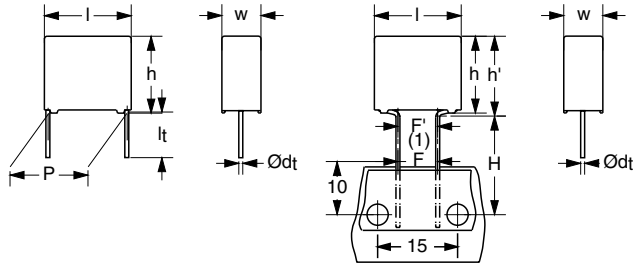


AC and Pulse Double Metallized Polypropylene Film Capacitors MMKP Radial Potted Type



Dimensions in mm.
(1) $|F - F'| < 0.3 \text{ mm.}$
 $F = 7.5 + 0.6/-0.1 \text{ mm.}$

APPLICATIONS

Where steep pulses occur e.g. SMPS (switch mode power supplies). Electronic lighting e.g. Ballast. Motor control circuits. S - correction. For flyback applications please use 1400 V series. For hot asphalt encapsulation process.

MARKING

C-value; tolerance; rated voltage; code for dielectric material; code for factory of origin; manufacturer's type designation; manufacturer; year and week of manufacture

DIELECTRIC

Polypropylene film

ELECTRODES

Metallized film

ENCAPSULATION

Flame retardant plastic case and epoxy resin (UL-class 94 V-0)

CONSTRUCTION

Internal serial construction

LEADS

Tinned wire

CAPACITANCE RANGE (E24 SERIES):

0.001 to 2.7 μF

CAPACITANCE TOLERANCE:

$\pm 5\%$

FEATURES

7.5 mm bent back pitch. 15 to 27.5 mm lead pitch. Low contact resistance. Low loss dielectric. Small dimensions for high density packaging. Supplied loose in box and taped on reel

Lead (Pb)-free product

RoHS-compliant product



RoHS
COMPLIANT

RATED (DC) VOLTAGE

250 V; 400 V; 630 V; 1000 V; 1400 V; 1600 V; 2000 V; 2500 V

RATED (AC) VOLTAGE

125 V; 200 V; 220 V; 350 V; 500 V; 550 V; 700 V; 900 V

RATED PEAK-TO-PEAK VOLTAGE

350 V; 560 V; 630 V; 1000 V; 1400 V; 1600 V; 2000 V; 2500 V

CLIMATIC CATEGORY

55/105/56

RATED (DC) TEMPERATURE

85 °C

RATED (AC) TEMPERATURE

105 °C

MAXIMUM APPLICATION TEMPERATURE

105 °C

REFERENCE SPECIFICATIONS

IEC 60384-17

PERFORMANCE GRADE

Grade 1 (long life)

STABILITY GRADE

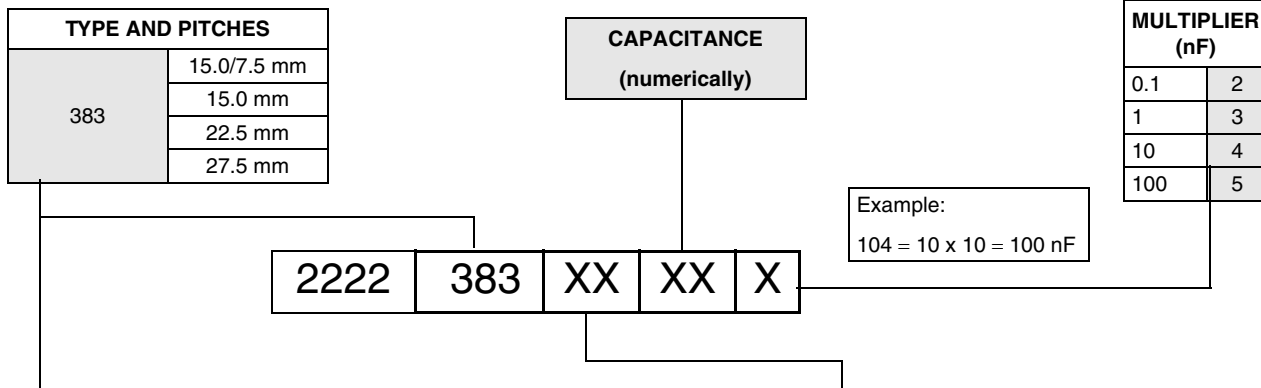
Grade 2

DETAIL SPECIFICATION

For more detailed data and test requirements contact:

filmcaps.roeselare@vishay.com

COMPOSITION OF CATALOG NUMBER



TYPE	PACKAGING	LEAD CONFIGURATION	PREFERRED TYPES								
			C-TOL	250 V	400 V	630 V	1000 V	1400 V	1600 V	2000 V	2500 V
383	loose in box	lead length 3.5 mm	±5%	00	10	20	30	40	50	60	70
	taped on reel (bent back)	H = 16.0 mm; P ₀ = 15.0 mm reel diameter = 500 mm	±5%	03	13	23	33	43	53	63	–
			dimensions relating to this code should remain in Parenthesis								
			ON REQUEST								
383	loose in box	lead length 5.0 mm	±5%	01	11	21	31	41	51	61	71
		lead length 25.0 mm	±5%	04	14	24	34	44	54	64	74
	taped on reel	H = 18.5 mm; P ₀ = 12.7 mm	±5%	02	12	22	32	42	52	62	72
	taped on reel (bent back)	H = 16.0 mm; P ₀ = 15.0 mm reel diameter = 356 mm	±5%	05	15	25	35	45	55	65	–
	taped on reel (bent back)	H = 16.0 mm; P ₀ = 15.0 mm reel diameter = 356 mm for hot asphalt encapsulation	±5%	–	–	–	–	46	56	66	–
			dimensions relating to this code should remain in Parenthesis								

SPECIFIC REFERENCE DATA (250 VDC)

DESCRIPTION	VALUE	
	at 10 kHz	at 100 kHz
Tangent of loss angle:		
C ≤ 0.15 μF	≤ 5 × 10 ⁻⁴	≤ 20 × 10 ⁻⁴
0.15 μF < C ≤ 0.39 μF	≤ 5 × 10 ⁻⁴	≤ 25 × 10 ⁻⁴
0.39 μF < C ≤ 0.56 μF	≤ 10 × 10 ⁻⁴	≤ 45 × 10 ⁻⁴
0.56 μF < C ≤ 0.82 μF	≤ 10 × 10 ⁻⁴	≤ 50 × 10 ⁻⁴
0.82 μF < C ≤ 1.2 μF	≤ 10 × 10 ⁻⁴	≤ 65 × 10 ⁻⁴
1.2 μF < C ≤ 1.8 μF	≤ 15 × 10 ⁻⁴	≤ 75 × 10 ⁻⁴
1.8 μF < C ≤ 2.2 μF	≤ 15 × 10 ⁻⁴	≤ 85 × 10 ⁻⁴
2.2 μF < C ≤ 2.7 μF	≤ 15 × 10 ⁻⁴	≤ 95 × 10 ⁻⁴
Rated voltage pulse slope (dU/dt) _R :		
P = 15.0 mm and 7.5 mm (bent back), for C ≤ 0.15 μF	450 V/μs	
P = 15.0 mm and 7.5 mm (bent back), for 0.15 μF < C ≤ 0.39 μF	900 V/μs	
P = 22.5 mm	290 V/μs	
P = 27.5 mm, for 0.82 μF < C ≤ 2 μF	190 V/μs	
P = 27.5 mm, for 2 μF < C ≤ 2.7 μF	130 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	>30000 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	



AC and Pulse Double Metallized
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MMKP Radial Potted Type

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$U_{Rdc} = 250 V$; $U_{Rac} = 125 V/U_{p-p} = 350 V$

