

Features

- Good thermal stability
- High insulation resistance
- Low dissipation factor
- Low inductance

Applications

- Resonant circuits
- Filter circuits
- Timing elements
- Coupling and filtering, particularly in RF circuits

Terminations

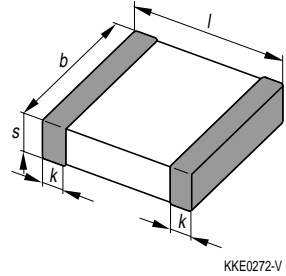
- For soldering: silver/nickel/tin
- For conductive adhesion: silver palladium

Packing

- Blister and cardboard tape, for details refer to chapter on "Taping and Packing", page 111.
- Bulk case for sizes 0603, 0805 and 1206, for details see page 114.

Maximum ratings

Climatic category
in accordance with IEC 68-1: 55/125/56



KKE0272-V

Dimensions (mm)

Size inch/mm	<i>l</i>	<i>b</i>	<i>s</i>	<i>k</i>
0402/1005	1,0 ± 0,10	0,50 ± 0,05	0,5 ± 0,05	0,2
0603/1608	1,6 ± 0,15*)	0,80 ± 0,10	0,8 ± 0,10	0,3
0805/2012	2,0 ± 0,20	1,25 ± 0,15	1,3 max.	0,5
1206/3216	3,2 ± 0,20	1,60 ± 0,15	1,3 max.	0,5
1210/3225	3,2 ± 0,30	2,50 ± 0,30	1,7 max.	0,5

*) For bulk cases: 1,6 ± 0,1

Tolerances in acc. with CECC 32101-801

Available capacitance tolerances

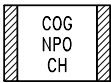
Rated capacitance C_R	Tolerance	Symbol
$C_R < 10 \text{ pF}$:	$\Delta C_R = \pm 0,1 \text{ pF}$	B
	$\Delta C_R = \pm 0,25 \text{ pF}$	C
	$\Delta C_R = \pm 0,5 \text{ pF}$	D
$C_R \geq 10 \text{ pF}$:	$\Delta C_R/C_R = \pm 1 \%$	F
	$\Delta C_R/C_R = \pm 2 \%$	G
	$\Delta C_R/C_R = \pm 5 \%$	J
	$\Delta C_R/C_R = \pm 10 \%$	K

Standard tolerances in bold print

F and G tolerance not available for 200 V

Rated voltage values

$V_R = 50 \text{ V}, 100 \text{ V}, 200 \text{ V}$



Product range

	COG/NP0/CH											
Size ¹⁾ inch mm	0402 1005		0603 1608		0805 2012			1206 3216			1210 3225	
Type	B37920		B37930		B37940			B37871			B37949	
V _R (Vdc)	50		50		50 100 200			50 100 200			50 200	
1,0 pF	1,0 pF											
1,2 pF												
1,5 pF												
1,8 pF												
2,2 pF	2,0 pF ²⁾											
2,7 pF	3,0 pF ²⁾											
3,3 pF	4,0 pF ²⁾											
3,9 pF	5,0 pF ²⁾											
4,7 pF	6,0 pF ²⁾											
5,6 pF	7,0 pF ²⁾											
6,8 pF	8,0 pF ²⁾											
8,2 pF	9,0 pF ²⁾											
10 pF												
12 pF												
15 pF												
18 pF												
22 pF												
27 pF												
33 pF												
39 pF												
47 pF												
56 pF												
68 pF												
82 pF												

Chip thickness (s): 0,5 ± 0,1 mm 0,6 ± 0,1 mm 0,8 ± 0,1 mm 1,2 ± 0,1 mm

1) l × b (inch) / l × b (mm)
 2) Only listed capacitance values available
 Capacitance values < 1 pF upon request

