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Capacitors General Catalog

ELECTROLYTIC CAPACITORS

Capacitors General Catalog

Aluminum Electrolytic Capacitors with Hybrid Conductive Polymer

EP-cap

Aluminum Electrolytic Capacitors

PRECAUTIONS

- The contents of this catalog are current as of December 2024. They may change without prior notice. When ordering products, please be sure to request specifications and carefully to follow instruction.
- Products described herein are not intended for applications requiring extremely high reliability (for example, those in which extensive human injury or property damage may occur such as with lifesupport systems or aircraft control systems). For such applications, consult our sales department.
- The performance, characteristics, and features of the products described in this catalog are based on the products working alone under prescribed conditions. Data listed here is not intended as a guarantee of performance when working as part of any other product or device. In order to detect problems and situations that cannot be predicted beforehand by evaluation of supplied data, please always perform necessary performance evaluations with these devices as part of the product that they will be used in.
- When using the products listed in this catalog, please always be sure to try to prevent any possible accidents or injury by designing products in a careful and safe manner. If you have any questions concerning the use of these products, please contact any of our sales representatives.
- For any products listed in this catalog that may constitute restricted trade goods under overseas exchange or service trade laws, permission to deliver according to law may be required before importing.
- Unauthorized duplication of this catalog in part or in whole is forbidden.
- Please understand that we cannot be held responsible for any damages to the industrial properties of any third party that arise from the use or application of the products listed in this catalog, with the exception of those items directly related to method of construction.

ISO Certificates

IATF 16949
- Masuda Plant · Headquarter
  - Certificate Number IATF 16949-0066829-001
- Izumo Plant · Headquarter
  - Certificate Number IATF 16949-0066829-002
- SUN Electronic (Nantong) Co.,Ltd.
  - Certificate Number IATF 16949-0070293

ISO 9001
- Izumo Plant · Masuda Plant · Headquarter Certificate Number ISO 9001-0066829-501
- SUN Electronic (Nantong) Co., Ltd. Certificate Number ISO 9001-0070292

ISO 14001
- Izumo Plant · Masuda Plant Certificate Number E0792
- SUN Electronic (Nantong) Co., Ltd. Certificate Number 01223E20859R6M

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Series Line-up

Hybrid Conductive Polymer Type EP-cap

Classification		Series	Page	Features	High Cap.	Low ESR	Long Life	Solvent Proof	AEC-Q200	Category Temperature Range(℃)	Rated Voltage Range(V.DC)	Rated Capacitance Range(μF)	External Appearance	Marking Color
Surface Mount Type		F V L	21	105℃, 125℃		●		●	●	−55 to +125	6.3 to 10	100 to 1000	—	Blue
		HVHZ/ H V H	22	105℃ Long Life		●	●	●	●	−55 to +105	16 to 125	6.8 to 560	—	Blue
		HVPZ/ H V P	23	125℃		●		●	●	−55 to +125	16 to 125	6.8 to 560	—	Blue
		H V T	24	135℃		●		●	●	−55 to +135	25 to 63	10 to 330	—	Blue
		H V J	★	150℃		●		●	●	−55 to +150	25 to 63	15 to 68	—	Blue
		H V H F	25	105℃ High Capacitance	●	●	●	●	●	−55 to +105	25 to 100	10 to 470	—	Blue
		H V P F	26	125℃ High Capacitance	●	●		●	●	−55 to +125	25 to 100	10 to 470	—	Blue
		H V P X	27	125℃ High Ripple	●	●		●	●	−55 to +125	25 to 80	22 to 470	—	Blue
		H V T X	28	135℃ High Ripple		●	●	●	●	−55 to +135	25 to 35	47 to 470	—	Blue
	UP GRADE	H V H Y	29	105℃ High Ripple		●	●	●	●	−55 to +105	25 to 35	47 to 470	—	Blue
		H V P Y	30	125℃ High Ripple		●		●	●	−55 to +125	25 to 35	270 to 470	—	Blue
		H V T Y	31	135℃ High Ripple		●	●	●	●	−55 to +135	25 to 35	270 to 470	—	Blue
		H V H C	32	105℃ High Capacitance	●	●		●	●	−55 to +105	16 to 35	56 to 820	—	Blue
	UP GRADE	H V P C	33	125℃ High Capacitance	●	●		●	●	−55 to +125	16 to 35	33 to 820	—	Blue
	UP GRADE	F V C	34	125℃, 135℃ High Capacitance	●	●	●	●	●	−55 to +135	6.3 to 35	150 to 3900	—	Blue
		F V F P	35	125℃, 135℃ High Ripple		●	●	●	●	−55 to +135	16	330 to 1000	—	Blue
	UP GRADE	F V F	36	150℃ Long Life, High Ripple		●	●	●	●	−55 to +150	25 to 80	22 to 680	—	Blue
		F V S	37	125℃, −16V Proof		●		●	●	−55 to +125	35	47 to 220	—	Blue
Radial Lead Type		H E H	★	105℃		●	●	●	●	−55 to +105	50 to 100	10 to 82	—	Blue
		H E H Z	★	105℃ Long Life		●	●	●	●	−55 to +105	16 to 35	47 to 560	—	Blue
		H E P Z	★	125℃		●		●	●	−55 to +125	16 to 35	47 to 560	—	Blue
		H E H F	★	105℃ High Capacitance	●	●	●	●	●	−55 to +105	25 to 100	10 to 470	—	Blue
		H E P F	★	125℃ High Capacitance	●	●		●	●	−55 to +125	25 to 100	10 to 470	—	Blue
		H E P C	★	125℃ High Capacitance	●	●		●	●	−55 to +125	16 to 35	100 to 820	—	Blue
	UP GRADE	F E C	38	125℃, 135℃ High Capacitance	●	●	●	●	●	−55 to +135	6.3 to 35	220 to 3900	—	Blue
	UP GRADE	F E F	39	125℃, 135℃ High Ripple		●	●	●	●	−55 to +135	25 to 80	22 to 680	—	Blue

Aluminum Electrolytic Type

Classification		Series	Page	Features	Small & Thin type	Low Impedance	Long Life	Solvent Proof	AEC-Q200	Category Temperature Range(℃)	Rated Voltage Range(V.DC)	Rated Capacitance Range(μF)	External Appearance	Marking Color	
Surface Mount Type		CE-LD	41	4.5mm Height, Long Life	●		●	●	●	−40 to +105	6.3 to 50	10 to 100	—	Black	★2
		CE-FSS	42		●			●	●	−40 to +105	6.3 to 50	4.7 to 220	—	Black	
		CE-FS	43	105℃ Standard					●	−40 to +105	160 to 400	2.2 to 82	—	Black	★2
			44					●	●	−55 to +105	6.3 to 63	2.2 to 12000			
								●	●	−40 to +105	100	4.7 to 330			
		CE-AX	46	Low Impedance		●		●	●	−55 to +105	6.3 to 50	4.7 to 6800	—	Black	★2
		CE-ZX	48	Super Low ESR		●		●	●	−55 to +105	6.3 to 50	33 to 1800	—	Black	
	UP GRADE	CE-ZC	49		●	●		●	●	−55 to +105	6.3 to 63	47 to 4700	—	Black	
	UP GRADE	CE-LX	50	Low Impedance, Long Life		●	●	●	●	−55 to +105	6.3 to 100	4.7 to 12000	—	Black	★2
		CE-GA	52			●		●	●	−55 to +105	6.3 to 63	2.2 to 220	—	Black	
		CE-LS	53	Low Impedance, Long Life		●	●	●	●	−40 to +105	6.3 to 50	10 to 330	—	Black	
		CE-LH	54	Long Life			●	●	●	−40 to +105	6.3 to 50	2.2 to 220	—	Black	
			55				●		●	−40 to +105	160 to 400	2.2 to 120			
		CE-LL	56	Low Impedance, Long Life		●	●	●	●	−40 to +105	6.3 to 50	10 to 1000	—	Black	
		CE-LF	57	Low Impedance, Long Life		●	●	●	●	−40 to +105	16 to 50	100 to 470	—	Black	
		CE-PC	58	125℃				●	●	−55 to +125	6.3 to 100	2.2 to 4700	—	Black	
		CE-PH	60			●		●	●	−40 to +125	16 to 63	10 to 3900	—	Black	
		CE-PS	62	125℃ High Capacitance	●			●	●	−40 to +125	16 to 63	47 to 680	—	Black	
		CE-PF	63				●	●	●	−40 to +125	25 to 35	100 to 330	—	Black	
	NEW	CE-PL	64	125℃ Long Life, High Capacitance	●		●	●	●	−40 to +125	25 to 35	330 to 470	—	Black	
		CE-PB	65	125℃ High Capacitance				●	●	−40 to +125	25 to 35	1300 to 3300	—	Black	
		CE-TH	66	135℃			●	●	●	−40 to +135	16 to 50	22 to 1000	—	Black	
	UP GRADE	CE-JX	67	150℃				●	●	−40 to +150	25 to 50	33 to 470	—	Black	
		CE-FN	68	105℃ Bi-polar				●	●	−55 to +105	6.3 to 63	1.0 to 47	—	Black	

★2 Some of specified case sizes' parts will be discontinued. (4×4.5, 4×7, 5×4.5, 5×7.10×7.7, 8×15, 8×20)

Please refer to http://www.sunelec.co.jp for the information where ★ marking is indicated.

Series Line-up

Aluminum Electrolytic Type

Classification		Series	Page	Features	Small & Thin type	Low Impedance	Long Life	Solvent Proof	Category Temperature Range(℃)	Rated Voltage Range(V.DC)	Rated Capacitance Range(μF)	External Appearance	Marking Color	
Radial Lead Type		ME-SZ	69	7mm Height, Temperature of Wide Range	●			●	−55 to +105	6.3 to 50	10 to 330	Green	White	★2
		ME-SWG	70	7mm Height, Low ESR	●	●			−40 to +105	6.3 to 35	47 to 330	Black	Gold	★2
		ME-LS	71	Long Life, High Reliability		●	●	●	−40 to +105	6.3 to 50	10 to 1000	Black	Silver	★2
		ME-CZ	72	Small Standard, Temperature of Wide Range	●			●	−55 to +105	6.3 to 100	3.3 to 15000	Green	White	
		ME-CA	74	Small Standard, Low Impedance	●	●		●	−55 to +105	6.3 to 50	4.7 to 15000	Green	Silver	
		ME-CX	76	Small, Low Impedance	●	●		●	−55 to +105	6.3 to 35	47 to 15000	Green	Gold	★2
		ME-AX	78	Low Impedance, Long Life		●	●	●	−55 to +105 −40 to +105	6.3 to 63 100	4.7 to 12000 5.6 to 470	Green	Gold	★2
		ME-WX	80	Low Impedance, High Ripple		●			−40 to +105	6.3 to 50	22 to 6800	Green	Gold	★2
		ME-WA	82	Low Impedance, High Ripple, Long Life		●	●		−40 to +105	6.3 to 63	82 to 8200	Black	Gold	★2
		ME-WL	84	Low Impedance, Long Life	●	●	●		−40 to +105	6.3 to 100	4.7 to 470	Green	Silver	
		ME-WG	85	Super Low ESR		●			−40 to +105	6.3 to 25	220 to 3300	Green	Gold	★2
		ME-FX	86	Long Life			●	●	−40 to +105	10 to 100	4.7 to 470	Black	White	
		ME-FC	87	Guaranteed 105℃ (Mid. & High Voltage)					−40 to +105 −25 to +105	160 to 400 450	0.47 to 220 22 to 47	Black	White	
		ME-FD	87	105℃, Low Profile (Mid. & High Voltage)					−40 to +105 −25 to +105	160 to 400 450	22 to 220 10 to 33	Black	White	
		ME-FH	88	105℃, Long Life (Mid. & High Voltage)			●		−40 to +105 −25 to +105	160 to 400 450	4.7 to 220 6.8 to 68	Black	White	
		ME-SWN	89	7mm Height, Bi-polar	●			●	−40 to +85	6.3 to 50	4.7 to 47	Black	White	★2
		ME-HWN	90	Small, Standard, Bi-polar	●			●	−40 to +85	6.3 to 100	2.2 to 2200	Black	White	

★2 Some of specified case sizes' parts will be discontinued. (4×4.5, 4×7, 5×4.5, 5×7, 10×7.7, 8×15, 8×20)

Please contact us for AEC-Q200 requirements.

Standardization Notice

For all new design, please place your orders with the suggested alternative series.

Aluminum Electrolytic Type

Surface Mount Type

Series	Features	alternative series
CE-BD ★2,★3	4.5mm Height	CE-LD
CE-FD ★2	105°C 4.5mm Height	
CE-BSS ★1	Small, Standard	CE-FSS
CE-BS ★3	Standard	CE-FS
CE-FH	Long Life	CE-LX
CE-KX	Low Impedance	
CE-NP ★1	Bi-polar	CE-FN

Surface Mount Type

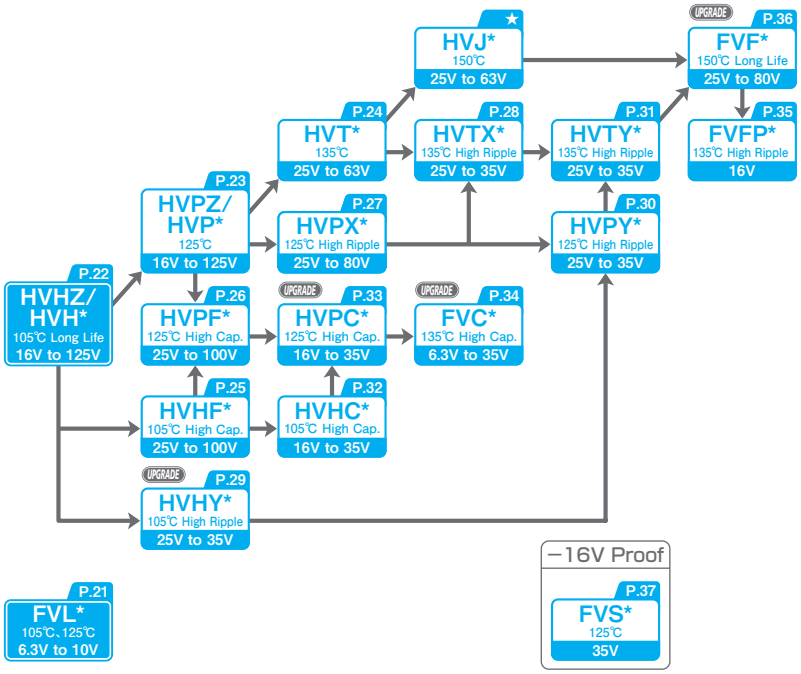
Series	Features	alternative series
ME-SZ ★2	7mm Height, Temperature of Wide Range	—
ME-UW ★1	5mm Height	
ME-UZ ★1	5mm Height, Temperature of Wide Range	
ME-SWG ★2	7mm Height, Low ESR	
ME-LS ★2	Long Life	
ME-UAX ★1	5mm Height, Low Impedance	
ME-SAX ★1	7mm Height, Low Impedance	ME-SZ,LS
ME-SWB	7mm Height	ME-SZ
ME-HC	Standard	ME-CZ
ME-FA	105°C Standard	
ME-HPC	Standard(Mid. & High Voltage)	ME-FC(Mid, & High Voltage)
ME-HPD	Long Profile(Mid. & High Voltage)	ME-FC(Mid, & High Voltage)
ME-SWN ★2	7mm Height, Bi-polar	—

★1 It will be discontinued.
★2 Some of specified case sizes' parts will be discontinued. (4×4.5, 4×7, 5×4.5, 5×7, 10×7.7, 8×15, 8×20)
★3 Some of specified rated voltade parts will be discontinued. (4V)

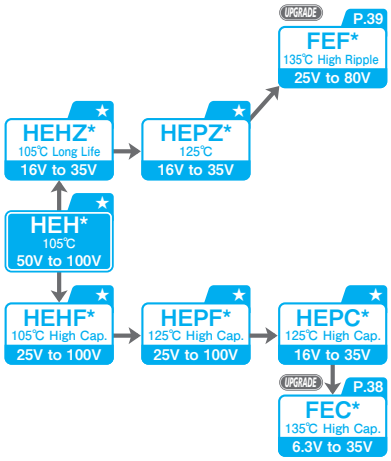
Series Chart

■ Hybrid Conductive Polymer Type EP-cap

SURFACE MOUNT TYPE

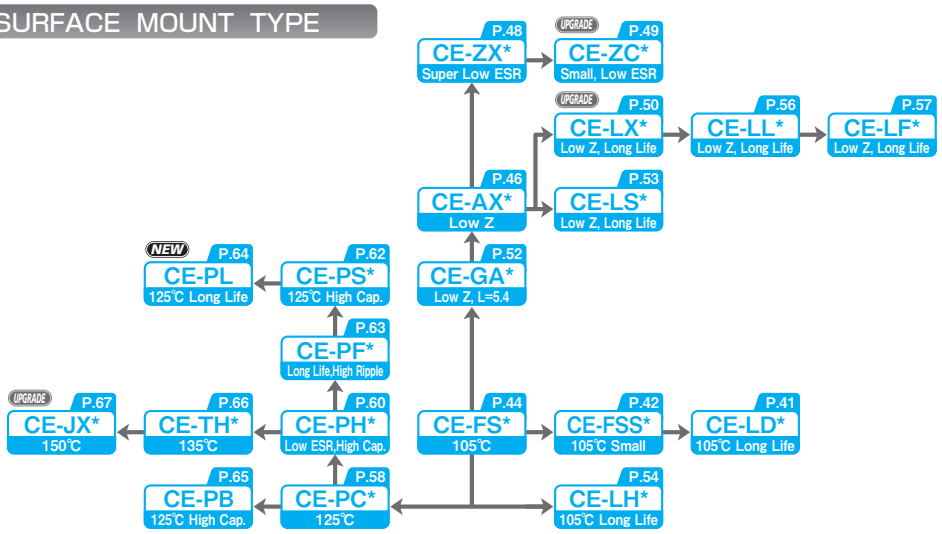


RADIAL LEAD TYPE



■ Aluminum Electrolytic Type

SURFACE MOUNT TYPE



BI-POLAR

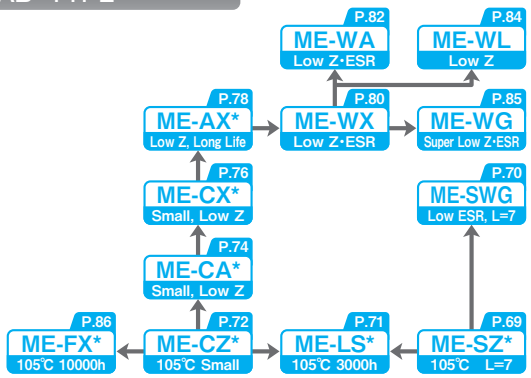
CE-FN* P.68 105℃

MID.&HIGH VOLTAGE

CE-LH P.55 105℃ 5000h

CE-FS P.43 105℃ 2000h

RADIAL LEAD TYPE



BI-POLAR

ME-SWN* P.89 L=7

ME-HWN* P.90 Standard

MID.&HIGH VOLTAGE

ME-FH P.88 105℃ 12000h

ME-FC·FD P.87 105℃ 2000h

⋆solvent proof

Please refer to http://www.sunelec.co.jp for the information where ★ marking is indicated.

For using aluminum electrolytic capacitors (hereafter "capacitor/capacitors"), please pay attention to the guidelines listed below.

For circuit design

1) Please make sure that the operating condition and the mounting condition are within the rated value which is described in the catalog or the specification.

2) Please make sure that the operating temperature and the operating ripple current are within the rated value which is described in the catalog or the specification.
   a) The operating temperature affects the lifetime of the capacitor. Generally speaking, the expected lifetime of the capacitor is 2times longer by each 10degC reduction. Please use the capacitor within the upper limit of the category temperature.
   b) Do not apply an excessive ripple current (higher than the rated ripple current) to the capacitor. An excessive ripple current may cause abnormal heating which leads to a damage or a shortening lifetime of the capacitor. Please use the capacitor within the rated ripple current described in the catalog or the specification.

3) Please choose a capacitor which meets the designed lifetime of the application.

4) The capacitor has a polarity. Do not apply a reverse voltage or an alternating current voltage to the capacitor. Please use the bi-polar capacitor for the circuit which polarity may change or be unstable. Do not use the bi-polar capacitor in an alternating current circuit.

5) Do not use the general-purpose capacitor for the circuit which has a repeat of a rapid charge and discharge. Please contact us if the capacitor is exposed in a repeat of a rapid charge and discharge.

6) Do not apply an excessive voltage (higher than the rated voltage) to the capacitor.

7) The exterior sleeve of the capacitor is not insulated. Do not place the capacitor where insulation is required. The case of the capacitor is not insulated. Please make sure that the case of the capacitor is insulated from the circuit pattern and the lead-wires.

8) Do not use the capacitor in the environments listed below.
   a) In the environment where the capacitor is exposed in water, salt water, oil or where condensation may occur.
   b) In the environment where poisonous gas (hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, etc) is filled in atmosphere.
   c) In the environment where ozone, ultra-violet, radiation are irradiated.
   d) In the environment where the capacitor is exposed in the vibration or physical shock which is severer than the range defined in the catalog or the specification.

9) For mounting the capacitor, please follow the guidelines listed below.
   a) Please make sure that the hole space of the circuit board matches the lead-wire space of the capacitor.
   b) Please make sure that the space above the pressure relief vent is greater than the value listed below.

Cace Diameter	Space
φ6.3 to φ16	2mm or more
φ18	3mm or more

   c) Please make sure that the circuit wires or the circuit pattern is not located above the pressure relief vent.
   d) If the distance between the top of the capacitor and the circuit board above the capacitor is shorter than the listed in 9.b, please make a hole in the board in order to relieve a gas from the pressure relief vent.

10) Design the circuit pattern so that the sealing rubber will not be placed on it.

11) Do not place heat-generating devices around the capacitor.
Do not place heat-generating devices on the other side of the capacitor.

12) Please refer to "surface mount type recommended land pattern" in the catalog or the specification.

13) For circuit design, please follow the guidelines listed below.
a) Temperature and/or the frequency of a ripple current affect the electrical characteristics of the capacitor. Please consider the variation of the electrical characteristics for the circuit design.
b) For mounting the capacitor on a double-sided circuit board, do not place the capacitor on excessive holes of the circuit board.
c) When the multiple capacitors are connected in parallel, please consider the current balance for the capacitors.
d) When the multiple capacitors are connected in series, please put resistors (voltage divider) in parallel to keep the voltage balance for the capacitors.

Mounting

1) Do not reuse the capacitor which has been mounted and electrically loaded on the circuit board.

2) A transient recovery voltage may occur in the capacitor. In this case, please discharge the capacitor through a 1k ohm resistor.

3) A high leakage current may occur after the capacitor stores for a long period.
Please apply voltage to the capacitor through a 1k ohm resistor.

4) Please check the rated capacitance and the rated voltage of the capacitor before mounting on the circuit board.

5) Please check the polarity of the capacitor before mounting on the circuit board.

6) Do not drop the capacitor on the floor. Do not use the capacitor which has been dropped on the floor.

7) Do not deform the capacitor.

8) Do not apply a force which causes a break of the case of the capacitor.

9) Please make sure that the hole space of the circuit board matches the lead-wire space of the capacitor.

10) Please adjust the clinch force of an automatic insertion machine in order to avoid excessive stress to the lead-wires of the capacitor.

11) Do not apply an excessive impact to the capacitor by the suction nozzle of an automatic insertion machine or a chip mounter also the impacts by a component checker or a centering operation.

12) For soldering by a soldering iron, please check the guidelines listed below.
a) Please make sure that the soldering condition (temperature and duration) is within the range defined in the catalog or the specification.
b) If the hole space of the circuit board does not match the space of the lead-wires of the capacitor, please apply a lead-wire forming before soldering. Do not apply an excessive stress to the capacitor when applying a lead-wire forming.
c) Do not reuse the capacitor which has been mounted on a circuit board.
d) Do not let the tip of a soldering iron contact on the body of the capacitor.

13) For flow soldering, please follow the guidelines listed below.
   a) Do not soak the body of the capacitor in a melted solder. Please make sure that the soldering is performed on the other side of the capacitor.
   b) Please make sure that the soldering conditions (preheating, solder temperature, soak duration) are within the range defined in the catalog or the specification.
   c) Do not leave flux on the body of the capacitor.
   d) Do not let the metallic lead-wires of the other components contact on the capacitor.

14) For reflow soldering, please follow the guidelines listed below.
   a) Please make sure that the soldering conditions (preheating, solder temperature, duration) are within the range defined in the catalog or the specification.
   b) Do not apply excessive heating to the capacitor when using an infrared heater. The color or/and the material of the capacitor affect the absorption of infrared ray.
   c) Cracks of the ink (for indicating the cathode polarity) may occur, however the cracks do not affect the reliability of the capacitor.

15) Do not apply any mechanical stress listed below to the capacitor after mounting on the circuit board.
   a) Do not tilt, lean, twist the capacitor.
   b) Do not use the capacitor as a grip for moving a circuit board manually.
   c) Do not hit the capacitor. When stacking circuit boards, do not let the capacitor contact a circuit board or the other components.

16) For washing a printed circuit board. Do not wash the capacitor with a halogen-containing solvent. The solvent-proof capacitor must be used when washing is required. Please make sure that the washing condition is within the range defined in the catalog or the specification. The capacitor may fail due to a type of washing solvent. Please pay attention to the risks listed below.
   a) A halogen-containing solvent may cause electrochemical corrosion in the capacitor.
   b) An alkali-containing solvent may cause corrosion (dissolution) of the aluminum case of the capacitor.
   c) Xylene may cause degradation of the sealing rubber.
   d) Acetone may cause a loss of the ink.
   e) A terpene/petroleum-containing solvents may cause degradation of the sealing rubber.

17) For washing the solvent-proof capacitor, please follow the guidelines listed below.
   a) Please control the conductivity, pH, specific gravity, moisture content, etc of a washing solvent.
   b) Do not store the capacitor where a washing solvent is vaporized or in an airtight enclosure. Do not dry the capacitor or the circuit board by heat higher than the upper limit of the operating temperature.

18) Do not use a glue and/or a coating material including halogen.

19) For using a glue and/or a coating material, please follow the guidelines listed below.
   a) Do not leave flux or a stain between the capacitor and the circuit board.
   b) Please dry out a washing solvent before using a glue and/or a coating material. Do not cover the sealing rubber of the capacitor by a glue and/or a coating material.
   c) Please make sure that the thermal curing condition for a glue and/or a coating material is within the rated value which is described in the catalog or the specification.

During use in application

1) Do not touch the capacitor.

2) Do not make a short-circuit between the lead-wires by a conductive material. Do not expose the capacitor in a liquid/conductive solution.

3) For mounting the circuit board, please follow the guideline listed below. Do not use the devise in the following environmental conditions:
   a) In the environment where the capacitor is exposed in water or oil.
   b) In the environment where the capacitor is exposed in direct sunlight.
   c) In the environment where the capacitor is exposed in ozone, ultraviolet ray, or radiation.
   d) In the environment where poisonous gas (hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, etc) is filled in atmosphere.
   e) In the environment where the capacitor is exposed in the vibration or physical shock which is severer than the range defined in the catalog or the specification.

Maintenance

1) For industrial applications, please perform periodical inspections.
2) In periodical inspection, please check the points listed below.
   a) Appearance (open-vent, a leakage of the electrolyte)
   b) Electrical characteristics (leakage current, capacitance, dissipation factor, and the other items defined in the catalog or the specification)

In case of a problem

1) If the safety-vent of the capacitor is opened and a gas relive from it, please turn off the main power supply of the application or plug off the power code from an outlet.
2) A high temperature gas over +100degC may come from the safety-vent of the capacitor. Leave the body from the capacitor. If a gas from the capacitor happen to coming into the eyes, please wash the eyes with water immediately. If a gas from the capacitor happen to coming into the mouth, please gargle the mouth with water immediately. Do not lick the electrolyte of the capacitor. If the electrolyte of the capacitor is touched on the skin, please rinse it out with a soap and water.

Storage conditions

1) Do not store the capacitor in high temperatures and/or in high humidity. Please store the capacitor at room temperature between 5 and 35degC in relative humidity below 75%. Please use the capacitor within one year after the shipment.
2) Do not store the capacitor in the environment where it is exposed in water, oil, or salt water.
3) Do not store in the environment where poisonous gas (hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, etc) is filled in atmosphere.
4) Do not store in the environment where the capacitor is exposed in ozone, ultraviolet ray, or radiation.

Scrap of capacitors

For scraping the capacitor, please follow the guideline listed below.
a) Please make a hole in the capacitor or crush the capacitor before burning it.
b) If not, please ask waste-disposal specialist to take care of them, such as burying in the ground.

AEC-Q200 Compatibility

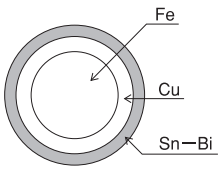
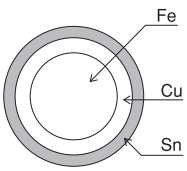
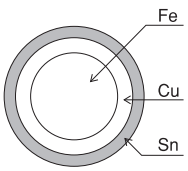
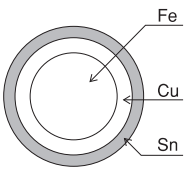
AEC("Automotive Electronics Council") is an organization for standardizing specifications for reliability testing and qualification. AEC was established by automotive manufacturers and electronic component manufacturers in U.S. Testing data for qualification compliant to AEC-Q200 (reliability testing standard for passive components) is available upon request.
For details, please contact us.

For important notice of using the aluminum electrolytic capacitors. we observe the guidelines of EIAJ RCR-2367C "Safety Application Guide for fixed aluminum electrolytic capacitors for use in electronic equipment". Please read carefully the guideline for details.

Conforming to environment

We encourage activities for protecting global environment. All our products are lead-free. The sleeve material is PET or sleeve-less(FEF). Please contact us if details are required.

■ Environmental Products (Compliance of RoHS Directive)

	Surface Mount Type Aluminum Electrolytic Capacitors		Radial Lead Type Aluminum Electrolytic Capacitors	
Type code	CE, HV, FV ★1	CE_T	ME	HE_T, FE_T
Cross section of lead wire (Kind of plating)	(φ4 to φ12.5) 	(φ16, φ18) 		
Part number (example)	16CE100LX (100μF／16V)	10CE4700LXT (4700μF／10V)	10ME100AX (100μF／10V)	63HEH10MT (10μF／63V)
Sleeve	Not used	Not used	PET	Not used
Moisture Sensitivity Level(MSL)★2	Not applicable No need dry package	Not applicable No need dry package	Not applicable No need dry package	Not applicable No need dry package

★1 Sn plating lead-wire for Surface Mount Type : “CE_T”, “HV_T”, “FV_T”
★2 Conforming to IPC/JEDEC J-STD-020

Conforming to RoHS

The capacitors do not intentionally contain the banned substances (Cd, Pb, Hg, Cr(Ⅵ), PBB, PBDE, DEHP, BBP, DBP, DIBP) listed in “RoHS directrive : (EU) 2015/863” and its concentration is less than the threshold values.

Conforming to European REACH Regulation.

Our products are "articles without any intended releas" besed or RIP3.8TGD published on 26 May 2008. They are not applicable for "Registration" for European REACH Regulation Article 7 (1).

Intellectual Property Rights

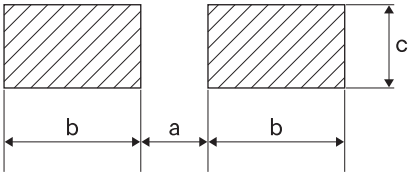
We proactively work on protecting the intellectual property rights of our products.

Examples of the patents related to our aluminum electrolytic capacitors with hybrid conductive polymer(***EP-cap***).

