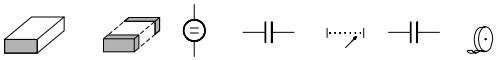
Ordering code system



B37631 K 7 105 K 0 60

Packaging

60 ≙ cardboard tape, 180-mm reel
62 ≙ blister tape, 180-mm reel

Internal coding

Capacitance tolerance

K ≙ ± 10 % (standard)

Capacitance, coded (example)
105 ≙ 10 · 10^5 pF = 1 µF
475 ≙ 47 · 10^5 pF = 4,7 µF
106 ≙ 10 · 10^6 pF = 10 µF

Rated voltage

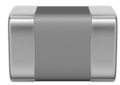
Rated voltage [VDC]	6,3	10	16	25	50
Code	7	8	9	0	5

Termination Standard: K ≙ nickel barrier for all case sizes

Type and size

Chip size (**inch** / mm)	Temperature characteristic X5R	X7R
0402 / 1005	B37621	–
0603 / 1608	B37631	B37931
0805 / 2012	B37641	B37941
1206 / 3216	B37572	B37872
1210 / 3225	B37650	B37950
1812 / 4532	B37653	–

SMD



Features

- Characteristic of class 2 dielectric
- High capacitance values up to 22 µF
- Voltage rating from 6,3 V to 50 V
- Reduced chip thickness
- Small sizes

Applications

- Coupling and bypass filters

Termination

- For soldering: Nickel-barrier terminations (Ni)

Options

- Extended E3 series (E3+) and other capacitance values on request

Delivery mode

- Cardboard and blister tape (blister tape for chip thickness ≥ 1,2 ± 0,1 mm and case sizes ≥ 1210)

Electrical data

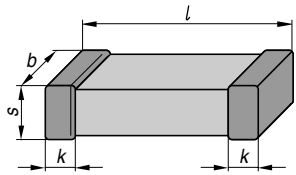
Temperature characteristic		X5R	X7R	
Climatic category (IEC 60068-1)		55/85/56	55/125/56	
Standard		EIA	EIA	
Dielectric		Class 2	Class 2	
Rated voltage[1)]	V_R	6,3; 10; 16; 25	10; 16; 25; 50	VDC
Test voltage	V_{test}	2,5 · V_R/5 s	2,5 · V_R/5 s	VDC
Capacitance range / E series	C_R	100 nF … 22 µF (E3+)	100 nF … 4,7 µF (E3+)	
Max. relative capacitance change	$\Delta C/C$	±15	±15	%
Dissipation factor (limit value)	tan δ	< 50 · 10^{-3}	< 25 · 10^{-3} < 35 · 10^{-3} for ≤ 25 V	
Insulation resistance[2)] at +25 °C	R_{ins}	> 10^4	> 10^4	MΩ
Time constant[2)] at +25 °C	τ	> 500	> 500	s
Operating temperature range	T_{op}	−55 … +85	−55 … +125	°C
Ageing[3)]		yes	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 (standard)
Tolerance	±10%

Dimensional drawing



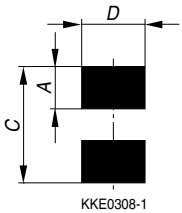
KKE0329-N

Dimensions (mm)

Case size (inch) (mm)	**0402** 1005	**0603** 1608	**0805** 2012	**1206** 3216	**1210** 3225	**1812** 4532
l	1,0 ± 0,10	1,6 ± 0,15	2,0 ± 0,20	3,2 ± 0,20	3,2 ± 0,30	4,5 ± 0,30
b	0,5 ± 0,05	0,8 ± 0,10	1,25 ± 0,15	1,6 ± 0,15	2,5 ± 0,30	3,2 ± 0,30
s	0,5 ± 0,05	0,8 ± 0,10	1,35 max.	1,80 max.	2,70 max.	2,70 max.
k	0,1 – 0,4	0,1 – 0,4	0,13 – 0,75	0,25 – 0,75	0,25 – 0,75	0,25 – 1,0

