# MKC, MKC-P Series

**(Resin encased Type Metallized Polyester Fiim Capacitors, Resin encased Type Metallized Polypropylene Film Capacitors for Aoutmobile)**

For HEV vehicles　DC-DC converter, the object for electric compressors, PHV, for EV vehicles　An in-vehicle charger etc. are the high reliability capacitors for automobile.

### Features

- Compact and high ripple current type.
- High moisture resistance.（85℃ / 85%RH）
- Various custum type.

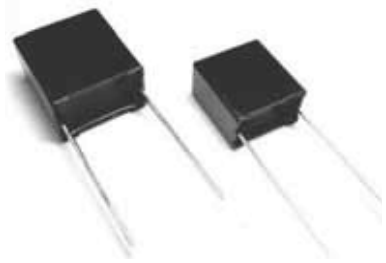
### Recommended Applications

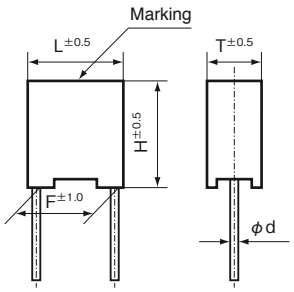
- DC-DC converter for HEV.
- Car charger for PHV and EV.
- Electric air compressors for HEV.

**MKC, and MKC-P Type Product Specifications**

| Items | Specifications | |
|---|---|---|
| Type of Series | MKC Type | MKC-P Type |
| Temperature Range | −40℃ ～ +125℃ | −40℃ ～ +105℃ |
| Rated Voltage | 35, 100V.DC | 250, 450V.DC |
| Capacitance Tolerance | ±5% (J), ±10% (K) | ±5% (J), ±10% (K) |
| Withstanding Voltage | Rated voltage×1.5, 1minute | Rated voltage×1.5, 1minute |
| Dielectric dissipation factor | 1.0% or less (20℃, 1kHz) | 0.1% or less (20℃, 1kHz) |
| Insulation resistance | 2,500/CR MΩ or more | 7,500/CR MΩ or more |

**Outline of drawings and dimensions**






Product symbol : (Example) MKC-P Series 450V.DC 1.0mF ±5%

**MKC-P-2W-105 J**

- Capacitance tolerance code
- Capacitance code
- Rated voltage code
- Type of series

MKC, and MKC-P Type Standard value and case size　(Unit : mm)

| Production name | R.V (V.dc) | Cap. (μF) | Size | | | | |
|---|---|---|---|---|---|---|---|
| | | | T | H | L | F | d |
| MKC-1V-106 | 35 | 10.0 | 10.0 | 18.5 | 15.0 | 12.5 | 0.8 |
| MKC-2A-395 | 100 | 3.9 | 11.0 | 20.5 | 17.0 | 15.0 | 0.8 |
| MKC-P-2E-185 | 250 | 1.8 | 11.0 | 20.5 | 17.0 | 15.0 | 0.8 |
| MKC-P-2W-474 | 450 | 0.47 | 10.5 | 18.5 | 17.0 | 15.0 | 0.8 |
| MKC-P-2W-105 | 450 | 1.0 | 12.5 | 22.5 | 20.0 | 17.5 | 1.0 |

∗For ratings that are not described in the table., ask us for further information.

# MKC-JS Series (Resin-encased Metallized Polyester Film Capacitors)

The MKC-JS series is developed to offer capacitors that have an increased moisture resistance and receive wide use in automotive electrical components, communications devices, and other electronic equipment. It guarantees a rated voltage load of 85℃ , 85% RH, and 500 hours.

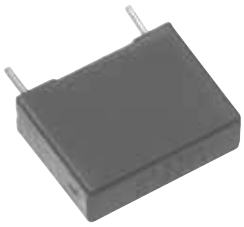
- The employed case and resin parts are made of the 94 V-0 flame-resistant material.
- A lead pitch of 10 mm is employed for the entire series.

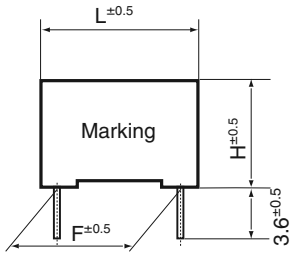
**Product Specifications**

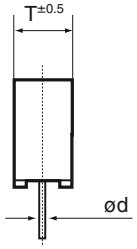
| Items | Specifications | |
|---|---|---|
| Temperature range | −40℃ ～ +85℃ （+105℃, with derating over 85℃） | |
| Rated voltage | 100 V.DC | |
| Capacitance tolerance | ±10% (K) | |
| Dielectric dissipation factor | 0.8% or less (20℃, 1KHz) | |
| Withstanding voltage | Between terminals | Rated voltage (V.DC)×1.5 for one min |
| | Between terminal and outside coating | Rated voltage (V.DC)×2.0 for 1 to 5 seconds |
| Insulation resistance | $C_R \leq 0.33\,\mu F$ 9,000MΩ or more | |
| | $C_R > 0.33\,\mu F$ 3,000 / $C_R$ MΩ or more | |
| Related standard | Subject to JIS C 5101-1 and JIS C 5101-2. | |

$C_R$ : Capacitance ( $\mu$ F)

**Outline of drawings and dimensions**






Product symbol : (Example) MKC-JS Series 100V.DC 1.0mF ±10%

**MKC-JS-2A-105 K**

- K — Capacitance tolerance code
- 105 — Capacitance code
- 2A — Rated voltage code
- MKC-JS — Type of series

Standard value and case size (Unit : mm)

| Capacitance | | Rated voltage (100V.DC) | | | | |
|---|---|---|---|---|---|---|
| μF | Code | T | H | L | F | d |
| 0.1 | 104 | 4.0 | 10.0 | 13.0 | 10.0 | 0.6 |
| 0.15 | 154 | 4.0 | 10.0 | 13.0 | 10.0 | 0.6 |
| 0.22 | 224 | 4.0 | 10.0 | 13.0 | 10.0 | 0.6 |
| 0.33 | 334 | 4.0 | 10.0 | 13.0 | 10.0 | 0.6 |
| 0.47 | 474 | 5.0 | 11.5 | 13.0 | 10.0 | 0.6 |
| 0.58 | 684 | 5.0 | 11.5 | 13.0 | 10.0 | 0.6 |
| 1.0 | 105 | 6.0 | 12.0 | 13.0 | 10.0 | 0.6 |
| 1.5 | 155 | 7.5 | 13.5 | 13.0 | 10.0 | 0.6 |

## Packaging of Plastic Film Capacitors

The following packaging types are available for automatic mounting.

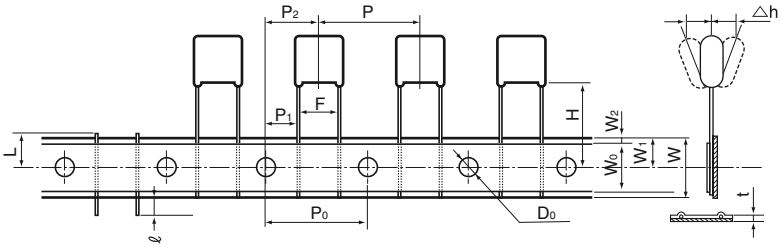
| Packaging \ Capacitor type | MDDSA | MDD-HF | MKC-JS |
|---|---|---|---|
| Lead taping ∗1 | ○ | ○ | |
| Stick magazine | | | ○ |

∗1 : For capacitors having a lead pitch of 15 mm or less.

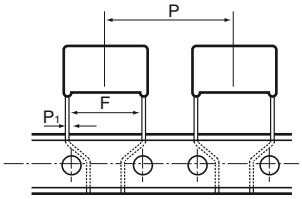
## Lead Taping for Dip Type Capacitor

Taping types and outline drawings

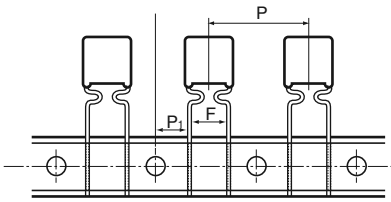
Taping type A



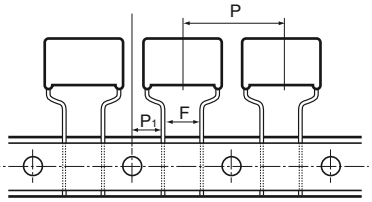

Taping type B



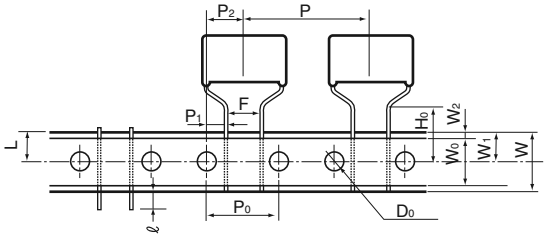

Taping type C




Taping type D




Taping type E




(Unit : mm)

