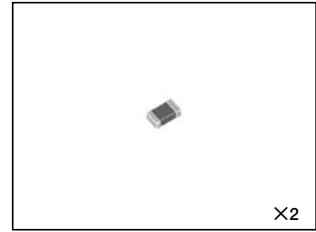


## 2012(0805)Size chip capacitors : MCH21

- Miniature, high capacitance
- Achieved high capacitance by thin and multi layer technology
- Lead-free plating terminal
- No polarity



### Quick Reference

The design and specifications are subject to change without prior notice. Before ordering or using, please check the latest technical specifications. For more detail information regarding temperature characteristic code and packaging style code, please check product destination.

### Range of thermal compensation capacitors

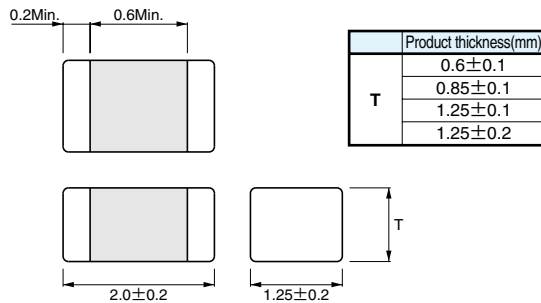
| MCH21                      | Temperature           | A,AN(CG) (COG) (CH) Characteristic |             |              | Packing style code |
|----------------------------|-----------------------|------------------------------------|-------------|--------------|--------------------|
|                            | Rated voltage(V)      | 50V                                |             |              |                    |
|                            | Product thickness(mm) | 0.6±0.10                           | 0.85±0.1    | 1.25±0.1     |                    |
|                            | Capacitance(pF)       | 2,700~3,300                        | 3,900~5,600 | 6,800~10,000 |                    |
| Capacitance tolerance      |                       | J(±5%)                             |             |              | K, P               |
| Nominal capacitance series |                       | E12                                |             |              |                    |

### Range of high dielectric constant capacitors

| MCH21                      | Temperature           | CN(R) (B) (X7R) Characteristic |           |        |                 |                   | CN(X5R) Characteristic |                     |            | Packing style code |
|----------------------------|-----------------------|--------------------------------|-----------|--------|-----------------|-------------------|------------------------|---------------------|------------|--------------------|
|                            | Rated voltage(V)      | 50V                            |           | 25V    | 16V             | 10V               | 10V                    | 6.3V                |            |                    |
|                            | Product thickness(mm) | 0.6±0.1                        | 0.85±0.15 | 10,000 | 150,000~220,000 | 330,000~1,000,000 | 1,500,000~2,200,000    | 3,300,000~4,700,000 | 10,000,000 |                    |
|                            | Capacitance(pF)       | 1,000~47,000                   | 68,000    | 10,000 | 150,000~220,000 | 330,000~1,000,000 | 1,500,000~2,200,000    | 3,300,000~4,700,000 | 10,000,000 |                    |
| Capacitance tolerance      |                       | K(±10%)                        |           |        |                 |                   |                        |                     | M(±20%)    | K, P               |
| Nominal capacitance series |                       | E6                             |           |        |                 |                   |                        |                     |            |                    |

| MCH21                      | Temperature           | FN(F) (Y5V) Characteristic |  |                     | Packing style code |            |
|----------------------------|-----------------------|----------------------------|--|---------------------|--------------------|------------|
|                            | Rated voltage(V)      | 50V                        |  | 16V                 |                    | 10V        |
|                            | Product thickness(mm) | 0.6±0.1                    |  | 1.25±0.2            |                    |            |
|                            | Capacitance(pF)       | 10,000~100,000             |  | 1,000,000~4,700,000 |                    | 10,000,000 |
| Capacitance tolerance      |                       | Z(+80%, -20%)              |  |                     | K, P               |            |
| Nominal capacitance series |                       | E3                         |  |                     |                    |            |

### External dimensions (Unit : mm)



| Code | Product thickness | Packing specification               | Reel           | Basic ordering unit(pcs.) |
|------|-------------------|-------------------------------------|----------------|---------------------------|
| K    | 0.6、0.85mm        | Paper tape(width 8mm, pitch 4mm)    | φ 180mm (7in.) | 4,000                     |
| P    | 1.25mm            | Pulastic tape(width 8mm, pitch 4mm) | φ 180mm (7in.) | 2,000                     |

Reel(φ 180mm):compatible with EIAJ ET-7200A

### Production designation

Part No.