JP. Pat. No.4911509, JP. Pat. No.4916416, JP. Pat. No.5305569, JP. Pat. No.6442162, JP. Pat. No.6899072
JP. Pat. No.7396695, JP. Pat. No.7465575
US. Pat. No.7497879, US. Pat. No.7859829, US. Pat. No.7872858, US. Pat. 11380493, US. Pat. 11990286
CN. Pat. No.ZL200710109529.7, CN. Pat. No.ZL200810125826.5, CN. Pat. No.ZL200810136119.6
CN. Pat. No.ZL201880097841.5, CN. Pat. No.ZL202080064325.X, CN. Pat. No.ZL202080097732.0
CN. Pat. No.ZL201980100340.2

Surface Mount Type Recommended Land Pattern

●Land pattern



(Unit:mm)

Size	a	b	c
φ4	1.0	2.6	1.8
φ5	1.4	3.0	1.8
φ6.3	1.8	3.6	1.8
φ8	2.8	4.1	2.1
φ10	4.3	4.4	2.5
φ12.5	4.3	5.8	2.5
φ16	6.6	6.5	5.0
φ18	6.6	7.7	5.0

(1)Please refer to page 17･18 for S.M.T Recommended Land Pattern of Anti-vibration Structure(CA Type, HA Type, HC Type, FA Type, FC Type).

Soldering Condition / Reflow Soldering Condition

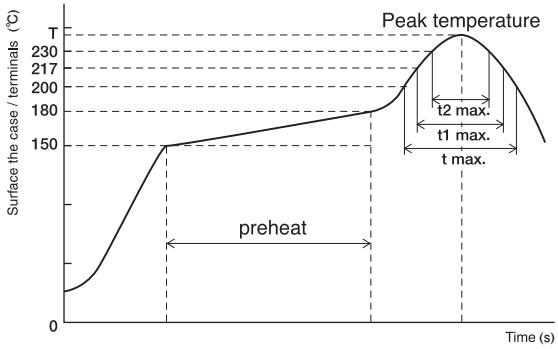
Soldering Condition

- Soldering with a soldering iron : within 3 seconds at 350℃ unless otherwise specified in the spec.
- Flow soldering : within 10 seconds at 260℃ unless otherwise specified in the spec.
  (Do not flow soldering with SMD type.)
- Thermal curing oven : within 2 minutes at below 150℃ ambient

Reflow Soldering Condition

●Profile 1

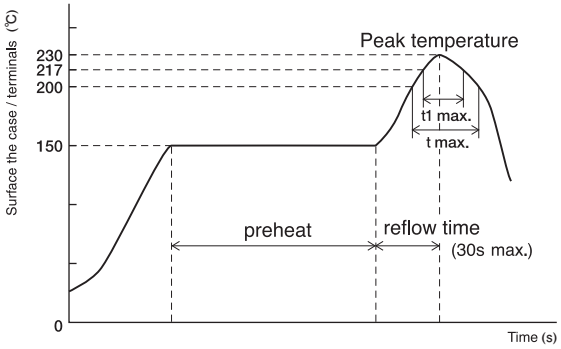
AIR reflow and IR reflow



Preheat ; 150℃ to 180℃, Within 120sec.

●Profile 2

AIR reflow and IR reflow



Preheat ; 150℃, Within 120sec.

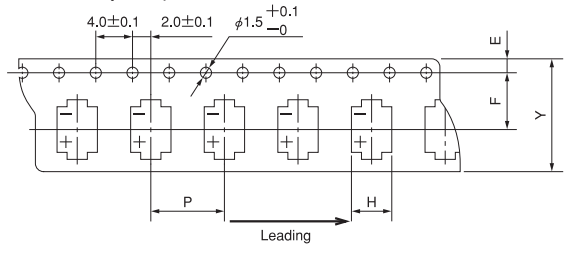
Series	Voltage (V)	Size	Time of more than 200℃ (t)	Time of more than 217℃ (t1)	Time of more than 230℃ (t2)	Peak temperature Within 5sec.(T)	Reflow cycle	Profile
CE-FS, CE-FSS CE-GA, CE-AX CE-LH, CE-LL CE-LF, CE-FN	6.3 to 63	φ4 to φ6.3	Within 70sec.	Within 60sec.	Within 40sec.	250℃	2	1
		φ8	Within 60sec.	Within 50sec.	Within 30sec.	245℃	2	1
		φ10, φ12.5	Within 50sec.	Within 40sec.	Within 20sec.	240℃	2	1
		φ16, φ18	Within 50sec.	Within 30sec.	Within 15sec.	235℃	2	1
	80 to 100	φ4 to φ6.3	Within 60sec.	Within 50sec.	Within 40sec.	250℃	2	1
		φ8	Within 60sec.	Within 40sec.	Within 30sec.	240℃	2	1
		φ10	Within 50sec.	Within 30sec.	Within 20sec.	240℃	2	1
		φ12.5	Within 50sec.	Within 30sec.	Within 20sec.	235℃	2	1
		φ16, φ18	Within 45sec.	Within 20sec.	Within 10sec.	235℃	2	1
	160 to 400	φ8, φ10	Within 50sec.	Within 30sec.	Within 20sec.	240℃	2	1
		φ12.5	Within 45sec.	Within 20sec.	Within 10sec.	235℃	2	1
		φ16, φ18	Within 30sec.	Within 15sec.	—	230℃	2	2
CE-ZX, CE-ZC CE-LX, CE-LS CE-PC, CE-PH CE-PS, CE-PF CE-PL,CE-PB, CE-TH, CE-JX	6.3 to 50	φ4 to φ8	Within 80sec.	Within 70sec.	Within 40sec.	260℃	2	1
		φ10	Within 70sec.	Within 60sec.	Within 40sec.	250℃	2	1
		φ12.5	Within 60sec.	Within 50sec.	Within 30sec.	245℃	2	1
		φ16, φ18	Within 50sec.	Within 40sec.	Within 20sec.	240℃	2	1
	63	φ6.3	Within 70sec.	Within 60sec.	Within 40sec.	250℃	2	1
		φ8	Within 60sec.	Within 50sec.	Within 30sec.	245℃	2	1
		φ10, φ12.5	Within 50sec.	Within 40sec.	Within 20sec.	240℃	2	1
		φ16, φ18	Within 50sec.	Within 40sec.	Within 15sec.	235℃	2	1
	80 to 100	φ6.3	Within 60sec.	Within 50sec.	Within 40sec.	250℃	2	1
		φ8	Within 60sec.	Within 50sec.	Within 30sec.	240℃	2	1
		φ10	Within 50sec.	Within 40sec.	Within 20sec.	240℃	2	1
		φ12.5	Within 50sec.	Within 40sec.	Within 20sec.	235℃	2	1
		φ16, φ18	Within 45sec.	Within 30sec.	Within 10sec.	235℃	2	1
CE-LD	ALL	ALL	Within 60sec.	Within 50sec.	Within 30sec.	245℃	2	1

The maximum cycle of reflow soldering is two times. The second cycle must be done after sufficient cooling time of more than one hour to return the temperatures of circuit boards and components back to room temperature.
Please refer to page 20 for reflow soldering condition of EP-cap.

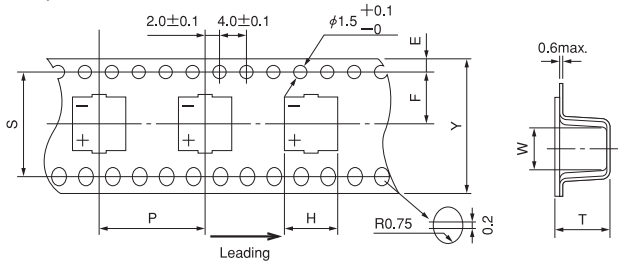
Packaging Specifications

Surface Mount Type Taping Specifications (Unit:mm)

Carrier tape $\phi D \leq 10$



$\phi D \geq 12.5$

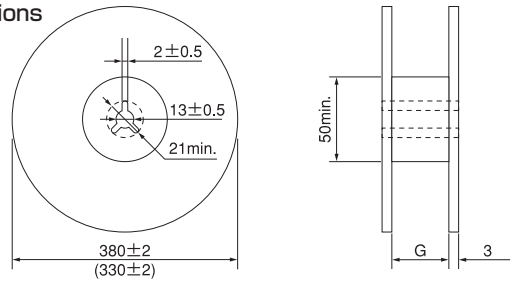


(Unit:mm)

size(φD×L)	Y±0.3	H±0.2	W±0.2	P±0.1	E±0.1	F±0.1	T±0.2	S±0.1
φ4×5.4	12.0	4.7	4.7	8.0	1.75	5.5	5.8	—
φ4×6.0	12.0	4.7	4.7	8.0	1.75	5.5	6.4	—
φ5×5.4	12.0	5.7	5.7	12.0	1.75	5.5	5.8	—
φ5×6.0	12.0	5.7	5.7	12.0	1.75	5.5	6.4	—
φ5×7.0	12.0	5.7	5.7	12.0	1.75	5.5	7.1	—
φ6.3×4.5	16.0	7.0	7.0	12.0	1.75	7.5	5.1	—
φ6.3×5.4	16.0	7.0	7.0	12.0	1.75	7.5	5.8	—
φ6.3×6.0	16.0	7.0	7.0	12.0	1.75	7.5	6.5	—
φ6.3×7.0	16.0	7.0	7.0	12.0	1.75	7.5	7.5	—
φ6.3×7.7	16.0	7.0	7.0	12.0	1.75	7.5	8.2	—
φ6.3×8.4	16.0	7.0	7.0	12.0	1.75	7.5	9.2	—
φ8×10.2(10.5)	24.0	8.7	8.7	16.0	1.75	11.5	11.1	—
φ10×10.2(10.5)	24.0	10.7	10.7	16.0	1.75	11.5	11.2	—
φ10×12.5	24.0	10.7	10.7	16.0	1.75	11.5	13.3	—
φ10×13.5(13.8)	24.0	10.7	10.7	16.0	1.75	11.5	14.6	—
φ10×16.5	24.0	10.7	10.7	16.0	1.75	11.5	17.7	—
φ12.5×13.5	32.0	13.2(13.9★)	13.2(13.9★)	24.0	1.75	14.2	14.3(14.7★)	28.4
φ16×16.5	44.0	17.5	17.5	28.0	1.75	20.2	17.3(17.8★)	40.4
φ16×21.5	44.0	17.5	17.5	28.0	1.75	20.2	22.8	40.4
φ18×16.5	44.0	19.5	19.5	32.0	1.75	20.2	17.8	40.4
φ18×21.5	44.0	19.5	19.5	32.0	1.75	20.2	22.5	40.4

★ Anti-vibration Structure : CA Type

Reel dimensions



(Unit:mm)

	G
φ4, φ5	14
φ6.3	18
φ8, φ10	26
φ12.5	34
φ16, φ18	46

Minimum Packing Quantity

φD×L(mm)	Quantity of 1 Reel(φ380)	Quantity of 1 Reel(φ330)	Quantity of 1 package(Reel)
φ4×5.4	2000	—	5
φ4×6.0	2000	—	5
φ5×5.4	—	1000	5
φ5×6.0	1000	—	5
φ5×6.0 ***EP-cap***	1200 ★2	—	5
φ5×7.0	1000	—	5
φ6.3×4.5	—	1000	5
φ6.3×5.4	—	1000	5
φ6.3×6.0	1000	—	5
φ6.3×7.0	1000	—	5
φ6.3×7.7	900	—	5
φ6.3×8.4	800	—	5
φ8×10.2(10.5)	500	—	3
φ10×10.2(10.5)	500	—	3
φ10×12.5	400	—	3
φ10×13.5(13.8)	400	—	3
φ10×16.5	325	—	3
φ12.5×13.5	250 ★1	—	2
φ16×16.5	200 ★1	—	2
φ16×21.5	150 ★2	—	2
φ18×16.5	175	—	2
φ18×21.5	125	—	2

Please place your orders with an integral multiple of the minimum packing quantity.

★1 "+D" has to be put after the part number.
Example
25CE2200LXT+D

★2 "+PN" has to be put after the part number.
(For EP-Cap, the quantity per reel is 1200pcs.)
Example
25HVPF33M+PN
25CE2700PHT+PN

The suffix "+P" at the end of the part number indicates a plastic reel.
Example
16CE470LX+P
25CE2200LXT+DP

Packaging Specifications

■ Radial Lead Type Taping Specifications for Automatic Inserting Machines

Fig.1

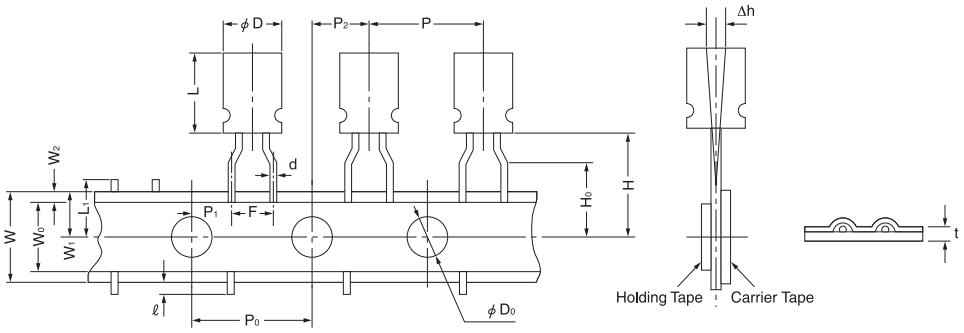


Fig.2

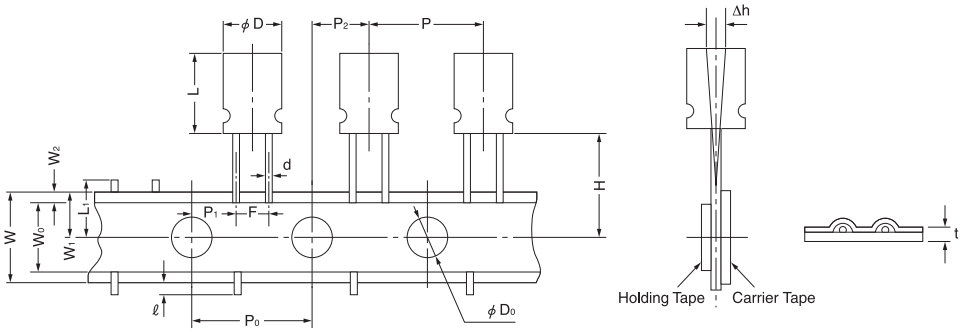
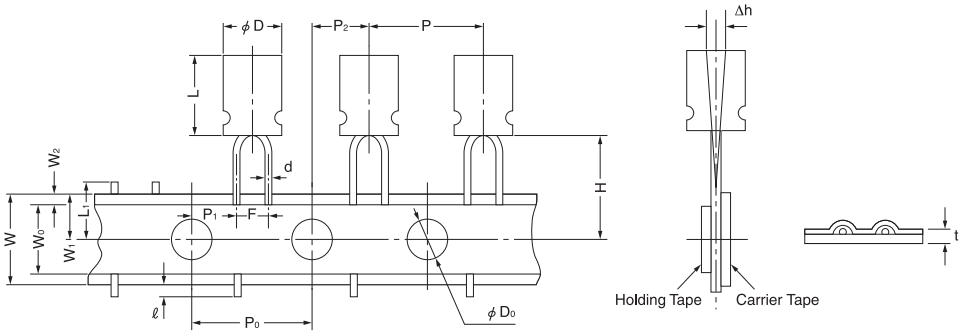


Fig.3



(Unit:mm)

Product Outer Dimensions		φ4 to φ6.3×7 φ6.3×7.5	φ5×11 φ6.3×11	φ8	φ10	φ12.5×20 φ12.5×25	φ16 ×25	φ4 to φ5×7	φ6.3×7 φ6.3×7.5	φ5 ×11	φ6.3 ×11	φ8
Fig. No.		1	1	1	2	2	★3	3	2	3	2	2
Lead wire interval	F $^{+0.8}_{-0.2}$★1	5.0	5.0	5.0	5.0	5.0	7.5	2.5	2.5	2.5	2.5	3.5
Pitch between components	P ±1.0	12.7	12.7	12.7	12.7	15.0	30.0	12.7	12.7	12.7	12.7	12.7
Sprocket hole pitch	P0 ±0.2	12.7	12.7	12.7	12.7	15.0	15.0	12.7	12.7	12.7	12.7	12.7
Sprocket hole position	P1 ±0.5	3.85	3.85	3.85	3.85	5.0	3.75	5.1	5.1	5.1	5.1	4.6
	P2 ±1.0	6.35	6.35	6.35	6.35	7.5	7.5	6.35	6.35	6.35	6.35	6.35
Lateral deviation	Δh ±1.0	0	0	0	0	0	0	0	0	0	0	0
Carrier tape width	W ±0.5	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
Holding tape width	W0 min.	6.0	6.0	6.0	6.0	11.5	11.5	6.0	6.0	6.0	6.0	6.0
Sprocket hole position	W1 ±0.5	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Holding tape position	W2 max.	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Component-base height	H ±0.75★2	17.5	18.5	20.0	16.0 | 18.5	16.0 | 18.5	18.5	17.5 | 18.5	17.5 | 18.5	18.5	18.5	18.5
Lead wire clinch height	H0 ±0.5	16.0	16.0	16.0	—	—	—	—	—	—	—	—
Sprocket hole diameter	φD0 ±0.2	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Tape thickness(in total)	t ±0.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Lead wire protrusion	ℓ max.	0	0	0	0	0	0	0	0	0	0	0
Cut position of failures	L1 max.	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0

Taping code(standard)	Zig-Zag type	+T	+T	+T	+T	+TO	+T	+TO	+T	+TS	+TS0	+TS	+TS0	+TS	+TS	+TS

For EP-cap, only straight taping(Fig.2) is available for φ8/φ10 diameters.
The taping coad has to be put after the part number.
Part number 16ME100HC+T

Taping code

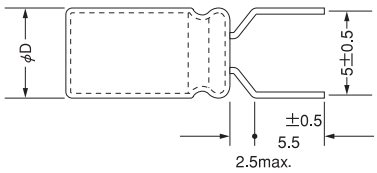
+TO, +TSO (0=Zero)

★1 Fig.2, Fig.3:±0.5
★2 φ10・φ12.5 with H=18.5:$^{+1.5}_{-0.5}$
★3 φ16 every two slots in Fig.2

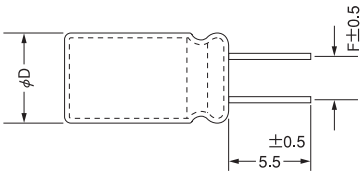
Packaging Specifications

Radial Lead Type Lead-wire Process Standard Specification (Unit:mm)

1.Lead-wire forming
for φD=5,6.3,8mm.



2.Lead-wire cutting



Lead-wire forming is unavailable for EP-cap.
For EP-cap, only lead-wire cutting is available for 10 X 9.5/10 X 11.5 case sizes.

(Unit:mm)

φD	5	6.3	8	10	12.5	16	18
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5

The following lead process symbols have to be put after the part number.
Please contact us if a different length of lead-wire is required.

+FA・・・・・・for lead-wire forming　Example) 16ME100CA+FA
+CA・・・・・・for lead-wire cutting　Example) 200ME10FH+CA

Part number

Example

6 (Rated voltage ★1) CE (Type symbol ★2) 100 (Rated capacitance symbol ★3) LX (Series symbol)

35 (Rated voltage ★1) HV (Type symbol ★2) HZ (Series symbol) 100 (Rated capacitance symbol ★3) M (Capacitance tolerance) +P (Reel symbol ★4)

63 (Rated voltage ★1) FV (Type symbol ★2) F (Series symbol) 100 (Rated capacitance symbol ★3) M (Capacitance tolerance) +P (Reel symbol ★4)

63 (Rated voltage ★1) FV (Type symbol ★2) F (Series symbol) 100 (Rated capacitance symbol ★3) M (Capacitance tolerance) S (Size type symbol ★5) +P (Reel symbol ★4)

★3

Rated capacitance(μF)	Symbol
0.47	R47
1.0	1
4.7	4R7
10	10
100	100
1000	1000
10000	10000

★1. 6 represents 6.3V as the rated voltage.
★2. Type symbol
CE, HV, FV : Surface mount type
ME, HE, FE : Radial lead type
CA, HA, HC, FA, FC : Surface mount type (Anti-vibration structure)
★3. R represents the decimal point.
★4. Only plastic reels are available for EP-cap.(For the φD=5, put "+PN")
★5. To indicate one rank smaller size.(S type)
Example)63FVF100M+P : φ10×12.5
63FVF100MS+P : φ10×10.5

Minimum Packing Quantity

● Bulk

Size	Quantity	Remarks reference
φ4 to φ8★1	500 PCS.	★1 φ8 X 12.5L ; 200 PCS. (ME-WA, ME-WG series Size φ8X11.5L ; 200 PCS.) ★2 φ12.5 X 30L ; 100 PCS. ★3 φ16 X 35.5L ; 50 PCS. Surface Mount Type ; Please refer to page13
φ10 to φ12.5★2	200 PCS.	
φ16★3	100 PCS.	
φ18	50 PCS.	

● Taping

Size	Quantity
φ4	4000 PCS.
φ5	3000 PCS.
φ6.3	2500 PCS.
φ8	1400 PCS.
φ10	900 PCS.
φ12.5	600 PCS.
φ16	250 PCS.

Please place your orders with an integral multiple of the minimum packing quantity.

Ripple Current Frequency Coefficient

Ripple Current Frequency Coefficient

Series	Capacitance:C(μF)	Frequency:f(Hz)			
		100≤f<1k	1k≤f<10k	10k≤f<100k	100k≤f
CE-LD CE-FSS, CE-FS(6.3 to 100V) CE-LH(6.3 to 50V), CE-FN	C≤4.7	1.00	1.30	1.50	1.80
	4.7<C≤33	1.00	1.20	1.30	1.45
	33<C	1.00	1.10	1.20	1.30
CE-AX CE-LX CE-ZX	C≤33	0.35	0.70	0.90	1.00
	33<C≤150	0.40	0.85	0.92	1.00
	150<C	0.60	0.85	0.95	1.00
CE-ZC	ALL	0.55	0.80	0.85	1.00
CE-GA	C≤1	0.07	0.55	0.85	1.00
	1<C≤4.7	0.25	0.60	0.90	1.00
	4.7<C≤47	0.45	0.75	0.92	1.00
	47<C	0.60	0.85	0.92	1.00
CE-LS, CE-LL CE-LF, CE-PC	C≤22	0.50	0.80	0.90	1.00
	22<C≤150	0.65	0.85	0.92	1.00
	150<C	0.70	0.85	0.95	1.00
CE-PH, CE-PF, CE-PL CE-PS, CE-TH, CE-JX	C≤10	0.50	0.80	0.90	1.00
	10<C	0.60	0.85	0.93	1.00

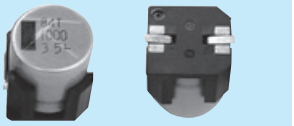
Series	Capacitance:C(μF)	Frequency:f(Hz)		
		100≤f<1k	1k≤f<10k	10k≤f
ME-FC, ME-FD, ME-FH ME-SWN, ME-HWN	C<100	1.00	1.30	1.50
	100≤C<1000	1.00	1.20	1.30
	1000≤C	1.00	1.13	1.15
ME-CX ME-AX	C≤68	0.50	0.80	1.00
	68<C≤220	0.55	0.85	1.00
	220<C≤1000	0.65	0.90	1.00
	1000<C	0.75	0.90	1.00
ME-CZ ME-CA ME-FX	C≤1	0.20	0.60	1.00
	1<C≤47	0.50	0.80	1.00
	47<C≤220	0.55	0.85	1.00
	220<C≤1000	0.65	0.90	1.00
	1000<C	0.75	0.90	1.00

Series	Capacitance:C(μF)	Frequency:f(Hz)			
		100≤f<1k	1k≤f<10k	10k≤f<100k	100k≤f
ME-SZ ME-LS	C≤4.7	0.50	0.65	0.95	1.00
	4.7<C≤33	0.60	0.75	0.95	1.00
	33<C	0.75	0.85	0.95	1.00
ME-WX ME-WA ME-WL	C≤33	0.40	0.65	0.90	1.00
	33<C≤1200	0.50	0.80	0.93	1.00
	1200<C	0.60	0.85	0.96	1.00
ME-WG	C≤820	0.45	0.80	0.94	1.00
	820<C≤1800	0.50	0.85	0.96	1.00
	1800<C	0.55	0.88	0.98	1.00
ME-SWG	C≤56	0.22	0.45	0.65	1.00
	56<C	0.28	0.50	0.65	1.00

Series	Capacitance:C(μF)	Frequency:f(Hz)				
		50	120	300	1k	10k≤f
CE-FS(160 to 400V) CE-LH(160 to 400V)	ALL	0.75	1.00	1.20	1.30	1.50

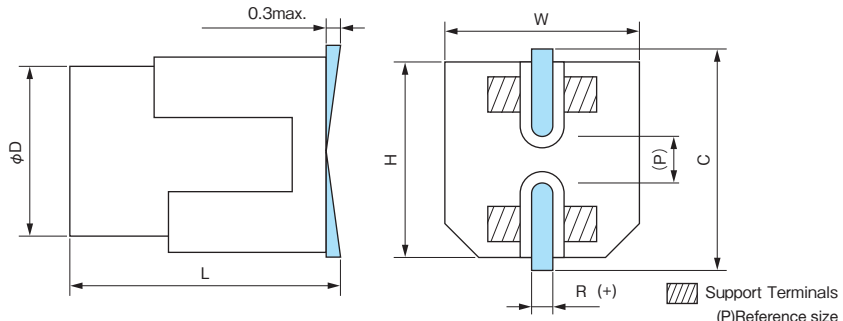
Please refer to page 20 for Ripple Current Frequency Coefficient of EP-cap.
Please contact us for CE-PB series.

CA Type



● Suitable for Automotive Applications

■ Dimensions



A pressure relief vent is provided for φD=8 or bigger

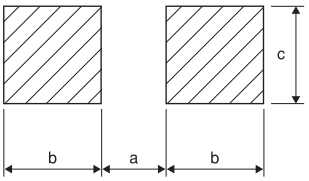
(Unit : mm)

D±0.5	L	W±0.2	H±0.2	C±0.2	R	P
8	10.5±0.5	8.3	8.3	9.0	0.7 to 1.0	3.2
8	10.7±0.5★	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5±0.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	10.7±0.5★	10.3	10.3	11.0	1.0 to 1.4	4.6
10	13.5±1.0	10.3	10.3	11.0	1.0 to 1.4	4.6
12.5	13.5±1.0	13.5	13.5	14.2	1.0 to 1.4	4.6
16	16.5±1.0	17.0	17.0	18.0	1.7 to 2.1	7.0
16	21.5±1.0	17.0	17.0	18.0	1.7 to 2.1	7.0
18	16.5±1.0	19.0	19.0	20.0	1.7 to 2.1	7.0
18	21.5±1.0	19.0	19.0	20.0	1.7 to 2.1	7.0

★ CA-ZX, CA-ZC, CA-LF, CA-PH, CA-PS, CA-PF, CA-PL, CA-TH, CA-JX
CA-FS(160 to 400V), CA-LH(160 to 400V)

■ Surface Mount Type Recommended land pattern

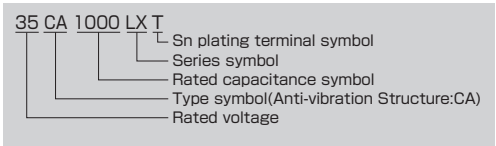
Land pattern
(Anti-vibration Structure)



(Unit : mm)

Size	a	b	c
φ 8	2.5	4.5	4.7
φ10	3.8	4.8	4.7
φ12.5	3.8	6.1	6.9
φ16	5.0	8.0	9.5
φ18	5.0	8.6	9.5

■ Part number CA Type

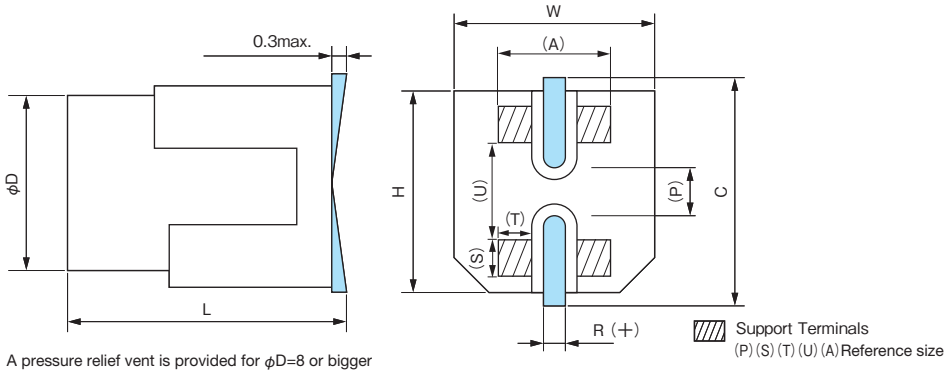


Hybrid Conductive Polymer Type / Anti-vibration Structure **RoHS compliance**

HA Type・HC Type・FA Type・FC Type

● Suitable for Automotive Applications

■ Dimensions



A pressure relief vent is provided for φD=8 or bigger

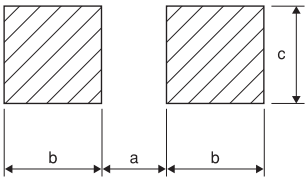
(Unit : mm)

Type	D±0.5	L	W±0.2	H±0.2	C±0.2	R	P	S	T	U	A
HA·FA	6.3	6.0±0.5 ★	6.6	6.6	7.3	0.5 to 0.8	2.2	1.8	0.8	3.0	2.6
HA·FA	6.3	7.7±0.5 ★	6.6	6.6	7.3	0.5 to 0.8	2.2	1.8	0.8	3.0	2.6
HA·FA	8	10.7±0.5	8.3	8.3	9.0	0.7 to 1.0	3.2	0.7	1.3	5.4	4.4
HC·FC	10	10.7±0.5	10.3	10.3	11.0	1.0 to 1.4	4.6	2.1	1.1	5.9	3.8
HC·FC	10	12.5±0.5	10.3	10.3	11.0	1.0 to 1.4	4.6	2.1	1.1	5.9	3.8
FC	10	13.8±0.5	10.3	10.3	11.0	1.0 to 1.4	4.6	2.1	1.1	5.9	3.8
FC	10	16.5±0.5	10.3	10.3	11.0	1.0 to 1.4	4.6	2.1	1.1	5.9	3.8

★ Please contact us for applicable series.

■ Surface Mount Type Recommended land pattern

Land pattern
(Anti-vibration Structure)



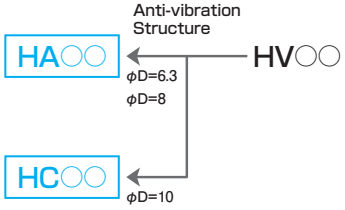
(Unit : mm)

Size	a	b	c
φ 6.3	1.6	4.0	3.0
φ 8	2.5	4.5	4.7
φ10	3.8	4.8	4.7

■ Part number

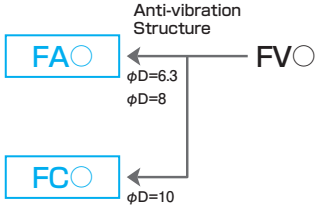
HA Type・HC Type EP-cap

35 HA PF 150 M +P
- +P: Reel symbol
- M: Capacitance tolerance
- 150: Rated capacitance symbol
- PF: Series symbol
- HA: Type code(Anti-vibration Structure:HA or HC)
- 35: Rated voltage



FA Type・FC Type EP-cap

35 FA F 150 M +P
- +P: Reel symbol
- M: Capacitance tolerance
- 150: Rated capacitance symbol
- F: Series symbol
- FA: Type code(Anti-vibration Structure:FA or FC)
- 35: Rated voltage

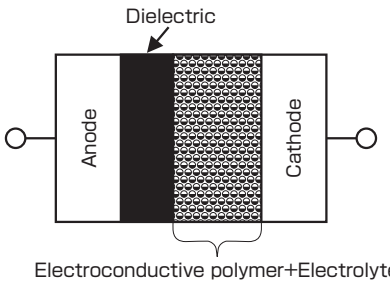


EP-cap Hybrid Conductive Polymer Type

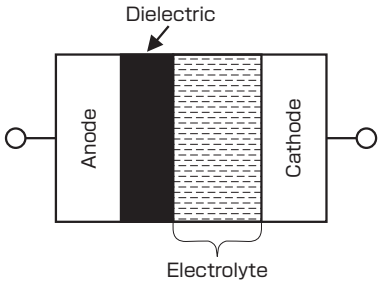
EP-cap is the first hybrid cathode aluminum electrolytic capacitors in the industry using a liquid electrolyte and a high conductive polymer.
EP-cap is very low ESR (equivalent series resistance) at high frequencies comparing with the standard aluminum electrolytic capacitors.
EP-cap has a self-healing mechanism of the dielectric due to a chemical reaction of the liquid electrolyte.
The highest voltage 125V (HVH/HVP series), high capacitance with high ripple current (FVC series), 125 to 150℃ proof with high ripple current (FVF series), and the other industry-leading products are ready in the line-up.

