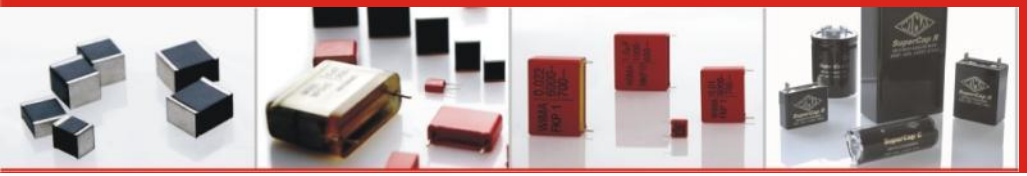
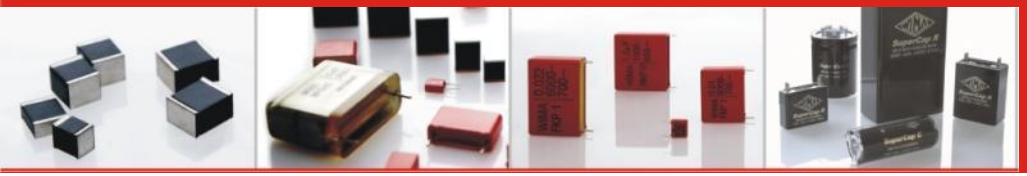
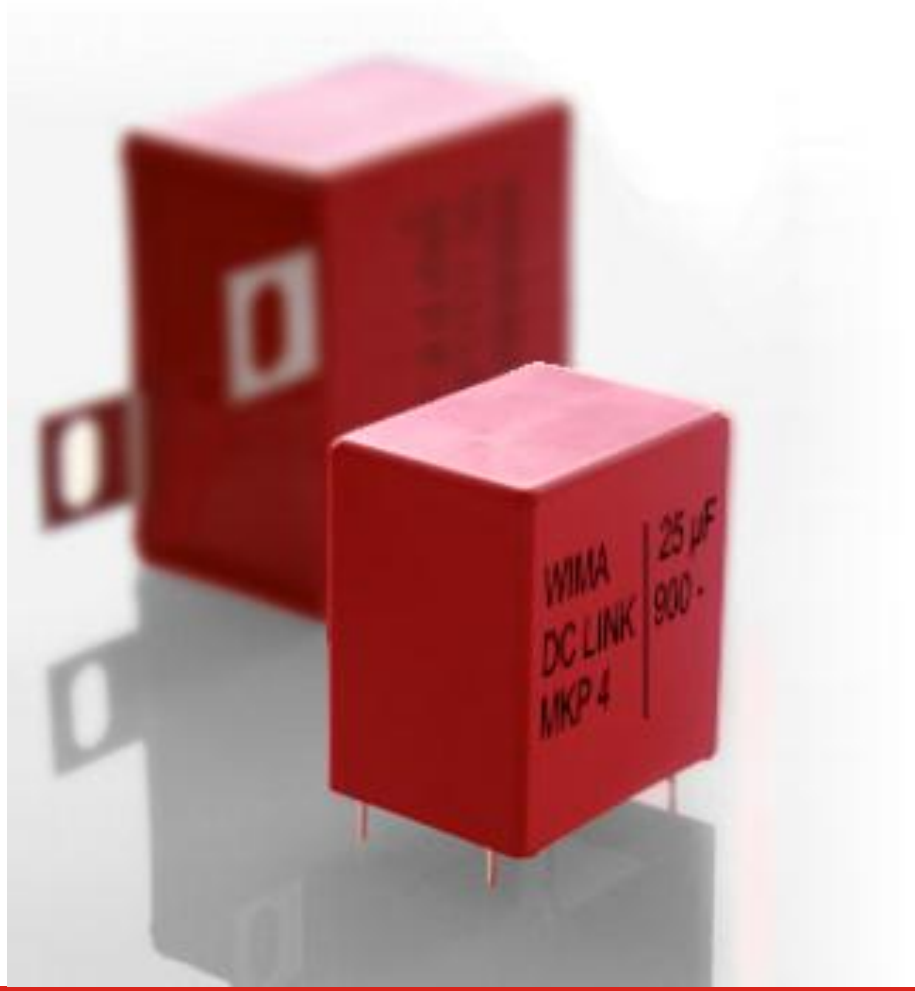


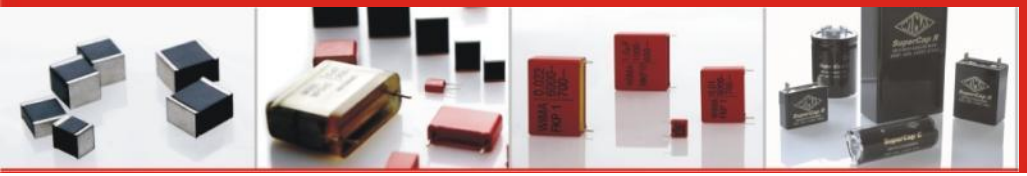
WIMA DC-LINK Capacitors



Outline

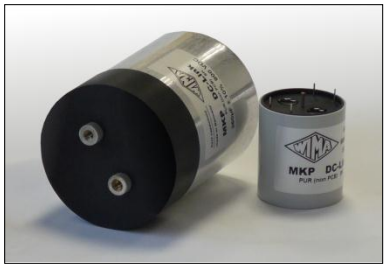
- DC-Link Capacitors: Description
- Capacitor Technologies
- Characteristics
- WIMA DC-LINK Range
- Applications
- Conclusion





Basic Description

WIMA DC-LINK capacitors are…



… designed for applications in high power converter technology

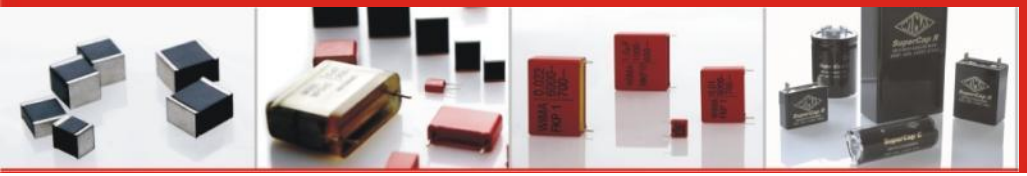
… substituting more and more electrolytic capacitors

… manufactured with low loss Polypropylene dielectric

… showing high current capability and low dissipation/self-heating

… available in rectangular and cylindrical cases with capacitances up to 4,500 µF

… available in various customized versions



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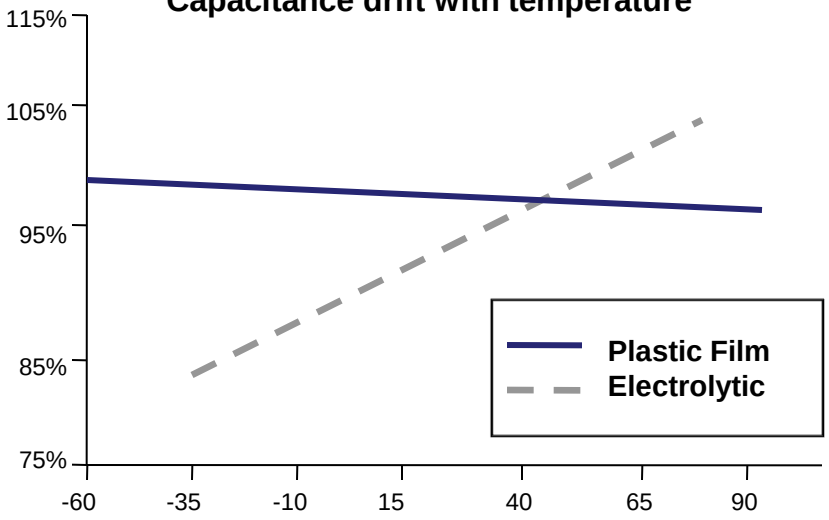
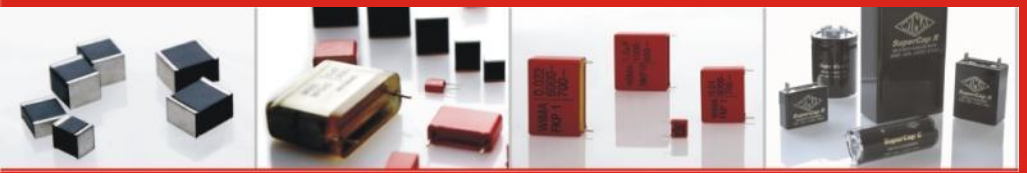
Comparison of DC-Link Capacitor Technologies: Film Cap vs. Electrolytics

Technical criteria

Technology	Capacitance per Volume	ESR	Irms	Stability / Reliability
Plastic Film	Improving	Low	High	High
Electrolytic	High	High	Medium	Medium

