DATA SHEET

MKP 479
AC and pulse
metallized polypropylene film
capacitors

Product specification
Supersedes data of April 1999
File under BCcomponents, BC05

2001 Jun 22

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP RADIAL EPOXY LACQUERED TYPE

PITCH 10/15/22.5/27.5 mm
PITCH 7.5 mm (bent back leads)

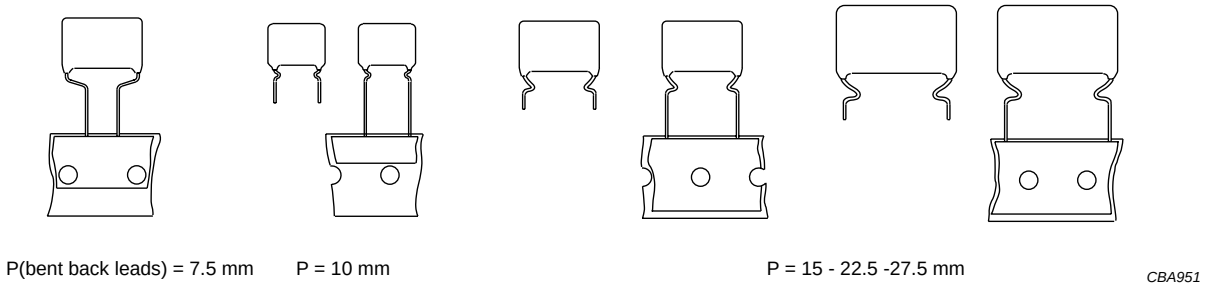


Fig.1 Simplified outlines.

FEATURES

- 7.5 mm bent back pitch
- 10 to 27.5 mm lead pitch
- Low contact resistance
- Low loss dielectric
- Supplied loose in box (including lock lead versions) and taped on reel.

APPLICATIONS

- Low losses due to low contact resistance and low loss dielectric result in applications where high currents at high frequency occur or high stability is preferred
- Typical for S-correction in TV-sets and monitor
- Their small dimensions make them suitable for circuits with high packaging density.

DETAIL SPECIFICATION

For more detailed data and test requirements see "*Type detail specification HQN-384-17/105*".

QUICK REFERENCE DATA

DESCRIPTION	VALUE
Capacitance range (E24 series)	0.01 to 3.9 µF
Capacitance tolerance	±5%
Rated (DC) voltage	160 V; 250 V; 400 V; 630 V
Rated (AC) voltage	100 V; 160 V; 200 V; 200 V
Rated peak-to-peak voltage	280 V; 450 V; 560 V; 560 V
Climatic category	55/105/56
Rated temperature (DC)	85 °C
Rated temperature (AC)	85 °C
Maximum application temperature	105 °C
Reference specification	IEC 60384-17
Performance grade	grade 1 (long life)
Stability grade	grade 2
Materials	qualified in accordance with UL94 V-0

AC and pulse metallized polypropylene film capacitors

MKP 479

COMPOSITION OF CATALOGUE NUMBER

TYPE AND PITCHES	
479	15.0/7.5 mm
	10.0 mm
	15.0 mm
	22.5 mm
	27.5 mm

CAPACITANCE
(numerically; but not for lock lead)

MULTIPLIER (nF)	
0.1	2
1	3
10	4
100	5

Example:
104 = 10 x 10 = 100 nF

2222	479	XX	XX	X

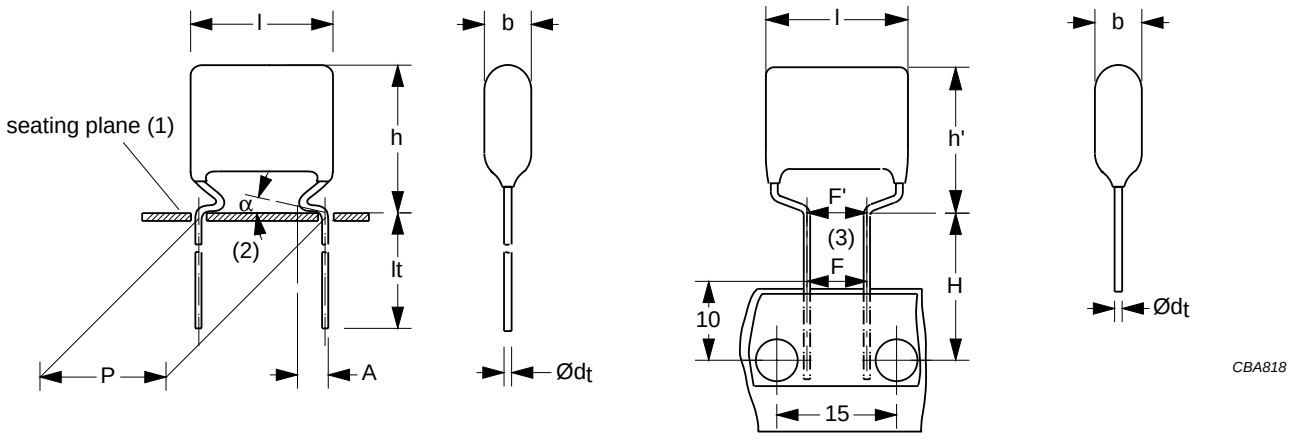
TYPE	PACKAGING	LEAD CONFIGURATION	PREFERRED TYPES						
			C-TOL	160 V	250 V	250 V monitor type	400 V	400 V monitor type	630 V
479	loose in box	lead length 5.0 mm	±5%	32	42	41	52	51	62
		lock lead 4.0 mm		90	90	90	90	90	90
	taped on reel	bent back leads		36	46	49	56	59	66
			ON REQUEST						
479	loose in box	lead length 3.5 mm	±5%	34	44	43	54	53	64
	taped on reel			35	45	47	55	57	65

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP 479 GENERAL DATA

PITCH 10/15 mm
PITCH 7.5 mm (bent back leads)



Dimensions in mm.

(1) Hole ∅1.0 for d_t = 0.6 mm.
Hole ∅1.3 for d_t = 0.8 mm.

(2) $0 \leq \alpha < 50°$.

(3) $|F - F'| < 0.3$ mm.
F = 7.5 +0.6/–0.1 mm.

(4) A = 2.0 +1.0/–0.5 mm (pitch = 10.0 mm).
A = 2.5 +1.4/–0.5 mm (pitch = 15.0 mm).

Fig.3 Outline.

Specific reference data for the 160 V DC capacitors

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
C = 0.075 µF	$\leq 5 \times 10^{-4}$	$\leq 20 \times 10^{-4}$
0.075 µF < C ≤ 0.11 µF	$\leq 5 \times 10^{-4}$	$\leq 25 \times 10^{-4}$
0.11 µF < C ≤ 0.18 µF	$\leq 10 \times 10^{-4}$	$\leq 30 \times 10^{-4}$
0.18 µF < C ≤ 0.3 µF	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
0.3 µF < C ≤ 0.39 µF	$\leq 10 \times 10^{-4}$	$\leq 40 \times 10^{-4}$
0.39 µF < C ≤ 0.56 µF	$\leq 10 \times 10^{-4}$	$\leq 45 \times 10^{-4}$
0.56 µF < C ≤ 0.68 µF	$\leq 10 \times 10^{-4}$	$\leq 50 \times 10^{-4}$
0.68 µF < C ≤ 0.75 µF	$\leq 10 \times 10^{-4}$	$\leq 55 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 160 V (DC):		
P = 10 mm	60 V/µs	
P = 15 mm	50 V/µs	
R between leads, for C ≤ 1.0 µF at 100 V; 1 minute	>100000 MΩ	
R between leads and case; 100 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	256 V; 1 minute	
Withstanding (DC)voltage between leads and case	2840 V; 1 minute	

Available 160 V DC versions

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 5.0 ±1.0 mm	±5%	2222 479 32...	preferred
	l_t = 3.5 ±0.5 mm	±5%	2222 479 34...	on request
Taped on reel	H = 16.0 mm; P_0 = 12.7 mm	±5%	2222 479 35...	on request
Taped on reel (bent back)	H = 16.0 mm; P_0 = 15.0 mm	±5%	2222 479 36...	preferred

AC and pulse metallized polypropylene film capacitors

MKP 479

U_{Rdc} = 160 V; U_{Rac} = 100 V; U_{p-p} = 280 V

C (µF)	DIMENSIONS(1) $b_{max} \times h\ (h')_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER	
			LOOSE IN BOX	REEL DIAMETER = 500 mm
			l_t = 5.0 ±1.0 mm	H = 16.0 mm; P_0 = 15.0 mm
			C-tol = ±5%	C-tol = ±5%
			catalogue number	last 5 digits
Pitch = 10.0 ±0.4 mm; d_t = 0.60 ±0.06 mm				**pitch = 7.5 mm (bent back)**
0.075	6.0 × 15.0 × 12.5	0.9	2222 479 32**753**	not available
0.082			2222 479 32**823**	
0.091			2222 479 32**913**	
0.1			2222 479 32**104**	
0.11			2222 479 32**114**	
0.12			2222 479 32**124**	
0.13			2222 479 32**134**	
0.15	6.5 × 15.5 × 12.5	1.0	2222 479 32**154**	
0.16			2222 479 32**164**	
Pitch = 15.0 ±0.4 mm; d_t = 0.80 ±0.08 mm				**pitch = 7.5 mm (bent back)**
0.18	6.0 × 15.0 (16.5) × 18.5	1.2	2222 479 32**184**	.. 36**184**
0.20	6.5 × 15.5 (17.0) × 18.5	1.3	2222 479 32**204**	.. 36**204**
0.22			2222 479 32**224**	.. 36**224**
0.24	7.0 × 16.0 (17.5) × 18.5	1.4	2222 479 32**244**	.. 36**244**
0.27			2222 479 32**274**	.. 36**274**
0.30			2222 479 32**304**	.. 36**304**
0.33			2222 479 32**334**	.. 36**334**
0.36			2222 479 32**364**	.. 36**364**
0.39			2222 479 32**394**	.. 36**394**
0.43	7.5 × 16.5 (18.0) × 18.5	1.5	2222 479 32**434**	.. 36**434**
0.47			2222 479 32**474**	.. 36**474**
0.51	8.0 × 17.0 (18.5) × 18.5	1.6	2222 479 32**514**	.. 36**514**
0.56			2222 479 32**564**	.. 36**564**
0.62	8.5 × 17.5 (19.0) × 18.5	1.7	2222 479 32**624**	.. 36**624**
0.68	9.0 × 18.0 (19.5) × 18.5	1.8	2222 479 32**684**	.. 36**684**
0.75	9.5 × 18.5 (20.0) × 18.5	1.9	2222 479 32**754**	.. 36**754**

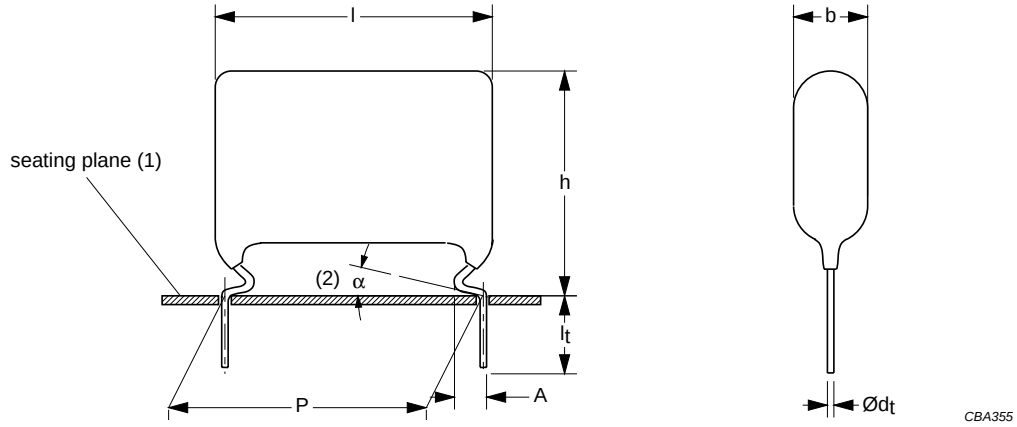
Note

1. Dimensions in brackets for bent back leads.

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP 479 GENERAL DATA **PITCH 22.5/27.5 mm**



Dimensions in mm.

(1) Hole ∅1.3 for d_t = 0.8 mm.

(2) $0 \le \alpha < 50°$.

(3) A = 2.5+1.4/–0.5 mm.

Fig.4 Outline.

Specific reference data for the 160 V DC capacitors

DESCRIPTION	VALUE		DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz	Tangent of loss angle:	at 10 kHz	at 100 kHz
C = 0.82 µF	$\le 10 \times 10^{-4}$	$\le 55 \times 10^{-4}$	1.8 µF < C ≤ 2.0 µF	$\le 10 \times 10^{-4}$	$\le 95 \times 10^{-4}$
0.82 µF < C ≤ 0.91 µF	$\le 10 \times 10^{-4}$	$\le 60 \times 10^{-4}$	2.0 µF < C ≤ 2.2 µF	$\le 10 \times 10^{-4}$	$\le 100 \times 10^{-4}$
0.91 µF < C ≤ 1.0 µF	$\le 10 \times 10^{-4}$	$\le 65 \times 10^{-4}$	2.2 µF < C ≤ 2.4 µF	$\le 15 \times 10^{-4}$	$\le 105 \times 10^{-4}$
1.0 µF < C ≤ 1.2 µF	$\le 10 \times 10^{-4}$	$\le 70 \times 10^{-4}$	2.4 µF < C ≤ 2.7 µF	$\le 15 \times 10^{-4}$	$\le 110 \times 10^{-4}$
1.2 µF < C ≤ 1.3 µF	$\le 10 \times 10^{-4}$	$\le 75 \times 10^{-4}$	2.7 µF < C ≤ 3.0 µF	$\le 15 \times 10^{-4}$	$\le 115 \times 10^{-4}$
1.3 µF < C ≤ 1.5 µF	$\le 10 \times 10^{-4}$	$\le 80 \times 10^{-4}$	3.0 µF < C ≤ 3.3 µF	$\le 15 \times 10^{-4}$	$\le 125 \times 10^{-4}$
1.5 µF < C ≤ 1.6 µF	$\le 10 \times 10^{-4}$	$\le 85 \times 10^{-4}$	3.3 µF < C ≤ 3.6 µF	$\le 15 \times 10^{-4}$	$\le 130 \times 10^{-4}$
1.6 µF < C ≤ 1.8 µF	$\le 10 \times 10^{-4}$	$\le 90 \times 10^{-4}$	3.6 µF < C ≤ 3.9 µF	$\le 15 \times 10^{-4}$	$\le 135 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 160 V (DC): P = 22.5 mm	25 V/µs		Rated voltage pulse slope $(dU/dt)_R$ at 160 V (DC): P = 27.5 mm	15 V/µs	
R between leads, for C ≤ 1 µF at 100 V; 1 minute			>100000 MΩ		
RC between leads, for C >1 µF at 100 V; 1 minute			>100000 s		
R between leads and case; 100 V; 1 minute			>100000 MΩ		
Ionization (AC) voltage (typical value) at 50 pC peak discharge			>220 V		
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s			256 V; 1 minute		
Withstanding (DC) voltage between leads and case			2840 V; 1 minute		

Available 160 V DC versions

PACKAGING(1)	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 5.0 ±1.0 mm	±5%	2222 479 32...	preferred
	l_t = 3.5 ±0.5 mm	±5%	2222 479 34...	on request
Taped on reel	H = 16.0 mm; P_0 = 12.7 mm	±5%	2222 479 35...	on request

Note

1. Taped on reel pitch = 27.5 mm is not available.

AC and pulse metallized polypropylene film capacitors

MKP 479

U_{Rdc} = 160 V; U_{Rac} = 100 V; U_{p-p} = 280 V

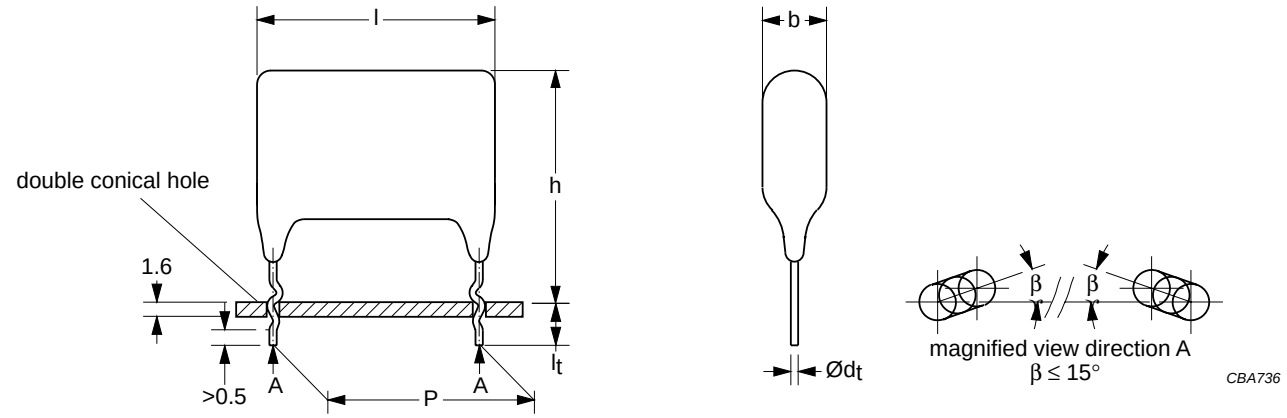
C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER LOOSE IN BOX l_t = 5.0 ±1.0 mm C-tol = ±5%
Pitch = 22.5 ±0.4 mm; d_t = 0.80 ±0.08 mm			
0.82	7.0 × 20.0 × 26.0	1.8	2222 479 32**824**
0.91	7.5 × 20.5 × 26.0	1.9	2222 479 32**914**
1			2222 479 32**105**
1.1	8.0 × 21.0 × 26.0	2.0	2222 479 32**115**
1.2	8.5 × 21.5 × 26.0	2.1	2222 479 32**125**
1.3			2222 479 32**135**
1.5	9.5 × 22.5 × 26.0	2.4	2222 479 32**155**
1.6			2222 479 32**165**
1.8	10.0 × 23.0 × 26.0	2.5	2222 479 32**185**
Pitch = 27.5 ±0.4 mm; d_t = 0.80 ±0.08 mm			
2	10.0 × 23.0 × 30.0	5.0	2222 479 32**205**
2.2	10.5 × 23.5 × 30.0	5.0	2222 479 32**225**
2.4	11.0 × 24.0 × 30.0	5.5	2222 479 32**245**
2.7	11.5 × 24.5 × 30.0	5.5	2222 479 32**275**
3	12.0 × 25.0 × 30.0	6.0	2222 479 32**305**
3.3	13.0 × 26.0 × 30.0	6.5	2222 479 32**335**
3.6	13.5 × 26.5 × 30.0	7.0	2222 479 32**365**
3.9	14.0 × 27.0 × 30.0	7.0	2222 479 32**395**

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP 479 GENERAL DATA **PITCH 10/15 mm (lock lead)**

lock lead



Dimensions in mm.

Fig.5 Outline.

Specific reference data for the 160 V DC capacitors (lock lead)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
C = 0.075 µF	$\leq 5 \times 10^{-4}$	$\leq 20 \times 10^{-4}$
0.075 µF < C ≤ 0.11 µF	$\leq 5 \times 10^{-4}$	$\leq 25 \times 10^{-4}$
0.11 µF < C ≤ 0.18 µF	$\leq 10 \times 10^{-4}$	$\leq 30 \times 10^{-4}$
0.18 µF < C ≤ 0.3 µF	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
0.3 µF < C ≤ 0.39 µF	$\leq 10 \times 10^{-4}$	$\leq 40 \times 10^{-4}$
0.39 µF < C ≤ 0.56 µF	$\leq 10 \times 10^{-4}$	$\leq 45 \times 10^{-4}$
0.56 µF < C ≤ 0.68 µF	$\leq 10 \times 10^{-4}$	$\leq 50 \times 10^{-4}$
0.68 µF < C ≤ 0.75 µF	$\leq 10 \times 10^{-4}$	$\leq 55 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 160 V (DC):		
P = 10 mm	60 V/µs	
P = 15 mm	50 V/µs	
R between leads, for C ≤ 1.0 µF at 100 V; 1 minute	>100000 MΩ	
R between leads and case; 100 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	256 V; 1 minute	
Withstanding (DC)voltage between leads and case	2840 V; 1 minute	

Available 160 V DC versions (lock lead)

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 4.0 +1.0/–0.5 mm	±5%	2222 479 90...	preferred

AC and pulse metallized polypropylene film capacitors

MKP 479

U_{Rdc} = 160 V; U_{Rac} = 100 V; U_{p-p} = 280 V (lock lead)

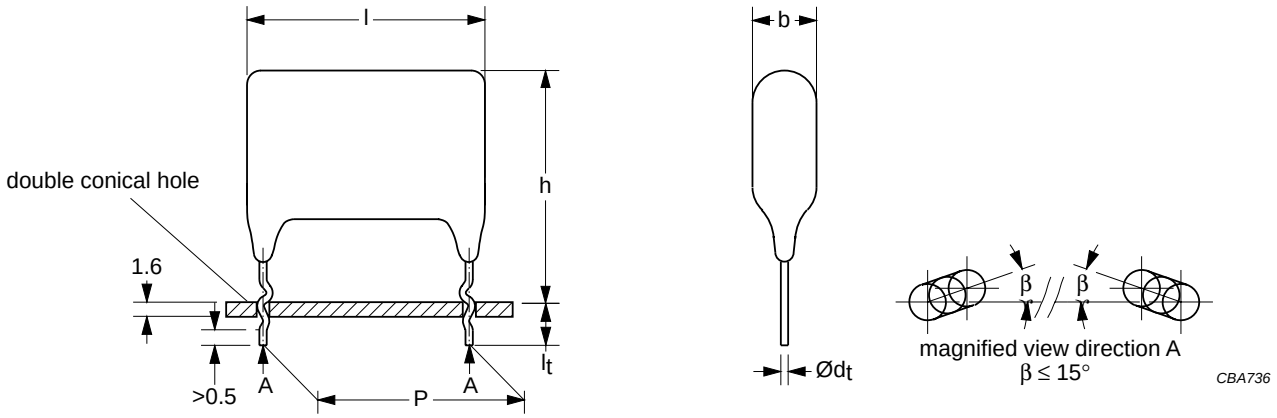
C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER LOOSE IN BOX l_t = 4.0 +1.0/−0.5 mm C-tol = ±5%
Pitch = 10.0 ±1.0 mm; d_t = 0.60 ±0.06 mm			
0.075	6.0 × 18.0 × 12.5	0.9	2222 479 90**089**
0.082			2222 479 90**091**
0.091			2222 479 90**092**
0.1			2222 479 90**093**
0.11			2222 479 90**094**
0.12			2222 479 90**095**
0.13			2222 479 90**096**
0.15	6.5 × 18.5 × 12.5	1.0	2222 479 90**097**
0.16			2222 479 90**098**
Pitch = 15.0 ±1.0 mm; d_t = 0.80 ±0.08 mm			
0.18	6.0 × 18.0 × 18.5	1.2	2222 479 90**099**
0.20	6.5 × 18.5 × 18.5	1.3	2222 479 90**101**
0.22			2222 479 90**102**
0.24	7.0 × 19.0 × 18.5	1.4	2222 479 90**103**
0.27			2222 479 90**104**
0.30			2222 479 90**105**
0.33			2222 479 90**106**
0.36			2222 479 90**107**
0.39			2222 479 90**108**
0.43	7.5 × 19.5 × 18.5	1.5	2222 479 90**109**
0.47			2222 479 90**111**
0.51	8.0 × 20.0 × 18.5	1.6	2222 479 90**112**
0.56			2222 479 90**113**
0.62	8.5 × 20.5 × 18.5	1.7	2222 479 90**114**
0.68	9.0 × 21.0 × 18.5	1.8	2222 479 90**115**
0.75	9.5 × 21.5 × 18.5	1.9	2222 479 90**116**

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP 479 GENERAL DATA **PITCH 22.5/27.5 mm (lock lead)**

lock lead



Dimensions in mm.

Fig.6 Outline.

