



# Plastic Film Capacitors

## Film Capacitor for AC Motor

### SMF series

#### Features

- High safety (safety function installed)
- High reliability, safety standard approval
- Small size, lightness, and low loss
- RoHS compliant

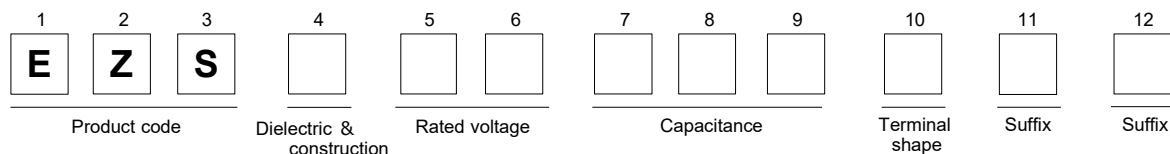
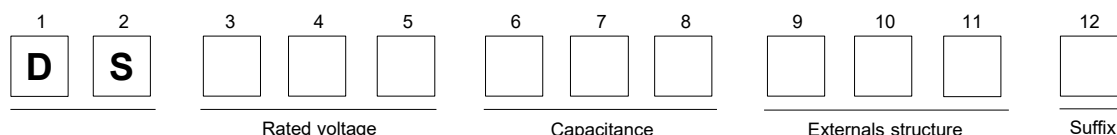
#### Recommended applications

- Motor and small compressor (for running)

#### Construction

- Internal electrode : Metallized plastic film (safety function installed)
- Plastic case : UL94 V-0
- Sealing : UL94 V-0
- Terminal : Faston terminal (tin plating), Lead wire (tin plating), Insulated wire

#### Explanation of part number



#### Applicable standard

Japan	JIS C 4908 Capacitors for electrical apparatus CMJ registration parts. Registration No.1475- C9902-026(JET)
UL/cUL	UL810 FILE No.E76560
Europe	EN60252-1 AC motor Capacitors VDE
China	GB/T 3667.1 AC motor Capacitors CQC

#### Specifications

Applicable standard <sup>*1</sup>		JIS UL	EN GB
Safety class		With built-in safety function P2 (CMJ approval) 10000 AFC (UL)	S0
Rated voltage (50/60 Hz) <sup>*2</sup> [AC]		370 V to 450 V	400 V, 450 V
Rated capacitance <sup>*2</sup>		1.5 μF to 9 μF	
Capacitance tolerance		-5 % / +10 %, ±5 % (Refer to the individual drawing)	
Withstand voltage	Between terminals	Rated voltage×1.75 60 s	Rated voltage×2.0 60 s
	Between terminals to enclosure	(min. 2000 V [AC]) Rated voltage × 2.0 + 1000 V [AC] 60 s	
Maximum permissible temperature (Case wall)		70 °C (Including self temperature rising)	

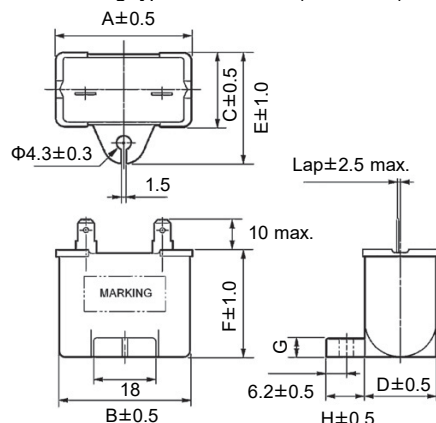
\*1 : The range of approval is different depending on each approval.

\*2 : These are typical values.

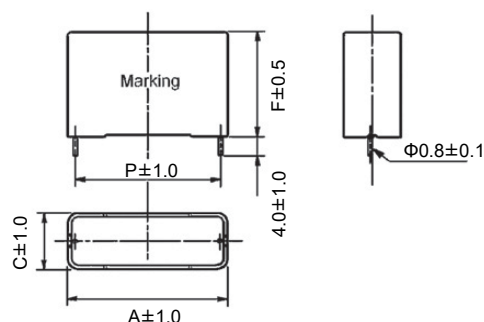
Dimension (Example)<sup>\*3</sup>

## ● SQ series (Installation leg type)

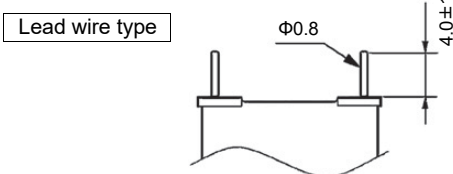
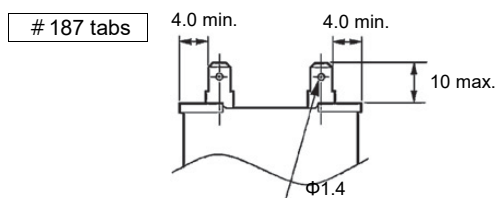
※ Non mounting type is available. (SP series).



