

AC METALLIZED POLYPROPYLENE FILM CAPACITORS FOR USE IN DISCHARGE LAMP CIRCUITS (TYPE A)

APPLICATION

The MKSP-025P capacitors, type A, rated voltage 250VAC, meet the requirements of EN 61048:2000/A2 and are designed for parallel power factor correction of discharge lamps (e.g. fluorescent lamps, metal halide lamps, mercury-vapour lamps and sodium-vapour lamps) supplied from mains with a frequency of 50 or 60 Hz.

TECHNICAL DATA

The technical data are specified in the following pages enclosed for particular capacitor versions. The detailed technical requirements are specified in the Technical Specifications WT-03/MIFLEX/MKSP-025 and MKSP-025P.

CAPACITOR VERSIONS

The MKSP-025P capacitors, type A are made of metallized polypropylene film having low dielectric loss. The winding element is placed into plastic case and sealed with special terminal cover. Depending on capacitor case, these capacitors can be fixed by an M8 stud or special quick-fixing clips. The capacitors have a discharge resistor which discharges the capacitor to a voltage not exceeding 50V within 1 minute from the capacitor turn-off from the mains.

NOTE:

The MKSP-025P capacitors, type A, versions 5 ÷ 10 are also produced in the version with a thermal fuse (see: "Mounting Instructions"). If these capacitors are required, it must be specified when ordering by adding the words "with thermal fuse".

The basic versions of capacitor are as follows:

VERSION 5 (Page 4):

- capacitor cover with integral terminal block (WAGO) equipped with internal discharge resistor suitable for currents with the value of 10A, to connect wire terminals 0.5 to 1.5 mm²
- case without quick-fixing clip and stud
- version with thermal fuse on the customer's request

VERSION 6 (Page 5):

- capacitor cover with integral terminal block as in the version 5
- case with metal M8 fixing stud
- version with thermal fuse on the customer's request

VERSION 7 (Page 6):

- capacitor cover with integral terminal block as in the version 5
- case with quick-fixing clip



AC METALLIZED POLYPROPYLENE FILM CAPACITORS FOR USE IN DISCHARGE LAMP CIRCUITS (TYPE A)

VERSION 8 (Page 7):

- capacitor cover with integral terminal block as in the version 5
- case with quick-fixing clip and plastic M8 fixing stud
- version with washernut on the customer's request
- version with terminal fuse on the customer's request

VERSION 9 (Page 8):

- insulated wire leads; 0.5mm²
- the capacitors have a discharge resistor inside
- case with quick-fixing clip
- version with terminal fuse on the customer's request

VERSION 10 (Page 9):

- insulated wire leads; 0.5mm²
- the capacitors have a discharge resistor inside
- case with plastic or metal M8 fixing stud
- version with terminal fuse on the customer's request

Note: The MKSP-025P capacitors do not contain PCB's.

MOUNTING INSTRUCTIONS

All capacitor versions can be mounted without restrictions in any position. Nevertheless, during the mounting it must be considered that these capacitors do not have a specific fail-safe device which would disconnect them from the mains in case of their failure. Although the capacitor cover and case are made of flame retardant materials (UL94 V0 or V2), the winding element is made of inflammable metallized polypropylene film. These capacitors have a self-healing feature but during the service life of capacitor, especially under conditions of permanent overloading, the ability of the dielectric to regenerate (self-healing) may deteriorate. As a result, the risk of a non-healing breakdown with continuous short circuit may occur. The winding element may overheat rapidly and melt, smoke and even ignite. It is, therefore, necessary to undertake proper measures to provide reliable safety for people and property by locate the capacitors in the lamp luminaires so as to avoid the ignition of inflammable materials in their surroundings.

NOTE:

- 1. To minimize the occurrence of fire, the capacitors have been developed with a thermal fuse which is located inside the capacitor winding and which responds to overtemperature. This thermal fuse provides the operating effectiveness of 98%.**
- 2. A full protection from fire is guaranteed by the MKSP-I60 capacitors, type B, sealed hermetically in Al case, and equipped with the overpressure disconnecter.**



AC METALLIZED POLYPROPYLENE FILM CAPACITORS FOR USE IN DISCHARGE LAMP CIRCUITS (TYPE A)

OPERATING CONDITIONS

The MKSP-025P capacitors have been designed for continuous operation at the rated voltage, temperature and humidity according to technical data given for particular versions.