Tolerances to CECC 32101-801

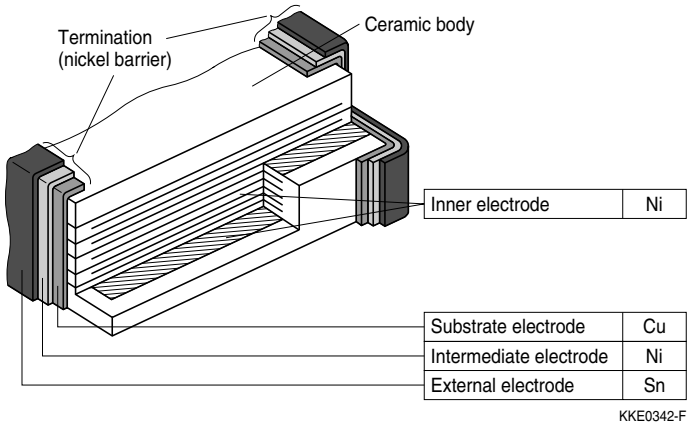
Recommended solder pad



Maximum dimensions (mm)

Case size	(inch/mm)	Type	A	C	D
	0402/1005	single chip	0,6	1,7	0,6
	0603/1608	single chip	1,0	3,0	1,0
	0805/2012	single chip	1,2	3,4	1,3
	1206/3216	single chip	1,2	4,5	1,8
	1210/3225	single chip	1,2	4,5	2,8
	1812/4532	single chip	1,5	6,0	3,6

Termination



Product range chip capacitors

	X5R							
Size[1)] **inch** mm	**0402** 1005	**0603** 1608			**0805** 2012		**1206** 3216	
Type	B37621	B37631			B37641		B37572	
V_R (VDC) / C_R	10	6,3	10	25	6,3	10	6,3	10
100 nF	■			■				
330 nF			■					
1,0 µF		■	■			■		
2,2 µF		■				■		
4,7 µF					■			■
10 µF					■		■	■

	X5R					
Size[1)] **inch** mm	**1210** 3225				**1812** 4532	
Type	B37650				B37653	
V_R (VDC) / C_R	6,3	10	16	25	16	25
4,7 µF				■		
10 µF		■	■			■
22 µF	■		■		■	

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

Product range chip capacitors

	X7R								
Size[1)] **inch** mm	**0603** 1608		**0805** 2012		**1206** 3216			**1210** 3225	
Type	B37931		B37941		B37872			B37950	
V_R (VDC) / C_R	10		16	25	16	25	50	25	50
100 nF									
220 nF	■		■	■			■		
330 nF			■			■	■		
470 nF			■			■	■		
1,0 µF			■		■	■			■
2,2 µF					■			■	
4,7 µF					■				

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

Ordering codes and packing for HighCap, X5R, 6,3; 10; 16 and 25 VDC, nickel-barrier terminations

