

Metallized Polypropylene (PP) - Capacitors for DC-Link Applications.
Capacitances from 1.0 μF to 400 μF .
Rated Voltages from 400 VDC to 1300 VDC.

Special Features

- Capacitances up to 400 μF
- High volume/capacitance ratio
- Excellent self-healing properties
- Very low dissipation factor
- High reliability
- 2-pin and 4-pin contact configuration (plate versions on request)
- AEC-Q200 qualified
- According to RoHS 2011/65/EU

Typical Applications

As intermediate circuit capacitor e.g. in high power converter technology, power supplies, solar inverters etc.

Construction

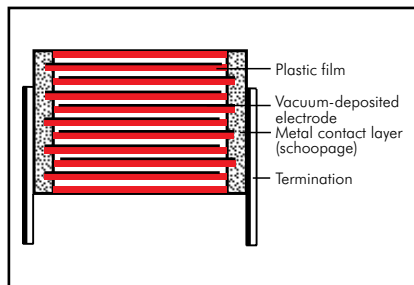
Dielectric:

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 (plate versions on request).

Marking:

Colour: Red. Marking: Black.

Electrical Data

Capacitance range: 1 μF to 400 μF
 (intermediate values on request)

Rated voltages: 400 VDC, 500 VDC, 600 VDC, 800 VDC, 900 VDC, 1100 VDC, 1300 VDC

Capacitance tolerances: $\pm 20\%$, $\pm 10\%$, $\pm 5\%$

Operating temperature range:
 -55°C to $+105^\circ\text{C}$ (hot spot including self-heating)

Climatic test category: 55/085/56
 in accordance with IEC

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

PCM	1 kHz	10 kHz
27.5	$\leq 15 \times 10^{-4}$	$\leq 160 \times 10^{-4}$
37.5	$\leq 30 \times 10^{-4}$	$\leq 210 \times 10^{-4}$
52.5	$\leq 50 \times 10^{-4}$	$\leq 260 \times 10^{-4}$

Voltage and current derating:

A derating factor of 1.35% per K must be applied from $+85^\circ\text{C}$ for DC voltages and from $+70^\circ\text{C}$ for AC currents (I_{rms}). Additionally a derating factor of 4.5% per K must be applied from $+85^\circ\text{C}$ for AC currents (I_{rms})

Reliability: Operational life $> 100\,000$ hours (U_r and 70°C)

Failure rate λ_0 ($0.5 \times U_r$ and 40°C)

$\Pi = C_N [\mu\text{F}] \times U_r [\text{V}] $	λ_0
$\Pi \leq 10\,000$	< 2 fit
$10\,000 < \Pi \leq 25\,000$	< 5 fit
$25\,000 < \Pi \leq 50\,000$	< 10 fit
$50\,000 < \Pi \leq 100\,000$	< 20 fit
$\Pi > 100\,000$	< 30 fit

Maximum pulse rise time:

PCM	max. pulse rise time V/ μsec at $T_A < 40^\circ\text{C}$						
	400 VDC	500 VDC	600 VDC	800 VDC	900 VDC	1100 VDC	1300 VDC
27.5	11	15	27	29	35	43	50
37.5	8	10	19	21	22	29	35
52.5	5	7	13	15	18	21	25

for pulses equal to the rated voltage

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

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

Measuring voltage: 100 V/1 min.

Test voltage:

1.2 U_r , 2sec

Dielectric absorption: 0.05 %

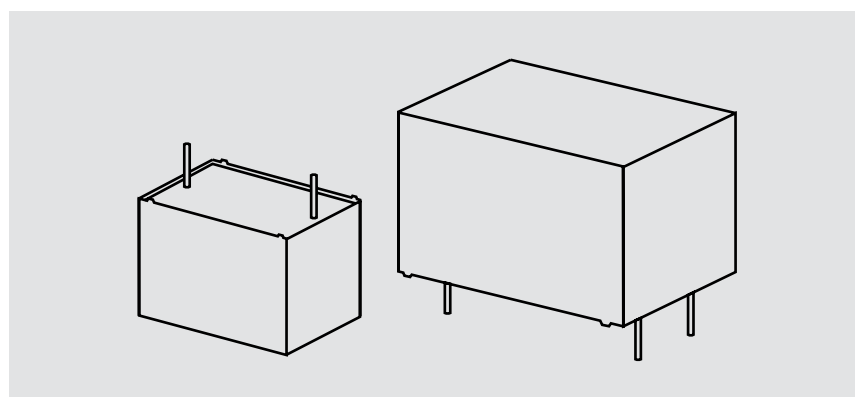
Specific dissipation:

Box size W x H x L in mm	Specific dissipation in Watts per K above the ambient temperature
9 x 19 x 31.5	0.021
11 x 21 x 31.5	0.025
13 x 24 x 31.5	0.030
15 x 26 x 31.5	0.034
17 x 29 x 31.5	0.039
27 x 15 x 41.5	0.043
17 x 34.5 x 31.5	0.044
20 x 39.5 x 31.5	0.053
19 x 32 x 41.5	0.054
20 x 39.5 x 41.5	0.065
24 x 45.5 x 41.5	0.080
31 x 46 x 41.5	0.092
35 x 50 x 41.5	0.106
40 x 55 x 41.5	0.123
35 x 50 x 57	0.132
45 x 55 x 57	0.164
45 x 65 x 57	0.184

Packing

Packing units at the end of the catalogue

For further details and graphs please refer to Technical Information.