C (μF)	DIMENSIONS w × h (h') × l (mm)	MASS (g)	CATALOG NUMBER 2222 383 AND PACKAGING						
			LOOSE IN BOX			REEL			
			$l_t = 3.5 \pm 0.3$ mm	short leads	long leads	original pitch	pitch = 7.5 mm (bent back)		
			C-tol = $\pm 5\%$				C-tol = $\pm 5\%$		
			last 5 digits of catalog number	SPQ	SPQ	SPQ	last 5 digits of catalog number	SPQ	SPQ
Pitch = 15.0 \pm 0.4 mm; $d_t = 0.80 \pm 0.08$ mm						pitch = 15.0 mm	pitch = 7.5 mm (bent back)		
0.082	5.0 × 11.0 (13.0) × 17.5	1.2	00823	1250	1000	1100	03823	950	550
0.091			00913				03913		
0.1			00104				03104		
0.11	6.0 × 12.0 (14.0) × 17.5	1.5	00114	1000	1000	900	03114	800	450
0.12			00124				03124		
0.13			00134				03134		
0.15			00154				03154		
0.16	7.0 × 13.5 (15.5) × 17.5	2.0	00164	750	500	800	03164	700	400
0.18			00184				03184		
0.2			00204				03204		
0.22	8.5 × 15.0 (17.0) × 17.5	2.7	00224	750	500	650	03224	550	300
0.24			00244				03244		
0.27			00274				03274		
0.3			00304				03304		
0.33	10.0 × 16.5 (18.5) × 17.5	3.3	00334	500	450	600	03334	500	250
0.36			00364				03364		
0.39			00394				03394		
Pitch = 22.5 \pm 0.4 mm; $d_t = 0.80 \pm 0.08$ mm						pitch = 22.5 mm	pitch = 7.5 mm (bent back)		
0.43	7.0 × 16.5 × 26.0	3.5	00434	200	250	550			
0.47	8.5 × 18.0 × 26.0	4.8	00474	200	250	450			
0.51			00514						
0.56			00564						
0.62	10.0 × 19.5 × 26.0	6.0	00624	200	200	350			
0.68			00684						
0.75			00754						
0.82			00824						
Pitch = 27.5 \pm 0.4 mm; $d_t = 0.80 \pm 0.08$ mm						pitch = 27.5 mm	pitch = 7.5 mm (bent back)		
0.91	11.0 × 21.0 × 31.0	8.4	00914	100	125				
1.0			00105						
1.1			00115						
1.2			00125						
1.3	13.0 × 23.0 × 31.0	11.0	00135	100	125				
1.5			00155						
1.6			00165						
1.8	15.0 × 25.0 × 31.0	13.6	00185	100	125				
2.0			00205						
2.2	18.0 × 28.0 × 31.0	18.5	00225	100	100				
2.4			00245						
2.7			00275						

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MMKP Radial Potted Type

SPECIFIC REFERENCE DATA (400 VDC)

DESCRIPTION	VALUE	
	at 10 kHz	at 100 kHz
Tangent of loss angle:		
C ≤ 0.22 μF	≤ 5 × 10 ⁻⁴	≤ 20 × 10 ⁻⁴
0.22 μF < C ≤ 0.33 μF	≤ 10 × 10 ⁻⁴	≤ 35 × 10 ⁻⁴
0.33 μF < C ≤ 0.43 μF	≤ 10 × 10 ⁻⁴	≤ 40 × 10 ⁻⁴
0.43 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 ≤ 1.2 μF	≤ 10 × 10 ⁻⁴	≤ 60 × 10 ⁻⁴
1.2 μF < C ≤ 1.5 μF	≤ 10 × 10 ⁻⁴	≤ 65 × 10 ⁻⁴
Rated voltage pulse slope (dU/dt) _R :		
P = 15.0 mm and 7.5 mm (bent back), C ≤ 0.082 μF		600 V/μs
P = 15.0 mm and 7.5 mm (bent back), 0.082 μF < C ≤ 0.22 μF		1200 V/μs
P = 22.5 mm		410 V/μs
P = 27.5 mm; for 0.43 μF < C ≤ 1.1 μF		260 V/μs
P = 27.5 mm; for 1.1 μF < C ≤ 1.5 μF		180 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		>30000 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		560 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

C (μF)	DIMENSIONS w × h (h') × l (mm)	MASS (g)	CATALOG NUMBER 2222 383 AND PACKAGING						
			LOOSE IN BOX			REEL			
			l _t = 3.5 ± 0.3 mm	short leads	long leads	original pitch	pitch = 7.5 mm (bent back)		
			C-tol = ±5%				C-tol = ±5%		
			last 5 digits of catalog number	SPQ	SPQ	SPQ	last 5 digits of catalog number	SPQ	SPQ
Pitch = 15.0 ± 0.4 mm; d_t = 0.80 ± 0.08 mm			pitch = 15.0 mm		pitch = 7.5 mm (bent back)				
0.047	5.0 × 11.0 (13.0) × 17.5	1.2	10473				13473		
0.051			10513	1250	1000	1100	13513	950	550
0.056			10563				13563		
0.062	6.0 × 12.0 (14.0) × 17.5	1.5	10623				13623		
0.068			10683	1000	1000	900	13683	800	450
0.075			10753				13753		
0.082			10823				13823		
0.091	7.0 × 13.5 (15.5) × 17.5	2.0	10913				13913		
0.1			10104	750	500	800	13104	700	400
0.11			10114				13114		
0.12	8.5 × 15.0 (17.0) × 17.5	2.7	10124				13124		
0.13			10134	750	500	650	13134	550	300
0.15			10154				13154		
0.16			10164				13164		
0.18	10.0 × 16.5 (18.5) × 17.5	3.3	10184				13184		
0.2			10204	500	450	600	13204	500	250
0.22			10224				13224		



AC and Pulse Double Metallized
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MMKP Radial Potted Type

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C (μ F)	DIMENSIONS w × h (h') × l (mm)	MASS (g)	CATALOG NUMBER 2222 383 AND PACKAGING						
			LOOSE IN BOX			REEL			
			$l_t = 3.5 \pm 0.3$ mm	short leads	long leads	original pitch	pitch = 7.5 mm (bent back)		
			C-tol = $\pm 5\%$				C-tol = $\pm 5\%$		
			last 5 digits of catalog number	SPQ	SPQ	SPQ	last 5 digits of catalog number	SPQ	SPQ
Pitch = 22.5 \pm 0.4 mm; $d_t = 0.80 \pm 0.08$ mm						pitch = 22.5 mm	pitch = 7.5 mm (bent back)		
0.24	7.0 × 16.5 × 26.0	3.5	10244	200	250	550			
0.27	8.5 × 18.0 × 26.0	4.8	10274	200	250	450			
0.3			10304						
0.33			10334						
0.36	10.0 × 19.5 × 26.0	6.0	10364	200	200	350			
0.39			10394						
0.43			10434						
Pitch = 27.5 \pm 0.4 mm; $d_t = 0.80 \pm 0.08$ mm						pitch = 27.5 mm	pitch = 7.5 mm (bent back)		
0.47	11.0 × 21.0 × 31.0	8.4	10474	100	125				
0.51			10514						
0.56			10564						
0.62			10624						
0.68	13.0 × 23.0 × 31.0	11.0	10684	100	125				
0.75			10754						
0.82			10824						
0.91	15.0 × 25.0 × 31.0	13.6	10914	100	125				
1			10105						
1.1			10115						
1.2	18.0 × 28.0 × 31.0	18.5	10125	100	100				
1.3			10135						
1.5			10155						

SPECIFIC REFERENCE DATA (630 VDC)

