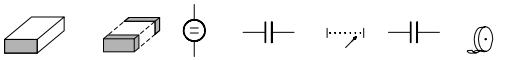
Ordering code system



B37923 **K** **5** **100** **J** **0** **60**

Packaging

60 ≙ cardboard tape, 180-mm reel
70 ≙ cardboard tape, 330-mm reel

Decimal place for cap. values < 10 pF, otherwise not used

Capacitance tolerance

C_R < 10 pF: **B ≙ ±0,1 pF (standard for capacitance values ≤ 3,9 pF)**
C ≙ ±0,25 pF (standard for capacitance values ≤ 8,2 pF)
D ≙ ±0,5 pF

C_R ≥ 10 pF: F ≙ ± 1 %
G ≙ ± 2 %
J ≙ ± 5 % (standard)
K ≙ ±10 %

Capacitance, coded 100 ≙ 10 · 10^0 pF = 10 pF
(example)

Rated voltage

Rated voltage [VDC]	50
Code	5

Termination Standard: K ≙ nickel barrier for all case sizes

Type and size	
Chip size (**inch** / mm)	Temperature characteristic HQF
0402 / 1005 **0603** / 1608	B37923 B37933

SMD

Features

- Ultra-low ESR and high Q factor
- Tight capacitance tolerances
- High stability with respect to time, temperature (T_{CC}: 0 ± 60 ppm/°C), frequency and voltage
- Class 1 characteristic with copper inner electrodes
- Excellent attenuation
- High self-resonant frequency
- Lower power dissipation
- Less energy absorption

Applications

- High-frequency applications
- Matching circuits
- Cellular communication, Bluetooth, DECT
- Cable TV, satellite TV (LNB), GPS
- Filters, RF amplifiers, VCOs

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		C0H	
Climatic category (IEC 60068-1)		55/125/56	
Standard		EIA	
Dielectric		Class 1	
Rated voltage	V_R	50	VDC
Test voltage	V_{test}	2,5 · V_R/5 s	VDC
Capacitance range	C_R	0,3 pF … 82 pF	
Temperature coefficient		0 ± 60 · 10^{-6}/K	
Dissipation factor (limit value)	tan δ	< 1,0 · 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	

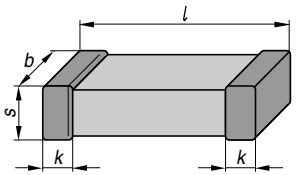
1) For C_R > 10 nF the time constant $\tau = C \cdot R_{ins}$ is given.

Capacitance tolerances

C_R	$C_R \leq 3{,}9$ pF		4,7 pF $\leq C_R \leq$ 8,2 pF		
Code letter	B (standard)	C	B	C (standard)	D
Tolerance	±0,1 pF	±0,25 pF	±0,1 pF	±0,25 pF	±0,5 pF

C_R	$C_R \geq 10$ pF			
Code letter	F	G	J (standard)	K
Tolerance	±1 %	±2 %	±5 %	±10 %

Dimensional drawing



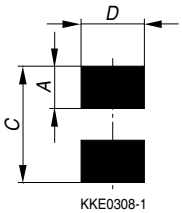
KKE0329-N

Dimensions (mm)

Case size **(inch)** (mm)	**0402** 1005	**0603** 1608
l	1,0 ± 0,1	1,6 ± 0,15
b	0,5 ± 0,05	0,8 ± 0,1
s	0,5 ± 0,05	0,8 ± 0,1
k	0,1 – 0,4	0,1 – 0,4

