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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



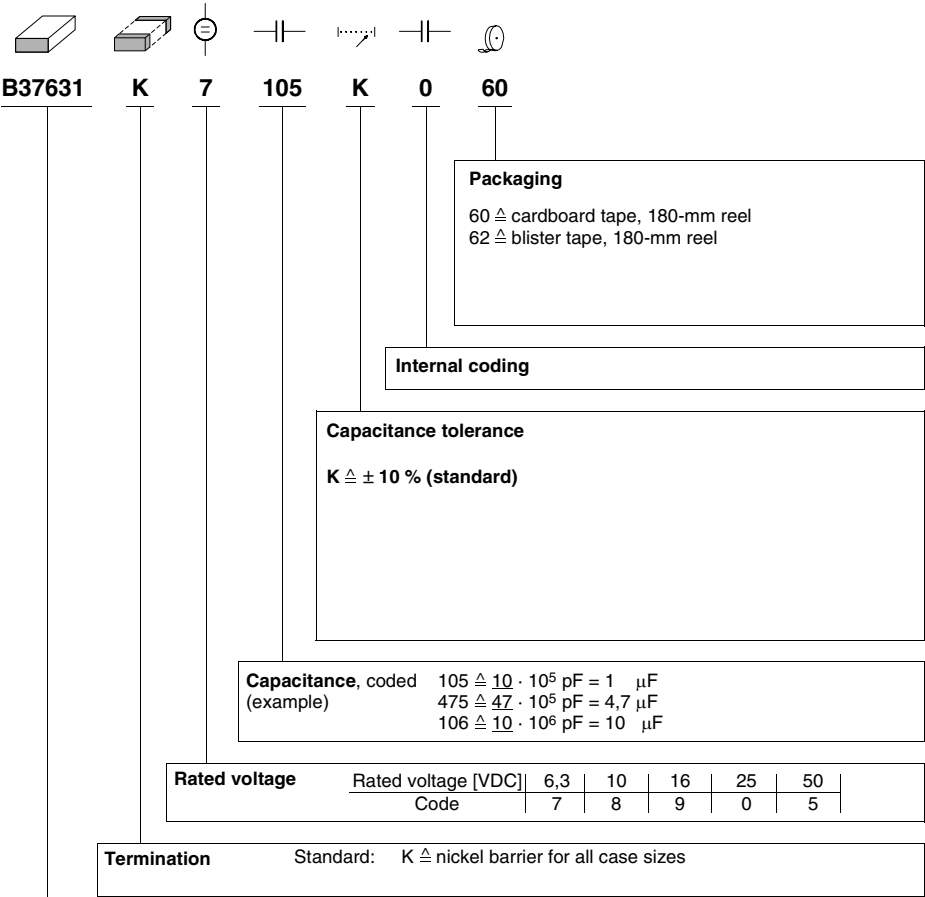
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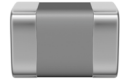


Ordering code system


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	–


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 $\geq 1,2 \pm 0,1$ 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}	$2,5 \cdot V_R/5$ s	$2,5 \cdot V_R/5$ 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)	$\tan \delta$	$< 50 \cdot 10^{-3}$	$< 25 \cdot 10^{-3}$ $< 35 \cdot 10^{-3}$ for ≤ 25 V	
Insulation resistance ²⁾ at +25 °C	R_{ins}	$> 10^4$	$> 10^4$	M Ω
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.

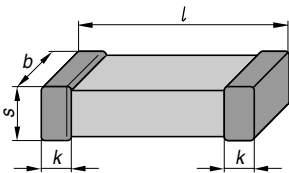
2) For $C_R > 10$ nF the time constant $\tau = C \cdot R_{\text{ins}}$ is given.

3) Refer to chapter "General Technical Information", page 197.

Capacitance tolerances

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

Dimensional drawing



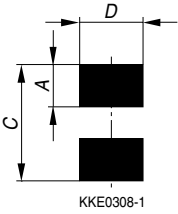
KKE0329-N

Dimensions (mm)

