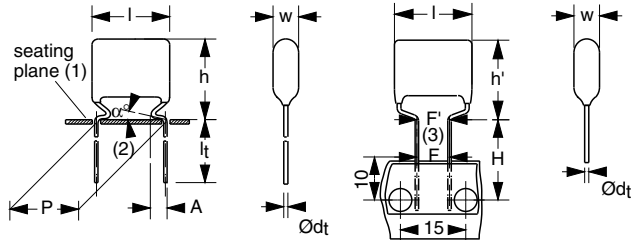
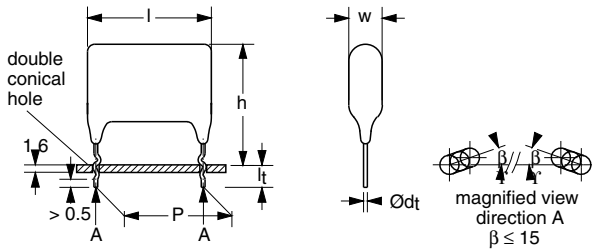


AC and Pulse Polypropylene Film Capacitors MKP Radial Epoxy Lacquered Type



Dimensions in mm

- (1) Hole \varnothing 1.0 for $d_t = 0.6$ mm
Hole \varnothing 1.3 for $d_t = 0.8$ mm
- (2) $0 \leq \alpha < 50^\circ$
- (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; 22.5 mm and 27.5 mm)



Dimensions in mm

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. Their small dimensions make them suitable for circuits with high packaging density.

MARKING

Manufacturer's emblem; C-value; tolerance; rated voltage; manufacturer's type designation; code for dielectric material; code for monitor type

DIELECTRIC

Polypropylene film

ELECTRODES

Vacuum deposited aluminum

COATING

Flame retardant epoxy material (UL-class 94 V-0)

LEADS

Tinned wire

FEATURES

7.5 mm bent back pitch. 10 to 27.5 mm lead 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

- Material categorization:
For definitions of compliance please see www.vishay.com/doc?99912



CONSTRUCTION

Wound mono construction

CAPACITANCE RANGE (E24 SERIES)

0.01 to 3.9 μ F

CAPACITANCE TOLERANCE

$\pm 5\%$

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

85 °C

MAXIMUM APPLICATION TEMPERATURE

105 °C

REFERENCE SPECIFICATIONS

IEC 60384-17

PERFORMANCE GRADE

Grade 1 (long life)

STABILITY GRADE

Grade 2

DETAIL SPECIFICATION

For more detailed data and test requirements contact: dc-film@vishay.com



AC and Pulse Polypropylene
Film Capacitors MKP Radial Epoxy
Lacquered Type

Vishay BCcomponents

COMPOSITION OF CATALOG 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
BFC2*	479	XX	XX	X

* Use this partnumber for those with access to the Vishay's SAP system and Partners website within the Americas

TYPE	PACKAGING	LEAD CONFIGURATION	PREFERRED TYPES				
			C-TOL	160 V	250 V	400 V	630 V
479	loose in box	lead length 5.0 ± 1.0 mm	± 5 %	32	42	52	62
		lock lead 4.0 + 1.0/- 0.5 mm		90	90	90	90
	Taped on reel (bent back)	H = 16.0 mm; P ₀ = 15.0 mm; reel diameter 500 mm		36	46	56	66
ON REQUEST							
479	loose in box	lead length 3.5 + 1.0/- 0.5 mm	± 5 %	34	44	54	64

SPECIFIC REFERENCE DATA (160 VDC)

DESCRIPTION	VALUE	
	at 10 kHz	at 100 kHz
Tangent of loss angle:		
C = 0.075 μF	≤ 5 × 10 ⁻⁴	≤ 20 × 10 ⁻⁴
0.075 μF < C ≤ 0.11 μF	≤ 5 × 10 ⁻⁴	≤ 25 × 10 ⁻⁴
0.11 μF < C ≤ 0.18 μF	≤ 10 × 10 ⁻⁴	≤ 30 × 10 ⁻⁴
0.18 μF < C ≤ 0.3 μF	≤ 10 × 10 ⁻⁴	≤ 35 × 10 ⁻⁴
0.3 μF < C ≤ 0.39 μF	≤ 10 × 10 ⁻⁴	≤ 40 × 10 ⁻⁴
0.39 μF < C ≤ 0.56 μF	≤ 10 × 10 ⁻⁴	≤ 45 × 10 ⁻⁴
0.56 μF < C ≤ 0.68 μF	≤ 10 × 10 ⁻⁴	≤ 50 × 10 ⁻⁴
0.68 μF < C ≤ 0.75 μF	≤ 10 × 10 ⁻⁴	≤ 55 × 10 ⁻⁴
C = 0.82 μF	≤ 10 × 10 ⁻⁴	≤ 55 × 10 ⁻⁴
0.82 μF < C ≤ 0.91 μF	≤ 10 × 10 ⁻⁴	≤ 60 × 10 ⁻⁴
0.91 μF < C ≤ 1.0 μF	≤ 10 × 10 ⁻⁴	≤ 65 × 10 ⁻⁴
1.0 μF < C ≤ 1.2 μF	≤ 10 × 10 ⁻⁴	≤ 70 × 10 ⁻⁴
1.2 μF < C ≤ 1.3 μF	≤ 10 × 10 ⁻⁴	≤ 75 × 10 ⁻⁴
1.3 μF < C ≤ 1.5 μF	≤ 10 × 10 ⁻⁴	≤ 80 × 10 ⁻⁴
1.5 μF < C ≤ 1.6 μF	≤ 10 × 10 ⁻⁴	≤ 85 × 10 ⁻⁴
1.6 μF < C ≤ 1.8 μF	≤ 10 × 10 ⁻⁴	≤ 90 × 10 ⁻⁴
1.8 μF < C ≤ 2.0 μF	≤ 10 × 10 ⁻⁴	≤ 95 × 10 ⁻⁴
2.0 μF < C ≤ 2.2 μF	≤ 10 × 10 ⁻⁴	≤ 100 × 10 ⁻⁴
2.2 μF < C ≤ 2.4 μF	≤ 15 × 10 ⁻⁴	≤ 105 × 10 ⁻⁴
2.4 μF < C ≤ 2.7 μF	≤ 15 × 10 ⁻⁴	≤ 110 × 10 ⁻⁴
2.7 μF < C ≤ 3.0 μF	≤ 15 × 10 ⁻⁴	≤ 115 × 10 ⁻⁴
3.0 μF < C ≤ 3.3 μF	≤ 15 × 10 ⁻⁴	≤ 125 × 10 ⁻⁴
3.3 μF < C ≤ 3.6 μF	≤ 15 × 10 ⁻⁴	≤ 130 × 10 ⁻⁴
3.6 μF < C ≤ 3.9 μF	≤ 15 × 10 ⁻⁴	≤ 135 × 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
P = 22.5 mm		25 V/μs
P = 27.5 mm		15 V/μs
R between leads, for C ≤ 1.0 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

