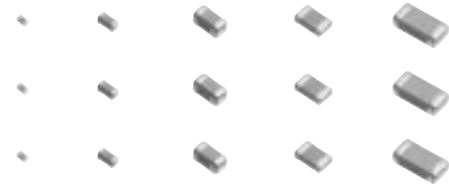


Multilayer Ceramic Chip Capacitors (For General Electronic Equipment)

Series: **ECJ**



■ 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 of copper, nickel and solder
- Low self-inductance and excellent frequency characteristics

■ Recommended Applications

- **Class 1 (T.C. Type)**
Temperature compensations, tuned circuits and filter circuits, where low loss and high stability of capacitance and high insulation resistance are required
- **Class 2 (Hi-K Type)**
Coupling and By-pass, where low and high stability of capacitance are not so important

■ Precautions for Handling

See Page 51 to 57

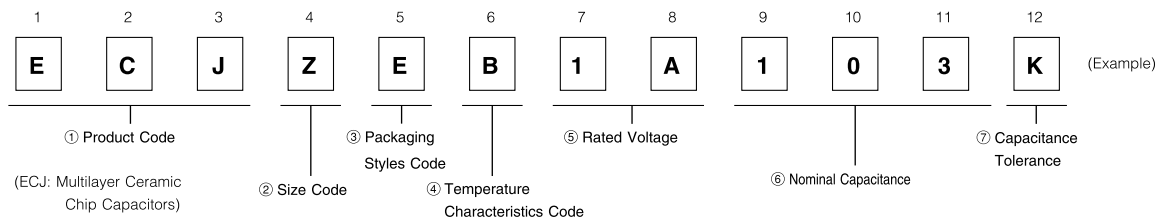
■ Packaging method

See Page 96

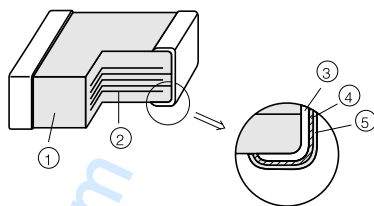
■ Discontinued / Revise Part Numbers

See Page 58

■ Explanation of Part Numbers



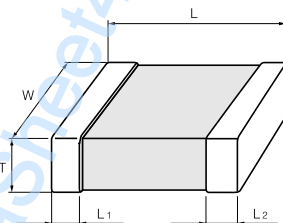
■ Construction



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

■ Dimensions in mm (not to scale)

Unit : mm



Code	Size Code (EIA)	L	W	T	L1, L2
Z	Type "06" 0201	0.60±0.03	0.30±0.03	0.30±0.03	0.15±0.05
0	Type "10" 0402	1.00±0.05	0.50±0.05	0.50±0.05	0.2±0.1
1	Type "11" 0603	1.6±0.1	0.8±0.1	0.8±0.1	0.3±0.2
2	Type "12" 0805	2.0±0.1	1.25±0.10	0.6±0.1	0.50±0.25
				0.85±0.10	
		2.00±0.15	1.25±0.15	1.25±0.15	
3	Type "13" 1206	3.20±0.15	1.60±0.15	0.6±0.1	0.6±0.3
				0.85±0.10	
				1.15±0.10	
		3.2±0.2	1.6±0.2	1.6±0.2	

■ Packaging Styles and Standard Packaging Quantity

T: Thickness (mm)

Code	Packaging Styles		Quantity	Type"06"	Type"10"	Type"11"	Type"12"			Type"13"				
				(0201)	(0402)	(0603)	(0805)	(0805)	(1206)	(1206)	(1206)	(1206)	(1206)	
				T=0.3	T=0.5	T=0.8	T=0.6	T=0.85	T=1.25	T=0.6	T=0.85	T=1.15	T=1.6	
E	φ180 reel	Paper taping (Pitch: 2 mm)	pcs./ reel	15,000	10,000	—	—	—	—	—	—	—	—	
V		Paper taping (Pitch: 4 mm)		—	—	4,000	5,000	4,000	—	5,000	4,000	—	—	
F		Embossed taping (Pitch: 4 mm)		—	—	—	—	—	—	3,000	—	—	3,000	—
Y				—	—	—	—	—	—	—	—	—	—	2,000
W	φ330 reel*	Paper taping (Pitch: 2 mm)	pcs./ reel	—	50,000	—	—	—	—	—	—	—	—	
Z		Paper taping (Pitch: 4 mm)		—	—	10,000	20,000	10,000	—	20,000	10,000	—	—	
C	Bulk case		pcs./reel	—	50,000	15,000	10,000	—	—	—	—	—	—	

For Part Number applicable to φ330 reel, please contact us.

