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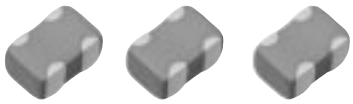
Multilayer Ceramic Capacitors (2 Array Type)

Series: **ECJU**



■ Features

- Array of 2 capacitors within 0504 case size
- Single part placement, saving placement time and using less PC board area
- Advanced multi-layer technology that results in high capacitance within a very small packge
- RoHS compliant

■ Recommended Applications

- Stabilization of power supply voltages and for filtering of noise
- Bypass capacitor for digital signal lines

■ Handling Precautions

See Page 48 to 53

■ Packaging Specifications

See Page 45, 46, 56

■ Discontinued / Revised Part Numbers, Alternative Part Numbers

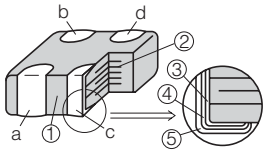
See Page 54, 55

■ Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11	12	
E	C	J	U	V	B	P	J	1	0	5	M	(Example)

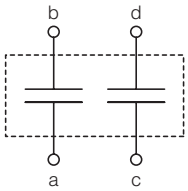
- 1 to 3: Product Code (ECJ:Multilayer Ceramic Chip Capacitors)
- 4: Size Code
- 5: Packaging Style Code
- 6: Temperature Characteristic Code
- 7 to 8: Rated Voltage Code
- 9 to 11: Nominal Capacitance
- 12: Capacitance Tolerance Code

■ Construction

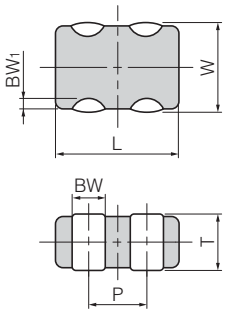


No	Name	
①	Ceramic dielectric	
②	Internal electrode	
③	Terminal electrode	Substrate electrode
④		Intermediate electrode
⑤		External electrode

Schematic



■ Dimensions in mm (not to scale)



Size Code	Size (EIA)	L	W	T	BW	BW_1	P
U	0504	1.37±0.15	1.0±0.1	$0.60^{+0.06}_{-0.10}$	0.36±0.10	2.0±0.1	0.64±0.10
				0.8±0.1	0.52±0.06	$0.2^{+0.2}_{-0.1}$	0.81±0.06

■ Packaging Styles and Standard Packaging Quantity

Quantity: pcs. / reel

Packaging Style Code	Packaging Styles \ Size / Thickness (mm)		0504	
			T=0.6	T=0.8
V	φ180 reel	Paper taping (Pitch : 4 mm)	4,000	

00 Sep. 2008

■ Temperature Characteristics

● Class 1

Temperature Characteristic Code	Temperature Characteristics	Temp. Coeff. (ppm/°C)	Rate of Capacitance change at each Temp. (%)			
			–25 °C		85 °C	
			max.	min.	max.	min.
C	CH	0 ± 60	0.49	–0.27	0.39	–0.39

Temperature coefficient: calculated between 20 °C to 85 °C

● Class 2

Temperature Characteristic Code	Temperature Characteristics	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

For applicable “temperature characteristics”, see the lists of standard products on page 27.

■ Rated Voltage

Code	1H	1E	1C, PC	1A, PA	PJ
Rated Voltage	DC 50 V	DC 25 V	DC 16 V	DC 10 V	DC 6.3 V

■ Nominal Capacitance

Ex.	100	101	103	104	105
Nominal Capacitance	10 pF	100 pF	10,000 pF (0.01 µF)	100,000 pF (0.1 µF)	1,000,000 pF (1.0 µF)

■ Capacitance tolerance

Class	Temperature Characteristics			Tolerance Code	Capacitance Tolerance
1	CH	Capacitance range	C=10 pF	F	±1 pF
			C>10 pF	K	±10 %
2	B, X7R, X5R			M	±20 %

