Multilayer Ceramic Chip Capacitors [Array Type]

Series: **ECJ**

■ Features

- 4 Capacitors built in type in the miniature size of "13" type (1206)
- Superior humidity characteristic and long life thanks to the monolithic construction
- Excellent solderability and resistance to soldering heat thanks to terminals with three layers of silver,nickel and solder

■ Recommended Applications

- Input/Output circuit of computar's mother boad
  Serial port
  Video port
  Parallel port

■ Precautions for Handling

See Page 26 to 30

■ Explanation of Part Numbers

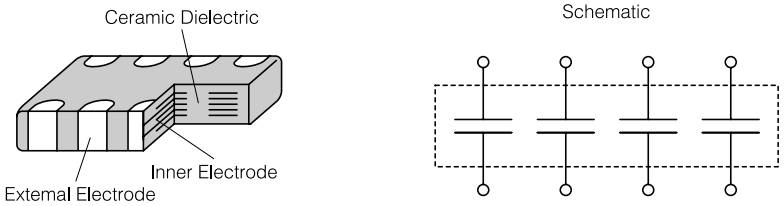
E	C	J	R	V	C	1	H	1	0	1	K	(Example)

①Product Code
②Size Code
③Packaging Styles
④Temperature Characteristics
⑤Rated Voltage
⑥Nominal Capacitance
⑦Capacitance Tolerance

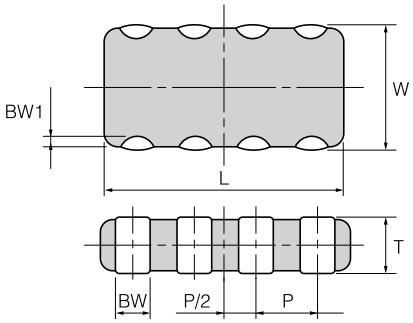
■ Product Code

ECJ : Multilayer Ceramic Chip Capacitors

■ Construction



■ Dimensions in mm (not to scale)



Unit : mm

	Dimension
L	3.2 ± 0.2
W	1.6 ± 0.2
T	0.85 ± 0.10
BW	0.40 ± 0.15
BW1	0.2 + 0.3/–0.1
P	0.8 ± 0.1

■ Packaging Styles

Code	Packaging Styles
X	Bulk
V	Paper Taping (Pitch : 4 mm)

■ Temperature Coefficient

● Class 1

Code	Temp. Coeff. Code	T.C. Tolerance (ppm/˚C)
C	CΔ	CH (0±60)

* Measurement of capacitance at 20 ˚C and 85 ˚C shall be made to calculate temperature characterristic

● Class 2

Code	Temperature Characteristic	Capaciance Change	Measurement Temperature Range	Reference Temperature
B	X7R	±15 %	–55 to 125 ˚C	25 ˚C
F	Y5V	+22, –82 %	–30 to 85 ˚C	25 ˚C

■ Rated Voltage

Code	1H	1E
Rated Voltage	50 VDC	25 VDC

■ Nominal Capacitance

Ex.	100	101	104
Nominal Capacitance	10 pF	100 pF	100000 pF (0.01µF)

■ Capacitance tolerance

Class	Tol. code	Capacitance Tolerance
1	F	±1 pF
	K	±10 %
2	M	±20 %
	Z	+80, –20 %

■ Specifications

Characteristics	Specifications		Test Method
	Class 1 (T.C. Type)	Class 2 (Hi-K Type)	
Operating Temperature Range	CΔ –55 to 125 ˚C	B (X7R): –55 to 125 ˚C F (Y5V): –25 to 85 ˚C	
Rated Voltage	CΔ, 50 VDC	B (X7R):50 VDC F (Y5V):25 VDC	
Dielectric Withstanding Voltage	No break down		Class 1:Rated Voltage ×3, 1 to 5 s Class 2:Rated voltage ×2.5, 1 to 5 s Limit surge current: 50 mA max.
Insulation Resistance (IR)	IR≧10000MΩ or 500/C (MΩ) whichever is less C: Nominal Capacitance (µF)		Rated Voltage at 1 min electrification
Capacitance	Within the specified tolerance		Measurement Temperature:20 ˚C Preconditioning:heat treatment (class 2) Class 1 Frequency:1 MHz ± 10% Voltage:0.5 to 5 Vrms Class 2 Frequency:1 kHz ± 10% Voltage:1.0 ± 0.2 Vrms
Q Factor or Dissipation Factor :(tan δ)	C<30 pF:Q ≧ 400+20C 30 pF≦C≦1000 pF:Q≧1000	Tan δ: B (X7R) ≦ 0.025 F (Y5V) ≦ 0.05	

