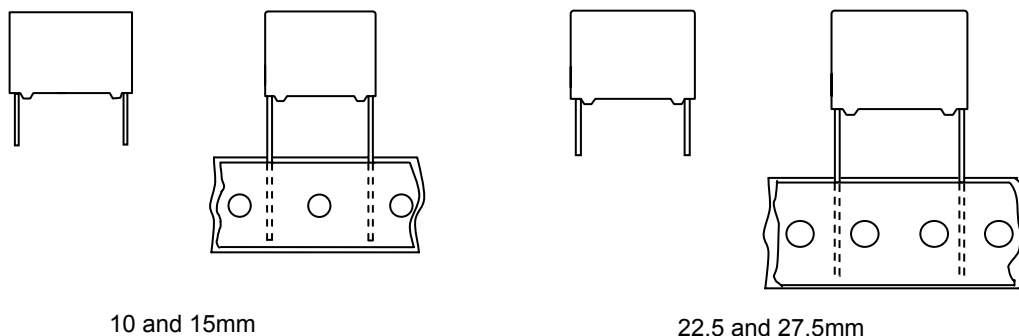


**MKP RADIAL POTTED CAPACITORS**

**Pitch 10.0/15.0/22.5/27.5mm**



10 and 15mm

22.5 and 27.5mm

**QUICK REFERENCE DATA**

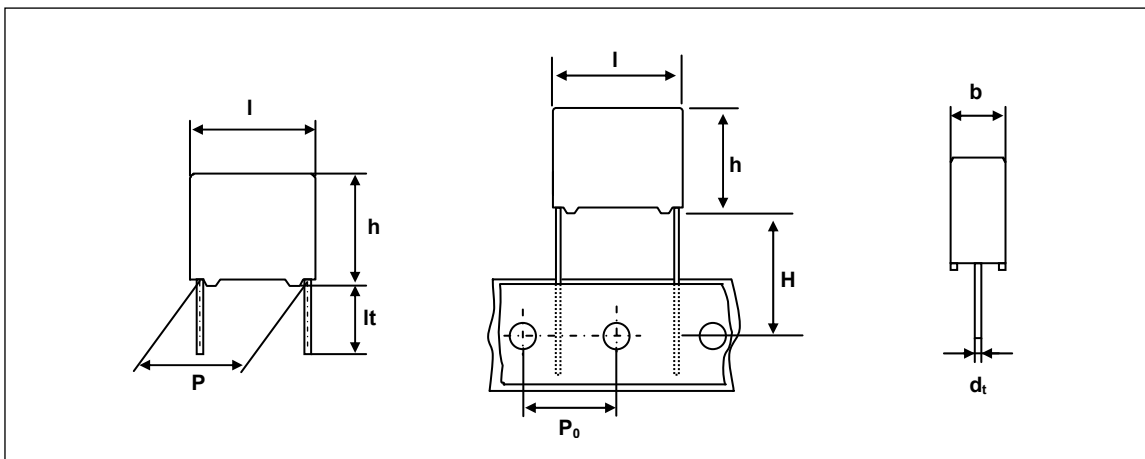
Capacitance range (E6 series) *	0.001 $\mu$ F to 3.3 $\mu$ F
Capacitance tolerance	$\pm 10\%$ , $\pm 20\%$
Rated (AC) voltage 50 to 60 Hz	305 V $\sim$
Climatic category	55/105/21
Temperature range	-55 $^{\circ}$ C ~ +105 $^{\circ}$ C
Reference IEC specification	IEC 60384-14(3rd edition) and EN 60384-14
Safety approvals	UL 1283 & CSA-C 22.2 NO. 8 ENEC, UL1414 & CSA-C 22.2 NO. 1
Potting & Encapsulation material	Qualified in accordance with UL 94V-0
Safety class	X2

\* Intermediate values of the E12 series are available to special order

<p><b>FEATURES</b></p> <ul style="list-style-type: none"> <li>. 7.5 to 27.5 mm lead pitch</li> <li>. Supplied loose in box and taped on reel</li> <li>. Consist of a low-inductive wound cell of Metallized Polypropylene film, potted in a flame retardant case</li> </ul>	<p><b>APPLICATIONS</b></p> <ul style="list-style-type: none"> <li>. For X2-electromagnetic interference suppression</li> <li>. Specially designed to meet the NEW REQUIREMENTS in new IEC 60384-14 specification(3rd edition)/EN 60384-14 requiring for X2 a 2.5kV peak pulse voltage test and the UL1414 and CSA-C22.2 No 1 specification</li> <li>. Not for use in series with the mains</li> </ul>
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• Please refer to caution and warning at <http://www.pilkor.co.kr/download/Introductions.pdf> before using these products.