■ Temperature Characteristics

● Class 1 Capacitors

Code	Temp. Char. Code	Temp. Coeff.			
		≤2 pF	3 pF	≥4 pF	≥10 pF
C	C4	CK(0±250 ppm/°C)	CJ(0±120 ppm/°C)	CH(0±60 ppm/°C)	CG(0±30 ppm/°C)*
G	SL	+350 to -1000			

Note: Measurement of capacitance at 20 °C and 85 °C shall be made to calculate temperature characteristic * It is not applying to the Type "06"

Temp. Char.	Temp. Coeff. (1) (ppm/°C)	Rate of Capacitance change at each Temperature (%)			
		-25 °C		85 °C	
		Max.	Min.	Max.	Min.
CG	0± 30	0.33	-0.14	0.20	-0.20
CH	0± 60	0.49	-0.27	0.39	-0.39
CJ	0±120	0.82	-0.54	0.78	-0.78
CK	0±250	1.54	-1.13	1.63	-1.63
SL	+350 to -1000	—	—	2.28	-6.50

(1) These temperature coefficient are calculated between 20 °C and 85 °C

For applicable "temperature characteristics", see the lists of standard products on page 16 to 23.

● Class 2 Capacitors

Code	Temp. Char.	Capacitance Change	Measurement Temperature Range	Reference Temperature
B	B	±10 %	-25 to 85 °C	20 °C
	X7R	±15 %	-55 to 125 °C	25 °C
	X5R	±15 %	-55 to 85 °C	25 °C
F	F	+30, -80 %	-25 to 85 °C	20 °C
	Y5V	+22, -82 %	-30 to 85 °C	25 °C

For applicable "temperature characteristics", see the lists of standard products on page 16 to 23.

■ Rated Voltage

Code	1H	1E	1C	1A	0J
Rated Voltage	DC 50 V	DC 25 V	DC 16 V	DC 10 V	DC 6.3 V

■ Nominal Capacitance

Ex	0R5	010	100	104
Nominal Capacitance	0.5 pF	1 pF	10 pF	100,000 pF (0.1μF)

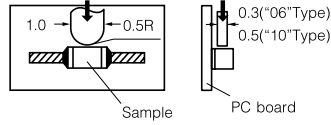
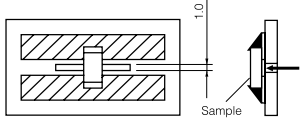
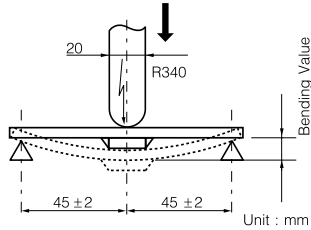
■ Capacitance Tolerance

Class	Temp. Char.	Tol. Code	Capacitance Tolerance	
1	C4, SL	C	C ≤ 5 pF	±0.25 pF
		D	C ≤ 10 pF	±0.5 pF
		F	C = 10 pF	±1 pF
		J	C > 10 pF	±5 %
		K		±10 %
2	B, X7R, X5R	K	±10 %	
		M	±20 %	
	F, Y5V	Z	+80, -20 %	