Specific reference data for the 160 V DC capacitors (lock lead)

DESCRIPTION	VALUE		DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz	Tangent of loss angle:	at 10 kHz	at 100 kHz
C = 0.82 µF	$\leq 10 \times 10^{-4}$	$\leq 55 \times 10^{-4}$	1.8 µF < C ≤ 2.0 µF	$\leq 10 \times 10^{-4}$	$\leq 95 \times 10^{-4}$
0.82 µF < C ≤ 0.91 µF	$\leq 10 \times 10^{-4}$	$\leq 60 \times 10^{-4}$	2.0 µF < C ≤ 2.2 µF	$\leq 10 \times 10^{-4}$	$\leq 100 \times 10^{-4}$
0.91 µF < C ≤ 1.0 µF	$\leq 10 \times 10^{-4}$	$\leq 65 \times 10^{-4}$	2.2 µF < C ≤ 2.4 µF	$\leq 15 \times 10^{-4}$	$\leq 105 \times 10^{-4}$
1.0 µF < C ≤ 1.2 µF	$\leq 10 \times 10^{-4}$	$\leq 70 \times 10^{-4}$	2.4 µF < C ≤ 2.7 µF	$\leq 15 \times 10^{-4}$	$\leq 110 \times 10^{-4}$
1.2 µF < C ≤ 1.3 µF	$\leq 10 \times 10^{-4}$	$\leq 75 \times 10^{-4}$	2.7 µF < C ≤ 3.0 µF	$\leq 15 \times 10^{-4}$	$\leq 115 \times 10^{-4}$
1.3 µF < C ≤ 1.5 µF	$\leq 10 \times 10^{-4}$	$\leq 80 \times 10^{-4}$	3.0 µF < C ≤ 3.3 µF	$\leq 15 \times 10^{-4}$	$\leq 125 \times 10^{-4}$
1.5 µF < C ≤ 1.6 µF	$\leq 10 \times 10^{-4}$	$\leq 85 \times 10^{-4}$	3.3 µF < C ≤ 3.6 µF	$\leq 15 \times 10^{-4}$	$\leq 130 \times 10^{-4}$
1.6 µF < C ≤ 1.8 µF	$\leq 10 \times 10^{-4}$	$\leq 90 \times 10^{-4}$	3.6 µF < C ≤ 3.9 µF	$\leq 15 \times 10^{-4}$	$\leq 135 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 160 V (DC): P = 22.5 mm	25 V/µs		Rated voltage pulse slope $(dU/dt)_R$ at 160 V (DC): P = 27.5 mm	15 V/µs	
R between leads, for C ≤ 1 µF at 100 V; 1 minute			>100000 MΩ		
RC between leads, for C >1 µF at 100 V; 1 minute			>100000 s		
R between leads and case; 100 V; 1 minute			>100000 MΩ		
Ionization (AC) voltage (typical value) at 50 pC peak discharge			>220 V		
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s			256 V; 1 minute		
Withstanding (DC) voltage between leads and case			2840 V; 1 minute		

Available 160 V DC versions (lock lead)

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 4.0 +1.0/–0.5 mm	±5%	2222 479 90...	preferred

AC and pulse metallized polypropylene film capacitors

MKP 479

U_{Rdc} = 160 V; U_{Rac} = 100 V; U_{p-p} = 280 V (lock lead)

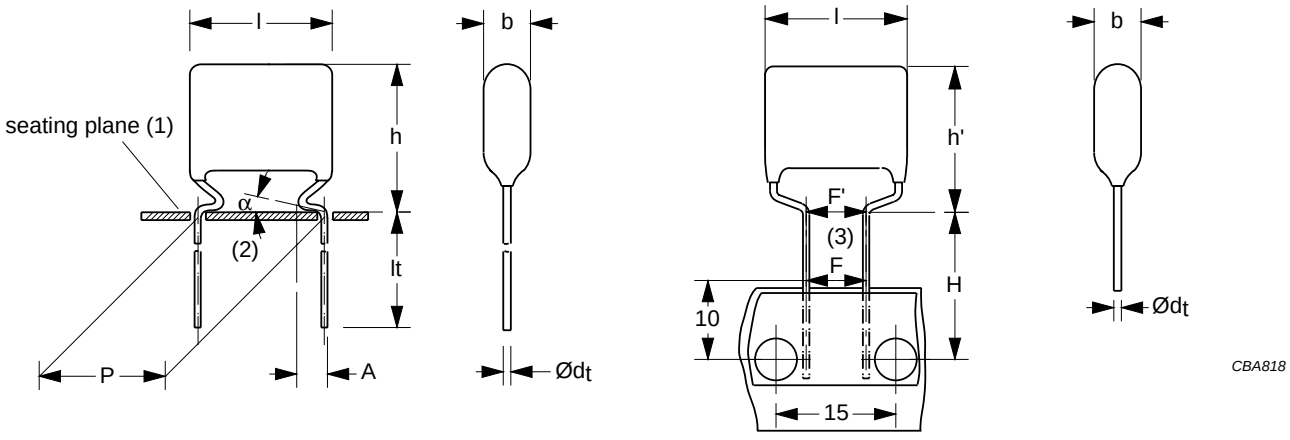
C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER LOOSE IN BOX l_t = 4.0 +1.0/−0.5 mm C-tol = ±5%
Pitch = 22.5 ±1.0 mm; d_t = 0.80 ±0.08 mm			
0.82	7.0 × 23.0 × 26.0	1.8	2222 479 90**117**
0.91	7.5 × 23.5 × 26.0	1.9	2222 479 90**118**
1			2222 479 90**119**
1.1	8.0 × 24.0 × 26.0	2.0	2222 479 90**121**
1.2	8.5 × 24.5 × 26.0	2.1	2222 479 90**122**
1.3			2222 479 90**036**
1.5	9.5 × 25.5 × 26.0	2.4	2222 479 90**037**
1.6			2222 479 90**038**
1.8	10.0 × 26.0 × 26.0	2.5	2222 479 90**039**
Pitch = 27.5 ±1.0 mm; d_t = 0.80 ±0.08 mm			
2	10.0 × 26.0 × 30.0	5.0	2222 479 90**041**
2.2	10.5 × 26.5 × 30.0	5.0	2222 479 90**042**
2.4	11.0 × 27.0 × 30.0	5.5	2222 479 90**123**
2.7	11.5 × 27.5 × 30.0	5.5	2222 479 90**124**
3	12.0 × 28.0 × 30.0	6.0	2222 479 90**125**
3.3	13.0 × 29.0 × 30.0	6.5	2222 479 90**126**
3.6	13.5 × 29.5 × 30.0	7.0	2222 479 90**127**
3.9	14.0 × 30.0 × 30.0	7.0	2222 479 90**128**

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP 479 GENERAL DATA

PITCH 10/15 mm
PITCH 7.5 mm (bent back leads)



Dimensions in mm.

(1) Hole ∅1.0 for d_t = 0.6 mm.
Hole ∅1.3 for d_t = 0.8 mm.

(2) $0 \leq \alpha < 50°$.

(3) $|F - F| < 0.3$ mm.
F = 7.5 +0.6/–0.1 mm.

(4) A = 2.0 +1.0/–0.5 mm (pitch = 10.0 mm).
A = 2.5 +1.4/–0.5 mm (pitch = 15.0 mm).

Fig.7 Outline.

Specific reference data for the 250 V DC capacitors

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.047 µF < C ≤ 0.075 µF	$\leq 5 \times 10^{-4}$	$\leq 20 \times 10^{-4}$
0.075 µF < C ≤ 0.11 µF	$\leq 5 \times 10^{-4}$	$\leq 25 \times 10^{-4}$
0.11 µF < C ≤ 0.18 µF	$\leq 10 \times 10^{-4}$	$\leq 30 \times 10^{-4}$
0.18 µF < C ≤ 0.3 µF	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
0.3 µF < C ≤ 0.39 µF	$\leq 10 \times 10^{-4}$	$\leq 40 \times 10^{-4}$
0.39 µF < C ≤ 0.47 µF	$\leq 10 \times 10^{-4}$	$\leq 45 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 250 V (DC):		
P = 10.0 mm	70 V/µs	
P = 15.0 mm	60 V/µs	
R between leads, for C ≤ 1.0 µF at 100 V; 1 minute	>100000 MΩ	
R between leads and case; 100 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	400 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 250 V DC versions

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 5.0 ±1.0 mm	±5%	2222 479 42...	preferred
	l_t = 3.5 ±0.5 mm	±5%	2222 479 44...	on request
Taped on reel	H = 16.0 mm; P_0 = 12.7 mm	±5%	2222 479 45...	on request
Taped on reel (bent back)	H = 16.0 mm; P_0 = 15.0 mm	±5%	2222 479 46...	preferred

AC and pulse metallized polypropylene film capacitors

MKP 479

U_{Rdc} = 250 V; U_{Rac} = 160 V; U_{p-p} = 450 V

C (µF)	DIMENSIONS(1) $b_{max} \times h\ (h')_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER	
			LOOSE IN BOX	REEL DIAMETER = 500 mm
			l_t = 5.0 ±1.0 mm	H = 16.0 mm; P_0 = 15.0 mm
			C-tol = ±5%	C-tol = ±5%
			catalogue number	last 5 digits
Pitch = 10.0 ±0.4 mm; d_t = 0.60 ±0.06 mm				**pitch = 7.5 mm (bent back)**
0.047	6.0 × 15.0 × 12.5	0.9	2222 479 42**473**	not available
0.051			2222 479 42**513**	
0.056			2222 479 42**563**	
0.062			2222 479 42**623**	
0.068			2222 479 42**683**	
0.075			2222 479 42**753**	
0.082			2222 479 42**823**	
0.091			2222 479 42**913**	
0.1	6.5 × 15.5 × 12.5	1.0	2222 479 42**104**	
Pitch = 15.0 ±0.4 mm; d_t = 0.80 ±0.08 mm				**pitch = 7.5 mm (bent back)**
0.11	6.5 × 15.5 (17.0) × 18.5	1.3	2222 479 42**114**	.. 46**114**
0.12			2222 479 42**124**	.. 46**124**
0.13			2222 479 42**134**	.. 46**134**
0.15			2222 479 42**154**	.. 46**154**
0.16			2222 479 42**164**	.. 46**164**
0.18			2222 479 42**184**	.. 46**184**
0.20			2222 479 42**204**	.. 46**204**
0.22			2222 479 42**224**	.. 46**224**
0.24	7.0 × 16.0 (17.5) × 18.5	1.4	2222 479 42**244**	.. 46**244**
0.27	7.5 × 16.5 (18.0) × 18.5	1.5	2222 479 42**274**	.. 46**274**
0.30			2222 479 42**304**	.. 46**304**
0.33	8.0 × 17.0 (18.5) × 18.5	1.6	2222 479 42**334**	.. 46**334**
0.36	8.5 × 17.5 (19.0) × 18.5	1.7	2222 479 42**364**	.. 46**364**
0.39			2222 479 42**394**	.. 46**394**
0.43	9.0 × 18.0 (19.5) × 18.5	1.8	2222 479 42**434**	.. 46**434**
0.47	9.5 × 18.5 (20.0) × 18.5	1.9	2222 479 42**474**	.. 46**474**

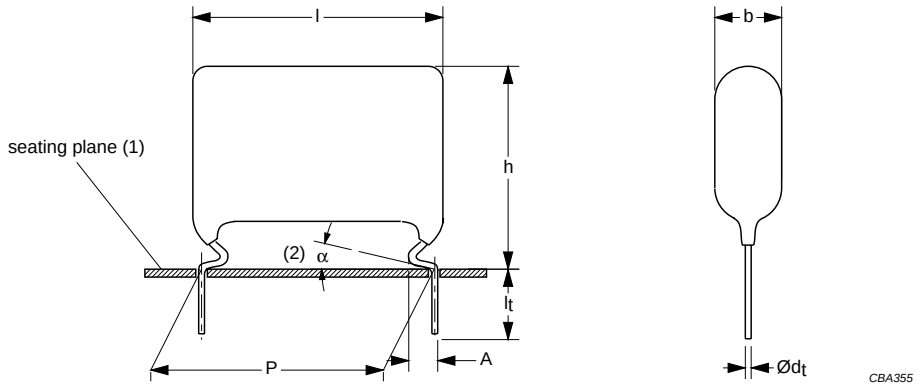
Note

1. Dimensions in brackets for bent back leads.

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP 479 GENERAL DATA **PITCH 22.5/27.5 mm**



Dimensions in mm.

(1) Hole 1.3 or d_t = 0.8 mm.

(2) $0 \le \alpha < 50°$.

(3) A = 2.5+1.4/–0.5 mm.

Fig.8 Outline.

Specific reference data for the 250 V DC capacitors

DESCRIPTION	VALUE		DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz	Tangent of loss angle:	at 10 kHz	at 100 kHz
0.51 µF < C ≤ 0.56 µF	$\le 10 \times 10^{-4}$	$\le 45 \times 10^{-4}$	1.3 µF < C ≤ 1.5 µF	$\le 10 \times 10^{-4}$	$\le 80 \times 10^{-4}$
0.56 µF < C ≤ 0.68 µF	$\le 10 \times 10^{-4}$	$\le 50 \times 10^{-4}$	1.5 µF < C ≤ 1.6 µF	$\le 10 \times 10^{-4}$	$\le 85 \times 10^{-4}$
0.68 µF < C ≤ 0.82 µF	$\le 10 \times 10^{-4}$	$\le 55 \times 10^{-4}$	1.6 µF < C ≤ 1.8 µF	$\le 10 \times 10^{-4}$	$\le 90 \times 10^{-4}$
0.82 µF < C ≤ 0.91 µF	$\le 10 \times 10^{-4}$	$\le 60 \times 10^{-4}$	1.8 µF < C ≤ 2.0 µF	$\le 10 \times 10^{-4}$	$\le 95 \times 10^{-4}$
0.91 µF < C ≤ 1.0 µF	$\le 10 \times 10^{-4}$	$\le 65 \times 10^{-4}$	2.0 µF < C ≤ 2.2 µF	$\le 10 \times 10^{-4}$	$\le 100 \times 10^{-4}$
1.0 µF < C ≤ 1.2 µF	$\le 10 \times 10^{-4}$	$\le 70 \times 10^{-4}$	2.2 µF < C ≤ 2.4 µF	$\le 15 \times 10^{-4}$	$\le 105 \times 10^{-4}$
1.2 µF < C ≤ 1.3 µF	$\le 10 \times 10^{-4}$	$\le 75 \times 10^{-4}$	2.4 µF < C ≤ 2.7 µF	$\le 15 \times 10^{-4}$	$\le 110 \times 10^{-4}$
			2.7 µF < C ≤ 3 µF	$\le 15 \times 10^{-4}$	$\le 115 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 250 V (DC): P = 22.5 mm	30 V/µs		Rated voltage pulse slope $(dU/dt)_R$ at 250 V (DC): P = 27.5 mm	20 V/µs	
R between leads, for C ≤ 1 µF at 100 V; 1 minute			>100000 MΩ		
RC between leads, for C >1 µF at 100 V; 1 minute			>100000 s		
R between leads and case; 100 V; 1 minute			>100000 MΩ		
Ionization (AC) voltage (typical value) at 50 pC peak discharge			>220 V		
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s			400 V; 1 minute		
Withstanding (DC) voltage between leads and case			2840 V; 1 minute		

Available 250 V DC versions

PACKAGING(1)	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 5.0 ±1.0 mm	±5%	2222 479 42...	preferred
	l_t = 3.5 ±0.5 mm	±5%	2222 479 44...	on request
Taped on reel	H = 16.0 mm; P_0 = 12.7 mm	±5%	2222 479 45...	on request

Note

1. Taped on reel pitch = 27.5 mm is not available.

AC and pulse metallized polypropylene film capacitors

MKP 479

U_{Rdc} = 250 V; U_{Rac} = 160 V; U_{p-p} = 450 V

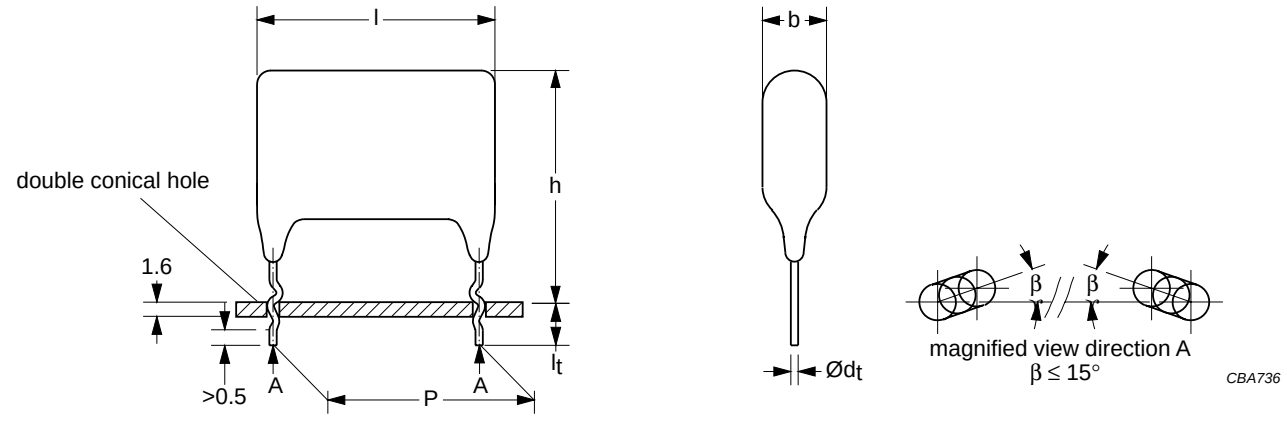
C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER
			LOOSE IN BOX
			l_t = 5.0 ±1.0 mm
			C-tol = ±5%
Pitch = 22.5 ±0.4 mm; d_t = 0.80 ±0.08 mm			
0.51	7.0 × 20.0 × 26.0	1.8	2222 479 42**514**
0.56			2222 479 42**564**
0.62	7.5 × 20.5 × 26.0	1.9	2222 479 42**624**
0.68			2222 479 42**684**
0.75	8.0 × 21.0 × 26.0	2.0	2222 479 42**754**
0.82	8.5 × 21.5 × 26.0	2.1	2222 479 42**824**
0.91	9.0 × 22.0 × 26.0	2.4	2222 479 42**914**
1.0	9.5 × 22.5 × 26.0	2.5	2222 479 42**105**
1.1	10.0 × 23.0 × 26.0	2.6	2222 479 42**115**
1.2	10.5 × 23.5 × 26.0	2.7	2222 479 42**125**
Pitch = 27.5 ±0.4 mm; d_t = 0.80 ±0.08 mm			
1.3	10.0 × 23.0 × 30.0	5.0	2222 479 42**135**
1.5	10.5 × 23.5 × 30.0	5.0	2222 479 42**155**
1.6	11.0 × 24.0 × 30.0	5.5	2222 479 42**165**
1.8	11.5 × 24.5 × 30.0	5.5	2222 479 42**185**
2.0	12.5 × 25.5 × 30.0	6.5	2222 479 42**205**
2.2	13.0 × 26.0 × 30.0	6.5	2222 479 42**225**
2.4	13.5 × 26.5 × 30.0	7.0	2222 479 42**245**
2.7	14.0 × 27.0 × 30.0	7.0	2222 479 42**275**
3.0	15.0 × 28.0 × 30.0	7.5	2222 479 42**305**

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP 479 GENERAL DATA **PITCH 10/15 mm (lock lead)**

lock lead



Dimensions in mm.

Fig.9 Outline.

Specific reference data for the 250 V DC capacitors (lock lead)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.047 µF < C ≤ 0.075 µF	$\leq 5 \times 10^{-4}$	$\leq 20 \times 10^{-4}$
0.075 µF < C ≤ 0.11 µF	$\leq 5 \times 10^{-4}$	$\leq 25 \times 10^{-4}$
0.11 µF < C ≤ 0.18 µF	$\leq 10 \times 10^{-4}$	$\leq 30 \times 10^{-4}$
0.18 µF < C ≤ 0.3 µF	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
0.3 µF < C ≤ 0.39 µF	$\leq 10 \times 10^{-4}$	$\leq 40 \times 10^{-4}$
0.39 µF < C ≤ 0.47 µF	$\leq 10 \times 10^{-4}$	$\leq 45 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 250 V (DC):		
P = 10.0 mm	70 V/µs	
P = 15.0 mm	60 V/µs	
R between leads, for C ≤ 1.0 µF at 100 V; 1 minute	>100000 MΩ	
R between leads and case; 100 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	400 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 250 V DC versions (lock lead)

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 4.0 +1.0/–0.5 mm	±5%	2222 479 90...	preferred

AC and pulse metallized polypropylene film capacitors

MKP 479

U_{Rdc} = 250 V; U_{Rac} = 160 V; U_{p-p} = 450 V (lock lead)

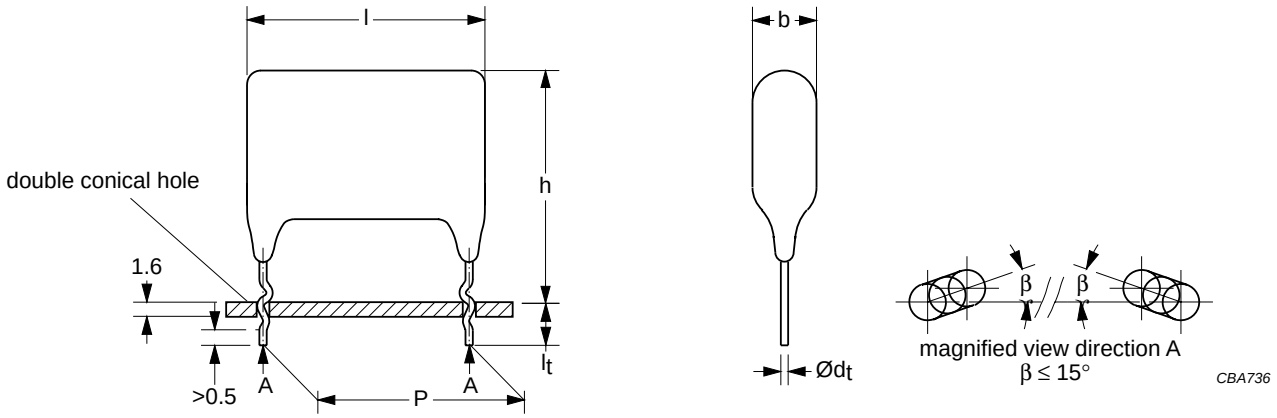
C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER LOOSE IN BOX l_t = 4.0 +1/−0.5 mm C-tol = ±5%
Pitch = 10.0 ±1.0 mm; d_t = 0.60 ±0.06 mm			
0.047	6.0 × 18.0 × 12.5	0.9	2222 479 90**052**
0.051			2222 479 90**129**
0.056			2222 479 90**131**
0.062			2222 479 90**132**
0.068			2222 479 90**133**
0.075			2222 479 90**134**
0.082			2222 479 90**135**
0.091			2222 479 90**136**
0.1	6.5 × 18.5 × 12.5	1.0	2222 479 90**137**
Pitch = 15.0 ±1.0 mm; d_t = 0.80 ±0.08 mm			
0.11	6.5 × 18.5 × 18.5	1.3	2222 479 90**138**
0.12			2222 479 90**051**
0.13			2222 479 90**139**
0.15			2222 479 90**141**
0.16			2222 479 90**142**
0.18			2222 479 90**012**
0.20			2222 479 90**013**
0.22			2222 479 90**014**
0.24	7.0 × 19.0 × 18.5	1.4	2222 479 90**015**
0.27	7.5 × 19.5 × 18.5	1.5	2222 479 90**016**
0.30			2222 479 90**017**
0.33	8.0 × 20.0 × 18.5	1.6	2222 479 90**018**
0.36	8.5 × 20.5 × 18.5	1.7	2222 479 90**019**
0.39			2222 479 90**021**
0.43	9.0 × 21.0 × 18.5	1.8	2222 479 90**022**
0.47	9.5 × 21.5 × 18.5	1.9	2222 479 90**023**

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP 479 GENERAL DATA **PITCH 22.5/27.5 mm (lock lead)**

lock lead



Dimensions in mm.

Fig.10 Outline.

