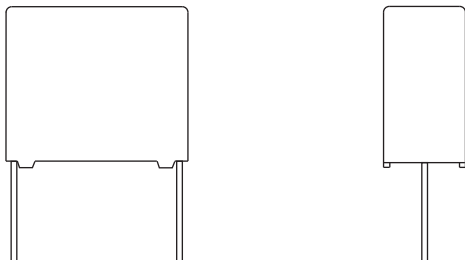




## AC and Pulse Metallized Polypropylene Film Capacitors MKP/MKP Radial Potted Type



### 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

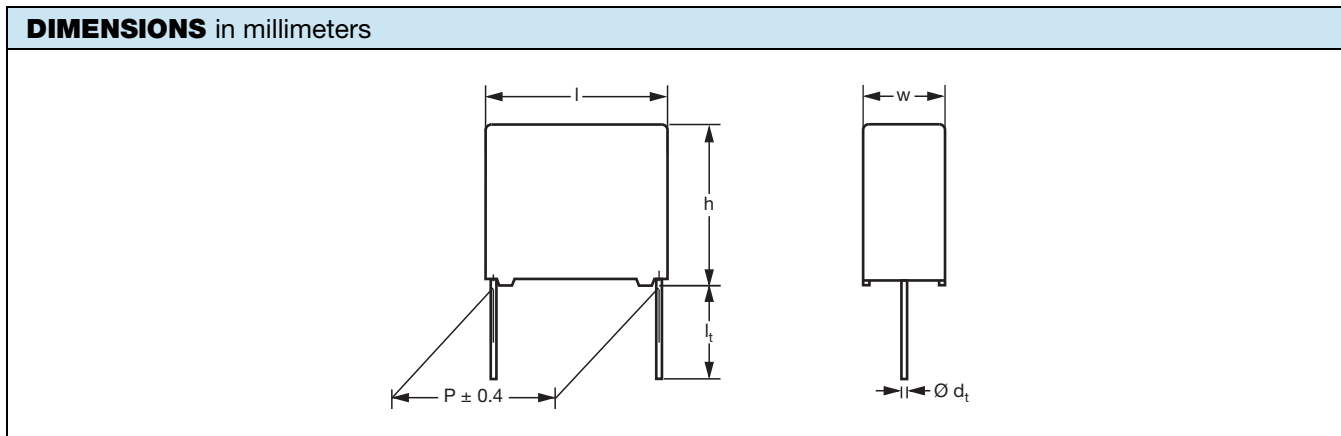


**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

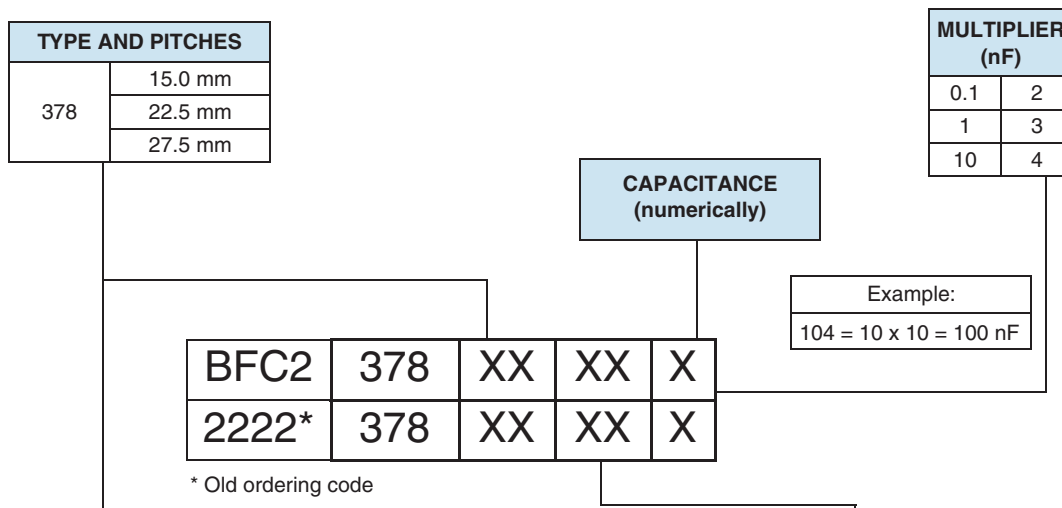
QUICK REFERENCE DATA	
Capacitance range (E24 series)	0.002 $\mu$ F to 0.68 $\mu$ F
Capacitance tolerance	$\pm$ 5 %
Climatic testing class according to IEC 60068-1	55/085/56
Rated DC temperature	85 °C
Rated AC temperature	70 °C
Maximum application temperature	85 °C
Reference specifications	IEC 60384-17
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	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 <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	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			