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

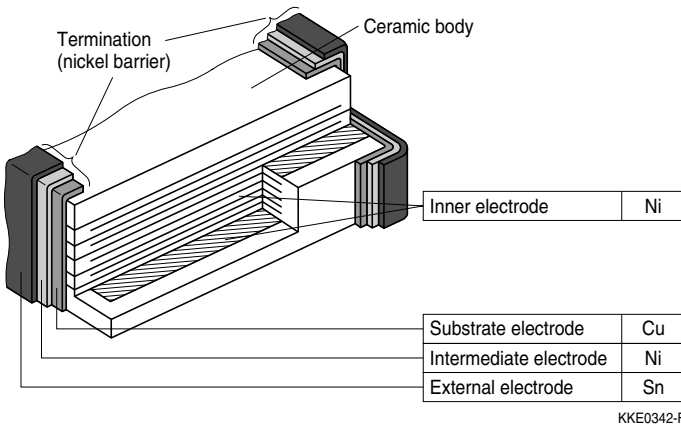
Recommended solder pad



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 μ F									
2,2 μ F									
4,7 μ F									
10 μ F									

		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 μ F							
10 μ F							
22 μ F							

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

Multilayer Ceramic Capacitors
HighCap; X7R

Product range chip capacitors

		X7R								
Size ¹⁾		0603		0805		1206			1210	
inch		1608		2012		3216			3225	
mm										
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	μ F			■		■	■			■
2,2	μ F					■			■	
4,7	μ F					■				

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, Ø 180-mm reel	Blister tape, Ø 180-mm reel
				** \triangleq 60	** \triangleq 62
				pcs/reel	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.

Multilayer Ceramic Capacitors
HighCap; X7R; 0603 to 1210

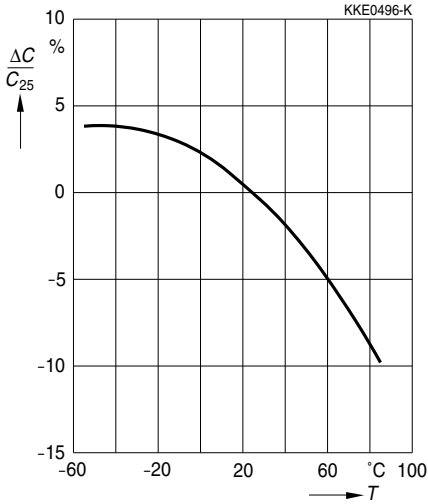
Ordering codes and packing for HighCap, X7R, 10, 16, 25 and 50 VDC, nickel-barrier terminations

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

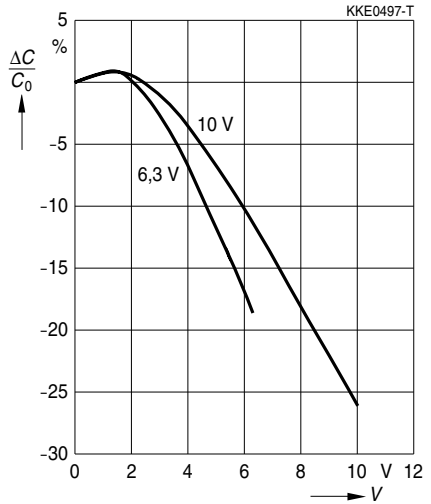
1) Other capacitance values on request.

Typical characteristics for HighCap X5R

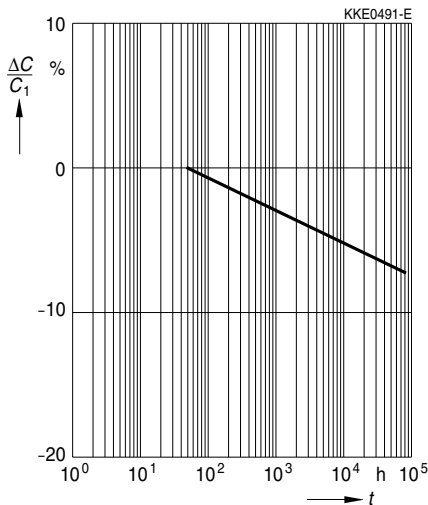
Capacitance change $\Delta C/C_{25}$ versus temperature T



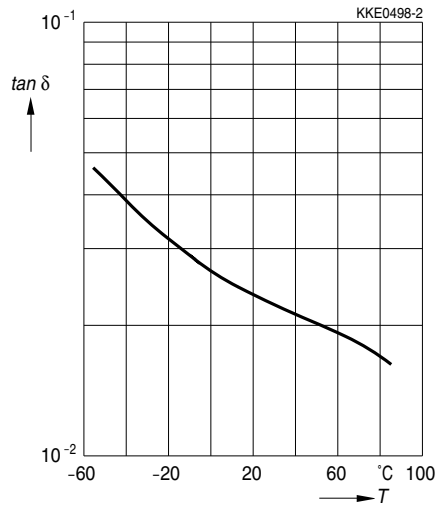
Capacitance change $\Delta C/C_0$ versus superimposed DC voltage V