■ Basic Construction

■ EP-cap



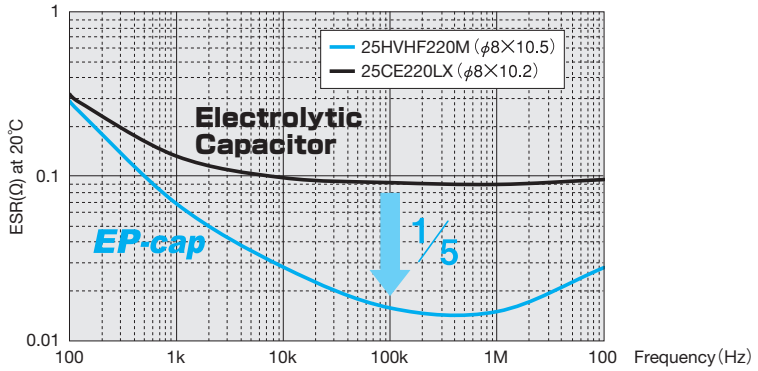
■ Electrolytic Capacitor



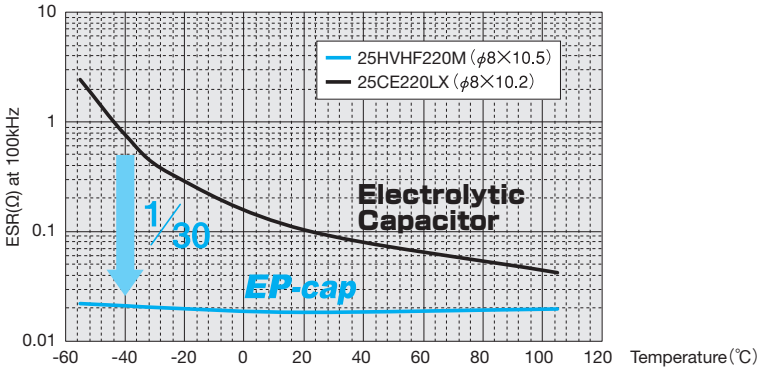
■ Features

- **Low ESR**
  (Downsize and upgrade your circuit)
  - ■ Excellent noise absorption capability at high frequency.
  - ■ High ripple current. Suitable for smoothing in switching regulators.
- **Excellent low temperature characteristics**
  - ■ Stable performance at low temperatures
- **Self-healing property of the liquid electrolyte**
  - ■ Less possibility of a short-circuit than the solid polymer capacitors. Low leakage current.
- **Rated voltage up to 125V.**
- **150℃ high temperature**
- **Applying a voltage up to the rated voltage is guaranteed.**
  - ■ Voltage derating is not necessary
- **RoHS compliance**
  (Environmental friendly)

■ Frequency characteristics



■ Temperature characteristics



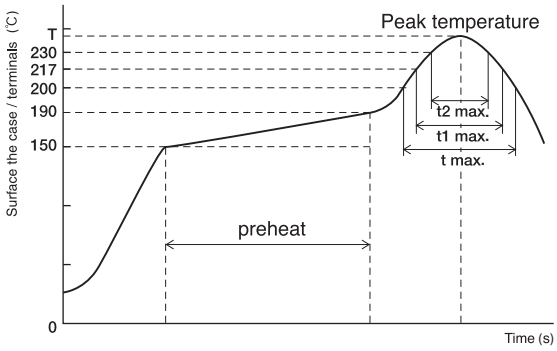
■ Soldering Condition

- Soldering with a soldering iron : within 3 seconds at 350℃ unless otherwise specified in the spec.
- Flow soldering : within 10 seconds at 260℃ unless otherwise specified in the spec.
  (Do not flow soldering with SMD type.)
- Thermal curing oven : within 2 minutes at below 150℃ ambient

■ Reflow Soldering Condition

●Profile 1

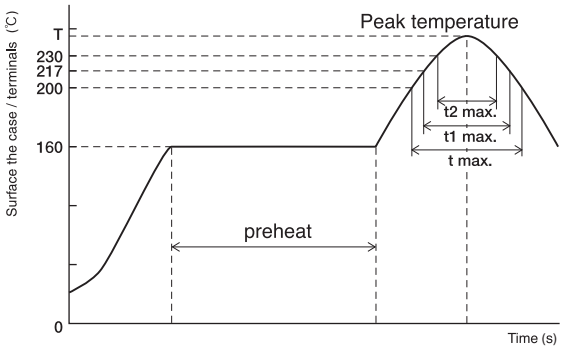
AIR reflow and IR reflow



Preheat ; 150℃ to 190℃, Within 120sec.

●Profile 2

AIR reflow and IR reflow



Preheat ; 160℃, Within 120sec.

Series	Voltage (V)	Size	Time of more than 200℃(t)	Time of more than 217℃(t1)	Time of more than 230℃(t2)	Peak temperature (T)	Reflow cycle	Profile
HVHZ·HVH HVPZ·HVP HVT, HVJ	16 to 63	ALL	Within 100sec.	Within 80sec.	Within 40sec.	260℃★1	2	1
	80 to 125	ALL	Within 100sec.	Within 80sec.	Within 40sec.	250℃★1	2	1
FVL, HVHF HVPF, HVPX HVTX, HVHY HVPY, HVTY HVHC, HVPC FVC, FVFP FVF, FVS	6.3 to 63	ALL	Within 70sec.	Within 50sec.	Within 40sec.	260℃★2	2	2
	80 to 100	ALL	Within 70sec.	Within 50sec.	Within 40sec.	260℃★2	1	2
			Within 70sec.	Within 50sec.	Within 40sec.	250℃★3	2	2

The maximum cycle of reflow soldering is two times. The second cycle must be done after sufficient cooling time of more than one hour to return the temperatures of circuit boards and components back to room temperature.

★1 Within 5sec.
★2 Not more than 260℃
★3 Not more than 250℃

■ Ripple Current Frequency Coefficient

Series	Capacitance C (μF)	Frequency : f (Hz)								
		100≦f<1k	1k≦f<5k	5k≦f<10k	10k≦f<20k	20k≦f<30k	30k≦f<40k	40k≦f<50k	50k≦f<100k	100k
FVL, HVHZ·HVH HVPZ·HVP, HVT HVJ, HVHF, HVPF HVPX, HVTX, HVHY HVPY, HVTY, HVHC HVPC, HEH HEHZ, HEPZ, HEHF HEPF, HEPC	C≦22	0.05	0.25	0.45	0.55	0.65	0.70	0.75	0.80	1.00
	22<C≦47	0.10	0.35	0.55	0.65	0.75	0.80	0.80	0.85	1.00
	47<C≦150	0.10	0.40	0.65	0.70	0.80	0.85	0.85	0.90	1.00
	150<C	0.15	0.45	0.65	0.75	0.80	0.85	0.85	0.90	1.00
FVS	ALL	0.10	0.20	0.40	0.50	0.65	0.75	0.80	0.85	1.00

Series	Case size φD(mm)	Frequency : f (Hz)								
		100≦f<1k	1k≦f<5k	5k≦f<10k	10k≦f<20k	20k≦f<30k	30k≦f<40k	40k≦f<50k	50k≦f<100k	100k
FVC, FVFP, FVF, FEC, FEFP, FEF	φ5, φ6.3	0.15	0.35	0.55	0.60	0.75	0.80	0.85	0.90	1.00
	φ8	0.15	0.40	0.65	0.70	0.80	0.85	0.90	0.90	1.00
	φ10	0.20	0.50	0.65	0.75	0.85	0.90	0.90	0.95	1.00

A peak voltage with a ripple current shall be less than the rated voltage.
A peak voltage with a ripple current shall not be a reverse voltage.

Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

FVL Series

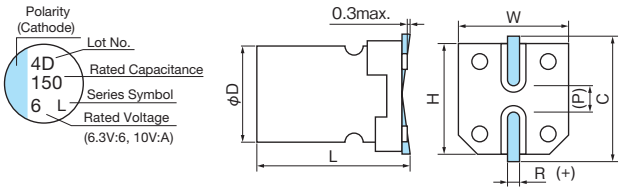
105℃・125℃

- 105℃ 5,000hours, 125℃ 2,000hours
- 85℃, 85%RH 1,000 to 2,000hours
- Solvent proof (within 2 minutes) ● AEC-Q200

■ Specifications

Items	Condition		Specifications	
Rated voltage (V)	–		6.3	10
Surge voltage (V)	Room temperature		8.2	13
Category temperature range (℃)	–		−55 to +125	
Capacitance tolerance (%)	120Hz/20℃		M : ±20	
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.18	0.16
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.05CV or 100	
Endurance	rated voltage applied (With the rated ripple current)	Test	105℃ : 5,000hours, 125℃ : 2,000hours	
		△C/C	Within ±30% of the initial value	
		tanδ	Not more than 200% of the specified value	
		ESR	Not more than 200% of the specified value	
		LC	Not more than the specified value	
Bias Humidity Test	85℃, 85%RH rated voltage applied	Test	φ6.3 : 1,000hours, φ8, φ10 : 2,000hours	
		△C/C	Within ±30% of the initial value	
		tanδ	Not more than 200% of the specified value	
		ESR	Not more than 200% of the specified value	
		LC	Not more than the specified value	
Shelf Life	125℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.	

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger
(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

V / Items / μF	6.3				10			
	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz)		Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz)	
			105℃	125℃			105℃	125℃
100					6.3×6.0	36	1700	950
150	6.3×6.0	36	1700	950	6.3×7.7	32	2100	1150
220	6.3×7.7	32	2100	1150				
470					8×10.5	16	3200	1800
560	8×10.5	16	3200	1800				
820					10×10.5	15	3900	2200
1000	10×10.5	15	3900	2200				

Please refer to page 20 for ripple current frequency coefficients.

■ Part number

6 FV L 150 M +P
- +P : Reel symbol
- M : Capacitance tolerance
- 150 : Rated capacitance
- L : Series symbol
- FV : Type symbol
- 6 : Rated voltage

Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

HVHZ・HVH Series

(16V to 35V) (50V to 125V)

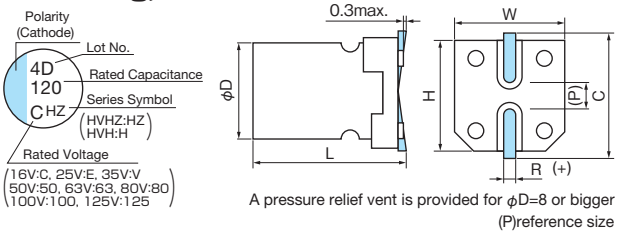
105℃ Long Life

- 105℃ 4,000 to 10,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications							
Rated voltage (V)	–		16	25	35	50	63	80	100	125
Surge voltage (V)	Room temperature		20	32	44	63	79	100	125	157
Category temperature range (℃)	–		−55 to +105							
Capacitance tolerance (%)	120Hz/20℃		M : ±20							
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.16							
Leakage current(LC)	μA/after 2minutes (max.) (20℃)	≤ 63V	0.01CV							
		80V ≤	The greater value of either 0.05CV or 100							
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test 16V	φ6.3 : 4,000hours, φ8·φ10 : 7,000hours							
		Test 25V≤	φ6.3 : 5,000hours, φ8·φ10 : 10,000hours							
		△C/C	Within ±30% of the initial value							
		tanδ	Not more than 200% of the specified value							
		ESR	Not more than 200% of the specified value							
		LC	Not more than the specified value							
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.							

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger

(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

Series	HVHZ									HVH		
μF \ V	16			25			35			50		
10										6.3×6.0 ★	120	980
15										6.3×7.7	80	1200
27							6.3×6.0	50	1530			
33										8×10.5	35	1670
47				6.3×6.0	40	1800	6.3×7.7	45	1840			
56										10×10.5	25	2320
68				6.3×7.7	35	1980						
82	6.3×6.0	38	1890							10×12.5	19	2650
100							8×10.5	28	2550			
120	6.3×7.7	32	2070									
150				8×10.5	25	2690	10×10.5	20	3490			
220							10×12.5	15	4000			
270	8×10.5	23	2820	10×10.5	19	3580						
330				10×12.5	14	4140						
470	10×10.5	18	3750									
560	10×12.5	14	4340									

Series	HVH											
μF \ V	63			80			100			125		
6.8	6.3×6.0	150	960									
10	6.3×7.7	100	1060				10×10.5	80	1450	10×10.5	90	1250
12				10×10.5	70	1600	10×10.5	80	1450			
15				10×10.5	70	1600	10×12.5	60	1660			
18				10×12.5	50	1830						
22	8×10.5	40	1560									
33	8×10.5★	40	1560									
	10×10.5	30	2100									
47	10×10.5	30	2100									
56	10×12.5	22	2400									

Please refer to page 20 for ripple current frequency coefficients.

★ S type

Case size:φDxL(mm)

ESR(mΩ)max. at 100kHz, 20℃

Rated ripple current mArms(100kHz, 105℃)

■ Part number

HVHZ Series

16 HV HZ 120 M +P

- Reel symbol
- Capacitance tolerance
- Rated capacitance
- Series symbol
- Type symbol
- Rated voltage

HVH Series

50 HV H 56 M +P

- Reel symbol
- Capacitance tolerance
- Rated capacitance
- Series symbol
- Type symbol
- Rated voltage

HVH Series

63 HV H 33 M S +P

- Reel symbol
- S type symbol
- Capacitance tolerance
- Rated capacitance
- Series symbol
- Type symbol
- Rated voltage

Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

HVPZ・HVP Series

(16V to 35V) (50V to 125V)

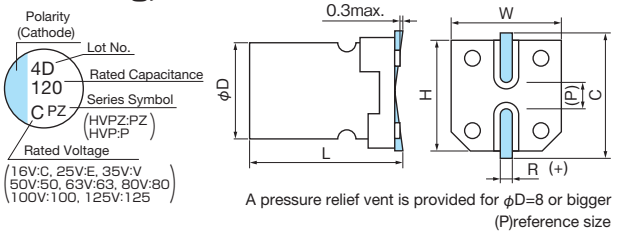
125℃

- 125℃ 2,000 to 3,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications
Rated voltage (V)	–		16 / 25 / 35 / 50 / 63 / 80 / 100 / 125
Surge voltage (V)	Room temperature		20 / 32 / 44 / 63 / 79 / 100 / 125 / 157
Category temperature range (℃)	–		−55 to +125
Capacitance tolerance (%)	120Hz/20℃		M : ±20
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.16
Leakage current(LC)	μA/after 2minutes (max.) (20℃)	≤ 63V	0.01CV
		80V ≤	The greater value of either 0.05CV or 100
Endurance	125℃ rated voltage applied (With the rated ripple current)	Test 16V	φ6.3 : 2,000hours, φ8·φ10 : 2,500hours
		Test 25V≤	φ6.3 : 2,000hours, φ8·φ10 : 3,000hours
		△C/C	Within ±30% of the initial value
		tanδ	Not more than 200% of the specified value
		ESR	Not more than 200% of the specified value
		LC	Not more than the specified value
Shelf Life	125℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger

(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

Series	HVPZ									HVP		
μF \ V	16			25			35			50		
10										6.3×6.0 ★	120	690
15										6.3×7.7	80	840
27							6.3×6.0	50	1070			
33										8×10.5	35	1170
47				6.3×6.0	40	1260	6.3×7.7	45	1280			
56										10×10.5	25	1390
68				6.3×7.7	35	1380						
82	6.3×6.0	38	1320							10×12.5	19	1590
100							8×10.5	28	1780			
120	6.3×7.7	32	1440									
150				8×10.5	25	1880	10×10.5	20	2440			
220							10×12.5	15	2800			
270	8×10.5	23	1970	10×10.5	19	2500						
330				10×12.5	14	2890						
470	10×10.5	18	2620									
560	10×12.5	14	3030									

Series	HVP											
μF \ V	63			80			100			125		
6.8	6.3×6.0	150	670									
10	6.3×7.7	100	740				10×10.5	80	870	10×10.5	90	750
12				10×10.5	70	900	10×10.5	80	870			
15				10×10.5	70	900	10×12.5	60	1000			
18				10×12.5	50	1100						
22	8×10.5	40	1090									
33	8×10.5 ★	40	1090									
	10×10.5	30	1260									
47	10×10.5	30	1260									
56	10×12.5	22	1440									

Please refer to page 20 for ripple current frequency coefficients.

★ S type

Case size:φDxL(mm) — ESR(mΩ)max. at 100kHz, 20℃ — Rated ripple current mArms(100kHz, 125℃)

■ Part number

HVPZ Series: 16 HV PZ 120 M +P
- 16 — Rated voltage
- HV — Type symbol
- PZ — Series symbol
- 120 — Rated capacitance
- M — Capacitance tolerance
- +P — Reel symbol

HVP Series: 50 HV P 56 M +P
- 50 — Rated voltage
- HV — Type symbol
- P — Series symbol
- 56 — Rated capacitance
- M — Capacitance tolerance
- +P — Reel symbol

HVP Series: 63 HV P 33 M S +P
- 63 — Rated voltage
- HV — Type symbol
- P — Series symbol
- 33 — Rated capacitance
- M — Capacitance tolerance
- S — S type symbol
- +P — Reel symbol

Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

HVT Series

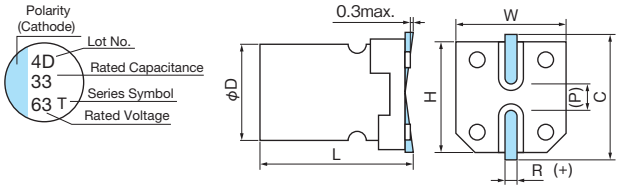
135℃

- 135℃ 1,000 to 2,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications				
Rated voltage (V)	–		25	35	40	50	63
Surge voltage (V)	Room temperature		32	44	50	63	79
Category temperature range (℃)	–		−55 to +135				
Capacitance tolerance (%)	120Hz/20℃		M : ±20				
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.16				
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV				
Endurance	135℃ rated voltage applied (With the rated ripple current)	Test	φ6.3 : 1,000hours, φ8·φ10 : 2,000hours				
		△C/C	Within ±30% of the initial value				
		tanδ	Not more than 200% of the specified value				
		ESR	Not more than 200% of the specified value				
		LC	Not more than the specified value				
Shelf Life	135℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.				

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger
(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

μF \ V	25			35			40			50		
15										6.3×7.7	80	670
27							6.3×7.7	70	700			
33										8×10.5	35	940
47				6.3×7.7	60	730						
56							8×10.5	32	980	10×10.5	25	1110
68	6.3×7.7	45	780									
82										10×12.5	19	1270
100				8×10.5	30	1010	10×10.5	24	1150			
120							10×12.5	18	1320			
150	8×10.5	27	1060	10×10.5	23	1180						
220				10×12.5	17	1360						
270	10×10.5	22	1220									
330	10×12.5	16	1390									

μF \ V	63		
10	6.3×7.7	100	590
22	8×10.5	40	870
33	8×10.5★	40	870
	10×10.5	30	1010
47	10×10.5	30	1010
56	10×12.5	22	1150

Case size:φDxL(mm)
ESR(mΩ)max. at 100kHz, 20℃
Rated ripple current mArms(100kHz, 135℃)

Please refer to page 20 for ripple current frequency coefficients.
★ S type

■ Part number

63 HV T 33 M +P
- +P : Reel symbol
- M : Capacitance tolerance
- 33 : Rated capacitance
- T : Series symbol
- HV : Type symbol
- 63 : Rated voltage

63 HV T 33 M S +P
- +P : Reel symbol
- S : S type symbol
- M : Capacitance tolerance
- 33 : Rated capacitance
- T : Series symbol
- HV : Type symbol
- 63 : Rated voltage

Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

HVHF Series

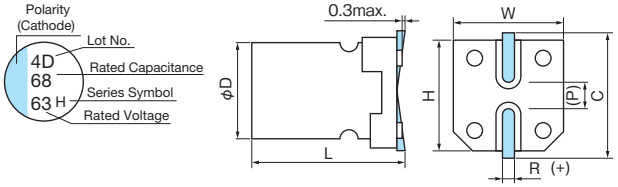
105℃ Long Life
High Capacitance

- 105℃ 5,000 to 10,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		25	35	50	63	80	100
Surge voltage (V)	Room temperature		32	44	63	79	100	125
Category temperature range (℃)	–		−55 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.14	0.12	0.10	0.08	0.08	0.08
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV					
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	10,000hours(φ6.3×6.0 : 5,000hours)					
		△C/C	Within ±30% of the initial value					
		tanδ	Not more than 200% of the specified value					
		ESR	Not more than 200% of the specified value					
		LC	Not more than the specified value					
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger
(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

μF \ V	25	35	50	63	80	100
10				6.3×6.0 120 1000		8×10.5 60 1400
15				6.3×6.0★ 120 1000 6.3×7.7 80 1500		10×10.5 45 1500
18						10×12.5 40 1580
22			6.3×6.0 80 1100	6.3×7.7 80 1500	8×10.5 45 1550	
27					8×10.5 45 1550	
33			6.3×7.7 40 1600	8×10.5 40 1700	10×10.5 36 1700	
39					10×12.5 32 1800	
47		6.3×6.0 60 1300		8×10.5 40 1700	10×10.5 36 1700	
56	6.3×6.0 50 1300			10×10.5 30 1800	10×12.5 32 1800	
68		6.3×7.7 35 2000	8×10.5 30 1800	10×12.5 22 2100		
82				10×10.5 30 1800		
100	6.3×7.7 30 2000		10×10.5 28 2000	10×12.5 22 2100		
120			10×10.5 28 2000			
150		8×10.5 27 2300	10×12.5 19 2300			
220	8×10.5 27 2300					
270		10×10.5 20 2500				
330	10×10.5 20 2500	10×12.5 17 2800				
470	10×12.5 16 2800					

Please refer to page 20 for ripple current frequency coefficients.
★ S type

Case size:φDxL(mm)
ESR(mΩ)max. at 100kHz, 20℃
Rated ripple current mArms(100kHz, 105℃)

■ Part number

63 HV HF 68 M +P
- Reel symbol
- Capacitance tolerance
- Rated capacitance
- Series symbol
- Type symbol
- Rated voltage

63 HV HF 15 M S +P
- Reel symbol
- S type symbol
- Capacitance tolerance
- Rated capacitance
- Series symbol
- Type symbol
- Rated voltage

Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

HVPF Series

125℃

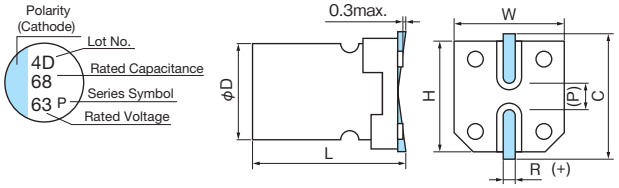
High Capacitance

- 125℃ 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		25	35	50	63	80	100
Surge voltage (V)	Room temperature		32	44	63	79	100	125
Category temperature range (℃)	–		−55 to +125					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.14	0.12	0.10	0.08	0.08	0.08
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV					
Endurance	125℃, 4,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value					
		tanδ	Not more than 200% of the specified value					
		ESR	Not more than 200% of the specified value					
		LC	Not more than the specified value					
Shelf Life	125℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger
(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
5	6.0	5.3	5.3	6.0	0.5 to 0.8	1.4
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

μF \ V	25			35			50			63			80			100		
10										5×6.0 ★	120	500				8×10.5	60	900
										6.3×6.0	120	700						
15										6.3×6.0 ★	120	700				10×10.5	45	1120
										6.3×7.7	80	900						
18																10×12.5	40	1220
22				5×6.0	100	550	6.3×6.0	80	750	6.3×7.7	80	900	8×10.5	45	1030			
27													8×10.5	45	1030			
33	5×6.0	80	550				6.3×7.7	40	1100	8×10.5	40	1100	10×10.5	36	1270			
39													10×12.5	32	1360			
47				6.3×6.0	60	900				8×10.5	40	1100	10×10.5	36	1270			
56	6.3×6.0	50	900							10×10.5	30	1400	10×12.5	32	1360			
68				6.3×7.7	35	1400	8×10.5	30	1250	10×12.5	22	1650						
82										10×10.5	30	1400						
100	6.3×7.7	30	1400	8×10.5	27	1600	10×10.5	28	1600	10×12.5	22	1650						
120							10×10.5	28	1600									
150				8×10.5	27	1600	10×12.5	19	1820									
220	8×10.5	27	1600															
270				10×10.5	20	2000												
330	10×10.5	20	2000	10×12.5	17	2260												
470	10×12.5	16	2260															

Please refer to page 20 for ripple current frequency coefficients.
★ S type

ESR(mΩ)max. at 100kHz, 20℃
Case size:φDxL(mm)

Rated ripple current
mArms(100kHz, 125℃)

■ Part number

63 HV PF 68 M +P
- Reel symbol(For the φD=5, put "+PN")
- Capacitance tolerance
- Rated capacitance
- Series symbol
- Type symbol
- Rated voltage

63 HV PF 15 M S +P
- Reel symbol(For the φD=5, put "+PN")
- S type symbol
- Capacitance tolerance
- Rated capacitance
- Series symbol
- Type symbol
- Rated voltage

Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

HVPX Series

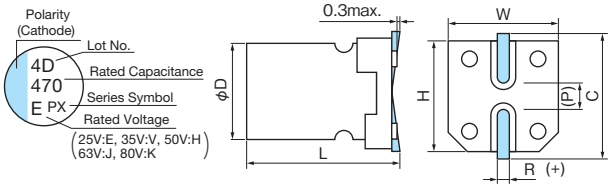
125℃
High Ripple Current

- 125℃ 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications				
Rated voltage (V)	–		25	35	50	63	80
Surge voltage (V)	Room temperature		32	44	63	79	100
Category temperature range (℃)	–		−55 to +125				
Capacitance tolerance (%)	120Hz/20℃		M : ±20				
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.14	0.12	0.10	0.08	0.08
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV				
Endurance	125℃, 4,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value				
		tanδ	Not more than 200% of the specified value				
		ESR	Not more than 200% of the specified value				
		LC	Not more than the specified value				
Shelf Life	125℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.				

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger
(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

μF \ V	25			35			50			63			80		
22													8×10.5	45	2000
33													8×10.5★	45	2000
													10×10.5	36	2550
39													10×12.5	32	3000
47				6.3×6.0	60	1400				8×10.5	40	2100			
56	6.3×6.0	50	1400										10×10.5	36	2550
68				6.3×7.7	35	2100	8×10.5	30	2300				10×12.5	32	3000
82							8×10.5	30	2300	10×10.5	30	2600			
100	6.3×7.7	30	2100	8×10.5	27	2900				10×12.5	22	3400			
120							10×10.5	28	2700						
150				8×10.5	27	2900	10×10.5★	28	2700						
							10×12.5	19	3500						
180							10×12.5	19	3500						
220	8×10.5	27	2900												
270				10×10.5	20	3300									
330	10×10.5	20	3300	10×12.5	17	3800									
470	10×12.5	16	3800												

Please refer to page 20 for ripple current frequency coefficients.
★ S type

Case size:φDxL(mm)
ESR(mΩ)max. at 100kHz, 20℃
Rated ripple current mArms(100kHz, 125℃)

■ Part number

35 HV PX 68 M +P
- +P: Reel symbol
- M: Capacitance tolerance
- 68: Rated capacitance
- PX: Series symbol
- HV: Type symbol
- 35: Rated voltage

50 HV PX 150 M S +P
- +P: Reel symbol
- S: S type symbol
- M: Capacitance tolerance
- 150: Rated capacitance
- PX: Series symbol
- HV: Type symbol
- 50: Rated voltage

Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

HVTX Series

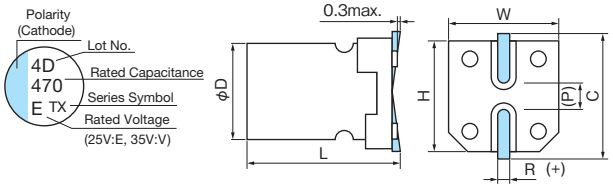
135℃ Long Life
High Ripple Current

- 135℃ 2,000 to 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items		Condition		Specifications	
Rated voltage	(V)	–		25	35
Surge voltage	(V)	Room temperature		32	44
Category temperature range (℃)		–		−55 to +135	
Capacitance tolerance (%)		120Hz/20℃		M : ±20	
Dissipation Factor(tan δ)		tanδ(max.)120Hz/20℃		0.14	0.12
Leakage current(LC)		μA/after 2minutes (max.), 20℃		0.01CV	
Endurance		135℃ rated voltage applied (With the rated ripple current)	Test	4,000hours(φ6.3 × 6.0 2,000hours)	
			△C/C	Within ±30% of the initial value	
			tanδ	Not more than 200% of the specified value	
			ESR	Not more than 200% of the specified value	
			LC	Not more than the specified value	
Shelf Life		135℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.	

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger
(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

μF \ V	25			35		
47				6.3×6.0	60	900
56	6.3×6.0	50	900			
68				6.3×7.7	35	1400
100	6.3×7.7	30	1400	8×10.5	27	1600
150				8×10.5	27	1600
220	8×10.5	27	1600			
270				10×10.5	20	2000
330	10×10.5	20	2000	10×12.5	17	2260
470	10×12.5	16	2260			

Please refer to page 20 for ripple current frequency coefficients.

Case size:φDxL(mm)
Rated ripple current mArms(100kHz, 135℃)
ESR(mΩ)max. at 100kHz, 20℃

■ Part number

25 HV TX 470 M +P
- +P: Reel symbol
- M: Capacitance tolerance
- 470: Rated capacitance
- TX: Series symbol
- HV: Type symbol
- 25: Rated voltage

Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

HVHY Series

105℃ Long Life
High Ripple Current

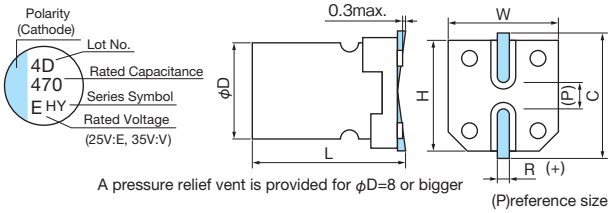
- 105℃ 10,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

UPGRADE

■ Specifications

Items	Condition		Specifications	
Rated voltage (V)	–		25	35
Surge voltage (V)	Room temperature		32	44
Category temperature range (℃)	–		−55 to +105	
Capacitance tolerance (%)	120Hz/20℃		M : ±20	
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV	
Endurance	105℃, 10,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value	
		tanδ	Not more than 200% of the specified value	
		ESR	Not more than 200% of the specified value	
		LC	Not more than the specified value	
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.	