SERVICE LIFE

In accordance with EN 61049, the capacitors are subjected to endurance test with the test voltage of 337,5VAC and the test temperature of +85°C for 2000 hours.

The above mentioned endurance test is equivalent to the service life expectancy of 30000h at the rated voltage of 250VAC and the temperature of +85°C in accordance with the following relation:

$$L_2 = L_1 \left(\frac{U_1}{U_2} \right)^9 \cdot 2^x$$

where: L_2 - service life expectancy (hours)
 L_1 - test duration acc. to EN 61049
 U_1 - test voltage e.g. 1,35 U_R for $L_1 = 2000h$
 U_2 - working voltage e.g. $U_R = 250VAC$

$$X = \frac{T_1 - T_2}{10}$$

where: T_1 - endurance test temperature (e.g. +85°C)
 T_2 - working temperature (temperature of capacitor case e.g. +85°C)

In accordance with the above relation, the service life of capacitors increases markedly as a result of temperature and voltage decrease.

Example:

In case of rated voltage of 250VAC and the capacitor case temperature of +70°C, the designed service shall be about 85000h and is equivalent to the capacitor lifetime of 10 years.

Notes:

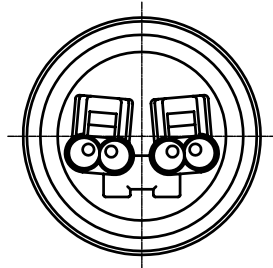
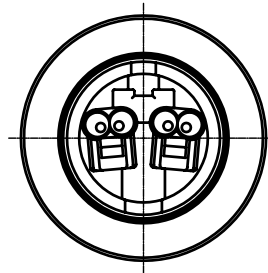
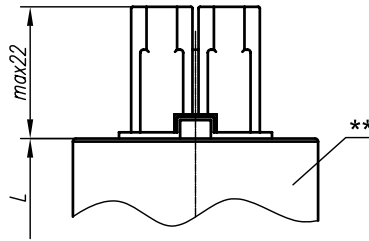
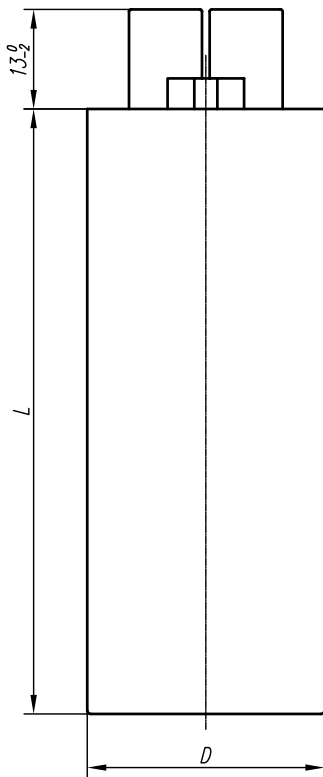
1. The excessive temperatures, overvoltages, humidity and harmonic distortions may reduce the service life expectancy or increase the failure rate.
2. No vapour condensation on the capacitor surface is allowed. The humidity class and climatic category is given in Technical Specifications. The limit values of humidity shall not be exceeded even during storage.
3. Only capacitors with overpressure safety mechanism are suitable for use under conditions of the increased humidity. In case of doubt regarding the character of the ambient conditions, the capacitors with overpressure safety mechanism should be given preference.
4. In case of other doubts please contact the manufacturer.



AC METALLIZED POLYPROPYLENE FILM CAPACITORS FOR USE IN DISCHARGE LAMP CIRCUITS (TYPE A)

Version 5

Capacitor dimensions



Rated capacitance C_N	Capacitor dimensions			
	without fuse		with thermal fuse	
	D_0^{+1}	$L \pm 2$	D_0^{+1}	$L \pm 2$
μF	mm	mm	mm	mm
3	30	60	30	60
3	25	57	25	57
3.5	25	57	25	57
3.5	30	60	30	60
3.7	30	60	30	60
4	25	70	25	70
4	30	60	30	60
4.5	25	70	25	70
4.5	30	60	30	60
5	25	70	25	70
5	30	60	30	60
5.5	25	70	25	70
6	25	70	25	70
6	30	60	30	60
6.3	30	70	30	70
6.5	30	60	30	60
7	30	70	30	70
7	30	60	30	60
7.5	30	70	30	70
8	30	70	30	70
9	30	70	30	70
9	30	84	30	84
10	30	70	30	70
10	30	84	30	84
12	30	95	30	95
12	30	84	30	84
12.5	30	95	30	95
13	30	95	30	95
13	35	84	35	84
13.5	30	95	30	95
13.5	35	84	35	84
14	30	95	30	95
14	35	84	35	84
15	30	95	30	95
16	30	95	30	95
18	35	95	35	95
18	35	84	35	84
20	35	95	35	95
20	35	84	35	84
22.5	40	95	40	95
25	40	95	40	95
25**	40	84	40	84
28	40	95	40	95
30	40	95	40	95
30	45	84	45	84
31.5	45	95	45	95
32	45	95	45	95
32	45	84	45	84
35	45	95	45	95
35	45	84	45	84
36	45	95	45	95
40	45	95	45	95
40**	50	84	50	84
45	45	95	45	95
45**	50	84	50	84