Packing Style



| Rated voltage |         |
|---------------|---------|
| Code          | Voltage |
| 8             | 6.3V    |
| 4             | 10V     |
| 3             | 16V     |
| 2             | 25V     |
| 5             | 50V     |

| Capacitance-temperature characteristics |            |                           |                                     | Nominal capacitance                  | Capacitance tolerance |                    |
|---|------------|---------------------------|-------------------------------------|--------------------------------------|-----------------------|--------------------|
| Code                                    | EIA code   | Operating temp. range(°C) | Temp. coefficient or percent change |                                      | Code                  | Tolerance          |
| A,AN                                    | CG(COG)    | -55~+125                  | 0±30ppm/°C                          | 3-digit designation according to IEC | J                     | ±5% (11pF or more) |
|   | CH         | -55~+125                  | 0±60ppm/°C                          |                                      | K                     | ±10%               |
| CN                                      | R          | -55~+125                  | ±15%                                |                                      | M                     | ±20%               |
|   | B          | -25~+85                   | ±10%                                |                                      | Z                     | +80%, -20%         |
|   | (X5R)      | (-55~+85)                 | (±15%)                              |                                      |                       |                    |
| (X7R)                                   | (-55~+125) | (±15%)                    |                                     |                                      |                       |                    |
| FN                                      | F          | -25~+85                   | +30%, -80%                          |                                      |                       |                    |
|   | (Y5V)      | (-30~+85)                 | (+22%, -82%)                        |                                      |                       |                    |



## ■ Product No. list

### ● Thermal compensation capacitors

| Capacitance (pF) | Temperature      |                       | A·AN (CG) (COG) (CH) Characteristic |
|------------------|------------------|-----------------------|-------------------------------------|
|                  | Rated voltage(V) |                       | 25V                                 |
|                  | Tolerance        | Product thickness(mm) | Product No.                         |
| 2,700            | J (±5%)          | 0.6±0.1               | MCH215A (AN) 272JK                  |
| 3,300            |                  |                       | MCH215A (AN) 332JK                  |
| 3,900            |                  |                       | MCH215A (AN) 392JK                  |
| 4,700            |                  | 0.85±0.1              | MCH215A (AN) 472JK                  |
| 5,600            |                  |                       | MCH215A (AN) 562JK                  |
| 6,800            |                  |                       | MCH215A (AN) 682JP                  |
| 8,200            |                  | 1.25±0.1              | MCH215A (AN) 822JP                  |
| 10,000           |                  |                       | MCH215A (AN) 103JP                  |

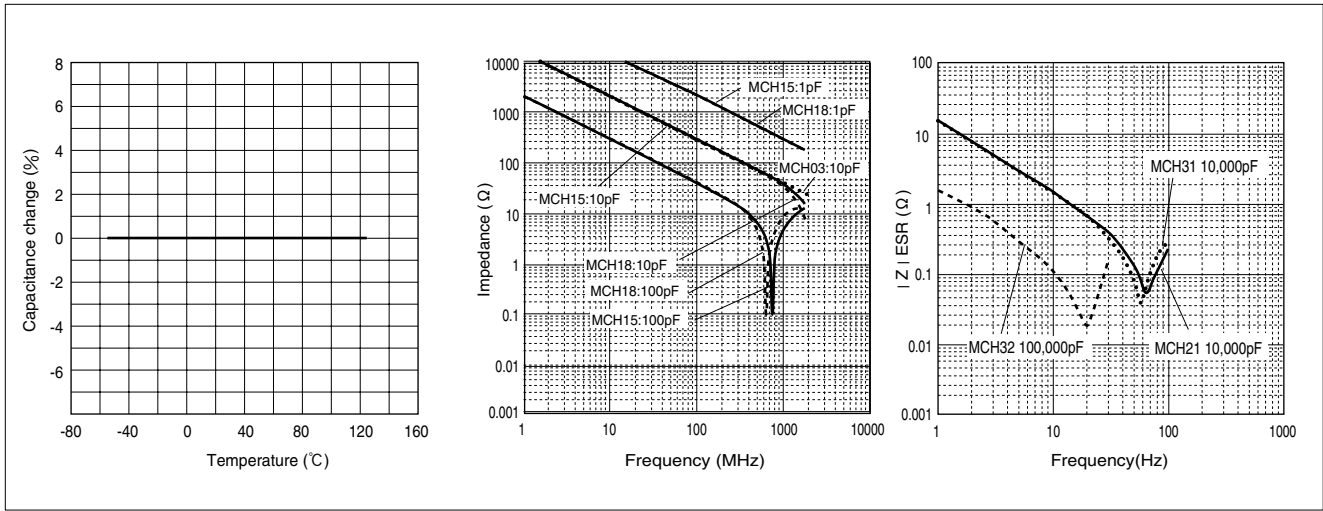
### ● High dielectric constant capacitors