■ Specification and Test Method

Item	Specification		Test Method																																		
	Class 1	Class 2																																			
Operating Temperature Range	Temp. Char. CΔ :-55 to 125 °C -25 to 85 °C (Type "13", 5600 to 10000 pF) Temp. Char. SL :-55 to 125 °C	Temp. Char. B, X7R :-55 to 125 °C Temp. Char. B, X5R :-55 to 85 °C Temp. Char. F, Y5V :-30 to 85 °C	_____																																		
Dielectric Withstanding Voltage	No break down		Test voltage: Class 1: Rated voltage ×300 % Class 2: Rated voltage ×250 % Duration: 1 to 5s Charge/discharge current: within 50 mA																																		
Insulation Resistance (I R)	10000 MΩ or 500/C (MΩ) whichever is less. Note: DC10V, DC6.3V: 100/C (MΩ) min. (C: Nominal Cap. in μF)		Measuring voltage: Rated voltage Duration: 60±5s Charge/discharge current: within 50 mA																																		
Capacitance	within the specified tolerance		Reference temperature: 20±2 °C																																		
Q Factor or Dissipation Factor (tan δ)	Q: C<30 pF: Q≥400+20C 30 pF≤C≤1000 pF: Q≥1000 tan δ: C>1000 pF: tan δ≤0.002 (C: Nominal Cap. in pF)	tan δ: 0.2 max. Please confirmation to the technical reports for details.	Class 1:																																		
			<table border="1"> <tr> <td>Nominal capacitance</td> <td>C ≤ 1000 pF</td> <td>C > 1000 pF</td> </tr> <tr> <td>Measuring frequency</td> <td>1 MHz ± 10%</td> <td>1 kHz ± 10%</td> </tr> <tr> <td>Measuring voltage</td> <td>0.5 to 5 Vrms</td> <td>0.5 to 5 Vrms</td> </tr> </table>	Nominal capacitance	C ≤ 1000 pF	C > 1000 pF	Measuring frequency	1 MHz ± 10%	1 kHz ± 10%	Measuring voltage	0.5 to 5 Vrms	0.5 to 5 Vrms																									
Nominal capacitance	C ≤ 1000 pF	C > 1000 pF																																			
Measuring frequency	1 MHz ± 10%	1 kHz ± 10%																																			
Measuring voltage	0.5 to 5 Vrms	0.5 to 5 Vrms																																			
			Class 2: Pretreatment: The capacitors shall be kept in a temperature of 150+0/-10 °C for 1 hour and then shall be stored in standard condition* for 48 ± 4 hours, before initial measurement.																																		
			<table border="1"> <tr> <td>Nominal capacitance</td> <td>C ≤ 1 μF</td> </tr> <tr> <td>Measuring frequency</td> <td>1 kHz ± 10%</td> </tr> <tr> <td>Measuring voltage</td> <td>1.0 ± 0.2 Vrms</td> </tr> </table>	Nominal capacitance	C ≤ 1 μF	Measuring frequency	1 kHz ± 10%	Measuring voltage	1.0 ± 0.2 Vrms																												
Nominal capacitance	C ≤ 1 μF																																				
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Measuring voltage	1.0 ± 0.2 Vrms																																				
Temperature Characteristics	Temp. Char. CG: 0 ± 30 ppm/ °C CH: 0 ± 60 ppm/ °C CJ: 0 ± 120 ppm/ °C CK: 0 ± 250 ppm/ °C SL: +350 to -1000 ppm/ °C	Temp. Char. B : ±10 %(-25 to 85 °C) X7R: ±15 %(-55 to 125 °C) X5R: ±15 %(-55 to 85 °C) F : +30, -80 %(-25 to 85 °C) Y5V: +22, -82 %(-30 to 85 °C)	Maximum capacitance change at stage 1 to 5 (Unit: °C)																																		
			<table border="1"> <thead> <tr> <th rowspan="2">Stage</th> <th colspan="4">Temp. Char.</th> </tr> <tr> <th>CΔ, SL B, F</th> <th>X7R</th> <th>X5R</th> <th>Y5V</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>20</td> <td>25</td> <td>25</td> <td>25</td> </tr> <tr> <td>2</td> <td>-25</td> <td>-55</td> <td>-55</td> <td>-30</td> </tr> <tr> <td>3 (Reference Temp.)</td> <td>20</td> <td>25</td> <td>25</td> <td>25</td> </tr> <tr> <td>4</td> <td>85</td> <td>125</td> <td>85</td> <td>85</td> </tr> <tr> <td>5</td> <td>20</td> <td>25</td> <td>25</td> <td>25</td> </tr> </tbody> </table>	Stage	Temp. Char.				CΔ, SL B, F	X7R	X5R	Y5V	1	20	25	25	25	2	-25	-55	-55	-30	3 (Reference Temp.)	20	25	25	25	4	85	125	85	85	5	20	25	25	25
Stage	Temp. Char.																																				
	CΔ, SL B, F	X7R	X5R	Y5V																																	
1	20	25	25	25																																	
2	-25	-55	-55	-30																																	
3 (Reference Temp.)	20	25	25	25																																	
4	85	125	85	85																																	
5	20	25	25	25																																	
			*ECJZEB0J104M(0210/X5R/6.3 V/0.1 μF) ECJ0□BOJ474□(0402/X5R/6.3 V/0.47 μF) of 0.50±0.05 Vrms measurement voltage.																																		

*Standard condition : Temperature 15 to 35 °C, Relative humidity 45 to 75 %

Item	Specification		Test Method														
	Class 1	Class 2															
Adhesion	The terminal electrode shall be free from peeling or signs of peeling.		<p>Applied force: 2 N(Type "06") 5 N(Type "10", "11", "12" and "13")</p> <p>Arrow direction for 10 seconds.</p> <p>Test of Type "06" and "10"</p>  <p>Unit : mm</p> <p>Test of Type "11", "12" and "13"</p>  <p>Unit : mm</p>														
Bending Strength	Appearance: no mechanical damage Capacitance change: Within $\pm 5\%$ or ± 0.5 pF whichever is larger.	Appearance: no mechanical damage Capacitance change: Temp. Char. B, X7R, X5R : within $\pm 12.5\%$ F, Y5V : within $\pm 30\%$	<p>Bending value: 1 mm Bending speed: 1 mm/s</p>  <p>Unit : mm</p>														
Vibration Proof	Appearance: There shall be no cracks and other mechanical damage. Capacitance: Shall be within the specified tolerance Q, tan δ : initial value		Apply a variable vibration of 1.5mm total amplitude in the 10 to 55 to 10Hz vibration frequency range swept in 1 min. in 3 mutually perpendicular directions for 2 hours each, a total of 6 hours.														
Solderability	More than 95 % of the soldered area of both terminal electrodes shall be covered with fresh solder.		<p>Solder bath method Solder temperature: 230 ± 5 °C Dipping period: 4 ± 1 s Solder: H63A (JIS-Z-3282)</p>														
Resistance to Solder Heat	Appearance: no mechanical damage Capacitance change: Within $\pm 2.5\%$ or ± 0.25 pF whichever is larger. Q, tan δ : initial value IR: initial value With-stand voltage: no dielectric breakdown or damage	Appearance: no mechanical damage Capacitance change: Temp. Char. B, X7R, X5R : within $\pm 7.5\%$ F, Y5V : within $\pm 20\%$ tan δ initial value IR: initial value With-stand voltage: no dielectric breakdown or damage	<p>Preconditioning: Heat treatment (150 °C, 1h)/Class 2 Solder temperature: 270 ± 5 °C Dipping period: 3.0 ± 0.5 s Preheat condition:</p> <table border="1"> <thead> <tr> <th rowspan="2">Order</th> <th rowspan="2">Temp. (°C)</th> <th colspan="2">Time(s)</th> </tr> <tr> <th>Type 06,10,11,12</th> <th>Type 13</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>80 to 100</td> <td>120 to 180</td> <td>300 to 360</td> </tr> <tr> <td>2</td> <td>150 to 200</td> <td>120 to 80</td> <td>300 to 360</td> </tr> </tbody> </table> <p>Recovery (Standard condition) Class 1: 24 ± 2 h Class 2: 48 ± 4 h</p>	Order	Temp. (°C)	Time(s)		Type 06,10,11,12	Type 13	1	80 to 100	120 to 180	300 to 360	2	150 to 200	120 to 80	300 to 360
Order	Temp. (°C)	Time(s)															
		Type 06,10,11,12	Type 13														
1	80 to 100	120 to 180	300 to 360														
2	150 to 200	120 to 80	300 to 360														
Temperature Cycle	Appearance: no mechanical damage Capacitance change: Within $\pm 2.5\%$ or ± 0.25 pF whichever is larger. Q, tan δ : initial value IR: initial value With-stand voltage: no dielectric breakdown or damage	Appearance: no mechanical damage Capacitance change: Temp. Char. B, X7R, X5R : within $\pm 7.5\%$ F, Y5V : within $\pm 20\%$ tan δ initial value IR: initial value With-stand voltage: no dielectric breakdown or damage	<p>Preconditioning: Heat treatment (150 °C, 1h) /Class 2 Condition of one cycle Step 1: Minimum operation temp. 30± 3 min. Step 2: Room temp. 3 min. Step 3: Maximum operation temp. 30± 3 min. Step 4: Room temp. 3 min. Number of cycles: 5 cycles Recovery (Standard condition) Class 1: 24 ± 2 h Class 2: 48 ± 4 h</p>														

