AC and Pulse Polypropylene Film Capacitors
MKP Radial Epoxy Lacquered Type

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.

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 aluminium

COATING

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

CONSTRUCTION

Wound mono construction

LEADS

Tinned wire

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

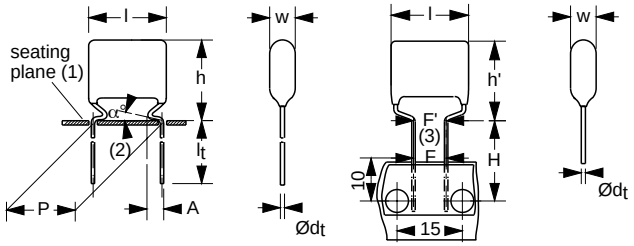
55/105/56

RATED TEMPERATURE

85 °C

MAXIMUM APPLICATION TEMPERATURE

105 °C



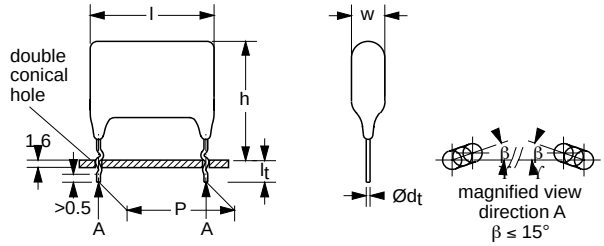
Dimensions in mm.

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

(2) $0 \le \alpha < 50°$.

(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; 22.5 mm and 27.5 mm).



Dimensions in mm

REFERENCE SPECIFICATIONS

IEC 60384-17

PERFORMANCE GRADE

Grade 1 (long life)

STABILITY GRADE

Grade 2

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

DETAIL SPECIFICATION

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

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

TYPE	PACKAGING	LEAD CONFIGURATION	PREFERRED TYPES						
			C-TOL	160 V	250 V	400 V	630 V	250 V monitor type	400 V monitor type
479	loose in box	lead length 5.0 ±1.0 mm	±5%	32	42	52	62	41	51
		lock lead 4.0 +1.0/–0.5 mm		90	90	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	49	59
				dimensions relating to this code should remain in Parenthesis					
			ON REQUEST						
479	loose in box	lead length 3.5 ±0.5 mm	±5%	34	44	54	64	43	53
	taped on reel	H = 16.0 mm; P_0 = 12.7 mm; reel diameter 500 mm		35	45	55	65	47	57

SPECIFIC REFERENCE DATA (160 VDC)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
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 $w_{max} \times h\ (h')_{max} \times l_{max}$ (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	SPQ
			last 5 digits of catalog number		last 5 digits of catalog number		
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				

C (µF)	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 ±1.0 mm	all leads	pitch 7.5 mm (bent back)		original pitch
			C-tol = ±5%		C-tol = ±5%		
			last 5 digits of catalog number	SPQ	last 5 digits of catalog number	SPQ	SPQ
0.15	6.5 × 15.5 × 12.5	1.0	32154	1000			900
0.16			32164				
Pitch = 15.0 ±0.4 mm; d_t = 0.80 ±0.08 mm					**pitch = 7.5 mm (bent back)**		**pitch = 15.0 mm**
0.18	6.0 × 15.0 (16.5) × 18.5	1.2	32184	2000	36184	800	1000
0.20	6.5 × 15.5 (17.0) × 18.5	1.3	32204	1500	36204	750	900
0.22			32224		36224		
0.24	7.0 × 16.0 (17.5) × 18.5	1.4	32244	1250	36244	700	800
0.27			32274		36274		
0.30			32304		36304		
0.33			32334		36334		
0.36			32364		36364		
0.39			32394		36394		
0.43	7.5 × 16.5 (18.0) × 18.5	1.5	32434	1250	36434	650	800
0.47			32474		36474		
0.51	8.0 × 17.0 (18.5) × 18.5	1.6	32514	1250	36514	600	700
0.56			32564		36564		
0.62	8.5 × 17.5 (19.0) × 18.5	1.7	32624	1000	36624	550	700
0.68	9.0 × 18.0 (19.5) × 18.5	1.8	32684	1000	36684	550	600
0.75	9.5 × 18.5 (20.0) × 18.5	1.9	32754	900	36754	500	600
Pitch = 22.5 ±0.4 mm; d_t = 0.80 ±0.08 mm					**pitch = 7.5 mm (bent back)**		**pitch = 22.5 mm**
0.82	7.0 × 20.0 × 26.0	1.8	32824	650			550
0.91	7.5 × 20.5 × 26.0	1.9	32914	600			500
1			32105				
1.1	8.0 × 21.0 × 26.0	2.0	32115	550			500
1.2	8.5 × 21.5 × 26.0	2.1	32125	500			450
1.3			32135				
1.5	9.5 × 22.5 × 26.0	2.4	32155	450			400
1.6			32165				
1.8	10.0 × 23.0 × 26.0	2.5	32185	400			400
Pitch = 27.5 ±0.4 mm; d_t = 0.80 ±0.08 mm					**pitch = 7.5 mm (bent back)**		**pitch = 27.5 mm**
2	10.0 × 23.0 × 30.0	5.0	32205	450			
2.2	10.5 × 23.5 × 30.0	5.0	32225	450			
2.4	11.0 × 24.0 × 30.0	5.5	32245	400			
2.7	11.5 × 24.5 × 30.0	5.5	32275	400			
3	12.0 × 25.0 × 30.0	6.0	32305	350			
3.3	13.0 × 26.0 × 30.0	6.5	32335	300			
3.6	13.5 × 26.5 × 30.0	7.0	32365	300			
3.9	14.0 × 27.0 × 30.0	7.0	32395	300			