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

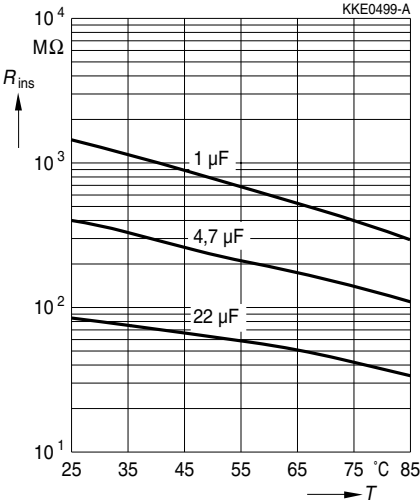


Dissipation factor $\tan \delta$ versus temperature T

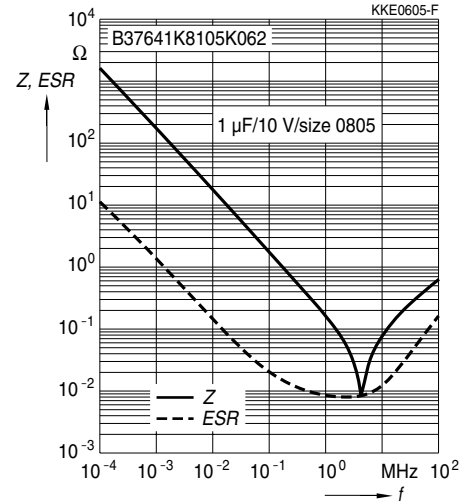


Typical characteristics for HighCap X5R

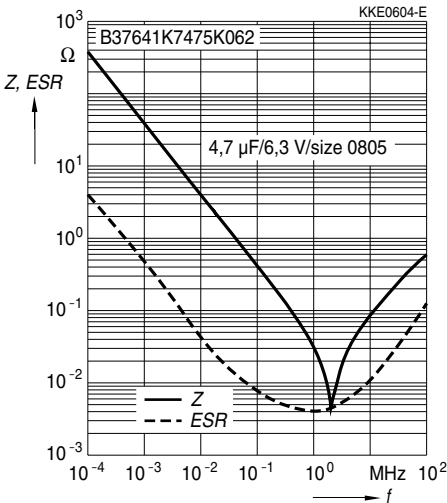
Insulation resistance R_{ins} versus temperature T



