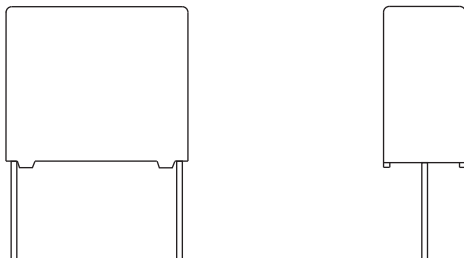




## AC and Pulse Metallized Polypropylene Film Capacitors MKP/MKP Radial Potted Type



### FEATURES

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

### APPLICATIONS

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

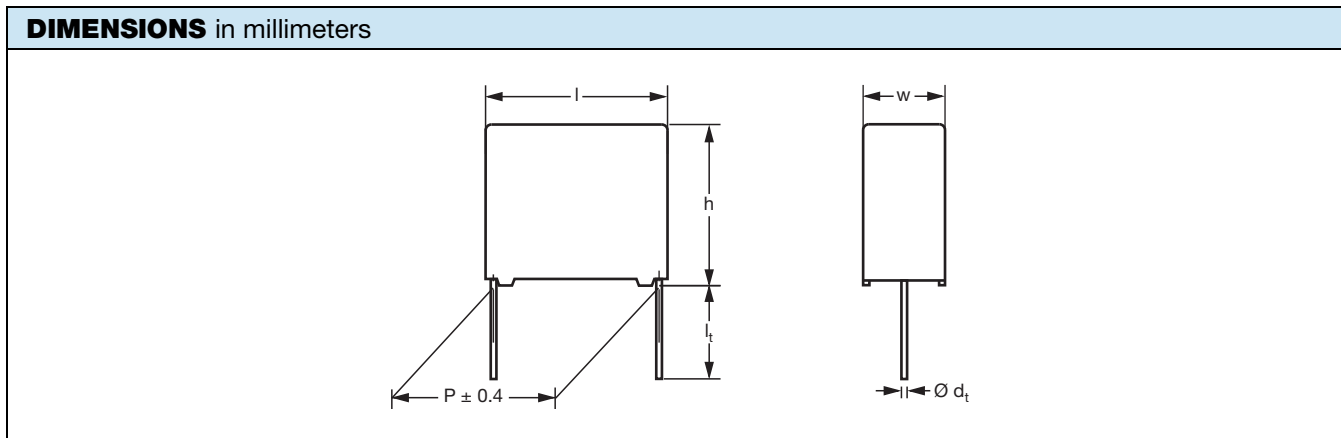


**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

QUICK REFERENCE DATA	
Capacitance range (E24 series)	0.002 $\mu$ F to 0.68 $\mu$ 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 <sub>DC</sub> ; 1000 V <sub>DC</sub> ; 1600 V <sub>DC</sub> ; 2000 V <sub>DC</sub>
Rated AC voltage	300 V <sub>AC</sub> ; 400 V <sub>AC</sub> ; 500 V <sub>AC</sub> ; 600 V <sub>AC</sub>
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](mailto: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 <sub>0</sub> = 12.7 mm		65	75	85	95



SPECIFIC REFERENCE DATA - 630 V <sub>DC</sub>		
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 <sup>-4</sup>	≤ 35 x 10 <sup>-4</sup>
	≤ 10 x 10 <sup>-4</sup>	≤ 45 x 10 <sup>-4</sup>
	≤ 10 x 10 <sup>-4</sup>	≤ 55 x 10 <sup>-4</sup>
	≤ 10 x 10 <sup>-4</sup>	≤ 65 x 10 <sup>-4</sup>
Rated voltage pulse slope (dU/dt) <sub>R</sub> : 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) <sup>(1)</sup> ; rise time ≤ 1000 V/s		1008 V; 1 min
Withstanding (DC) voltage between leads and case		2840 V; 1 min

Note

<sup>(1)</sup> See "Voltage Proof Test for Metalized Film Capacitors" [www.vishay.com/doc?28169](http://www.vishay.com/doc?28169)