Continuation

General Data

Capacitance						400 VDC (70° C) / 300 VDC (85° C)			Part number
	W	H	L	PCM**	Pin	I _S A	I _{rms} * (10 kHz)* A	ESR (10 kHz)* mΩ	
1 μF	9	19	31.5	27.5	2	11	1	238.7	DCP4G041006A
2 "	9	19	31.5	27.5	2	22	1.5	119.4	DCP4G042006A
3 "	9	19	31.5	27.5	2	33	1.5	79.6	DCP4G043006A
4 "	9	19	31.5	27.5	2	44	2	59.7	DCP4G044006A
5 "	9	19	31.5	27.5	2	55	2	47.7	DCP4G045006A
7 "	9	19	31.5	27.5	2	77	2.5	34.1	DCP4G047006A
10 μF	11	21	31.5	27.5	2/4	110	3.5	23.9	DCP4G051006B
15 "	13	24	31.5	27.5	2/4	165	4.5	15.9	DCP4G051506D
20 "	15	26	31.5	27.5	2/4	220	5.5	11.9	DCP4G052006F
25 "	17	29	31.5	27.5	2/4	275	6.5	9.5	DCP4G052506G
30 "	17	34.5	31.5	27.5	2/4	330	7	8	DCP4G053006I
40 "	20	39.5	31.5	27.5	2/4	440	9.5	6	DCP4G054006J
50 "	20	39.5	41.5	37.5	2/4	400	11	5.4	DCP4G055007G
60 "	20	39.5	41.5	37.5	2/4	480	11.5	4.8	DCP4G056007G
70 "	24	45.5	41.5	37.5	2/4	560	15	3.6	DCP4G057007H
80 "	24	45.5	41.5	37.5	2/4	640	17	2.7	DCP4G058007H
90 "	24	45.5	41.5	37.5	2/4	720	17.5	2.6	DCP4G059007H
100 μF	31	46	41.5	37.5	2/4	800	19	2.5	DCP4G061007I
120 "	31	46	41.5	37.5	2/4	960	20	2.3	DCP4G061207I
140 "	35	50	41.5	37.5	2/4	1120	22.5	2.1	DCP4G061407J
150 "	35	50	41.5	37.5	2/4	1200	23	2	DCP4G061507J
160 "	40	55	41.5	37.5	2/4	1280	28	1.6	DCP4G061607K
180 "	40	55	41.5	37.5	2/4	1440	29.5	1.4	DCP4G061807K
190 "	40	55	41.5	37.5	2/4	1520	31.5	1.2	DCP4G061907K
200 "	40	55	41.5	37.5	2/4	1600	32.5	1.2	DCP4G062007K
220 "	35	50	57	52.5	4	1100	27	1.8	DCP4G062209F
250 "	45	55	57	52.5	4	1250	32	1.6	DCP4G062509H
270 "	45	55	57	52.5	4	1350	33.5	1.5	DCP4G062709H
300 "	45	55	57	52.5	4	1500	35	1.3	DCP4G063009H
330 "	45	65	57	52.5	4	1650	37	1.2	DCP4G063309J
350 "	45	65	57	52.5	4	1750	40	1.1	DCP4G063509J
370 "	45	65	57	52.5	4	1850	41.5	1.1	DCP4G063709J
400 "	45	65	57	52.5	4	2000	43	1	DCP4G064009J

New voltage range

* General guide

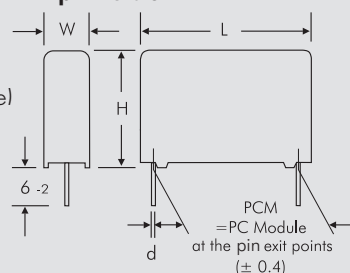
* Permissible I_{rms} at 10° C internal temperature rise (general guide)

** PCM = Printed circuit module = pin spacing

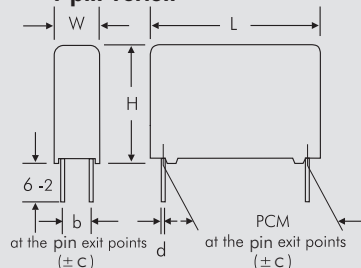
Dims. in mm.

Part number completion:	
Version code:	2-pin = D2 4-pin = D4
Tolerance:	20 % = M 10 % = K 5 % = J
Packing:	bulk = S
Pin length:	6-2 = SD
Taped version see page 148.	

2-pin version



4-pin version



Rights reserved to amend design data without prior notification.

Continuation page 124

Continuation

General Data

Capacitance	500 VDC (70° C) / 400 VDC (85° C)								
	W	H	L	PCM**	Pin	I _S A	I _{rms} * (10 kHz)* A	ESR (10 kHz)* mΩ	Part number
1 µF	9	19	31.5	27.5	2	15	1	238.7	DCP4H141006A_____
2 "	9	19	31.5	27.5	2	30	1.5	119.4	DCP4H142006A_____
3 "	9	19	31.5	27.5	2	45	1.5	79.6	DCP4H143006A_____
5 "	9	19	31.5	27.5	2	75	2.5	47.7	DCP4H145006A_____
7 "	11	21	31.5	27.5	2/4	105	3	34.1	DCP4H147006B_____
8 "	13	24	31.5	27.5	2/4	120	3	29.8	DCP4H148006D_____
10 µF	13	24	31.5	27.5	2/4	150	4	23.9	DCP4H151006D_____
12 "	15	26	31.5	27.5	2/4	180	4	19.9	DCP4H151206F_____
15 "	17	29	31.5	27.5	2/4	225	5	15.9	DCP4H151506G_____
20 "	17	34.5	31.5	27.5	2/4	300	6	11.9	DCP4H152006I_____
22 "	20	39.5	31.5	27.5	2/4	330	7	10.9	DCP4H152206J_____
25 "	20	39.5	31.5	27.5	2/4	375	7.5	9.5	DCP4H152506J_____
30 "	20	39.5	41.5	37.5	2/4	300	9	7.9	DCP4H153007G_____
35 "	20	39.5	41.5	37.5	2/4	350	8.5	9.1	DCP4H153507G_____
40 "	20	39.5	41.5	37.5	2/4	400	10	5.7	DCP4H154007G_____
	24	45.5	41.5	37.5	2/4	400	10	8	DCP4H154007H_____
45 "	24	45.5	41.5	37.5	2/4	450	12.5	5	DCP4H154507H_____
50 "	24	45.5	41.5	37.5	2/4	500	13	4.8	DCP4H155007H_____
55 "	24	45.5	41.5	37.5	2/4	550	14	4	DCP4H155507H_____
60 "	31	46	41.5	37.5	2/4	600	14	4.7	DCP4H156007I_____
65 "	31	46	41.5	37.5	2/4	650	16.5	3.3	DCP4H156507I_____
70 "	31	46	41.5	37.5	2/4	700	18	2.9	DCP4H157007I_____
75 "	31	46	41.5	37.5	2/4	750	17	3.2	DCP4H157507I_____
80 "	31	46	41.5	37.5	2/4	800	18	2.8	DCP4H158007I_____
85 "	35	50	41.5	37.5	2/4	850	10.5	3.2	DCP4H158507J_____
90 "	35	50	41.5	37.5	2/4	900	21	2.4	DCP4H159007J_____
95 "	35	50	41.5	37.5	2/4	950	21.5	2.2	DCP4H159507J_____
100 µF	35	50	41.5	37.5	2/4	1000	24	1.9	DCP4H161007J_____
	35	50	57	52.5	4	700	18	4	DCP4H161009F_____
110 "	40	55	41.5	37.5	2/4	1100	19	2.9	DCP4H161107K_____
	35	50	57	52.5	4	770	19	3.6	DCP4H161109F_____
120 "	40	55	41.5	37.5	2/4	1200	22.5	2.7	DCP4H161207K_____
	35	50	57	52.5	4	840	20	3.3	DCP4H161209F_____
130 "	40	55	41.5	37.5	2/4	1300	23	2.4	DCP4H161307K_____
	35	50	57	52.5	4	910	21	3.1	DCP4H161309F_____
140 "	35	50	57	52.5	4	980	21.5	2.8	DCP4H161409F_____
150 "	35	50	57	52.5	4	1050	22.5	2.7	DCP4H161509F_____
160 "	45	55	57	52.5	4	1120	25.5	2.5	DCP4H161609H_____
170 "	45	55	57	52.5	4	1190	26.5	2.3	DCP4H161709H_____
180 "	45	55	57	52.5	4	1260	27	2.2	DCP4H161809H_____
190 "	45	55	57	52.5	4	1330	28	2.1	DCP4H161909H_____
200 "	45	55	57	52.5	4	1400	28.5	2	DCP4H162009H_____
210 "	45	55	57	52.5	4	1470	29.5	1.9	DCP4H162109H_____
220 "	45	65	57	52.5	4	1540	32	1.8	DCP4H162209J_____
240 "	45	65	57	52.5	4	1680	33.5	1.7	DCP4H162409J_____

New voltage range

* General guide

* Permissible I_{rms} at 10° C internal temperature rise (general guide)

** PCM = Printed circuit module = pin spacing

Dims. in mm.