| Item | | | Code | Dimension | Dimension tplerance | Individual dimensions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Formed or not | | | | | | Not formed (straight) | | | | | Formed | | | | |
| Taping type code | | | | | | | | T | | | T2C2 | T2C3 | T2I4 | T2I5 | T2I6 |
| Outline drawing | | | | | | A | A | A | B | B | C | C | D | E | E |
| Product lead pitch (F) | | | | Each dimensions | — | 5.0 | 7.5 | 10.0 | 12.5 | 15.0 | 5.0 | 7.5 | 10.0 | 12.5 | 15.0 |
| Taping dimensions | | | | — | Each dimensions | ± 1.0 | ± 1.0 | ± 1.5 | ± 1.5 | ± 1.5 | ± 1.0 | ± 1.0 | ± 1.5 | ± 1.5 | ± 1.5 |
| Taping dimensions | 1 | Taping lead pitch | F | Each dimensions | ± 0.5 | 5.0 | 7.5 | 10.0 | 12.5 | 15.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| | 2 | Feed hole pitch | $P_0$ (∗1) | 12.7 | ± 0.3 | | | | | | | | | | |
| | 3 | Feed hole displacement | $P_2$ | 6.35 | ± 1.3 | | | | | | | | | | |
| | | | $P_1$ (∗2) | — | Each dimensions | 3.85 | 2.60 | 1.35 | 0.10 | 1.15 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 |
| | 4 | Inter-product distance | P (∗2) | — | ± 1.0 | 12.7 | 12.7 | 12.7 | 25.4 | 25.4 | 12.7 | 12.7 | 12.7 | 25.4 | 25.4 |
| | 5 | Tape width | W (∗3) | 18.0 | $^{+1.0}_{-0.5}$ | | | | | | | | | | |
| | 6 | Adhesive tape width | $W_0$ | 12.5 | MIN | | | | | | | | | | |
| | 7 | Feed hole displacement | $W_1$ | 9.0 | ± 0.5 | | | | | | | | | | |
| | 8 | Adhesive tape displacement | $W_2$ (∗3) | 3.0 | MAX | | | | | | | | | | |
| | 9 | Length to hole center | H | 20.5 | ± 0.75 | | | | | | | | | | |
| | 10 | Lead clinch height | $H_0$ (∗4) | 16.0 | ± 0.5 | | | | | | | | | | |
| | 11 | Feed hole diameter | $D_0$ | 4.0 | ± 0.2 | | | | | | | | | | |
| | 12 | Non-standard product cutting position | L | 11.0 | MAX | | | | | | | | | | |
| | 13 | Lead displacement length | ℓ | 1.0 | MAX | | | | | | | | | | |
| | 14 | Tape thickness (overall) | t | 0.6 | ± 0.3 | | | | | | | | | | |
| | 15 | Inolination limits | △ h (∗5) | 0 | ± 2.0 | | | | | | | | | | |
| Other | | | Subject to JIS C 0806-2 | | | | | | | | | | | | |

(∗1) Maximum allowance of pitch tolerance for 20 pitch should be ±1.0mm.

(∗2) Measuring point is upper end of taping and between center of lead wire.

(∗3) Adhesive tape should not be exceeded to the carrier tape.

(∗4) Measuring point is at the bottom of forming crinch.

(∗5) Measuring point is top of the component.

## Product Symbol for Dip Type Capacitor

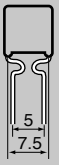
Example : MDDSA Series 100V.DC 0.47mF ±10% Taping type C

**MDDSA-2A-474 K T 2 C 3**

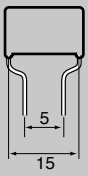
- Symbol of Taping type code
- Product lead pitch code
- Type of lead forming
- After-forming lead pitch code
- Taping or not: Taped: T / Not taped: (blank)
- Capacitance code
- Rated voltage code
- Capacitance tolerance code
- Type of series

Examples of taping code

Symbol: C
Examples: 2C3




Symbol: I
Examples: 2I6




Lead pitch codes-product and after-forming

| Code | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Dimension (F) | 5 | 7.5 | 10 | 12.5 | 15 |

## Taping Types and Packed Quantities for MDDSA Type Capacitor

| Capacitance | | Rated voltage (Code) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 100V.DC (2A) | | 250V.DC (2E) | | 400V.DC (2G) | | 630V.DC (2J) | |
| μF | Code | Taping type | Quantity per pack | Taping type | Quantity per pack | Taping type | Quantity per pack | Taping type | Quantity per pack |
| 0.010 | 103 | A, C | 2,000 | A, C | 2,000 | A, C | 2,000 | A, D | 2,000 |
| 0.012 | 123 | A, C | 2,000 | A, C | 2,000 | A, C | 2,000 | A, D | 2,000 |
| 0.015 | 153 | A, C | 2,000 | A, C | 2,000 | A, C | 2,000 | A, D | 1,500 |
| 0.018 | 183 | A, C | 2,000 | A, C | 2,000 | A, C | 2,000 | A, D | 1,500 |
| 0.022 | 223 | A, C | 2,000 | A, C | 2,000 | A, C | 2,000 | A, D | 1,500 |
| 0.027 | 273 | A, C | 2,000 | A, C | 2,000 | A, C | 2,000 | A, D | 1,500 |
| 0.033 | 333 | A, C | 2,000 | A, C | 2,000 | A, C | 1,500 | A, D | 1,000 |
| 0.039 | 393 | A, C | 2,000 | A, C | 2,000 | A, D | 2,000 | A, D | 1,000 |
| 0.047 | 473 | A, C | 2,000 | A, C | 2,000 | A, D | 2,000 | A, D | 1,000 |
| 0.056 | 563 | A, C | 2,000 | A, C | 2,000 | A, D | 1,500 | B, E | 500 |
| 0.068 | 683 | A, C | 2,000 | A, C | 2,000 | A, D | 1,500 | B, E | 500 |
| 0.082 | 823 | A, C | 2,000 | A, C | 2,000 | A, D | 1,500 | B, E | 500 |
| 0.10 | 104 | A, C | 2,000 | A, C | 1,500 | A, D | 1,500 | B, E | 500 |
| 0.12 | 124 | A, C | 2,000 | A, C | 1,500 | B, E | 500 | B, E | 500 |
| 0.15 | 154 | A, C | 2,000 | A, C | 1,000 | B, E | 500 | B, E | 500 |
| 0.18 | 184 | A, C | 2,000 | A, D | 1,500 | B, E | 500 | | |
| 0.22 | 224 | A, C | 2,000 | A, D | 1,500 | B, E | 500 | | |
| 0.27 | 274 | A, C | 1,500 | A, D | 1,000 | B, E | 500 | | |
| 0.33 | 334 | A, C | 1,500 | A, D | 1,000 | B, E | 500 | | |
| 0.39 | 394 | A, C | 1,000 | B, E | 500 | B, E | 500 | | |
| 0.47 | 474 | A, C | 1,000 | B, E | 500 | B, E | 500 | | |
| 0.56 | 564 | A, D | 1,500 | B, E | 500 | | | | |
| 0.68 | 684 | A, D | 1,500 | B, E | 500 | | | | |
| 0.82 | 824 | A, D | 1,000 | B, E | 500 | | | | |
| 1.0 | 105 | A, D | 1,000 | B, E | 500 | | | | |
| 1.2 | 125 | B, E | 500 | B, E | 500 | | | | |
| 1.5 | 155 | B, E | 500 | | | | | | |
| 1.8 | 185 | B, E | 500 | | | | | | |
| 2.2 | 225 | B, E | 500 | | | | | | |
| 2.7 | 275 | B, E | 500 | | | | | | |
| 3.3 | 335 | B, E | 400 | | | | | | |

# MDDSA Series (Small Type Metallized Polyester Capacitors)

MDDSA series is the reduced size of conventional MDD type, light weight and high reliability metallized polyester film capacitors.

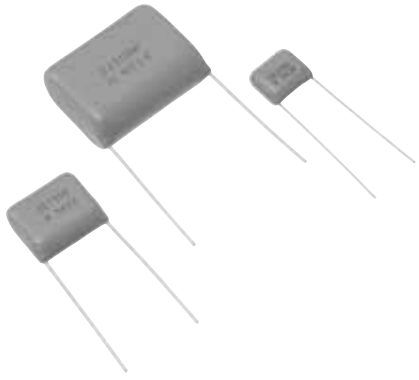
- The size is reduced by 40 to 50% of conventional MDD type.
- The capacitance range is extended from 0.01 μF to 10 μF.
- Humidity resistance is greatly improved through special production technique.
- Excellent in flame retardant property with outside coating of flame resistance epoxy resin.
- Tracking resistance is improved.
- For lead forming and taping, see page 231 and 232.

