

# 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

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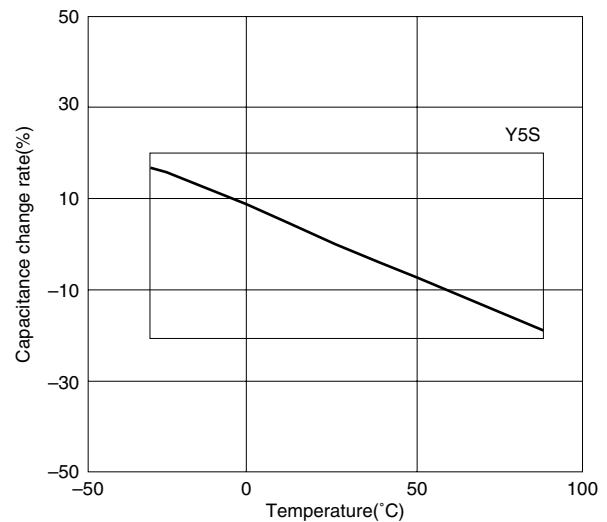
**ELECTRICAL CHARACTERISTICS/DIMENSIONS**
**TYPICAL CAPACITANCE CHARACTERISTICS**
**UHV SERIES(DC. 20 to 50kV, TC:Z5T)**

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

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

Rated voltage Edc(kV)	Part No.	Rated capacitance (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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