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

C (μF)	DIMENSIONS w _{max} × h (h') _{max} × l _{max} (mm)	MASS (g)	CATALOG NUMBER 2222 479 AND PACKAGING				
			LOOSE IN BOX		REEL		
			l _t = 5.0 ± 1.0 mm	all leads	pitch 7.5 mm (bent back)		original pitch
			C-tol = ± 5 %	SPQ	C-tol = ± 5 %		SPQ
last 5 digits of catalog number	last 5 digits of catalog number	SPQ	SPQ				
Pitch = 10.0 ± 0.4 mm; d _t = 0.60 ± 0.06 mm			pitch = 7.5 mm (bent back)		pitch = 10.0 mm		
0.075	6.0 × 15.0 × 12.5	0.9	32753	1000		1000	
0.082			32823				
0.091			32913				
0.1			32104				
0.11			32114				
0.12			32124				
0.13			32134				
0.15	6.5 × 15.5 × 12.5	1.0	32154	1000		900	
0.16			32164				



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C (μ F)	DIMENSIONS $w_{max} \times h (h')_{max} \times l_{max}$ (mm)	MASS (g)	CATALOG NUMBER 2222 479 AND PACKAGING				
			LOOSE IN BOX		REEL		
			$l_t = 5.0 \pm 1.0$ mm	all leads	pitch 7.5 mm (bent back)		original pitch
			C-tol = ± 5 %	SPQ	C-tol = ± 5 %	SPQ	SPQ
last 5 digits of catalog number	last 5 digits of catalog number						
Pitch = 15.0 \pm 0.4 mm; $d_t = 0.80 \pm 0.08$ mm					pitch = 7.5 mm (bent back)		pitch = 15.0 mm
0.18	6.0 \times 15.0 (16.5) \times 18.5	1.2	32184	2000	36184	800	1000
0.20 0.22	6.5 \times 15.5 (17.0) \times 18.5	1.3	32204 32224	1500	36204 36224	750	900
0.24 0.27 0.30 0.33 0.36 0.39	7.0 \times 16.0 (17.5) \times 18.5	1.4	32244 32274 32304 32334 32364 32394	1250	36244 36274 36304 36334 36364 36394	700	800
0.43 0.47	7.5 \times 16.5 (18.0) \times 18.5	1.5	32434 32474	1250	36434 36474	650	800
0.51 0.56	8.0 \times 17.0 (18.5) \times 18.5	1.6	32514 32564	1250	36514 36564	600	700
0.62	8.5 \times 17.5 (19.0) \times 18.5	1.7	32624	1000	36624	550	700
0.68	9.0 \times 18.0 (19.5) \times 18.5	1.8	32684	1000	36684	550	600
0.75	9.5 \times 18.5 (20.0) \times 18.5	1.9	32754	900	36754	500	600
Pitch = 22.5 \pm 0.4 mm; $d_t = 0.80 \pm 0.08$ mm					pitch = 7.5 mm (bent back)		pitch = 22.5 mm
0.82	7.0 \times 20.0 \times 26.0	1.8	32824	650			
0.91 1	7.5 \times 20.5 \times 26.0	1.9	32914 32105	600			
1.1	8.0 \times 21.0 \times 26.0	2.0	32115	550			
1.2 1.3	8.5 \times 21.5 \times 26.0	2.1	32125 32135	500			
1.5 1.6	9.5 \times 22.5 \times 26.0	2.4	32155 32165	450			
1.8	10.0 \times 23.0 \times 26.0	2.5	32185	400			
Pitch = 27.5 \pm 0.4 mm; $d_t = 0.80 \pm 0.08$ mm					pitch = 7.5 mm (bent back)		pitch = 27.5 mm
2	10.0 \times 23.0 \times 30.0	5.0	32205	450			
2.2	10.5 \times 23.5 \times 30.0	5.0	32225	450			
2.4	11.0 \times 24.0 \times 30.0	5.5	32245	400			
2.7	11.5 \times 24.5 \times 30.0	5.5	32275	400			
3	12.0 \times 25.0 \times 30.0	6.0	32305	350			
3.3	13.0 \times 26.0 \times 30.0	6.5	32335	300			
3.6	13.5 \times 26.5 \times 30.0	7.0	32365	300			
3.9	14.0 \times 27.0 \times 30.0	7.0	32395	300			

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

C (μF)	DIMENSIONS $w_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOG NUMBER 2222 479 AND PACKAGING	
			LOOSE IN BOX	
			$l_t = 4.0 + 1.0/-0.5\text{ mm}$	
			C-tol = $\pm 5\%$ last 5 digits of catalog number	SPQ
Pitch = $10.0 \pm 1.0\text{ mm}$; $d_t = 0.60 \pm 0.06\text{ mm}$				
0.075	6.0 × 18.0 × 12.5	0.9	90089	1400
0.082			90091	
0.091			90092	
0.1			90093	
0.11			90094	
0.12			90095	
0.13			90096	
0.15	6.5 × 18.5 × 12.5	1.0	90097	1250
0.16			90098	
Pitch = $15.0 \pm 1.0\text{ mm}$; $d_t = 0.80 \pm 0.08\text{ mm}$				
0.18	6.0 × 18.0 × 18.5	1.2	90099	1500
0.20	6.5 × 18.5 × 18.5	1.3	90101	1250
0.22			90102	
0.24	7.0 × 19.0 × 18.5	1.4	90103	1250
0.27			90104	
0.30			90105	
0.33			90106	
0.36			90107	
0.39			90108	
0.43	7.5 × 19.5 × 18.5	1.5	90109	1000
0.47			90111	
0.51	8.0 × 20.0 × 18.5	1.6	90112	1000
0.56			90113	
0.62	8.5 × 20.5 × 18.5	1.7	90114	900
0.68	9.0 × 21.0 × 18.5	1.8	90115	800
0.75	9.5 × 21.5 × 18.5	1.9	90116	800
Pitch = $22.5 \pm 1.0\text{ mm}$; $d_t = 0.80 \pm 0.08\text{ mm}$				
0.82	7.0 × 23.0 × 26.0	1.8	90117	850
0.91	7.5 × 23.5 × 26.0	1.9	90118	750
1			90119	
1.1	8.0 × 24.0 × 26.0	2.0	90121	700
1.2	8.5 × 24.5 × 26.0	2.1	90122	650
1.3			90036	
1.5	9.5 × 25.5 × 26.0	2.4	90037	550
1.6			90038	
1.8	10.0 × 26.0 × 26.0	2.5	90039	500
Pitch = $27.5 \pm 1.0\text{ mm}$; $d_t = 0.80 \pm 0.08\text{ mm}$				
2	10.0 × 26.0 × 30.0	5.0	90041	400
2.2	10.5 × 26.5 × 30.0	5.0	90042	400
2.4	11.0 × 27.0 × 30.0	5.5	90123	350
2.7	11.5 × 27.5 × 30.0	5.5	90124	350
3	12.0 × 28.0 × 30.0	6.0	90125	350
3.3	13.0 × 29.0 × 30.0	6.5	90126	300
3.6	13.5 × 29.5 × 30.0	7.0	90127	250
3.9	14.0 × 30.0 × 30.0	7.0	90128	250