Item	Specification		Test Method
	Class 1	Class 2	
Damp Heat (Steady state)	<p>Appearance: no mechanical damage</p> <p>Capacitance change: Within $\pm 5\%$ or ± 0.5 pF whichever is larger.</p> <p>Q: C < 10 pF: Q $\geq 200 + 10C$ 10 pF \leq C < 30 pF: Q $\geq 275 + 5C/2$ 30 pF \leq C \leq 1000 pF: Q ≥ 350</p> <p>tan δ C > 1000 pF: tan $\delta \leq 0.004$ (C: Nominal capacitance in pF)</p> <p>IR: 1000 MΩ or 50/C (MΩ) Whichever is less. (C: Nominal capacitance in μF)</p>	<p>Appearance: no mechanical damage</p> <p>Capacitance change: Temp. Char. B, X7R, X5R: Within $\pm 12.5\%$ Note: ECJ0□B0J474□ (0402/X5R/6.3 V/0.47 μF), Within $\pm 20\%$</p> <p>F, Y5V: Within $\pm 30\%$</p> <p>tan δ 0.3 max. Please confirmation to the technical reports for details.</p> <p>IR: 1000 MΩ or 50/C (MΩ) Whichever is less. Note: DC 10 V: 10/C (MΩ) min. (C: Nominal capacitance in μF)</p>	<p>Preconditioning: Heat treatment (150°C, 1h)/Class 2 Temperature: 40 \pm 2 °C Relative humidity: 90 to 95% Test period: 500+24/0 h Recovery (Standard condition) Class 1: 24 \pm 2 h Class 2: 48 \pm 4 h</p>
Loading Under Damp Heat	<p>Appearance: no mechanical damage</p> <p>Capacitance change: Within $\pm 7.5\%$ or ± 0.75 pF whichever is larger.</p> <p>Q tan δ: C < 30 pF: Q $\geq 100 + 10C/3$ 30 pF \leq C \leq 1000 pF: Q ≥ 200</p> <p>tan δ C > 1000 pF: tan $\delta \leq 0.004$ (C: Nominal capacitance in pF)</p> <p>IR: 500 MΩ or 25/C (MΩ) Whichever is less. (C: Nominal capacitance in μF)</p>	<p>Appearance: no mechanical damage</p> <p>Capacitance change: Temp. Char. B, X7R, X5R: Within $\pm 12.5\%$ Note: ECJ0□B0J474□ (0402/X5R/6.3 V/0.47 μF), Within $\pm 20\%$</p> <p>F, Y5V: Within $\pm 30\%$</p> <p>tan δ 0.3 max. Please confirmation to the technical reports for details.</p> <p>IR: 500 MΩ or 25/C (MΩ) Whichever is less. Note: DC 10 V: 5/C (MΩ) min. (C: Nominal capacitance in μF)</p>	<p>Preconditioning: Voltage treatment (150°C, 1h)/Class 2 Temperature: 40 \pm 2 °C Relative humidity: 90 to 95% Applied voltage: Rated voltage Charge/discharge current: within 50mA Test period: 500+24/0 h Recovery (Standard condition) Class 1: 24 \pm 2 h Class 2: 48 \pm 4 h</p>

