

# Ultra-high Voltage Ceramic Capacitors

Molded type with metal terminals

For high voltage power supply/laser

UHV(Edc: 20 to 50kV) series

FHV(Edc: 15 to 50kV) series

Issue date: September 2006

- All specifications are subject to change without notice.
  - Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.
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# Ultra-high Voltage Ceramic Capacitors

## Molded Type with Metal Terminals UHV, FHV Series

Conformity to RoHS Directive

**CLASS 2 HIGH DIELECTRIC****DC. 20 TO 50kV: UHV-1A TO 12A, 221A TO 253A TYPES****DC. 15 TO 50kV: FHV-1AN TO 12AN, 153AN TYPES**

TDK UHV and FHV series high voltage ceramic capacitors feature low dissipation and excellent voltage-capacitance characteristics using patented strontium titanate for dielectric material. They are epoxy-encapsulated to meet requirement of high voltage applications.

**FEATURES**

- Small size.
- Low dissipation factor.
- Excellent voltage-capacitance characteristics.
- Screw terminals for easy mounting.
- FHV series: High capacitance and low temperature characteristics of capacitance.

**APPLICATIONS**

High voltage power supplies, laser equipment.

**INITIAL CHARACTERISTICS**

| Series                                  | UHV   | FHV   |
|---|---|---|
| Operating temperature range             | -30 to +85°C  | -30 to +85°C  |
| Rated voltage                           | DC. 20 to 50kV  | DC. 15 to 50kV  |
| Insulation resistance                   | 100,000MΩ min.  | 100,000MΩ min.  |
| Nominal capacitance range               | 100 to 4,000pF  | 700 to 7,000pF  |
| Capacitance tolerance                   | ±10%  | ±10%  |
| Dissipation factor(tanδ)                | 0.2% max.   | 0.2% max.   |
| Capacitance temperature characteristics | Z5T:+22, -33%[+10 to +85°C, 25°C ]                      | Y5S:±22%[-30 to +85°C, 25°C ]                           |
| AC Corona starting voltage              | 3PC* max. at 50% of rated voltage min.(50Hz rms)        | 3PC* max. at 50% of rated voltage min.(50Hz rms)        |
| Withstanding voltage                    | No breakdown at 1.5 times of rated voltage, 60s(in oil) | No breakdown at 1.5 times of rated voltage, 60s(in oil) |

\* PC: Pico coulomb

**SHAPES AND DIMENSIONS****UHV-1A to 12A****UHV-221A to 253A**

Dimensions in mm

**FHV-1AN to 12AN****MARKING**

| Item  | Marking example |
|---|-----------------|
| 1. Part No.                                   |                 |
| 2. Nominal capacitance and tolerance code     | 1 → UHV-5A      |
| 3. Rated voltage                              | 2 → 172K        |
| 4. Manufacturer's name (TDK or TDK logo mark) | 3 → 30kV        |
| 5. Lot No.                                    | 4 → TDK         |
|   | 5 → 1234        |

**MARKING**

| Item  | Marking example |
|---|-----------------|
| 1. Part No.                                   |                 |
| 2. Nominal capacitance and tolerance code     | 1 → FHV-5A      |
| 3. Rated voltage                              | 2 → 172K        |
| 4. Manufacturer's name (TDK or TDK logo mark) | 3 → 30kV        |
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## ELECTRICAL CHARACTERISTICS/DIMENSIONS

### TYPICAL CAPACITANCE CHARACTERISTICS

#### UHV SERIES(DC. 20 to 50kV, TC:Z5T)

| Rated voltage<br>Edc(kV) | Part No. | Rated capacitance<br>(pF)±10% | Dimensions (mm) |    |    | Female thread |
|--------------------------|----------|-------------------------------|-----------------|----|----|---------------|
|                          |          |                               | øD              | T  | L  |               |
| 20                       | UHV-221A | 200                           | 20              |    |    | ISO M4        |
|                          | UHV-222A | 400                           | 25              |    |    |               |
|                          | UHV-223A | 700                           | 30              |    |    |               |
|                          | UHV-224A | 1,000                         | 34              | 19 | 23 | ISO M5        |
|                          | UHV-1A   | 1,400                         | 38              |    |    |               |
|                          | UHV-2A   | 2,500                         | 48              |    |    |               |
|                          | UHV-3A   | 4,000                         | 60              |    |    |               |
| 30                       | UHV-231A | 200                           | 25              |    |    | ISO M4        |
|                          | UHV-232A | 400                           | 30              |    |    |               |
|                          | UHV-233A | 700                           | 34              |    |    |               |
|                          | UHV-4A   | 940                           | 38              | 22 | 26 | ISO M5        |
|                          | UHV-5A   | 1,700                         | 48              |    |    |               |
|                          | UHV-6A   | 2,700                         | 60              |    |    |               |
|                          |          |                               |                 |    |    |               |
| 40                       | UHV-241A | 100                           | 20              |    |    | ISO M4        |
|                          | UHV-242A | 200                           | 25              |    |    |               |
|                          | UHV-243A | 400                           | 34              |    |    | ISO M5        |
|                          | UHV-7A   | 700                           | 38              | 28 | 32 |               |
|                          | UHV-8A   | 1,300                         | 48              |    |    |               |
| UHV-9A                   | 2,000    | 60                            |                 |    |    |               |
| 50                       | UHV-251A | 100                           | 20              |    |    | ISO M4        |
|                          | UHV-252A | 200                           | 30              |    |    |               |
|                          | UHV-253A | 400                           | 34              |    |    | ISO M5        |
|                          | UHV-10A  | 560                           | 38              | 31 | 35 |               |
|                          | UHV-11A  | 1,000                         | 48              |    |    |               |
| UHV-12A                  | 1,700    | 60                            |                 |    |    |               |