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger

(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6

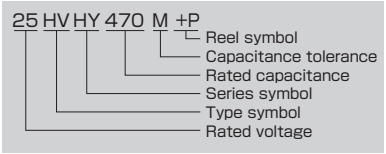
■ Size, ESR, Rated Ripple Current

μF \ V	25			35		
47				6.3×6.0	60	1300
56	6.3×6.0	50	1300			
150				8×10.5	20	4500
220	8×10.5	20	4500			
270				10×10.5	18	5000
330	10×10.5	18	5000	10×12.5	14	5500
470	10×12.5	14	5500			

Please refer to page 20 for ripple current frequency coefficients.

Case size:φDxL(mm)
Rated ripple current mArms(100kHz, 105℃)
ESR(mΩ)max. at 100kHz, 20℃

■ Part number



Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

HVPY Series

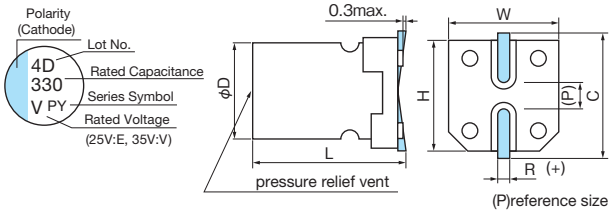
125℃
High Ripple Current

- 125℃ 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications	
Rated voltage (V)	–		25	35
Surge voltage (V)	Room temperature		32	44
Category temperature range (℃)	–		−55 to +125	
Capacitance tolerance (%)	120Hz/20℃		M : ±20	
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV	
Endurance	125℃, 4,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value	
		tanδ	Not more than 200% of the specified value	
		ESR	Not more than 200% of the specified value	
		LC	Not more than the specified value	
Shelf Life	125℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.	

■ Marking, Dimensions



(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

μF \ V	25			35		
270				10×10.5	18	4000
330	10×10.5	18	4000	10×12.5	14	4700
470	10×12.5	14	4700			

Please refer to page 20 for ripple current frequency coefficients.

Case size:φDxL(mm)
Rated ripple current mArms(100kHz, 125℃)
ESR(mΩ)max. at 100kHz, 20℃

■ Part number

35 HV PY 330 M +P
- +P: Reel symbol
- M: Capacitance tolerance
- 330: Rated capacitance
- PY: Series symbol
- HV: Type symbol
- 35: Rated voltage

Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

HVTY Series

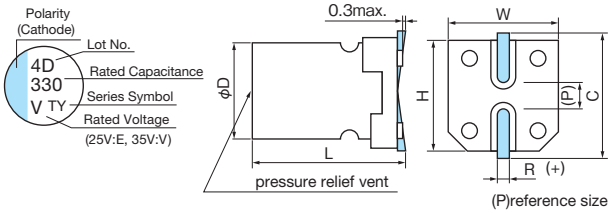
135℃ Long Life
High Ripple Current

- 135℃ 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications	
Rated voltage (V)	–		25	35
Surge voltage (V)	Room temperature		32	44
Category temperature range (℃)	–		−55 to +135	
Capacitance tolerance (%)	120Hz/20℃		M : ±20	
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV	
Endurance	135℃, 4,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value	
		tanδ	Not more than 200% of the specified value	
		ESR	Not more than 200% of the specified value	
		LC	Not more than the specified value	
Shelf Life	135℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.	

■ Marking, Dimensions



(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

μF \ V	25			35		
270				10×10.5	18	2500
330	10×10.5	18	2500	10×12.5	14	2750
470	10×12.5	14	2750			

Please refer to page 20 for ripple current frequency coefficients.

Case size:φDxL(mm)
Rated ripple current mArms(100kHz, 135℃)
ESR(mΩ)max. at 100kHz, 20℃

■ Part number

35 HV TY 330 M +P
- +P : Reel symbol
- M : Capacitance tolerance
- 330 : Rated capacitance
- TY : Series symbol
- HV : Type symbol
- 35 : Rated voltage

Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

HVHC Series

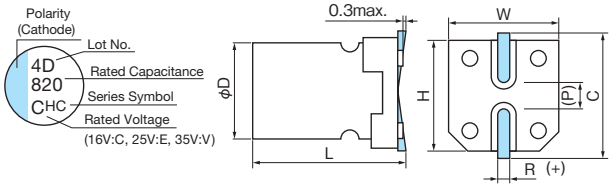
105℃
High Capacitance

- 105℃ 5,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications		
Rated voltage (V)	–		16	25	35
Surge voltage (V)	Room temperature		20	32	44
Category temperature range (℃)	–		−55 to +105		
Capacitance tolerance (%)	120Hz/20℃		M : ±20		
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.16	0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV		
Endurance	105℃, 5,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value		
		tanδ	Not more than 200% of the specified value		
		ESR	Not more than 200% of the specified value		
		LC	Not more than the specified value		
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.		

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger
(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

μF \ V	16			25			35		
56							6.3×6.0	60	1600
100				6.3×6.0	50	1600	6.3×7.7	35	2000
150				6.3×7.7	30	2000			
180							8×10.5	27	2550
220	6.3×7.7	30	2000						
270				8×10.5	27	2550			
330							10×10.5	20	3500
390							10×12.5	17	4000
470	8×10.5	27	2550	10×10.5	20	3500			
560				10×12.5	16	4000			
820	10×10.5	20	3500						

Please refer to page 20 for ripple current frequency coefficients.

Case size:φDxL(mm)
ESR(mΩ)max. at 100kHz, 20℃
Rated ripple current mArms(100kHz, 105℃)

■ Part number

16 HV HC 820 M +P
- +P: Reel symbol
- M: Capacitance tolerance
- 820: Rated capacitance
- HC: Series symbol
- HV: Type symbol
- 16: Rated voltage

Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

HVPC Series

125℃
High Capacitance

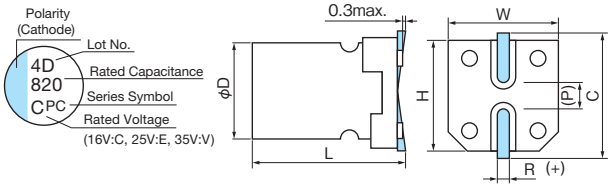
- 125℃ 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

UPGRADE

■ Specifications

Items	Condition		Specifications		
Rated voltage (V)	–		16	25	35
Surge voltage (V)	Room temperature		20	32	44
Category temperature range (℃)	–		−55 to +125		
Capacitance tolerance (%)	120Hz/20℃		M : ±20		
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.16	0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV		
Endurance	125℃, 4,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value		
		tanδ	Not more than 200% of the specified value		
		ESR	Not more than 200% of the specified value		
		LC	Not more than the specified value		
Shelf Life	125℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.		

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger
(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
5	6.0	5.3	5.3	6.0	0.5 to 0.8	1.4
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

μF \ V	16			25			35		
33							5×6.0	100	750
56				5×6.0	80	850	6.3×6.0	60	1200
82				6.3×6.0	50	1300			
100				6.3×6.0	50	1300	6.3×7.7	35	1700
150				6.3×7.7	30	1800			
180							8×10.5	27	2000
220	6.3×7.7	30	1800						
270				8×10.5	27	2000			
330							10×10.5	20	2800
390							10×12.5	17	3000
470	8×10.5	27	2000	10×10.5	20	2800			
560				10×12.5	16	3000			
820	10×10.5	20	2800						

Please refer to page 20 for ripple current frequency coefficients.

Case size:φDxL(mm)
ESR(mΩ)max. at 100kHz, 20℃
Rated ripple current mArms(100kHz, 125℃)

■ Part number

25 HV PC 820 M +P
- +P: Reel symbol
- M: Capacitance tolerance
- 820: Rated capacitance
- PC: Series symbol
- HV: Type symbol
- 25: Rated voltage

Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

FVC Series

105℃·125℃·135℃

High Ripple Current, High Capacitance

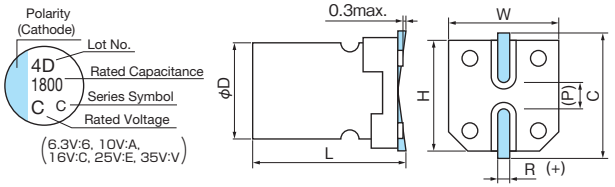
- 105℃ 4000hours,125℃ 4,000hours, 135℃ 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

UPGRADE

■ Specifications

Items	Condition		Specifications				
Rated voltage (V)	—		6.3	10	16	25	35
Surge voltage (V)	Room temperature		8.0	13	20	32	44
Category temperature range (℃)	—		φ5, φ6.3 : −55 to +125 φ8, φ10 : −55 to +135				
Capacitance tolerance (%)	120Hz/20℃		M : ±20				
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.18	0.16	0.16	0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.) (20℃)	≤ 10V	The greater value of either 0.05CV or 100				
		16V ≤	0.01CV				
Endurance	105℃, 125℃, 135℃ rated voltage applied (With the rated ripple current)	Test	4,000hours				
		△C/C	Within ±30% of the initial value				
		tanδ	Not more than 200% of the specified value				
		ESR	Not more than 200% of the specified value				
		LC	Not more than the specified value				
Shelf Life	φD≦6.3:125℃, φD≧8:135℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.				

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger

(P)reference size

(Unit : mm)

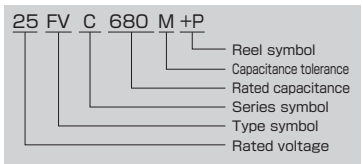
D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
5	6.0	5.3	5.3	6.0	0.5 to 0.8	1.4
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	13.8	10.3	10.3	11.0	1.0 to 1.4	4.6
10	16.5	10.3	10.3	11.0	1.0 to 1.4	4.6

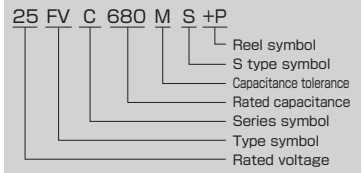
■ Size, ESR, Rated Ripple Current

V / Items / μF	6.3					10					16				
	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 105℃	125℃	135℃	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 105℃	125℃	135℃	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 105℃	125℃	135℃
150						5×6.0	60	2800	1000	—					
220	5×6.0	60	2800	1000	—	6.3×6.0	40	3600	1300	—					
270						6.3×6.0	40	3600	1300	—					
390	6.3×6.0	40	3600	1300	—	6.3×7.7	28	4200	1500	—					
560	6.3×7.7	28	4200	1500	—						8×10.5	27	—	3100	1500
820						8×10.5	18	6000	3700	1800					
1000											10×10.5	20	—	3600	1750
1200	8×10.5	18	6000	3700	1800						10×12.5	16	—	4100	1950
1500						10×10.5	16	6500	4000	1900	10×13.8	15	—	4300	2050
1800						10×12.5	14	7000	4400	2100	10×16.5	11	—	5200	2500
2200	10×10.5	16	6500	4000	1900	10×13.8	12	7800	4900	2300					
2700	10×12.5	14	7000	4400	2100	10×16.5	10	8400	5200	2500					
3300	10×13.8	12	7800	4900	2300										
3900	10×16.5	10	8400	5200	2500										

V / Items / μF	25					35				
	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 105℃	125℃	135℃	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 105℃	125℃	135℃
220						8×10.5	27	—	3100	1500
330	8×10.5	27	—	3100	1500					
390	8×10.5	27	—	3100	1500	10×10.5	20	—	3600	1750
470						10×12.5	16	—	4100	1950
560	10×10.5	20	—	3600	1750	10×13.8	15	—	4300	2050
680	10×10.5★	20	—	3600	1750	10×16.5	11	—	5200	2500
	10×12.5	16	—	4100	1950					
820	10×12.5★	16	—	4100	1950					
	10×13.8	15	—	4300	2050					
1000	10×13.8★	15	—	4300	2050					
	10×16.5	11	—	5200	2500					
1200	10×16.5	11	—	5200	2500					

■ Part number





Please refer to page 20 for ripple current frequency coefficients.

★S type

Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

FVFP Series

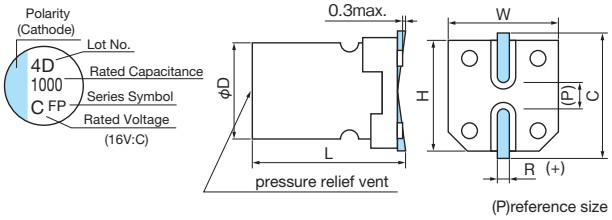
125℃・135℃
High Ripple Current

- 125℃ 4,000hours, 135℃ 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications
Rated voltage (V)	–		16
Surge voltage (V)	Room temperature		20
Category temperature range (℃)	–		−55 to +135
Capacitance tolerance (%)	120Hz/20℃		M : ±20
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.16
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV
Endurance	125℃, 135℃ rated voltage applied (With the rated ripple current)	Test	4,000hours
		△C/C	Within ±30% of the initial value
		tanδ	Not more than 200% of the specified value
		ESR	Not more than 200% of the specified value
		LC	Not more than the specified value
Shelf Life	135℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.

■ Marking, Dimensions



(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	13.8	10.3	10.3	11.0	1.0 to 1.4	4.6
10	16.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

V / Items / μF	16			
	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 125℃	135℃
330	8×10.5	20	3700	2500
560	10×10.5	18	4200	2800
680	10×12.5	14	4700	3100
820	10×13.8	13	5000	3300
1000	10×16.5	11	5900	4000

Please refer to page 20 for ripple current frequency coefficients.

■ Part number

16 FV FP 1000 M +P
- +P : Reel symbol
- M : Capacitance tolerance
- 1000 : Rated capacitance
- FP : Series symbol
- FV : Type symbol
- 16 : Rated voltage

Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

FVF Series

150℃ Long Life
High Ripple Current

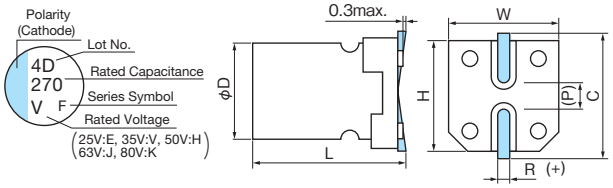
- 125℃ 4,000hours, 135℃ 4,000hours, 150℃ 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

UPGRADE

■ Specifications

Items	Condition		Specifications				
Rated voltage (V)	–		25	35	50	63	80
Surge voltage (V)	Room temperature		32	44	63	79	100
Category temperature range (℃)	–		φ6.3 : −55 to +135 φ8·φ10 : −55 to +150				
Capacitance tolerance (%)	120Hz/20℃		M : ±20				
Dissipation Factor (tan δ)	tanδ (max.) 120Hz/20℃		0.14	0.12	0.10	0.08	0.08
Leakage current (LC)	μA/after 2minutes (max.), 20℃		0.01CV				
Endurance	150℃ rated voltage applied (With the rated ripple current) φ8·φ10	Test	4,000hours				
		△C/C	Within ±35% of the initial value				
		tanδ	Not more than 200% of the specified value				
		ESR	Not more than 250% of the specified value				
		LC	Not more than the specified value				
	125℃, 135℃ rated voltage applied (With the rated ripple current)	Test	4,000hours				
		△C/C	Within ±30% of the initial value				
		tanδ	Not more than 200% of the specified value				
		ESR	Not more than 200% of the specified value				
		LC	Not more than the specified value				
Shelf Life	φD=6.3 : 135℃, φD≧8 : 150℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.				

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger
(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	13.8	10.3	10.3	11.0	1.0 to 1.4	4.6
10	16.5	10.3	10.3	11.0	1.0 to 1.4	4.6

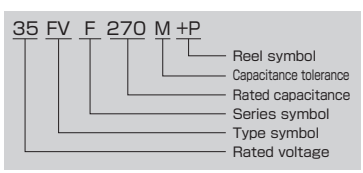
■ Size, ESR, Rated Ripple Current

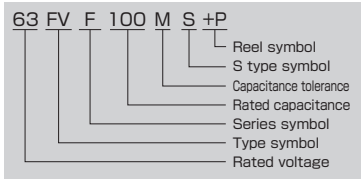
V / Items / μF	25					35					50				
	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 125℃	135℃	150℃	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 125℃	135℃	150℃	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 125℃	135℃	150℃
33											6.3×7.7	40	2200	1500	–
68						6.3×7.7	35	2700	1800	–	8×10.5	30	2900	2100	1100
100	6.3×7.7	30	2700	1800	–						10×10.5	28	3600	2600	1400
120											10×10.5	28	3600	2600	1400
150						8×10.5	20	4000	3000	1200	10×12.5	19	3900	2800	1600
180											10×13.8	18	4400	3100	1800
220	8×10.5	20	4000	3000	1200						10×16.5	13	5100	3700	2100
270						10×10.5	18	4600	3400	1600					
330	10×10.5	18	4600	3400	1600	10×12.5	14	5200	3900	1800					
360						10×13.8	13	5600	4200	2000					
390						10×13.8	13	5600	4200	2000					
470	10×12.5	14	5200	3900	1800	10×16.5	11	6000	4500	2250					
560	10×13.8	13	5600	4200	2000										
680	10×16.5	11	6000	4500	2250										

V / Items / μF	63					80				
	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 125℃	135℃	150℃	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 125℃	135℃	150℃
22	6.3×7.7	60	2000	1400	–					
33						8×10.5	45	2500	1700	900
47	8×10.5	40	2700	1900	1000					
56	8×10.5	40	2700	1900	1000	10×10.5	36	3200	2200	1100
68						10×12.5	32	3500	2400	1300
82	10×10.5	30	3400	2400	1250	10×13.8	28	3900	2600	1500
100	10×10.5★	30	3400	2400	1250	10×16.5	16	4400	3200	1800
	10×12.5	22	3700	2600	1450					
120	10×12.5★	22	3700	2600	1450					
	10×13.8	20	4100	2800	1700					
150	10×13.8★	20	4100	2800	1700					
	10×16.5	15	4900	3500	2000					
180	10×16.5	15	4900	3500	2000					

Please refer to page 20 for ripple current frequency coefficients.
★S type

■ Part number





Hybrid Conductive Polymer Type / Surface Mount Type **RoHS compliance**

FVS Series

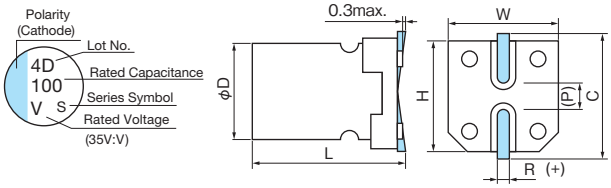
125℃
−16V Proof

- 125℃ 4,000hours
- Reverse polarity proof(−16V, 60 minutes)
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications
Rated voltage (V)	–		35
Surge voltage (V)	Room temperature		44
Category temperature range (℃)	–		−55 to +125
Capacitance tolerance (%)	120Hz/20℃		M : ±20
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.12
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV
Endurance	125℃, 4,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value
		tanδ	Not more than 200% of the specified value
		ESR	Not more than 200% of the specified value
		LC	Not more than the specified value
Shelf Life	125℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger
(P)reference size

(Unit : mm)

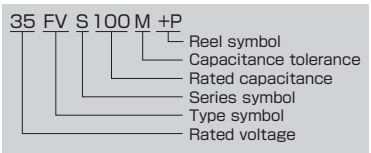
D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

V / Items / μF	35		
	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 125℃
47	6.3×7.7	35	1400
100	8×10.5	27	1600
150	10×10.5	20	2000
220	10×12.5	17	2260

Please refer to page 20 for ripple current frequency coefficients.

■ Part number

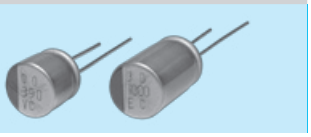


Hybrid Conductive Polymer Type / Radial Lead Type **RoHS compliance**

FEC Series

105℃·125℃·135℃

High Ripple Current, High Capacitance



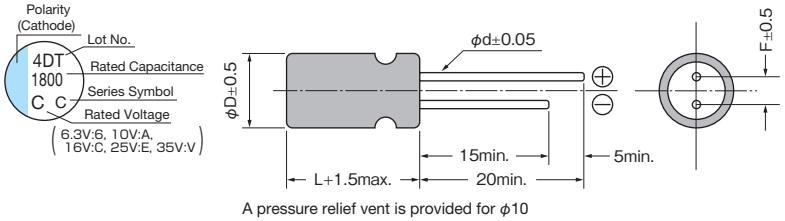
- 105℃ 4,000hours, 125℃ 4,000hours, 135℃ 4,000hours
- Laminated case ● Solvent proof (within 2 minutes)
- AEC-Q200

UPGRADE

■ Specifications

Items	Condition		Specifications				
Rated voltage (V)	—		6.3	10	16	25	35
Surge voltage (V)	Room temperature		8.0	13	20	32	44
Category temperature range(℃)	—		φ6.3 : −55 to +125 φ8·φ10 : −55 to +135				
Capacitance tolerance(%)	120Hz/20℃		M : ±20				
Dissipation Factor(tanδ)	tanδ (max.)120Hz/20℃		0.18	0.16	0.16	0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20℃		the greater value of either 0.05CV or 100				
Endurance	105℃, 125℃, 135℃ rated voltage applied (With the rated ripple current)	Test	4,000hours				
		△C/C	Within ±30% of the initial value				
		tanδ	Not more than 200% of the specified value				
		ESR	Not more than 200% of the specified value				
		LC	Not more than the specified value				
Shelf Life	φD=6.3:125℃, φD≧8:135℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.				

■ Marking, Dimensions



A pressure relief vent is provided for φ10

(Unit : mm)

φD	L	F	φd
6.3	7.2	2.5	0.45
8	9.5	3.5	0.6
10	9.5	5.0	0.7
10	11.5	5.0	0.7
10	15.0	5.0	0.7

■ Size, ESR, Rated Ripple Current

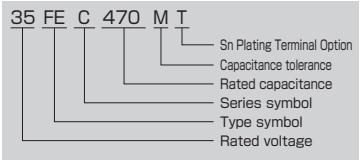
V / Items / μF	6.3					10					16				
	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 105℃	125℃	135℃	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 105℃	125℃	135℃	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 105℃	125℃	135℃
390						6.3×7.2	28	4200	1500	—					
560	6.3×7.2	28	4200	1500	—						8×9.5	27	—	3100	1500
820						8×9.5	18	6000	3700	1800					
1000											10×9.5	20	—	3600	1750
1200	8×9.5	18	6000	3700	1800						10×11.5	16	—	4100	1950
1500						10×9.5	16	6500	4000	1900					
1800						10×11.5	14	7000	4400	2100	10×15	11	—	5200	2500
2200	10×9.5	16	6500	4000	1900										
2700	10×11.5	14	7000	4400	2100	10×15	10	8400	5200	2500					
3900	10×15	10	8400	5200	2500										

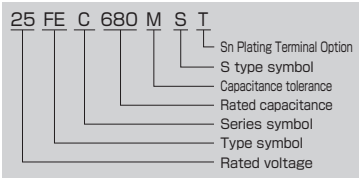
V / Items / μF	25					35				
	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 105℃	125℃	135℃	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 105℃	125℃	135℃
220						8×9.5	27	—	3100	1500
330	8×9.5	27	—	3100	1500					
390	8×9.5	27	—	3100	1500	10×9.5	20	—	3600	1750
470						10×11.5	16	—	4100	1950
560	10×9.5	20	—	3600	1750					
680	10×9.5★	20	—	3600	1750	10×15	11	—	5200	2500
	10×11.5	16	—	4100	1950					
820	10×11.5★	16	—	4100	1950					
1000	10×15	11	—	5200	2500					
1200	10×15	11	—	5200	2500					

Please refer to page 20 for ripple current frequency coefficients.

★S type

■ Part number

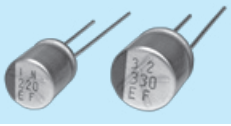




Hybrid Conductive Polymer Type / Radial Lead Type **RoHS compliance**

FEF Series

125℃・135℃
High Ripple Current



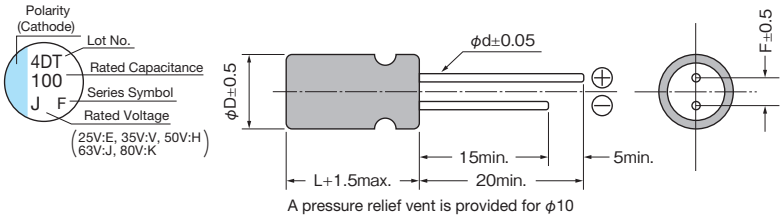
- 125℃ 4,000hours, 135℃ 4,000hours
- Laminated case
- Solvent proof (within 2 minutes)
- AEC-Q200

UPGRADE

■ Specifications

Items	Condition		Specifications				
Rated voltage (V)	–		25	35	50	63	80
Surge voltage (V)	Room temperature		32	44	63	79	100
Category temperature range (℃)	–		−55 to +135				
Capacitance tolerance (%)	120Hz/20℃		M : ±20				
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.14	0.12	0.10	0.08	0.08
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.05CV or 100				
Endurance	125℃, 135℃ rated voltage applied (With the rated ripple current)	Test	4,000hours				
		△C/C	Within ±30% of the initial value				
		tanδ	Not more than 200% of the specified value				
		ESR	Not more than 200% of the specified value				
		LC	Not more than the specified value				
Shelf Life	135℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.				

■ Marking, Dimensions



A pressure relief vent is provided for φ10

(Unit : mm)

φD	L	F	φd
6.3	7.2	2.5	0.45
8	9.5	3.5	0.6
10	9.5	5.0	0.7
10	11.5	5.0	0.7
10	15.0	5.0	0.7

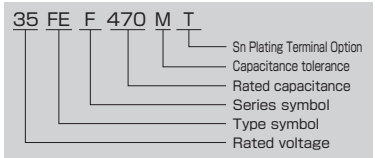
■ Size, ESR, Rated Ripple Current

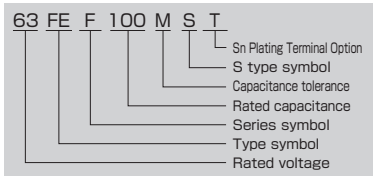
V / Items / μF	25				35				50			
	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 125℃	135℃	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 125℃	135℃	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 125℃	135℃
33									6.3×7.2	40	2200	1500
68					6.3×7.2	35	2700	1800	8×9.5	30	2900	2100
100	6.3×7.2	30	2700	1800					10×9.5	28	3600	2600
120									10×9.5	28	3600	2600
150					8×9.5	20	4000	3000	10×11.5	19	3900	2800
220	8×9.5	20	4000	3000					10×15	13	5100	3700
270					10×9.5	18	4600	3400				
330	10×9.5	18	4600	3400	10×11.5	14	5200	3900				
470	10×11.5	14	5200	3900	10×15	11	6000	4500				
680	10×15	11	6000	4500								

V / Items / μF	63				80			
	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 125℃	135℃	Case size φDxL(mm)	ESR(mΩmax.) (20℃/100kHz)	Rated ripple current(mArms/100kHz) 125℃	135℃
22	6.3×7.2	60	2000	1400				
33					8×9.5	45	2500	1700
47	8×9.5	40	2700	1900				
56	8×9.5	40	2700	1900	10×9.5	36	3200	2200
68					10×11.5	32	3500	2400
82	10×9.5	30	3400	2400				
100	10×9.5 ★	30	3400	2400	10×15	16	4400	3200
	10×11.5	22	3700	2600				
120	10×11.5★	22	3700	2600				
150	10×15	15	4900	3500				
180	10×15	15	4900	3500				

Please refer to page 20 for ripple current frequency coefficients.
★S type

■ Part number





Aluminum Electrolytic Capacitors

Aluminum electrolytic capacitors are hard to be a short-circuit since the self-healing mechanism of the dielectric (aluminum oxide layer). Aluminum electrolytic capacitors carry high voltage and high capacitance with reasonable prices.

Features

- Wide voltage range 6.3V to 450V.
- Wide capacitance range 0.47μF to 15000μF.
- Self-healing mechanism of the dielectric. (aluminum oxide layer)
- Hard to be a short-circait. The primary filure mode is wear-out.
- The capacitance does not change by voltage.
- Strong to a pulse current and a pulse voltage as compared with the other type of capacitors.

Applications

Automotive electronics, Network equipments, Industrial equipments, Digital equipments, Consumer electronics, personal computers, signal processing, back-up use, etc.

Aluminum Electrolytic Type / Surface Mount Type **RoHS compliance**

CE-LD Series

Long Life

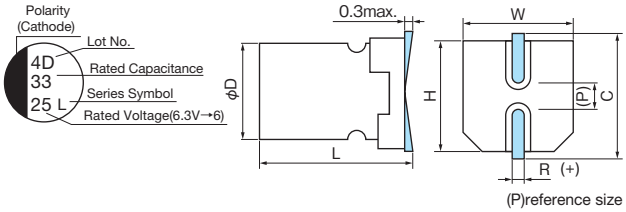
4.5mm Height

- 105℃ 3,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.35	0.30	0.20	0.16	0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV					
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2
		−40℃ Z/Z20℃	10	8	6	4	4	4
Endurance	105℃, 3,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value					
		tanδ	Not more than 300% of the specified value					
		LC	Not more than the specified value					
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

■ Marking, Dimensions



(P)reference size

(Unit : mm)

D±0.5	L +0.1 −0.2	W±0.2	H±0.2	C±0.2	R	P
6.3	4.5	6.6	6.6	7.3	0.5 to 0.8	2.2

■ Size, Rated Ripple Current

μF \ V	6.3	10	16	25	35	50
10						6.3×4.5 24
22				→	6.3×4.5 35	
33			→	6.3×4.5 40		
47		→	→	6.3×4.5 44		
100	→	6.3×4.5 52				

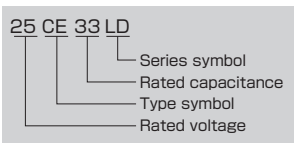
→Please use the higher voltage model in the next.

Please refer to page 16 for ripple current frequency coefficients.

Case size:φDxL(mm)

Rated ripple current mArms(120Hz, 105℃)

■ Part number



CE-FSS Series

Small, High Capacitance

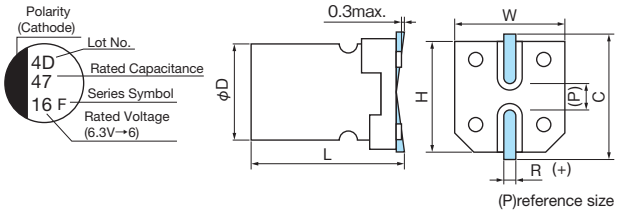
5.4mm Height

- 105℃ 1,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.35	0.30	0.26	0.20	0.16	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2
		−40℃ Z/Z20℃	10	8	6	4	4	4
Endurance	105℃, 1,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value(6.3V:±30%)					
		tanδ	Not more than 300% of the specified value					
		LC	Not more than the specified value					
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

■ Marking, Dimensions



(P)reference size

(Unit : mm)

D±0.5	L+0.1 −0.2	W±0.2	H±0.2	C±0.2	R	P
4	5.4	4.3	4.3	5.0	0.5 to 0.8	1.0
5	5.4	5.3	5.3	6.0	0.5 to 0.8	1.4
6.3	5.4	6.6	6.6	7.3	0.5 to 0.8	2.2

■ Size, Rated Ripple Current

μF \ V	6.3		10		16		25		35		50	
4.7											4×5.4	16
10							→		4×5.4	22	5×5.4	23
22			→		4×5.4	28	→		5×5.4	35	6.3×5.4	35
33	→		4×5.4	29	→		5×5.4	45	6.3×5.4	42		
47	4×5.4	36	→		5×5.4	39	6.3×5.4	70				
100	→		5×5.4	47								
150	→		6.3×5.4	71								
220	6.3×5.4	74										

→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.