AC and Pulse Polypropylene
Film Capacitors MKP Radial Epoxy
Lacquered Type

Vishay BCcomponents

SPECIFIC REFERENCE DATA (250 VDC)

DESCRIPTION	VALUE	
	at 10 kHz	at 100 kHz
Tangent of loss angle:		
0.047 μF < C ≤ 0.075 μF	≤ 5 × 10 ⁻⁴	≤ 20 × 10 ⁻⁴
0.075 μF < C ≤ 0.11 μF	≤ 5 × 10 ⁻⁴	≤ 25 × 10 ⁻⁴
0.11 μF < C ≤ 0.18 μF	≤ 10 × 10 ⁻⁴	≤ 30 × 10 ⁻⁴
0.18 μF < C ≤ 0.3 μF	≤ 10 × 10 ⁻⁴	≤ 35 × 10 ⁻⁴
0.3 μF < C ≤ 0.39 μF	≤ 10 × 10 ⁻⁴	≤ 40 × 10 ⁻⁴
0.39 μF < C ≤ 0.47 μF	≤ 10 × 10 ⁻⁴	≤ 45 × 10 ⁻⁴
0.51 μF < C ≤ 0.56 μF	≤ 10 × 10 ⁻⁴	≤ 45 × 10 ⁻⁴
0.56 μF < C ≤ 0.68 μF	≤ 10 × 10 ⁻⁴	≤ 50 × 10 ⁻⁴
0.68 μF < C ≤ 0.82 μF	≤ 10 × 10 ⁻⁴	≤ 55 × 10 ⁻⁴
0.82 μF < C ≤ 0.91 μF	≤ 10 × 10 ⁻⁴	≤ 60 × 10 ⁻⁴
0.91 μF < C ≤ 1.0 μF	≤ 10 × 10 ⁻⁴	≤ 65 × 10 ⁻⁴
1.0 μF < C ≤ 1.2 μF	≤ 10 × 10 ⁻⁴	≤ 70 × 10 ⁻⁴
1.2 μF < C ≤ 1.3 μF	≤ 10 × 10 ⁻⁴	≤ 75 × 10 ⁻⁴
1.3 μF < C ≤ 1.5 μF	≤ 10 × 10 ⁻⁴	≤ 80 × 10 ⁻⁴
1.5 μF < C ≤ 1.6 μF	≤ 10 × 10 ⁻⁴	≤ 85 × 10 ⁻⁴
1.6 μF < C ≤ 1.8 μF	≤ 10 × 10 ⁻⁴	≤ 90 × 10 ⁻⁴
1.8 μF < C ≤ 2.0 μF	≤ 10 × 10 ⁻⁴	≤ 95 × 10 ⁻⁴
2.0 μF < C ≤ 2.2 μF	≤ 10 × 10 ⁻⁴	≤ 100 × 10 ⁻⁴
2.2 μF < C ≤ 2.4 μF	≤ 15 × 10 ⁻⁴	≤ 105 × 10 ⁻⁴
2.4 μF < C ≤ 2.7 μF	≤ 15 × 10 ⁻⁴	≤ 110 × 10 ⁻⁴
2.7 μF < C ≤ 3 μF	≤ 15 × 10 ⁻⁴	≤ 115 × 10 ⁻⁴
Rated voltage pulse slope (dU/dt) _R :		
P = 10.0 mm		70 V/μs
P = 15.0 mm		60 V/μs
P = 22.5 mm		30 V/μs
P = 27.5 mm		20 V/μs
R between leads, for C ≤ 1.0 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

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

C (μF)	DIMENSIONS w _{max} × h (h') _{max} × l _{max} (mm)	MASS (g)	CATALOG NUMBER 2222 479 AND PACKAGING			
			LOOSE IN BOX		REEL	
			l _t = 5.0 ± 1.0 mm	all leads	pitch 7.5 mm (bent back)	original pitch
			C-tol = ± 5 %	SPQ	C-tol = ± 5 %	SPQ
last 5 digits of catalog number	last 5 digits of catalog number	SPQ				
Pitch = 10.0 ± 0.4 mm; d _t = 0.60 ± 0.06 mm			pitch = 7.5 mm (bent back)		pitch = 10.0 mm	
0.047	6.0 × 15.0 × 12.5	0.9	42473	1000	1000	
0.051			42513			
0.056			42563			
0.062			42623			
0.068			42683			
0.075			42753			
0.082			42823			
0.091			42913			
0.1	6.5 × 15.5 × 12.5	1.0	42104	1000	900	

