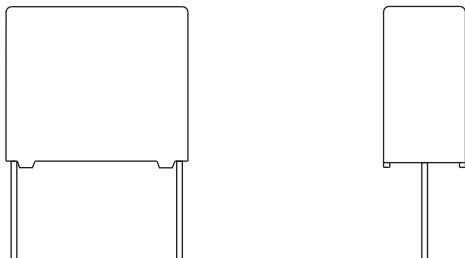




AC and Pulse Metallized Polypropylene Film Capacitors MKP/MKP Radial Potted Type



FEATURES

- 15 mm to 27.5 mm pitch
- Material categorization:
for definitions of compliance please see
www.vishay.com/doc?99912

APPLICATIONS

- Where steep pulses occur e.g. SMPS (switch mode power supplies)
- Motor control circuits

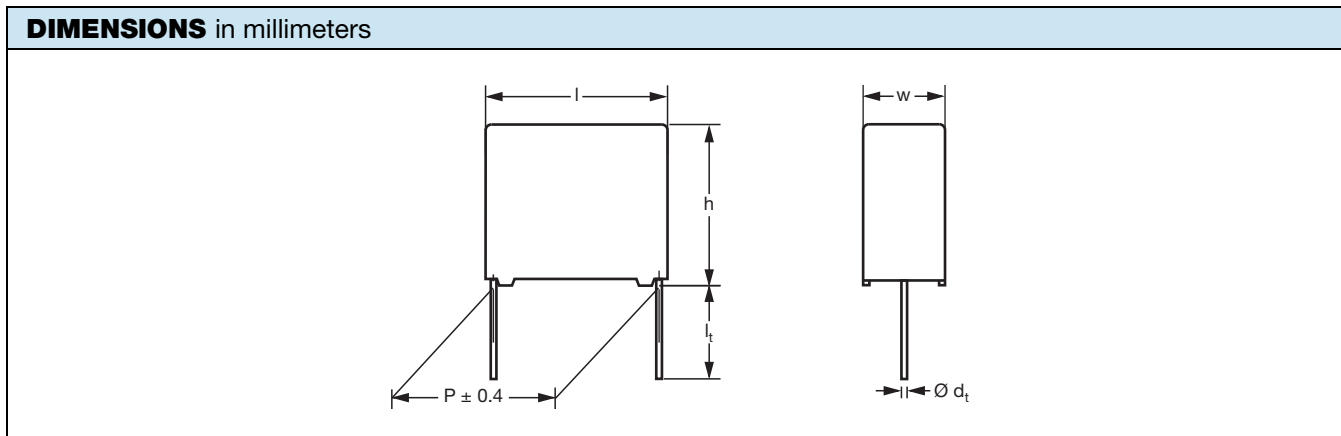


RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

QUICK REFERENCE DATA	
Capacitance range (E24 series)	0.002 μ F to 0.68 μ F
Capacitance tolerance	\pm 5 %
Climatic testing class according to IEC 60068-1	55/085/56
Rated DC temperature	85 °C
Rated AC temperature	70 °C
Maximum application temperature	85 °C
Reference specifications	IEC 60384-17
Dielectric	Polypropylene film
Electrodes	Metallized film
Construction	Internal serial construction
Encapsulation	Flame retardant plastic case and epoxy resin (UL-class 94 V-0)
Leads	Tinned wire
Marking	C-value; tolerance; rated voltage; manufacturer's type designation; code for dielectric material; manufacturer's emblem; code for factory of origin; year and week of manufacture
Rated DC voltage	630 V _{DC} ; 1000 V _{DC} ; 1600 V _{DC} ; 2000 V _{DC}
Rated AC voltage	300 V _{AC} ; 400 V _{AC} ; 500 V _{AC} ; 600 V _{AC}
Rated peak-to-peak voltage	850 V; 1130 V; 1400 V; 1700 V
Performance grade	Grade 1 (long life)
Stability grade	Pitch 15 mm: grade 2 Pitch 22.5 mm and 27.5 mm: grade 1

Note

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



COMPOSITION OF CATALOG NUMBER



TYPE	PACKAGING	LEAD CONFIGURATION	PREFERRED TYPES				
			C-TOL.	630 V	1000 V	1600 V	2000 V
380	Loose in box	Lead length 3.5 mm ± 0.3 mm	± 5 %	64	74	84	94
TYPE	PACKAGING	LEAD CONFIGURATION	ON REQUEST				
378	Loose in box	Lead length 5.0 mm ± 1.0 mm	± 5 %	62	72	82	92
	Taped on reel	H = 18.5 mm; P ₀ = 12.7 mm		65	75	85	95