DESCRIPTION	VALUE	
	at 10 kHz	at 100 kHz
Tangent of loss angle:		
C ≤ 0.15 μ F	≤ 5 × 10 ⁻⁴	≤ 15 × 10 ⁻⁴
0.15 μ F < C ≤ 0.22 μ F	≤ 8 × 10 ⁻⁴	≤ 25 × 10 ⁻⁴
0.22 μ F < C ≤ 0.3 μ F	≤ 8 × 10 ⁻⁴	≤ 30 × 10 ⁻⁴
0.3 μ F < C ≤ 0.47 μ F	≤ 10 × 10 ⁻⁴	≤ 40 × 10 ⁻⁴
0.47 μ F < C ≤ 0.68 μ F	≤ 10 × 10 ⁻⁴	≤ 45 × 10 ⁻⁴
0.68 μ F < C ≤ 1.0 μ F	≤ 10 × 10 ⁻⁴	≤ 50 × 10 ⁻⁴
Rated voltage pulse slope (dU/dt) _R :		
P = 15.0 mm and 7.5 mm (bent back), C ≤ 0.056 μ F		700 V/ μ s
P = 15.0 mm and 7.5 mm (bent back), 0.056 μ F < C ≤ 0.15 μ F		1400 V/ μ s
P = 22.5 mm		470 V/ μ s
P = 27.5 mm, for 0.3 μ F < C ≤ 0.75 μ F		300 V/ μ s
P = 27.5 mm, for 0.75 μ F < C ≤ 1 μ F		210 V/ μ s
R between leads, for C ≤ 1 μ F at 500 V; 1 minute		>100000 M Ω
R between leads and case; 500 V; 1 minute		>30000 M Ω
Ionization (AC) voltage (typical value) at 50 pC peak discharge		>250 V
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s		1000 V; 1 minute
Withstanding (DC) voltage between leads and case		2840 V; 1 minute

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AC and Pulse Double Metallized
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MMKP Radial Potted Type



$U_{Rdc} = 630 \text{ V}$; $U_{Rac} = 220 \text{ V}$ / $U_{p-p} = 630 \text{ V}$

C (μF)	DIMENSIONS $w \times h (h') \times l$ (mm)	MASS (g)	CATALOG NUMBER 2222 383 AND PACKAGING						
			LOOSE IN BOX			REEL			
			$l_t = 3.5 \pm 0.3 \text{ mm}$	short leads	long leads	original pitch	pitch = 7.5 mm (bent back)		
			C-tol = $\pm 5\%$				C-tol = $\pm 5\%$		
			last 5 digits of catalog number	SPQ	SPQ	SPQ	$\varnothing 500 \text{ mm}$		$\varnothing 356 \text{ mm}$
			last 5 digits of catalog number	SPQ	SPQ				
Pitch = 15.0 ± 0.4 mm; $d_t = 0.80 \pm 0.08$ mm						pitch = 15.0 mm	pitch = 7.5 mm (bent back)		
0.03	5.0 \times 11.0 (13.0) \times 17.5	1.2	20303				23303		
0.033			20333	1250	1000	1100	23333	950	550
0.036			20363				23363		
0.039	6.0 \times 12.0 (14.0) \times 17.5	1.5	20393				23393		
0.043			20433				23433		
0.047			20473	1000	1000	900	23473	800	450
0.051			20513				23513		
0.056			20563				23563		
0.062	7.0 \times 13.5 (15.5) \times 17.5	2.0	20623				23623		
0.068			20683	750	500	800	23683	700	400
0.075			20753				23753		
0.082	8.5 \times 15.0 (17.0) \times 17.5	2.7	20823				23823		
0.091			20913	750	500	650	23913	550	300
0.1			20104				23104		
0.11			20114				23114		
0.12	10.0 \times 16.5 (18.5) \times 17.5	3.3	20124				23124		
0.13			20134	500	450	600	23134	500	250
0.15			20154				23154		
Pitch = 22.5 ± 0.4 mm; $d_t = 0.80 \pm 0.08$ mm						pitch = 22.5 mm	pitch = 7.5 mm (bent back)		
0.16	8.5 \times 18.0 \times 26.0	4.8	20164						
0.18			20184	200	250	450			
0.2			20204						
0.22			20224						
0.24	10.0 \times 19.5 \times 26.0	6.0	20244						
0.27			20274	200	200	350			
0.3			20304						
Pitch = 27.5 ± 0.4 mm; $d_t = 0.80 \pm 0.08$ mm						pitch = 27.5 mm	pitch = 7.5 mm (bent back)		
0.33	11.0 \times 21.0 \times 31.0	8.4	20334						
0.36			20364	100	125				
0.39			20394						
0.43			20434						
0.47	13.0 \times 23.0 \times 31.0	11.0	20474						
0.51			20514	100	125				
0.56			20564						
0.62	15.0 \times 25.0 \times 31.0	13.6	20624						
0.68			20684	100	125				
0.75			20754						
0.82	18.0 \times 28.0 \times 31.0	18.5	20824						
0.91			20914	100	100				
1			20105						



AC and Pulse Double Metallized
Polypropylene Film Capacitors
MMKP Radial Potted Type

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SPECIFIC REFERENCE DATA (1000 VDC)

DESCRIPTION	VALUE	
	at 10 kHz	at 100 kHz
Tangent of loss angle: C ≤ 0.062 μF 0.062 μF < C ≤ 0.13 μF 0.13 μF < C ≤ 0.22 μF 0.22 μF < C ≤ 0.33 μF 0.33 μF < C ≤ 0.47 μF	≤ 5 × 10 ⁻⁴ ≤ 6 × 10 ⁻⁴ ≤ 8 × 10 ⁻⁴ ≤ 8 × 10 ⁻⁴ ≤ 8 × 10 ⁻⁴	≤ 15 × 10 ⁻⁴ ≤ 20 × 10 ⁻⁴ ≤ 25 × 10 ⁻⁴ ≤ 30 × 10 ⁻⁴ ≤ 35 × 10 ⁻⁴
Rated voltage pulse slope (dU/dt) _R : P = 15.0 mm and 7.5 mm (bent back), C ≤ 0.024 μF P = 15.0 mm and 7.5 mm (bent back), 0.024 μF < C ≤ 0.062 μF P = 22.5 mm P = 27.5 mm, for 0.13 μF < C ≤ 0.33 μF P = 27.5 mm, for 0.33 μF < C ≤ 0.47 μF	1700 V/μs 3300 V/μs 1200 V/μs 700 V/μs 470 V/μs	
R between leads, for C ≤ 1 μF at 500 V; 1 minute	>100000 MΩ	
R between leads and case; 500 V; 1 minute	>30000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	>440 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	1600 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

U_{Rdc} = 1000 V; U_{Rac} = 350 V/U_{p-p} = 1000 V

C (μF)	DIMENSIONS w × h (h') × l (mm)	MASS (g)	CATALOG NUMBER 2222 383 AND PACKAGING						
			LOOSE IN BOX			REEL			
			l _t = 3.5 ± 0.3 mm	short leads	long leads	original pitch	pitch = 7.5 mm (bent back)		
			C-tol = ±5%				C-tol = ±5%		
							∅ 500 mm	∅ 356 mm	
			last 5 digits of catalog number	SPQ	SPQ	SPQ	last 5 digits of catalog number	SPQ	SPQ
Pitch = 15.0 ± 0.4 mm; d_t = 0.80 ± 0.08 mm						pitch = 15.0 mm		pitch = 7.5 mm (bent back)	
0.0043	5.0 × 11.0 (13.0) × 17.5	1.2	30432	1250	1000	1100	33432	950	550
0.0047			30472				33472		
0.0051			30512				33512		
0.0056			30562				33562		
0.0062			30622				33622		
0.0068			30682				33682		
0.0075			30752				33752		
0.0082			30822				33822		
0.0091			30912				33912		
0.010			30103				33103		
0.011			30113				33113		
0.012			30123				33123		
0.013			30133				33133		
0.015	30153	33153							
0.016	30163	33163							
0.018	6.0 × 12.0 (14.0) × 17.5	1.5	30183	1000	1000	900	33183	800	450
0.02			30203				33203		
0.022			30223				33223		
0.024			30243				33243		
0.027	7.0 × 13.5 (15.5) × 17.5	2.0	30273	750	500	800	33273	700	400
0.03			30303				33303		
0.033			30333				33333		

MMKP 383

Vishay BCcomponents

AC and Pulse Double Metallized
Polypropylene Film Capacitors
MMKP Radial Potted Type