| Capacitance (pF) | Temperature      |                       | CN (R) (B) (X7R) Characteristic |               |               |             | CN (X5R) Characteristic |               |               |
|------------------|------------------|-----------------------|---------------------------------|---------------|---------------|-------------|-------------------------|---------------|---------------|
|                  | Rated voltage(V) |                       | 50V                             | 25V           | 16V           | 10V         | 10V                     | 6.3V          |               |
|                  | Tolerance        | Product thickness(mm) | Product No.                     | Product No.   | Product No.   | Product No. | Product No.             | Product No.   |               |
| 1,000            | K (±10%)         | 0.6±0.1               | MCH215CN102KK                   |               |               |             |                         |               |               |
| 1,500            |                  |                       | MCH215CN152KK                   |               |               |             |                         |               |               |
| 2,200            |                  |                       | MCH215CN222KK                   |               |               |             |                         |               |               |
| 3,300            |                  |                       | MCH215CN332KK                   |               |               |             |                         |               |               |
| 4,700            |                  |                       | MCH215CN472KK                   |               |               |             |                         |               |               |
| 6,800            |                  |                       | MCH215CN682KK                   |               |               |             |                         |               |               |
| 10,000           |                  |                       | MCH215CN103KK                   |               |               |             |                         |               |               |
| 15,000           |                  |                       | MCH215CN153KK                   |               |               |             |                         |               |               |
| 22,000           |                  |                       | MCH215CN223KK                   |               |               |             |                         |               |               |
| 33,000           |                  |                       | MCH215CN333KK                   |               |               |             |                         |               |               |
| 47,000           |                  |                       | MCH215CN473KK                   |               |               |             |                         |               |               |
| 68,000           |                  |                       | 0.85±0.15                       | MCH215CN683KK |               |             |                         |               |               |
| 100,000          |                  |                       | 1.25±0.2                        | MCH215CN104KP |               |             |                         |               |               |
| 150,000          |                  |                       |                                 | MCH212CN154KP |               |             |                         |               |               |
| 220,000          |                  |                       |                                 | MCH212CN224KP |               |             |                         |               |               |
| 330,000          |                  |                       |                                 |               | MCH213CN334KP |             |                         |               |               |
| 470,000          |                  |                       |                                 |               | MCH213CN474KP |             |                         |               |               |
| 680,000          |                  |                       |                                 |               | MCH213CN684KP |             |                         |               |               |
| 1,000,000        |                  |                       |                                 |               | MCH213CN105KP |             |                         |               |               |
| 1,500,000        |                  |                       |                                 |               |               |             | MCH214CN155KP           |               |               |
| 2,200,000        |                  |                       |                                 |               |               |             | MCH214CN225KP           |               |               |
| 3,300,000        |                  |                       |                                 |               |               |             |                         | MCH214CN335KP |               |
| 4,700,000        |                  |                       |                                 |               |               |             |                         | MCH214CN475KP |               |
| 10,000,000       |                  | M (±20%)              |                                 |               |               |             |                         |               | MCH218CN106MP |