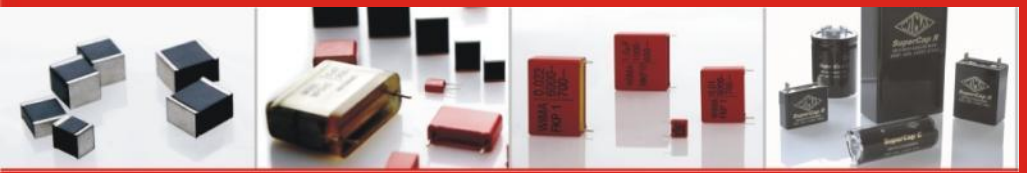
Capacitance drift with temperature



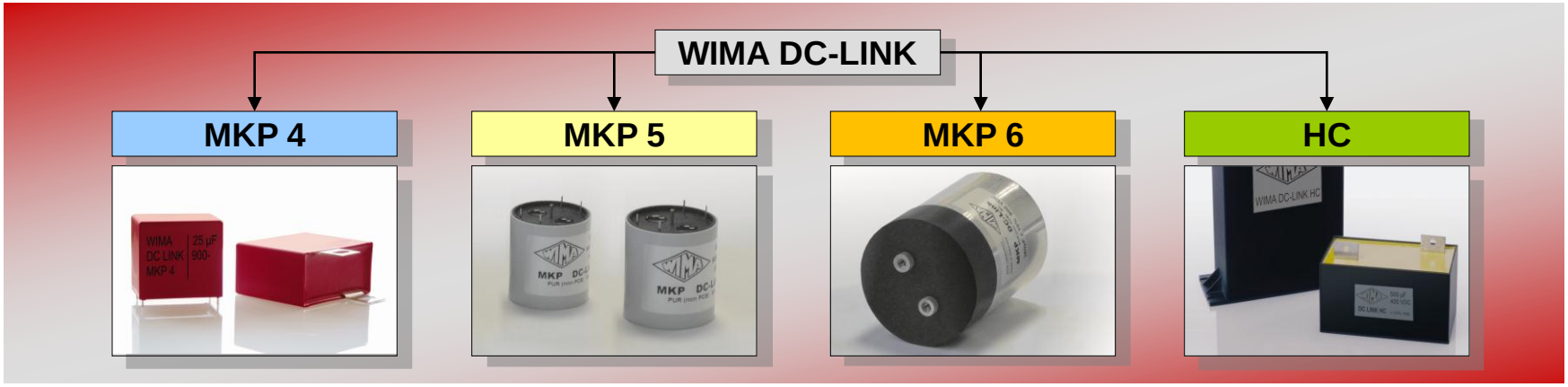


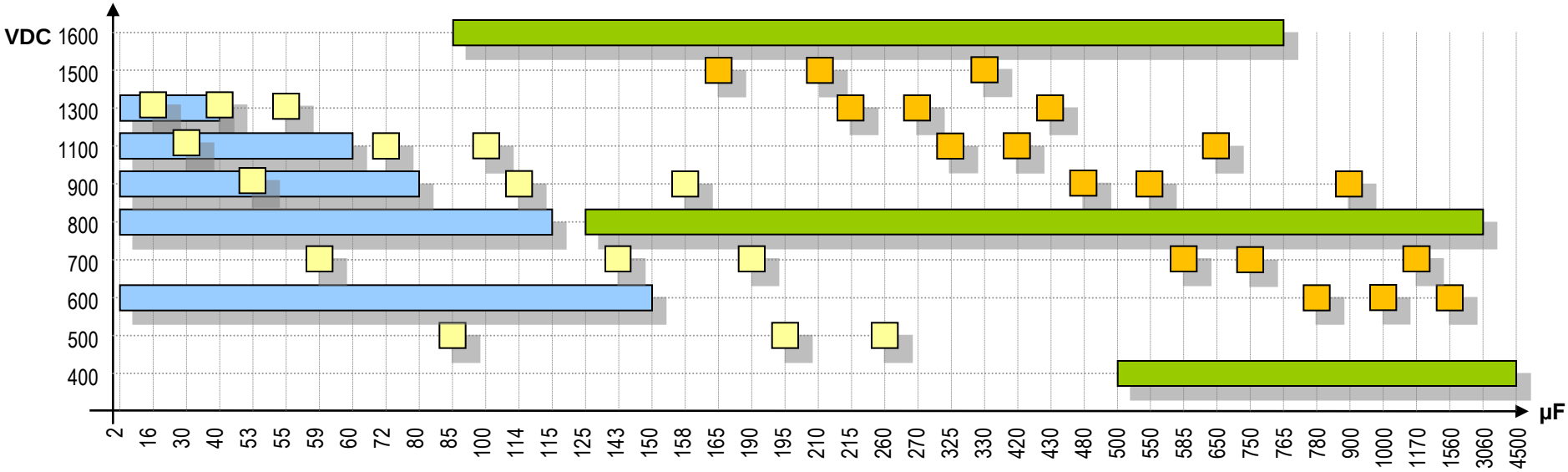
DC-Link Characteristics

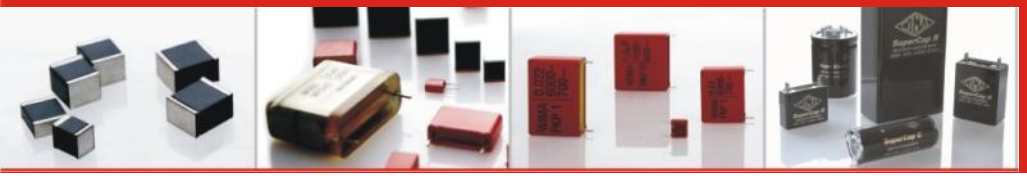
- Very high volume / capacitance ratio
- High voltage rating per component
- Very low dissipation factor (ESR)
- Very high insulation resistance
- Excellent self-healing properties
- Long life expectancy
- Non-polar construction
- Particularly reliable contact configuration
- High shock and vibration resistance
- Outstanding mechanical stability
- Solvent-resistant, flame retardant plastic case (in accordance with UL 94 V-0)



WIMA DC-LINK Portfolio

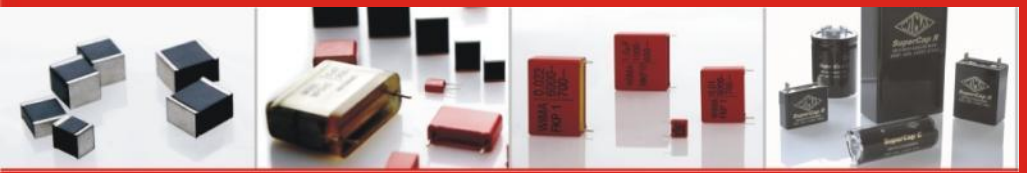






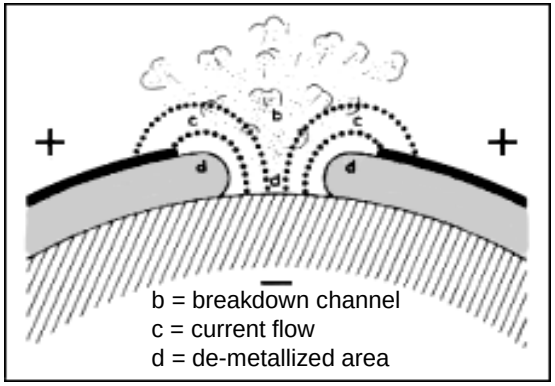
Requirements and Technical Solutions

Basic Criteria	Technical Solutions
■ High ripple current capability ■ Low ESR & ESL	■ Wound film technology ■ PP film material ■ Terminal configurations
■ High self-healing capability ■ Thermal / electrical stability ■ Reliability	■ Metallized plastic film
■ High mechanical performance	■ Plastic case (UL 94 V-0) ■ Terminal robustness (according to capacitor size)

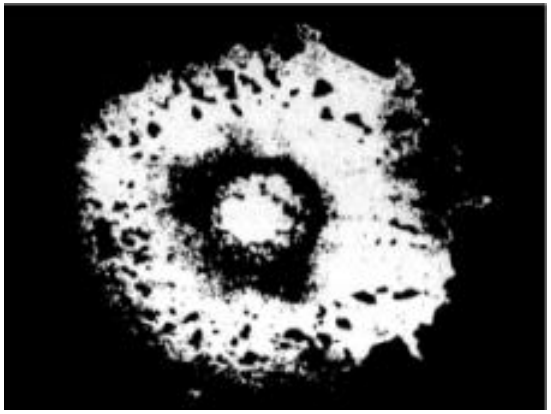


Wound Film Technology

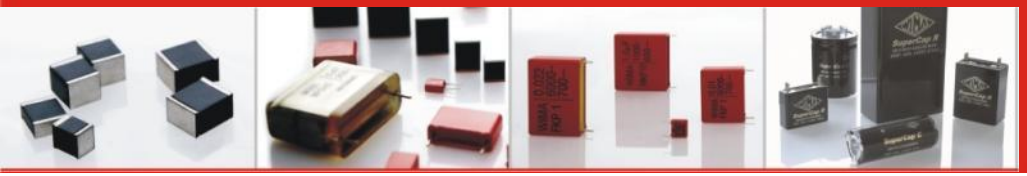
- During operation voltage spikes and/or high temperature may impact the capacitor
- An electrical breakdown occurs causing temperatures of several thousand °C
- The metallization evaporates in the area of the break-through channel
- A metal-free zone is created isolating the area electrically.
- The capacitor has regenerated (self-healed) completely.