<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>				
<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> = 850 V</b>						
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

<b>SPECIFIC REFERENCE DATA - 1000 V<sub>DC</sub></b>		
<b>DESCRIPTION</b>	<b>VALUE</b>	
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> (V)	<b>CAP.</b> (μF)	<b>DIMENSIONS</b> w x h x l (mm)	<b>MASS</b> <sup>(2)</sup> (g)	<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; 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		
	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			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	8.5 x 18.0 x 26.0	3.8	74303	200	450
	0.033			74333		
	0.036			74363		
	0.039			74393		
	0.043	9.0 x 19.0 x 31.5	6.8	74433	200	350
	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	11.0 x 21.0 x 31.5	7.4	74563	100	
	0.062			74623		
	0.068			74683		
	0.075			74753		
	0.082	13.0 x 23.0 x 31.0	9.2	74823	100	
	0.091			74913		
0.10	74104					
0.11	74114					
0.12	15.0 x 25.0 x 31.5	12.3	74124	100		
0.13			74134			
0.15			74154			
0.16			74164			
0.18	18.0 x 28.0 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:	at 10 kHz	at 100 kHz
C ≤ 0.022 μF	≤ 10 × 10 <sup>-4</sup>	≤ 15 × 10 <sup>-4</sup>
0.024 μF ≤ C ≤ 0.1 μF	≤ 10 × 10 <sup>-4</sup>	≤ 20 × 10 <sup>-4</sup>
Rated voltage pulse slope (dU/dt) <sub>R</sub> :	1600 V/μs	
P = 22.5 mm	900 V/μs (b < 15 mm)	
P = 27.5 mm	450 V/μs (b ≥ 15 mm)	
P = 27.5 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	6.0 x 15.5 x 26.0	2.4	84562	300	600
	0.0062			84622		
	0.0068			84682		
	0.0075		2.9	84752	200	550
	0.0082			84822		
	0.0091			84912		
	0.010		84103			
	0.011	6.0 x 15.5 x 26.0	3.8	84113	200	450
	0.012			84123		
	0.013			84133		
	0.015		6.8	84153	200	350
	0.016			84163		
	0.018			84183		
	0.020		84203			
	0.022		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	9.0 x 19.0 x 31.5	7.4	84243	100	
	0.027			84273		
	0.030			84303		
0.033	9.2		84333	100		
0.036			84363			
0.039			84393			
0.043	11.0 x 21.0 x 31.0	12.3	84433	100		
0.047			84473			
0.051			84513			
0.056	13.0 x 23.0 x 31.0	16.1	84563	100		
0.062			84623			
0.068			84683			
0.075	15.0 x 25.0 x 31.5		84753	100		
0.082			84823			
0.091			84913			
0.10			84104			