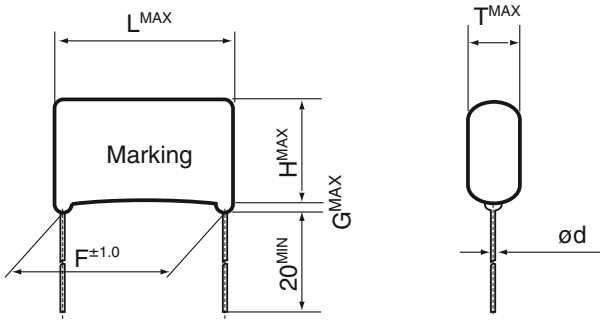
**Product Specifications**

| Items | Specifications | |
|---|---|---|
| Temperature range | −40℃ ～ +85℃ （+105℃, with derating over 85℃） | |
| Rated voltage | 100～630 V.DC | |
| Capacitance tolerance | ±5% (J), ±10% (K), ±20% (M) | |
| Dielectric dissipation factor | 0.8% or less (20℃, 1KHz) | |
| Withstanding voltage | Between terminals | Rated voltage (V.DC)×1.4 for one min |
| | Between terminal and outside coating | Rated voltage (V.DC)×2.0 for 1 to 5 seconds |
| Insulation resistance | $C_R \leq 0.33\,\mu F$ 7,500MΩ or more | |
| | $C_R > 0.33\,\mu F$ 2,500 / $C_R$ MΩ or more | |
| Related standard | Subject to JIS C 5101-1 and JIS C 5101-2. | |

$C_R$ : Capacitance ( μF)

**Outline of drawings and dimensions**






G : 1.0 mm when F Dimension is less than 7.5 mm.
1.5 mm when F Dimension is more than 10 mm.

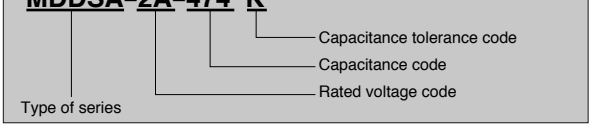
## Standard value and case size

(Unit : mm)

| Capacitance | | Rated voltage (Code) | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 100V.DC (2A) | | | | | 250V.DC (2E) | | | | | 400V.DC (2G) | | | | | 630V.DC (2J) | | | | |
| μF | Code | T | H | L | F | d | T | H | L | F | d | T | H | L | F | d | T | H | L | F | d |
| 0.010 | 103 | 4.5 | 7.5 | 8.5 | 5.0 | 0.5 | 4.5 | 8.0 | 10.0 | 7.5 | 0.6 | 4.5 | 8.0 | 10.0 | 7.5 | 0.6 | 4.5 | 8.0 | 12.5 | 10.0 | 0.6 |
| 0.012 | 123 | 4.5 | 7.5 | 8.5 | 5.0 | 0.5 | 4.5 | 8.5 | 10.0 | 7.5 | 0.6 | 4.5 | 8.5 | 10.0 | 7.5 | 0.6 | 4.5 | 8.5 | 12.5 | 10.0 | 0.6 |
| 0.015 | 153 | 4.5 | 7.5 | 8.5 | 5.0 | 0.5 | 4.5 | 8.0 | 10.0 | 7.5 | 0.6 | 4.5 | 8.0 | 10.0 | 7.5 | 0.6 | 5.0 | 9.0 | 12.5 | 10.0 | 0.6 |
| 0.018 | 183 | 4.5 | 7.5 | 8.5 | 5.0 | 0.5 | 4.5 | 8.0 | 10.0 | 7.5 | 0.6 | 4.5 | 8.0 | 10.0 | 7.5 | 0.6 | 5.0 | 9.5 | 12.5 | 10.0 | 0.6 |
| 0.022 | 223 | 4.5 | 7.5 | 8.5 | 5.0 | 0.5 | 4.5 | 8.0 | 10.0 | 7.5 | 0.6 | 4.5 | 8.0 | 10.0 | 7.5 | 0.6 | 5.5 | 10.0 | 12.5 | 10.0 | 0.6 |
| 0.027 | 273 | 4.5 | 7.5 | 8.5 | 5.0 | 0.5 | 4.5 | 8.0 | 10.0 | 7.5 | 0.6 | 5.0 | 8.5 | 10.0 | 7.5 | 0.6 | 5.5 | 11.0 | 12.5 | 10.0 | 0.6 |
| 0.033 | 333 | 4.5 | 7.5 | 8.5 | 5.0 | 0.5 | 4.5 | 8.0 | 10.0 | 7.5 | 0.6 | 5.0 | 9.0 | 10.0 | 7.5 | 0.6 | 6.0 | 11.5 | 12.5 | 10.0 | 0.6 |
| 0.039 | 393 | 4.5 | 7.5 | 8.5 | 5.0 | 0.5 | 4.5 | 8.0 | 10.0 | 7.5 | 0.6 | 4.5 | 8.0 | 12.5 | 10.0 | 0.6 | 6.5 | 12.0 | 12.5 | 10.0 | 0.6 |
| 0.047 | 473 | 4.5 | 8.0 | 8.5 | 5.0 | 0.5 | 4.5 | 8.0 | 10.0 | 7.5 | 0.6 | 4.5 | 9.0 | 12.5 | 10.0 | 0.6 | 7.5 | 12.5 | 12.5 | 10.0 | 0.6 |
| 0.056 | 563 | 4.5 | 8.0 | 8.5 | 5.0 | 0.5 | 4.5 | 8.0 | 10.0 | 7.5 | 0.6 | 5.0 | 9.0 | 12.5 | 10.0 | 0.6 | 5.5 | 11.0 | 18.0 | 15.0 | 0.6 |
| 0.068 | 683 | 4.5 | 8.0 | 8.5 | 5.0 | 0.5 | 4.5 | 8.5 | 10.0 | 7.5 | 0.6 | 5.5 | 9.5 | 12.5 | 10.0 | 0.6 | 6.0 | 11.5 | 18.0 | 15.0 | 0.6 |
| 0.082 | 823 | 4.5 | 8.0 | 8.5 | 5.0 | 0.5 | 4.5 | 9.0 | 10.0 | 7.5 | 0.6 | 5.5 | 10.5 | 12.5 | 10.0 | 0.6 | 6.0 | 13.0 | 18.0 | 15.0 | 0.6 |
| 0.10 | 104 | 4.5 | 8.0 | 8.5 | 5.0 | 0.5 | 5.0 | 9.0 | 10.0 | 7.5 | 0.6 | 6.0 | 11.0 | 12.5 | 10.0 | 0.6 | 6.5 | 13.5 | 18.0 | 15.0 | 0.6 |
| 0.12 | 124 | 4.5 | 8.0 | 10.0 | 7.5 | 0.6 | 5.5 | 9.5 | 10.0 | 7.5 | 0.6 | 5.0 | 10.0 | 18.0 | 15.0 | 0.6 | 7.5 | 14.0 | 18.0 | 15.0 | 0.8 |
| 0.15 | 154 | 4.5 | 8.5 | 10.0 | 7.5 | 0.6 | 6.0 | 10.0 | 10.0 | 7.5 | 0.6 | 5.0 | 10.5 | 18.0 | 15.0 | 0.6 | 8.0 | 15.0 | 18.0 | 15.0 | 0.8 |
| 0.18 | 184 | 4.5 | 8.5 | 10.0 | 7.5 | 0.6 | 5.0 | 10.0 | 12.5 | 10.0 | 0.6 | 5.5 | 11.0 | 18.0 | 15.0 | 0.6 | 9.0 | 15.5 | 18.0 | 15.0 | 0.8 |
| 0.22 | 224 | 5.0 | 8.5 | 10.0 | 7.5 | 0.6 | 5.5 | 10.5 | 12.5 | 10.0 | 0.6 | 6.0 | 12.0 | 18.0 | 15.0 | 0.6 | 9.5 | 16.5 | 18.0 | 15.0 | 0.8 |
| 0.27 | 274 | 5.0 | 9.0 | 10.0 | 7.5 | 0.6 | 6.0 | 11.0 | 12.5 | 10.0 | 0.6 | 6.5 | 12.5 | 18.0 | 15.0 | 0.8 | 7.5 | 17.5 | 25.5 | 22.5 | 0.8 |
| 0.33 | 334 | 5.5 | 9.5 | 10.0 | 7.5 | 0.6 | 6.5 | 11.5 | 12.5 | 10.0 | 0.6 | 7.0 | 12.5 | 18.0 | 15.0 | 0.8 | 8.0 | 18.5 | 25.5 | 22.5 | 0.8 |
| 0.39 | 394 | 6.0 | 9.5 | 10.0 | 7.5 | 0.6 | 5.0 | 12.0 | 18.0 | 15.0 | 0.6 | 7.0 | 14.0 | 18.0 | 15.0 | 0.8 | 9.0 | 19.0 | 25.5 | 22.5 | 0.8 |
| 0.47 | 474 | 6.5 | 10.0 | 10.0 | 7.5 | 0.6 | 5.5 | 12.0 | 18.0 | 15.0 | 0.6 | 8.0 | 14.5 | 18.0 | 15.0 | 0.8 | 10.0 | 20.0 | 25.5 | 22.5 | 0.8 |
| 0.56 | 564 | 5.5 | 10.5 | 12.5 | 10.0 | 0.6 | 6.0 | 12.5 | 18.0 | 15.0 | 0.6 | 7.0 | 14.0 | 25.5 | 22.5 | 0.8 | 11.0 | 21.0 | 25.5 | 22.5 | 0.8 |
| 0.68 | 684 | 5.5 | 11.0 | 12.5 | 10.0 | 0.6 | 6.5 | 13.0 | 18.0 | 15.0 | 0.8 | 7.5 | 14.5 | 25.5 | 22.5 | 0.8 | 12.0 | 22.5 | 25.5 | 22.5 | 0.8 |
| 0.82 | 824 | 6.0 | 11.5 | 12.5 | 10.0 | 0.6 | 7.0 | 14.0 | 18.0 | 15.0 | 0.8 | 7.5 | 16.0 | 25.5 | 22.5 | 0.8 | 12.0 | 22.5 | 30.5 | 27.5 | 0.8 |
| 1.0 | 105 | 6.5 | 12.0 | 12.5 | 10.0 | 0.6 | 7.5 | 14.5 | 18.0 | 15.0 | 0.8 | 8.5 | 17.0 | 25.5 | 22.5 | 0.8 | 13.5 | 24.0 | 30.5 | 27.5 | 0.8 |
| 1.2 | 125 | 5.5 | 12.0 | 18.0 | 15.0 | 0.8 | 8.5 | 15.0 | 18.0 | 15.0 | 0.8 | 9.5 | 18.0 | 25.5 | 22.5 | 0.8 | 15.0 | 25.0 | 30.5 | 27.5 | 0.8 |
| 1.5 | 155 | 6.0 | 12.5 | 18.0 | 15.0 | 0.8 | 9.0 | 16.0 | 18.0 | 15.0 | 0.8 | 9.0 | 18.0 | 30.5 | 27.5 | 0.8 | 16.5 | 27.0 | 30.5 | 27.5 | 0.8 |
| 1.8 | 185 | 6.5 | 13.0 | 18.0 | 15.0 | 0.8 | 8.0 | 15.0 | 25.5 | 22.5 | 0.8 | 10.0 | 19.0 | 30.5 | 27.5 | 0.8 | 18.5 | 29.0 | 30.5 | 27.5 | 0.8 |
| 2.2 | 225 | 7.0 | 14.0 | 18.0 | 15.0 | 0.8 | 9.0 | 16.0 | 25.5 | 22.5 | 0.8 | 11.0 | 20.0 | 30.5 | 27.5 | 0.8 | 21.5 | 31.5 | 30.5 | 27.5 | 0.8 |
| 2.7 | 275 | 8.0 | 14.5 | 18.0 | 15.0 | 0.8 | 10.0 | 17.0 | 25.5 | 22.5 | 0.8 | | | | | | | | | | |
| 3.3 | 335 | 8.5 | 16.0 | 18.0 | 15.0 | 0.8 | 11.0 | 18.0 | 25.5 | 22.5 | 0.8 | | | | | | | | | | |
| 3.9 | 395 | 7.5 | 14.5 | 25.5 | 22.5 | 0.8 | 11.5 | 20.0 | 25.5 | 22.5 | 0.8 | | | | | | | | | | |
| 4.7 | 475 | 7.5 | 16.5 | 25.5 | 22.5 | 0.8 | 12.5 | 21.0 | 25.5 | 22.5 | 0.8 | | | | | | | | | | |
| 5.6 | 565 | 8.5 | 17.0 | 25.5 | 22.5 | 0.8 | 12.0 | 21.0 | 30.5 | 27.5 | 0.8 | | | | | | | | | | |
| 6.8 | 685 | 9.5 | 18.5 | 25.5 | 22.5 | 0.8 | 14.0 | 22.0 | 30.5 | 27.5 | 0.8 | | | | | | | | | | |
| 8.2 | 825 | 11.0 | 20.0 | 25.5 | 22.5 | 0.8 | 15.0 | 23.0 | 30.5 | 27.5 | 0.8 | | | | | | | | | | |
| 10.0 | 106 | 11.5 | 21.0 | 25.5 | 22.5 | 0.8 | 16.5 | 25.0 | 30.5 | 27.5 | 0.8 | | | | | | | | | | |