C_R[1]	V_R (VDC)	Ordering code	Chip thickness mm	Cardboard tape, ∅ 180-mm reel ** ≙ 60 pcs/reel	Blister tape, ∅ 180-mm reel ** ≙ 62 pcs/reel
Case size 0402					
100 nF	10	B37621K8104K0**	0,5 ± 0,05	10000	–
Case size 0603					
1,0 µF	6,3	B37631K7105K0**	0,8 ± 0,1	4000	–
2,2 µF	6,3	B37631K7225K0**	0,8 ± 0,1	4000	–
330 nF	10	B37631K8334K0**	0,8 ± 0,1	4000	–
1,0 µF	10	B37631K8105K0**	0,8 ± 0,1	4000	–
100 nF	25	B37631K0104K0**	0,8 ± 0,1	4000	–
Case size 0805					
4,7 µF	6,3	B37641K7475K0**	1,25 ± 0,1	–	3000
10 µF	6,3	B37641K7106K0**	1,25 ± 0,1	–	3000
1,0 µF	10	B37641K8105K0**	1,25 ± 0,1	–	3000
2,2 µF	10	B37641K8225K0**	1,25 ± 0,1	–	3000
Case size 1206					
10 µF	6,3	B37572K7106K0**	1,6 ± 0,2	–	2000
4,7 µF	10	B37572K8475K0**	1,6 ± 0,2	–	2000
10 µF	10	B37572K8106K0**	1,6 ± 0,2	–	2000
Case size 1210					
22 µF	6,3	B37650K7226K0**	2,5 ± 0,2	–	500
10 µF	10	B37650K8106K0**	2,0 ± 0,2	–	2000
10 µF	16	B37650K9106K0**	2,0 ± 0,2	–	2000
22 µF	16	B37650K9226K0**	2,5 ± 0,2	–	500
4,7 µF	25	B37650K0475K0**	2,0 ± 0,2	–	2000
Case size 1812					
22 µF	16	B37653K9226K0**	2,5 ± 0,2	–	500
10 µF	25	B37653K0106K0**	2,5 ± 0,2	–	500

1) Other capacitance values on request.

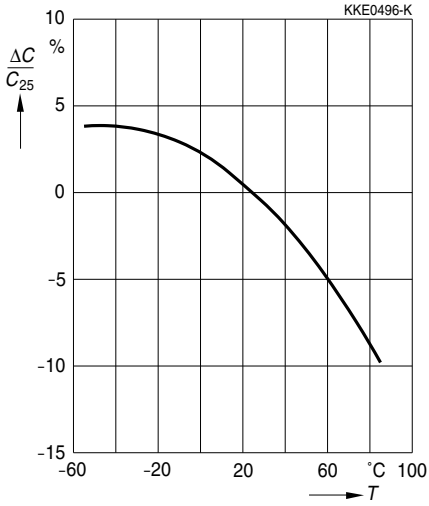
Ordering codes and packing for HighCap, X7R, 10, 16, 25 and 50 VDC, nickel-barrier terminations

C_R[1]	V_R (VDC)	Ordering code	Chip thickness mm	Cardboard tape, ∅ 180-mm reel ** ≙ 60 pcs/reel	Blister tape, ∅ 180-mm reel ** ≙ 62 pcs/reel
Case size 0603					
220 nF	10	B37931K8224K0**	0,8 ± 0,1	4000	–
Case size 0805					
220 nF	16	B37941K9224K0**	1,25 ± 0,1	–	3000
330 nF	16	B37941K9334K0**	1,25 ± 0,1	–	3000
470 nF	16	B37941K9474K0**	1,25 ± 0,1	–	3000
1,0 µF	16	B37941K9105K0**	1,25 ± 0,1	–	3000
220 nF	25	B37941K0224K0**	0,85 ± 0,1	–	4000
Case size 1206					
1,0 µF	16	B37872K9105K0**	1,15 ± 0,1	–	3000
2,2 µF	16	B37872K9225K0**	1,6 ± 0,2	–	2000
4,7 µF	16	B37872K9475K0**	1,6 ± 0,2	–	2000
330 nF	25	B37872K0334K0**	0,8 ± 0,1	4000	–
470 nF	25	B37872K0474K0**	1,2 ± 0,1	–	3000
1,0 µF	25	B37872K0105K0**	1,6 ± 0,2	–	2000
220 nF	50	B37872K5224K0**	0,8 ± 0,1	4000	–
330 nF	50	B37872K5334K0**	1,2 ± 0,1	–	3000
470 nF	50	B37872K5474K0**	1,2 ± 0,1	–	3000
Case size 1210					
2,2 µF	25	B37950K0225K0**	2,0 ± 0,2	–	2000
1,0 µF	50	B37950K5105K0**	2,0 ± 0,2	–	2000

