Film Capacitors

Metallized Polypropylene Film Capacitors (MKP)

Series/Type: **B32774 ... B32778**

Date: June 2018

EPCOS AG is a TDK Group Company.

MKP DC link – high density series up to 480 µF

Typical applications

- Frequency converters
- Industrial and high-end power supplies
- Solar inverters

Climatic

- Max. operating temperature: 105 °C (case)
- Climatic category (IEC 60068-1:2013): 40/105/56

Construction

- Dielectric: Polypropylene (MKP)
- Plastic case (UL 94 V-0)
- Epoxy resin sealing (UL 94 V-0)

Features

- Capacitance values up to 480 µF
- High CV product, compact
- Good self-healing properties
- Over-voltage capability
- Low losses with high current capability
- High reliability
- Long useful life
- RoHS-compatible

Terminals

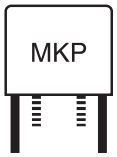
- Parallel wire leads, lead-free tinned
- 2-pin, 4-pin and 12-pin versions
- Standard lead lengths: 6 −1 mm

Marking

Manufacturer's logo and lot number, date code, rated capacitance (coded), capacitance tolerance (code letter) and rated DC voltage

Delivery mode

Bulk (untaped)



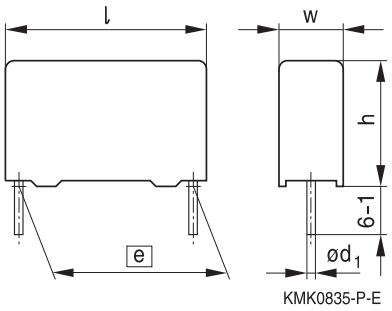
Dimensional drawings

Number of wires	Lead spacing e ±0.4	Lead diameter d_1 ±0.05	Type
2-pin	27.5	0.8	B32774D
2-pin	37.5	1.0	B32776E
2-pin	37.5	1.0	B32776T
4-pin	37.5	1.2	B32776G
4-pin	37.5	1.2	B32776T
4-pin	52.5	1.2	B32778T
4-pin	52.5	1.2	B32778G
12-pin	52.5	1.2	B32778J

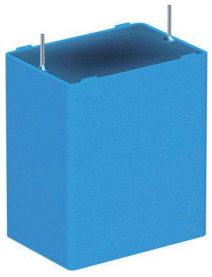
Dimensions in mm

Dimensional drawings 2-pin versions

B32774D, B32776E



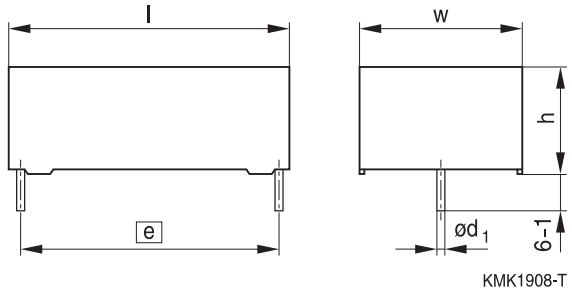
KMK0835-P-E



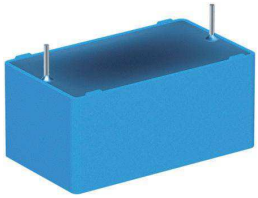
	B32774D	B32776E
Lead spacing e ±0.4:	27.5	37.5
Lead diameter d_1:	0.8	1.0

Dimensions in mm

B32776T (low profile)

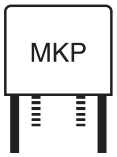


KMK1908-T



Lead spacing e ±0.4:	37.5
Lead diameter d_1:	1.0

Dimensions in mm

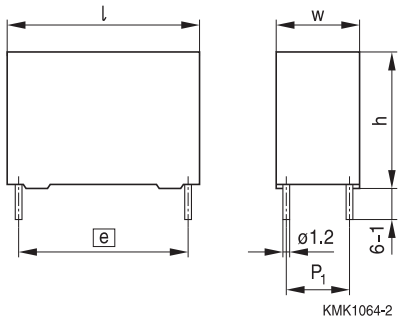


B32774 ... B32778

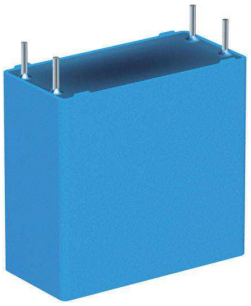
MKP DC link – high density series up to 480 µF