Note 1) Heat treatment : 1 h of heat treatment at 150+0/–10 ˚C followed by 48±4 h of recovery under the standead condition

■ Standard Products for Array Type, Taped Version

Capacitance (pF)	CΔ			B			F		
	Capacitance Tolerance	50 VDC		Capacitance Tolerance	50 VDC		Capacitance Tolerance	25 VDC	
		Part No.	Dim T (mm)		Part No.	Dim T (mm)		Part No.	Dim T (mm)
10	±1 pF(F)	ECJRVC1H100F	0.85						
15		ECJRVC1H150K	0.85						
22		ECJRVC1H220K	0.85						
33		ECJRVC1H330K	0.85						
47		ECJRVC1H470K	0.85						
68	±10 %(K)	ECJRVC1H680K	0.85						
100		ECJRVC1H101K	0.85						
150		ECJRVC1H151K	0.85						
220		ECJRVC1H221K	0.85						
330		ECJRVC1H331K	0.85						
470		ECJRVC1H471K	0.85		ECJRVB1H471M	0.85			
680					ECJRVB1H681M	0.85			
1000					ECJRVB1H102M	0.85			
1500					ECJRVB1H152M	0.85			
2200				±20 %(M)	ECJRVB1H222M	0.85			
3300					ECJRVB1H332M	0.85			
4700					ECJRVB1H472M	0.85			
6800					ECJRVB1H682M	0.85			
10000					ECJRVB1H103M	0.85			
100000							+80, –20 %(Z)	ECJRVF1E104Z	0.85

✻ Packaging Style Code: "V" for Taped Version (Taping pitch: 4 mm) and "X" for Bulk Type

Multilayer Ceramic Chip Capacitors (100V, 200V Series)

■ Features

- Small in size and wide capacitance range
- Superior humidity characteristic and long life thanks to the monolithic construction
- Excellent solderbility and resistance to soldering heat thanks to terminals with three layers
- Low self-inductance and excellent frequency characteristics

■ Recommended Applications

- For noise limiter, coupling, time constant and oscilate circuit

■ Precaution for Handling

See Page 26 to 30

■ Explanation of Part Numbers

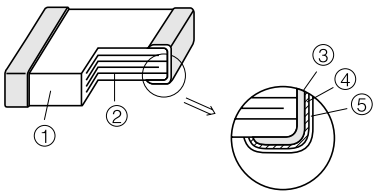
E	C	J	3	X	B	2	A	4	7	3	K	(Example)

①Product Code
②Size Code
③Packaging Styles
④Temperature Characteristics
⑤Rated Voltage [2A:100 V] [2D:200 V]
⑥Nominal Capacitance
⑦Capacitance Tolerance

■ Product Code

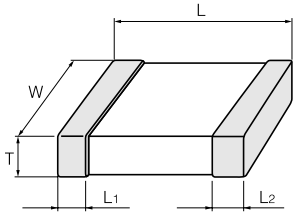
ECJ : Multilayer Ceramic Chip Capacitors

■ Construction



No	Name
①	Ceramic dielectric
②	Inner electrode
③	Substrate electrode
④	Intermediate electrode
⑤	External electrode

■ Dimensions in mm (not to scale)