Tolerances to CECC 32101-801

Recommended solder pad

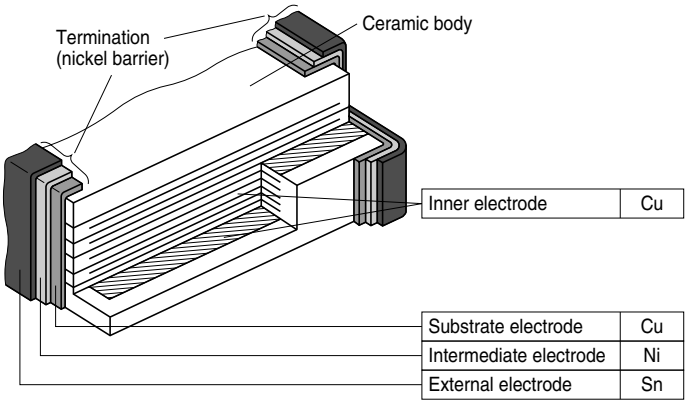


KKE0308-1

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

Termination



KKE0486-D

Product range chip capacitors

	HQF			
Size[1)] **inch** mm	**0402** 1005		**0603** 1608	
Type	B37923		B37933	
V_R (VDC) / C_R	50		50	
0,3 pF	■			
0,4 pF	■		■	
0,5 pF	■		■	
0,6 pF	■		■	
0,7 pF	■		■	
0,8 pF	■		■	
0,9 pF	■		■	
1,0 pF	■		■	
1,2 pF	■		■	
1,5 pF	■		■	
1,8 pF	■		■	
2,2 pF	■		■	
2,7 pF	■		■	
3,3 pF	■		■	
3,9 pF	■		■	
4,7 pF	■		■	
5,6 pF	■		■	
6,8 pF	■		■	
8,2 pF	■		■	
10 pF	■		■	
12 pF	■		■	
15 pF	■		■	
18 pF	■		■	
22 pF	■		■	
27 pF			■	
82 pF			■	

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

Ordering codes and packing for HQF capacitors, 50 VDC, nickel-barrier terminations

Case size 0402, 50 VDC

C_R	Ordering code[1)]	Chip thickness mm	Cardboard tape, ∅ 180-mm reel ** ≙ 60 pcs/reel	Cardboard tape, ∅ 330-mm reel ** ≙ 70 pcs/reel
0,3 pF	B37923K5000B3**	0,5 ± 0,05	10000	50000
0,4 pF	B37923K5000B4**	0,5 ± 0,05	10000	50000
0,5 pF	B37923K5000B5**	0,5 ± 0,05	10000	50000
0,6 pF	B37923K5000B6**	0,5 ± 0,05	10000	50000
0,7 pF	B37923K5000B7**	0,5 ± 0,05	10000	50000
0,8 pF	B37923K5000B8**	0,5 ± 0,05	10000	50000
0,9 pF	B37923K5000B9**	0,5 ± 0,05	10000	50000
1,0 pF	B37923K5010B0**	0,5 ± 0,05	10000	50000
1,2 pF	B37923K5010B2**	0,5 ± 0,05	10000	50000
1,5 pF	B37923K5010B5**	0,5 ± 0,05	10000	50000
1,8 pF	B37923K5010B8**	0,5 ± 0,05	10000	50000
2,2 pF	B37923K5020B2**	0,5 ± 0,05	10000	50000
2,7 pF	B37923K5020B7**	0,5 ± 0,05	10000	50000
3,3 pF	B37923K5030B3**	0,5 ± 0,05	10000	50000
3,9 pF	B37923K5030B9**	0,5 ± 0,05	10000	50000
4,7 pF	B37923K5040C7**	0,5 ± 0,05	10000	50000
5,6 pF	B37923K5050C6**	0,5 ± 0,05	10000	50000
6,8 pF	B37923K5060C8**	0,5 ± 0,05	10000	50000
8,2 pF	B37923K5080C2**	0,5 ± 0,05	10000	50000
10 pF	B37923K5100J0**	0,5 ± 0,05	10000	50000
12 pF	B37923K5120J0**	0,5 ± 0,05	10000	50000
15 pF	B37923K5150J0**	0,5 ± 0,05	10000	50000
18 pF	B37923K5180J0**	0,5 ± 0,05	10000	50000
22 pF	B37923K5220J0**	0,5 ± 0,05	10000	50000

1) The table contains the ordering codes for the standard capacitance tolerance.
For other available capacitance tolerances see page 120.

Ordering codes and packing for HQF capacitors, 50 VDC, nickel-barrier terminations

