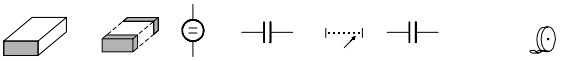
Ordering code system



B37830 R 0 101 K 0 2 1

Packaging

1 ≙ cardboard tape, 180-mm reel
3 ≙ cardboard tape, 330-mm reel

2 ≙ 2-fold array 4 ≙ 4-fold array

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

Capacitance tolerance

J ≙ ± 5 %
K ≙ ± 10 % (standard for C0G)
M ≙ ± 20 % (standard for X7R)

Capacitance, coded (example)
100 ≙ 10 · 10^0 pF = 10 pF
101 ≙ 10 · 10^1 pF = 100 pF
220 ≙ 22 · 10^0 pF = 22 pF

Rated voltage

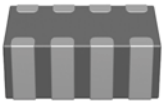
Rated voltage [VDC]	16	25	50
Code	9	0	5

Termination Standard: R ≙ nickel barrier for all case sizes
"R" also indicates array capacitor

Type and size

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

SMD



Features

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

Applications

- Suitable for electronic circuits with parallel line layout
- Decoupling
- Coupling
- Blocking
- Interference suppression

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		X7R	
Climatic category (IEC 60068-1)		55/125/56	
Standard		EIA	
Dielectric		Class 2	
Rated voltage[1)]	V_R	16, 25, 50	VDC
Test voltage	V_{test}	$2{,}5 \cdot V_R$/5 s	VDC
Capacitance range	C_R	1 nF … 22 nF	
Max. relative capacitance change	$\Delta C/C$	± 15	%
Dissipation factor (limit value)	tan δ	$< 25 \cdot 10^{-3}$	
		$< 35 \cdot 10^{-3}$ for 16V	
Insulation resistance[2)] at + 25 °C	R_{ins}	$> 10^5$	MΩ
Insulation resistance[2)] at +125 °C	R_{ins}	$> 10^4$	MΩ
Time constant[2)] at + 25 °C	τ	> 1000	s
Time constant[2)] at +125 °C	τ	> 100	s
Operating temperature range	T_{op}	−55 … +125	°C
Ageing[3)]		yes	

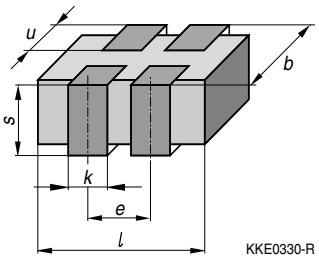
1) Note: No operation on AC line.
2) For C_R > 10 nF the time constant $\tau = C \cdot R_{ins}$ is given.
3) Refer to chapter “General Technical Information”, page 197.

Capacitance tolerances

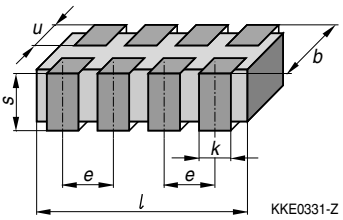
Code letter	K	M (standard)
Tolerance	±10%	±20%

Dimensional drawing

2-fold array (case size 0405)



4-fold array (case sizes 0508 and 0612)



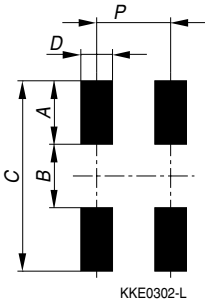
Dimensions (mm)

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

Tolerances to CECC 32101-801

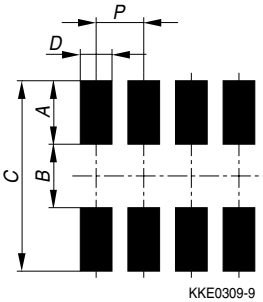
Recommended solder pad

2-fold array (case size 0405)



KKE0302-L

4-fold array (case sizes 0508 and 0612)

