

Metallized Polypropylene (PP) Capacitors for DC-Link Applications

Special Features

- Very high volume/capacitance ratio
- Self-healing
- Particularly reliable contact-configurations: 4-lead versions and screwable plate connections
- Very low dissipation factor
- Negative capacitance change versus temperature
- Very low dielectric absorption
- According to RoHS 2002/95/EC

Typical Applications

As intermediate circuit capacitor e.g. in high power converter technology

Construction

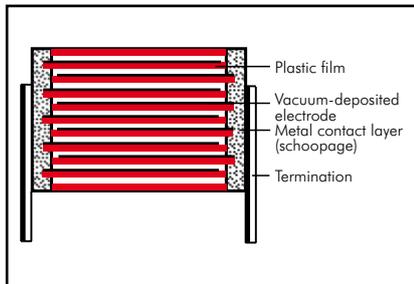
Dielectric:

Polypropylene (PP) film

Capacitor electrodes:

Vacuum-deposited

Internal construction:



Encapsulation:

Solvent-resistant, flame-retardant plastic case with epoxy resin seal, UL 94 V-0

Terminations:

Tinned wire or plates.

Marking:

Colour: Red. Marking: Black.

Epoxy resin seal: Red

Electrical Data

Capacitance range:

5 μ F to 75 μ F

Rated voltages:

450 VDC, 700 VDC, 900 VDC, 1100 VDC

Capacitance tolerances:

$\pm 20\%$, $\pm 10\%$, $\pm 5\%$

Operating temperature range:

-55° C to $+85^{\circ}$ C

Climatic test category:

55/085/56 in accordance with IEC

Insulation resistance at $+20^{\circ}$ C:

$\geq 30\,000$ sec ($M\Omega \times \mu$ F)

(mean value: 100 000 sec)

Measuring voltage: 100 V/1 min.

Dissipation factors at $+20^{\circ}$ C:

$\tan \delta \leq 10 \times 10^{-4}$ at 1 kHz

Test voltage: $1.2 U_r$, 2sec

Dielectric absorption: 0.05 %

Maximum pulse rise time:

Capacitance μ F	max. pulse rise time V/ μ sec at $T_A < 40^{\circ}$ C			
	450 VDC	700 VDC	900 VDC	1100 VDC
5 ... 16	-	14	16	21
20 ... 30	13	14	16	16
35 ... 45	13	12	12	16
50 ... 60	11	12	12	-
75	11	11	-	-

for pulses equal to the rated voltage

Voltage and current derating:

A derating factor of 1.35 % per K must be applied from 75° C for AC voltages and AC currents (I_{rms} according to graphs).

Reliability:

Operational life $> 200\,000$ hours

Failure rate < 2 fit ($0.5 \times U_r$ and 40° C)

Specific dissipation:

Box size WxHxL in mm	Specific dissipation in Watts per K above the ambient temperature
20x39.5x41.5	0.065
24x45.5x41.5	0.080
31x46x41.5	0.092
33x48x56	0.122
37x54x56	0.142

Mounting Recommendation

Excessive mechanical strain, e.g. pressure or shock onto the capacitor body, is to be avoided during mounting and usage of the capacitors. When fixing the plates the screw torque is to be limited to max. 5 Nm.

For further details and graphs please refer to Technical Information.

Packing

Transportation-safe packing in cardboard boxes.

