



TeCap

X1MKP

X1 Capacitor (Metallized Polypropylene Film Capacitor)

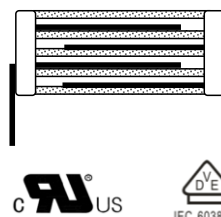


www.tecaphk.com



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single sided metallized
polypropylene film

APPLICATION:

Interference suppression and across the line.
Spark killer circuit.
EMI filters.
Switching power supply.

FEATURES:

Withstand overvoltage stressing.
Excellent flame resistant abilities.

GENERAL TECHNICAL DATA

Dielectric: polypropylene film.

Metal Layer: Metal layer by evaporation under vacuum.

Winding: Non-inductive type.

Leads: Tin-plated copper wire.

Plastic case: PBT material with solven resistant
& flame retardant according to UL94V0

Filling: Epoxy Resin with flame retardant according
to UL94V0.

Marking: Company logo, capacitor type, capacitance,
tolerance, capacitor class, rated voltage, approvals
climatic category, passive flammability category,
date code.

Operating temperature range: - 40 to +110°C
Climatic category: 40/100/56 IEC

ELECTRICAL CHARACTERISTICS

Capacitance range: 0.01µF ~ 2.2µF
Capacitance tolerances: (measured at 1KHZ)
±10%(K); ±20%(M) upon request
Rated Voltage: 300Vac(50/60Hz)/ 610Vdc

Dissipation Factor:
 $\tan \delta \leq 10^{-4}$ at +25°C ±5°C: ≤ 0.15 (6 typical) at 1 kHz

Insulation Resistance:

Test conditions
Temperature 25°C ±5°C
Voltage charge: 100 Vdc
Charge time 1 Min.

Performance
 $C \leq 0.33\mu F$ $\geq 1 \times 10^5 M\Omega$ (typical value $5 \times 10^5 M\Omega$)
 $C > 0.33\mu F$ $\geq 30000 s$ (typical value 150000 s)

Test Voltage: at 25°C ±5°C
(Between terminals) 1500VAC for 1 sec. or 2200VDC 1sec.

Rated voltage pulse slope Max dv/dt(V/us)at 390VDC

Pitch	10mm	15mm	22.5mm	27.5mm	37.5mm
dv/dt	500	400	200	150	100

RELIABILITY TEST METHOD & PERFORMANCE:

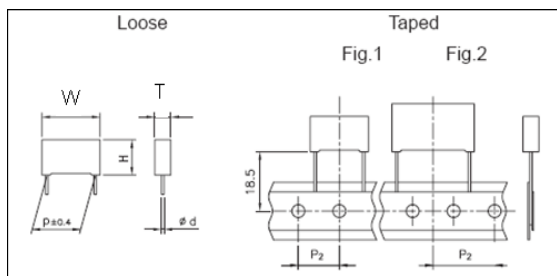
Damp heat steady state			Performance	
Test condition				
1st	Temperature:	40±2℃	Dielectric strength	No dielectric breakdown or flashover at 4.3xVr(d.c)/1 min.
	Relative humidity:	93%±2%		
	Test duration:	56 days	Capacitance change	
2nd	Temperature:	60±2℃	Insulation resistance	≥50% of initial limit
	Relative humidity:	95%±2%		
	Test duration:	500 hours		
Endurance			Performance	
Test condition				
	Temperature:	100±2℃	Dielectric strength	No dielectric breakdown or flashover at 4.3xVr(d.c)/1 min.
	Test duration:	1000 h		
	Voltage applied:	1.25*VR+1000Vac	Capacitance change	≤10%
		0.1S/h	Insulation resistance	≥50% of initial limit
Resistance to soldering heat				
	Solder bath temperature:	260±5℃	Capacitance change	≤2%
	Dipping time:	10s±1s		



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Dimensions



$\varnothing$ d+0,05	p=15	22,5 ≤ p ≤ 27,5
	0,6	0,8

All dimensions are in mm

Pitch mm	Box thickness (T) mm	Maximum dimensions (mm)		
		Tmax	Hmax	Wmax
10,0	All	T+0,2	H+0,1	W+0,2
15,0	<7,5	T+0,2	H+0,1	W+0,3
15,0	>7,5	T+0,2	H+0,1	W+0,5
22,5	All	T+0,2	H+0,1	W+0,3
27,5	All	T+0,2	H+0,1	W+0,3

Dimension Table (mm)