Rights reserved to amend design data without prior notification.

Continuation

General Data

Capacitance						600 VDC (70° C) / 450 VDC (85° C)			Part number
	W	H	L	PCM**	Pin	I _S A	I _{rms} (10 kHz)* A	ESR (10 kHz)* mΩ	
2 µF	9	19	31.5	27.5	2	54	2	56	DCP4I042006A
5 "	13	24	31.5	27.5	2/4	135	3.5	22	DCP4I045006D
7 "	15	26	31.5	27.5	2/4	189	4.5	16	DCP4I047006F
10 µF	17	29	31.5	27.5	2/4	270	6	11	DCP4I051006G
	27	15	41.5	37.5	2/4	190	6.5	10	DCP4I051007M
15 "	17	34.5	31.5	27.5	2/4	405	7.5	7.4	DCP4I051506I
20 "	20	39.5	31.5	27.5	2/4	540	9	6.2	DCP4I052006J
	20	39.5	41.5	37.5	2/4	380	10	6.2	DCP4I052007G
25 "	20	39.5	41.5	37.5	2/4	475	11.5	5	DCP4I052507G
30 "	24	45.5	41.5	37.5	2/4	570	14	4.1	DCP4I053007H
35 "	24	45.5	41.5	37.5	2/4	665	14.5	3.8	DCP4I053507H
40 "	31	46	41.5	37.5	2/4	760	16.5	3.3	DCP4I054007I
45 "	31	46	41.5	37.5	2/4	855	17	3.2	DCP4I054507I
50 "	35	50	41.5	37.5	2/4	950	19	2.9	DCP4I055007J
55 "	35	50	41.5	37.5	2/4	1045	17	3.8	DCP4I055507J
60 "	35	50	41.5	37.5	2/4	1140	17.5	3.4	DCP4I056007J
65 "	40	55	41.5	37.5	2/4	1235	19.5	3.3	DCP4I056507K
	35	50	57	52.5	4	845	20	3.3	DCP4I056509F
70 "	40	55	41.5	37.5	2/4	1330	20	3.1	DCP4I057007K
	35	50	57	52.5	4	910	20.5	3.1	DCP4I057009F
75 "	40	55	41.5	37.5	2/4	1425	20.5	3	DCP4I057507K
	35	50	57	52.5	4	975	21	3	DCP4I057509F
80 "	40	55	41.5	37.5	2/4	1520	22	2.6	DCP4I058007K
	35	50	57	52.5	4	1040	22	2.6	DCP4I058009F
85 "	35	50	57	52.5	4	1105	22.5	2.1	DCP4I058509F
90 "	35	50	57	52.5	4	1170	23.5	1.9	DCP4I059009F
95 "	45	55	57	52.5	4	1235	24	2.8	DCP4I059509H
100 µF	45	55	57	52.5	4	1300	25	2.6	DCP4I061009H
110 "	45	55	57	52.5	4	1430	26.5	2.3	DCP4I061109H
115 "	45	65	57	52.5	4	1495	27.5	2.5	DCP4I061159J
120 "	45	65	57	52.5	4	1560	28	2.3	DCP4I061209J
130 "	45	65	57	52.5	4	1690	29.5	2.1	DCP4I061309J
140 "	45	65	57	52.5	4	1820	31	1.9	DCP4I061409J
150 "	45	65	57	52.5	4	1950	33	1.7	DCP4I061509J

* General guide

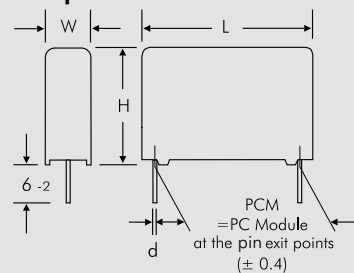
** PCM = Printed circuit module = pin spacing

Dims. in mm.

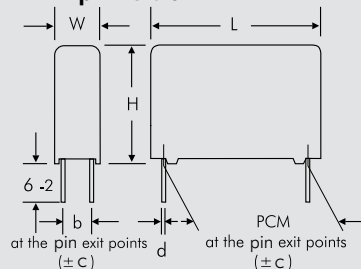
Part number completion:

Version code: 2-pin = D2
4-pin = D4
Tolerance: 20 % = M
10 % = K
5 % = J
Packing: bulk = S
Pin length: 6-2 = SD
Taped version see page 148.

2-pin version



4-pin version



Rights reserved to amend design data without prior notification.

Continuation

General Data

Capacitance	800 VDC (70° C) / 700 VDC (85° C)								Part number
	W	H	L	PCM**	Pin	I _S A	I _{rms} (10 kHz)* A	ESR (10 kHz)* mΩ	
2 µF	9	19	31.5	27.5	2	58	2	52	DCP4L042006A_____
5 "	13	24	31.5	27.5	2/4	145	4	21	DCP4L045006D_____
7 "	17	29	31.5	27.5	2/4	203	5	15	DCP4L047006G_____
10 µF	17	34.5	31.5	27.5	2/4	290	6.5	10	DCP4L051006I_____
15 "	20	39.5	31.5	27.5	2/4	435	9	6.9	DCP4L051506J_____
	20	39.5	41.5	37.5	2/4	315	9.5	6.9	DCP4L051507G_____
20 "	20	39.5	41.5	37.5	2/4	420	10	6.2	DCP4L052007G_____
25 "	24	45.5	41.5	37.5	2/4	525	12.5	5	DCP4L052507H_____
30 "	24	45.5	41.5	37.5	2/4	630	14	4.1	DCP4L053007H_____
35 "	31	46	41.5	37.5	2/4	735	15.5	3.8	DCP4L053507I_____
40 "	31	46	41.5	37.5	2/4	840	16.5	3.3	DCP4L054007I_____
45 "	35	50	41.5	37.5	2/4	945	17.5	3.4	DCP4L054507J_____
50 "	35	50	41.5	37.5	2/4	1050	19	3	DCP4L055007J_____
55 "	40	55	41.5	37.5	2/4	1155	19.5	3.2	DCP4L055507K_____
	35	50	57	52.5	4	825	20.4	3.2	DCP4L055509F_____
60 "	40	55	41.5	37.5	2/4	1260	20.5	2.9	DCP4L056007K_____
	35	50	57	52.5	4	900	21.5	2.9	DCP4L056009F_____
65 "	35	50	57	52.5	4	975	22.5	2.2	DCP4L056509F_____
70 "	45	55	57	52.5	4	1050	23.5	3	DCP4L057009H_____
75 "	45	55	57	52.5	4	1125	24	2.9	DCP4L057509H_____
80 "	45	55	57	52.5	4	1200	24.5	3	DCP4L058009H_____
85 "	45	65	57	52.5	4	1275	25	2.6	DCP4L058509J_____
90 "	45	65	57	52.5	4	1350	25.5	2.5	DCP4L059009J_____
95 "	45	65	57	52.5	4	1425	26	2.4	DCP4L059509J_____
100 µF	45	65	57	52.5	4	1500	26.5	2.3	DCP4L061009J_____
110 "	45	65	57	52.5	4	1650	27.5	2.2	DCP4L061109J_____
115 "	45	65	57	52.5	4	1725	28	2.1	DCP4L061159J_____