Packing units

L	pcs. per packing unit
18	100
26.5	100
31.5	100
41.5	100
56	50

Continuation

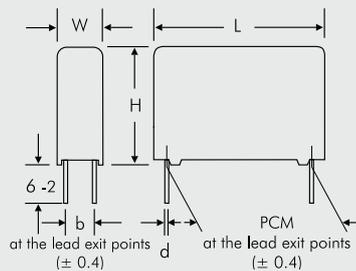
General Data

Capacitance	450 VDC/200 VAC*					700 VDC/220 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
15 µF						20	39.5	41.5	37.5	DCP4K05150SL_____
16 "						20	39.5	41.5	37.5	DCP4K05160SL_____
20 "	20	39.5	41.5	37.5	DCP4H05200SL_____	20	39.5	41.5	37.5	DCP4K05200SL_____
22 "	20	39.5	41.5	37.5	DCP4H05220SL_____	20	39.5	41.5	37.5	DCP4K05220SL_____
25 "	20	39.5	41.5	37.5	DCP4H05250SL_____	24	45.5	41.5	37.5	DCP4K05250SM_____
30 "	24	45.5	41.5	37.5	DCP4H05300SM_____	24	45.5	41.5	37.5	DCP4K05300SM_____
35 "	24	45.5	41.5	37.5	DCP4H05350SM_____	31	46	41.5	37.5	DCP4K05350SN_____
40 "	31	46	41.5	37.5	DCP4H05400SN_____	31	46	41.5	37.5	DCP4K05400SN_____
45 "	31	46	41.5	37.5	DCP4H05450SN_____	33	48	56	48.5	DCP4K05450SR_____
50 "	33	48	56	48.5	DCP4H05500SR_____	33	48	56	48.5	DCP4K05500SR_____
55 "	33	48	56	48.5	DCP4H05550SR_____	33	48	56	48.5	DCP4K05550SR_____
60 "	33	48	56	48.5	DCP4H05600SR_____	37	54	56	48.5	DCP4K05600SS_____
75 "	37	54	56	48.5	DCP4H05750SS_____	37	54	56	48.5	DCP4K05750SS_____

* AC voltages: $1.4 \times U_{rms} + U_{DC} \leq U_r$; at $f > 100$ Hz the permissible AC current (I_{rms} see graphs) has to be considered.

** PCM = Printed circuit module = lead spacing of the 4-lead version

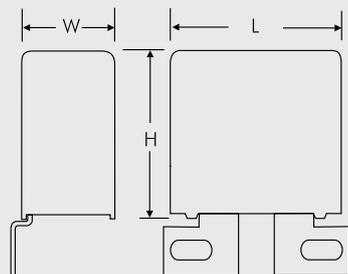
4-lead version



W	H	L	PCM	b	d
20	39.5	41.5	37.5	12.5	1
24	45.5	41.5	37.5	12.5	1
31	46	41.5	37.5	20	1
33	48	56	48.5	20	1
37	54	56	48.5	20	1

Part number completion:	
Version codes see page 110.	
Tolerance:	20 % = M
	10 % = K
	5 % = J
Packing:	bulk = S
Lead length:	none = 00

Plate versions (example)



Additional plate versions are possible, please refer to the construction principles of WIMA Snubber capacitors page 107.

Dims. in mm.

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Continuation page 119

Continuation

General Data

Capacitance	900 VDC/240 VAC*					1100 VDC/260 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
5 μ F						20	39.5	41.5	37.5	DCP4P04500SL_____
8 "						20	39.5	41.5	37.5	DCP4P04800SL_____
10 μ F	20	39.5	41.5	37.5	DCP4N05100SL_____	20	39.5	41.5	37.5	DCP4P05100SL_____
12 "	20	39.5	41.5	37.5	DCP4N05120SL_____	24	45.5	41.5	37.5	DCP4P05120SM_____
14 "	20	39.5	41.5	37.5	DCP4N05140SL_____	24	45.5	41.5	37.5	DCP4P05140SM_____
15 "	20	39.5	41.5	37.5	DCP4N05150SL_____	31	46	41.5	37.5	DCP4P05150SN_____
16 "	20	39.5	41.5	37.5	DCP4N05160SL_____	31	46	41.5	37.5	DCP4P05160SN_____
20 "	24	45.5	41.5	37.5	DCP4N05200SM_____	33	48	56	48.5	DCP4P05200SR_____
22 "	24	45.5	41.5	37.5	DCP4N05220SM_____	33	48	56	48.5	DCP4P05220SR_____
25 "	31	46	41.5	37.5	DCP4N05250SN_____	33	48	56	48.5	DCP4P05250SR_____
30 "	31	46	41.5	37.5	DCP4N05300SN_____	37	54	56	48.5	DCP4P05300SS_____
35 "	33	48	56	48.5	DCP4N05350SR_____	37	54	56	48.5	DCP4P05350SS_____
40 "	33	48	56	48.5	DCP4N05400SR_____					
45 "	33	48	56	48.5	DCP4N05450SR_____					
50 "	37	54	56	48.5	DCP4N05500SS_____					

* AC voltages: $1.4 \times U_{rms} + UDC \leq U_i$; at $f > 100$ Hz the permissible AC current (I_{rms} see graphs) has to be considered.

** PCM = Printed circuit module = lead spacing of the 4-lead version.

Dims. in mm.

Versions and dimensional drawings see page 107.

Part number completion:

Version codes see page 110.