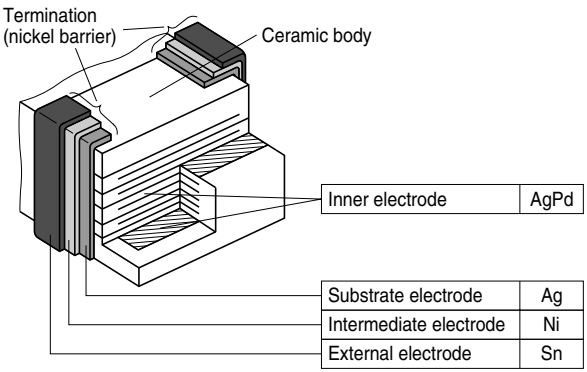


KKE0309-9

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

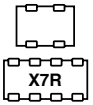


KKE0366-S-E

Product range array capacitors

	X7R					
	2-fold arrays		4-fold arrays			
Size[1)] **inch** mm	**0405** 1012		**0508** 1220		**0612** 1632	
Type	B37831		B37941		B37872	
V_R (VDC) C_R	16		25		50	
1,0 nF	■		■		■	
1,5 nF					■	
2,2 nF	■		■		■	
3,3 nF					■	
4,7 nF	■		■		■	
6,8 nF					■	
10 nF	■		■		■	
15 nF					■	
22 nF					■	

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



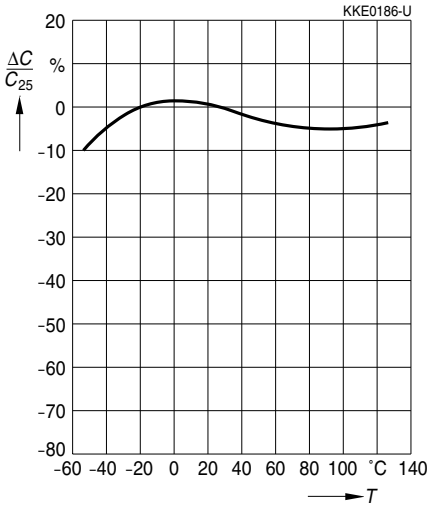
Ordering codes and packing for X7R, 16, 25 and 50 VDC, nickel-barrier terminations

C_R[1]	Ordering code[2]	Chip thickness mm	Cardboard tape, ∅ 180-mm reel * ≙ 1 pcs/reel	Cardboard tape, ∅ 330-mm reel * ≙ 3 pcs/reel
Case size 0405, 16 VDC, 2-fold arrays				
1,0 nF	B37831R9102M02*	0,6 ± 0,1	5000	20000
2,2 nF	B37831R9222M02*	0,6 ± 0,1	5000	20000
4,7 nF	B37831R9472M02*	0,6 ± 0,1	5000	20000
10 nF	B37831R9103M02*	0,6 ± 0,1	5000	20000
Case size 0508, 25 VDC, 4-fold arrays				
1,0 nF	B37941R0102M04*	0,85 ± 0,1	4000	16000
2,2 nF	B37941R0222M04*	0,85 ± 0,1	4000	16000
4,7 nF	B37941R0472M04*	0,85 ± 0,1	4000	16000
10 nF	B37941R0103M04*	0,85 ± 0,1	4000	16000
Case size 0612, 50 VDC, 4-fold arrays				
1,0 nF	B37872R5102M04*	0,85 ± 0,1	4000	16000
1,5 nF	B37872R5152M04*	0,85 ± 0,1	4000	16000
2,2 nF	B37872R5222M04*	0,85 ± 0,1	4000	16000
3,3 nF	B37872R5332M04*	0,85 ± 0,1	4000	16000
4,7 nF	B37872R5472M04*	0,85 ± 0,1	4000	16000
6,8 nF	B37872R5682M04*	0,85 ± 0,1	4000	16000
10 nF	B37872R5103M04*	0,85 ± 0,1	4000	16000
15 nF	B37872R5153M04*	0,85 ± 0,1	4000	16000
22 nF	B37872R5223M04*	0,85 ± 0,1	4000	16000