Specific reference data for the 250 V DC capacitors (lock lead)

DESCRIPTION	VALUE		DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz	Tangent of loss angle:	at 10 kHz	at 100 kHz
0.51 µF < C ≤ 0.56 µF	$\leq 10 \times 10^{-4}$	$\leq 45 \times 10^{-4}$	1.3 µF < C ≤ 1.5 µF	$\leq 10 \times 10^{-4}$	$\leq 80 \times 10^{-4}$
0.56 µF < C ≤ 0.68 µF	$\leq 10 \times 10^{-4}$	$\leq 50 \times 10^{-4}$	1.5 µF < C ≤ 1.6 µF	$\leq 10 \times 10^{-4}$	$\leq 85 \times 10^{-4}$
0.68 µF < C ≤ 0.82 µF	$\leq 10 \times 10^{-4}$	$\leq 55 \times 10^{-4}$	1.6 µF < C ≤ 1.8 µF	$\leq 10 \times 10^{-4}$	$\leq 90 \times 10^{-4}$
0.82 µF < C ≤ 0.91 µF	$\leq 10 \times 10^{-4}$	$\leq 60 \times 10^{-4}$	1.8 µF < C ≤ 2.0 µF	$\leq 10 \times 10^{-4}$	$\leq 95 \times 10^{-4}$
0.91 µF < C ≤ 1.0 µF	$\leq 10 \times 10^{-4}$	$\leq 65 \times 10^{-4}$	2.0 µF < C ≤ 2.2 µF	$\leq 10 \times 10^{-4}$	$\leq 100 \times 10^{-4}$
1.0 µF < C ≤ 1.2 µF	$\leq 10 \times 10^{-4}$	$\leq 70 \times 10^{-4}$	2.2 µF < C ≤ 2.4 µF	$\leq 15 \times 10^{-4}$	$\leq 105 \times 10^{-4}$
1.2 µF < C ≤ 1.3 µF	$\leq 10 \times 10^{-4}$	$\leq 75 \times 10^{-4}$	2.4 µF < C ≤ 2.7 µF	$\leq 15 \times 10^{-4}$	$\leq 110 \times 10^{-4}$
			2.7 µF < C ≤ 3 µF	$\leq 15 \times 10^{-4}$	$\leq 115 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 250 V (DC): P = 22.5 mm	30 V/µs		Rated voltage pulse slope $(dU/dt)_R$ at 250 V (DC): P = 27.5 mm	20 V/µs	
R between leads, for C ≤ 1 µF at 100 V; 1 minute	>100000 MΩ				
RC between leads, for C >1 µF at 100 V; 1 minute	>100000 s				
R between leads and case; 100 V; 1 minute	>100000 MΩ				
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V				
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	400 V; 1 minute				
Withstanding (DC) voltage between leads and case	2840 V; 1 minute				

Available 250 V DC versions (lock lead)

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 4.0 +1.0/–0.5 mm	±5%	2222 479 90...	preferred

AC and pulse metallized polypropylene film capacitors

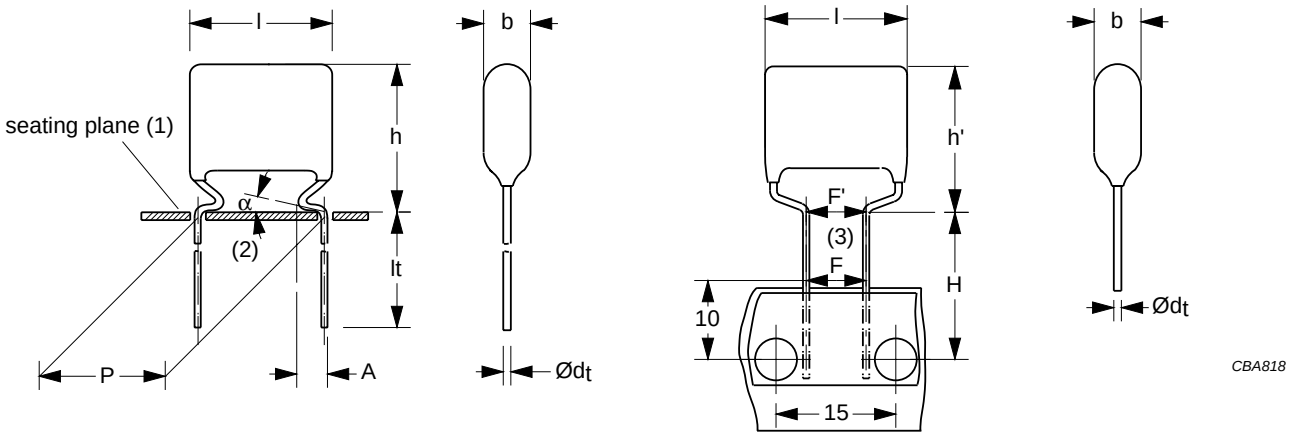
MKP 479

U_{Rdc} = 250 V; U_{Rac} = 160 V; U_{p-p} = 450 V (lock lead)

C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER
			LOOSE IN BOX
			l_t = 4.0 +1.0/−0.5 mm
			C-tol = ±5%
Pitch = 22.5 ±1.0 mm; d_t = 0.80 ±0.08 mm			
0.51	7.0 × 23.0 × 26.0	1.8	2222 479 90**024**
0.56			2222 479 90**025**
0.62	7.5 × 23.5 × 26.0	1.9	2222 479 90**026**
0.68			2222 479 90**027**
0.75	8.0 × 24.0 × 26.0	2.0	2222 479 90**028**
0.82	8.5 × 24.5 × 26.0	2.1	2222 479 90**029**
0.91	9.0 × 25.0 × 26.0	2.4	2222 479 90**031**
1.0	9.5 × 25.5 × 26.0	2.5	2222 479 90**032**
1.1	10.0 × 26.0 × 26.0	2.6	2222 479 90**033**
1.2	10.5 × 26.5 × 26.0	2.7	2222 479 90**034**
Pitch = 27.5 ±1.0 mm; d_t = 0.80 ±0.08 mm			
1.3	10.0 × 26.0 × 30.0	5.0	2222 479 90**143**
1.5	10.5 × 26.5 × 30.0	5.0	2222 479 90**144**
1.6	11.0 × 27.0 × 30.0	5.5	2222 479 90**145**
1.8	11.5 × 27.5 × 30.0	5.5	2222 479 90**146**
2.0	12.5 × 28.5 × 30.0	6.5	2222 479 90**147**
2.2	13.0 × 29.0 × 30.0	6.5	2222 479 90**148**
2.4	13.5 × 29.5 × 30.0	7.0	2222 479 90**149**
2.7	14.0 × 30.0 × 30.0	7.0	2222 479 90**151**
3.0	15.0 × 31.0 × 30.0	7.5	2222 479 90**152**

MKP 479 GENERAL DATA

PITCH 10/15 mm
PITCH 7.5 mm (bent back leads)



Dimensions in mm.

(1) Hole ∅1.0 for d_t = 0.6 mm.
Hole ∅1.3 for d_t = 0.8 mm.

(2) $0 \leq \alpha < 50°$.

(3) $|F - F| < 0.3$ mm.
F = 7.5 +0.6/–0.1 mm.

(4) A = 2.0 +1.0/–0.5 mm (pitch = 10.0 mm).
A = 2.5 +1.4/–0.5 mm (pitch = 15.0 mm).

Fig.11 Outline.

Specific reference data for the 250 V DC capacitors (monitor type)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.022 µF < C ≤ 0.027 µF	$\leq 5 \times 10^{-4}$	$\leq 15 \times 10^{-4}$
0.027 µF < C ≤ 0.075 µF	$\leq 5 \times 10^{-4}$	$\leq 20 \times 10^{-4}$
0.075 µF < C ≤ 0.11 µF	$\leq 5 \times 10^{-4}$	$\leq 25 \times 10^{-4}$
0.11 µF < C ≤ 0.18 µF	$\leq 10 \times 10^{-4}$	$\leq 30 \times 10^{-4}$
0.18 µF < C ≤ 0.22 µF	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 250 V (DC):		
P = 10.0 mm	160 V/µs	
P = 15.0 mm	140 V/µs	
R between leads, for C ≤ 1.0 µF at 100 V; 1 minute	>100000 MΩ	
R between leads and case; 100 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	400 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 250 V DC versions (monitor type)

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 5.0 ±1.0 mm	±5%	2222 479 41...	preferred
	l_t = 3.5 ±0.5 mm	±5%	2222 479 43...	on request
Taped on reel	H = 16.0 mm; P_0 = 12.7 mm	±5%	2222 479 47...	on request
Taped on reel (bent back)	H = 16.0 mm; P_0 = 15.0 mm	±5%	2222 479 49...	preferred

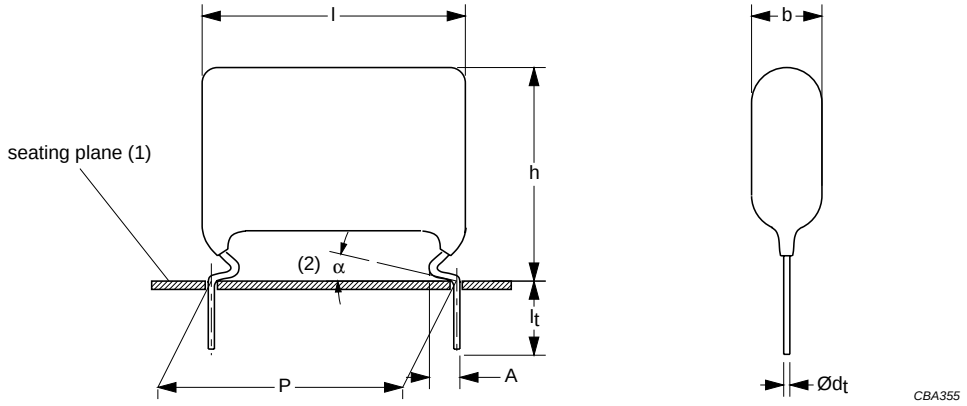
U_{Rdc} = 250 V; U_{Rac} = 160 V; U_{p-p} = 450 V (monitor type)

C (µF)	DIMENSIONS[1] $b_{max} \times h\ (h')_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER	
			LOOSE IN BOX	REEL DIAMETER = 500 mm
			l_t = 5.0 ±1.0 mm	H = 16.0 mm; P_0 = 15.0 mm
			C-tol = ±5%	C-tol = ±5%
			catalogue number	last 5 digits
Pitch = 10.0 ±0.4 mm; d_t = 0.60 ±0.06 mm				**pitch = 7.5 mm (bent back)**
0.022	6.0 × 15.0 × 12.5	0.9	2222 479 41**223**	not available
0.024			2222 479 41**243**	
0.027			2222 479 41**273**	
0.03			2222 479 41**303**	
0.033			2222 479 41**333**	
0.036			2222 479 41**363**	
0.039			2222 479 41**393**	
0.043			2222 479 41**433**	
0.047			2222 479 41**473**	
Pitch = 15.0 ±0.4 mm; d_t = 0.80 ±0.08 mm				**pitch = 7.5 mm (bent back)**
0.051	6.5 × 15.5 (17.0) × 18.5	1.3	2222 479 41**513**	.. 49**513**
0.056			2222 479 41**563**	.. 49**563**
0.062			2222 479 41**623**	.. 49**623**
0.068			2222 479 41**683**	.. 49**683**
0.075			2222 479 41**753**	.. 49**753**
0.082			2222 479 41**823**	.. 49**823**
0.091	7.0 × 16.0 (17.5) × 18.5	1.4	2222 479 41**913**	.. 49**913**
0.1			2222 479 41**104**	.. 49**104**
0.11			2222 479 41**114**	.. 49**114**
0.12			2222 479 41**124**	.. 49**124**
0.13	7.5 × 16.5 (18.0) × 18.5	1.5	2222 479 41**134**	.. 49**134**
0.15			2222 479 41**154**	.. 49**154**
0.16	8.0 × 17.0 (18.5) × 18.5	1.6	2222 479 41**164**	.. 49**164**
0.18	8.5 × 17.5 (19.0) × 18.5	1.7	2222 479 41**184**	.. 49**184**
0.2			2222 479 41**204**	.. 49**204**
0.22	9.0 × 18.0 (19.5) × 18.5	1.8	2222 479 41**224**	.. 49**224**

Note

1. Dimensions in brackets for bent back leads.

MKP 479 GENERAL DATA **PITCH 22.5/27.5 mm**



Dimensions in mm.

(1) Hole ∅1.3 for d_t = 0.8 mm.

(2) $0 \leq \alpha < 50°$.

(3) A = 2.5+1.4/–0.5 mm.

Fig.12 Outline.

Specific reference data for the 250 V DC capacitors (monitor type)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.24 µF < C ≤ 0.3 µF	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
0.3 µF < C ≤ 0.39 µF	$\leq 10 \times 10^{-4}$	$\leq 40 \times 10^{-4}$
0.39 µF < C ≤ 0.56 µF	$\leq 10 \times 10^{-4}$	$\leq 45 \times 10^{-4}$
0.56 µF < C ≤ 0.68 µF	$\leq 10 \times 10^{-4}$	$\leq 50 \times 10^{-4}$
0.68 µF < C ≤ 0.82 µF	$\leq 10 \times 10^{-4}$	$\leq 55 \times 10^{-4}$
0.82 µF < C ≤ 0.91 µF	$\leq 10 \times 10^{-4}$	$\leq 60 \times 10^{-4}$
0.91 µF < C ≤ 1.0 µF	$\leq 10 \times 10^{-4}$	$\leq 65 \times 10^{-4}$
1.0 µF < C ≤ 1.2 µF	$\leq 10 \times 10^{-4}$	$\leq 70 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 250 V (DC):		
P = 22.5 mm	70 V/µs	
P = 27.5 mm	50 V/µs	
R between leads, for C ≤ 1.0 µF at 100 V; 1 minute	>100000 MΩ	
RC between leads, for C > 1.0 µF at 100 V; 1 minute	>100000 s	
R between leads and case; 100 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	400 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 250 V DC versions (monitor type)

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 5.0 ±1.0 mm	±5%	2222 479 41...	preferred
	l_t = 3.5 ±0.5 mm	±5%	2222 479 43...	on request
Taped on reel	H = 16.0 mm; P_0 = 12.7 mm	±5%	2222 479 47...	on request

Note

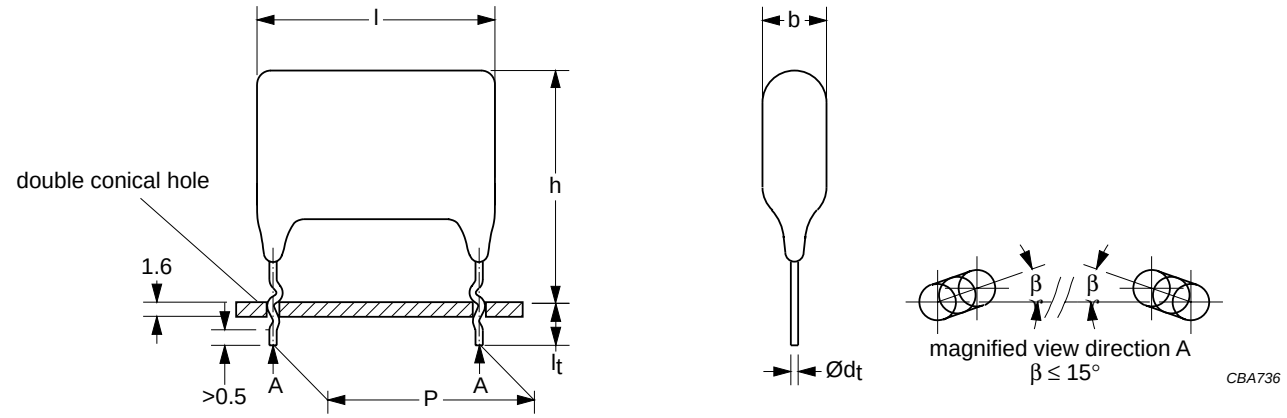
1. Taped on reel pitch = 27.5 mm is not available.

U_{Rdc} = 250 V; U_{Rac} = 160 V; U_{p-p} = 450 V (monitor type)

C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER
			LOOSE IN BOX
			l_t = 5.0 ±1.0 mm
			C-tol = ±5%
Pitch = 22.5 ±0.4 mm; d_t = 0.80 ±0.08 mm			
0.24	6.5 × 19.5 × 26.0	1.7	2222 479 41**244**
0.27	7.0 × 20.0 × 26.0	1.8	2222 479 41**274**
0.3	7.5 × 20.5 × 26.0	1.9	2222 479 41**304**
0.33			2222 479 41**334**
0.36	8.0 × 21.0 × 26.0	2.0	2222 479 41**364**
0.39	8.5 × 21.5 × 26.0	2.1	2222 479 41**394**
0.43			2222 479 41**434**
0.47	9.0 × 22.0 × 26.0	2.4	2222 479 41**474**
0.51	9.5 × 22.5 × 26.0	2.5	2222 479 41**514**
0.56	10.0 × 23.0 × 26.0	2.6	2222 479 41**564**
0.62	10.5 × 23.5 × 26.0	2.7	2222 479 41**624**
Pitch = 27.5 ±0.4 mm; d_t = 0.80 ±0.08 mm			
0.68	10.0 × 23.0 × 30.0	5.0	2222 479 41**684**
0.75	10.5 × 23.5 × 30.0	5.0	2222 479 41**754**
0.82	11.0 × 24.0 × 30.0	5.5	2222 479 41**824**
0.91	11.5 × 24.5 × 30.0	5.5	2222 479 41**914**
1.0	12.0 × 25.0 × 30.0	6.0	2222 479 41**105**
1.1	12.5 × 25.5 × 30.0	6.5	2222 479 41**115**
1.2	13.0 × 26.0 × 30.0	6.5	2222 479 41**125**

MKP 479 GENERAL DATA **PITCH 10/15 mm (lock lead)**

lock lead



Dimensions in mm.

Fig.13 Outline.

Specific reference data for the 250 V DC capacitors (monitor type - lock lead)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.022 µF < C ≤ 0.027 µF	$\leq 5 \times 10^{-4}$	$\leq 15 \times 10^{-4}$
0.027 µF < C ≤ 0.075 µF	$\leq 5 \times 10^{-4}$	$\leq 20 \times 10^{-4}$
0.075 µF < C ≤ 0.11 µF	$\leq 5 \times 10^{-4}$	$\leq 25 \times 10^{-4}$
0.11 µF < C ≤ 0.18 µF	$\leq 10 \times 10^{-4}$	$\leq 30 \times 10^{-4}$
0.18 µF < C ≤ 0.22 µF	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 400 V (DC):		
P = 10.0 mm	80 V/µs	
P = 15.0 mm	70 V/µs	
R between leads, for C ≤ 1.0 µF at 100 V; 1 minute	>100000 MΩ	
R between leads and case; 100 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	640 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 250 V DC versions (monitor type - lock lead)

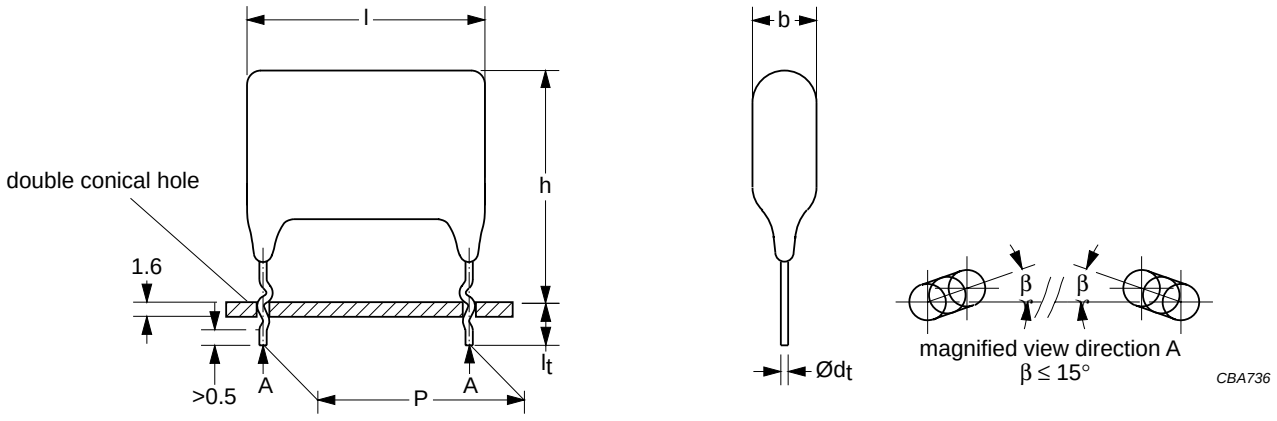
PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 4.0 +1.0/–0.5 mm	±5%	2222 479 90...	preferred

U_{Rdc} = 250 V; U_{Rac} = 160 V; U_{p-p} = 450 V (monitor type - lock lead)

C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER LOOSE IN BOX l_t = 4.0 +1.0/−0.5 mm C-tol = ±5%
Pitch = 10.0 ±1.0 mm; d_t = 0.60 ±0.06 mm			
0.022	6.0 × 18.0 × 12.5	0.9	2222 479 90**379**
0.024			2222 479 90**381**
0.027			2222 479 90**382**
0.03			2222 479 90**383**
0.033			2222 479 90**384**
0.036			2222 479 90**385**
0.039			2222 479 90**386**
0.043			2222 479 90**387**
0.047			2222 479 90**388**
Pitch = 15.0 ±1.0 mm; d_t = 0.80 ±0.08 mm			
0.051	6.5 × 18.5 × 18.5	1.3	2222 479 90**389**
0.056			2222 479 90**391**
0.062			2222 479 90**392**
0.068			2222 479 90**393**
0.075			2222 479 90**394**
0.082			2222 479 90**395**
0.091	7.0 × 19.0 × 18.5	1.4	2222 479 90**396**
0.1			2222 479 90**397**
0.11			2222 479 90**398**
0.12			2222 479 90**399**
0.13	7.5 × 19.5 × 18.5	1.5	2222 479 90**401**
0.15			2222 479 90**402**
0.16	8.0 × 20.0 × 18.5	1.6	2222 479 90**403**
0.18	8.5 × 20.5 × 18.5	1.7	2222 479 90**404**
0.2			2222 479 90**405**
0.22	9.0 × 21.0 × 18.5	1.8	2222 479 90**406**

MKP 479 GENERAL DATA **PITCH 22.5/27.5 mm (lock lead)**

lock lead



Dimensions in mm.

Fig.14 Outline.

Specific reference data for the 250 V DC capacitors (monitor type - lock lead)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.24 µF < C ≤ 0.3 µF	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
0.3 µF < C ≤ 0.39 µF	$\leq 10 \times 10^{-4}$	$\leq 40 \times 10^{-4}$
0.39 µF < C ≤ 0.56 µF	$\leq 10 \times 10^{-4}$	$\leq 45 \times 10^{-4}$
0.56 µF < C ≤ 0.68 µF	$\leq 10 \times 10^{-4}$	$\leq 50 \times 10^{-4}$
0.68 µF < C ≤ 0.82 µF	$\leq 10 \times 10^{-4}$	$\leq 55 \times 10^{-4}$
0.82 µF < C ≤ 0.91 µF	$\leq 10 \times 10^{-4}$	$\leq 60 \times 10^{-4}$
0.91 µF < C ≤ 1.0 µF	$\leq 10 \times 10^{-4}$	$\leq 65 \times 10^{-4}$
1.0 µF < C ≤ 1.2 µF	$\leq 10 \times 10^{-4}$	$\leq 70 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 400 V (DC):		
P = 22.5 mm	35 V/µs	
P = 27.5 mm	25 V/µs	
R between leads, for C ≤ 1.0 µF at 100 V; 1 minute	>100000 MΩ	
RC between leads, for C > 1.0 µF at 100 V; 1 minute	>100000 s	
R between leads and case; 100 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	640 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 250 V DC versions (lock lead)

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 4.0 +1.0/–0.5 mm	±5%	2222 479 90...	preferred

U_{Rdc} = 250 V; U_{Rac} = 160 V; U_{p-p} = 450 V (monitor type - lock lead)

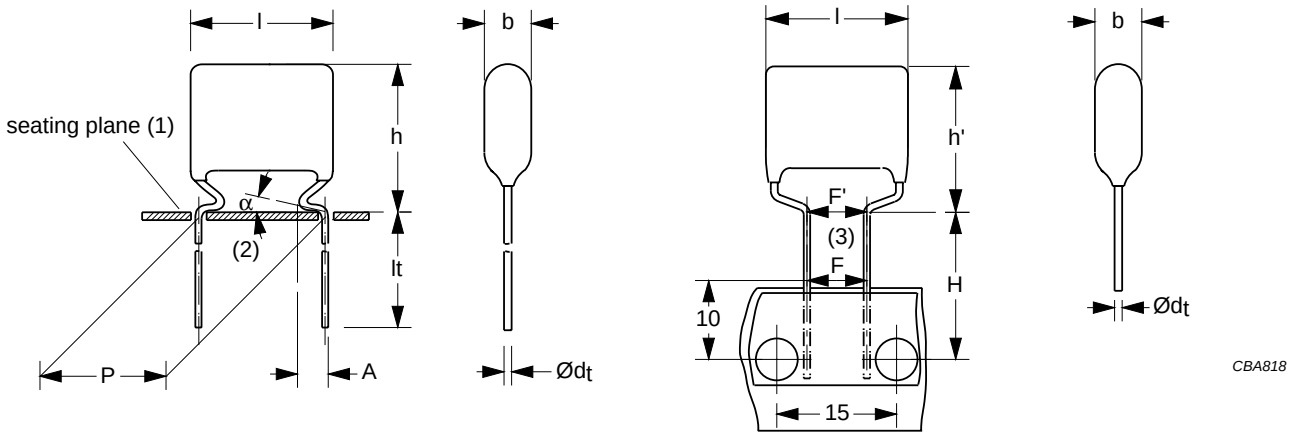
C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER
			LOOSE IN BOX
			l_t = 4.0 +1.0/−0.5 mm
			C-tol = ±5%
Pitch = 22.5 ±1.0 mm; d_t = 0.80 ±0.08 mm			
0.24	6.5 × 22.5 × 26.0	1.7	2222 479 90**407**
0.27	7.0 × 23.0 × 26.0	1.8	2222 479 90**408**
0.3	7.5 × 23.5 × 26.0	1.9	2222 479 90**409**
0.33			2222 479 90**411**
0.36	8.0 × 24.0 × 26.0	2.0	2222 479 90**412**
0.39	8.5 × 24.5 × 26.0	2.1	2222 479 90**413**
0.43			2222 479 90**414**
0.47	9.0 × 25.0 × 26.0	2.4	2222 479 90**415**
0.51	9.5 × 25.5 × 26.0	2.5	2222 479 90**416**
0.56	10.0 × 26.0 × 26.0	2.6	2222 479 90**417**
0.62	10.5 × 26.5 × 26.0	2.7	2222 479 90**418**
Pitch = 27.5 ±1.0 mm; d_t = 0.80 ±0.08 mm			
0.68	10.0 × 26.0 × 30.0	5.0	2222 479 90**419**
0.75	10.5 × 26.5 × 30.0	5.0	2222 479 90**421**
0.82	11.0 × 27.0 × 30.0	5.5	2222 479 90**422**
0.91	11.5 × 27.5 × 30.0	5.5	2222 479 90**423**
1.0	12.0 × 28.0 × 30.0	6.0	2222 479 90**424**
1.1	12.5 × 28.5 × 30.0	6.5	2222 479 90**425**
1.2	13.0 × 29.0 × 30.0	6.5	2222 479 90**426**

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP 479 GENERAL DATA

PITCH 10/15 mm
PITCH 7.5 mm (bent back leads)



Dimensions in mm.