Product range

COG/NPO/CH													
Size ¹⁾ inch mm	0402 1005		0603 1608		0805 2012			1206 3216			1210 3225		
Type	B37920		B37930		B37940			B37871			B37949		
V _R (Vdc)	50		50		50	100	200	50	100	200	50	100	200
100 pF	■		■		■	■	■	■	■	■	■	■	■
120 pF	■		■		■	■	■	■	■	■	■	■	■
150 pF	■		■		■	■	■	■	■	■	■	■	■
180 pF	■		■		■	■	■	■	■	■	■	■	■
220 pF	■		■		■	■	■	■	■	■	■	■	■
270 pF			■		■	■	■	■	■	■	■	■	■
330 pF			■		■	■	■	■	■	■	■	■	■
390 pF			■		■	■	■	■	■	■	■	■	■
470 pF			■		■	■	■	■	■	■	■	■	■
560 pF					■	■	■	■	■	■	■	■	■
680 pF					■	■	■	■	■	■	■	■	■
820 pF					■	■	■	■	■	■	■	■	■
1,0 nF					■	■	■	■	■	■	■	■	■
1,2 nF					■	■	■	■	■	■	■	■	■
1,5 nF					■	■	■	■	■	■	■	■	■
1,8 nF					■	■	■	■	■	■	■	■	■
2,2 nF					■	■	■	■	■	■	■	■	▨
2,7 nF								■	■	■	■	■	■
3,3 nF								■	■	■	■	■	■
3,9 nF								■	■	■	■	■	■
4,7 nF								■	■	■	■	■	■
5,6 nF								■	■	■	■	■	■
6,8 nF								■	■	■	■	■	■
8,2 nF										■	■	■	■
10 nF										■	■	■	■

Chip thickness (s): 0,5 ± 0,1 mm 0,6 ± 0,1 mm 0,8 ± 0,1 mm 1,2 ± 0,1 mm 1,6 ± 0,1 mm

1) l × b (inch) / l × b (mm)

Ordering codes for COG/NPO/CH, 50 Vdc, AgNiSn terminations

Size	0402/1005	0603/1608	0805/2012	1206/3216	1210/3225
C _R ¹⁾	Ordering code ²⁾				
	B37920-	B37930-	B37940-	B37871-	B37949-
1,0 pF	-K5010-C60 ▲	-K5010-C60 ○	-K5010-C60 □	-K5010-C60 ○	
1,2 pF		-K5010-C260 ○	-K5010-C260 □	-K5010-C260 ○	
1,5 pF		-K5010-C560 ○	-K5010-C560 □	-K5010-C560 ○	
1,8 pF		-K5010-C860 ○	-K5010-C860 □	-K5010-C860 ○	
2,2 (2,0) pF	-K5020-C60 ▲	-K5020-C260 ○	-K5020-C260 □	-K5020-C260 ○	
2,7 (3,0) pF	-K5030-C60 ▲	-K5020-C760 ○	-K5020-C760 □	-K5020-C760 ○	
3,3 (4,0) pF	-K5040-C60 ▲	-K5030-C360 ○	-K5030-C360 □	-K5030-C360 ○	
3,9 (5,0) pF	-K5050-C60 ▲	-K5030-C960 ○	-K5030-C960 □	-K5030-C960 ○	
4,7 (6,0) pF	-K5060-C60 ▲	-K5040-C760 ○	-K5040-C760 □	-K5040-C760 ○	
5,6 (7,0) pF	-K5070-C60 ▲	-K5050-C660 ○	-K5050-C660 □	-K5050-C660 ○	
6,8 (8,0) pF	-K5080-C60 ▲	-K5060-C860 ○	-K5060-C860 □	-K5060-C860 ○	
8,2 (9,0) pF	-K5090-C60 ▲	-K5080-C260 ○	-K5080-C260 □	-K5080-C260 ○	
10 pF	-K5100-J60 ▲	-K5100-J60 ○	-K5100-J60 □	-K5100-J60 ○	
12 pF	-K5120-J60 ▲	-K5120-J60 ○	-K5120-J60 □	-K5120-J60 ○	
15 pF	-K5150-J60 ▲	-K5150-J60 ○	-K5150-J60 □	-K5150-J60 ○	
18 pF	-K5180-J60 ▲	-K5180-J60 ○	-K5180-J60 □	-K5180-J60 ○	
22 pF	-K5220-J60 ▲	-K5220-J60 ○	-K5220-J60 □	-K5220-J60 ○	
27 pF	-K5270-J60 ▲	-K5270-J60 ○	-K5270-J60 □	-K5270-J60 ○	
33 pF	-K5330-J60 ▲	-K5330-J60 ○	-K5330-J60 □	-K5330-J60 ○	
39 pF	-K5390-J60 ▲	-K5390-J60 ○	-K5390-J60 □	-K5390-J60 ○	
47 pF	-K5470-J60 ▲	-K5470-J60 ○	-K5470-J60 □	-K5470-J60 ○	
56 pF	-K5560-J60 ▲	-K5560-J60 ○	-K5560-J60 □	-K5560-J60 ○	
68 pF	-K5680-J60 ▲	-K5680-J60 ○	-K5680-J60 □	-K5680-J60 ○	
82 pF	-K5820-J60 ▲	-K5820-J60 ○	-K5820-J60 □	-K5820-J60 ○	
100 pF	-K5101-J60 ▲	-K5101-J60 ○	-K5101-J60 □	-K5101-J60 ○	
120 pF	-K5121-J60 ▲	-K5121-J60 ○	-K5121-J60 □	-K5121-J60 ○	
150 pF	-K5151-J60 ▲	-K5151-J60 ○	-K5151-J60 □	-K5151-J60 ○	
180 pF	-K5181-J60 ▲	-K5181-J60 ○	-K5181-J60 □	-K5181-J60 ○	
220 pF	-K5221-J60 ▲	-K5221-J60 ○	-K5221-J60 □	-K5221-J60 ○	
270 pF		-K5271-J60 ○	-K5271-J60 □	-K5271-J60 ○	
330 pF		-K5331-J60 ○	-K5331-J60 □	-K5331-J60 ○	
390 pF		-K5391-J60 ○	-K5391-J60 □	-K5339-J60 ○	
470 pF		-K5471-J60 ○	-K5471-J60 □	-K5471-J60 ○	
560 pF			-K5561-J60 □	-K5561-J60 ○	
680 pF			-K5681-J60 □	-K5681-J60 ○	
820 pF			-K5821-J60 □	-K5821-J60 ○	