U_{Rdc} = 160 V; U_{Rac} = 100 V; U_{p-p} = 280 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 mm	
			C-tol = ±5%	SPQ
			last 5 digits of catalog number	
Pitch = 10.0 ±1.0 mm; d_t = 0.60 ±0.06 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 ±1.0 mm; d_t = 0.80 ±0.08 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 ±1.0 mm; d_t = 0.80 ±0.08 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 ±1.0 mm; d_t = 0.80 ±0.08 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

SPECIFIC REFERENCE DATA (250 VDC)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
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 $w_{max} \times h\ (h')_{max} \times l_{max}$ (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%		C-tol = ±5%		
			last 5 digits of catalog number	SPQ	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
0.047	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 (µF)	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 ±1.0 mm	all leads	pitch 7.5 mm (bent back)		original pitch
			C-tol = ±5%		C-tol = ±5%		
			last 5 digits of catalog number	SPQ	last 5 digits of catalog number	SPQ	SPQ
Pitch = 15.0 ±0.4 mm; d_t = 0.80 ±0.08 mm					**pitch = 7.5 mm (bent back)**		**pitch = 15.0 mm**
0.11	6.5 × 15.5 (17.0) × 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 × 16.0 (17.5) × 18.5	1.4	42244	1250	46244	700	800
0.27	7.5 × 16.5 (18.0) × 18.5	1.5	42274	1250	46274	650	800
0.30			42304		46304		
0.33	8.0 × 17.0 (18.5) × 18.5	1.6	42334	1250	46334	600	700
0.36	8.5 × 17.5 (19.0) × 18.5	1.7	42364	1000	46364	550	700
0.39			42394		46394		
0.43	9.0 × 18.0 (19.5) × 18.5	1.8	42434	1000	46434	550	600
0.47	9.5 × 18.5 (20.0) × 18.5	1.9	42474	900	46474	500	600
Pitch = 22.5 ±0.4 mm; d_t = 0.80 ±0.08 mm					**pitch = 7.5 mm (bent back)**		**pitch = 22.5 mm**
0.51	7.0 × 20.0 × 26.0	1.8	42514	650			550
0.56			42564				
0.62	7.5 × 20.5 × 26.0	1.9	42624	600			500
0.68			42684				
0.75	8.0 × 21.0 × 26.0	2.0	42754	550			500
0.82	8.5 × 21.5 × 26.0	2.1	42824	500			450
0.91	9.0 × 22.0 × 26.0	2.4	42914	450			450
1.0	9.5 × 22.5 × 26.0	2.5	42105	450			400
1.1	10.0 × 23.0 × 26.0	2.6	42115	400			400
1.2	10.5 × 23.5 × 26.0	2.7	42125	350			350
Pitch = 27.5 ±0.4 mm; d_t = 0.80 ±0.08 mm					**pitch = 7.5 mm (bent back)**		**pitch = 27.5 mm**
1.3	10.0 × 23.0 × 30.0	5.0	42135	450			
1.5	10.5 × 23.5 × 30.0	5.0	42155	450			
1.6	11.0 × 24.0 × 30.0	5.5	42165	400			
1.8	11.5 × 24.5 × 30.0	5.5	42185	400			
2.0	12.5 × 25.5 × 30.0	6.5	42205	350			
2.2	13.0 × 26.0 × 30.0	6.5	42225	300			
2.4	13.5 × 26.5 × 30.0	7.0	42245	300			
2.7	14.0 × 27.0 × 30.0	7.0	42275	300			
3.0	15.0 × 28.0 × 30.0	7.5	42305	250			

U_{Rdc} = 250 V; U_{Rac} = 160 V; U_{p-p} = 450 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 mm C-tol = ±5% last 5 digits of catalog number	SPQ
Pitch = 10.0 ±1.0 mm; d_t = 0.60 ±0.06 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 ±1.0 mm; d_t = 0.80 ±0.08 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 ±1.0 mm; d_t = 0.80 ±0.08 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 ±1.0 mm; d_t = 0.80 ±0.08 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	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.022 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}
0.11 μF < C ≤ 0.18 μF	≤10 × 10^{-4}	≤30 × 10^{-4}
0.18 μF < C ≤ 0.22 μF	≤10 × 10^{-4}	≤35 × 10^{-4}
0.24 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 ≤ 0.82 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}
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 ≤ 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	

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

C (μF)	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 ±1.0 mm	all leads	pitch 7.5 mm (bent back)		original pitch
			C-tol = ±5%		C-tol = ±5%		
			last 5 digits of catalog number	SPQ	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**
0.022	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				
Pitch = 15.0 ±0.4 mm; d_t = 0.80 ±0.08 mm					**pitch = 7.5 mm (bent back)**		**pitch = 15.0 mm**
0.051	6.5 × 15.5 (17.0) × 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		

C (µF)	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 ±1.0 mm	all leads	pitch 7.5 mm (bent back)		original pitch
			C-tol = ±5%		C-tol = ±5%		
			last 5 digits of catalog number	SPQ	last 5 digits of catalog number	SPQ	SPQ
0.091	7.0 × 16.0 (17.5) × 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 × 16.5 (18.0) × 18.5	1.5	52134	1250	56134	650	800
0.15			52154		56154		
0.16	8.0 × 17.0 (18.5) × 18.5	1.6	52164	1250	56164	600	700
0.18	8.5 × 17.5 (19.0) × 18.5	1.7	52184	1000	56184	550	700
0.2			52204		56204		
0.22	9.0 × 18.0 (19.5) × 18.5	1.8	52224	1000	56224	550	600
Pitch = 22.5 ±0.4 mm; d_t = 0.80 ±0.08 mm					**pitch = 7.5 mm (bent back)**		**pitch = 22.5 mm**
0.24	6.5 × 19.5 × 26.0	1.7	52244	750			600
0.27	7.0 × 20.0 × 26.0	1.8	52274	650			550
0.3	7.5 × 20.5 × 26.0	1.9	52304	600			500
0.33			52334				
0.36	8.0 × 21.0 × 26.0	2.0	52364	550			500
0.39	8.5 × 21.5 × 26.0	2.1	52394	500			450
0.43			52434				
0.47	9.0 × 22.0 × 26.0	2.4	52474	450			450
0.51	9.5 × 22.5 × 26.0	2.5	52514	450			400
0.56	10.0 × 23.0 × 26.0	2.6	52564	400			400
0.62	10.5 × 23.5 × 26.0	2.7	52624	350			350
Pitch = 27.5 ±0.4 mm; d_t = 0.80 ±0.08 mm					**pitch = 7.5 mm (bent back)**		**pitch = 27.5 mm**
0.68	10.0 × 23.0 × 30.0	5.0	52684	450			
0.75	10.5 × 23.5 × 30.0	5.0	52754	450			
0.82	11.0 × 24.0 × 30.0	5.5	52824	400			
0.91	11.5 × 24.5 × 30.0	5.5	52914	400			
1.0	12.0 × 25.0 × 30.0	6.0	52105	350			
1.1	12.5 × 25.5 × 30.0	6.5	52115	350			
1.2	13.0 × 26.0 × 30.0	6.5	52125	300			

