



# Plastic Film Capacitors

## DC-Link Film Capacitor

### TYPE 1

#### Features

- High safety, Self-healing and Self-protecting function built in.
- No catastrophic failure upon natural end of life due to inbuilt fuse function.
- Open circuit failure mode by fuse function patterned electrode.
- Can replace electrolytic capacitor.
- Low ESR, High ripple current capability
- Low ESL
- RoHS compliant

#### Recommended applications

- Any automotive and/or other application requiring DC Linkage  
※Verify the usage and fitting environments, and make sure to observe the rated performance specified in the corresponding specifications.

#### Construction

- Dielectric : Polypropylene
- Electrode : Metallized dielectric with segment pattern
- Plastic case : PPS. equivalent to UL94 V-0
- Sealing : Epoxy Resin equivalent to UL94 HB
- Terminal : Copper with tin plating

#### Explanation of part number

1	2	3	4	5	6	7	8	9	10	11	12
E	Z	T	V	K	C	T	Y	P	1	H	A

#### Specifications

Operating temperature on the surface of the case	- 40 °C to +105 °C (including self heat generation)
Capacitance	581 μF (+10 %/- 5 %) at 1 kHz, 25 °C
Rated voltage [DC]	450 V
Maximum voltage [DC]	600 V for 60 sec in life time
Rated ripple current	Continuous 80 A rms at 10 kHz
Current derating	Refer Fig.1
ESR	≤ 0.8 mΩ at 10 kHz
ESL	≤ 20 nH at 1 MHz
Insulation resistance between terminals and case	1 GΩ or more measure after applying 500 V [DC] for 2 seconds.
Dimensions L x W x H (Typical data)	164 × 115 × 43.1 mm : Excluding terminals
Weight (Typical data)	980 g

\*1 : Voltage includes ripple voltage

\*2 : Derate the current when the maximum surface temperature exceeds 95 degC, as shown in Fig. 1.

**Current Derating**

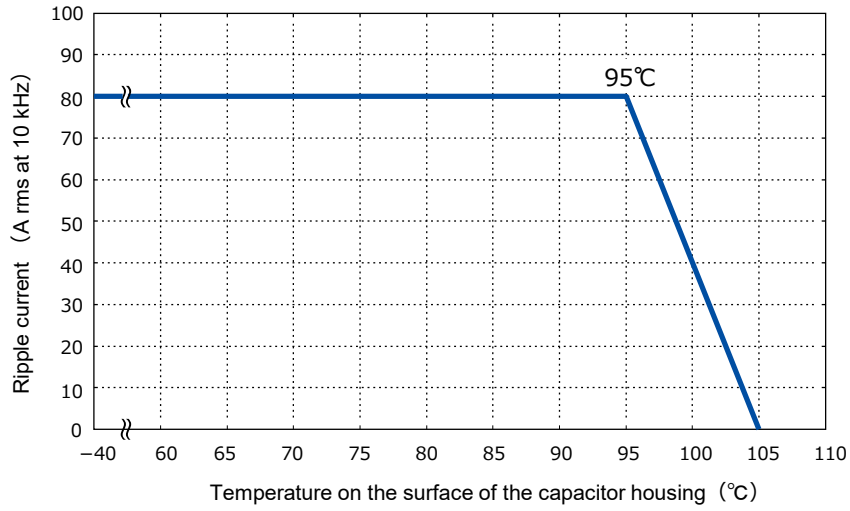
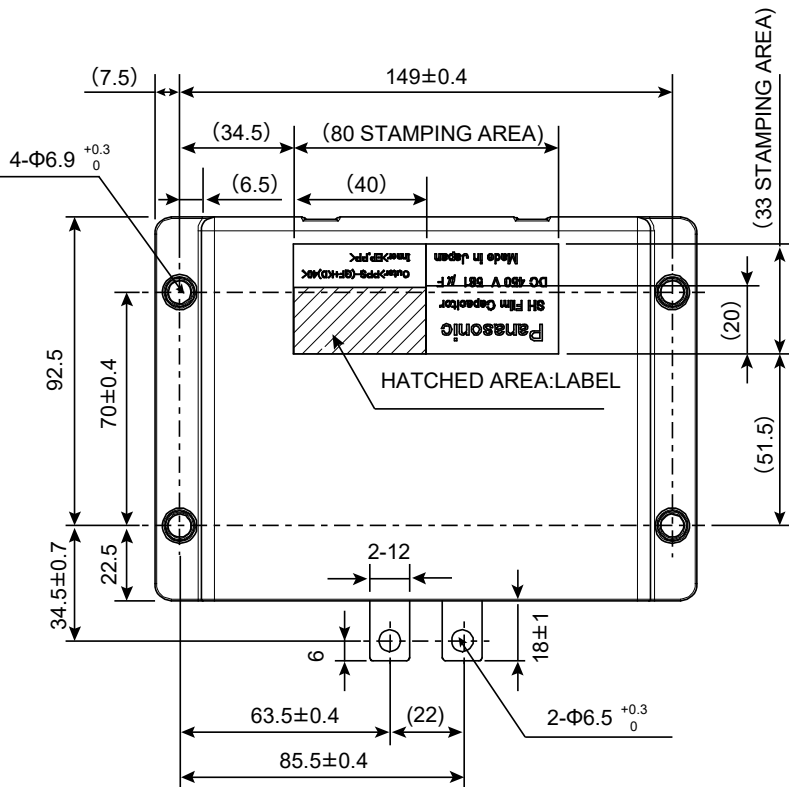
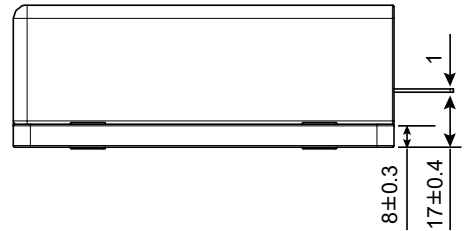
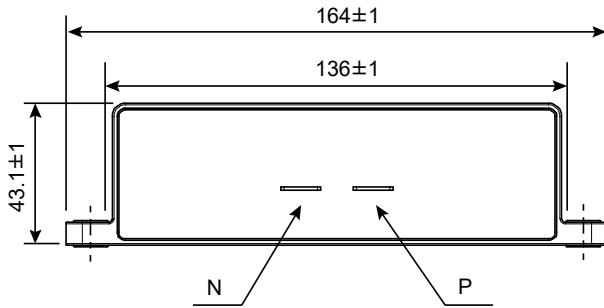