**Ordering Information**



**PCX2 339 X X X X X X**

Type series

Capacitance

Code	Version & Voltage
3	Standard / 305V

Code	Original pitch
D	10.0mm
F	15.0mm
J	22.5mm
L	27.5mm

Available versions					Product ( $l_{max}$ )			
code	Packing method	C - tol.	Lead length & Height	Hole to hole ( $P_0$ )	12.5	18.0	26.0	31.0
					Pitch (P)			
0	Loose in box	$\pm 20\%$	$l_t = 5.0 \pm 1.0\text{mm}$	-	10.0	15.0	22.5	27.5
1	Loose in box	$\pm 10\%$	$l_t = 5.0 \pm 1.0\text{mm}$	-	10.0	15.0	22.5	27.5
4	Loose in box	$\pm 20\%$	$l_t = 25.0 \pm 2.0\text{mm}$	-	10.0	15.0	22.5	27.5
5	Loose in box	$\pm 10\%$	$l_t = 25.0 \pm 2.0\text{mm}$	-	10.0	15.0	22.5	27.5
6	Ammopack	$\pm 20\%$	$H = 18.5\text{mm}^*$	12.7mm	10.0	15.0	22.5	27.5
7	Ammopack	$\pm 10\%$	$H = 18.5\text{mm}^*$	12.7mm	10.0	15.0	22.5	27.5

\* H ; intape height ; for detailed specifications refer to chapter PACKAGING

\*\* Some values is not following the coding rule.

## EMI Suppression film capacitors

## PCX2 339x3 (Standard)

### SAFETY APPROVALS

SAFETY APPROVALS	Voltage	Value	File Number
UL1283 & CSA-C22.2 No. 8 (cUL)	305V(AC)	1nF to 3.3 $\mu$ F	E208404
UL1414 & CSA-C22.2 No. 1 (cUL)	250V(AC)	1nF to 1.0 $\mu$ F	E165646
ENEC(SEMKO) *	305V(AC)	1nF to 3.3 $\mu$ F	SE/0256-4
EK	305V(AC)	$C \leq 0.1 \mu\text{F}$ $0.1 \mu\text{F} < C \leq 0.33 \mu\text{F}$ $0.33 \mu\text{F} < C \leq 1.0 \mu\text{F}$ $1.0 \mu\text{F} < C \leq 2.2 \mu\text{F}$	SH03001-9001 SH03001-8001 SH03001-13001 SH03001-13002
CQC	305V(AC)	1nF to 3.3 $\mu$ F	CQC08001023138

\* The ENEC-approval together with the CB-Certificate replace all national approval marks of the following countries(they have already signed the ENEC-Agreement): Austria; Belgium; Czech. Republic; Denmark; Finland; France; Germany; Greece; Hungary; Ireland; Italy; Luxembourg; Netherlands; Norway; Portugal; Slovenian; Spain; Sweden; Switzerland and United Kingdom

### Packaging Information

SMALLEST PACKING QUANTITIES (SPQ)	LOOSE IN BOX	
	It = 5.0 $\pm$ 1.0 mm	It = 25 $\pm$ 2.0 mm
<b>DIMENSIONS</b>		
4.0 x 10.0 x 12.5	2000	1200
5.0 x 11.0 x 12.5	1500	1000
6.0 x 12.0 x 12.5	1000	1000
5.0 x 11.0 x 18.0	1000	1000
6.0 x 12.0 x 18.0	1000	1000
7.0 x 13.5 x 18.0	1000	1000
8.5 x 15.0 x 18.0	1000	1000
10.0 x 16.5 x 18.0	1000	1000
11.0 x 18.5 x 18.0	1000	1000
6.0 x 15.5 x 26.5	1000	1000
7.0 x 16.5 x 26.5	1000	1000
8.5 x 18.0 x 26.5	500	500
10.0 x 19.5 x 26.5	500	500
13.0 x 23.0 x 26.5	500	500
11.0 x 21.0 x 31.5	500	250
13.0 x 23.0 x 31.5	250	250
15.0 x 25.0 x 31.5	250	250
18.0 x 28.0 x 31.5	200	200
21.0 x 31.0 x 31.5	150	150

