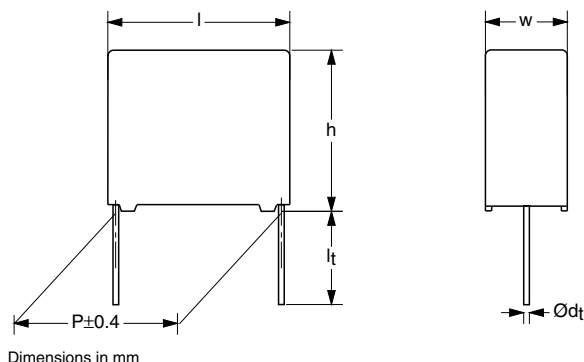


AC and Pulse Metallized Polypropylene Film Capacitors MKP/MKP Radial Potted Type



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 μ 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

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"



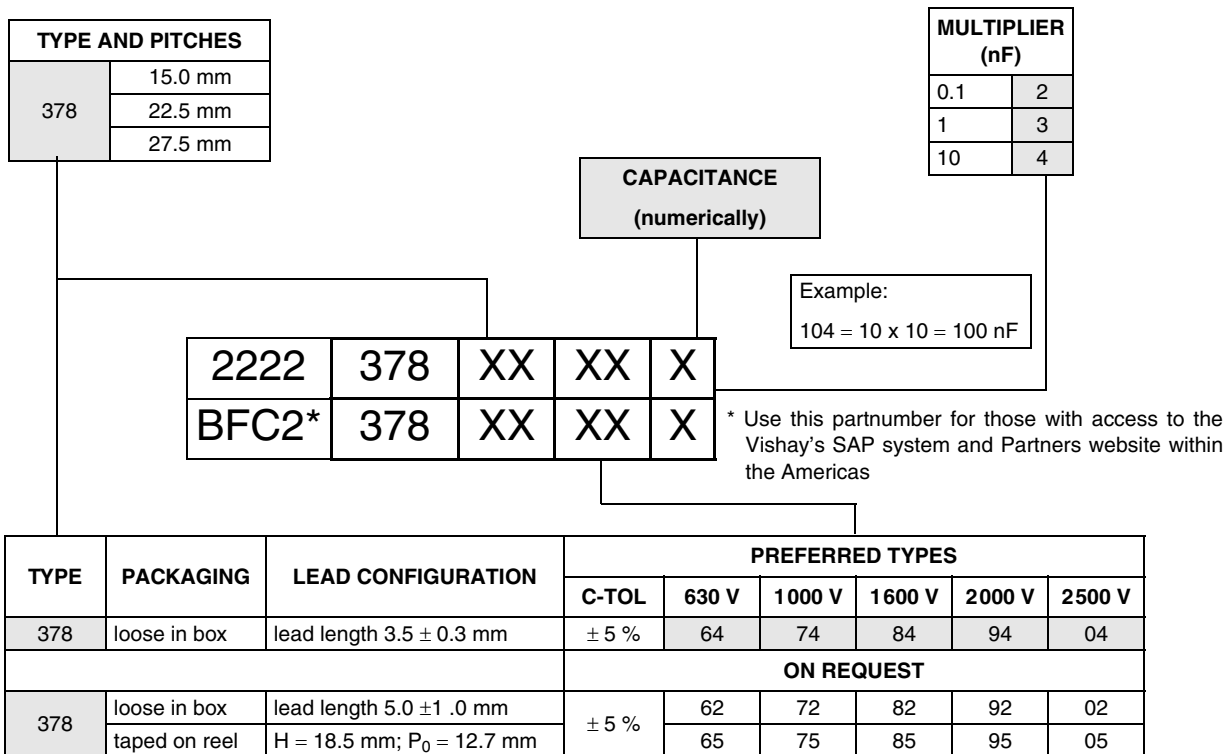
RoHS
COMPLIANT

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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 ⁻⁴	≤ 15 × 10 ⁻⁴
	≤ 10 × 10 ⁻⁴	≤ 25 × 10 ⁻⁴
	≤ 10 × 10 ⁻⁴	≤ 30 × 10 ⁻⁴
	≤ 10 × 10 ⁻⁴	≤ 40 × 10 ⁻⁴
	≤ 10 × 10 ⁻⁴	≤ 45 × 10 ⁻⁴
Rated voltage pulse slope (dU/dt) _R :		
P = 15 mm	500 V/µs	
P = 22.5 mm	370 V/µs	
P = 27.5 mm	230 V/µs (b < 15 mm)	
P = 27.5 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	

