Film Capacitors

Capacitors for DC Link

Series/Type: **B3271*P**

Date: June 2025

Applications

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

Climatic

- Max. operating temperature: 125 °C (case)
- Climatic category (IEC 60068-1): 55/110/56

Construction

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

Features

- Capacitance values from 0.47 to 110 uF
- High CV product, compact
- Good self-healing properties
- Over-voltage capability
- Low losses with high current capability
- High reliability
- Long useful life
- RoHS-compatible
- UL 810 construction
- AEC-Q200E compliant

Terminals

- Parallel wire leads, lead-free tinned
- 2-pin, 4-pin
- 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)

Approval

Approval mark	Standards	Certificate
	UL 810 (construction only)	E323128

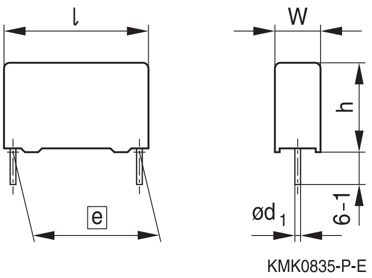
Dimensional drawings

Number of wires	Lead spacing e ±0.4	Lead diameter d_1 ±0.05	Width	Height	Length	Type
2-pin	27.5	0.8	+0.2/–0.8	+0.1/–0.5	+0.2/–0.8	B32714P
2-pin	37.5	1.0	+0.2/–0.8	+0.1/–0.5	+0.2/–1.0	B32716P
4-pin	37.5	1.2	+0.2/–1.0	+0.1/–0.5	+0.2/–1.0	B32716P
4-pin	52.5	1.2	+0.2/–1.0	+0.1/–0.5	+0.2/–1.0	B32718P

Dimensions in mm

Dimensional drawings 2-pin versions

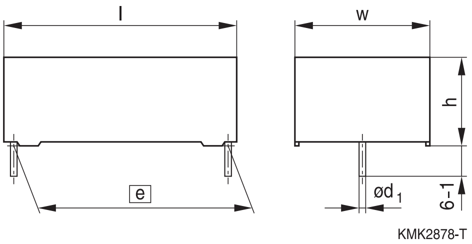
B32714P, B32716P

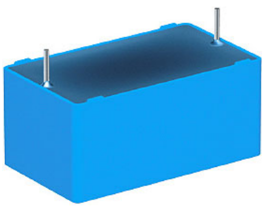


	B32714P	B32716P
Lead spacing e ±0.4	27.5	37.5
Lead diameter d_1	0.8	1.0

Dimensions in mm

B32716P (low profile)



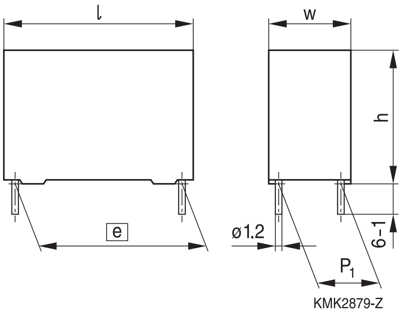


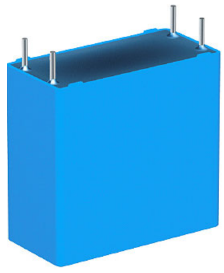
	B32716P
Lead spacing e ±0.4	37.5
Lead diameter d_1	1.0

Dimensions in mm

Dimensional drawings 4-pin versions

B32716P, B32718P





	B32716P	B32718P
Lead spacing e ±0.4	37.5	52.5
Lead diameter d_1	1.2	1.2

Dimensions in mm

Overview of available types

Lead spacing	27.5 mm						
Type	B32714P						
V_R (V DC)	600	675	750	825	900	1050	1200
C_R (µF)							
0.47							
0.68							
0.82							
1.0							
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
8.0							
9.0							
10.0							
12.0							
14.0							

Overview of available types

Lead spacing	37.5 mm						
Type	B32716P						
V_R (V DC)	600	675	750	825	900	1050	1200
C_R (µF)							
1.5							
2.0							
2.7							
3.0							
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
10							
12							
14							
15							
16							
18							
20							
22							
25							
28							
30							
35							
40							
45							
50							
55							
60							
65							

Overview of available types

Lead spacing	52.5 mm						
Type	B32718P						
V_R (V DC)	600	675	750	825	900	1050	1200
C_R (µF)							
11							
15							
18							
20							
22							
25							
27							
30							
33							
35							
36							
40							
45							
50							
55							
60							
65							
70							
75							
80							
85							
90							
100							
110							

Ordering codes and packing units (lead spacing 27.5 mm)

C_R 1) µF	Typical dimensions w x h x l mm	P_1 mm	Ordering code (Composition see below)	$I_{RMS,max}$ 2) 85 °C 10 kHz A_{RMS}	ESR_{typ} 85 °C 10 kHz mΩ	ESL_{typ} nH	tan δ max. 1 kHz (10^{-3})	tan δ max. 10 kHz (10^{-3})	Untaped pcs./ MOQ
$V_{R,85\,°C}$ = 600 V DC, $V_{op,105\,°C}$ = 600 V DC, $V_{op,125\,°C}$ = 400 V DC									
2.5	11.0 x 19.0 x 31.5	-	B32714P6255K000	3.5	25.5	20.0	1.0	6.5	2352
3.0	11.0 x 21.0 x 31.5	-	B32714P6305K000	3.9	21.8	21.0	1.0	6.5	2352
4.0	13.5 x 23.0 x 31.5	-	B32714P6405+000	4.9	15.8	23.0	1.0	6.6	1932
5.0	15.0 x 24.5 x 31.5	-	B32714P6505+000	5.7	12.8	25.0	1.0	6.6	1680
6.0	16.0 x 30.0 x 31.5	-	B32714P6605+000	6.8	10.8	27.0	1.0	6.7	1064
7.0	16.0 x 30.0 x 31.5	-	B32714P6705+000	7.3	9.4	30.0	1.0	6.8	1064
8.0	19.0 x 30.0 x 31.5	-	B32714P6805+000	8.1	8.3	29.0	1.0	6.9	896
9.0	18.0 x 33.0 x 31.5	-	B32714P6905+000	8.7	7.5	33.0	1.0	7.0	952
10.0	21.0 x 31.0 x 31.5	-	B32714P6106+000	9.3	6.8	32.0	1.0	7.0	784
12.0	22.0 x 36.5 x 31.5	*)	B32714P6126+000	10.5	5.8	35.0	1.0	7.3	784
14.0	22.0 x 36.5 x 31.5	*)	B32714P6146K000	11.0	5.4	37.0	1.0	7.4	784
$V_{R,85\,°C}$ = 675 V DC, $V_{op,105\,°C}$ = 675 V DC, $V_{op,125\,°C}$ = 450 V DC									
2.0	11.0 x 21.0 x 31.5	-	B32714P3205+000	3.4	28.5	20.0	0.9	5.8	2352
2.5	12.5 x 21.5 x 31.5	-	B32714P3255+000	3.9	22.4	21.0	0.9	5.8	2100
3.0	13.5 x 23.0 x 31.5	-	B32714P3305+000	4.5	18.8	22.0	0.9	5.8	1932
4.0	15.0 x 24.5 x 31.5	-	B32714P3405+000	5.4	14.2	25.0	0.9	5.9	1680
5.0	16.0 x 30.0 x 31.5	-	B32714P3505+000	6.6	11.5	28.0	0.9	6.0	1064
6.0	19.0 x 30.0 x 31.5	-	B32714P3605+000	7.4	9.7	28.0	0.9	6.1	896
7.0	18.0 x 33.0 x 31.5	-	B32714P3705+000	8.1	8.5	33.0	0.9	6.2	952
8.0	21.0 x 31.0 x 31.5	-	B32714P3805+000	8.8	7.5	32.0	0.9	6.2	784
10.0	22.0 x 36.5 x 31.5	*)	B32714P3106+000	10.6	6.2	36.0	1.0	6.5	784

MOQ = Minimum Order Quantity, consisting of 4 packing units.
Intermediate capacitance values on request.
*) 4-pin version capacitance values are available on request.

Composition of ordering code

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

Packaging code
000 = Untaped (lead length 6–1 mm)
Other lead lengths available upon request

1) Capacitance value measured at 1 kHz
2) Max. ripple current I_{RMS}@85 °C@10 kHz for a ΔT ≤15 °C when ΔESR_{typ} ≤ ±5%

Ordering codes and packing units (lead spacing 27.5 mm)

C_R 1)	Typical dimensions w x h x l	P_1	Ordering code (Composition see below)	$I_{RMS,max}$ 2) 85 °C	ESR_{typ} 85 °C	ESL_{typ}	tan δ max.	tan δ max.	Un-taped
				10 kHz	10 kHz		1 kHz	10 kHz	pcs./
μF	mm	mm		A_{RMS}	mΩ	nH	(10^{-3})	(10^{-3})	MOQ
$V_{R,85\,°C}$ = 750 V DC, $V_{op,105\,°C}$ = 750 V DC, $V_{op,125\,°C}$ = 600 V DC									
1.5	11.0 x 21.0 x 31.5	-	B32714P7155+000	3.2	31.6	20.0	0.9	4.9	2352
2.0	12.5 x 21.5 x 31.5	-	B32714P7205+000	3.8	23.9	22.0	0.9	4.9	2100
2.5	13.5 x 23.0 x 31.5	-	B32714P7255+000	4.4	19.2	23.0	0.9	5.0	1932
3.0	15.0 x 24.5 x 31.5	-	B32714P7305+000	5.0	16.1	25.0	0.9	5.0	1680
4.0	16.0 x 30.0 x 31.5	-	B32714P7405+000	6.3	12.3	28.0	0.9	5.1	1064
5.0	19.0 x 30.0 x 31.5	-	B32714P7505+000	7.4	10.0	30.0	0.9	5.2	896
6.0	21.0 x 31.0 x 31.5	-	B32714P7605+000	8.4	8.5	31.0	0.9	5.3	784
7.0	22.0 x 36.5 x 31.5	*)	B32714P7705+000	9.7	7.4	34.0	0.9	5.4	784
8.0	22.0 x 36.5 x 31.5	*)	B32714P7805+000	10.3	6.6	37.0	0.9	5.5	784
$V_{R,85\,°C}$ = 825 V DC, $V_{op,105\,°C}$ = 825 V DC, $V_{op,125\,°C}$ = 660 V DC									
1.0	11.0 x 19.0 x 31.5	-	B32714P8105+000	2.7	42.0	18.0	0.9	4.5	2352
1.5	12.5 x 21.5 x 31.5	-	B32714P8155+000	3.5	28.2	21.0	0.9	4.5	2100
2.0	13.5 x 23.0 x 31.5	-	B32714P8205+000	4.2	21.8	23.0	0.9	4.5	1932
2.5	15.0 x 24.5 x 31.5	-	B32714P8255+000	4.8	17.6	25.0	0.9	4.6	1680
3.5	16.0 x 30.0 x 31.5	-	B32714P8355+000	6.2	12.9	30.0	0.9	4.7	1064
4.0	19.0 x 30.0 x 31.5	-	B32714P8405+000	6.9	11.3	29.0	0.9	4.7	896
5.0	21.0 x 31.0 x 31.5	-	B32714P8505+000	8.1	9.1	32.0	0.9	4.8	784
6.0	22.0 x 36.5 x 31.5	*)	B32714P8605+000	9.4	7.8	35.0	0.9	4.9	784
7.0	22.0 x 36.5 x 31.5	*)	B32714P8705K000	9.7	7.2	37.0	0.9	5.0	784

MOQ = Minimum Order Quantity, consisting of 4 packing units.
Intermediate capacitance values on request.
*) 4-pin version capacitance values are available on request.

Composition of ordering code

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

Packaging code
000 = Untaped (lead length 6–1 mm)
Other lead lengths available upon request

1) Capacitance value measured at 1 kHz
2) Max. ripple current I_{RMS}@85 °C@10 kHz for a ΔT ≤15 °C when ΔESR_{typ} ≤ ±5%

Ordering codes and packing units (lead spacing 27.5 mm)

C_R 1) μF	Typical dimensions w x h x l mm	P_1 mm	Ordering code (Composition see below)	$I_{RMS,max}$ 2) 85 °C 10 kHz A_{RMS}	ESR_{typ} 85 °C 10 kHz mΩ	ESL_{typ} nH	tan δ max. 1 kHz (10^{-3})	tan δ max. 10 kHz (10^{-3})	Un-taped pcs./ MOQ
$V_{R,85\ °C}$ = 900 V DC, $V_{op,105\ °C}$ = 900 V DC, $V_{op,125\ °C}$ = 720 V DC									
1.0	11.0 x 19.0 x 31.5	-	B32714P9105+000	2.8	40.0	19.0	0.9	4.1	2352
1.5	12.5 x 21.5 x 31.5	-	B32714P9155K000	3.6	27.9	22.0	0.9	4.2	2100
2.0	15.0 x 24.5 x 31.5	-	B32714P9205+000	4.6	20.3	24.0	0.9	4.2	1680
3.0	16.0 x 30.0 x 31.5	-	B32714P9305+000	6.0	13.8	30.0	0.9	4.3	1064
3.5	19.0 x 30.0 x 31.5	-	B32714P9355+000	6.8	11.9	30.0	0.9	4.3	896
4.0	18.0 x 33.0 x 31.5	-	B32714P9405+000	7.4	10.6	34.0	0.9	4.4	952
5.0	22.0 x 36.5 x 31.5	*)	B32714P9505+000	8.9	8.7	35.0	0.9	4.5	784
5.5	22.0 x 36.5 x 31.5	*)	B32714P9555+000	9.3	7.9	37.0	0.9	4.5	784
$V_{R,85\ °C}$ = 1050 V DC, $V_{op,105\ °C}$ = 1050 V DC, $V_{op,125\ °C}$ = 840 V DC									
0.68	11.0 x 19.0 x 31.5	-	B32714P0684+000	2.5	48.0	19.0	0.9	3.4	2352
1.0	12.5 x 21.5 x 31.5	-	B32714P0105K000	3.2	33.5	22.0	0.9	3.4	2100
1.5	15.0 x 24.5 x 31.5	-	B32714P0155+000	4.3	22.1	25.0	0.9	3.4	1680
2.0	18.0 x 27.5 x 31.5	-	B32714P0205+000	5.5	16.7	27.0	0.9	3.5	1428
2.5	19.0 x 30.0 x 31.5	-	B32714P0255+000	6.4	13.6	30.0	0.9	3.5	896
3.0	21.0 x 31.0 x 31.5	*)	B32714P0305K000	7.1	11.7	32.0	0.9	3.6	784
3.5	22.0 x 36.5 x 31.5	*)	B32714P0355+000	8.2	10.0	35.0	0.9	3.6	784
4.0	22.0 x 36.5 x 31.5	*)	B32714P0405K000	8.6	9.2	37.0	0.9	3.7	784

MOQ = Minimum Order Quantity, consisting of 4 packing units.
Intermediate capacitance values on request.
*) 4-pin version capacitance values are available on request.

Composition of ordering code

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

Packaging code
000 = Untaped (lead length 6–1 mm)
Other lead lengths available upon request

1) Capacitance value measured at 1 kHz
2) Max. ripple current I_{RMS}@85 °C@10 kHz for a ΔT ≤15 °C when ΔESR_{typ} ≤ ±5%

Ordering codes and packing units (lead spacing 27.5 mm)

C_R [1] µF	Typical dimensions w x h x l mm	P_1 mm	Ordering code (Composition see below)	$I_{RMS,max}$ [2] 85 °C 10 kHz A_{RMS}	ESR_{typ} 85 °C 10 kHz mΩ	ESL_{typ} nH	tan δ max. 1 kHz (10^{-3})	tan δ max. 10 kHz (10^{-3})	Un-taped pcs./ MOQ
$V_{R,85\ °C}$ = 1200 V DC, $V_{op,105\ °C}$ = 1200 V DC, $V_{op,125\ °C}$ = 960 V DC									
0.47	11.0 x 19.0 x 31.5	-	B32714P1474+000	2.3	59.7	19.0	0.9	3.0	2352
0.68	12.5 x 21.5 x 31.5	-	B32714P1684+000	2.9	41.5	21.0	0.9	3.0	2100
0.82	13.5 x 23.0 x 31.5	-	B32714P1824+000	3.3	35.3	22.0	0.9	3.0	1932
1.0	14.0 x 24.5 x 31.5	-	B32714P1105+000	3.7	29.3	25.0	0.9	3.0	1848
1.5	18.0 x 27.5 x 31.5	-	B32714P1155+000	5.0	19.7	27.0	0.9	3.1	1428
2.0	18.0 x 33.0 x 31.5	-	B32714P1205+000	6.1	15.0	33.0	0.9	3.1	952
3.0	22.0 x 36.5 x 31.5	*)	B32714P1305+000	7.9	10.4	37.0	0.9	3.2	784

MOQ = Minimum Order Quantity, consisting of 4 packing units.
Intermediate capacitance values on request.
*) 4-pin version capacitance values are available on request.

Composition of ordering code

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

Packaging code
000 = Untaped (lead length 6–1 mm)
Other lead lengths available upon request

1) Capacitance value measured at 1 kHz
2) Max. ripple current I_{RMS}@85 °C@10 kHz for a ΔT ≤15 °C when ΔESR_{typ} ≤ ±5%

Ordering codes and packing units (lead spacing 37.5 mm)

C_R[1)] μF	Typical dimensions w x h x l mm	P_1 mm	Ordering code (Composition see below)	$I_{RMS,max}$[2)] 85 °C 10 kHz A_{RMS}	ESR_{typ} 85 °C 10 kHz mΩ	ESL_{typ} nH	tan δ max. 1 kHz (10^{-3})	tan δ max. 10 kHz (10^{-3})	Un-taped pcs./ MOQ
$V_{R,85\,°C}$ = 600 V DC, $V_{op,105\,°C}$ = 600 V DC, $V_{op,125\,°C}$ = 400 V DC									
6.5	24.0 x 15.0 x 42.0	-	B32716P6655K000	5.5	19.0	12.0	1.6	12.5	1040
8.5	24.0 x 19.0 x 42.0	-	B32716P6855+000	6.4	14.3	15.0	1.6	12.6	780
12.0	18.0 x 32.5 x 42.0	-	B32716P6126+000	8.1	10.4	25.0	1.6	12.9	720
15.0	18.5 x 35.5 x 42.0	10.2	B32716P6156+000	9.6	8.2	12.0	1.6	12.7	680
18.0	20.0 x 39.5 x 42.0	10.2	B32716P6186+000	11.3	6.8	13.0	1.6	12.8	640
20.0	22.0 x 37.0 x 42.0	10.2	B32716P6206K000	11.6	6.5	13.0	1.6	12.8	560
22.0	28.0 x 37.0 x 42.0	10.2	B32716P6226+000	13.4	5.5	12.0	1.6	12.8	440
25.0	24.0 x 44.0 x 42.0	12.7	B32716P6256+000	14.3	5.0	15.0	1.6	13.0	520
30.0	30.0 x 45.0 x 42.0	20.3	B32716P6306+000	16.5	4.2	14.0	1.6	13.1	400
35.0	33.0 x 48.0 x 42.0	20.3	B32716P6356+000	18.2	3.6	15.0	1.6	13.3	180
40.0	35.0 x 50.0 x 42.0	20.3	B32716P6406+000	19.9	3.2	16.0	1.6	13.4	144
45.0	35.0 x 54.0 x 42.0	20.3	B32716P6456+000	21.7	2.9	18.0	1.7	13.6	168
50.0	35.0 x 54.0 x 42.0	20.3	B32716P6506K000	22.5	2.8	19.0	1.7	13.7	168
55.0	38.0 x 57.0 x 42.0	20.3	B32716P6556+000	23.4	2.5	20.0	1.7	14.0	224
60.0	42.5 x 60.0 x 42.5	20.3	B32716P6606+000	24.5	2.3	20.0	1.7	14.2	140
65.0	42.5 x 60.0 x 42.5	20.3	B32716P6656K000	24.9	2.2	21.0	1.7	14.3	140

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

Composition of ordering code

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

Packaging code
000 = Untaped (lead length 6–1 mm)
Other lead lengths available upon request

1) Capacitance value measured at 1 kHz
2) Max. ripple current I_{RMS}@85 °C@10 kHz for a ΔT ≤15 °C when ΔESR_{typ} ≤ ±5%

Ordering codes and packing units (lead spacing 37.5 mm)

C_R 1) µF	Typical dimensions w x h x l mm	P_1 mm	Ordering code (Composition see below)	$I_{RMS,max}$ 2) 85 °C 10 kHz A_{RMS}	ESR_{typ} 85 °C 10 kHz mΩ	ESL_{typ} nH	tan δ max. 1 kHz (10^{-3})	tan δ max. 10 kHz (10^{-3})	Un-taped pcs./ MOQ
$V_{R,85\ °C}$ = 675 V DC, $V_{op,105\ °C}$ = 675 V DC, $V_{op,125\ °C}$ = 450 V DC									
5.0	24.0 x 15.0 x 42.0	-	B32716P3505K000	5.0	21.9	12.0	1.4	11.1	1040
7.0	24.0 x 19.0 x 42.0	-	B32716P3705K000	6.1	16.0	15.0	1.4	11.2	780
10.0	18.0 x 32.5 x 42.0	-	B32716P3106+000	7.9	11.1	26.0	1.5	11.5	720
12.0	18.5 x 35.5 x 42.0	10.2	B32716P3126K000	8.9	9.3	12.0	1.4	11.3	680
15.0	20.0 x 39.5 x 42.0	10.2	B32716P3156K000	10.7	7.4	13.0	1.4	11.3	640
18.0	28.0 x 37.0 x 42.0	10.2	B32716P3186+000	12.6	6.1	12.0	1.5	11.4	440
20.0	24.0 x 44.0 x 42.0	12.7	B32716P3206+000	13.4	5.5	15.0	1.5	11.5	520
25.0	30.0 x 45.0 x 42.0	20.3	B32716P3256+000	16.0	4.5	15.0	1.5	11.6	400
30.0	33.0 x 48.0 x 42.0	20.3	B32716P3306+000	18.4	3.8	16.0	1.5	11.8	180
35.0	35.0 x 50.0 x 42.0	20.3	B32716P3356K000	20.1	3.4	17.0	1.5	11.9	144
40.0	35.0 x 54.0 x 42.0	20.3	B32716P3406K000	21.7	3.0	19.0	1.5	12.1	168
45.0	38.0 x 57.0 x 42.0	20.3	B32716P3456K000	23.5	2.7	20.0	1.5	12.3	224
50.0	42.5 x 60.0 x 42.5	20.3	B32716P3506+000	24.2	2.4	21.0	1.6	12.6	140

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

Composition of ordering code

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

Packaging code
000 = Untaped (lead length 6–1 mm)
Other lead lengths available upon request

1) Capacitance value measured at 1 kHz
2) Max. ripple current I_{RMS}@85 °C@10 kHz for a ΔT ≤15 °C when ΔESR_{typ} ≤ ±5%

Ordering codes and packing units (lead spacing 37.5 mm)