## ● T series (Printed circuit board (PCB))



## ● Terminal shape (Standard)



Unit : mm

<sup>\*3</sup> : Other shape and specific requirement can be designed. Please contact, if necessary.Rating · Dimensions<sup>\*4</sup>

## ● SQ series (Installation leg type)

Rated voltage (V) [AC]	Capacitance (μF)	Dimensions (mm)								Case series	
		A	B	C	D	E	F	G	H		
400	1.5 to 3.0	39.5	38.0	16.0	14.5	26.5	30.5	4.0	11.0	SQ	
	3.5	39.5	38.0	17.5	16.0	28.0	30.5				
	4.0 to 5.0	39.5	38.0	22.0	20.5	32.5	30.5				
	5.5 to 6.5	39.5	38.0	26.7	25.2	37.0	32.0				
	7.0 to 8.0	39.5	38.0	26.7	25.2	37.0	37.0				
	8.5 to 9.0	39.5	38.0	26.7	25.2	37.0	41.0				
450	1.5 to 2.5	39.5	38.0	16.0	14.5	26.5	30.5	4.0	11.0		SQ
	3.0	39.5	38.0	17.5	16.0	28.0	30.5				
	3.5 to 4.0	39.5	38.0	22.0	20.5	32.5	30.5				
	4.5 to 5.5	39.5	38.0	26.7	25.2	37.0	32.0				
	6.0 to 6.5	39.5	38.0	26.7	25.2	37.0	37.0				
	7.0 to 7.5	39.5	38.0	26.7	25.2	37.0	41.0				

## ● T series (Printed circuit board (PCB))

Rated voltage (V) [AC]	Capacitance (μF)	Dimensions (mm)				Case series
		A	C	F	P	
400	1.5 to 2.5	38.5	14.0	25.5	36.0	T
	3.0 to 3.5	38.5	15.5	29.0	36.0	
	4.0 to 5.0	38.5	20.5	29.0	36.0	
	5.5 to 7.5	38.5	25.0	34.0	36.0	
450	1.5 to 2.0	38.5	14.0	25.5	36.0	
	2.5 to 3.0	38.5	15.5	29.0	36.0	
	3.5 to 4.0	38.5	20.5	29.0	36.0	
	4.5 to 6.5	38.5	25.0	34.0	36.0	

<sup>\*4</sup> : Please contact if necessary other Voltage and Capacitance.

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## PRECAUTION AND WARNING

- Please consult us in case that demand the specification of our company without fail and do the confirmation of the use condition and that exceeds the entry value and be indistinct when you use it.
- The film capacitors contain a film based dielectric which may be flammable under certain operating conditions. When in use, they can either emit smoke and/or ignite should the product be defective. It is recommended covering the surrounding resin with flame-resistant materials or case as needed particularly.
- In the event of troubles of other parts on the circuit such as shortening and opening, provide with proper means for preventing excessive voltage, current or temperature exceeding the rating from being applied to the film capacitor.
- Prior to use, please make sure that failure of the film capacitors does not have any negative effects on other preventing electronic circuit components and devices that would possibly cause damage. Proper safety measures should be taken using fail-safe protective circuit designs to help prevent other devices of becoming unsafe.  
Example:
  - a . State in which basic performance of automobiles (run, turn and stop)
  - b . False operations
  - c . Smoke emission/ignitions
- The Film Capacitor listed in this catalog(except for automotive series) are designed and manufactured specifically for general electronic devices, including audio-video equipment, home appliance, office equipment and data communication equipment etc.. Accordingly, it is strongly recommended that the user contact us in advance if the parts are to be used for the following devices(items 1 -12), which require having advanced security measures.  
The capacitor for automotive can be used for automobiles such as xEV.
  - (1) Transport equipment (motor vehicles, airplanes, trains, ships, traffic signal controllers)
  - (2) Medical equipment (life-support equipment, pacemakers for the heart, dialysis controllers)
  - (3) Aircraft equipment, Aerospace Equipment (airplanes, artificial satellites, rockets, etc.)
  - (4) Submarine equipment (submarine repeating equipment, etc.)
  - (5) Generation control equipment (equipment for atomic/hydraulic/heat power plants)
  - (6) Information processing equipment (large scale computer system)
  - (7) Electric heating appliance, Burning apparatus
  - (8) Rotary motion equipment
  - (9) Security systems
  - (10) Robots
  - (11) Lighting equipment
  - (12) And any similar types of equipment
- If used in a specific appliance that requires an extremely high reliability directly relating with any life-supporting equipment like electronic aviation controllers, automotive driving controllers and engine controllers, please consult us and use within the conditions designated in the specification. However the chip type capacitor should not be used in these appliances.

Note:

1. Technical information in this catalog is intended to convey examples of typical performances and/or applications, and is not intended to convey patents rights, if any.
2. For the products, which are controlled items subject to the Foreign Exchange and Foreign Trade Control Law, the export permission according to the Law is necessary.
3. Note of ozone depleting substances of class1 (ODS) under the Montreal Protocol is used in manufacturing process of Device Solutions Business Division, Panasonic Industry Co., Ltd.

### ■ AEC-Q200 compliant

The products are tested based on all or part of the test conditions and methods defined in AEC-Q200. Please consult with Panasonic for the details of the product specification and specific evaluation test results, etc., and please review and approve Panasonic's product specification before ordering.

#### \* Intellectual property right

We, Panasonic Group are providing the product and service that customers can use without anxiety, working positively on the protection of our products under intellectual property rights.

Representative patents relating to xEV Film capacitors are as follows :

US Patent No.7027286, No.8315031, No.8861177, No.9240279, No.10475585  
JP Patent No.4784464, No.4930099, No.4946618, No.5391797