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

C (μF)	DIMENSIONS W × H × L (mm)	MASS (g)	CATAOG NUMBER 2222 378 AND PACKAGING		
			LOOSE IN BOX		REEL
			l _t = 3.5 ± 0.3 mm	ALL LEADS	SPQ
			C-tol = ± 5 %	SPQ	
		LAST 5 DIGITS OF CATAOG NUMBER			
Pitch = 15.0 ± 0.4 mm; d _t = 0.60 ± 0.06 mm					
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
Pitch = 15.0 ± 0.4 mm; d _t = 0.80 ± 0.08 mm					
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
Pitch = 22.5 ± 0.4 mm; d _t = 0.80 ± 0.08 mm					
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
Pitch = 27.5 ± 0.4 mm; d _t = 0.80 ± 0.08 mm					
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	

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SPECIFIC REFERENCE DATA (1000 VDC)

DESCRIPTION	VALUE	
Tangent of loss angle: $C \leq 0.051 \mu\text{F}$ $0.056 \mu\text{F} \leq C \leq 0.22 \mu\text{F}$	at 10 kHz	at 100 kHz
	$\leq 6 \times 10^{-4}$	$\leq 15 \times 10^{-4}$
	$\leq 8 \times 10^{-4}$	$\leq 20 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$: P = 15 mm P = 22.5 mm P = 27.5 mm P = 27.5 mm	1300 V/ μs 1200 V/ μs 600 V/ μs (b < 15 mm) 300 V/ μs (b $\geq$ 15 mm)	
R between leads, for $C \leq 1 \mu\text{F}$; 500 V; 1 minute	> 100000 M Ω	
R between leads and case; 500 V; 1 minute	> 100000 M Ω	
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	

$U_{Rdc} = 1000 \text{ V}$; $U_{Rac} = 400 \text{ V}$; $U_{p-p} = 1130 \text{ V}$

C (μF)	DIMENSIONS W × H × L (mm)	MASS (g)	CATAOG NUMBER 2222 378 AND PACKAGING		
			LOOSE IN BOX		REEL
			l _t = 3.5 ± 0.3 mm	ALL LEADS	SPQ
			C-tol = ± 5 %	SPQ	
			LAST 5 DIGITS OF CATAOG NUMBER		
Pitch = 15.0 ± 0.4 mm; d _t = 0.60 ± 0.06 mm					
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		
Pitch = 22.5 ± 0.4 mm; d _t = 0.80 ± 0.08 mm					
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 (μF)	DIMENSIONS W × H × L (mm)	MASS (g)	CATAOG NUMBER 2222 378 AND PACKAGING		
			LOOSE IN BOX		REEL
			l _t = 3.5 ± 0.3 mm	ALL LEADS	SPQ
			C-tol = ± 5 %	SPQ	
			LAST 5 DIGITS OF CATAOG NUMBER		
Pitch = 27.5 ± 0.4 mm; d _t = 0.80 ± 0.08 mm					
0.056	11.0 × 21.0 × 31.0	7.8	74563	100	
0.062			74623		
0.068			74683		
0.075			74753		
0.082			74823		
0.091	13.0 × 23.0 × 31.0	10.4	74913	100	
0.1			74104		
0.11			74114		
0.12	15.0 × 25.0 × 31.0	12.8	74124	100	
0.13			74134		
0.15			74154		
0.16	18.0 × 28.0 × 31.0	17.5	74164	100	
0.18			74184		
0.2			74204		
0.22			74224		

SPECIFIC REFERENCE DATA (1600 VDC)

