

Ordering code system


B37830


R


0


101


K


0


2


1

Packaging
 1 $\triangleq$ cardboard tape, 180-mm reel
 3 $\triangleq$ cardboard tape, 330-mm reel

2 $\triangleq$ 2-fold array
4 $\triangleq$ 4-fold array

Internal coding: 0 or decimal place for cap. values < 10 pF

Capacitance tolerance

 J $\triangleq \pm 5\%$
K $\triangleq \pm 10\%$ (standard for C0G)
M $\triangleq \pm 20\%$ (standard for X7R)

Capacitance, coded $100 \triangleq 10 \cdot 10^0 \text{ pF} = 10 \text{ pF}$
 (example) $101 \triangleq 10 \cdot 10^1 \text{ pF} = 100 \text{ pF}$
 $220 \triangleq 22 \cdot 10^0 \text{ pF} = 22 \text{ pF}$

Rated voltage	Rated voltage [VDC]	16	25	50
	Code	9	0	5

Termination	Standard: R $\triangleq$ nickel barrier for all case sizes "R" also indicates array capacitor
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Type and size

Chip size (inch / mm)	Temperature characteristic		
	C0G	X7R	
0405 / 1012	B37830	B37831	
0508 / 1220	B37940	B37941	
0612 / 1632	B37871	B37872	

Features

- Reduction of mounting time and mounting costs
- Space saving on the PCB

Applications

- Suitable for electronic circuits with parallel line layout
- Coupling and filtering, particularly in RF circuits
- Resonant circuits
- Filter circuits



Termination

- For soldering: Nickel-barrier terminations (Ni)

Options

- Alternative capacitance tolerances available on request

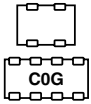
Delivery mode

- Cardboard tape, 180-mm and 330-mm reel available

Electrical data

Temperature characteristic		C0G	
Climatic category (IEC 60068-1)		55/125/56	
Standard		EIA	
Dielectric		Class 1	
Rated voltage	V_R	25, 50	VDC
Test voltage	V_{test}	$2,5 \cdot V_R/5$ s	VDC
Capacitance range / E series	C_R	10 pF ... 1,0 nF (E6)	
Temperature coefficient		$0 \pm 30 \cdot 10^{-6}/K$	
Dissipation factor (limit value)	$\tan \delta$	$< 1,0 \cdot 10^{-3}$	
Insulation resistance ¹⁾ at + 25 °C	R_{ins}	$> 10^5$	MΩ
Insulation resistance ¹⁾ at +125 °C	R_{ins}	$> 10^4$	MΩ
Time constant ¹⁾ at + 25 °C	τ	> 1000	s
Time constant ¹⁾ at +125 °C	τ	> 100	s
Operating temperature range	T_{op}	-55 ... +125	°C
Ageing		none	

1) For $C_R > 10$ nF the time constant $\tau = C \cdot R_{ins}$ is given.

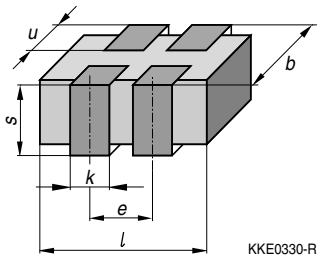


Capacitance tolerances

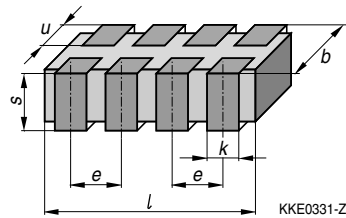
Code letter	J	K (standard)
Tolerance	$\pm 5\%$	$\pm 10\%$

Dimensional drawing

2-fold array (case size 0405)



4-fold array (case sizes 0508 and 0612)



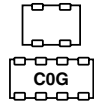
Dimensions (mm)