#### FHV SERIES(DC. 15 to 50kV, TC:Y5S)

| Rated voltage<br>Edc(kV) | Part No.  | Rated capacitance<br>(pF)±10% | Dimensions (mm) |      |      | Female thread |
|--------------------------|-----------|-------------------------------|-----------------|------|------|---------------|
|                          |           |                               | øD              | T    | L    |               |
| 15                       | FHV-153AN | 7,000                         | 60              | 16.5 | 20.5 | ISO M5        |
|                          | FHV-1AN   | 1,700                         | 38              |      |      |               |
| 20                       | FHV-2AN   | 3,000                         | 48              | 18.5 | 22.5 | ISO M5        |
|                          | FHV-3AN   | 5,200                         | 60              |      |      |               |
|                          | FHV-4AN   | 1,200                         | 38              |      |      |               |
| 30                       | FHV-5AN   | 2,100                         | 48              | 22   | 26   | ISO M5        |
|                          | FHV-6AN   | 3,500                         | 60              |      |      |               |
|                          | FHV-7AN   | 850                           | 38              |      |      |               |
| 40                       | FHV-8AN   | 1,500                         | 48              | 26   | 30   | ISO M5        |
|                          | FHV-9AN   | 2,600                         | 60              |      |      |               |
|                          | FHV-10AN  | 700                           | 38              |      |      |               |
| 50                       | FHV-11AN  | 1,300                         | 48              | 29   | 33   | ISO M5        |
|                          | FHV-12AN  | 2,100                         | 60              |      |      |               |

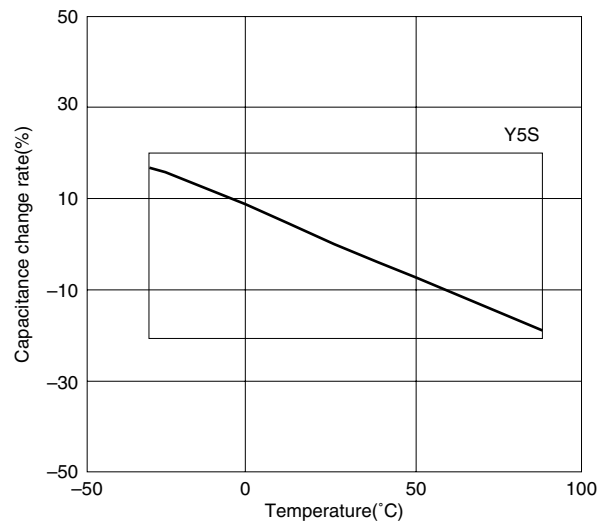
### TYPICAL CAPACITANCE CHARACTERISTICS

#### CAPACITANCE vs. TEMPERATURE CHARACTERISTICS

#### UHV SERIES(DC. 20 to 50kV, TC:Z5T)

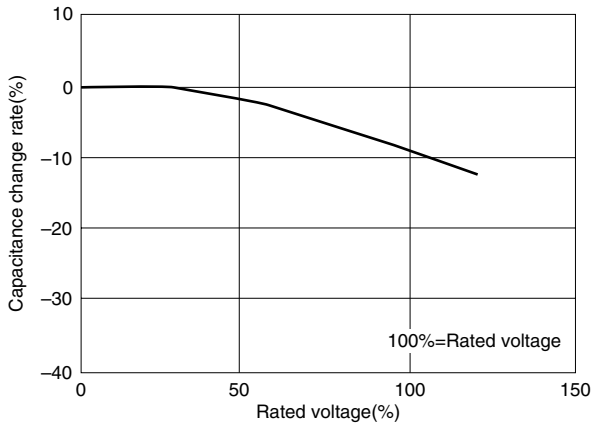


#### FHV SERIES(DC. 15 to 50kV, TC:Y5S)

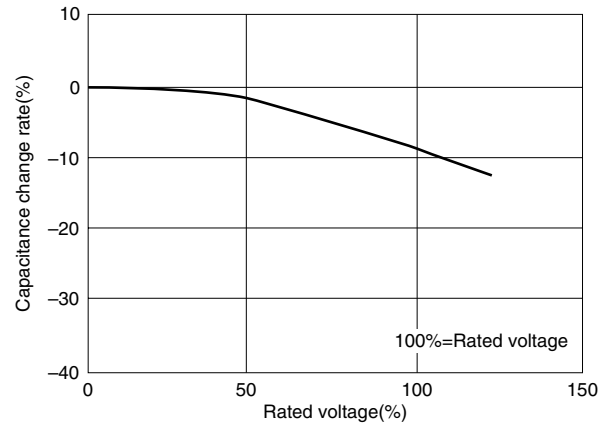


## CAPACITANCE vs. DC BIAS CHARACTERISTICS

### UHV SERIES(DC. 20 to 50kV, TC:Z5T)



### FHV SERIES(DC. 15 to 50kV, TC:Y5S)



## PRECAUTIONS

### (1) During transportation and storage

- Do not transport or store where the capacitor will be exposed to high temperature or high humidity.
- Do not expose to poisonous gases such as H<sub>2</sub>SO<sub>4</sub>, HCl, or HNO<sub>3</sub>.
- Avoid excessive impact such as that caused by falling.

### (2) During operation

- Avoid contact with electrolytes such as perspiration. Do not touch with bare hands.
- Avoid excessive impact such as that caused by falling.
- Do not apply solder to stud terminals.
- Do not re-machine the terminals.

### (3) Usage

- When the capacitor is used for high-speed pulses such as with a laser, make sure that the impressed voltage (peak-to-peak voltage) is within the capacitor's rated specifications.
- Make sure that the capacitor is not exposed to radiant heat from chambers or transformers.

• For more information about products with other capacitance or other data, please contact us.

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## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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