C_R 1) µF	Typical dimensions w x h x l mm	P_1 mm	Ordering code (Composition see below)	$I_{RMS,max}$ 2) 85 °C 10 kHz A_{RMS}	ESR_{typ} 85 °C 10 kHz mΩ	ESL_{typ} nH	tan δ max. 1 kHz (10^{-3})	tan δ max. 10 kHz (10^{-3})	Un-taped pcs./ MOQ
$V_{R,85\,°C}$ = 750 V DC, $V_{op,105\,°C}$ = 750 V DC, $V_{op,125\,°C}$ = 600 V DC									
4.0	24.0 x 15.0 x 42.0	-	B32716P7405K000	4.8	23.7	12.0	1.3	9.6	1040
5.0	24.0 x 19.0 x 42.0	-	B32716P7505+000	5.5	18.7	14.0	1.3	9.7	780
8.0	18.0 x 32.5 x 42.0	-	B32716P7805+000	7.6	12.0	26.0	1.3	9.9	720
9.0	18.5 x 35.5 x 42.0	10.2	B32716P7905+000	8.5	10.4	12.0	1.3	9.7	680
12.0	20.0 x 39.5 x 42.0	10.2	B32716P7126K000	10.1	8.2	13.0	1.3	9.8	640
14.0	28.0 x 37.0 x 42.0	10.2	B32716P7146+000	12.1	6.7	12.0	1.3	9.8	440
16.0	24.0 x 44.0 x 42.0	12.7	B32716P7166+000	13.0	6.0	15.0	1.3	9.9	520
18.0	28.0 x 42.5 x 42.0	10.2	B32716P7186+000	14.3	5.3	14.0	1.3	9.9	440
20.0	30.0 x 45.0 x 42.0	20.3	B32716P7206+000	15.6	4.8	15.0	1.3	10.0	400
22.0	33.0 x 48.0 x 42.0	20.3	B32716P7226+000	16.7	4.4	15.0	1.3	10.1	180
25.0	35.0 x 50.0 x 42.0	20.3	B32716P7256+000	18.4	3.9	16.0	1.3	10.2	144
30.0	35.0 x 54.0 x 42.0	20.3	B32716P7306+000	20.8	3.3	19.0	1.3	10.4	168
35.0	38.0 x 57.0 x 42.0	20.3	B32716P7356+000	22.5	2.9	20.0	1.4	10.5	224
40.0	42.5 x 60.0 x 42.5	20.3	B32716P7406+000	24.0	2.6	21.0	1.4	10.7	140

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

Composition of ordering code

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

Packaging code
000 = Untaped (lead length 6–1 mm)
Other lead lengths available upon request

1) Capacitance value measured at 1 kHz
2) Max. ripple current I_{RMS}@85 °C@10 kHz for a ΔT ≤15 °C when ΔESR_{typ} ≤ ±5%

Ordering codes and packing units (lead spacing 37.5 mm)

C_R 1) µF	Typical dimensions w x h x l mm	P_1 mm	Ordering code (Composition see below)	$I_{RMS,max}$ 2) 85 °C 10 kHz A_{RMS}	ESR_{typ} 85 °C 10 kHz mΩ	ESL_{typ} nH	tan δ max. 1 kHz (10^{-3})	tan δ max. 10 kHz (10^{-3})	Un-taped pcs./ MOQ
$V_{R,85\,°C}$ = 825 V DC, $V_{op,105\,°C}$ = 825 V DC, $V_{op,125\,°C}$ = 660 V DC									
3.5	24.0 x 15.0 x 42.0	-	B32716P8355K000	4.6	25.6	12.0	1.2	8.8	1040
4.5	24.0 x 19.0 x 42.0	-	B32716P8455K000	5.5	19.7	15.0	1.2	8.8	780
6.5	18.0 x 32.5 x 42.0	-	B32716P8655+000	7.3	13.4	26.0	1.2	9.0	720
7.5	18.5 x 35.5 x 42.0	10.2	B32716P8755+000	8.2	11.4	12.0	1.2	8.8	680
9.0	20.0 x 39.5 x 42.0	10.2	B32716P8905+000	9.5	9.5	13.0	1.2	8.9	640
12.0	28.0 x 37.0 x 42.0	10.2	B32716P8126+000	11.7	7.2	12.0	1.2	8.9	440
14.0	24.0 x 44.0 x 42.0	12.7	B32716P8146K000	12.6	6.5	15.0	1.2	9.0	520
16.0	30.0 x 45.0 x 42.0	20.3	B32716P8166+000	14.7	5.4	15.0	1.2	9.1	400
18.0	33.0 x 48.0 x 42.0	20.3	B32716P8186+000	16.5	4.9	16.0	1.2	9.1	180
20.0	33.0 x 48.0 x 42.0	20.3	B32716P8206+000	17.3	4.4	16.0	1.2	9.2	180
22.0	35.0 x 50.0 x 42.0	20.3	B32716P8226+000	18.6	4.1	17.0	1.2	9.3	144
25.0	35.0 x 54.0 x 42.0	20.3	B32716P8256+000	19.9	3.7	19.0	1.2	9.4	168
28.0	38.0 x 57.0 x 42.0	20.3	B32716P8286+000	20.8	3.3	19.0	1.3	9.5	224
30.0	42.5 x 60.0 x 42.5	20.3	B32716P8306+000	21.7	3.1	20.0	1.3	9.6	140

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

Composition of ordering code

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

Packaging code
000 = Untaped (lead length 6–1 mm)
Other lead lengths available upon request

1) Capacitance value measured at 1 kHz
2) Max. ripple current I_{RMS}@85 °C@10 kHz for a ΔT ≤15 °C when ΔESR_{typ} ≤ ±5%

Ordering codes and packing units (lead spacing 37.5 mm)

C_R[1] µF	Typical dimensions w x h x l mm	P_1 mm	Ordering code (Composition see below)	$I_{RMS,max}$[2] 85 °C 10 kHz A_{RMS}	ESR_{typ} 85 °C 10 kHz mΩ	ESL_{typ} nH	tan δ max. 1 kHz (10^{-3})	tan δ max. 10 kHz (10^{-3})	Un-taped pcs./ MOQ
$V_{R,85\,°C}$ = 900 V DC, $V_{op,105\,°C}$ = 900 V DC, $V_{op,125\,°C}$ = 720 V DC									
2.7	24.0 x 15.0 x 42.0	-	B32716P9275K000	4.3	29.5	12.0	1.1	8.1	1040
3.5	24.0 x 19.0 x 42.0	-	B32716P9355+000	5.3	22.3	15.0	1.1	8.1	780
5.0	18.0 x 32.5 x 42.0	-	B32716P9505+000	6.7	15.7	25.0	1.1	8.2	720
6.0	18.5 x 35.5 x 42.0	10.2	B32716P9605+000	7.6	13.1	11.0	1.1	8.1	680
8.0	20.0 x 39.5 x 42.0	10.2	B32716P9805+000	9.4	9.9	13.0	1.1	8.2	640
10.0	28.0 x 37.0 x 42.0	10.2	B32716P9106+000	11.3	7.8	12.0	1.1	8.2	440
12.0	28.0 x 42.5 x 42.0	10.2	B32716P9126+000	12.8	6.6	14.0	1.1	8.3	440
14.0	30.0 x 45.0 x 42.0	20.3	B32716P9146+000	14.3	5.7	15.0	1.1	8.3	400
16.0	33.0 x 48.0 x 42.0	20.3	B32716P9166+000	16.2	5.0	16.0	1.1	8.4	180
18.0	35.0 x 50.0 x 42.0	20.3	B32716P9186+000	17.6	4.5	17.0	1.2	8.5	144
20.0	35.0 x 54.0 x 42.0	20.3	B32716P9206+000	18.9	4.1	18.0	1.2	8.5	168
22.0	38.0 x 57.0 x 42.0	20.3	B32716P9226+000	19.5	3.8	19.0	1.2	8.6	224
25.0	42.5 x 60.0 x 42.5	20.3	B32716P9256+000	20.8	3.4	20.0	1.2	8.8	140

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

Composition of ordering code

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

Packaging code
000 = Untaped (lead length 6–1 mm)
Other lead lengths available upon request

1) Capacitance value measured at 1 kHz
2) Max. ripple current I_{RMS}@85 °C@10 kHz for a ΔT ≤15 °C when ΔESR_{typ} ≤ ±5%

Ordering codes and packing units (lead spacing 37.5 mm)

C_R [1] µF	Typical dimensions w x h x l mm	P_1 mm	Ordering code (Composition see below)	$I_{RMS,max}$ [2] 85 °C 10 kHz A_{RMS}	ESR_{typ} 85 °C 10 kHz mΩ	ESL_{typ} nH	tan δ max. 1 kHz (10^{-3})	tan δ max. 10 kHz (10^{-3})	Un-taped pcs./ MOQ
$V_{R,85\,°C}$ = 1050 V DC, $V_{op,105\,°C}$ = 1050 V DC, $V_{op,125\,°C}$ = 840 V DC									
2.0	24.0 x 15.0 x 42.0	-	B32716P0205K000	4.2	33.5	12.0	1.0	6.6	1040
2.7	24.0 x 19.0 x 42.0	-	B32716P0275K000	5.0	24.7	15.0	1.0	6.7	780
3.5	18.0 x 32.5 x 42.0	-	B32716P0355+000	6.1	18.6	24.0	1.0	6.8	720
4.0	18.5 x 35.5 x 42.0	10.2	B32716P0405+000	6.9	16.0	11.0	1.0	6.7	680
5.0	20.0 x 39.5 x 42.0	10.2	B32716P0505+000	8.1	13.0	12.0	1.0	6.7	640
6.0	22.0 x 37.0 x 42.0	10.2	B32716P0605+000	8.7	11.2	13.0	1.0	6.7	560
7.0	28.0 x 37.0 x 42.0	10.2	B32716P0705+000	10.4	9.2	12.0	1.0	6.7	440
8.0	24.0 x 44.0 x 42.0	12.7	B32716P0805+000	11.3	8.2	15.0	1.0	6.8	520
10.0	30.0 x 45.0 x 42.0	20.3	B32716P0106+000	13.4	6.6	15.0	1.0	6.8	400
12.0	33.0 x 48.0 x 42.0	20.3	B32716P0126+000	15.4	5.6	16.0	1.0	6.9	180
14.0	35.0 x 50.0 x 42.0	20.3	B32716P0146K000	16.7	5.0	17.0	1.0	6.9	144
16.0	35.0 x 54.0 x 42.0	20.3	B32716P0166K000	18.1	4.5	19.0	1.0	7.0	168
18.0	38.0 x 57.0 x 42.0	20.3	B32716P0186K000	19.1	4.0	20.0	1.0	7.1	224
20.0	42.5 x 60.0 x 42.5	20.3	B32716P0206K000	19.9	3.6	21.0	1.0	7.2	140

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

Composition of ordering code

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

Packaging code
000 = Untaped (lead length 6–1 mm)
Other lead lengths available upon request

1) Capacitance value measured at 1 kHz
2) Max. ripple current I_{RMS}@85 °C@10 kHz for a ΔT ≤15 °C when $ΔESR_{typ}$ ≤ ±5%

Ordering codes and packing units (lead spacing 37.5 mm)

C_R 1) μF	Typical dimensions w x h x l mm	P_1 mm	Ordering code (Composition see below)	$I_{RMS,max}$ 2) 85 °C 10 kHz A_{RMS}	ESR_{typ} 85 °C 10 kHz mΩ	ESL_{typ} nH	tan δ max. 1 kHz (10^{-3})	tan δ max. 10 kHz (10^{-3})	Un-taped pcs./ MOQ
$V_{R,85\,°C}$ = 1200 V DC, $V_{op,105\,°C}$ = 1200 V DC, $V_{op,125\,°C}$ = 960 V DC									
1.5	24.0 x 15.0 x 42.0	-	B32716P1155K000	4.0	39.1	12.0	0.9	5.9	1040
2.0	24.0 x 19.0 x 42.0	-	B32716P1205K000	4.8	28.9	15.0	0.9	5.9	780
3.0	18.0 x 32.5 x 42.0	-	B32716P1305+000	6.1	19.2	26.0	0.9	6.0	720
3.5	18.5 x 35.5 x 42.0	10.2	B32716P1355K000	6.8	16.9	12.0	0.9	5.9	680
4.0	20.0 x 39.5 x 42.0	10.2	B32716P1405+000	7.8	14.3	12.0	0.9	5.9	640
4.5	22.0 x 37.0 x 42.0	10.2	B32716P1455K000	8.1	13.2	12.0	0.9	5.9	560
5.5	28.0 x 37.0 x 42.0	10.2	B32716P1555+000	9.8	10.4	12.0	0.9	5.9	440
6.0	24.0 x 44.0 x 42.0	12.7	B32716P1605+000	10.4	9.6	15.0	0.9	6.0	520
7.0	28.0 x 42.5 x 42.0	10.2	B32716P1705K000	11.3	8.6	14.0	0.9	6.0	440
8.0	30.0 x 45.0 x 42.0	20.3	B32716P1805K000	12.6	7.5	15.0	0.9	6.0	400
9.0	33.0 x 48.0 x 42.0	20.3	B32716P1905+000	14.3	6.5	16.0	0.9	6.0	180
10.0	35.0 x 50.0 x 42.0	20.3	B32716P1106+000	15.2	5.9	17.0	0.9	6.1	144
12.0	38.0 x 57.0 x 42.0	20.3	B32716P1126+000	17.1	4.9	19.0	0.9	6.2	224
15.0	42.5 x 60.0 x 42.5	20.3	B32716P1156K000	18.6	4.2	21.0	0.9	6.3	140

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

Composition of ordering code

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

Packaging code
000 = Untaped (lead length 6–1 mm)
Other lead lengths available upon request

1) Capacitance value measured at 1 kHz
2) Max. ripple current I_{RMS}@85 °C@10 kHz for a ΔT ≤15 °C when ΔESR_{typ} ≤ ±5%

Ordering codes and packing units (lead spacing 52.5 mm)

C_R 1) μF	Typical dimensions w x h x l mm	P_1 mm	Ordering code (Composition see below)	$I_{RMS,max}$ 2) 85 °C 10 kHz A_{RMS}	ESR_{typ} 85 °C 10 kHz mΩ	ESL_{typ} nH	tan δ max. 1 kHz (10^{-3})	tan δ max. 10 kHz (10^{-3})	Un-taped pcs./ MOQ
$V_{R,85\,°C}$ = 600 V DC, $V_{op,105\,°C}$ = 600 V DC, $V_{op,125\,°C}$ = 400 V DC									
45.0	30.0 x 45.0 x 57.5	20.3	B32718P6456+000	14.3	5.4	15.0	2.9	25.5	280
50.0	30.0 x 45.0 x 57.5	20.3	B32718P6506K000	14.7	5.2	15.0	2.9	25.6	280
55.0	35.0 x 50.0 x 57.5	20.3	B32718P6556+000	16.9	4.5	16.0	2.9	25.9	108
60.0	35.0 x 50.0 x 57.5	20.3	B32718P6606+000	17.7	4.2	17.0	2.9	26.0	108
70.0	38.0 x 57.5 x 57.5	20.3	B32718P6706+000	19.7	3.6	19.0	2.9	26.6	96
75.0	38.0 x 57.5 x 57.5	20.3	B32718P6756+000	20.3	3.4	19.0	3.0	26.7	96
80.0	38.0 x 57.5 x 57.5	20.3	B32718P6806K000	20.6	3.3	20.0	3.0	26.8	96
85.0	45.0 x 55.0 x 57.5	20.3	B32718P6856+000	22.4	3.0	19.0	3.0	26.9	140
90.0	45.0 x 57.0 x 57.5	20.3	B32718P6906+000	23.2	2.9	20.0	3.0	27.1	140
100.0	45.0 x 65.0 x 57.5	20.3	B32718P6107+000	25.1	2.7	22.0	3.1	27.8	140
110.0	45.0 x 65.0 x 57.5	20.3	B32718P6117K000	25.8	2.5	23.0	3.1	28.0	140
$V_{R,85\,°C}$ = 675 V DC, $V_{op,105\,°C}$ = 675 V DC, $V_{op,125\,°C}$ = 450 V DC									
36.0	30.0 x 45.0 x 57.5	20.3	B32718P3366+000	13.7	6.0	15.0	2.6	22.6	280
45.0	35.0 x 50.0 x 57.5	20.3	B32718P3456+000	16.4	4.9	16.0	2.6	22.9	108
50.0	35.0 x 50.0 x 57.5	20.3	B32718P3506K000	16.8	4.6	17.0	2.6	23.0	108
55.0	38.0 x 57.5 x 57.5	20.3	B32718P3556+000	19.1	4.1	18.0	2.6	23.4	96
60.0	38.0 x 57.5 x 57.5	20.3	B32718P3606+000	19.7	3.8	19.0	2.6	23.5	96
65.0	45.0 x 55.0 x 57.5	20.3	B32718P3656+000	21.7	3.5	19.0	2.7	23.6	140
70.0	45.0 x 57.0 x 57.5	20.3	B32718P3706+000	22.5	3.3	19.0	2.7	23.8	140
75.0	45.0 x 57.0 x 57.5	20.3	B32718P3756K000	22.8	3.2	20.0	2.7	23.8	140
80.0	45.0 x 65.0 x 57.5	20.3	B32718P3806+000	24.2	2.9	22.0	2.7	24.4	140
85.0	45.0 x 65.0 x 57.5	20.3	B32718P3856+000	24.9	2.8	23.0	2.7	24.6	140

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

Composition of ordering code

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

Packaging code
000 = Untaped (lead length 6–1 mm)
Other lead lengths available upon request

1) Capacitance value measured at 1 kHz
2) Max. ripple current I_{RMS}@85 °C@10 kHz for a ΔT ≤15 °C when $ΔESR_{typ}$ ≤ ±5%

Ordering codes and packing units (lead spacing 52.5 mm)

C_R[1)] µF	Typical dimensions w x h x l mm	P_1 mm	Ordering code (Composition see below)	$I_{RMS,max}$[2)] 85 °C 10 kHz A_{RMS}	ESR_{typ} 85 °C 10 kHz mΩ	ESL_{typ} nH	tan δ max. 1 kHz (10^{-3})	tan δ max. 10 kHz (10^{-3})	Un-taped pcs./ MOQ
$V_{R,85\,°C}$ = 750 V DC, $V_{op,105\,°C}$ = 750 V DC, $V_{op,125\,°C}$ = 600 V DC									
25.0	30.0 x 45.0 x 57.5	20.3	B32718P7256+000	12.5	7.3	14.0	2.3	19.5	280
30.0	30.0 x 45.0 x 57.5	20.3	B32718P7306K000	13.2	6.6	15.0	2.3	19.6	280
35.0	35.0 x 50.0 x 57.5	20.3	B32718P7356+000	15.6	5.5	16.0	2.3	19.9	108
40.0	35.0 x 50.0 x 57.5	20.3	B32718P7406K000	16.3	5.0	17.0	2.3	20.0	108
45.0	38.0 x 57.5 x 57.5	20.3	B32718P7456+000	18.4	4.3	19.0	2.3	20.3	96
50.0	38.0 x 57.5 x 57.5	20.3	B32718P7506K000	19.1	4.0	20.0	2.3	20.4	96
55.0	45.0 x 55.0 x 57.5	20.3	B32718P7556+000	21.0	3.6	19.0	2.3	20.5	140
60.0	45.0 x 57.0 x 57.5	20.3	B32718P7606K000	21.7	3.5	20.0	2.4	20.7	140
65.0	45.0 x 65.0 x 57.5	20.3	B32718P7656+000	23.6	3.1	22.0	2.4	21.1	140
$V_{R,85\,°C}$ = 825 V DC, $V_{op,105\,°C}$ = 825 V DC, $V_{op,125\,°C}$ = 660 V DC									
22.0	30.0 x 45.0 x 57.5	20.3	B32718P8226+000	12.1	7.7	14.0	2.1	17.8	280
25.0	30.0 x 45.0 x 57.5	20.3	B32718P8256K000	12.6	7.2	15.0	2.1	17.8	280
27.0	35.0 x 50.0 x 57.5	20.3	B32718P8276+000	14.5	6.2	16.0	2.1	18.0	108
30.0	35.0 x 50.0 x 57.5	20.3	B32718P8306+000	15.1	5.8	17.0	2.1	18.0	108
35.0	38.0 x 57.5 x 57.5	20.3	B32718P8356+000	17.3	5.0	18.0	2.1	18.3	96
40.0	38.0 x 57.5 x 57.5	20.3	B32718P8406+000	18.4	4.4	20.0	2.1	18.4	96
45.0	45.0 x 57.0 x 57.5	20.3	B32718P8456+000	20.5	4.0	19.0	2.2	18.6	140
50.0	45.0 x 57.0 x 57.5	20.3	B32718P8506K000	20.9	3.8	20.0	2.2	18.6	140
55.0	45.0 x 65.0 x 57.5	20.3	B32718P8556+000	23.3	3.3	23.0	2.2	19.1	140

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

Composition of ordering code

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

Packaging code
000 = Untaped (lead length 6–1 mm)
Other lead lengths available upon request

1) Capacitance value measured at 1 kHz
2) Max. ripple current I_{RMS}@85 °C@10 kHz for a ΔT ≤15 °C when ΔESR_{typ} ≤ ±5%

Ordering codes and packing units (lead spacing 52.5 mm)

C_R [1] µF	Typical dimensions w x h x l mm	P_1 mm	Ordering code (Composition see below)	$I_{RMS,max}$ [2] 85 °C 10 kHz A_{RMS}	ESR_{typ} 85 °C 10 kHz mΩ	ESL_{typ} nH	tan δ max. 1 kHz (10^{-3})	tan δ max. 10 kHz (10^{-3})	Untaped pcs./ MOQ
$V_{R,85\,°C}$ = 900 V DC, $V_{op,105\,°C}$ = 900 V DC, $V_{op,125\,°C}$ = 720 V DC									
20.0	30.0 x 45.0 x 57.5	20.3	B32718P9206+000	12.2	7.9	15.0	1.9	16.3	280
25.0	35.0 x 50.0 x 57.5	20.3	B32718P9256+000	14.5	6.3	16.0	2.0	16.5	108
27.0	35.0 x 50.0 x 57.5	20.3	B32718P9276+000	15.2	5.9	17.0	2.0	16.5	108
30.0	38.0 x 57.5 x 57.5	20.3	B32718P9306+000	16.9	5.4	18.0	2.0	16.7	96
33.0	38.0 x 57.5 x 57.5	20.3	B32718P9336+000	17.8	4.9	20.0	2.0	16.8	96
35.0	45.0 x 55.0 x 57.5	20.3	B32718P9356+000	19.1	4.6	18.0	2.0	16.8	140
40.0	45.0 x 57.0 x 57.5	20.3	B32718P9406+000	20.5	4.1	20.0	2.0	17.0	140
50.0	45.0 x 65.0 x 57.5	20.3	B32718P9506K000	22.9	3.5	23.0	2.0	17.4	140
$V_{R,85\,°C}$ = 1050 V DC, $V_{op,105\,°C}$ = 1050 V DC, $V_{op,125\,°C}$ = 840 V DC									
15.0	30.0 x 45.0 x 57.5	20.3	B32718P0156K000	12.1	9.0	15.0	1.7	13.5	280
20.0	35.0 x 50.0 x 57.5	20.3	B32718P0206K000	14.9	6.8	17.0	1.7	13.7	108
25.0	38.0 x 57.5 x 57.5	20.3	B32718P0256+000	17.8	5.4	20.0	1.7	13.9	96
27.0	45.0 x 55.0 x 57.5	20.3	B32718P0276+000	19.1	5.0	19.0	1.7	13.9	140
30.0	45.0 x 57.0 x 57.5	20.3	B32718P0306K000	19.7	4.7	20.0	1.7	14.0	140
35.0	45.0 x 65.0 x 57.5	20.3	B32718P0356K000	21.7	4.1	23.0	1.7	14.3	140
$V_{R,85\,°C}$ = 1200 V DC, $V_{op,105\,°C}$ = 1200 V DC, $V_{op,125\,°C}$ = 960 V DC									
11.0	30.0 x 45.0 x 57.5	20.3	B32718P1116+000	11.3	10.3	15.0	1.5	11.8	280
15.0	35.0 x 50.0 x 57.5	20.3	B32718P1156K000	13.7	7.9	17.0	1.5	11.9	108
18.0	38.0 x 57.5 x 57.5	20.3	B32718P1186+000	15.9	6.5	19.0	1.5	12.1	96
20.0	45.0 x 55.0 x 57.5	20.3	B32718P1206+000	17.3	5.8	19.0	1.5	12.1	140
22.0	45.0 x 57.0 x 57.5	20.3	B32718P1226K000	18.2	5.5	20.0	1.5	12.2	140
25.0	45.0 x 65.0 x 57.5	20.3	B32718P1256+000	20.3	4.8	23.0	1.5	12.4	140

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

Composition of ordering code

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

Packaging code
000 = Untaped (lead length 6–1 mm)
Other lead lengths available upon request

1) Capacitance value measured at 1 kHz
2) Max. ripple current I_{RMS}@85 °C@10 kHz for a ΔT ≤15 °C when $ΔESR_{typ}$ ≤ ±5%

Technical data

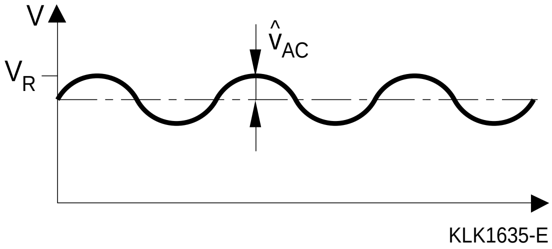
Reference standard: IEC 61071:2017 and AEC-Q200E. All data given at T = 20 °C, unless otherwise specified.