Tolerance: 20 % = M

10 % = K

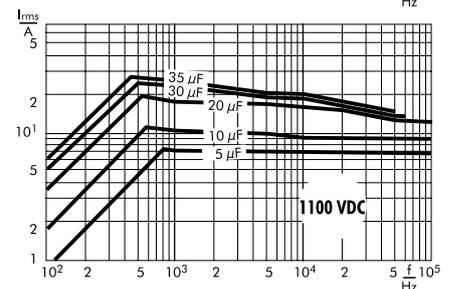
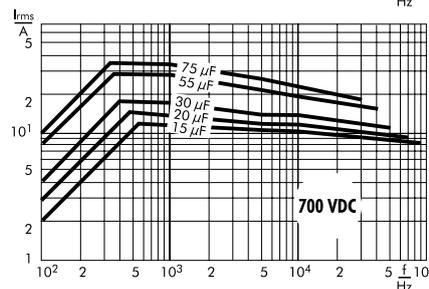
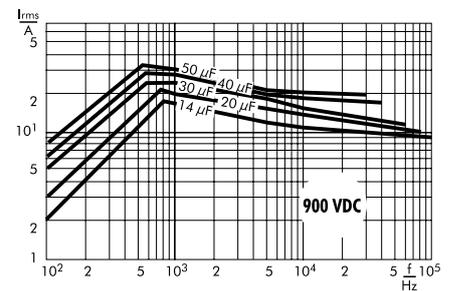
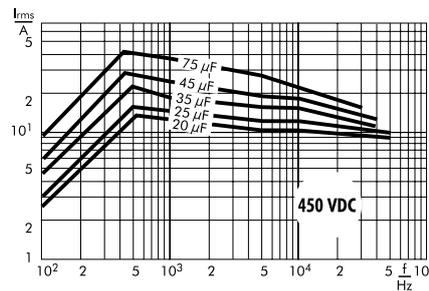
5 % = J

Packing: bulk = S

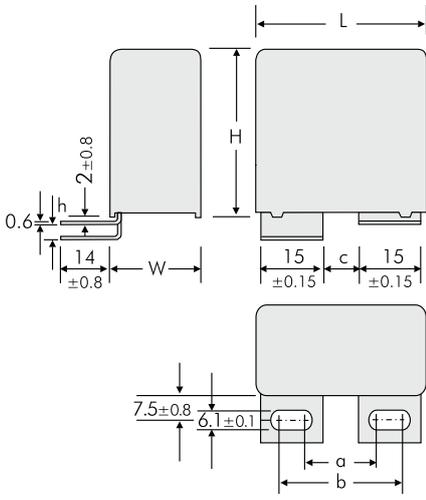
Lead length: none = 00

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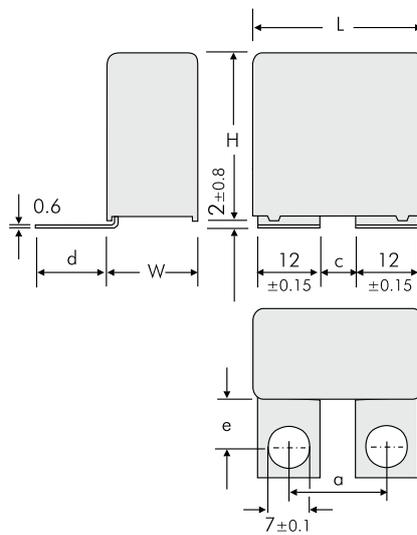
Permissible AC current in relation to frequency at 10° C internal temperature rise (general guide):



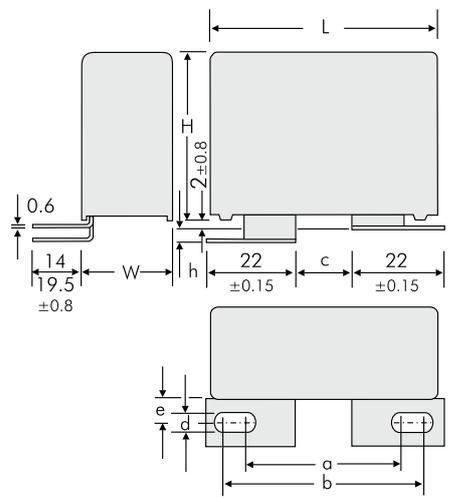
Versions of WIMA Snubber- and DC-LINK MKP 4 Capacitors



