



### INTERFERENCE SUPPRESSORS

#### General technical information

Two principal classes of capacitors have been defined

- CLASS "X"

Capacitors intended for applications where a short will not cause a dangerous electric shock.

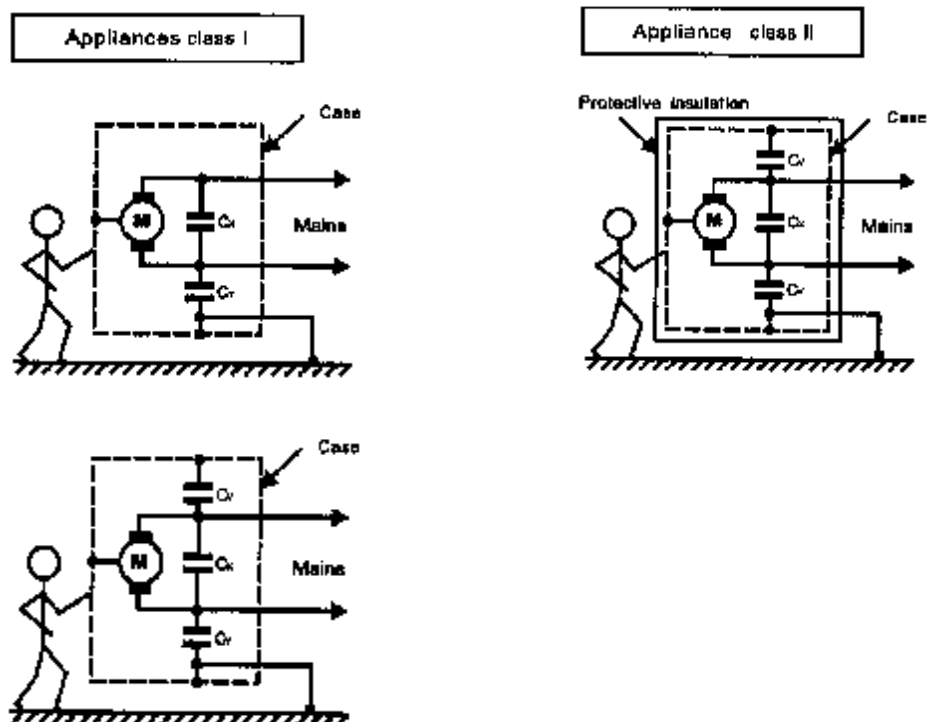
- CLASS "Y"

Capacitors with greater mechanical and electrical security ,which exclude short circuits within the capacitor.

Capacitances are limited to reduce currents to a safe limit.

Depending on function,class "X" Capacitors are connected between each line conductor, Class "Y"

Between a conductor and earth or a metals element in the equipment.



Cx: Suppression capacitors-Function (or class) X

Cy: Suppression capacitors-Function (or class) Y

The example above show protection and suppression of a motor by using X and Y capacitors.



# CARLI ELECTRONICS CO., LTD

## MPX SERIES.....X2 CLASS

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### ● General electrical characteristics

Capacitance range	0.01 ~ 2.2uf
Rated voltage	275VAC 50/60HZ
Permissible continuous dc voltage	630VDC
Capacitance tolerance	±10%, ±20%
Dissipation factor	1KHz: ≤0.1% 10KHz: ≤0.3%
Insulation resistance	≥15000MΩ for ≤0.33uf ≥5000 MΩ for ≤0.33uf Measured at 100 ±10VDC, 60s±20°C
Temperature range	-40°C to +100°C
Dc test voltage	1700V3S
Climatic category	40/100/21 (GMF)

### ● Approved electrical characteristics according to EN132400-12, iec384, part2:

Voltage between terminals	1185VDC, 1min
Voltage between terminals and case	2050VDC, 1min
Maximum peak voltage	2500V for $CR \leq 1\text{uf}$ 2500V/ $\sqrt{CR}$ for $CR > 1\text{uf}$