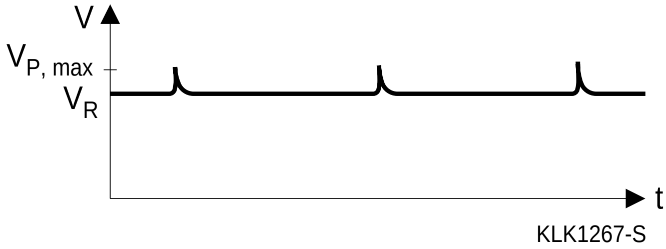
Operating temperature range (case)	Max. operating temperature, $T_{op,max}$						+125 °C
	Upper category temperature T_{max}						+110 °C
	Lower category temperature T_{min}						–55 °C
Rated temperature T_R	+85 °C						
Insulation resistance R_{ins}, given as time constant $\tau = C_R \cdot R_{ins}$, rel. humidity ≤ 65% (minimum as-delivered values)	τ > 10 000 s (after 1 min) at 500 V DC						
DC test voltage between terminals (10 s)[1]	$1.5 \cdot V_R$						
Voltage test terminal to case (10 s)	2110 V AC, 50 Hz						
Pulse handling capability (V/µs)	I_P (A) / C (µF)						
V_R (V DC) at 85 °C[2]	600	675	750	825	900	1050	1200
Continuous operating voltage V_{op} (V DC) at 105 °C[2]	600	675	750	825	900	1050	1200
Continuous operating voltage V_{op} (V DC) at 125 °C[2]	400	450	600	660	720	840	960
For temperature between 105 °C and 125 °C[2]	B3271#P6/P3 1.66%/°C of V_{op} de-rating compared to V_{op} at 105 °C B3271#P7/P8/P9/P0/P1 1.0%/°C of V_{op} de-rating compared to V_{op} at 105 °C						
Advanced biased humidity	1000 hours / 60 °C / 95% relative humidity with V_R						
Limit values after test	Capacitance change |ΔC/C|			≤ 3%			
	Dissipation factor change |Δtan δ|			< 0.005 (at 1 kHz)			
	Insulation resistance R_{ins}			≥ 50% of initial limit			
Reliability: Failure rate λ	12 fit ($\leq 12 \cdot 10^{-9}$/h) at $0.5 \cdot V_R$, 40 °C For conversion to other operating conditions and temperatures, refer to chapter "Quality, 2 Reliability".						
Service life t_{SL}	42 000 h at V_R, 85 °C						

1) The repetition of this DC voltage test may damage the capacitor. Special care must be taken in case of use several capacitors in a parallel configuration.

2) Temperature given as operating temperature T_{op} (ambient temperature + self-heating).

Typical waveforms





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.
ûAC ≤ 0.2 • V_R

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

NOTE 1 An overvoltage equal to 1.5 • 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. These parameters are given for isolated pulses in such a way that the heat generated by one pulse will be completely dissipated before applying the next pulse.

dV/dt values

Lead spacing	27.5 mm						
Type	B32714P						
V_R (V DC)	600	675	750	825	900	1050	1200
dV/dt (V/µs)	40	50	75	85	100	120	140

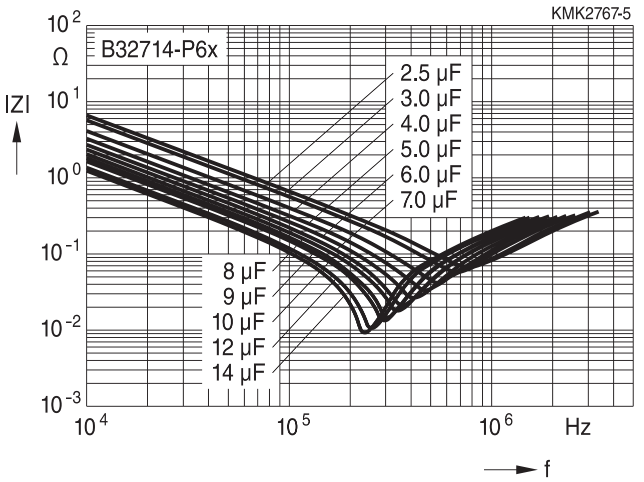
Lead spacing	37.5 mm						
Type	B32716P						
V_R (V DC)	600	675	750	825	900	1050	1200
dV/dt (V/µs)	25	35	54	63	73	85	100

Lead spacing	52.5 mm						
Type	B32718P						
V_R (V DC)	600	675	750	825	900	1050	1200
dV/dt (V/µs)	15	22	35	40	50	58	65

Characteristics curves

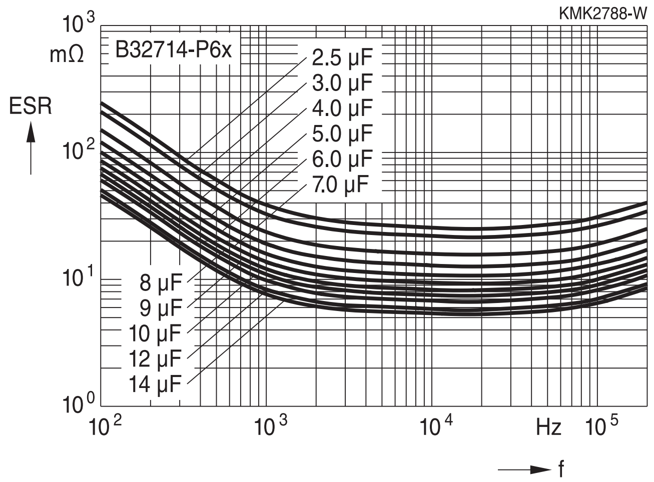
Impedance Z versus frequency f
(Typical values)

Lead spacing 27.5 mm
600 V DC



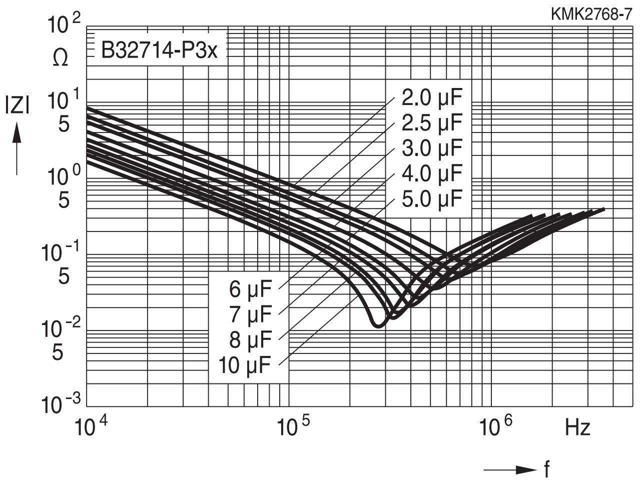
ESR versus frequency f
(Typical values)

Lead spacing 27.5 mm
600 V DC



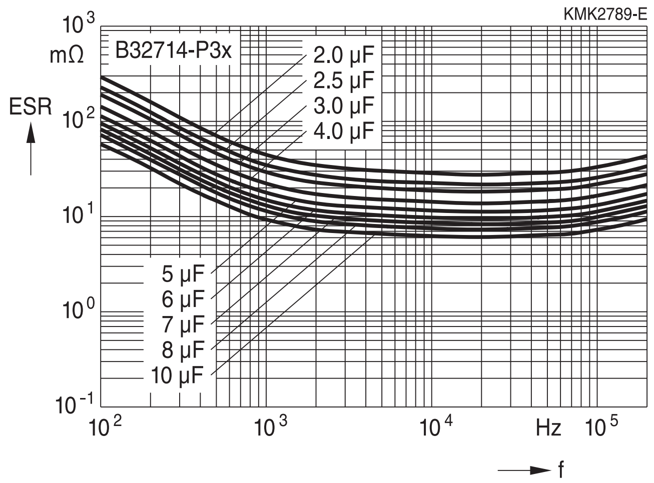
Impedance Z versus frequency f
(Typical values)

Lead spacing 27.5 mm
675 V DC



ESR versus frequency f
(Typical values)

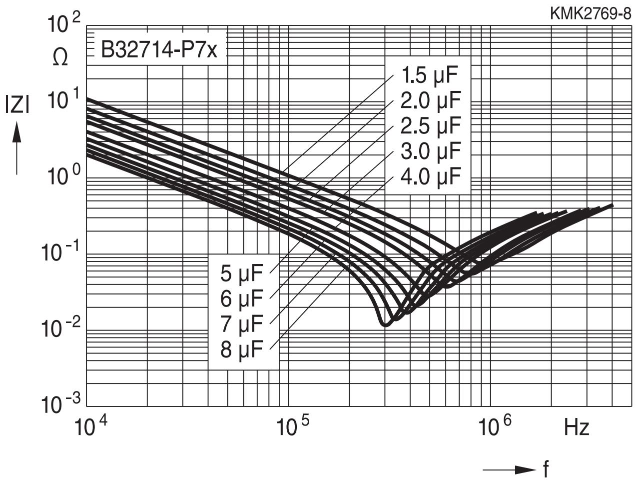
Lead spacing 27.5 mm
675 V DC



Characteristics curves

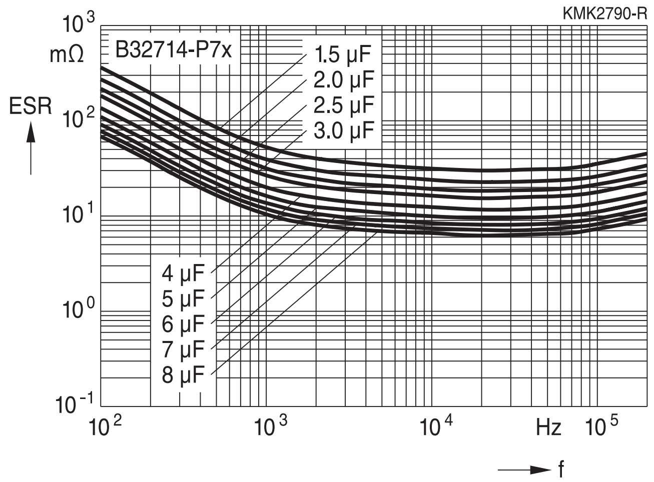
Impedance Z versus frequency f
(Typical values)

Lead spacing 27.5 mm
750 V DC



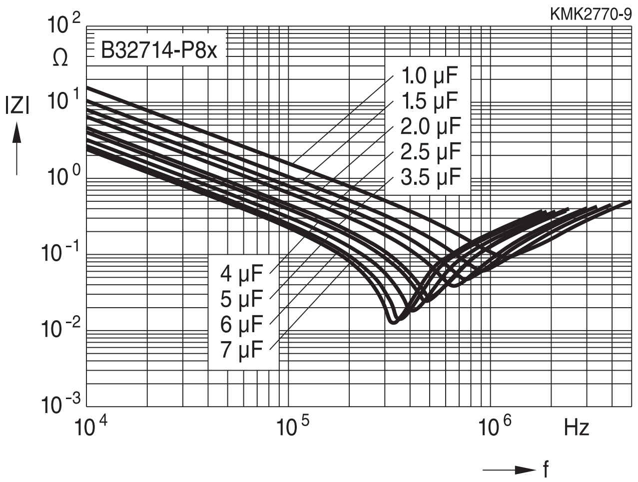
ESR versus frequency f
(Typical values)

Lead spacing 27.5 mm
750 V DC



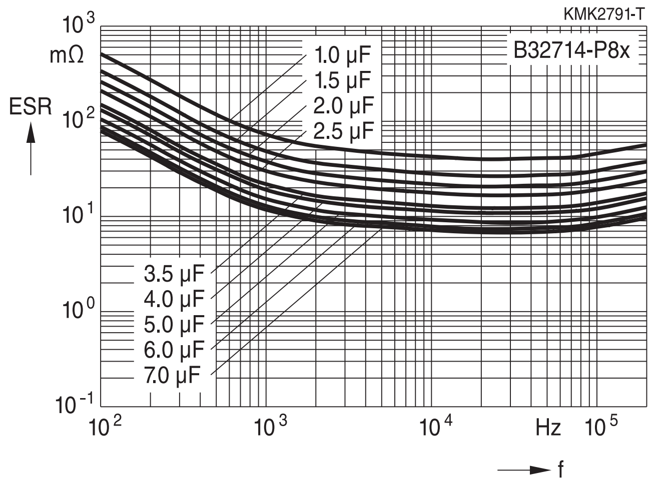
Impedance Z versus frequency f
(Typical values)

Lead spacing 27.5 mm
825 V DC



ESR versus frequency f
(Typical values)

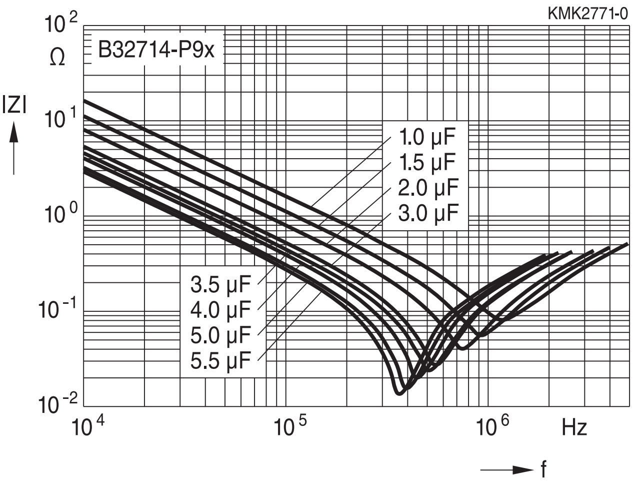
Lead spacing 27.5 mm
825 V DC



Characteristics curves

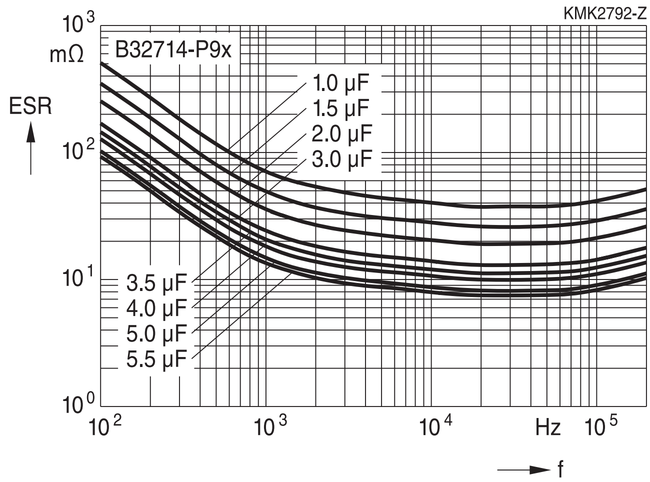
Impedance Z versus frequency f
(Typical values)

Lead spacing 27.5 mm
900 V DC



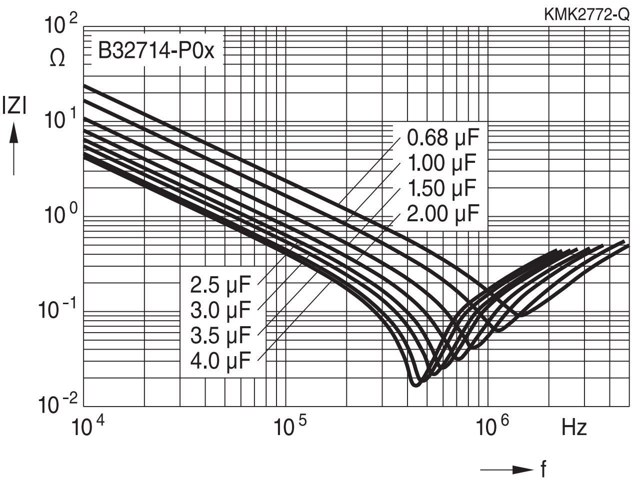
ESR versus frequency f
(Typical values)

Lead spacing 27.5 mm
900 V DC



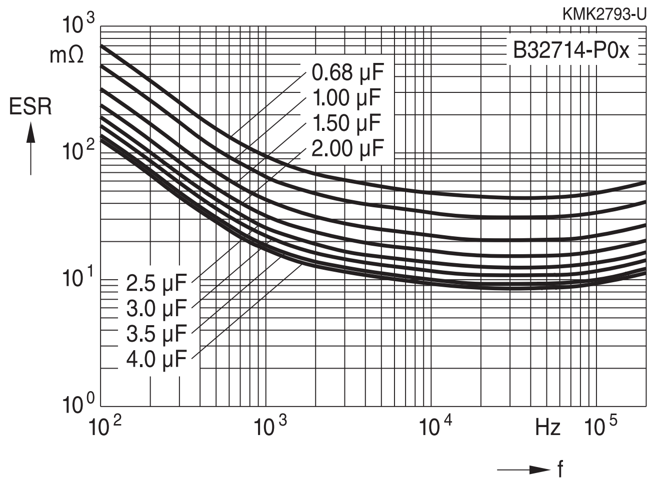
Impedance Z versus frequency f
(Typical values)

Lead spacing 27.5 mm
1050 V DC



ESR versus frequency f
(Typical values)

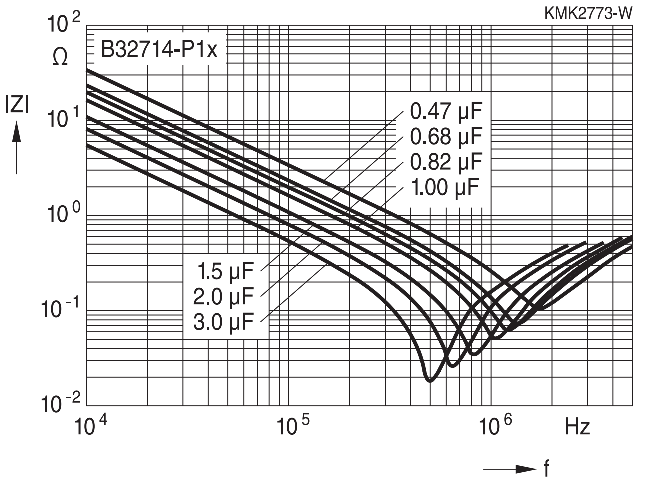
Lead spacing 27.5 mm
1050 V DC



Characteristics curves

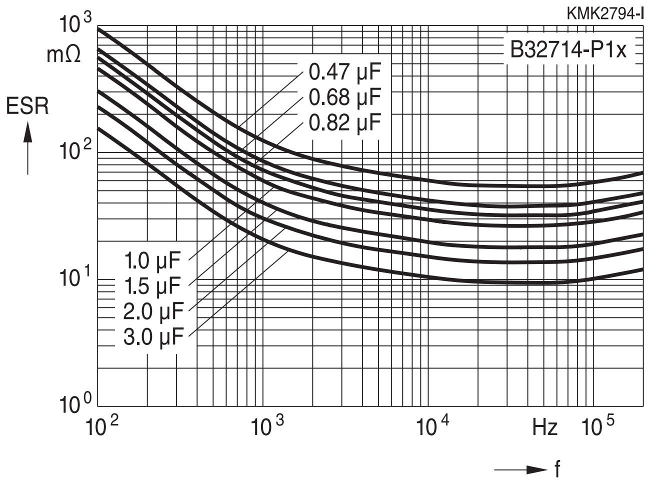
Impedance Z versus frequency f
(Typical values)

Lead spacing 27.5 mm
1200 V DC



ESR versus frequency f
(Typical values)

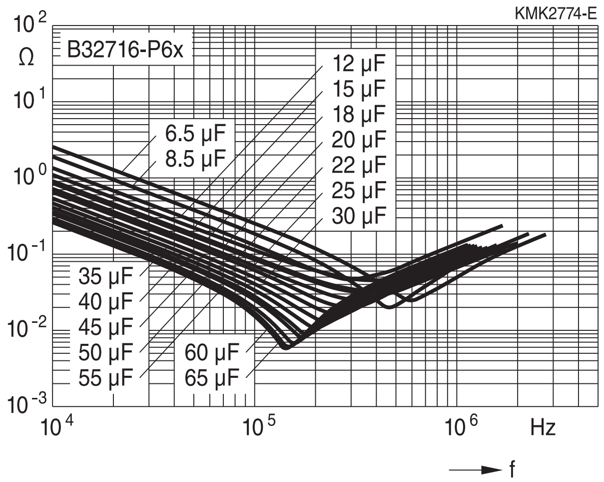
Lead spacing 27.5 mm
1200 V DC



Characteristics curves

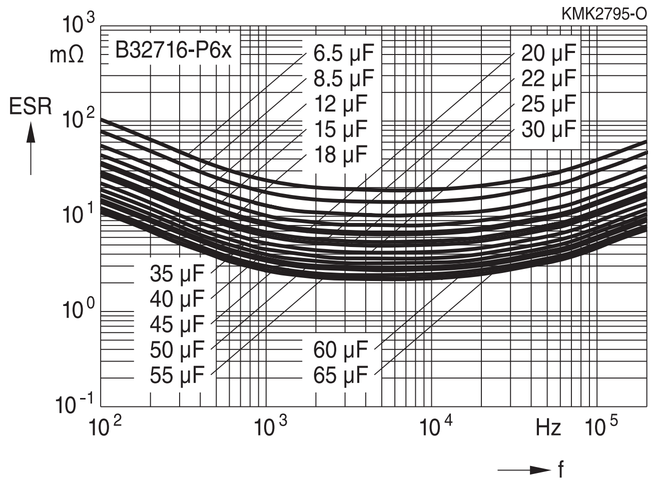
Impedance Z versus frequency f
(Typical values)