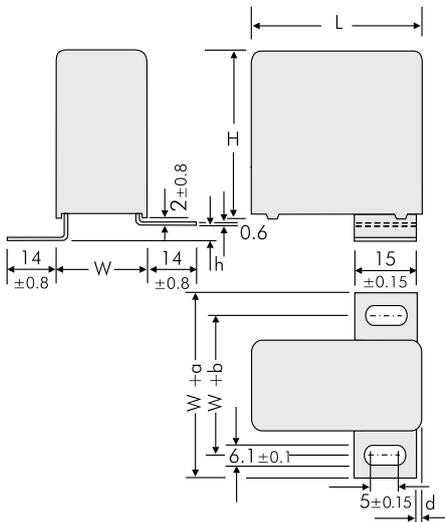
Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
A1	41.5	17.5	27.5	7.5	0
A1.5	41.5	17.5	27.5	7.5	3.5
A1	56	20	30	10	0
A1.1.1	56	28	38	18	0
A1.4	56	20	30	10	3.5
A1.4.1	56	28	38	18	3.5



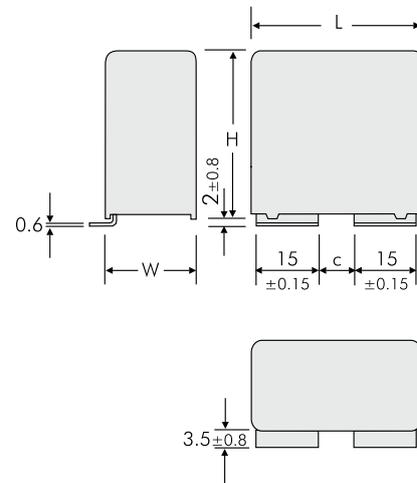
Version	L	a ±0.5	c ±0.5	d ±0.8	e ±0.8
A1.6	41.5	18	6	21.5	16
A1.6.1	41.5	22	10	18.5	13
A1.6	56	29	17	21.5	16



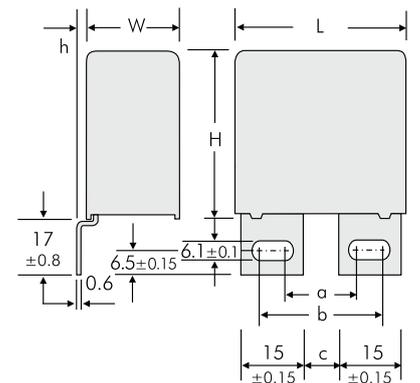
Version	L	a ±0.5	b ±0.5	c ±0.5	d ±0.1	e ±0.8	h ±0.8
A2	41.5	40.5	46.5	14.5	8.4	7.5	0
A2.2	41.5	31	37	5	8.4	7.5	3.5
A2.3	41.5	31	37	5	8.4	13	3.5
A2.4	41.5	33.5	39.5	7.5	8.4	13	3.5
A2.4.1	41.5	33.5	39.5	7.5	8.4	13	0
A2.5	41.5	29.5	39.5	5.5	6.1	7.5	3.5
A2.6	41.5	31.5	41.5	7.5	6.1	13	3.5
A2.6.1	41.5	31.5	41.5	14	6.1	13	3.5
A2.6.2	41.5	31.5	41.5	14	6.1	13	0
A2.8	41.5	40.5	46.5	14.5	8.4	7.5	3.5
A2.1	56	39.5	45.5	13.5	8.4	7.5	0
A2.7	56	39.5	45.5	13.5	8.4	7.5	3.5



Version	L	d ±1.0	h ±0.8	a ±0.8	b ±0.8	W
A1.3.1	31.5	2	0	47	34	19
A1.3.2	31.5	2	3.5	47	34	19
A1.2	41.5	2	3.5	47	34	19
A1.8	41.5	2	0	47	34	19
A1.8.1	41.5	2	0	56	43	28
A1.8.2	41.5	2	3.5	56	43	28



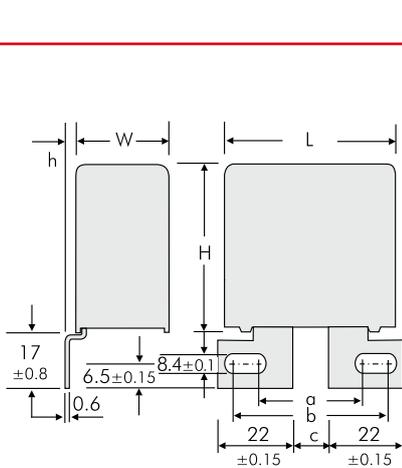
Version	L	c ±0.5
A1.7	41.5	7.5
A1.7	56	10
A1.7.1	56	18