Capacitance	900 VDC (70° C) / 760 VDC (85° C)								Part number
	W	H	L	PCM**	Pin	I _S A	I _{rms} (10 kHz)* A	ESR (10 kHz)* mΩ	
2 µF	11	21	31.5	27.5	2/4	70	2.5	44	DCP4N042006B_____
5 "	17	29	31.5	27.5	2/4	175	4.5	18	DCP4N045006G_____
7 "	17	34.5	31.5	27.5	2/4	245	6	13	DCP4N047006I_____
10 µF	20	39.5	31.5	27.5	2/4	350	8	8.8	DCP4N051006J_____
	20	39.5	41.5	37.5	2/4	220	8.5	8.8	DCP4N051007G_____
15 "	20	39.5	41.5	37.5	2/4	330	10.5	5.8	DCP4N051507G_____
20 "	24	45.5	41.5	37.5	2/4	440	13	4.8	DCP4N052007H_____
25 "	31	46	41.5	37.5	2/4	550	15.5	3.8	DCP4N052507I_____
30 "	31	46	41.5	37.5	2/4	660	15.5	3.7	DCP4N053007I_____
35 "	35	50	41.5	37.5	2/4	770	18	3.2	DCP4N053507J_____
40 "	40	55	41.5	37.5	2/4	880	19.5	3.2	DCP4N054007K_____
	35	50	57	52.5	4	720	20.5	3.2	DCP4N054009F_____
45 "	35	50	57	52.5	4	810	21	2.8	DCP4N054509F_____
50 "	35	50	57	52.5	4	900	22	3.3	DCP4N055009F_____
55 "	35	50	57	52.5	4	990	22.5	3.2	DCP4N055509F_____
	45	55	57	52.5	4	990	22.5	3.2	DCP4N055509H_____
60 "	45	55	57	52.5	4	1080	23	3	DCP4N056009H_____
65 "	45	55	57	52.5	4	1170	24	2.9	DCP4N056509H_____
70 "	45	65	57	52.5	4	1260	24.5	3.3	DCP4N057009J_____
75 "	45	65	57	52.5	4	1350	25	2.9	DCP4N057509J_____
80 "	45	65	57	52.5	4	1440	25.5	2.8	DCP4N058009J_____

* General guide

** PCM = Printed circuit module = pin spacing

Dims. in mm.

Rights reserved to amend design data without prior notification.

Continuation

General Data

Capacitance						1100 VDC (70° C) / 920 VDC (85° C)			Part number
	W	H	L	PCM**	Pin	I _S A	I _{rms} (10 kHz)* A	ESR (10 kHz)* mΩ	
2 μF	13	24	31.5	27.5	2/4	86	3	36	DCP4P042006D_____
3 "	15	26	31.5	27.5	2/4	129	4	23	DCP4P043006F_____
5 "	17	34.5	31.5	27.5	2/4	215	5.5	14	DCP4P045006I_____
7 "	20	39.5	31.5	27.5	2/4	301	7.5	10	DCP4P047006J_____
	19	32	41.5	37.5	2/4	203	7.5	10	DCP4P047007F_____
10 μF	20	39.5	41.5	37.5	2/4	290	9.5	7.2	DCP4P051007G_____
15 "	31	46	41.5	37.5	2/4	435	13	5.4	DCP4P051507I_____
20 "	31	46	41.5	37.5	2/4	580	14	5.2	DCP4P052007I_____
	35	50	41.5	37.5	2/4	580	15	4.7	DCP4P052007J_____
25 "	40	55	41.5	37.5	2/4	725	16.5	4.6	DCP4P052507K_____
30 "	35	50	57	52.5	4	630	17.5	4.4	DCP4P053009F_____
35 "	35	50	57	52.5	4	735	18	4	DCP4P053509F_____
40 "	45	55	57	52.5	4	840	19	4.5	DCP4P054009H_____
45 "	45	55	57	52.5	4	945	20	4.1	DCP4P054509H_____
50 "	45	65	57	52.5	4	1050	21	4.1	DCP4P055009J_____
55 "	45	65	57	52.5	4	1150	22	3.8	DCP4P055509J_____
60 "	45	65	57	52.5	4	1260	23	3.5	DCP4P056009J_____

Capacitance						1300 VDC (70° C) / 1100 VDC (85° C)			Part number
	W	H	L	PCM**	Pin	I _S A	I _{rms} (10 kHz)* A	ESR (10 kHz)* mΩ	
2 μF	15	26	31.5	27.5	2/4	100	3	36	DCP4R242006F_____
5 "	20	39.5	31.5	27.5	2/4	250	6	14	DCP4R245006J_____
	20	39.5	41.5	37.5	2/4	175	7	14	DCP4R245007G_____
7 "	20	39.5	41.5	37.5	2/4	245	8	10	DCP4R247007G_____
10 μF	24	45.5	41.5	37.5	2/4	350	10.5	7.2	DCP4R251007H_____
15 "	31	46	41.5	37.5	2/4	525	14	4.8	DCP4R251507I_____
20 "	40	55	41.5	37.5	2/4	700	17.5	4	DCP4R252007K_____
	35	50	57	52.5	4	500	18	4	DCP4R252009F_____
25 "	35	50	57	52.5	4	625	19	3.6	DCP4R252509F_____
30 "	45	55	57	52.5	4	750	20	4	DCP4R253009H_____
35 "	45	65	57	52.5	4	875	21	4.1	DCP4R253509J_____
40 "	45	65	57	52.5	4	1000	22	3.7	DCP4R254009J_____

* General guide

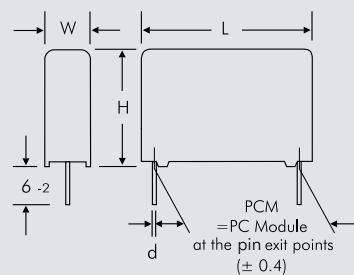
** PCM = Printed circuit module = pin spacing

Dims. in mm.