Lead spacing 37.5 mm
600 V DC



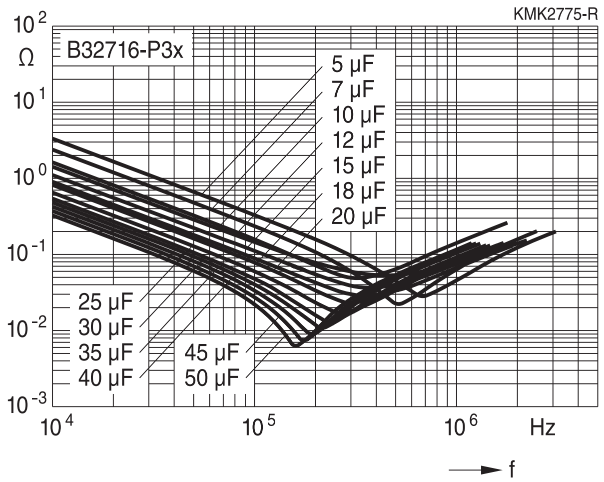
ESR versus frequency f
(Typical values)

Lead spacing 37.5 mm
600 V DC



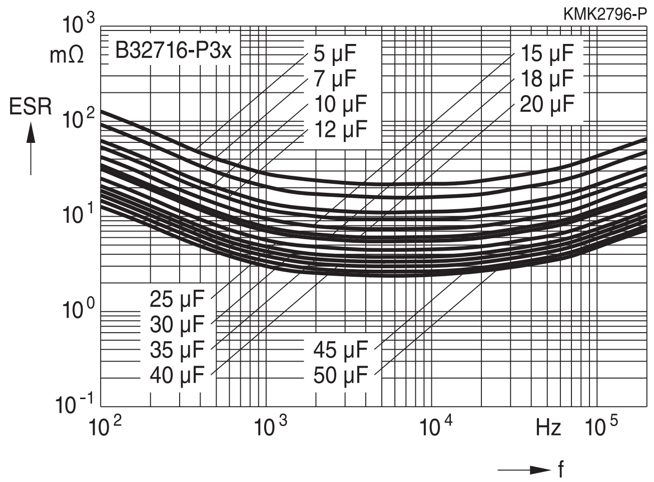
Impedance Z versus frequency f
(Typical values)

Lead spacing 37.5 mm
675 V DC



ESR versus frequency f
(Typical values)

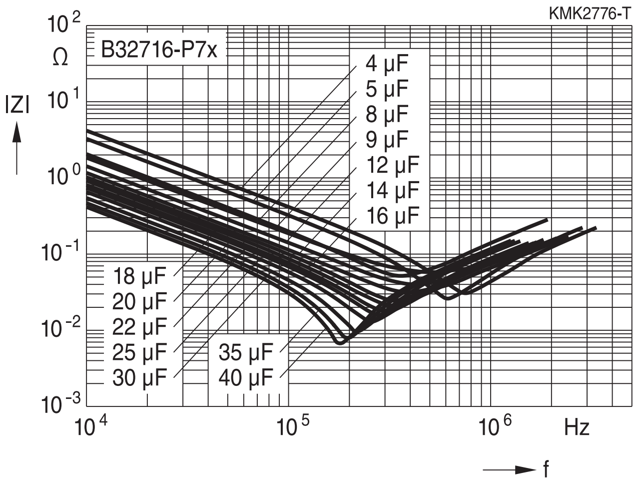
Lead spacing 37.5 mm
675 V DC



Characteristics curves

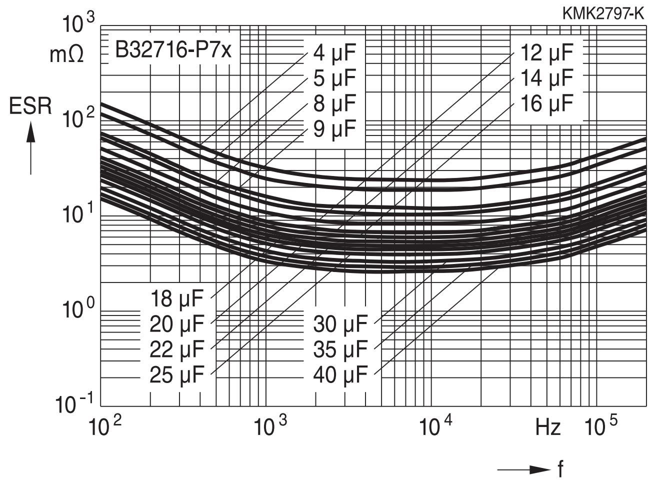
Impedance Z versus frequency f
(Typical values)

Lead spacing 37.5 mm
750 V DC



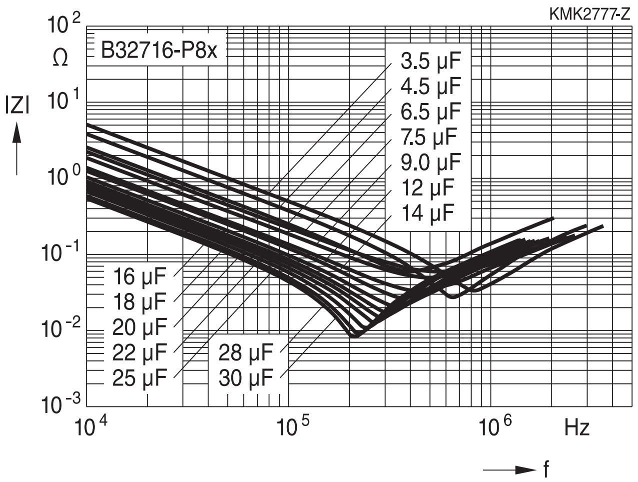
ESR versus frequency f
(Typical values)

Lead spacing 37.5 mm
750 V DC



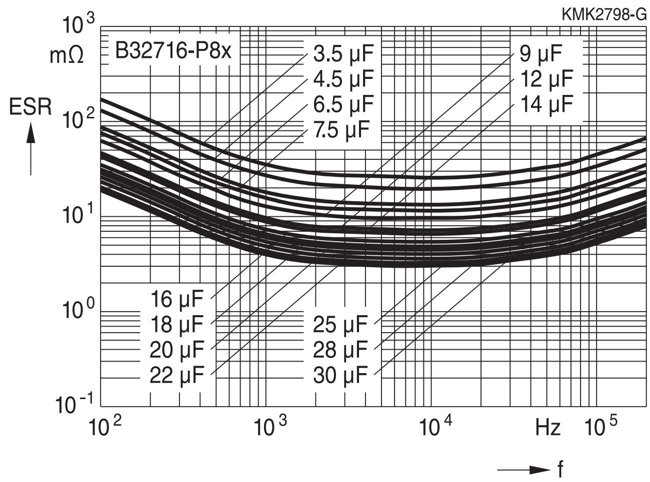
Impedance Z versus frequency f
(Typical values)

Lead spacing 37.5 mm
825 V DC



ESR versus frequency f
(Typical values)

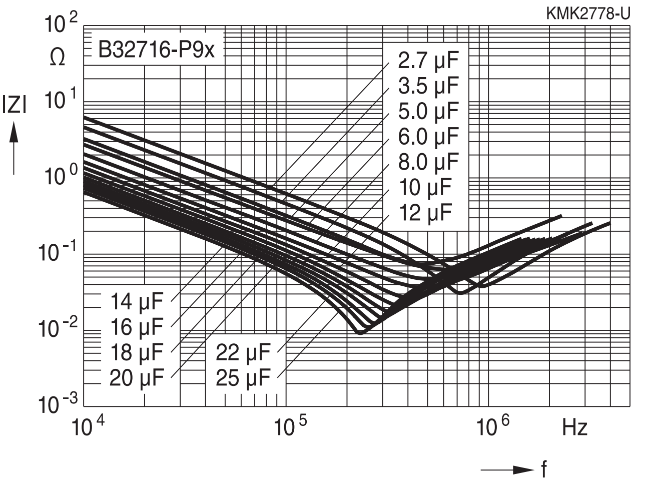
Lead spacing 37.5 mm
825 V DC



Characteristics curves

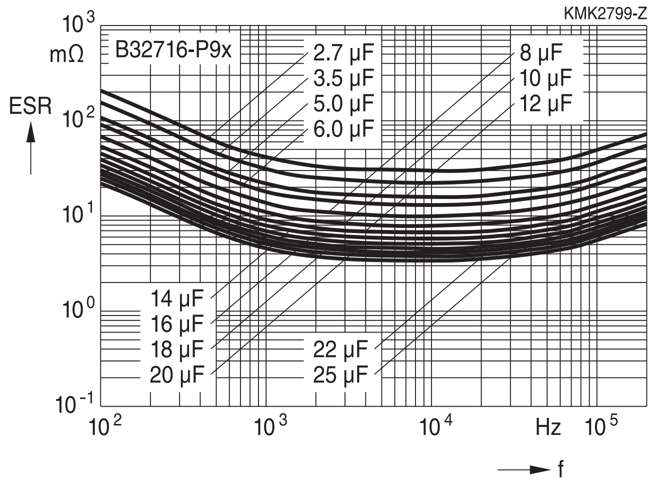
Impedance Z versus frequency f
(Typical values)

Lead spacing 37.5 mm
900 V DC



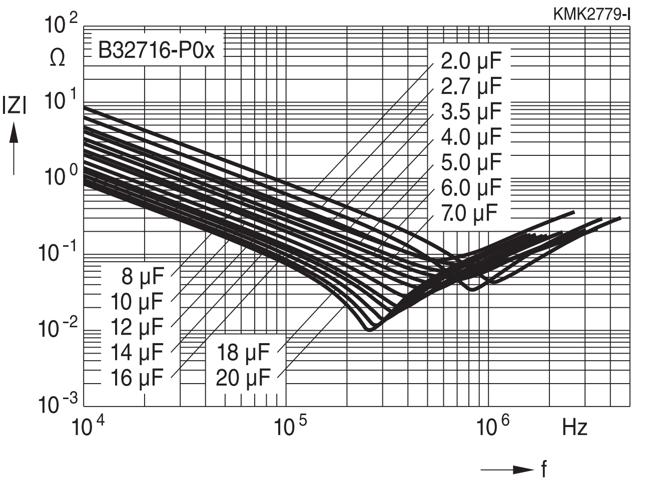
ESR versus frequency f
(Typical values)

Lead spacing 37.5 mm
900 V DC



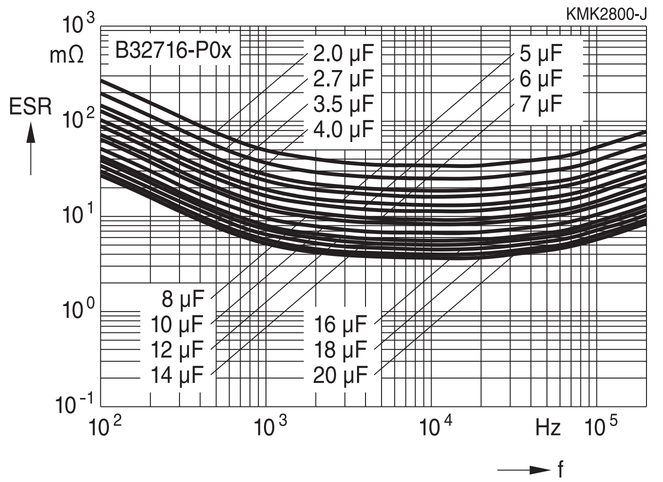
Impedance Z versus frequency f
(Typical values)

Lead spacing 37.5 mm
1050 V DC



ESR versus frequency f
(Typical values)

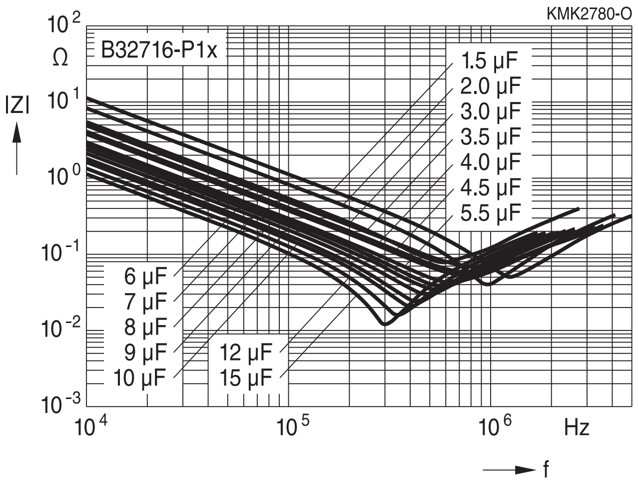
Lead spacing 37.5 mm
1050 V DC



Characteristics curves

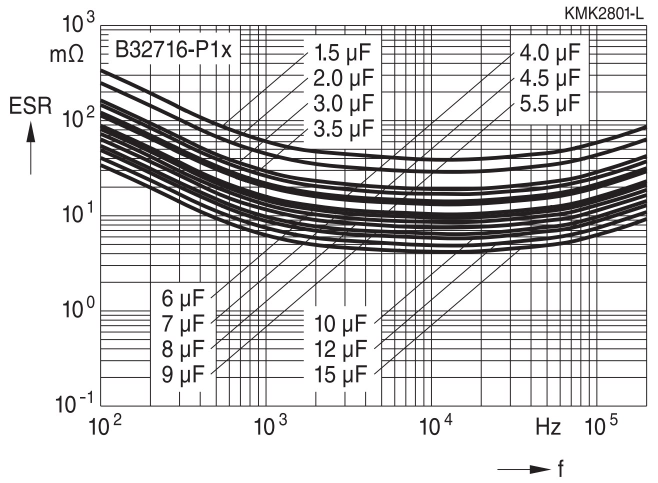
Impedance Z versus frequency f
(Typical values)

Lead spacing 37.5 mm
1200 V DC



ESR versus frequency f
(Typical values)

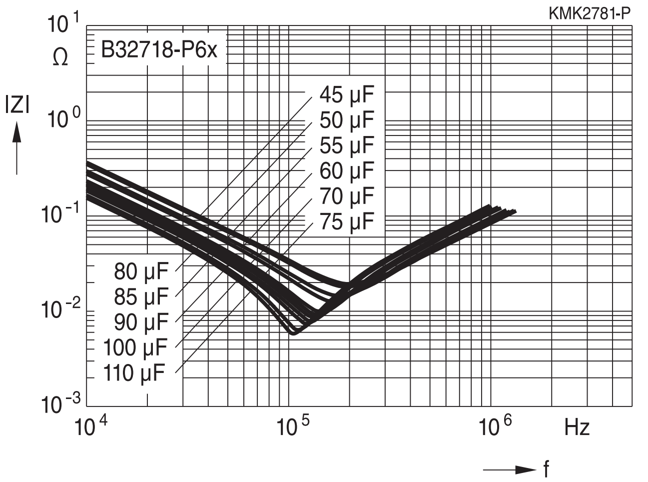
Lead spacing 37.5 mm
1200 V DC



Characteristics curves

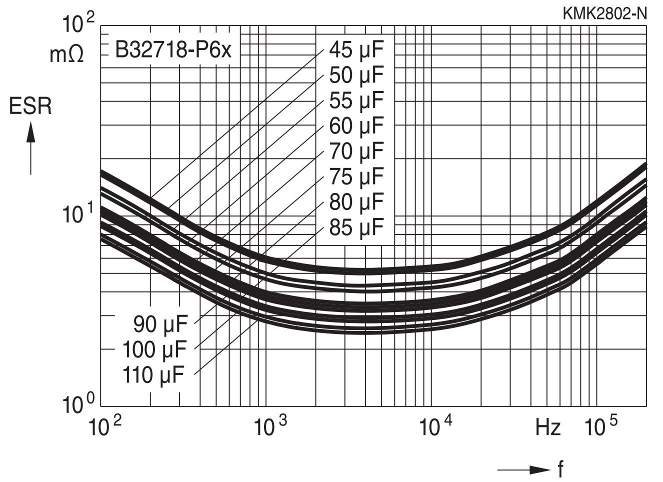
Impedance Z versus frequency f
(Typical values)

Lead spacing 52.5 mm
600 V DC



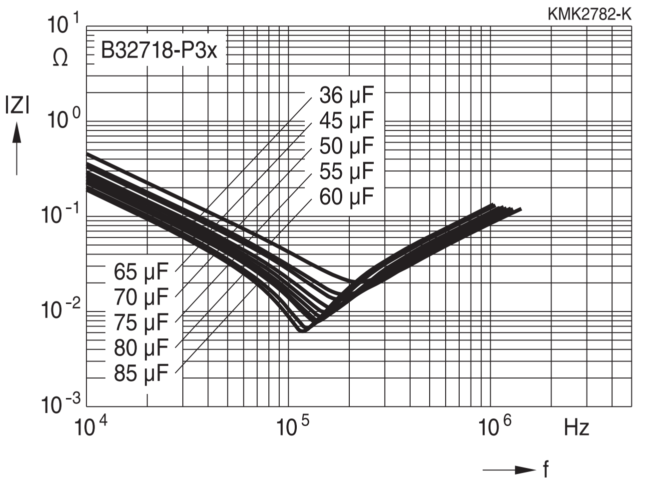
ESR versus frequency f
(Typical values)

Lead spacing 52.5 mm
600 V DC



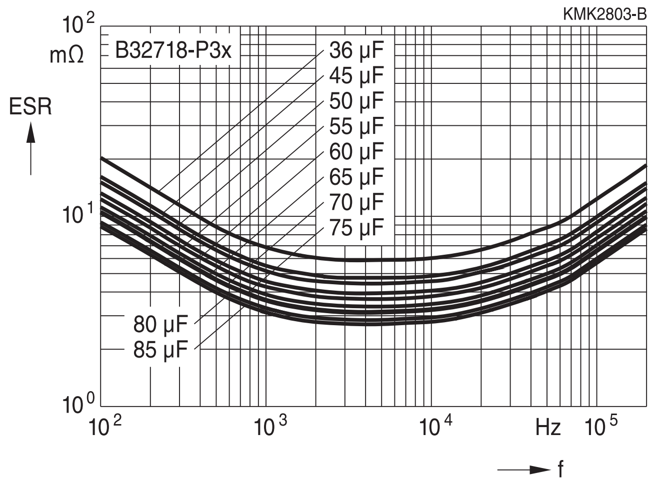
Impedance Z versus frequency f
(Typical values)

Lead spacing 52.5 mm
675 V DC



ESR versus frequency f
(Typical values)

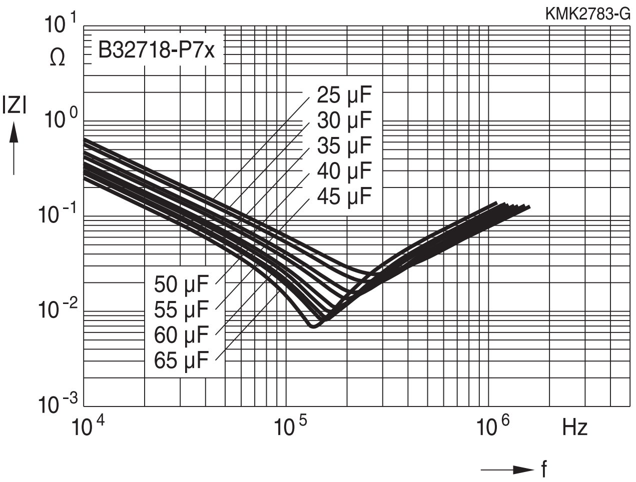
Lead spacing 52.5 mm
675 V DC



Characteristics curves

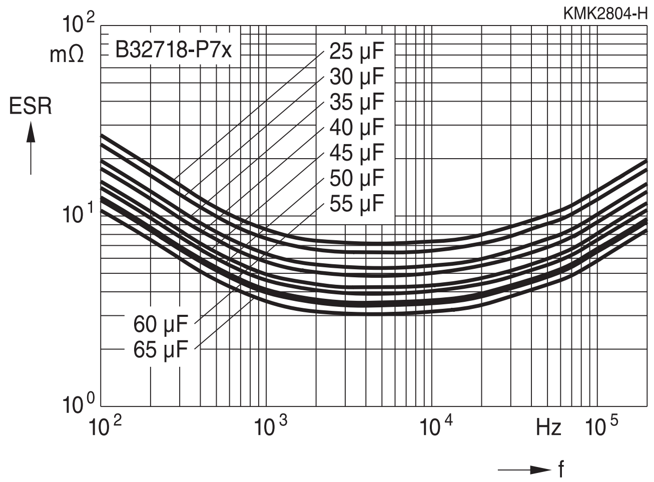
Impedance Z versus frequency f
(Typical values)

Lead spacing 52.5 mm
750 V DC



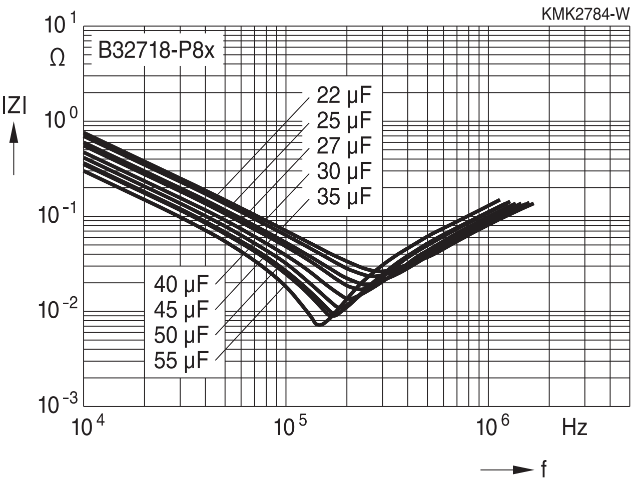
ESR versus frequency f
(Typical values)

Lead spacing 52.5 mm
750 V DC



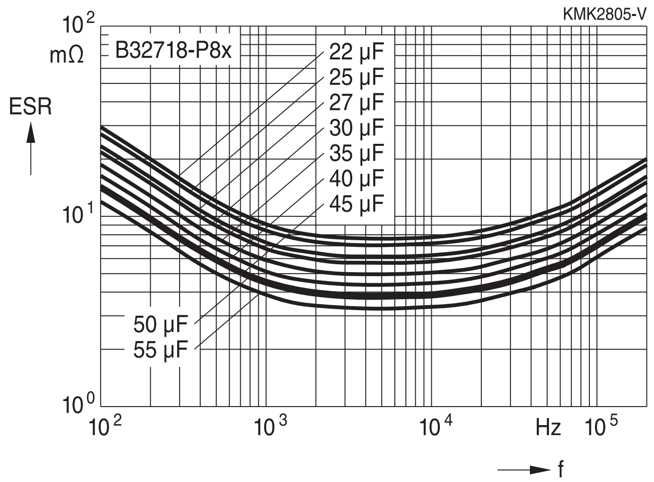
Impedance Z versus frequency f
(Typical values)

Lead spacing 52.5 mm
825 V DC



ESR versus frequency f
(Typical values)