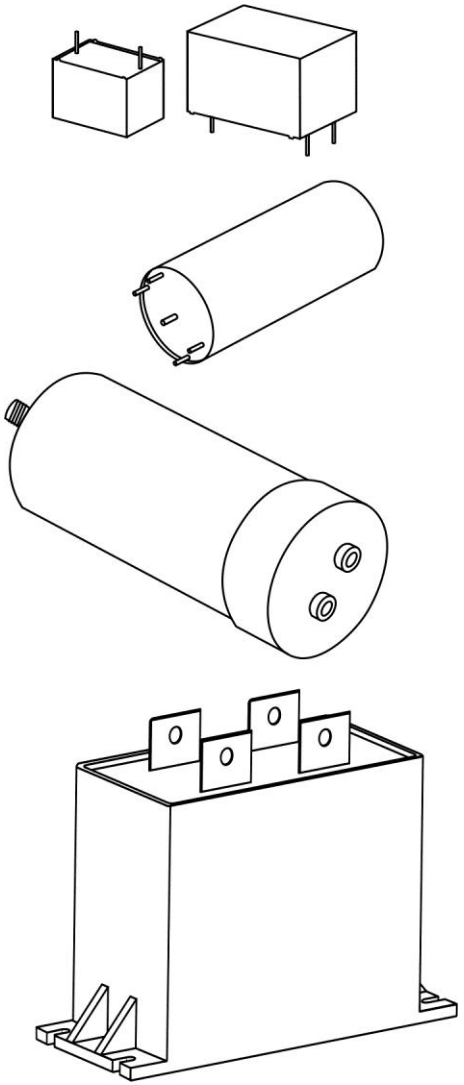
Schematic depiction of the self-healing process



Isolated area after the self-healing process



Terminal Configurations



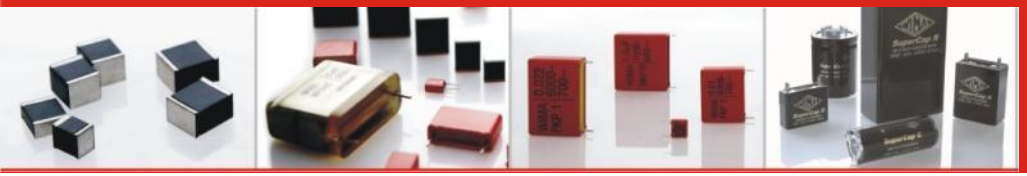
DC-Link Termination Options:

- Particularly reliable contact-configurations, 2-pin and 4-pin versions (screwable plate versions on request)
  → **DC-LINK MKP 4**

- Cylindrical capacitor body with pin connections for PCB mounting
  → **DC-LINK MKP 5**

- Cylindrical capacitor body with M6 screw connections and M12 screw bolt for bus bar mounting
  → **DC-LINK MKP 6**

- Versatile and safe contact configurations by screwable plates
  → **DC-LINK HC**



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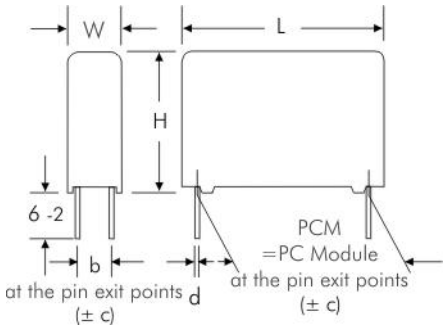
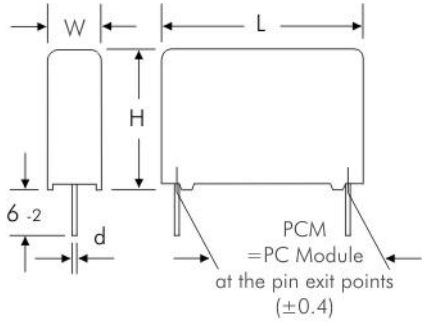
Terminal Configurations

DC-LINK MKP 4:

- 2-pin or 4-pin version (screwable plate versions on request)



W	PCM	b	d	c
19	37.5	12.5	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

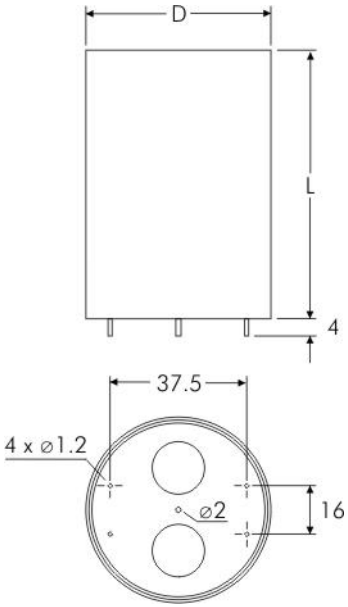


PCM	d
27.5	0.8
37.5	1

Capacitors are non-polarized

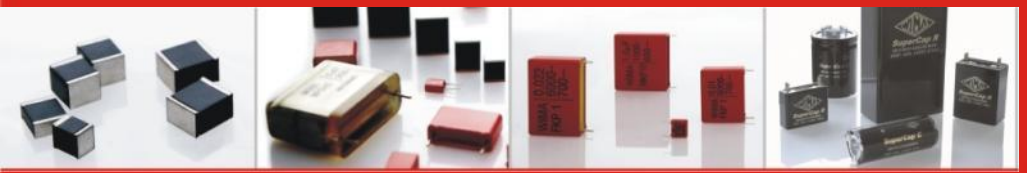
DC-LINK MKP 5:

- Cylindrical capacitor body with pin connections for PCB mounting



D	L
50	57
50	95
50	120

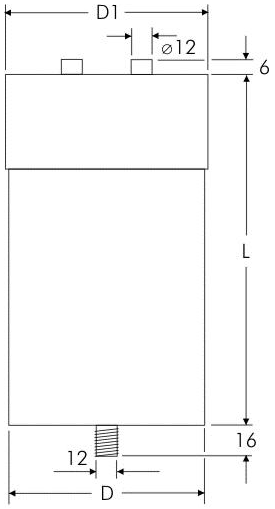
Capacitors are non-polarized. The centre termination is designed as one pole whereas the four outer terminations form the other pole. The sum of the outer terminations' diameters is virtually identical with the diameter of the centre termination.



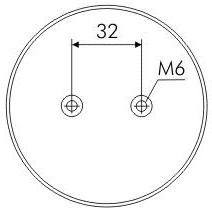
Terminal Configurations

DC-LINK MKP 6:

- Cylindrical capacitor body with screw connections for bus bar mounting



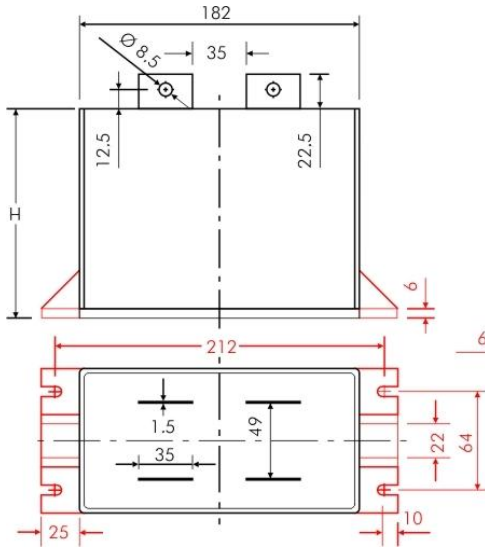
D	D1	L
85	86	120
85	86	132
85	86	210



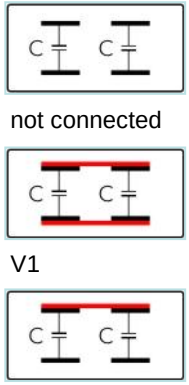
Capacitors are non-polarized and are designed with two M6 screw connections and a M12 earth bolt.

DC-LINK HC:

- In rectangular plastic case or as moulded version with screwable plate connections

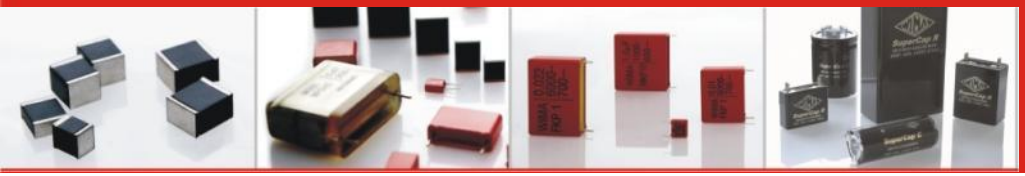


Wiring versions



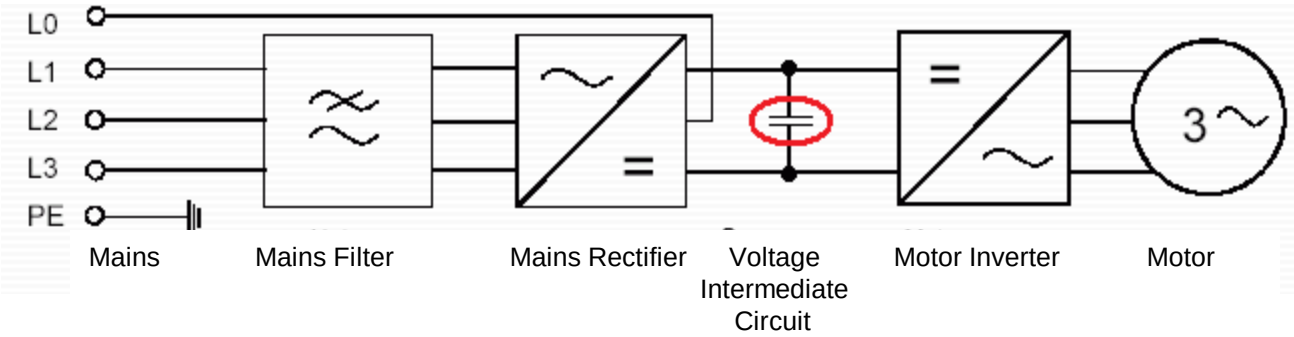
- optional screw fixing

Capacitors are non-polarized and can be connected by user „on capacitance“ (V1) or „on voltage“ (V2). Customized solutions on request.