Part number completion:

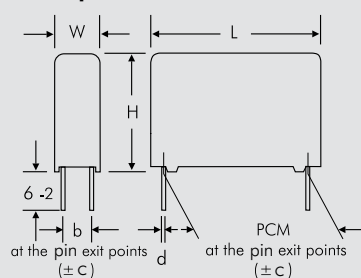
Version code: 2-pin = D2
4-pin = D4
Tolerance: 20 % = M
10 % = K
5 % = J
Packing: bulk = S
Pin length: 6-2 = SD
Taped version see page 148.

2-pin version



PCM	d
27.5	0.8
37.5	1

4-pin version



W	PCM	b	d	c
11	27.5	5	0.8	0.4
13	27.5	7.5	0.8	0.4
15	27.5	7.5	0.8	0.4
17	27.5	10	0.8	0.4
20	27.5	12.5	0.8	0.4
19	37.5	10	1	0.4
20	37.5	12.5	1	0.4
24	37.5	12.5	1	0.4
31	37.5	20	1	0.4
35	37.5	20	1	0.4
40	37.5	20	1	0.4
35	52.5	20	1.2	0.8
45	52.5	20	1.2	0.8

Rights reserved to amend design data without prior notification.

Recommendation for Processing and Application of Through-Hole Capacitors

Soldering Process

Internal temperature of the capacitor must be kept as follows:

Polyester: preheating: $T_{\max.} \leq 125^{\circ}\text{C}$
soldering: $T_{\max.} \leq 135^{\circ}\text{C}$

Polypropylene: preheating: $T_{\max.} \leq 100^{\circ}\text{C}$
soldering: $T_{\max.} \leq 110^{\circ}\text{C}$

Single wave soldering

Soldering bath temperature: $T < 260^{\circ}\text{C}$

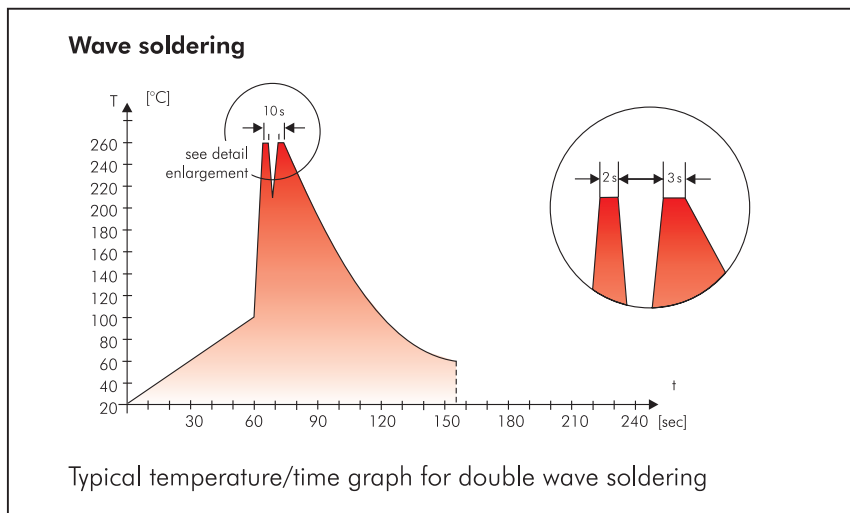
Dwell time: $t < 5\text{ sec}$

Double wave soldering

Soldering bath temperature: $T < 260^{\circ}\text{C}$

Dwell time: $\Sigma t < 5\text{ sec}$

Due to different soldering processes and heat requirements the graphs are to be regarded as a recommendation only.



WIMA Quality and Environmental Philosophy

ISO 9001:2008 Certification

ISO 9001:2008 is an international basic standard of quality assurance systems for all branches of industry. The approval according to ISO 9001:2008 of our factories by the infaz (Institut für Auditierung und Zertifizierung) certifies that organisation, equipment and monitoring of quality assurance in our factories correspond to internationally recognized standards.

WIMA WPCS

The WIMA Process Control System (WPCS) is a quality surveillance and optimization system developed by WIMA. WPCS is a major part of the quality-oriented WIMA production. Points of application during production process:

- incoming material inspection
- metallization
- film inspection
- schoopage
- pre-healing
- pin attachment
- cast resin preparation/encapsulation
- 100% final inspection
- Testing as per customer requirements

WIMA Environmental Policy

All WIMA capacitors, irrespective of whether through-hole devices or SMD, are made of environmentally friendly materials. Neither during manufacture nor in the product itself any toxic substances are used, e.g.

- Lead
- PCB
- CFC
- Hydrocarbon chloride
- Chromium 6+
- PBB/PBDE
- Arsenic
- Cadmium
- Mercury
- etc.

We merely use pure, recyclable materials for packing our components, such as:

- carton
- cardboard
- adhesive tape made of paper
- polystyrene

We almost completely refrain from using packing materials such as:

- foamed polystyrene (Styropor®)
- adhesive tapes made of plastic
- metal clips

RoHS Compliance

According to the RoHS Directive 2011/65/EU certain hazardous substances like e.g. lead, cadmium, mercury must not be used any longer in electronic equipment as of July 1st, 2006. For the sake of the environment WIMA has refrained from using such substances since years already.



WIMA Kondensatoren sind bleifrei
konform RoHS 2011/65/EU

WIMA capacitors are lead free
in accordance with RoHS 2011/65/EU

Tape for lead-free WIMA capacitors

DIN EN ISO 14001:2004

WIMA's environmental management has been established in accordance with the guidelines of DIN EN ISO 14001:2004 to optimize the production processes with regard to energy and resources.