Case size:φDxL(mm)

Rated ripple current mArms(120Hz, 105℃)

■ Part number

16 CE 47 FSS

- FSS: Series symbol
- 47: Rated capacitance
- CE: Type symbol
- 16: Rated voltage

Aluminum Electrolytic Type / Surface Mount Type **RoHS compliance**

CE-FS Series

105℃ Standard
High Voltage

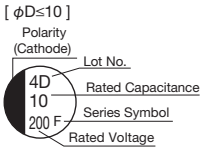
- 160 to 400V, 105℃ 1,000 to 2,000hours
- Non solvent proof
- AEC-Q200

■ Specifications

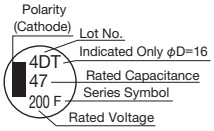
Items	Condition		Specifications			
Rated voltage (V)	–		160	200	250	400
Surge voltage (V)	Room temperature		200	250	300	450
Category temperature range (℃)	–		−40 to +105			
Capacitance tolerance (%)	120Hz/20℃		M : ±20			
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.20			0.25
Leakage current(LC)	μA/after 2minutes (max.) (20℃)	CV ≤ 1000	0.03CV +15			
		CV > 1000	0.02CV +25			
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	3	3	3	6
		−40℃ Z/Z20℃	6	6	6	10
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ8 : 1,000hours, φ10 to φ16 : 2,000hours			
		△C/C	Within ±25% of the initial value			
		tanδ	Not more than 200% of the specified value			
		LC	Not more than the specified value			
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.			

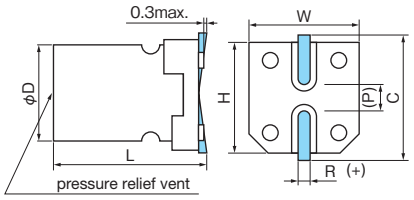
■ Marking, Dimensions

[φD≤10]



[φD≥12.5]





(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
12.5	13.5±0.5	12.8	12.8	13.5	1.0 to 1.4	4.6
16	16.5±0.5	16.3	16.3	17.3	1.7 to 2.1	7.0

■ Size, Rated Ripple Current

μF \ V	160		200		250		400	
2.2							8×10.5	25
3.3					8×10.5	31	10×10.5	36
4.7					8×10.5	37	10×10.5	38
6.8					8×10.5	44	12.5×13.5	47
10	8×10.5	57	10×10.5	64	10×10.5	64	12.5×13.5	57
22	→		12.5×13.5	112	12.5×13.5	112	16×16.5	115
33	→		12.5×13.5	137	16×16.5	150		
47	→		16×16.5	180	16×16.5	180		
68	→		16×16.5	215				
82	16×16.5	235						

→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.

Case size:φDxL(mm)
16×16.5:CE-FST

Rated ripple current
mArms(120Hz, 105℃)

■ Part number

FS
200 CE 10 FS
- FS: Series symbol
- 10: Rated capacitance
- CE: Type symbol
- 200: Rated voltage

FST
200 CE 47 FS T
- T: Sn plating terminal option
- FS: Series symbol
- 47: Rated capacitance
- CE: Type symbol
- 200: Rated voltage

CE-FS Series

105℃ Standard

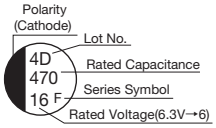
- 105℃ 1,000 to 2,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

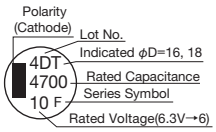
Items	Condition		Specifications							
Rated voltage (V)	–		6.3	10	16	25	35	50	63	100
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79	125
Category temperature range (℃)	–		−55 to +105							−40 to +105
Capacitance tolerance (%)	120Hz/20℃		M : ±20							
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20℃	φ4 to φ6.3	0.24	0.20	0.16	0.14	0.12	0.10	0.12	0.10
		φ8 to φ16	0.28	0.24	0.20	0.16	0.14	0.12	0.12	0.10
		φ18	0.34	0.30	0.26	0.22	0.18	0.16	0.14	0.10
			Exceeding 1,000μF, +0.02 every 1,000μF							
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.01CV or 3							
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	3	2	2	2	2	2	3
		−55℃ Z/Z20℃	8	5	4	3	3	3	3	–
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ4 to φ6.3 : 1,000hours, φ8 to φ18 : 2,000hours							
		△C/C	Within ±25% of the initial value							
		tanδ	Not more than 200% of the specified value							
		LC	Not more than the specified value							
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.							

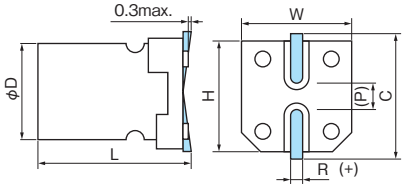
■ Marking, Dimensions

[φD≤10]



[φD≥12.5]





A pressure relief vent is provided for φD=8 or bigger

(P)reference size

(Unit : mm)

D±0.5	L	W±0.2	H±0.2	C±0.2	R	P
4	$5.4^{+0.1}_{-0.2}$	4.3	4.3	5.0	0.5 to 0.8	1.0
4	$6.0^{\pm0.3}$	4.3	4.3	5.0	0.5 to 0.8	1.0
5	$5.4^{+0.1}_{-0.2}$	5.3	5.3	6.0	0.5 to 0.8	1.4
6.3	$5.4^{+0.1}_{-0.2}$	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	$6.0^{\pm0.3}$	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	$7.7^{\pm0.3}$	6.6	6.6	7.3	0.5 to 0.8	2.2
8	$10.2^{\pm0.3}$	8.3	8.3	9.0	0.7 to 1.0	3.2
10	$10.2^{\pm0.3}$	10.3	10.3	11.0	1.0 to 1.4	4.6
12.5	$13.5^{\pm0.5}$	12.8	12.8	13.5	1.0 to 1.4	4.6
16	$16.5^{\pm0.5}$	16.3	16.3	17.3	1.7 to 2.1	7.0
18	$16.5^{\pm1.0}$	19.0	19.0	20.0	1.7 to 2.1	7.0
18	$21.5^{\pm1.0}$	19.0	19.0	20.0	1.7 to 2.1	7.0

■ Size, Rated Ripple Current

μF \ V	6.3		10		16		25		35	
4.7							→		4×5.4	14
10					4×5.4	18	→		5×5.4	21
22	4×5.4	22	→		5×5.4	27	→		6.3×5.4	38
33	→		5×5.4	30	→		6.3×5.4	44	6.3×6.0	42
47	5×5.4	33	→		6.3×5.4	48	→		6.3×6.0	49
100	→		→		6.3×5.4	60	→		6.3×7.7	84
150			6.3×6.0	62	6.3×7.7	95	→		8×10.2	155
220	6.3×6.0	67	→		6.3×7.7	105	→		8×10.2	190
330	6.3×7.7	105	→		→		8×10.2	220	10×10.2	300
470	→		→		8×10.2	230	10×10.2	300	12.5×13.5	410
680	8×10.2	210			10×10.2	310			12.5×13.5	430
1000	8×10.2	230	10×10.2	310			12.5×13.5	460	16×16.5	700
1500	10×10.2	310			12.5×13.5	500			16×16.5	740
2200			12.5×13.5	510			16×16.5	805	18×16.5	950
2700									18×21.5	1200
3300	12.5×13.5	520			16×16.5	840	18×16.5	1040		
3900							18×21.5	1280		
4700			16×16.5	880	18×16.5	1090				
5600					18×21.5	1300				
6800	16×16.5	930	18×16.5	1150						
8200			18×21.5	1350						
10000	18×16.5	1200								
12000	18×21.5	1350								

μF \ V	50		63		100	
2.2	4×5.4	11	4×5.4	11		
3.3	4×5.4	13	5×5.4	14		
4.7	5×5.4	16	5×5.4	16	6.3×6.0	25
10	6.3×5.4	24	6.3×5.4	24	6.3×7.7	35
22	6.3×6.0	42	6.3×7.7	49	8×10.2	84
33	6.3×7.7	60	8×10.2	112	10×10.2	133
47	6.3×7.7	63	8×10.2	119	12.5×13.5	240
68			8×10.2	126	12.5×13.5	245
100	8×10.2	140	10×10.2	196	16×16.5	490
150					16×16.5	500
220	10×10.2	220	12.5×13.5	287	18×16.5	650
330	12.5×13.5	365			18×21.5	700
390	12.5×13.5	380				
470			16×16.5	630		
680			18×16.5	750		
1000	16×16.5	655	18×21.5	900		
1500	18×21.5	1100				

→Please use the higher voltage model in the next.
Please refer to page 16 for
ripple current frequency coefficients.

Case size:φDxL(mm)
φ16, φ18:CE-FST

Rated ripple current
mArms(120Hz, 105℃)

■ Part number

FS

16 CE 470 FS
- FS: Series symbol
- 470: Rated capacitance
- CE: Type symbol
- 16: Rated voltage

FST

10 CE 4700 FS T
- T: Sn plating terminal option
- FS: Series symbol
- 4700: Rated capacitance
- CE: Type symbol
- 10: Rated voltage

CE-AX Series

Low Impedance

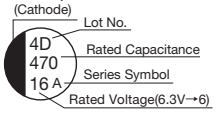
- 105℃ 1,000 to 2,000hours
- We recommend CE-LX series on page 50.
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

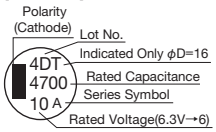
Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−55 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20℃	φ4 to φ6.3	0.24	0.20	0.16	0.14	0.12	0.12
		φ8 to φ16	0.28	0.24	0.20	0.16	0.14	0.14
			Exceeding 1,000μF, +0.02 every 1,000μF					
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	2	2	2	2	2
		−55℃ Z/Z20℃	5	4	4	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ4 to φ6.3 : 1,000hours, φ8 to φ16 : 2,000hours					
		△C/C	Within ±25% of the initial value					
		tanδ	Not more than 200% of the specified value					
		LC	Not more than the specified value					
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

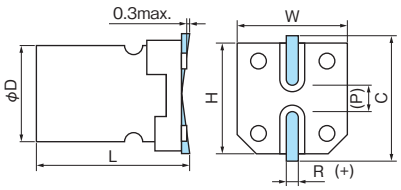
■ Marking, Dimensions

[φD≤10]



[φD≥12.5]





A pressure relief vent is provided for φD=8 or bigger

(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
4	6.0	4.3	4.3	5.0	0.5 to 0.8	1.0
5	6.0	5.3	5.3	6.0	0.5 to 0.8	1.4
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.2	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.2	10.3	10.3	11.0	1.0 to 1.4	4.6
12.5	13.5±0.5	12.8	12.8	13.5	1.0 to 1.4	4.6
16	16.5±0.5	16.3	16.3	17.3	1.7 to 2.1	7.0

■ Size, Impedance, Rated Ripple Current

μF \ V	6.3			10			16			25			35			50		
4.7													4×6.0	1.80	80	4×6.0	2.90	60
10										4×6.0	1.80	80	5×6.0	0.76	150	6.3×6.0	0.88	165
15							4×6.0	1.80	80	→			5×6.0	0.76	150			
22				4×6.0	1.80	80	→			→			5×6.0	0.76	150	6.3×6.0	0.88	165
27	4×6.0	1.80	80															
33	→			5×6.0	0.76	150	→			→			6.3×6.0	0.44	230	6.3×7.7	0.68	195
47	5×6.0	0.76	150	→			→			→			6.3×6.0	0.44	230	6.3×7.7	0.68	195
56	5×6.0	0.76	150							6.3×6.0	0.44	230						
68	→			→			→			6.3×6.0	0.44	230	6.3×7.7	0.34	280			
100	6.3×6.0	0.44	230	→			6.3×6.0	0.44	230	6.3×7.7	0.34	280	8×10.2	0.17	450	8×10.2	0.39	300
150	→			6.3×6.0	0.44	230	6.3×7.7	0.34	280	→			8×10.2	0.17	450	10×10.2	0.21	450
220	6.3×6.0	0.44	230	→			6.3×7.7	0.34	280	→			8×10.2	0.17	450	10×10.2	0.21	450
330	6.3×7.7	0.34	280	→			→			8×10.2	0.17	450	10×10.2	0.090	670	12.5×13.5	0.14	620
390																12.5×13.5	0.14	620
470	→			→			8×10.2	0.17	450	10×10.2	0.090	670	12.5×13.5	0.066	900			
680	8×10.2	0.17	450	→			10×10.2	0.090	670				12.5×13.5	0.066	900			
1000	8×10.2	0.17	450	10×10.2	0.090	670				12.5×13.5	0.066	900				16×16.5	0.078	790
1500	10×10.2	0.090	670				12.5×13.5	0.066	900				16×16.5	0.052	1250			
2200				12.5×13.5	0.066	900				16×16.5	0.052	1250						
3300	12.5×13.5	0.066	900				16×16.5	0.052	1250									
4700				16×16.5	0.052	1250												
6800	16×16.5	0.052	1250															

→Please use the higher voltage model in the next.
Please refer to page 16 for
ripple current frequency coefficients.

Case size:φDxL(mm)
16×16.5:CE-AXT

Impedance(Ω)
max. at 100kHz, 20℃

Rated ripple current
mArms(100kHz, 105℃)

■ Part number

AX
16 CE 470 AX
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

AXT
10 CE 4700 AX T
- Sn plating terminal option
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

Aluminum Electrolytic Type / Surface Mount Type **RoHS compliance**

CE-ZX Series

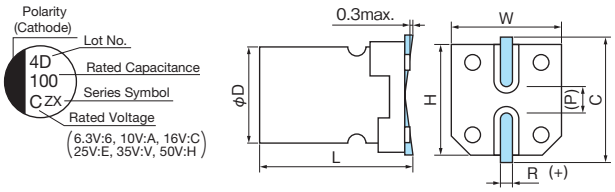
Super Low ESR

- 30 to 50% less ESR than CE-KX series at high frequencies.
- 105℃ 2,000hours ● Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−55 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.26	0.19	0.16	0.14	0.12	0.10
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV					
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	3	3	3	3	3
		−55℃ Z/Z20℃	4	4	4	3	3	3
Endurance	105℃, 2,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value					
		tanδ	Not more than 200% of the specified value					
		LC	Not more than the specified value					
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger

(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	13.5±0.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

μF \ V	6.3			10			16			25			35			50		
33										→			6.3×6.0	0.26	300			
47							→			→			6.3×6.0	0.26	300			
68							→			6.3×6.0	0.26	300	6.3×7.7	0.16	600			
100	6.3×6.0	0.26	300				6.3×6.0 ★1	0.26	300	→			6.3×7.7 ★1	0.16	600			
							6.3×7.7	0.16	600				8×10.5	0.08	850	8×10.5	0.18	670
150				6.3×6.0	0.26	300	6.3×7.7	0.16	600	→			8×10.5	0.08	850			
220	6.3×6.0	0.26	300	→			6.3×7.7	0.16	600	→			8×10.5	0.08	850	10×10.5	0.12	900
330	6.3×7.7	0.16	600	→			→			8×10.5	0.08	850	10×10.5	0.06	1190	10×13.5★2	0.10	900
390													10×10.5	0.08	850			
470	→			→			8×10.5	0.08	850	10×10.5	0.06	1190	10×13.5★2	0.06	1190			
560										10×10.5	0.08	850						
680				8×10.5	0.08	850	10×10.5	0.06	1190	10×13.5★2	0.06	1190						
820							10×10.5	0.08	850									
1000	8×10.5	0.08	850	10×10.5	0.06	1190	10×13.5★2	0.06	1190									
1200				10×10.5	0.08	850												
1500	10×10.5	0.06	1190	10×13.5★2	0.06	1190												
1800	10×10.5	0.08	850															

→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.
★1 ZXS ★2 ZXC

Case size:φDxL(mm)
Rated ripple current mArms(100kHz, 105℃)
ESR(Ω) max. at 100kHz, 20℃

■ Part number

ZX
16 CE 100 ZX
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

ZXS
16 CE 100 ZXS
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

ZXC
16 CE 1000 ZXC
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

Aluminum Electrolytic Type / Surface Mount Type **RoHS compliance**

CE-ZC Series

Super Low ESR
Small, High Capacitance

- 105℃ 2,000 to 5,000hours
- Solvent proof (within 2 minutes) ● AEC-Q200

UPGRADE

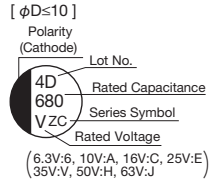
■ Specifications

Items	Condition		Specifications						
Rated voltage (V)	–		6.3	10	16	25	35	50	63
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79
Category temperature range (℃)	–		−55 to +105						
Capacitance tolerance (%)	120Hz/20℃		M : ±20						
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.26	0.19	0.16	0.14	0.12	0.10	0.08
			Exceeding 1,000μF, +0.02 every 1,000μF						
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV						
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	3	3	3	3	3	3
		−55℃ Z/Z20℃	4	4	4	3	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ6.3×6.0 to φ10×10.5:2,000hours, φ10×13.5:3,000hours, φ12.5 to φ18:5,000hours						
		△C/C	Within ±30% of the initial value						
		tanδ	Not more than 200% of the specified value						
		LC	Not more than the specified value						
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.						

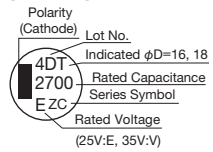
■ Marking, Dimensions

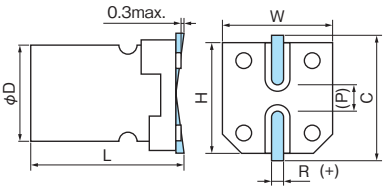
(Unit : mm)

[φD≤10]



[φD≥12.5]





A pressure relief vent is provided for φD=8 or bigger

(P)reference size

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	13.5±0.5	10.3	10.3	11.0	1.0 to 1.4	4.6
12.5	13.5±0.5	12.8	12.8	13.5	1.0 to 1.4	4.6
16	16.5±0.5	16.3	16.3	17.3	1.7 to 2.1	7.0
16	21.5±1.0	16.3	16.3	17.3	1.7 to 2.1	7.0
18	16.5±1.0	19.0	19.0	20.0	1.7 to 2.1	7.0
18	21.5±1.0	19.0	19.0	20.0	1.7 to 2.1	7.0

■ Size, ESR, Rated Ripple Current

μF \ V	6.3			10			16			25			35		
68													6.3×6.0	0.28	300
100										→			6.3×6.0	0.28	300
150							6.3×6.0	0.28	300	→			6.3×7.7	0.16	600
220				→			6.3×6.0	0.28	300	6.3×7.7	0.16	600			
330	6.3×6.0	0.28	300	→			6.3×7.7	0.16	600				8×10.5	0.08	850
390													8×10.5	0.08	850
470	→			6.3×7.7	0.16	600				8×10.5	0.08	850	10×10.5	0.06	1190
560										8×10.5	0.08	850	10×10.5	0.06	1190
680	6.3×7.7	0.16	600				8×10.5	0.08	850				10×10.5	0.06	1190
820										10×10.5	0.06	1190	10×13.5★	0.06	1500
910													12.5×13.5	0.058	1420
1000				8×10.5	0.08	850	→			10×10.5	0.06	1190			
1200										10×13.5★	0.06	1500			
1500	8×10.5	0.08	850	10×10.5	0.06	1190									
1800													16×16.5	0.035	1800
2200	10×10.5	0.06	1190												
2400													18×16.5	0.033	2060
2700										16×16.5	0.035	1800	16×21.5	0.034	2540
3000													18×21.5	0.025	2640
3600										18×16.5	0.033	2060			
3900										16×21.5	0.034	2540			
4700										18×21.5	0.025	2640			

μF \ V	50			63		
47	6.3×6.0	0.68	195			
220	8×10.5	0.18	670	10×13.5★	0.14	600
330	10×10.5	0.12	900			
470	10×13.5★	0.12	750			

Rated ripple current mArms(100kHz, 105℃)

ESR(Ω) max. at 100kHz, 20℃

Case size:φDxL(mm) φ16, φ18:CE-ZCT

→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.
★ ZCC

■ Part number

ZC
35 CE 560 ZC
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

ZCC
25 CE 1200 ZCC
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

ZCT
35 CE 1800 ZC T
- Sn plating terminal option
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

Aluminum Electrolytic Type / Surface Mount Type **RoHS compliance**

CE-LX Series

Long Life

Low Impedance

- 105℃ 2,000 to 5,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

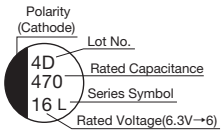
UPGRADE

■ Specifications

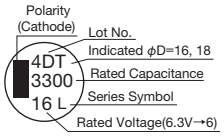
Items	Condition		Specifications								
Rated voltage (V)	–		6.3	10	16	25	35	50	63	80	100
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79	100	125
Category temperature range (℃)	–		−55 to +105								
Capacitance tolerance (%)	120Hz/20℃		M : ±20								
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20℃	φ4 to φ6.3	0.26	0.20	0.16	0.14	0.12	0.12	0.08	0.08	0.07
		φ8 to φ18	0.28	0.24	0.22	0.16	0.14	0.14	0.08	0.08	0.07
			Exceeding 1,000μF, +0.02 every 1,000μF								
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.01CV or 3								
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	3	3	3	3	3	2	2	2
		−55℃ Z/Z20℃	4	4	4	3	3	3	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ4 to φ6.3 : 2,000hours, φ8 to φ18 : 5,000hours								
		△C/C	Within ±30% of the initial value								
		tanδ	Not more than 300% of the specified value								
		LC	Not more than the specified value								
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.								

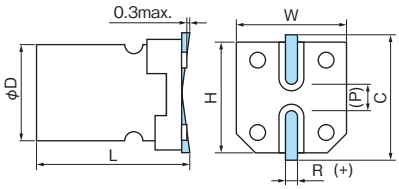
■ Marking, Dimensions

[φD≤10]



[φD≥12.5]





A pressure relief vent is provided for φD=8 or bigger

(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
4	6.0	4.3	4.3	5.0	0.5 to 0.8	1.0
5	6.0	5.3	5.3	6.0	0.5 to 0.8	1.4
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.2	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.2	10.3	10.3	11.0	1.0 to 1.4	4.6
10	13.5±0.5	10.3	10.3	11.0	1.0 to 1.4	4.6
12.5	13.5±0.5	12.8	12.8	13.5	1.0 to 1.4	4.6
16	16.5±0.5	16.3	16.3	17.3	1.7 to 2.1	7.0
18	16.5±1.0	19.0	19.0	20.0	1.7 to 2.1	7.0
18	21.5±1.0	19.0	19.0	20.0	1.7 to 2.1	7.0

■ Part number

LX
16 CE 470 LX
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

LXS
35 CE 100 LXS
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

LXC
35 CE 470 LXC
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

LXT
16 CE 3300 LX T
- Sn plating terminal option
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

■ Size, Impedance, Rated Ripple Current

μF \ V	6.3			10			16			25			35		
4.7													4×6.0	1.45	90
10													4×6.0 ★1	1.45	90
										4×6.0	1.45	90	5×6.0	0.70	170
15							4×6.0	1.45	90	→			5×6.0	0.70	170
22				4×6.0	1.45	90	→			→			5×6.0	0.70	170
27	4×6.0	1.45	90	→			5×6.0	0.70	170	→			6.3×6.0	0.39	250
33	→			5×6.0	0.70	170	→			→			6.3×6.0	0.39	250
47	5×6.0	0.70	170	→			→			→			6.3×6.0	0.39	250
56	5×6.0	0.70	170	→			→			6.3×6.0	0.39	250	6.3×7.7	0.30	300
68	→			→			→			6.3×6.0	0.39	250	6.3×7.7	0.30	300
100	5×6.0 ★1	0.70	170										6.3×7.7 ★1	0.30	300
	→			→			6.3×6.0	0.39	250	6.3×7.7	0.30	300	8×10.2	0.17	600
150	→			6.3×6.0	0.39	250	6.3×7.7	0.30	300	→			8×10.2	0.17	600
220	6.3×6.0	0.39	250	→			6.3×7.7	0.30	300	→			8×10.2	0.17	600
330	6.3×7.7	0.30	300	→			→			8×10.2	0.17	600	10×10.2	0.090	850
470	→			→			8×10.2	0.17	600	10×10.2	0.090	850	10×13.5★2	0.070	950
													12.5×13.5	0.060	1100
680	8×10.2	0.17	600	→			10×10.2	0.090	850	10×13.5★2	0.070	950			
										→			12.5×13.5	0.060	1100
1000							10×13.5★2	0.070	950						
	8×10.2	0.17	600	10×10.2	0.090	850	→			12.5×13.5	0.060	1100	16×16.5	0.035	1800
1500				10×13.5★2	0.070	950									
	10×10.2	0.090	850	→			12.5×13.5	0.060	1100	→			16×16.5	0.035	1800
2200	→			12.5×13.5	0.060	1100				16×16.5	0.035	1800	18×16.5	0.033	2060
2700													18×21.5	0.028	2260
3300							16×16.5	0.035	1800	18×16.5	0.033	2060			
3900										18×21.5	0.028	2260			
4700				16×16.5	0.035	1800	18×16.5	0.033	2060						
5600							18×21.5	0.028	2260						
6800	16×16.5	0.035	1800	18×16.5	0.033	2060									
8200	18×16.5	0.033	2060	18×21.5	0.028	2260									
10000	18×16.5	0.033	2060												
12000	18×21.5	0.028	2260												

μF \ V	50			63			80			100		
4.7	4×6.0	2.90	60									
10	6.3×6.0	0.88	165	6.3×6.0	1.50	80	→			6.3×7.7	2.40	60
22	6.3×6.0	0.88	165	6.3×7.7	1.20	120	→			8×10.2	1.30	130
27	6.3×7.7	0.68	195									
33	6.3×7.7	0.68	195	8×10.2	0.65	250				10×10.2	0.65	200
47	6.3×7.7	0.68	195	8×10.2	0.65	250	10×10.2	0.65	200	12.5×13.5	0.32	500
56	8×10.2	0.34	350									
68	8×10.2	0.34	350							12.5×13.5	0.32	500
100				10×10.2 ★1	0.30	480						
	8×10.2	0.34	350	12.5×13.5	0.16	800	12.5×13.5	0.32	500	16×16.5	0.17	793
150	10×10.2	0.18	670	12.5×13.5	0.16	800	12.5×13.5	0.32	500	16×16.5	0.17	793
220	10×10.2	0.18	670	12.5×13.5	0.16	800				18×16.5	0.153	917
330	12.5×13.5	0.12	900	16×16.5	0.082	1410	16×16.5	0.17	793	18×21.5	0.083	1230
470	16×16.5	0.073	1610	16×16.5	0.082	1410	18×16.5	0.153	917			
680	16×16.5	0.073	1610	18×16.5	0.080	1690						
1000	16×16.5	0.073	1610	18×21.5	0.055	1960						
1200	18×16.5	0.068	1900									
1500	18×21.5	0.042	2180									

→Please use the higher voltage model in the next.
Please refer to page 16 for
ripple current frequency coefficients.

★1 LXS
★2 LXC

Case size:φDxL(mm)
φ16, φ18:CE-LXT

Impedance(Ω)
max. at 100kHz, 20℃

Rated ripple current
mArms(100kHz, 105℃)

CE-GA Series

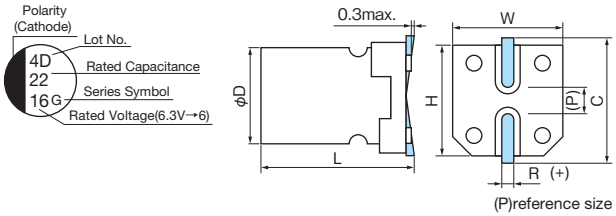
Low Impedance
5.4mm Height

- 105℃ 1,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications						
Rated voltage (V)	–		6.3	10	16	25	35	50	63
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79
Category temperature range (℃)	–		−55 to +105						
Capacitance tolerance (%)	120Hz/20℃		M : ±20						
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.24	0.20	0.16	0.14	0.12	0.12	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.01CV or 3						
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	2	2	2	2	2	2
		−55℃ Z/Z20℃	5	4	4	3	3	3	3
Endurance	105℃, 1,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value						
		tanδ	Not more than 200% of the specified value						
		LC	Not more than the specified value						
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.						

■ Marking, Dimensions



(Unit : mm)

D±0.5	L +0.1 −0.2	W±0.2	H±0.2	C±0.2	R	P
4	5.4	4.3	4.3	5.0	0.5 to 0.8	1.0
5	5.4	5.3	5.3	6.0	0.5 to 0.8	1.4
6.3	5.4	6.6	6.6	7.3	0.5 to 0.8	2.2

■ Size, Impedance, Rated Ripple Current

μF \ V	6.3			10			16			25			35			50			63		
2.2													4	2.9	68	4	6.6	45	4	8.0	24
3.3													4	2.7	68	4	5.4	52	5	3.5	40
4.7											→		4	2.3	68	5	2.9	75	5	3.5	40
10							4	2.3	68		→		5	1.1	105	6.3	1.3	120	6.3	1.6	65
22	4	2.3	68		→		5	1.1	105		→		6.3	0.6	155	6.3	1.3	120			
33		→		5	1.1	105		→			→		6.3	0.6	155						
47	5	1.1	105		→			→			→		6.3	0.6	155						
100		→			→		6.3	0.6	155												
220	6.3	0.6	155																		

→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.

Impedance(Ω) max. at 100kHz, 20℃
Case size:φD(mm)
Rated ripple current mArms(100kHz, 105℃)

■ Part number

16 CE 22 GA
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

CE-LS Series

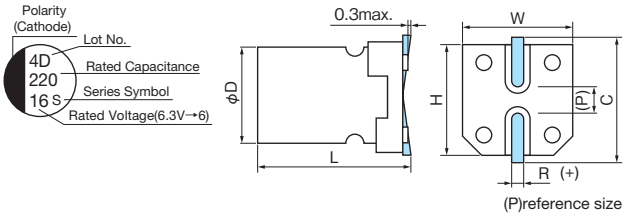
Long Life
Low Impedance

- 105℃ 3,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.28	0.24	0.22	0.16	0.13	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2
		−40℃ Z/Z20℃	10	7	5	3	3	3
Endurance	105℃, 3,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value					
		tanδ	Not more than 300% of the specified value					
		LC	Not more than the specified value					
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

■ Marking, Dimensions



(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
5	6.0	5.3	5.3	6.0	0.5 to 0.8	1.4
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2

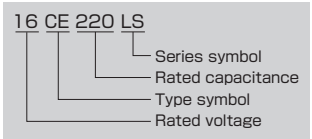
■ Size, Impedance, Rated Ripple Current

μF \ V	6.3	10	16	25	35	50
10					5×6.0 1.30 95	6.3×6.0 2.00 70
22			→	5×6.0 1.30 95	6.3×6.0 0.70 140	6.3×6.0 2.00 70
33		5×6.0 1.30 95		6.3×6.0 0.70 140		6.3×7.7 1.35 100
47	→	5×6.0 1.30 95	→	6.3×6.0 0.70 140	6.3×7.7 0.60 230	
100	→	→	6.3×6.0 0.70 140	6.3×7.7 0.60 230		
150		6.3×6.0 0.70 140	6.3×7.7 0.60 230			
220	→		6.3×7.7 0.60 230			
330	6.3×7.7 0.60 230					

→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.

Case size:φDxL(mm)
Impedance(Ω) max. at 100kHz, 20℃
Rated ripple current mArms(100kHz, 105℃)

■ Part number



CE-LH Series

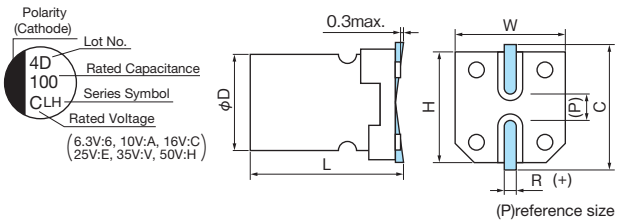
Long Life

- 105℃ 5,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.32	0.24	0.20	0.16	0.13	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2
		−40℃ Z/Z20℃	10	7	5	3	3	3
Endurance	105℃, 5,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value					
		tanδ	Not more than 300% of the specified value					
		LC	Not more than the specified value					
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

■ Marking, Dimensions



(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
4	6.0	4.3	4.3	5.0	0.5 to 0.8	1.0
5	6.0	5.3	5.3	6.0	0.5 to 0.8	1.4
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2

■ Size, Rated Ripple Current

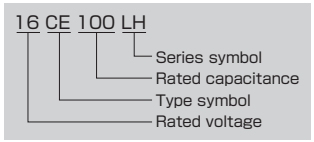
μF \ V	6.3		10		16		25		35		50	
2.2											4×6.0	11
3.3											4×6.0	14
4.7									4×6.0	15	5×6.0	19
10					4×6.0	18	→		5×6.0	25	6.3×6.0	30
22			→		5×6.0	30	→		6.3×6.0	42	6.3×7.7	49
33	→		5×6.0	35	→		6.3×6.0	48	6.3×7.7	57		
47	5×6.0	36	→		6.3×6.0	50	6.3×7.7	63				
100	6.3×6.0	60	→		6.3×7.7	81						
220	6.3×7.7	101										

→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.