Chip thickness: ▲: 0,5 ± 0,1 mm □: 0,6 ± 0,1 mm ○: 0,8 ± 0,1 mm

1) E24 series available on request. For size 0402 only capacitance values in () available; capacitance values < 1 pF on request.

2) The tables contain the ordering codes for the standard capacitance tolerance:

C = ± 0,25 pF for < 10 pF; J = ± 5 % for ≥ 10 pF. Example: B37920-K5010-C60

For other available capacitance tolerances see page 15

Ordering codes for COG/NP0/CH, 50 Vdc, AgNiSn terminations (cont'd)

Size	0402/1005	0603/1606	0805/2012	1206/3216	1210/3225
$C_R^{1)}$	Ordering code ²⁾				
	B37920-	B37930-	B37940-	B37871-	B37949-
1,0 nF			-K5102-J60 □	-K5102-J60 ○	-K5102-J62 ○
1,2 nF			-K5122-J60 ○	-K5122-J60 ○	-K5122-J62 ○
1,5 nF			-K5152-J60 ○	-K5152-J60 ○	-K5152-J62 ○
1,8 nF			-K5182-J62 ◆	-K5182-J60 ○	-K5182-J62 ○
2,2 nF			-K5222-J62 ◆	-K5222-J60 ○	-K5222-J62 ○
2,7 nF				-K5272-J60 ○	-K5272-J62 ○
3,3 nF				-K5332-J60 ○	-K5332-J62 ○
3,9 nF				-K5392-J60 ○	-K5392-J62 ○
4,7 nF				-K5472-J62 ◆	-K5472-J62 ○
5,6 nF				-K5562-J62 ◆	-K5562-J62 ○
6,8 nF					-K5682-J62 ○
8,2 nF					-K5822-J62 ◆
10 nF					-K5103-J62 ◆

Chip thickness: □: $0,6 \pm 0,1$ mm ○: $0,8 \pm 0,1$ mm ◆: $1,2 \pm 0,1$ mm

1) E24 series available on request

2) The tables contain the ordering codes for the standard capacitance tolerance:

C = $\pm 0,25$ pF for < 10 pF; J = ± 5 % for ≥ 10 pF. Example: B37940-K5102-J60

For other available capacitance tolerances see page 15

Ordering codes for COG/NPO/CH, 100 Vdc, AgNiSn terminations

Size	0805/2012	1206/3216	Size	1206/3216	1210/3225
C_R	Ordering code ¹⁾		C_R	Ordering code ¹⁾	
	B37940-	B37871-		B37871-	B37949-
1,0 pF	-K1010-C60 □	-K1010-C60 ○	1,2 nF	-K1122-J60 ○	-K1122-J60 ○
1,2 pF	-K1010-C260 □	-K1010-C260 ○	1,5 nF	-K1152-J60 ○	-K1152-J60 ○
1,5 pF	-K1010-C560 □	-K1010-C560 ○	1,8 nF	-K1182-J60 ○	-K1182-J60 ○
1,8 pF	-K1010-C860 □	-K1010-C860 ○	2,2 nF	-K1222-J62 ◆	-K1222-J60 ○
2,2 pF	-K1020-C260 □	-K1020-C260 ○	2,7 nF		-K1272-J60 ○
2,7 pF	-K1020-C760 □	-K1020-C760 ○	3,3 nF		-K1332-J60 ○
3,3 pF	-K1030-C360 □	-K1030-C360 ○	3,9 nF		-K1392-J60 ○
3,9 pF	-K1030-C960 □	-K1030-C960 ○	4,7 nF		-K1472-J62 ◆
4,7 pF	-K1040-C760 □	-K1040-C760 ○	5,6 nF		-K1562-J62 ◆
5,6 pF	-K1050-C660 □	-K1050-C660 ○	6,8 nF		-K1682-J62 ◆
6,8 pF	-K1060-C860 □	-K1060-C860 ○			
8,2 pF	-K1080-C260 □	-K1080-C260 ○			
10 pF	-K1100-J60 □	-K1100-J60 ○			
12 pF	-K1120-J60 □	-K1120-J60 ○			
15 pF	-K1150-J60 □	-K1150-J60 ○			
18 pF	-K1180-J60 □	-K1180-J60 ○			
22 pF	-K1220-J60 □	-K1220-J60 ○			
27 pF	-K1270-J60 □	-K1270-J60 ○			
33 pF	-K1330-J60 □	-K1330-J60 ○			
39 pF	-K1390-J60 □	-K1390-J60 ○			
47 pF	-K1470-J60 □	-K1470-J60 ○			
56 pF	-K1560-J60 □	-K1560-J60 ○			
68 pF	-K1680-J60 □	-K1680-J60 ○			
82 pF	-K1820-J60 □	-K1820-J60 ○			
100 pF	-K1101-J60 □	-K1101-J60 ○			
120 pF	-K1121-J60 □	-K1121-J60 ○			
150 pF	-K1151-J60 □	-K1151-J60 ○			
180 pF	-K1181-J60 □	-K1181-J60 ○			
220 pF	-K1221-J60 □	-K1221-J60 ○			
270 pF	-K1271-J60 □	-K1271-J60 ○			
330 pF	-K1331-J60 □	-K1331-J60 ○			
390 pF	-K1391-J60 □	-K1391-J60 ○			
470 pF	-K1471-J60 □	-K1471-J60 ○			
560 pF	-K1561-J60 ○	-K1561-J60 ○			
680 pF	-K1681-J60 ○	-K1681-J60 ○			
820 pF	-K1821-J62 ◆	-K1821-J60 ○			
1,0 nF	-K1102-J62 ◆	-K1102-J60 ○			

Chip thickness: □: 0,6 ± 0,1 mm ○: 0,8 ± 0,1 mm ◆: 1,2 ± 0,1 mm

1) The tables contain the ordering codes for the standard capacitance tolerance:
 C = ± 0,25 pF for < 10 pF; J = ± 5 % for ≥ 10 pF. Example: B37940-K1010-C60
 For other available capacitance tolerances see page 15