Typical Dimensions for Taping Configuration

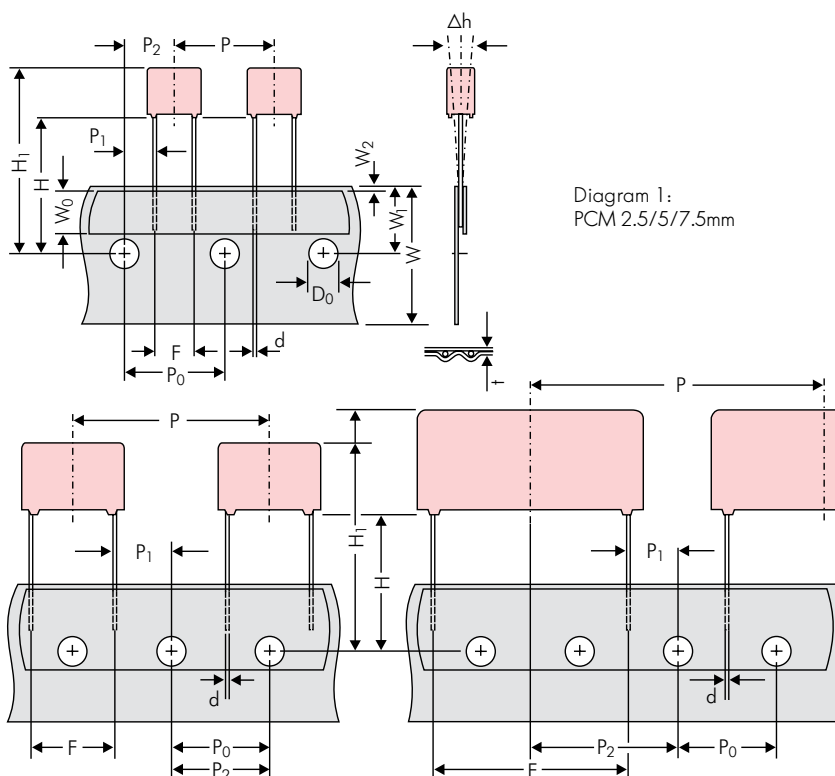


Diagram 2: PCM 10/15 mm

Diagram 3: PCM 22.5 and 27.5*mm

*PCM 27.5 tapping possible with two feed holes between components

Designation	Symbol	Dimensions for Radial Taping						
		PCM 2.5 taping	PCM 5 taping	PCM 7.5 taping	PCM 10 taping*	PCM 15 taping*	PCM 22.5 taping	PCM 27.5 taping
Carrier tape width	W	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5
Hold-down tape width	W ₀	6.0 for hot-sealing adhesive tape	6.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape
Hole position	W ₁	9.0 ±0.5	9.0 ±0.5	9.0 ±0.5	9.0 ±0.5	9.0 ±0.5	9.0 ±0.5	9.0 ±0.5
Hold-down tape position	W ₂	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.
Feed hole diameter	D ₀	4.0 ±0.2	4.0 ±0.2	4.0 ±0.2	4.0 ±0.2	4.0 ±0.2	4.0 ±0.2	4.0 ±0.2
Pitch of component	P	12.7 ±1.0	12.7 ±1.0	12.7 ±1.0	25.4 ±1.0	25.4 ±1.0	38.1 ±1.5	*38.1 ±1.5 or 50.8 ±1.5
Feed hole pitch	P ₀	12.7 ±0.3 cumulative pitch error max. 1.0 mm/20 pitch	12.7 ±0.3 cumulative pitch error max. 1.0 mm/20 pitch	12.7 ±0.3 cumulative pitch error max. 1.0 mm/20 pitch	12.7 ±0.3 cumulative pitch error max. 1.0 mm/20 pitch	12.7 ±0.3 cumulative pitch error max. 1.0 mm/20 pitch	12.7 ±0.3 cumulative pitch error max. 1.0 mm/20 pitch	12.7 ±0.3 cumulative pitch error max. 1.0 mm/20 pitch
Feed hole centre to pin	P ₁	5.1 ±0.5	3.85 ±0.7	2.6 ±0.7	7.7 ±0.7	5.2 ±0.7	7.8 ±0.7	5.3 ±0.7
Hole centre to component centre	P ₂	6.35 ±1.3	6.35 ±1.3	6.35 ±1.3	12.7 ±1.3	12.7 ±1.3	19.05 ±1.3	19.05 ±1.3
Feed hole centre to bottom edge of the component	H	16.5 ±0.3	16.5 ±0.3	16.5 ±0.5	16.5 ±0.5	16.5 ±0.5	16.5 ±0.5	16.5 ±0.5
		18.5 ±0.5	18.5 ±0.5	18.5 ±0.5	18.5 ±0.5	18.5 ±0.5	18.5 ±0.5	18.5 ±0.5
Feed hole centre to top edge of the component	H ₁	H+H _{component} < H ₁ 32.25 max.	H+H _{component} < H ₁ 32.25 max.	H+H _{component} < H ₁ 24.5 to 31.5	H+H _{component} < H ₁ 25.0 to 31.5	H+H _{component} < H ₁ 26.0 to 37.0	H+H _{component} < H ₁ 30.0 to 43.0	H+H _{component} < H ₁ 35.0 to 45.0
Pin spacing at upper edge of carrier tape	F	2.5 ±0.5	5.0 ^{+0.8} _{-0.2}	7.5 ±0.8	10.0 ±0.8	15 ±0.8	22.5 ±0.8	27.5 ±0.8
Pin diameter	d	0.4 ±0.05	0.5 ±0.05	*0.5 ±0.05 or 0.6 ^{+0.06} _{-0.05}	*0.5 ±0.05 or 0.6 ^{+0.06} _{-0.05}	0.8 ^{+0.08} _{-0.05}	0.8 ^{+0.08} _{-0.05}	0.8 ^{+0.08} _{-0.05}
Component alignment	Δh	± 2.0 max.	± 2.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.
Total tape thickness	t	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2
Package (see also page 149)		ROLL/AMMO			AMMO			
		REEL ϕ 360 max. ϕ 30 ±1			REEL ϕ 360 max. ϕ 30 ±1			
Unit		see details page 150.						

Dims in mm.

* Diameter of pins see General Data.

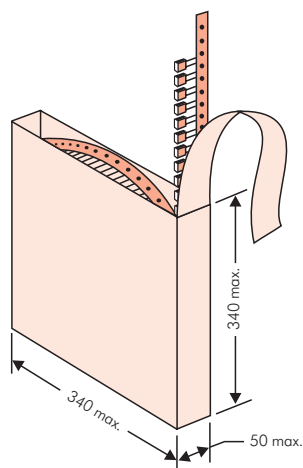
* PCM 10 and PCM 15 can be crimped to PCM 7.5.

Position of components according to PCM 7.5 (sketch 11). P₀ = 12.7 or 15.0 is possible

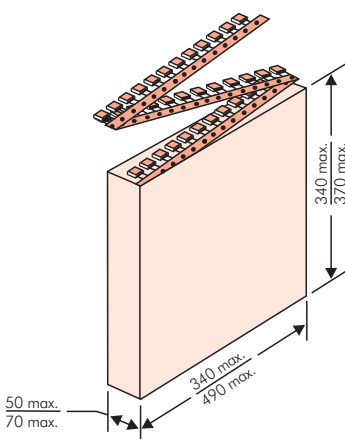
Please clarify customer-specific deviations with the manufacturer.

Types of Tape Packaging of Capacitors for Automatic Radial Insertion

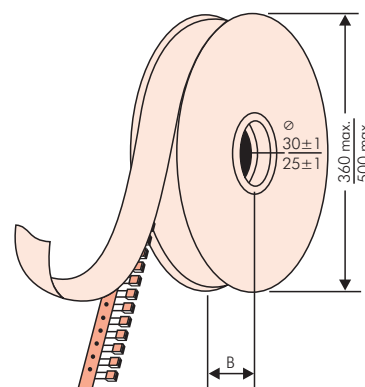
■ ROLL Packaging



■ AMMO Packaging



■ REEL Packaging



BAR CODE (Labelling)

Labelling of package units in plain text and with alphanumerical Bar Code

Scanner decoding of

- WIMA supplier number
- Customer's P/O number
- Customer's part number
- WIMA confirmation number
- WIMA part number
- Lot number
- Date code
- Quantity

In addition part description of

- article
- capacitance value
- rated voltage
- dimensions
- capacitance tolerance
- packing

as well as gross weight and customer's name are indicated in plain text.