C (μ F)	DIMENSIONS w × h (h') × l (mm)	MASS (g)	CATALOG NUMBER 2222 383 AND PACKAGING						
			LOOSE IN BOX			REEL			
			$l_t = 3.5 \pm 0.3$ mm	short leads	long leads	original pitch	pitch = 7.5 mm (bent back)		
			C-tol = $\pm 5\%$				C-tol = $\pm 5\%$		
			last 5 digits of catalog number	SPQ	SPQ	SPQ	last 5 digits of catalog number	SPQ	SPQ
0.036 0.039 0.043 0.047	8.5 × 15.0 (17.0) × 17.5	2.7	30363 30393 30433 30473	750	500	650	33363 33393 33433 33473	550	300
0.051 0.056 0.062	10.0 × 16.5 (18.5) × 17.5	3.3	30513 30563 30623	500	450	600	33513 33563 33623	500	250
Pitch = 22.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm						pitch = 22.5 mm	pitch = 7.5 mm (bent back)		
0.068 0.075 0.082 0.091	7.0 × 16.5 × 26.0 8.5 × 18.0 × 26.0	3.5 4.8	30683 30753 30823 30913	200	250	550 450			
0.1 0.11 0.12 0.13	10.0 × 19.5 × 26.0	6.0	30104 30114 30124 30134	200	200	350			
Pitch = 27.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm						pitch = 27.5 mm	pitch = 7.5 mm (bent back)		
0.15 0.16 0.18	11.0 × 21.0 × 31.0	8.4	30154 30164 30184	100	125				
0.2 0.22 0.24	13.0 × 23.0 × 31.0	11.0	30204 30224 30244	100	125				
0.27 0.3 0.33	15.0 × 25.0 × 31.0	13.6	30274 30304 30334	100	125				
0.36 0.39 0.43 0.47	18.0 × 28.0 × 31.0	18.5	30364 30394 30434 30474	100	100				



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MMKP Radial Potted Type

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SPECIFIC REFERENCE DATA (1400 VDC)

DESCRIPTION	VALUE	
	at 10 kHz	at 100 kHz
Tangent of loss angle: C ≤ 0.016 μF 0.016 μF < C ≤ 0.039 μF 0.039 μF < C ≤ 0.13 μF	≤ 5 × 10 ⁻⁴ ≤ 5 × 10 ⁻⁴ ≤ 5 × 10 ⁻⁴	≤ 10 × 10 ⁻⁴ ≤ 15 × 10 ⁻⁴ ≤ 20 × 10 ⁻⁴
Rated voltage pulse slope (dU/dt) _R : P = 15.0 mm and 7.5 mm (bent back), for C ≤ 0.0056 μF P = 15.0 mm and 7.5 mm (bent back), for 0.0056 μF < C ≤ 0.016 μF P = 22.5 mm P = 27.5 mm, for 0.039 μF < C ≤ 0.1 μF P = 27.5 mm, for 0.1 μF < C ≤ 0.13 μF	8000 V/μs 15000 V/μs 4000 V/μs 2100 V/μs 1500 V/μs	
R between leads, for C ≤ 1 μF at 500 V; 1 minute	>100000 MΩ	
R between leads and case; 500 V; 1 minute	>30000 MΩ	
Ionization (AC) voltage (typical value) at 20 pC peak discharge	>500 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	2250 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

U_{Rdc} = 1400 V; U_{Rac} = 500 V/U_{p-p} = 1400 V (standard)

C (μF)	DIMENSIONS w × h (h') × l (mm)	MASS (g)	CATALOG NUMBER 2222 383 AND PACKAGING						
			LOOSE IN BOX			REEL			
			l _t = 3.5 ± 0.3 mm	short leads	long leads	original pitch	pitch = 7.5 mm (bent back)		
			C-tol = ±5%				C-tol = ±5%		
			last 5 digits of catalog number	SPQ	SPQ	SPQ	last 5 digits of catalog number	SPQ	SPQ
Pitch = 15.0 ± 0.4 mm; d_t = 0.80 ± 0.08 mm			pitch = 15.0 mm				pitch = 7.5 mm (bent back)		
0.0022	5.0 × 11.0 (13.0) × 17.5	1.2	40222	1250	1000	1100	43222	950	550
0.0024			40242				43242		
0.0027			40272				43272		
0.003			40302				43302		
0.0033			40332				43332		
0.0036			40362				43362		
0.0039			40392				43392		
0.0043	6.0 × 12.0 (14.0) × 17.5	1.5	40432	1000	1000	900	43432	800	450
0.0047			40472				43472		
0.0051			40512				43512		
0.0056			40562				43562		
0.0062	7.0 × 13.5 (15.5) × 17.5	2.0	40622	750	500	800	43622	700	400
0.0068			40682				43682		
0.0075			40752				43752		
0.0082			40822				43822		
0.0091	8.5 × 15.0 (17.0) × 17.5	2.7	40912	750	500	650	43912	550	300
0.01			40103				43103		
0.011			40113				43113		
0.012			40123				43123		
0.013	10.0 × 16.5 (18.5) × 17.5	3.3	40133	500	450	600	43133	500	250
0.015			40153				43153		
0.016			40163				43163		
Pitch = 22.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm			pitch = 22.5 mm				pitch = 7.5 mm (bent back)		
0.018	7.0 × 16.5 × 26.0	3.5	40183	200	250	550			
0.02			40203						

MMKP 383

Vishay BCcomponents

AC and Pulse Double Metallized
Polypropylene Film Capacitors
MMKP Radial Potted Type



C (μ F)	DIMENSIONS w × h (h') × l (mm)	MASS (g)	CATALOG NUMBER 2222 383 AND PACKAGING						
			LOOSE IN BOX			REEL			
			$l_t = 3.5 \pm 0.3$ mm	short leads	long leads	original pitch	pitch = 7.5 mm (bent back)		
			C-tol = $\pm 5\%$				C-tol = $\pm 5\%$		
			last 5 digits of catalog number	SPQ	SPQ	SPQ	last 5 digits of catalog number	SPQ	SPQ
0.022 0.024 0.027	8.5 × 18.0 × 26.0	4.8	40223 40243 40273	200	250	450			
0.03 0.033 0.036 0.039	10.0 × 19.5 × 26.0	6.0	40303 40333 40363 40393	200	200	350			
Pitch = 27.5 ± 0.4 mm; $d_t = 0.80 \pm 0.08$ mm						pitch = 27.5 mm	pitch = 7.5 mm (bent back)		
0.043 0.047 0.051 0.056	11.0 × 21.0 × 31.0	8.4	40433 40473 40513 40563	100	125				
0.062 0.068 0.075	13.0 × 23.0 × 31.0	11.0	40623 40683 40753	100	125				
0.082 0.091 0.1	15.0 × 25.0 × 31.0	13.6	40823 40913 40104	100	125				
0.11 0.12 0.13	18.0 × 28.0 × 31.0	11.0	40114 40124 40134	100	100				

$U_{Rdc} = 1400$ V; $U_{Rac} = 500$ V/ $U_{p-p} = 1400$ V (hot asphalt encapsulation)

C (μ F)	DIMENSIONS w × h (h') × l (mm)	MASS (g)	CATALOG NUMBER 2222 383 AND PACKAGING	
			REEL; $\varnothing 356$ mm	
			C-tol = $\pm 5\%$	
			last 5 digits of catalog number	SPQ
Pitch = 15.0 ± 0.4 mm; (Pitch = 7.5 ± 0.4 mm for bent back leads); $d_t = 0.80 \pm 0.08$ mm				
0.0022 0.0024 0.0027 0.003 0.0033 0.0036 0.0039	6.0 × 12.0 (14.0) × 17.5	1.5	46222 46242 46272 46302 46332 46362 46392	450
0.0043 0.0047 0.0051 0.0056 0.0062 0.0068 0.0075 0.0082	7.0 × 13.5 (15.5) × 17.5	2.0	46432 46472 46512 46562 46622 46682 46752 46822	400



AC and Pulse Double Metallized
Polypropylene Film Capacitors
MMKP Radial Potted Type

Vishay BCcomponents

SPECIFIC REFERENCE DATA (1600 VDC)