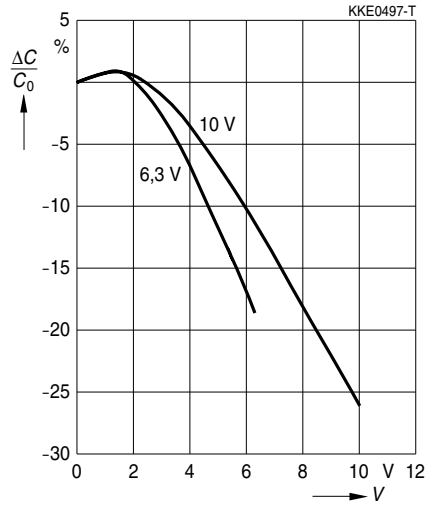
1) Other capacitance values on request.

Typical characteristics for HighCap X5R

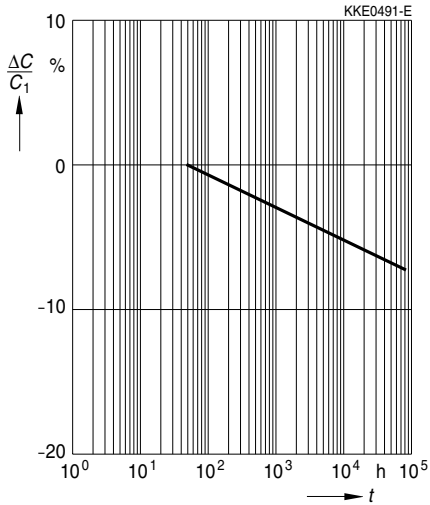
Capacitance change $\Delta C/C_{25}$ versus temperature T



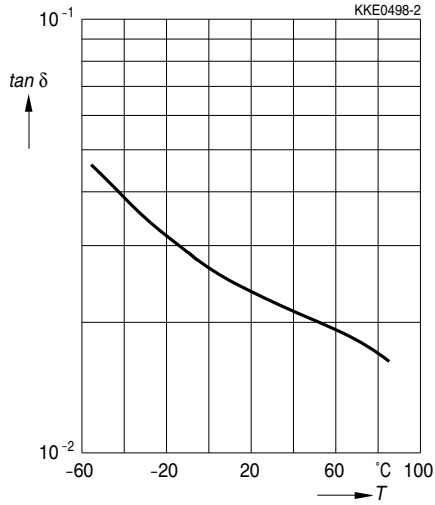
Capacitance change $\Delta C/C_0$ versus superimposed DC voltage V