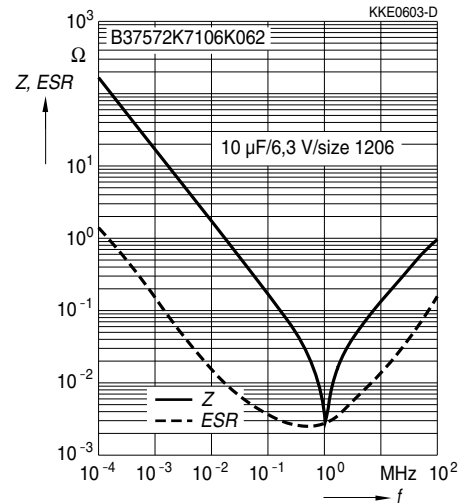
Impedance Z and ESR versus frequency f



Impedance Z and ESR versus frequency f

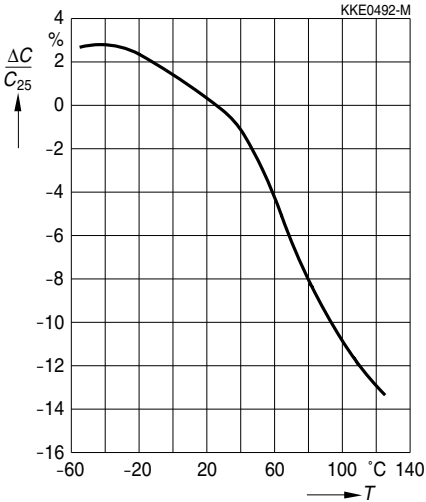


Impedance Z and ESR versus frequency f

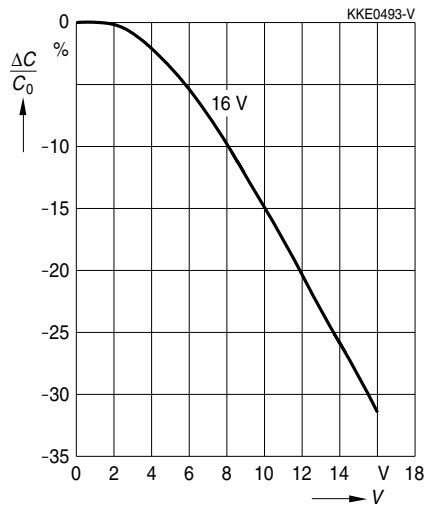


Typical characteristics for HighCap X7R

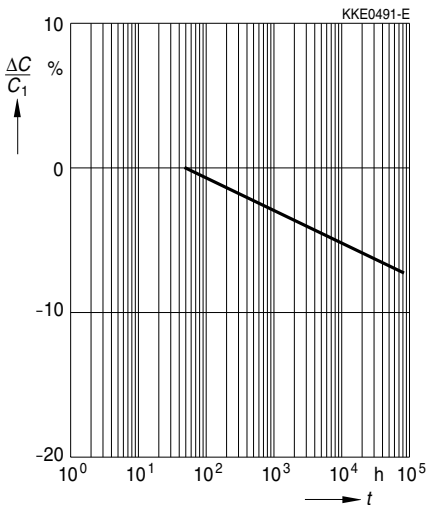
Capacitance change $\Delta C/C_{25}$ versus temperature T



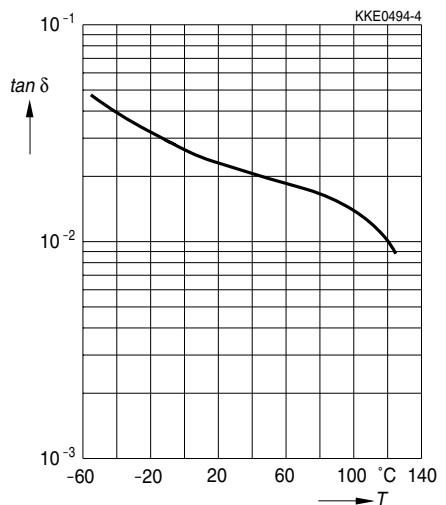
Capacitance change $\Delta C/C_0$ versus superimposed DC voltage V



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

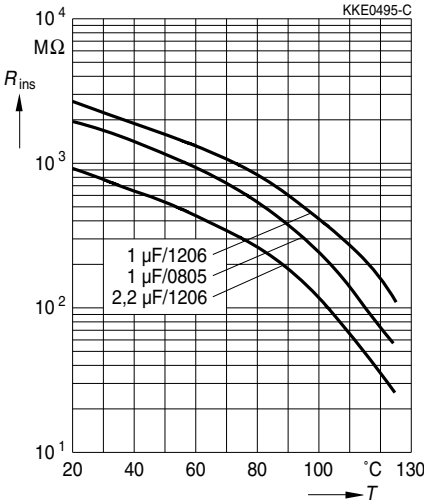


Dissipation factor $\tan \delta$ versus temperature T

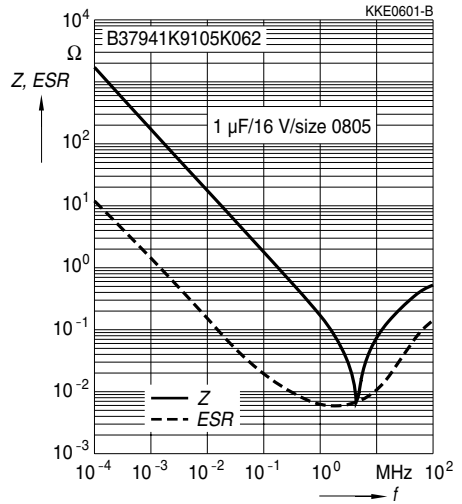


Typical characteristics for HighCap X7R

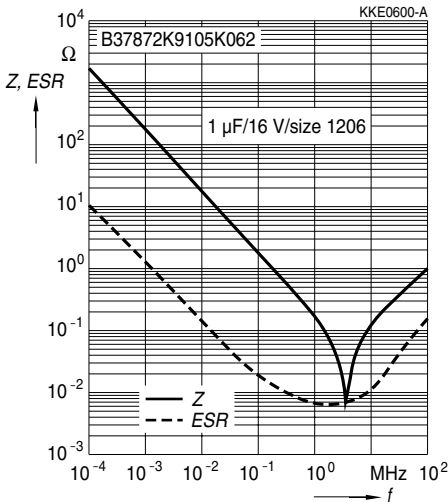
Insulation resistance R_{ins} versus temperature T



Impedance Z and ESR versus frequency f



Impedance Z and ESR versus frequency f



Impedance Z and ESR versus frequency f