Dimensional drawings 4-pin versions

B32776G, B32778G



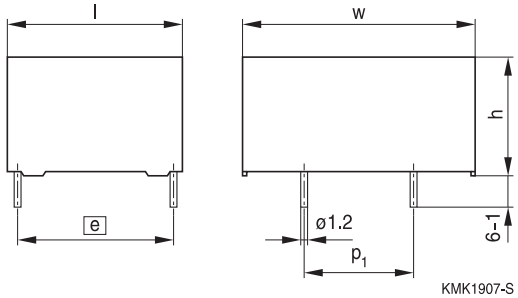
KMK1064-2



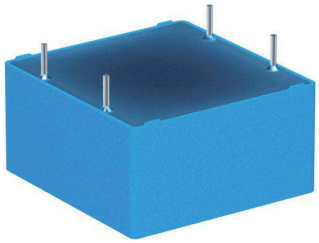
	B32776G	B32778G
Lead spacing e ±0.4:	37.5	52.5
Lead diameter d_1:	1.2	1.2

Dimensions in mm

B32776T, B32778T (low profile)



KMK1907-S

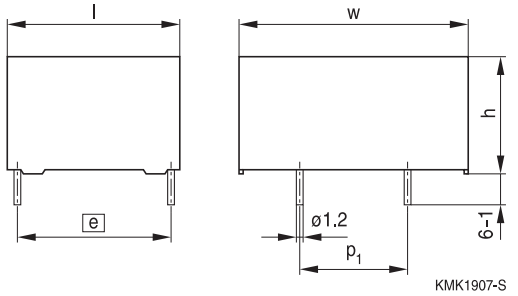


	B32776T	B32778T
Lead spacing e ±0.4:	37.5	52.5
Lead diameter d_1:	1.2	1.2

Dimensions in mm

Dimensional drawing 12-pin version

B32778J



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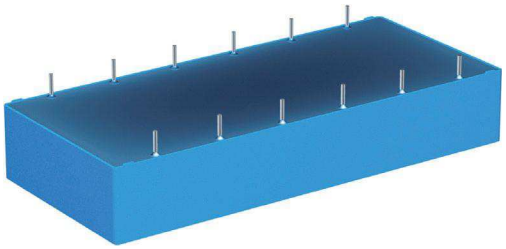
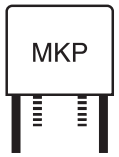


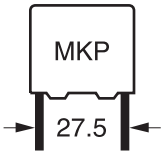
Lead spacing e ±0.4:	52.5
Lead diameter d_1:	1.2

Dimensions in mm



Overview of available types

Lead spacing	27.5 mm				37.5 mm					
Type	B32774				B32776					
Page	7				8					
V_R (V DC)	450	800	1100	1300	450	575	800	900	1100	1300
C_R (µF)										
1.5				■						
2.0			■							
2.7										■
3.0		■		■						
3.3			■							
3.5										■
3.9									■	
5.0	■	■	■	■				■	■	
6.8							■			
7.0			■							
7.5								■		
8.0										■
8.5						■	■			
9.0										■
10	■									■
12		■			■	■			■	■
13									■	
14							■		■	■
15							■	■		
16					■			■	■	■
20							■	■	■	
22	■						■	■	■	
25						■	■	■		
27						■				
30					■	■	■	■		
35					■	■	■			
40					■					
45						■				
50					■	■				
60					■					
65					■					



Ordering codes and packing units (lead spacing 27.5 mm)

C_R[1] µF	Max. dimensions w × h × l mm	Ordering code (composition see below)	$I_{RMS,max}$[2] 70 °C 10 kHz A	ESR_{typ} 70 °C 10 kHz mΩ	ESL_{typ}[3] 70 °C 10 kHz nH	tan δ 1 kHz 10^{-3}	tan δ 10 kHz 10^{-3}	Untaped pcs./ MOQ
$V_{R,70\,°C}$ = 450 V DC, $V_{op,85\,°C}$ = 450 V DC								
5.0	11.0 × 21.0 × 31.5	B32774D4505+000	5.0	21.1	19.0	1.2	10.7	2352
10.0	15.0 × 24.5 × 31.5	B32774D4106+000	8.0	10.9	24.0	1.2	11.0	1680
22.0	22.0 × 36.5 × 31.5	B32774D4226+000	14.5	5.4	30.0	1.3	12.1	784
$V_{R,70\,°C}$ = 800 V DC, $V_{op,85\,°C}$ = 700 V DC								
3.0	11.0 × 21.0 × 31.5	B32774D8305+000	4.5	24.8	19.0	0.9	7.6	2352
5.0	14.0 × 24.5 × 31.5	B32774D8505+000	6.5	15.3	23.0	0.9	7.7	1848
12.0	22.0 × 36.5 × 31.5	B32774D8126+000	13.0	6.8	34.0	1.0	8.3	784
$V_{R,70\,°C}$ = 1100 V DC, $V_{op,85\,°C}$ = 920 V DC								
2.0	12.5 × 21.5 × 31.5	B32774D0205+000	4.5	26.3	19.0	0.7	5.3	2100
3.3	18.0 × 27.5 × 31.5	B32774D0335+000	7.0	16.2	22.0	0.7	5.4	1428
5.0	19.0 × 30.0 × 31.5	B32774D0505+000	9.0	10.9	27.0	0.7	5.5	896
7.0	22.0 × 36.5 × 31.5	B32774D0705+000	12.0	8.1	30.0	0.7	5.8	784
$V_{R,70\,°C}$ = 1300 V DC, $V_{op,85\,°C}$ = 1100 V DC								
1.5	12.5 × 21.5 × 31.5	B32774D1155K000	4.4	31.3	20.0	0.6	4.8	2100
3.0	18.0 × 27.5 × 31.5	B32774D1305K000	7.0	16.0	24.0	0.6	4.9	1428
5.0	22.0 × 36.5 × 31.5	B32774D1505K000	10.5	9.8	33.0	0.7	5.1	784