# EMI Suppression film capacitors

## PCX2 339x3 (Standard)

### SPECIFIC REFERENCE DATA FOR 305 V<sub>AC</sub>

Tangent of loss angle	at 1 khz	at 10 khz
$C \leq 470 \text{ nF}$ $470 \text{ nF} < C \leq 1 \text{ } \mu\text{F}$ $C > 1 \text{ } \mu\text{F}$	$\leq 10 \times 10^{-4}$ $\leq 20 \times 10^{-4}$ $\leq 30 \times 10^{-4}$	$\leq 20 \times 10^{-4}$ $\leq 70 \times 10^{-4}$ -
Rated voltage pulse slope (dV/dt) <sub>R</sub> P = 10.0mm P = 15.0mm P = 22.5mm P = 27.5mm	550 V/ $\mu\text{s}$ 400 V/ $\mu\text{s}$ 200 V/ $\mu\text{s}$ 150 V/ $\mu\text{s}$	
R between leads, for $C \leq 0.33 \text{ } \mu\text{F}$	$> 15\,000 \text{ M}\Omega$	
RC between leads, for $C > 0.33 \text{ } \mu\text{F}$	$> 5\,000 \text{ s}$	
Withstanding(DC) Voltage (cut-off current 10mA) $C \leq 1 \text{ } \mu\text{F}$ $C > 1 \text{ } \mu\text{F}$	2250 V ; 1 min 1850 V ; 1 min	
Withstanding(AC) Voltage between leads and case	2400 V ; 1 min	

**V<sub>Rac</sub> = 305 V X2**
**loose and taped**

Cap. ( $\mu\text{F}$ )	b x h x l (mm)	MASS (g)	CATALOGUE NUMBER			
			PCX2 339 .....			
			loose in box			
			lt = 5 $\pm$ 1.0 mm		lt = 25 $\pm$ 2.0 mm	
			C - tol. $\pm 20 \%$	C - tol. $\pm 10 \%$	C - tol. $\pm 20 \%$	C - tol. $\pm 10 \%$
Pitch = 10.0 $\pm$ 0.4 mm			dt = 0.6 +0.06/-0.05 mm			
0.001	4.0 x 10.0x 12.5	0.8	D30102	D31102	D34102	D35102
0.0015	4.0 x 10.0x 12.5	0.8	D30152	D31152	D34152	D35152
0.0022	4.0 x 10.0x 12.5	0.8	D30222	D31222	D34222	D35222
0.0033	4.0 x 10.0x 12.5	0.8	D30332	D31332	D34332	D35332
0.0047	4.0 x 10.0x 12.5	0.8	D30472	D31472	D34472	D35472
0.0068	4.0 x 10.0x 12.5	0.8	D30682	D31682	D34682	D35682
0.01	4.0 x 10.0x 12.5	0.8	D30103	D31103	D34103	D35103
0.015	4.0 x 10.0x 12.5	0.8	D30153	D31153	D34153	D35153
0.022	4.0 x 10.0x 12.5	0.8	D30223	D31223	D34223	D35223
0.033	5.0 x 11.0 x 12.5	0.9	D30333	D31333	D34333	D35333
0.047	5.0 x 11.0 x 12.5	0.9	D30473	D31473	D34473	D35473
0.068	6.0 x 12.0 x 12.5	1.0	D30683	D31683	D34683	D35683
0.1	6.0 x 12.0 x 12.5	1.0	D30104	D31104	D34104	D35104

EMI Suppression  
film capacitorsPCX2 339x3  
(Standard) $V_{Rac} = 305 V \text{ X2}$ 