SPECIFIC REFERENCE DATA - 630 V _{DC}		
DESCRIPTION	VALUE	
Tangent of loss angle: C ≤ 0.18 μF 0.2 μF ≤ C ≤ 0.3 μF 0.33 μF ≤ C ≤ 0.39 μF 0.43 μF ≤ C ≤ 0.51 μF C > 0.51 μF	at 10 kHz	at 100 kHz
	≤ 10 x 10 ⁻⁴	≤ 35 x 10 ⁻⁴
	≤ 10 x 10 ⁻⁴	≤ 45 x 10 ⁻⁴
	≤ 10 x 10 ⁻⁴	≤ 55 x 10 ⁻⁴
	≤ 10 x 10 ⁻⁴	≤ 65 x 10 ⁻⁴
Rated voltage pulse slope (dU/dt) _R : P = 15 mm P = 22.5 mm P = 27.5 mm P = 27.5 mm	500 V/μs 370 V/μs 230 V/μs (b < 15 mm) 120 V/μs (b ≥ 15 mm)	
	R between leads, for C ≤ 1 μF; 500 V; 1 min	
	> 100 000 MΩ	
	R between leads and case; 500 V; 1 min	
> 100 000 MΩ		
Ionization (AC) voltage (typical value) at 50 pC peak discharge		> 400 V
Withstanding (DC) voltage (cut off current 10 mA) ⁽¹⁾ ; rise time ≤ 1000 V/s		1008 V; 1 min
Withstanding (DC) voltage between leads and case		2840 V; 1 min

Note

⁽¹⁾ See "Voltage Proof Test for Metalized Film Capacitors" www.vishay.com/doc?28169

ELECTRICAL DATA AND ORDERING CODE						
U _{RDC} (V)	CAP. (μF)	DIMENSIONS w x h x l (mm)	MASS ⁽²⁾ (g)	CATALOG NUMBER BFC2 378 AND PACKAGING		
				LOOSE IN BOX		REEL ⁽¹⁾
				l _t = 3.5 mm ± 0.3 mm	ALL LEADS	H = 18.5 mm; P ₀ = 12.7 mm
				C-TOL. = ± 5 %		
LAST 5 DIGITS OF CATALOG NUMBER		SPQ	SPQ			
630	PITCH = 15.0 mm ± 0.4 mm; d _t = 0.60 ± 0.06 mm; U _{RAC} = 300 V; U _{p-p} = 850 V					
	0.015	5.0 x 11.0 x 17.5	1.0	64153	1000	1100
	0.016			64163		
	0.018			64183		
	0.020			64203		
	0.022			64223		
	0.024	5.0 x 11.0 x 17.5	1.4	64243	1000	900
	0.027			64273		
	0.030			64303		
	0.033			64333		
	0.036			6.0 x 12.0 x 17.5		
	0.039	64393				
	0.043	64433				
	0.047	7.0 x 13.0 x 17.5	2.4	64473	1000	650
	0.051			64513		
	PITCH = 22.5 mm ± 0.4 mm; d _t = 0.80 ± 0.08 mm; U _{RAC} = 300 V; U _{p-p} = 850 V					
	0.056	6.0 x 15.5 x 26.0	2.4	64563	300	600
	0.062			64623		
0.068	64683					
0.075	64753					
0.082	64823					
0.091	6.0 x 15.5 x 26.0	2.9	64913	200	550	
0.10			64104			
0.11			64114			
0.12	7.0 x 16.5 x 26.0	3.8	64124	200	450	
0.13			64134			
0.15			64154			
0.16	8.5 x 18.0 x 26.0	6.8	64164	200	350	
0.18			64184			



ELECTRICAL DATA AND ORDERING CODE						
U_{RDC} (V)	CAP. (μF)	DIMENSIONS w x h x l (mm)	MASS ⁽²⁾ (g)	CATALOG NUMBER BFC2 378 AND PACKAGING		
				LOOSE IN BOX		REEL ⁽¹⁾
				l_t = 3.5 mm ± 0.3 mm	ALL LEADS	H = 18.5 mm; P₀ = 12.7 mm
				C-TOL. = ± 5 %		
LAST 5 DIGITS OF CATALOG NUMBER	SPQ	SPQ				
PITCH = 27.5 mm ± 0.4 mm; d_t = 0.80 ± 0.08 mm; U_{RAC} = 300 V; U_{p-p} = 850 V						
630	0.20	9.0 x 19.0 x 31.5	7.4	64204	100	
	0.22			64224		
	0.24			64244		
	0.27			64274		
	0.30	11.0 x 21.0 x 31.0	9.2	64304	100	
	0.33			64334		
	0.36			64364		
	0.39			64394		
	0.43	13.0 x 23.0 x 31.0	12.3	64434	100	
	0.47			64474		
	0.51			64514		
	0.56	15.0 x 25.0 x 31.5	16.1	64564	100	
	0.62			64624		
	0.68			64684		