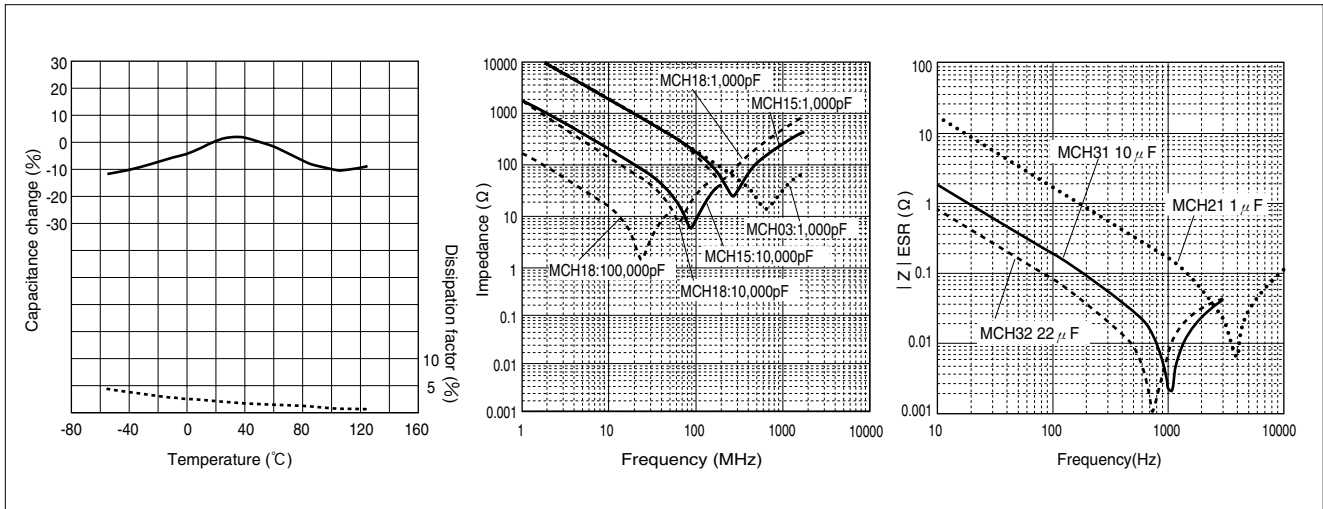
| Capacitance (pF) | Temperature      |                       | FN (F) (Y5V) Characteristic |               |               |  |
|------------------|------------------|-----------------------|-----------------------------|---------------|---------------|--|
|                  | Rated voltage(V) |                       | 50V                         | 16V           | 10V           |  |
|                  | Tolerance        | Product thickness(mm) | Product No.                 | Product No.   | Product No.   |  |
| 10,000           | Z (+80%, -20%)   | 0.6±0.1               | MCH215FN103ZK               |               |               |  |
| 22,000           |                  |                       | MCH215FN223ZK               |               |               |  |
| 47,000           |                  |                       | MCH215FN473ZK               |               |               |  |
| 100,000          |                  |                       | MCH215FN104ZK               |               |               |  |
| 1,000,000        |                  | 1.25±0.2              |                             | MCH213FN105ZP |               |  |
| 2,200,000        |                  |                       |                             | MCH213FN225ZP |               |  |
| 4,700,000        |                  |                       |                             | MCH213FN475ZP |               |  |
| 10,000,000       |                  |                       |                             |               | MCH214FN106ZP |  |