TECHNICAL DATA:

- Capacitance tolerance:
- Rated voltage:
- Rated frequency:
- Temperature range (temp of capacitor surface):
- Climatic category:
- Relative humidity in capacitor's ambience at $20 \pm 25^\circ C$:

- Dewing of capacitor:
- Dissipation factor ($\text{tg } \delta$):
- Dielectric strength:

- between terminals
- between terminals connected together and case

- Case:
- Specifications:
- The capacitors meet the requirements of:
- Safety approval:

- $\pm 10\%$,
- 250V/50Hz,
- 50 - 60Hz,
- $-40 \div 85^\circ C$,
- 40/085/10 acc. to EN 60068-1,
- 65% mean annual value,
- 85% max value during 30 days,
- not allowed,
- ≤ 0.003 at 50Hz / 250V~,

- $2U_R - 60s$,
- 2.5kV / 50Hz - 60s,
- plastic case,
- WT-03/MIFLEX/MKSP-025 and MKSP-025P,
- EN 61048/A2, EN 61049,
- Polish safety mark "B",
- ENEC certificate.

** Capacitor with cover + terminal block.
Other dimensions and capacitances within the given range are available on the customer's request.

This product fulfils the requirements of the RoHS Directive (2002/95/EC).

 **MIFLEX S.A.**

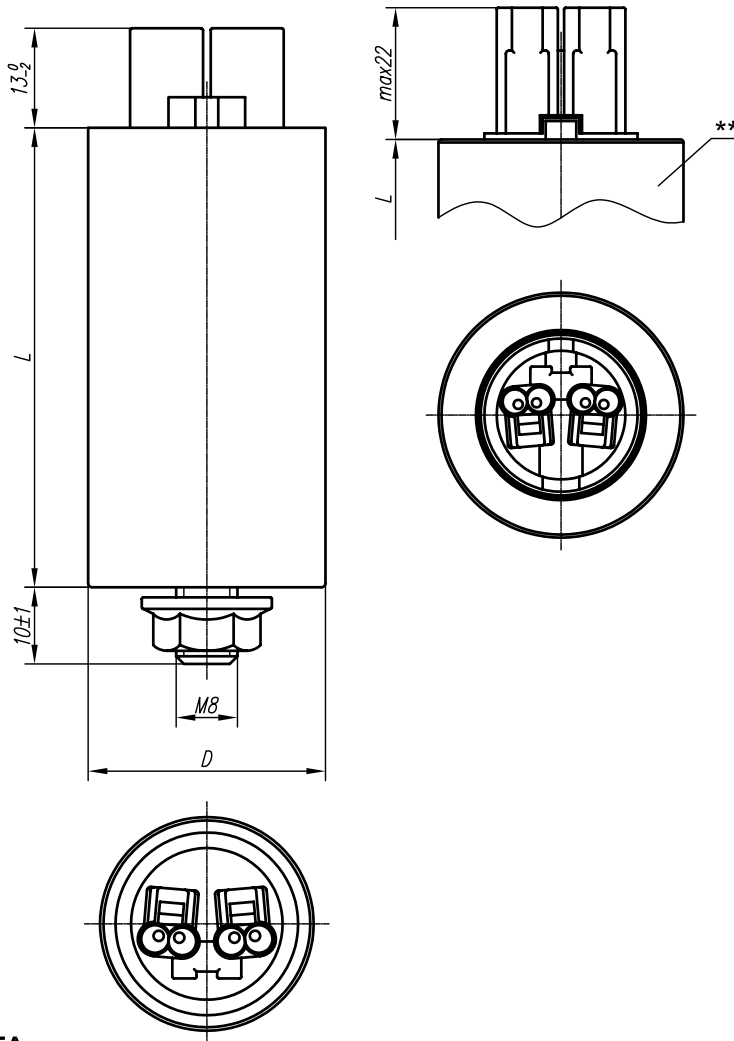
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AC METALLIZED POLYPROPYLENE FILM CAPACITORS FOR USE IN DISCHARGE LAMP CIRCUITS (TYPE A)