Ordering codes for COG/NP0/CH, 200 Vdc, AgNiSn terminations

Size	0805/2012	1206/3216	1210/3225		
C_R	Ordering code ¹⁾				
	B37940-	B37871-	B37949-		
1,0 pF	-K2010-C60 □	-K2010-C60 ○			
1,2 pF	-K2010-C260 □	-K2010-C260 ○			
1,5 pF	-K2010-C560 □	-K2010-C560 ○			
1,8 pF	-K2010-C860 □	-K2010-C860 ○			
2,2 pF	-K2020-C260 □	-K2020-C260 ○			
2,7 pF	-K2020-C760 □	-K2020-C760 ○			
3,3 pF	-K2030-C360 □	-K2030-C360 ○			
3,9 pF	-K2030-C960 □	-K2030-C960 ○			
4,7 pF	-K2040-C760 □	-K2040-C760 ○			
5,6 pF	-K2050-C660 □	-K2050-C660 ○			
6,8 pF	-K2060-C860 □	-K2060-C860 ○			
8,2 pF	-K2080-C260 □	-K2080-C260 ○			
10 pF	-K2100-J60 □	-K2100-J60 ○			
12 pF	-K2120-J60 □	-K2120-J60 ○			
15 pF	-K2150-J60 □	-K2150-J60 ○			
18 pF	-K2180-J60 □	-K2180-J60 ○			
22 pF	-K2220-J60 □	-K2220-J60 ○			
27 pF	-K2270-J60 □	-K2270-J60 ○			
33 pF	-K2330-J60 □	-K2330-J60 ○			
39 pF	-K2390-J60 □	-K2390-J60 ○			
47 pF	-K2470-J60 □	-K2470-J60 ○			
56 pF	-K2560-J60 □	-K2560-J60 ○			
68 pF	-K2680-J60 □	-K2680-J60 ○			
82 pF	-K2820-J60 □	-K2820-J60 ○			
100 pF	-K2101-J60 □	-K2101-J60 ○	-K2101-J62 ○		
120 pF	-K2121-J60 □	-K2121-J60 ○	-K2121-J62 ○		
150 pF	-K2151-J60 □	-K2151-J60 ○	-K2151-J62 ○		
180 pF	-K2181-J60 □	-K2181-J60 ○	-K2181-J62 ○		
220 pF	-K2221-J60 □	-K2221-J60 ○	-K2221-J62 ○		
270 pF	-K2271-J62 ◆	-K2271-J60 ○	-K2271-J62 ○		
330 pF	-K2331-J62 ◆	-K2331-J60 ○	-K2331-J62 ○		
390 pF		-K2391-J60 ○	-K2391-J62 ○		
470 pF		-K2471-J60 ○	-K2471-J62 ○		
560 pF		-K2561-J60 ○	-K2561-J62 ○		
680 pF		-K2681-J62 ◆	-K2681-J62 ○		
820 pF		-K2821-J62 ◆	-K2821-J62 ○		

Chip thickness: □: 0,6 ± 0,1 mm ○: 0,8 ± 0,1 mm ◆: 1,2 ± 0,1 mm

1) The tables contain the ordering codes for the standard capacitance tolerance:
 C = ± 0,25 pF for < 10 pF; J = ± 5 % for ≥ 10 pF. Example: B37940-K2010-C62
 For other available capacitance tolerances see page 15

Ordering codes for COG/NPO/CH, 200 Vdc, AgNiSn terminations (cont'd)

Size	0805/2012	1206/3216	1210/3225		
C_R	Ordering code ¹⁾				
	B37940-	B37871-	B37949-		
1,0 nF		-K2102-J62 ◆	-K2102-J62 ○		
1,2 nF			-K2122-J62 ◆		
1,5 nF			-K2152-J62 ◆		
1,8 nF			-K2182-J62 ◆		
2,2 nF			-K2222-J62 ●		

Chip thickness: □: $0,6 \pm 0,1$ mm ○: $0,8 \pm 0,1$ mm ◆: $1,2 \pm 0,1$ mm ●: $1,6 \pm 0,1$ mm

1) The tables contain the ordering codes for the standard capacitance tolerance:
 $C = \pm 0,25$ pF for < 10 pF; $J = \pm 5\%$ for ≥ 10 pF. Example: B37871-K2102-J62
 For other available capacitance tolerances see page 15

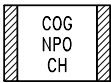
Ordering codes for C0G/NP0/CH, 50 Vdc, AgNiSn terminations, bulk case packing