ELECTRICAL DATA AND ORDERING CODE						
U <sub>RDC</sub> (V)	CAP. (μF)	DIMENSIONS w x h x l (mm)	MASS <sup>(2)</sup> (g)	CATALOG NUMBER BFC2 378 ..... AND PACKAGING		
				LOOSE IN BOX		REEL <sup>(1)</sup>
				l <sub>t</sub> = 3.5 mm ± 0.3 mm	ALL LEADS	H = 18.5 mm; P <sub>0</sub> = 12.7 mm
				C-TOL. = ± 5 %		
LAST 5 DIGITS OF CATALOG NUMBER		SPQ	SPQ			
630	PITCH = 15.0 mm ± 0.4 mm; d <sub>t</sub> = 0.60 ± 0.06 mm; U <sub>RAC</sub> = 300 V; U <sub>p-p</sub> = 850 V					
	0.015	5.0 x 11.0 x 17.5	1.0	64153		1000
	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
	0.027			64273		
	0.030			64303		
	0.033			64333		
	0.036			6.0 x 12.0 x 17.5	1.8	
	0.039	64393				
	0.043	64433				
	0.047	64473				
	0.051	7.0 x 13.0 x 17.5	2.4	64513		1000
	PITCH = 15.0 mm ± 0.4 mm; d <sub>t</sub> = 0.80 ± 0.08 mm; U <sub>RAC</sub> = 300 V; U <sub>p-p</sub> = 850 V					
	0.056	6.0 x 15.5 x 26.0	2.4	64563		300
	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	
0.10			64104			
0.11			64114			
0.12	7.0 x 16.5 x 26.0	3.8	64124		200	
0.13			64134			
0.15			64154			
0.16	8.5 x 18.0 x 26.0	6.8	64164		200	
0.18			64184			



ELECTRICAL DATA AND ORDERING CODE						
U <sub>RDC</sub> (V)	CAP. (μF)	DIMENSIONS w x h x l (mm)	MASS <sup>(2)</sup> (g)	CATALOG NUMBER BFC2 378 ..... AND PACKAGING		
				LOOSE IN BOX		REEL <sup>(1)</sup>
				l <sub>t</sub> = 3.5 mm ± 0.3 mm	ALL LEADS	H = 18.5 mm; P <sub>0</sub> = 12.7 mm
				C-TOL. = ± 5 %		
LAST 5 DIGITS OF CATALOG NUMBER	SPQ	SPQ				
PITCH = 27.5 mm ± 0.4 mm; d <sub>t</sub> = 0.80 ± 0.08 mm; U <sub>RAC</sub> = 300 V; U <sub>p-p</sub> = 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; P<sub>0</sub> = 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 <sub>DC</sub>		
DESCRIPTION	VALUE	
Tangent of loss angle:	at 10 kHz	at 100 kHz
C ≤ 0.051 μF	≤ 10 x 10 <sup>-4</sup>	≤ 20 x 10 <sup>-4</sup>
0.056 μF ≤ C ≤ 0.22 μF	≤ 10 x 10 <sup>-4</sup>	≤ 25 x 10 <sup>-4</sup>
Rated voltage pulse slope (dU/dt) <sub>R</sub> :		
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) <sup>(1)</sup> ; 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](http://www.vishay.com/doc?28169)