(1) Hole ∅1.0 for d_t = 0.6 mm.
Hole ∅1.3 for d_t = 0.8 mm.

(2) $0 \leq \alpha < 50°$.

(3) $|F - F| < 0.3$ mm.
F = 7.5 +0.6/–0.1 mm.

(4) A = 2.0 +1.0/–0.5 mm (pitch = 10.0 mm).
A = 2.5 +1.4/–0.5 mm (pitch = 15.0 mm).

Fig.15 Outline.

Specific reference data for the 400 V DC capacitors

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.022 µF < C ≤ 0.027 µF	$\leq 5 \times 10^{-4}$	$\leq 15 \times 10^{-4}$
0.027 µF < C ≤ 0.075 µF	$\leq 5 \times 10^{-4}$	$\leq 20 \times 10^{-4}$
0.075 µF < C ≤ 0.11 µF	$\leq 5 \times 10^{-4}$	$\leq 25 \times 10^{-4}$
0.11 µF < C ≤ 0.18 µF	$\leq 10 \times 10^{-4}$	$\leq 30 \times 10^{-4}$
0.18 µF < C ≤ 0.22 µF	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 400 V (DC):		
P = 10.0 mm	80 V/µs	
P = 15.0 mm	70 V/µs	
R between leads, for C ≤ 1.0 µF at 100 V; 1 minute	>100000 MΩ	
R between leads and case; 100 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	640 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 400 V DC versions

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 5.0 ±1.0 mm	±5%	2222 479 52...	preferred
	l_t = 3.5 ±0.5 mm	±5%	2222 479 54...	on request
Taped on reel	H = 16.0 mm; P_0 = 12.7 mm	±5%	2222 479 55...	on request
Taped on reel (bent back)	H = 16.0 mm; P_0 = 15.0 mm	±5%	2222 479 56...	preferred

AC and pulse metallized polypropylene film capacitors

MKP 479

U_{Rdc} = 400 V; U_{Rac} = 200 V; U_{p-p} = 560 V

C (µF)	DIMENSIONS(1) $b_{max} \times h\ (h')_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER	
			LOOSE IN BOX	REEL DIAMETER = 500 mm
			l_t = 5.0 ±1.0 mm	H = 16.0 mm; P_0 = 15.0 mm
			C-tol = ±5%	C-tol = ±5%
			catalogue number	last 5 digits
Pitch = 10.0 ±0.4 mm; d_t = 0.60 ±0.06 mm				**pitch = 7.5 mm (bent back)**
0.022	6.0 × 15.0 × 12.5	0.9	2222 479 52**223**	not available
0.024			2222 479 52**243**	
0.027			2222 479 52**273**	
0.03			2222 479 52**303**	
0.033			2222 479 52**333**	
0.036			2222 479 52**363**	
0.039			2222 479 52**393**	
0.043			2222 479 52**433**	
0.047			2222 479 52**473**	
Pitch = 15.0 ±0.4 mm; d_t = 0.80 ±0.08 mm				**pitch = 7.5 mm (bent back)**
0.051	6.5 × 15.5 (17.0) × 18.5	1.3	2222 479 52**513**	.. 56**513**
0.056			2222 479 52**563**	.. 56**563**
0.062			2222 479 52**623**	.. 56**623**
0.068			2222 479 52**683**	.. 56**683**
0.075			2222 479 52**753**	.. 56**753**
0.082			2222 479 52**823**	.. 56**823**
0.091	7.0 × 16.0 (17.5) × 18.5	1.4	2222 479 52**913**	.. 56**913**
0.1			2222 479 52**104**	.. 56**104**
0.11			2222 479 52**114**	.. 56**114**
0.12			2222 479 52**124**	.. 56**124**
0.13	7.5 × 16.5 (18.0) × 18.5	1.5	2222 479 52**134**	.. 56**134**
0.15			2222 479 52**154**	.. 56**154**
0.16	8.0 × 17.0 (18.5) × 18.5	1.6	2222 479 52**164**	.. 56**164**
0.18	8.5 × 17.5 (19.0) × 18.5	1.7	2222 479 52**184**	.. 56**184**
0.2			2222 479 52**204**	.. 56**204**
0.22	9.0 × 18.0 (19.5) × 18.5	1.8	2222 479 52**224**	.. 56**224**

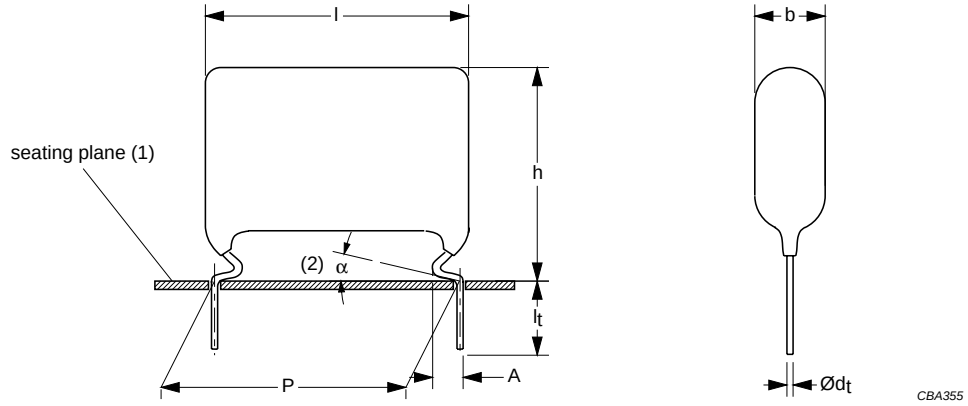
Note

1. Dimensions in brackets for bent back leads.

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP 479 GENERAL DATA **PITCH 22.5/27.5 mm**



Dimensions in mm.

(1) Hole ∅1.3 for d_t = 0.8 mm.

(2) $0 \leq \alpha < 50°$.

(3) A = 2.5+1.4/–0.5 mm.

Fig.16 Outline.

Specific reference data for the 400 V DC capacitors

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.24 µF < C ≤ 0.3 µF	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
0.3 µF < C ≤ 0.39 µF	$\leq 10 \times 10^{-4}$	$\leq 40 \times 10^{-4}$
0.39 µF < C ≤ 0.56 µF	$\leq 10 \times 10^{-4}$	$\leq 45 \times 10^{-4}$
0.56 µF < C ≤ 0.68 µF	$\leq 10 \times 10^{-4}$	$\leq 50 \times 10^{-4}$
0.68 µF < C ≤ 0.82 µF	$\leq 10 \times 10^{-4}$	$\leq 55 \times 10^{-4}$
0.82 µF < C ≤ 0.91 µF	$\leq 10 \times 10^{-4}$	$\leq 60 \times 10^{-4}$
0.91 µF < C ≤ 1.0 µF	$\leq 10 \times 10^{-4}$	$\leq 65 \times 10^{-4}$
1.0 µF < C ≤ 1.2 µF	$\leq 10 \times 10^{-4}$	$\leq 70 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 400 V (DC):		
P = 22.5 mm	35 V/µs	
P = 27.5 mm	25 V/µs	
R between leads, for C ≤ 1.0 µF at 100 V; 1 minute	>100000 MΩ	
RC between leads, for C > 1.0 µF at 100 V; 1 minute	>100000 s	
R between leads and case; 100 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	640 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 400 V DC versions

PACKAGING(1)	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 5.0 ±1.0 mm	±5%	2222 479 52...	preferred
	l_t = 3.5 ±0.5 mm	±5%	2222 479 54...	on request
Taped on reel	H = 16.0 mm; P_0 = 12.7 mm	±5%	2222 479 55...	on request

Note

1. Taped on reel pitch = 27.5 mm is not available.

AC and pulse metallized polypropylene film capacitors

MKP 479

U_{Rdc} = 400 V; U_{Rac} = 200 V; U_{p-p} = 560 V

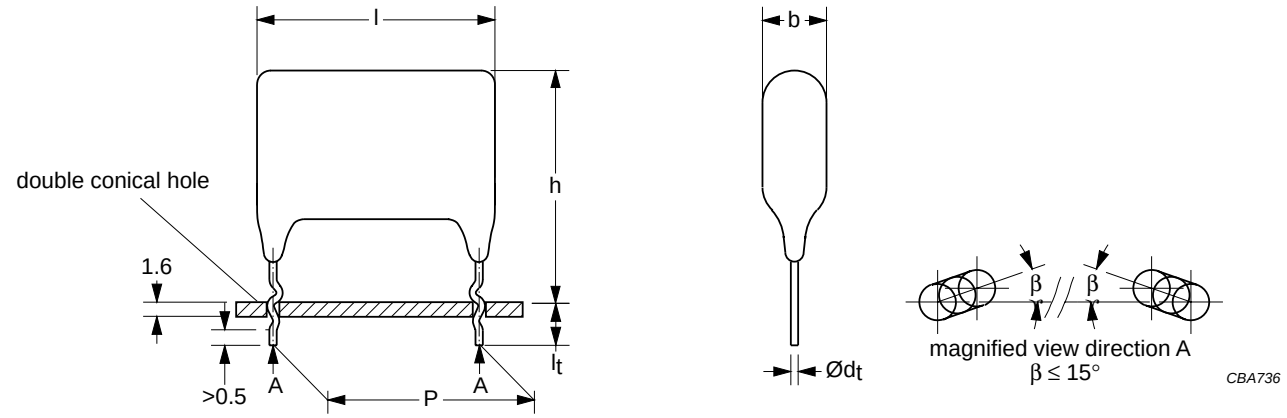
C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER
			LOOSE IN BOX
			l_t = 5.0 ±1.0 mm
			C-tol = ±5%
Pitch = 22.5 ±0.4 mm; d_t = 0.80 ±0.08 mm			
0.24	6.5 × 19.5 × 26.0	1.7	2222 479 52**244**
0.27	7.0 × 20.0 × 26.0	1.8	2222 479 52**274**
0.3	7.5 × 20.5 × 26.0	1.9	2222 479 52**304**
0.33			2222 479 52**334**
0.36	8.0 × 21.0 × 26.0	2.0	2222 479 52**364**
0.39	8.5 × 21.5 × 26.0	2.1	2222 479 52**394**
0.43			2222 479 52**434**
0.47	9.0 × 22.0 × 26.0	2.4	2222 479 52**474**
0.51	9.5 × 22.5 × 26.0	2.5	2222 479 52**514**
0.56	10.0 × 23.0 × 26.0	2.6	2222 479 52**564**
0.62	10.5 × 23.5 × 26.0	2.7	2222 479 52**624**
Pitch = 27.5 ±0.4 mm; d_t = 0.80 ±0.08 mm			
0.68	10.0 × 23.0 × 30.0	5.0	2222 479 52**684**
0.75	10.5 × 23.5 × 30.0	5.0	2222 479 52**754**
0.82	11.0 × 24.0 × 30.0	5.5	2222 479 52**824**
0.91	11.5 × 24.5 × 30.0	5.5	2222 479 52**914**
1.0	12.0 × 25.0 × 30.0	6.0	2222 479 52**105**
1.1	12.5 × 25.5 × 30.0	6.5	2222 479 52**115**
1.2	13.0 × 26.0 × 30.0	6.5	2222 479 52**125**

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP 479 GENERAL DATA **PITCH 10/15 mm (lock lead)**

lock lead



Dimensions in mm.

Fig.17 Outline.

Specific reference data for the 400 V DC capacitors (lock lead)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.022 µF < C ≤ 0.027 µF	$\leq 5 \times 10^{-4}$	$\leq 15 \times 10^{-4}$
0.027 µF < C ≤ 0.075 µF	$\leq 5 \times 10^{-4}$	$\leq 20 \times 10^{-4}$
0.075 µF < C ≤ 0.11 µF	$\leq 5 \times 10^{-4}$	$\leq 25 \times 10^{-4}$
0.11 µF < C ≤ 0.18 µF	$\leq 10 \times 10^{-4}$	$\leq 30 \times 10^{-4}$
0.18 µF < C ≤ 0.22 µF	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 400 V (DC):		
P = 10.0 mm	80 V/µs	
P = 15.0 mm	70 V/µs	
R between leads, for C ≤ 1.0 µF at 100 V; 1 minute	>100000 MΩ	
R between leads and case; 100 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	640 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 400 V DC versions (lock lead)

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 4.0 +1.0/–0.5 mm	±5%	2222 479 90...	preferred

AC and pulse metallized polypropylene film capacitors

MKP 479

U_{Rdc} = 400 V; U_{Rac} = 200 V; U_{p-p} = 560 V (lock lead)

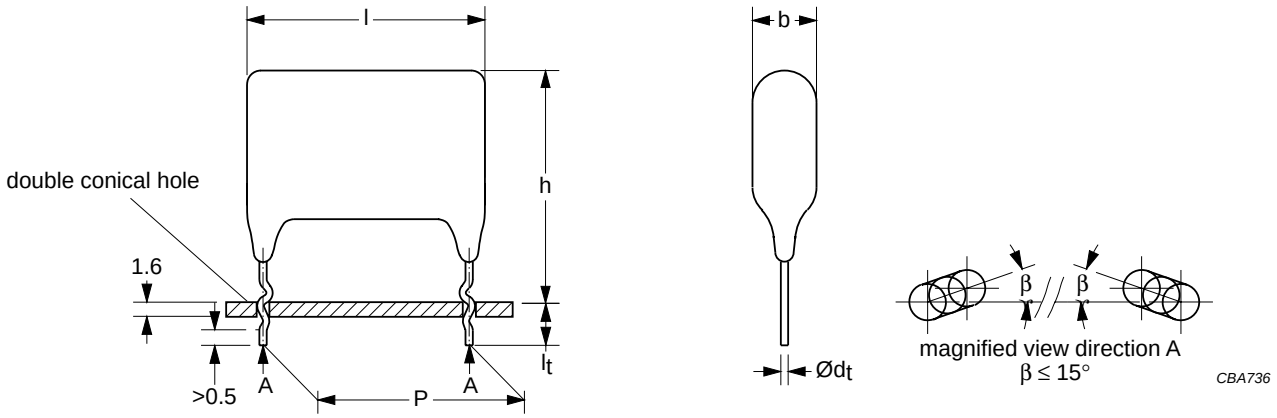
C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER LOOSE IN BOX l_t = 4.0 +1.0/−0.5 mm C-tol = ±5%
Pitch = 10.0 ±1.0 mm; d_t = 0.60 ±0.06 mm			
0.022	6.0 × 18.0 × 12.5	0.9	2222 479 90**153**
0.024			2222 479 90**154**
0.027			2222 479 90**155**
0.03			2222 479 90**156**
0.033			2222 479 90**157**
0.036			2222 479 90**158**
0.039			2222 479 90**159**
0.043			2222 479 90**161**
0.047			2222 479 90**162**
Pitch = 15.0 ±1.0 mm; d_t = 0.80 ±0.08 mm			
0.051	6.5 × 18.5 × 18.5	1.3	2222 479 90**163**
0.056			2222 479 90**164**
0.062			2222 479 90**165**
0.068			2222 479 90**166**
0.075			2222 479 90**167**
0.082			2222 479 90**168**
0.091	7.0 × 19.0 × 18.5	1.4	2222 479 90**169**
0.1			2222 479 90**171**
0.11			2222 479 90**172**
0.12			2222 479 90**173**
0.13	7.5 × 19.5 × 18.5	1.5	2222 479 90**174**
0.15			2222 479 90**175**
0.16	8.0 × 20.0 × 18.5	1.6	2222 479 90**176**
0.18	8.5 × 20.5 × 18.5	1.7	2222 479 90**177**
0.2			2222 479 90**178**
0.22	9.0 × 21.0 × 18.5	1.8	2222 479 90**179**

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP 479 GENERAL DATA **PITCH 22.5/27.5 mm (lock lead)**

lock lead



Dimensions in mm.

Fig.18 Outline.

Specific reference data for the 400 V DC capacitors (lock lead)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.24 µF < C ≤ 0.3 µF	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
0.3 µF < C ≤ 0.39 µF	$\leq 10 \times 10^{-4}$	$\leq 40 \times 10^{-4}$
0.39 µF < C ≤ 0.56 µF	$\leq 10 \times 10^{-4}$	$\leq 45 \times 10^{-4}$
0.56 µF < C ≤ 0.68 µF	$\leq 10 \times 10^{-4}$	$\leq 50 \times 10^{-4}$
0.68 µF < C ≤ 0.82 µF	$\leq 10 \times 10^{-4}$	$\leq 55 \times 10^{-4}$
0.82 µF < C ≤ 0.91 µF	$\leq 10 \times 10^{-4}$	$\leq 60 \times 10^{-4}$
0.91 µF < C ≤ 1.0 µF	$\leq 10 \times 10^{-4}$	$\leq 65 \times 10^{-4}$
1.0 µF < C ≤ 1.2 µF	$\leq 10 \times 10^{-4}$	$\leq 70 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 400 V (DC):		
P = 22.5 mm	35 V/µs	
P = 27.5 mm	25 V/µs	
R between leads, for C ≤ 1.0 µF at 100 V; 1 minute	>100000 MΩ	
RC between leads, for C > 1.0 µF at 100 V; 1 minute	>100000 s	
R between leads and case; 100 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	640 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 400 V DC versions (lock lead)

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 4.0 +1.0/–0.5 mm	±5%	2222 479 90...	preferred

AC and pulse metallized polypropylene film capacitors

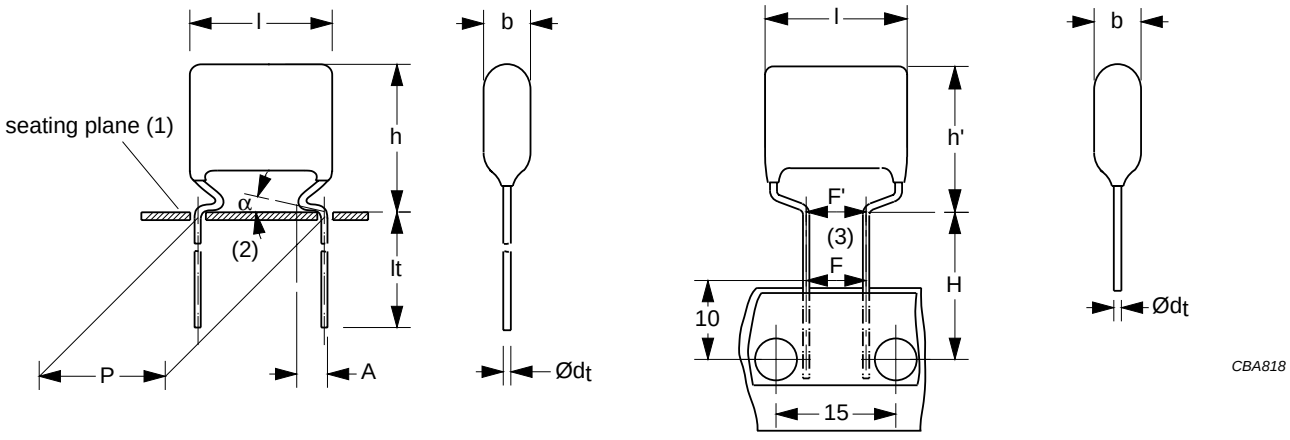
MKP 479

U_{Rdc} = 400 V; U_{Rac} = 200 V; U_{p-p} = 560 V(lock lead)

C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER LOOSE IN BOX l_t = 4.0 +1.0/−0.5 mm C-tol = ±5%
Pitch = 22.5 ±1.0 mm; d_t = 0.80 ±0.08 mm			
0.24	6.5 × 22.5 × 26.0	1.7	2222 479 90**181**
0.27	7.0 × 23.0 × 26.0	1.8	2222 479 90**182**
0.3	7.5 × 23.5 × 26.0	1.9	2222 479 90**183**
0.33			2222 479 90**184**
0.36	8.0 × 24.0 × 26.0	2.0	2222 479 90**185**
0.39	8.5 × 24.5 × 26.0	2.1	2222 479 90**186**
0.43			2222 479 90**187**
0.47	9.0 × 25.0 × 26.0	2.4	2222 479 90**188**
0.51	9.5 × 25.5 × 26.0	2.5	2222 479 90**189**
0.56	10.0 × 26.0 × 26.0	2.6	2222 479 90**191**
0.62	10.5 × 26.5 × 26.0	2.7	2222 479 90**192**
Pitch = 27.5 ±1.0 mm; d_t = 0.80 ±0.08 mm			
0.68	10.0 × 26.0 × 30.0	5.0	2222 479 90**193**
0.75	10.5 × 26.5 × 30.0	5.0	2222 479 90**194**
0.82	11.0 × 27.0 × 30.0	5.5	2222 479 90**195**
0.91	11.5 × 27.5 × 30.0	5.5	2222 479 90**196**
1.0	12.0 × 28.0 × 30.0	6.0	2222 479 90**086**
1.1	12.5 × 28.5 × 30.0	6.5	2222 479 90**197**
1.2	13.0 × 29.0 × 30.0	6.5	2222 479 90**198**

MKP 479 GENERAL DATA

PITCH 10/15 mm
PITCH 7.5 mm (bent back leads)



Dimensions in mm.

(1) Hole ∅1.0 for d_t = 0.6 mm.
Hole ∅1.3 for d_t = 0.8 mm.

(2) $0 \leq \alpha < 50°$.

(3) $|F - F| < 0.3$ mm.
F = 7.5 +0.6/–0.1 mm.

(4) A = 2.0 +1.0/–0.5 mm (pitch = 10.0 mm).
A = 2.5 +1.4/–0.5 mm (pitch = 15.0 mm).

Fig.19 Outline.

Specific reference data for the 400 V DC capacitors (monitor type)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.01 µF < C ≤ 0.027 µF	$\leq 5 \times 10^{-4}$	$\leq 15 \times 10^{-4}$
0.027 µF < C ≤ 0.075 µF	$\leq 5 \times 10^{-4}$	$\leq 20 \times 10^{-4}$
0.075 µF < C ≤ 0.11 µF	$\leq 5 \times 10^{-4}$	$\leq 25 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 400 V (DC):		
P = 10.0 mm	200 V/µs	
P = 15.0 mm	180 V/µs	
R between leads, for C ≤ 1.0 µF at 100 V; 1 minute	>100000 MΩ	
R between leads and case; 100 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	640 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 400 V DC versions (monitor type)

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 5.0 ±1.0 mm	±5%	2222 479 51...	preferred
	l_t = 3.5 ±0.5 mm	±5%	2222 479 53...	on request
Taped on reel	H = 16.0 mm; P_0 = 12.7 mm	±5%	2222 479 57...	on request
Taped on reel (bent back)	H = 16.0 mm; P_0 = 15.0 mm	±5%	2222 479 59...	preferred

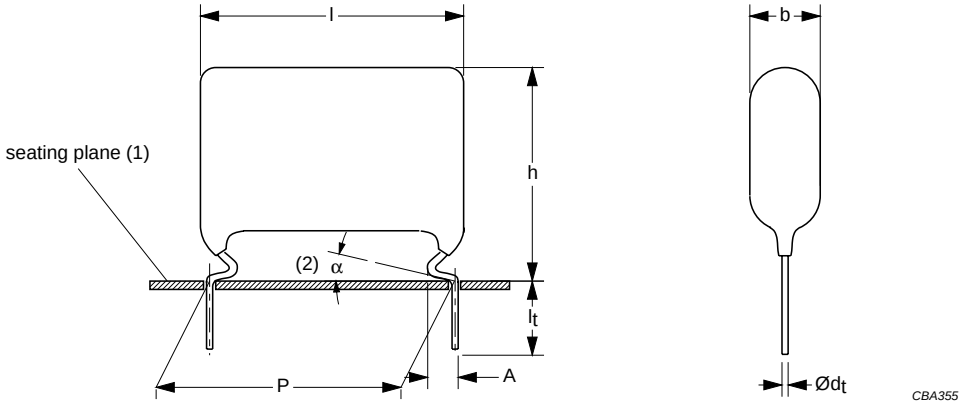
U_{Rdc} = 400 V; U_{Rac} = 200 V; U_{p-p} = 560 V (monitor type)

C (µF)	DIMENSIONS[1] $b_{max} \times h\ (h')_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER	
			LOOSE IN BOX	REEL DIAMETER = 500 mm
			l_t = 5.0 ±1.0 mm	H = 16.0 mm; P_0 = 15.0 mm
			C-tol = ±5%	C-tol = ±5%
			catalogue number	last 5 digits
Pitch = 10.0 ±0.4 mm; d_t = 0.60 ±0.06 mm				**pitch = 7.5 mm (bent back)**
0.01	6.0 × 15.0 × 12.5	0.9	2222 479 51**103**	not available
0.011			2222 479 51**113**	
0.012			2222 479 51**123**	
0.013			2222 479 51**133**	
0.015			2222 479 51**153**	
0.016			2222 479 51**163**	
0.018			2222 479 51**183**	
0.02			2222 479 51**203**	
0.022			2222 479 51**223**	
0.024			2222 479 51**243**	
0.027	6.5 × 15.5 × 12.5	1.0	2222 479 51**273**	
Pitch = 15.0 ±0.4 mm; d_t = 0.80 ±0.08 mm				**pitch = 7.5 mm (bent back)**
0.03	6.5 × 15.5 (17.0) × 18.5	1.3	2222 479 51**303**	.. 59**303**
0.033			2222 479 51**333**	.. 59**333**
0.036			2222 479 51**363**	.. 59**363**
0.039			2222 479 51**393**	.. 59**393**
0.043			2222 479 51**433**	.. 59**433**
0.047			2222 479 51**473**	.. 59**473**
0.051			2222 479 51**513**	.. 59**513**
0.056			2222 479 51**563**	.. 59**563**
0.062	7.0 × 16.0 (17.5) × 18.5	1.4	2222 479 51**623**	.. 59**623**
0.068	7.5 × 16.5 (18.0) × 18.5	1.5	2222 479 51**683**	.. 59**683**
0.075	8.0 × 17.0 (18.5) × 18.5	1.6	2222 479 51**753**	.. 59**753**
0.082			2222 479 51**823**	.. 59**823**
0.091	8.5 × 17.5 (19.0) × 18.5	1.7	2222 479 51**913**	.. 59**913**
0.1	9.0 × 18.0 (19.5) × 18.5	1.8	2222 479 51**104**	.. 59**104**
0.11	9.5 × 18.5 (20.0) × 18.5	1.9	2222 479 51**114**	.. 59**114**

Note

1. Dimensions in brackets for bent back leads.

MKP 479 GENERAL DATA **PITCH 22.5/27.5 mm**



Dimensions in mm.