DESCRIPTION	VALUE	
	at 10 kHz	at 100 kHz
Tangent of loss angle: C ≤ 0.015 μF 0.015 μF < C ≤ 0.15 μF	≤ 5 × 10 ⁻⁴ ≤ 5 × 10 ⁻⁴	≤ 15 × 10 ⁻⁴ ≤ 20 × 10 ⁻⁴
Rated voltage pulse slope (dU/dt) _R : P = 15.0 mm and 7.5 mm (bent back), for C ≤ 0.0056 μF P = 15.0 mm and 7.5 mm (bent back), for 0.0056 μF < C ≤ 0.015 μF P = 22.5 mm P = 27.5 mm, for 0.039 μF < C ≤ 0.1 μF P = 27.5 mm; for 0.1 μF < C ≤ 0.15 μF	8000 V/μs 15000 V/μs 3100 V/μs 1800 V/μs 1200 V/μs	
R between leads, for C ≤ 1 μF at 500 V; 1 minute	>100000 MΩ	
R between leads and case; 500 V; 1 minute	>30000 MΩ	
Ionization (AC) voltage (typical value) at 20 pC peak discharge	>660 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	2560 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

U_{Rdc} = 1600 V; U_{Rac} = 550 V/U_{p-p} = 1600 V (standard)

C (μF)	DIMENSIONS w × h (h') × l (mm)	MASS (g)	CATALOG NUMBER 2222 383 AND PACKAGING						
			LOOSE IN BOX			REEL			
			l _t = 3.5 ± 0.3 mm	short leads	long leads	original pitch	pitch = 7.5 mm (bent back)		
			C-tol = ±5%				C-tol = ±5%		
			last 5 digits of catalog number	SPQ	SPQ	SPQ	last 5 digits of catalog number	SPQ	SPQ
Pitch = 15.0 ± 0.4 mm; d_t = 0.80 ± 0.08 mm			pitch = 15.0 mm				pitch = 7.5 mm (bent back)		
0.0027 0.003 0.0033 0.0036 0.0039	5.0 × 11.0 (13.0) × 17.5	1.2	50272 50302 50332 50362 50392	1250	1000	1100	53272 53302 53332 53362 53392	950	550
0.0043 0.0047 0.0051 0.0056	6.0 × 12.0 (14.0) × 17.5	1.5	50432 50472 50512 50562	1000	1000	900	53432 53472 53512 53562	800	450
0.0062 0.0068 0.0075	7.0 × 13.5 (15.5) × 17.5	2.0	50622 50682 50752	750	500	800	53622 53682 53752	700	400
0.0082 0.0091 0.01 0.011	8.5 × 15.0 (17.0) × 17.5	2.7	50822 50912 50103 50113	750	500	650	53822 53912 53103 53113	550	300
0.012 0.013 0.015	10.0 × 16.5 (18.5) × 17.5	3.3	50123 50133 50153	500	450	600	53123 53133 53153	500	250
Pitch = 22.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm			pitch = 22.5 mm				pitch = 7.5 mm (bent back)		
0.016 0.018 0.02	7.0 × 16.5 × 26.0	3.5	50163 50183 50203	200	250	550			

MMKP 383

Vishay BCcomponents

AC and Pulse Double Metallized
Polypropylene Film Capacitors
MMKP Radial Potted Type



C (μ F)	DIMENSIONS w × h (h') × l (mm)	MASS (g)	CATALOG NUMBER 2222 383 AND PACKAGING						
			LOOSE IN BOX			REEL			
			$l_t = 3.5 \pm 0.3$ mm	short leads	long leads	original pitch	pitch = 7.5 mm (bent back)		
			C-tol = $\pm 5\%$				C-tol = $\pm 5\%$		
			last 5 digits of catalog number	SPQ	SPQ	SPQ	last 5 digits of catalog number	SPQ	SPQ
0.022 0.024 0.027 0.03	8.5 × 18.0 × 26.0	4.8	50223 50243 50273 50303	200	250	450			
0.033 0.036 0.039	10.0 × 19.5 × 26.0	6.0	50333 50363 50393	200	200	350			
Pitch = 27.5 ± 0.4 mm; $d_t = 0.80 \pm 0.08$ mm						pitch = 27.5 mm	pitch = 7.5 mm (bent back)		
0.043 0.047 0.051 0.056	11.0 × 21.0 × 31.0	8.4	50433 50473 50513 50563	100	125				
0.062 0.068 0.075	13.0 × 23.0 × 31.0	11.0	50623 50683 50753	100	125				
0.082 0.091 0.1	15.0 × 25.0 × 31.0	13.6	50823 50913 50104	100	125				
0.11 0.12 0.13 0.15	18.0 × 28.0 × 31.0	18.5	50114 50124 50134 50154	100	100				

$U_{Rdc} = 1600$ V; $U_{Rac} = 550$ V/ $U_{p-p} = 1600$ V (hot asphalt encapsulation)

C (μ F)	DIMENSIONS w × h (h') × l (mm)	MASS (g)	CATALOG NUMBER 2222 383 AND PACKAGING			
			REEL; $\varnothing 356$ mm			
			C-tol = $\pm 5\%$			
			last 5 digits of catalog number		SPQ	
Pitch = 15.0 ± 0.4 mm; (Pitch = 7.5 ± 0.4 mm for bent back leads); $d_t = 0.80 \pm 0.08$ mm						
0.0027 0.003 0.0033 0.0036 0.0039	6.0 × 12.0 (14.0) × 17.5	1.5	56272 56302 56332 56362 56392		450	
0.0043 0.0047 0.0051 0.0056 0.0062 0.0068 0.0075	7.0 × 13.5 (15.5) × 17.5	2.0	56432 56472 56512 56562 56622 56682 56752		400	



AC and Pulse Double Metallized
Polypropylene Film Capacitors
MMKP Radial Potted Type

Vishay BCcomponents

SPECIFIC REFERENCE DATA (2000 VDC)

DESCRIPTION	VALUE	
	at 10 kHz	at 100 kHz
Tangent of loss angle: C ≤ 0.01 μF	≤ 5 × 10 ⁻⁴	≤ 15 × 10 ⁻⁴
0.01 μF < C ≤ 0.1 μF	≤ 5 × 10 ⁻⁴	≤ 18 × 10 ⁻⁴
Rated voltage pulse slope (dU/dt) _R : P = 15.0 mm and 7.5 mm (bent back), for C ≤ 0.0036 μF P = 15.0 mm and 7.5 mm (bent back), for 0.0036 μF < C ≤ 0.01 μF P = 22.5 mm P = 27.5 mm, for 0.024 μF < C ≤ 0.068 μF P = 27.5 mm, for 0.068 μF < C ≤ 0.1 μF	11 000 V/μs 20 000 V/μs 4 400 V/μs 2 500 V/μs 1 800 V/μs	
R between leads, for C ≤ 1 μF at 500 V; 1 minute	> 100 000 MΩ	
R between leads and case; 500 V; 1 minute	> 30 000 MΩ	
Ionization (AC) voltage (typical value) at 20 pC peak discharge	> 750 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	3200 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

U_{Rdc} = 2000 V; U_{Rac} = 700 V/U_{p-p} = 2000 V (standard)

C (μF)	DIMENSIONS w × h (h') × l (mm)	MASS (g)	CATALOG NUMBER 2222 383 AND PACKAGING						
			LOOSE IN BOX			REEL			
			l _t = 3.5 ± 0.3 mm	short leads	long leads	original pitch	pitch = 7.5 mm (bent back)		
			C-tol = ±5%				C-tol = ±5%		
			last 5 digits of catalog number	SPQ	SPQ	SPQ	last 5 digits of catalog number	SPQ	SPQ
Pitch = 15.0 ± 0.4 mm; d_t = 0.80 ± 0.08 mm				pitch = 15.0 mm		pitch = 7.5 mm (bent back)			
0.001	5.0 × 11.0 (13.0) × 17.5	1.2	60102	1250	1000	1100	63102	950	550
0.0011			60112				63112		
0.0012			60122				63122		
0.0013			60132				63132		
0.0015			60152				63152		
0.0016			60162				63162		
0.0018			60182				63182		
0.002			60202				63202		
0.0022			60222				63222		
0.0024			60242				63242		
0.0027	6.0 × 12.0 (14.0) × 17.5	1.5	60272	1000	1000	900	63272	800	450
0.003			60302				63302		
0.0033			60332				63332		
0.0036			60362				63362		
0.0039	7.0 × 13.5 (15.5) × 17.5	2.0	60392	750	500	800	63392	700	400
0.0043			60432				63432		
0.0047			60472				63472		
0.0051	8.5 × 15.0 (17.0) × 17.5	2.7	60512	750	500	650	63512	550	300
0.0056			60562				63562		
0.0062			60622				63622		
0.0068			60682				63682		
0.0075	10.0 × 16.5 (18.5) × 17.5	3.3	60752	500	450	600	63752	500	250
0.0082			60822				63822		
0.0091			60912				63912		
0.01			60103				63103		