Item	Specification		Test Method
	Class 1	Class 2	
Loading at High Temperature	<p>Appearance: no mechanical damage</p> <p>Capacitance change: Within $\pm 3\%$ or $\pm 0.3\text{ pF}$ whichever is larger.</p> <p>Q tan δ: C < 10 pF: Q $\geq 200 + 10C$ 10 pF $\leq C \leq 30$ pF: Q $\geq 275 + 5C/2$ 30 pF $\leq C \leq 1000$ pF: Q ≥ 350</p> <p>tan δ C > 1000 pF: tan $\delta \leq 0.004$ (C: Nominal capacitance in pF)</p> <p>IR: 1000 MΩ or 50/C (MΩ) Whichever is less. (C: Nominal capacitance in μF)</p>	<p>Appearance: no mechanical damage</p> <p>Capacitance change: Temp. Char. B, X7R, X5R: Within $\pm 12.5\%$ Note: ECJ0□B0J474□ (0402/X5R/6.3 V/0.47 μF), Within $\pm 20\%$</p> <p>F, Y5V: Within $\pm 30\%$</p> <p>tan δ 0.3 max. Please confirmation to the technical reports for details.</p> <p>IR: 1000 MΩ or 50/C (MΩ) Whichever is less. Note: DC10 V: 10/C (MΩ) min. (C: Nominal capacitance in μF)</p>	<p>Preconditioning: Voltage treatment /Class 2</p> <p>Temperature: Maximum operation temp. $\pm 3\text{ }^\circ\text{C}$ Applied voltage: Rated voltage $\times 200\%$ Note: ECJZEB0J104M (0201/X5R/6.3 V/0.1 μF) ECJ0□B0J474□ (0402/X5R/6.3 V/0.47 μF) : Rated voltage $\times 100\%$</p> <p>Charge/discharge current: within 50mA Test period: 1000+48/0 h Recovery (Standard condition) Class 1: 24± 2 h Class 2: 48± 4 h</p>

Note 1) Heat treatment: 1 h of heat treatment at 150+0/-10 $^\circ\text{C}$ followed by 48 ± 4 h recovery under the standead condition

Note 2) Voltage treatment: 1 h of voltage treatment under the specified temperature and voltage for testing followed by 48 ± 4 h of recovery under the standead condition

■ Standard Products for Type "06" (EIA "0201") , Taped Version

● Class 1

Capacitance (pF)	Code		C											
	Rated voltage	Capacitance Tolerance	DC25V						DC16V					
			Part No	Dim. T (mm)	Temp. Char.			Part No	Dim. T (mm)	Temp. Char.				
CK	CJ	CH			CK	CJ	CH							
0.5	±0.25pF(C)	ECJZEC1E0R5C	0.3	○	—	—								
1	±0.25pF	ECJZEC1E010□	0.3	○	—	—								
1.5	(C)	ECJZEC1E1R5□	0.3	○	—	—								
2	or	ECJZEC1E020□	0.3	○	—	—								
3	±0.5pF	ECJZEC1E030□	0.3	—	○	—								
4	(D)	ECJZEC1E040□	0.3	—	—	○								
5		ECJZEC1E050□	0.3	—	—	○								
6		ECJZEC1E060D	0.3	—	—	○								
7	±0.5pF	ECJZEC1E070D	0.3	—	—	○								
8	(D)	ECJZEC1E080D	0.3	—	—	○								
9		ECJZEC1E090D	0.3	—	—	○								
10	±0.5pF(D) or ±1pF(F)	ECJZEC1E100□	0.3	—	—	○								
12		ECJZEC1E120□	0.3	—	—	○								
15		ECJZEC1E150□	0.3	—	—	○								
18		ECJZEC1E180□	0.3	—	—	○								
22		ECJZEC1E220□	0.3	—	—	○								
27	±5%(J)	ECJZEC1E270□	0.3	—	—	○								
33	or	ECJZEC1E330□	0.3	—	—	○								
39	±10%(K)						ECJZEC1C390□	0.3	—	—	○			
47							ECJZEC1C470□	0.3	—	—	○			
56							ECJZEC1C560□	0.3	—	—	○			
68							ECJZEC1C680□	0.3	—	—	○			
82							ECJZEC1C820□	0.3	—	—	○			
100							ECJZEC1C101□	0.3	—	—	○			

● Class 2

Capacitance (pF)	Code		B																		
	Rated voltage	Capacitance Tolerance	DC50V					DC25V					DC16V			DC10V					
			Part No	Dim. T (mm)	Temp. Char.			Part No	Dim. T (mm)	Temp. Char.			Part No	Dim. T (mm)	Temp. Char.		Part No	Dim. T (mm)	Temp. Char.		
B	X7R	X5R			B	X7R	X5R			B	X7R	X5R			B	X7R			X5R		
150		ECJZEB1H151□	0.3	○	○	—	ECJZEB1E151□	0.3	○	○	—										
220		ECJZEB1H221□	0.3	○	○	—	ECJZEB1E221□	0.3	○	○	—										
330		ECJZEB1H331□	0.3	○	○	—	ECJZEB1E331□	0.3	○	○	—										
470		ECJZEB1H471□	0.3	○	○	—	ECJZEB1E471□	0.3	○	○	—										
680		ECJZEB1H681□	0.3	○	○	—	ECJZEB1E681□	0.3	○	○	—										
1000	±10%(K) or	ECJZEB1H102□	0.3	○	○	—	ECJZEB1E102□	0.3	○	○	—										
1500	±20%(M)						ECJZEB1E152□	0.3	○	○	—	ECJZEB1C152□	0.3	○	○	—					
2200							ECJZEB1E222□	0.3	○	○	—	ECJZEB1C222□	0.3	○	○	—					
3300												ECJZEB1C332□	0.3	○	○	—	ECJZEB1A332□	0.3	○	—	○
4700																	ECJZEB1A472□	0.3	—	—	○
6800																	ECJZEB1A682□	0.3	—	—	○
10000																	ECJZEB1A103□	0.3	—	—	○