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

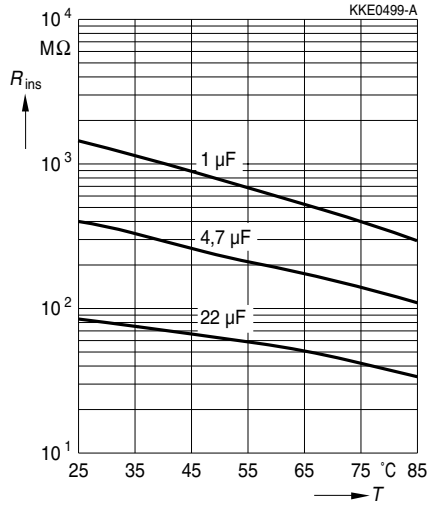


Dissipation factor tan δ versus temperature T

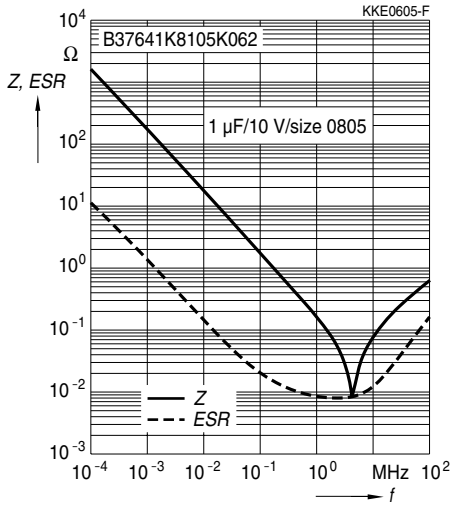


Typical characteristics for HighCap X5R

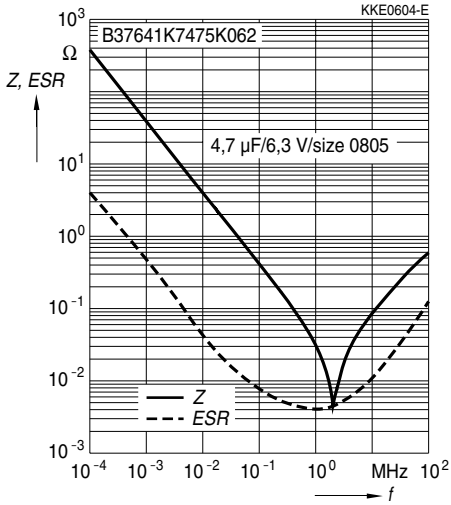
Insulation resistance R_{ins} versus temperature T



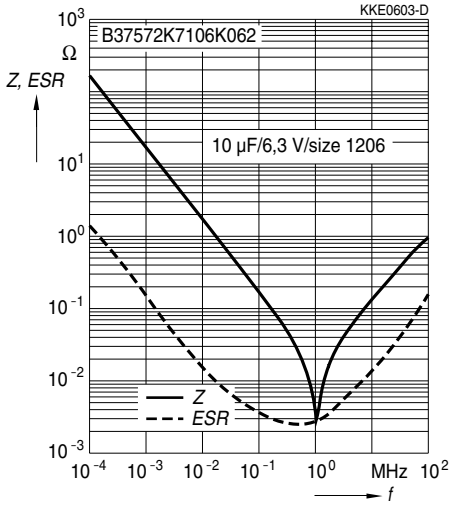
Impedance Z and ESR versus frequency f



Impedance Z and ESR versus frequency f

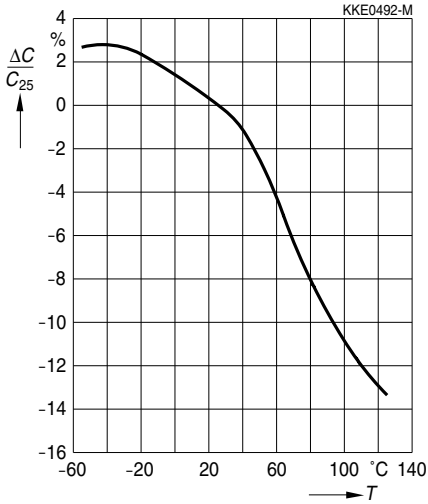


Impedance Z and ESR versus frequency f

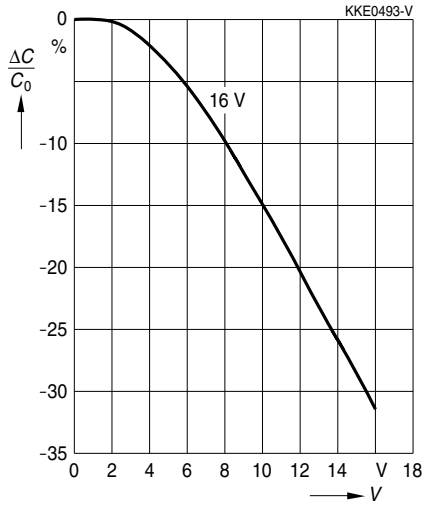


Typical characteristics for HighCap X7R

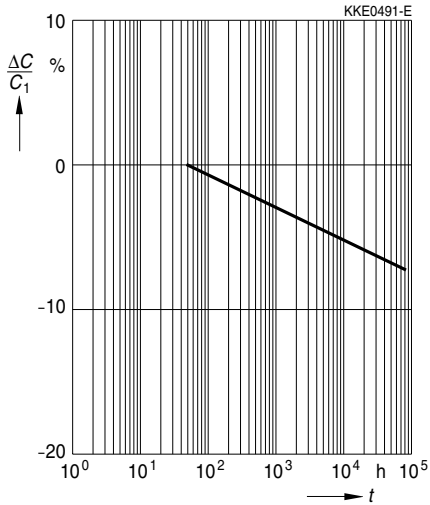
Capacitance change $\Delta C/C_{25}$ versus temperature T