■ **Characteristics**

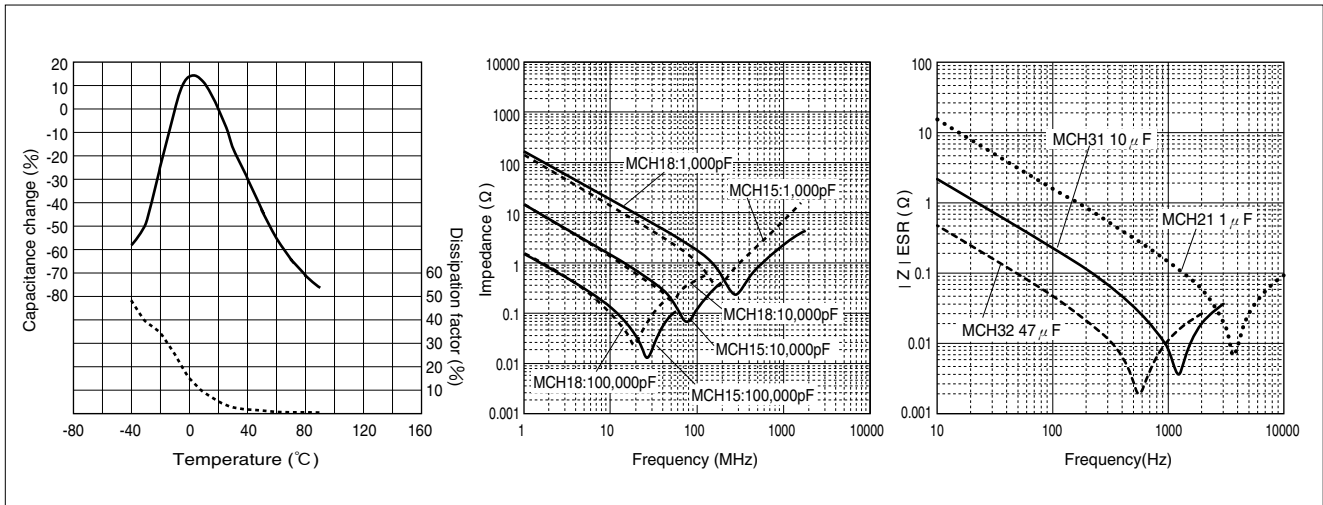
● **A (CG) (C0G) (CH) Characteristics**



● **CN (R) (B) (X5R) (X7R) Characteristics**



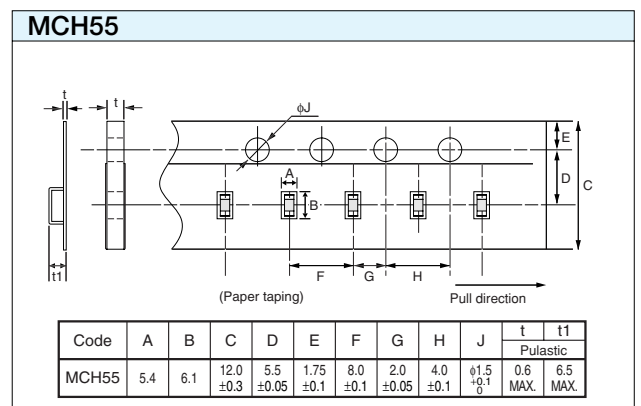
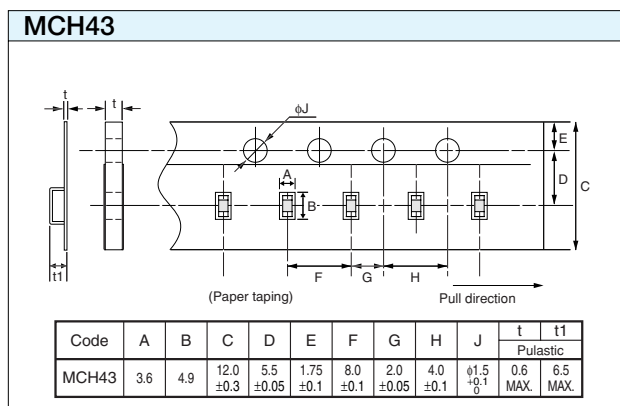
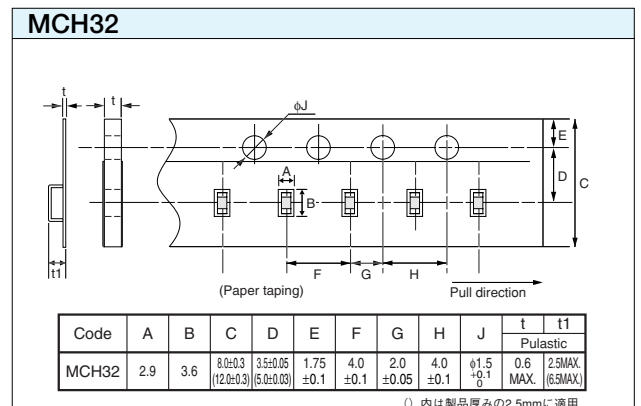
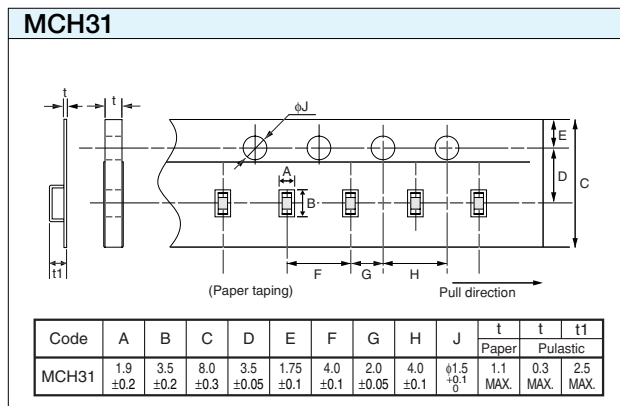
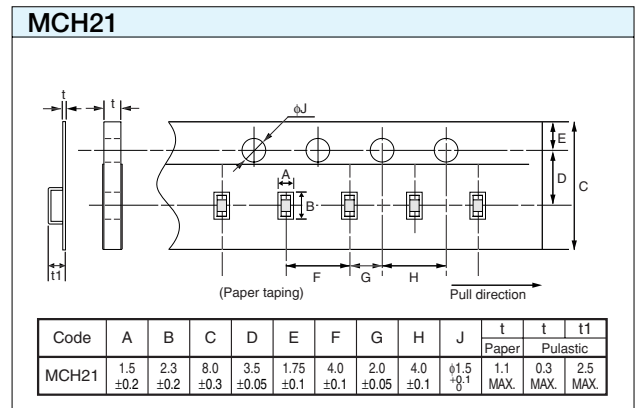
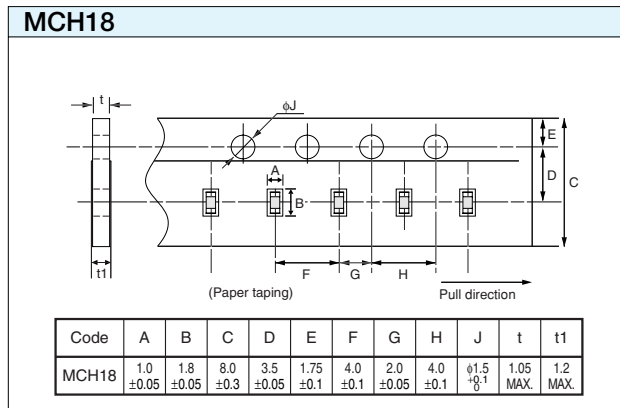
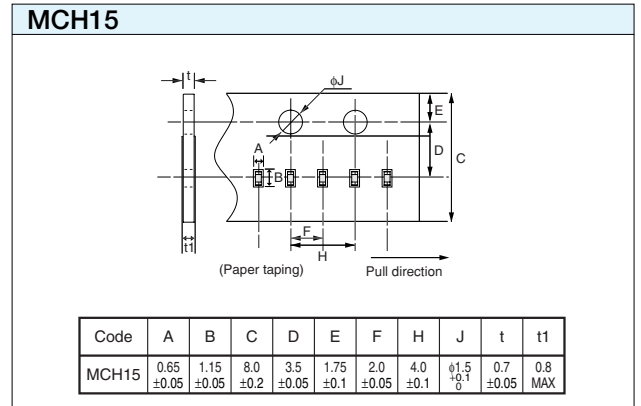
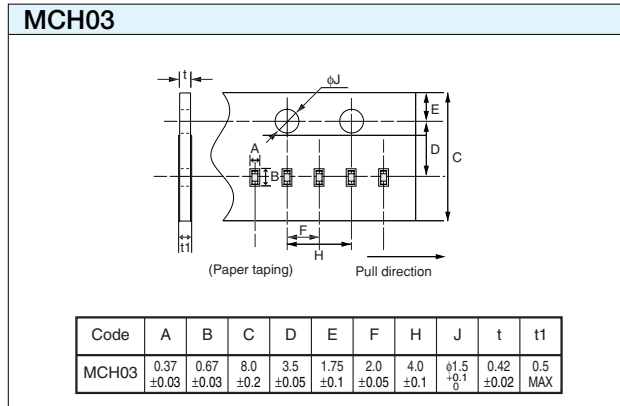
● **FN (F) (Y5V) Characteristics**