C (μ F)	DIMENSIONS w × h (h') × l (mm)	MASS (g)	CATALOG NUMBER 2222 383 AND PACKAGING						
			LOOSE IN BOX			REEL			
			$l_t = 3.5 \pm 0.3$ mm	short leads	long leads	original pitch	pitch = 7.5 mm (bent back)		
			C-tol = $\pm 5\%$				C-tol = $\pm 5\%$		
			last 5 digits of catalog number	SPQ	SPQ	SPQ	last 5 digits of catalog number	SPQ	SPQ
Pitch = 22.5 \pm 0.4 mm; $d_t = 0.80 \pm 0.08$ mm				pitch = 22.5 mm		pitch = 7.5 mm (bent back)			
0.011	7.0 × 16.5 × 26.0	3.5	60113	200	250	550			
0.012			60123						
0.013			60133						
0.015	8.5 × 18.0 × 26.0	4.8	60153	200	250	450			
0.016			60163						
0.018			60183						
0.02	10.0 × 19.5 × 26.0	6.0	60203	200	200	350			
0.022			60223						
0.024			60243						
Pitch = 27.5 \pm 0.4 mm; $d_t = 0.80 \pm 0.08$ mm				pitch = 27.5 mm		pitch = 7.5 mm (bent back)			
0.027	11.0 × 21.0 × 31.0	8.4	60273	100	125				
0.03			60303						
0.033			60333						
0.036			60363						
0.039			60393						
0.043	13.0 × 23.0 × 31.0	11.0	60433	100	125				
0.047			60473						
0.051			60513						
0.056	15.0 × 25.0 × 31.0	13.6	60563	100	125				
0.062			60623						
0.068			60683						
0.075	18.0 × 28.0 × 31.0	18.5	60753	100	100				
0.082			60823						
0.091			60913						
0.1			60104						

$U_{Rdc} = 2000$ V; $U_{Rac} = 700$ V/ $U_{p-p} = 2000$ V (hot asphalt encapsulation)

C (μ F)	DIMENSIONS w × h (h') × l (mm)	MAS S (g)	CATALOG NUMBER 2222 383 AND PACKAGING		
			REEL; \varnothing 356 mm		
			C-tol = $\pm 5\%$		
			last 5 digits of catalog number	SPQ	
Pitch = 15.0 \pm 0.4 mm; (Pitch = 7.5 \pm 0.4 mm for bent back leads); $d_t = 0.80 \pm 0.08$ mm					
0.001	6.0 × 12.0 (14.0) × 17.5	1.5	66102		
0.0011			66112		
0.0012			66122		
0.0013			66132		
0.0015			66152		
0.0016			66162		
0.0018			66182		
0.002			66202		
0.0022			66222		
0.0024			66242		
			450		



AC and Pulse Double Metallized
Polypropylene Film Capacitors
MMKP Radial Potted Type

Vishay BCcomponents

C (μ F)	DIMENSIONS w × h (h') × l (mm)	MAS S (g)	CATALOG NUMBER 2222 383 AND PACKAGING	
			REEL; \varnothing 356 mm	
			C-tol = \pm 5%	
			last 5 digits of catalog number	SPQ
0.0027	7.0 × 13.5 (15.5) × 17.5	2.0	66272	400
0.003			66302	
0.0033			66332	
0.0036			66362	
0.0039			66392	
0.0043			66432	
0.0047			66472	

SPECIFIC REFERENCE DATA (2500 VDC)

DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
C ≤ 0.015 μ F	≤ 5 × 10 ⁻⁴	≤ 10 × 10 ⁻⁴
0.015 μ F < C ≤ 0.056 μ F	≤ 5 × 10 ⁻⁴	≤ 15 × 10 ⁻⁴
Rated voltage pulse slope (dU/dt) _R :		
P = 22.5 mm	13000 V/ μ s	
P = 27.5 mm, for 0.015 μ F < C ≤ 0.043 μ F	6000 V/ μ s	
P = 27.5 mm, for 0.043 μ F < C ≤ 0.056 μ F	4200 V/ μ s	
R between leads, for C ≤ 1 μ F at 500 V; 1 minute	>100000 M Ω	
R between leads and case; 500 V; 1 minute	>30000 M Ω	
Ionization (AC) voltage (typical value) at 20 pC peak discharge	>1000 V	
Withstanding (DC) voltage (cut off current 10 mA); rise time 100 V/s	3500 V; 1 minute	
Withstanding (DC) voltage between leads and case	2840 V; 1 minute	

U_{Rdc} = 2500 V; U_{Rac} = 900 V/U_{p-p} = 2500 V

C (μ F)	DIMENSIONS w × h × l (mm)	MASS (g)	CATALOG NUMBER AND PACKAGING			
			LOOSE IN BOX			REEL
			I _t = 3.5 \pm 0.3 mm	short leads	long leads	H = 18.5 mm
			C-tol = \pm 5%	SPQ	SPQ	SPQ
Pitch = 22.5 \pm0.4 mm; d_t = 0.80 \pm0.08 mm						
0.001	6.0 × 15.5 × 26.0	3.0	70102	200	250	600
0.0011			70112			
0.0012			70122			
0.0013			70132			
0.0015			70152			
0.0016			70162			
0.0018			70182			
0.002			70202			
0.0022			70222			
0.0024			70242			
0.0027			70272			
0.003			70302			
0.0033			70332			
0.0036			70362			

MMKP 383

Vishay BCcomponents

AC and Pulse Double Metallized
Polypropylene Film Capacitors
MMKP Radial Potted Type



