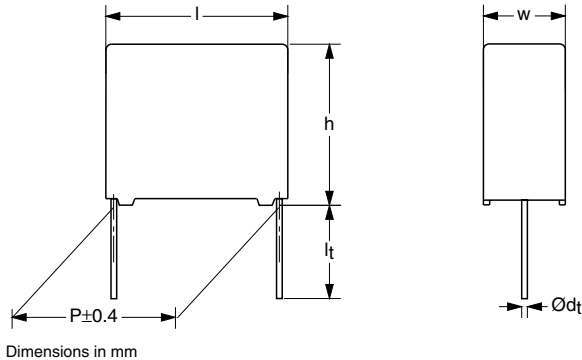


# AC and Pulse Metallized Polypropylene Film Capacitors

## MKP/MKP Radial Potted Type



### APPLICATIONS

Where steep pulses occur e.g. SMPS (switch mode power supplies). Motor control circuits. It is not advised to use these products as resonance capacitors in fly-back applications.

### 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

### 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)

0.002 to 0.68  $\mu$ F

### CAPACITANCE TOLERANCE

$\pm 5 \%$

### FEATURES

15 to 27.5 mm pitch. Supplied loose in box and taped on reel

Lead (Pb)-free product

RoHS-compliant product



**RoHS**  
COMPLIANT

### RATED (DC) VOLTAGE

630 V; 1000 V; 1600 V; 2000 V

### RATED (AC) VOLTAGE

300 V; 400 V; 500 V; 600 V

### RATED PEAK-TO-PEAK VOLTAGE

850 V; 1130 V; 1400 V; 1700 V

### CLIMATIC CATEGORY

55/085/56

### RATED (DC) TEMPERATURE

85 °C

### RATED (AC) TEMPERATURE

70 °C

### MAXIMUM APPLICATION TEMPERATURE

85 °C

### REFERENCE SPECIFICATIONS

IEC 60384-17

### PERFORMANCE GRADE

Grade 1 (long life)

### STABILITY GRADE

Pitch 15 mm: grade 2

Pitch 22.5 and 27.5 mm: grade 1

### DETAIL SPECIFICATION

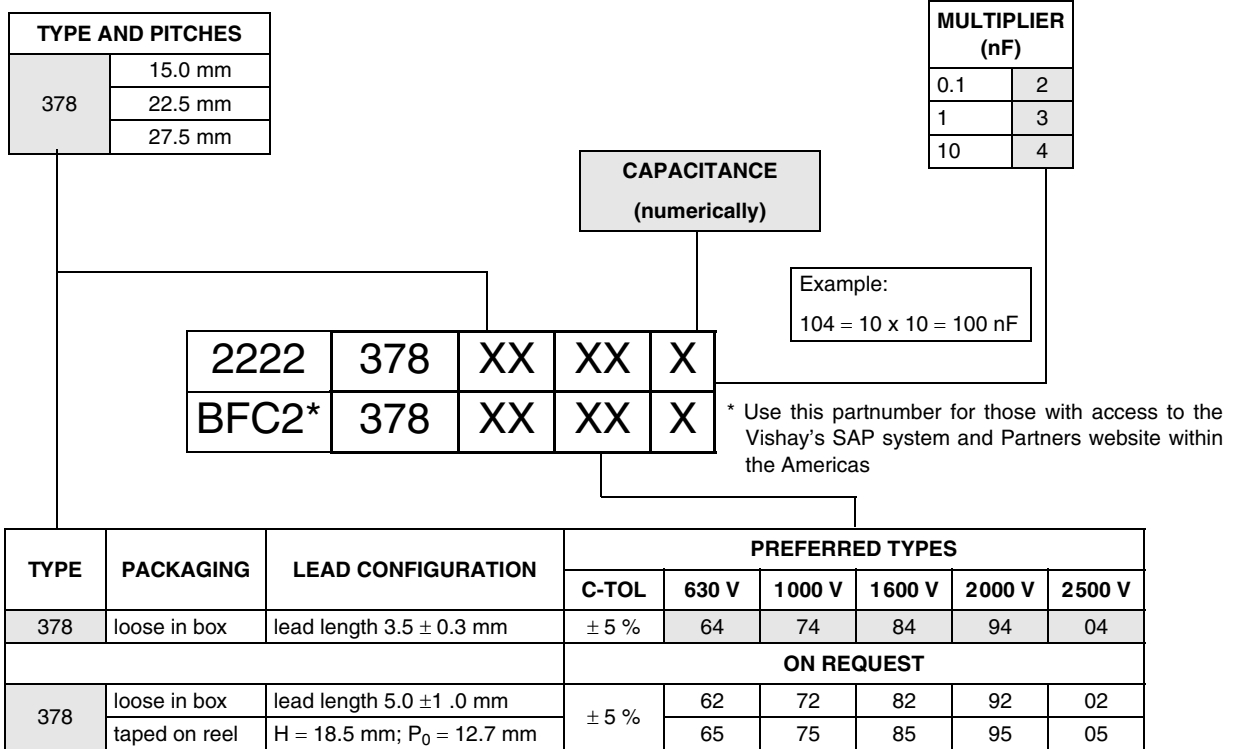
For more detailed data and test requirements see "Type detail specification HQN-384-17/102"