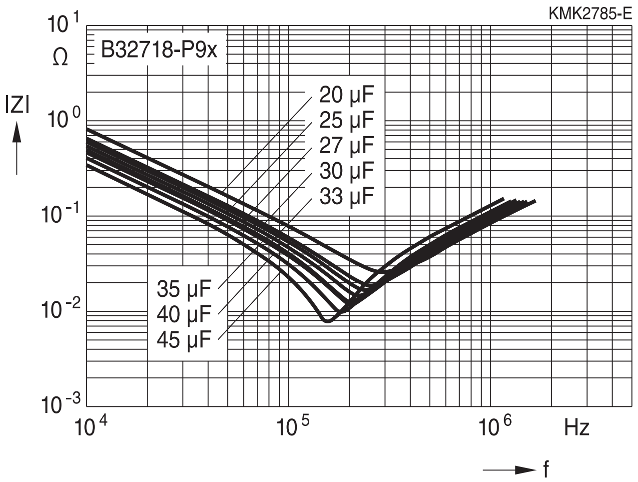
Lead spacing 52.5 mm
825 V DC



Characteristics curves

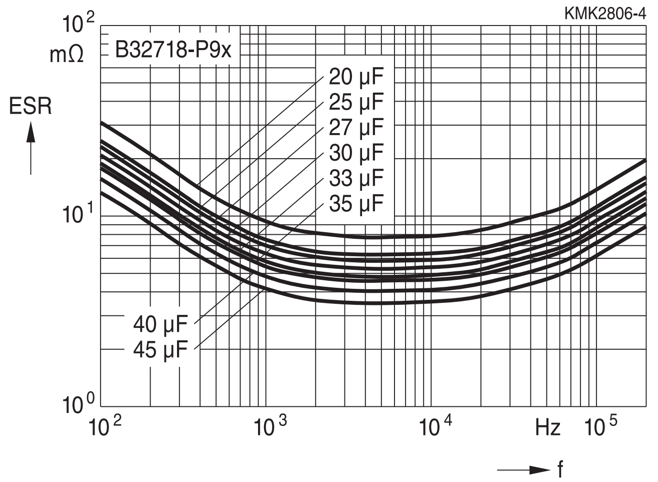
Impedance Z versus frequency f
(Typical values)

Lead spacing 52.5 mm
900 V DC



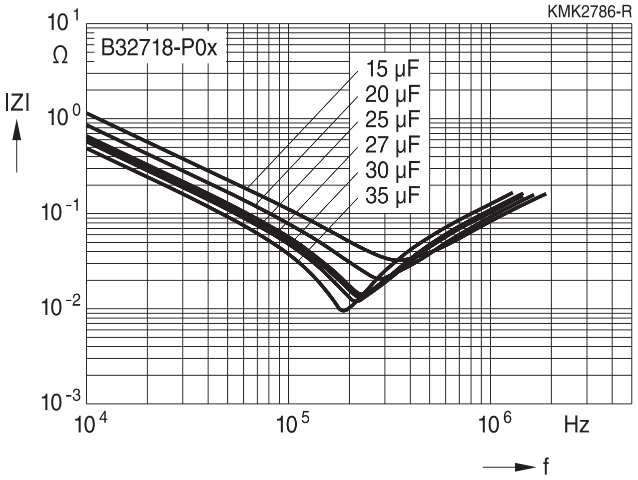
ESR versus frequency f
(Typical values)

Lead spacing 52.5 mm
900 V DC



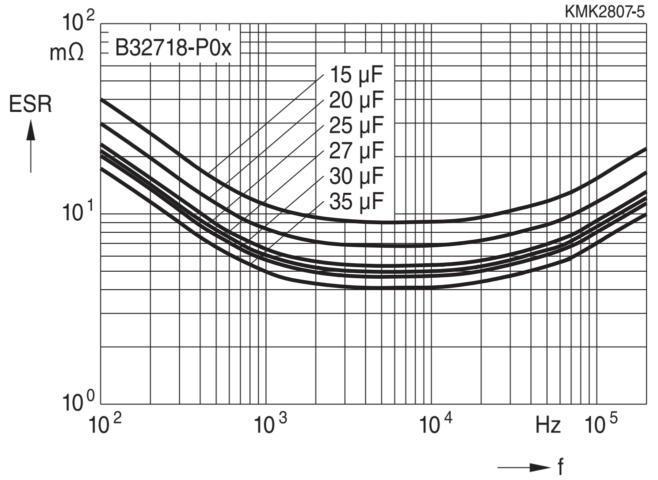
Impedance Z versus frequency f
(Typical values)

Lead spacing 52.5 mm
1050 V DC



ESR versus frequency f
(Typical values)

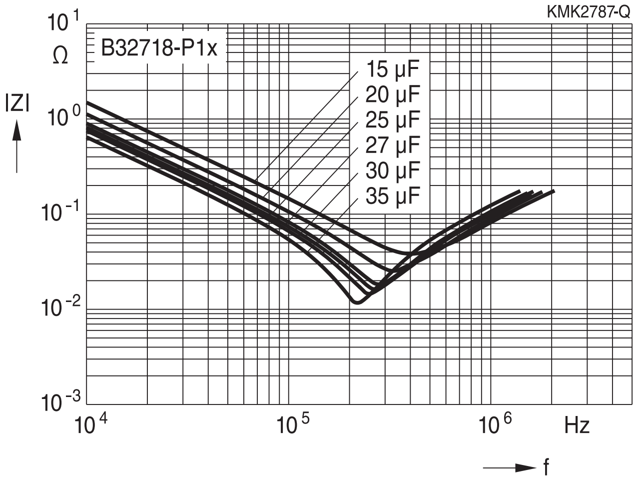
Lead spacing 52.5 mm
1050 V DC



Characteristics curves

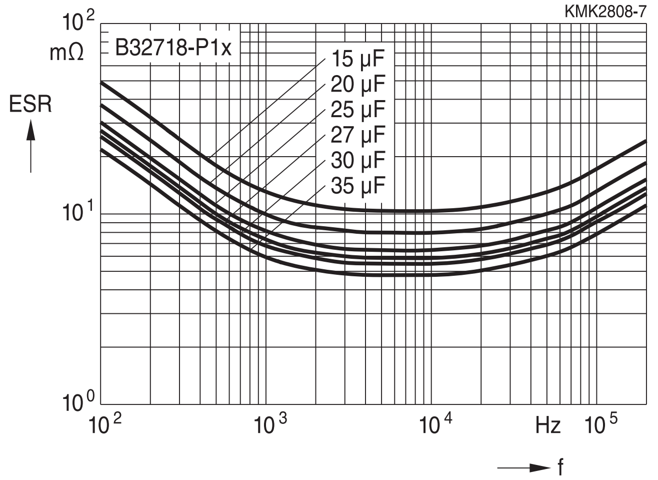
Impedance Z versus frequency f
(Typical values)

Lead spacing 52.5 mm
1200 V DC



ESR versus frequency f
(Typical values)

Lead spacing 52.5 mm
1200 V DC

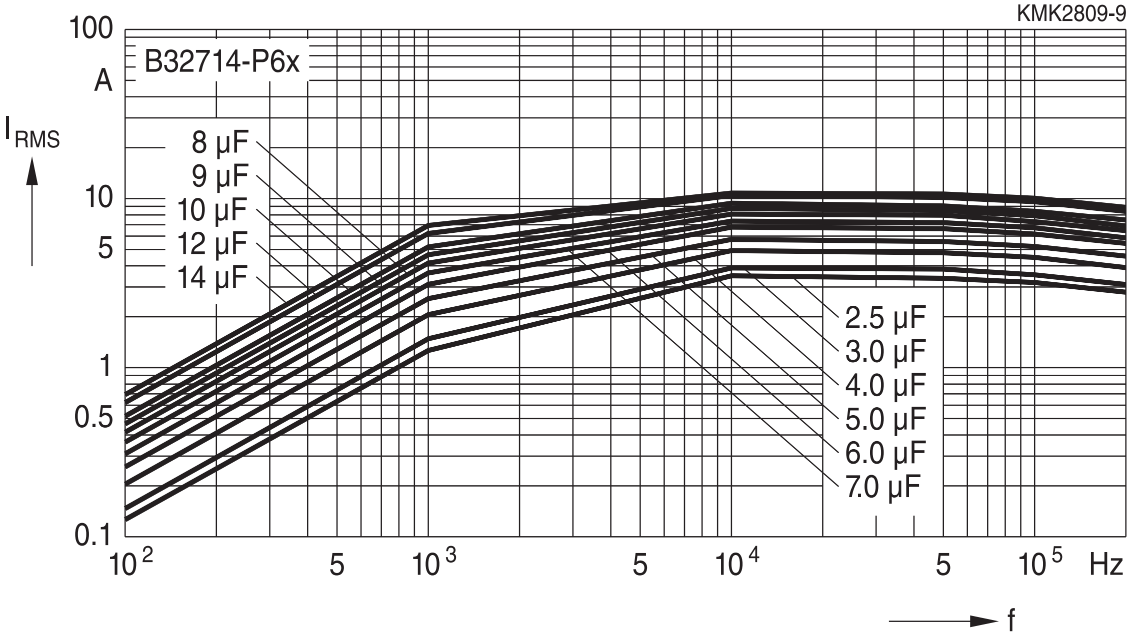


Characteristics curves

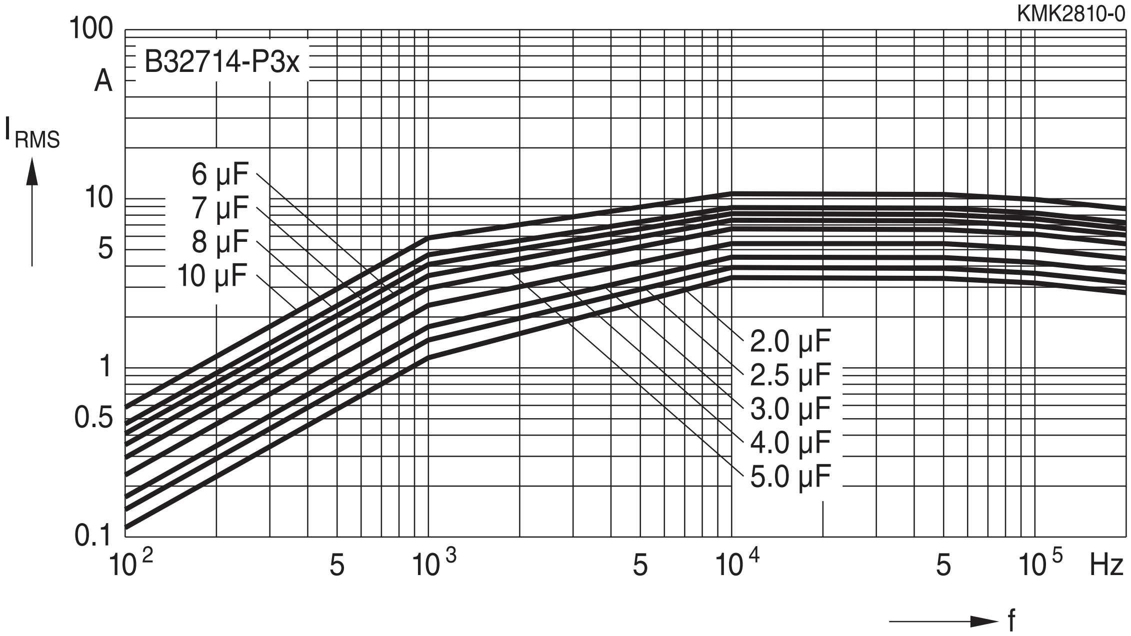
Permissible current I_{RMS} versus frequency f at T_a ≤85 °C

Lead spacing 27.5 mm

600 V DC



675 V DC

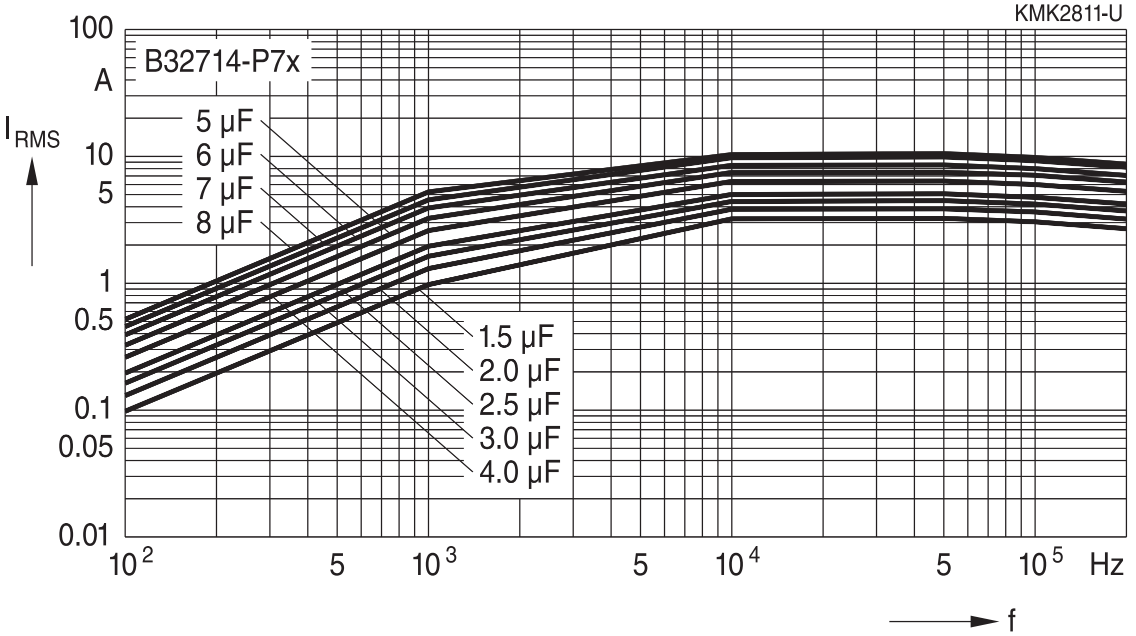


Characteristics curves

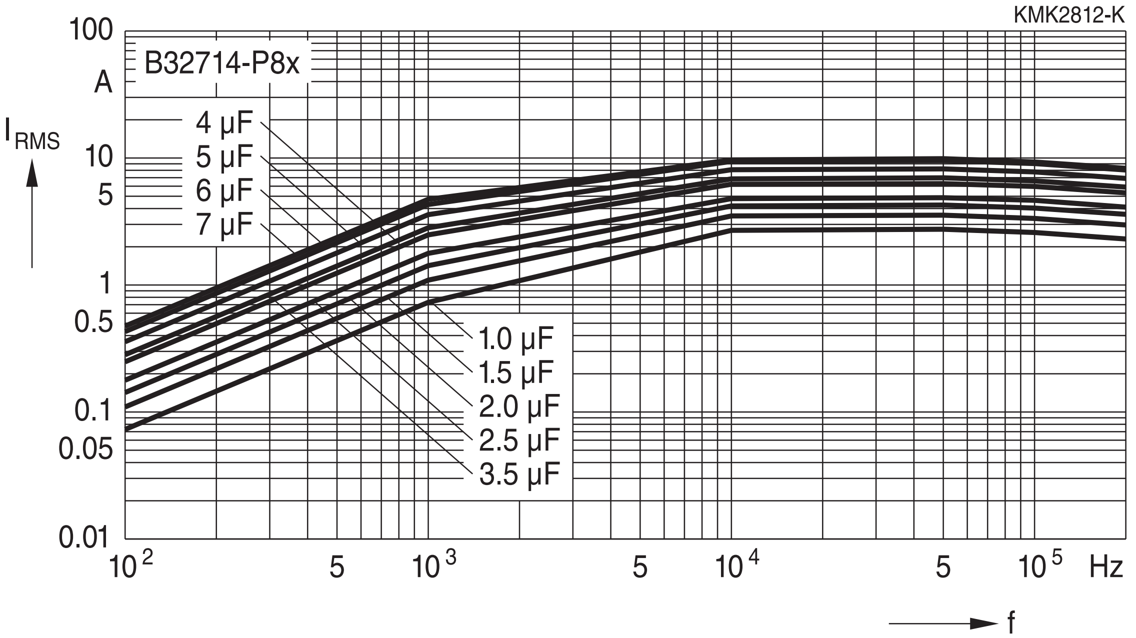
Permissible current I_{RMS} versus frequency f at T_a ≤85 °C

Lead spacing 27.5 mm

750 V DC



825 V DC

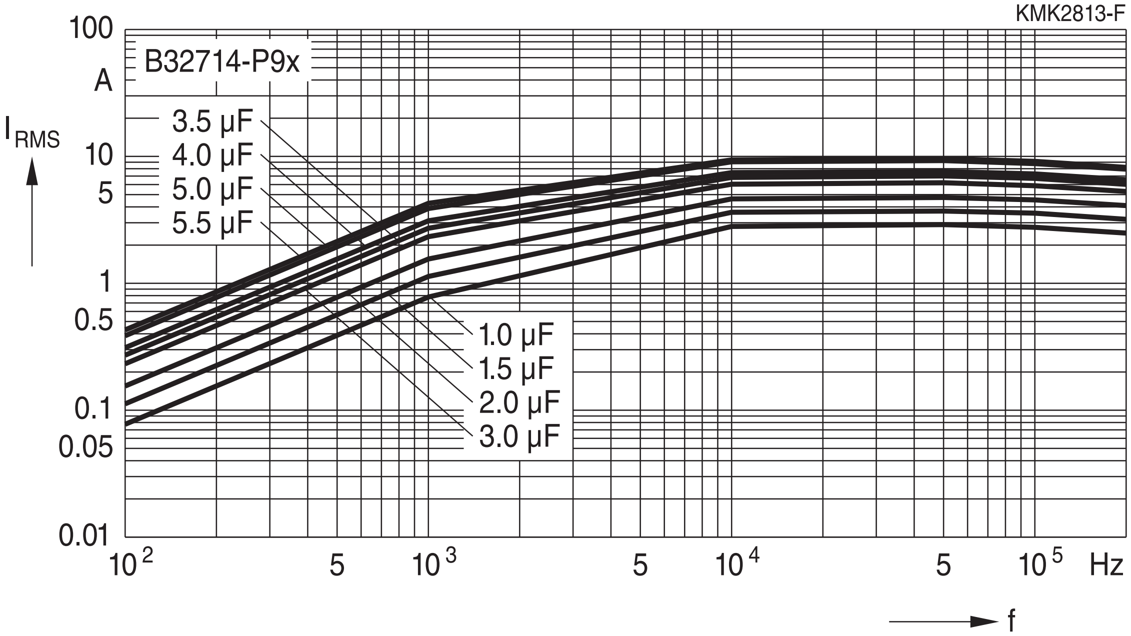


Characteristics curves

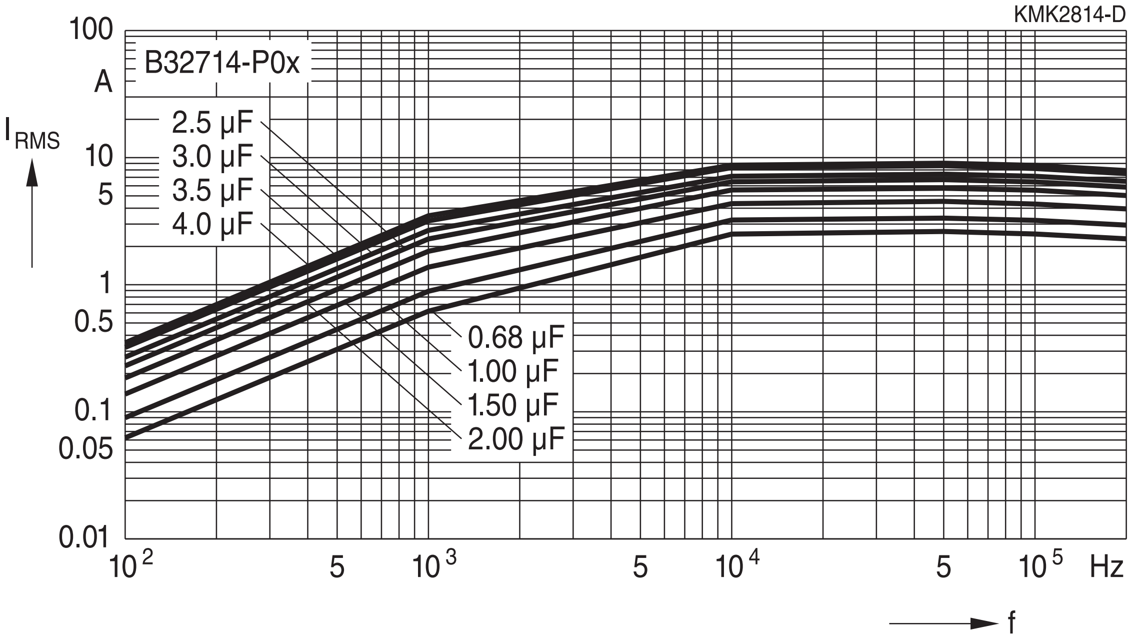
Permissible current I_{RMS} versus frequency f at T_a ≤85 °C