Case size (inch) (mm)	2-fold array	4-fold array	
	0405 1012	0508 1220	0612 1632
<i>l</i>	$1,37 \pm 0,15$	$2,0 \pm 0,2$	$3,2 \pm 0,2$
<i>b</i>	$1,0 +0/-0,15$	$1,25 \pm 0,15$	$1,6 \pm 0,2$
<i>s</i>	0,70 max.	$0,85 \pm 0,1$	$0,85 \pm 0,1$
<i>k</i>	$0,36 \pm 0,1$	$0,3 \pm 0,1$	$0,4 \pm 0,15$
<i>e</i>	0,64	$0,5 \pm 0,1$	$0,8 \pm 0,15$
<i>u</i>	$0,2 \pm 0,1$	$0,2 +0,3/-0,1$	$0,2 +0,3/-0,1$

Tolerances to CECC 32101-801

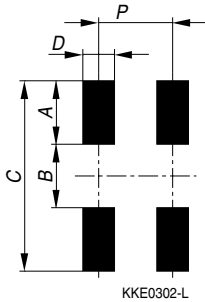
Multilayer Ceramic Capacitors

C0G

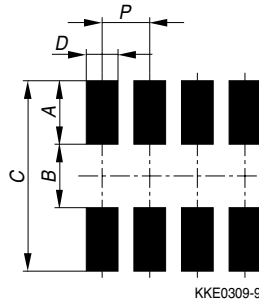


Recommended solder pad

2-fold array (case size 0405)



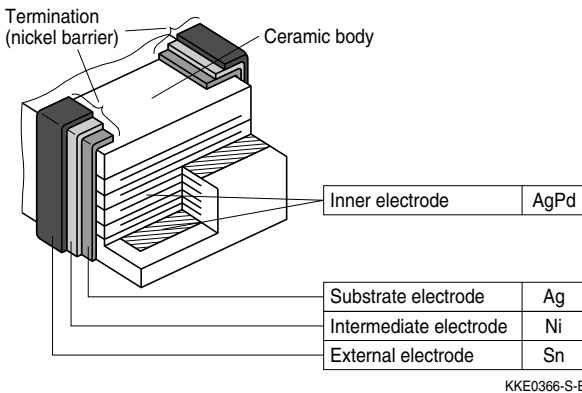
4-fold array (case sizes 0508 and 0612)

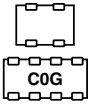


Maximum dimensions (mm)

Case size	(inch/mm)	Type	A	B	C	D	P
	0405/1012	2-fold array	0,55	0,28	1,38	0,40	0,64
	0508/1220	4-fold array	0,90	0,40	2,20	0,35	0,50
	0612/1632	4-fold array	1,00	1,10	3,10	0,45	0,90

Termination

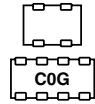




Product range array capacitors

	C0G					
	2-fold arrays		4-fold arrays			
Size ¹⁾ inch mm	0405 1012		0508 1220		0612 1632	
Type	B37830		B37940		B37871	
V_R (VDC)	25		50		50	
C_R						
10 pF						
15 pF						
22 pF						
33 pF						
47 pF						
68 pF						
100 pF						
150 pF						
180 pF						
220 pF						
330 pF						
470 pF						
680 pF						
1,0 nF						

¹⁾ $l \times b$ (inch) / $l \times b$ (mm)



Multilayer Ceramic Capacitors

C0G; 0405

Ordering codes and packing for C0G arrays, 25 VDC, nickel-barrier terminations

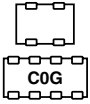
$C_R^{1)}$	Ordering code ²⁾	Chip thickness	Cardboard tape, Ø 180-mm reel	Cardboard tape, Ø 330-mm reel
		mm	* $\triangleq$ 1	* $\triangleq$ 3
			pcs/reel	pcs/reel

Case size 0405, 25 VDC, 2-fold arrays

10	pF	B37830R0100K02*	0,6 $\pm$ 0,1	5000	20000
15	pF	B37830R0150K02*	0,6 $\pm$ 0,1	5000	20000
22	pF	B37830R0220K02*	0,6 $\pm$ 0,1	5000	20000
33	pF	B37830R0330K02*	0,6 $\pm$ 0,1	5000	20000
47	pF	B37830R0470K02*	0,6 $\pm$ 0,1	5000	20000
68	pF	B37830R0680K02*	0,6 $\pm$ 0,1	5000	20000
100	pF	B37830R0101K02*	0,6 $\pm$ 0,1	5000	20000
150	pF	B37830R0151K02*	0,6 $\pm$ 0,1	5000	20000
180	pF	B37830R0181K02*	0,6 $\pm$ 0,1	5000	20000

1) Other capacitance values on request.