Version 6



Capacitor dimensions

Rated capacitance C_N	Capacitor dimensions			
	without fuse		with thermal fuse	
	D_{20}^{+1}	$L \pm 2$	D_{20}^{+1}	$L \pm 2$
μF	mm	mm	mm	mm
3	30	58	30	58
3	25	57	25	57
3.5	25	57	25	57
3.5	30	58	30	58
3.7	30	58	30	58
4	25	70	25	70
4	30	58	30	58
4.5	25	70	25	70
4.5	30	58	30	58
5	25	70	25	70
5	30	58	30	58
5.5	25	70	25	70
6	25	70	25	70
6	30	58	30	58
6.3	30	70	30	70
6.5	30	58	30	58
7	30	70	30	70
7	30	58	30	58
7.5	30	70	30	70
8	30	70	30	70
9	30	70	30	70
9	30	83	30	83
10	30	70	30	70
10	30	83	30	83
12	30	95	30	95
12	30	83	30	83
12.5	30	95	30	95
13	30	95	30	95
13	35	83	35	83
13.5	30	95	30	95
13.5	35	83	35	83
14	30	95	30	95
14	35	83	35	83
15	30	95	30	95
16	30	95	30	95
18	35	95	35	95
18	35	83	35	83
20	35	95	35	95
20	35	83	35	83
22.5	40	95	40	95
25	40	95	40	95
25**	40	84	40	84
28	40	95	40	95
30	40	95	40	95
30	45	83	45	83
31.5	45	95	45	95
32	45	95	45	95
32	45	83	45	83
35	45	95	45	95
35	45	83	45	83
36	45	95	45	95
40	45	95	45	95
40**	50	84	50	84
45	45	95	45	95
45**	50	84	50	84

TECHNICAL DATA:

- Capacitance tolerance:
- Rated voltage:
- Rated frequency:
- Temperature range (temp of capacitor surface):
- Climatic category:
- Relative humidity in capacitor's ambience at $20 \pm 25^\circ\text{C}$:

- $\pm 10\%$,
- 250V/50Hz,
- 50 - 60Hz,
- $-40 \pm 85^\circ\text{C}$,
- 40/085/10 acc. to EN 60068-1,
- 65% mean annual value,
- 85% max value during 30 days,
- not allowed,
- ≤ 0.003 at 50Hz / 250V~,

- Dewing of capacitor:
- Dissipation factor ($\text{tg } \delta$):
- Dielectric strength:
 - between terminals
 - between terminals connected together and case
- Metal stud
- Case:
- Specifications:
 - The capacitors meet the requirements of:
 - Safety approval:

- 2U_R - 60s,
- 2.5kV / 50Hz - 60s,
- tightening-up strength 4 Nm,
- plastic case,
- WT-03/MIFLEX/MKSP-025 and MKSP-025P,
- EN 61048/A2, EN 61049,
- Polish safety mark "B",
- ENEC certificate.

** Capacitor with cover + terminal block.
Other dimensions and capacitances from the given range are available on the customer's request.

See also version 8* with optional washernut

This product fulfils the requirements of the RoHS Directive (2002/95/EC).

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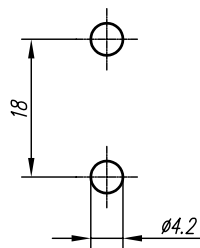
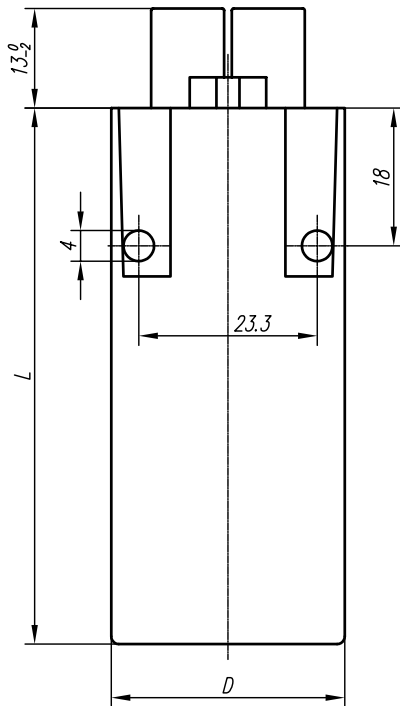
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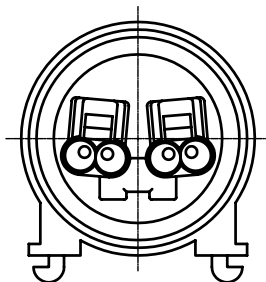
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AC METALLIZED POLYPROPYLENE FILM CAPACITORS FOR USE IN DISCHARGE LAMP CIRCUITS (TYPE A)