DESCRIPTION	VALUE	
Tangent of loss angle: C ≤ 0.022 μF 0.024 μF ≤ C ≤ 0.1 μF	at 10 kHz	at 100 kHz
	≤ 5×10^{-4}	≤ 10×10^{-4}
	≤ 6×10^{-4}	≤ 15×10^{-4}
Rated voltage pulse slope (dU/dt) _R at 1600 V _(DC) : 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 minute	> 100000 M Ω	
R between leads and case; 500 V; 1 minute	> 100000 M Ω	
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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$U_{Rdc} = 1600 \text{ V}$; $U_{Rac} = 500 \text{ V}$; $U_{p-p} = 1400 \text{ V}$

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



SPECIFIC REFERENCE DATA (2000 VDC)

DESCRIPTION	VALUE	
Tangent of loss angle: $C \leq 0.051 \mu\text{F}$	at 10 kHz	at 100 kHz
	$\leq 5 \times 10^{-4}$	$\leq 10 \times 10^{-4}$
Rated voltage pulse slope $(dU/dt)_R$ 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 $\geq$ 15 mm)	
R between leads, for $C \leq 1 \mu\text{F}$; 500 V; 1 minute	> 100000 M Ω	
R between leads and case; 500 V; 1 minute	> 100000 M Ω	
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	

 $U_{Rdc} = 2000 \text{ V}$; $U_{Rac} = 600 \text{ V}$; $U_{p-p} = 1700 \text{ V}$