2) The table contains the ordering codes for the standard capacitance tolerance.
For other available capacitance tolerances see page 94.



Multilayer Ceramic Capacitors

C0G; 0508 and 0612

Ordering codes and packing for C0G arrays, 50 VDC, nickel-barrier terminations

$C_R^{1)}$	Ordering code ²⁾	Chip thickness	Cardboard tape, Ø 180-mm reel	Cardboard tape, Ø 330-mm reel
		mm	* $\triangleq$ 1	* $\triangleq$ 3
			pcs/reel	pcs/reel

Case size 0508, 50 VDC, 4-fold arrays

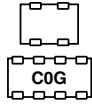
10 pF	B37940R5100K04*	0,85 $\pm$ 0,1	4000	16000
15 pF	B37940R5150K04*	0,85 $\pm$ 0,1	4000	16000
22 pF	B37940R5220K04*	0,85 $\pm$ 0,1	4000	16000
33 pF	B37940R5330K04*	0,85 $\pm$ 0,1	4000	16000
47 pF	B37940R5470K04*	0,85 $\pm$ 0,1	4000	16000
68 pF	B37940R5680K04*	0,85 $\pm$ 0,1	4000	16000
100 pF	B37940R5101K04*	0,85 $\pm$ 0,1	4000	16000
150 pF	B37940R5151K04*	0,85 $\pm$ 0,1	4000	16000
220 pF	B37940R5221K04*	0,85 $\pm$ 0,1	4000	16000

Case size 0612, 50 VDC, 4-fold arrays

10 pF	B37871R5100K04*	0,85 $\pm$ 0,1	4000	16000
15 pF	B37871R5150K04*	0,85 $\pm$ 0,1	4000	16000
22 pF	B37871R5220K04*	0,85 $\pm$ 0,1	4000	16000
33 pF	B37871R5330K04*	0,85 $\pm$ 0,1	4000	16000
47 pF	B37871R5470K04*	0,85 $\pm$ 0,1	4000	16000
68 pF	B37871R5680K04*	0,85 $\pm$ 0,1	4000	16000
100 pF	B37871R5101K04*	0,85 $\pm$ 0,1	4000	16000
150 pF	B37871R5151K04*	0,85 $\pm$ 0,1	4000	16000
220 pF	B37871R5221K04*	0,85 $\pm$ 0,1	4000	16000
330 pF	B37871R5331K04*	0,85 $\pm$ 0,1	4000	16000
470 pF	B37871R5471K04*	0,85 $\pm$ 0,1	4000	16000
680 pF	B37871R5681K04*	0,85 $\pm$ 0,1	4000	16000
1,0 nF	B37871R5102K04*	0,85 $\pm$ 0,1	4000	16000

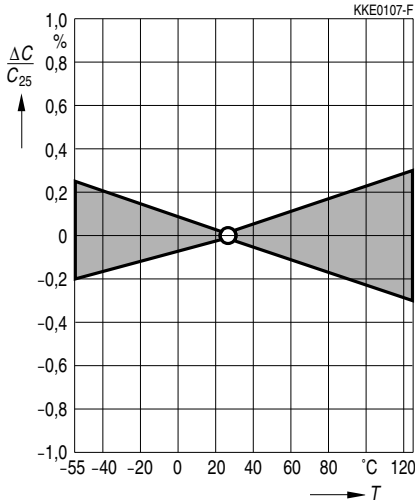
1) Other capacitance values on request.

2) The table contains the ordering codes for the standard capacitance tolerance.
For other available capacitance tolerances see page 94.