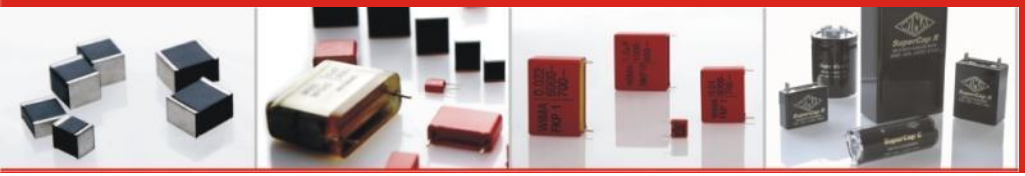
Application: Frequency Converter

Speed Adjustment and Control of Three-Phase AC Motors

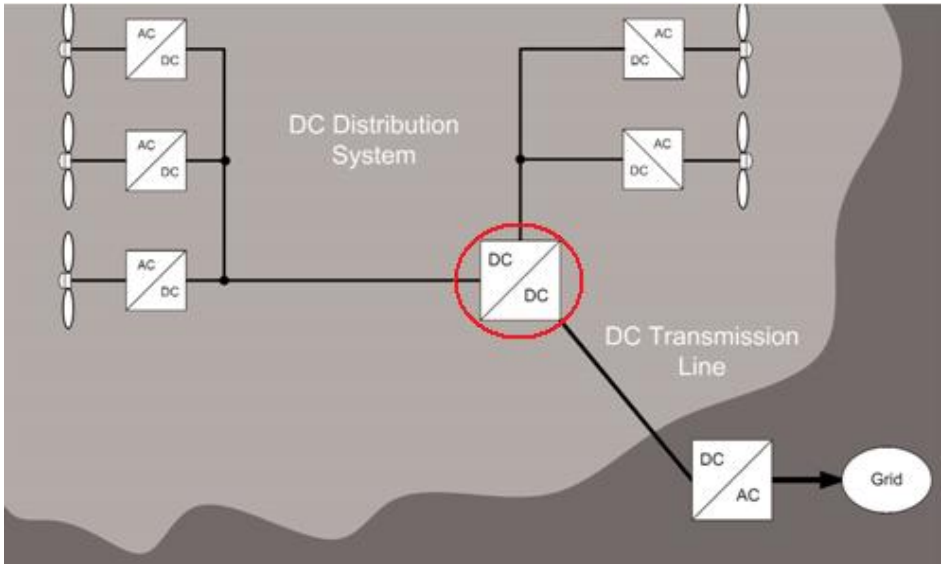


Frequency Converters are designed for starting, braking, speed adjustment as well as control or positioning of three-phase AC motors.

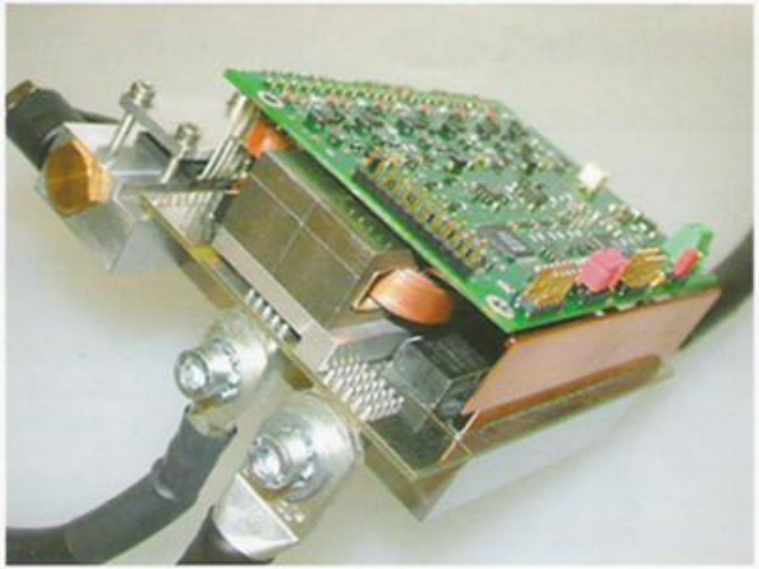
Fields of application: Trains, Freight Elevators, Wind Power Plants



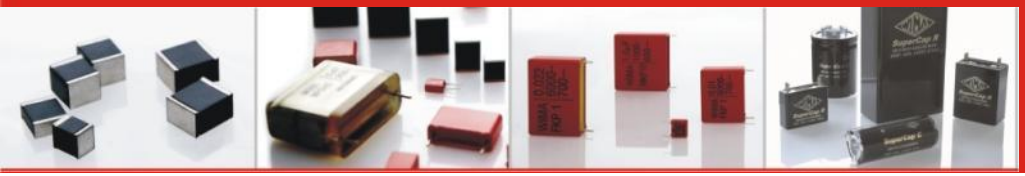
Application: DC/DC Converters



Layout of a DC distribution network for offshore windparks



DC/DC converter



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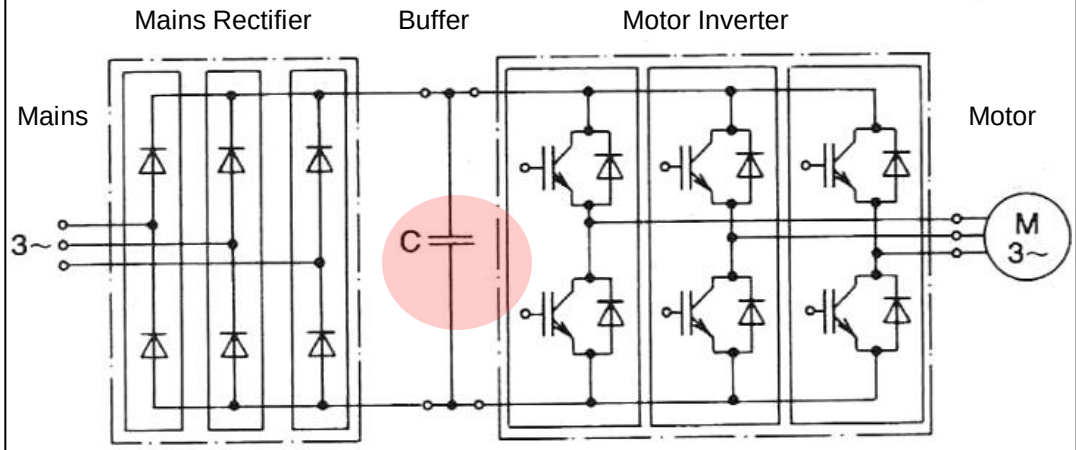
Typical Converter Circuit using a DC-Link Capacitor

Requirements for DC-LINK

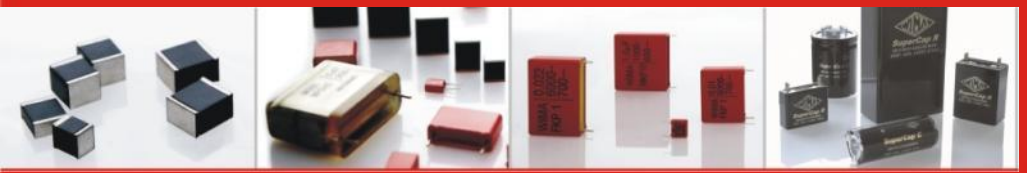
- For plastic film capacitors highest volume/capacitance ratio combined with high DC voltage strength by self-healing capability

- Intermediate circuit voltage =/> 450 V

- High ripple current capability and resistance against superimposed AC- and pulse voltage respectively



DC capacitor as intermediate circuit buffer



WIMA DC-LINK MKP 4

Metallized Polypropylene (PP) - Capacitors for DC-Link Applications

Special Features

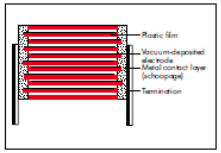
- **Capacitances up to 150 µF**
- **High volume/capacitance ratio**
- **Excellent self-healing properties**
- **Very low dissipation factor**
- **High reliability**
- **2-pin and 4-pin contact configuration (plate versions on request)**
- **According to RoHS 2002/95/EC**

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.
Epoxy resin seal: Red

Electrical Data

Capacitance range: 2 µF to 150 µF
Rated voltages: 600 VDC, 800 VDC, 900 VDC, 1100 VDC, 1300 VDC
Capacitance tolerances: ±20%, ±10%, ±5%
Operating temperature range: –55° C to +105° C (hot spot including self-heating)
Climatic test category: 55/085/56 in accordance with IEC
Insulation resistance at +20° C:
≥ 30 000 sec (MΩ x µF)
(mean value: 100 000 sec)
Measuring voltage: 100 V/1 min.
Dissipation factors at +20° C:
tan δ ≤ 10×10^{-4} at 1 kHz (C ≤ 50 µF)
tan δ ≤ 15×10^{-4} at 1 kHz (C > 50 µF)
Test voltage: 1.2 U_r, 2sec
Dielectric absorption: 0.05 %
Voltage and current derating:
A derating factor of 1.35% per K must be applied from +85° C for DC voltages and from +70° C for AC currents (I_{rms}). Additionally a derating factor of 4.5% per K must be applied from +85° C for AC currents (I_{rms})
Maximum pulse rise time:

PCM	max. pulse rise time V/µsec at T_A < 40° C				
	600 VDC	800 VDC	900 VDC	1100 VDC	1300 VDC
27.5	19	21	25	31	36
37.5	14	15	16	21	25
52.5	10	12	13	15	18

for pulses equal to the rated voltage

Reliability: Operational life > 100 000 hours (U$_r$ and 70° C)
Failure rate λ_0 (0.5 x U$_r$ and 40° C)

$\Pi = \lvert C_N \text{ [µF]} \times U_r \text{ [V]} \rvert$	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

Specific dissipation:

Box size W x H x L in mm	Specific dissipation in Watts per K above the ambient temperature
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

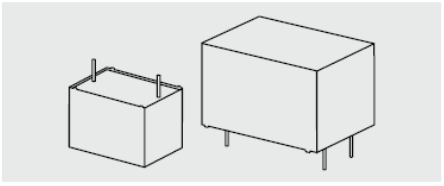
* other box sizes see main catalogue.

Packing

Transportation-safe packing in cardboard boxes.
Packing units:

L	pcs. per packing unit
31.5	100
41.5	100
57	50

For further details and graphs please refer to Technical Information.