Lead spacing 27.5 mm

900 V DC



1050 V DC

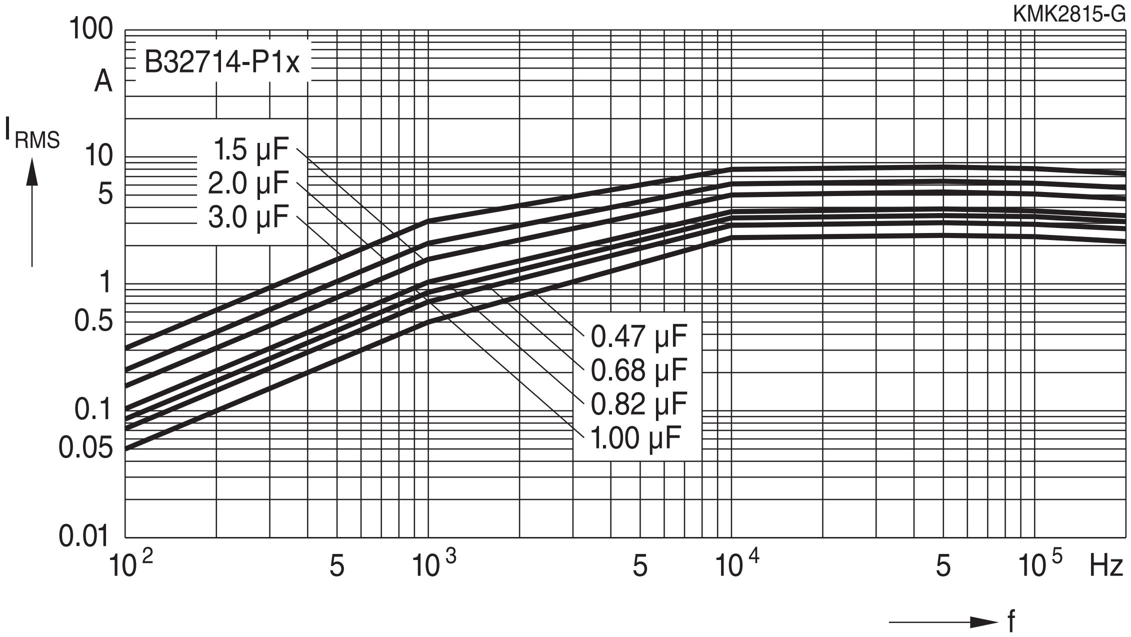


Characteristics curves

Permissible current I_{RMS} versus frequency f at T_a ≤85 °C

Lead spacing 27.5 mm

1200 V DC

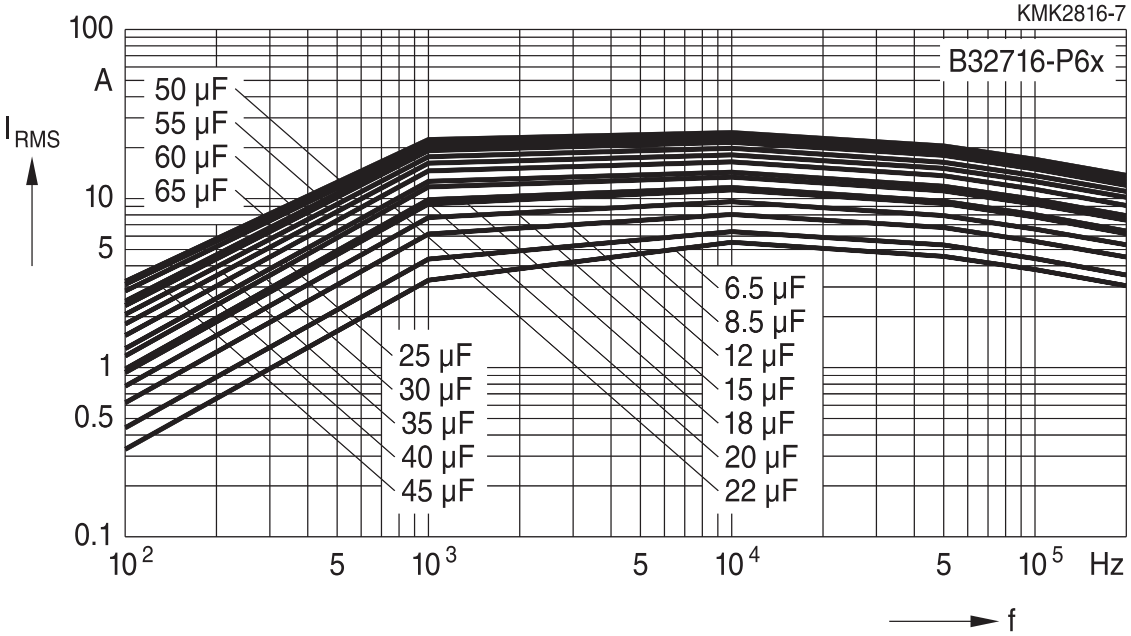


Characteristics curves

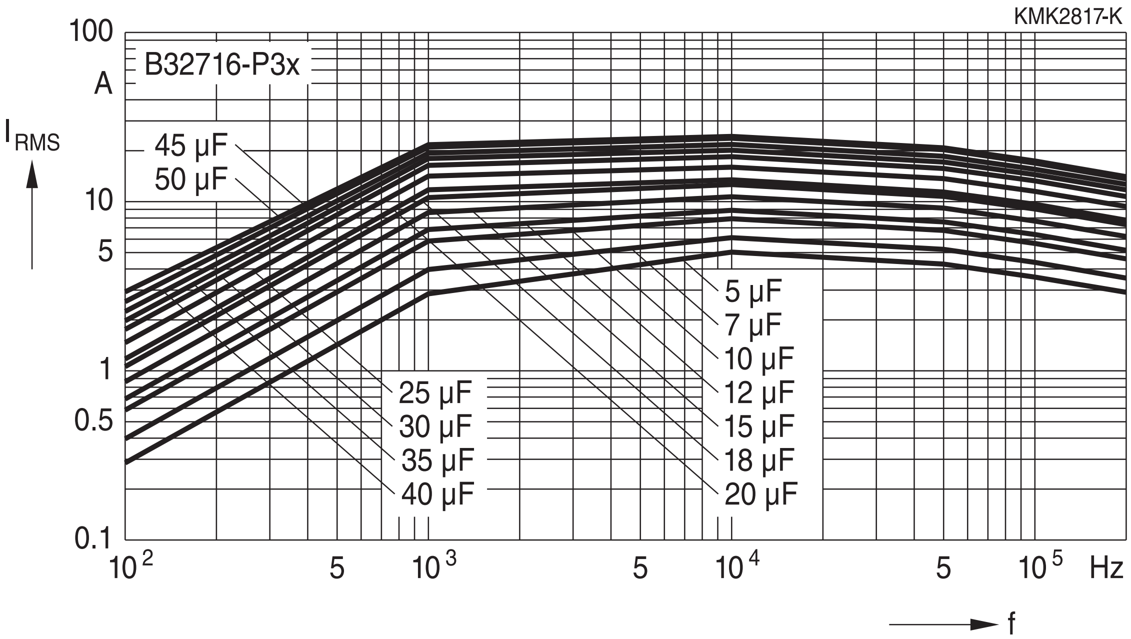
Permissible current I_{RMS} versus frequency f at T_a ≤85 °C

Lead spacing 37.5 mm

600 V DC



675 V DC

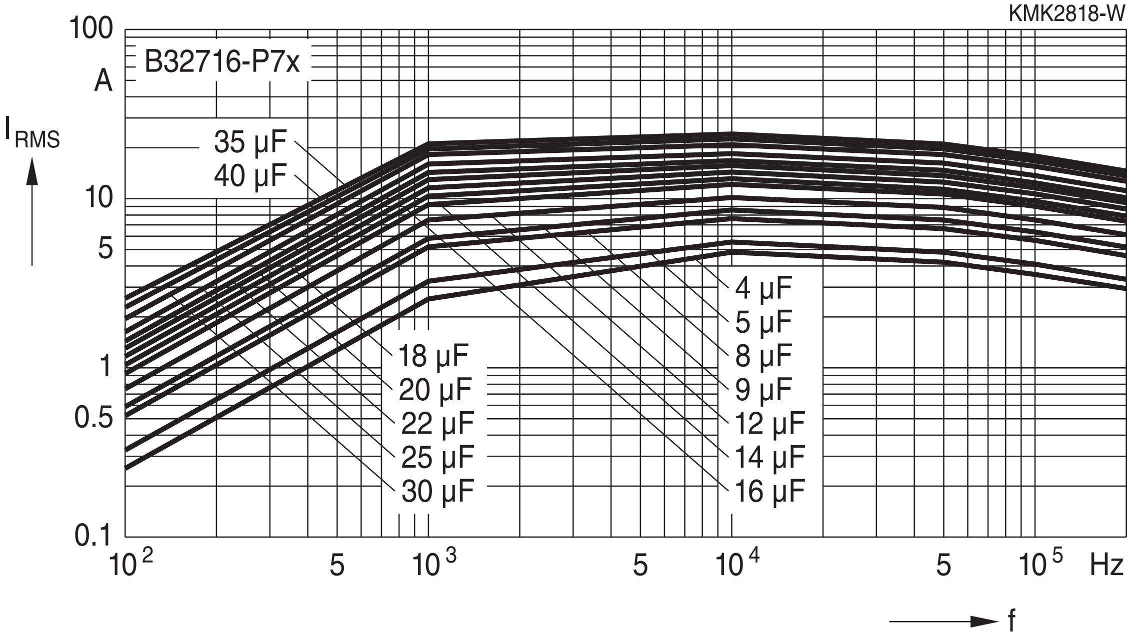


Characteristics curves

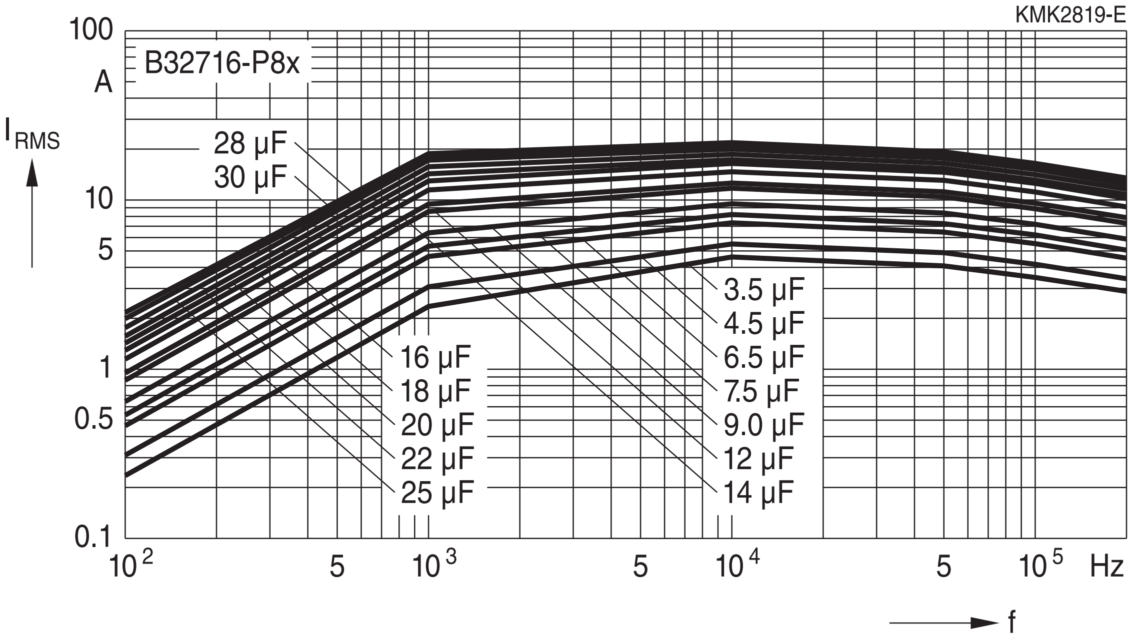
Permissible current I_{RMS} versus frequency f at T_a ≤85 °C

Lead spacing 37.5 mm

750 V DC



825 V DC

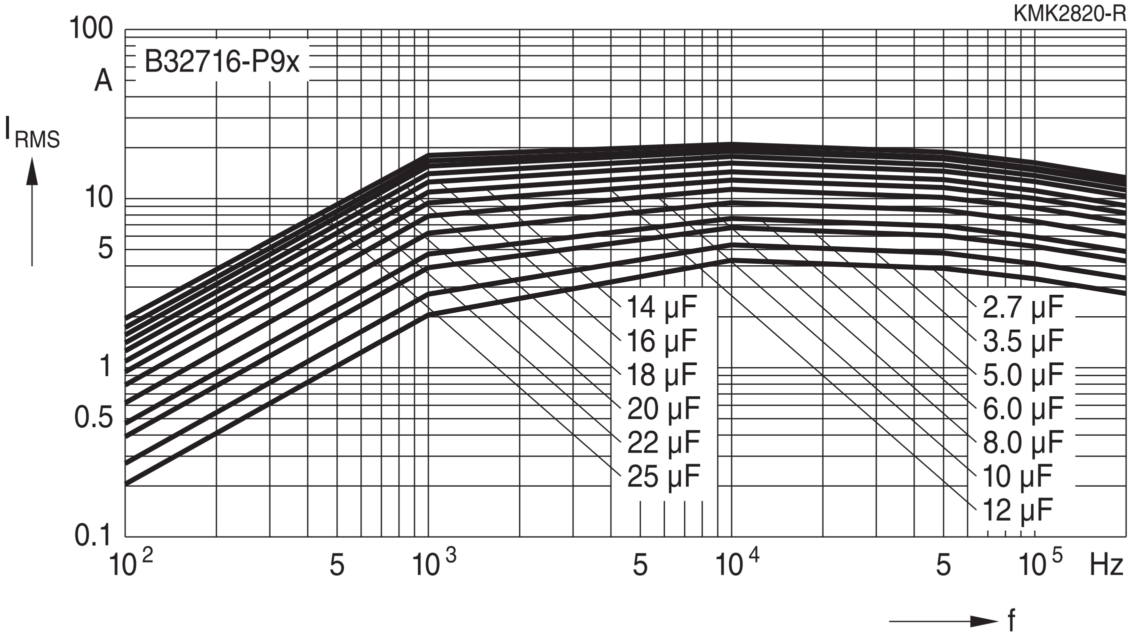


Characteristics curves

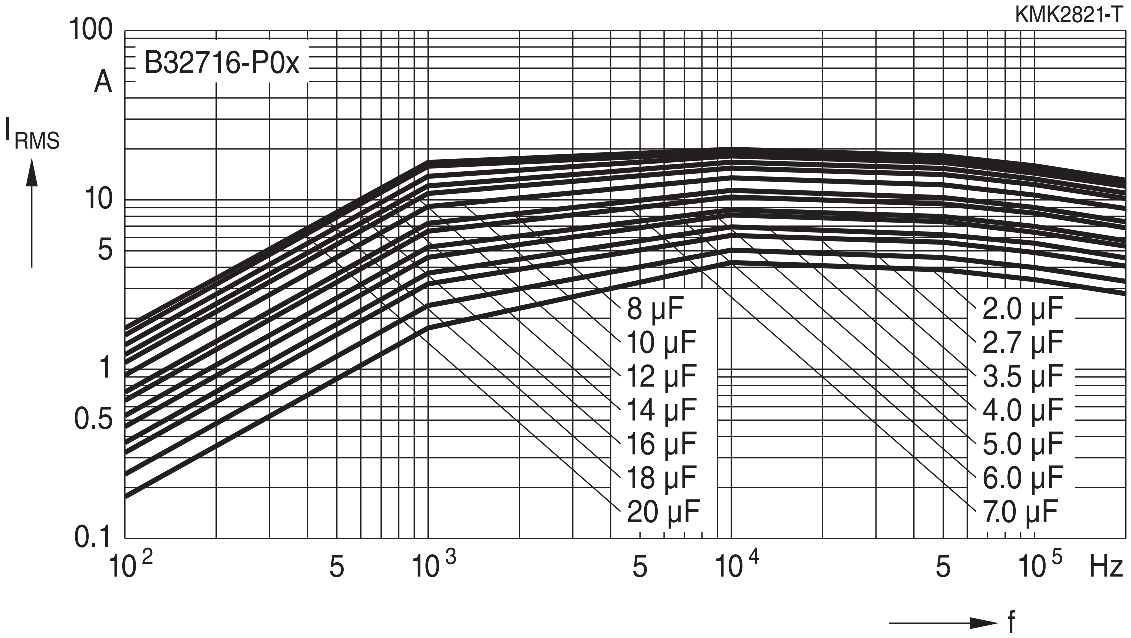
Permissible current I_{RMS} versus frequency f at T_a ≤85 °C

Lead spacing 37.5 mm

900 V DC



1050 V DC

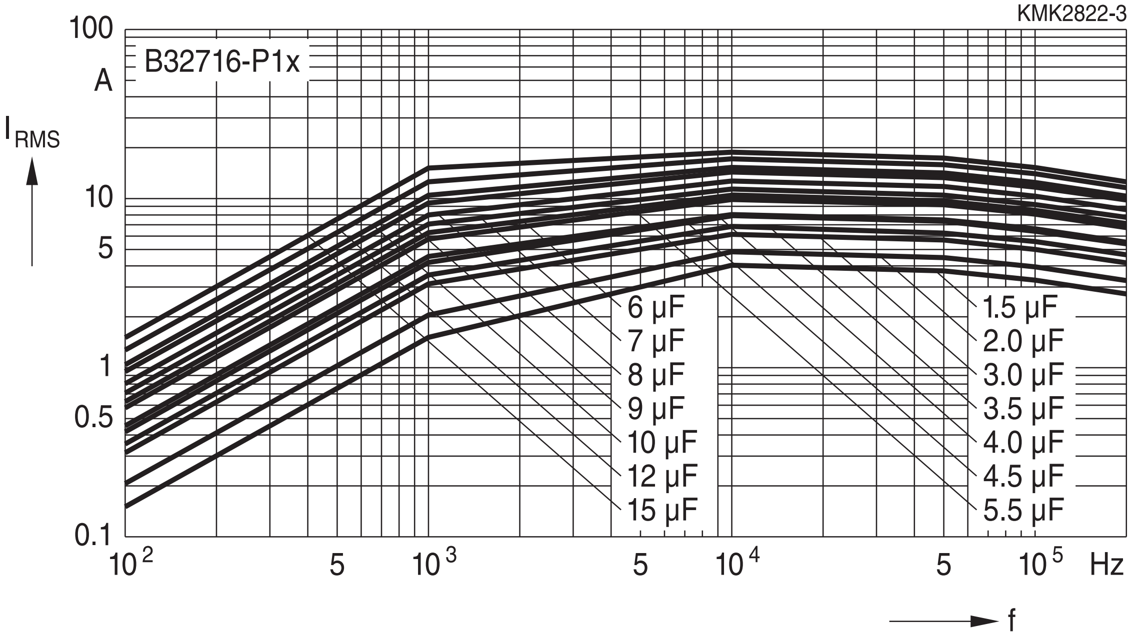


Characteristics curves

Permissible current I_{RMS} versus frequency f at T_a ≤85 °C

Lead spacing 37.5 mm

1200 V DC

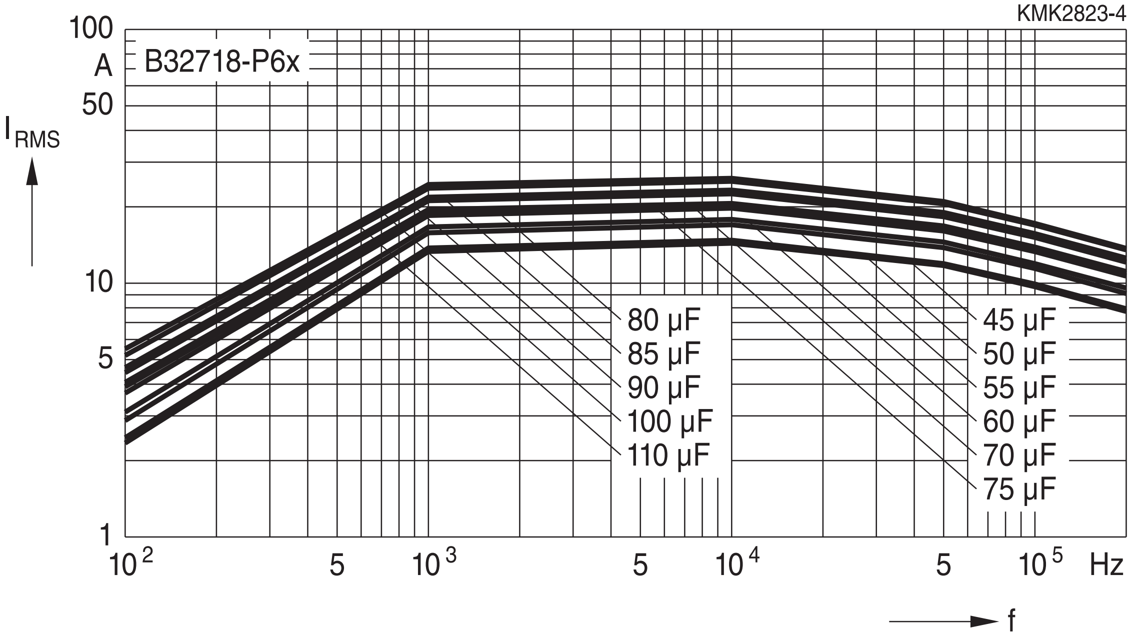


Characteristics curves

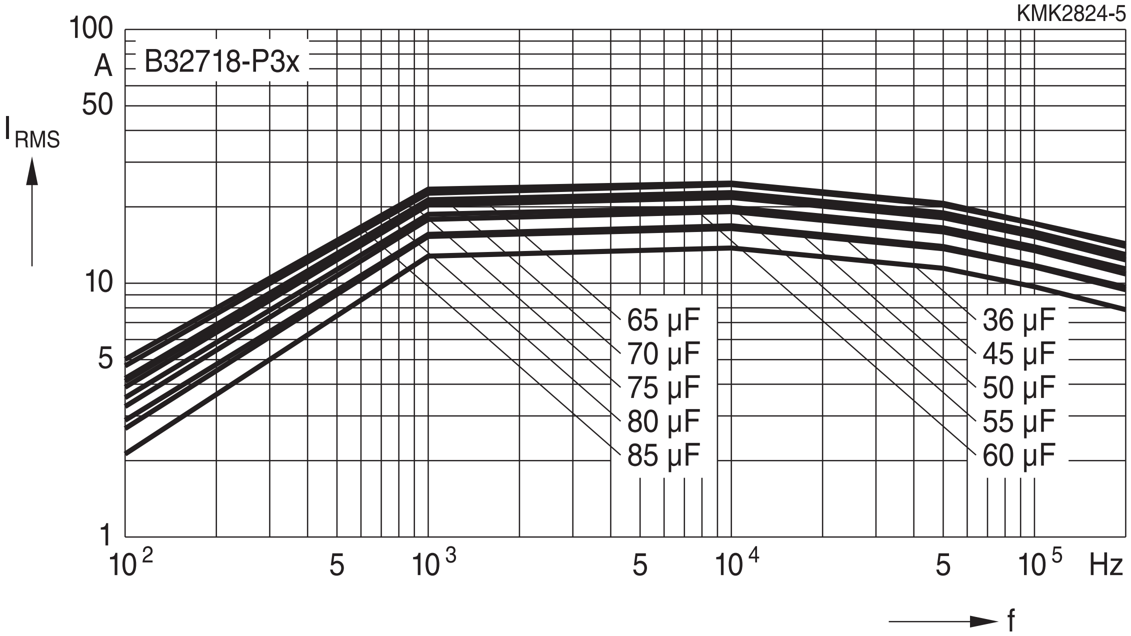
Permissible current I_{RMS} versus frequency f at T_a ≤85 °C