Version 7



Mounting holes



Capacitor dimensions

Rated capacitance C_N	Capacitor dimensions			
	without fuse		with thermal fuse	
	D_{-0}^{+1}	$L \pm 2$	D_{-0}^{+1}	$L \pm 2$
μF	mm	mm	mm	mm
3	25	57	25	57
3	30	70	30	70
3.5	25	57	25	57
3.5	30	70	30	70
4	25	70	25	70
4	30	70	30	70
4.5	25	70	25	70
4.5	30	70	30	70
5	25	70	25	70
5	30	70	30	70
5.5	25	70	25	70
6	30	70	30	70
6	25	70	25	70
6	30	70	30	70
6.3	30	70	30	70
6.5	30	70	30	70
7	30	70	30	70
7.5	30	70	30	70
8	30	70	30	70
9	30	70	30	70
10	30	70	30	70
12	30	95	30	95
12	30	70	30	70
12.5	30	95	30	95
12.5	30	70	30	70
13	30	95	30	95
13	30	70	30	70
13.5	30	95	30	95
13.5	30	70	30	70
14	30	95	30	95
14	30	70	30	70
15	30	95	30	95
16	30	95	30	95
18	35	95	35	95
20	35	95	35	95

TECHNICAL DATA:

- Capacitance tolerance: $\pm 10\%$,
- Rated voltage: 250V/50Hz,
- Rated frequency: 50 - 60Hz,
- Temperature range (temp of capacitor surface): $-40 \pm 85^\circ\text{C}$,
- Climatic category: 40/085/10 acc. to EN 60068-1,
- Relative humidity in capacitor's ambience at $20 \pm 25^\circ\text{C}$:
 - 65% mean annual value,
 - 85% max value during 30 days,
 - not allowed,
- Dewing of capacitor: ≤ 0.003 at 50Hz / 250V~,
- Dissipation factor (tg δ):
- Dielectric strength:
 - between terminals: $2U_R - 60s$,
 - between terminals connected together and case: 2.5kV / 50Hz - 60s,
- Case: plastic case,
- Specifications: WT-03/MIFLEX/MKSP-025 and MKSP-025P,
- The capacitors meet the requirements of:
 - EN 61048/A2, EN 61049,
 - Polish safety mark "B",
 - ENEC certificate.
- Safety approval:

This product fulfils the requirements of the RoHS Directive (2002/95/EC).

 **MIFLEX S.A.**

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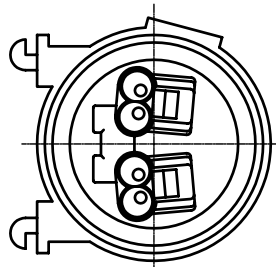
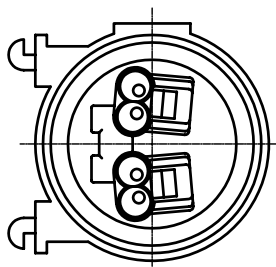
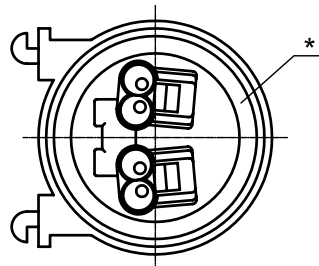
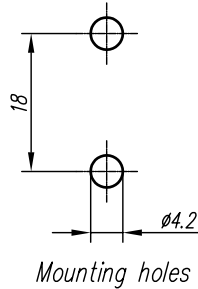
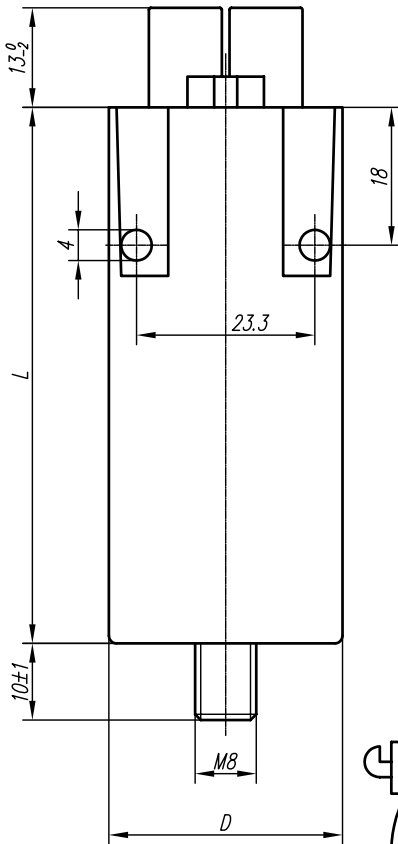
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AC METALLIZED POLYPROPYLENE FILM CAPACITORS FOR USE IN DISCHARGE LAMP CIRCUITS (TYPE A)