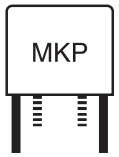
MOQ = Minimum Order Quantity, consisting of 4 packing units.
Intermediate capacitance values are available on request.

Composition of ordering code

+ = Capacitance tolerance code:
J = ±5%
K = ±10%

Packing code:
000 = untaped (lead length 6 −1 mm)

1) Capacitance value measured at 1 kHz
2) Max ripple current I_{RMS} at 70 °C, 10 kHz for ΔT ≤20 °C at $\Delta ESR_{typ} \leq \pm 5\%$

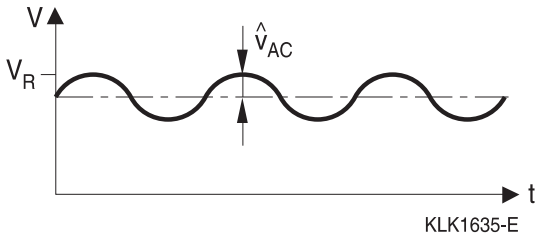


Technical data

Reference standard: IEC 61071:2007. All data given at T = 20 °C, unless otherwise specified.

Operating temperature range (case)	Max. operating temperature, $T_{op,max}$ +105 °C Upper category temperature T_{max} +105 °C Lower category temperature T_{min} –40 °C					
Insulation resistance R_{ins} given as time constant $\tau = C_R \cdot R_{ins}$, rel. humidity ≤ 65% (minimum as-delivered values)	τ > 10 000 s (after 1 min.) For $V_R \geq$ 500 V measured at 500 V For V_R < 500 V measured at V_R					
DC test voltage between terminals (10 s)	1.5 · V_R					
Voltage test terminal to case (10 s)	2110 V AC, 50 Hz					
Pulse Handling Capability (V/µs)	I_P (A) / C (µF)					
Reliability: Failure rate λ	10 fit (≤ 1 · 10^{-9}/h) at 0.5 · V_R, 40 °C For conversion to other operating conditions and temperatures, refer to chapter "Quality, 2 Reliability".					
Service life t_{SL}	100 000 h at V_R and 70 °C					
V_R (V DC)	450	575	800	900	1100	1300
Continuous operation voltage V_{op} (V DC) at 70 °C	450	575	800	900	1100	1300
Continuous operation voltage V_{op} (V DC) at 85 °C	450	500	700	800	920	1100
For temperatures between 85 °C and 105 °C	1.33%/°C of V_{op} derating compared to V_{op} at 85 °C					

Typical waveforms

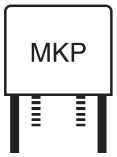


KLK1635-E

KLK1267-S

Restrictions:

V_R: Maximum operating peak voltage of either polarity but of a non-reversing waveform, for which the capacitor has been designed for continuous operation.



B32774 ... B32778

MKP DC link – high density series up to 480 µF

$\hat{v}_{AC} \leq 0.2 \cdot V_R$

Overvoltage	Maximum duration within one day	Observation
$1.1 \cdot V_R$	30% of on-load duration	System regulation
$1.15 \cdot V_R$	30 min.	System regulation
$1.2 \cdot V_R$	5 min.	System regulation
$1.3 \cdot V_R$	1 min.	System regulation

NOTE 1 An overvoltage equal to $1.5 \cdot V_R$ for 30 ms is permitted 1000 times during the life of the capacitor.