WIMA Best Capacitors Made in Germany		Werk Unna	
Supplier-ID: 123456789	RoHS 2011/65/EU	Date Code: 08.10.10	
Purchase Order No. (P/O): Bestellung xyz		Quantity: 5.000	
Customer Part No.: KUNDETEILENUMMER		Customer No.: 0000100002	
WIMA Confirmation No.: 0001004063000100		Gross Weight [g]: 1870	
WIMA Part No.: MKS2C034701C00K89D			
Handling Unit:	MKS 2	QTY: 5.000	COO: DE
1000067326	MKS 2 0.47 µF 63 VDC 3.5x8.5x7.2 RMS		
	Standard 10% Loss - Standard Drähte 6-2		
	Vorlage Debitur Inland	Week 03/2011	

BARCODE „Code 39“

Packing Quantities for Capacitors with Radial Pins in PCM 2.5 mm to 22.5 mm

PCM	Size				bulk	pcs. per packing unit									
						ROLL		REEL		AMMO					
	H16.5	H18.5	ø 360	ø 500		340 × 340		490 × 370							
	W	H	L	Codes	S	N	O	F	I	H	J	A	C	B	D
2.5 mm	2.5	7	4.6	0B	5000	2200		2500		—		2800		—	
	3	7.5	4.6	0C	5000	2000		2300		—		2300		—	
	3.8	8.5	4.6	0D	5000	1500		1800		—		1800		—	
	4.6	9	4.6	0E	5000	1200		1500		—		1500		—	
	5.5	10	4.6	0F	5000	900		1200		—		1200		—	
5 mm	2.5	6.5	7.2	1A	5000	2200		2500		—		2800		—	
	3	7.5	7.2	1B	5000	2000		2300		—		2300		—	
	3.5	8.5	7.2	1C	5000	1600		2000		—		2000		—	
	4.5	6	7.2	1D	6000	1300		1500		—		1500		—	
	4.5	9.5	7.2	1E	4000	1300		1500		—		1500		—	
	5	10	7.2	1F	3500	1100		1400		—		1400		—	
	5.5	7	7.2	1G	4000	1000		1200		—		1200		—	
	5.5	11.5	7.2	1H	2500	1000		1200		—		1200		—	
	6.5	8	7.2	1I	2500	800		1000		—		1000		—	
	7.2	8.5	7.2	1J	2500	700		1000		—		1000		—	
	7.2	13	7.2	1K	2000	700		950		—		1000		—	
	8.5	10	7.2	1L	2000	600		800		—		800		—	
	8.5	14	7.2	1M	1500	600		800		—		800		—	
11	16	7.2	1N	1000	500		600		—		400		—		
7.5 mm	2.5	7	10	2A	5000	—		2500		4400		2500		—	
	3	8.5	10	2B	5000	—		2200		4300		2300		4150	
	4	9	10	2C	4000	—		1700		3200		1700		3100	
	4.5	9.5	10.3	2D	3500	—		1500		2900		1400		2700	
	5	10.5	10.3	2E	3000	—		1300		2500		1300		—	
	5.7	12.5	10.3	2F	2000	—		1000		2200		1100		—	
	7.2	12.5	10.3	2G	1500	—		900		1800		1000		—	
10 mm	3	9	13	3A	3000	—		1100		2200		—		1900	
	4	8.5	13.5	FA	3000	—		900		1600		—		1450	
	4	9	13	3C	3000	—		900		1600		—		1450	
	4	9.5	13	3D	3000	—		900		1600		—		1400	
	5	10	13.5	FB	2000	—		700		1300		—		1200	
	5	11	13	3F	3000	—		700		1300		—		1200	
	6	12	13	3G	2400	—		550		1100		—		1000	
	6	12.5	13	3H	2400	—		550		1100		—		1000	
8	12	13	3I	2000	—		400		800		—		740		
15 mm	5	11	18	4B	2400	—		600		1200		—		1150	
	5	13	19	FC	1000	—		600		1200		—		1200	
	6	12.5	18	4C	2000	—		500		1000		—		1000	
	6	14	19	FD	1000	—		500		1000		—		1000	
	7	14	18	4D	1600	—		450		900		—		850	
	7	15	19	FE	1000	—		450		900		—		850	
	8	15	18	4F	1200	—		400		800		—		740	
	8	17	19	FF	500	—		400		800		—		740	
	9	14	18	4H	1200	—		350		700		—		650	
	9	16	18	4J	900	—		350		700		—		650	
	10	18	19	FG	500	—		300		650		—		590	
11	14	18	4M	1000	—		300		600		—		540		
22.5 mm	5	14	26.5	5A	1200	—		—		800		—		770	
	6	15	26.5	5B	1000	—		—		700		—		640	
	7	16.5	26.5	5D	760	—		—		600		—		550	
	8	20	28	FH	500	—		—		500		—		480	
	8.5	18.5	26.5	5F	500	—		—		480		—		450	
	10	22	28	FI	570*	—		—		420		—		380	
	10.5	19	26.5	5G	594*	—		—		400		—		360	
	10.5	20.5	26.5	5H	594*	—		—		400		—		360	
	11	21	26.5	5I	561*	—		—		380		—		350	
	12	24	28	FJ	480*	—		—		350		—		310	

* TPS (Tray-Packing-System). Plate versions may have different packing units.
Samples and pre-production needs on request.

■ Moulded versions.

Rights reserved to amend design data without prior notification.