<b>ELECTRICAL DATA AND ORDERING CODE</b>							
<b>U<sub>RDC</sub></b> <b>(V)</b>	<b>CAP.</b> <b>(µF)</b>	<b>DIMENSIONS</b> <b>w x h x l</b> <b>(mm)</b>	<b>MASS</b> <sup>(2)</sup> <b>(g)</b>	<b>CATALOG NUMBER BFC2 378 ..... AND PACKAGING</b>			
				<b>LOOSE IN BOX</b>		<b>REEL</b> <sup>(1)</sup>	
				<b>l<sub>t</sub> = 3.5 mm ± 0.3 mm</b>	<b>ALL LEADS</b>	<b>H = 18.5 mm;</b> <b>P<sub>0</sub> = 12.7 mm</b>	
				<b>C-TOL. = ± 5 %</b>			
<b>LAST 5 DIGITS OF CATALOG NUMBER</b>	<b>SPQ</b>	<b>SPQ</b>					
1000	<b>PITCH = 15.0 mm ± 0.4 mm; d<sub>t</sub> = 0.60 ± 0.06 mm; U<sub>RAC</sub> = 300 V; U<sub>p-p</sub> = 1130 V</b>						
	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
	0.0091	74912					
	0.010	74103					
	0.011			74113			
	<b>PITCH = 22.5 mm ± 0.4 mm; d<sub>t</sub> = 0.80 ± 0.08 mm; U<sub>RAC</sub> = 300 V; U<sub>p-p</sub> = 1130 V</b>						
	0.012	6.0 x 15.5 x 26.0	2.4	74123	300	600	
	0.013			74133			
	0.015			74153			
	0.016		7.0 x 16.5 x 26.0	3.8	74163	200	450
	0.018				74183		
	0.020				74203		
	0.022	8.5 x 18.0 x 26.0	6.8	74223	200	350	
	0.024			74243			
	0.027			74273			
	0.030			74303			
	0.033			74333			
	0.036			74363			
	0.039			74393			
	0.043			74433			
	0.047			74473			
	0.051			74513			
	<b>PITCH = 27.5 mm ± 0.4 mm; d<sub>t</sub> = 0.80 ± 0.08 mm; U<sub>RAC</sub> = 300 V; U<sub>p-p</sub> = 1130 V</b>						
	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			74164				
0.18	15.0 x 25.0 x 31.5	16.1	74184	100			
0.20			74204				
0.22			74224				

**Notes**

- (1) H = in-tape height; P<sub>0</sub> = 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 <sub>DC</sub>		
DESCRIPTION	VALUE	
Tangent of loss angle: C ≤ 0.022 μF 0.024 μF ≤ C ≤ 0.1 μF	at 10 kHz	at 100 kHz
	≤ 10 x 10 <sup>-4</sup>	≤ 15 x 10 <sup>-4</sup>
	≤ 10 x 10 <sup>-4</sup>	≤ 20 x 10 <sup>-4</sup>
Rated voltage pulse slope (dU/dt) <sub>R</sub> : P = 22.5 mm P = 27.5 mm P = 27.5 mm	1600 V/μs 900 V/μs (b < 15 mm) 450 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) <sup>(1)</sup> ; rise time ≤ 1000 V/s	2560 V; 1 min	
Withstanding (DC) voltage between leads and case	2840 V; 1 min	

**Note**

<sup>(1)</sup> See "Voltage Proof Test for Metalized Film Capacitors" [www.vishay.com/doc?28169](http://www.vishay.com/doc?28169)

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

**Notes**

- <sup>(1)</sup> H = in-tape height; P<sub>0</sub> = sprocket hole distance; for detailed specifications refer to packaging information
- <sup>(2)</sup> Weight for short lead product only
- SPQ = Standard Packing Quantity



SPECIFIC REFERENCE DATA - 2000 V <sub>DC</sub>		
DESCRIPTION	VALUE	
Tangent of loss angle: C ≤ 0.051 μF	at 10 kHz ≤ 10 x 10 <sup>-4</sup>	at 100 kHz ≤ 15 x 10 <sup>-4</sup>
Rated voltage pulse slope (dU/dt) <sub>R</sub> : 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) <sup>(1)</sup> ; rise time ≤ 1000 V/s	3200 V; 1 min	
Withstanding (DC) voltage between leads and case	2840 V; 1 min	

**Note**

<sup>(1)</sup> See "Voltage Proof Test for Metalized Film Capacitors" [www.vishay.com/doc?28169](http://www.vishay.com/doc?28169)