U_{Rdc} = 400 V; U_{Rac} = 200 V; U_{p-p} = 560 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 mm	
			C-tol = ±5%	
			last 5 digits of catalog number	SPQ
Pitch = 10.0 ±1.0 mm; d_t = 0.60 ±0.06 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	

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 mm	
			C-tol = ±5%	
			last 5 digits of catalog number	SPQ
0.036	6.0 × 18.0 × 12.5	0.9	90158	1400
0.039			90159	
0.043			90161	
0.047			90162	
Pitch = 15.0 ±1.0 mm; d_t = 0.80 ±0.08 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 ±1.0 mm; d_t = 0.80 ±0.08 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 ±1.0 mm; d_t = 0.80 ±0.08 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

SPECIFIC REFERENCE DATA (630 VDC)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
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 $w_{max} \times h\ (h')_{max} \times l_{max}$ (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%		C-tol = ±5%		
			last 5 digits of catalog number	SPQ	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**
0.01	6.0 × 15.0 × 12.5	0.9	62103	1000			1000
0.011			62113				
0.012			62123				
0.013			62133				
0.015			62153				
0.016			62163				
0.018			62183				
0.02			62203				
0.022			62223				
0.024			62243				
0.027	6.5 × 15.5 × 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 × 15.5 (17.0) × 18.5	1.3	62303	1500	66303	750	900
0.033			62333		66333		
0.036			62363		66363		
0.039			62393		66393		
0.043			62433		66433		
0.047			62473		66473		
0.051			62513		66513		
0.056			62563		66563		
0.062	7.0 × 16.0 (17.5) × 18.5	1.4	62623	1250	66623	700	800
0.068	7.5 × 16.5 (18.0) × 18.5	1.5	62683	1250	66683	650	800
0.075	8.0 × 17.0 (18.5) × 18.5	1.6	62753	1250	66753	600	700
0.082			62823		66823		

C (μF)	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 ±1.0 mm	all leads	pitch 7.5 mm (bent back)		original pitch
			C-tol = ±5%		C-tol = ±5%		
			last 5 digits of catalog number	SPQ	last 5 digits of catalog number	SPQ	SPQ
0.091	8.5 × 17.5 (19.0) × 18.5	1.7	62913	1000	66913	550	700
0.1	9.0 × 18.0 (19.5) × 18.5	1.8	62104	1000	66104	550	600
0.11	9.5 × 18.5 (20.0) × 18.5	1.9	62114	900	66114	500	600
Pitch = 22.5 ±0.4 mm; d_t = 0.80 ±0.08 mm					**pitch = 7.5 mm (bent back)**		**pitch = 22.5 mm**
0.12	6.5 × 19.5 × 26.0	1.7	62124	750			600
0.13	7.0 × 20.0 × 26.0	1.8	62134	650			550
0.15	7.5 × 20.5 × 26.0	1.9	62154	600			500
0.16			62164				
0.18	8.0 × 21.0 × 26.0	2.0	62184	550			500
0.20	8.5 × 21.5 × 26.0	2.1	62204	500			450
0.22	9.0 × 22.0 × 26.0	2.4	62224	450			450
0.24			62244				
0.27	9.5 × 22.5 × 26.0	2.5	62274	450			400
0.30	10.0 × 23.0 × 26.0	2.7	62304	400			400
Pitch = 27.5 ±0.4 mm; d_t = 0.80 ±0.08 mm					**pitch = 7.5 mm (bent back)**		**pitch = 27.5 mm**
0.33	9.5 × 22.5 × 30.0	5.0	62334	550			
0.36	10.0 × 22.5 × 30.0	5.0	62364	500			
0.39	10.5 × 23.0 × 30.0	5.0	62394	450			
0.43	11.0 × 23.0 × 30.0	5.5	62434	450			
0.47	11.5 × 24.5 × 30.0	5.5	62474	400			
0.51	12.0 × 25.0 × 30.0	6.0	62514	350			
0.56	13.0 × 26.0 × 30.0	6.5	62564	300			
0.62	13.5 × 26.5 × 30.0	6.5	62624	300			
0.68	14.0 × 27.0 × 30.0	7.0	62684	300			

U_{Rdc} = 630 V; U_{Rac} = 200 V; U_{p-p} = 560 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 mm	
			C-tol = ±5%	
			last 5 digits of catalog number	SPQ
Pitch = 10.0 ±1.0 mm; d_t = 0.60 ±0.06 mm				
0.01	6.0 × 18.0 × 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 × 18.5 × 12.5	1.0	90211	1250