C (μ F)	DIMENSIONS $W_{max} \times h (h')_{max} \times l_{max}$ (mm)	MASS (g)	CATALOG NUMBER 2222 479 AND PACKAGING				
			LOOSE IN BOX		REEL		
			$l_t = 5.0 \pm 1.0$ mm	all leads	pitch 7.5 mm (bent back)		original pitch
			C-tol = ± 5 %	SPQ	C-tol = ± 5 %	SPQ	SPQ
last 5 digits of catalog number	last 5 digits of catalog number						
Pitch = 15.0 \pm 0.4 mm; $d_t = 0.80 \pm 0.08$ mm					pitch = 7.5 mm (bent back)		pitch = 15.0 mm
0.11	6.5 \times 15.5 (17.0) \times 18.5	1.3	42114	1500	46114	750	900
0.12			42124		46124		
0.13			42134		46134		
0.15			42154		46154		
0.16			42164		46164		
0.18			42184		46184		
0.20			42204		46204		
0.22			42224		46224		
0.24	7.0 \times 16.0 (17.5) \times 18.5	1.4	42244	1250	46244	700	800
0.27	7.5 \times 16.5 (18.0) \times 18.5	1.5	42274	1250	46274	650	800
0.30			42304		46304		
0.33	8.0 \times 17.0 (18.5) \times 18.5	1.6	42334	150	46334	600	700
0.36	8.5 \times 17.5 (19.0) \times 18.5	1.7	42364	1000	46364	550	700
0.39			42394		46394		
0.43	9.0 \times 18.0 (19.5) \times 18.5	1.8	42434	1000	46434	550	600
0.47	9.5 \times 18.5 (20.0) \times 18.5	1.9	42474	900	46474	500	600
Pitch = 22.5 \pm 0.4 mm; $d_t = 0.80 \pm 0.08$ mm					pitch = 7.5 mm (bent back)		pitch = 22.5 mm
0.51	7.0 \times 20.0 \times 26.0	1.8	42514	650			
0.56			42564				
0.62	7.5 \times 20.5 \times 26.0	1.9	42624	600			
0.68			42684				
0.75	8.0 \times 21.0 \times 26.0	2.0	42754	550			
0.82	8.5 \times 21.5 \times 26.0	2.1	42824	500			
0.91	9.0 \times 22.0 \times 26.0	2.4	42914	450			
1.0	9.5 \times 22.5 \times 26.0	2.5	42105	450			
1.1	10.0 \times 23.0 \times 26.0	2.6	42115	400			
1.2	10.5 \times 23.5 \times 26.0	2.7	42125	350			
Pitch = 27.5 \pm 0.4 mm; $d_t = 0.80 \pm 0.08$ mm					pitch = 7.5 mm (bent back)		pitch = 27.5 mm
1.3	10.0 \times 23.0 \times 30.0	5.0	42135	450			
1.5	10.5 \times 23.5 \times 30.0	5.0	42155	450			
1.6	11.0 \times 24.0 \times 30.0	5.5	42165	400			
1.8	11.5 \times 24.5 \times 30.0	5.5	42185	400			
2.0	12.5 \times 25.5 \times 30.0	6.5	42205	350			
2.2	13.0 \times 26.0 \times 30.0	6.5	42225	300			
2.4	13.5 \times 26.5 \times 30.0	7.0	42245	300			
2.7	14.0 \times 27.0 \times 30.0	7.0	42275	300			
3.0	15.0 \times 28.0 \times 30.0	7.5	42305	250			



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

C (μF)	DIMENSIONS $W_{max} \times H_{max} \times L_{max}$ (mm)	MASS (g)	CATALOG NUMBER 2222 479 AND PACKAGING	
			LOOSE IN BOX	
			$l_t = 4.0 + 1.0/-0.5\text{ mm}$	
			C-tol = $\pm 5\%$	SPQ
last 5 digits of catalog number				
Pitch = $10.0 \pm 1.0\text{ mm}$; $d_t = 0.60 \pm 0.06\text{ mm}$				
0.047	6.0 × 18.0 × 12.5	0.9	90052	1400
0.051			90129	
0.056			90131	
0.062			90132	
0.068			90133	
0.075			90134	
0.082			90135	
0.091			90136	
0.1	6.5 × 18.5 × 12.5	1.0	90137	1250
Pitch = $15.0 \pm 1.0\text{ mm}$; $d_t = 0.80 \pm 0.08\text{ mm}$				
0.11	6.5 × 18.5 × 18.5	1.3	90138	1250
0.12			90051	
0.13			90139	
0.15			90141	
0.16			90142	
0.18			90012	
0.20			90013	
0.22			90014	
0.24	7.0 × 19.0 × 18.5	1.4	90015	1250
0.27	7.5 × 19.5 × 18.5	1.5	90016	1000
0.30			90017	
0.33	8.0 × 20.0 × 18.5	1.6	90018	1000
0.36	8.5 × 20.5 × 18.5	1.7	90019	900
0.39			90021	
0.43	9.0 × 21.0 × 18.5	1.8	90022	800
0.47	9.5 × 21.5 × 18.5	1.9	90023	800
Pitch = $22.5 \pm 1.0\text{ mm}$; $d_t = 0.80 \pm 0.08\text{ mm}$				
0.51	7.0 × 23.0 × 26.0	1.8	90024	850
0.56			90025	
0.62	7.5 × 23.5 × 26.0	1.9	90026	750
0.68			90027	
0.75	8.0 × 24.0 × 26.0	2.0	90028	700
0.82	8.5 × 24.5 × 26.0	2.1	90029	650
0.91	9.0 × 25.0 × 26.0	2.4	90031	600
1.0	9.5 × 25.5 × 26.0	2.5	90032	550
1.1	10.0 × 26.0 × 26.0	2.6	90033	500
1.2	10.5 × 26.5 × 26.0	2.7	90034	500
Pitch = $27.5 \pm 1.0\text{ mm}$; $d_t = 0.80 \pm 0.08\text{ mm}$				
1.3	10.0 × 26.0 × 30.0	5.0	90143	400
1.5	10.5 × 26.5 × 30.0	5.0	90144	400
1.6	11.0 × 27.0 × 30.0	5.5	90145	350
1.8	11.5 × 27.5 × 30.0	5.5	90146	350
2.0	12.5 × 28.5 × 30.0	6.5	90147	300
2.2	13.0 × 29.0 × 30.0	6.5	90148	300
2.4	13.5 × 29.5 × 30.0	7.0	90149	250
2.7	14.0 × 30.0 × 30.0	7.0	90151	250
3.0	15.0 × 31.0 × 30.0	7.5	90152	200

SPECIFIC REFERENCE DATA (400 VDC)

DESCRIPTION	VALUE	
	at 10 kHz	at 100 kHz
Tangent of loss angle:		
0.022 $\mu\text{F} < C \leq 0.027 \mu\text{F}$	$\leq 5 \times 10^{-4}$	$\leq 15 \times 10^{-4}$
0.027 $\mu\text{F} < C \leq 0.075 \mu\text{F}$	$\leq 5 \times 10^{-4}$	$\leq 20 \times 10^{-4}$
0.075 $\mu\text{F} < C \leq 0.11 \mu\text{F}$	$\leq 5 \times 10^{-4}$	$\leq 25 \times 10^{-4}$
0.11 $\mu\text{F} < C \leq 0.18 \mu\text{F}$	$\leq 10 \times 10^{-4}$	$\leq 30 \times 10^{-4}$
0.18 $\mu\text{F} < C \leq 0.22 \mu\text{F}$	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
0.24 $\mu\text{F} < C \leq 0.3 \mu\text{F}$	$\leq 10 \times 10^{-4}$	$\leq 35 \times 10^{-4}$
0.3 $\mu\text{F} < C \leq 0.39 \mu\text{F}$	$\leq 10 \times 10^{-4}$	$\leq 40 \times 10^{-4}$
0.39 $\mu\text{F} < C \leq 0.56 \mu\text{F}$	$\leq 10 \times 10^{-4}$	$\leq 45 \times 10^{-4}$
0.56 $\mu\text{F} < C \leq 0.68 \mu\text{F}$	$\leq 10 \times 10^{-4}$	$\leq 50 \times 10^{-4}$
0.68 $\mu\text{F} < C \leq 0.82 \mu\text{F}$	$\leq 10 \times 10^{-4}$	$\leq 55 \times 10^{-4}$
0.82 $\mu\text{F} < C \leq 0.91 \mu\text{F}$	$\leq 10 \times 10^{-4}$	$\leq 60 \times 10^{-4}$
0.91 $\mu\text{F} < C \leq 1.0 \mu\text{F}$	$\leq 10 \times 10^{-4}$	$\leq 65 \times 10^{-4}$
1.0 $\mu\text{F} < C \leq 1.2 \mu\text{F}$	$\leq 10 \times 10^{-4}$	$\leq 70 \times 10^{-4}$
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
P = 22.5 mm		35 V/ μs
P = 27.5 mm		25 V/ μs
R between leads, for C $\leq 1.0 \mu\text{F}$ at 100 V; 1 minute		> 100000 M Ω
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 M Ω
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