Lead spacing 52.5 mm

600 V DC



675 V DC

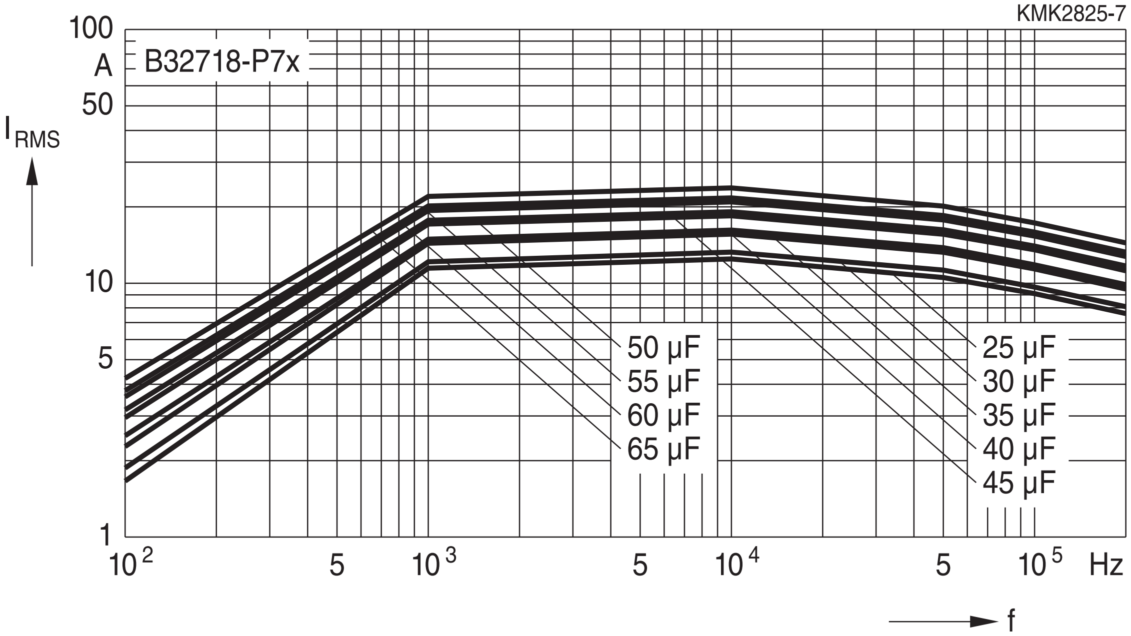


Characteristics curves

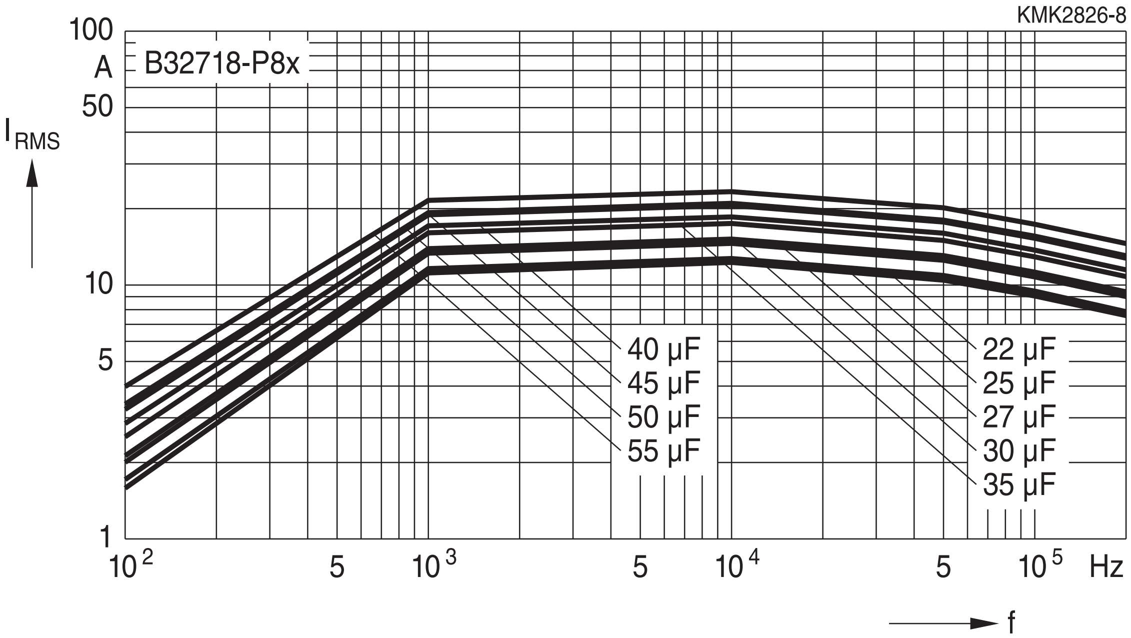
Permissible current I_{RMS} versus frequency f at T_a ≤85 °C

Lead spacing 52.5 mm

750 V DC



825 V DC

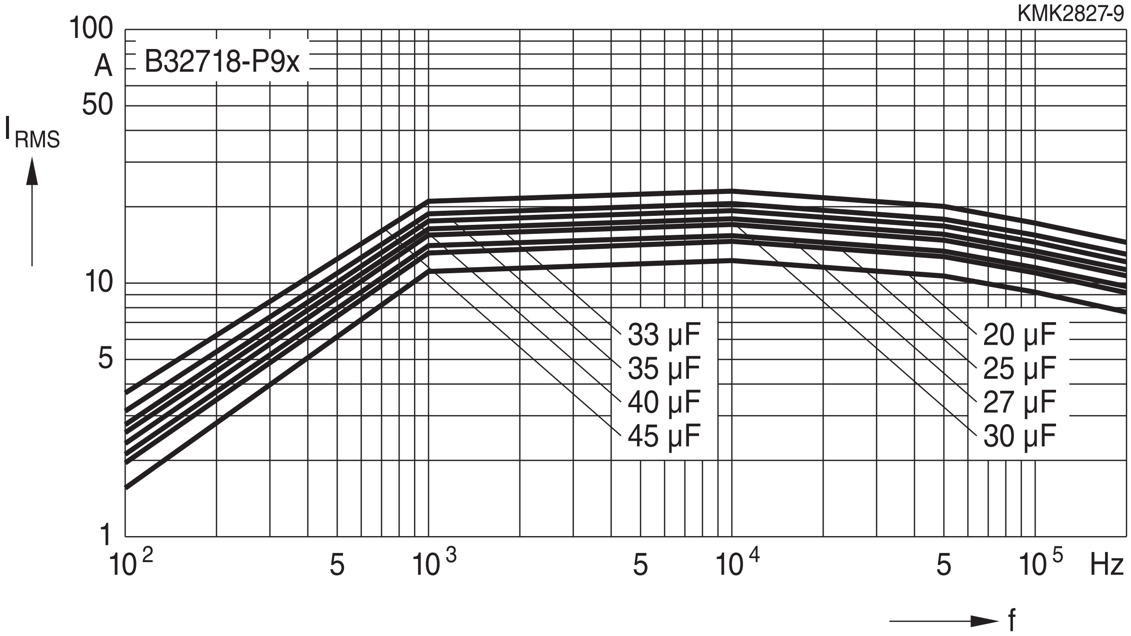


Characteristics curves

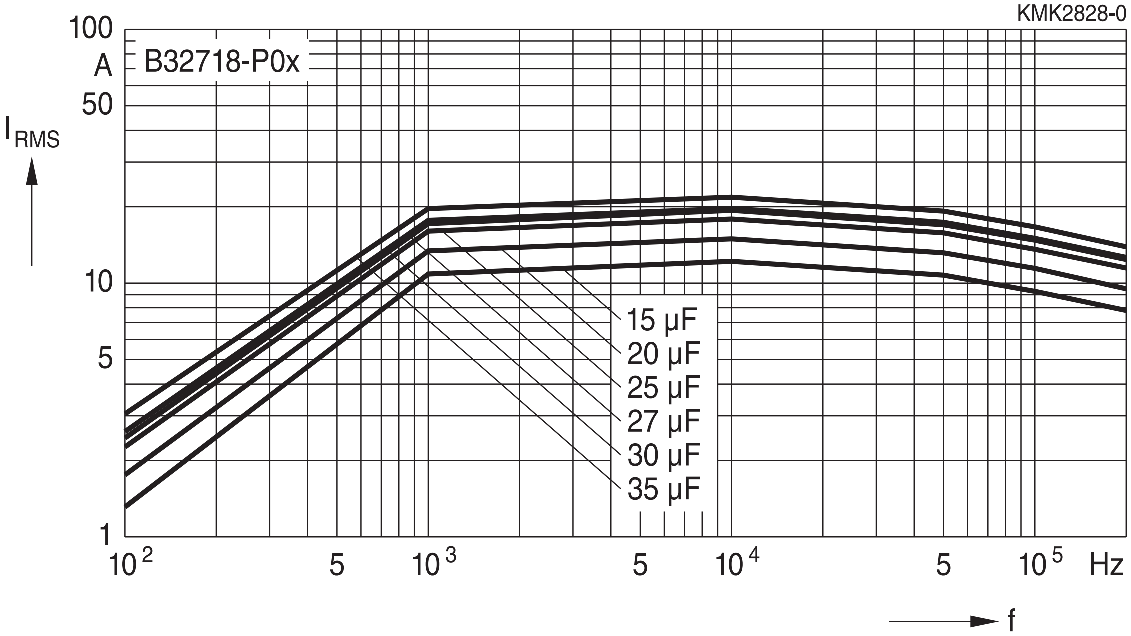
Permissible current I_{RMS} versus frequency f at T_a ≤85 °C

Lead spacing 52.5 mm

900 V DC



1050 V DC

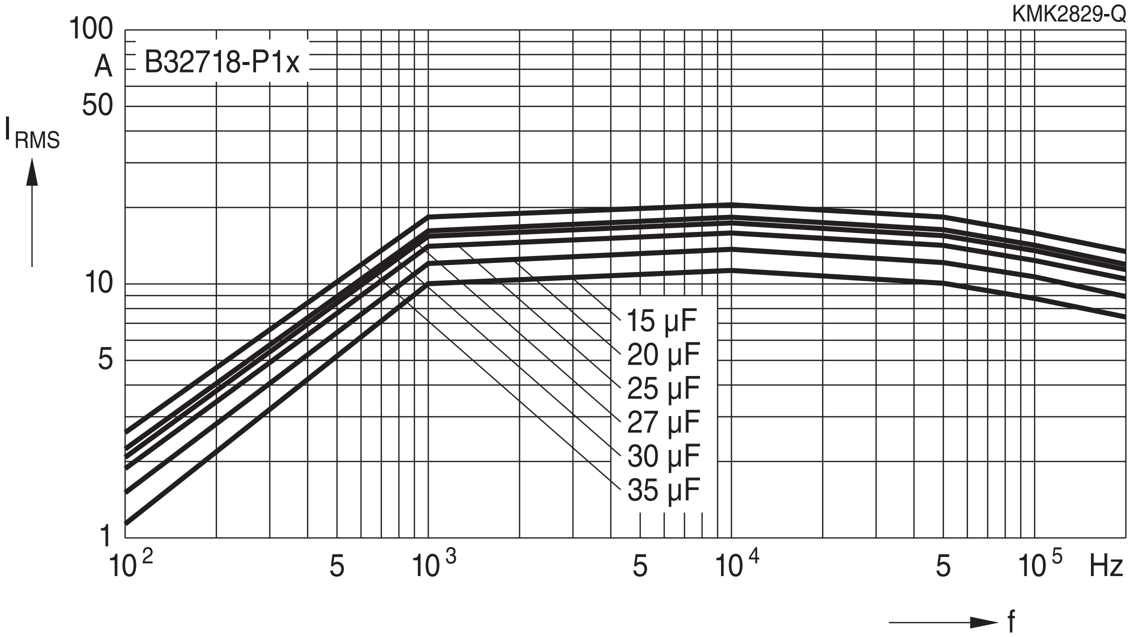


Characteristics curves

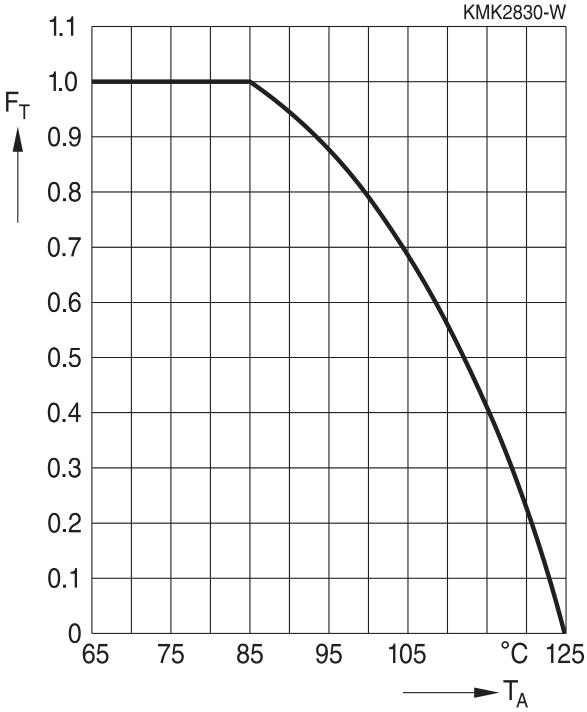
Permissible current I_{RMS} versus frequency f at T_a ≤85 °C

Lead spacing 52.5 mm

1200 V DC



Curves characteristics (I_{RMS} derating versus temperature)



Maximum I_{RMS} current as function of the ambient temperature: I_{RMS} (T_{amb}) = Factor x I_{RMS} (85 °C)

Heat transference for self heating calculation

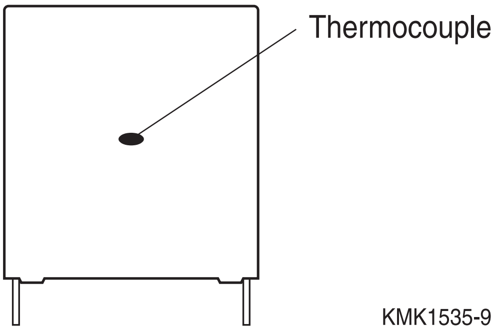


Figure 1

Box dimensions			Equivalent heat coefficient
w (mm)	h (mm)	l (mm)	G (mW/°C)
11.0	19.0	31.5	24
11.0	21.0	31.5	28
12.5	21.5	31.5	30
13.5	23.0	31.5	32
14.0	24.5	31.5	35
15.0	24.5	31.5	36
16.0	30.0	31.5	40
18.0	27.5	31.5	44
18.0	33.0	31.5	48
19.0	30.0	31.5	48
21.0	31.0	31.5	51
22.0	36.5	31.5	58
18.0	32.5	42.0	59
18.5	35.5	42.0	64
20.0	39.5	42.0	72
22.0	37.0	42.0	72
24.0	19.0	42.0	48
24.0	15.0	42.0	44
28.0	37.0	42.0	83
24.0	44.0	42.0	84
28.0	42.5	42.0	90
30.0	45.0	42.0	100
33.0	48.0	42.0	110
35.0	50.0	42.0	117
35.0	54.0	42.0	124
38.0	57.0	42.0	133
42.5	60.0	42.5	150

Box dimensions			Equivalent heat coefficient
w (mm)	h (mm)	l (mm)	G (mW/°C)
30.0	45.0	57.5	125
35.0	50.0	57.5	145
38.0	57.5	57.5	165
45.0	55.0	57.5	180
45.0	57.0	57.5	185
45.0	65.0	57.5	200

The equivalent heat coefficient “G (mW/°C)” is given for measuring the temperature on the lateral surface of the plastic box as Figure 1 shows. By using a thermocouple and avoiding effect of radiation and convection the temperature measured during operation conditions should be a result of the dissipated power divided by the equivalent heat coefficient.

Self heating by power dissipation & equivalent heat coefficient

The I_{RMS} and consequently the power dissipation must be limited during operation in order to not exceed the maximum limit of ΔT allowed for this series. ΔT given for this series is equal or lower than 15 °C at operating temperature (85 °C), for higher ambient temperatures ΔT_{max}(T) will have the same derating factor than I_{RMS} vs temperature and then an equivalent derating as per:

ΔT_{max} (T) = (Factor)^2 x ΔT(85 °C)

For any particular I_{RMS} the ΔT may be calculated by:

ΔT(°C) = P_{dis} (mW) / G (mW/°C)

Where ΔT (°C) is the difference between the temperature measured on the box (see figure 1) and the ambient temperature when capacitor is working during normal operation; ΔT (°C) = T_{op} (°C) – T_{amb} (°C). It represents the increasing of temperature provoked by the I_{RMS} during operation. G (mW/°C) is the equivalent heat coefficient described above and P_{dis} (mW) is the dissipated power defined by:

P_{dis} (mW) = ESR_{typ} (mΩ) x I_{RMS}^2 (A_{RMS})

Example for thermal calculation:

We will take B32718P7306K (30 µF/750 V) as reference type for thermal calculation. Considering the following load and capacitor characteristics:

I_{RMS}: 7 A_{RMS} at 10 kHz
T_A: 95 °C
Box: 30 x 45 x 57.5
G (mW/°C): 125

Then we have to search the ESR_{typ} at 10 kHz what is approx. 6.6 mΩ.

So according to:	P_{dis} (mW) = ESR_{typ} (mΩ) x I_{RMS}^2 (A_{RMS})
we have the following:	P_{dis} (mW) = 6.6 mΩ x 7 A_{RMS}^2 = 323.4 mW
And as per:	ΔT (°C) = P_{dis} (mW) / G (mW/°C)
we have the following:	ΔT (°C) = 323.4 (mW) / 125 (mW/ºC) = 2.59 °C
What is below of the	ΔT_{max} (95 °C) = (Factor)^2 x ΔT (85 °C) = (0.88)^2 x 15 °C = 11.6 °C

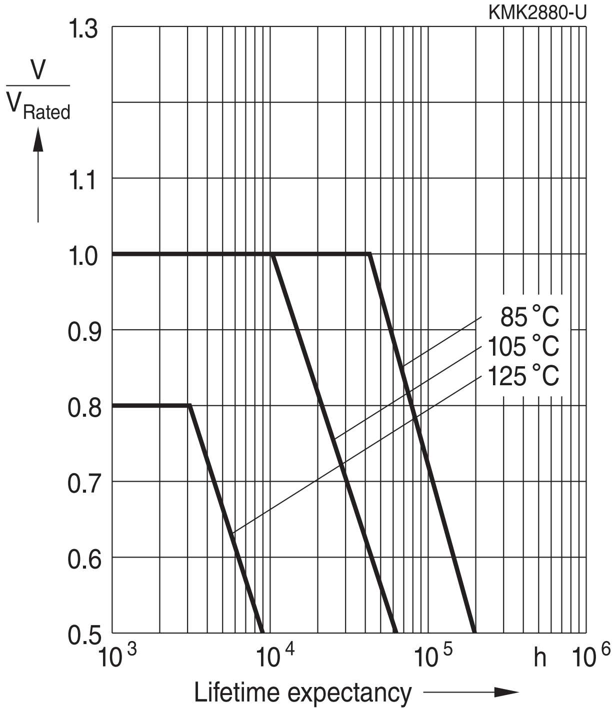
What confirms once again that I_{RMS} (7 A_{RMS} @10 kHz) is below the max specified for such frequency and ambient temperature.

On the other hand, we may confirm previous page that max I_{RMS} @10 kHz@85 °C = 13.2 A_{RMS}
And then max I_{RMS} for 95 °C of ambient temperature is defined as follows:
I_{RMS} (95 °C) = Factor x I_{RMS} (85 °C) = 0.88 x 13.2 A_{RMS} = 11.6 A_{RMS}
What confirms once again that I_{RMS} (7 A_{RMS}@10 kHz) is below the max specified for such frequency and ambient temperature.

Service life:

Lifetime expectancy - typical curve

(600 V DC/675 V DC/825 V DC/900 V DC/1050 V DC/1200 V DC/B3271# - P/6/3/7/8/9/0/1)



Note: Confidence level of 95%

Testing and standards

Test	Reference	Test condition	Performance requirements
Electrical parameters (Routine test)	IEC 61071:2017	Voltage between terminals, 1.5 V_R, during 10 s Insulation Resistance, R_{ins} at 500 V Capacitance, C at 1 kHz (room temperature) Dissipation factor, tan δ at 1/10 kHz (room temperature)	Within specified limits
Robustness of terminations (Type test)	IEC 60068-2-21:2021	Tensile strength (test Ua1) Wire diameter / Tensile force $0.5 < d_1 \leq 0.8$ mm / 10 N $0.8 < d_1 \leq 1.25$ mm / 20 N	Capacitance and tan δ within specified limits
Resistance to soldering heat (Type test)	IEC 60068-2-20:2021 test Tb, method 1A	Solder bath temperature at 260 ±5 °C, immersion for 10 ±1 seconds	No visible damage $\|\Delta C/C_0\| \leq 2\%$ $\|\Delta \tan \delta\| \leq 0.002$ (1 kHz)
Rapid change of temperature (Type test)	IEC 61071:2017	T_A = lower category temperature T_B = upper category temperature Five cycles, duration t = 30 min	No visible damage $\|\Delta C/C_0\| \leq 2\%$ $\|\Delta \tan \delta\| \leq 0.002$ (1 kHz) $R_{ins} \geq 50\%$ of initial limit
Temperature cycling (Type test)	AEC-Q200E	–55 °C ... +85 °C, 1000 cycles	No visible damage $\|\Delta C/C_0\| \leq 2\%$ $\|\Delta \tan \delta\| \leq 0.002$ (1 kHz) $R_{ins} \geq 50\%$ of initial limit
Vibration and shocks (Type test)	IEC 61071:2017	In accordance with IEC 60068-2-6 f = 10 Hz to 55 Hz a = ±0.35 mm Test duration per axis = 10 frequency cycles (3 axes offset from each other by 90°), 1 octave/min. Mounting conditions: The capacitor shall be fixed by the leads and the body must be properly clamped.	No visible damage $\|\Delta C/C_0\| \leq 0.5\%$ at 1 kHz
Self-healing (Type test)	IEC 61071:2017	1.5 x UNDC Duration 10 s Number of clearings ≤ 5 Clearing = voltage drop of 5% Increase the voltage at 100 V/s till 5 clearings occur with a max. of 2.5 x V_R for a duration of 10 s	$\|\Delta C/C_0\| \leq 0.5\%$ tan δ (10 kHz) ≤ 1.2 initial tan δ + 0.0001

Test	Reference	Test condition	Performance requirements
Climatic sequence (Type test)	IEC 60384-16:2019	Dry heat Tb / 16 h. Damp heat cyclic, 1st cycle +55 °C / 24 h / 95% ... 100% RH Cold Ta / 2 h Damp heat cyclic, 5 cycles +55 °C / 24 h / 95% ... 100% RH	No visible damage $\lvert\Delta C/C_0\rvert \leq 3\%$ $\lvert\Delta \tan\delta\rvert \leq 0.001$ $R_{ins} \geq 50\%$ of initial limit
Biased humidity test (Type test)		60 °C / 95% RH / V_R 1000 hours	No visible damage $\lvert\Delta C/C_0\rvert \leq 3\%$ $\lvert\Delta \tan\delta\rvert \leq 0.005$ (1 kHz) $R_{ins} \geq 50\%$ of initial limit
Endurance (Type test)	IEC 61071:2017	85 °C / 1.3 V_R / 500 hours and 1000 discharges at 1.4 I_P and 85 °C / 1.3 V_R / 500 hours	No visible damage $\lvert\Delta C/C_0\rvert \leq 3\%$ $\lvert\Delta \tan\delta\rvert \leq 0.005$ (1 kHz) $R_{ins} \geq 50\%$ of initial limit

Soldering

Solderability of leads

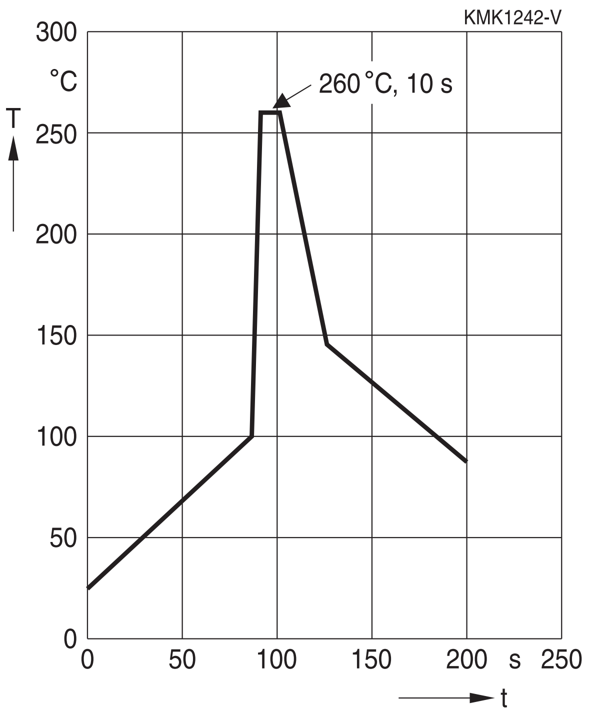
The solderability of terminal leads is tested to IEC 60068-2-20:2008, test Ta, method 1.
Before a solderability test is carried out, terminals are subjected to accelerated ageing (to IEC 60068-2-2, test Ba: 4 h exposure to dry heat at 155 °C). Since the ageing temperature is far higher than the upper category temperature of the capacitors, the terminal wires should be cut off from the capacitor before the ageing procedure to prevent the solderability being impaired by the products of any capacitor decomposition that might occur.