TeCap PN	CAP. (μF)	300Vac/610Vdc															
		P=10mm				P=15mm				P=22.5mm				P=27.5mm			
		W	H	T	d	W	H	T	d	W	H	T	d	W	H	T	d
X1MKP103#300P10 - -	0,01	13,0	11,0	4,0	0,6												
X1MKP223#300P10 - -	0,022	13,0	11,0	4,0	0,6												
X1MKP333#300P10 - -	0,033	13,0	11,0	5,0	0,6												
X1MKP473#300P10 - -	0,047	13,0	12,0	6,0	0,6												
X1MKP683#300P15 - -	0,068					18,0	11,0	5,0	0,8								
X1MKP104#300P15 - -	0,1					18,0	12,0	6,0	0,8								
X1MKP154#300P15 - -	0,15					18,0	13,5	7,5	0,8								
X1MKP224#300*** - -	0,22					18,0	14,5	8,5	0,8	26,5	16,5	7,0	0,8				
X1MKP334#300P22 - -	0,33									26,5	16,5	7,0	0,8				
X1MKP474#300P22 - -	0,47									26,0	17,0	8,5	0,8				
X1MKP474#300P27 - -	0,47													32,0	17,5	8,5	0,8
X1MKP684#300P27 - -	0,68													32,0	20,0	11,0	0,8
X1MKP105#300P27 - -	1													32,0	23,0	13,0	0,8
X1MKP155#300P27 - -	1,5													32,0	26,0	15,0	0,8
X1MKP225#300P27 - -	2,2													32,0	27,5	17,5	0,8

tolerance: K=10%, M=20%

*** pitch code

- - lead length/package code

E12 series available upon request



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Part number description

X1	M	K	P	1	0	5	K	2	7	5	P	1	5	0	6	*
1 Type				2 Capacitance			3 Tolerance	4 Rated Voltage			5 Pitch	6 lead lenght			7 internal code	

1 Type:

X1 MKP = Class X1, film metallized polypropylene

2 Capacitance:

Use 3 digit to represent Capacitance. First 2 digit means capacitance value. The last digit means 0 No. after capacitance value with unit Pico Farad. Show as below:

102= 1000PF= 1.0nF=0.001μF

105= 1000000PF= 1000nF=1.0μF

103= 10000PF= 10nF= 0.01μF

106= 10000000PF= 10000nF= 10μF

104=100000PF= 100nF= 0.1μF

3 Tolerance:

TOLERANCE	±1%	±2%	±3%	±5%	±10%	±20%
CODE	F	G	H	J	K	M

4 Rated Voltage:

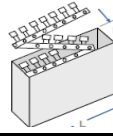
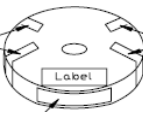
AC voltage represent code:

VOLTAGE	125V	180V	200V	220V	230V	250V	275V	280V	300V	310V
CODE	125	180	200	220	230	250	275	280	300	310

5 Pitch Code:

PITCH	5.0	7.5	10	15	22.5	27.5	37,5
CODE	P05	P07	P10	P15	P22	P27	P37

6 Lead length & Box dimensions:

CODE	Package	Lead length mm	Drawing	Typing style		
				P ₂ mm	Fig N°	Pitch mm
TA	Ammo-Pack			12,70 19,05	1 2	10,0/15,0 22,5
TR	Reel Taping ø500			12,70 19,05	1 2	10,0/15,0 22,5
06	Loose, short lead wire	6 ⁻²				
30	Loose, long lead wire	30 ⁺⁵				

7 Internal code:

S = series version

* = others

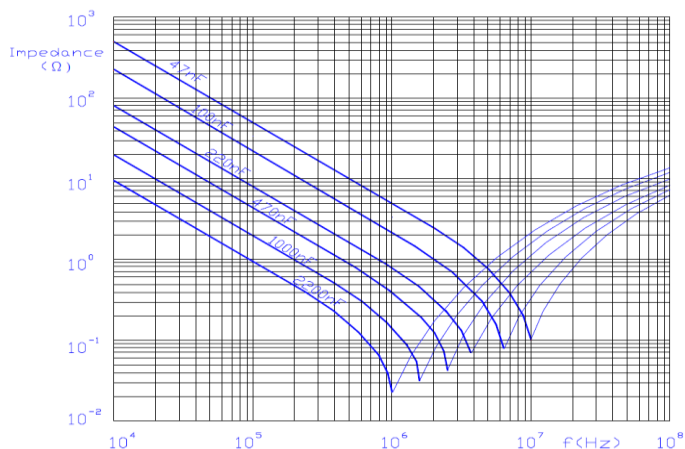
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Approval Standards

Impedance vs frequency

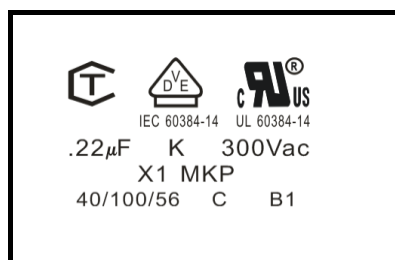
(lead length less than 2mm) Typical values.