Capacitance (pF)	Code		B				
	Rated voltage	Capacitance Tolerance	DC6.3V				
			Part No	Dim. T (mm)	Temp. Char.		
B	X7R	X5R					
4700		ECJZEB0J472□	0.3	—	—	○	
6800	±10%(K) or	ECJZEB0J682□	0.3	—	—	○	
10000	±20%(M)	ECJZEB0J103□	0.3	—	—	○	
100000		ECJZEB0J104M	0.3	—	—	○	

□: Capacitance tolerance Code. : "□" for "K" or "M"

Packaging style code: "E" for taped version. (φ180 reel, taping pitch: 2 mm)

Recommend soldering method: Reflow soldering.

■ Standard Products for Type "10" (EIA "0402") , Taped Version

● Class 1

Capacitance (pF)	Code	C						G		
	Rated voltage	DC50V						DC50V		
	Capacitance Tolerance	Part No	Dim. T (mm)	Temp. Char.				Part No	Dim. T (mm)	Temp. Char.
			CK	CJ	CH	CG			SL	
0.5	±0.25pF(C)	ECJ0EC1H0R5C	0.5	○	—	—	—	ECJ0EG1H0R5C	0.5	○
1	±0.25pF	ECJ0EC1H010□	0.5	○	—	—	—	ECJ0EG1H010□	0.5	○
1.5	(C)	ECJ0EC1H1R5□	0.5	○	—	—	—	ECJ0EG1H1R5□	0.5	○
2	or	ECJ0EC1H020□	0.5	○	—	—	—	ECJ0EG1H020□	0.5	○
3	±0.5pF	ECJ0EC1H030□	0.5	—	○	—	—	ECJ0EG1H030□	0.5	○
4	(D)	ECJ0EC1H040□	0.5	—	—	○	—	ECJ0EG1H040□	0.5	○
5		ECJ0EC1H050□	0.5	—	—	○	—	ECJ0EG1H050□	0.5	○
6		ECJ0EC1H060D	0.5	—	—	○	—	ECJ0EG1H060D	0.5	○
7	±0.5pF	ECJ0EC1H070D	0.5	—	—	○	—	ECJ0EG1H070D	0.5	○
8	(D)	ECJ0EC1H080D	0.5	—	—	○	—	ECJ0EG1H080D	0.5	○
9		ECJ0EC1H090D	0.5	—	—	○	—	ECJ0EG1H090D	0.5	○
10	±0.5pF(D) or ±1pF(F)	ECJ0EC1H100□	0.5	—	—	○	○	ECJ0EG1H100□	0.5	○
12		ECJ0EC1H120□	0.5	—	—	○	○	ECJ0EG1H120□	0.5	○
15		ECJ0EC1H150□	0.5	—	—	○	○	ECJ0EG1H150□	0.5	○
18		ECJ0EC1H180□	0.5	—	—	○	○	ECJ0EG1H180□	0.5	○
22		ECJ0EC1H220□	0.5	—	—	○	○	ECJ0EG1H220□	0.5	○
27		ECJ0EC1H270□	0.5	—	—	○	○	ECJ0EG1H270□	0.5	○
33		ECJ0EC1H330□	0.5	—	—	○	○	ECJ0EG1H330□	0.5	○
39	±5%(J)	ECJ0EC1H390□	0.5	—	—	○	○	ECJ0EG1H390□	0.5	○
47	or	ECJ0EC1H470□	0.5	—	—	○	○	ECJ0EG1H470□	0.5	○
56	±10%(K)	ECJ0EC1H560□	0.5	—	—	○	○	ECJ0EG1H560□	0.5	○
68		ECJ0EC1H680□	0.5	—	—	○	○	ECJ0EG1H680□	0.5	○
82		ECJ0EC1H820□	0.5	—	—	○	○	ECJ0EG1H820□	0.5	○
100		ECJ0EC1H101□	0.5	—	—	○	○	ECJ0EG1H101□	0.5	○
120		ECJ0EC1H121□	0.5	—	—	○	○	ECJ0EG1H121□	0.5	○
150		ECJ0EC1H151□	0.5	—	—	○	○	ECJ0EG1H151□	0.5	○
180		ECJ0EC1H181□	0.5	—	—	○	○	ECJ0EG1H181□	0.5	○
220		ECJ0EC1H221□	0.5	—	—	○	○	ECJ0EG1H221□	0.5	○

□: Capacitance tolerance code. : "□" for "K" or "M"

Packaging style code: "E" for taped version. (φ180 reel, taping pitch: 2 mm)

Recommend soldering method: Reflow soldering.

