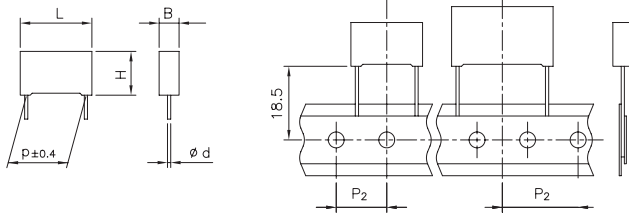


X2 CLASS (IEC 60384-14) - MKP Series  
**METALLIZED POLYPROPYLENE FILM CAPACITOR**  
SELF-HEALING PROPERTIES

Loose

Taped

Fig.1 Fig.2



Ø d ±0.05	p ≤15	22.5 ≤ p ≤ 27.5	p = 37.5
	0.6 or 0.8*	0.8	1.0

\*See size table.

All dimensions are in mm.

PRODUCT CODE: **R46**

**Not for new design.**

Not for use in series with the mains.  
See [www.kemet.com](http://www.kemet.com) for more information.

Pitch (mm)	Box thickness (B) (mm)	Maximum dimensions (mm)		
		B max	H max	L max
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

**GENERAL TECHNICAL DATA**

**Dielectric:** polypropylene film.

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

**Winding:** non-inductive type.

**Leads:** tinned wire.

**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<sub>R</sub>):** 275Vac (50/60Hz) / 560 Vdc

**Capacitance range:** 0.022µF to 10µF

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

**Capacitance tolerances** (measured at 1 kHz):  
±10% (K); ±20% (M).

tolerance ±5% (J) available upon request

**Dissipation factor (DF):**

tgδ 10<sup>-4</sup> at +25°C ±5°C: ≤15 (8)\* at 1kHz

\* Typical value

**Insulation resistance:**

**Test conditions**

Temperature: +25°C±5°C

Voltage charge time: 1 min

Voltage charge: 100 Vdc

**Performance**

≥1x10<sup>5</sup> MΩ (5x10<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):

1500Vac for 1 s + 2200Vdc for 1 s at +25°C±5°C

**TEST METHOD AND PERFORMANCE**

**Damp heat, steady state:**

**Test conditions 1st**

Temperature: +40°C ± 2°C

Relative humidity (RH): 93% ±2%

Test duration: 56 days

**Test conditions 2nd**

Temperature: +60°C ± 2°C

Relative humidity (RH): 95% ±2%

Test duration: 500 hours

**Test conditions 3rd**

Temperature: +40°C ± 2°C

Relative humidity (RH): 93% ±2%

Test duration: 500 hours

Voltage value: 230 Vac, 50 Hz

**Performance**

Dielectric strength: no dielectric breakdown or flashover at 4.3 x V<sub>R</sub> (d.c.)/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: 1.25 x V<sub>R</sub> + 1000Vac 0.1 s/h

**Performance**

Dielectric strength: no dielectric breakdown or flashover at 4.3 x V<sub>R</sub> (d.c.)/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%