Case size 0603, 50 VDC

C_R	Ordering code[1)]	Chip thickness mm	Cardboard tape, ∅ 180-mm reel ** ≙ 60 pcs/reel	Cardboard tape, ∅ 330-mm reel ** ≙ 70 pcs/reel
0,4 pF	B37933K5000B4**	0,8 ± 0,1	4000	16000
0,5 pF	B37933K5000B5**	0,8 ± 0,1	4000	16000
0,6 pF	B37933K5000B6**	0,8 ± 0,1	4000	16000
0,7 pF	B37933K5000B7**	0,8 ± 0,1	4000	16000
0,8 pF	B37933K5000B8**	0,8 ± 0,1	4000	16000
0,9 pF	B37933K5000B9**	0,8 ± 0,1	4000	16000
1,0 pF	B37933K5010B0**	0,8 ± 0,1	4000	16000
1,2 pF	B37933K5010B2**	0,8 ± 0,1	4000	16000
1,5 pF	B37933K5010B5**	0,8 ± 0,1	4000	16000
1,8 pF	B37933K5010B8**	0,8 ± 0,1	4000	16000
2,2 pF	B37933K5020B2**	0,8 ± 0,1	4000	16000
2,7 pF	B37933K5020B7**	0,8 ± 0,1	4000	16000
3,3 pF	B37933K5030B3**	0,8 ± 0,1	4000	16000
3,9 pF	B37933K5030B9**	0,8 ± 0,1	4000	16000
4,7 pF	B37933K5040C7**	0,8 ± 0,1	4000	16000
5,6 pF	B37933K5050C6**	0,8 ± 0,1	4000	16000
6,8 pF	B37933K5060C8**	0,8 ± 0,1	4000	16000
8,2 pF	B37933K5080C2**	0,8 ± 0,1	4000	16000
10 pF	B37933K5100J0**	0,8 ± 0,1	4000	16000
12 pF	B37933K5120J0**	0,8 ± 0,1	4000	16000
15 pF	B37933K5150J0**	0,8 ± 0,1	4000	16000
18 pF	B37933K5180J0**	0,8 ± 0,1	4000	16000
22 pF	B37933K5220J0**	0,8 ± 0,1	4000	16000
27 pF	B37933K5270J0**	0,8 ± 0,1	4000	16000
82 pF	B37933K5820J0**	0,8 ± 0,1	4000	16000

1) The table contains the ordering codes for the standard capacitance tolerance.
For other available capacitance tolerances see page 120.

Typical RF performance for HQF capacitors, case size 0402, 50 VDC

Capacitance pF	f_{res} 1) MHz	*ESR* @ 1 GHz 2) mΩ	*Q* @ 1 GHz 2)	*ESR* @ f_{res} 2) mΩ
0,3	23400	560	920	710
0,4	20350	490	805	605
0,5	19700	440	720	535
0,6	17400	405	650	485
0,7	15100	375	600	445
0,8	14450	355	560	415
0,9	12600	335	520	385
1,0	12000	320	490	365
1,2	10600	295	440	330
1,5	8900	265	390	290
1,8	7100	245	350	265
2,2	6400	225	310	235
2,7	6000	205	275	210
3,3	5500	185	245	190
3,9	5350	170	225	175
4,7	4650	155	200	155
5,6	3950	145	175	140
6,8	4100	130	155	125
8,2	3650	120	140	115
10	3350	110	120	105
12	3350	102	104	94
15	2600	92	88	82
18	2300	84	70	74
22	2200	78	56	66

1) Measured with impedance analyser E 4991A, parts not soldered.
2) Measured with network analyser HP 8753D, parts soldered.

Typical RF performance for HQF capacitors, case size 0603, 50 VDC

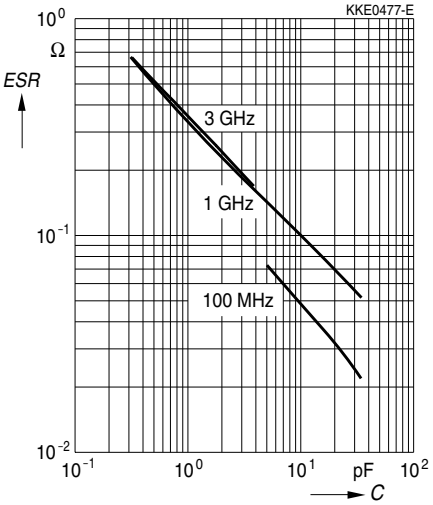
Capacitance pF	f_{res} [1] MHz	*ESR* @ 1 GHz [2] mΩ	*Q* @ 1 GHz [2]	*ESR* @ f_{res} [2] mΩ
0,4	17800	445	860	595
0,5	17100	400	805	540
0,6	13600	385	755	510
0,7	12200	345	635	440
0,8	11400	325	595	410
0,9	10600	315	560	390
1,0	9600	300	525	365
1,2	8800	275	455	335
1,5	7900	250	395	300
1,8	6900	240	360	285
2,2	5750	215	305	250
2,7	5100	200	270	235
3,3	4700	185	235	210
3,9	4150	175	210	200
4,7	3550	165	185	185
5,6	3130	150	160	170
6,8	2850	140	135	155
8,2	2730	130	115	140
10	2580	120	96	130
12	2400	110	76	118
15	2150	102	62	108
18	2050	96	50	100
22	1870	88	34	90
27	1780	80	26	82

Capacitance pF	f_{res} [1] MHz	*ESR* @ 300 MHz [2] mΩ	*Q* @ 300 MHz [2]	*ESR* @ f_{res} [2] mΩ
82	930	52	105	52