For taping, ask us for further information.

Product symbol : (Example) MDDSA Series 100V.DC 0.47mF ±10%



# MDD-HD(4) Series

**(Resin Dip Type Metallized Polyester Film Capacitors for PFC use only)**

## Features

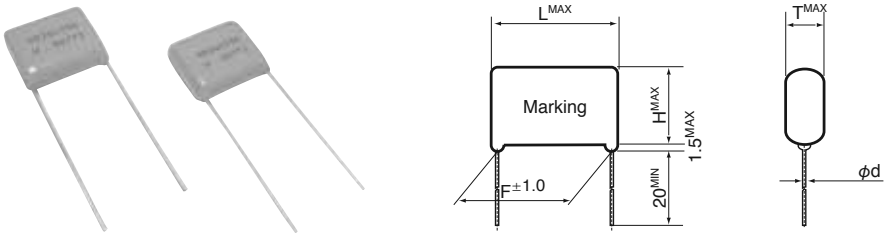
- The size reduced by 35% of conventional.
- Improve of pulse current resistance with the technology for Automobile.
- Flame retardant epoxy resin（UL94V-0）coating type.

## Product Specifications

| Items | Specifications |
|---|---|
| Temperature range | −40℃～+85℃（+105℃ with derating over 85℃） |
| Rated voltage | 450 V.DC |
| Capacitance tolerance | ±10% (K) |
| Dielectric dissipation factor | 0.8% or less (20℃, 1KHz) |
| Withstanding voltage | Rated voltage (V.DC)×1.4 |
| Insulation resistance | Between terminals \| 2,500 / $C_R$ MΩ or more |
| Related standard | Subject to JIS C 5101-1 and JIS C 5101-2 |

$C_R$ : Capacitance ( $\mu$ F)

## Outline of drawings and dimensions




Desingnasion : (Example) MDD-HD(4) Series 450V.DC 1.0mF±10%

**MDD-HD – 2W – 105 K 4**

- MDD-HD: Type of series
- 2W: Rated voltage code
- 105: Capacitance code
- K: Capacitance tolerance code
- 4: Suffix

Standard value and case size

(Unit : mm)

| No. | Production name | Cap. ( $\mu$ F) | Tol. (%) | R.V (VDC) | Size | | | | | $I_{0}$-p |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | T | H | L | F | d | $A_{0}$-p |
| 1 | MDD-HD-2W-474K4 | 0.47 | ± 10 | 450 | 6.8 | 13.8 | 12.5 | 10.0 | 0.6 | 14.0 |
| 2 | MDD-HD-2W-684K4 | 0.68 | ± 10 | 450 | 5.5 | 13.5 | 17.8 | 15.0 | 0.8 | 11.0 |
| 3 | MDD-HD-2W-105K4 | 1.0 | ± 10 | 450 | 7.0 | 15.5 | 17.8 | 15.0 | 0.8 | 16.0 |
| 4 | MDD-HD-2W-155K4 | 1.5 | ± 10 | 450 | 6.8 | 15.5 | 25.5 | 22.5 | 0.8 | 15.0 |
| 5 | MDD-HD-2W-225K4 | 2.2 | ± 10 | 450 | 8.5 | 17.0 | 25.5 | 22.5 | 0.8 | 22.0 |

# MDD-HD（4HS） Series

**(Resin Dip Type Metallized Polyester Film Capacitors for PFC use only)**

## Features

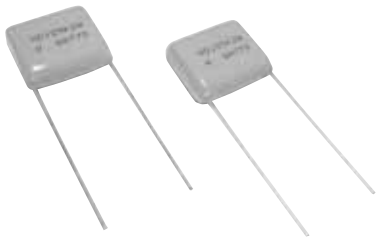
- The size reduced by 25% of conventional.
- Improve of pulse current resistance with the technology for Automobile.
- The buzz noise reduced by 10dB of conventional.
- Flame retardant epoxy resin（UL94V-0）coating type.