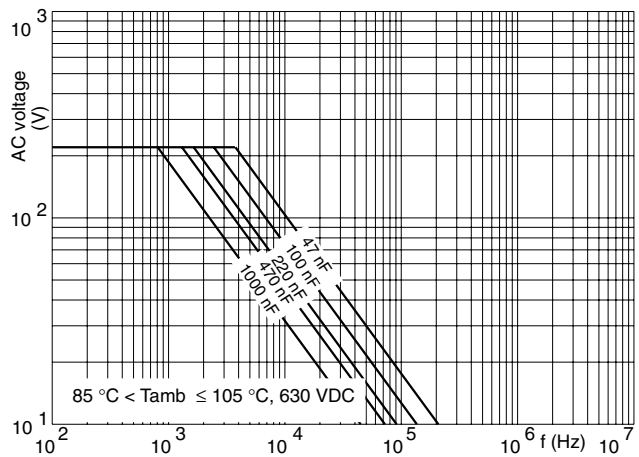
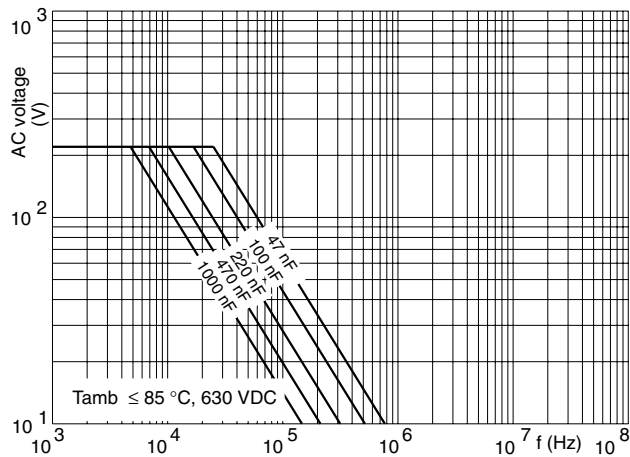
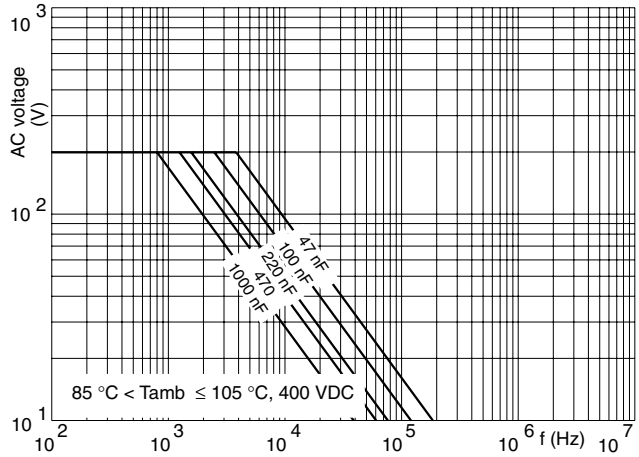
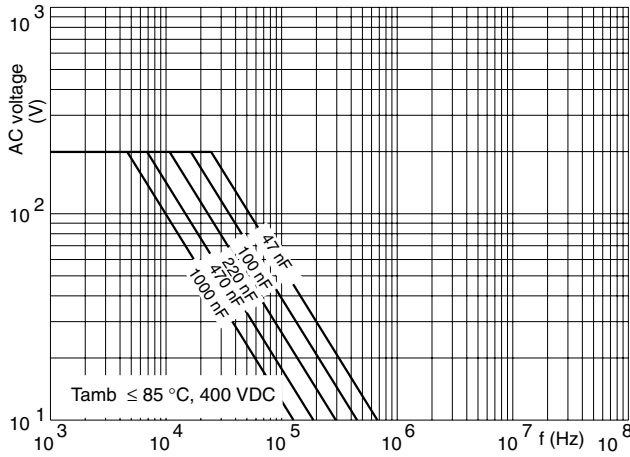
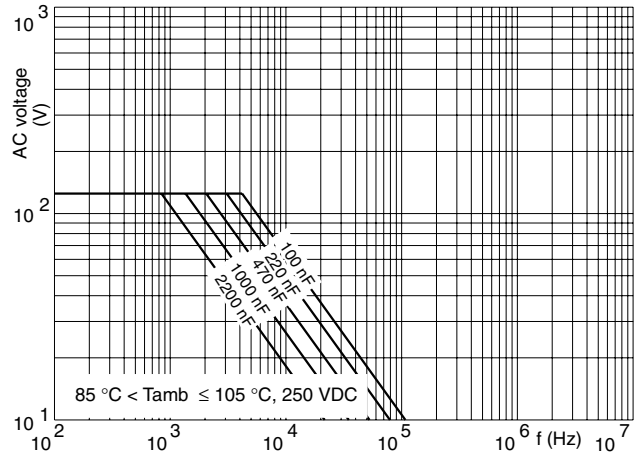
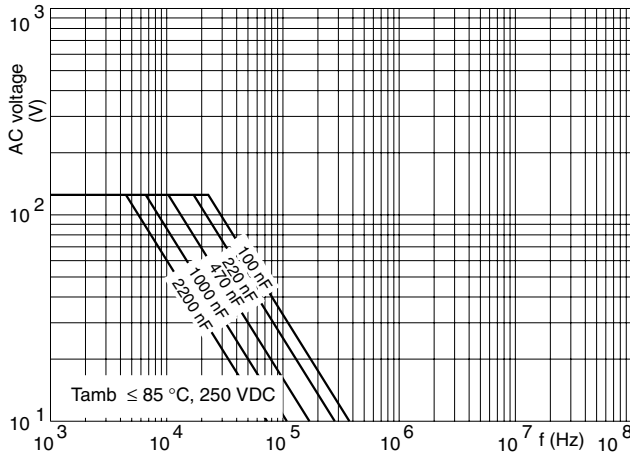
C (μ F)	DIMENSIONS w × h × l (mm)	MASS (g)	CATALOG NUMBER AND PACKAGING			
			LOOSE IN BOX			REEL
			$l_t = 3.5 \pm 0.3$ mm	short leads	long leads	H = 18.5 mm
			C-tol = $\pm 5\%$	SPQ	SPQ	SPQ
0.0039 0.0043 0.0047 0.0051 0.0056	6.0 × 15.5 × 26.0	3.0	70392 70432 70472 70512 70562	200	250	600
0.0062 0.0068 0.0075	7.0 × 16.5 × 26.0	3.5	70622 70682 70752	200	250	550
0.0082 0.0091 0.01 0.011	8.5 × 18.0 × 26.0	4.8	70822 70912 70103 70113	200	250	450
0.012 0.013 0.015	10.0 × 19.5 × 26.0	6.0	70123 70133 70153	200	200	350
Pitch = 27.5 ± 0.4 mm; d_t = 0.80 ± 0.08 mm						
0.016	9.0 × 19.0 × 31.0	6.0	70163	100	150	
0.018 0.02 0.022 0.024	11.0 × 21.0 × 31.0	8.4	70183 70203 70223 70243	100	125	
0.027 0.03 0.033	13.0 × 23.0 × 31.0	11.0	70273 70303 70333	100	125	
0.036 0.039 0.043	15.0 × 25.0 × 31.0	13.6	70363 70393 70433	100	125	
0.047 0.051 0.056	18.0 × 28.0 × 31.0	18.5	70473 70513 70563	100	100	

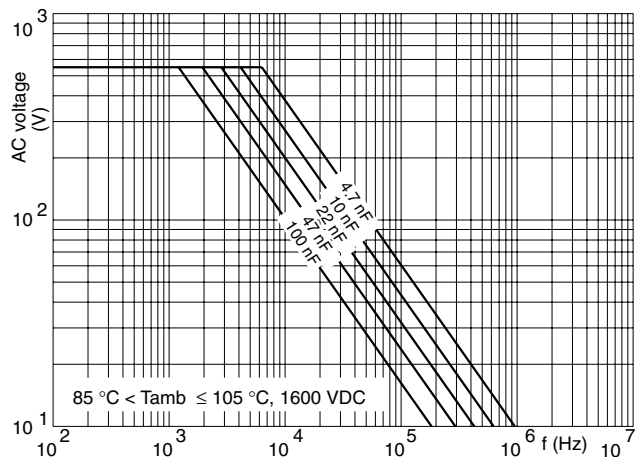
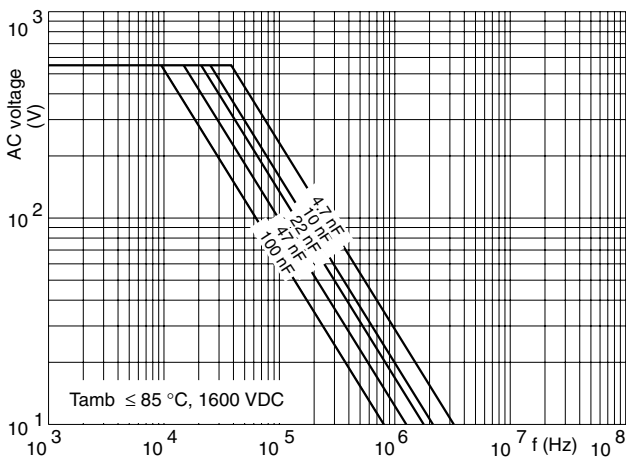
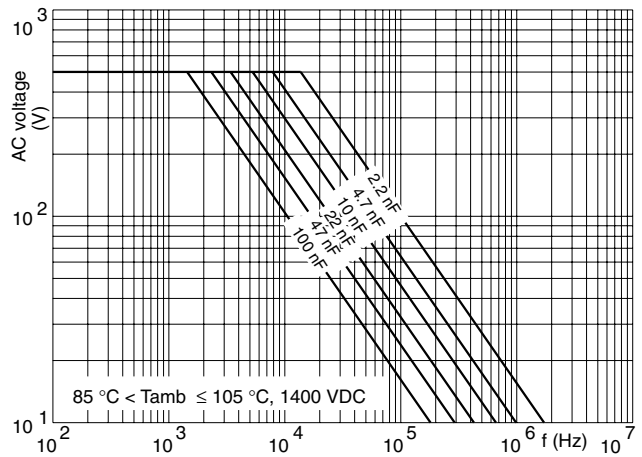
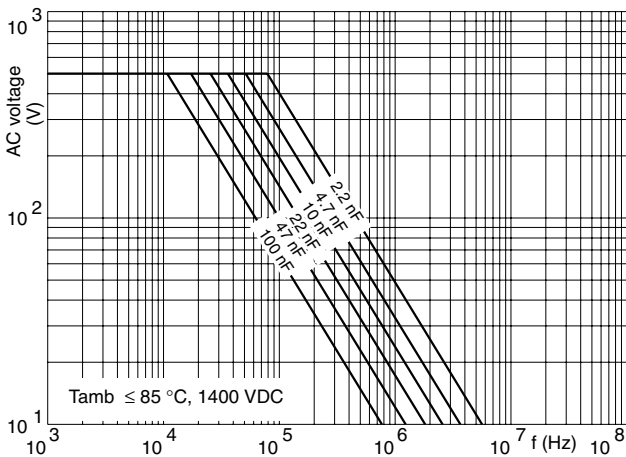
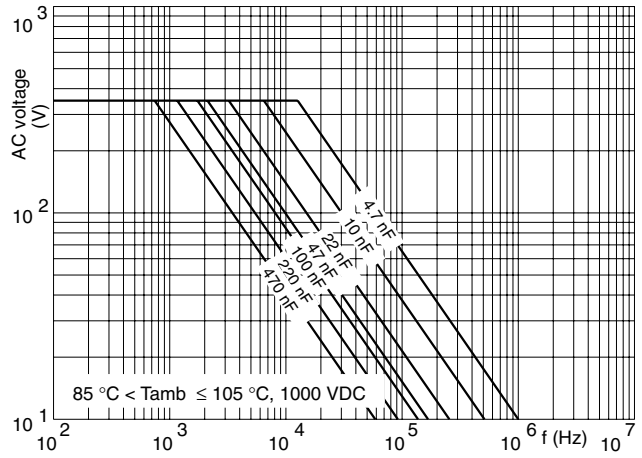
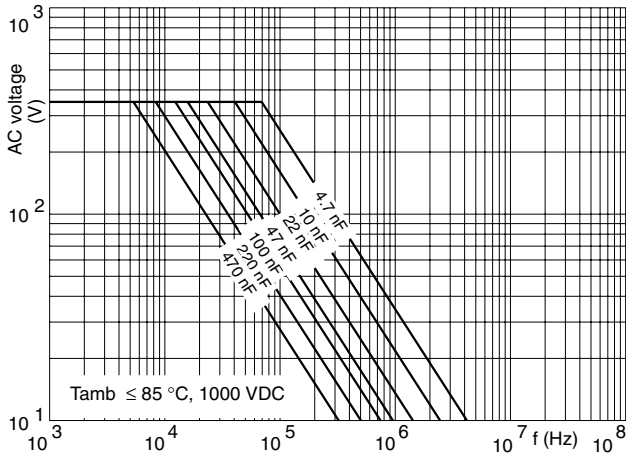