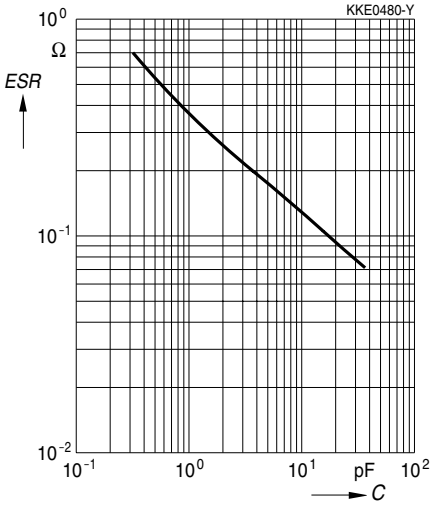
1) Measured with impedance analyser E 4991A, parts not soldered.
2) Measured with network analyser HP 8753D, parts soldered.

Typical characteristics for chip size 0402

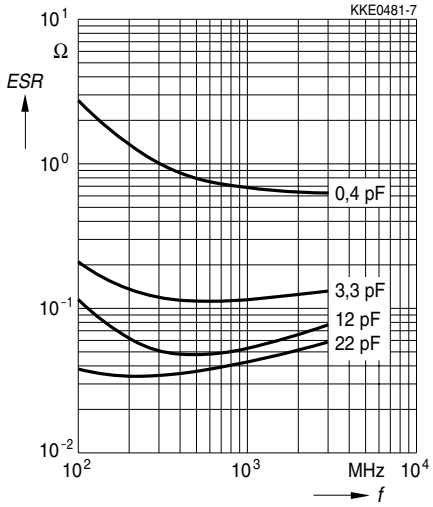
ESR versus capacitance *C*
(for not soldered parts)



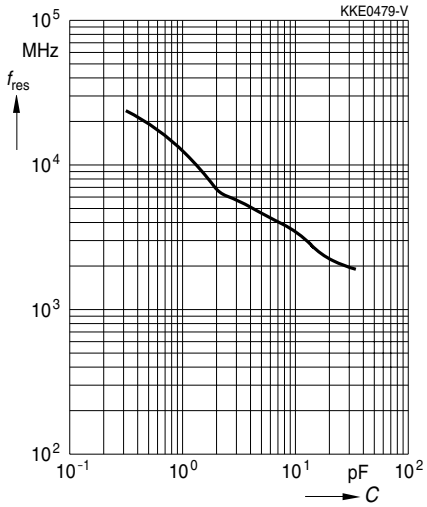
ESR versus capacitance *C*
at self-resonant frequency (for soldered parts)