(1) Hole ∅1.3 for d_t = 0.8 mm.

(2) $0 \leq \alpha < 50°$.

(3) A = 2.5+1.4/–0.5 mm.

Fig.20 Outline.

Specific reference data for the 400 V DC capacitors (monitor type)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.12 µF < C ≤ 0.18 µF	$\leq 10 \times 10^{-4}$	$\leq 30 \times 10^{-4}$
0.18 µF < C ≤ 0.3 µF	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
0.3 µF < C ≤ 0.39 µF	$\leq 10 \times 10^{-4}$	$\leq 40 \times 10^{-4}$
0.39 µF < C ≤ 0.56 µF	$\leq 10 \times 10^{-4}$	$\leq 45 \times 10^{-4}$
0.56 µF < C ≤ 0.68 µF	$\leq 10 \times 10^{-4}$	$\leq 50 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 400 V (DC):		
P = 22.5 mm	90 V/µs	
P = 27.5 mm	60 V/µs	
R between leads, for C ≤ 1.0 µF at 100 V; 1 minute	>100000 MΩ	
R between leads and case; 100 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	640 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 400 V DC versions (monitor type)

PACKAGING(1)	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 5.0 ±1.0 mm	±5%	2222 479 51...	preferred
	l_t = 3.5 ±0.5 mm	±5%	2222 479 53...	on request
Taped on reel	H = 16.0 mm; P_0 = 12.7 mm	±5%	2222 479 57...	on request

Note

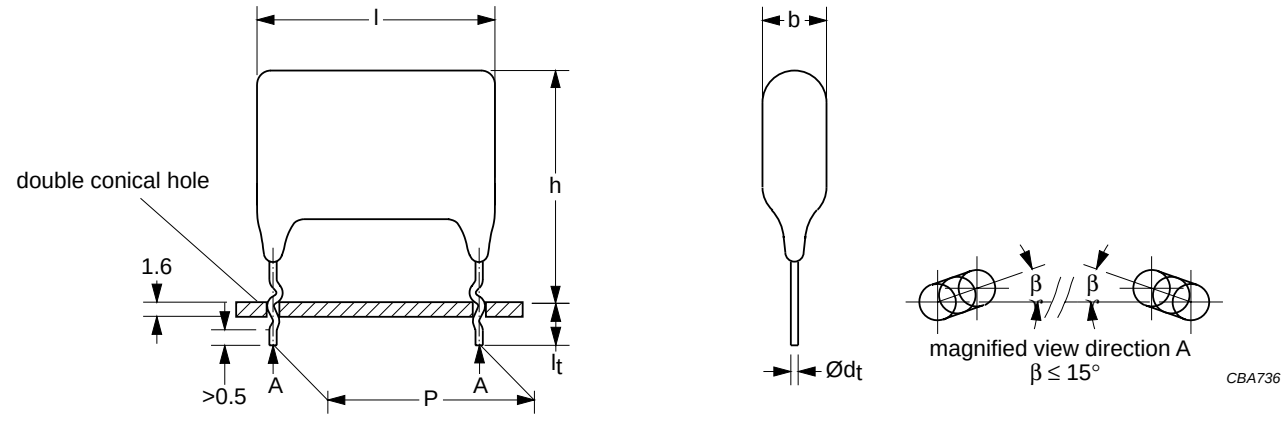
1. Taped on reel pitch = 27.5 mm is not available.

U_{Rdc} = 400 V; U_{Rac} = 200 V; U_{p-p} = 560 V (monitor type)

C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER
			LOOSE IN BOX
			l_t = 5.0 ±1.0 mm
			C-tol = ±5%
Pitch = 22.5 ±0.4 mm; d_t = 0.80 ±0.08 mm			
0.12	6.5 × 19.5 × 26.0	1.7	2222 479 51**124**
0.13	7.0 × 20.0 × 26.0	1.8	2222 479 51**134**
0.15	7.5 × 20.5 × 26.0	1.9	2222 479 51**154**
0.16			2222 479 51**164**
0.18	8.0 × 21.0 × 26.0	2.0	2222 479 51**184**
0.20	8.5 × 21.5 × 26.0	2.1	2222 479 51**204**
0.22	9.0 × 22.0 × 26.0	2.4	2222 479 51**224**
0.24			2222 479 51**244**
0.27	9.5 × 22.5 × 26.0	2.5	2222 479 51**274**
0.30	10.0 × 23.0 × 26.0	2.7	2222 479 51**304**
Pitch = 27.5 ±0.4 mm; d_t = 0.80 ±0.08 mm			
0.33	9.5 × 22.5 × 30.0	5.0	2222 479 51**334**
0.36	10.0 × 22.5 × 30.0	5.0	2222 479 51**364**
0.39	10.5 × 23.0 × 30.0	5.0	2222 479 51**394**
0.43	11.0 × 23.0 × 30.0	5.5	2222 479 51**434**
0.47	11.5 × 24.5 × 30.0	5.5	2222 479 51**474**
0.51	12.0 × 25.0 × 30.0	6.0	2222 479 51**514**
0.56	13.0 × 26.0 × 30.0	6.5	2222 479 51**564**
0.62	13.5 × 26.5 × 30.0	6.5	2222 479 51**624**
0.68	14.0 × 27.0 × 30.0	7.0	2222 479 51**684**

MKP 479 GENERAL DATA **PITCH 10/15 mm (montior type - lock lead)**

lock lead



Dimensions in mm.

Fig.21 Outline.

Specific reference data for the 400 V DC capacitors (monitor type - lock lead)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.01 µF < C ≤ 0.027 µF	$\leq 5 \times 10^{-4}$	$\leq 15 \times 10^{-4}$
0.027 µF < C ≤ 0.075 µF	$\leq 5 \times 10^{-4}$	$\leq 20 \times 10^{-4}$
0.075 µF < C ≤ 0.11 µF	$\leq 5 \times 10^{-4}$	$\leq 25 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 630 V (DC):		
P = 10.0 mm	100 V/µs	
P = 15.0 mm	90 V/µs	
R between leads, for C ≤ 1.0 µF at 500 V; 1 minute	>100000 MΩ	
R between leads and case; 500 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	1008 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 400 V DC versions (monitor type - lock lead)

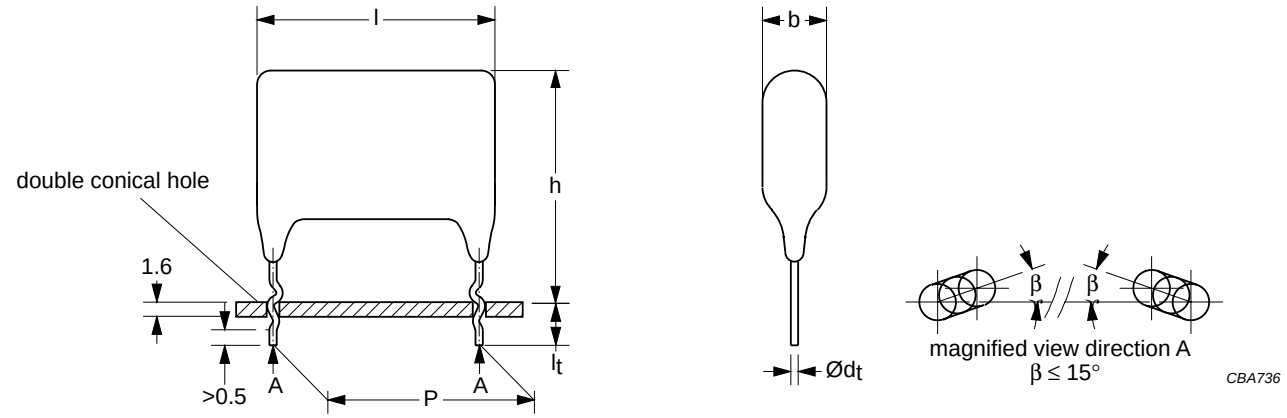
PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 4.0 +1.0/–0.5 mm	±5%	2222 479 90...	preferred

U_{Rdc} = 400 V; U_{Rac} = 200 V; U_{p-p} = 560 V (monitor type - lock lead)

C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER LOOSE IN BOX l_t = 4.0 +1.0/−0.5 mm C-tol = ±5%
Pitch = 10.0 ±1.0 mm; d_t = 0.60 ±0.06 mm			
0.01	6.0 × 18.0 × 12.5	0.9	2222 479 90**427**
0.011			2222 479 90**428**
0.012			2222 479 90**429**
0.013			2222 479 90**431**
0.015			2222 479 90**432**
0.016			2222 479 90**433**
0.018			2222 479 90**434**
0.02			2222 479 90**435**
0.022			2222 479 90**436**
0.024			2222 479 90**437**
0.027	6.5 × 18.5 × 12.5	1.0	2222 479 90**438**
Pitch = 15.0 ±1.0 mm; d_t = 0.80 ±0.08 mm			
0.03	6.5 × 18.5 × 18.5	1.3	2222 479 90**439**
0.033			2222 479 90**441**
0.036			2222 479 90**442**
0.039			2222 479 90**443**
0.043			2222 479 90**444**
0.047			2222 479 90**445**
0.051			2222 479 90**446**
0.056			2222 479 90**447**
0.062	7.0 × 19.0 × 18.5	1.4	2222 479 90**448**
0.068	7.5 × 19.5 × 18.5	1.5	2222 479 90**449**
0.075	8.0 × 20.0 × 18.5	1.6	2222 479 90**451**
0.082			2222 479 90**452**
0.091	8.5 × 20.5 × 18.5	1.7	2222 479 90**453**
0.1	9.0 × 21.0 × 18.5	1.8	2222 479 90**454**
0.11	9.5 × 21.5 × 18.5	1.9	2222 479 90**455**

MKP 479 GENERAL DATA **PITCH 22.5/27.5 mm (monitor type - lock lead)**

lock lead



Dimensions in mm.

Fig.22 Outline.

Specific reference data for the 400 V DC capacitors (monitor type - lock lead)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.12 µF < C ≤ 0.18 µF	$\leq 10 \times 10^{-4}$	$\leq 30 \times 10^{-4}$
0.18 µF < C ≤ 0.3 µF	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
0.3 µF < C ≤ 0.39 µF	$\leq 10 \times 10^{-4}$	$\leq 40 \times 10^{-4}$
0.39 µF < C ≤ 0.56 µF	$\leq 10 \times 10^{-4}$	$\leq 45 \times 10^{-4}$
0.56 µF < C ≤ 0.68 µF	$\leq 10 \times 10^{-4}$	$\leq 50 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 630 V (DC):		
P = 22.5 mm	45 V/µs	
P = 27.5 mm	30 V/µs	
R between leads, for C ≤ 1.0 µF at 500 V; 1 minute	>100000 MΩ	
R between leads and case; 500 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	1008 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 400 V DC versions (monitor type - lock lead)

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 4.0 +1.0/–0.5 mm	±5%	2222 479 90...	preferred

U_{Rdc} = 400 V; U_{Rac} = 200 V; U_{p-p} = 560 V (monitor type - lock lead)

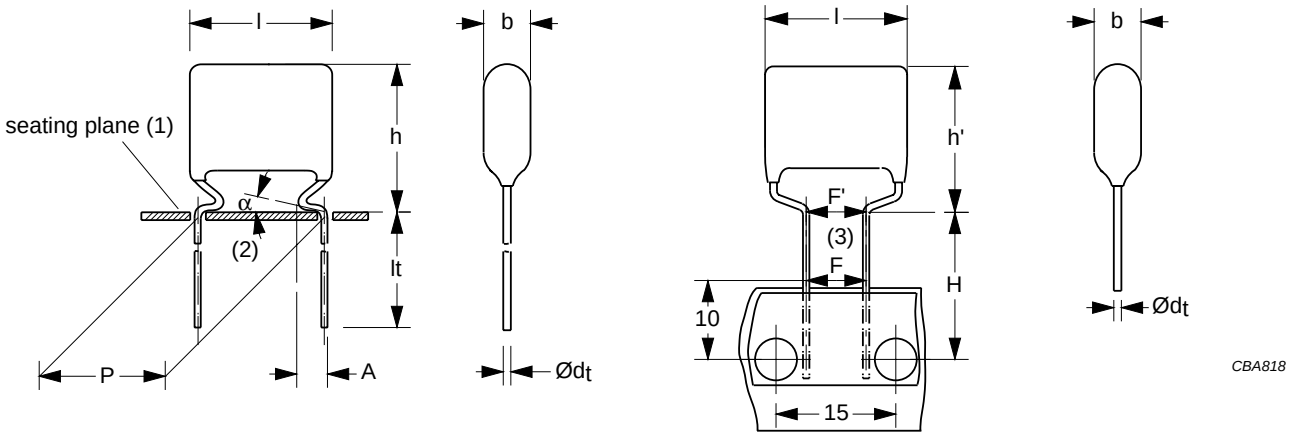
C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER
			LOOSE IN BOX
			l_t = 4.0 +1.0/−0.5 mm
			C-tol = ±5%
Pitch = 22.5 ±1.0 mm; d_t = 0.80 ±0.08 mm			
0.12	6.5 × 22.5 × 26.0	1.7	2222 479 90**456**
0.13	7.0 × 23.0 × 26.0	1.8	2222 479 90**457**
0.15	7.5 × 23.5 × 26.0	1.9	2222 479 90**458**
0.16			2222 479 90**459**
0.18	8.0 × 24.0 × 26.0	2.0	2222 479 90**461**
0.20	8.5 × 24.5 × 26.0	2.1	2222 479 90**462**
0.22	9.0 × 25.0 × 26.0	2.4	2222 479 90**463**
0.24			2222 479 90**464**
0.27	9.5 × 25.5 × 26.0	2.5	2222 479 90**465**
0.30	10.0 × 26.0 × 26.0	2.7	2222 479 90**466**
Pitch = 27.5 ±1.0 mm; d_t = 0.80 ±0.08 mm			
0.33	9.5 × 25.5 × 30.0	5.0	2222 479 90**467**
0.36	10.0 × 25.5 × 30.0	5.0	2222 479 90**468**
0.39	10.5 × 26.0 × 30.0	5.0	2222 479 90**469**
0.43	11.0 × 26.0 × 30.0	5.5	2222 479 90**471**
0.47	11.5 × 27.5 × 30.0	5.5	2222 479 90**472**
0.51	12.0 × 28.0 × 30.0	6.0	2222 479 90**473**
0.56	13.0 × 29.0 × 30.0	6.5	2222 479 90**474**
0.62	13.5 × 29.5 × 30.0	6.5	2222 479 90**475**
0.68	14.0 × 30.0 × 30.0	7.0	2222 479 90**476**

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP 479 GENERAL DATA

PITCH 10/15 mm
PITCH 7.5 mm (bent back leads)



Dimensions in mm.

(1) Hole ∅1.0 for d_t = 0.6 mm.
Hole ∅1.3 for d_t = 0.8 mm.

(2) $0 \leq \alpha < 50°$.

(3) $|F - F| < 0.3$ mm.
F = 7.5 +0.6/–0.1 mm.

(4) A = 2.0 +1.0/–0.5 mm (pitch = 10.0 mm).
A = 2.5 +1.4/–0.5 mm (pitch = 15.0 mm).

Fig.23 Outline.

Specific reference data for the 630 V DC capacitors

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.01 µF < C ≤ 0.027 µF	$\leq 5 \times 10^{-4}$	$\leq 15 \times 10^{-4}$
0.027 µF < C ≤ 0.075 µF	$\leq 5 \times 10^{-4}$	$\leq 20 \times 10^{-4}$
0.075 µF < C ≤ 0.11 µF	$\leq 5 \times 10^{-4}$	$\leq 25 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 630 V (DC):		
P = 10.0 mm	100 V/µs	
P = 15.0 mm	90 V/µs	
R between leads, for C ≤ 1.0 µF at 500 V; 1 minute	>100000 MΩ	
R between leads and case; 500 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	1008 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 630 V DC versions

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 5.0 ±1.0 mm	±5%	2222 479 62...	preferred
	l_t = 3.5 ±0.5 mm	±5%	2222 479 64...	on request
Taped on reel	H = 16.0 mm; P_0 = 12.7 mm	±5%	2222 479 65...	on request
Taped on reel (bent back)	H = 16.0 mm; P_0 = 15.0 mm	±5%	2222 479 66...	preferred

AC and pulse metallized polypropylene film capacitors

MKP 479

U_{Rdc} = 630 V; U_{Rac} = 200 V; U_{p-p} = 560 V

C (µF)	DIMENSIONS[1] $b_{max} \times h\ (h')_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER	
			LOOSE IN BOX	REEL DIAMETER = 500 mm
			l_t = 5.0 ±1.0 mm	H = 16.0 mm; P_0 = 15.0 mm
			C-tol = ±5%	C-tol = ±5%
			catalogue number	last 5 digits
Pitch = 10.0 ±0.4 mm; d_t = 0.60 ±0.06 mm				**pitch = 7.5 mm (bent back)**
0.01	6.0 × 15.0 × 12.5	0.9	2222 479 62**103**	not available
0.011			2222 479 62**113**	
0.012			2222 479 62**123**	
0.013			2222 479 62**133**	
0.015			2222 479 62**153**	
0.016			2222 479 62**163**	
0.018			2222 479 62**183**	
0.02			2222 479 62**203**	
0.022			2222 479 62**223**	
0.024			2222 479 62**243**	
0.027	6.5 × 15.5 × 12.5	1.0	2222 479 62**273**	
Pitch = 15.0 ±0.4 mm; d_t = 0.80 ±0.08 mm				**pitch = 7.5 mm (bent back)**
0.03	6.5 × 15.5 (17.0) × 18.5	1.3	2222 479 62**303**	.. 66**303**
0.033			2222 479 62**333**	.. 66**333**
0.036			2222 479 62**363**	.. 66**363**
0.039			2222 479 62**393**	.. 66**393**
0.043			2222 479 62**433**	.. 66**433**
0.047			2222 479 62**473**	.. 66**473**
0.051			2222 479 62**513**	.. 66**513**
0.056			2222 479 62**563**	.. 66**563**
0.062	7.0 × 16.0 (17.5) × 18.5	1.4	2222 479 62**623**	.. 66**623**
0.068	7.5 × 16.5 (18.0) × 18.5	1.5	2222 479 62**683**	.. 66**683**
0.075	8.0 × 17.0 (18.5) × 18.5	1.6	2222 479 62**753**	.. 66**753**
0.082			2222 479 62**823**	.. 66**823**
0.091	8.5 × 17.5 (19.0) × 18.5	1.7	2222 479 62**913**	.. 66**913**
0.1	9.0 × 18.0 (19.5) × 18.5	1.8	2222 479 62**104**	.. 66**104**
0.11	9.5 × 18.5 (20.0) × 18.5	1.9	2222 479 62**114**	.. 66**114**

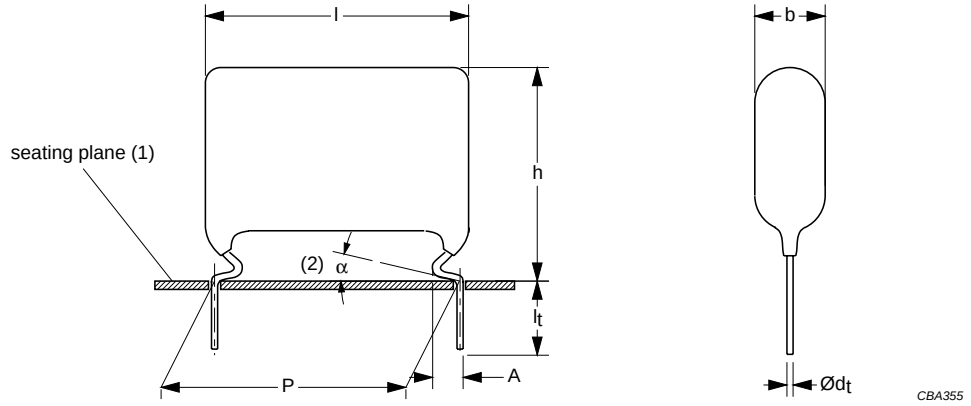
Note

1. Dimensions in brackets for bent back leads.

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP 479 GENERAL DATA **PITCH 22.5/27.5 mm**



Dimensions in mm.

(1) Hole ∅1.3 for d_t = 0.8 mm.

(2) $0 \leq \alpha < 50°$.

(3) A = 2.5+1.4/–0.5 mm.

Fig.24 Outline.

Specific reference data for the 630 V DC capacitors

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.12 µF < C ≤ 0.18 µF	$\leq 10 \times 10^{-4}$	$\leq 30 \times 10^{-4}$
0.18 µF < C ≤ 0.3 µF	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
0.3 µF < C ≤ 0.39 µF	$\leq 10 \times 10^{-4}$	$\leq 40 \times 10^{-4}$
0.39 µF < C ≤ 0.56 µF	$\leq 10 \times 10^{-4}$	$\leq 45 \times 10^{-4}$
0.56 µF < C ≤ 0.68 µF	$\leq 10 \times 10^{-4}$	$\leq 50 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 630 V (DC):		
P = 22.5 mm	45 V/µs	
P = 27.5 mm	30 V/µs	
R between leads, for C ≤ 1.0 µF at 500 V; 1 minute	>100000 MΩ	
R between leads and case; 500 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	1008 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 630 V DC versions

PACKAGING(1)	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 5.0 ±1.0 mm	±5%	2222 479 62...	preferred
	l_t = 3.5 ±0.5 mm	±5%	2222 479 64...	on request
Taped on reel	H = 16.0 mm; P_0 = 12.7 mm	±5%	2222 479 65...	on request

Note

1. Taped on reel pitch = 27.5 mm is not available.

AC and pulse metallized polypropylene film capacitors

MKP 479

U_{Rdc} = 630 V; U_{Rac} = 200 V; U_{p-p} = 560 V

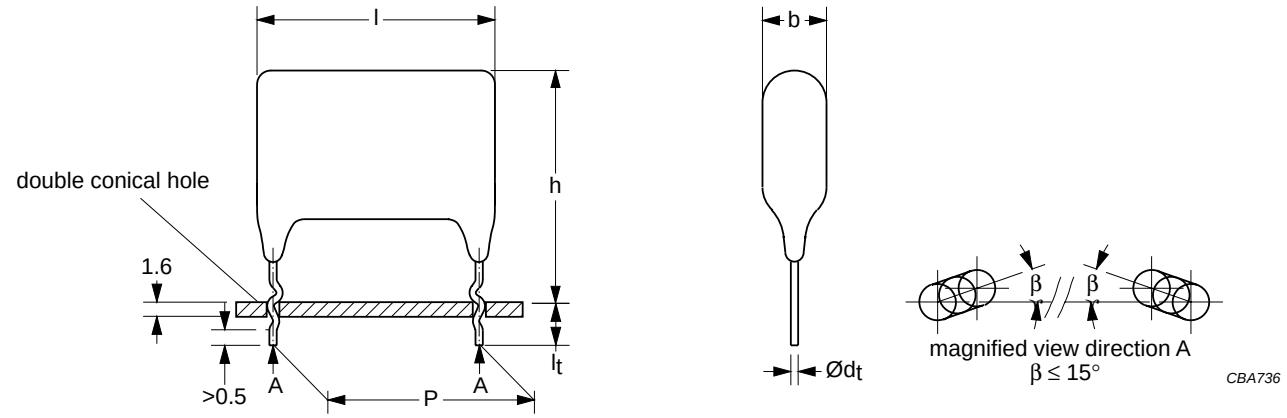
C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER
			LOOSE IN BOX
			l_t = 5.0 ±1.0 mm
			C-tol = ±5%
Pitch = 22.5 ±0.4 mm; d_t = 0.80 ±0.08 mm			
0.12	6.5 × 19.5 × 26.0	1.7	2222 479 62**124**
0.13	7.0 × 20.0 × 26.0	1.8	2222 479 62**134**
0.15	7.5 × 20.5 × 26.0	1.9	2222 479 62**154**
0.16			2222 479 62**164**
0.18	8.0 × 21.0 × 26.0	2.0	2222 479 62**184**
0.20	8.5 × 21.5 × 26.0	2.1	2222 479 62**204**
0.22	9.0 × 22.0 × 26.0	2.4	2222 479 62**224**
0.24			2222 479 62**244**
0.27	9.5 × 22.5 × 26.0	2.5	2222 479 62**274**
0.30	10.0 × 23.0 × 26.0	2.7	2222 479 62**304**
Pitch = 27.5 ±0.4 mm; d_t = 0.80 ±0.08 mm			
0.33	9.5 × 22.5 × 30.0	5.0	2222 479 62**334**
0.36	10.0 × 22.5 × 30.0	5.0	2222 479 62**364**
0.39	10.5 × 23.0 × 30.0	5.0	2222 479 62**394**
0.43	11.0 × 23.0 × 30.0	5.5	2222 479 62**434**
0.47	11.5 × 24.5 × 30.0	5.5	2222 479 62**474**
0.51	12.0 × 25.0 × 30.0	6.0	2222 479 62**514**
0.56	13.0 × 26.0 × 30.0	6.5	2222 479 62**564**
0.62	13.5 × 26.5 × 30.0	6.5	2222 479 62**624**
0.68	14.0 × 27.0 × 30.0	7.0	2222 479 62**684**

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP 479 GENERAL DATA **PITCH 10/15 mm (lock lead)**

lock lead



Dimensions in mm.