Unit : mm

Size	Size Code (EIA)	L	W	T	L1, L2
1	"11" Type (0603)	1.6 ±0.1	0.8 ±0.10	0.8 ±0.1	0.3 ±0.2
2	"12" Type (0805)	2.0 ±0.1	1.25±0.10	0.85±0.10 1.25±0.10	0.50±0.25
3	"13" Type (1206)	3.20±0.15	1.60±0.15	0.85±0.10 1.15±0.10	0.6 ±0.3

■ Packaging Styles

Code	PAackaging Styless	"11" Type (0603)	"12" Type (0805)	"13" Type (1206)
X	Bulk			
V	Paper Taping (Pitch : 4 mm)			
F	Embossed Taping (Pitch : 4 mm)(3000 pcs./reel)		(T : 1.25 mm)	(T : 1.15 mm)

■ Temperature Coefficient

● Class 1 Capacitors/T.C. Tolerance (ppm/˚C)

Code	Temp. Coeff. Code	T.C. Tolerance (ppm/˚C)
C	CΔ	CH (0±60)

∗ Measurement of capacitance at 20 ˚C and 85 ˚C shall be made to calculate temperature characterristic

● Class 2

Code	Temperature Characteristic	Capaciance Change	Measurement Temperature Range	Reference Temperature
B	X7R	±15 %	–55 to 125 ˚C	25 ˚C

■ Rated Voltage

Code	2A	2D
Rated Voltage	100 VDC	200 VDC

■ Nominal Capacitance

Ex.	100	101	103
Nominal Capacitance	10 pF	100 pF	10000 pF (0.01µF)

■ Capacitance Tolerance

Class	Tol. code	Capacitance Tolerance	
1	D	≦ 10 pF	±0.5 pF
	J	>10 pF	±5 %
	K		±10 %
2	K	±10 %	

■ Specifications

Characteristics	Specifications		Test Method
	Class 1 (T.C. Type)	Class 2 (Hi-K Type)	
Operating Temperature Range	–55 to 125 °C		
Rated Voltage	100 VDC, 200 VDC		
Withstanding Voltage	No break down		Test Voltage: Class 1: Rated Voltage ×3 Class 2: Rated Voltage ×2.5 Electrification time: 1 to 5 s Limit surge current: 50 mA max.
Insulation Resistance (IR)	IR≧10000 MΩ or 500/C (MΩ) Whichever is less C: Nominal Capacitance (µF)		Measurement Voltage:Rated Voltage Electrification time: 60 ± 5 s Limit surge current: 50 mA max.
Capacitance	Within the specified tolerance		Standard Temperature:20 ˚C Preconditioning:heat treatment (class 2) (1) Class 1 (T.C. Type) Frequency C ≦ 1000 pF:1 MHz ± 10% C > 1000 pF:1 kHz ± 10% Voltage:0.5 to 5 Vrms (2) Class 2 (Hi-K Type) Frequency:1 kHz ± 10% Voltage:1.0 ± 0.2 Vrms
Q Factor or Dissipation Factor :(tan δ)	C < 30 pF: Q ≧ 400+20 C 30 pF ≦ C ≦ 1000 pF: Q ≧ 1000 C > 1000 pF: tan δ ≦ 0.002 C:Nominal capacitance (pF)	tan δ:0.025 max.	

Note 1) Heat treatment : 1 h of heat treatment at 150+0/–10 ˚C followed by 48±4 h of recovery under the standead condition

■ Standard Products for "11" Type (EIA "0603" Type) , Taped Version

Capacitance (pF)	CΔ			B/X7R				
	Capacitance Tolerance	100 VDC		Capacitance Tolerance	100 VDC		200 VDC	
		Part No.	Dim T (mm)		Part No.	Dim T (mm)	Part No.	Dim T (mm)
10	±0.5 pF(D)	ECJ1VC2A100D	0.8					
15		ECJ1VC2A150□	0.8					
22		ECJ1VC2A220□	0.8					
33	±5 %(J)	ECJ1VC2A330□	0.8					
47	or	ECJ1VC2A470□	0.8					
68	±10 %(K)	ECJ1VC2A680□	0.8					
100		ECJ1VC2A101□	0.8					
220					ECJ1VB2A221K	0.8	ECJ1VB2D221K	0.8
330					ECJ1VB2A331K	0.8	ECJ1VB2D331K	0.8
470				±10 %(K)	ECJ1VB2A471K	0.8	ECJ1VB2D471K	0.8
680					ECJ1VB2A681K	0.8	ECJ1VB2D681K	0.8
1000					ECJ1VB2A102K	0.8	ECJ1VB2D102K	0.8

