

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

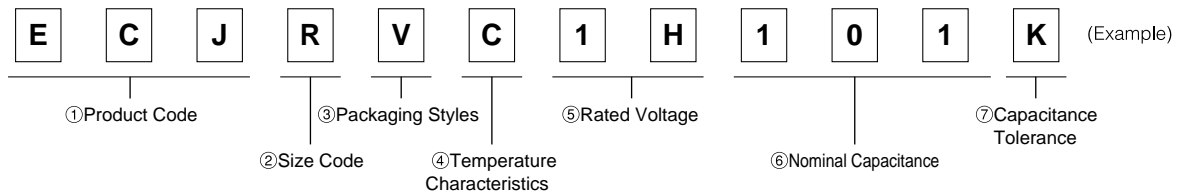
■ Recommended Applications

- Input/Output circuit of computer's mother board
- Serial port
- Video port
- Parallel port

■ Precautions for Handling

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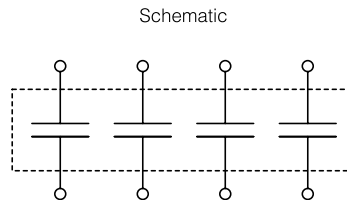
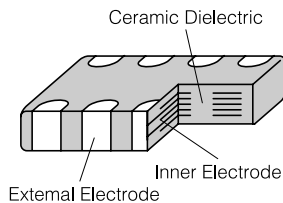
■ Explanation of Part Numbers



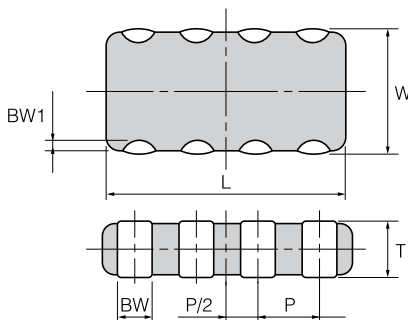
■ Product Code

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 characteristic

● Class 2

Code	Temperature Characteristic	Capacitance 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

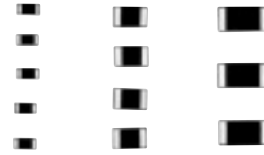
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Standard Products for Array Type, Taped Version

Capacitance (pF)	C1			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	±20 % (M)						
15	±10 % (K)	ECJRVC1H150K	0.85							
22		ECJRVC1H220K	0.85							
33		ECJRVC1H330K	0.85							
47		ECJRVC1H470K	0.85							
68		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						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 solderability and resistance to soldering heat thanks to terminals with three layers
- Low self-inductance and excellent frequency characteristics

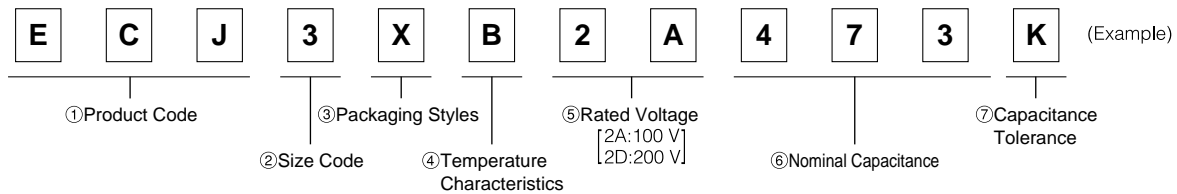
■ Recommended Applications

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

■ Precaution for Handling

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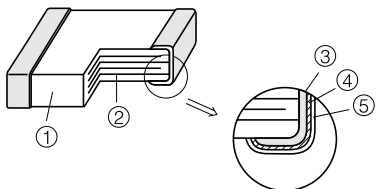
■ Explanation of Part Numbers



■ Product Code

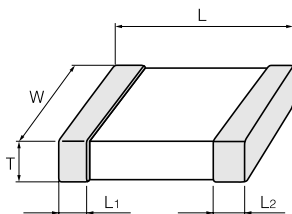
ECJ : Multilayer Ceramic Chip Capacitors

■ 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	0.50±0.25
				1.25±0.10	
3	"13" Type (1206)	3.20±0.15	1.60±0.15	0.85±0.10	0.6 ±0.3
				1.15±0.10	

■ Packaging Styles

Code	PAackaging Stylless	"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 characteristic

● Class 2

Code	Temperature Characteristic	Capacitance 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 x3 Class 2: Rated Voltage x2.5 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)
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.	(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

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

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

Capacitance (pF)	CΔ			Capacitance Tolerance	B/X7R				
	Capacitance Tolerance	100 VDC			100 VDC	Dim T (mm)	200 VDC		Dim T (mm)
		Part No.	Dim T (mm)				Part No.	Dim T (mm)	
10	±0.5 pF(D)	ECJ1VC2A100D	0.8	±10 % (K)					
15	±5 % (J) or ±10 % (K)	ECJ1VC2A150□	0.8						
22		ECJ1VC2A220□	0.8						
33		ECJ1VC2A330□	0.8						
47		ECJ1VC2A470□	0.8						
68		ECJ1VC2A680□	0.8						
100		ECJ1VC2A101□	0.8						
220						ECJ1VB2A221K	0.8	ECJ1VB2D221K	0.8
330						ECJ1VB2A331K	0.8	ECJ1VB2D331K	0.8
470						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					Capacitance Tolerance	B/X7R				
	Capacitance Tolerance	100 VDC		200 VDC			100 VDC	Dim T (mm)	200 VDC		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	±10 % (K)					
15	±5 % (J) or ±10 % (K)	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		ECJ2VC2A101□	0.85	ECJ2FC2D101□	1.25						
150		ECJ2VC2A151□	0.85	ECJ2FC2D151□	1.25						
220		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							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					Capacitance Tolerance	B/X7R				
	Capacitance Tolerance	100 VDC		200 VDC			100 VDC	Dim T (mm)	200 VDC		Dim T (mm)
		Part No.	Dim T (mm)	Part No.	Dim T (mm)				Part No.	Dim T (mm)	
470	±5 % (J) or ±10 % (K)			ECJ3FC2D471□	1.15	±10 % (K)					
680				ECJ3FC2D681□	1.15						
1000				ECJ3FC2D102□	1.15						
1500		ECJ3VC2A152□	0.85								
2200		ECJ3VC2A222□	0.85								
3300		ECJ3VC2A332□	0.85								
15000									ECJ3FB2D153K	1.15	
22000								ECJ3FB2A223K	1.15	ECJ3FB2D223K	1.15
33000								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)

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