THE DATASHEET OF

ECJ-TVB1A104M

Multilayer Ceramic Capacitors (4 Array Type)

Series: **ECJR, ECJT**



■ Features

- 4 miniature capacitors built within 0805 and 1206 case sizes
- Improved placement time on mounting machines
- Low self-inductance and excellent frequency characteristics
- RoHS compliant

■ Recommended Applications

- Input/Output circuit for computer motherboards
  - · Serial port
  - · Video port
  - · Parallel port

■ Handling Precautions

See Page 48 to 53

■ Packaging Specifications

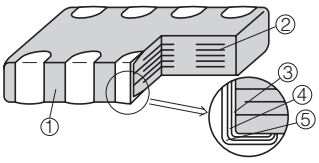
See Page 45, 46, 56

■ Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11	12	
E	C	J	T	V	C	1	H	1	0	1	K	(Example)

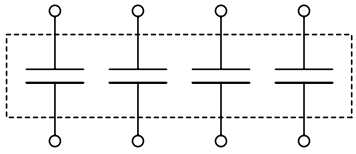
- 1 2 3: Product Code (ECJ:Multilayer Ceramic Chip Capacitors)
- 4: Size Code
- 5: Packaging Style Code
- 6: Temperature Characteristic Code
- 7 8: Rated Voltage Code
- 9 10 11: Nominal Capacitance
- 12: Capacitance Tolerance Code

■ Construction

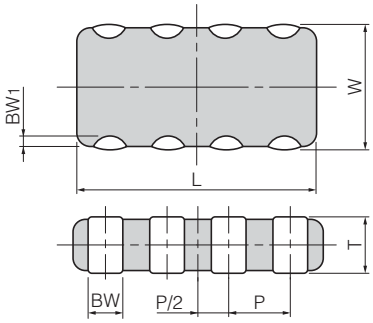


No	Name	
①	Ceramic dielectric	
②	Internal electrode	
③	Terminal electrode	Substrate electrode
④		Intermediate electrode
⑤		External electrode

Schematic



■ Dimensions in mm (not to scale)



Size Code	Size (EIA)	L	W	T	BW	BW_1	P
T	0805	2.00±0.15	1.25±0.15	0.85±0.10	0.25±0.10	$0.2^{+0.3}_{-0.1}$	0.5±0.1
R	1206	3.2±0.2	1.6±0.2	0.85±0.10	0.40±0.15	$0.2^{+0.3}_{-0.1}$	0.80±0.1

■ Packaging Styles and Standard Packaging Quantity

Quantity: pcs./reel

Packaging Style Code	Packaging Styles \ Size		0805	1206
V	φ180 reel	Paper taping (Pitch : 4 mm)	4,000	

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.
Should a safety concern arise regarding this product, please be sure to contact us immediately.

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
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 31 to 32.

■ 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.	100	101	104	105
Nominal Capacitance	10 pF	100 pF	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 %
	F, Y5V			Z	+80, −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 F, Y5V: −30 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 (IR)	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
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: 0.075 max. F, Y5V: 0.125 max. Please see the technical specifications for details.	Class 2 Preconditioning: The capacitors shall be kept in temperature of 150 +0/−10 ± for 1 hour and subject to standard conditions* for 48±4 hours before initial measurement. Measuring frequency: 1 kHz ± 10 % Measuring voltage: 1.0±0.2 Vrms

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

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■ Standard Products for EIA “0805”, 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)	ECJTVC1H100F	0.85	○
22	±10 % (K)	ECJTVC1H220K	0.85	○
47		ECJTVC1H470K	0.85	○
100		ECJTVC1H101K	0.85	○
220		ECJTVC1H221K	0.85	○

Standard packaging quantity of Packaging Style Code “V” (T = 0.85 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. B	Temp. Char. X7R	Part No.	Dim. T (mm)	Temp. Char. X5R
470	±20 % (M)	ECJTVB1H471M	0.85	○	○											
1000		ECJTVB1H102M	0.85	○	○											
2200		ECJTVB1H222M	0.85	○	○											
4700						ECJTVB1E472M	0.85	○	○							
10000										ECJTVB1C103M	0.85	○	○			
47000														ECJTVB1A473M	0.85	○
100000														ECJTVB1A104M	0.85	○

Rated voltage		DC 6.3 V		
Capacitance (µF)	Capacitance Tolerance	Part No.	Dim. T (mm)	Temp. Char. X5R
1.0	±20 % (M)	ECJTVB0J105M	0.85	○

Standard packaging quantity of Packaging Style Code “V” (T = 0.85 mm): 4,000 pcs./reel
Avoid flow soldering.

◆ Temperature Characteristics Code: F (Temperature Characteristics: F, Y5V)

Rated voltage		DC 16 V			
Capacitance (µF)	Capacitance Tolerance	Part No.	Dim. T (mm)	Temp. Char. F	Temp. Char. Y5V
0.1	+80, -20 % (Z)	ECJTVF1C104Z	0.85	○	○

Standard packaging quantity of Packaging Style Code “V” (T = 0.85 mm): 4,000 pcs./reel
Avoid flow soldering.

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■ Standard Products for EIA “1206”, 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)	ECJRVC1H100F	0.85	○
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	○

Standard packaging quantity of Packaging Style Code “V” (T = 0.85 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 16 V				DC 6.3 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
470	±20 % (M)	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						ECJRVB1C104M	0.85	○	○			
1000000										ECJRVB0J105M	0.85	○

Standard packaging quantity of Packaging Style Code “V” (T = 0.85 mm): 4,000 pcs./reel
Avoid flow soldering.

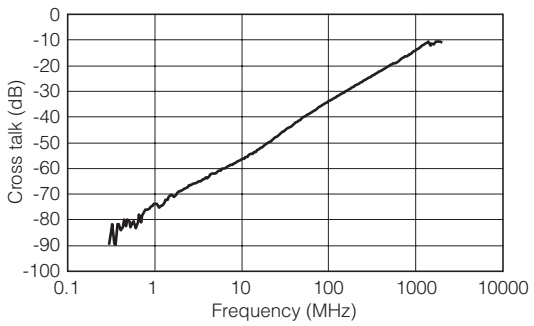
◆ Temperature Characteristic Code: F (Temperature Characteristics: F, Y5V)

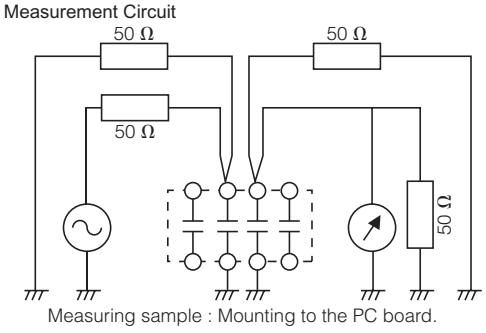
Rated voltage		DC 25 V				DC 10 V			
Capacitance (µF)	Capacitance Tolerance	Part No.	Dim. T (mm)	Temp. Char. F	Temp. Char. Y5V	Part No.	Dim. T (mm)	Temp. Char. F	Temp. Char. Y5V
0.1	+80, –20 %	ECJRVF1E104Z	0.85	○	○				
1.0	(Z)					ECJRVF1A105Z	0.85	○	○

Standard packaging quantity of Packaging Style Code “V” (T = 0.85 mm): 4,000 pcs./reel
Avoid flow soldering.

■ Cross talk characteristics [Ex.]

Size: 0805, Temperature Characteristics: CH, 100 pF





Measuring sample : Mounting to the PC board.

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