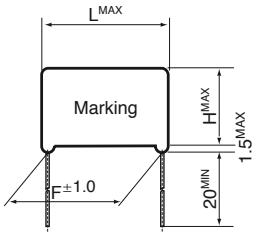
## Product Specifications

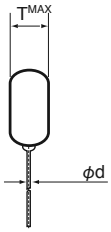
| Items | Specifications |
|---|---|
| Temperature range | −40℃～+85℃（+105℃ with derating over 85℃） |
| Rated voltage | 450 V.DC |
| Capacitance tolerance | ±10% (K) |
| Dielectric dissipation factor | 0.8% or less (20℃, 1KHz) |
| Withstanding voltage | Rated voltage (V.DC)×1.4 |
| Insulation resistance | Between terminals \| 2,500 / $C_R$ MΩ or more |
| Related standard | Subject to JIS C 5101-1 and JIS C 5101-2 |

$C_R$ : Capacitance ( $\mu$ F)

## Outline of drawings and dimensions






Desingnasion : (Example) MDD-HD(4HS) Series 450V.DC 1.0mF±10%

**MDD-HD – 2W – 105 K 4HS**

- 4HS — Suffix
- K — Capacitance tolerance code
- 105 — Capacitance code
- 2W — Rated voltage code
- MDD-HD — Type of series

Standard value and case size

(Unit : mm)

| No. | Production name | Cap. ( $\mu$ F) | Tol. (%) | R.V (VDC) | Size T | Size H | Size L | Size F | Size d | $I_{0\text{-}p}$ / $A_{0\text{-}p}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MDD-HD-2W-474K4HS | 0.47 | ± 10 | 450 | 8.0 | 15.0 | 12.5 | 10.0 | 0.6 | 15.0 |
| 2 | MDD-HD-2W-684K4HS | 0.68 | ± 10 | 450 | 6.5 | 15.0 | 17.8 | 15.0 | 0.8 | 12.0 |
| 3 | MDD-HD-2W-105K4HS | 1.0 | ± 10 | 450 | 8.0 | 16.5 | 17.8 | 15.0 | 0.8 | 18.0 |
| 4 | MDD-HD-2W-155K4HS | 1.5 | ± 10 | 450 | 8.0 | 16.5 | 25.5 | 22.5 | 0.8 | 16.0 |
| 5 | MDD-HD-2W-225K4HS | 2.2 | ± 10 | 450 | 9.5 | 19.0 | 25.5 | 22.5 | 0.8 | 24.0 |

# MDD-P（4） Series

**(Resin Dip Type Metallized Polypropylene Film Capacitors for PFC use only)**

## Features

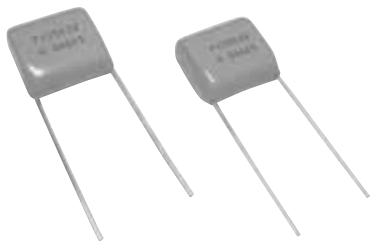
- Self-healing and high frequency characteristc due to polypropylene film and non-inductive construction.
- Flame retardant epoxy resin（UL94V−0）coating type.

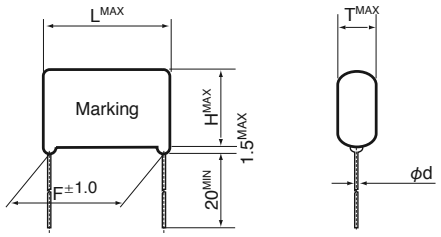
## Product Specifications

| Items | Specifications |
|---|---|
| Temperature range | −40℃ ～ +85℃ |
| Rated voltage | 450 V.DC |
| Capacitance tolerance | ±10% (K) |
| Dielectric dissipation factor | 0.1% or less (20℃, 1KHz) |
| Withstanding voltage | Rated voltage (V.DC)×1.4 |
| Insulation resistance | Between terminals \| 7,500 / $C_R$ MΩ or more |
| Related standard | Subject to JIS C 5101-1 and JIS C 5101-16 |

$C_R$ : Capacitance ( μF)

## Outline of drawings and dimensions






Desingnasion : (Example) MDD-P(4) Series 450V.DC 1.0mF±10%

**MDD-P – 2W – 105 K 4**

- 4 — Suffix
- K — Capacitance tolerance code
- 105 — Capacitance code
- 2W — Rated voltage code
- MDD-P — Type of series

Standard value and case size

(Unit : mm)

| No. | Production name | Cap. ( μF) | Tol. (%) | R.V (VDC) | Size | | | | | $I_{o\text{-}p}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | T | H | L | F | d | $A_{o\text{-}p}$ |
| 1 | MDD-P-2W-474K4 | 0.47 | ± 10 | 450 | 8.3 | 15.4 | 12.5 | 10.0 | 0.6 | 19.0 |
| 2 | MDD-P-2W-684K4 | 0.68 | ± 10 | 450 | 7.5 | 14.2 | 17.8 | 15.0 | 0.8 | 15.0 |
| 3 | MDD-P-2W-105K4 | 1.0 | ± 10 | 450 | 9.2 | 15.8 | 17.8 | 15.0 | 0.8 | 22.0 |
| 4 | MDD-P-2W-155K4 | 1.5 | ± 10 | 450 | 8.3 | 16.5 | 25.5 | 22.5 | 0.8 | 21.0 |
| 5 | MDD-P-2W-225K4 | 2.2 | ± 10 | 450 | 9.8 | 18.0 | 25.5 | 22.5 | 0.8 | 31.0 |

# MDD-HF Series (High-frequency Current, Resin Dip Type PPS Film Capacitors)

PPS film based, dip type film capacitors which are developed on the basis of the MDD capacitor production technology to offer increased heat resistance and enhanced performance characteristics.

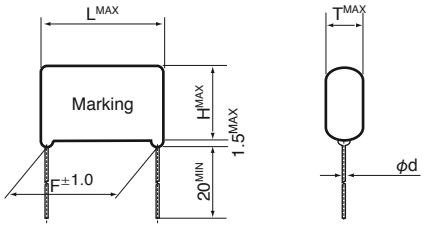
### Features

- Offers excellent electrical performance characteristics and remains stable relative to temperature, frequency, and voltage.
- Exhibits increased heat resistance.
- Excels in loss characteristics and generates a minimum of heat at high frequency.
- Refer to page 231 and 232 for lead wire forming and taping type.

### Product Specifications

| Items | Specifications |
|---|---|
| Temperature range | −40℃ ~ +105℃ (+125℃, with derating over 105℃) |
| Rated voltage | 100, 250 V.DC |
| Capacitance tolerance | ±5% (J), ±10% (K)) |
| Dielectric dissipation factor | 0.1% or less (20℃, 1KHz) |
| Withstanding voltage | Rated voltage (V.DC)×1.5 for one min. |
| Insulation resistance | 15,000 MΩ or more. |

### Outline of drawings and dimensions




Product symbol : (Example) MDD-HF Series 100V.DC 0.1mF ±10%

**MDD-HF−2A−104 K T 2C3**

- 2C3 — Forming
- T — With or without taping
- K — Capacitance tolerance code
- 104 — Capacitance code
- 2A — Rated voltage code
- MDD-HF — Type of series

Standard value and case size

(Unit : mm)

| Capacitance | | Rated voltage (100V.DC) | | | | | | | | Rated voltage (250V.DC) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 100V.DC (2A) | | | | | | | | 250V.DC (2E) | | | | | | | |
| μF | Code | T | H | L | F | f | d | Taping type | Package quantity / case | T | H | L | F | f | d | Taping type | Package quantity/case |
| 0.010 | 103 | 4.5 | 7.5 | 8.5 | 5.0 | 0.5 | 0.5 | A,C | 2,000 | 4.5 | 7.5 | 8.5 | 5.0 | 0.5 | 0.5 | A,C | 2,000 |
| 0.012 | 123 | 4.5 | 7.5 | 8.5 | 5.0 | 0.5 | 0.6 | A,C | 2,000 | 4.5 | 7.5 | 8.5 | 5.0 | 0.5 | 0.6 | A,C | 2,000 |
| 0.015 | 153 | 4.9 | 7.7 | 8.5 | 5.0 | 0.5 | 0.6 | A,C | 2,000 | 4.9 | 7.7 | 8.5 | 5.0 | 0.5 | 0.6 | A,C | 2,000 |
| 0.018 | 183 | 4.5 | 7.5 | 11.0 | 7.5 | 1.0 | 0.6 | A,C | 2,000 | 4.5 | 7.5 | 11.0 | 7.5 | 1.0 | 0.6 | A,C | 2,000 |
| 0.022 | 223 | 4.7 | 7.5 | 11.0 | 7.5 | 1.0 | 0.6 | A,C | 2,000 | 4.7 | 7.5 | 11.0 | 7.5 | 1.0 | 0.6 | A,C | 2,000 |
| 0.027 | 273 | 4.7 | 8.3 | 11.0 | 7.5 | 1.0 | 0.6 | A,C | 2,000 | 4.7 | 8.3 | 11.0 | 7.5 | 1.0 | 0.6 | A,C | 2,000 |
| 0.033 | 333 | 4.9 | 9.0 | 11.0 | 7.5 | 1.0 | 0.6 | A,C | 1,500 | 4.9 | 9.0 | 11.0 | 7.5 | 1.0 | 0.6 | A,C | 1,500 |
| 0.039 | 393 | 5.2 | 9.3 | 11.0 | 7.5 | 1.0 | 0.6 | A,C | 1,500 | 5.2 | 9.3 | 11.0 | 7.5 | 1.0 | 0.6 | A,C | 1,500 |
| 0.047 | 473 | 5.5 | 9.5 | 11.0 | 7.5 | 1.0 | 0.6 | A,C | 1,500 | 5.5 | 9.5 | 11.0 | 7.5 | 1.0 | 0.6 | A,C | 1,500 |
| 0.056 | 563 | 5.2 | 8.0 | 11.0 | 7.5 | 1.0 | 0.6 | A,C | 2,000 | 5.0 | 9.0 | 13.5 | 10.5 | 1.0 | 0.6 | A,D | 1,500 |
| 0.068 | 683 | 5.2 | 8.5 | 11.0 | 7.5 | 1.0 | 0.6 | A,C | 1,500 | 5.5 | 9.5 | 13.5 | 10.5 | 1.0 | 0.6 | A,D | 1,500 |
| 0.082 | 823 | 5.3 | 9.0 | 11.0 | 7.5 | 1.0 | 0.6 | A,C | 1,500 | 6.0 | 9.5 | 13.5 | 10.5 | 1.0 | 0.6 | A,D | 1,500 |
| 0.10 | 104 | 5.7 | 9.3 | 11.0 | 7.5 | 1.0 | 0.6 | A,C | 1,500 | 6.0 | 10.5 | 13.5 | 10.5 | 1.0 | 0.6 | A,D | 1,000 |
| 0.12 | 124 | 4.8 | 8.4 | 13.0 | 10.5 | 1.0 | 0.6 | A,D | 1,500 | | | | | | | | |
| 0.15 | 154 | 4.7 | 10.0 | 13.0 | 10.5 | 1.0 | 0.6 | A,D | 1,500 | | | | | | | | |
| 0.18 | 184 | 5.0 | 10.2 | 13.0 | 10.5 | 1.0 | 0.6 | A,D | 1,500 | | | | | | | | |
| 0.22 | 224 | 5.3 | 10.5 | 13.0 | 10.5 | 1.0 | 0.6 | A,D | 1,500 | | | | | | | | |
| 0.27 | 274 | 5.6 | 10.8 | 13.0 | 10.5 | 1.0 | 0.6 | A,D | 1,500 | | | | | | | | |
| 0.33 | 334 | 6.1 | 11.3 | 13.0 | 10.5 | 1.0 | 0.6 | A,D | 1,000 | | | | | | | | |