# MKP/MKP 378

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



## COMPOSITION OF CATAOG NUMBER



## SPECIFIC REFERENCE DATA (630 VDC)

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
	≤ 8 × 10 <sup>-4</sup>	≤ 15 × 10 <sup>-4</sup>
	≤ 10 × 10 <sup>-4</sup>	≤ 25 × 10 <sup>-4</sup>
	≤ 10 × 10 <sup>-4</sup>	≤ 30 × 10 <sup>-4</sup>
	≤ 10 × 10 <sup>-4</sup>	≤ 40 × 10 <sup>-4</sup>
Rated voltage pulse slope (dU/dt) <sub>R</sub> :		
	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 minute	> 100000 MΩ	
R between leads and case; 500 V; 1 minute	> 100000 MΩ	
Ionization (AC)voltage (typical value) at 50 pC peak discharge	> 400 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	



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

$U_{Rdc} = 630\text{ V}$ ;  $U_{Rac} = 300\text{ V}$ ;  $U_{p-p} = 850\text{ V}$

C ( $\mu\text{F}$ )	DIMENSIONS W × H × L (mm)	MASS (g)	CATAOG NUMBER 2222 378 ..... AND PACKAGING		
			LOOSE IN BOX		REEL
			$l_t = 3.5 \pm 0.3\text{ mm}$	ALL LEADS	SPQ
			C-tol = $\pm 5\%$	SPQ	
			LAST 5 DIGITS OF CATAOG NUMBER	SPQ	SPQ
<b>Pitch = <math>15.0 \pm 0.4\text{ mm}</math>; <math>d_t = 0.60 \pm 0.06\text{ mm}</math></b>					
0.015 0.016 0.018 0.02 0.022	5.0 × 11.0 × 17.5	1.2	64153 64163 64183 64203 64223	1000	1100
0.024 0.027 0.03 0.033	6.0 × 12.0 × 17.5	1.4	64243 64273 64303 64333	1000	900
<b>Pitch = <math>15.0 \pm 0.4\text{ mm}</math>; <math>d_t = 0.80 \pm 0.08\text{ mm}</math></b>					
0.036 0.039 0.043	7.0 × 13.5 × 17.5	1.9	64363 64393 64433	1000	800
0.047 0.051	8.5 × 15.0 × 17.5	2.6	64473 64513	1000	650
<b>Pitch = <math>22.5 \pm 0.4\text{ mm}</math>; <math>d_t = 0.80 \pm 0.08\text{ mm}</math></b>					
0.068 0.075 0.082 0.091	7.0 × 16.5 × 26.0	3.2	64683 64753 64823 64913	200	550
0.1 0.11 0.12 0.13	8.5 × 18.0 × 26.0	4.4	64104 64114 64124 64134	200	450
0.15 0.16 0.18	10.0 × 19.5 × 26.0	5.5	64154 64164 64184	200	350
<b>Pitch = <math>27.5 \pm 0.4\text{ mm}</math>; <math>d_t = 0.80 \pm 0.08\text{ mm}</math></b>					
0.2 0.22 0.24 0.27	11.0 × 21.0 × 31.0	7.8	64204 64224 64244 64274	100	
0.3 0.33 0.36 0.39	13.0 × 23.0 × 31.0	10.4	64304 64334 64364 64394	100	
0.43 0.47 0.51	15.0 × 25.0 × 31.0	12.8	64434 64474 64514	100	
0.56 0.62 0.68	18.0 × 28.0 × 31.0	17.2	64564 64624 64684	100	