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

C (μF)	DIMENSIONS W _{max} × h (h') _{max} × l _{max} (mm)	MASS (g)	CATALOG NUMBER 2222 479 AND PACKAGING			
			LOOSE IN BOX		REEL	
			l _t = 5.0 ± 1.0 mm	all leads	pitch 7.5 mm (bent back)	original pitch
			C-tol = ± 5 %	SPQ	C-tol = ± 5 %	SPQ
last 5 digits of catalog number	last 5 digits of catalog number	SPQ				
Pitch = 10.0 ± 0.4 mm; d _t = 0.60 ± 0.06 mm			pitch = 7.5 mm (bent back)		pitch = 10.0 mm	
0.022	6.0 × 15.0 × 12.5	0.9	52223	1000	1000	
0.024			52243			
0.027			52273			
0.03			52303			
0.033			52333			
0.036			52363			
0.039			52393			
0.043			52433			
0.047			52473			



AC and Pulse Polypropylene
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C (μ F)	DIMENSIONS $w_{max} \times h (h')_{max} \times l_{max}$ (mm)	MASS (g)	CATALOG NUMBER 2222 479 AND PACKAGING				
			LOOSE IN BOX		REEL		
			$l_t = 5.0 \pm 1.0$ mm	all leads	pitch 7.5 mm (bent back)		original pitch
			C-tol = ± 5 %	SPQ	C-tol = ± 5 %	SPQ	SPQ
last 5 digits of catalog number	last 5 digits of catalog number						
Pitch = 15.0 \pm 0.4 mm; $d_t = 0.80 \pm 0.08$ mm					pitch = 7.5 mm (bent back)	pitch = 15.0 mm	
0.051	6.5 \times 15.5 (17.0) \times 18.5	1.3	52513	1500	56513	750	900
0.056			52563		56563		
0.062			52623		56623		
0.068			52683		56683		
0.075			52753		56753		
0.082			52823		56823		
0.091	7.0 \times 16.0 (17.5) \times 18.5	1.4	52913	1250	56913	700	800
0.1			52104		56104		
0.11			52114		56114		
0.12			52124		56124		
0.13	7.5 \times 16.5 (18.0) \times 18.5	1.5	52134	1250	56134	650	800
0.15			52154		56154		
0.16	8.0 \times 17.0 (18.5) \times 18.5	1.6	52164	1250	56164	600	700
0.18	8.5 \times 17.5 (19.0) \times 18.5	1.7	52184	1000	56184	550	700
0.2			52204		56204		
0.22	9.0 \times 18.0 (19.5) \times 18.5	1.8	52224	1000	56224	550	600
Pitch = 22.5 \pm 0.4 mm; $d_t = 0.80 \pm 0.08$ mm					pitch = 7.5 mm (bent back)	pitch = 22.5 mm	
0.24	6.5 \times 19.5 \times 26.0	1.7	52244	750			
0.27	7.0 \times 20.0 \times 26.0	1.8	52274	650			
0.3	7.5 \times 20.5 \times 26.0	1.9	52304	600			
0.33			52334				
0.36	8.0 \times 21.0 \times 26.0	2.0	52364	550			
0.39	8.5 \times 21.5 \times 26.0	2.1	52394	500			
0.43			52434				
0.47	9.0 \times 22.0 \times 26.0	2.4	52474	450			
0.51	9.5 \times 22.5 \times 26.0	2.5	52514	450			
0.56	10.0 \times 23.0 \times 26.0	2.6	52564	400			
0.62	10.5 \times 23.5 \times 26.0	2.7	52624	350			
Pitch = 27.5 \pm 0.4 mm; $d_t = 0.80 \pm 0.08$ mm					pitch = 7.5 mm (bent back)	pitch = 27.5 mm	
0.68	10.0 \times 23.0 \times 30.0	5.0	52684	450			
0.75	10.5 \times 23.5 \times 30.0	5.0	52754	450			
0.82	11.0 \times 24.0 \times 30.0	5.5	52824	400			
0.91	11.5 \times 24.5 \times 30.0	5.5	52914	400			
1.0	12.0 \times 25.0 \times 30.0	6.0	52105	350			
1.1	12.5 \times 25.5 \times 30.0	6.5	52115	350			
1.2	13.0 \times 26.0 \times 30.0	6.5	52125	300			