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 mm	
			C-tol = ±5%	
			last 5 digits of catalog number	SPQ
Pitch = 15.0 ±1.0 mm; d_t = 0.80 ±0.08 mm				
0.03	6.5 × 18.5 × 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 × 19.0 × 18.5	1.4	90221	1250
0.068	7.5 × 19.5 × 18.5	1.5	90222	1000
0.075	8.0 × 20.0 × 18.5	1.6	90223	1000
0.082			90224	
0.091	8.5 × 20.5 × 18.5	1.7	90225	900
0.1	9.0 × 21.0 × 18.5	1.8	90226	800
0.11	9.5 × 21.5 × 18.5	1.9	90227	800
Pitch = 22.5 ±1.0 mm; d_t = 0.80 ±0.08 mm				
0.12	6.5 × 22.5 × 26.0	1.7	90228	900
0.13	7.0 × 23.0 × 26.0	1.8	90229	850
0.15	7.5 × 23.5 × 26.0	1.9	90231	750
0.16			90232	
0.18	8.0 × 24.0 × 26.0	2.0	90233	700
0.20	8.5 × 24.5 × 26.0	2.1	90234	650
0.22	9.0 × 25.0 × 26.0	2.4	90235	600
0.24			90236	
0.27	9.5 × 25.5 × 26.0	2.5	90237	550
0.30	10.0 × 26.0 × 26.0	2.7	90238	500
Pitch = 27.5 ±1.0 mm; d_t = 0.80 ±0.08 mm				
0.33	9.5 × 25.5 × 30.0	5.0	90239	450
0.36	10.0 × 25.5 × 30.0	5.0	90241	450
0.39	10.5 × 26.0 × 30.0	5.0	90242	400
0.43	11.0 × 26.0 × 30.0	5.5	90243	400
0.47	11.5 × 27.5 × 30.0	5.5	90244	350
0.51	12.0 × 28.0 × 30.0	6.0	90245	350
0.56	13.0 × 29.0 × 30.0	6.5	90246	300
0.62	13.5 × 29.5 × 30.0	6.5	90247	250
0.68	14.0 × 30.0 × 30.0	7.0	90248	250

SPECIFIC REFERENCE DATA (250 VDC MONITOR)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
0.022 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}
0.11 μF < C ≤ 0.18 μF	≤10 × 10^{-4}	≤30 × 10^{-4}
0.18 μF < C ≤ 0.22 μF	≤10 × 10^{-4}	≤35 × 10^{-4}
0.24 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 ≤ 0.82 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}
Rated voltage pulse slope $(dU/dt)_R$:		
P = 10.0 mm	160 V/μs	
P = 15.0 mm	140 V/μs	
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 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 (monitor standard)

C (μF)	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 ±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 = 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	41223	1000			1000
0.024			41243				
0.027			41273				
0.03			41303				
0.033			41333				
0.036			41363				
0.039			41393				
0.043			41433				
0.047			41473				
Pitch = 15.0 ±0.4 mm; d_t = 0.80 ±0.08 mm					**pitch = 7.5 mm (bent back)**		**pitch = 15.0 mm**
0.051	6.5 × 15.5 (17.0) × 18.5	1.3	41513	1500	49513	750	900
0.056			41563		49563		
0.062			41623		49623		
0.068			41683		49683		
0.075			41753		49753		
0.082			41823		49823		

C (µF)	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 ±1.0 mm	all leads	pitch 7.5 mm (bent back)		original pitch
			C-tol = ±5%		C-tol = ±5%		
			last 5 digits of catalog number	SPQ	last 5 digits of catalog number	SPQ	SPQ
0.091	7.0 × 16.0 (17.5) × 18.5	1.4	41913	1250	49913	700	800
0.1			41104		49104		
0.11			41114		49114		
0.12			41124		49124		
0.13	7.5 × 16.5 (18.0) × 18.5	1.5	41134	1250	49134	650	800
0.15			41154		49154		
0.16	8.0 × 17.0 (18.5) × 18.5	1.6	41164	1250	49164	600	700
0.18	8.5 × 17.5 (19.0) × 18.5	1.7	41184	1000	49184	550	700
0.2			41204		49204		
0.22	9.0 × 18.0 (19.5) × 18.5	1.8	41224	1000	49224	550	600
Pitch = 22.5 ±0.4 mm; d_t = 0.80 ±0.08 mm					**pitch = 7.5 mm (bent back)**		**pitch = 22.5 mm**
0.24	6.5 × 19.5 × 26.0	1.7	41244	750			600
0.27	7.0 × 20.0 × 26.0	1.8	41274	650			550
0.3	7.5 × 20.5 × 26.0	1.9	41304	600			500
0.33			41334				
0.36	8.0 × 21.0 × 26.0	2.0	41364	550			500
0.39	8.5 × 21.5 × 26.0	2.1	41394	500			450
0.43			41434				
0.47	9.0 × 22.0 × 26.0	2.4	41474	450			450
0.51	9.5 × 22.5 × 26.0	2.5	41514	450			400
0.56	10.0 × 23.0 × 26.0	2.6	41564	400			400
0.62	10.5 × 23.5 × 26.0	2.7	41624	350			350
Pitch = 27.5 ±0.4 mm; d_t = 0.80 ±0.08 mm					**pitch = 7.5 mm (bent back)**		**pitch = 27.5 mm**
0.68	10.0 × 23.0 × 30.0	5.0	41684	450			
0.75	10.5 × 23.5 × 30.0	5.0	41754	450			
0.82	11.0 × 24.0 × 30.0	5.5	41824	400			
0.91	11.5 × 24.5 × 30.0	5.5	41914	400			
1.0	12.0 × 25.0 × 30.0	6.0	41105	350			
1.1	12.5 × 25.5 × 30.0	6.5	41115	350			
1.2	13.0 × 26.0 × 30.0	6.5	41125	300			

U_{Rdc} = 250 V; U_{Rac} = 160 V; U_{p-p} = 450 V (monitor 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 mm	
			C-tol = ±5%	
			last 5 digits of catalog number	SPQ
Pitch = 10.0 ±1.0 mm; d_t = 0.60 ±0.06 mm				
0.022	6.0 × 18.0 × 12.5	0.9	90379	1400
0.024			90381	
0.027			90382	
0.03			90383	
0.033			90384	
0.036			90385	
0.039			90386	
0.043			90387	
0.047			90388	