08.11

WIMA DC-LINK MKP 4

Continuation

General Data

Capacitance	W	H	L	PCM**	Pin	600 VDC (70° C) / 450 VDC (85° C) I_S A	I_{rms} (10 kHz)* A	ESR (10 kHz)* mΩ	Part number
2 µF	9	19	31.5	27.5	2	38	2	56	DCP4042006A_____
5 „	13	24	31.5	27.5	2	95	3.5	22	DCP4045006D_____
7 „	15	26	31.5	27.5	2	133	4.5	16	DCP4047006F_____
10 µF	17	29	31.5	27.5	2	190	6	11	DCP4051006G_____
15 „	17	34,5	31.5	27.5	2	285	7.5	7.4	DCP4051506J_____
20 „	20	39,5	31.5	27.5	2	380	9	6.2	DCP4052006J_____
	20	39,5	41.5	37.5	2/4	280	10	6.2	DCP4052007G_____
25 „	20	39,5	41.5	37.5	2/4	350	11.5	5	DCP4052507G_____
30 „	24	45,5	41.5	37.5	2/4	420	14	4.1	DCP4053007H_____
35 „	24	45,5	41.5	37.5	2/4	490	14.5	3.8	DCP4053507H_____
40 „	31	46	41.5	37.5	2/4	560	16.5	3.3	DCP4054007J_____
45 „	31	46	41.5	37.5	2/4	630	17	3.2	DCP4054507J_____
50 „	35	50	41.5	37.5	2/4	700	19	2.9	DCP4055007J_____
55 „	35	50	41.5	37.5	2/4	770	17	3.8	DCP4055507J_____
60 „	35	50	41.5	37.5	2/4	840	17.5	3.4	DCP4056007J_____
65 „	40	55	41.5	37.5	2/4	910	19.5	3.3	DCP4056507K_____
	35	50	57	52.5	4	650	20	3.3	DCP4056508A_____
70 „	40	55	41.5	37.5	2/4	980	20	3.1	DCP4057007K_____
	35	50	57	52.5	4	700	20.5	3.1	DCP4057008A_____
75 „	40	55	41.5	37.5	2/4	1050	20.5	3	DCP4057507K_____
	35	50	57	52.5	4	750	21	3	DCP4057508A_____
80 „	40	55	41.5	37.5	2/4	1120	22	2.6	DCP4058007K_____
	35	50	57	52.5	4	800	22	2.6	DCP4058008A_____
85 „	35	50	57	52.5	4	850	22.5	2.1	DCP4058508A_____
90 „	35	50	57	52.5	4	900	23.5	1.9	DCP4059008A_____
95 „	45	55	57	52.5	4	950	24	2.8	DCP4059508B_____
100 µF	45	55	57	52.5	4	1000	25	2.6	DCP4061008B_____
110 „	45	55	57	52.5	4	1100	26.5	2.3	DCP4061108B_____
115 „	45	65	57	52.5	4	1150	27.5	2.5	DCP4061158C_____
120 „	45	65	57	52.5	4	1200	28	2.3	DCP4061208C_____
130 „	45	65	57	52.5	4	1300	29.5	2.1	DCP4061308C_____
140 „	45	65	57	52.5	4	1400	31	1.9	DCP4061408C_____
150 „	45	65	57	52.5	4	1500	33	1.7	DCP4061508C_____

New box sizes, values and ranges.

* General guide

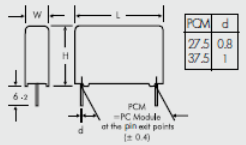
** PCM = Printed circuit module – pin spacing

Dims. in mm.

Part number completion:

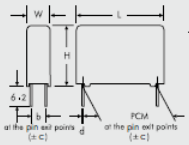
Version code:	2-pin	– D2
	4-pin	– D4
Tolerance:	20 %	– M
	10 %	– K
	5 %	– J
Packing:	bulk	– S
Pin length:	6-2	– SD

2-pin version



PCM	d
27.5	0.8
37.5	1

4-pin version



W	PCM	b	d	c
19	37.5	12.5	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

Continuation next page

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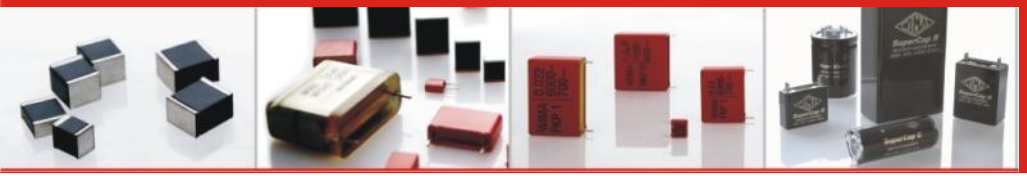

WIMA DC-LINK MKP 4

Continuation

General Data

Capacitance	W	H	L	PCM**	Pin	I_S A	I_{rms} (10 kHz)* A	ESR (10 kHz)* mΩ	Part number
800 VDC (70° C) / 700 VDC (85° C)									
2 µF	9	19	31.5	27.5	2	42	2	52	DCP4L042006A_____
5 „	13	24	31.5	27.5	2	105	4	21	DCP4L045006D_____
7 „	17	29	31.5	27.5	2	147	5	15	DCP4L047006G_____
10 µF	17	34.5	31.5	27.5	2	210	6.5	10	DCP4L051006I_____
15 „	20	39.5	31.5	27.5	2	315	9	6.9	DCP4L051506J_____
	20	39.5	41.5	37.5	2/4	225	9.5	6.9	DCP4L051507G_____
20 „	20	39.5	41.5	37.5	2/4	300	10	6.2	DCP4L052007G_____
25 „	24	45.5	41.5	37.5	2/4	375	12.5	5	DCP4L052507H_____
30 „	24	45.5	41.5	37.5	2/4	450	14	4.1	DCP4L053007H_____
35 „	31	46	41.5	37.5	2/4	525	15.5	3.8	DCP4L053507I_____
40 „	31	46	41.5	37.5	2/4	600	16.5	3.3	DCP4L054007I_____
45 „	35	50	41.5	37.5	2/4	675	17.5	3.4	DCP4L054507J_____
50 „	35	50	41.5	37.5	2/4	750	19	3	DCP4L055007J_____
55 „	40	55	41.5	37.5	2/4	825	19.5	3.2	DCP4L055507K_____
60 „	40	55	41.5	37.5	2/4	900	20.5	2.9	DCP4L056007K_____
	35	50	57	52.5	4	720	21.5	2.9	DCP4L056008A_____
65 „	35	50	57	52.5	4	780	22.5	2.2	DCP4L056508A_____
70 „	45	55	57	52.5	4	840	23.5	3	DCP4L057008B_____
75 „	45	55	57	52.5	4	900	24	2.9	DCP4L057508B_____
80 „	45	55	57	52.5	4	960	24.5	3	DCP4L058008B_____
85 „	45	65	57	52.5	4	1020	25	2.6	DCP4L058508C_____
90 „	45	65	57	52.5	4	1080	25.5	2.5	DCP4L059008C_____
95 „	45	65	57	52.5	4	1140	26	2.4	DCP4L059508C_____
100 µF	45	65	57	52.5	4	1200	26.5	2.3	DCP4L061008C_____
110 „	45	65	57	52.5	4	1320	27.5	2.2	DCP4L061108C_____
115 „	45	65	57	52.5	4	1380	28	2.1	DCP4L061158C_____

Capacitance	W	H	L	PCM**	Pin	I_S A	I_{rms} (10 kHz)* A	ESR (10 kHz)* mΩ	Part number
900 VDC (70° C) / 760 VDC (85° C)									
2 µF	11	21	31.5	27.5	2	50	2.5	44	DCP4N042006B_____
5 „	17	29	31.5	27.5	2	125	4.5	18	DCP4N045006G_____
7 „	17	34.5	31.5	27.5	2	175	6	13	DCP4N047006I_____
10 µF	20	39.5	31.5	27.5	2	250	8	8.8	DCP4N051006J_____
	20	39.5	41.5	37.5	2/4	160	8.5	8.8	DCP4N051007G_____
15 „	20	39.5	41.5	37.5	2/4	240	10.5	5.8	DCP4N051507G_____
20 „	24	45.5	41.5	37.5	2/4	320	13	4.8	DCP4N052007H_____
25 „	31	46	41.5	37.5	2/4	400	15.5	3.8	DCP4N052507I_____
30 „	31	46	41.5	37.5	2/4	480	15.5	3.7	DCP4N053007I_____
35 „	35	50	41.5	37.5	2/4	560	18	3.2	DCP4N053507J_____
40 „	40	55	41.5	37.5	2/4	640	19.5	3.2	DCP4N054007K_____
	35	50	57	52.5	4	520	20.5	3.2	DCP4N054008A_____
45 „	35	50	57	52.5	4	585	21	2.8	DCP4N054508A_____
50 „	35	50	57	52.5	4	650	22	3.3	DCP4N055008A_____
55 „	45	55	57	52.5	4	715	22.5	3.2	DCP4N055508B_____
60 „	45	55	57	52.5	4	780	23	3	DCP4N056008B_____
65 „	45	55	57	52.5	4	845	24	2.9	DCP4N056508B_____
70 „	45	65	57	52.5	4	910	24.5	3.3	DCP4N057008C_____
75 „	45	65	57	52.5	4	975	25	2.9	DCP4N057508C_____
80 „	45	65	57	52.5	4	1040	25.5	2.8	DCP4N058008C_____

New box sizes, values and ranges.

* General guide

** PCM – Printed circuit module – pin spacing

Dims. in mm.