# MKP/MKP 378

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



## SPECIFIC REFERENCE DATA (1000 VDC)

DESCRIPTION	VALUE	
Tangent of loss angle: C ≤ 0.051 μF 0.056 μF ≤ C ≤ 0.22 μF	at 10 kHz	at 100 kHz
	≤ 6 × 10 <sup>-4</sup>	≤ 15 × 10 <sup>-4</sup>
	≤ 8 × 10 <sup>-4</sup>	≤ 20 × 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 minute	> 100000 MΩ	
R between leads and case; 500 V; 1 minute	> 100000 MΩ	
Ionization (AC)voltage (typical value) at 50 pC peak discharge	> 500 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<sub>Rdc</sub> = 1000 V; U<sub>Rac</sub> = 400 V; U<sub>p-p</sub> = 1130 V**

C (μF)	DIMENSIONS W × H × L (mm)	MASS (g)	CATAOG NUMBER 2222 378 ..... AND PACKAGING		
			LOOSE IN BOX		REEL
			l <sub>t</sub> = 3.5 ± 0.3 mm	ALL LEADS	SPQ
			C-tol = ± 5 %	SPQ	
			LAST 5 DIGITS OF CATAOG NUMBER	SPQ	SPQ
<b>Pitch = 15.0 ± 0.4 mm; d<sub>t</sub> = 0.60 ± 0.06 mm</b>					
0.003	5.0 × 11.0 × 17.5	1.2	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 × 12.0 × 17.5	1.4	74822	1100	900
0.0091			74912		
0.01			74103		
0.011			74113		
<b>Pitch = 22.5 ± 0.4 mm; d<sub>t</sub> = 0.80 ± 0.08 mm</b>					
0.02	7.0 × 16.5 × 26.0	3.2	74203	200	550
0.022			74223		
0.024			74243		
0.027	8.5 × 18.0 × 26.0	4.4	74273	200	450
0.03			74303		
0.033			74333		
0.036			74363		
0.039	10.0 × 19.5 × 26.0	5.5	74393	200	350
0.043			74433		
0.047			74473		
0.051			74513		



C ( $\mu\text{F}$ )	DIMENSIONS W × H × L (mm)	MASS (g)	CATAOG NUMBER 2222 378 ..... AND PACKAGING		
			LOOSE IN BOX		REEL
			$l_t = 3.5 \pm 0.3 \text{ mm}$	ALL LEADS	SPQ
			C-tol = $\pm 5 \%$	SPQ	
			LAST 5 DIGITS OF CATAOG NUMBER	SPQ	SPQ
<b>Pitch = <math>27.5 \pm 0.4 \text{ mm}</math>; <math>d_t = 0.80 \pm 0.08 \text{ mm}</math></b>					
0.056 0.062 0.068 0.075 0.082	11.0 × 21.0 × 31.0	7.8	74563 74623 74683 74753 74823	100	
0.091 0.1 0.11	13.0 × 23.0 × 31.0	10.4	74913 74104 74114	100	
0.12 0.13 0.15	15.0 × 25.0 × 31.0	12.8	74124 74134 74154	100	
0.16 0.18 0.2 0.22	18.0 × 28.0 × 31.0	17.5	74164 74184 74204 74224	100	