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

C (μF)	DIMENSIONS $w_{\max} \times h_{\max} \times l_{\max}$ (mm)	MASS (g)	CATALOG NUMBER 2222 479 AND PACKAGING	
			LOOSE IN BOX	
			$l_t = 4.0 + 1.0/- 0.5 \text{ mm}$	
			C-tol = $\pm 5 \%$	
			last 5 digits of catalog number	SPQ
Pitch = $10.0 \pm 1.0 \text{ mm}$; $d_t = 0.60 \pm 0.06 \text{ mm}$				
0.022	6.0 × 18.0 × 12.5	0.9	90153	1400
0.024			90154	
0.027			90155	
0.03			90156	
0.033			90157	
0.036	6.0 × 18.0 × 12.5	0.9	90158	1400
0.039			90159	
0.043			90161	
0.047			90162	
Pitch = $15.0 \pm 1.0 \text{ mm}$; $d_t = 0.80 \pm 0.08 \text{ mm}$				
0.051	6.5 × 18.5 × 18.5	1.3	90163	1250
0.056			90164	
0.062			90165	
0.068			90166	
0.075			90167	
0.082			90168	
0.091	7.0 × 19.0 × 18.5	1.4	90169	1250
0.1			90171	
0.11			90172	
0.12			90173	
0.13	7.5 × 19.5 × 18.5	1.5	90174	1000
0.15			90175	
0.16	8.0 × 20.0 × 18.5	1.6	90176	1000
0.18	8.5 × 20.5 × 18.5	1.7	90177	900
0.2			90178	
0.22	9.0 × 21.0 × 18.5	1.8	90179	800
Pitch = $22.5 \pm 1.0 \text{ mm}$; $d_t = 0.80 \pm 0.08 \text{ mm}$				
0.24	6.5 × 22.5 × 26.0	1.7	90181	900
0.27	7.0 × 23.0 × 26.0	1.8	90182	850
0.3	7.5 × 23.5 × 26.0	1.9	90183	750
0.33			90184	
0.36	8.0 × 24.0 × 26.0	2.0	90185	700
0.39	8.5 × 24.5 × 26.0	2.1	90186	650
0.43			90187	
0.47	9.0 × 25.0 × 26.0	2.4	90188	600
0.51	9.5 × 25.5 × 26.0	2.5	90189	550
0.56	10.0 × 26.0 × 26.0	2.6	90191	500
0.62	10.5 × 26.5 × 26.0	2.7	90192	500
Pitch = $27.5 \pm 1.0 \text{ mm}$; $d_t = 0.80 \pm 0.08 \text{ mm}$				
0.68	10.0 × 26.0 × 30.0	5.0	90193	400
0.75	10.5 × 26.5 × 30.0	5.0	90194	400
0.82	11.0 × 27.0 × 30.0	5.5	90195	350
0.91	11.5 × 27.5 × 30.0	5.5	90196	350
1.0	12.0 × 28.0 × 30.0	6.0	90086	350
1.1	12.5 × 28.5 × 30.0	6.5	90197	300
1.2	13.0 × 29.0 × 30.0	6.5	90198	300



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SPECIFIC REFERENCE DATA (630 VDC)

DESCRIPTION	VALUE	
	at 10 kHz	at 100 kHz
Tangent of loss angle:		
0.01 μF < C ≤ 0.027 μF	≤ 5 × 10 ⁻⁴	≤ 15 × 10 ⁻⁴
0.027 μF < C ≤ 0.075 μF	≤ 5 × 10 ⁻⁴	≤ 20 × 10 ⁻⁴
0.075 μF < C ≤ 0.11 μF	≤ 5 × 10 ⁻⁴	≤ 25 × 10 ⁻⁴
0.12 μF < C ≤ 0.18 μF	≤ 10 × 10 ⁻⁴	≤ 30 × 10 ⁻⁴
0.18 μF < C ≤ 0.3 μF	≤ 10 × 10 ⁻⁴	≤ 35 × 10 ⁻⁴
0.3 μF < C ≤ 0.39 μF	≤ 10 × 10 ⁻⁴	≤ 40 × 10 ⁻⁴
0.39 μF < C ≤ 0.56 μF	≤ 10 × 10 ⁻⁴	≤ 45 × 10 ⁻⁴
0.56 μF < C ≤ 0.68 μF	≤ 10 × 10 ⁻⁴	≤ 50 × 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
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

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

C (μF)	DIMENSIONS w _{max} × h (h') _{max} × l _{max} (mm)	MASS (g)	CATALOG NUMBER 2222 479 AND PACKAGING				
			LOOSE IN BOX		REEL		
			l _t = 5.0 ± 1.0 mm	all leads	PITCH 7.5 mm (bent back)		original pitch
			C-tol = ± 5 %	SPQ	C-tol = ± 5 %		SPQ
last 5 digits of catalog number	last 5 digits of catalog number	SPQ					
Pitch = 10.0 ± 0.4 mm; d _t = 0.60 ± 0.06 mm			pitch = 7.5 mm (bent back)		pitch = 10.0 mm		
0.01	6.0 x 15.0 x 12.5	0.9	62103	1000		1000	
0.011							
0.012							
0.013							
0.015							
0.016							
0.018							
0.02							
0.022							
0.024							
0.027	6.5 x 15.5 x 12.5	1.0	62273	1000		900	
Pitch = 15.0 ± 0.4 mm; d _t = 0.80 ± 0.08 mm			pitch = 7.5 mm (bent back)		pitch = 15.0 mm		
0.03	6.5 x 15.5 (17.0) x 18.5	1.3	62303	1500	750	900	
0.033							
0.036							
0.039							
0.043							
0.047							
0.051							
0.056							
0.062							
0.068							
0.075	7.0 x 16.0 (17.5) x 18.5	1.4	62623	1250	66623	700	
0.082	7.5 x 16.5 (18.0) x 18.5	1.5	62683	1250	66683	650	
0.091	8.0 x 17.0 (18.5) x 18.5	1.6	62753	1250	66753	600	
0.1	8.5 x 17.5 (19.0) x 18.5	1.7	62823	1000	66823	700	
0.11	9.0 x 18.0 (19.5) x 18.5	1.8	62913	1000	66913	550	
	9.5 x 18.5 (20.0) x 18.5	1.9	62104	900	66104	600	
			62114	900	66114	600	

C (μ F)	DIMENSIONS $w_{max} \times h (h')_{max} \times l_{max}$ (mm)	MASS (g)	CATALOG NUMBER 2222 479 AND PACKAGING	
			LOOSE IN BOX	
			$l_t = 5.0 \pm 1.0$ mm	all leads
			C-tol = ± 5 %	SPQ
last 5 digits of catalog number				
Pitch = 22.5 ± 0.4 mm; $d_t = 0.80 \pm 0.08$ mm				
0.12	6.5 x 19.5 x 26.0	1.7	62124	750
0.13	7.0 x 20.0 x 26.0	1.8	62134	650
0.15	7.5 x 20.5 x 26.0	1.9	62154	600
0.16			62164	
0.18	8.0 x 21.0 x 26.0	2.0	62184	550
0.20	8.5 x 21.5 x 26.0	2.1	62204	500
0.22	9.0 x 22.0 x 26.0	2.4	62224	450
0.24			62244	
0.27	9.5 x 22.5 x 26.0	2.5	62274	450
0.30	10.0 x 23.0 x 26.0	2.7	62304	400
Pitch = 27.5 ± 0.4 mm; $d_t = 0.80 \pm 0.08$ mm				
0.33	9.5 x 22.5 x 30.0	5.0	62334	550
0.36	10.0 x 22.5 x 30.0	5.0	62364	500
0.39	10.5 x 23.0 x 30.0	5.0	62394	450
0.43	11.0 x 23.0 x 30.0	5.5	62434	450
0.47	11.5 x 24.5 x 30.0	5.5	62474	400
0.51	12.0 x 25.0 x 30.0	6.0	62514	350
0.56	13.0 x 26.0 x 30.0	6.5	62564	300
0.62	13.5 x 26.5 x 30.0	6.5	62624	300
0.68	14.0 x 27.0 x 30.0	7.0	62684	300

