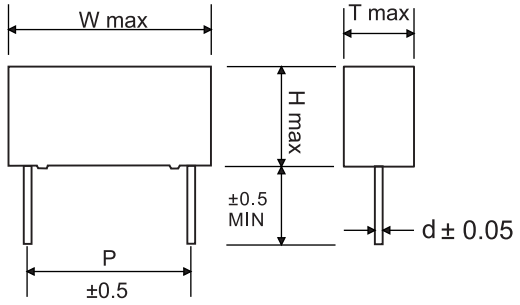
AC "Across-the-Line" Film Capacitors
MKP-U: Rugged Environment, X2 Class
High Humidity, (310VAC/630VDC)

INTRODUCTION

MKP-U series capacitors are constructed specifically for difficult applications, such as smart meters and other high temperature and high humidity outdoor applications. They feature a very long operational life and excellent temperature stability.



FEATURES

- 310VAC, X2 Class
- Very Long Life
- Tough environment construction
- Flame-retardant plastic case and epoxy resin (compliant to UL 94V-0 rated)
- Excellent for long term stability under high ambient temperatures and high humidity.
- Self healing properties

TYPICAL APPLICATIONS

- Power meters
- Severe ambient conditions
- Capacitive power supply applications
- Across-the-Line
- EMI Filter (interference suppression)
- Outdoor applications
- Connections in series with the main

MECHANICAL DATA

- Dielectric Metallized Polypropylene Film
- Winding: Non-inductive type
- Leads: Tinned wire
- Outer Coating: Flame retardant plastic case and epoxy filled.

RELIABILITY TEST

Test Method	Requirements
Temperature 85 ˚C	Capacitance Change | ΔC/C | : ≤ 10%
Relative Humidity 85%	Δtan δ≤ 2.4% at 10KHz, C≤ 1 µF
Voltage Applied: 240VAC	Δtan δ≤ 1.5% at 1KHz, C> 1 µF
Duration: 1000 hours	Insulation Resistance: ≥ 50% of spec value

ELECTRICAL CHARACTERISTICS (Ta=25℃ Unless otherwise specified)

Parameter	Specification				
Operating Temperature Range	~40˚C ~ +110˚C				
Capacitance Range	0.027µF ~ 10µF				
Capacitance Tolerance	±5%(J), ±10%(K), ±20%(M),				
Rate Voltage (50-60Hz)	310VAC (DC Voltage rating is 630VDC max.)				
Dissipation Factor	0.1% max at 1KHz, 20˚C ±5˚C				
Insulation Resistance	Terminal to Terminal:	Terminal to Enclosure:			
	≥15000MΩ at DC 100V (C≤0.33µF)	≥30000MΩ at DC 100V			
	≥5000MΩ x µF at DC 100V(C>0.33µF)	≥500MΩ at DC 500V			
Climatic Category	-40˚C / +110˚C / 56 days in Humidity				
Withstand Voltage	[Between Terminals] Nothing abnormal shall be found when 1500VDC is applied for 3 sec.				
	[Between Terminal and Enclosure] Nothing abnormal shall be found when 2050VAC is applied for 1 minute.				
Pulse Slope dV/dt (V/µs)	Lead Spacing / VR	15 mm	22.5 mm	27.5 mm	37.5 mm
	630VDC	300	180	120	100

NOTE: See MKP type for standard X2 application
See MKP-P type for reduced size X2 application