**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)

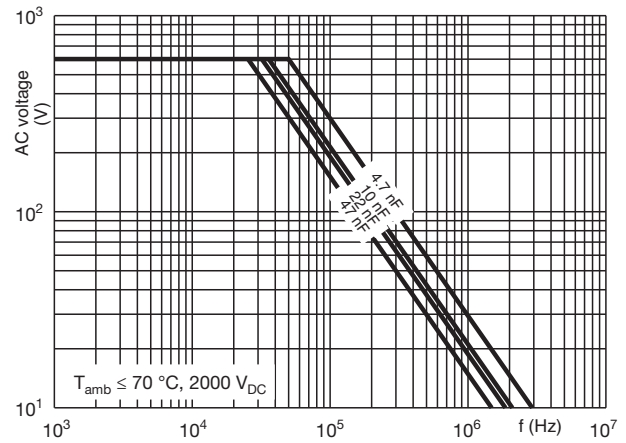
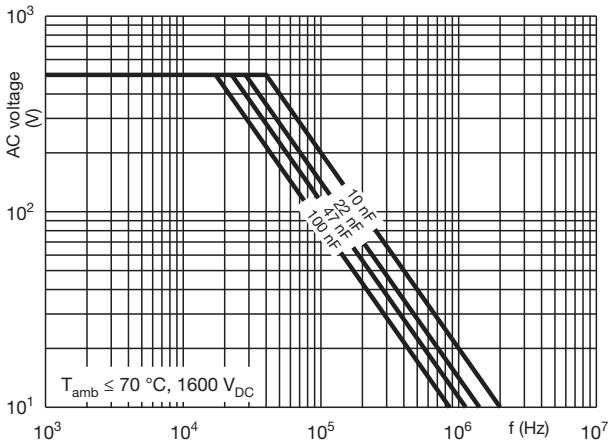
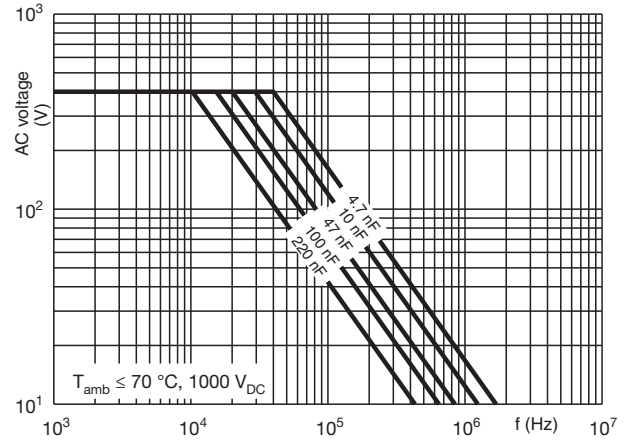
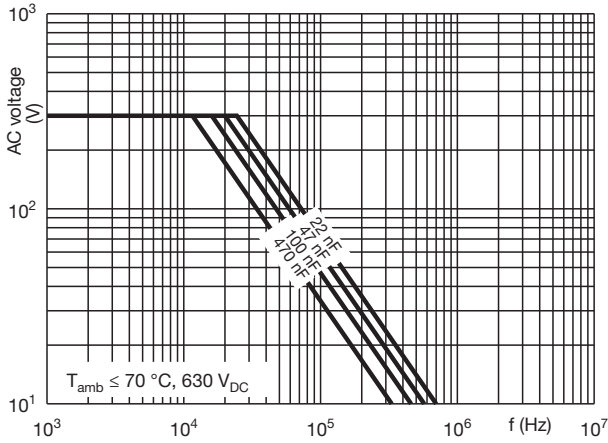
ELECTRICAL DATA AND ORDERING CODE						
U <sub>RDC</sub> (V)	CAP. (μF)	DIMENSIONS w x h x l (mm)	MASS <sup>(2)</sup> (g)	CATALOG NUMBER BFC2 378 ..... AND PACKAGING		
				LOOSE IN BOX		REEL <sup>(1)</sup>
				I <sub>t</sub> = 3.5 mm ± 0.3 mm	ALL LEADS	H = 18.5 mm; P <sub>0</sub> = 12.7 mm
				C-TOL. = ± 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		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		
<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	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**

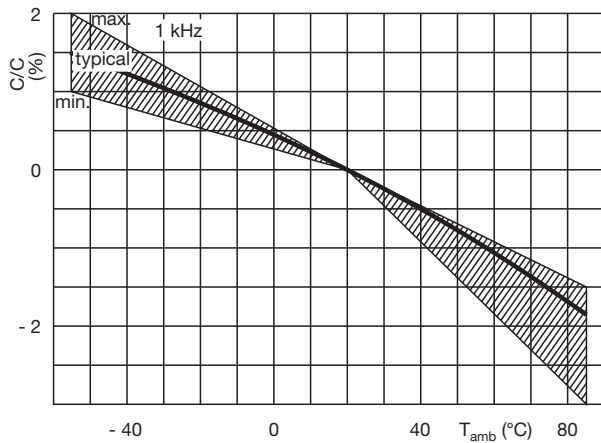
- <sup>(1)</sup> H = in-tape height; P<sub>0</sub> = sprocket hole distance; for detailed specifications refer to packaging information
- <sup>(2)</sup> Weight for short lead product only
- SPQ = Standard Packing Quantity



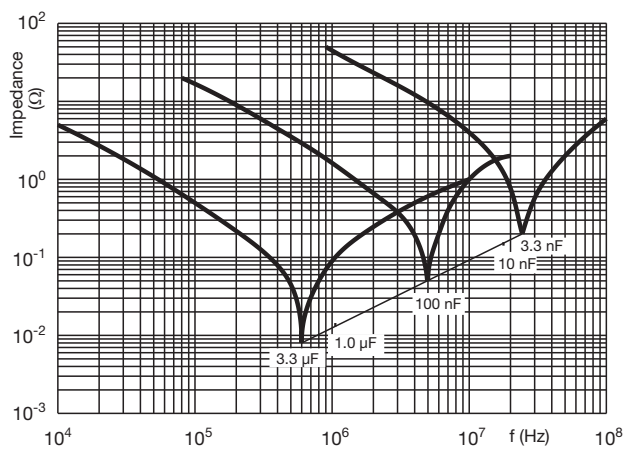
**MAXIMUM RMS VOLTAGE (SINEWAVE) AS A FUNCTION OF FREQUENCY**



**CAPACITANCE**



**IMPEDANCE**







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