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 mm	
			C-tol = ±5%	
			last 5 digits of catalog number	SPQ
Pitch = 15.0 ±1.0 mm; d_t = 0.80 ±0.08 mm				
0.051	6.5 × 18.5 × 18.5	1.3	90389	1250
0.056			90391	
0.062			90392	
0.068			90393	
0.075			90394	
0.082			90395	
0.091	7.0 × 19.0 × 18.5	1.4	90396	1250
0.1			90397	
0.11			90398	
0.12			90399	
0.13	7.5 × 19.5 × 18.5	1.5	90401	1000
0.15			90402	
0.16	8.0 × 20.0 × 18.5	1.6	90403	1000
0.18	8.5 × 20.5 × 18.5	1.7	90404	900
0.2			90405	
0.22	9.0 × 21.0 × 18.5	1.8	90406	800
Pitch = 22.5 ±1.0 mm; d_t = 0.80 ±0.08 mm				
0.24	6.5 × 22.5 × 26.0	1.7	90407	900
0.27	7.0 × 23.0 × 26.0	1.8	90408	850
0.3	7.5 × 23.5 × 26.0	1.9	90409	750
0.33			90411	
0.36	8.0 × 24.0 × 26.0	2.0	90412	700
0.39	8.5 × 24.5 × 26.0	2.1	90413	650
0.43			90414	
0.47	9.0 × 25.0 × 26.0	2.4	90415	600
0.51	9.5 × 25.5 × 26.0	2.5	90416	550
0.56	10.0 × 26.0 × 26.0	2.6	90417	500
0.62	10.5 × 26.5 × 26.0	2.7	90418	500
Pitch = 27.5 ±1.0 mm; d_t = 0.80 ±0.08 mm				
0.68	10.0 × 26.0 × 30.0	5.0	90419	400
0.75	10.5 × 26.5 × 30.0	5.0	90421	400
0.82	11.0 × 27.0 × 30.0	5.5	90422	350
0.91	11.5 × 27.5 × 30.0	5.5	90423	350
1.0	12.0 × 28.0 × 30.0	6.0	90424	350
1.1	12.5 × 28.5 × 30.0	6.5	90425	300
1.2	13.0 × 29.0 × 30.0	6.5	90426	300

SPECIFIC REFERENCE DATA (400 VDC MONITOR)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
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 $(dU/dt)_R$):		
P = 10.0 mm	200 V/μs	
P = 15.0 mm	180 V/μs	
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	

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

C (μF)	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 ±1.0 mm	all leads	pitch 7.5 mm (bent back)		orginal pitch
			C-tol = ±5%		C-tol = ±5%		
			last 5 digits of catalog number	SPQ	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**
0.01	6.0 × 15.0 × 12.5	0.9	51103	1000			1000
0.011			51113				
0.012			51123				
0.013			51133				
0.015			51153				
0.016			51163				
0.018			51183				
0.02			51203				
0.022	6.0 × 15.0 × 12.5	0.9	51223	1000			1000
0.024			51243				
0.027	6.5 × 15.5 × 12.5	1.0	51273	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 × 15.5 (17.0) × 18.5	1.3	51303	1500	59303	750	900
0.033			51333		59333		
0.036			51363		59363		
0.039			51393		59393		
0.043			51433		59433		
0.047			51473		59473		
0.051			51513		59513		
0.056			51563		59563		
0.062	7.0 × 16.0 (17.5) × 18.5	1.4	51623	1250	59623	700	800
0.068	7.5 × 16.5 (18.0) × 18.5	1.5	51683	1250	59683	650	800

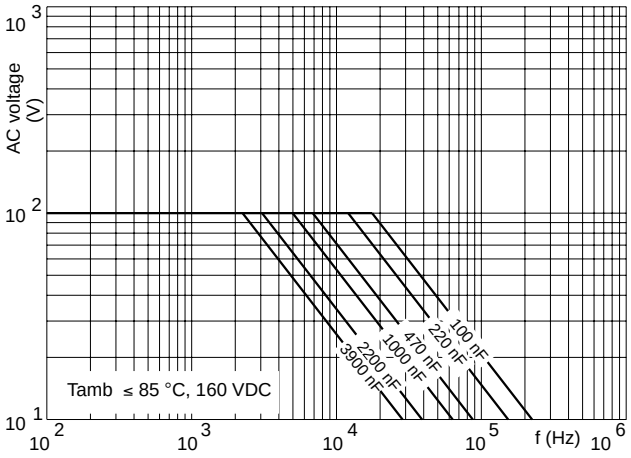
C (μF)	DIMENSIONS $w_{max} \times h\ (h')_{max} \times l_{max}$ (mm)	MASS (g)	CATALOG NUMBER 2222 479 ..... AND PACKAGING				
			LOOSE IN BOX		REEL		
			l_t = 5.0 ±1.0 mm	all leads	pitch 7.5 mm (bent back)		orginal pitch
			C-tol = ±5%		C-tol = ±5%		
			last 5 digits of catalog number	SPQ	last 5 digits of catalog number	SPQ	SPQ
0.075	8.0 × 17.0 (18.5) × 18.5	1.6	51753	1250	59753	600	700
0.082			51823		59823		
0.091	8.5 × 17.5 (19.0) × 18.5	1.7	51913	1000	59913	550	700
0.1	9.0 × 18.0 (19.5) × 18.5	1.8	51104	1000	59104	550	600
0.11	9.5 × 18.5 (20.0) × 18.5	1.9	51114	900	59114	500	600
Pitch = 22.5 ±0.4 mm; d_t = 0.80 ±0.08 mm					**pitch = 7.5 mm (bent back)**		**pitch = 22.5 mm**
0.12	6.5 × 19.5 × 26.0	1.7	51124	750			600
0.13	7.0 × 20.0 × 26.0	1.8	51134	650			550
0.15	7.5 × 20.5 × 26.0	1.9	51154	600			500
0.16			51164				
0.18	8.0 × 21.0 × 26.0	2.0	51184	550			500
0.20	8.5 × 21.5 × 26.0	2.1	51204	500			450
0.22	9.0 × 22.0 × 26.0	2.4	51224	450			450
0.24			51244				
0.27	9.5 × 22.5 × 26.0	2.5	51274	450			400
0.30	10.0 × 23.0 × 26.0	2.7	51304	400			400
Pitch = 27.5 ±0.4 mm; d_t = 0.80 ±0.08 mm					**pitch = 7.5 mm (bent back)**		**pitch = 27.5 mm**
0.33	9.5 × 22.5 × 30.0	5.0	51334	550			
0.36	10.0 × 22.5 × 30.0	5.0	51364	500			
0.39	10.5 × 23.0 × 30.0	5.0	51394	450			
0.43	11.0 × 23.0 × 30.0	5.5	51434	450			
0.47	11.5 × 24.5 × 30.0	5.5	51474	400			
0.51	12.0 × 25.0 × 30.0	6.0	51514	350			
0.56	13.0 × 26.0 × 30.0	6.5	51564	300			
0.62	13.5 × 26.5 × 30.0	6.5	51624	300			
0.68	14.0 × 27.0 × 30.0	7.0	51684	300			