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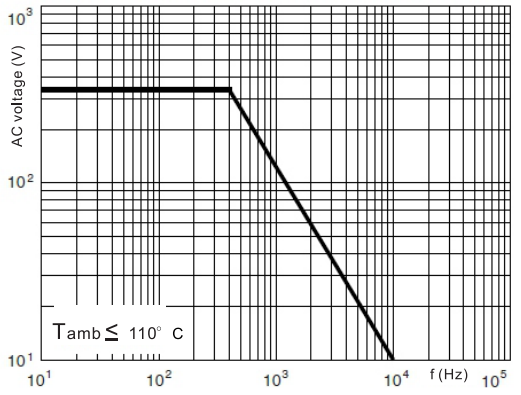
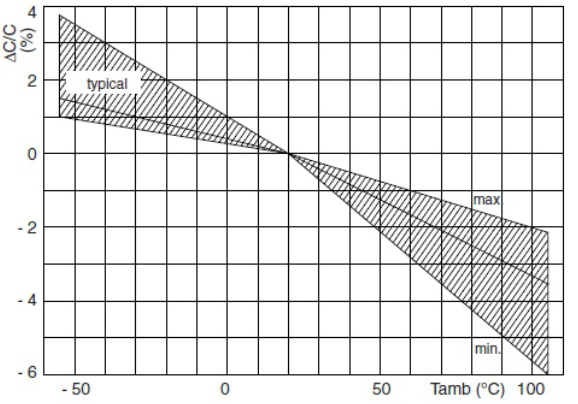
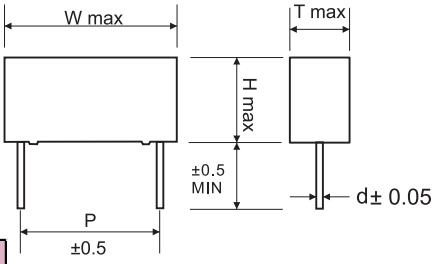
■ CHARACTERISTICS

Max. RMS Voltage vs Frequency (Typical Curve)



Capacitance as a function of ambient temperature (typical curve)





■ DIMENSIONS

Rating	310VAC				
	Maximum Dimensions (mm)				
Size / Cap. (µF)	W ±0.3	H ±0.3	T ±0.3	P	d ±0.05
0.027	13	11	5	10	0.6
0.033	13	11	5	10	0.6
0.039	13	11	5	10	0.6
0.047	13	12	6	10	0.6
0.056	13	12	6	10	0.6
0.068	13	13	7	10	0.6
0.082	13	13	7	10	0.6
0.1	13	14	8	10	0.6
0.047	18	12	6	15	0.8
0.068	18	12	6	15	0.8
0.1	18	12	6	15	0.8
0.15	18	12	6	15	0.8
0.22	18	13.5	7.5	15	0.8
0.33	18	15	9	15	0.8
0.47	18	18	9	15	0.8
0.56	18	19	11	15	0.8
0.68(M)	18	19	11	15	0.8
0.68	18	19	12.5	15	0.8
0.33	26	14.5	7	22.5	0.8
0.47	26	16.5	7.5	22.5	0.8
0.56	26	18.5	8.5	22.5	0.8
0.68	26	18.5	8.5	22.5	0.8

Rating	310VAC				
	Maximum Dimensions (mm)				
Size / Cap. (µF)	W ±0.3	H ±0.3	T ±0.3	P	d ±0.05
0.82	26	19	10	22.5	0.8
1.0	26	20	11.5	22.5	0.8
1.5	26	24	14	22.5	0.8
2.2(M)	26	25	15	22.5	0.8
0.68	31	18	9	27.5	0.8
0.82	31	18	9	27.5	0.8
1	31	20	10	27.5	0.8
1.5	31	20.5	12	27.5	0.8
2.2	31	24.5	15	27.5	0.8
3.3	31	28	18	27.5	0.8
3.3	31	33	18	27.5	0.8
4.7	31	37	22	27.5	0.8
3.3	41.5	27.5	16	37.5	1.0
4.7	41.5	31.5	18.5	37.5	1.0
5.6(M)	41.5	35	19	37.5	1.0
5.6	41.5	34	20.5	37.5	1.0
6.8(M)	41.5	35.5	22.5	37.5	1.0
6.8	42	40	20	37.5	1.0
8.2	41.5	38	25	37.5	1.0
10(M)	41.5	38	29	37.5	1.0
10	41.5	41	27.5	37.5	1.0

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■ PART NUMBER EXAMPLE

MKP 104 K 310VAC 150 B 200 S - U

- Series
- Capacitance
- Tolerance
- Voltage
- Lead space*
- Packaging
- Lead Length
- Lead Style

* Leadspace is straight lead non-formed original leadspace.

■ LEAD STYLE

Code	Style
S	Straight

■ STRAIGHT LEAD SPACING (P)

* Lead space is straight non-formed original lead space.

mm	15	22.5	27.5	37.5
Code	150	225	275	375

■ LEAD LENGTH FROM SEATING PLANE

mm	3.5	4	4.5	20
Code	35	40	45	200

■ RECOGNITION

Agency	File number	Monogram
UL/CUL	E346827	
ENEC	SE/11048-3	
CQC	CQC11001060989	