ESR versus frequency *f*

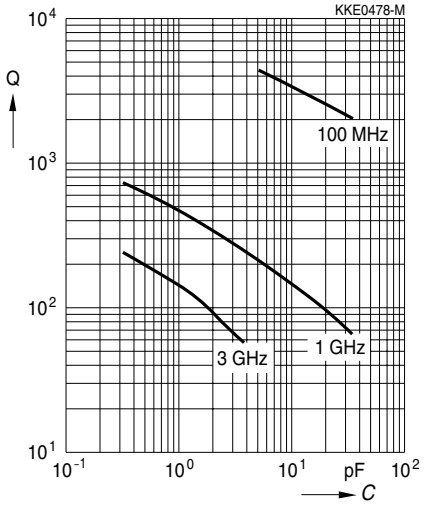


Self-resonant frequency f_{res} versus
capacitance *C*

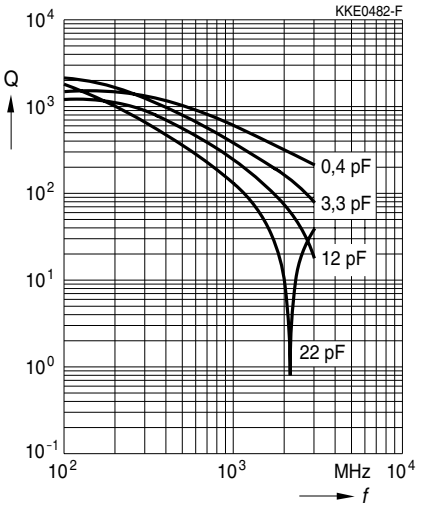


Typical characteristics for chip size 0402

Q factor versus capacitance *C*

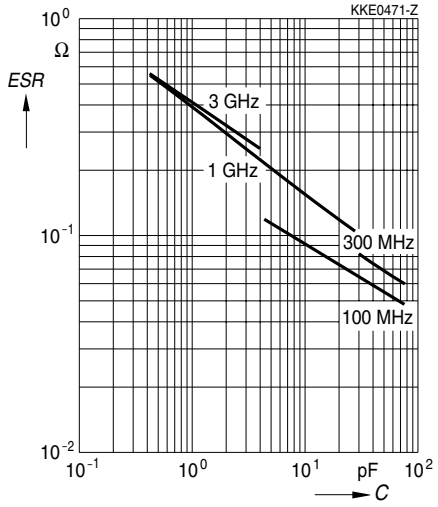


Q factor versus frequency *f*

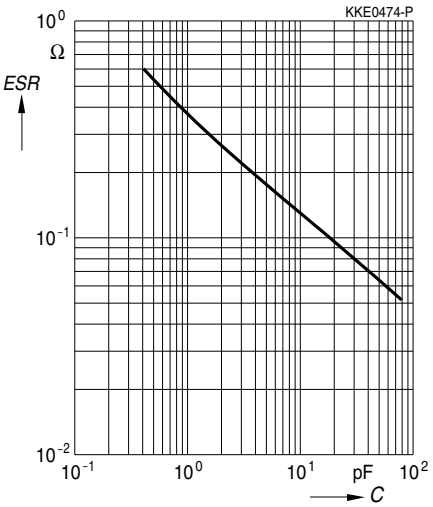


Typical characteristics for chip size 0603

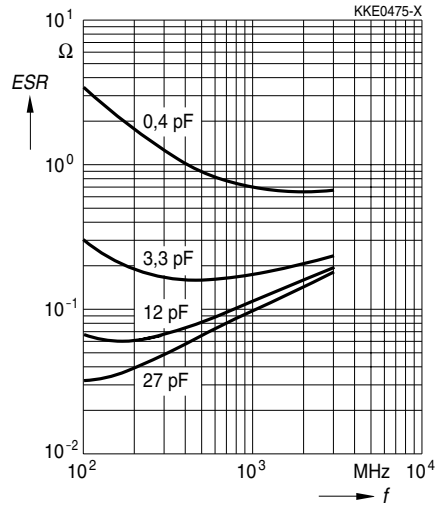
ESR versus capacitance *C*
(for not soldered parts)



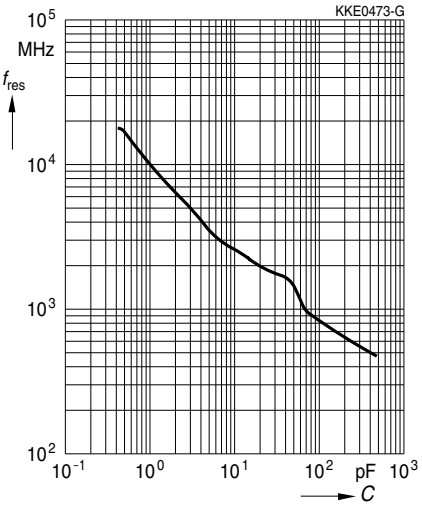
ESR versus capacitance *C*
at self-resonant frequency (for soldered parts)



ESR versus frequency *f*

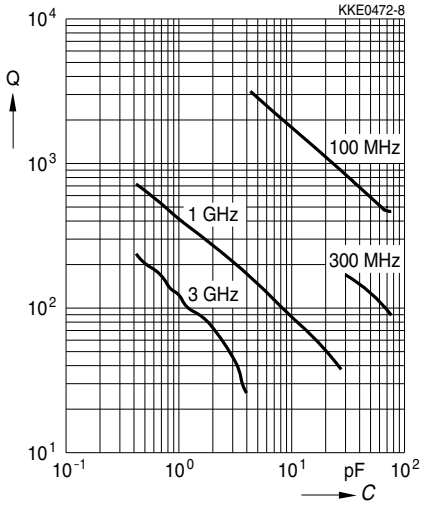


Self-resonant frequency f_{res} versus
capacitance *C*

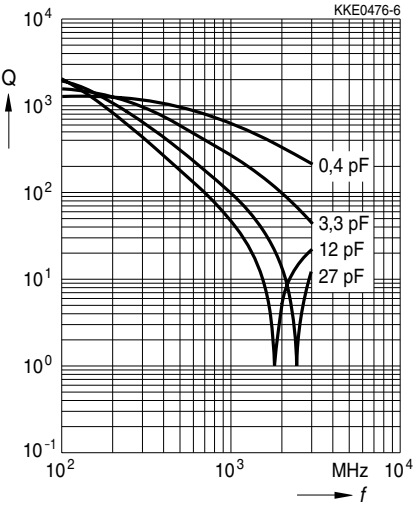


Typical characteristics for chip size 0603

Q factor versus capacitance *C*



Q factor versus frequency *f*



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