Notes

- (1) H = in-tape height; P₀ = sprocket hole distance; for detailed specifications refer to packaging information
- (2) Weight for short lead product only
- SPQ = Standard Packing Quantity

SPECIFIC REFERENCE DATA - 1000 V_{DC}		
DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
C ≤ 0.051 μF	≤ 10 x 10 ⁻⁴	≤ 20 x 10 ⁻⁴
0.056 μF ≤ C ≤ 0.22 μF	≤ 10 x 10 ⁻⁴	≤ 25 x 10 ⁻⁴
Rated voltage pulse slope (dU/dt) _R :		
P = 15 mm	1300 V/μs	
P = 22.5 mm	1200 V/μs	
P = 27.5 mm	600 V/μs (b < 15 mm)	
P = 27.5 mm	300 V/μs (b ≥ 15 mm)	
R between leads, for C ≤ 1 μF; 500 V; 1 min	> 100 000 MΩ	
R between leads and case; 500 V; 1 min	> 100 000 MΩ	
Ionization (AC) voltage (typical value) at 50 pC peak discharge	> 500 V	
Withstanding (DC) voltage (cut off current 10 mA) ⁽¹⁾ ; rise time ≤ 1000 V/s	1600 V; 1 min	
Withstanding (DC) voltage between leads and case	2840 V; 1 min	

Note

- (1) See "Voltage Proof Test for Metalized Film Capacitors" www.vishay.com/doc?28169



ELECTRICAL DATA AND ORDERING CODE						
U_{RDC} (V)	CAP. (μF)	DIMENSIONS w x h x l (mm)	MASS ⁽²⁾ (g)	CATALOG NUMBER BFC2 378 AND PACKAGING		
				LOOSE IN BOX		REEL ⁽¹⁾
				l_t = 3.5 mm ± 0.3 mm	ALL LEADS	H = 18.5 mm; P₀ = 12.7 mm
				C-TOL. = ± 5 %		
LAST 5 DIGITS OF CATALOG NUMBER	SPQ	SPQ				
1000	PITCH = 15.0 mm ± 0.4 mm; d_t = 0.60 ± 0.06 mm; U_{RAC} = 300 V; U_{p-p} = 1130 V					
	0.0030	5.0 x 11.0 x 17.5	1.0	74302	1000	1100
	0.0033			74332		
	0.0036			74362		
	0.0039			74392		
	0.0043			74432		
	0.0047			74472		
	0.0051			74512		
	0.0056			74562		
	0.0062			74622		
	0.0068			74682		
	0.0075			74752		
	0.0082	6.0 x 12.0 x 17.5	1.4	74822	1000	900
	0.0091			74912		
	0.010			74103		
	0.011	74113				
	PITCH = 22.5 mm ± 0.4 mm; d_t = 0.80 ± 0.08 mm; U_{RAC} = 300 V; U_{p-p} = 1130 V					
	0.012	6.0 x 15.5 x 26.0	2.4	74123	300	600
	0.013			74133		
	0.015			74153		
	0.016			74163		
	0.018			74183		
	0.020			74203		
	0.022	7.0 x 16.5 x 26.0	2.9	74223	200	550
	0.024			74243		
	0.027			74273		
	0.030			74303		
	0.033	7.0 x 16.5 x 26.0	3.8	74333	200	450
	0.036			74363		
	0.039			74393		
	0.043	8.5 x 18.0 x 26.0	6.8	74433	200	350
	0.047			74473		
	0.051			74513		
	PITCH = 27.5 mm ± 0.4 mm; d_t = 0.80 ± 0.08 mm; U_{RAC} = 300 V; U_{p-p} = 1130 V					
	0.056	9.0 x 19.0 x 31.5	7.4	74563	100	
	0.062			74623		
	0.068			74683		
	0.075			74753		
	0.082	11.0 x 21.0 x 31.5	9.2	74823	100	
	0.091			74913		
0.10	74104					
0.11	74114					
0.12	13.0 x 23.0 x 31.0	12.3	74124	100		
0.13			74134			
0.15			74154			
0.16	15.0 x 25.0 x 31.5	16.1	74164	100		
0.18			74184			
0.20			74204			
0.22			74224			