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WIMA DC-LINK MKP 4

Continuation

General Data

Capacitance	W	H	L	PCM**	Pin	I_S A	I_{rms} (10 kHz)* A	ESR (10 kHz)* mΩ	Part number
1100 VDC (70° C) / 920 VDC (85° C)									
2 µF	13	24	31.5	27.5	2	62	3	36	DCP4P042006D_____
5 „	17	34.5	31.5	27.5	2	155	5.5	14	DCP4P045006I_____
7 „	20	39.5	31.5	27.5	2	217	7.5	10	DCP4P047006J_____
	19	32	41.5	37.5	2/4	147	7.5	10	DCP4P047007F_____
10 µF	20	39.5	41.5	37.5	2/4	210	9.5	7.2	DCP4P051007G_____
15 „	31	46	41.5	37.5	2/4	315	13	5.4	DCP4P051507I_____
20 „	35	50	41.5	37.5	2/4	420	15	4.7	DCP4P052007J_____
25 „	40	55	41.5	37.5	2/4	525	16.5	4.6	DCP4P052507K_____
30 „	35	50	57	52.5	4	450	17.5	4.4	DCP4P053008A_____
35 „	35	50	57	52.5	4	525	18	4	DCP4P053508A_____
40 „	45	55	57	52.5	4	600	19	4.5	DCP4P054008B_____
45 „	45	55	57	52.5	4	675	20	4.1	DCP4P054508B_____
50 „	45	65	57	52.5	4	750	21	4.1	DCP4P055008C_____
55 „	45	65	57	52.5	4	825	22	3.8	DCP4P055508C_____
60 „	45	65	57	52.5	4	900	23	3.5	DCP4P056008C_____

Capacitance	W	H	L	PCM**	Pin	I_S A	I_{rms} (10 kHz)* A	ESR (10 kHz)* mΩ	Part number
1300 VDC (70° C) / 1100 VDC (85° C)									
2 µF	15	26	31.5	27.5	2	72	3	36	DCP4R242006F_____
5 „	20	39.5	31.5	27.5	2	180	6	14	DCP4R245006J_____
	20	39.5	41.5	37.5	2/4	125	7	14	DCP4R245007G_____
7 „	20	39.5	41.5	37.5	2/4	175	8	10	DCP4R247007G_____
10 µF	24	45.5	41.5	37.5	2/4	250	10.5	7.2	DCP4R251007H_____
15 „	31	46	41.5	37.5	2/4	375	14	4.8	DCP4R251507I_____
20 „	40	55	41.5	37.5	2/4	500	17.5	4	DCP4R252007K_____
	35	50	57	52.5	4	360	18	4	DCP4R252008A_____
25 „	35	50	57	52.5	4	450	19	3.6	DCP4R252508A_____
30 „	45	55	57	52.5	4	540	20	4	DCP4R253008B_____
35 „	45	65	57	52.5	4	630	21	4.1	DCP4R253508C_____
40 „	45	65	57	52.5	4	720	22	3.7	DCP4R254008C_____

New box sizes, values and ranges.

* General guide

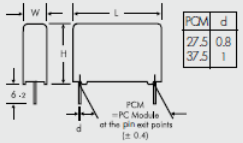
** PCM – Printed circuit module – pin spacing

Dims. in mm.

Part number completion:

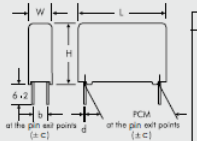
Version code:	2-pin	– D2
	4-pin	– D4
Tolerance:	20 %	– M
	10 %	– K
	5 %	– J
Packing:	bulk	– S
Pin length:	6-2	– SD

2-pin version



PCM	d
27.5	0.8
37.5	1

4-pin version



W	PCM	b	d	c
19	37.5	12.5	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

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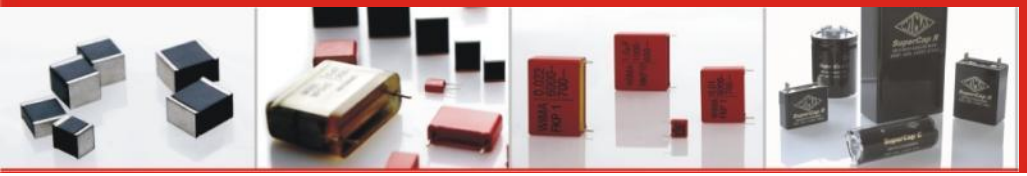


WIMA DC-LINK MKP 5 NEW

Metallized Polypropylene (PP) - Capacitors in Cylindrical Case for DC-Link Applications

Special Features

- Very high volume/capacitance ratio
- Self-healing properties
- With cylindrical plastic case for PCB mounting
- Dry construction without electrolyte or oil
- No internal fuse required
- Negative capacitance change versus temperature
- Very low dielectric absorption
- According to RoHS 2002/95/EC

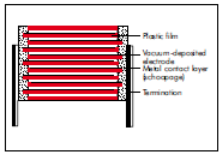
Typical Applications

DC capacitors with high capacitances for applications in power electronics also at non-sinusoidal voltages and currents e.g. in

- Wind power systems
- Inverters

Construction

Dielectric:
Polypropylene (PP) film
Capacitor electrodes:
Vacuum-deposited
Internal construction:



Encapsulation:
Solvent-resistant, flame-retardant plastic case with PU-sealing, UL 94 V-0
Terminations:
Tinned wire.
Marking:
Colour: Grey. Marking: Black on silver label.

Electrical Data

Capacitance range: 16 µF to 260 µF
Rated voltages: 500 VDC, 700 VDC, 900 VDC, 1100 VDC, 1300 VDC
Capacitance tolerances: ±20%, ±10%
Operating temperature range:
–40° C to +85° C
Insulation resistance at +20° C:
≥ 5000 sec (MΩ x µF)
(mean value: 20 000 sec)
Measuring voltage: 100 V/1 min.

Dielectric loss factor tan δ_D:
2 x 10-4
Test voltage: 1.5 U_R, 2sec
Dielectric absorption:
0.05 %
Reliability:
Operational life > 100 000 hours at 40° C

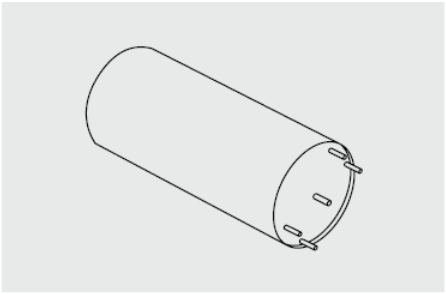
Mounting Recommendation

Excessive mechanical strain, e.g. pressure or shock onto the capacitor body, is to be avoided during mounting and usage of the capacitors.

Packing

Transportation-safe packing in cardboard boxes.

For further details and graphs please refer to Technical Information.



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WIMA DC-LINK MKP 5

Continuation

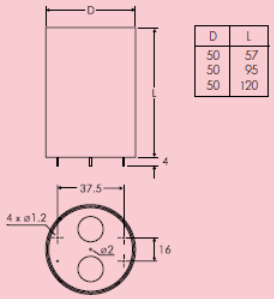
General Data

U_R	C_N	D x L mm	I_{rms} (1 kHz)** A	ESR (1 kHz)** mΩ	Approx. weight g	Part number
500 VDC	85 µF	50 x 57	35	2.0	120	DCP5H15850D000_ _ _ _
	195 „	50 x 95	32	3.4	190	DCP5H16195D100_ _ _ _
	260 „	50 x 120	30	5.2	220	DCP5H16260D200_ _ _ _
700 VDC	59 µF	50 x 57	30	1.9	120	DCP5K05590D000_ _ _ _
	143 „	50 x 95	32	3.5	190	DCP5K06143D100_ _ _ _
	190 „	50 x 120	25	4.7	220	DCP5K06190D200_ _ _ _
900 VDC	53 µF	50 x 57	35	2.3	120	DCP5N05530D000_ _ _ _
	114 „	50 x 95	32	4.2	190	DCP5N06114D100_ _ _ _
	158 „	50 x 120	30	6.0	220	DCP5N06158D200_ _ _ _
1100 VDC	30 µF	50 x 57	20	2.8	120	DCP5P05300D000_ _ _ _
	72 „	50 x 95	25	4.5	190	DCP5P05720D100_ _ _ _
	100 „	50 x 120	25	6.1	220	DCP5P06100D200_ _ _ _
1300 VDC	16 µF	50 x 57	20	3.0	120	DCP5R25160D000_ _ _ _
	40 „	50 x 95	25	5.7	190	DCP5R25400D100_ _ _ _
	55 „	50 x 120	25	7.7	220	DCP5R25550D200_ _ _ _

** General guide

Dims. in mm.

Part number completion:	
Tolerance:	20 % – M
	10 % – K
Packing:	bulk – S
Pin length:	none – 00



D	L
50	57
50	95
50	120

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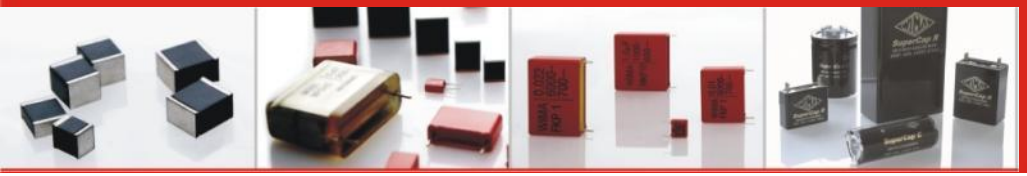


WIMA DC-LINK MKP 6 NEW

Metallized Polypropylene (PP) - Capacitors in Cylindrical Case for DC-Link Applications

Special Features

- **Very high volume/capacitance ratio**
- **Self-healing properties**
- **With cylindrical aluminium case for bus bar mounting**
- **Dry construction without electrolyte or oil**
- **No internal fuse required**
- **Negative capacitance change versus temperature**
- **Very low dielectric absorption**
- **According to RoHS 2002/95/EC**

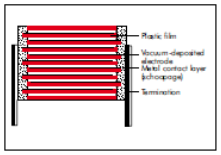
Typical Applications

DC capacitors with high capacitances for applications in power electronics also at non-sinusoidal voltages and currents e.g. in

- **Wind power systems**
- **Inverters**

Construction

Dielectric:
Polypropylene (PP) film
Capacitor electrodes:
Vacuum-deposited
Internal construction:



Encapsulation:
Aluminium case with PU-sealing, UL 94 V-0
Terminations:
Screw connection M6, screw bolt M12 x 16.
Marking:
Colour: Metallic. Marking: Black on silver label.