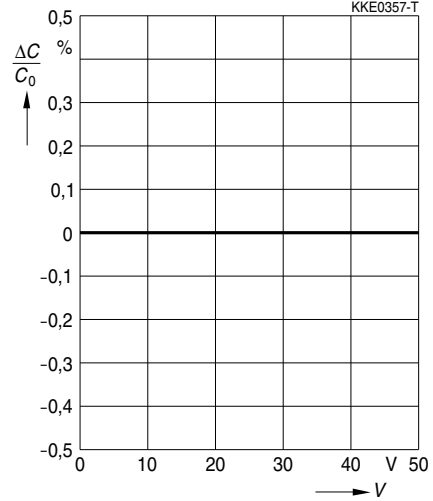


Typical characteristics

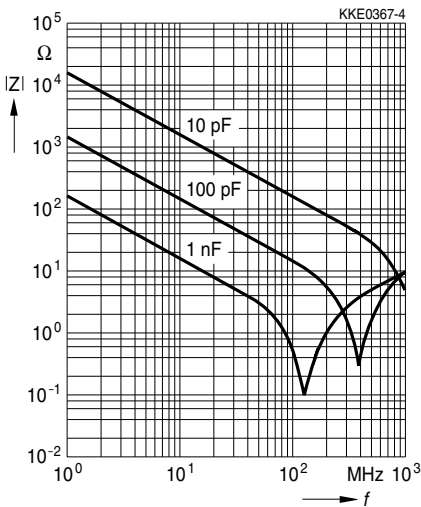
Capacitance change $\Delta C/C_{25}$ versus temperature T (tolerance range)



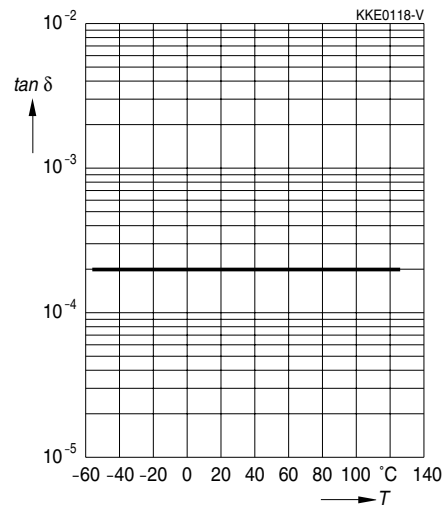
Capacitance change $\Delta C/C_0$ versus superimposed DC voltage V

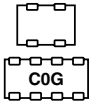


Impedance $|Z|$ versus frequency f



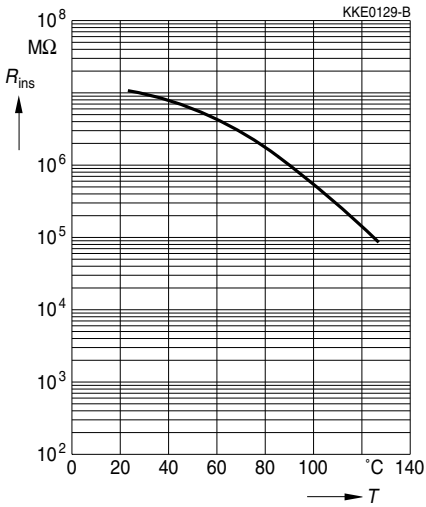
Dissipation factor $\tan \delta$ versus temperature T



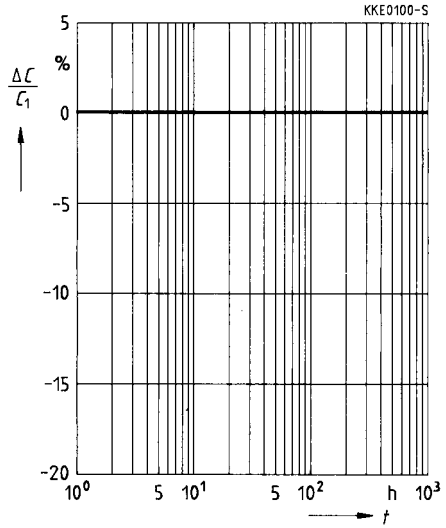


Typical characteristics

Insulation resistance R_{ins} versus temperature T



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



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