Fig.25 Outline.

Specific reference data for the 630 V DC capacitors (lock lead)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.01 µF < C ≤ 0.027 µF	$\leq 5 \times 10^{-4}$	$\leq 15 \times 10^{-4}$
0.027 µF < C ≤ 0.075 µF	$\leq 5 \times 10^{-4}$	$\leq 20 \times 10^{-4}$
0.075 µF < C ≤ 0.11 µF	$\leq 5 \times 10^{-4}$	$\leq 25 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 630 V (DC):		
P = 10.0 mm	100 V/µs	
P = 15.0 mm	90 V/µs	
R between leads, for C ≤ 1.0 µF at 500 V; 1 minute	>100000 MΩ	
R between leads and case; 500 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	1008 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 630 V DC versions (lock lead)

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 4.0 +1.0/–0.5 mm	±5%	2222 479 90...	preferred

AC and pulse metallized polypropylene film capacitors

MKP 479

U_{Rdc} = 630 V; U_{Rac} = 200 V; U_{p-p} = 560 V (lock lead)

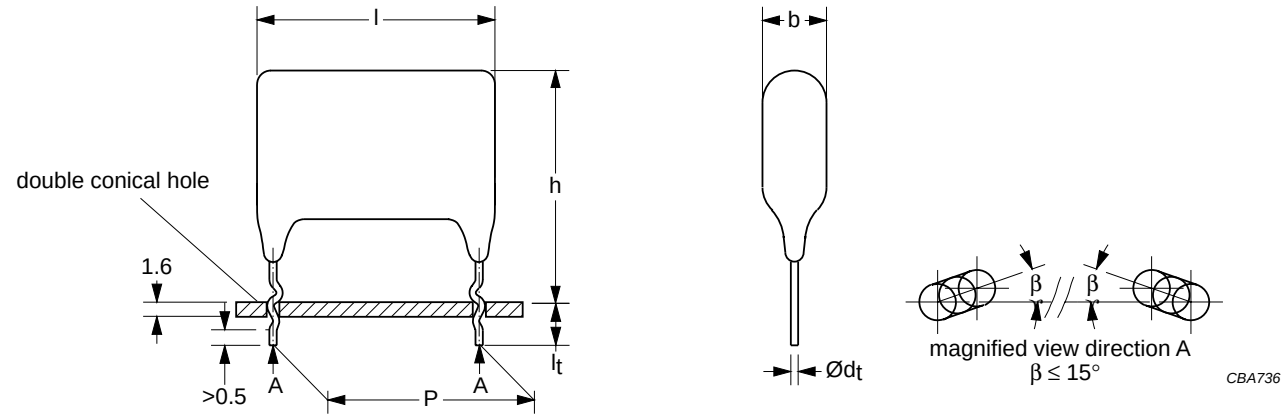
C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER LOOSE IN BOX l_t = 4.0 +1.0/−0.5 mm C-tol = ±5%
Pitch = 10.0 ±1.0 mm; d_t = 0.60 ±0.06 mm			
0.01	6.0 × 18.0 × 12.5	0.9	2222 479 90**199**
0.011			2222 479 90**201**
0.012			2222 479 90**202**
0.013			2222 479 90**203**
0.015			2222 479 90**204**
0.016			2222 479 90**205**
0.018			2222 479 90**206**
0.02			2222 479 90**207**
0.022			2222 479 90**208**
0.024			2222 479 90**209**
0.027	6.5 × 18.5 × 12.5	1.0	2222 479 90**211**
Pitch = 15.0 ±1.0 mm; d_t = 0.80 ±0.08 mm			
0.03	6.5 × 18.5 × 18.5	1.3	2222 479 90**212**
0.033			2222 479 90**213**
0.036			2222 479 90**214**
0.039			2222 479 90**215**
0.043			2222 479 90**216**
0.047			2222 479 90**217**
0.051			2222 479 90**218**
0.056			2222 479 90**219**
0.062	7.0 × 19.0 × 18.5	1.4	2222 479 90**221**
0.068	7.5 × 19.5 × 18.5	1.5	2222 479 90**222**
0.075	8.0 × 20.0 × 18.5	1.6	2222 479 90**223**
0.082			2222 479 90**224**
0.091	8.5 × 20.5 × 18.5	1.7	2222 479 90**225**
0.1	9.0 × 21.0 × 18.5	1.8	2222 479 90**226**
0.11	9.5 × 21.5 × 18.5	1.9	2222 479 90**227**

AC and pulse metallized polypropylene film capacitors

MKP 479

MKP 479 GENERAL DATA **PITCH 22.5/27.5 mm (lock lead)**

lock lead



Dimensions in mm.

Fig.26 Outline.

Specific reference data for the 630 V DC capacitors (lock lead)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.12 µF < C ≤ 0.18 µF	$\leq 10 \times 10^{-4}$	$\leq 30 \times 10^{-4}$
0.18 µF < C ≤ 0.3 µF	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
0.3 µF < C ≤ 0.39 µF	$\leq 10 \times 10^{-4}$	$\leq 40 \times 10^{-4}$
0.39 µF < C ≤ 0.56 µF	$\leq 10 \times 10^{-4}$	$\leq 45 \times 10^{-4}$
0.56 µF < C ≤ 0.68 µF	$\leq 10 \times 10^{-4}$	$\leq 50 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ at 630 V (DC):		
P = 22.5 mm	45 V/µs	
P = 27.5 mm	30 V/µs	
R between leads, for C ≤ 1.0 µF at 500 V; 1 minute	>100000 MΩ	
R between leads and case; 500 V; 1 minute	>100000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>220 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	1008 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

Available 630 V DC versions (lock lead)

PACKAGING	DIMENSIONS	C-tol	FIRST 9 DIGITS OF CATALOGUE NUMBER	ORDERING
Loose in box	l_t = 4.0 +1.0/–0.5 mm	±5%	2222 479 90...	preferred

AC and pulse metallized polypropylene film capacitors

MKP 479

U_{Rdc} = 630 V; U_{Rac} = 200 V; U_{p-p} = 560 V (lock lead)

C (µF)	DIMENSIONS $b_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOGUE NUMBER LOOSE IN BOX l_t = 4.0 +1.0/−0.5 mm C-tol = ±5%
Pitch = 22.5 ±1.0 mm; d_t = 0.80 ±0.08 mm			
0.12	6.5 × 22.5 × 26.0	1.7	2222 479 90**228**
0.13	7.0 × 23.0 × 26.0	1.8	2222 479 90**229**
0.15	7.5 × 23.5 × 26.0	1.9	2222 479 90**231**
0.16			2222 479 90**232**
0.18	8.0 × 24.0 × 26.0	2.0	2222 479 90**233**
0.20	8.5 × 24.5 × 26.0	2.1	2222 479 90**234**
0.22	9.0 × 25.0 × 26.0	2.4	2222 479 90**235**
0.24			2222 479 90**236**
0.27	9.5 × 25.5 × 26.0	2.5	2222 479 90**237**
0.30	10.0 × 26.0 × 26.0	2.7	2222 479 90**238**
Pitch = 27.5 ±1.0 mm; d_t = 0.80 ±0.08 mm			
0.33	9.5 × 25.5 × 30.0	5.0	2222 479 90**239**
0.36	10.0 × 25.5 × 30.0	5.0	2222 479 90**241**
0.39	10.5 × 26.0 × 30.0	5.0	2222 479 90**242**
0.43	11.0 × 26.0 × 30.0	5.5	2222 479 90**243**
0.47	11.5 × 27.5 × 30.0	5.5	2222 479 90**244**
0.51	12.0 × 28.0 × 30.0	6.0	2222 479 90**245**
0.56	13.0 × 29.0 × 30.0	6.5	2222 479 90**246**
0.62	13.5 × 29.5 × 30.0	6.5	2222 479 90**247**
0.68	14.0 × 30.0 × 30.0	7.0	2222 479 90248

AC and pulse metallized polypropylene film capacitors

MKP 479

CONSTRUCTION

Description

- Low-inductive wound cell of metallized polypropylene (PP) film, epoxy lacquered
- Radial leads, solder-coated wire.

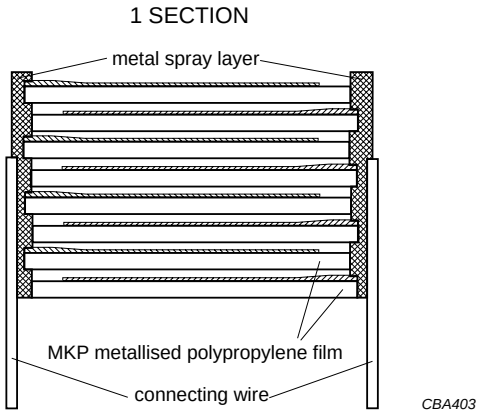


Fig.27 Construction.

Mounting

NORMAL USE

The capacitors are designed for mounting on printed-circuit boards. The capacitors packed in bandoliers are designed for mounting on printed-circuit boards by automatic insertion machines.

For detailed tape specifications refer to this handbook, chapter *"Packaging information"*.

SPECIFIC METHOD OF MOUNTING TO WITHSTAND VIBRATION AND SHOCK

In order to withstand vibration and shock tests, it must be ensured that the underside of the crimps are in good contact with the printed-circuit board:

- For original pitches of ≤15 mm the capacitors shall be mechanically fixed by the leads.
- For larger pitches the capacitors shall be mounted in the same way and the body clamped.

Storage temperature

- Storage temperature: T_{stg} = –25 to +40 °C with RH maximum 80% without condensation.

RATINGS AND CHARACTERISTICS REFERENCE CONDITIONS

Unless otherwise specified, all electrical values apply to an ambient free air temperature of 23 ±1 °C, an atmospheric pressure of 86 to 106 kPa and a relative humidity of 50 ±2%.

For reference testing, a conditioning period shall be applied over 96 ±4 hours by heating the products in a circulating air oven at the rated temperature and a relative humidity not exceeding 20%.

CHARACTERISTICS

Capacitance

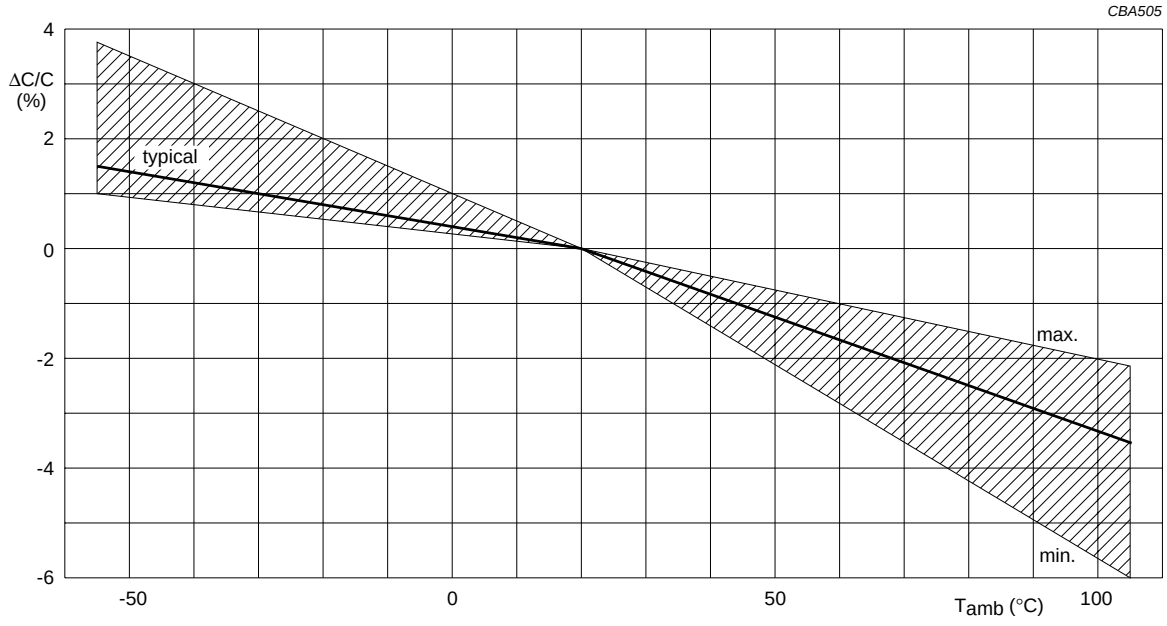


Fig.28 Capacitance change at 1 kHz as a function of temperature.

Impedance

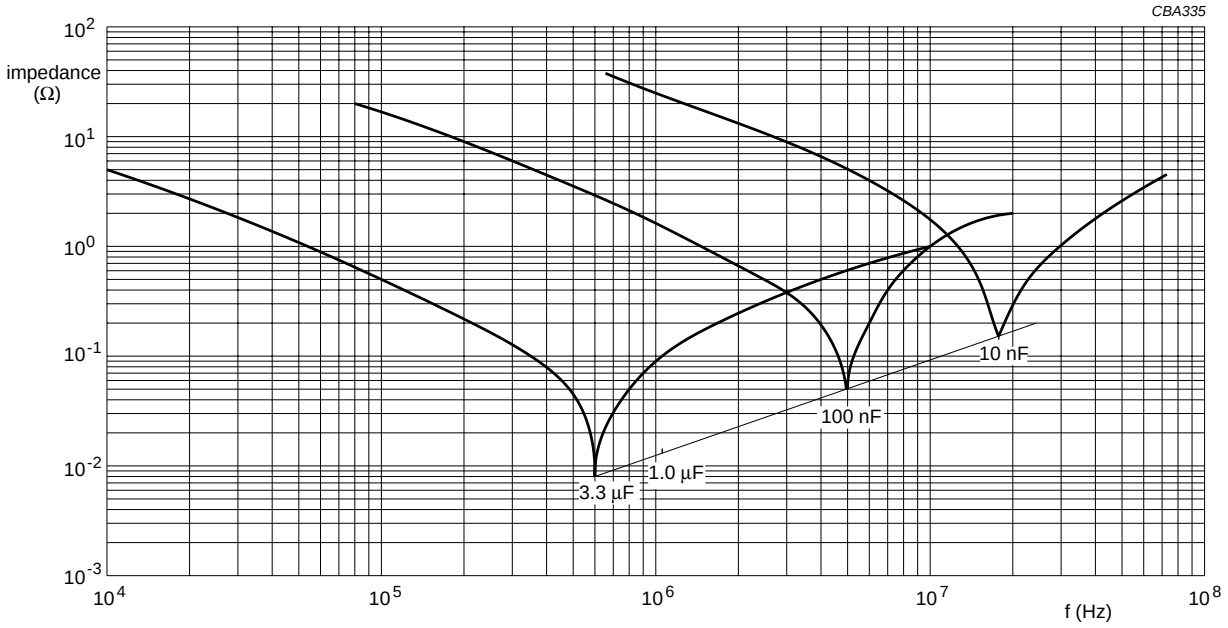


Fig.29 Impedance as a function of frequency: typical curves.

Maximum DC and AC voltage as a function of temperature

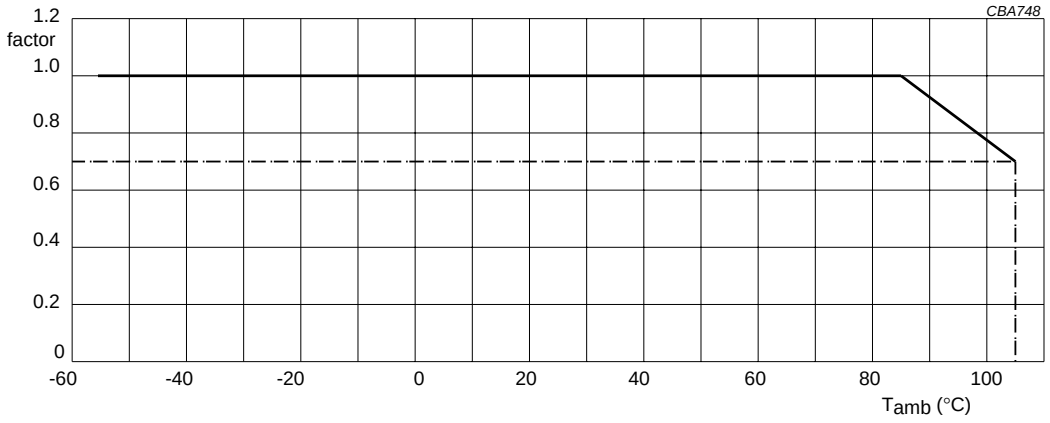


Fig.30 Multiplying factor for DC and AC voltage as a function of temperature.

Maximum RMS voltage (sinewave) as a function of frequency

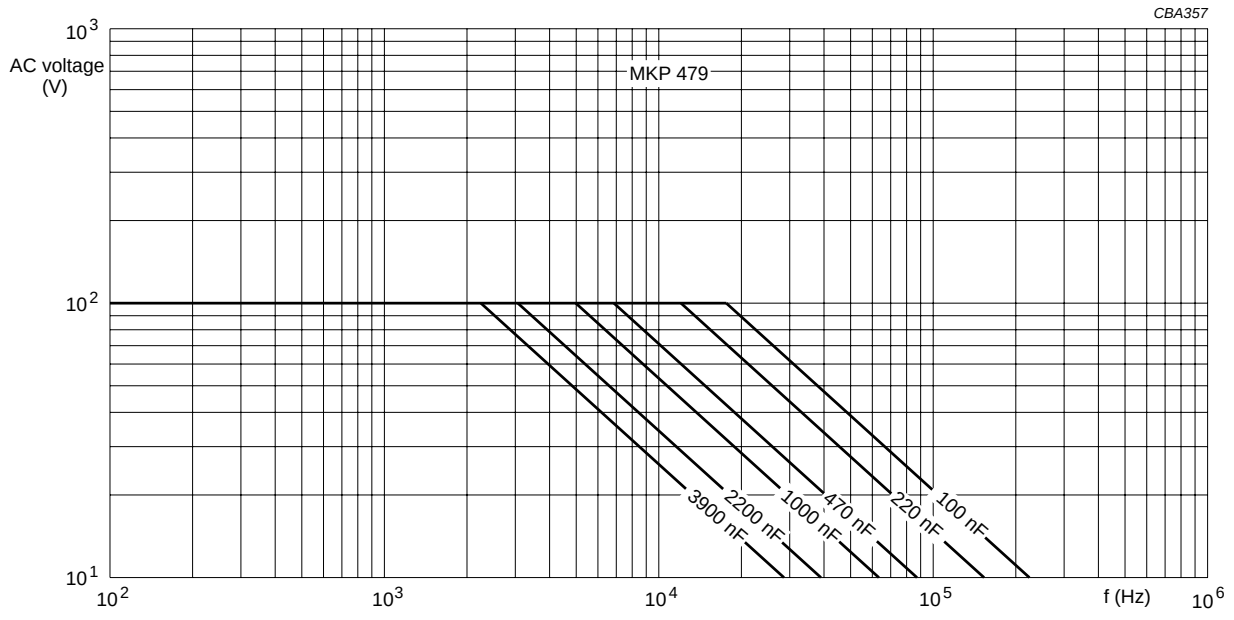


Fig.31 AC voltage (RMS value) as a function of frequency at $T_{amb} \leq 85$ °C for $U_{Rdc} = 160$ V.

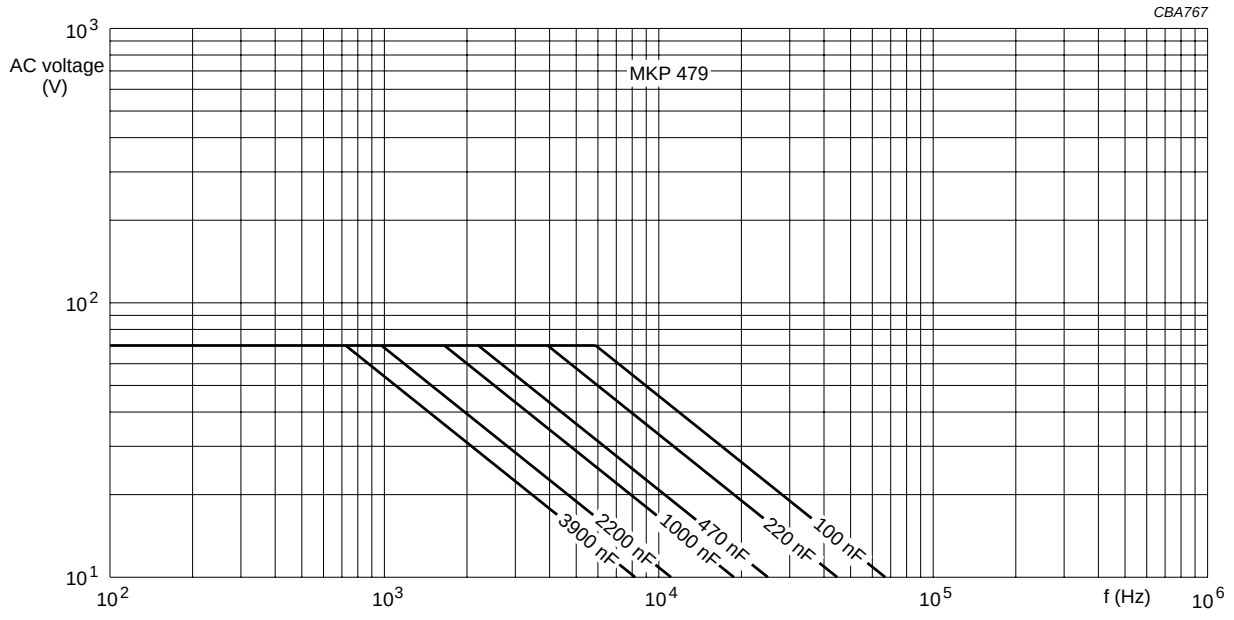


Fig.32 AC voltage (RMS value) as a function of frequency at 85 °C < $T_{amb} \leq 105$ °C for $U_{Rdc} = 160$ V.