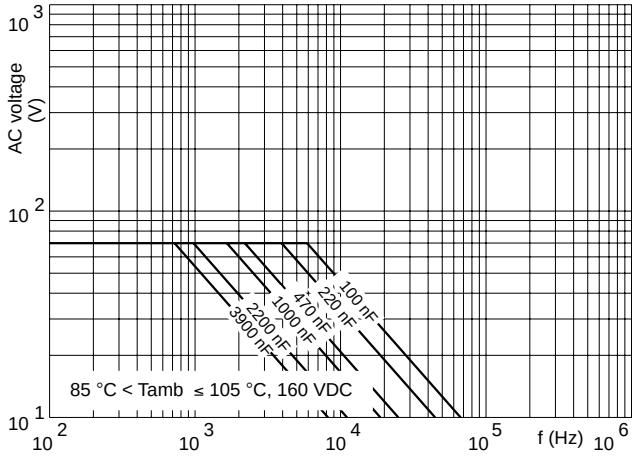
U_{Rdc} = 400 V; U_{Rac} = 200 V; U_{p-p} = 560 V (monitor lock lead)

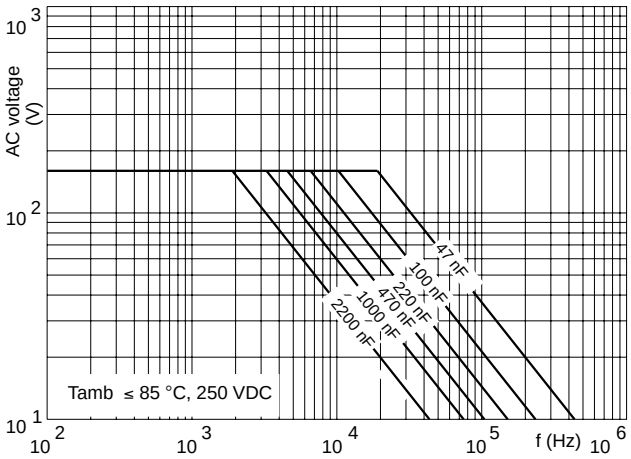
C (μF)	DIMENSIONS $w_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOG NUMBER 2222 479 ..... AND PACKAGING	
			LOOSE IN BOX	
			l_t = 4.0 +1.0/–0.5 mm	
			C-tol = ±5%	
			last 5 digits of catalog number	SPQ
Pitch = 10.0 ±1.0 mm; d_t = 0.60 ±0.06 mm				
0.01	6.0 × 18.0 × 12.5	0.9	90427	1400
0.011			90428	
0.012			90429	
0.013			90431	
0.015			90432	
0.016			90433	
0.018			90434	
0.02			90435	
0.022			90436	
0.024			90437	
0.027	6.5 × 18.5 × 12.5	1.0	90438	1250

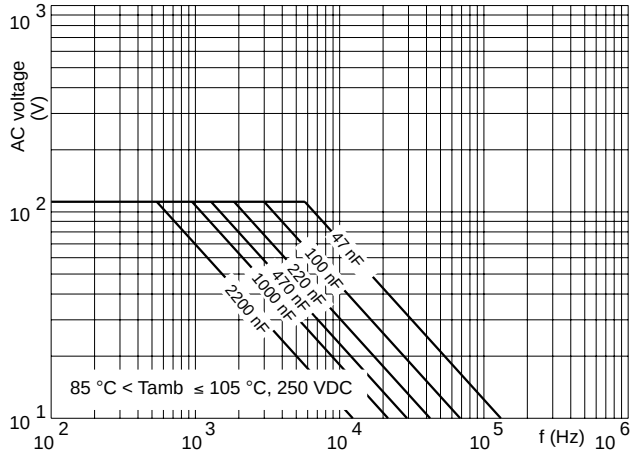
C (μF)	DIMENSIONS $w_{max} \times h_{max} \times l_{max}$ (mm)	MASS (g)	CATALOG NUMBER 2222 479 ..... AND PACKAGING	
			LOOSE IN BOX	
			l_t = 4.0 +1.0/−0.5 mm	
			C-tol = ±5%	
			last 5 digits of catalog number	SPQ
Pitch = 15.0 ±1.0 mm; d_t = 0.80 ±0.08 mm				
0.03	6.5 × 18.5 × 18.5	1.3	90439	1250
0.033			90441	
0.036			90442	
0.039			90443	
0.043			90444	
0.047			90445	
0.051			90446	
0.056			90447	
0.062	7.0 × 19.0 × 18.5	1.4	90448	1250
0.068	7.5 × 19.5 × 18.5	1.5	90449	1000
0.075	8.0 × 20.0 × 18.5	1.6	90451	1000
0.082			90452	
0.091	8.5 × 20.5 × 18.5	1.7	90453	900
0.1	9.0 × 21.0 × 18.5	1.8	90454	800
0.11	9.5 × 21.5 × 18.5	1.9	90455	800
Pitch = 22.5 ±1.0 mm; d_t = 0.80 ±0.08 mm				
0.12	6.5 × 22.5 × 26.0	1.7	90456	800
0.13	7.0 × 23.0 × 26.0	1.8	90457	800
0.15	7.5 × 23.5 × 26.0	1.9	90458	800
0.16			90459	
0.18	8.0 × 24.0 × 26.0	2.0	90461	800
0.20	8.5 × 24.5 × 26.0	2.1	90462	800
0.22	9.0 × 25.0 × 26.0	2.4	90463	800
0.24			90464	
0.27	9.5 × 25.5 × 26.0	2.5	90465	800
0.30	10.0 × 26.0 × 26.0	2.7	90466	800
Pitch = 27.5 ±1.0 mm; d_t = 0.80 ±0.08 mm				
0.33	9.5 × 25.5 × 30.0	5.0	90467	800
0.36	10.0 × 25.5 × 30.0	5.0	90468	800
0.39	10.5 × 26.0 × 30.0	5.0	90469	800
0.43	11.0 × 26.0 × 30.0	5.5	90471	800
0.47	11.5 × 27.5 × 30.0	5.5	90472	800
0.51	12.0 × 28.0 × 30.0	6.0	90473	800
0.56	13.0 × 29.0 × 30.0	6.5	90474	800
0.62	13.5 × 29.5 × 30.0	6.5	90475	800
0.68	14.0 × 30.0 × 30.0	7.0	90476	800