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

● Class 1

Capacitance (pF)	Code	C						G		
	Rated voltage	DC50V						DC50V		
	Capacitance Tolerance	Part No	Dim. T (mm)	Temp. Char.				Part No	Dim. T (mm)	Temp. Char. SL
				CK	CJ	CH	CG			
0.5	±0.25pF(C)	ECJ1VC1H0R5C	0.8	○	—	—	—	ECJ1VG1H0R5C	0.8	○
1	±0.25pF	ECJ1VC1H010□	0.8	○	—	—	—	ECJ1VG1H010□	0.8	○
1.5	(C)	ECJ1VC1H1R5□	0.8	○	—	—	—	ECJ1VG1H1R5□	0.8	○
2	or	ECJ1VC1H020□	0.8	○	—	—	—	ECJ1VG1H020□	0.8	○
3	±0.5pF	ECJ1VC1H030□	0.8	—	○	—	—	ECJ1VG1H030□	0.8	○
4	(D)	ECJ1VC1H040□	0.8	—	—	○	—	ECJ1VG1H040□	0.8	○
5		ECJ1VC1H050□	0.8	—	—	○	—	ECJ1VG1H050□	0.8	○
6		ECJ1VC1H060D	0.8	—	—	○	—	ECJ1VG1H060D	0.8	○
7	±0.5pF	ECJ1VC1H070D	0.8	—	—	○	—	ECJ1VG1H070D	0.8	○
8	(D)	ECJ1VC1H080D	0.8	—	—	○	—	ECJ1VG1H080D	0.8	○
9		ECJ1VC1H090D	0.8	—	—	○	—	ECJ1VG1H090D	0.8	○
10	±0.5pF(D) or ±1pF(F)	ECJ1VC1H100□	0.8	—	—	○	○	ECJ1VG1H100□	0.8	○
12		ECJ1VC1H120□	0.8	—	—	○	○	ECJ1VG1H120□	0.8	○
15		ECJ1VC1H150□	0.8	—	—	○	○	ECJ1VG1H150□	0.8	○
18		ECJ1VC1H180□	0.8	—	—	○	○	ECJ1VG1H180□	0.8	○
22		ECJ1VC1H220□	0.8	—	—	○	○	ECJ1VG1H220□	0.8	○
27		ECJ1VC1H270□	0.8	—	—	○	○	ECJ1VG1H270□	0.8	○
33		ECJ1VC1H330□	0.8	—	—	○	○	ECJ1VG1H330□	0.8	○
39	±5%(J)	ECJ1VC1H390□	0.8	—	—	○	○	ECJ1VG1H390□	0.8	○
47	or	ECJ1VC1H470□	0.8	—	—	○	○	ECJ1VG1H470□	0.8	○
56	±10%(K)	ECJ1VC1H560□	0.8	—	—	○	○	ECJ1VG1H560□	0.8	○
68		ECJ1VC1H680□	0.8	—	—	○	○	ECJ1VG1H680□	0.8	○
82		ECJ1VC1H820□	0.8	—	—	○	○	ECJ1VG1H820□	0.8	○
100		ECJ1VC1H101□	0.8	—	—	○	○	ECJ1VG1H101□	0.8	○
120		ECJ1VC1H121□	0.8	—	—	○	○	ECJ1VG1H121□	0.8	○
150		ECJ1VC1H151□	0.8	—	—	○	○	ECJ1VG1H151□	0.8	○
180		ECJ1VC1H181□	0.8	—	—	○	○	ECJ1VG1H181□	0.8	○
220		ECJ1VC1H221□	0.8	—	—	○	○	ECJ1VG1H221□	0.8	○
270		ECJ1VC1H271□	0.8	—	—	○	○	ECJ1VG1H271□	0.8	○
330		ECJ1VC1H331□	0.8	—	—	○	○	ECJ1VG1H331□	0.8	○
390		ECJ1VC1H391□	0.8	—	—	○	○	ECJ1VG1H391□	0.8	○
470		ECJ1VC1H471□	0.8	—	—	○	○	ECJ1VG1H471□	0.8	○
560		ECJ1VC1H561□	0.8	—	—	○	○	ECJ1VG1H561□	0.8	○
680		ECJ1VC1H681□	0.8	—	—	○	○	ECJ1VG1H681□	0.8	○
820		ECJ1VC1H821□	0.8	—	—	○	○	ECJ1VG1H821□	0.8	○
1000		ECJ1VC1H102□	0.8	—	—	○	○	ECJ1VG1H102□	0.8	○

□: Capacitance tolerance code. : "□" for "K" or "M"

Packaging style code: "V" for taped version. (ø 180 reel, taping pitch: 4 mm).

Recommend soldering method: Reflow soldering.