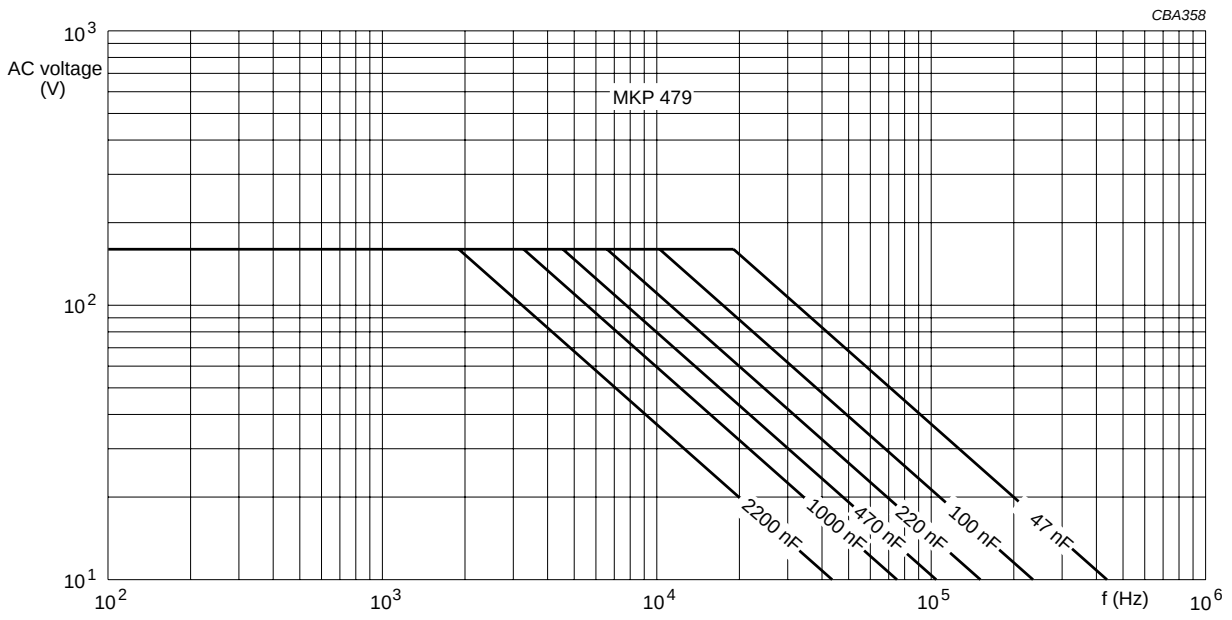


Fig.33 AC voltage (RMS value) as a function of frequency at $T_{amb} \leq 85$ °C for $U_{Rdc} = 250$ V.

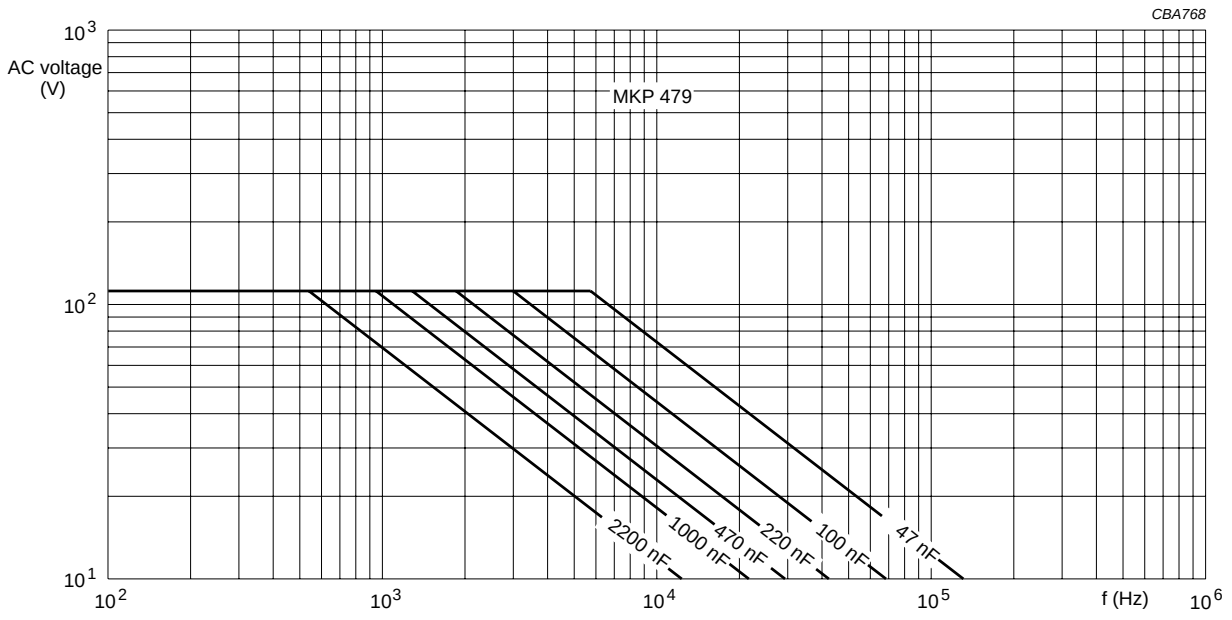


Fig.34 AC voltage (RMS value) as a function of frequency at 85 °C < $T_{amb} \leq 105$ °C for $U_{Rdc} = 250$ V.

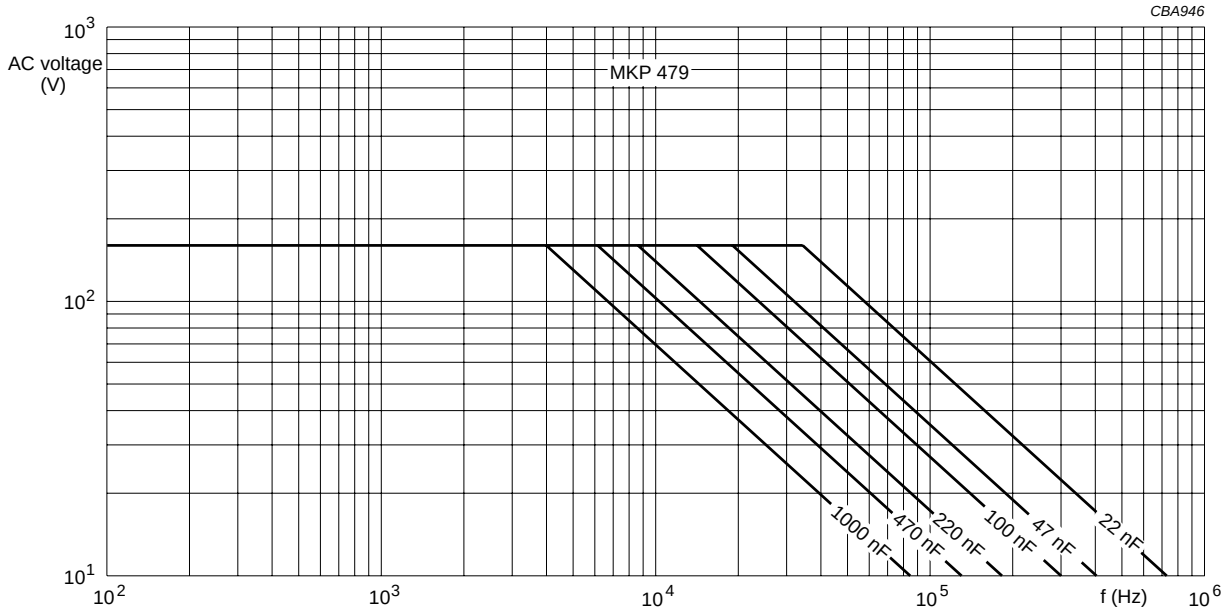


Fig.35 AC voltage (RMS value) as a function of frequency at $T_{amb} \leq 85$ °C for $U_{Rdc} = 250$ V (monitor type).

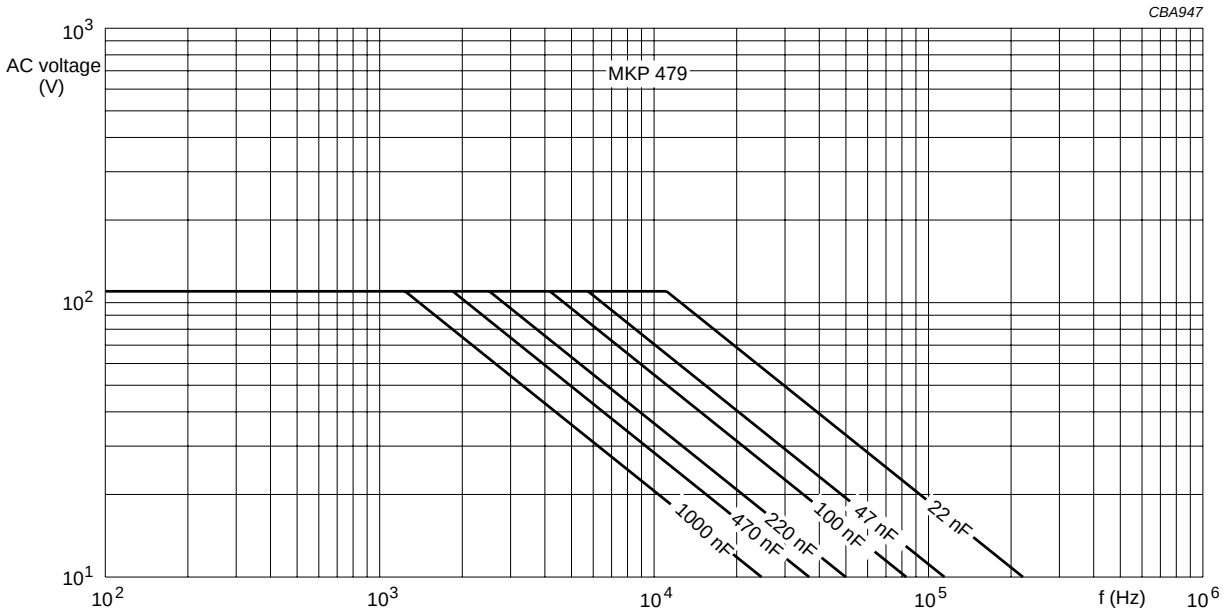


Fig.36 AC voltage (RMS value) as a function of frequency at 85 °C < $T_{amb} \leq 105$ °C for $U_{Rdc} = 250$ V (monitor type).

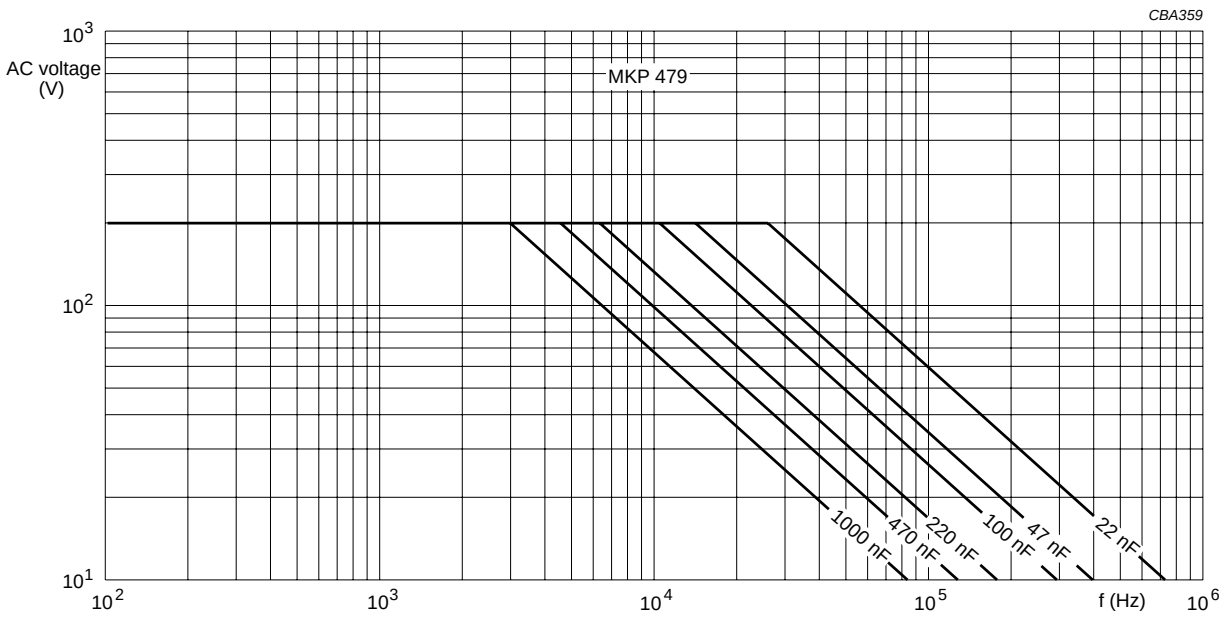


Fig.37 AC voltage (RMS value) as a function of frequency at $T_{amb} \leq 85$ °C for $U_{Rdc} = 400$ V.

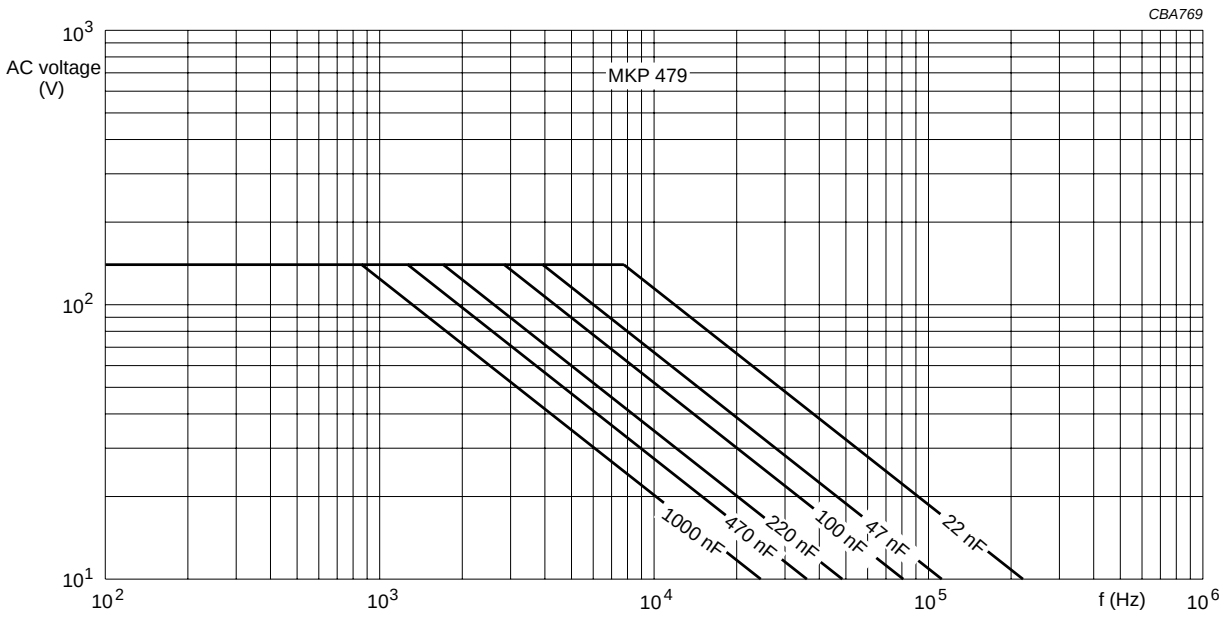


Fig.38 AC voltage (RMS value) as a function of frequency at 85 °C < $T_{amb} \leq 105$ °C for $U_{Rdc} = 400$ V.

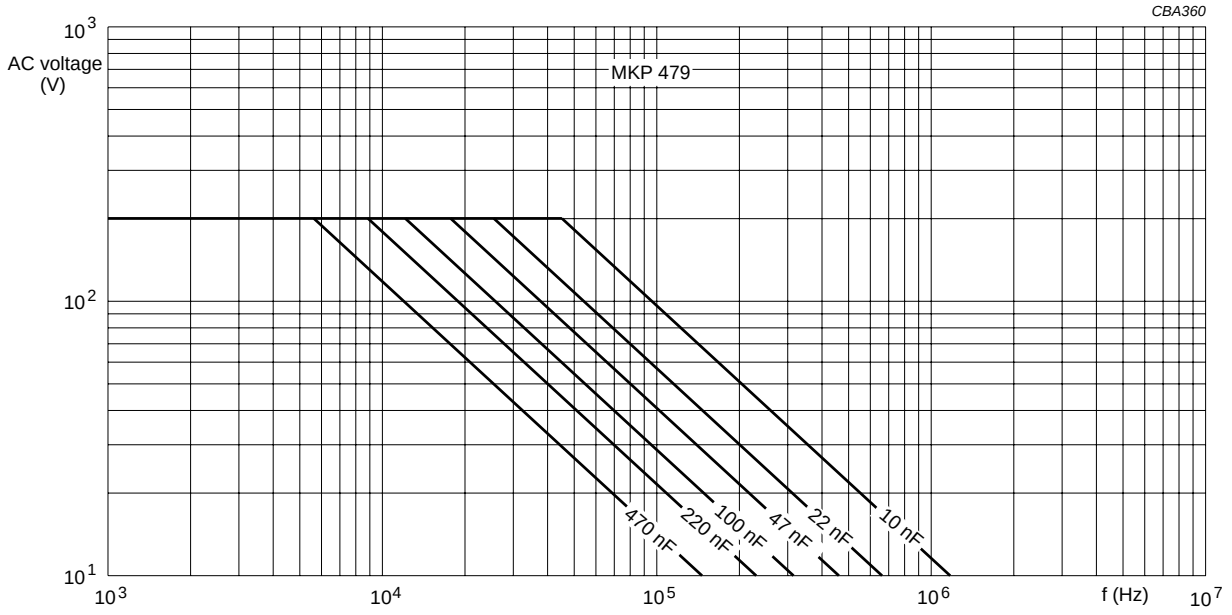


Fig.39 AC voltage (RMS value) as a function of frequency at $T_{amb} \leq 85$ °C for $U_{Rdc} = 400$ V (monitor type).

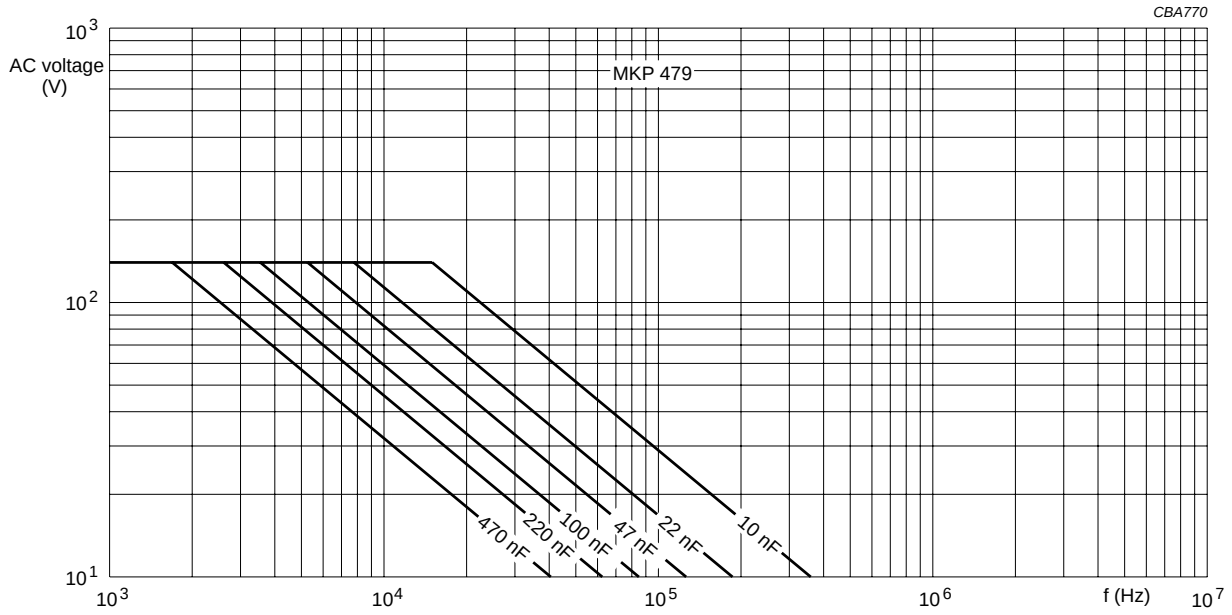


Fig.40 AC voltage (RMS value) as a function of frequency at 85 °C < $T_{amb} \leq 105$ °C for $U_{Rdc} = 400$ V (monitor type).

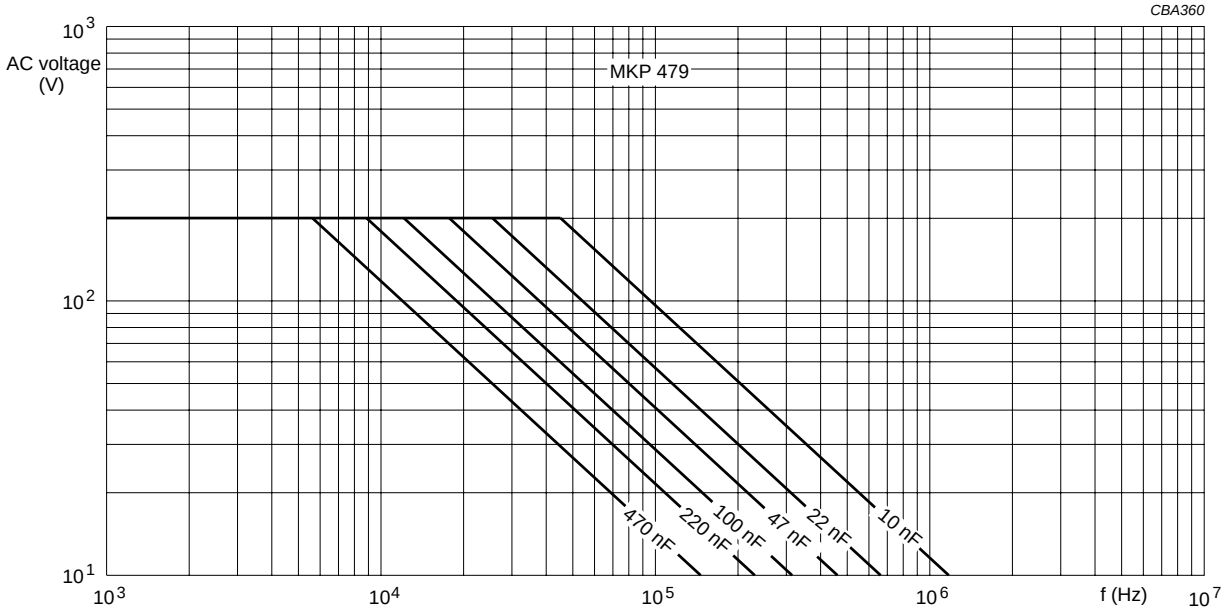


Fig.41 AC voltage (RMS value) as a function of frequency at $T_{amb} \leq 85$ °C for $U_{Rdc} = 630$ V.

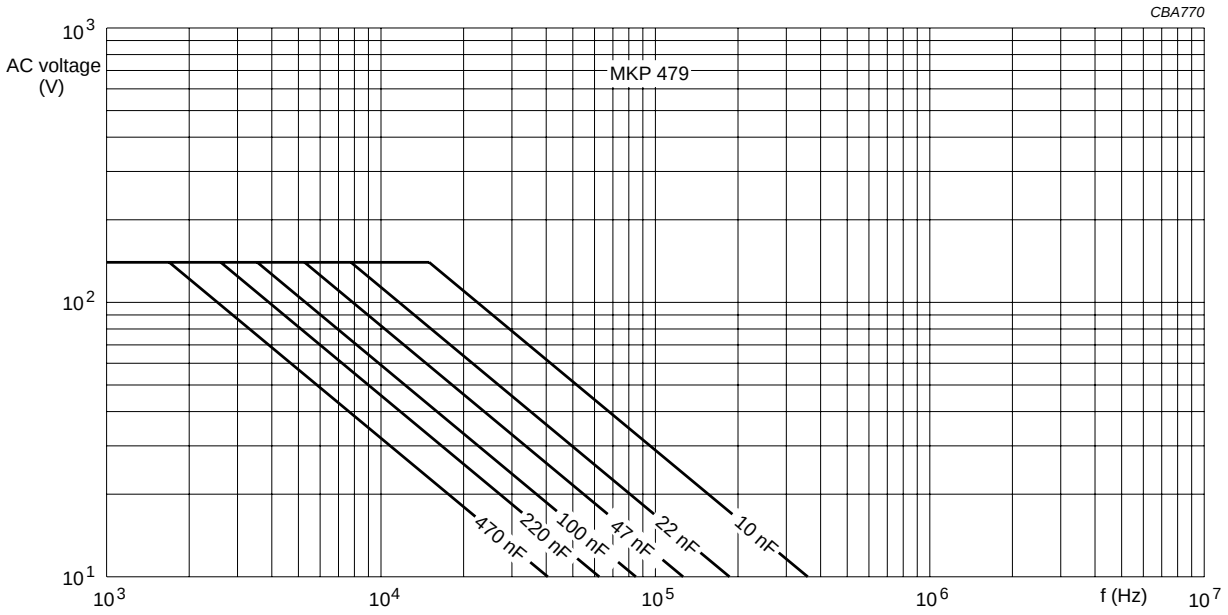


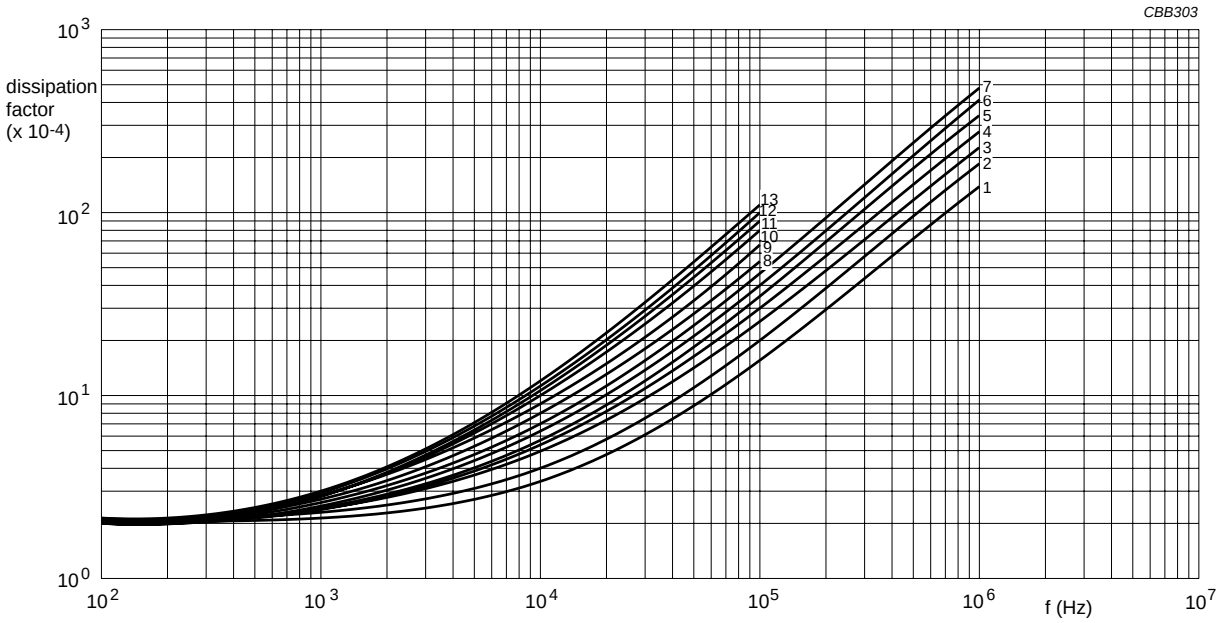
Fig.42 AC voltage (RMS value) as a function of frequency at 85 °C < $T_{amb} \leq 105$ °C for $U_{Rdc} = 630$ V.