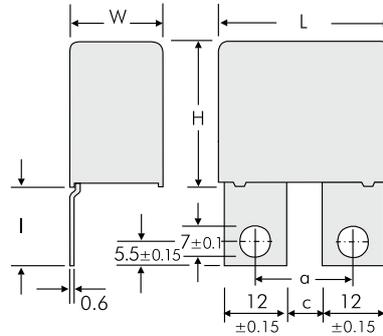
Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
A3	41.5	17.5	27.5	7.5	0
A3.5	41.5	17.5	27.5	7.5	3
A3	56	20	30	10	0
A3.1	56	28	38	18	0
A3.5	56	20	30	10	3
A3.10	56	28	38	18	3



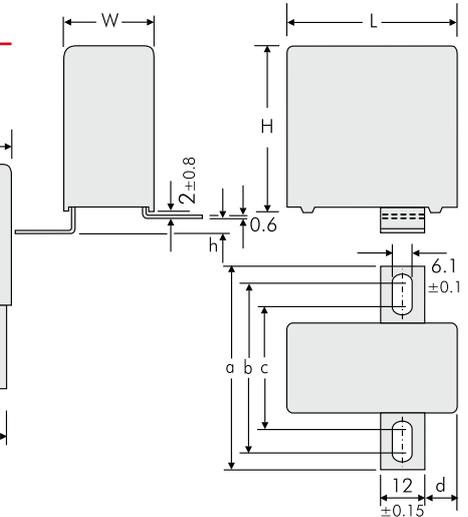
Versions of WIMA Snubber and DC-LINK MKP 4 Capacitors



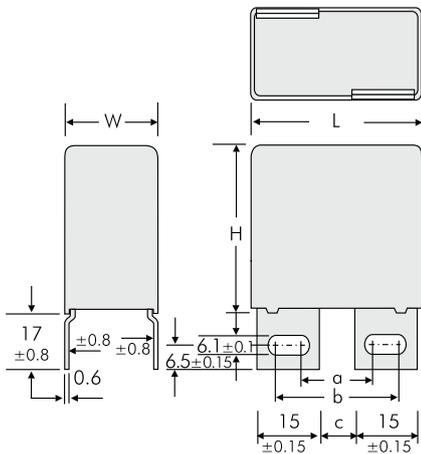
Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
A3.9	41.5	40.5	46.5	14.5	0
A3.11	41.5	40.5	46.5	14.5	3
A3.2	56	40.5	46.5	14.5	0
A3.3	56	40.5	46.5	14.5	3



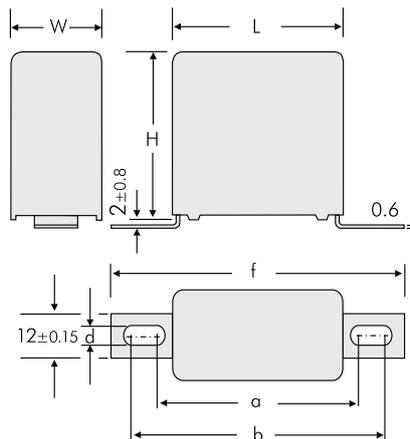
Version	L	a ±0.5	c ±0.5	l ±0.8
A3.8	41.5 W ≥ 17	18	6	23
A3.8.1	41.5 W ≥ 17	22	10	17.5



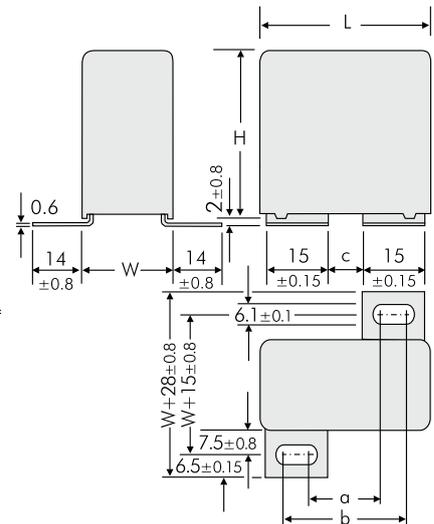
Version	L	a ±0.8	b ±0.8	c ±0.8	d ±1.0	h ±0.8	W
A4.3	31.5	57	47	31	1	3.5	19
A4.4	31.5	57	47	31	1	0	19
A4.6	31.5	44.6	34.6	31.6	1	3.5	19
A4.8	31.5	44.6	34.6	31.6	1	0	19
A4.1	41.5	57	47	31	6	3.5	19
A4.5	41.5	57	47	31	6	0	19
A4.5.1	41.5	63.5	53.5	37.5	6	0	28
A4.5.2	41.5	63.5	53.5	37.5	6	3.5	28