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

C (μ F)	DIMENSIONS $w_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOG NUMBER 2222 479 AND PACKAGING	
			LOOSE IN BOX	
			$l_t = 4.0 + 1.0/- 0.5$ mm	
			C-tol = ± 5 %	SPQ
last 5 digits of catalog number				
Pitch = 10.0 ± 1.0 mm; $d_t = 0.60 \pm 0.06$ mm				
0.01	6.0 x 18.0 x 12.5	0.9	90199	1400
0.011			90201	
0.012			90202	
0.013			90203	
0.015			90204	
0.016			90205	
0.018			90206	
0.02			90207	
0.022			90208	
0.024			90209	
0.027			6.5 x 18.5 x 12.5	

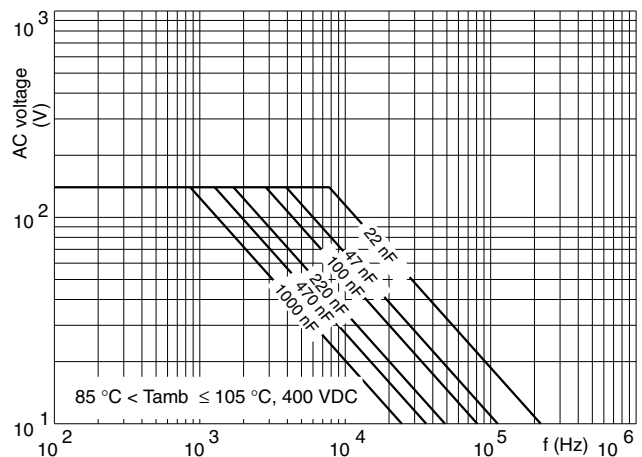
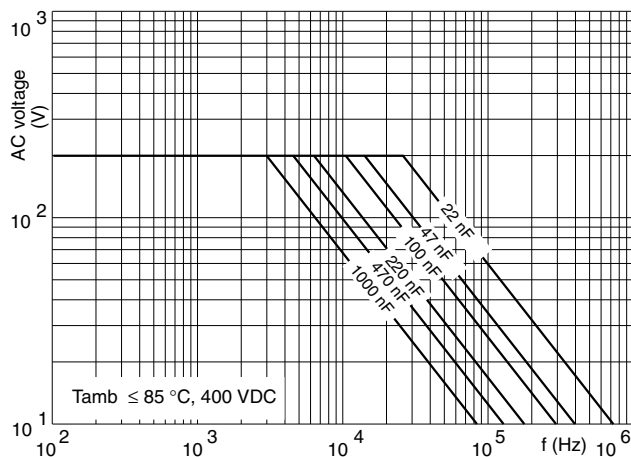
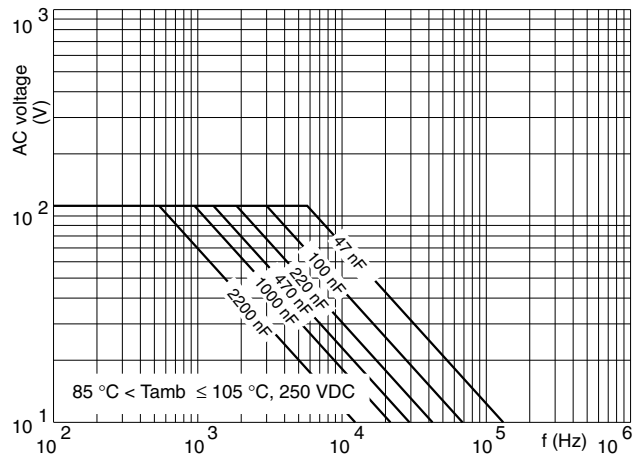
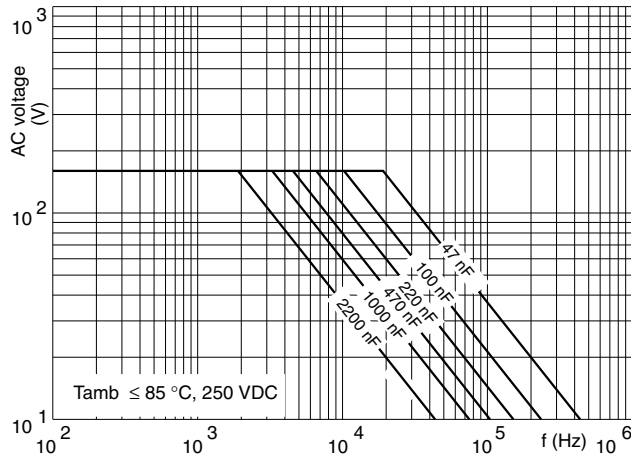
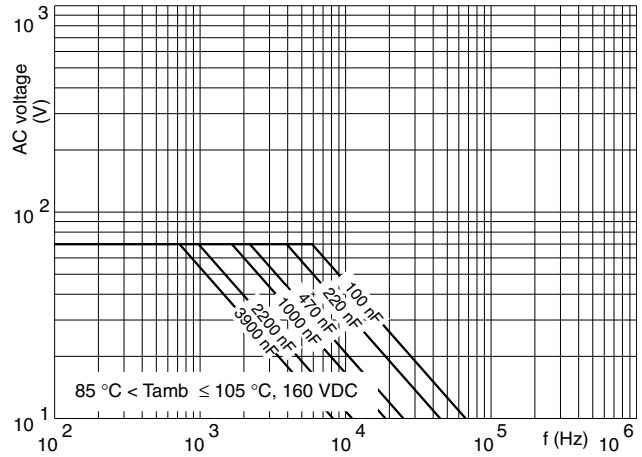
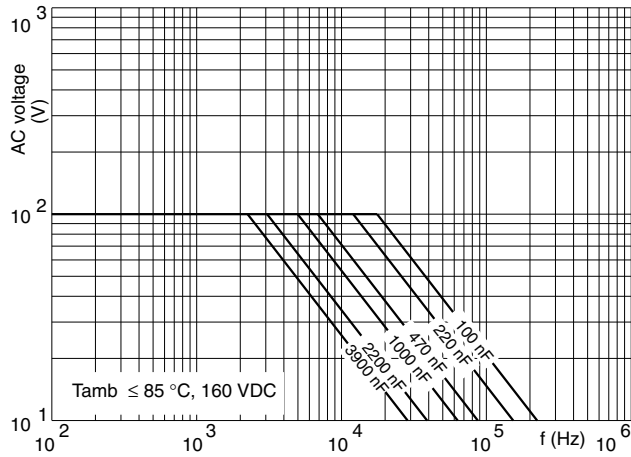


