.05	p = 10	p = 15	15 < p ≤ 27.5	p = 37.5
	0.6	0.6	0.8	1

All dimensions are in mm.

### GENERAL TECHNICAL DATA

**Dielectric:** polypropylene film.

**Plates:** metal layer deposited by evaporation under vacuum.

**Winding:** non-inductive type.

**Leads:** tinned wire.

**Protection:** plastic case, epoxy 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, EN132400.

### ELECTRICAL CHARACTERISTICS

**Rated voltage (V<sub>R</sub>):** 300Vac; 50/60Hz

**Capacitance range:** 0.001µF to 1.0µF

**Capacitance values:** E6 series (IEC 60063 Norm).

**Capacitance tolerances** (measured at 1 kHz):

± 10% (K); ± 20% (M).

**Dissipation factor (DF):**

$tg\delta \times 10^{-4}$  at +25°C ± 5°C: ≤ 20 (15)\* at 1kHz

\* Typical value

**Insulation resistance:**

**Test conditions**

Temperature: +25°C ± 5°C

Voltage charge time: 1 min

Voltage charge: 100 Vdc

**Performance**

≥ 1 × 10<sup>5</sup> MΩ (5 × 10<sup>5</sup> MΩ)\* for C ≤ 0.33µF

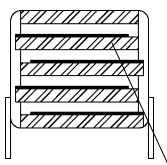
≥ 30000 s (150000 s)\* for C > 0.33µF

\* Typical value

**Test voltage between terminations** (on all pieces):

2500Vac for 1 s + 5000Vdc for 1 s at +25°C ± 5°C

### Winding scheme



300Vac

single sided metallized polypropylene film

### TEST METHOD AND PERFORMANCE

**Damp heat, steady state:**

**Test conditions**

Temperature: +40 ± 2°C

Relative humidity (RH): 93 ± 2%

Test duration: 56 days

**Performance**

Dielectric strength: no dielectric breakdown or flashover at 1500Vac/1 min

Capacitance change |ΔC/C|: ≤ 5%

Insulation resistance: ≥ 50% of initial limit.

**Endurance:**

**Test conditions**

Temperature: 110°C ± 2°C

Test duration: 1000 h

Voltage applied: 1.7 × V<sub>R</sub> + 1000Vac 0.1 s/h

**Performance**

Dielectric strength: no dielectric breakdown or flashover at 1500Vac/1 min

Capacitance change |ΔC/C|: ≤ 10%

Insulation resistance: ≥ 50% of initial limit.

**Resistance to soldering heat:**

**Test conditions**

Solder bath temperature: +260°C ± 5°C

Dipping time (with heat screen): 10 s ± 1 s

**Performance**

Capacitance change |ΔC/C|: ≤ 2%

### APPROVALS

	ENEC-IMQ IEC 60384-14	Class Y2 / X1	File No. V4160
	CSA C22.2 N°1	Across-the-line or line-to-ground	File No. LR83890
	UL 1414	Across-the-line or line-to-ground	File No. E 97797
	GB IT 14472-1998	Class Y2 / X1	File No. pending

CSA and UL 1414 for 250Vac only.

Approved according to IEC 60384-14:1993+ A1:1995

(EN132400:1994+A2:1998+A3:1998).

According to IEC 60065.

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



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**Table 1** (for more detailed information, please refer to page 16).

Rated Cap.	300 Vac				Max dv/dt at 420Vdc (V/µs)	Part Number
	B	H	L	p		
1000 pF	4.0	9.0	13.0	10.0	800	R413F 1100 - - 00 -
1500 pF	4.0	9.0	13.0	10.0	800	R413F 1150 - - 00 -
2200 pF	4.0	9.0	13.0	10.0	800	R413F 1220 - - 00 -
3300 pF	5.0	11.0	13.0	10.0	800	R413F 1330 - - 00 -
4700 pF	5.0	11.0	13.0	10.0	800	R413F 1470 - - M1M
4700 pF	6.0	12.0	13.0	10.0	800	R413F 1470 - - 00 -
6800 pF	6.0	12.0	13.0	10.0	800	R413F 1680 - - 00 -
0.010 µF	5.0	11.0	18.0	15.0	600	R413I 2100 - - 00 -
0.015 µF	6.0	12.0	18.0	15.0	600	R413I 2150 - - 00 -
0.022 µF	7.5	13.5	18.0	15.0	600	R413I 2220 - - 00 -
0.033 µF	8.5	14.5	18.0	15.0	600	R413I 2330 - - 00 -
0.047 µF	10.0	16.0	18.0	15.0	600	R413I 2470 - - 00 -
0.047 µF	6.0	15.0	26.5	22.5	500	R413N 2470 - - 00 -
0.068 µF	7.0	16.0	26.5	22.5	500	R413N 2680 - - 00 -
0.10 µF	10.0	18.5	26.5	22.5	500	R413N 3100 - - 00 -
0.15 µF	11.0	20.0	26.5	22.5	500	R413N 3150 - - 00 -
0.22 µF	13.0	22.0	26.5	22.5	500	R413N 3220 - - 00 -
0.22 µF	13.0	22.0	32.0	27.5	400	R413R 3220 - - 00M
0.33 µF	14.0	28.0	32.0	27.5	400	R413R 3330 - - 00 -
0.47 µF	18.0	33.0	32.0	27.5	400	R413R 3470 - - 00 -
0.68 µF	18.0	33.0	32.0	27.5	400	R413R 3680 - - 00 -
0.47 µF	13.0	24.0	41.5	37.5	300	R413W3470 - - 00 -
0.68 µF	16.0	28.5	41.5	37.5	300	R413W3680 - - 00 -
1.0 µF	20.0	40.0	41.5	37.5	300	R413W4100 - - 00 -

Mechanical version and packaging (Table 1)

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 <sub>2</sub> (mm)	Fig. (No.)	Pitch (mm)	
AMMO-PACK		12.70	1	10.0/15.0	DQ
AMMO-PACK		19.05	2	22.5	DQ
REEL Ø 355mm		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)	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