**SPECIFIC REFERENCE DATA (1600 VDC)**

DESCRIPTION	VALUE	
Tangent of loss angle: C ≤ 0.022 $\mu\text{F}$ 0.024 $\mu\text{F}$ ≤ C ≤ 0.1 $\mu\text{F}$	at 10 kHz	at 100 kHz
	≤ $5 \times 10^{-4}$	≤ $10 \times 10^{-4}$
	≤ $6 \times 10^{-4}$	≤ $15 \times 10^{-4}$
Rated voltage pulse slope (dU/dt) <sub>R</sub> at 1600 V <sub>(DC)</sub> : P = 22.5 mm P = 27.5 mm P = 27.5 mm	1600 V/ $\mu\text{s}$ 900 V/ $\mu\text{s}$ (b < 15 mm) 450 V/ $\mu\text{s}$ (b ≥ 15 mm)	
R between leads, for C ≤ 1 $\mu\text{F}$ ; 500 V; 1 minute	> 100000 M $\Omega$	
R between leads and case; 500 V; 1 minute	> 100000 M $\Omega$	
Ionization (AC)voltage (typical value) at 20 pC peak discharge	> 600 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	

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



$U_{Rdc} = 1600\text{ V}$ ;  $U_{Rac} = 500\text{ V}$ ;  $U_{p-p} = 1400\text{ V}$

C ( $\mu\text{F}$ )	DIMENSIONS W × H × L (mm)	MASS (g)	CATAOG NUMBER 2222 378 ..... AND PACKAGING		
			LOOSE IN BOX		REEL
			$l_t = 3.5 \pm 0.3\text{ mm}$	ALL LEADS	SPQ
			C-tol = $\pm 5\%$	SPQ	
			LAST 5 DIGITS OF CATAOG NUMBER	SPQ	SPQ
<b>Pitch = <math>22.5 \pm 0.4\text{ mm}</math>; <math>d_t = 0.80 \pm 0.08\text{ mm}</math></b>					
0.0056	6.0 × 15.5 × 26.0	2.6	84562	300	600
0.0062			84622		
0.0068			84682		
0.0075	7.0 × 16.5 × 26.0	3.2	84752	200	550
0.0082			84822		
0.0091			84912		
0.01			84103		
0.011	8.5 × 18.0 × 26.0	4.4	84113	200	450
0.012			84123		
0.013			84133		
0.015			84153		
0.016			84163		
0.018	10.0 × 19.5 × 26.0	5.5	84183	200	350
0.02			84203		
0.022			84223		
<b>Pitch = <math>27.5 \pm 0.4\text{ mm}</math>; <math>d_t = 0.80 \pm 0.08\text{ mm}</math></b>					
0.024	11.0 × 21.0 × 31.0	7.8	84243	100	
0.027			84273		
0.03			84303		
0.033			84333		
0.036			84363		
0.039	13.0 × 23.0 × 31.0	10.4	84393	100	
0.043			84433		
0.047			84473		
0.051			84513		
0.056	15.0 × 25.0 × 31.0	12.8	84563	100	
0.062			84623		
0.068			84683		
0.075	18.0 × 28.0 × 31.0	17.2	84753	100	
0.082			84823		
0.091			84913		
0.1			84104		



**SPECIFIC REFERENCE DATA (2000 VDC)**

DESCRIPTION	VALUE	
Tangent of loss angle: C ≤ 0.051 μF	at 10 kHz	at 100 kHz
	≤ 5 × 10 <sup>-4</sup>	≤ 10 × 10 <sup>-4</sup>
Rated voltage pulse slope (dU/dt) <sub>R</sub> at 2000 V (DC): 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 minute	> 100000 MΩ	
R between leads and case; 500 V; 1 minute	> 100000 MΩ	
Ionization (AC)voltage (typical value) at 20 pC peak discharge	> 600 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<sub>Rdc</sub> = 2000 V; U<sub>Rac</sub> = 600 V; U<sub>p-p</sub> = 1700 V**