loose and taped

Cap. ( $\mu F$ )	b x h x l (mm)	MASS (g)	CATALOGUE NUMBER			
			PCX2 339 .....			
			loose in box			
			lt = 5 $\pm$ 1.0 mm		lt = 25 $\pm$ 2.0 mm	
			C - tol. $\pm 20 \%$	C - tol. $\pm 10 \%$	C - tol. $\pm 20 \%$	C - tol. $\pm 10 \%$
Pitch = 15.0 $\pm$ 0.4 mm			dt = 0.8 +0.08/-0.05 mm			
0.01	5.0 x 11.0 x 18.0	1.6	F30103	F31103	F34103	F35103
0.015	5.0 x 11.0 x 18.0	1.6	F30153	F31153	F34153	F35153
0.022	5.0 x 11.0 x 18.0	1.6	F30223	F31223	F34223	F35223
0.033	5.0 x 11.0 x 18.0	1.6	F30333	F31333	F34333	F35333
0.047	5.0 x 11.0 x 18.0	1.6	F30473	F31473	F34473	F35473
0.068	5.0 x 11.0 x 18.0	1.6	F30683	F31683	F34683	F35683
0.1	5.0 x 11.0 x 18.0	1.6	F30104	-	F34104	-
0.1	6.0 x 12.0 x 18.0	1.8	-	F31104	-	F35104
0.15	7.0 x 13.5 x 18.0	1.9	F30154	F31154	F34154	F35154
0.22	8.5 x 15.0 x 18.0	2.6	F30224	F31224	F34224	F35224
0.33	10.0 x 16.5 x 18.0	3.1	F30334	F31334	F34334	F35334
0.47	11.0 x 18.5 x 18.0	4.1	F30474	F31474	F34474	F35474
Pitch = 22.5 $\pm$ 0.4 mm			dt = 0.8 +0.08/-0.05 mm			
0.22	6.0 x 15.5 x 26.0	3.0	J30224	J31224	J34224	J35224
0.33	7.0 x 16.5 x 26.0	3.5	J30334	J31334	J34334	J35334
0.47	8.5 x 18.0 x 26.0	4.4	J30474	J31474	J34474	J35474
0.68	10.0 x 19.5 x 26.0	5.5	J30684	J31684	J34684	J35684
1.0	13.0 x 23.0 x 26.0	8.0	J30105	J31105	J34105	J35105
Pitch = 27.5 $\pm$ 0.4 mm			dt = 0.8 +0.08/-0.05 mm			
0.68	11.0 x 21.0 x 31.0	7.8	L30684	L31684	L34684	L35684
1.0	13.0 x 23.0 x 31.0	10.4	L30105	L31105	L34105	L35105
1.5	15.0 x 25.0 x 31.0	12.8	L30155	L31155	L34155	L35155
2.2	18.0 x 28.0 x 31.0	17.2	L30225	L31225	L34225	L35225
3.3	21.0 x 31.0 x 31.0	20.4	L30335	L31335	L34335	L35335

Original pitch	New Code	Old Code	Example
10.0mm	PCX2 339D3xxxx	PCX2 339 3xxxx	PCX2 339 50474 => PCX2 339J30474
15.0mm	PCX2 339F3xxxx	PCX2 339 4xxxx	
22.5mm	PCX2 339J3xxxx	PCX2 339 5xxxx	
27.5mm	PCX2 339L3xxxx	PCX2 339 6xxxx	

**MOUNTING**
**NORMAL USE**

The capacitors are designed for mounting on printed-circuit boards.

The capacitors packed in bandoliers are designed for mounting on printed-circuit boards by means of automatic insertion machines.

For detailed specifications refer to chapter "PACKAGING".

**SPECIFIC METHOD OF MOUNTING TO WITHSTAND VIBRATION AND SHOCK**

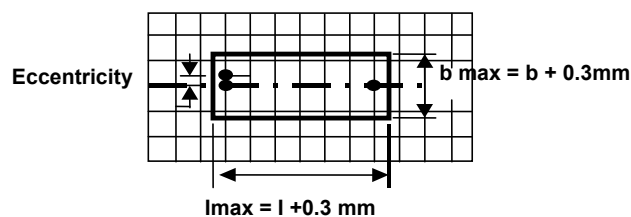
In order to withstand vibration and shock tests, it must be ensured that the stand-off pins are in good contact with the printed-circuit board.

. For pitches of 15mm the capacitors shall be mechanically fixed by leads.

. For larger pitches the capacitors shall be mounted in the same way and the body clamped.

**SPACE REQUIREMENTS ON PRINTED-CIRCUIT BOARD**

The maximum length and width of film capacitors are shown in the following drawing ;



- Eccentricity as in drawing.