Case size:φDxL(mm)

Rated ripple current mArms(120Hz, 105℃)

■ Part number



Aluminum Electrolytic Type / Surface Mount Type **RoHS compliance**

CE-LH Series

105℃ Long Life
High Voltage

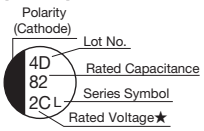
- 160 to 400V, 105℃ 5,000hours
- Non solvent proof
- AEC-Q200

■ Specifications

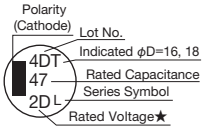
Items	Condition		Specifications		
Rated voltage (V)	–		160	200	400
Surge voltage (V)	Room temperature		200	250	450
Category temperature range (℃)	–		−40 to +105		
Capacitance tolerance (%)	120Hz/20℃		M : ±20		
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.20	0.20	0.25
Leakage current(LC)	μA/after 2minutes (max.) (20℃)	CV ≤ 1,000	0.03CV +15		
		CV > 1,000	0.02CV +25		
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	3	3	6
		−40℃ Z/Z20℃	6	6	10
Endurance	105℃, 5,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value		
		tanδ	Not more than 300% of the specified value		
		LC	Not more than the specified value		
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.		

■ Marking, Dimensions

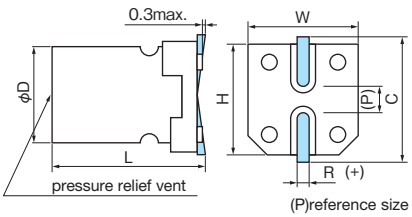
[φD≤10]



[φD≥12.5]



★(160V : 2C, 200V : 2D, 400V : 2G)



(P)reference size

(Unit : mm)

D±0.5	L	W±0.2	H±0.2	C±0.2	R	P
8	10.5±0.3	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5±0.3	10.3	10.3	11.0	1.0 to 1.4	4.6
12.5	13.5±0.5	12.8	12.8	13.5	1.0 to 1.4	4.6
16	16.5±0.5	16.3	16.3	17.3	1.7 to 2.1	7.0
18	16.5±1.0	19.0	19.0	20.0	1.7 to 2.1	7.0
18	21.5±1.0	19.0	19.0	20.0	1.7 to 2.1	7.0

■ Size, Rated Ripple Current

μF \ V	160		200		400	
2.2					8×10.5	25
3.3			8×10.5	31	10×10.5	36
4.7			8×10.5	37	10×10.5	38
10	→		10×10.5	43	12.5×13.5	57
22	→		12.5×13.5	112	16×16.5	115
27					18×16.5	125
33	→		12.5×13.5	137	18×21.5	160
47	→		16×16.5	180		
68	→		16×16.5	215		
			18×16.5 ★	270		
82	16×16.5	235				
100	18×16.5	320	18×21.5	330		
120	18×21.5	340				

→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.
★LHV

Case size:φDxL(mm)
φ16, φ18:CE-LHT

Rated ripple current
mArms(120Hz, 105℃)

■ Part number

LH
160 CE 82 LH
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

LHV
200 CE 68 LHV T
- Sn plating terminal option
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

LHT
200 CE 47 LH T
- Sn plating terminal option
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

CE-LL Series

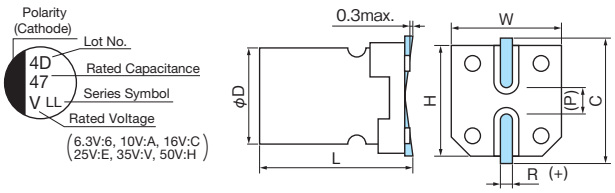
Long Life
Low Impedance

- 105℃ 7,000 to 10,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.32	0.28	0.26	0.16	0.14	0.14
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φD ≤ 6.3 : 7,000hours, φD ≥ 8 : 10,000hours					
		△C/C	Within ±30% of the initial value					
		tanδ	Not more than 300% of the specified value					
		LC	Not more than the specified value					
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger

(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
5	7.0	5.3	5.3	6.0	0.5 to 0.8	1.4
6.3	7.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	8.4	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.2	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.2	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, Impedance, Rated Ripple Current

μF \ V	6.3			10			16			25			35			50		
10													5×7.0	2.2	95			
22							→			→			5×7.0	2.2	95	6.3×8.4	1.8	100
33				5×7.0	2.2	95				6.3×7.0	1.1	140	6.3×8.4	1.0	230	8×10.2	0.53	350
47	5×7.0	2.2	95				→			6.3×7.0	1.1	140	6.3×8.4	1.0	230	8×10.2	0.53	350
100	6.3×7.0	1.1	140				6.3×7.0	1.1	140	6.3×8.4	1.0	230	8×10.2	0.22	600	10×10.2	0.35	670
150				6.3×7.0	1.1	140	6.3×8.4	1.0	230	8×10.2	0.22	600						
220	6.3×8.4	1.0	230				6.3×8.4	1.0	230	8×10.2	0.22	600	10×10.2	0.16	850			
330	6.3×8.4	1.0	230				8×10.2	0.22	600	10×10.2	0.16	850						
470	8×10.2	0.22	600				10×10.2	0.16	850									
1000	10×10.2	0.16	850															

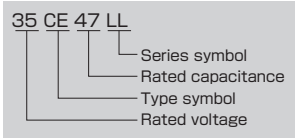
→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.

Impedance(Ω) max. at 100kHz, 20℃

Rated ripple current mArms(100kHz, 105℃)

Case size:φDxL(mm)

■ Part number



CE-LF Series

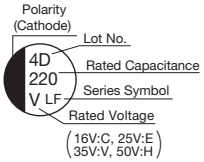
Long Life
Low Impedance

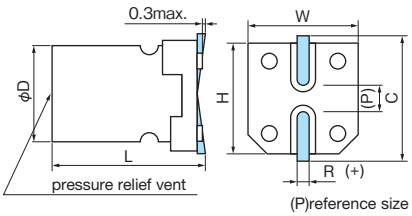
- 105℃ 7,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications			
Rated voltage (V)	–		16	25	35	50
Surge voltage (V)	Room temperature		20	32	44	63
Category temperature range (℃)	–		−40 to +105			
Capacitance tolerance (%)	120Hz/20℃		M : ±20			
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.26	0.16	0.14	0.14
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV			
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2	2	2
Endurance	105℃, 7,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value			
		tanδ	Not more than 300% of the specified value			
		LC	Not more than the specified value			
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.			

■ Marking, Dimensions





(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, Impedance, Rated Ripple Current

μF \ V	16			25			35			50		
100										8×10.5	0.53	350
220							8×10.5	0.22	600	10×10.5	0.35	670
330				8×10.5	0.22	600	10×10.5	0.16	850			
470	8×10.5	0.22	600	10×10.5	0.16	850						

Please refer to page 16 for ripple current frequency coefficients.

Impedance(Ω) max. at 100kHz, 20℃
Rated ripple current mArms(100kHz, 105℃)
Case size:φDxL(mm)

■ Part number

35 CE 220 LF
- LF: Series symbol
- 220: Rated capacitance
- CE: Type symbol
- 35: Rated voltage

CE-PC Series

125℃

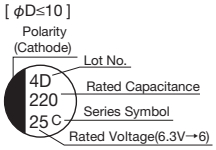
- 125℃ 1,000 to 2,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

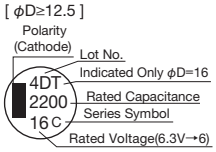
Items	Condition		Specifications							
Rated voltage (V)	–		6.3	10	16	25	35	50	63	100
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79	125
Category temperature range (℃)	–		−55 to +125							
Capacitance tolerance (%)	120Hz/20℃		M : ±20							
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.30	0.24	0.20	0.16	0.14	0.14	0.12	0.10
			Exceeding 1,000μF, +0.02 every 1,000μF							
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.01CV or 3							
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2	2	2
		−40℃ Z/Z20℃	8	6	4	3	3	3	3	3
Endurance	125℃ rated voltage applied (With the rated ripple current)	Test	6.3 to 50V 2,000hours. (φD=6.3 : 1,000hours.), 63 to 100V 1,500hours							
		△C/C	Within ±30% of the initial value							
		tanδ	Not more than 300% of the specified value							
		LC	Not more than the specified value							
Shelf Life	125℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.							

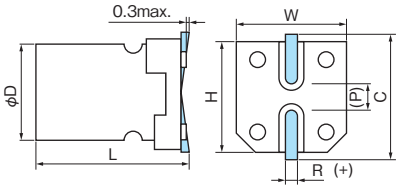
■ Marking, Dimensions

[φD≤10]



[φD≥12.5]





A pressure relief vent is provided for φD=8 or bigger

(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.2	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.2	10.3	10.3	11.0	1.0 to 1.4	4.6
12.5	13.5±0.5	12.8	12.8	13.5	1.0 to 1.4	4.6
16	16.5±0.5	16.3	16.3	17.3	1.7 to 2.1	7.0

■ Size, ESR, Rated Ripple Current

μF \ V	6.3			10			16			25		
33										6.3×6.0	1.6	70
47				→			6.3×6.0	1.6	70	6.3×7.7	0.90	110
100							→			6.3×7.7 ★	0.90	110
	6.3×6.0	1.6	70	6.3×7.7	0.90	110	→			8×10.2	0.40	160
220				6.3×7.7 ★	0.90	110				8×10.2 ★	0.40	160
	6.3×7.7	0.90	110	→			8×10.2	0.40	160	10×10.2	0.30	296
330										10×10.2 ★	0.30	296
	→			8×10.2	0.40	160	10×10.2	0.30	296	12.5×13.5	0.12	550
470	8×10.2	0.40	160	10×10.2	0.30	296	→			12.5×13.5	0.12	550
680	10×10.2	0.30	296	→			→			12.5×13.5	0.12	550
1000	→			→			12.5×13.5	0.12	550	16×16.5	0.080	900
1500	→			12.5×13.5	0.12	550	→			16×16.5	0.080	900
2200	12.5×13.5	0.12	550	→			16×16.5	0.080	900			
3300	→			16×16.5	0.080	900						
4700	16×16.5	0.080	900									

μF \ V	35			50			63			100		
4.7	6.3×6.0	2.0	60	6.3×6.0	3.5	45						
10	6.3×6.0	1.6	70	6.3×6.0	2.8	50						
22	6.3×6.0	1.6	70	6.3×7.7	2.0	80	8×10.2	1.0	100	8×10.2	1.0	70
33				6.3×7.7 ★	2.0	80						
	6.3×7.7	0.90	110	8×10.2	0.70	140	8×10.2	1.0	100	10×10.2	0.80	115
47	6.3×7.7 ★	0.90	110	8×10.2 ★	0.70	140	8×10.2 ★	1.0	100			
	8×10.2	0.40	160	10×10.2	0.50	247	10×10.2	0.50	150	12.5×13.5	0.33	350
100	8×10.2 ★	0.40	160	10×10.2 ★	0.50	247	10×10.2 ★	0.50	150			
	10×10.2	0.30	296	12.5×13.5	0.23	490	12.5×13.5	0.25	350	16×16.5	0.24	500
220	10×10.2 ★	0.30	296				12.5×13.5 ★	0.25	350			
	12.5×13.5	0.12	550	12.5×13.5	0.23	490	16×16.5	0.18	500			
330				12.5×13.5 ★	0.23	490						
	12.5×13.5	0.12	550	16×16.5	0.15	800	16×16.5	0.18	500			
470	12.5×13.5 ★	0.12	550									
	16×16.5	0.080	900	16×16.5	0.15	800	16×16.5	0.18	500			
680	16×16.5	0.080	900	16×16.5	0.15	800						
1000	16×16.5	0.080	900									

→Please use the higher voltage model in the next.
Please refer to page 16 for
ripple current frequency coefficients.

★ PCS

Case size:φDxL(mm)
16×16.5:CE-PCT

Rated ripple current
mArms(100kHz, 125℃)

ESR(Ω)
max. at 100kHz, 20℃

■ Part number

PC

25 CE 220 PC
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

PCS

25 CE 220 PCS
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

PCT

16 CE 2200 PC T
- Sn plating terminal option
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

CE-PH Series

125℃ Low ESR

High Ripple Current, High Capacitance

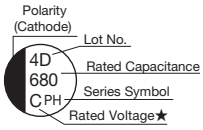
- 125℃ 2,000 to 5,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

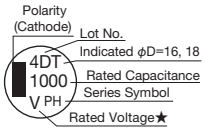
Items	Condition			Specifications				
Rated voltage (V)	–			16	25	35	50	63
Surge voltage (V)	Room temperature			20	32	44	63	79
Category temperature range (℃)	–			−40 to +125				
Capacitance tolerance (%)	120Hz/20℃			M : ±20				
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃			0.20	0.16	0.14	0.14	0.14
				Exceeding 1,000μF, +0.02 every 1,000μF				
Leakage current(LC)	μA/after 2minutes (max.), 20℃			0.01CV				
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃	Z/Z20℃	2	2	2	2	2
		−40℃	Z/Z20℃	4	3	3	3	3
Endurance	125℃ rated voltage applied (With the rated ripple current)	Test		φ6.3 to φ10 : 2,000hours, φ12.5 : 3,000hours, φ16,φ18 : 5,000hours				
		△C/C		Within ±30% of the initial value				
		tanδ		Not more than 300% of the specified value				
		LC		Not more than the specified value				
Shelf Life	125℃, 1,000hours(with no voltage load)			Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.				

■ Marking, Dimensions

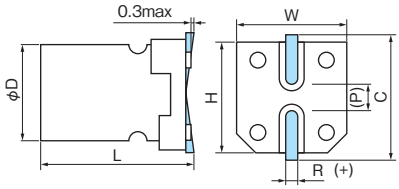
[φD≤10]



[φD≥12.5]



★(16V:C, 25V:E, 35V:V, 50V:H, 63V:J)



A pressure relief vent is provided for φD=8 or bigger

(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
12.5	13.5±0.5	12.8	12.8	13.5	1.0 to 1.4	4.6
16	16.5±0.5	16.3	16.3	17.3	1.7 to 2.1	7.0
16	21.5±1.0	16.3	16.3	17.3	1.7 to 2.1	7.0
18	16.5±1.0	19.0	19.0	20.0	1.7 to 2.1	7.0
18	21.5±1.0	19.0	19.0	20.0	1.7 to 2.1	7.0

■ Size, ESR, Rated Ripple Current

μF \ V	16				25				35			
22									6.3×6.0	1.6	—	110
33									6.3×6.0 ★	1.6	—	110
					6.3×6.0	1.6	—	110	6.3×7.7	0.45	5.0	200
47	6.3×6.0	1.6	—	110					6.3×7.7	0.45	5.0	200
100	→				6.3×7.7	0.45	5.0	200	8×10.5	0.18	3.0	300
160									8×10.5	0.18	3.0	300
220					8×10.5	0.18	3.0	300	10×10.5	0.11	2.0	500
270					8×10.5	0.18	3.0	300				
300									10×10.5	0.11	2.0	500
330	8×10.5	0.18	3.0	300	10×10.5	0.11	2.0	500	12.5×13.5	0.08	1.0	1200
390	8×10.5	0.18	3.0	300								
470	10×10.5	0.11	2.0	500	10×10.5	0.11	2.0	500	12.5×13.5	0.08	1.0	1200
620									12.5×13.5	0.08	1.0	1200
680									12.5×13.5 ★	0.08	1.0	1200
	10×10.5	0.11	2.0	500	12.5×13.5	0.08	1.0	1200	16×16.5	0.05	0.5	1800
1000					12.5×13.5 ★	0.08	1.0	1200				
	12.5×13.5	0.08	1.0	1200	→				16×16.5	0.05	0.5	1800
1500	12.5×13.5	0.08	1.0	1200	16×16.5	0.05	0.5	1800	18×16.5	0.045	0.45	2000
1600									16×21.5	0.045	0.45	2000
2200	16×16.5	0.05	0.5	1800	18×16.5	0.045	0.45	2000	18×21.5	0.04	0.4	2200
2700					16×21.5	0.045	0.45	2000				
3300	18×16.5	0.045	0.45	2000	18×21.5	0.04	0.4	2200				
3900	18×21.5	0.04	0.4	2200								

μF \ V	50				63			
10	6.3×6.0	2.0	—	70	6.3×7.7	2.0	20	60
22					8×10.5	0.70	7.0	140
33					8×10.5	0.70	7.0	140
47	8×10.5	0.45	5.0	250	8×10.5	0.70	7.0	140
100					10×10.5 ★	0.30	3.0	260
	10×10.5	0.30	3.0	350	12.5×13.5	0.18	2.0	700
150					12.5×13.5	0.18	2.0	700
220	12.5×13.5	0.15	1.5	700	12.5×13.5	0.18	2.0	700
330					16×16.5	0.13	1.3	1000
470	16×16.5	0.09	0.9	1000	16×16.5	0.13	1.3	1000
560					16×21.5	0.085	0.85	1200
680	18×16.5	0.07	0.7	1200				
820	16×21.5	0.05	0.5	1200				
1000	18×21.5	0.05	0.5	1650				

→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.

★ PHS

Case size:φDxL(mm)
φ16, φ18:CE-PHT

ESR(Ω)
max. at 100kHz, 20℃

ESR(Ω)
max. at 100kHz, −40℃

Rated ripple current
mArms(100kHz, 125℃)

■ Part number

PH

16 CE 680 PH
- PH: Series symbol
- 680: Rated capacitance
- CE: Type symbol
- 16: Rated voltage

PHS

35 CE 33 PHS
- PHS: Series symbol
- 33: Rated capacitance
- CE: Type symbol
- 35: Rated voltage

PHT

35 CE 1000 PH T
- T: Sn plating terminal option
- PH: Series symbol
- 1000: Rated capacitance
- CE: Type symbol
- 35: Rated voltage

Aluminum Electrolytic Type / Surface Mount Type **RoHS compliance**

CE-PS Series

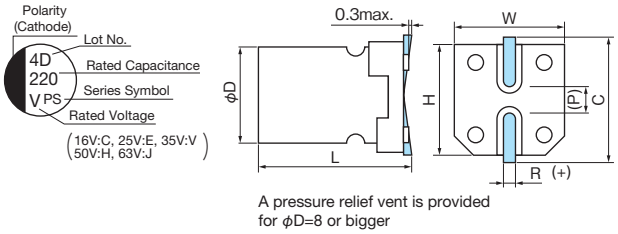
125℃
High Capacitance

- 125℃ 1,000 to 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications				
Rated voltage (V)	–		16	25	35	50	63
Surge voltage (V)	Room temperature		20	32	44	63	79
Category temperature range (℃)	–		−40 to +125				
Capacitance tolerance (%)	120Hz/20℃		M : ±20				
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.20	0.16	0.14	0.14	0.14
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV				
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2	2	2	2
		−40℃ Z/Z20℃	4	3	3	3	3
Endurance	125℃ rated voltage applied (With the rated ripple current)	Test	φ6.3×6.0 : 1,000hours, φ6.3×7.7 to φ10×10.5 : 2,000hours, φ10×13.5 : 4,000hours				
		△C/C	Within ±30% of the initial value				
		tanδ	Not more than 300% of the specified value				
		LC	Not more than the specified value				
Shelf Life	125℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.				

■ Marking, Dimensions



A pressure relief vent is provided for φD=8 or bigger

(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	13.5±0.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

μF \ V	16			25			35			50			63		
47							6.3×6.0	1.20	110						
68													8×10.5	0.50	250
100	6.3×6.0	1.20	110				6.3×7.7	0.60	220	8×10.5	0.45	250	8×10.5	0.50	250
150				6.3×7.7	0.60	220				8×10.5	0.45	250	10×10.5	0.30	350
220							8×10.5	0.30	300	10×10.5	0.30	350			
270										10×10.5	0.30	350			
330				8×10.5	0.30	300	10×10.5	0.20	500						
390							10×13.5★	0.15	710						
470				10×10.5	0.20	500	10×13.5★	0.15	710						
560				→			10×13.5★	0.15	710						
680				10×13.5★	0.15	710									

→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.

Case size:φDxL(mm)

ESR(Ω) max. at 100kHz, 20℃

Rated ripple current mArms(100kHz, 125℃)

★ PSC

■ Part number

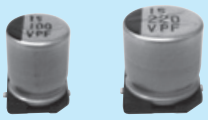
PS
35 CE 220 PS
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

PSC
25 CE 680 PSC
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

Aluminum Electrolytic Type / Surface Mount Type **RoHS compliance**

CE-PF Series

125℃ Long Life
High Ripple Current

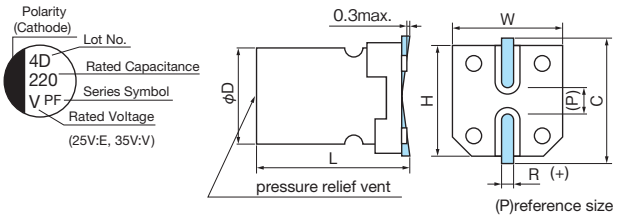


- 125℃ 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications	
Rated voltage (V)	–		25	35
Surge voltage (V)	Room temperature		32	44
Category temperature range (℃)	–		−40 to +125	
Capacitance tolerance (%)	120Hz/20℃		M : ±20	
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.16	0.14
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV	
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2
		−40℃ Z/Z20℃	3	3
Endurance	125℃, 4,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value	
		tanδ	Not more than 300% of the specified value	
		LC	Not more than the specified value	
Shelf Life	125℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.	

■ Marking, Dimensions



(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

μF \ V	25			35		
100				8×10.5	0.30	300
150	8×10.5	0.30	300			
220				10×10.5	0.20	500
330	10×10.5	0.20	500			

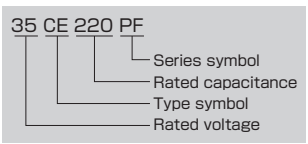
Please refer to page 16 for ripple current frequency coefficients.

Case size:φDxL(mm)

ESR(Ω) max. at 100kHz, 20℃

Rated ripple current mArms(100kHz, 125℃)

■ Part number



CE-PL Series

125℃ Long Life
High Capacitance

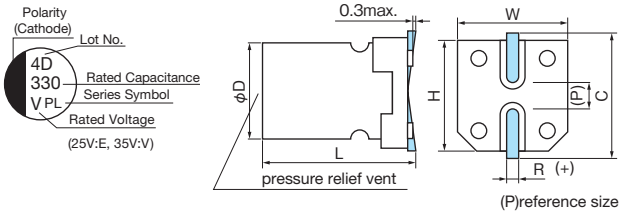
- 125℃ 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

NEW

■ Specifications

Items	Condition		Specifications	
Rated voltage (V)	–		25	35
Surge voltage (V)	Room temperature		32	44
Category temperature range (℃)	–		−40 to +125	
Capacitance tolerance (%)	120Hz/20℃		M : ±20	
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.16	0.14
Leakage current(LC)	μA/after 2minutes (max.),20℃		0.01CV	
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2
		−40℃ Z/Z20℃	3	3
Endurance	125℃ rated voltage applied	Test	4,000hours	
		△C/C	Within ±30% of the initial value	
		tanδ	Not more than 300% of the specified value	
		LC	Not more than the specified value	
Shelf Life	125℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.	

■ Marking, Dimensions



(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

μF \ V	25			35		
330				10×10.5	0.20	500
470	10×10.5	0.20	500			

Please refer to page 16 for ripple current frequency coefficients.

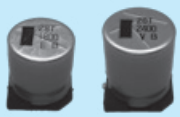
Case size:φDxL(mm)
ESR(Ω) max. at 100kHz, 20℃
Rated ripple current mArms(100kHz, 125℃)

■ Part number

35 CE 330 PL
- PL: Series symbol
- 330: Rated capacitance
- CE: Type symbol
- 35: Rated voltage

CE-PB Series

125℃ High Capacitance

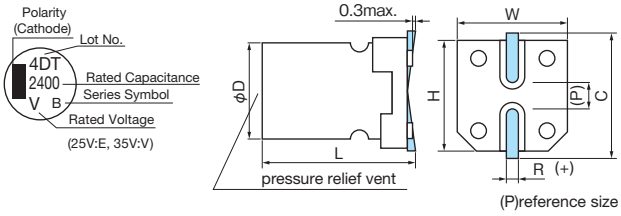


- 125℃ 3,000 to 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications	
Rated voltage (V)	–		25	35
Surge voltage (V)	Room temperature		32	44
Category temperature range (℃)	–		−40 to +125	
Capacitance tolerance (%)	120Hz/20℃		M : ±20	
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.18	0.16
			Exceeding 1,000μF, +0.02 every 1,000μF	
Leakage current(LC)	μA/after 2minutes (max.),20℃		0.01CV	
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2
		−40℃ Z/Z20℃	4	3
Endurance	125℃ rated voltage applied	Test	φ16×16.5 : 3,000hours, φ18×21.5 : 4,000hours	
		△C/C	Within ±35% of the initial value	
		tanδ	Not more than 300% of the specified value	
		LC	Not more than the specified value	
Shelf Life	125℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.	

■ Marking, Dimensions



(P)reference size

(Unit : mm)

D±0.5	L	W±0.2	H±0.2	C±0.2	R	P
16	16.5±0.5	16.3	16.3	17.3	1.7 to 2.1	7.0
18	21.5±1.0	19.0	19.0	20.0	1.7 to 2.1	7.0

■ Size, ESR, Rated Ripple Current

μF \ V	25			35		
1300				16×16.5	0.047	2400
1800	16×16.5	0.047	2400			
2400				18×21.5	0.032	3250
3300	18×21.5	0.032	3250			

Please refer to page 16 for ripple current frequency coefficients.

Case size:φDxL(mm)

ESR(Ω) max. at 100kHz, 20℃

Rated ripple current mArms(100kHz, 125℃)

■ Part number

35 CE 2400 PB T
- T: Sn plating terminal option
- PB: Series symbol
- 2400: Rated capacitance
- CE: Type symbol
- 35: Rated voltage

CE-TH Series 135℃

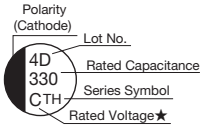
- 135℃ 1,000 to 2,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

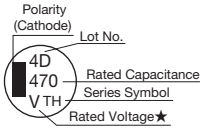
Items	Condition		Specifications			
Rated voltage (V)	–		16	25	35	50
Surge voltage (V)	Room temperature		20	32	44	63
Category temperature range (℃)	–		−40 to +135			
Capacitance tolerance (%)	120Hz/20℃		M : ±20			
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.23	0.18	0.16	0.16
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV			
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2	2	2
		−40℃ Z/Z20℃	4	3	3	3
Endurance	135℃ rated voltage applied (With the rated ripple current)	Test	2,000hours(φ6.3×7.7 : 1,000hours)			
		△C/C	Within ±30% of the initial value			
		tanδ	Not more than 300% of the specified value			
		LC	Not more than the specified value			
Shelf Life	135℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.			

■ Marking, Dimensions

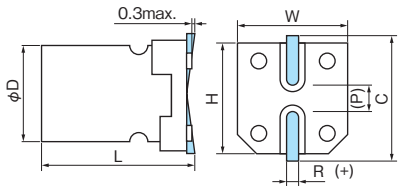
[φD≤10]



[φD=12.5]



★(16V:C, 25V:E, 35V:V, 50V:H)



A pressure relief vent is provided for φD=8 or bigger

(P)reference size

(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
12.5	13.5±0.5	12.8	12.8	13.5	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

μF \ V	16			25			35			50		
22										6.3×7.7	1.20	110
33							6.3×7.7	0.80	150			
47							6.3×7.7	0.80	150	8×10.5	0.60	160
100	→			6.3×7.7	0.80	150	8×10.5	0.30	240	10×10.5	0.35	260
220				8×10.5	0.30	240	10×10.5	0.20	400	12.5×13.5	0.15	600
330	8×10.5	0.30	240	10×10.5	0.20	400	12.5×13.5	0.10	750			
470	10×10.5	0.20	400				12.5×13.5	0.10	750			
680				12.5×13.5	0.10	750						
1000	12.5×13.5	0.10	750									

→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.

Case size:φDxL(mm)

ESR(Ω) max. at 100kHz, 20℃

Rated ripple current mArms(100kHz, 135℃)

■ Part number

16 CE 330 TH

- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

Aluminum Electrolytic Type / Surface Mount Type **RoHS compliance**

CE-JX Series

150℃

- 150℃ 1,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

UPGRADE

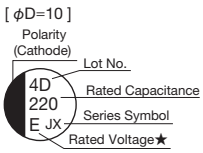
CE-LD
CE-FSS
CE-FS(High Voltage)
CE-FS
CE-AX
CE-ZX
CE-ZC UPGRADE
CE-LX UPGRADE
CE-GA
CE-LS
CE-LH
CE-LH(High Voltage)
CE-LL
CE-LF
CE-PC
CE-PH
CE-PS
CE-PF
CE-PL NEW
CE-PB
CE-TH
CE-JX UPGRADE
CE-FN

■ Specifications

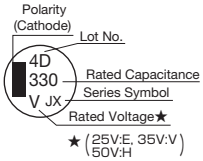
Items	Condition		Specifications		
Rated voltage (V)	–		25	35	50
Surge voltage (V)	Room temperature		32	44	63
Category temperature range (℃)	–		−40 to +150		
Capacitance tolerance (%)	120Hz/20℃		M : ±20		
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.16	0.14	0.14
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV		
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2	2
		−40℃ Z/Z20℃	3	3	3
Endurance	150℃, 1,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value		
		tanδ	Not more than 300% of the specified value		
		LC	Not more than the specified value		
Shelf Life	150℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.		

■ Marking, Dimensions

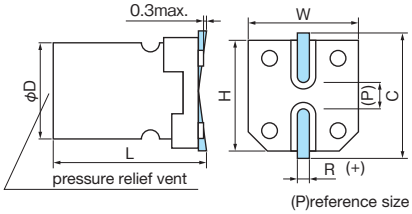
[φD=10]



[φD=12.5]



★ (25V:E, 35V:V, 50V:H)



(Unit : mm)

D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
12.5	13.5±0.5	12.8	12.8	13.5	1.0 to 1.4	4.6

■ Size, ESR, Rated Ripple Current

μF \ V	25			35			50		
33							8×10.5	0.60	70
100				10×10.5	0.20	120			
150				10×10.5	0.20	120			
220	10×10.5	0.20	150	12.5×13.5	0.15	550			
330	→			12.5×13.5	0.15	650			
470	12.5×13.5	0.15	700						

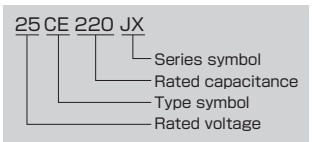
→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.