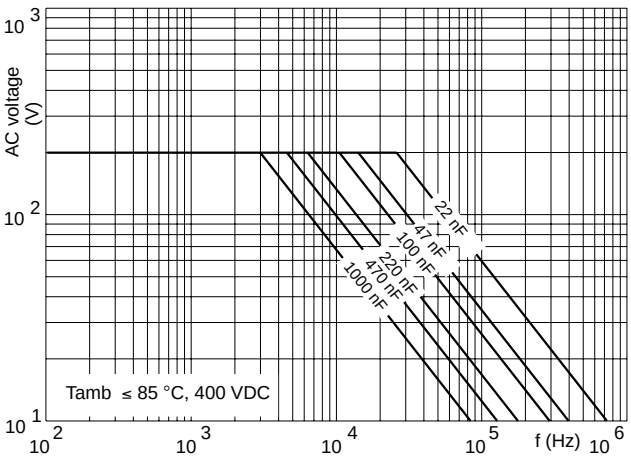
MAXIMUM RMS VOLTAGE (SINEWAVE) AS A FUNCTION OF FREQUENCY

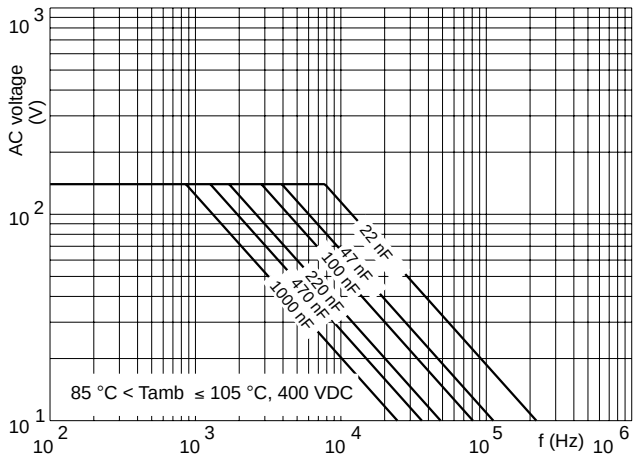


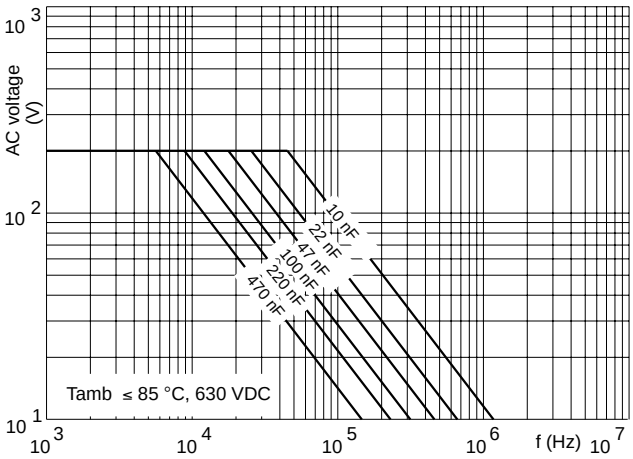


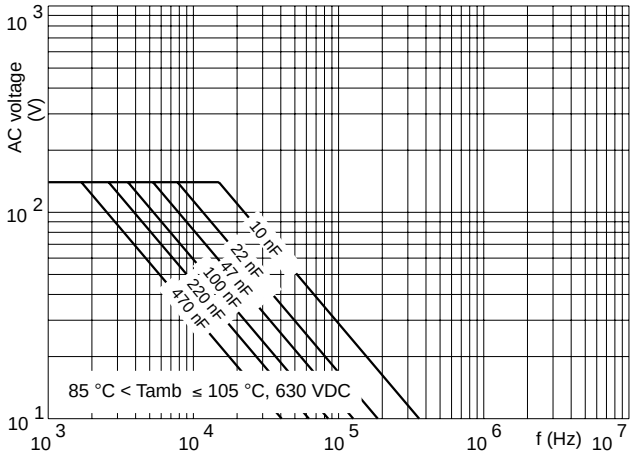


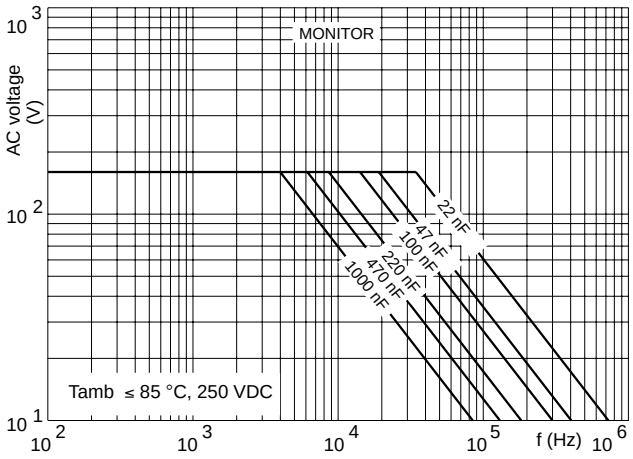


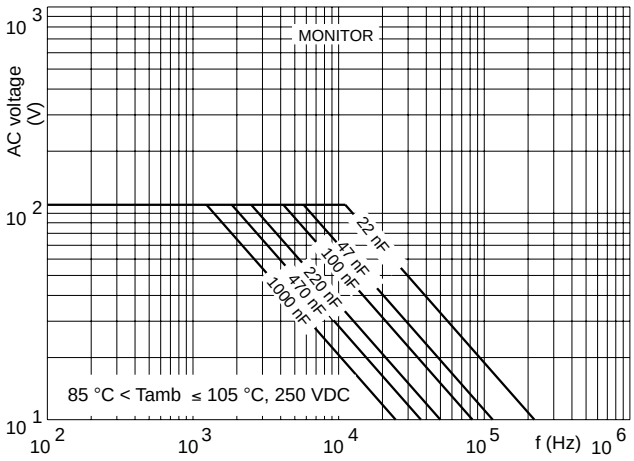


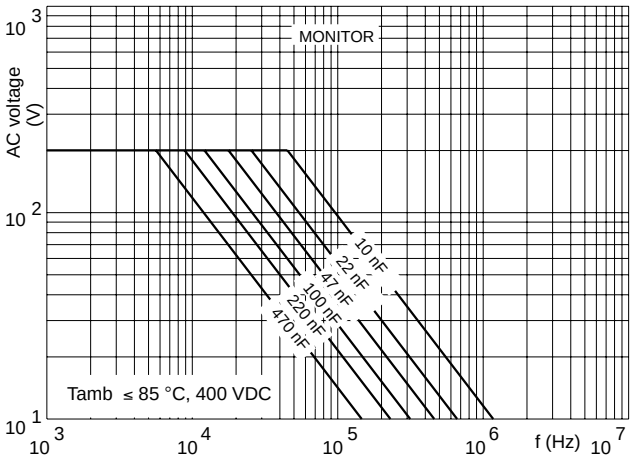


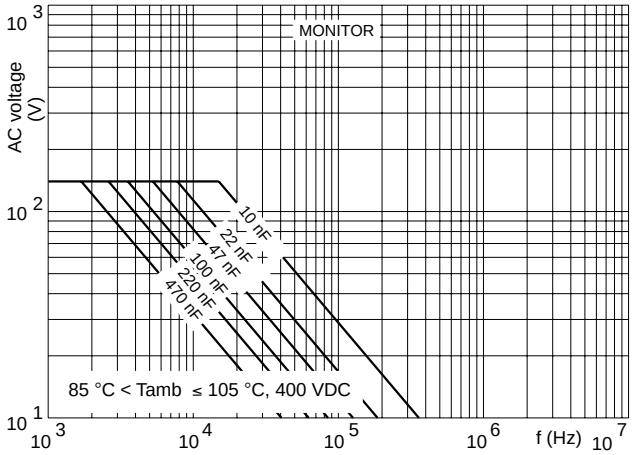

AC voltage (V)
f (Hz)
10 nF
22 nF
47 nF
100 nF
220 nF
470 nF
Tamb ≤ 85 °C, 630 VDC


AC voltage (V)
f (Hz)
10 nF
22 nF