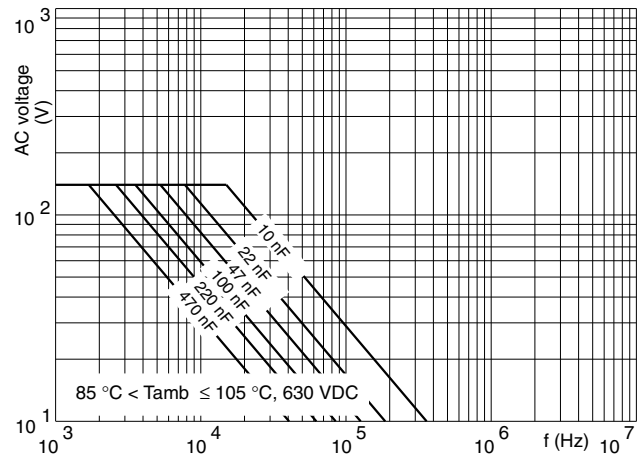
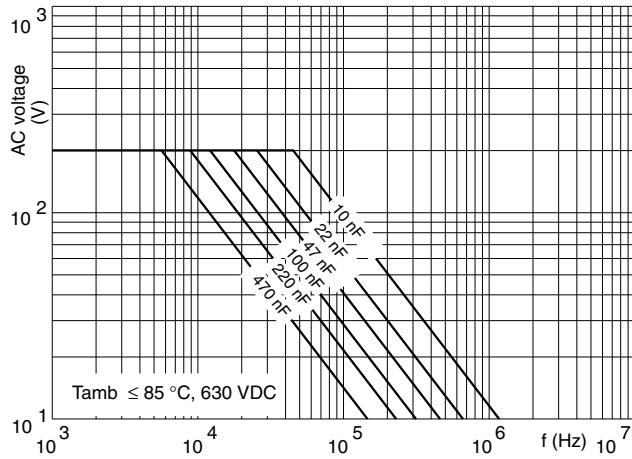
AC and Pulse Polypropylene
Film Capacitors MKP Radial Epoxy
Lacquered Type

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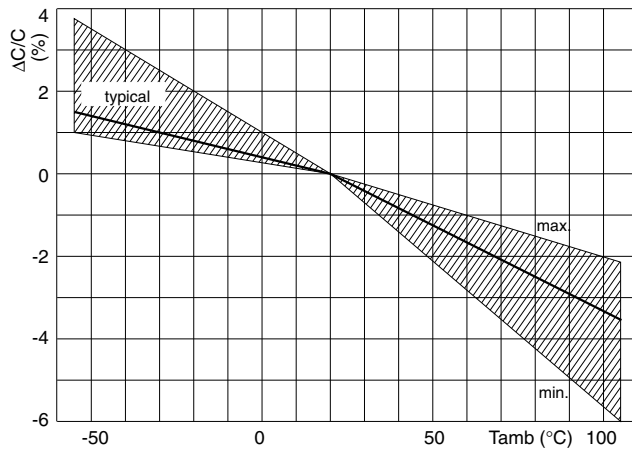
C (μ F)	DIMENSIONS $w_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOG NUMBER 2222 479 AND PACKAGING	
			LOOSE IN BOX	
			$l_t = 4.0 + 1.0/- 0.5$ mm	
			C-tol ± 5 %	SPQ
			last 5 digits of catalog number	
Pitch = 15.0 \pm 1.0 mm; $d_t = 0.80 \pm 0.08$ mm				
0.03	6.5 x 18.5 x 18.5	1.3	90212	1250
0.033			90213	
0.036			90214	
0.039			90215	
0.043			90216	
0.047			90217	
0.051			90218	
0.056			90219	
0.062	7.0 x 19.0 x 18.5	1.4	90221	1250
0.068	7.5 x 19.5 x 18.5	1.5	90222	1000
0.075	8.0 x 20.0 x 18.5	1.6	90223	1000
0.082			90224	
0.091	8.5 x 20.5 x 18.5	1.7	90225	900
0.1	9.0 x 21.0 x 18.5	1.8	90226	800
0.11	9.5 x 21.5 x 18.5	1.9	90227	800
Pitch = 22.5 \pm 1.0 mm; $d_t = 0.80 \pm 0.08$ mm				
0.12	6.5 x 22.5 x 26.0	1.7	90228	900
0.13	7.0 x 23.0 x 26.0	1.8	90229	850
0.15	7.5 x 23.5 x 26.0	1.9	90231	750
0.16			90232	
0.18	8.0 x 24.0 x 26.0	2.0	90233	700
0.20	8.5 x 24.5 x 26.0	2.1	90234	650
0.22	9.0 x 25.0 x 26.0	2.4	90235	600
0.24			90236	
0.27	9.5 x 25.5 x 26.0	2.5	90237	550
0.30	10.0 x 26.0 x 26.0	2.7	90238	500
Pitch = 27.5 \pm 1.0 mm; $d_t = 0.80 \pm 0.08$ mm				
0.33	9.5 x 25.5 x 30.0	5.0	90239	450
0.36	10.0 x 25.5 x 30.0	5.0	90241	450
0.39	10.5 x 26.0 x 30.0	5.0	90242	400
0.43	11.0 x 26.0 x 30.0	5.5	90243	400
0.47	11.5 x 27.5 x 30.0	5.5	90244	350
0.51	12.0 x 28.0 x 30.0	6.0	90245	350
0.56	13.0 x 29.0 x 30.0	6.5	90246	300
0.62	13.5 x 29.5 x 30.0	6.5	90247	250
0.68	14.0 x 30.0 x 30.0	7.0	90248	250

MAXIMUM RMS VOLTAGE (SINEWAVE) AS A FUNCTION OF FREQUENCY

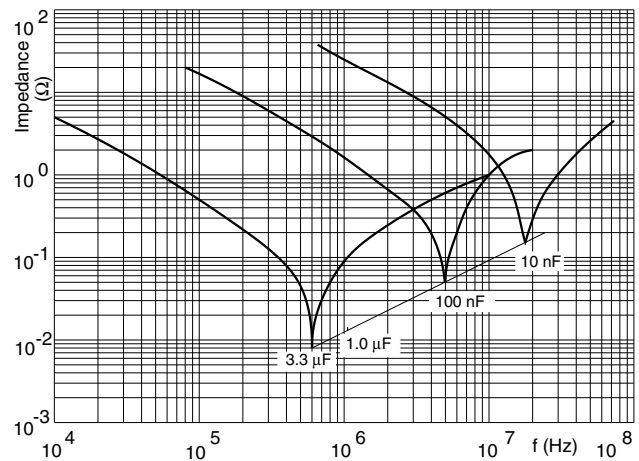




CAPACITANCE



IMPEDANCE





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