Packing Quantities for Capacitors with Radial Pins in PCM 27.5 mm to 52.5 mm

PCM	Size				bulk	ROLL		pcs. per packing unit				AMMO			
								REEL							
	W	H	L	Codes		H16.5	H18.5	ø 360	ø 500	H16.5	H18.5	H16.5	H18.5	340 × 340	490 × 370
					S	N	O	F	I	H	J	A	C	B	D
27.5 mm	9	19	31.5	6A	567*	–	–	–	–	460/340*	–	–	–	420	–
	11	21	31.5	6B	459*	–	–	–	–	380/280*	–	–	–	350	–
	13	24	31.5	6D	378*	–	–	–	–	300	–	–	–	290	–
	13	25	33	FK	405*	–	–	–	–	–	–	–	–	–	–
	15	26	31.5	6F	324*	–	–	–	–	270	–	–	–	250	–
	15	26	33	FL	324*	–	–	–	–	–	–	–	–	–	–
	17	29	31.5	6G	198*	–	–	–	–	–	–	–	–	–	–
	17	34.5	31.5	6I	198*	–	–	–	–	–	–	–	–	–	–
	20	32	33	FM	162*	–	–	–	–	–	–	–	–	–	–
	20	39.5	31.5	6J	162*	–	–	–	–	–	–	–	–	–	–
37.5 mm	9	19	41.5	7A	441*	–	–	–	–	–	–	–	–	–	–
	11	22	41.5	7B	357*	–	–	–	–	–	–	–	–	–	–
	13	24	41.5	7C	294*	–	–	–	–	–	–	–	–	–	–
	15	26	41.5	7D	252*	–	–	–	–	–	–	–	–	–	–
	17	29	41.5	7E	154*	–	–	–	–	–	–	–	–	–	–
	19	32	41.5	7F	140*	–	–	–	–	–	–	–	–	–	–
	20	39.5	41.5	7G	126*	–	–	–	–	–	–	–	–	–	–
	24	45.5	41.5	7H	112*	–	–	–	–	–	–	–	–	–	–
	31	46	41.5	7I	84*	–	–	–	–	–	–	–	–	–	–
	35	50	41.5	7J	35*	–	–	–	–	–	–	–	–	–	–
	40	55	41.5	7K	28*	–	–	–	–	–	–	–	–	–	–
48.5 mm	19	31	56	8D	120*	–	–	–	–	–	–	–	–	–	–
	23	34	56	8E	80*	–	–	–	–	–	–	–	–	–	–
	27	37.5	56	8H	84*	–	–	–	–	–	–	–	–	–	–
	33	48	56	8J	25*	–	–	–	–	–	–	–	–	–	–
	37	54	56	8L	25*	–	–	–	–	–	–	–	–	–	–
52.5 mm	25	45	57	9D	70*	–	–	–	–	–	–	–	–	–	–
	30	45	57	9E	60*	–	–	–	–	–	–	–	–	–	–
	35	50	57	9F	25*	–	–	–	–	–	–	–	–	–	–
	45	55	57	9H	20*	–	–	–	–	–	–	–	–	–	–
	45	65	57	9J	20*	–	–	–	–	–	–	–	–	–	–

* for 2-inch transport pitches.

* TPS (Tray-Packing-System). Plate versions may have different packing units.
Samples and pre-production needs on request.

■ Moulded versions. Rights reserved to amend design data without prior notification.

Updated data on www.wima.com

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: Version code (e.g. Snubber versions)
 Field 15: Capacitance tolerance
 Field 16: Packing
 Field 17 - 18: Pin 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				2.5×6.5×7.2			-		20%	bulk	6 -2
Type description:				Rated voltage:		Capacitance:				Size:			Tolerance:		Packing:		
SMD-PET = SMDT				50 VDC = B0		22 pF = 0022				4.8×3.3×3 Size 1812 = KA			±20% = M		AMMO H16.5 340×340 = A		
SMD-PEN = SMDN				63 VDC = C0		47 pF = 0047				4.8×3.3×4 Size 1812 = KB			±10% = K		AMMO H16.5 490×370 = B		
SMD-PPS = SMDI				100 VDC = D0		100 pF = 0100				5.7×5.1×3.5 Size 2220 = QA			±5% = J		AMMO H18.5 340×340 = C		
FKP 02 = FKPO				250 VDC = F0		150 pF = 0150				5.7×5.1×4.5 Size 2220 = QB			±2.5% = H		AMMO H18.5 490×370 = D		
MKS 02 = MKS0				400 VDC = G0		220 pF = 0220				7.2×6.1×3 Size 2824 = TA			±1% = E		REEL H16.5 360 = F		
FKS 2 = FKS2				450 VDC = H0		330 pF = 0330				7.2×6.1×5 Size 2824 = TB			...		REEL H16.5 500 = H		
FKP 2 = FKP2				520 VDC = H2		470 pF = 0470				10.2×7.6×5 Size 4030 = VA					REEL H18.5 360 = I		
FKS 3 = FKS3				600 VDC = I0		680 pF = 0680				12.7×10.2×6 Size 5040 = XA					REEL H18.5 500 = J		
FKP 3 = FKP 3				630 VDC = J0		1000 pF = 1100				15.3×13.7×7 Size 6054 = YA					ROLL H16.5 = N		
MKS 2 = MKS2				700 VDC = K0		1500 pF = 1150				2.5×7×4.6 PCM 2.5 = 0B					ROLL H18.5 = O		
MKP 2 = MKP2				800 VDC = L0		2200 pF = 1220				3×7.5×4.6 PCM 2.5 = 0C					BLISTER W12 180 = P		
MKS 4 = MKS4				850 VDC = M0		3300 pF = 1330				2.5×6.5×7.2 PCM 5 = 1A					BLISTER W12 330 = Q		
MKP 4C = MKPC				900 VDC = N0		4700 pF = 1470				3×7.5×7.2 PCM 5 = 1B					BLISTER W16 330 = R		
MKP 4 = MKP4				1000 VDC = O1		6800 pF = 1680				2.5×7×10 PCM 7.5 = 2A					BLISTER W24 330 = T		
MKP 10 = MKP1				1100 VDC = P0		0.01 μF = 2100				3×8.5×10 PCM 7.5 = 2B					Bulk/TPS Standard = S		
FKP 1 = FKP1				1200 VDC = Q0		0.022 μF = 2220				3×9×13 PCM 10 = 3A					...		
MKP-X2 = MKX2				1250 VDC = R0		0.047 μF = 2470				4×9×13 PCM 10 = 3C							
MKP-X1 R = MKX1				1500 VDC = S0		0.1 μF = 3100				5×11×18 PCM 15 = 4B							
MKP-Y2 = MKY2				1600 VDC = T0		0.22 μF = 3220				6×12.5×18 PCM 15 = 4C							
MP 3-X2 = MPX2				2000 VDC = U0		0.47 μF = 3470				5×14×26.5 PCM 22.5 = 5A							
MP 3-X1 = MPX1				2500 VDC = V0		1 μF = 4100				6×15×26.5 PCM 22.5 = 5B							
MP 3-Y2 = MPY2				3000 VDC = W0		2.2 μF = 4220				9×19×31.5 PCM 27.5 = 6A							
MP 3R-Y2 = MPRY				4000 VDC = X0		4.7 μF = 4470				11×21×31.5 PCM 27.5 = 6B							
MKP 4F = MKPF				6000 VDC = Y0		10 μF = 5100				9×19×41.5 PCM 37.5 = 7A							
Snubber MKP = SNMP				250 VAC = 0W		22 μF = 5220				11×22×41.5 PCM 37.5 = 7B							
Snubber FKP = SNFP				275 VAC = 1W		47 μF = 5470				19×31×56 PCM 48.5 = 8D							
GTO MKP = GTOM				300 VAC = 2W		100 μF = 6100				25×45×57 PCM 52.5 = 9D							
DC-LINK MKP 3 = DCP3				305 VAC = AW		220 μF = 6220				...							
DC-LINK MKP 4 = DCP4				350 VAC = BW		1000 μF = 7100											
DC-LINK MKP 4S = DCP5				440 VAC = 4W		1500 μF = 7150											
DC-LINK MKP 5 = DCP5				500 VAC = 5W		...											
DC-LINK MKP 6 = DCP6				...													
DC-LINK HC = DCHC																	
DC-LINK HY = DCHY																	