■ Standard Products for "12" Type (EIA "0805" Type) , Taped Version

Capacitance (pF)	CΔ					B/X7R				
	Capacitance Tolerance	100 VDC		200 VDC		Capacitance Tolerance	100 VDC		200 VDC	
		Part No.	Dim T (mm)	Part No.	Dim T (mm)		Part No.	Dim T (mm)	Part No.	Dim T (mm)
10	±0.5 pF(D)	ECJ2VC2A100D	0.85	ECJ2VC2D100D	0.85					
15		ECJ2VC2A150□	0.85	ECJ2VC2D150□	0.85					
22		ECJ2VC2A220□	0.85	ECJ2VC2D220□	0.85					
33		ECJ2VC2A330□	0.85	ECJ2VC2D330□	0.85					
47		ECJ2VC2A470□	0.85	ECJ2VC2D470□	0.85					
68		ECJ2VC2A680□	0.85	ECJ2FC2D680□	1.25					
100	±5 %(J)	ECJ2VC2A101□	0.85	ECJ2FC2D101□	1.25					
150	or	ECJ2VC2A151□	0.85	ECJ2FC2D151□	1.25					
220	±10 %(K)	ECJ2VC2A221□	0.85	ECJ2FC2D221□	1.25		ECJ2VB2A221K	0.85	ECJ2VB2D221K	0.85
330		ECJ2VC2A331□	0.85	ECJ2FC2D331□	1.25		ECJ2VB2A331K	0.85	ECJ2VB2D331K	0.85
470		ECJ2VC2A471□	0.85				ECJ2VB2A471K	0.85	ECJ2VB2D471K	0.85
680		ECJ2VC2A681□	0.85				ECJ2VB2A681K	0.85	ECJ2VB2D681K	0.85
1000		ECJ2VC2A102□	0.85				ECJ2VB2A102K	0.85	ECJ2VB2D102K	0.85
1500							ECJ2VB2A152K	0.85	ECJ2VB2D152K	0.85
2200						±10 %(K)	ECJ2VB2A222K	0.85	ECJ2VB2D222K	0.85
3300							ECJ2VB2A332K	0.85	ECJ2VB2D332K	0.85
4700							ECJ2VB2A472K	0.85	ECJ2VB2D472K	0.85
6800							ECJ2VB2A682K	0.85	ECJ2FB2D682K	1.25
10000							ECJ2VB2A103K	0.85	ECJ2FB2D103K	1.25
15000							ECJ2FB2A153K	1.25		

■ Standard Products for "13" Type (EIA "1206" Type) , Taped Version

Capacitance (pF)	CΔ					B/X7R				
	Capacitance Tolerance	100 VDC		200 VDC		Capacitance Tolerance	100 VDC		200 VDC	
		Part No.	Dim T (mm)	Part No.	Dim T (mm)		Part No.	Dim T (mm)	Part No.	Dim T (mm)
470				ECJ3FC2D471□	1.15					
680				ECJ3FC2D681□	1.15					
1000				ECJ3FC2D102□	1.15					
1500	±5 %(J)	ECJ3VC2A152□	0.85							
2200	or	ECJ3VC2A222□	0.85							
3300	±10 %(K)	ECJ3VC2A332□	0.85							
15000									ECJ3FB2D153K	1.15
22000							ECJ3FB2A223K	1.15	ECJ3FB2D223K	1.15
33000						±10 %(K)	ECJ3FB2A333K	1.15		
47000							ECJ3FB2A473K	1.15		

* □: Capacitance Tolerance Codes.
** Soldering method of Multilayer ceramic chip capacitor shall be reflow soldering. (Over Dim T=1 mm)