Version	L	a ±0.5	b ±0.5	c ±0.5
A3.6	41.5	17.5	27.5	7.5
A3.7	56	20	30	10

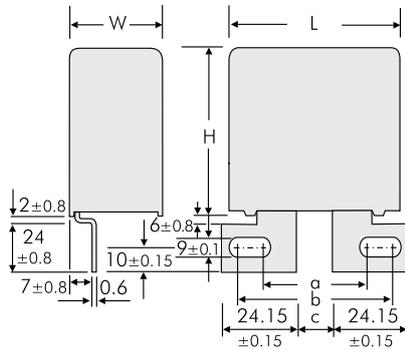


Version	L	a ±0.8	b ±0.8	f ±0.8	d ±0.1
A4.9	31.5 W ≥ 15	44	47	57	4.5
A4.10	31.5 W ≥ 15	43	59	69	6.1
A4.2	41.5 W ≥ 15	54	57	67	4.5
A4	41.5 W ≥ 15	53	69	79	6.1
A4.7	56	65	68	78	4.5
A4	56	64	80	90	6.1

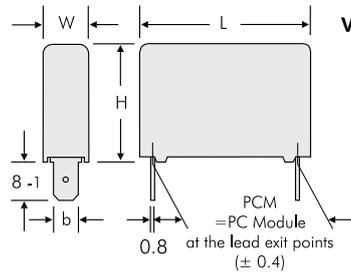


Version	L	a ±0.5	b ±0.5	c ±0.5
A5	41.5	17.5	27.5	7.5
A5	56	20	30	10

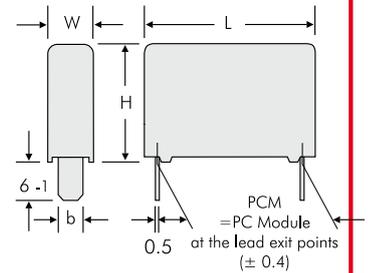
Versions of WIMA Snubber- and DC-LINK MKP 4 Capacitors



Version FS 6.3
with slip-on terminals according to DIN 46244



Version B

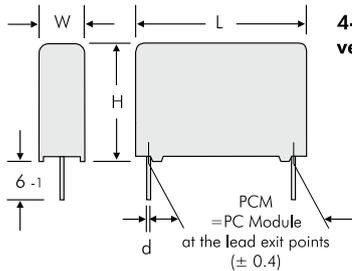


Version	L	a ±0.5	b ±0.5	c ±0.5
A6	56 W ≥ 23	41.5	45.5	15.5

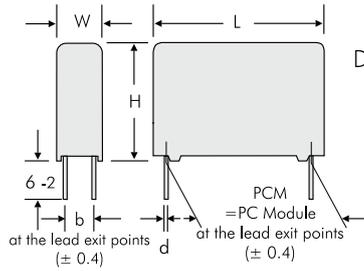
L	W	PCM	b ±0.15
26.5	≥ 11	23.5	6.3
31.5	≥ 11	28.5	6.3
41.5	≥ 11	38.5	6.3
56	≥ 11	49.5	6.3

L	PCM	b ±0.15
18	16	5
26.5	23.5	5
31.5	28.5	8
41.5	38.5	8
56	49.5	8

2-lead version



4-lead version



Dims. in mm.

PCM	d
15	0.8
22.5	0.8
27.5	0.8
38.5	1.2
49.5	1.2

W	H	L	PCM	b	d
10.5	19	26.5	22.5	5	0.8
10.5	20.5	26.5	22.5	5	0.8
11	21	26.5	22.5	5	0.8
11	21	31.5	27.5	5	0.8
13	24	31.5	27.5	7.5	0.8
15	26	31.5	27.5	7.5	0.8
17	29	31.5	27.5	10	0.8
19	30	31.5	27.5	10	0.8
17	34.5	31.5	27.5	10	0.8
20	39.5	31.5	27.5	12.5	0.8
22	43.5	31.5	27.5	12.5	0.8
11	22	41.5	37.5	5	1
13	24	41.5	37.5	7.5	1
15	26	41.5	37.5	7.5	1
17	29	41.5	37.5	10	1
19	32	41.5	37.5	10	1
20	39.5	41.5	37.5	12.5	1
24	45.5	41.5	37.5	12.5	1
31	46	41.5	37.5	20	1
19	31	56	48.5	12.5	1
23	34	56	48.5	15	1
27	37.5	56	48.5	15	1
33	48	56	48.5	20	1
37	54	56	48.5	20	1

Additional special versions can be realized. Please contact us with your specific needs.