X2 CLASS (IEC60384-14) - MKP Series  
**METALLIZED POLYPROPYLENE FILM CAPACITOR**  
SELF-HEALING PROPERTIES

**APPROVALS**

**Not for new design.**

Rated Cap. (*)	275 Vac / 560 Vdc Std dimensions					Ø d	Max dv/dt at 390Vdc (V/µs)	Part Number		
	B	H	L	p						
0.010 µF	5.0	11.0	18.0	15.0	0.6	400	R46 KI	2100 -- S0	-	
0.015 µF	5.0	11.0	18.0	15.0	0.6	400	R46 KI	2150 -- S0	-	
0.022 µF	5.0	11.0	18.0	15.0	0.6	400	R46 KI	2220 -- S0	-	
0.033 µF	5.0	11.0	18.0	15.0	0.6	400	R46 KI	2330 -- S0	-	
0.047 µF	5.0	11.0	18.0	15.0	0.6	400	R46 KI	2470 -- S1	-	
0.068 µF	5.0	11.0	18.0	15.0	0.6	400	R46 KI	2680 -- S0	-	
0.10 µF	5.0	11.0	18.0	15.0	0.6	400	R46 KI	3100 -- S1	M	
0.10 µF	6.0	12.0	18.0	15.0	0.6	400	R46 KI	3100 -- S0	-	
0.15 µF	6.0	12.0	18.0	15.0	0.6	400	R46 KI	3150 -- S1	M	
0.15 µF	7.5	13.5	18.0	15.0	0.6	400	R46 KI	3150 -- S0	-	
0.15 µF	9.0	12.5	18.0	15.0	0.6	400	R46 KI	3150 -- S3	-	
0.22 µF	7.5	13.5	18.0	15.0	0.6	400	R46 KI	3220 -- S1	M	
0.22 µF	8.5	14.5	18.0	15.0	0.6	400	R46 KI	3220 -- S0	-	
0.22 µF	6.0	17.5	18.0	15.0	0.6	400	R46 KI	3220 -- S2	-	
0.22 µF	9.0	12.5	18.0	15.0	0.6	400	R46 KI	3220 -- S3	-	
0.33 µF	13.0	12.0	18.0	15.0	0.8	400	R46 KI	3330 -- S1	-	
0.33 µF	8.5	14.5	18.0	15.0	0.8	400	R46 KI	3330 -- S3	M	
0.33 µF	10.0	16.0	18.0	15.0	0.8	400	R46 KI	3330 -- S0	-	
0.33 µF	7.5	18.5	18.0	15.0	0.8	400	R46 KI	3330 -- S2	-	
0.47 µF	11.0	19.0	18.0	15.0	0.8	400	R46 KI	3470 -- S0	-	
0.47 µF	10.0	16.0	18.0	15.0	0.8	400	R46 KI	3470 -- S1	M	
0.56 µF	11.0	19.0	18.0	15.0	0.8	400	R46 KI	3560 -- S0	-	
0.68 µF	11.0	19.0	18.0	15.0	0.8	400	R46 KI	3680 -- S0	M	
0.22 µF	6.0	15.0	26.5	22.5	0.8	200	R46 KN	3220 -- S0	-	
0.33 µF	6.0	15.0	26.5	22.5	0.8	200	R46 KN	3330 -- S1	M	
0.33 µF	7.0	16.0	26.5	22.5	0.8	200	R46 KN	3330 -- S0	-	
0.47 µF	7.0	16.0	26.5	22.5	0.8	200	R46 KN	3470 -- S1	M	
0.47 µF	8.5	17.0	26.5	22.5	0.8	200	R46 KN	3470 -- S0	-	
0.68 µF	10.0	18.5	26.5	22.5	0.8	200	R46 KN	3680 -- S0	-	
1.0 µF	10.0	18.5	26.5	22.5	0.8	200	R46 KN	4100 -- S2	M	
1.0 µF	11.0	20.0	26.5	22.5	0.8	200	R46 KN	4100 -- S1	-	
1.2 µF	13.0	22.0	26.5	22.5	0.8	200	R46 KN	4120 -- S0	-	
0.47 µF	9.0	17.0	32.0	27.5	0.8	150	R46 KR	3470 -- S0	-	
0.68 µF	9.0	17.0	32.0	27.5	0.8	150	R46 KR	3680 -- S1	-	
1.0 µF	11.0	20.0	32.0	27.5	0.8	150	R46 KR	4100 -- S1	-	
1.5 µF	13.0	22.0	32.0	27.5	0.8	150	R46 KR	4150 -- S1	-	
2.2 µF	13.0	25.0	32.0	27.5	0.8	150	R46 KR	4220 -- S2	-	
3.3 µF	18.0	33.0	32.0	27.5	0.8	150	R46 KR	4330 -- S2	-	
4.7 µF	18.0	33.0	32.0	27.5	0.8	150	R46 KR	4470 -- S2	-	
1.5 µF	11.0	22.0	41.5	37.5	1.0	100	R46 KW	4150 -- S1	-	
2.2 µF	11.0	22.0	41.5	37.5	1.0	100	R46 KW	4220 -- S2	M	
2.2 µF	13.0	24.0	41.5	37.5	1.0	100	R46 KW	4220 -- S1	-	
3.3 µF	16.0	28.5	41.5	37.5	1.0	100	R46 KW	4330 -- S1	-	
4.7 µF	16.0	28.5	41.5	37.5	1.0	100	R46 KW	4470 -- S2	M	
4.7 µF	19.0	32.0	41.5	37.5	1.0	100	R46 KW	4470 -- S1	-	
6.8 µF	20.0	40.0	41.5	37.5	1.0	100	R46 KW	4680 -- S2	-	
10.0 µF	30.0	45.0	41.5	37.5	1.0	100	R46 KW	5100 -- S1	-	

	ENEC IEC 60384-14	Class X2	File No.V4413
	UL 1414 (up to 1µF, 85°C; 250Vac)	Across-the-line	File No.E97797
	CSA - C22.2 No.1 (up to 1µF, 85°C; 250Vac)	Across-the-line certified for Canada	File No.E97797
	UL 1283 (310 Vac)	Electromagnetic Interference Filters	File No.E85238
	CSA - C22.2 No.8 (310 Vac)	Electromagnetic Interference Filters certified for Canada	File No.E85238
	GB/T 14472	Class X2	File CQC03001008199 CQC03001008842

Approved according to IEC 60384-14  
According to IEC 60065  
Not for use in series with the mains.  
See [www.kemet.com](http://www.kemet.com) for more information.

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



Table 1

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 Ø500mm		12.70	1	10.0/15.0	CK
REEL Ø500mm		19.05	2	22.5/27.5	CK
Loose, short leads	4 <sup>+2</sup>				00
Loose, long leads	25 <sup>-1/+2</sup>				50
Loose, long leads	30 <sup>+5</sup>				40
Loose, insulated rigid leads	30 <sup>+5</sup>				51
Loose, insulated flexible leads	150 <sup>+5</sup>				52

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

Rated voltage (K=275Vac) \_\_\_\_\_  
Mechanical version and packaging (Table 1) \_\_\_\_\_  
Tolerance: K (±10%); M (±20%) \_\_\_\_\_

300Vac Available upon request

E12 Series available upon request

All dimensions are in mm

Statements of suitability for certain applications are based on our knowledge of typical operating conditions for such applications, but are not intended to constitute – and we specifically disclaim – any warranty concerning suitability for a specific customer application or use. This Information is intended for use only by customers who have the requisite experience and capability to determine the correct products for their application. Any technical advice inferred from this Information or otherwise provided by us with reference to the use of our products is given gratis, and we assume no obligation or liability for the advice given or results obtained.