Electrical Data

Capacitance range: 165 µF to 1560 µF
Rated voltages: 600 VDC, 700 VDC, 900 VDC, 1100 VDC, 1300 VDC, 1500 VDC
Capacitance tolerances: ±20%, ±10%
Operating temperature range: –40° C to +85° C
Insulation resistance at +20° C:
≥ 5000 sec (MΩ x µF)
(mean value: 20 000 sec)
Measuring voltage: 100 V/1 min.
Dielectric loss factor tan δ_D:
2 x 10-4
Test voltage: 1.5 U_R, 2sec
Dielectric absorption:
0.05 %
Reliability:
Operational life > 100 000 hours at 40° C

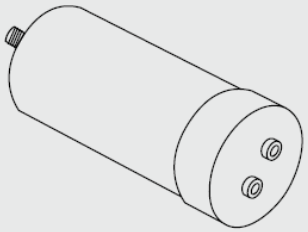
Mounting Recommendation

Excessive mechanical strain, e.g. pressure or shock onto the capacitor body, is to be avoided during mounting and usage of the capacitors.

Packing

Transportation-safe packing in cardboard boxes.

For further details and graphs please refer to Technical Information.



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WIMA DC-LINK MKP 6

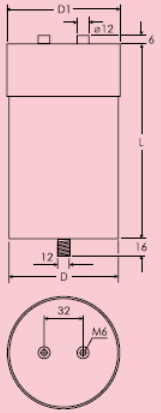
Continuation

General Data

U_R	C_N	D x L mm	I_{rms} (max.)** A	ESR (1 kHz)** mΩ	Approx. weight g	Part number
600 VDC	780 µF	85 x 120	30	1.6	700	DCP6I06780E000_ _ _ _
	1000 „	85 x 132	35	1.7	850	DCP6I07100E100_ _ _ _
	1560 „	85 x 210	60	1.3	1400	DCP6I07156E200_ _ _ _
700 VDC	585 µF	85 x 120	30	1.7	700	DCP6K06585E000_ _ _ _
	750 „	85 x 132	35	1.9	850	DCP6K06750E100_ _ _ _
	1170 „	85 x 210	60	1.3	1400	DCP6K07117E200_ _ _ _
900 VDC	480 µF	85 x 120	30	1.7	700	DCP6N06480E000_ _ _ _
	550 „	85 x 132	36	1.8	850	DCP6N06550E100_ _ _ _
	900 „	85 x 210	60	1.5	1400	DCP6N06900E200_ _ _ _
1100 VDC	325 µF	85 x 120	30	1.8	700	DCP6P06325E000_ _ _ _
	420 „	85 x 132	40	1.9	850	DCP6P06420E100_ _ _ _
	650 „	85 x 210	60	1.3	1400	DCP6P06650E200_ _ _ _
1300 VDC	215 µF	85 x 120	30	1.8	700	DCP6R26215E000_ _ _ _
	270 „	85 x 132	40	2.4	850	DCP6R26270E100_ _ _ _
	430 „	85 x 210	60	1.5	1400	DCP6R26430E200_ _ _ _
1500 VDC	165 µF	85 x 120	30	2.2	700	DCP6S06165E000_ _ _ _
	210 „	85 x 132	40	2.5	850	DCP6S06210E100_ _ _ _
	330 „	85 x 210	60	1.7	1400	DCP6S06330E200_ _ _ _

** General guide

Dims. in mm.



D	D1	L
85	86	120
85	86	132
85	86	210

Part number completion:	
Tolerance:	20 % – M
	10 % – K
Packing:	bulk – S
Pin length:	none – 00

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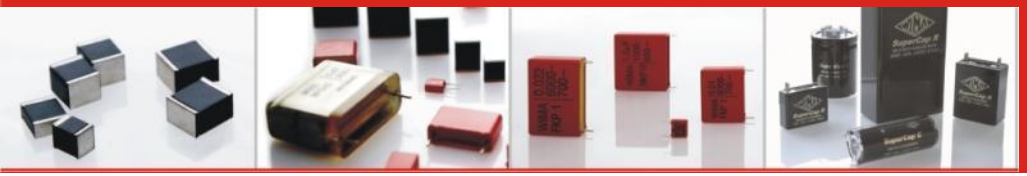


WIMA DC-LINK HC

Metallized Polypropylene (PP) - Capacitors for DC-Link Applications

Special Features

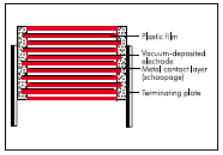
- **Very high volume/capacitance ratio**
- **Self-healing, internal safety disconnector**
- **Versatile and safe contact configurations by screwable plates**
- **Dry construction without electrolyte or oil**
- **Very low disipation factor**
- **Negative capacitance change versus temperature**
- **Very 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 resin seal (optional screw fixing) or moulded version (without screw fixing), UL 94 V-0.
Terminations:
Tinned plates, customized plate configurations are possible.
Marking:
Colour: Black. Marking: Gold.

Electrical Data

Capacitance range:
85 µF to 4500 µF
Rated voltages:
400 VDC, 800 VDC, 1600 VDC
Capacitance tolerances:
±20%, ±10%, (±5% available subject to special enquiry)
Operating temperature:
–55° C to +85° C
Insulation resistance at +20° C:
≥ 30 000 sec (MΩ x µF)
(mean value: 100 000 sec)
Measuring voltage: 100 V/1 min.
Dissipation factors at +20° C:
See General Data.
Test voltage: 1.1 U_r, 2 sec
Dielectric absorption:
0.05 %
Voltage derating:
A voltage derating factor of 1.35 % per K must be applied from +85° C for DC voltages and from +75° C for AC voltages.
Reliability:
Operational life > 100 000 hours at 40° C
Failure rate < 36 fit (0.5 x U_r and 40° C)
Specific dissipation:
See General Data.

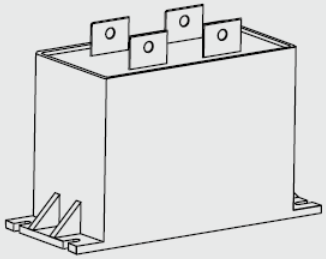
Mounting Recommendation

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 capacitor the screw torque is to be limited to max. 5 Nm.

Packing

Transportation-safe packing in cardboard boxes.

For further details and graphs please refer to Technical Information.



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WIMA DC-LINK HC

Continuation

General Data

Capacitance 400 VDC/180 VAC* V1	Capacitance 400 VDC/180 VAC* V2	Capacitance 800 VDC/360 VAC* V2	Size 182 x 94 x H in mm	Electrical parameters $I_{max.}$ A V1	$I_{max.}$ A V2	I_{rms} (1 kHz)** A V1	I_{rms} (1 kHz)** A V2	ESR (1 kHz)** mΩ V1	ESR (1 kHz)** mΩ V2	k_T W/K	tan δ** (x 10⁻⁴) 100 Hz	tan δ** (x 10⁻⁴) 1 kHz	Part number
2 x 250 µF	500 µF	125 µF	49	5000	1250	65.4	32.7	1.43	5.73	0.613	8	45	DCH3G06250__00_____
2 x 500 „	1000 „	250 „	77	10 000	2500	103.5	51.7	0.72	2.87	0.767	8	45	DCH3G06500__00_____
2 x 750 „	1500 „	375 „	105	15 000	3750	139.0	69.5	0.48	1.91	0.922	8	45	DCH3G06750__00_____
2 x 1000 „	2000 „	500 „	133	20 000	5000	173.3	86.7	0.36	1.43	1.076	8	45	DCH3G07100__00_____
2 x 1250 „	2500 „	625 „	161	25 000	6250	196.7	98.3	0.32	1.27	1.231	11	50	DCH3G07125__00_____
2 x 1500 „	3000 „	750 „	189	30 000	7500	228.5	114.3	0.27	1.06	1.385	11	50	DCH3G07150__00_____
2 x 1750 „	3500 „	875 „	217	35 000	8750	248.1	124.1	0.25	1.00	1.540	11	55	DCH3G07175__00_____
2 x 2000 „	4000 „	1000 „	245	40 000	10 000	278.3	139.2	0.22	0.88	1.695	14	55	DCH3G07200__00_____
2 x 2250 „	4500 „	1125 „	285	45 000	11 250	298.7	157.4	0.21	0.76	1.893	14	60	DCH3G07225__00_____

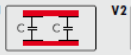
Capacitance 800 VDC/240 VAC* V1	Capacitance 800 VDC/240 VAC* V2	Capacitance 1600 VDC/480 VAC* V2	Size 182 x 94 x H in mm	Electrical parameters $I_{max.}$ A V1	$I_{max.}$ A V2	I_{rms} (1 kHz)** A V1	I_{rms} (1 kHz)** A V2	ESR (1 kHz)** mΩ V1	ESR (1 kHz)** mΩ V2	k_T W/K	tan δ** (x 10⁻⁴) 100 Hz	tan δ** (x 10⁻⁴) 1 kHz	Part number
2 x 170 µF	340 µF	85 µF	49	3740	935	61.2	30.6	1.64	6.55	0.613	7	35	DCH4L06170__00_____
2 x 340 „	680 „	170 „	77	7480	1870	96.8	48.4	0.82	3.28	0.767	7	35	DCH4L06340__00_____
2 x 510 „	1020 „	255 „	105	11 220	2805	129.9	65.0	0.55	2.18	0.922	7	35	DCH4L06510__00_____
2 x 680 „	1360 „	340 „	133	14 960	3740	162.1	81.0	0.41	1.64	1.076	7	35	DCH4L06680__00_____
2 x 850 „	1700 „	425 „	161	18 700	4675	181.3	90.7	0.37	1.50	1.231	10	40	DCH4L06850__00_____
2 x 1020 „	2040 „	510 „	189	22 440	5610	210.7	105.3	0.31	1.25	1.385	10	40	DCH4L07102__00_____
2 x 1190 „	2380 „	595 „	217	26 180	6545	226.2	113.1	0.30	1.20	1.540	10	45	DCH4L07119__00_____
2 x 1360 „	2720 „	680 „	245	29 920	7480	253.7	126.9	0.26	1.05	1.695	12	45	DCH4L07136__00_____
2 x 1530 „	3060 „	765 „	285	33 660	8415	269.8	134.9	0.26	1.04	1.893	12	50	DCH4L07153__00_____

* AC voltages: f < 100 Hz
** General guide
The capacitors will be delivered without interconnection.