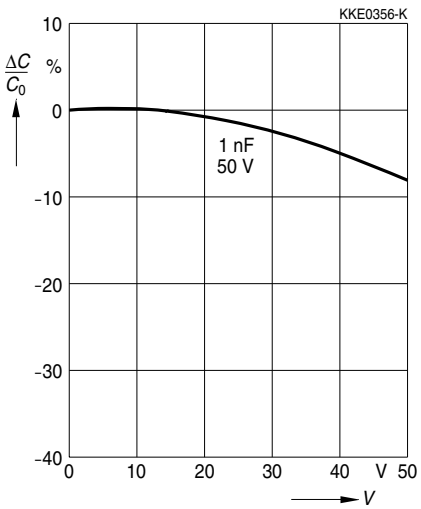
1) Other capacitance values on request.
2) The table contains the ordering codes for the standard capacitance tolerance.
For other available capacitance tolerances see page 102.

Typical characteristics

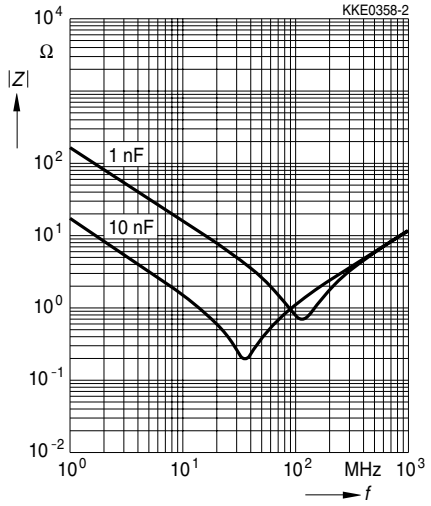
Capacitance change $\Delta C/C_{25}$ versus temperature T



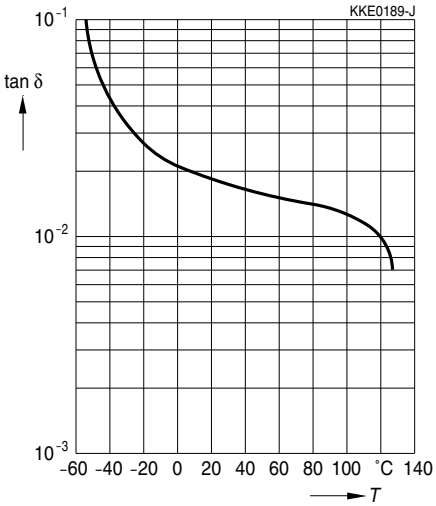
Capacitance change $\Delta C/C_0$ versus superimposed DC voltage V

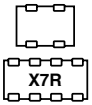


Impedance $|Z|$ versus frequency f



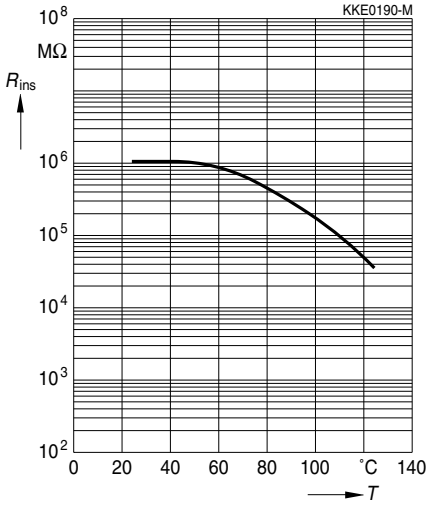
Dissipation factor tan δ versus temperature T



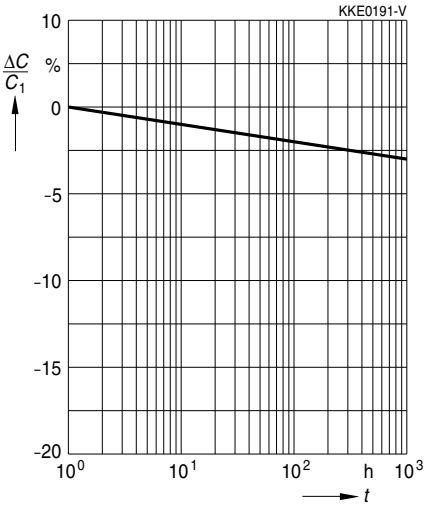


Typical characteristics

Insulation resistance R_{ins} versus temperature T



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



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