ELECTRICAL DATA AND ORDERING CODE						
U <sub>RDC</sub> (V)	CAP. (μF)	DIMENSIONS w x h x l (mm)	MASS <sup>(2)</sup> (g)	CATALOG NUMBER BFC2 378 ..... AND PACKAGING		
				LOOSE IN BOX		REEL <sup>(1)</sup>
				I <sub>t</sub> = 3.5 mm ± 0.3 mm	ALL LEADS	H = 18.5 mm; P <sub>0</sub> = 12.7 mm
				C-TOL. = ± 5 %		
LAST 5 DIGITS OF CATALOG NUMBER	SPQ	SPQ				
<b>PITCH = 22.5 mm ± 0.4 mm; d<sub>t</sub> = 0.80 ± 0.08 mm; U<sub>RAC</sub> = 600 V; U<sub>p-p</sub> = 1700 V</b>						
2000	0.0033	6.0 x 12.0 x 26.0	2.4	94332	300	600
	0.0036			94362		
	0.0039		94392			
	0.0043		94432			
	0.0047		94472			
	0.0051	94512	2.9	94562	200	550
	0.0056	94622				
	0.0062	94682	3.8	94752		
	0.0068	94752				
	0.0075	94822				
	0.0082	8.5 x 18.0 x 26.0	6.8	94912	200	350
	0.0091			94103		
	0.010			94113		
	0.011			94123		
	0.012	10.0 x 19.5 x 26.0		94123		
<b>PITCH = 27.5 mm ± 0.4 mm; d<sub>t</sub> = 0.80 ± 0.08 mm; U<sub>RAC</sub> = 600 V; U<sub>p-p</sub> = 1700 V</b>						
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			94243		
	0.027	13.0 x 23.0 x 31.0	12.3	94273	100	
	0.030			94303		
	0.033			94333		
	0.036			94363		
	0.039	15.0 x 25.0 x 31.5	16.1	94393	100	
	0.043			94433		
0.047	94473					
0.051	94513					

**Notes**

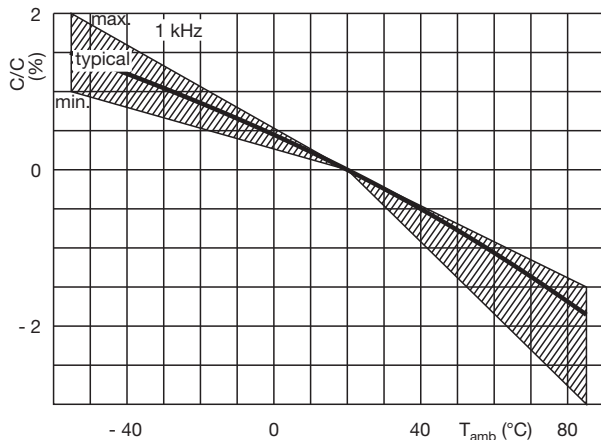
- <sup>(1)</sup> H = in-tape height; P<sub>0</sub> = sprocket hole distance; for detailed specifications refer to packaging information
- <sup>(2)</sup> Weight for short lead product only
- SPQ = Standard Packing Quantity



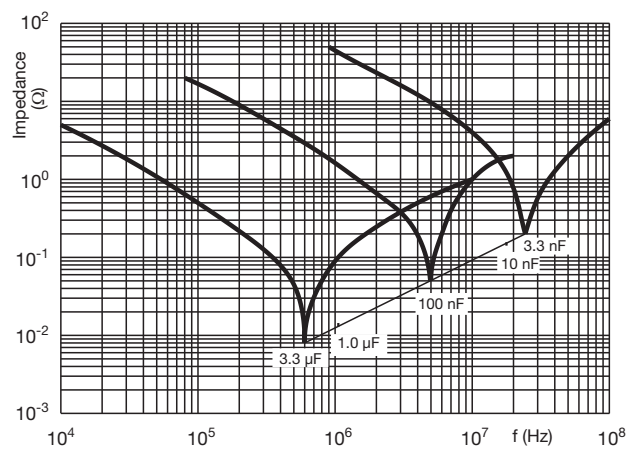
**MAXIMUM RMS VOLTAGE (SINEWAVE) AS A FUNCTION OF FREQUENCY**



**CAPACITANCE**



**IMPEDANCE**







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