Fig.1 Current derating curve

**Dimensions**

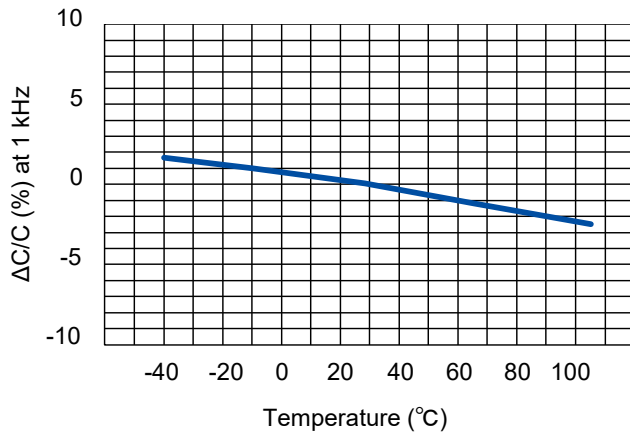


Unit:mm

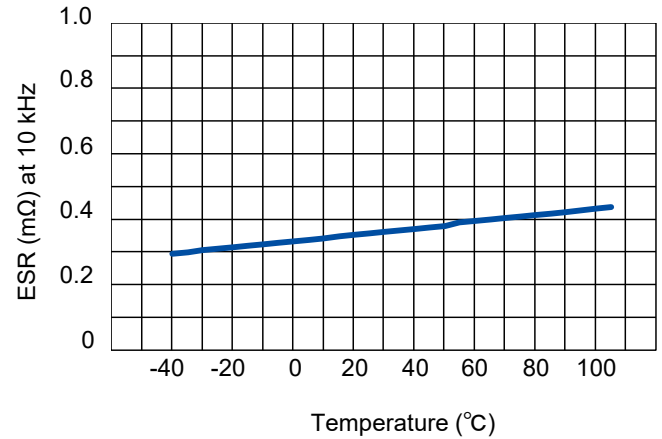
## Characteristics <Reference>

### < Temperature characteristics (Typical curve)>

#### ● Change of capacitance ( $\Delta C/C$ )

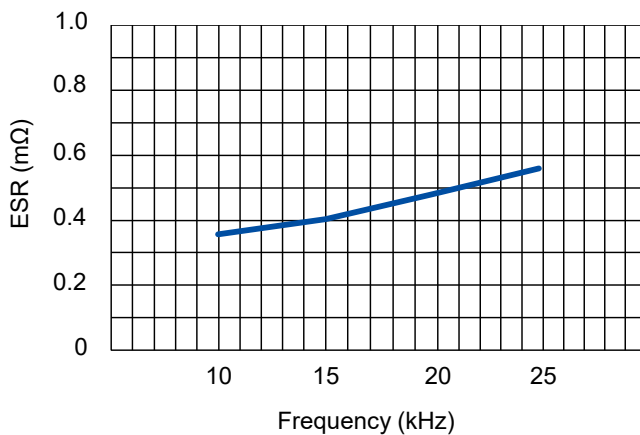


#### ● Equivalent series resistance (ESR)



### < Frequency characteristics (Typical curve)>

#### ● Equivalent series resistance (ESR)



### < Lifetime Expectancy (Reference)>

\* Expected life : 15,000 hours

\* Failure in time : 300 Fits

The above values are reference calculated under an pre-assumed average operating condition.