Size	0603/1608	0805/2012	1206/3216	
C _R ¹⁾	Ordering code ²⁾			
	B37930-	B37940-	B37871-	
1,0 pF	-K5010-C01 ○	-K5010-C01 □	-K5010-C01 □	
1,2 pF	-K5010-C201 ○	-K5010-C201 □	-K5010-C201 □	
1,5 pF	-K5010-C501 ○	-K5010-C501 □	-K5010-C501 □	
1,8 pF	-K5010-C801 ○	-K5010-C801 □	-K5010-C801 □	
2,2 pF	-K5020-C201 ○	-K5020-C201 □	-K5020-C201 □	
2,7 pF	-K5020-C701 ○	-K5020-C701 □	-K5020-C701 □	
3,3 pF	-K5030-C301 ○	-K5030-C301 □	-K5030-C301 □	
3,9 pF	-K5030-C901 ○	-K5030-C901 □	-K5030-C901 □	
4,7 pF	-K5040-C701 ○	-K5040-C701 □	-K5040-C701 □	
5,6 pF	-K5050-C601 ○	-K5050-C601 □	-K5050-C601 □	
6,8 pF	-K5060-C801 ○	-K5060-C801 □	-K5060-C801 □	
8,2 pF	-K5080-C201 ○	-K5080-C201 □	-K5080-C201 □	
10 pF	-K5100-J01 ○	-K5100-J01 □	-K5100-J01 □	
12 pF	-K5120-J01 ○	-K5120-J01 □	-K5120-J01 □	
15 pF	-K5150-J01 ○	-K5150-J01 □	-K5150-J01 □	
18 pF	-K5180-J01 ○	-K5180-J01 □	-K5180-J01 □	
22 pF	-K5220-J01 ○	-K5220-J01 □	-K5220-J01 □	
27 pF	-K5270-J01 ○	-K5270-J01 □	-K5270-J01 □	
33 pF	-K5330-J01 ○	-K5330-J01 □	-K5330-J01 □	
39 pF	-K5390-J01 ○	-K5390-J01 □	-K5390-J01 □	
47 pF	-K5470-J01 ○	-K5470-J01 □	-K5470-J01 □	
56 pF	-K5560-J01 ○	-K5560-J01 □	-K5560-J01 □	
68 pF	-K5680-J01 ○	-K5680-J01 □	-K5680-J01 □	
82 pF	-K5820-J01 ○	-K5820-J01 □	-K5820-J01 □	
100 pF	-K5101-J01 ○	-K5101-J01 □	-K5101-J01 □	
120 pF	-K5121-J01 ○	-K5121-J01 □	-K5121-J01 □	
150 pF	-K5151-J01 ○	-K5151-J01 □	-K5151-J01 □	
180 pF	-K5181-J01 ○	-K5181-J01 □	-K5181-J01 □	
220 pF	-K5221-J01 ○	-K5221-J01 □	-K5221-J01 □	
270 pF	-K5271-J01 ○	-K5271-J01 □	-K5271-J01 □	
330 pF	-K5331-J01 ○	-K5331-J01 □	-K5331-J01 □	
390 pF	-K5391-J01 ○	-K5391-J01 □	-K5391-J01 □	
470 pF	-K5471-J01 ○	-K5471-J01 □	-K5471-J01 □	
560 pF		-K5561-J01 □	-K5561-J01 □	
680 pF		-K5681-J01 □	-K5681-J01 □	
820 pF		-K5821-J01 □	-K5821-J01 □	

Chip thickness: □: 0,6 ± 0,1 mm ○: 0,8 ± 0,1 mm

1) E24 series available on request

2) The tables contain the ordering codes for the standard capacitance tolerance:
 C = ± 0,25 pF for < 10 pF; J = ± 5 % for ≥ 10 pF. Example: B37930-K5010-C01
 For other available capacitance tolerances see page 15



Ordering codes for COG/NPO/CH, 50 Vdc, AgNiSn terminations, bulk case packing (cont'd)

Size	0603/1608	0805/2012	1206/3216	
C_R ¹⁾	Ordering code ²⁾			
	B37930-	B37940-	B37871-	
1,0 nF		-K5102-J01 □	-K5102-J01 □	
1,2 nF			-K5122-J01 □	
1,5 nF			-K5152-J01 □	
1,8 nF			-K5182-J01 □	
2,2 nF			-K5222-J01 □	