Maximum RMS current (sinewave) as a function of frequency

The maximum RMS current is defined by $I_{ac} = \omega \times C \times U_{ac}$.

U_{ac} is the maximum AC voltage depending on the ambient temperature in Figs 31 to 42.

Tangent of loss angle



160 V:
C ≤ 0.10 µF, curve 2.
C ≤ 0.16 µF, curve 3.
C ≤ 0.75 µF, curve 4.
C ≤ 1.0 µF, curve 8.
C ≤ 1.8 µF, curve 9.
C ≤ 3.0 µF, curve 10.
C ≤ 3.9 µF, curve 13.

250 V:
C ≤ 0.068 µF, curve 1.
C ≤ 0.091 µF, curve 2.
C ≤ 0.220 µF, curve 3.
C ≤ 0.470 µF, curve 4.
C ≤ 0.680 µF, curve 7.
C ≤ 1.0 µF, curve 9.
C ≤ 2.0 µF, curve 11.
C ≤ 2.7 µF, curve 12.

400 V:
C ≤ 0.043 µF, curve 1.
C ≤ 0.1 µF, curve 2.
C ≤ 0.22 µF, curve 3.
C ≤ 0.33 µF, curve 4.
C ≤ 0.47 µF, curve 5.
C ≤ 0.68 µF, curve 6.
C ≤ 1.0 µF, curve 7.
C ≤ 1.2 µF, curve 8.

630 V:
C ≤ 0.024 µF, curve 1.
C ≤ 0.047 µF, curve 1.
C ≤ 0.11 µF, curve 2.
C ≤ 0.22 µF, curve 3.
C ≤ 0.3 µF, curve 4.
C ≤ 0.47 µF, curve 6.
C ≤ 0.68 µF, curve 7.

Fig.43 Tangent of loss angle as a function of frequency; typical curves.

Insulation resistance

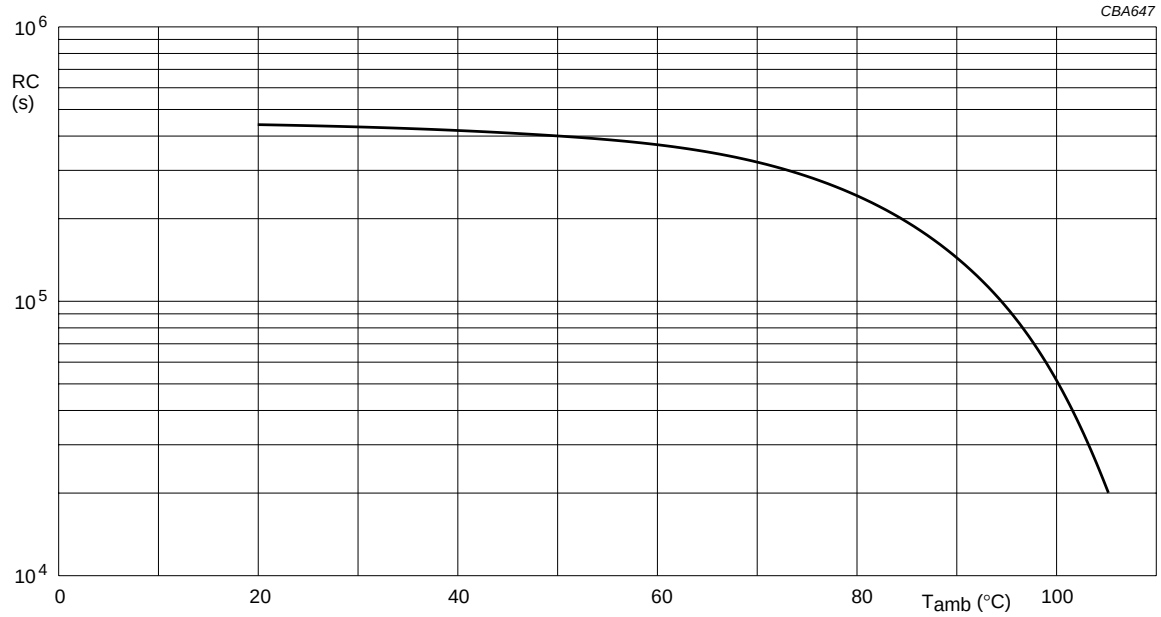


Fig.44 RC product as a function of ambient free air temperature; typical curve.

Maximum allowed component temperature rise (ΔT) as a function of the ambient temperature (T_{amb})

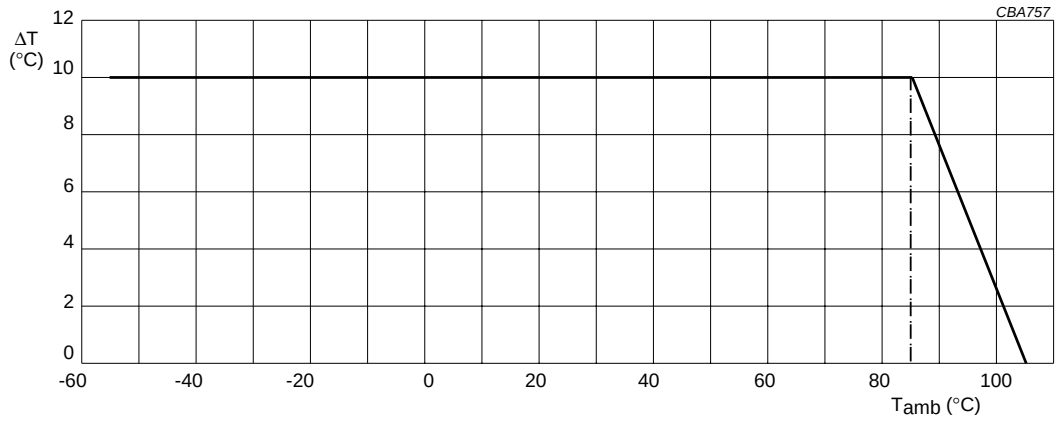


Fig.45 Maximum allowed component temperature rise as a function of the ambient temperature.

Heat conductivity (G) as a function of pitch and capacitor body thickness in mW/°C

Table 1 Heat conductivity

b_{max} (mm)	ORIGINAL PITCH (mm)			
	10	15	22.5	27.5
4.0	4.0	5.0	–	–
4.5	4.5	6.0	–	–
5.0	5.0	6.0	12.0	13.0
5.5	6.0	6.5	13.0	15.0
6.0	6.0	6.5	13.0	15.0
6.5	6.5	8.0	15.0	17.0
7.0	–	8.0	15.0	17.0
7.5	–	9.0	17.0	18.0
8.0	–	9.0	17.0	20.0
8.5	–	11.0	18.0	20.0
9.0	–	11.0	18.0	22.0
9.5	–	12.0	20.0	22.0
10.0	–	12.0	20.0	23.0
10.5	–	–	22.0	25.0
11.0	–	–	–	25.0
11.5	–	–	–	27.0
12.0	–	–	–	27.0
12.5	–	–	–	30.0
13.0	–	–	–	30.0
13.5	–	–	–	30.0
14.0	–	–	–	30.0
14.5	–	–	–	33.0
15.0	–	–	–	33.0
15.5	–	–	–	37.0
16.0	–	–	–	37.0

Power dissipation and maximum component temperature rise

The power dissipation must be limited in order not to exceed the maximum allowed component temperature rise as a function of the free air ambient temperature.

The power dissipation can be calculated according chapter *"Introduction"*, section *"Maximum power dissipation"* with the typical tan δ of the curves in Fig.43.

The component temperature rise (ΔT) can be measured (see section "Measuring the component temperature" for more details) or calculated by $\Delta T = P/G$:

- ΔT = component temperature rise (°C).
- P = power dissipation of the component (mW).
- G = heat conductivity of the component (mW/°C).

Measuring the component temperature

A thermocouple must be attached to the capacitor body; see Fig.46.

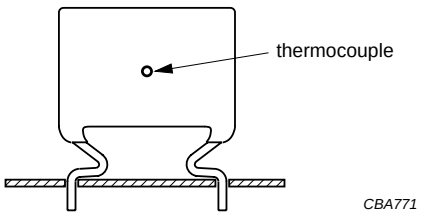


Fig.46 Mounting the thermocouple.

The temperature is measured in unloaded (T_{amb}) and maximum loaded condition (T_c).

The temperature rise is given by $\Delta T = T_c - T_{amb}$.

To avoid radiation or convection, the capacitor should be tested in a wind-free box.

Application note and limiting conditions

These capacitors are not suitable for mains applications as across-the-line capacitors without additional protection, as described hereunder. These mains applications are strictly regulated in safety standards and therefore electromagnetic interference suppression capacitors conforming the standards must be used.

To select the capacitor for a certain application, the following conditions must be checked:

1. The peak voltage (U_p) shall not be greater than the rated DC voltage (U_{Rdc}).
2. The peak-to-peak voltage (U_{p-p}) shall not be greater than the maximum U_{p-p} to avoid the ionisation inception level.
3. The voltage pulse slope (dU/dt) shall not exceed the rated voltage pulse slope in an RC-circuit at rated voltage and without ringing. If the pulse voltage is lower than the rated DC voltage, the rated voltage pulse slope may be multiplied by U_{Rdc} and divided by the applied voltage.

   For all other pulses following equation must be fulfilled:

$$2 \times \int_0^T \left(\frac{dU}{dt}\right)^2 \times dt < U_{Rdc} \times \left(\frac{dU}{dt}\right)_{rated}$$

   T is the pulse duration.

   The rated voltage pulse slope is valid for ambient temperatures up to 85 °C. For higher temperatures a derating factor of 3% per K shall be applied.
4. The maximum component surface temperature rise must be lower than the limits in Fig.45.
5. Since in circuits used at voltages over 280 V peak-to-peak the risk for an intrinsically active flammability after a capacitor breakdown (short circuit) increases, it is recommended that the power to the component is limited to 100 times the values mentioned in Table 1 “Heat conductivity”.
6. When using these capacitors as across-the-line capacitor in the input filter for mains applications or as series connected with an impedance to the mains the applicant must guarantee that following conditions are fulfilled in any case (spikes and surge voltages from the mains included).

VOLTAGE CONDITIONS FOR 6 ABOVE

ALLOWED VOLTAGES	$T_{amb} \leq 85$ °C	85 °C $< T_{amb} \leq 105$ °C
Maximum continuous RMS voltage	U_{Rac}	$0.7 \times U_{Rac}$
Maximum temporary RMS-overvoltage (<24 hours)	$1.25 \times U_{Rac}$	$0.875 \times U_{Rac}$
Maximum peak voltage (V_{o-p}) (<2 s)	$1.6 \times U_{Rdc}$	$1.1 \times U_{Rdc}$

Example: 2222 479 42474

C = 470 nF, 250 V used for S-correction:

This is a signal as in Fig.47 with:

U_{p-p} = 108 V; U_p = 170 V; T_1 = 12 µs; T_2 = 64 µs; I_{p-p} = 5 A

The ambient temperature is 50 °C.

Checking the conditions:

1. The peak voltage U_p = 170 V is lower than 250 V (DC).
2. The peak-to-peak voltage 108 V is lower than $2 \times \sqrt{2} \times 160 V(AC) = 450\ U_{p-p}$.
3. I_p = 2.5 A is lower than $0.47\ \mu F \times 60\ V/\mu s = 28\ A$.
4. The dissipated power is about 40 mW as calculated with Fourier terms and tgδ maximum values.

   This gives a temperature rise of $\frac{40\ mW}{12\ mW/°C} = 3.3\ °C$ which is which is permitted; see Fig.45.
5. Depends on actual application.
6. Not applicable.

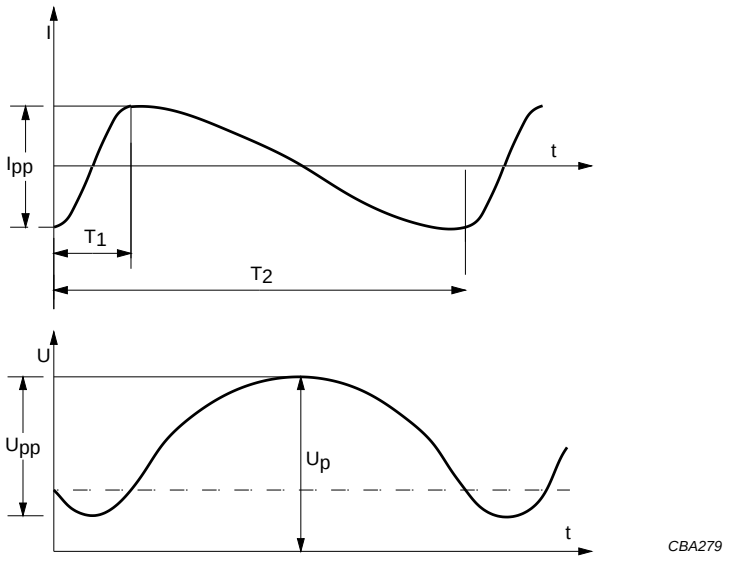


Fig.47 Voltage signal.

MARKING

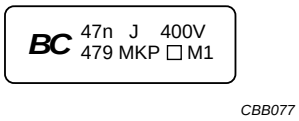
Product marking

COUNTRY OF ORIGIN: BELGIUM (INK PRINT)

Capacitors are marked on top (see Fig.48) with the following information:

1. Manufacturer's logo (only for original pitches > 10 mm)
2. Rated capacitance code in accordance with "IEC 60062"
3. Tolerance on rated capacitance J = ±5%
4. Rated (DC) voltage (e.g. 400 V)
5. Manufacturer's type designation with code for dielectric material (479 MKP)

   Code for monitor type: "□" if monitor types
6. Year and month of manufacture in code (e.g. K1) (see Section 1 "Letter codes for year and numbers for month of production" for more details).



CBB077

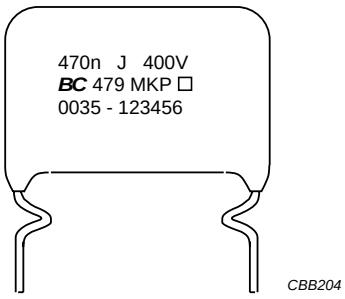
Fig.48 Example of marking.

COUNTRY OF ORIGIN: BELGIUM (LASER PRINTING ONLY FOR PITCH ≥15 MM)

Capacitors are marked on side for original pitches > 10 mm (see Fig.49) with the following information by laser printing:

1. Rated capacitance code in accordance with "IEC 60062"
2. Tolerance on rated capacitance J = ±5%
3. Rated (DC) voltage (e.g. 400 V)
4. Manufacturer's logo
5. Manufacturer's type designation with code for dielectric material (479 MKP)

   Code for monitor type: "□" if monitor types
6. Year and week of manufacture code - batch code).



CBB204

Fig.49 Example of marking.

AC and pulse metallized polypropylene film capacitors

MKP 479

COUNTRY OF ORIGIN: PRC (PEOPLE'S REPUBLIC OF CHINA)

The capacitors are marked on the front (see Fig.50) with the following information:

1. Manufacturer's logo (BC)
2. Capacitance code in accordance with "IEC 60062"
3. Capacitance tolerance: J = ±5%
4. Rated (DC) voltage (e.g. 400 V)
5. Manufacturer's type designation (479)
6. Code for dielectric material (MKP)
   Code for monitor type: "□" if monitor types
7. Year and month of manufacture in code (e.g. K1) (see Section 1 "Letter codes for year and numbers for month of production" for more details).

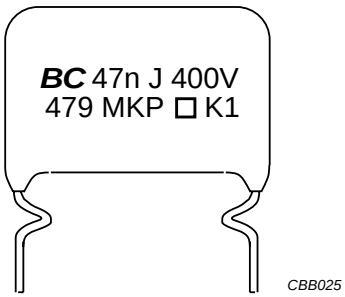


Fig.50 Example of marking.

LETTER CODES FOR YEAR AND NUMBERS FOR MONTH OF PRODUCTION

YEAR	LETTER CODE	MONTH	CODE
1998	K	January	1
1999	L	February	2
2000	M	March	3
2001	N	April	4
2002	P	May	5
2003	R	June	6
2004	S	July	7
2005	T	August	8
2006	U	September	9
2007	V	October	O
2008	W	November	N
2009	X	December	D

Package marking

The package containing the capacitors is marked as shown in Fig.51.

Barcode label marking

LINE	MARKING EXPLANATION
1	Manufacturer's name
2	Country of origin
3	Sub-family
4	Type description
5	Capacitance value in µF, tolerance, voltage and climatic category *("IEC 60068-1")*
6	–
7	• Country of origin: Belgium Preference origin code: A Country of origin in code: 170 (Belgium) Responsible production centre: HQ Work order: WO • Country of origin: China Preference origin code: N Country of origin in code: 260 (PRC) Responsible production centre: 07
8	Product type description
9	Quantity and production period, year and week code
10	Product code (12NC)

Fig.51 Barcode label.

QUICK REFERENCE TEST REQUIREMENTS

TEST	PROCEDURE (quick reference)	REQUIREMENTS
Robustness of leads		
Tensile: "*IEC 60068-2-21*"	load 10 N; 10 s	no visible damage legible marking
Bending: "*IEC 60068-2-21*"	load 5 N; 4 × 90 °	$\|\Delta C/C\| \leq 1\%$ for 250 to 630 V: pitch = 22.5 or 27.5 mm $\|\Delta C/C\| \leq 2\%$ for 160 V: all pitches; for 250 V to 630 V: original pitch = 10 and 15 mm $\Delta\tan\delta \leq 5 \times 10^{-4}$ ($C \leq 100$ nF) $\Delta\tan\delta \leq 10 \times 10^{-4}$ (100 nF < $C \leq 470$ nF) $\Delta\tan\delta \leq 15 \times 10^{-4}$ ($C > 470$ nF)
Resistance to soldering heat: "*IEC 60068-2-20*"	solder bath: 260 °C; 10 s	
Component solvent resistance	isopropyl alcohol; 23 °C; 5 minutes	
Robustness of component		
Vibration: "*IEC 60068-2-6*"	10 Hz to 55 kHz; amplitude 0.75 mm or acceleration 98 m/s^2; 6 hours	$\|\Delta C/C\| \leq 1\%$ for 250 to 630 V: pitch = 22.5 or 27.5 mm $\|\Delta C/C\| \leq 2\%$ for 160 V: all pitches; for 250 V to 630 V: original pitch = 10 and 15 mm $\Delta\tan\delta \leq 5 \times 10^{-4}$ ($C \leq 100$ nF) $\Delta\tan\delta \leq 10 \times 10^{-4}$ (100 nF < $C \leq 470$ nF) $\Delta\tan\delta \leq 15 \times 10^{-4}$ ($C > 470$ nF)
Shock: "*IEC 60068-2-27*"	half sinewave; 490 m/s^2; 11 ms	
Climatic sequence		
Dry heat: "*IEC 60068-2-2*"	16 hours; 105 °C	$\|\Delta C/C\| \leq 1\%$ for 250 to 630 V: pitch = 22.5 or 27.5 mm $\|\Delta C/C\| \leq 3\%$ for 160 V: all pitches; for 250 V to 630 V: original pitch = 10 and 15 mm $\Delta\tan\delta \leq 5 \times 10^{-4}$ ($C \leq 100$ nF) $\Delta\tan\delta \leq 10 \times 10^{-4}$ (100 nF < $C \leq 470$ nF) $\Delta\tan\delta \leq 15 \times 10^{-4}$ ($C > 470$ nF) $R_{ins} \geq 50\%$ of specified value
Damp heat, cyclic, test Db, first cycle: "*IEC 60068-2-30*"		
Cold: "*IEC 60068-2-1*"	2 hours; –55 °C	
Damp heat, cyclic, test Db, remaining cycles: "*IEC 60068-2-30*"		
Other applicable tests		
Damp heat, steady state: "*IEC 60068-2-3*"	56 days; 40 °C; 90 to 95% RH	$\|\Delta C/C\| \leq 1\%$ for 250 to 630 V: pitch = 22.5 or 27.5 mm $\|\Delta C/C\| \leq 3\%$ for 160 V: all pitches; for 250 V to 630 V: original pitch = 10 and 15 mm $\Delta\tan\delta \leq 5 \times 10^{-4}$ $R_{ins} \geq 50\%$ of specified value

TEST	PROCEDURE (quick reference)	REQUIREMENTS
Endurance (AC): "*IEC 60384-17*"	2000 hours; 85 °C $1.25 \times U_{Rac}$ (RMS); 50 Hz 2000 hours; 105 °C $0.875 \times U_{Rac}$ (RMS); 50 Hz	$\lvert\Delta C/C\rvert \leq 5\%$ $\Delta\tan\delta \leq 5 \times 10^{-4}$ ($C \leq 100$ nF) $\Delta\tan\delta \leq 10 \times 10^{-4}$ (100 nF $< C \leq$ 470 nF) $\Delta\tan\delta \leq 15 \times 10^{-4}$ ($C >$ 470 nF) $R_{ins} \geq 50\%$ of specified value
Heat storage: "*IEC 60384-17*"	2000 hours; 105 °C	$\lvert\Delta C/C\rvert \leq 1\%$ for 250 to 630 V: pitch = 22.5 or 27.5 mm $\lvert\Delta C/C\rvert \leq 3\%$ for 160 V: all pitches; for 250 V to 630 V: original pitch = 10 and 15 mm $\Delta\tan\delta \leq 5 \times 10^{-4}$ ($C \leq 100$ nF) $\Delta\tan\delta \leq 10 \times 10^{-4}$ (100 nF $< C \leq$ 470 nF) $\Delta\tan\delta \leq 15 \times 10^{-4}$ ($C >$ 470 nF)
Resistance to soldering heat with preheating: "*IEC 60384-17*"	body temperature: 105 °C bath temperature: 260 °C dwell time: 10 s	$\lvert\Delta C/C\rvert \leq 1\%$ for 250 to 630 V: pitch = 22.5 or 27.5 mm $\lvert\Delta C/C\rvert \leq 2\%$ for 160 V: all pitches; for 250 V to 630 V: original pitch = 10 and 15 mm $\Delta\tan\delta \leq 5 \times 10^{-4}$ ($C \leq 100$ nF) $\Delta\tan\delta \leq 10 \times 10^{-4}$ (100 nF $< C \leq$ 470 nF) $\Delta\tan\delta \leq 15 \times 10^{-4}$ ($C >$ 470 nF)
Passive flammability: "*IEC 60384-1*"	class C	no burning
Endurance (DC): "*IEC 60384-17*"	2000 hours: $1.25 \times U_{Rdc}$; 85 °C $0.875 \times U_{Rdc}$; 105 °C	$\lvert\Delta C/C\rvert \leq 1\%$ for 250 to 630 V: pitch = 22.5 or 27.5 mm $\lvert\Delta C/C\rvert \leq 3\%$ for 160 V: all pitches; for 250 V to 630 V: original pitch = 10 and 15 mm $\Delta\tan\delta \leq 5 \times 10^{-4}$ ($C \leq 100$ nF) $\Delta\tan\delta \leq 10 \times 10^{-4}$ (100 nF $< C \leq$ 470 nF) $\Delta\tan\delta \leq 15 \times 10^{-4}$ ($C >$ 470 nF) $R_{ins} \geq 50\%$ of specified value