C (μF)	DIMENSIONS W × H × L (mm)	MASS (g)	CATAOG NUMBER 2222 378 ..... AND PACKAGING		
			LOOSE IN BOX		REEL
			l <sub>t</sub> = 3.5 ± 0.3 mm	ALL LEADS	SPQ
			C-tol = ± 5 %	SPQ	
			LAST 5 DIGITS OF CATAOG NUMBER	SPQ	SPQ
<b>Pitch = 22.5 ± 0.4 mm; d<sub>t</sub> = 0.80 ± 0.08 mm</b>					
0.0033 0.0036	6.0 × 15.5 × 26.0	2.6	94332 94362	300	600
0.0039 0.0043 0.0047 0.0051	7.0 × 16.5 × 26.0	3.2	94392 94432 94472 94512	200	550
0.0056 0.0062 0.0068 0.0075 0.0082	8.5 × 18.0 × 26.0	4.4	94562 94622 94682 94752 94822	200	450
0.0091 0.01 0.011 0.012	10.0 × 19.5 × 26.0	5.5	94912 94103 94113 94123	200	350
<b>Pitch = 27.5 ± 0.4 mm; d<sub>t</sub> = 0.80 ± 0.08 mm</b>					
0.013 0.015 0.016 0.018 0.02	11.0 × 21.0 × 31.0	7.8	94133 94153 94163 94183 94203	100	
0.022 0.024 0.027	13.0 × 23.0 × 31.0	10.4	94223 94243 94273	100	
0.030 0.033 0.036	15.0 × 25.0 × 31.0	12.8	94303 94333 94363	100	
0.039 0.043 0.047 0.051	18.0 × 28.0 × 31.0	17.5	94393 94433 94473 94513	100	