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

● Class 1

Capacitance (pF)	Code	C				G		
	Rated voltage	DC50V				DC50V		
	Capacitance Tolerance	Part No	Dim. T (mm)	Temp. Char.		Part No	Dim. T (mm)	Temp. Char.
				CH	CG			SL
27		ECJ2VC1H270□	0.6	○	○	ECJ2VG1H270□	0.6	○
33		ECJ2VC1H330□	0.6	○	○	ECJ2VG1H330□	0.6	○
39		ECJ2VC1H390□	0.6	○	○	ECJ2VG1H390□	0.6	○
47		ECJ2VC1H470□	0.6	○	○	ECJ2VG1H470□	0.6	○
56		ECJ2VC1H560□	0.6	○	○	ECJ2VG1H560□	0.6	○
68		ECJ2VC1H680□	0.6	○	○	ECJ2VG1H680□	0.6	○
82		ECJ2VC1H820□	0.6	○	○	ECJ2VG1H820□	0.6	○
100		ECJ2VC1H101□	0.6	○	○	ECJ2VG1H101□	0.6	○
120		ECJ2VC1H121□	0.6	○	○	ECJ2VG1H121□	0.6	○
150		ECJ2VC1H151□	0.6	○	○	ECJ2VG1H151□	0.6	○
180		ECJ2VC1H181□	0.6	○	○	ECJ2VG1H181□	0.6	○
220	±5%(J)	ECJ2VC1H221□	0.6	○	○	ECJ2VG1H221□	0.6	○
270	or	ECJ2VC1H271□	0.6	○	○	ECJ2VG1H271□	0.6	○
330	±10%(K)	ECJ2VC1H331□	0.6	○	○	ECJ2VG1H331□	0.6	○
390		ECJ2VC1H391□	0.6	○	○	ECJ2VG1H391□	0.6	○
470		ECJ2VC1H471□	0.6	○	○	ECJ2VG1H471□	0.6	○
560		ECJ2VC1H561□	0.6	○	○	ECJ2VG1H561□	0.6	○
680		ECJ2VC1H681□	0.6	○	○	ECJ2VG1H681□	0.6	○
820		ECJ2VC1H821□	0.6	○	○	ECJ2VG1H821□	0.6	○
1000		ECJ2VC1H102□	0.6	○	○	ECJ2VG1H102□	0.6	○
1200		ECJ2VC1H122□	0.6	○	—	ECJ2VG1H122□	0.6	○
1500		ECJ2VC1H152□	0.6	○	—	ECJ2VG1H152□	0.6	○
1800		ECJ2VC1H182□	0.6	○	—	ECJ2VG1H182□	0.6	○
2200		ECJ2VC1H222□	0.6	○	—	ECJ2VG1H222□	0.6	○
2700		ECJ2VC1H272□	0.85	○	—	ECJ2VG1H272□	0.6	○

□: Capacitance tolerance code. : "□" for "K" or "M"

Packaging style code: "V" for taped version. (φ 180 reel, taping pitch: 4 mm)

Recommend soldering method: Reflow soldering.

■ Standard Products for Type "13" (EIA "1206") , Taped Version
● class 1

Capacitance (pF)	Code	C			G		
	Rated voltage	DC50V			DC50V		
	Capacitance Tolerance	Part No	Dim. T (mm)	Temp. Char. CH	Part No	Dim. T (mm)	Temp. Char. SL
3300	±5%(J) or ±10%(K)	ECJ3VC1H332□	0.6	○	ECJ3VG1H332□	0.6	○
3900		ECJ3VC1H392□	0.6	○	ECJ3VG1H392□	0.6	○
4700		ECJ3VC1H472□	0.6	○	ECJ3VG1H472□	0.6	○
5600		ECJ3VC1H562□	0.85	○	ECJ3VG1H562□	0.6	○
6800		ECJ3VC1H682□	0.85	○			
8200		ECJ3FC1H822□	1.15	○			
10000		ECJ3FC1H103□	1.15	○			

● class 2

Capacitance (pF)	Code	B											
	Rated voltage	DC50V			DC25V			DC16V					
	Capacitance Tolerance	Part No	Dim. T (mm)	Temp. Char. B X7R X5R	Part No	Dim. T (mm)	Temp. Char. B X7R X5R	Part No	Dim. T (mm)	Temp. Char. B X7R X5R			
100000	±10%(K) or ±20%(K)				ECJ3VB1E104□	0.85	○	○	ECJ3VB1C104□	0.85	○	○	
150000					ECJ3VB1E154□	0.85	○	○	ECJ3VB1C154□	0.85	○	○	
220000		ECJ3YB1H224□	1.6	○	○	ECJ3VB1E224□	0.85	○	○	ECJ3VB1C224□	0.85	○	○
330000						ECJ3VB1E334□	0.85	○	○	ECJ3VB1C334□	0.85	○	○
470000						ECJ3FB1E474□	1.15	○	○	ECJ3VB1C474□	0.85	○	○
680000						ECJ3YB1E684□	1.6	○	○	ECJ3VB1C684□	0.85	○	○

□: Capacitance tolerance code. : "□" for "K" or "M"

Packaging style code: "V", "F" and "Y" for taped version. (φ 180 reel, taping pitch: 4 mm)

Soldering method of dimension T>1 mm: Do not use the flow soldering.

As for the capacitance value 1 μF above, please refer the page 8 and 9