■ Specifications and Testing Methods

Item	Specifications		Test Method
	Class 1	Class 2	
Operating Temperature Range	Temp. Char. CH: –55 to 125 °C	Temp. Char. B, X7R: –55 to 125 °C X5R: –55 to 85 °C	———
Dielectric Withstanding Voltage	No dielectric breakdown and /or damage		Test voltage: Class 1: Rated voltage × 300 % Class 2: Rated voltage × 250 % Duration: 1 to 5 s Charge/discharge current: 50 mA max.
Insulation Resistance (I.R.)	10000 MΩ or 500/C (MΩ) Whichever is less Note: 100/C (MΩ) min. for DC 10 V max. C: Nominal Cap. in µF		Measuring voltage: Rated voltage Duration: 60±5 s Charge/discharge current: 50 mA max.
Capacitance	Within the specified tolerance		Measuring temperature: 20±2 °C Class 1 Measuring frequency: 1 MHz ± 10 % Measuring voltage: 0.5 to 5 Vrms Class 2 Preconditioning: The capacitors shall be kept in temperature of 150 +0/–10 °C for 1 hour and subjected to standard condition * 48±4 hours before initial measurement. Measuring frequency: 1 kHz ± 10 % Measuring voltage: 1.0±0.2 Vrms
Q Factor or Dissipation Factor (tan δ)	Q: C < 30 pF: Q≧400+20 C 30 pF≦C≦1000 pF: Q≧1000 C: Nominal Cap. in pF	tan δ: Temp. Char. B, X7R: 0.025 max. X5R: 0.15 max. Please see the technical specifications for details.	

✻ Standard condition: Temperature 15 to 35 °C, Relative humidity 45 to 75 %.
For further information, see the technical specifications.

■ Standard Products for EIA “0504”, Taped Version

● Class 1

◆ Temperature Characteristic Code: C (Temperature Characteristics: CH)

Rated voltage		DC 50 V		
Capacitance (pF)	Capacitance Tolerance	Part No.	Dim. T (mm)	Temp. Char. CH
10	±1 pF (F)	ECJUVC1H100F	0.6	○
22	±10 % (K)	ECJUVC1H220K	0.6	○
47		ECJUVC1H470K	0.6	○
100		ECJUVC1H101K	0.6	○

Standard packaging quantity of Packaging Style Code “V” (T = 0.6 mm): 4,000 pcs./reel
Avoid flow soldering.

● Class 2

◆ Temperature Characteristic Code: B (Temperature Characteristics: B, X7R, X5R)

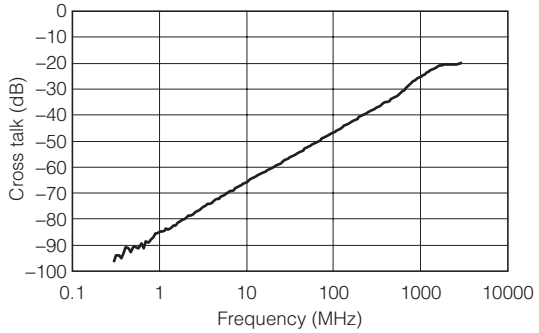
Rated voltage		DC 50 V				DC 25 V				DC 16 V			DC 10 V		
Capacitance (pF)	Capacitance Tolerance	Part No.	Dim. T (mm)	Temp. Char. B	Temp. Char. X7R	Part No.	Dim. T (mm)	Temp. Char. B	Temp. Char. X7R	Part No.	Dim. T (mm)	Temp. Char. X5R	Part No.	Dim. T (mm)	Temp. Char. X5R
470	±20 % (M)	ECJUVB1H471M	0.6	○	○										
1000		ECJUVB1H102M	0.6	○	○										
2200		ECJUVB1H222M	0.6	○	○										
4700						ECJUVB1E472M	0.6	○	○						
10000						ECJUVB1E103M	0.6	○	○						
47000										ECJUVB1C473M	0.6	○			
100000													ECJUVB1A104M	0.6	○
1000000										ECJUVBPC105M	0.8	○	ECJUVBPA105M	0.8	○

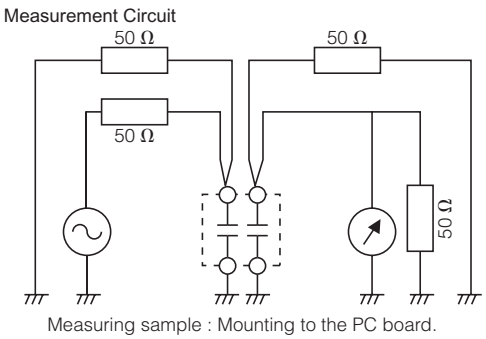
Rated voltage		DC 6.3 V		
Capacitance (µF)	Capacitance Tolerance	Part No.	Dim. T (mm)	Temp. Char. X5R
1	±20 % (M)	ECJUVBPJ105M	0.8	○
2.2		ECJUVBPJ225M	0.8	○

Standard packaging quantity of Packaging Style Code “V” (T = 0.6 mm, T = 0.8 mm): 4,000 pcs./reel
Avoid flow soldering.

■ Cross talk characteristics [Ex.]

Temperature Characteristics X5R, 1.0 µF





Measuring sample : Mounting to the PC board.