# MDD-P, MTB-P Series

**(Metallized Polypropylene Film Capacitors for High frequency)**

These types are metallized polypropylene film capacitors that have been used for many years and are suitable for communication devices and inverter fluorescent lighting.

Use either resin dip type（MDD-P type）or tape wrapped type（MTB-P type）depending on the operating condition.

**Product Specifications**

| Item | Specification | |
|---|---|---|
| Temperature Range | −40℃ ～ +85℃ | |
| Rated voltage | 250～630V.DC | |
| Capacitance tolerance | ±5% (J), ±10% (K), ±20% (M) | |
| Dissipation factor | 0.1% or less (20℃, 1kHz) | |
| Withstanding voltage | Between terminals | Rated voltage (V.DC)×1.4 for one min |
| | Between terminal and outside coating | Rated voltage (V.DC)×2.0 for 1 to 5 seconds |
| Insulation resistance | $C_R \leq 0.33\,\mu F$ 25,000MΩ or more | |
| | $C_R > 0.33\,\mu F$ 7,500 / $C_R$ MΩ or more | |
| Related standard | Subject to JIS C 5101-1 and JIS C 5101-16. | |

$C_R$ : Capacitance ( $\mu$ F)

Product symbol: (Example) MDD-P series 250 V.DC 0.1mF±10%

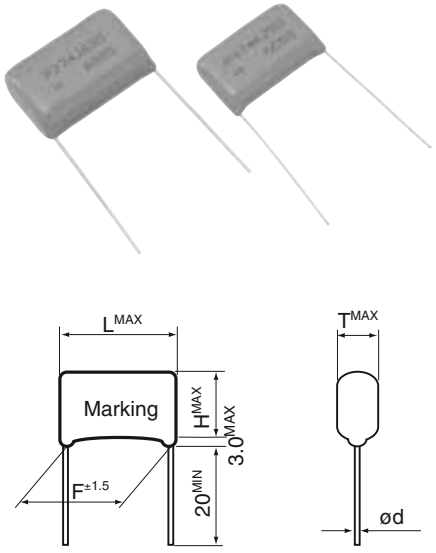
**MDD-P–2E–104 K**

- MDD-P: Type of series
- 2E: Rated voltage code
- 104: Capacitance code
- K: Capacitance tolerance code

# MDD-P Series

**(Resin Dip Type Metallized Polypropylene Film Capacitors)**

**Outline of drawings and dimensions**

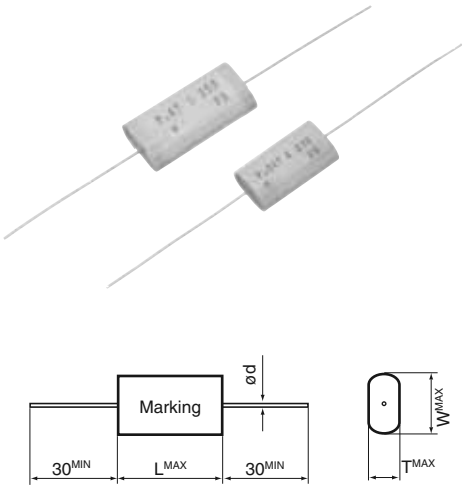



Standard value and case size (Unit : mm)

| Capacitance | | Rated voltage (code) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 250V.DC (2E) | | | | | 400V.DC (2G) | | | | | 630V.DC (2J) | | | | |
| μ F | Code | T | H | L | F | d | T | H | L | F | d | T | H | L | F | d |
| 0.027 | 273 | | | | | | | | | | | 7.0 | 10.5 | 18.0 | 15.0 | 0.6 |
| 0.033 | 333 | | | | | | 7.0 | 11.0 | 15.0 | 12.5 | 0.6 | 7.5 | 11.0 | 18.0 | 15.0 | 0.6 |
| 0.039 | 393 | | | | | | 7.5 | 11.5 | 15.0 | 12.5 | 0.6 | 8.0 | 11.5 | 18.0 | 15.0 | 0.6 |
| 0.047 | 473 | | | | | | 7.5 | 12.5 | 15.0 | 12.5 | 0.6 | 8.0 | 13.0 | 18.0 | 15.0 | 0.6 |
| 0.056 | 563 | | | | | | 6.5 | 10.5 | 20.0 | 17.5 | 0.6 | 8.5 | 13.5 | 18.0 | 15.0 | 0.6 |
| 0.068 | 683 | 6.5 | 10.0 | 15.0 | 12.5 | 0.6 | 7.0 | 11.5 | 20.0 | 17.5 | 0.6 | 8.0 | 13.0 | 26.0 | 22.5 | 0.8 |
| 0.082 | 823 | 7.0 | 10.5 | 15.0 | 12.5 | 0.6 | 7.5 | 12.5 | 20.0 | 17.5 | 0.6 | 8.5 | 13.5 | 26.0 | 22.5 | 0.8 |
| 0.10 | 104 | 7.0 | 12.0 | 15.0 | 12.5 | 0.6 | 8.0 | 13.0 | 20.0 | 17.5 | 0.6 | 9.0 | 15.5 | 26.0 | 22.5 | 0.8 |
| 0.12 | 124 | 7.5 | 12.5 | 15.0 | 12.5 | 0.6 | 8.5 | 13.5 | 20.0 | 17.5 | 0.8 | 9.5 | 16.0 | 26.0 | 22.5 | 0.8 |
| 0.15 | 154 | 7.0 | 11.0 | 20.0 | 17.5 | 0.6 | 9.5 | 14.5 | 20.0 | 17.5 | 0.8 | 10.5 | 17.0 | 26.0 | 22.5 | 0.8 |
| 0.18 | 184 | 7.0 | 12.0 | 20.0 | 17.5 | 0.6 | 10.5 | 15.5 | 20.0 | 17.5 | 0.8 | 11.5 | 18.0 | 26.0 | 22.5 | 0.8 |
| 0.22 | 224 | 7.5 | 12.5 | 20.0 | 17.5 | 0.6 | 11.5 | 16.5 | 20.0 | 17.5 | 0.8 | 11.5 | 18.0 | 29.0 | 25.0 | 0.8 |
| 0.27 | 274 | 8.5 | 13.0 | 20.0 | 17.5 | 0.6 | 9.5 | 16.0 | 29.0 | 25.0 | 0.8 | 12.5 | 19.5 | 29.0 | 25.0 | 0.8 |
| 0.33 | 334 | 8.5 | 15.0 | 20.0 | 17.5 | 0.6 | 10.5 | 16.5 | 29.0 | 25.0 | 0.8 | 13.0 | 22.5 | 29.0 | 25.0 | 0.8 |
| 0.39 | 394 | 9.0 | 15.5 | 20.0 | 17.5 | 0.6 | 11.0 | 17.5 | 29.0 | 25.0 | 0.8 | 14.0 | 23.5 | 29.0 | 25.0 | 0.8 |
| 0.47 | 474 | 8.5 | 15.0 | 26.0 | 22.5 | 0.6 | 12.0 | 18.5 | 29.0 | 25.0 | 0.8 | 13.0 | 22.5 | 36.0 | 32.5 | 0.8 |
| 0.56 | 564 | 9.0 | 15.5 | 26.0 | 22.5 | 0.8 | 13.0 | 19.5 | 29.0 | 25.0 | 0.8 | 14.0 | 23.5 | 36.0 | 32.5 | 0.8 |
| 0.68 | 684 | 10.0 | 16.5 | 26.0 | 22.5 | 0.8 | 13.0 | 23.0 | 29.0 | 25.0 | 0.8 | | | | | |
| 0.82 | 824 | 10.0 | 19.5 | 26.0 | 22.5 | 0.8 | 12.0 | 22.0 | 36.0 | 32.5 | 0.8 | | | | | |
| 1.0 | 105 | 10.0 | 19.5 | 31.0 | 27.5 | 0.8 | 13.5 | 23.0 | 36.0 | 32.5 | 0.8 | | | | | |