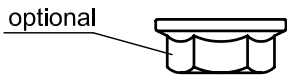
Version 8

Capacitor dimensions



D=30

D=25



Rated capacitance C_N	Capacitor dimensions			
	without fuse		with termal fuse	
	D_{10}^{+1} mm	$L \pm 2$ mm	D_{10}^{+1} mm	$L \pm 2$ mm
μF				
3	25	70	25	70
3*	30	70	30	70
3.5	25	70	25	70
3.5*	30	70	30	70
4	25	70	25	70
4*	30	70	30	70
4.5	25	70	25	70
4.5*	30	70	30	70
5	25	70	25	70
5*	30	70	30	70
5.5	25	70	25	70
5.5*	30	70	30	70
6	25	70	25	70
6*	30	70	30	70
6.3				
6.5				
7				
7.5	30	70	30	70
8				
9				
10				
12	30	95	30	95
12*	30	70	30	70
12.5	30	95	30	95
12.5*	30	70	30	70
13	30	95	30	95
13*	30	70	30	70
13.5	30	95	30	95
13.5*	30	70	30	70
14	30	95	30	95
14*	30	70	30	70
15	30	95	30	95
16				

Other dimensions and capacitances from the given range are available on the customer's request.

TECHNICAL DATA:

- Capacitance tolerance:
- Rated voltage:
- Rated frequency:
- Temperature range (temp of capacitor surface):
- Climatic category:
- Relative humidity in capacitor's ambience at 20 ± 25 °C:

- Dewing of capacitor:
- Dissipation factor (tg δ):
- Dielectric strength:
 - between terminals
 - between terminals connected together and case

- Plastic stud

- Case:

- Specifications:

- The capacitors meet the requirements of:

- Safety approval:

- ±10%,
- 250V/50Hz,
- 50 - 60Hz,
- -40 + 85 °C,
- 40/085/10 acc. to EN 60068-1,
- 65% mean annual value,
- 85% max value during 30 days,
- not allowed,
- ≤0.003 at 50Hz / 250V~,

- 2U_R - 60s,

- 2.5kV / 50Hz - 60s,

- tightening-up strength 1.6 Nm,

- plastic case,

- WT-03/MIFLEX/MKSP-025 and MKSP-025P,

- EN 61048/A2, EN 61049,

- Polish safety mark "B",

- ENEC certificate.

This product fulfils the requirements of the RoHS Directive (2002/95/EC).

 **MIFLEX S.A.**

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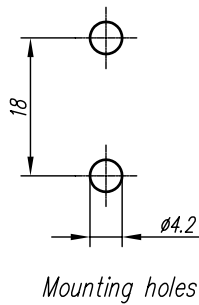
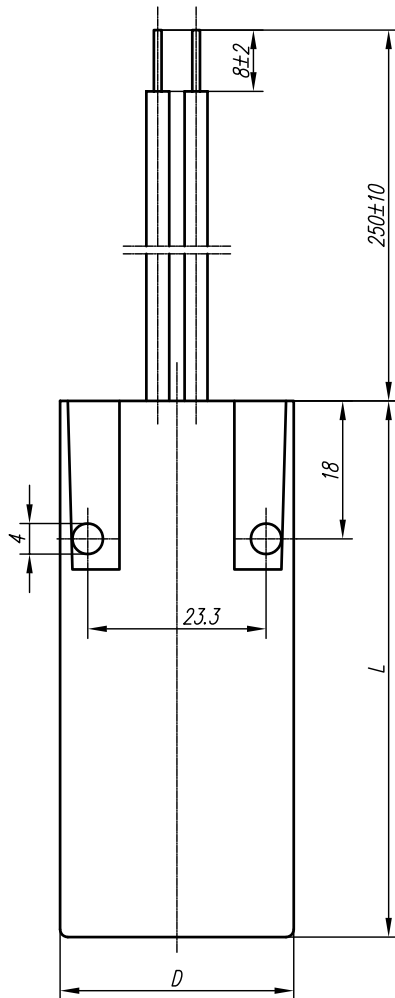
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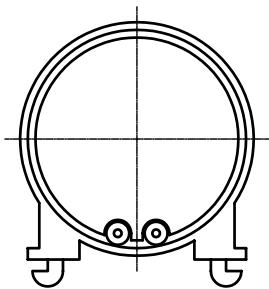
AC METALLIZED POLYPROPYLENE FILM CAPACITORS FOR USE IN DISCHARGE LAMP CIRCUITS (TYPE A)