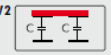
Insulated in the sense of a breakdown voltage of 2 x U_r between the individual capacitors.

External wiring versions (to be implemented by user):

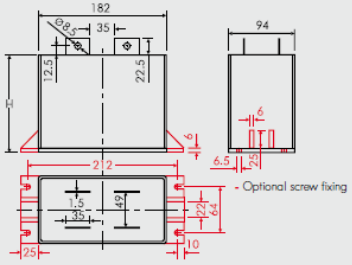
V1



V2



Customized solutions can be realized on request.



- Optional screw fixing

Part number completion:

Size W	H	L	Part number code for digit 11-12 moulded	boxed	box with screw fixing
94	49	182	**H0**	**I0**	**J0**
94	77	182	**H1**	**I1**	**J1**
94	105	182	**H2**	**I2**	**J2**
94	133	182	**H3**	**I3**	**J3**
94	161	182	**H4**	**I4**	**J4**
94	189	182	**H5**	**I5**	**J5**
94	217	182	**H6**	**I6**	**J6**
94	245	182	**H7**	**I7**	**J7**
94	285	182	**H8**	**I8**	**J8**

Tolerance: 20 % — M
10 % — K
5 % — J
Packing: bulk — S
Pin length: none — 00

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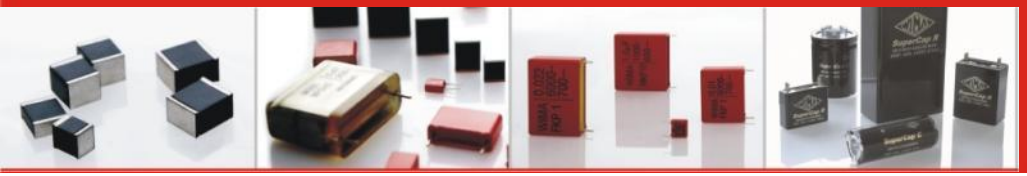
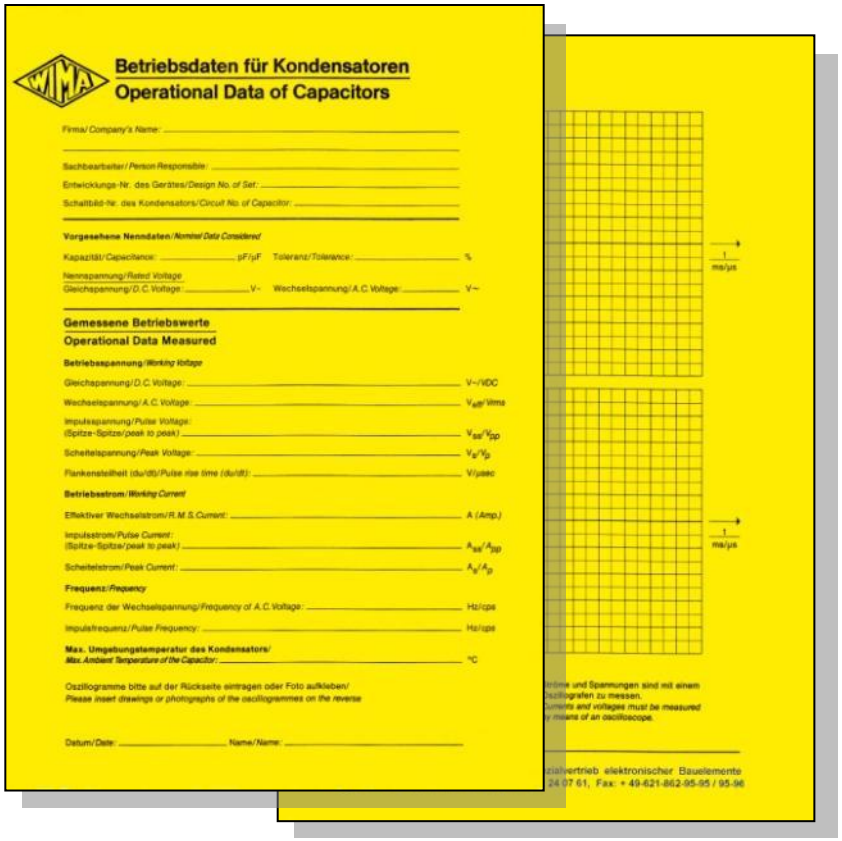


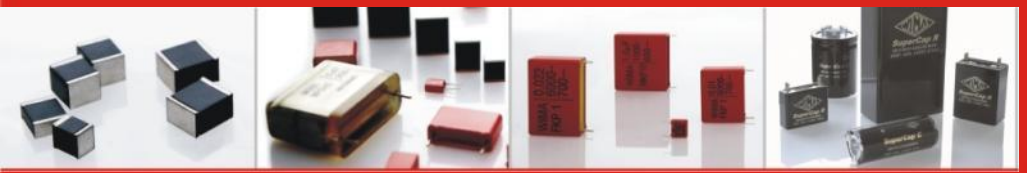
Selection of Capacitors for Customized Applications

Operational Data Required:

- **Electrical data of the capacitor**
  - Capacitance
  - Rated voltage (DC / AC)
  - Tolerance*
  - Dimensions* / PCM*
- **Electrical data of the application**
  - Voltage
  - Current
  - Pulse frequency / Repetition frequency
  - Time axis
  - Pulse rise time*
- **Application data**
  - Ambient temperature
  - Kind of application*
- **Oscillogram (voltage and current) appreciated**

*optional



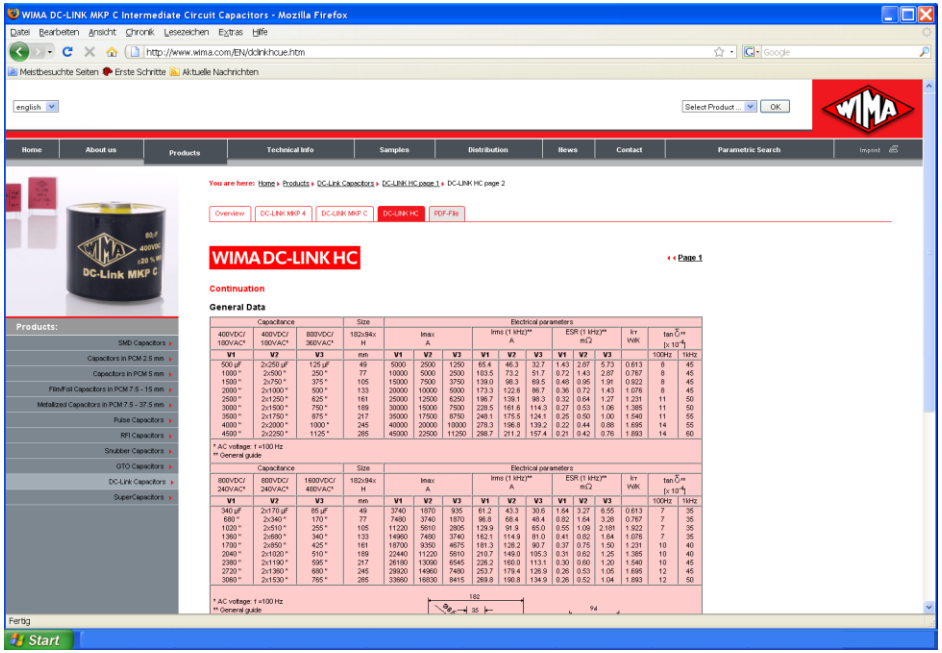


Conclusion

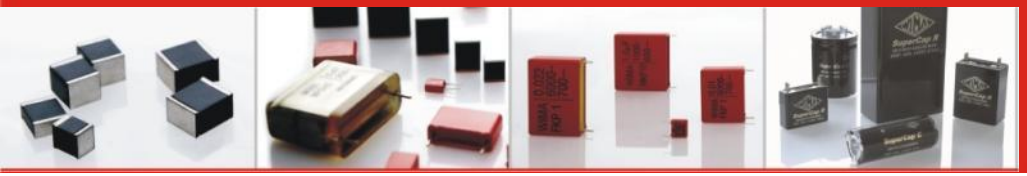
WIMA film capacitor technology is replacing more and more electrolytic capacitors in DC-Link applications

→ made possible due to:

- Longer life time and growing efficiency requirements in applications
- Parameter stability that makes the design easier
- New film cap designs with greater density of capacitance per volume (reducing the size)



For more information: **www.wima.com**



Thank You !

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