# MTB-P Series (Tape Wrapped Metallized Polypropylene Film Capacitors)

**Outline of drawings and dimensions**




Standard value and case size (Unit : mm)

| Capacitance | | Rated voltage (code) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 250V.DC (2E) | | | | 400V.DC (2G) | | | | 630V.DC (2J) | | | |
| μ F | Code | T | W | L | d | T | W | L | d | T | W | L | d |
| 0.027 | 273 | | | | | | | | | 5.0 | 9.0 | 20.0 | 0.6 |
| 0.033 | 333 | | | | | 5.5 | 9.0 | 16.0 | 0.6 | 5.5 | 9.5 | 20.0 | 0.6 |
| 0.039 | 393 | | | | | 6.0 | 9.5 | 16.0 | 0.6 | 6.0 | 10.0 | 20.0 | 0.6 |
| 0.047 | 473 | | | | | 6.0 | 11.0 | 16.0 | 0.6 | 6.5 | 11.5 | 20.0 | 0.6 |
| 0.056 | 563 | | | | | 5.0 | 9.0 | 21.0 | 0.6 | 7.0 | 12.0 | 20.0 | 0.6 |
| 0.068 | 683 | 4.5 | 8.5 | 16.0 | 0.6 | 5.0 | 10.0 | 21.0 | 0.6 | 6.0 | 11.0 | 26.0 | 0.6 |
| 0.082 | 823 | 5.0 | 9.0 | 16.0 | 0.6 | 5.5 | 10.5 | 21.0 | 0.6 | 7.0 | 11.5 | 26.0 | 0.8 |
| 0.10 | 104 | 5.5 | 10.5 | 16.0 | 0.6 | 6.5 | 11.0 | 21.0 | 0.6 | 7.5 | 12.5 | 26.0 | 0.8 |
| 0.12 | 124 | 6.0 | 11.0 | 16.0 | 0.6 | 7.0 | 12.0 | 21.0 | 0.6 | 7.5 | 14.0 | 26.0 | 0.8 |
| 0.15 | 154 | 5.5 | 9.0 | 21.0 | 0.6 | 8.0 | 13.0 | 21.0 | 0.6 | 9.0 | 15.0 | 26.0 | 0.8 |
| 0.18 | 184 | 5.5 | 10.5 | 21.0 | 0.6 | 8.5 | 13.5 | 21.0 | 0.6 | 9.5 | 16.0 | 26.0 | 0.8 |
| 0.22 | 224 | 6.0 | 11.0 | 21.0 | 0.6 | 9.5 | 14.5 | 21.0 | 0.6 | 10.0 | 16.5 | 29.0 | 0.8 |
| 0.27 | 274 | 6.5 | 11.5 | 21.0 | 0.6 | 7.5 | 14.0 | 29.0 | 0.8 | 11.0 | 17.5 | 29.0 | 0.8 |
| 0.33 | 334 | 7.0 | 13.5 | 21.0 | 0.6 | 8.5 | 15.0 | 29.0 | 0.8 | 11.0 | 20.5 | 29.0 | 0.8 |
| 0.39 | 394 | 7.5 | 14.0 | 21.0 | 0.6 | 9.5 | 15.5 | 29.0 | 0.8 | 12.0 | 22.0 | 29.0 | 0.8 |
| 0.47 | 474 | 7.0 | 13.0 | 26.0 | 0.6 | 10.5 | 16.5 | 29.0 | 0.8 | 11.0 | 20.5 | 37.0 | 0.8 |
| 0.56 | 564 | 7.5 | 14.0 | 26.0 | 0.6 | 11.5 | 17.5 | 29.0 | 0.8 | 12.5 | 22.0 | 37.0 | 0.8 |
| 0.68 | 684 | 8.5 | 15.0 | 26.0 | 0.6 | 11.5 | 21.0 | 29.0 | 0.8 | | | | |
| 0.82 | 824 | 8.0 | 18.0 | 26.0 | 0.6 | 10.5 | 20.0 | 37.0 | 0.8 | | | | |
| 1.0 | 105 | 8.0 | 18.0 | 31.0 | 0.8 | 12.0 | 21.0 | 37.0 | 0.8 | | | | |

# MTBS, MTB Series (Tape Wrapped Metallized Polyester Film Capacitors)

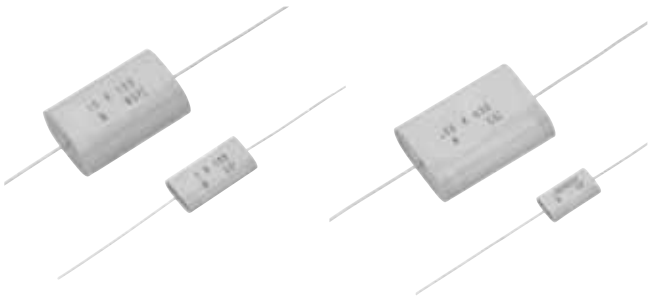
This series offers metallized film capacitors that have axial leads and exhibit excellent heat resistance and moisture resistance. These capacitors employ a metallized polyester film dielectric and have a polyester-taped outer covering and resin-sealed ends.

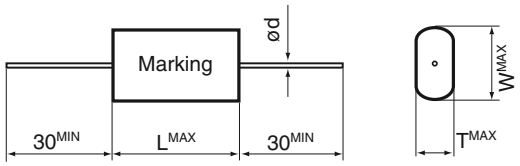
### Product Specifications

| Items | Specifications |
|---|---|
| Temperature range | −40℃ ～ +85℃ |
| Rated voltage | 100 ～ 630 V.DC |
| Capacitance tolerance | ±5% (J), ±10% (K), ±20% (M) |
| Withstanding voltage | Rated voltage (V.DC) × 1.4 for one min. |
| Dielectric dissipation factor | 0.8% or less (20℃, 1KHz) |
| Insulation resistance | $C_R \leq 0.33\,\mu F$ 7,500MΩ or more |
| | $C_R > 0.33\,\mu F$ 2,500 / $C_R$ MΩ or more |
| Related standard | Subject to JIS C 5101-1 and JIS C 5101-2. |

$C_R$ : Capacitance ( $\mu$ F)

### Outline of drawings and dimensions






Standard value and case size (Unit : mm)