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### MPX TYPE



### METALLIZED POLYPROPYLENE FILM CAPACITOR

#### 4.CHARACTERISTICS: MPX-TYPE

NO.	TEST ITEM		CHARACTERISTICS	TEST METHOD
1	Operating Temperature		-40℃ ~ 100℃	/
2	Rated Voltage		275VAC	/
3.	Withstand Voltage	Between Terminals	No abnormality	1185VDC for 1 min or 500VAC for 2 sec (50/60Hz)
		Between Terminals		2050VAC for 1 min (50/60Hz)
4	Insulation Resistance		$\geq 15000M\Omega$ for $C \leq 0.33\mu F$ $\geq 5000M\Omega * \mu F$ for $C > 0.33\mu F$	Charge time: 60 $\pm$ 5sec Charge Voltage: 100VDC Test Temp: 25℃
5	Capacitance		Within specified tolerance	At 1KHz Measure R.V as 1 Vrms or below, Test Temp: 25℃
6	Capacitance tolerance		$\pm 10\%(K)$ / $\pm 20\%(M)$	Measure at 1KHz ( 25℃ )
	Dissipation factor		$\leq 0.1\%$	Measure at 1KHz ( 25℃ )
7	Terminal Strength	Pull Strength	No cutting or Slack of terminals	Wire diameter: 0.6 & 0.8mm Load: 1Kg, time: 10sec Wire diameter: 1.0mm Load: 2Kg, time: 20sec
		Bending Strength		Wire diameter: 0.6 & 0.8mm Load: 0.5Kg, 90° × 4times Wire diameter: 1.0mm Load: 1Kg, 90° × 4times
8	Vibration Proof		No abnormality of the appearance	Frequency range 55 $\pm$ 10Hz Amplitude 1.5mm, 2Hrs Per direction × 3 directions
9	Solderability		At least 95% of the circumference of the lead wire. Around load surface dipped into with new solder.	Solder temp: 235 $\pm$ 5℃ Immersion time: 2 $\pm$ 0.5sec



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NO.	TEST	ITEM	CHARACTERISTICS	TEST METHOD
10	Resistance To soldering heat	Appearance	-40℃ to 100℃	Solder temp: 260±5℃ Immersion time: 10±0.5sec
		Withstand Voltage	No abnormality	
		Capacitance Variation	Within ±3% of the value before test	
		Dissipation factor	≤0.1% 1KHz	
		Insulation Resistance	C ≤ 0.33μF F ≥ 15000MΩ C ≥ 0.33μF F ≥ 5000MΩ	
11	Cold Resistance	Capacitance Variation	Within +3/-0% of the value before test	Temp: -40 ±2℃ Duration: 48±2Hrs
12	Dry Heat	Insulation Resistance	≥ 3000MΩ at +100℃ (C ≤ 0.33μF) ≥ 1000MΩXμF at +100℃ (C > 0.33μF)	Temp: 100 ±2℃ Duration: 48±2Hrs
		Capacitance Variation	Within +0/-3% of the value before test	
13	Humidity resistance	Appearance	No abnormality Marking to be legible	Humidity of 90~95% RH Temp: 40 ±2℃ Duration: 500+24/-0Hrs Withstanding voltage: 1000VAC 1min
		Withstand Voltage	No abnormality	
		Capacitance Variation	Within ±3% of the value before test	
		Insulation Resistance	≥ 10000MΩ for at 25℃ (C ≤ 0.33μF) ≥ 3000MΩ*μF for at +25℃ (C > 0.33μF)	
		Dissipation Factor	0.1%(max) at 1KHz (25℃)	
14	High Temp Loading test	Appearance	No abnormality Marking to be legible	Temp: 40 ±2℃ Duration: 500±24Hrs Applied Voltage: 275VAC (50/60Hz Rated Voltage)
		Withstand Voltage	No abnormality	
		Capacitance Variation	Within ±5% of the value before test	
		Insulation Resistance	≥ 10000MΩ for at 25℃ (C ≤ 0.33μF) ≥ 3000MΩ*μF for at +25℃ (C > 0.33μF)	
		Dissipation Factor	0.1%(max) at 1KHz (25℃)	



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### ● MARKING:

CARLI X2 LOGO

Dissipation factor      0.01-2.2uf

Tolerance                      K=±10%

Rated voltage                275VAC

Capacitor class              X2

Type                              MPX

Climatic category          GMF 40/100/21/B

Approvals brands

### ● Approvals

COUNTRY	SPECIFICATIONS	FILE&REF NO.	RATED VOLTAGE
VDE=Germany	EN132400 IEC384-14	40008520	275VAC
SEV=Switzerland	EN132400 IEC384-14	03.1294	275VAC
DEMKO=Denmark	EN132400 IEC384-14	312371-02	275VAC
SEMKO=Sweden	EN132400 IEC384-14	309666	275VAC
FIMKO=Finland	EN132400 IEC384-14	19664-A2	275VAC
NEMKO=Norway	EN132400 IEC384-14	P03201249	275VAC
CSA=Canada	C22.2NO.1~94	LR88249-3	250VAC
UL=U.S.A	UL1414 US1283	E120045	250VAC
KOREA	IEC384-14	SU03015-3001	275V
CQC	GB/T14472-1998 IEC384-14	CQC03001007996	275V(0.01~1UF)