The amplitudes of the overvoltages that may be tolerated without significant reduction in the life time of the capacitor depend on their duration, the number of application and the capacitor temperature.

In addition these values assume that the overvoltages may appear when the internal temperature of the capacitor is less than 0 °C but within the temperature category.

NOTE 2 The average applied voltage must not be higher than the specified voltage.

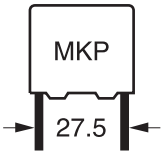
Pulse handling capability

"dV/dt" represents the maximum permissible voltage change per unit of time for non-sinusoidal voltages, expressed in V/µs.

Note:
The values of dV/dt provided below must not be exceeded in order to avoid damaging the capacitor.

dV/dt values

Lead spacing	27.5 mm				37.5 mm						52.5 mm					
Type	B32774				B32776						B32778					
V_R (V DC)	450	800	1100	1300	450	575	800	900	1100	1300	450	575	800	900	1100	1300
dV/dt in V/µs	30	40	75	100	21	22	22	35	54	73	14	14	15	22	35	50



B32774

MKP DC link – high density series – up to 480 µF

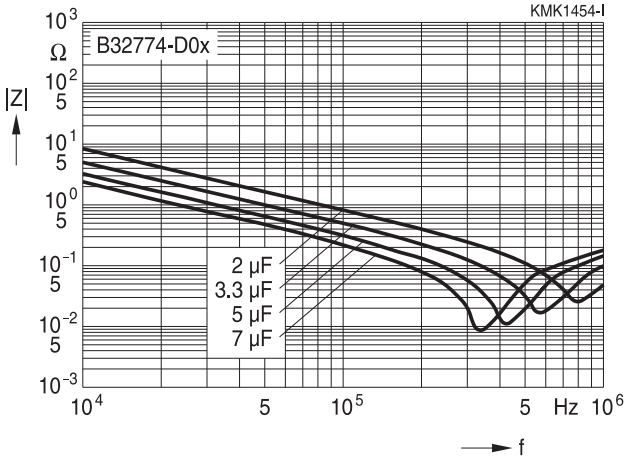
Characteristics curves

Additional technical information can be found under "Design support" on www.epcos.com.

Impedance Z versus frequency f
(typical values)

Lead spacing 27.5 mm

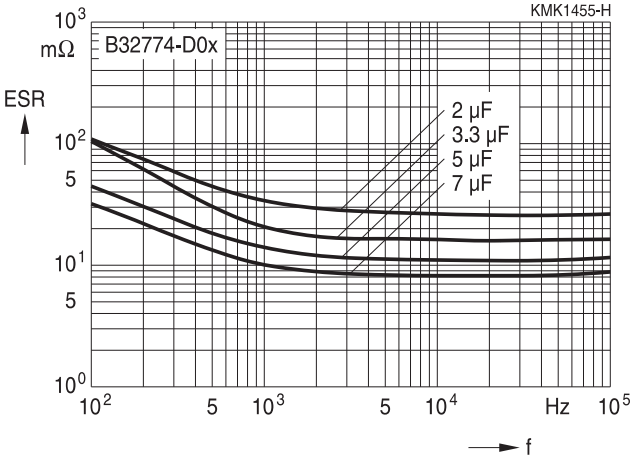
1100 V DC



ESR versus frequency f
(typical values)

Lead spacing 27.5 mm

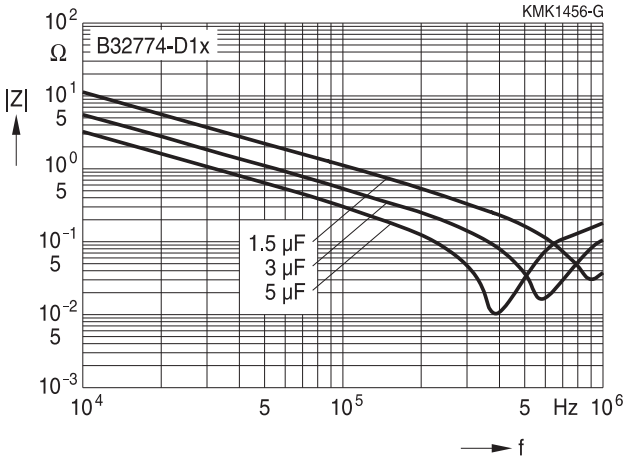
1100 V DC



Impedance Z versus frequency f
(typical values)

Lead spacing 27.5 mm

1300 V DC



ESR versus frequency f
(typical values)

Lead spacing 27.5 mm

1300 V DC