

# Ultra-high Voltage Ceramic Capacitors

Molded type with metal terminals

For distribution lines

TSF(Eac: 20kV) series

H(Eac: 8kV) series

GA(Eac: 10kV) series

Issue date: July 2009

- 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 With Metal Terminals(Molded and Non-insulated Type)

Conformity to RoHS Directive

## TSF/H,GA Series

TSF/H,GA Series are applicable to Gas Insulated Switch gear.

**RATED VOLTAGE  $E_{ac}$  : 8kV, 10kV, 20kV**

### FEATURES

- Small size.
- Strong in the impulse voltage.
- Low dissipation factor.
- Excellent voltage-capacitance characteristics.
- High capacitance and low temperature characteristics of capacitance.

### APPLICATIONS

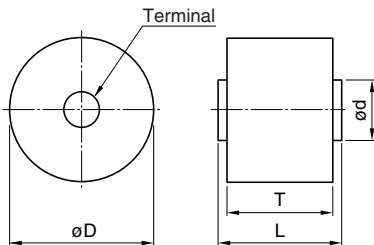
- High voltage surge absorber, gas circuit breaker in electric power transmitter and receiver devices, lightning arresters.
- Improve the voltage distribution of high voltage bushings, etc.
- Also for voltage distribution elements for the high voltage measuring devices.
- For impedance adjustment of a transformers and high voltage AC circuits.
- It is possible to use it in the SF6 gas.



### SHAPES AND DIMENSIONS

#### MOLDED TYPE

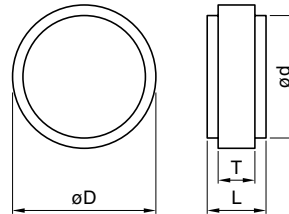
##### TSF-40C/TSF-301



Molded with epoxide resin; alumina filler.

#### NON-INSULATED TYPE

##### H-11/GA-14



### CAPACITANCE RANGES/ELECTRICAL CHARACTERISTICS

Type	Rated voltage	Capacitance (pF)±10%	Withstand voltage Erms(kV)	Insulation resistance (MΩ)min.	AC corona starting voltage Erms(kV)min. [3PC*]	Dimensions (mm)			
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TSF-40C	AC.20kV	1,080	42	100,000	25	40	29	33	15
TSF-301	AC.20kV	400	42	100,000	25	30	29	33	10
H-11	AC.8kV	2,900	16	100,000	8	40	8	11	35
GA-14	AC.10kV	1,700	20	100,000	10	40	10	16	35

\* PC : Pico coulomb

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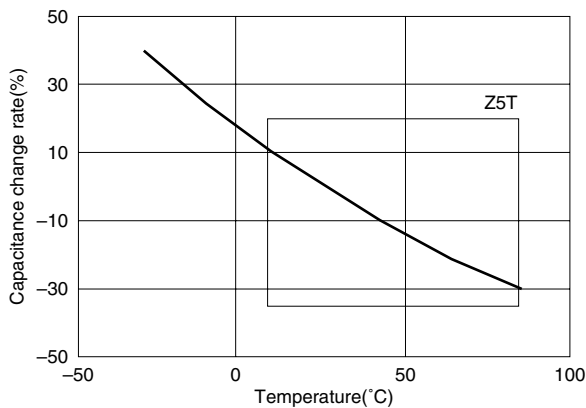
## INITIAL CHARACTERISTICS

Series	Molded type	Non-insulated type
Operating temperature range	-30 to +85°C	-20 to +70°C
Rated voltage	AC.20kV	AC.10kV, 8kV
Insulation resistance	100,000MΩ min.	100,000MΩ min.
Capacitance	400pF, 1,080pF	1,700pF, 2,900pF
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 ]	Z5T:+22, -33%[+10 to +85°C, 25°C ]
AC Corona starting voltage	3PC* max. at AC.25kV(50Hz rms)	3PC* max. at AC.10kV, 8kV(50Hz rms)
Withstanding voltage	AC.42kV, 60s(in insulating liquid)	AC.20kV, 16kV, 60s(in insulating liquid)

\* PC: Pico coulomb

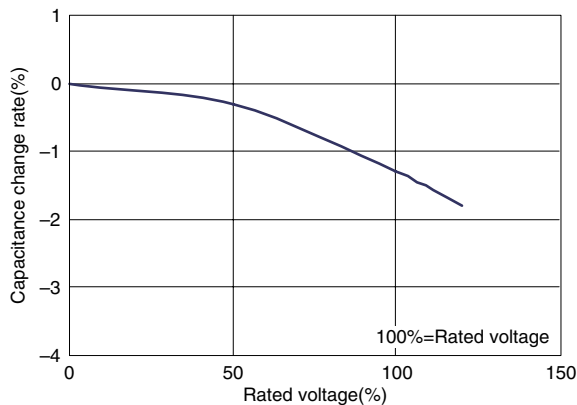
## TYPICAL CAPACITANCE CHARACTERISTICS

### CAPACITANCE vs. TEMPERATURE CHARACTERISTICS

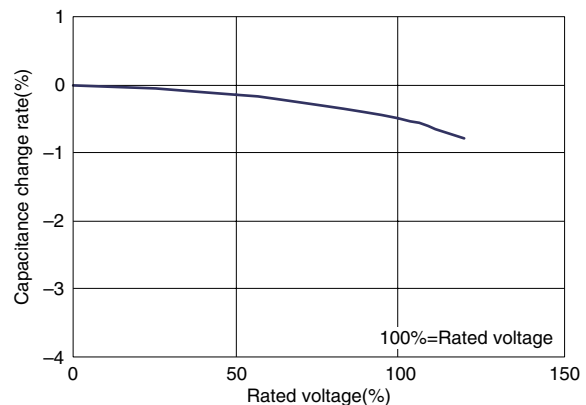


### CAPACITANCE vs. AC VOLTAGE CHARACTERISTICS

#### TSF-40C/TSF-301



#### H-11/GA-14



## 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 metal terminals.
- Do not re-machine the terminals.

### (3) Usage

- 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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