Approval marks	Standard	Class	Region
	VDE IEC 60384-14	Class X1	Europe
	UL UL 60384-14	Class X1	Usa
	UL CSA 60384-14	Class X1	Canada



X1 Capacitor marking:

	Company Logo
MKP	capacitor Type
.22uF	Capacitance value
K	Capacitance tolerance: J=±5%, K=±10%, M=±20%
X1	X2 class
300Vac	Rated voltage
	UL safety approval mark
VDE	VDE safety approval mark
40/100/56	Climatic Category
IEC 60384-14	Product test standard
C	Passive flammability category
B1	Date code (table)

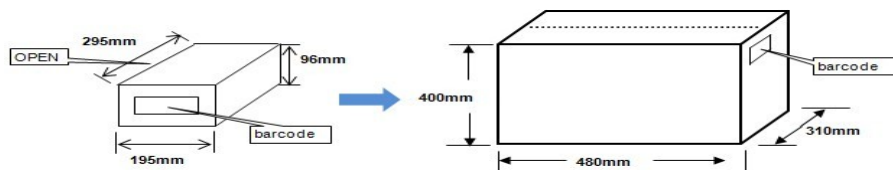


Date code table:

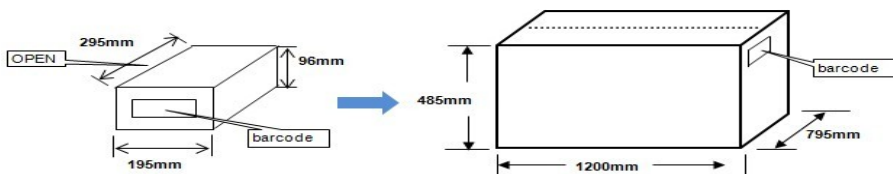
Year Code	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	X	Y	Z	A	B	C	D	E	F	G	H	I
Month Code	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	1	2	3	4	5	6	7	8	9	0	N	D

GENERAL INFORMATION

Bulk Package-A (dimensions in mm)



Bulk Package-B (dimensions in mm)



NUMBER OF PIECES FOR PACKING UNIT

Box dimensions				Bulk Package				Taping package			
			Pitch	PCS/box		box/Carton		Ammo		Reel/O 500mm	
W	H	T	P	short leads	Long leads	A	B	PCS/box	box/Carton	PCS/box	Reel / Carton
mm	mm	mm	mm	6-2mm	30+5mm						
13,0	9,0	4,0	10,0	2000	1800	10	80	1000	64	1500	20
13,0	11,0	5,0	10,0	1500	1300	10	80	800	64	1250	20
13,0	12,0	6,0	10,0	1200	1000	10	80	680	64	1000	20
18,0	10,0	4,0	15,0	2500	1500	10	80	1000	64	1500	20
18,0	11,0	5,0	15,0	2000	1000	10	80	800	64	1250	20
18,0	12,0	6,0	15,0	1750	900	10	80	680	64	1000	20
18,0	13,5	7,5	15,0	1000	700	10	80	500	64	800	20
18,0	17,5	6,0	15,0	1000	700	10	80	680	64	1000	20
18,0	14,5	8,5	15,0	1000	500	10	80	440	64	700	20
18,0	12,5	9,0	15,0	1000	520	10	80	410	64	650	20
18,0	16,0	10,0	15,0	750	500	10	80	380	64	600	20
18,0	12,0	13,0	15,0	750	490	10	80	280	64	480	20
18,0	19,0	11,0	15,0	450	350	10	80	340	64	500	20
26,5	15,0	6,0	22,5	805	500	10	80	464	64	700	20
26,5	16,0	7,0	22,5	700	500	10	80	380	64	550	20
26,5	17,0	8,5	22,5	468	300	10	80	280	64	450	20
26,5	18,5	10,0	22,5	396	300	10	80	235	64	350	20
26,0	20,0	11,0	22,5	360	250	10	80	217	64	350	20
26,5	22,0	13,0	22,5	300	200	10	80			300	20
32,0	17,0	9,0	27,5	408	204	10	80			450	20
32,0	20,0	10,0	27,5	300	204	10	80			350	20
32,0	20,0	11,0	27,5	280	168	10	80			350	20
32,0	22,0	13,0	27,5	240	144	10	80			300	20
32,0	25,0	14,0	27,5	240	144	10	80				
32,0	28,0	14,0	27,5	176	88	10	80				
32,0	24,5	15,0	27,5	200	120	10	80				
32,0	33,0	18,0	27,5	156	64	10	80				
32,0	37,0	22,0	27,5	84	56	10	80				
41,5	22,0	11,0	37,5	210	126	10	80				
41,5	24,0	13,0	37,5	180	108	10	80				
41,5	28,0	16,0	37,5	108	54	10	80				
41,5	32,0	19,0	37,5	96	48	10	80				
41,5	40,0	20,0	37,5	63	42	10	80				
41,5	44,0	24,0	37,5	54	36	10	80				
41,5	45,0	30,0	37,5	45	30	10	80				