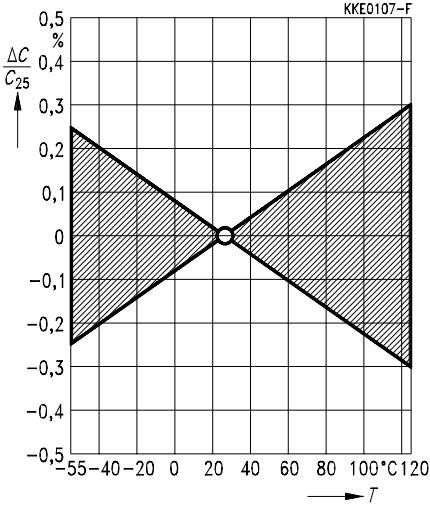
Chip thickness: □: 0,6 ± 0,1 mm

1) E24 series available on request

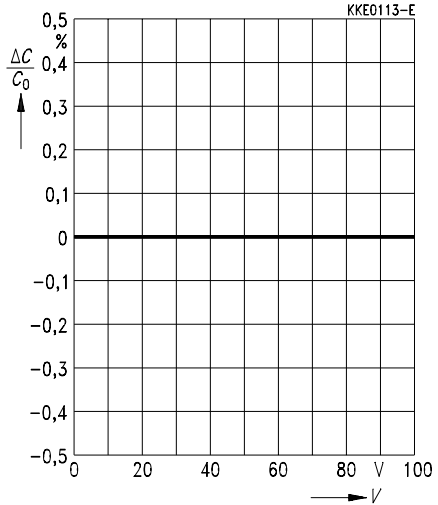
2) The tables contain the ordering codes for the standard capacitance tolerance:
 C = ± 0,25 pF for < 10 pF; J = ± 5 % for ≥ 10 pF. Example: B37871-K5102-J01
 For other available capacitance tolerances see page 15

Characteristics

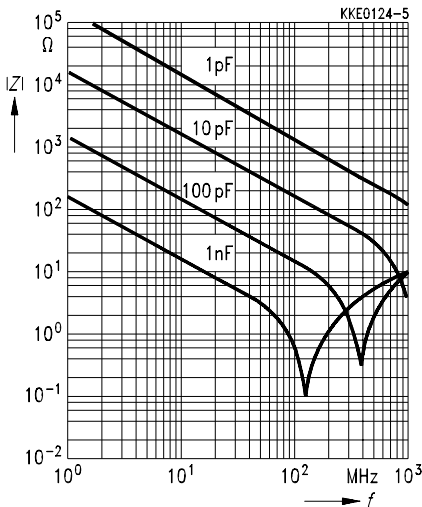
Capacitance change $\Delta C/C_{25}$ versus temperature T (tolerance range \square)



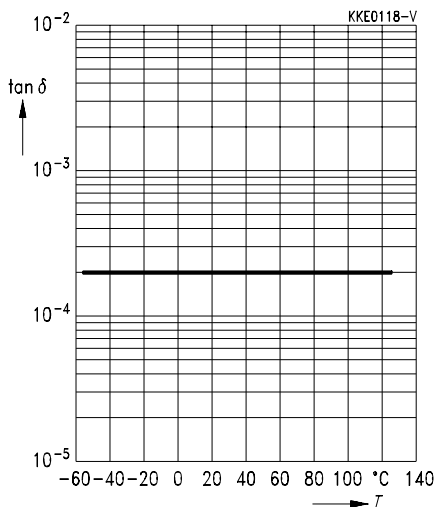
Capacitance change $\Delta C/C_0$ versus superimposed dc voltage V

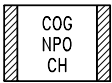


Impedance $|Z|$ versus frequency f

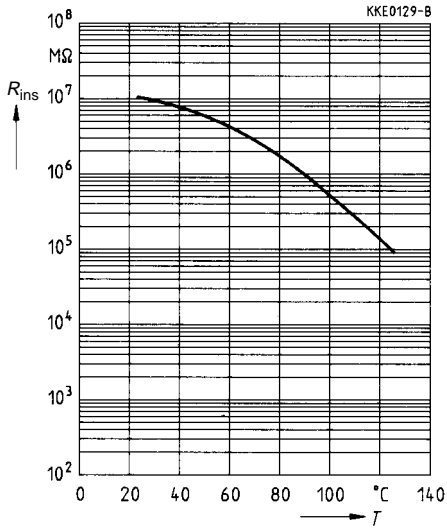


Dissipation factor $\tan \delta$ versus temperature T





Insulation resistance R_{ins} versus temperature T



Capacitance change $\Delta C/C_1$ versus time t