Version 9



Capacitor dimensions

Rated capacitance C_N	Capacitor dimensions			
	without fuse		with thermal fuse	
	D_{-0}^{+1}	$L \pm 2$	D_{-0}^{+1}	$L \pm 2$
μF	mm	mm	mm	mm
3	25	57	25	57
3	30	70	30	70
3.5	25	57	25	57
3.5	30	70	30	70
4	25	70	25	70
4	30	70	30	70
4.5	25	70	25	70
4.5	30	70	30	70
5	25	70	25	70
5	30	70	30	70
5.5	25	70	25	70
5.5	30	70	30	70
6	25	70	25	70
6	30	70	30	70
6.3	30	70	30	70
6.5	30	70	30	70
7	30	70	30	70
7.5	30	70	30	70
8	30	70	30	70
9	30	70	30	70
10	30	70	30	70
12	30	95	30	95
12	30	70	30	70
12.5	30	95	30	95
12.5	30	70	30	70
13	30	95	30	95
13	30	70	30	70
13.5	30	95	30	95
13.5	30	70	30	70
14	30	95	30	95
14	30	70	30	70
15	30	95	30	95
16	30	95	30	95
18	35	95	35	95
20	35	95	35	95



TECHNICAL DATA:

- Capacitance tolerance:
 - Rated voltage:
 - Rated frequency:
 - Temperature range (temp of capacitor surface):
 - Climatic category:
 - Relative humidity in capacitor's ambience at 20 + 25 °C:
 - Dewing of capacitor:
 - Dissipation factor (tg δ):
 - Dielectric strength:
 - between terminals
 - between terminals connected together and case
 - Case:
 - Specifications:
 - The capacitors meet the requirements of:
 - Safety approval:
- $\pm 10\%$,
 - 250V/50Hz,
 - 50 - 60Hz,
 - $-40 + 85$ °C,
 - 40/085/10 acc. to EN 60068-1,
 - 65% mean annual value,
 - 85% max value during 30 days,
 - not allowed,
 - ≤ 0.003 at 50Hz / 250V~,
 - 2U_R - 60s,
 - 2.5kV / 50Hz - 60s,
 - plastic case,
 - WT-03/MIFLEX/MKSP-025 and MKSP-025P,
 - EN 61048/A2, EN 61049,
 - Polish safety mark "B",
 - ENEC certificate.

This product fulfils the requirements of the RoHS Directive (2002/95/EC).