Versions of WIMA Snubber and DC-LINK MKP 4 Capacitors

Version code		D2	D4	B5	B8	1A	1B	1C	1D	1E	1F	1G	1H	1I	1J	1K	1L	1M	1N	1O	2A	2B	2C	2D	2E	2H	2I	2J	2K	2L	2M	3A	3C	3D	3E	3G	3I	3J	3K	3L	3N	3O	3P									
WxHxL	Size Code	2-lead	4-lead	B5	B8	A1	A1.1	A1.2*	A1.3.1	A1.3.2	A1.4	A1.4.1	A1.5	A1.6	A1.6.1	A1.7	A1.7.1	A1.8*	A1.8.1	A1.8.2	A2	A2.1	A2.2	A2.3	A2.4	A2.5	A2.6	A2.6.1	A2.6.2	A2.7	A2.8	A3	A3.1	A3.2	A3.3	A3.5	A3.6	A3.7	A3.8	A3.8.1	A3.9	A3.10	A3.11									
7x14x18	S2																																																			
8x15x18	S3																																																			
7x16.5x26.5	S4																																																			
8.5x18.5x26.5	S5																																																			
10.5x19x26.5	S6																																																			
10.5x20.5x26.5	S7																																																			
11x21x26.5	S8																																																			
11x21x31.5	S9																																																			
13x24x31.5	SA																																																			
15x26x31.5	SB																																																			
17x29x31.5	SC																																																			
19x30x31.5	ST																																																			
17x34.5x31.5	SD																																																			
11x22x41.5	SG																																																			
13x24x41.5	SH																																																			
15x26x41.5	SI																																																			
17x29x41.5	SJ																																																			
19x32x41.5	SK																																																			
20x39.5x41.5	SL																																																			
24x45.5x41.5	SM																																																			
31x46x41.5	SN																																																			
19x31x56	SO																																																			
23x34x56	SP																																																			
27x37.5x56	SQ																																																			
33x48x56	SR																																																			
37x54x56	SS																																																			

Version code		4A	4B	4C	4D	4E	4F	4G	4H	4I	4J	4K	4L	4M	5A	6A	FS 6.3
WxHxL	Size code	A4	A4.1*	A4.2	A4.3*	A4.4*	A4.5*	A4.5.1	A4.5.2	A4.6*	A4.7	A4.8*	A4.9	A4.10	A5	A6	FS 6.3
11x21x26.5	S8																
11x21x31.5	S9																
13x24x31.5	SA																
15x26x31.5	SB																
17x29x31.5	SC																
19x30x31.5	ST																
17x34.5x31.5	SD																
11x22x41.5	SG																
13x24x41.5	SH																
15x26x41.5	SI																
17x29x41.5	SJ																
19x32x41.5	SK																
20x39.5x41.5	SL																
24x45.5x41.5	SM																
31x46x41.5	SN																
19x31x56	SO																
23x34x56	SP																
27x37.5x56	SQ																
33x48x56	SR																
37x54x56	SS																

Possible connecting respective plate versions - depending on box size.

* on request



WIMA Part Number System

A WIMA part number consists of 18 digits and is composed as follows:

- Field 1 - 4: Type description
- Field 5 - 6: Rated voltage
- Field 7 - 10: Capacitance
- Field 11 - 12: Size and PCM
- Field 13 - 14: Special features (e.g. Snubber versions)
- Field 15: Capacitance tolerance
- Field 16: Packing
- Field 17 - 18: Lead length (untaped)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
M	K	S	2	C	0	2	1	0	0	1	A	0	0	M	S	S	D
MKS 2				63 VDC		0.01 µF			2.5x6.5x7.2		-		20%	bulk	6-2		