Solder bath temperature	245 ±5 °C
Soldering time	3.0 ±0.3 s
Immersion depth	2.0 +0/–0.5 mm from capacitor body or seating plane
Evaluation criteria: Visual inspection	Wetting of wire surface by new solder ≥ 95%, free-flowing solder

Resistance to soldering heat

Resistance to soldering heat is tested to IEC 60068-2-20, test Tb, method 1.
Conditions:

Series		Solder bath temperature	Soldering time
MKT	boxed (except 2.5 x 6.5 x 7.2 mm) coated uncoated (lead spacing > 10 mm)	260 ± 5 °C	10 ± 1 s
MFP MKP	 (lead spacing > 7.5 mm)		
MKT	boxed (case 2.5 x 6.5 x 7.2 mm)		5 ± 1 s
MKP MKT	(lead spacing ≤ 7.5 mm) uncoated (lead spacing ≤ 10 mm) insulated (B32559)		< 4 s recommended soldering profile for MKT uncoated (lead spacing ≤ 10 mm) and insulated (B32559)



Immersion depth	2.0 +0/–0.5 mm from capacitor body or seating plane
Shield	Heat-absorbing board, (1.5 ± 0.5) mm thick, between capacitor body and liquid solder
Evaluation criteria:	
Visual inspection	No visible damage
$\Delta C/C_0$	2% for MKT/MKP/MFP 5% for EMI suppression capacitors
tan δ	As specified in sectional specification

General notes on soldering

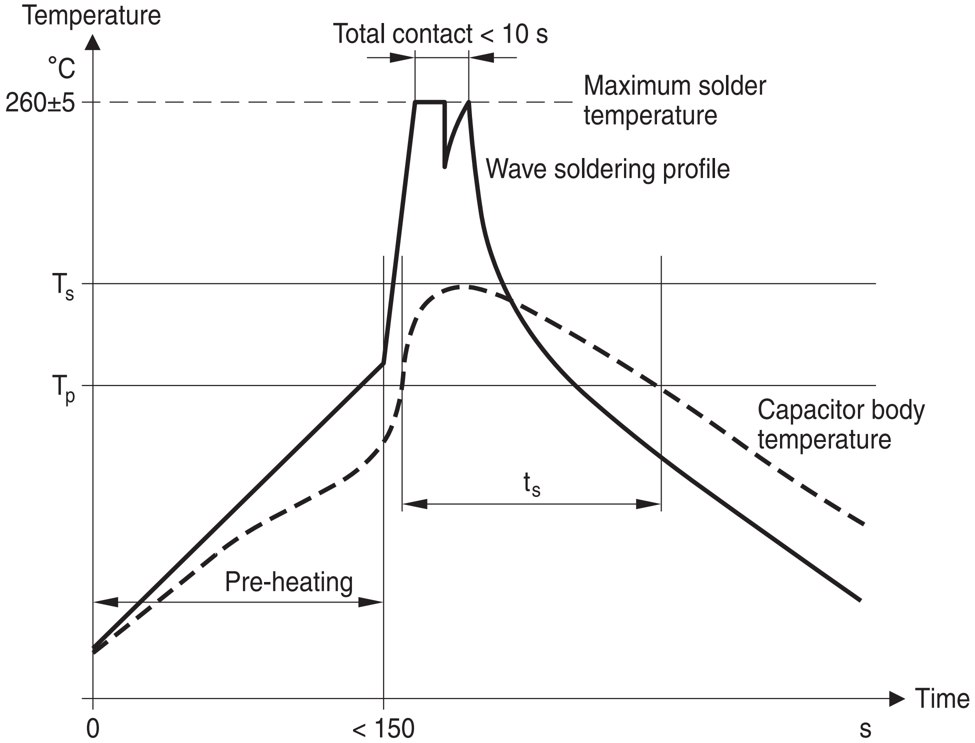
Permissible heat exposure loads on film capacitors are primarily characterized by the upper category temperature T_{max}. Long exposure to temperatures above this type-related temperature limit can lead to changes in the plastic dielectric and thus change irreversibly a capacitor's electrical characteristics. For short exposures (as in practical soldering processes) the heat load (and thus the possible effects on a capacitor) will also depend on other factors like:

- Pre-heating temperature and time
- Forced cooling immediately after soldering
- Terminal characteristics:
  diameter, length, thermal resistance, special configurations (e.g. crimping)
- Height of capacitor above solder bath
- Shadowing by neighboring components
- Additional heating due to heat dissipation by neighboring components
- Use of solder-resist coatings

The overheating associated with some of these factors can usually be reduced by suitable countermeasures. For example, if a pre-heating step cannot be avoided, an additional or reinforced cooling process may possibly have to be included.

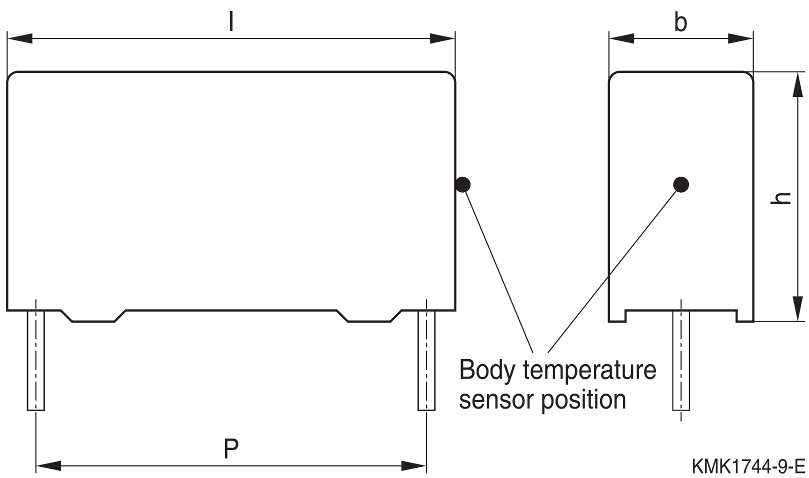
TDK Recommendations

As a reference, the recommended wave soldering profile for our film capacitors is as follows:



T_s: Capacitor body maximum temperature at wave soldering
T_p: Capacitor body maximum temperature at pre-heating

KMK1745-A-E



KMK1744-9-E

Body temperature should follow the description below:

- MKP capacitor
  During pre-heating: $T_p \leq 110$ °C
  During soldering: $T_s \leq 120$ °C, $t_s \leq 45$ s
- MKT capacitor
  During pre-heating: $T_p \leq 125$ °C
  During soldering: $T_s \leq 160$ °C, $t_s \leq 45$ s

When SMD components are used together with leaded ones, the film capacitors should not pass into the SMD adhesive curing oven. The leaded components should be assembled after the SMD curing step.

Leaded film capacitors are not suitable for reflow soldering.

In order to ensure proper conditions for manual or selective soldering, the body temperature of the capacitor (T_s) must be ≤120 °C.

One recommended condition for manual soldering is that the tip of the soldering iron should be <360 °C and the soldering contact time should be no longer than 3 seconds.

For uncoated MKT capacitors with lead spacings ≤10 mm (B32560/B32561) the following measures are recommended:

- pre-heating to not more than 110 °C in the preheater phase
- rapid cooling after soldering

Please refer to our Film Capacitors Data Book in case more details are needed.

Cleaning

To determine whether the following solvents, often used to remove flux residues and other substances, are suitable for the capacitors described, refer to the table below:

Type	Ethanol, isopropanol, n-propanol	n-propanol-water mixtures, water with surface tension-reducing tensides (neutral)
MKT (uncoated)	Suitable	Unsuitable
MKT, MKP, MFP (coated/boxed)		Suitable

Even when suitable solvents are used, a reversible change of the electrical characteristics may occur in uncoated capacitors immediately after they are washed. Thus it is always recommended to dry the components (e.g. 4 h at 70 °C) before they are subjected to subsequent electrical testing.

Caution: Consult us first if you wish to use new solvents!

Embedding of capacitors in finished assemblies

In many applications, finished circuit assemblies are embedded in plastic resins. In this case, both chemical and thermal influences of the embedding ("potting") and curing processes must be taken into account.

Our experience has shown that the following potting materials can be recommended: non-flexible epoxy resins with acid-anhydride hardeners; chemically inert, non-conducting fillers; maximum curing temperature of 100 °C.

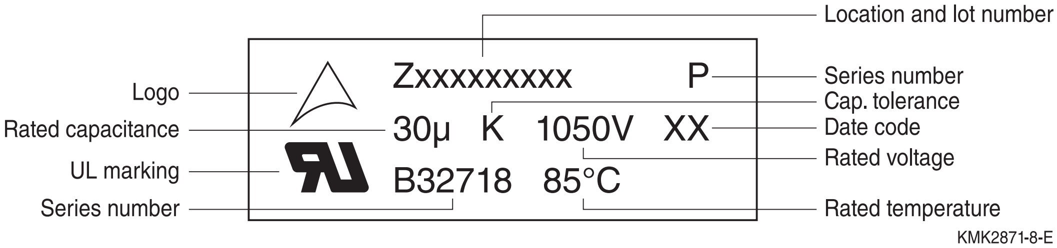
Caution: Consult us first if you wish to embed uncoated types!

Marking

Capacitor markings

Depending on the capacitor size, the markings are positioned either on the side and/or the top of the component. The coded forms specified in IEC 60062:2004 are used to indicate the rated capacitance, capacitance tolerance and date of manufacture.
The lot number (production batch number) ensures unique identification of a particular capacitor and allows, together with the date of manufacture, exact assignment to the process data of the entire production run (traceability).
If the capacitor is not wide enough for the entire marking, the information in the marking will be split between the top and side. In this case, the following partial information will be found on the top:

Marking examples (on top)



Codes for rated capacitance

Rated capacitance	To IEC 60062	Short code
100 pF	100p	n1
150 pF	150p	n15
1.0 nF	1n0	1n
1.5 nF	1n5	
10 nF	10n	
100 nF	100n	µ1
150 nF	150n	µ15
1.0 µF	1µ0	1µ
1.5 µF	1µ5	
10 µF	10µ	
15 µF	15µ	

Codes for capacitance tolerance

Capacitance tolerance	Code letter	Remark
	A	Capacitance tolerances for which no code letter is defined can be indicated by an A. The meaning of code A must then be mutually specified in other documentation.
±2.5%	H	
±5%	J	
±10%	K	
±20%	M	

Codes for date of manufacture (to IEC 60062:2016)

Code for year					Code for month				
Year	Code letter		Year	Code letter	Month	Code numeral		Month	Code numeral/letter
2018	K		2024	S	January	1		July	7
2019	L		2025	T	February	2		August	8
2020	M		2026	U	March	3		September	9
2021	N		2027	V	April	4		October	O
2022	P		2028	W	May	5		November	N
2023	R		2029	X	June	6		December	D

E.g.: R5 2023 May

Marking types

The capacitors may have either an ink-jet marking or a laser marking. The main advantage of laser marking is that it cannot be removed by solvents, which ensures the reliable identification of the capacitor. Moreover, because the laser marking process reduces the amount of chemicals used, it is an environmentally friendly marking solution.

Ordering code system

A component and the packing in which it is to be delivered are defined by the ordering code, which has 15 digits (plus 3 additional digits for internal use). For all capacitors the ordering codes are explicitly stated (together with the corresponding tolerance and/or packing variants) in the data sheets.
Should there be any doubt about the coding system, however, then it is better to order the capacitor using a plain text description (i.e. without a code).

Basic structure of the ordering code:

Digit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	B																	

Block 1 — Block 2 — Block 3 — Block 4 (for internal use)

Digit	Meaning
1	B = Passive components
2,3	32 = Metallized film capacitors, EMI suppression capacitors 81 = EMI suppression capacitors
4 ... 6	Type (block 1 is termed the "type number")
7	Revision status
8	Rated DC voltage, coded (not for EMI suppression capacitors)
9 ... 11	Rated capacitance (coding method for value in pF) Examples: Digit 9 10 11 B 3 2 6 5 2 A 3 [1][5][4] K = 15 • 10^4 pF = 150 nF
12	Code letter for capacitance tolerance
13 ... 15	Codes for lead and taping parameters (refer to respective data sheet)
16 ... 18	Internal use

Cautions and warnings

- Do not exceed the upper category temperature (UCT).
- Do not apply any mechanical stress to the capacitor terminals.
- Avoid any compressive, tensile or flexural stress.
- Do not move the capacitor after it has been soldered to the PC board.
- Do not pick up the PC board by the soldered capacitor.
- Do not place the capacitor on a PC board whose PTH hole spacing differs from the specified lead spacing.
- Do not exceed the specified time or temperature limits during soldering.
- Avoid external energy inputs, such as fire or electricity.
- Avoid overload of the capacitors.
- Consult us if application is with severe temperature and humidity condition.
- There are no serviceable or repairable parts inside the capacitor. Opening the capacitor or any attempts to open or repair the capacitor will void the warranty and liability of TDK Electronics.
- Please note that the standards referred to in this publication may have been revised in the meantime.

The table below summarizes the safety instructions that must always be observed. A detailed description can be found in the relevant sections of the chapters "General technical information" and "Mounting guidelines".

Topic	Safety information	Reference chapter "General technical information"
Storage conditions	Make sure that capacitors are stored within the specified range of time, temperature and humidity conditions.	4.5 "Storage conditions"
Flammability	Avoid external energy, such as fire or electricity (passive flammability), avoid overload of the capacitors (active flammability) and consider the flammability of materials.	5.3 "Flammability"
Resistance to vibration	Do not exceed the tested ability to withstand vibration. The capacitors are tested to IEC 60068-2-6:2007. TDK Electronics offers film capacitors specially designed for operation under more severe vibration regimes such as those found in automotive applications. Consult our catalog "Film Capacitors for Automotive Electronics".	5.2 "Resistance to vibration"
Soldering	Do not exceed the specified time or temperature limits during soldering.	1 "Soldering"
Cleaning	Use only suitable solvents for cleaning capacitors.	2 "Cleaning"
Embedding of capacitors in finished assemblies	When embedding finished circuit assemblies in plastic resins, chemical and thermal influences must be taken into account. Caution: Consult us first, if you also wish to embed other uncoated component types!	3 "Embedding of capacitors in finished assemblies"

Display of ordering codes for TDK Electronics products

The ordering code for one and the same product can be represented differently in data sheets, data books, other publications, on the company website, or in order-related documents such as shipping notes, order confirmations and product labels. The varying representations of the ordering codes are due to different processes employed and do not affect the specifications of the respective products.
Detailed information can be found on the Internet under www.tdk-electronics.tdk.com/orderingcodes.

Correlation of data sheet values and modelling tool outputs

Data sheet values and results of design tools may deviate as they have not been derived in the same context.
While data sheets show individual parameter statements without considering a possible dependency to other parameters. Tools model a complete given scenario as input and processed inside the tool.
Furthermore as we constantly strive to improve our models, the results of tools can change over time and be a non-binding indication only.

Symbols and terms

Symbol	English	German
α	Heat transfer coefficient	Wärmeübergangszahl
α_C	Temperature coefficient of capacitance	Temperaturkoeffizient der Kapazität
A	Capacitor surface area	Kondensatoroberfläche
β_C	Humidity coefficient of capacitance	Feuchtekoeffizient der Kapazität
C	Capacitance	Kapazität
C_R	Rated capacitance	Nennkapazität
ΔC	Absolute capacitance change	Absolute Kapazitätsänderung
$\Delta C/C$	Relative capacitance change (relative deviation of actual value)	Relative Kapazitätsänderung (relative Abweichung vom Ist-Wert)
$\Delta C/C_R$	Capacitance tolerance (relative deviation from rated capacitance)	Kapazitätstoleranz (relative Abweichung vom Nennwert)
dt	Time differential	Differentielle Zeit
Δt	Time interval	Zeitintervall
ΔT	Absolute temperature change (self-heating)	Absolute Temperaturänderung (Selbsterwärmung)
$\Delta \tan \delta$	Absolute change of dissipation factor	Absolute Änderung des Verlustfaktors
ΔV	Absolute voltage change	Absolute Spannungsänderung
dV/dt	Time differential of voltage function (rate of voltage rise)	Differentielle Spannungsänderung (Spannungsflankensteilheit)
$\Delta V/\Delta t$	Voltage change per time interval	Spannungsänderung pro Zeitintervall
E	Activation energy for diffusion	Aktivierungsenergie zur Diffusion
ESL	Self-inductance	Eigeninduktivität
ESR	Equivalent series resistance	Ersatz-Serienwiderstand
f	Frequency	Frequenz
f_1	Frequency limit for reducing permissible AC voltage due to thermal limits	Grenzfrequenz für thermisch bedingte Reduzierung der zulässigen Wechselspannung
f_2	Frequency limit for reducing permissible AC voltage due to current limit	Grenzfrequenz für strombedingte Reduzierung der zulässigen Wechselspannung
f_r	Resonant frequency	Resonanzfrequenz
F_D	Thermal acceleration factor for diffusion	Therm. Beschleunigungsfaktor zur Diffusion
F_T	Derating factor	Deratingfaktor
i	Current (peak)	Stromspitze
I_C	Category current (max. continuous current)	Kategoriestrom (max. Dauerstrom)
I_{RMS}	(Sinusoidal) alternating current, root-mean- square value	(Sinusförmiger) Wechselstrom
i_z	Capacitance drift	Inkonstanz der Kapazität
k_0	Pulse characteristic	Impulskennwert
L_S	Series inductance	Serieninduktivität
λ	Failure rate	Ausfallrate

Symbol	English	German
λ_0	Constant failure rate during useful service life	Konstante Ausfallrate in der Nutzungsphase
λ_{test}	Failure rate, determined by tests	Experimentell ermittelte Ausfallrate
P_{diss}	Dissipated power	Abgegebene Verlustleistung
P_{gen}	Generated power	Erzeugte Verlustleistung
Q	Heat energy	Wärmeenergie
ρ	Density of water vapor in air	Dichte von Wasserdampf in Luft
R	Universal molar constant for gases	Allg. Molarkonstante für Gas
R	Ohmic resistance of discharge circuit	Ohmscher Widerstand des Entladekreises
R_i	Internal resistance	Innenwiderstand
R_{ins}	Insulation resistance	Isolationswiderstand
R_P	Parallel resistance	Parallelwiderstand
R_S	Series resistance	Serienwiderstand
S	severity (humidity test)	Schärfegrad (Feuchtetest)
t	Time	Zeit
T	Temperature	Temperatur
τ	Time constant	Zeitkonstante
$\tan \delta$	Dissipation factor	Verlustfaktor
$\tan \delta_D$	Dielectric component of dissipation factor	Dielektrischer Anteil des Verlustfaktors
$\tan \delta_P$	Parallel component of dissipation factor	Parallelanteil des Verlfustfaktors
$\tan \delta_S$	Series component of dissipation factor	Serienanteil des Verlustfaktors
T_A	Temperature of the air surrounding the component	Temperatur der Luft, die das Bauteil umgibt
T_{max}	Upper category temperature	Obere Kategorietemperatur
T_{min}	Lower category temperature	Untere Kategorietemperatur
t_{OL}	Operating life at operating temperature and voltage	Betriebszeit bei Betriebstemperatur und -spannung
T_{op}	Operating temperature, $T_A + \Delta T$	Beriebstemperatur, $T_A + \Delta T$
T_R	Rated temperature	Nenntemperatur
T_{ref}	Reference temperature	Referenztemperatur
t_{SL}	Reference service life	Referenz-Lebensdauer
V_{AC}	AC voltage	Wechselspannung
V_C	Category voltage	Kategoriespannung
$V_{C,RMS}$	Category AC voltage	(Sinusförmige) Kategorie-Wechselspannung
V_{CD}	Corona-discharge onset voltage	Teilentlade-Einsatzspannung
V_{ch}	Charging voltage	Ladespannung
V_{DC}	DC voltage	Gleichspannung
V_{FB}	Fly-back capacitor voltage	Spannung (Flyback)

Symbol	English	German
V_i	Input voltage	Eingangsspannung
V_o	Output voltage	Ausgangssspannung
V_{op}	Operating voltage	Betriebsspannung
V_p	Peak pulse voltage	Impuls-Spitzenspannung
V_{pp}	Peak-to-peak voltage Impedance	Spannungshub
V_R	Rated voltage	Nennspannung
$\hat{V}_R$	Amplitude of rated AC voltage	Amplitude der Nenn-Wechselspannung
V_{RMS}	(Sinusoidal) alternating voltage, root-mean-square value	(Sinusförmige) Wechselspannung
V_{SC}	S-correction voltage	Spannung bei Anwendung "S-correction”
V_{sn}	Snubber capacitor voltage	Spannung bei Anwendung "Beschaltung"
Z	Impedance	Scheinwiderstand
e	Lead spacing	Rastermaß

Important notes

The following applies to all products named in this publication:

1 Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application**. As a rule we are either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether a product with the properties described in the product specification is suitable for use in a particular customer application.

2 We also point out that **in individual cases, a malfunction of electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified**. In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of an electronic component.

3 **The warnings, cautions and product-specific notes must be observed**.

4 In order to satisfy certain technical requirements, **some of the products described in this publication may contain substances subject to restrictions in certain jurisdictions (e.g. because they are classed as hazardous)**. Useful information on this will be found in our Material Data Sheets on the Internet (www.tdk-electronics.tdk.com/material). Should you have any more detailed questions, please contact our sales offices.

5 We constantly strive to improve our products. Consequently, **the products described in this publication may change from time to time**. The same is true of the corresponding product specifications. Please check therefore to what extent product descriptions and specifications contained in this publication are still applicable before or when you place an order.
We also **reserve the right to discontinue production and delivery of products**. Consequently, we cannot guarantee that all products named in this publication will always be available. The aforementioned does not apply in the case of individual agreements deviating from the foregoing for customer-specific products.

6 Unless otherwise agreed in individual contracts, **all orders are subject to our General Terms and Conditions of Supply**.

7 **Our manufacturing sites serving the automotive business apply the IATF 16949 standard**. The IATF certifications confirm our compliance with requirements regarding the quality management system in the automotive industry. Referring to customer requirements and customer specific requirements (“CSR”) TDK always has and will continue to have the policy of respecting individual agreements. Even if IATF 16949 may appear to support the acceptance of unilateral requirements, we hereby like to emphasize that **only requirements mutually agreed upon can and will be implemented in our Quality Management System**. For clarification purposes we like to point out that obligations from IATF 16949 shall only become legally binding if individually agreed upon.

8 The trade names EPCOS, CarXield, CeraCharge, CeraDiode, CeraLink, CeraPad, CeraPlas, CSMP, CTVS, DeltaCap, DigiSiMic, FilterCap, FormFit, InsuGate, LeaXield, MediPlas, MiniBlue, MiniCell, MKD, MKK, ModCap, MotorCap, PCC, PhaseCap, PhaseCube, PhaseMod, PhiCap, PiezoBrush, PlasmaBrush, PowerHap, PQSine, PQvar, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, SiMic, SIMID, SineFormer, SIOV, SurfIND, ThermoFuse, WindCap, XieldCap are **trademarks registered or pending** in Europe and in other countries. Further information will be found on the Internet at www.tdk-electronics.tdk.com/trademarks.

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