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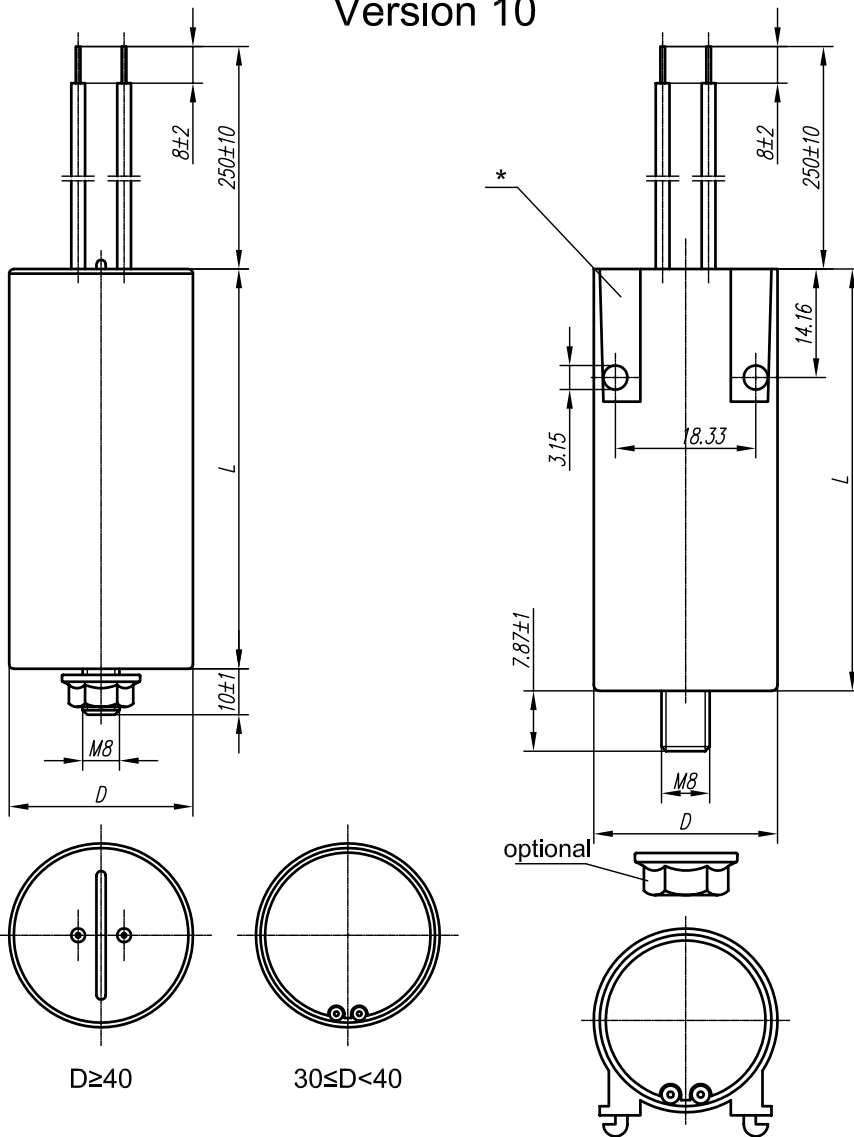
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Revision date
24.06.2008

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AC METALLIZED POLYPROPYLENE FILM CAPACITORS FOR USE IN DISCHARGE LAMP CIRCUITS (TYPE A)

Version 10



Capacitor dimensions in case with metal stud

Rated capacitance C_N	Capacitor dimensions			
	without fuse		with termal fuse	
	D_{-0}^{+1}	$L \pm 2$	D_{-0}^{+1}	$L \pm 2$
μF	mm	mm	mm	mm
8	30	84	30	84
12	35		35	
14				
18				
20				
25				
30	45	45		
45	50	50		

Other dimensions and capacitances from the given range are available on the customer's request.

Capacitor dimensions in case with plastic stud*

Rated capacitance C_N	Capacitor dimensions			
	without fuse		with termal fuse	
	D_{-0}^{+1}	$L \pm 2$	D_{-0}^{+1}	$L \pm 2$
μF	mm	mm	mm	mm
3	30	70	30	70
3.5				
4				
4.5				
5				
5.5				
6				
6.3				
6.5				
7				
7.5				
8				
9				
10				
12				
12.5				
13				
13.5				
14				

Other dimensions and capacitances from the given range are available on the customer's request.

TECHNICAL DATA:

- Capacitance tolerance:
- Rated voltage:
- Rated frequency:
- Temperature range (temp of capacitor surface):
- Climatic category:
- Relative humidity in capacitor's ambience at 20 + 25 °C:

- Dewing of capacitor:
- Dissipation factor (tg δ):
- Dielectric strength:

- between terminals
- between terminals connected together and case

- Metal stud

- Plastic stud

- Case:

- Specifications:

- The capacitors meet the requirements of:

This product fulfils the requirements of the RoHS Directive (2002/95/EC).

- $\pm 10\%$,
- 250V/50Hz,
- 50 - 60Hz,
- -40 ± 85 °C,
- 40/085/10 acc. to EN 60068-1,
- 65% mean annual value,
- 85% max value during 30 days,
- not allowed,
- ≤ 0.003 at 50Hz / 250V~,

- $2U_R - 60s$,
- 2.5kV / 50Hz - 60s,
- tightening-up strength 4 Nm,
- tightening-up strength 1.6 Nm,
- plastic case,
- WT-03/MIFLEX/MKSP-025 and MKSP-025P,
- EN 61048/A2, EN 61049,

 **MIFLEX S.A.**

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