<p>Type description:</p> <p>SMD-PET = SMDT SMD-PEN = SMDN SMD-PPS = SMDI FKP 02 = FKPO MKS 02 = MKSO FKS 2 = FKS2 FKM 2 = FKM2 FKP 2 = FKP2 MKS 2 = MKS2 MKP 2 = MKP2 MKI 2 = MKI2 FKS 3 = FKS3 FKM 3 = FKM3 FKP 3 = FKP3 MKS 4 = MKS4 MKM 4 = MKM4 MKP 4 = MKP4 MKP 10 = MKP1 FKP 4 = FKP4 FKP 1 = FKP1 MKP-X2 = MKX2 MKP-X2 R = MKXR MKP-Y2 = MKY2 MP 3-X2 = MPX2 MP 3-X1 = MPX1 MP 3-Y2 = MPY2 MP 3R-Y2 = MPRY Snubber MKP = SNMP Snubber FKP = SNFP GTO MKP = GTOM DC-LINK MKP 4 = DCP4 DC-LINK MKP C = DCPC DC-LINK HC = DCH_ SuperCap C = SCSC SuperCap MC = SCMC SuperCap R = SCSR SuperCap MR = SCMR</p>	<p>Rated voltage:</p> <p>16 VDC = A0 2.5 VDC = A1 4 VDC = A2 14 VDC = A3 28 VDC = A4 40 VDC = A5 5 VDC = A6 50 VDC = B0 63 VDC = C0 100 VDC = D0 160 VDC = E0 250 VDC = F0 400 VDC = G0 450 VDC = H0 600 VDC = I0 630 VDC = J0 700 VDC = K0 800 VDC = L0 850 VDC = M0 900 VDC = N0 1000 VDC = O1 1100 VDC = P0 1200 VDC = Q0 1250 VDC = R0 1500 VDC = S0 1600 VDC = T0 2000 VDC = U0 2500 VDC = V0 3000 VDC = W0 4000 VDC = X0 6000 VDC = Y0 250 VAC = 0W 275 VAC = 1W 300 VAC = 2W 400 VAC = 3W 440 VAC = 4W 500 VAC = 5W</p>	<p>Capacitance:</p> <p>22 pF = 0022 47 pF = 0047 100 pF = 0100 150 pF = 0150 220 pF = 0220 330 pF = 0330 470 pF = 0470 680 pF = 0680 1000 pF = 1100 1500 pF = 1150 2200 pF = 1220 3300 pF = 1330 4700 pF = 1470 6800 pF = 1680 0.01 µF = 2100 0.022 µF = 2220 0.047 µF = 2470 0.1 µF = 3100 0.22 µF = 3220 0.47 µF = 3470 1 µF = 4100 2.2 µF = 4220 4.7 µF = 4470 10 µF = 5100 22 µF = 5220 47 µF = 5470 100 µF = 6100 220 µF = 6220 1 F = A010 2.5 F = A025 50 F = A500 100 F = B100 110 F = B110 600 F = B600 1200 F = C120 ...</p>	<p>Size:</p> <p>4.8x3.3x3 Size 1812 = X1 4.8x3.3x4 Size 1812 = X2 5.7x5.1x3.5 Size 2220 = Y1 5.7x5.1x4.5 Size 2220 = Y2 7.2x6.1x3 Size 2824 = T1 7.2x6.1x5 Size 2824 = T2 10.2x7.6x5 Size 4030 = K1 12.7x10.2x6 Size 5040 = V1 15.3x13.7x7 Size 6054 = Q1 2.5x7x4.6 PCM 2.5 = 0B 3x7.5x4.6 PCM 2.5 = 0C 2.5x6.5x7.2 PCM 5 = 1A 3x7.5x7.2 PCM 5 = 1B 2.5x7x10 PCM 7.5 = 2A 3x8.5x10 PCM 7.5 = 2B 3x9x13 PCM 10 = 3A 4x9x13 PCM 10 = 3C 5x11x18 PCM 15 = 4B 6x12.5x18 PCM 15 = 4C 5x14x26.5 PCM 22.5 = 5A 6x15x26.5 PCM 22.5 = 5B 9x19x31.5 PCM 27.5 = 6A 11x21x31.5 PCM 27.5 = 6B 9x19x41.5 PCM 37.5 = 7A 11x22x41.5 PCM 37.5 = 7B 94x49x182 DCH_ = H0 94x77x182 DCH_ = H1 ...</p>	<p>Tolerance:</p> <p>20% = M 10% = K 5% = J 2.5% = H 1% = E ...</p> <p>Packing:</p> <p>AMMO H16.5 340x340 = A AMMO H16.5 490x370 = B AMMO H18.5 340x340 = C AMMO H18.5 490x370 = D REEL H16.5 360 = F REEL H16.5 500 = H REEL H18.5 360 = I REEL H18.5 500 = J ROLL H16.5 = N ROLL H18.5 = O BLISTER W12 180 = P BLISTER W12 330 = Q BLISTER W16 330 = R BLISTER W24 330 = T Bulk Mini = M Bulk Standard = S Bulk Maxi = G TPS Mini = X TPS Standard = Y ...</p>	<p>Special features:</p> <p>Standard = 00 Version A1 = 1A Version A1.1.1 = 1B Version A1.2 = 1C ...</p> <p>Lead length (untaped)</p> <p>3.5 ±0.5 = C9 6-2 = SD 16-1 = P4 ...</p>
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The data on this page is not complete and serves only to explain the part number system. Part number information is listed on the pages of the respective WIMA range.