## Safety and Legal Matters to Be Observed

### Product specifications and applications

- Please be advised that this product and product specifications are subject to change without notice for improvement purposes. Therefore, please request and confirm the latest delivery specifications that explain the specifications in detail before the final design, or purchase or use of the product, regardless of the application. In addition, do not use this product in any way that deviates from the contents of the company's delivery specifications.
- Unless otherwise specified in this catalog or the product specifications, this product is intended for use in general electronic equipment (AV products, home appliances, commercial equipment, office equipment, information and communication equipment, etc.).  
When this product is used for the following special cases, the specification document suited to each application shall be signed/sealed (with Panasonic Industry and the user) in advance..These include applications requiring special quality and reliability, wherein their failures or malfunctions may directly threaten human life or cause harm to the human body (e.g.: space/aircraft equipment, transportation/traffic equipment, combustion equipment, medical equipment, disaster prevention/crime prevention equipment, safety equipment, etc.).

### Safety design and product evaluation

- Please ensure safety through protection circuits, redundant circuits, etc., in the customer's system design so that a defect in our company's product will not endanger human life or cause other serious damage.
- This catalog shows the quality and performance of individual parts. The durability of parts varies depending on the usage environment and conditions. Therefore, please ensure to evaluate and confirm the state of each part after it has been mounted in your product in the actual operating environment before use.  
If you have any doubts about the safety of this product, then please notify us immediately, and be sure to conduct a technical review including the above protection circuits and redundant circuits at your company.

### Laws / Regulations / Intellectual property

- The transportation of dangerous goods as designated by UN numbers, UN classifications, etc., does not apply to this product. In addition, when exporting products, product specifications, and technical information described in this catalog, please comply with the laws and regulations of the countries to which the products are exported, especially those concerning security export control.
- Each model of this product complies with the RoHS Directive (Restriction of the use of hazardous substances in electrical and electronic equipment) (2011/65/EU and (EU) 2015/863). The date of compliance with the RoHS Directive and REACH Regulation varies depending on the product model.  
Further, if you are using product models in stock and are not sure whether or not they comply with the RoHS Directive or REACH Regulation, please contact us by selecting "Sales Inquiry" from the inquiry form.
- During the manufacturing process of this product and any of its components and materials to be used, Panasonic Industry does not intentionally use ozone-depleting substances stipulated in the Montreal Protocol and specific bromine-based flame retardants such as PBBs (Poly-Brominated Biphenyls) / PBDEs (Poly-Brominated Diphenyl Ethers). In addition, the materials used in this product are all listed as existing chemical substances based on the Act on the Regulation of Manufacture and Evaluation of Chemical Substances.
- With regard to the disposal of this product, please confirm the disposal method in each country and region where it is incorporated into your company's product and used.
- The technical information contained in this catalog is intended to show only typical operation and application circuit examples of this product. This catalog does not guarantee that such information does not infringe upon the intellectual property rights of Panasonic Industry or any third party, nor imply that the license of such rights has been granted.
- Design, materials, or process related to technical owned by Panasonic Industry are subject to change without notice.

**Panasonic Industry will assume no liability whatsoever if the use of our company's products deviates from the contents of this catalog or does not comply with the precautions. Please be advised of these restrictions.**

## Matters to Be Observed When Using This Product

(Film capacitor : Automotive/Industrial)

### Response to anomalies and handling conditions

- Because the capacitor described herein is made of a combustible material, it may generate smoke or even ignite when exposed to excessive heat. We therefore recommend you cover the capacitor with a fire-resistant material or fire-resistant case.
- When a different component in the same circuit has short-circuited or developed an open failure, see to it that a voltage or current higher than the rated voltage or current or excessive heat is not applied to the capacitor.

### Reliability

A capacitor conforming to "AEC-Q200" refers to a capacitor having passed some or all of evaluation test items defined in AEC-Q200.

To know the detailed specifications of each capacitor or specific evaluation test scores, please contact us.

We issue a delivery specification sheet for each product ordered. Please confirm the delivery specification sheet when you place an order with us.

## Reference information

### Guidelines

Before using the capacitor, make sure to acquire our delivery specification sheet and confirm service conditions.

If you find measurement values exceeding specified values in the specification sheet or have any question, feel free to contact us. We also advise you to refer to RCR-1001B "Safety Application Guide on Components for Use in Electronic and Electrical Equipment" and JEITA RCR-2350D "Safety Application Guide for Fixed Plastic Film Capacitors for Use in Electronic Equipment."

### Intellectual property

Panasonic Group provides customers with safe products and services. We are also making great efforts to protect our intellectual property rights for Panasonic Group products. Typical patents related to this product are as follows. (Hybrid type)

[U.S. patent]

USP Nos. 7027286, 8315031, 8861177, 9240279, 10475585

[Japanese patent]

Japanese Patent No. 4784464, 4930099, 4946618, 5391797