AC and Pulse Double Metallized
Polypropylene Film Capacitors
MMKP Radial Potted Type

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MAXIMUM RMS VOLTAGE (SINEWAVE) AS A FUNCTION OF FREQUENCY

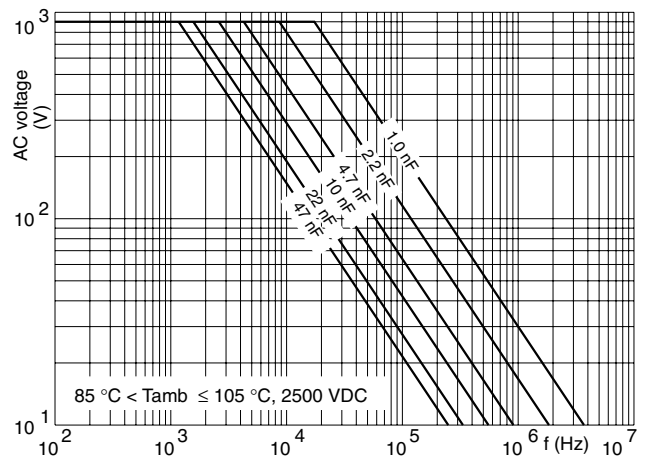
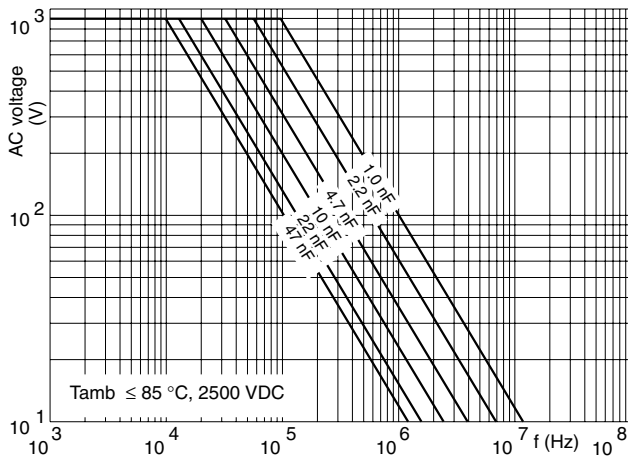
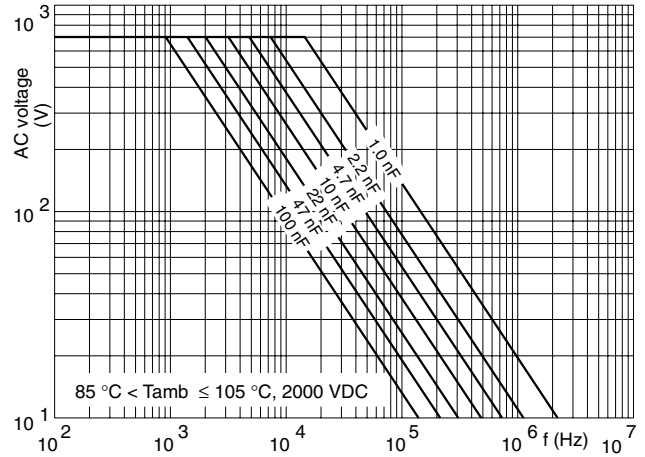
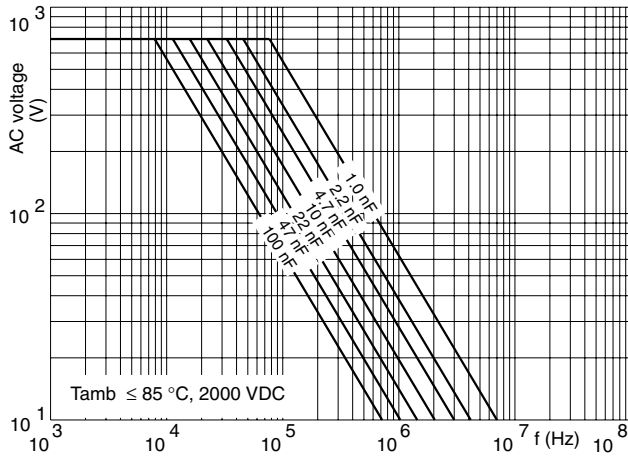




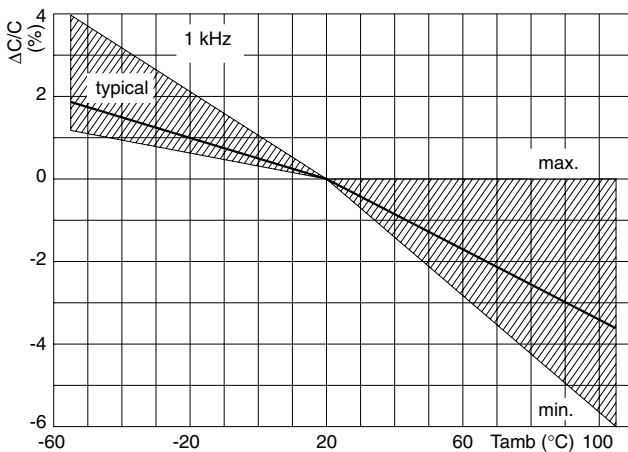


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CAPACITANCE



IMPEDANCE