47 nF
100 nF
220 nF
470 nF
85 °C < Tamb ≤ 105 °C, 630 VDC

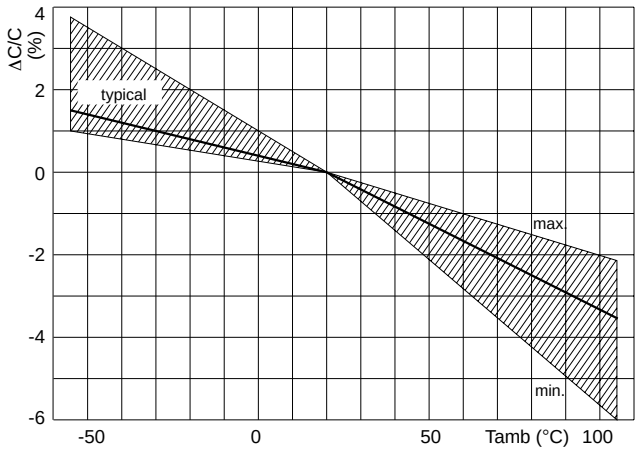

MONITOR
AC voltage (V)
f (Hz)
22 nF
47 nF
100 nF
220 nF
470 nF
1000 nF
Tamb ≤ 85 °C, 250 VDC


MONITOR
AC voltage (V)
f (Hz)
22 nF
47 nF
100 nF
220 nF
470 nF
1000 nF
85 °C < Tamb ≤ 105 °C, 250 VDC


MONITOR
AC voltage (V)
f (Hz)
10 nF
22 nF
47 nF
100 nF
220 nF
470 nF
Tamb ≤ 85 °C, 400 VDC


MONITOR
AC voltage (V)
f (Hz)
10 nF
22 nF
47 nF
100 nF
220 nF
470 nF
85 °C < Tamb ≤ 105 °C, 400 VDC

CAPACITANCE



IMPEDANCE