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### Part numbering form:

1	2	3	4	5	6	7	8	9	10	11	12
P	X	1	0	4	K	3	I	D	2	0	1

**1-2** Series name: MPX=PX

METALLIZED POLYPROPYLENE FILM CAPACITOR

**3-5** Rated capacitance:

102=0.001uf 103=0.01uf 104=0.1uf 105=1uf

**6** Capacitance tolerance:

J±5% K±10% M±20%

**7- 8** Rated voltage:

2L=125VAC 2I=250VAC 3I=275VAC

**9-10** Case size(W):

C=13mm D=18mm E=26.5mm F=32mm

**11-12** Configuration:

01=lead cut 02=lead from 03=lead crimp&cut(form) 04=standard

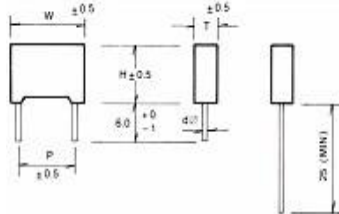
### ● Terminals:

Parallel were lead tinned

Two standard lead length available: 6mm&25mm

Other lead lengths available upon request

# MPX-275VAC



## MARKING (Example)



SYMBOL	MFD	W	H	T	P	dØ	CASE NO
MPX103	.01	13	9	4	10	0.6	C1
MPX153	.015	13	9	4	10	0.6	C1
MPX223	.022	13	11	5	10	0.6	C2
MPX333	.033	13	11	5	10	0.6	C2
MPX473	.047	13	11	5	10	0.6	C2
MPX683	.068	13	12	6	10	0.6	C3
MPX104	.1	13	12	6	10	0.6	C3
MPX223	.022	18	11.5	5	15	0.8	D1
MPX333	.033	18	11.5	5	15	0.8	D1
MPX473	.047	18	11.5	5	15	0.8	D1
MPX683	.068	18	11.5	5	15	0.8	D1
MPX104	.1	18	11.5	5	15	0.8	D1
MPX104	.1	18	12	6	15	0.8	D2
MPX154	.15	18	12	6	15	0.8	D2
MPX154	.15	18	14.5	8.5	15	0.8	D4
MPX224	.22	18	13.5	7.5	15	0.8	D3
MPX224	.22	18	14.5	8.5	15	0.8	D4
MPX224	.22	18	16	10	15	0.8	D5
MPX334	.33	18	14.5	8.5	15	0.8	D4
MPX334	.33	18	16	10	15	0.8	D5
MPX474	.47	18	16	10	15	0.8	D5
MPX474	.47	18	18.5	11	15	0.8	D6
MPX684	.68	18	18.5	11	15	0.8	D6
MPX154	.15	26.5	15	6	22.5	0.8	E1
MPX224	.22	26.5	15	6	22.5	0.8	E1
MPX224	.22	26.5	17	7	22.5	0.8	E2
MPX334	.33	26.5	17	7	22.5	0.8	E2
MPX334	.33	26.5	17	8.5	22.5	0.8	E3
MPX474	.47	26.5	17	8.5	22.5	0.8	E3
MPX474	.47	26.5	19	10	22.5	0.8	E4
MPX684	.68	26.5	19	10	22.5	0.8	E4
MPX824	.82	26.5	20	11	22.5	0.8	E5
MPX105	1.0	26.5	20	11	22.5	0.8	E5
MPX105	1.0	26.5	21.5	12.5	22.5	0.8	E6
MPX474	.47	32	20	11	27.5	0.8	F1
MPX564	.56	32	20	11	27.5	0.8	F1
MPX684	.68	32	20	11	27.5	0.8	F1
MPX824	.82	32	22	13	27.5	0.8	F2
MPX105	1.0	30	17.2	10	27.5	0.8	F0
MPX105	1.0	32	22	13	27.5	0.8	F2
MPX125	1.2	32	22	13	27.5	0.8	F2
MPX155	1.5	32	25	15	27.5	0.8	F3
MPX185	1.8	32	25	15	27.5	0.8	F3
MPX205	2.0	32	30	18	27.5	0.8	F4
MPX225	2.2	32	30	18	27.5	0.8	F4

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