Notes

- (1) H = in-tape height; P₀ = sprocket hole distance; for detailed specifications refer to packaging information
- (2) Weight for short lead product only
- SPQ = Standard Packing Quantity



SPECIFIC REFERENCE DATA - 1600 V _{DC}		
DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
$C \leq 0.022 \mu\text{F}$	$\leq 10 \times 10^{-4}$	$\leq 15 \times 10^{-4}$
$0.024 \mu\text{F} \leq C \leq 0.1 \mu\text{F}$	$\leq 10 \times 10^{-4}$	$\leq 20 \times 10^{-4}$
Rated voltage pulse slope (dU/dt) _R :	1600 V/ μs	
P = 22.5 mm	900 V/ μs (b < 15 mm)	
P = 27.5 mm	450 V/ μs (b \geq 15 mm)	
P = 27.5 mm		
R between leads, for $C \leq 1 \mu\text{F}$; 500 V; 1 min	> 100 000 M Ω	
R between leads and case; 500 V; 1 min	> 100 000 M Ω	
Ionization (AC) voltage (typical value) at 20 pC peak discharge	> 600 V	
Withstanding (DC) voltage (cut off current 10 mA) ⁽¹⁾ ; rise time \leq 1000 V/s	2560 V; 1 min	
Withstanding (DC) voltage between leads and case	2840 V; 1 min	

Note

⁽¹⁾ See "Voltage Proof Test for Metalized Film Capacitors" www.vishay.com/doc?28169

ELECTRICAL DATA AND ORDERING CODE						
U _{RDC} (V)	CAP. (μF)	DIMENSIONS w x h x l (mm)	MASS ⁽²⁾ (g)	CATALOG NUMBER BFC2 378 AND PACKAGING		
				LOOSE IN BOX		REEL ⁽¹⁾
				$l_t = 3.5 \text{ mm} \pm 0.3 \text{ mm}$	ALL LEADS	H = 18.5 mm; P ₀ = 12.7 mm
				C-TOL. = $\pm 5 \%$		
LAST 5 DIGITS OF CATALOG NUMBER		SPQ	SPQ			
1600	PITCH = 22.5 mm \pm 0.4 mm; d_t = 0.80 \pm 0.08 mm; U_{RAC} = 500 V; U_{p-p} = 1400 V					
	0.0056	6.0 x 15.5 x 26.0	2.4	84562	300	600
	0.0062			84622		
	0.0068			84682		
	0.0075		2.9	84752		
	0.0082			84822		
	0.0091			84912		
	0.010	3.8	6.8	84103	200	450
	0.011			84113		
	0.012			84123		
	0.013		84133			
	0.015		84153			
	0.016		84163			
	0.018	11.0 x 21.0 x 31.0	12.3	84183	200	350
	0.020			84203		
	0.022			84223		
				84233		
	PITCH = 27.5 mm \pm 0.4 mm; d_t = 0.80 \pm 0.08 mm; U_{RAC} = 500 V; U_{p-p} = 1400 V					
	0.024	9.0 x 19.0 x 31.5	7.4	84243	100	
	0.027			84273		
0.030	84303					
0.033	84333					
0.036	84363					
0.039	11.0 x 21.0 x 31.0	9.2	84393	100		
0.043			84433			
0.047			84473			
0.051	13.0 x 23.0 x 31.0	16.1	84513	100		
0.056			84563			
0.062			84623			
0.068			84683			
0.075	15.0 x 25.0 x 31.5		84753			
0.082			84823			
0.091			84913			
0.10			84104			

Notes

- ⁽¹⁾ H = in-tape height; P₀ = sprocket hole distance; for detailed specifications refer to packaging information
- ⁽²⁾ Weight for short lead product only
- SPQ = Standard Packing Quantity



SPECIFIC REFERENCE DATA - 2000 V _{DC}		
DESCRIPTION	VALUE	
Tangent of loss angle: C ≤ 0.051 μF	at 10 kHz ≤ 10 x 10 ⁻⁴	at 100 kHz ≤ 15 x 10 ⁻⁴
Rated voltage pulse slope (dU/dt) _R : P = 22.5 mm P = 27.5 mm P = 27.5 mm	2000 V/μs 1200 V/μs (b < 15 mm) 600 V/μs (b ≥ 15 mm)	
R between leads, for C ≤ 1 μF; 500 V; 1 min	> 100 000 MΩ	
R between leads and case; 500 V; 1 min	> 100 000 MΩ	
Ionization (AC) voltage (typical value) at 20 pC peak discharge	> 600 V	
Withstanding (DC) voltage (cut off current 10 mA) ⁽¹⁾ ; rise time ≤ 1000 V/s	3200 V; 1 min	
Withstanding (DC) voltage between leads and case	2840 V; 1 min	