## ■ Packing specification

### ● Carrier tape dimensions (Unit:mm)

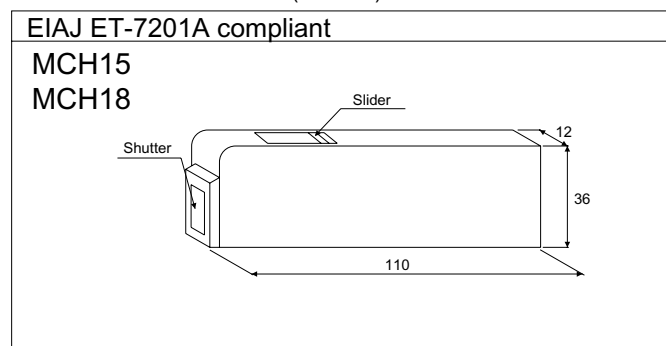


■ Packing specification

● Reel dimensions (Unit:mm)

| φ180mm Plastic reel  | φ330mm Plastic reel    |
|--|------------------------|
| <p>MCH03<br/>MCH15<br/>MCH18<br/>MCH21<br/>MCH31<br/>MCH32<br/>MCH43<br/>MCH55</p> | <p>MCH15<br/>MCH18</p> |

● Bulk case dimensions (Unit:mm)



● For fundamental considerations on capacitors, refer to Electric Industries Association of Japan, technical report, "EIAJ RCR-2333, Guideline of notabilia for fixed multilayer ceramic capacitors for use in electronic equipment".

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