Case size:φDxL(mm)

ESR(Ω) max. at 100kHz, 20℃

Rated ripple current mArms(100kHz, 150℃)

■ Part number



CE-FN Series

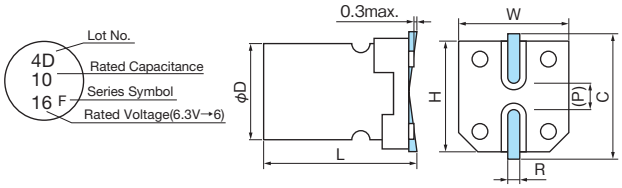
105℃ Bi-polar
5.4mm Height

- 105℃ 1,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ Specifications

Items	Condition		Specifications						
Rated voltage (V)	–		6.3	10	16	25	35	50	63
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79
Category temperature range (℃)	–		−55 to +105						
Capacitance tolerance (%)	120Hz/20℃		M : ±20						
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.24	0.22	0.20	0.20	0.20	0.18	0.16
Leakage current(LC)	μA/after 1minute (max.), 20℃		0.03CV +6						
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	3	2	2	2	2	2
		−55℃ Z/Z20℃	8	6	4	4	3	3	3
Endurance	500hours×2(alternately) 105℃,rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value						
		tanδ	Not more than 200% of the specified value						
		LC	Not more than the specified value						
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.						

■ Marking, Dimensions



(P)reference size

(Unit : mm)

D±0.5	L+0.1 −0.2	W±0.2	H±0.2	C±0.2	R	P
4	5.4	4.3	4.3	5.0	0.5 to 0.8	1.0
5	5.4	5.3	5.3	6.0	0.5 to 0.8	1.4
6.3	5.4	6.6	6.6	7.3	0.5 to 0.8	2.2

■ Size, Rated Ripple Current

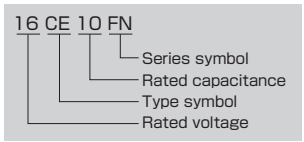
μF \ V	6.3	10	16	25	35	50	63
1.0						4 7.0	4 7.0
2.2					4 5.9	5 10	5 10
3.3				4 7.0	5 12	5 13	6.3 13
4.7			4 8.0	→	5 14	6.3 16	6.3 16
10		4 12	5 17	→	→	6.3 18	
22	5 22	→	6.3 27				
33	→	→	6.3 40				
47	6.3 33						

→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.

Case size:φD(mm)

Rated ripple current mArms(120Hz, 105℃)

■ Part number



Aluminum Electrolytic Type / Radial Lead Type **RoHS compliance**

ME-SZ Series

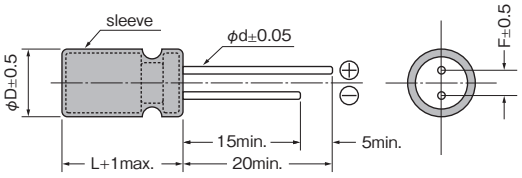
7mm Height, Wide Temperature

● 105℃ 1,000hours, Solvent proof (within 3 minutes)

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−55 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max.) 120Hz/20℃		0.24	0.20	0.16	0.14	0.12	0.10
Leakage current (LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	2	2	2	2	2
		−55℃ Z/Z20℃	5	4	4	3	3	3
Endurance	105℃, 1,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value					
		tanδ	Not more than 200% of the specified value					
		LC	Not more than the specified value					
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

■ Dimensions



(Unit : mm)

φD	6.3
F	2.5
φd	0.45

■ Size, Impedance, Rated Ripple Current

μF \ V	6.3	10	16	25	35	50
10						6.3×7 1.6 100
22				6.3×7 1.2 120	→	6.3×7 1.6 100
33			→	6.3×7 1.2 120	→	6.3×7 1.6 100
47		→	→	6.3×7 1.2 120	→	6.3×7 1.6 100
100	→	→	→	6.3×7 1.2 120	6.3×7 1.6 100	
220	→	→	6.3×7 1.2 120			
330	6.3×7 1.2 120					

→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.

Case size:φDxL(mm)

Impedance(Ω) max. at 100kHz, 20℃

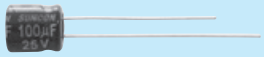
Rated ripple current mArms(100kHz, 105℃)

■ Part number

25 ME 100 SZ
- SZ — Series symbol
- 100 — Rated capacitance
- ME — Type symbol
- 25 — Rated voltage

ME-SWG Series

Low ESR, Small
7mm Height

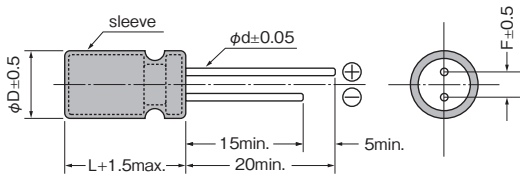


- 105℃ 1,000 to 2,000hours
- Non solvent proof

■ Specifications

Items	Condition		Specifications				
Rated voltage (V)	–		6.3	10	16	25	35
Surge voltage (V)	Room temperature		8.0	13	20	32	44
Category temperature range (℃)	–		−40 to +105				
Capacitance tolerance (%)	120Hz/20℃		M : ±20				
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.24	0.20	0.16	0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.03CV				
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2	2	2	2
		−40℃ Z/Z20℃	3	3	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ6.3 : 2,000hours, (6ME330SWG, 10ME220SWG : 1,000hours)				
		△C/C	Within ±25% of the initial value(6.3V, 10V : ±30%)				
		tanδ	Not more than 200% of the specified value				
		LC	Not more than the specified value				
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.				

■ Dimensions



(Unit : mm)

φD	6.3
F	2.5
φd	0.45

■ Size, ESR, Rated Ripple Current

μF \ V	6.3	10	16	25	35
47					6.3×7 0.082 760
100	→	→	→	6.3×7 0.082 760	
150	→	→	6.3×7 0.082 760		
220	→	6.3×7 0.082 760			
330	6.3×7 0.082 760				

→Please use the higher voltage model in the next.
Please refer to page 16 for
ripple current frequency coefficients.

ESR(Ω) max. at 100kHz, 20℃

Rated ripple current mArms(100kHz, 105℃)

Case size:φDxL(mm)

■ Part number

25 ME 100 SWG
- Series symbol
- Rated capacitance
- Type symbol
- Rated voltage

ME-LS Series

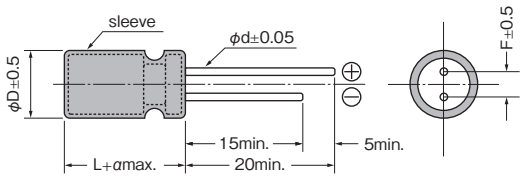
105℃
Long Life

- 105℃ 3,000hours
- Solvent proof (φ6.3 : within 3 minutes, φ8 : within 5 minutes)

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor(tan δ)	tanδ (max.) 120Hz/20℃		0.30	0.28	0.24	0.18	0.16	0.14
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	5	4	3	2	2	2
		−40℃ Z/Z20℃	10	8	6	4	3	3
Endurance	105℃, 3,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value					
		tanδ	Not more than 300% of the specified value					
		LC	Not more than the specified value					
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

■ Dimensions



α : L≦7.5 α=1.0, L=11.5 α=1.5

A pressure relief vent is provided for φ8×11.5

(Unit : mm)

φD	6.3	8
F	2.5	3.5
φd	0.45	0.60

■ Size, Impedance, Rated Ripple Current

μF \ V	6.3	10	16	25	35	50
10						6.3×7 2.5 84
22					6.3×7 1.2 120	6.3×7.5 1.6 112
33				6.3×7 1.2 120	6.3×7.5 0.75 163	
47			6.3×7 1.2 120	6.3×7.5 0.75 163	6.3×7.5 0.75 163	
100	6.3×7 1.2 120		6.3×7.5 0.75 163			
150		6.3×7.5 0.75 163				
220	6.3×7.5 0.75 163			→	8×11.5 0.40 298	
330				8×11.5 0.40 298		
470			8×11.5 0.40 298			
1000	8×11.5 0.40 298					

→Please use the higher voltage model in the next.
Please refer to page 16 for
ripple current frequency coefficients.

Case size:φDxL(mm)

Impedance(Ω)
max. at 100kHz, 20℃

Rated ripple current
mArms(100kHz, 105℃)

■ Part number

6 ME 1000 LS
- LS: Series symbol
- 1000: Rated capacitance
- ME: Type symbol
- 6: Rated voltage

Aluminum Electrolytic Type / Radial Lead Type **RoHS compliance**

ME-CZ Series

Small Standard
Wide Temperature

- 105℃ 1,000 to 3,000hours
- Solvent proof (within 5 minutes)

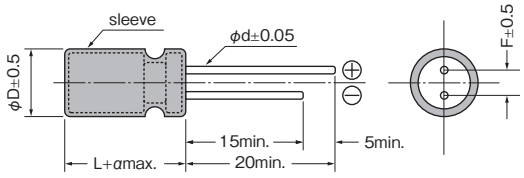
■ Specifications

Items	Condition		Specifications							
Rated voltage (V)	–		6.3	10	16	25	35	50	63	100
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79	125
Category temperature range (℃)	–		−55 to +105							
Capacitance tolerance (%)	120Hz/20℃		M : ±20							
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.10
			Exceeding 1,000μF, +0.02 every 1,000μF							
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.01CV or 3							
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−40℃ Z/Z20℃	4	4	3	3	2	2	2	2
		−55℃ Z/Z20℃	10	8	6	5	4	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ5 to φ8 : 1,000hours, φ10 : 2,000hours, φ12.5 to φ18 : 3,000hours							
		△C/C	Within ±25% of the initial value							
		tanδ	Not more than 200% of the specified value							
		LC	Not more than the specified value							
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.							

■ Dimensions

(Unit : mm)

φD	5	6.3	8	10	12.5	16	18
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8



α : L<20 α=1.5, L≥20 α=2.0

A pressure relief vent is provided for φD=6.3 or bigger

■ Size, Impedance, Rated Ripple Current

V / Case size φD×L(mm)	6.3				10			
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current (mArms/105℃)		Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current (mArms/105℃)	
			120Hz	100kHz			120Hz	100kHz
5×11	220	1.4	88	160	100	1.4	83	150
6.3×11	330	0.58	156	240	220	0.58	132	240
6.3×11	470	0.55	163	250	330	0.55	163	250
8×11.5	1000	0.26	293	450	470	0.39	241	370
10×12.5					1000	0.16	364	560
10×16	2200	0.12	570	760				
10×20	3300	0.10	675	900	2200	0.10	675	900
12.5×20	4700	0.072	825	1100	3300	0.074	825	1100
12.5×25	6800	0.054	1065	1420	4700	0.054	1065	1420
16×25	10000	0.043	1275	1700	6800	0.043	1275	1700
16×31.5					10000	0.035	1463	1950
16×35.5	15000	0.032	1575	2100				
18×35.5					15000	0.028	1800	2400

■ Part number

16 ME 100 CZ
- CZ — Series symbol
- 100 — Rated capacitance
- ME — Type symbol
- 16 — Rated voltage

Aluminum Electrolytic Type / Radial Lead Type — RoHS compliance

■ Size, Impedance, Rated Ripple Current

V / Case size φD×L(mm) / Items	16				25			
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current (mArms/105℃)		Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current (mArms/105℃)	
			120Hz	100kHz			120Hz	100kHz
5×11	100	1.4	83	150	47	1.4	75	150
6.3×11	220	0.55	132	240	100	0.60	132	240
8×11.5	330	0.35	241	370	220	0.39	204	370
8×11.5	470	0.28	293	450	330	0.34	260	400
10×12.5					470	0.17	364	560
10×16	1000	0.13	494	760				
10×20					1000	0.10	585	900
12.5×20	2200	0.075	825	1100				
12.5×25	3300	0.054	990	1320	2200	0.062	990	1320
16×25	4700	0.043	1200	1600	3300	0.043	1200	1600
16×31.5	6800	0.035	1425	1900	4700	0.035	1425	1900
18×35.5	10000	0.028	1725	2300	6800	0.028	1650	2200

V / Case size φD×L(mm) / Items	35				50			
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current (mArms/105℃)		Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current (mArms/105℃)	
			120Hz	100kHz			120Hz	100kHz
5×11					3.3	4.0	25	50
5×11					4.7	2.8	40	80
5×11					10	2.3	45	90
5×11	33	2.1	60	120	22	2.2	55	110
5×11	47	2.1	70	140	33	2.1	60	120
6.3×11	100	1.1	99	180	47	1.1	90	180
8×11.5	220	0.46	198	360	100	0.55	171	310
10×12.5	330	0.26	325	500	220	0.30	275	500
10×16	470	0.18	423	650	330	0.20	423	650
10×20					470	0.13	520	800
12.5×20	1000	0.11	585	900				
12.5×25					1000	0.10	715	1100
16×25	2200	0.056	1050	1400				
16×31.5					2200	0.055	1238	1650
16×35.5	3300	0.038	1350	1800				
18×35.5	4700 ★	0.035	1500	2000	3300	0.035	1500	2000

★ Available 40V(40ME4700CZ)

V / Case size φD×L(mm) / Items	63				100			
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current (mArms/105℃)		Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current (mArms/105℃)	
			120Hz	100kHz			120Hz	100kHz
5×11	3.3	6.0	29	58	3.3	8.0	29	58
5×11	4.7	4.2	32	64	4.7	5.6	32	64
5×11	10	2.8	45	90				
5×11	22	2.4	70	140				
6.3×11	33	1.4	100	200	10	1.7	54	108
6.3×11	47	1.3	120	240				
8×11.5					22	0.83	118	235
8×12.5	100	0.60	165	300	33	0.60	150	300
10×12.5					47	0.39	165	330
10×16	220	0.22	286	520				
10×20	330	0.17	498	765	100	0.24	248	450
12.5×20	470	0.14	624	960				
12.5×25					220	0.15	385	700
16×25	1000	0.065	715	1100	330	0.090	618	950
16×30					470	0.085	715	1100

Please refer to page 16 for ripple current frequency coefficients.

Aluminum Electrolytic Type / Radial Lead Type **RoHS compliance**

ME-CA Series

Small

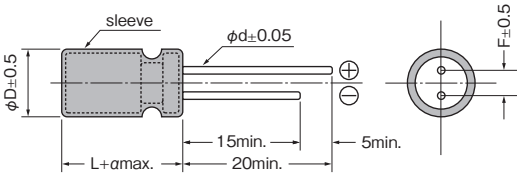
Low Impedance

- 105℃ 1,000 to 3,000hours
- Solvent proof (within 5 minutes)

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−55 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.28	0.24	0.20	0.16	0.14	0.12
			Exceeding 1,000μF, +0.02 every 1,000μF					
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	3	2	2	2	2
		−55℃ Z/Z20℃	6	5	4	4	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ5 to φ8 : 1,000hours, φ10 : 2,000hours, φ12.5 to φ16 : 3,000hours					
		△C/C	Within ±25% of the initial value					
		tanδ	Not more than 200% of the specified value					
		LC	Not more than the specified value					
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

■ Dimensions



α : L<20 α=1.5, L≥20 α=2.0

A pressure relief vent is provided for φD=6.3 or bigger

(Unit : mm)

φD	5	6.3	8	10	12.5	16
F	2.0	2.5	3.5	5.0	5.0	7.5
φd	0.5	0.5	0.6	0.6	0.6	0.8

■ Size, Impedance, Rated Ripple Current

V / Items / Case size φD×L(mm)	6.3				10			
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current (mArms/105℃)		Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current (mArms/105℃)	
			120Hz	10k to 200kHz			120Hz	10k to 200kHz
5×11	220	0.50	99	180				
6.3×11	330	0.30	182	280	220	0.30	154	280
6.3×11	470	0.24	182	280	330	0.24	182	280
8×11.5	1000	0.15	364	560	470	0.16	267	410
10×12.5					1000	0.086	462	710
10×16	2200	0.066	713	950				
10×20	3300	0.047	863	1150	2200	0.047	863	1150
12.5×20	4700	0.042	1095	1460	3300	0.042	1095	1460
12.5×25	6800	0.031	1335	1780	4700	0.031	1335	1780
16×25	10000	0.026	1500	2000	6800	0.026	1500	2000
16×31.5					10000	0.022	1650	2200
16×35.5	15000	0.022	1650	2200				

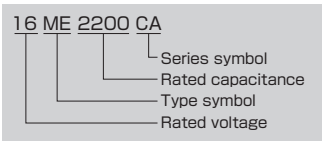
■ Size, Impedance, Rated Ripple Current

V / Case size φD×L(mm) / Items	16				25			
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current (mArms/105℃)		Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current (mArms/105℃)	
			120Hz	10k to 200kHz			120Hz	10k to 200kHz
5×11	100	0.50	99	180				
6.3×11	220	0.24	154	280	100	0.30	154	280
8×11.5	330	0.16	267	410	220	0.16	226	410
8×11.5	470	0.15	364	560	330	0.15	364	560
10×12.5					470	0.086	462	710
10×16	1000	0.066	618	950				
10×20					1000	0.047	748	1150
12.5×20	2200	0.042	1095	1460				
12.5×25	3300	0.035	1335	1780	2200	0.035	1335	1780
16×25	4700	0.026	1500	2000	3300	0.026	1500	2000
16×31.5	6800	0.022	1650	2200	4700	0.022	1650	2200

V / Case size φD×L(mm) / Items	35				50			
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current (mArms/105℃)		Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current (mArms/105℃)	
			120Hz	10k to 200kHz			120Hz	10k to 200kHz
5×11					4.7	2.0	45	90
5×11					10	1.7	55	110
5×11	33	0.72	90	180	22	1.2	60	120
5×11	47	0.50	90	180	33	0.95	65	130
6.3×11	100	0.24	154	280	47	0.56	95	190
8×11.5	220	0.15	308	560	100	0.30	176	320
10×12.5	330	0.086	462	710	220	0.16	286	520
10×16	470	0.066	618	950	330	0.12	436	670
10×20					470	0.088	533	820
12.5×20	1000	0.042	949	1460				
12.5×25					1000	0.053	780	1200
16×25	2200	0.026	1500	2000				
16×31.5					2200	0.029	1313	1750
16×35.5	3300	0.022	1650	2200				

Please refer to page 16 for ripple current frequency coefficients.

■ Part number



Aluminum Electrolytic Type / Radial Lead Type **RoHS compliance**

ME-CX Series

Small, Long Life

Low Impedance

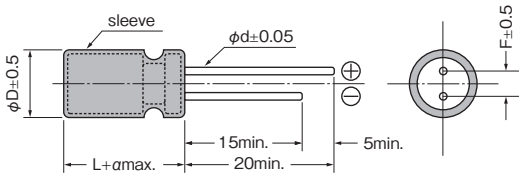
- 105℃ 2,000 to 7,000hours
- Solvent proof (within 5 minutes)

ME-SZ
ME-SWG
ME-LS
ME-CZ
ME-CA
ME-CX
ME-AX
ME-WX
ME-WA
ME-WL
ME-WG
ME-FX
ME-FC·FD
ME-FH
ME-SWN
ME-HWN

■ Specifications

Items	Condition		Specifications				
Rated voltage (V)	–		6.3	10	16	25	35
Surge voltage (V)	Room temperature		8.0	13	20	32	44
Category temperature range (℃)	–		−55 to +105				
Capacitance tolerance (%)	120Hz/20℃		M : ±20				
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.22	0.19	0.16	0.14	0.12
			Exceeding 1,000μF, +0.02 every 1,000μF				
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV				
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	2	2	2	2
		−55℃ Z/Z20℃	4	4	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ5 to φ6.3 : 2,000hours, φ8 : 3,000hours, φ10 : 4,000hours, φ12.5 : 5,000hours, φ16 to φ18 : 7,000hours				
		△C/C	Within ±25% of the initial value				
		tanδ	Not more than 200% of the specified value				
		LC	Not more than the specified value				
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.				

■ Dimensions



α : L<20 α=1.5, L≥20 α=2.0

A pressure relief vent is provided for φD=6.3 or bigger

(Unit : mm)

φD	5	6.3	8	10	12.5	16	18
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φd	0.5	0.5	0.6	0.6	0.6★	0.8	0.8

★φ12.5×30:φd=0.8

■ Size, Impedance, Rated Ripple Current

V / Items / Case size φD×L(mm)	6.3			10		
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11	180	0.34	205	150	0.34	205
6.3×11	330	0.17	330	270	0.17	330
6.3×11	390	0.17	330	330	0.17	330
8×11.5	680	0.11	580	470	0.11	580
8×11.5				560	0.11	580
10×12.5	1200	0.063	900	820	0.063	900
10×16	1500	0.049	1200	1000	0.049	1200
10×16				1200	0.049	1200
10×20	2200	0.036	1450	1500	0.036	1450
10×22	2700	0.036	1500	1800	0.036	1500
12.5×20	3900	0.035	1660	2700	0.035	1660
12.5×25	4700	0.027	2000	3900	0.027	2000
12.5×25	5600	0.027	2000			
12.5×30	★1 6800	0.024	2450	★1 4700	0.024	2450
16×21	★2 5600	0.032	2000	★2 3900	0.032	2000
16×25	6800	0.022	2560	4700	0.022	2560
16×25	8200	0.022	2560	5600	0.022	2560
16×31.5	10000	0.017	3010	6800	0.017	3010
16×31.5				8200	0.017	3010
16×35.5	12000	0.016	3150	10000	0.016	3150
18×21	★2 6800	0.030	2490	★2 5600	0.030	2490
18×25	★2 10000	0.022	2740	★2 6800	0.022	2740
18×30.5	★2 12000	0.017	3330	★2 10000	0.017	3330
18×35.5	15000	0.016	3680	12000	0.016	3680

★1 CXL ★2 CXS

Aluminum Electrolytic Type / Radial Lead Type — RoHS compliance

■ Size, Impedance, Rated Ripple Current

V / Items / Case size φD×L(mm)	16 Capacitance (μF)	16 Impedance(Ωmax.) (20℃/100kHz)	16 Rated ripple current(mArms) (105℃/10k to 200kHz)	25 Capacitance (μF)	25 Impedance(Ωmax.) (20℃/100kHz)	25 Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11	100	0.34	205	68	0.34	205
6.3×11	180	0.17	330	120	0.17	330
6.3×11	220	0.17	330	150	0.17	330
8×11.5	330	0.11	580	220	0.11	580
10×12.5	560	0.063	900	390	0.063	900
10×12.5				★2 470	0.063	900
10×16	820	0.049	1200	560	0.049	1200
10×16				★2 680	0.049	1200
10×20	1000	0.036	1450	680	0.036	1450
10×20				820	0.036	1450
10×20				★2 1000	0.036	1450
10×22	1200	0.036	1500	1000	0.036	1500
12.5×20	1500	0.035	1660	1200	0.035	1660
12.5×20	1800	0.035	1660	1500	0.035	1660
12.5×25	2200	0.027	2000	1800	0.027	2000
12.5×25	2700	0.027	2000	2200	0.027	2000
12.5×30	★1 3300	0.024	2450	★1 2200	0.024	2450
16×21	★2 2700	0.032	2000	★2 1800	0.032	2000
16×25	3300	0.022	2560	2700	0.022	2560
16×25	3900	0.022	2560			
16×31.5	4700	0.017	3010	3300	0.017	3010
16×31.5	5600	0.017	3010			
16×35.5	6800	0.016	3150	3900	0.016	3150
18×21	★2 3300	0.030	2490	★2 2200	0.030	2490
18×25	★2 4700	0.022	2740	★2 3300	0.022	2740
18×30.5				★2 3900	0.017	3330
18×35.5				4700	0.016	3680
18×35.5	8200	0.016	3680	5600	0.016	3680

V / Items / Case size φD×L(mm)	35 Capacitance (μF)	35 Impedance(Ωmax.) (20℃/100kHz)	35 Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11	47	0.34	205
6.3×11	100	0.17	330
8×11.5	150	0.11	580
10×12.5	270	0.063	900
10×12.5	★2 330	0.063	900
10×16	330	0.049	1200
10×16	390	0.049	1200
10×16	★2 470	0.049	1200
10×20	470	0.036	1450
10×20	560	0.036	1450
10×20	★2 680	0.036	1450
10×22	680	0.036	1500
12.5×20	820	0.035	1660
12.5×20	1000	0.035	1660
12.5×25	1200	0.027	2000
12.5×25	1500	0.027	2000
12.5×30	★1 1500	0.024	2450
16×21	★2 1200	0.032	2000
16×25	1800	0.022	2560
16×31.5	2700	0.017	3010
16×35.5	3300	0.016	3150
18×21	★2 1500	0.030	2490
18×25	2200	0.022	2740
18×30.5	★2 3300	0.017	3330
18×35.5	3900	0.016	3680

★1 CXL
★2 CXS

Please refer to page 16 for ripple current frequency coefficients.

■ Part number

CX
6 ME 1200 CX
- CX — Series symbol
- 1200 — Rated capacitance
- ME — Type symbol
- 6 — Rated voltage

CXL
10 ME 4700 CXL
- CXL — Series symbol
- 4700 — Rated capacitance
- ME — Type symbol
- 10 — Rated voltage

CXS
16 ME 2700 CXS
- CXS — Series symbol
- 2700 — Rated capacitance
- ME — Type symbol
- 16 — Rated voltage

ME-AX Series

Long Life

Low Impedance

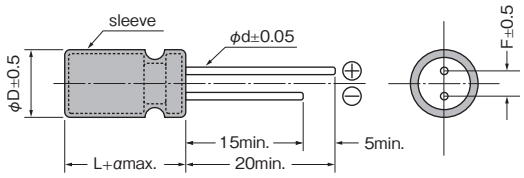
- 105℃ 2,500 to 10,000hours
- Solvent proof (within 5 minutes)

■ Specifications

Items	Condition		Specifications							
Rated voltage (V)	–		6.3	10	16	25	35	50	63	100
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79	125
Category temperature range (℃)	–		−55 to +105							−40 to +105
Capacitance tolerance (%)	120Hz/20℃		M : ±20							
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.22	0.19	016	0.14	0.12	0.10	0.10	0.10
			Exceeding 1,000μF, +0.02 every 1,000μF							
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.01CV or 3							
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	2	2	2	2	2	2	2
		−55℃ Z/Z20℃	4	4	3	3	3	2	2	–
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ5 : 2,500hours, φ6.3 : 3,000hours, φ8×11.5, φ8×12.5 : 3,500hours, φ10 : 5,000hours, φ12.5 : 7,000hours, φ16 to φ18 : 10,000hours							
		△C/C	Within ±20% of the initial value							
		tanδ	Not more than 200% of the specified value							
		LC	Not more than the specified value							
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.							

■ Dimensions

(Unit : mm)



α : L<20 α=1.5, L≥20 α=2.0

A pressure relief vent is provided for φD=6.3 or bigger

φD	5	6.3	8	10	12.5	16	18
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8

■ Size, Impedance, Rated Ripple Current

V / Items / Case size φD×L(mm)	6.3			10		
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11	150	0.42	190	100	0.42	190
6.3×11	270	0.22	300	220	0.22	300
8×11.5	470	0.11	560	330	0.11	560
8×12.5	560	0.11	570	390	0.11	570
10×12.5	820	0.085	800	680	0.085	800
10×16	1200	0.062	1050	820	0.062	1050
10×20	1500	0.044	1250	1200	0.044	1250
10×22	1800	0.039	1450	1500	0.039	1450
12.5×20	2700	0.038	1600	2200	0.038	1600
12.5×25	3900	0.029	1800	2700	0.029	1800
16×25	5600	0.022	2100	3900	0.022	2100
16×31.5	8200	0.018	2350	5600	0.018	2350
16×35	10000	0.018	2550	6800	0.018	2550
18×35.5	12000	0.018	2800	8200	0.018	2800

★1 AXL ★2 AXS

■ Part number

AX
10 ME 680 AX
- AX: Series symbol
- 680: Rated capacitance
- ME: Type symbol
- 10: Rated voltage

AXL
63 ME 68 AXL
- AXL: Series symbol
- 68: Rated capacitance
- ME: Type symbol
- 63: Rated voltage

AXS
25 ME 470 AXS
- AXS: Series symbol
- 470: Rated capacitance
- ME: Type symbol
- 25: Rated voltage

■ Size, Impedance, Rated Ripple Current

V / Items / Case size φD×L(mm)	16			25		
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11	68	0.42	190	47	0.42	190
6.3×11	150	0.22	300	100	0.22	300
8×11.5	220	0.11	560	150	0.11	560
8×12.5	270	0.11	570	180	0.11	570
10×12.5	470	0.085	800	270	0.085	800
10×16	560	0.062	1050	390	0.062	1050
10×16	680	0.062	1050	★2 470	0.068	1050
10×20	820	0.044	1250	560	0.044	1250
10×22	1000	0.039	1450	680	0.039	1450
12.5×20	1200	0.038	1600	1000	0.038	1600
12.5×25	1800	0.029	1800	1200	0.029	1800
16×25	2700	0.022	2100	1800	0.022	2100
16×31.5	3900	0.018	2350	2700	0.018	2350
16×35	4700	0.018	2550	3300	0.018	2550
18×35.5	5600	0.018	2800	3900	0.018	2800

V / Items / Case size φD×L(mm)	35			50		
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11	4.7	1.2	115	4.7	2.0	90
5×11	10	0.90	140	10	1.7	110
5×11	22	0.42	190	15	1.2	130
5×11	33	0.42	190	22	0.70	160
6.3×11	47	0.22	300	33	0.43	220
6.3×11	68	0.22	300	47	0.43	220
8×11.5	100	0.11	560	68	0.26	360
8×12.5	120	0.11	570	82	0.24	400
10×12.5	220	0.085	800	120	0.16	550
10×16	270	0.062	1050	180	0.12	760
10×20	330	0.044	1250	270	0.088	950
10×22	470	0.039	1450	330	0.072	1000
12.5×20	680	0.038	1600	470	0.059	1200
12.5×25	1000	0.029	1800	560	0.045	1400
16×25	1500	0.022	2100	1000	0.039	1750
16×31.5	2200	0.018	2350	1200	0.025	2100
16×35	★1 2200	0.018	2550	1500	0.025	2300
18×35.5	2700	0.018	2800	1800	0.024	2400

V / Items / Case size φD×L(mm)	63			100		
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11	18	1.6	140	5.6	2.7	120
6.3×11	33	0.90	200	12	1.4	170
8×11.5	68	0.52	275	22	0.81	230
8×12.5	★1 68	0.47	300	★1 22	0.79	250
10×12.5	120	0.26	420	39	0.39	360
10×16	150	0.20	525	47	0.35	420
10×20	220	0.15	765	68	0.24	630
10×22	270	0.12	840	82	0.21	700
12.5×20	330	0.10	960	100	0.15	800
12.5×25	470	0.064	1200	150	0.11	920
16×25	680	0.052	1500	220	0.071	1100
16×31.5	1000	0.042	1750	330	0.049	1490
16×35	1200	0.036	1920	390	0.043	1630
18×35.5	1500	0.033	2000	470	0.038	1700

Please refer to page 16 for ripple current frequency coefficients.