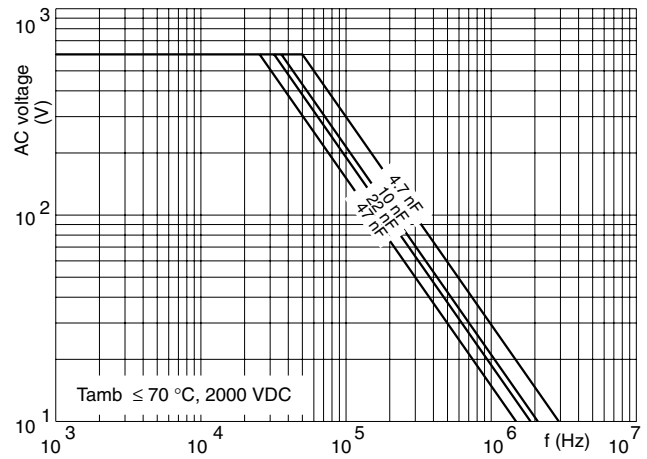
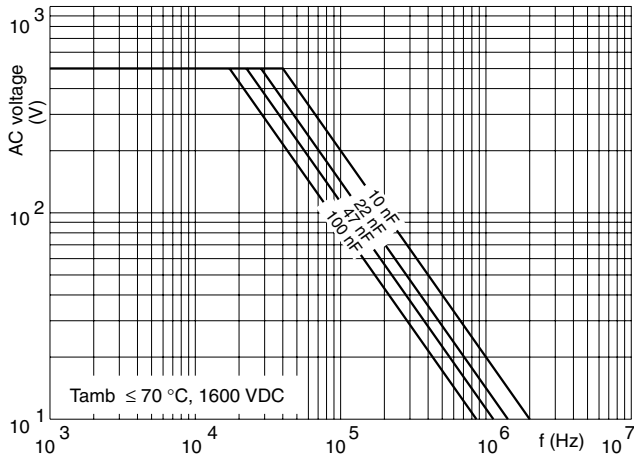
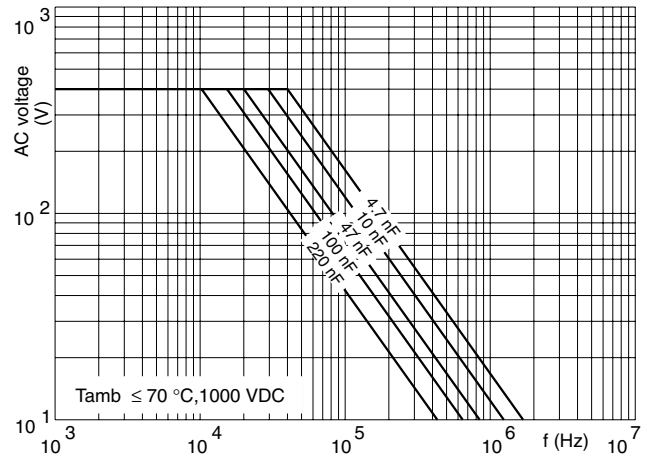
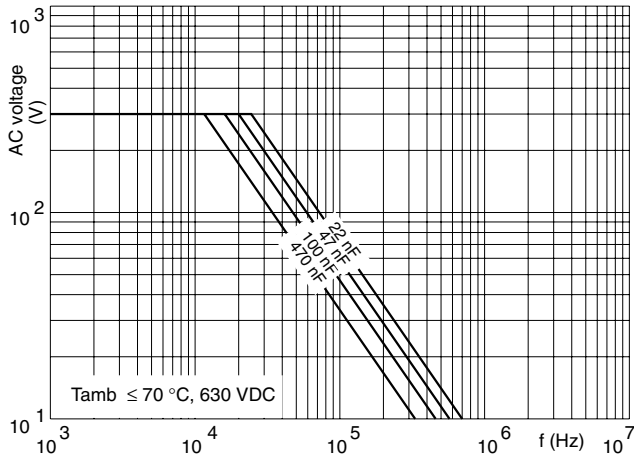
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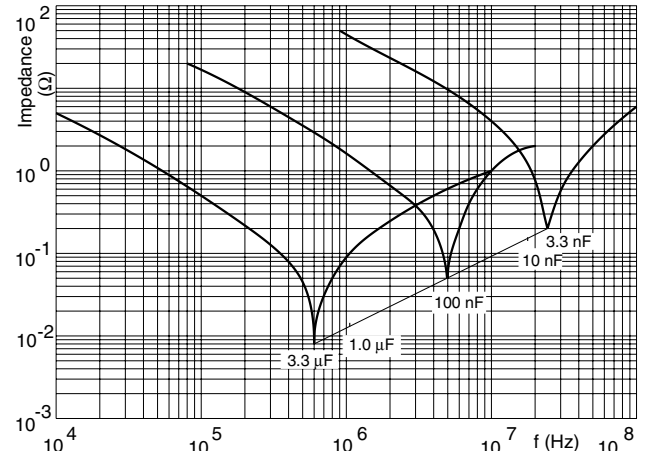
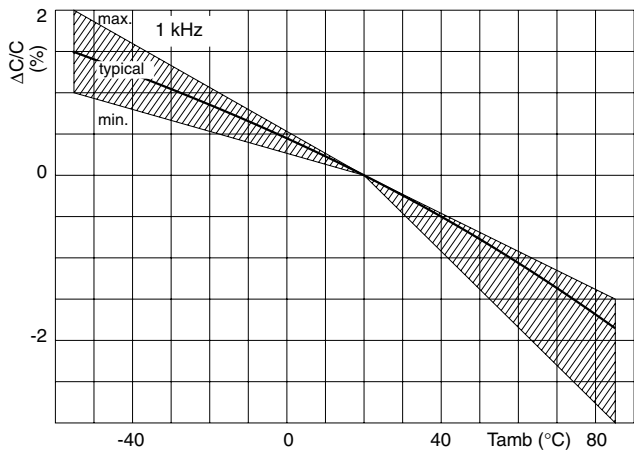
## MAXIMUM RMS VOLTAGE (SENEWAVE) AS A

## FUNCTION OF FREQUENCY



## CAPACITANCE

## IMPEDANCE







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