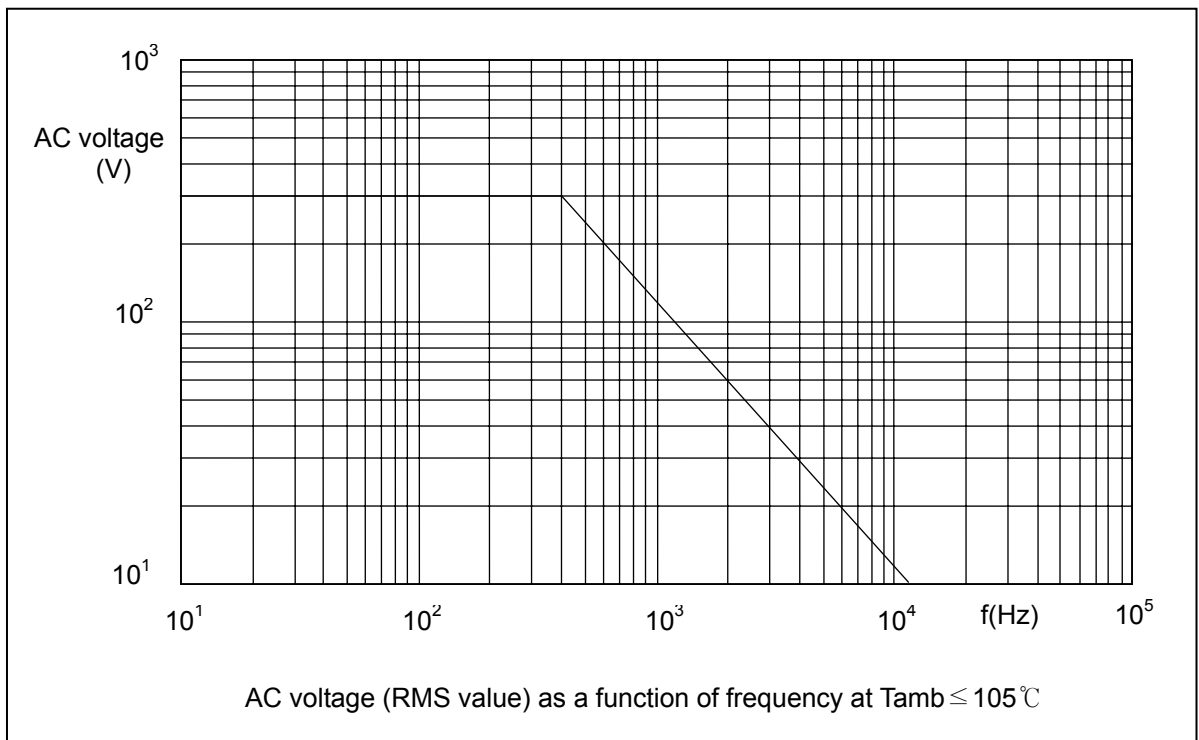
The maximum eccentricity is smaller than or equal to the lead diameter of the product concerned.

- Product height with seating plane as given by IEC 60717 as reference :  $h_{\max} \leq h + 0.3 \text{ mm}$

**RATINGS AND CHARACTERISTICS**

Unless otherwise specified all electrical values apply to an ambient temperature of  $23 \pm 1^\circ\text{C}$ , an atmospheric pressure of 86 to 106kPa and a relative humidity  $50 \pm 2\%$ .

For reference testing, a conditioning period shall be applied of  $96 \pm 4$  hours by heating the products in a circulating air oven at the rated temperature and a relative humidity not exceeding 20%.

**Maximum RMS Voltage as a function of frequency**

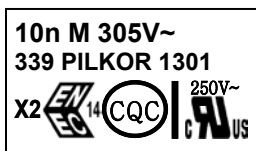
**PRODUCT MARKING**

Capacitors are marked as having following information;

- 1.Manufacturer (PILKOR),
- 2.Manufacturer's type designation (PCX2 339 )
- 3.Rated capacitance in code according to IEC 60062
- 4.Rated (AC) voltage (305V~)
- 5.Sub class (X2)
- 6.Tolerance on rated capacitance M =±20 % K = ±10 %
- 7.Climatic category (55/105/21)
- 8.Code for dielectric material (MKP)
- 9.Year and week of manufacturing (e.g. 1301)
- 10.Safety approvals

**Example of marking**

Pitch P = 7.5mm or 10mm or 15.0mm



Marking on the side

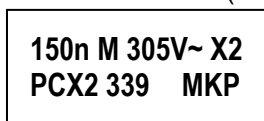
or



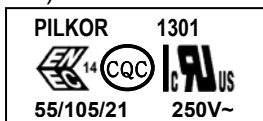
Marking on the side

Pitch P = 15.0mm or P = 22.5 mm or P = 27.5mm

(C ≤ 1uF)



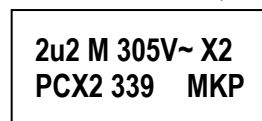
Marking on the top



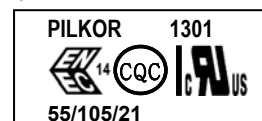
Marking on the side

or

(C > 1uF)

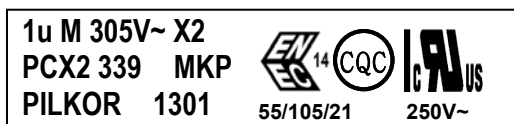


Marking on the top



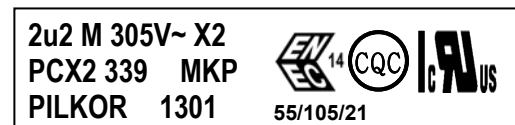
Marking on the side

Pitch P = 22.5 mm or P = 27.5mm



Marking on headface(C ≤ 1uF)

or



Marking on headface(C > 1uF)

Pitch P = 27.5mm



Marking on the top(C ≤ 1uF)

or



Marking on the top(C > 1uF)