★1 AXL ★2 AXS

Aluminum Electrolytic Type / Radial Lead Type **RoHS compliance**

ME-WX Series

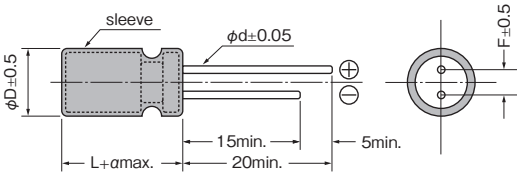
High Ripple Current
Low Impedance

- 105℃ 2,000 to 5,000hours
- Non solvent proof

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.22	0.19	0.16	0.14	0.12	0.10
			Exceeding 1,000μF, +0.02 every 1,000μF					
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.01CV					
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2	2	2	2	2
		−40℃ Z/Z20℃	3	3	3	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ5 to φ6.3 : 2,000hours, φ8 : 3,000hours, φ10 : 4,000hours, φ12.5 to φ16 : 5,000hours					
		△C/C	Within ±25% of the initial value					
		tanδ	Not more than 200% of the specified value					
		LC	Not more than the specified value					
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

■ Dimensions



α : L<20 α=1.5, L≥20 α=2.0

A pressure relief vent is provided for φD=6.3 or bigger

(Unit : mm)

φD	5	6.3	8	10	12.5	16
F	2.0	2.5	3.5	5.0	5.0	7.5
φd	0.5	0.5	0.6	0.6	0.6★	0.8

★φ12.5×30:φd=0.8

■ Size, Impedance, Rated Ripple Current

V / Items / Case size φD×L(mm)	6.3			10		
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
5×11	150	0.30	250	100	0.30	250
6.3×11	330	0.13	405	220	0.13	405
8×11.5	560	0.072	760	470	0.072	760
10×12.5	1000	0.053	1030	680	0.053	1030
10×16	1200	0.038	1430	1000	0.038	1430
10×20	1500	0.023	1820	1200	0.023	1820
10×20	2200	0.023	1820	1500	0.023	1820
10×23	★2 2200	0.022	2150	★2 1500	0.022	2150
12.5×20	3300	0.021	2360	2200	0.021	2360
12.5×25	3900	0.018	2770	3300	0.018	2770
12.5×30	4700	0.016	3290	3900	0.016	3290
16×21	5600	0.018	3140	★1 3900	0.018	3140
16×25	6800	0.016	3460	5600	0.016	3460

★1 WXS ★2 WXV

■ Size, Impedance, Rated Ripple Current

V / Items / Case size φD×L(mm)	16			25		
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
5×11	56	0.30	250	47	0.30	250
6.3×11	120	0.13	405	100	0.13	405
8×11.5	330	0.072	760	220	0.072	760
10×12.5	470	0.053	1030	★1 330	0.053	1030
10×16	680	0.038	1430	470	0.038	1430
10×20	1000	0.023	1820	680	0.023	1820
10×20	1200	0.023	1820	820	0.023	1820
10×23	★2 1200	0.022	2150	★2 820	0.022	2150
12.5×20	1500	0.021	2360	1000	0.021	2360
12.5×25	2200	0.018	2770	1500	0.018	2770
12.5×30	2700	0.016	3290	1800	0.016	3290
16×21	★1 2700	0.018	3140	★1 1800	0.018	3140
16×25	3900	0.016	3460	2700	0.016	3460

V / Items / Case size φD×L(mm)	35			50		
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
5×11	33	0.30	250	22	0.34	238
6.3×11	56	0.13	405	47	0.14	385
8×12.5	★2 150	0.072	760	100	0.074	724
10×12.5	★1 220	0.053	1030	150	0.061	979
10×16	330	0.038	1430	220	0.042	1370
10×20	470	0.023	1820	270	0.030	1580
10×23	★2 560	0.022	2150	330	0.028	1870
12.5×20	680	0.021	2360	470	0.027	2050
12.5×25	1000	0.018	2770	560	0.023	2410
12.5×30	1200	0.016	3290	680	0.021	2860
16×21	★1 1200	0.018	3140	820	0.023	2730
16×25	1800	0.016	3460	1000	0.021	3010

Please refer to page 16 for ripple current frequency coefficients.

★1 WXS ★2 WXV

■ Part number

WX
6 ME 1000 WX
- WX: Series symbol
- 1000: Rated capacitance
- ME: Type symbol
- 6: Rated voltage

WXS
25 ME 330 WXS
- WXS: Series symbol
- 330: Rated capacitance
- ME: Type symbol
- 25: Rated voltage

WXV
35 ME 560 WXV
- WXV: Series symbol
- 560: Rated capacitance
- ME: Type symbol
- 35: Rated voltage

ME-WA Series

105℃, Small, Long Life

Low Impedance, High Ripple Current

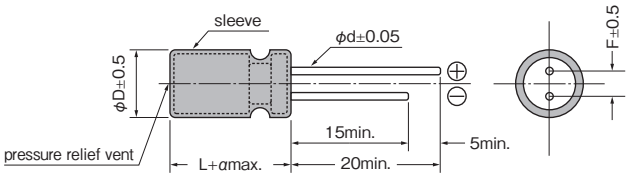
- 105℃ 8,000 to 10,000hours
- Non solvent proof

■ Specifications

Items	Condition		Specifications						
Rated voltage (V)	–		6.3	10	16	25	35	50	63
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79
Category temperature range (℃)	–		−40 to +105						
Capacitance tolerance (%)	120Hz/20℃		M : ±20						
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.22	0.19	0.16	0.14	0.12	0.10	0.10
			Exceeding 1,000μF, +0.02 every 1,000μF						
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.03CV						
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2	2	2	2	2	2
		−40℃ Z/Z20℃	3	3	3	3	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ8 : 8,000hours, φ10 to φ16 : 10,000hours						
		△C/C	Within ±25% of the initial value(6.3V, 10V : ±30%)						
		tanδ	Not more than 200% of the specified value						
		LC	Not more than the specified value						
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.						

■ Dimensions

(Unit : mm)



α : L<20 α=1.5, L≥20 α=2.0 (Only φ8×11.5 α=2.0)

φD	8	10	12.5	16
F	3.5	5.0	5.0	7.5
φd	0.6	0.6	0.6★	0.8

★φ12.5×30:φd=0.8

■ Size, Impedance, Rated Ripple Current

V / Items / Case size φD×L(mm)	6.3			10		
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
8×11.5	820	0.059	945	680	0.059	945
10×12.5	1200	0.043	1330	1000	0.043	1330
10×16	1800	0.030	1760	1500	0.030	1760
10×20	2200	0.021	1960	1800	0.021	1960
10×22	2700	0.020	2250	2200	0.020	2250
12.5×20	3900	0.019	2480	3300	0.019	2480
12.5×25	4700	0.016	2900	3900	0.016	2900
12.5×30	5600	0.014	3450	★1 4700	0.014	3450
16×21	6800	0.018	3250	4700	0.018	3250
16×25	8200	0.014	3630	6800	0.014	3630

★1 WAL

■ Size, Impedance, Rated Ripple Current

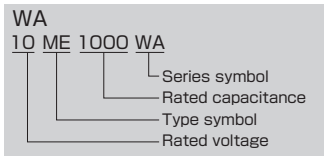
V / Items / Case size φD×L(mm)	16			25		
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
8×11.5	470	0.059	945	330	0.059	945
10×12.5	680	0.043	1330	470	0.043	1330
10×16	1000	0.030	1760	680	0.030	1760
10×20	1500	0.021	1960	820	0.021	1960
10×22	1800	0.020	2250	1000	0.020	2250
12.5×20	2200	0.019	2480	1500	0.019	2480
12.5×25	2700	0.016	2900	1800	0.016	2900
12.5×30	★1 3300	0.014	3450	★1 2200	0.014	3450
16×21	3300	0.018	3250	2200	0.018	3250
16×25	4700	0.014	3630	3300	0.014	3630

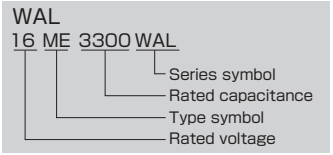
V / Items / Case size φD×L(mm)	35			50		
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
8×11.5	220	0.059	945	100	0.074	724
10×12.5	330	0.043	1330	150	0.061	979
10×16	470	0.030	1760	220	0.042	1370
10×20	560	0.021	1960	270	0.030	1580
10×22	680	0.020	2250	330	0.028	1870
12.5×20	1000	0.019	2480	470	0.027	2050
12.5×25	1200	0.016	2900	560	0.023	2410
12.5×30	★1 1500	0.014	3450	680	0.021	2860
16×21	1500	0.018	3250	820	0.023	2730
16×25	2200	0.014	3630	1000	0.021	3010

V / Items / Case size φD×L(mm)	63		
	Capacitance (μF)	Impedance(Ωmax.) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
8×11.5	82	0.22	525
10×12.5	120	0.15	725
10×16	180	0.11	998
10×20	270	0.078	1200
12.5×20	390	0.060	1570
12.5×25	470	0.043	1990
12.5×30	★1 560	0.035	2410
16×21	560	0.043	2100
16×25	820	0.032	2730

Please refer to page 16 for ripple current frequency coefficients. ★1 WAL

■ Part number





ME-WL Series

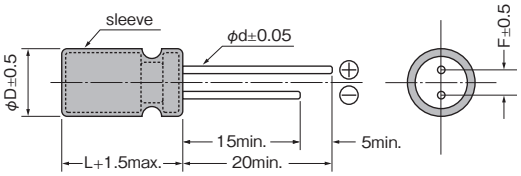
Small, Long Life
Low Impedance

- 105℃ 4,000 to 5,000hours
- Non solvent proof

■ Specifications

Items	Condition		Specifications							
Rated voltage (V)	–		6.3	10	16	25	35	50	63	100
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79	125
Category temperature range (℃)	–		−40 to +105							
Capacitance tolerance (%)	120Hz/20℃		M : ±20							
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.22	0.19	0.16	0.14	0.12	0.10	0.10	0.10
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.01CV or 3							
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2	2	2
		−40℃ Z/Z20℃	8	6	4	3	3	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	4,000hours		5,000hours					
		△C/C	Within ±25% of the initial value							
		tanδ	Not more than 200% of the specified value							
		LC	Not more than the specified value							
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.							

■ Dimensions



A pressure relief vent is provided for φD=6.3 or bigger

(Unit : mm)

φD	5	6.3
F	2.0	2.5
φd	0.5	0.5

■ Size, Impedance, Rated Ripple Current

μF \ V	6.3			10			16			25		
47										5×11	0.58	210
56							5×11	0.69	210			
100				5×11	0.58	210	5×11	0.69	210	6.3×11	0.26	340
120							6.3×11	0.26	340			
150	5×11	0.69	210	5×11	0.69	210						
220				6.3×11	0.26	340	6.3×11	0.26	340			
330	6.3×11	0.26	340	6.3×11	0.26	340						
470	6.3×11	0.26	340									

μF \ V	35			50			63			100		
4.7				5×11	1.90	88						
6.8										5×11	1.40	125
10				5×11	1.50	100						
15							5×11	1.06	165	6.3×11	0.57	205
18							5×11	1.06	165			
22				5×11	0.84	180	6.3×11	0.42	265			
27				5×11	0.84	180						
33	5×11	0.69	210				6.3×11	0.42	265			
47	5×11	0.69	210	6.3×11	0.40	250						
56	6.3×11	0.26	340	6.3×11	0.36	295						
100	6.3×11	0.26	340									

Please refer to page 16 for ripple current frequency coefficients.

Case size:φDxL(mm)
Impedance(Ω) max. at 100kHz, 20℃
Rated ripple current mArms(100kHz, 105℃)

■ Part number

16 ME 120 WL
- WL: Series symbol
- 120: Rated capacitance
- ME: Type symbol
- 16: Rated voltage

Aluminum Electrolytic Type / Radial Lead Type **RoHS compliance**

ME-WG Series

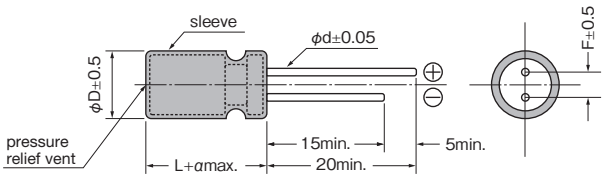
Super Low ESR, Small

- 105℃ 2,000 to 4,000hours
- Non solvent proof

■ Specifications

Items	Condition		Specifications			
Rated voltage (V)	–		6.3	10	16	25
Surge voltage (V)	Room temperature		8.0	13	20	32
Category temperature range (℃)	–		−40 to +105			
Capacitance tolerance (%)	120Hz/20℃		M : ±20			
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.22	0.19	0.16	0.14
			Exceeding 1,000μF, +0.02 every 1,000μF			
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.03CV			
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2	2	2
		−40℃ Z/Z20℃	3	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ8×11.5, φ10×12.5, φ10×16 : 2,000hours, φ10×20, φ10×23 : 4,000hours			
		△C/C	Within ±25% of the initial value			
		tanδ	Not more than 200% of the specified value			
		LC	Not more than the specified value			
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.			

■ Dimensions



α : L<20 α=1.5, L≥20 α=2.0(Only φ8×11.5 α=2.0)

(Unit : mm)

φD	8	10
F	3.5	5.0
φd	0.6	0.6

■ Size, ESR, Rated Ripple Current

V / Items / μF	6.3			10			16			25		
	Case size φDxL (mm)	ESR (Ωmax.) 20℃/100kHz	Ripple current (mArms) 105℃/100kHz	Case size φDxL (mm)	ESR (Ωmax.) 20℃/100kHz	Ripple current (mArms) 105℃/100kHz	Case size φDxL (mm)	ESR (Ωmax.) 20℃/100kHz	Ripple current (mArms) 105℃/100kHz	Case size φDxL (mm)	ESR (Ωmax.) 20℃/100kHz	Ripple current (mArms) 105℃/100kHz
220										8×11.5	0.030	1110
330							8×11.5	0.030	1140	8×11.5	0.032	1080
										10×12.5 ★2	0.025	1440
470				8×11.5	0.030	1140	8×11.5	0.036	1140	10×12.5	0.027	1390
										10×16 ★2	0.020	1920
680				8×11.5	0.036	1140	10×12.5	0.026	1540	10×16	0.022	1830
										10×20 ★2	0.016	2180
820	8×11.5	0.036	1140									
1000	8×11.5	0.030	1140	10×12.5	0.026	1540	10×16	0.019	2000	10×23 ★1	0.016	2180
1500	10×12.5	0.026	1540	10×16	0.019	2000	10×20	0.013	2550			
	10×16 ★2	0.018	2000									
1800	10×16	0.019	2000	10×20	0.013	2550	10×23	0.012	2800			
2200	10×20	0.013	2550	10×23	0.012	2800						
3300	10×23	0.012	2800									

Please refer to page 16 for ripple current frequency coefficients.

★1 WGL ★2 WGV

■ Part number

WG
10 ME 1000 WG
- WG — Series symbol
- 1000 — Rated capacitance
- ME — Type symbol
- 10 — Rated voltage

WGL
25 ME 1000 WGL
- WGL — Series symbol
- 1000 — Rated capacitance
- ME — Type symbol
- 25 — Rated voltage

WGV
25 ME 470 WGV
- WGV — Series symbol
- 470 — Rated capacitance
- ME — Type symbol
- 25 — Rated voltage

ME-FX Series

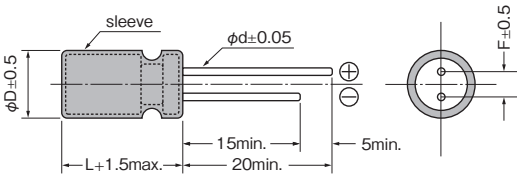
Long Life

- 105℃ 10,000hours
- Solvent proof(within 5 minutes)

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		10	16	25	35	50	100
Surge voltage (V)	Room temperature		13	20	32	44	63	125
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.45	0.35	0.30	0.22	0.19	0.15
Leakage current(LC)	μA/after 2minutes (max.), 20℃		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	8	6	4	4	3	3
Endurance	105℃, 10,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value					
		tanδ	Not more than 300% of the specified value					
		LC	Not more than the specified value					
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

■ Dimensions



A pressure relief vent is provided for φD=6.3 or bigger

(Unit : mm)

φD	5	6.3	8
F	2.0	2.5	3.5
φd	0.5	0.5	0.6

■ Size, Rated Ripple Current

μF \ V	10		16		25		35		50		100	
4.7									5×11	80	5×11	70
10									5×11	90	6.3×11	150
22									5×11	110	8×11.5	230
33					→		5×11	130	6.3×11	190		
47			→		5×11	130	6.3×11	210	6.3×11	190		
100			→		6.3×11	210	8×11.5	330	8×12.5	270		
220	6.3×11	210	→		8×11.5	330						
330	→		8×11.5	330								
470	8×11.5	330										

→Please use the higher voltage model in the next.
Please refer to page 16 for
ripple current frequency coefficients.

Case size:φDxL(mm)

Rated ripple current
mArms(100kHz, 105℃)

■ Part number

10 ME 220 FX
- FX: Series symbol
- 220: Rated capacitance
- ME: Type symbol
- 10: Rated voltage

Aluminum Electrolytic Type / Radial Lead Type **RoHS compliance**

ME-FC·FD Series

105℃, High Voltage

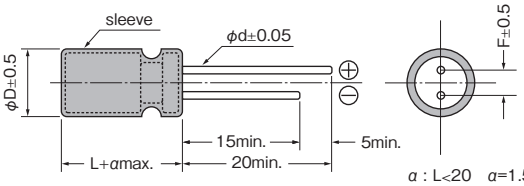
105℃ Low Profile, High Voltage

- 105℃ 1,000 to 2,000hours
- Non solvent proof

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		160	200	250	350	400	450
Surge voltage (V)	Room temperature		200	250	300	400	450	500
Category temperature range (℃)	–		−40 to +105					−25 to +105
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.20	0.20	0.20	0.25	0.25	0.25
Leakage current(LC)	μA/after 2minutes (max.) (20℃)	CV ≤ 1,000	0.03CV +15					
		CV > 1,000	0.02CV +25					
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	3	3	3	4	6	6
		−40℃ Z/Z20℃	6	6	6	8	10	–
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ5 to φ8 : 1,000hours, φ10 to φ18 : 2,000hours					
		△C/C	Within ±20% of the initial value					
		tanδ	Not more than 200% of the specified value					
		LC	Not more than the specified value					
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

■ Dimensions



(Unit : mm)

φD	5	6.3	8	10	12.5	16	18
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8

α : L<20 α=1.5, L≥20 α=2.0

A pressure relief vent is provided for φD=6.3 or bigger

■ Size, Rated Ripple Current

μF \ V	160		200		250		350		400		450	
0.47	5×11	7.0	5×11	8.0	5×11	8.0						
1.0	5×11	15	5×11	16	5×11	18	6.3×11	20				
2.2	6.3×11	22	6.3×11	24	6.3×11	25	8×11.5	28	8×11.5	28		
3.3	6.3×11	28	6.3×11	32	8×11.5	34	8×12.5	36	10×12.5	36		
4.7	6.3×11	39	8×11.5	40	8×11.5	41	10×12.5	47	10×16	47		
10	8×11.5	63	8×12.5	64	10×12.5	66	10×20	70	10×20	70	16×21	70
22	10×12.5	107	10×16	112	10×20	119	12.5×25 16×21	123	12.5×25 16×21	126	16×25 18×21	125
33	10×20	137	10×20	147	12.5×20	154	16×25 18×21	158	16×25 18×21	161	16×30 18×25	154
47	12.5×20	172	12.5×20	175	12.5×25 16×21	182	16×30 18×25	182	16×30 18×25	189	18×35.5	172
68	12.5×20	217	12.5×25 16×21	228	16×25 18×21	235	16×35.5 18×30.5	242	18×35.5	249		
82	12.5×25 16×21	270	16×21	277	16×30 18×25	284	18×35.5	294				
100	12.5×25 16×21	287	16×25 18×21	301	16×35.5 18×25	302						
150	16×30 18×25	385	16×35.5 18×30.5	403	18×35.5	412						
220	16×35.5 18×30.5	522	18×35.5	532								

Please refer to page 16 for ripple current frequency coefficients.
Upper : ME-FC series(0.47μF to 4.7μF:ME-FC series)
Lower : ME-FD series

Case size:φDxL(mm)

Rated ripple current mArms(120Hz, 105℃)

■ Part number

FC
160 ME 33 FC
- FC — Series symbol
- 33 — Rated capacitance
- ME — Type symbol
- 160 — Rated voltage

FD
450 ME 10 FD
- FD — Series symbol
- 10 — Rated capacitance
- ME — Type symbol
- 450 — Rated voltage

ME-FH Series

105℃, Small, Long Life
High Voltage

- 105℃ 10,000 to 12,000hours
- Non solvent proof

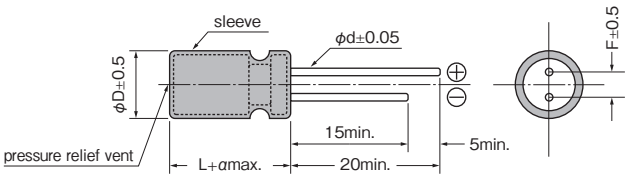
■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		160	200	250	350	400	450
Surge voltage (V)	Room temperature		200	250	300	400	450	500
Category temperature range (℃)	–		−40 to +105					−25 to +105
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.20	0.20	0.20	0.25	0.25	0.25
Leakage current(LC)	μA/after 2minutes (max.), 20℃		0.02CV +25					
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	3	3	3	4	6	6
		−40℃ Z/Z20℃	6	6	6	8	10	–
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ10 : 10,000hours, φ12.5 to φ18 : 12,000hours					
		△C/C	Within ±20% of the initial value					
		tanδ	Not more than 200% of the specified value					
		LC	Not more than the specified value					
Shelf Life	105℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

■ Dimensions

(Unit : mm)

φD	10	12.5	16	18
F	5.0	5.0	7.5	7.5
φd	0.6	0.6	0.8	0.8



α : L<20 α=1.5, L≥20 α=2.0

■ Size, Rated Ripple Current

μF \ V	160		200		250		350		400		450	
4.7									10×12.5	57		
6.8									10×16	88	10×20	58
10			10×12.5	105	10×16	106	10×16	100	10×20	108	12.5×20	145
22			10×16	173	10×20	184	12.5×20	184	12.5×25	195	16×25	218
33	10×16	190	10×20	227	12.5×20	238	12.5×25	224	16×25	249	16×31.5	243
47	10×20	270	12.5×20	270	12.5×25	282	16×25	282	16×31.5	292	18×31.5	304
68	12.5×20	336	12.5×20	325	16×25	364	16×31.5	334	18×31.5	346	18×41	340
82	12.5×20	346	12.5×25	370	16×25	403	18×31.5	360	18×35.5	420		
100	12.5×25	410	16×25	436	16×31.5	418			18×41	500		
150	16×25	500	16×31.5	470	18×31.5	545						
220	16×31.5	570	18×31.5	660								

Please refer to page 16 for ripple current frequency coefficients.

Case size:φDxL(mm)

Rated ripple current mArms(120Hz, 105℃)

■ Part number

200 ME 33 FH
- FH: Series symbol
- 33: Rated capacitance
- ME: Type symbol
- 200: Rated voltage

Aluminum Electrolytic Type / Radial Lead Type **RoHS compliance**

ME-SWN Series

Bi-polar

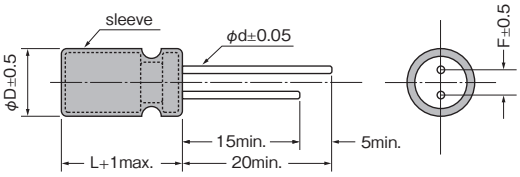
7mm Height

- 85℃ 1,000hours
- Solvent proof(within 3 minutes)

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +85					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.24	0.22	0.20	0.18	0.16	0.16
Leakage current(LC)	μA/after 1minutes (max.), 20℃		0.03CV +6					
Endurance	500hours×2(alternately) 85℃,rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value					
		tanδ	Not more than 200% of the specified value					
		LC	Not more than the specified value					
Shelf Life	85℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.					

■ Dimensions



(Unit : mm)

φD	6.3
F	2.5
φd	0.45

■ Size, Rated Ripple Current

μF \ V	6.3	10	16	25	35	50
4.7						6.3×7 23
10					→	6.3×7 34
22			→	6.3×7 52		
33		→	6.3×7 57			
47	→	→	6.3×7 68			

→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.

Case size:φDxL(mm)

Rated ripple current mArms(120Hz, 85℃)

■ Part number

16 ME 33 SWN
- SWN — Series symbol
- 33 — Rated capacitance
- ME — Type symbol
- 16 — Rated voltage

Aluminum Electrolytic Type / Radial Lead Type **RoHS compliance**

ME-HWN Series

Bi-polar

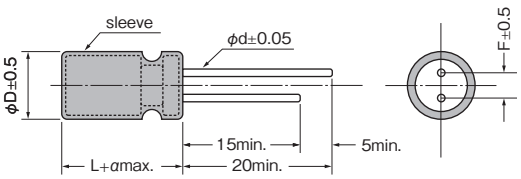
Standard

- 85℃ 2,000hours
- Solvent proof(within 5 minutes)

■ Specifications

Items	Condition		Specifications						
Rated voltage (V)	–		6.3	10	16	25	35	50	100
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	125
Category temperature range (℃)	–		−40 to +85						
Capacitance tolerance (%)	120Hz/20℃		M : ±20						
Dissipation Factor(tan δ)	tanδ(max.)120Hz/20℃		0.24	0.20	0.18	0.16	0.14	0.13	0.10
			Exceeding 1,000μF, +0.02 every 1,000μF						
Leakage current(LC)	μA/after 1minute (max.), 20℃		0.03CV +6						
Impedance ratio at low temperature	Based on the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	3	2	2	2	2
		−40℃ Z/Z20℃	10	8	8	6	4	4	4
Endurance	500hours×4(alternately) 85℃,rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value						
		tanδ	Not more than 200% of the specified value						
		LC	Not more than the specified value						
Shelf Life	85℃, 1,000hours(with no voltage load)		Shall meet the endurance spec above after voltage treatment at 20deg.C per JIS C 5101-4 4.1.						

■ Dimensions



α : L<20 α=1.5, L≥20 α=2.0

A pressure relief vent is provided for φD=6.3 or bigger

(Unit : mm)

φD	5	6.3	8	10	12.5
F	2.0	2.5	3.5	5.0	5.0
φd	0.5	0.5	0.6	0.6	0.6

■ Size, Rated Ripple Current

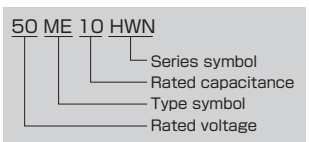
μF \ V	6.3		10		16		25		35		50		100	
2.2											5×11	20	5×11	25
3.3											5×11	28	6.3×11	30
4.7							→		5×11	30	5×11	38	6.3×11	45
10					→		→		5×11	45	6.3×11	50	8×12.5	70
22			→		→		5×11	60	6.3×11	75	6.3×11	90	10×16	120
33	→		→		5×11	60	→		6.3×11	90	8×11.5	110	10×20	170
47	→		5×11	70	→		6.3×11	90	8×11.5	125	10×12.5	135	12.5×20	200
100	→		6.3×11	125	8×11.5	165	8×12.5	180	10×12.5	200	10×20	250		
220	8×11.5	210	8×12.5	225	10×12.5	260	10×16	320	10×20	350	12.5×25	410		
330	8×11.5	260	10×12.5	295	10×16	360	10×20	425	12.5×20	440				
470	10×12.5	330	10×16	390	10×20	420	12.5×20	540	12.5×25	585				
1000	10×20	560	12.5×20	620	12.5×25	740								
2200	12.5×25	890												

→Please use the higher voltage model in the next.
Please refer to page 16 for ripple current frequency coefficients.

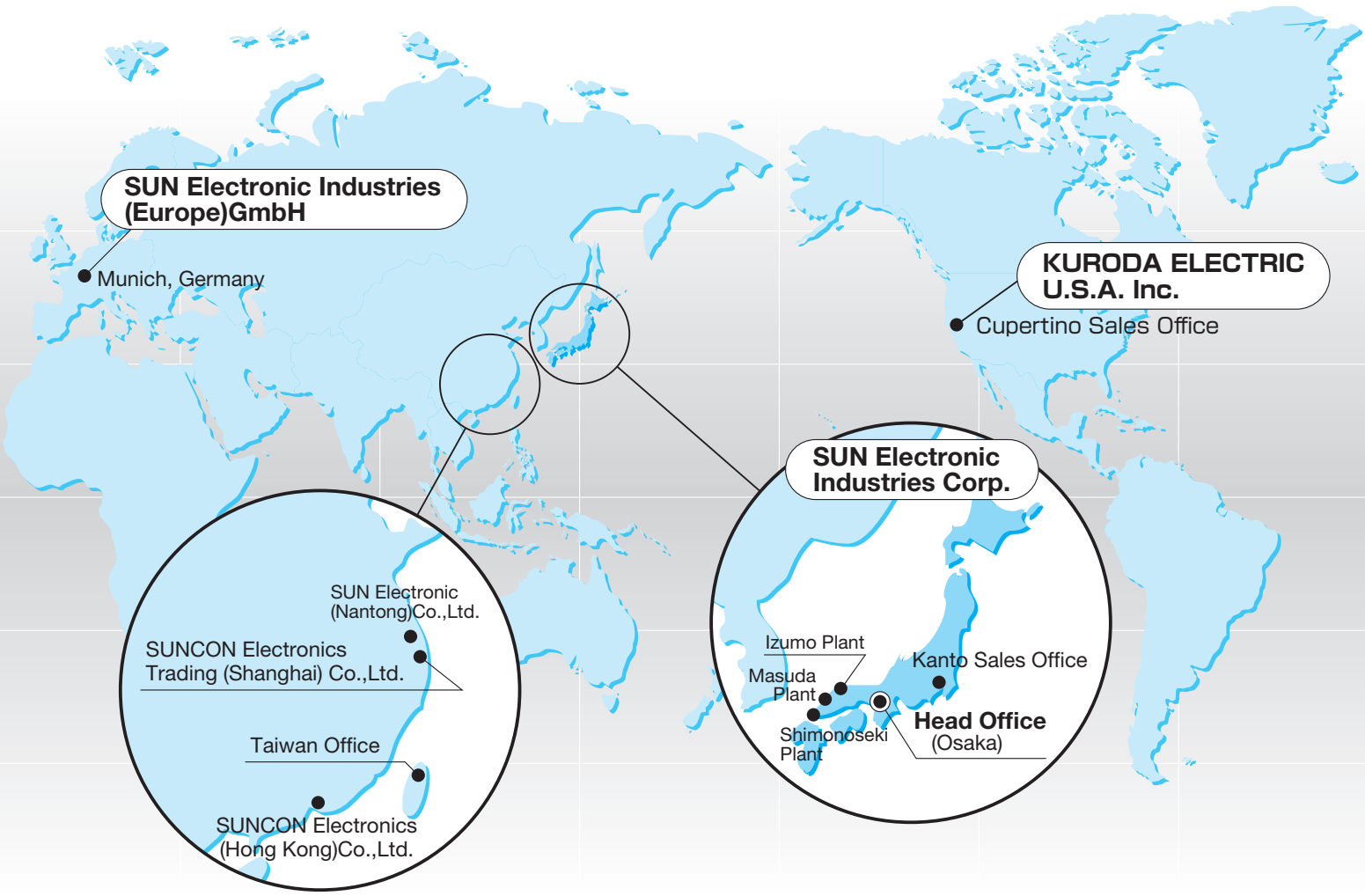
Case size:φDxL(mm)

Rated ripple current mArms(120Hz, 85℃)

■ Part number



SunCon network expanding around the world




Head Office


Izumo Plant


Masuda Plant


SUN Electronic(Nantong)Co.,Ltd.

SUN Electronic Industries Corp.

https://www.sunelec.co.jp

■ **Head Office**
1-1-18, Okayama-higashi, Shijonawate-City, Osaka, Japan 575-8585
Phone:+81-72-876-1423 Fax:+81-72-879-0395

■ **Taiwan Office**
Room302, 3F., No.160, Sec.2, Nanjing E. Rd., Jhongshan District, Taipei City, Taiwan 104695
Phone:+886-2-2516-0602 Fax:+886-2-2517-6045

■ **SUNCON Electronics (Hong Kong) Co., Ltd.**
Room2311, Two Sky Parc, 51 Hung To Road, Kwun Tong, Kowloon, Hong Kong
Phone:+852-2707-0502 Fax:+852-2707-9881

■ **SUNCON Electronics Trading (Shanghai) Co., Ltd.**
Room No.2705,360 changshou Road,Putuo District,Shanghai,China P.C:200060
Phone:+86-21-6259-1750 Fax:+86-21-6259-1791

■ **SUN Electronic Industries (Europe) GmbH**
Hohenlindener strasse 1, 81677 Munich, Germany
Phone:+49-89-91049188

■ **KURODA ELECTRIC U.S.A. Inc.**
10080 N. Wolfe Rd., Suite SW3-200, Cupertino, CA, 95014, USA
Phone:+1-619-661-8288

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2025