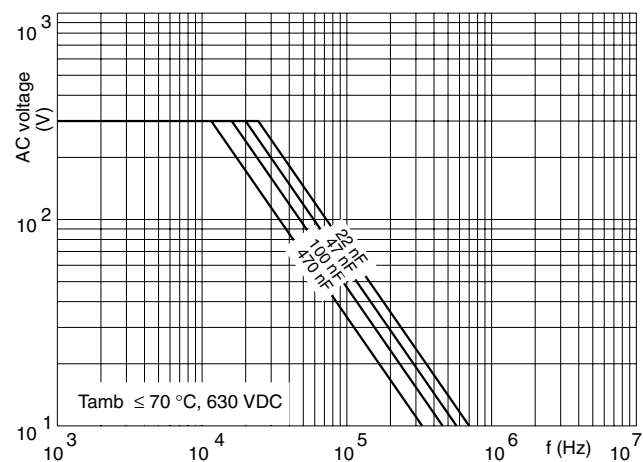
C (μF)	DIMENSIONS W × H × L (mm)	MASS (g)	CATAOG NUMBER 2222 378 AND PACKAGING		
			LOOSE IN BOX		REEL
			l _t = 3.5 ± 0.3 mm	ALL LEADS	SPQ
			C-tol = ± 5 %	SPQ	
			LAST 5 DIGITS OF CATAOG NUMBER		
Pitch = 22.5 ± 0.4 mm; d _t = 0.80 ± 0.08 mm					
0.0033 0.0036	6.0 × 15.5 × 26.0	2.6	94332 94362	300	600
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
Pitch = 27.5 ± 0.4 mm; d _t = 0.80 ± 0.08 mm					
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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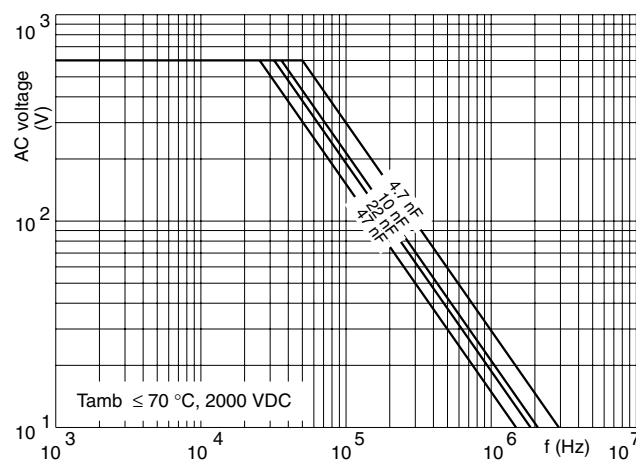
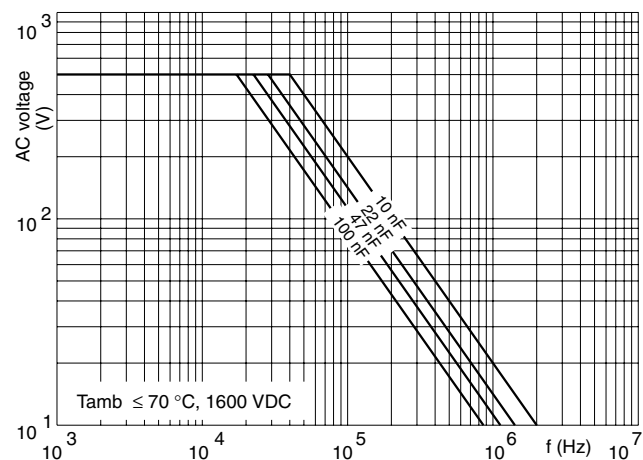
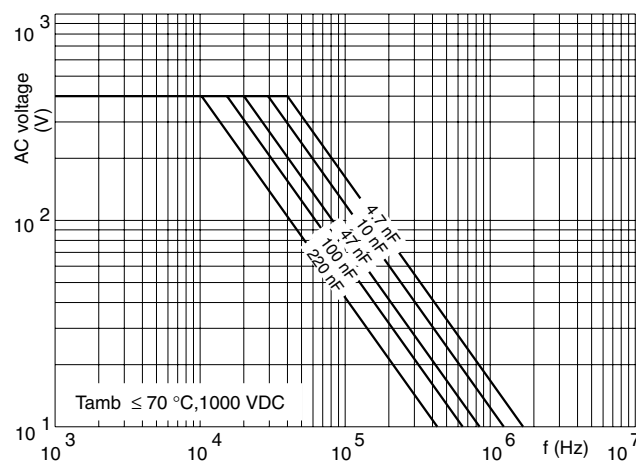
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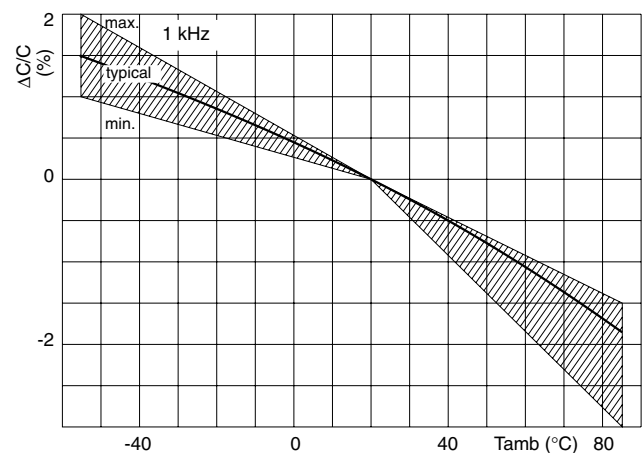
MAXIMUM RMS VOLTAGE (SINEWAVE) AS A



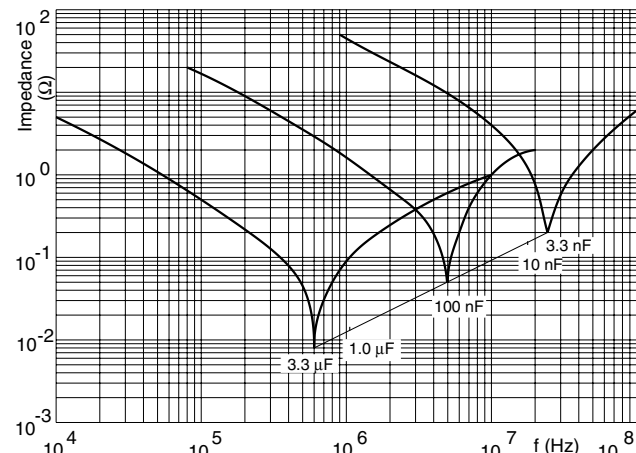
FUNCTION OF FREQUENCY



CAPACITANCE



IMPEDANCE





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