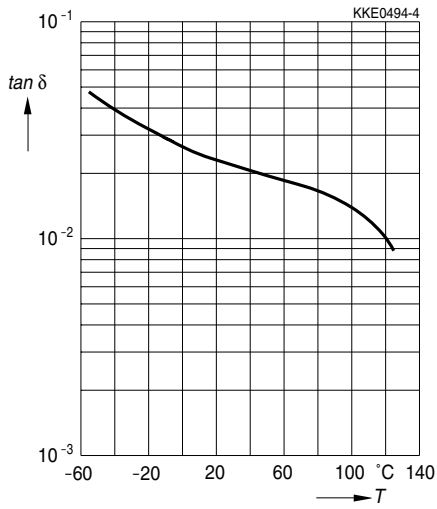
Capacitance change $\Delta C/C_0$ versus superimposed DC voltage V



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

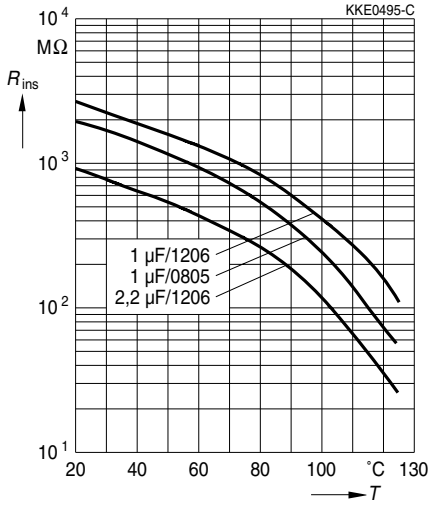


Dissipation factor tan δ versus temperature T

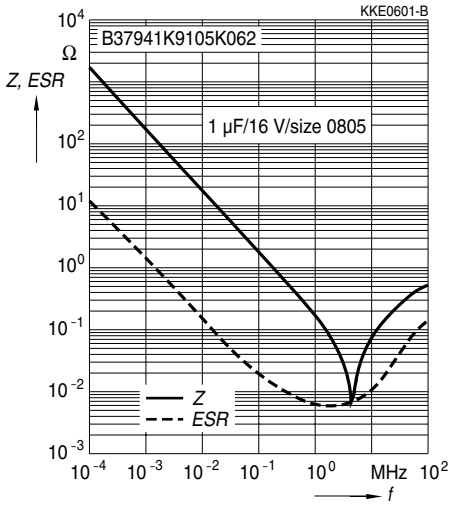


Typical characteristics for HighCap X7R

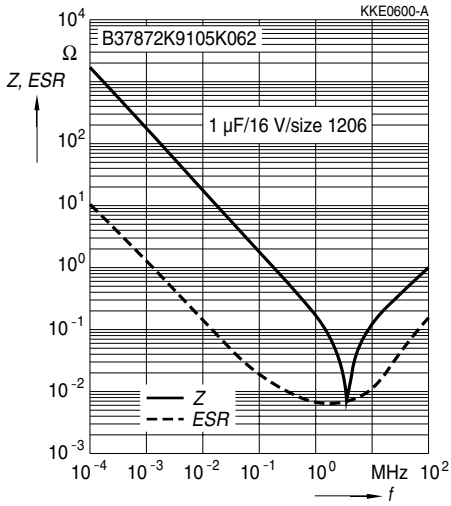
Insulation resistance R_{ins} versus temperature T



Impedance Z and ESR versus frequency f



Impedance Z and ESR versus frequency f



Impedance Z and ESR versus frequency f