| Capacitance | | MTBS | | | | MTB | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Rated voltage (Code) | | | | | | | | | | | | | | | |
| | | 100V.DC (2A) | | | | 250V.DC (2E) | | | | 400V.DC (2G) | | | | 630V.DC(2J) | | | |
| μ F | Code | T | W | L | d | T | W | L | d | T | W | L | d | T | W | L | d |
| 0.022 | 223 | | | | | | | | | 4.0 | 7.0 | 14.0 | 0.6 | 4.5 | 9.0 | 16.0 | 0.6 |
| 0.033 | 333 | | | | | | | | | 4.0 | 7.5 | 16.0 | 0.6 | 5.5 | 9.0 | 16.0 | 0.6 |
| 0.047 | 473 | | | | | 4.0 | 7.5 | 14.0 | 0.6 | 5.0 | 8.5 | 16.0 | 0.6 | 4.5 | 9.5 | 22.0 | 0.6 |
| 0.068 | 683 | | | | | 4.0 | 7.5 | 16.0 | 0.6 | 6.0 | 9.5 | 16.0 | 0.6 | 5.5 | 10.5 | 22.0 | 0.6 |
| 0.10 | 104 | | | | | 4.5 | 9.0 | 16.0 | 0.6 | 5.0 | 10.0 | 22.0 | 0.6 | 6.5 | 13.0 | 22.0 | 0.6 |
| 0.12 | 124 | | | | | 5.0 | 9.5 | 16.0 | 0.6 | 5.5 | 10.5 | 22.0 | 0.6 | 7.0 | 13.5 | 22.0 | 0.6 |
| 0.15 | 154 | | | | | 5.5 | 10.5 | 16.0 | 0.6 | 6.5 | 11.0 | 22.0 | 0.6 | 6.5 | 11.5 | 29.0 | 0.8 |
| 0.18 | 184 | | | | | 6.0 | 11.0 | 16.0 | 0.6 | 6.5 | 12.5 | 22.0 | 0.6 | 6.5 | 13.0 | 29.0 | 0.8 |
| 0.22 | 224 | | | | | 5.0 | 10.0 | 22.0 | 0.6 | 7.0 | 13.5 | 22.0 | 0.6 | 7.5 | 14.0 | 29.0 | 0.8 |
| 0.27 | 274 | 4.0 | 8.0 | 14.0 | 0.6 | 5.5 | 10.5 | 22.0 | 0.6 | 8.0 | 14.5 | 22.0 | 0.6 | 7.5 | 17.0 | 29.0 | 0.8 |
| 0.33 | 334 | 4.5 | 8.5 | 14.0 | 0.6 | 6.0 | 11.0 | 22.0 | 0.6 | 7.0 | 13.5 | 29.0 | 0.8 | 8.0 | 17.5 | 31.0 | 0.8 |
| 0.39 | 394 | 5.0 | 9.0 | 14.0 | 0.6 | 7.0 | 11.5 | 22.0 | 0.6 | 7.5 | 14.0 | 29.0 | 0.8 | 9.0 | 18.5 | 31.0 | 0.8 |
| 0.47 | 474 | 5.5 | 9.5 | 14.0 | 0.6 | 7.5 | 12.5 | 22.0 | 0.6 | 8.5 | 14.5 | 29.0 | 0.8 | 9.5 | 19.0 | 31.0 | 0.8 |
| 0.56 | 564 | 4.5 | 9.5 | 20.0 | 0.6 | 6.0 | 12.0 | 29.0 | 0.8 | 8.0 | 17.5 | 29.0 | 0.8 | 11.0 | 20.5 | 31.0 | 0.8 |
| 0.68 | 684 | 5.0 | 9.5 | 20.0 | 0.6 | 6.5 | 13.0 | 29.0 | 0.8 | 9.0 | 18.5 | 29.0 | 0.8 | 11.0 | 23.5 | 31.0 | 0.8 |
| 0.82 | 824 | 5.0 | 10.0 | 20.0 | 0.6 | 7.0 | 13.5 | 29.0 | 0.8 | 10.0 | 19.5 | 29.0 | 0.8 | 12.5 | 25.0 | 31.0 | 0.8 |
| 1.0 | 105 | 6.0 | 10.5 | 20.0 | 0.6 | 7.0 | 16.5 | 29.0 | 0.8 | 11.5 | 21.0 | 29.0 | 0.8 | 14.0 | 26.5 | 31.0 | 0.8 |
| 1.2 | 125 | 6.5 | 11.5 | 20.0 | 0.6 | 8.0 | 17.5 | 29.0 | 0.8 | 12.0 | 21.5 | 31.0 | 0.8 | 12.5 | 25.0 | 43.0 | 1.0 |
| 1.5 | 155 | 7.0 | 12.5 | 20.0 | 0.6 | 9.0 | 18.5 | 29.0 | 0.8 | 14.0 | 23.5 | 31.0 | 0.8 | 14.0 | 26.5 | 43.0 | 1.0 |
| 1.8 | 185 | 7.0 | 12.0 | 22.0 | 0.8 | 10.0 | 19.5 | 29.0 | 0.8 | 12.5 | 22.0 | 43.0 | 1.0 | 15.5 | 28.5 | 43.0 | 1.0 |
| 2.2 | 225 | 7.5 | 13.0 | 22.0 | 0.8 | 11.0 | 21.0 | 29.0 | 0.8 | 14.0 | 24.0 | 43.0 | 1.0 | 15.5 | 28.0 | 52.0 | 1.0 |
| 2.7 | 275 | 8.5 | 14.0 | 22.0 | 0.8 | 9.5 | 19.0 | 43.0 | 1.0 | 14.0 | 24.0 | 43.0 | 1.0 | | | | |
| 3.3 | 335 | 9.0 | 16.0 | 22.0 | 0.8 | 10.5 | 20.5 | 43.0 | 1.0 | 16.0 | 28.5 | 43.0 | 1.0 | | | | |
| 3.9 | 395 | 10.0 | 17.0 | 22.0 | 0.8 | 12.0 | 21.5 | 43.0 | 1.0 | 16.5 | 32.5 | 43.0 | 1.0 | | | | |
| 4.7 | 475 | 11.0 | 17.5 | 22.0 | 0.8 | 13.5 | 23.0 | 43.0 | 1.0 | 15.5 | 31.0 | 52.0 | 1.0 | | | | |
| 5.6 | 565 | 11.0 | 17.5 | 26.0 | 0.8 | 13.0 | 22.5 | 52.0 | 1.0 | | | | | | | | |
| 6.8 | 685 | 12.0 | 18.5 | 26.0 | 0.8 | 14.5 | 24.0 | 52.0 | 1.0 | | | | | | | | |
| 8.2 | 825 | 11.5 | 18.5 | 29.0 | 0.8 | 16.0 | 25.5 | 52.0 | 1.0 | | | | | | | | |
| 10.0 | 106 | 12.5 | 20.5 | 29.0 | 0.8 | 16.5 | 29.5 | 52.0 | 1.0 | | | | | | | | |

Product symbol : (Example) MTB Series 630V.DC 0.1mF ±10%

**MTB–2J–104 K**

- MTB: Type of series
- 2J: Rated voltage code
- 104: Capacitance code
- K: Capacitance tolerance code

Product symbol : (Example) MTBS Series 100V.DC 1.0mF ±10%

**MTBS–2A–105 K**

Type of series

Specify as MTBS when ordering 100V DC items

# WMTB, WMTB-P Series

**(High-frequency Large-current Tape-wrapped Capacitors) (For Snubbers)**

The WMTB / WMTB-P series offers tape-wrapped capacitors which are developed for applications where high-frequency current is essential.

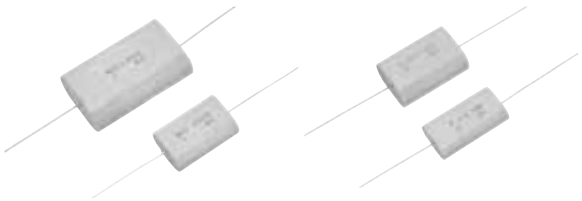
Being small and lightweight, these capacitors are ideal for use in high-frequency large-current circuits for high-frequency surge suppressors, various inverter circuits, snubber circuits, and the like.

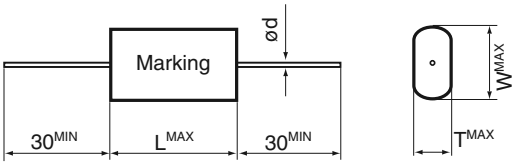
### WMTB, and WMTB-P Type Product Specifications

| Items | Specifications | |
|---|---|---|
| Type of Series | WMTB Type | WMTB-P Type |
| Dielectric | Metallized polyester | Metallized polypropylene |
| Temperature range | −40℃ ～ +85℃ | −40℃ ～ +85℃ |
| Rated voltage | 630V.DC | 1,200V.DC |
| Capacitance tolerance | ±10% (K) | ±10% (K) |
| Withstanding voltage | Rated voltage (V.DC)×1.5 for one min. | Rated voltage (V.DC)×1.5 for one min. |
| Dielectric dissipation factor | 0.8% or less (20℃, 1KHz) | 0.1% or less (20℃, 1KHz) |
| Insulation resistance | $C_R \leq 0.33\,\mu F$ 9,000MΩ or more | $C_R \leq 0.33\,\mu F$ 30,000MΩ or more |
| | $C_R > 0.33\,\mu F$ 3,000 / $C_R$ MΩ or more | $C_R > 0.33\,\mu F$ 10,000 / $C_R$ MΩ or more |

$C_R$ : Capacitance ( $\mu$ F)

### Outline of drawings and dimensions






Product symbol : (Example) WMTB-P Series 1200V.DC 0.1mF ±10%

**WMTB-P−1200−104 K**

- WMTB-P: Type of series
- 1200: Rated voltage code
- 104: Capacitance code
- K: Capacitance tolerance code

WMTB, and WMTB-P Type Standard value and case size (Unit : mm)

| Capacitance | | Rated voltage | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 630V.DC (WMTB Type) | | | | 1200V.DC (WMTB-P Type) | | | |
| μ F | Code | T | W | L | d | T | W | L | d |
| 0.10 | 104 | | | | | 11.0 | 20.0 | 36.0 | 0.8 |
| 0.15 | 154 | | | | | 13.5 | 23.0 | 36.0 | 0.8 |
| 0.22 | 224 | 10.5 | 20.0 | 29.0 | 0.8 | 17.0 | 26.0 | 36.0 | 0.8 |
| 0.33 | 334 | 11.0 | 20.5 | 33.0 | 0.8 | 15.5 | 25.0 | 41.0 | 1.0 |
| 0.47 | 474 | 13.0 | 22.5 | 33.0 | 0.8 | 20.0 | 29.0 | 41.0 | 1.0 |
| 0.68 | 684 | 14.0 | 24.0 | 41.0 | 1.0 | 23.5 | 33.0 | 41.0 | 1.0 |
| 1.0 | 105 | 16.5 | 27.5 | 41.0 | 1.0 | 21.0 | 35.5 | 54.0 | 1.0 |
| 1.5 | 155 | 18.0 | 27.5 | 52.0 | 1.0 | | | | |
| 2.2 | 225 | 21.0 | 33.5 | 52.0 | 1.0 | | | | |