Note

⁽¹⁾ See "Voltage Proof Test for Metalized Film Capacitors" www.vishay.com/doc?28169

ELECTRICAL DATA AND ORDERING CODE						
U _{RDC} (V)	CAP. (μF)	DIMENSIONS w x h x l (mm)	MASS ⁽²⁾ (g)	CATALOG NUMBER BFC2 378 AND PACKAGING		
				LOOSE IN BOX		REEL ⁽¹⁾
				I _t = 3.5 mm ± 0.3 mm	ALL LEADS	H = 18.5 mm; P ₀ = 12.7 mm
				C-TOL. = ± 5 %		
LAST 5 DIGITS OF CATALOG NUMBER	SPQ	SPQ				
PITCH = 22.5 mm ± 0.4 mm; d_t = 0.80 ± 0.08 mm; U_{RAC} = 600 V; U_{p-p} = 1700 V						
2000	0.0033	6.0 x 12.0 x 26.0	2.4	94332	300	600
	0.0036			94362		
	0.0039		2.9	94392		
	0.0043			94432		
	0.0047			94472		
	0.0051	3.8	94512			
	0.0056		94562			
	0.0062	7.0 x 16.5 x 26.0	3.8	94622	200	450
	0.0068			94682		
	0.0075			94752		
	0.0082	8.5 x 18.0 x 26.0	6.8	94822	200	350
	0.0091			94912		
	0.010			94103		
	0.011			94113		
	0.012	10.0 x 19.5 x 26.0		94123		
PITCH = 27.5 mm ± 0.4 mm; d_t = 0.80 ± 0.08 mm; U_{RAC} = 600 V; U_{p-p} = 1700 V						
2000	0.013	9.0 x 19.0 x 31.5	7.4	94133	100	
	0.015			94153		
	0.016			94163		
	0.018	11.0 x 21.0 x 31.0	9.2	94183	100	
	0.020			94203		
	0.022			94223		
	0.024	13.0 x 23.0 x 31.0	12.3	94243	100	
	0.027			94273		
	0.030			94303		
	0.033	15.0 x 25.0 x 31.5	16.1	94333	100	
	0.036			94363		
	0.039			94393		
0.043	18.0 x 28.0 x 31.5		94433	100		
0.047			94473			
0.051			94513			

Notes

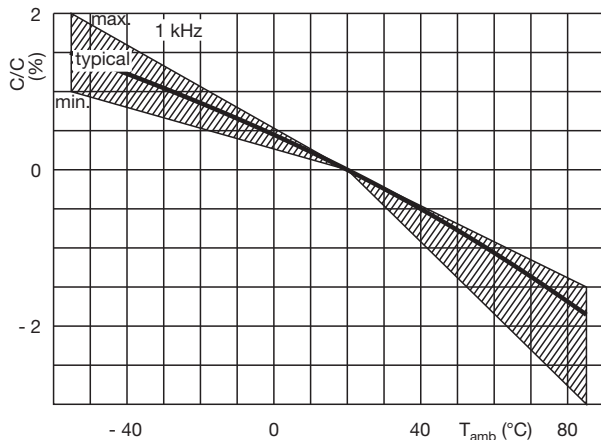
- ⁽¹⁾ H = in-tape height; P₀ = sprocket hole distance; for detailed specifications refer to packaging information
- ⁽²⁾ Weight for short lead product only
- SPQ = Standard Packing Quantity



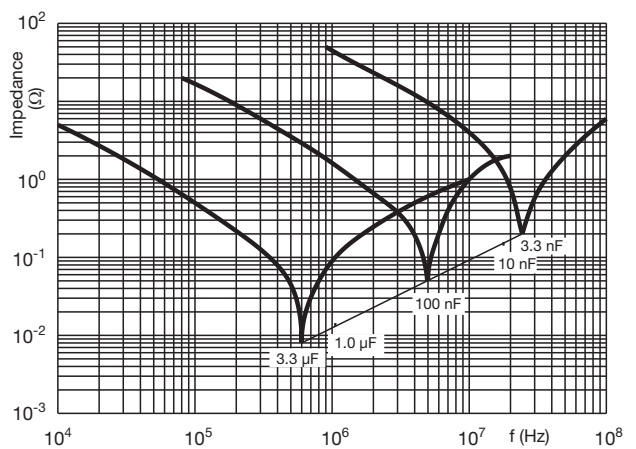
MAXIMUM RMS VOLTAGE (SINEWAVE) AS A FUNCTION OF FREQUENCY



CAPACITANCE



IMPEDANCE





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