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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 2023. 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.
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Certificate Number IATF 16949-0066829-001
Izumo Plant · Headquarter
Certificate Number IATF 16949-0066829-002
SUN Electronic (Nantong) Co.,Ltd.
Certificate Number 10151345

ISO 9001

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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(°C)	Rated Voltage Range(V.DC)	Rated Capacitance Range(μF)	External Appearance	Marking Color
Surface Mount Type	F V L	19	105°C, 125°C		●		●	●	-55 to +125	6.3 to 10	100 to 1000	—	Blue
	HVHZ/ H V H	20	105°C Long Life		●	●	●	●	-55 to +105	16 to 125	6.8 to 560	—	Blue
	HVPZ/ H V P	21	125°C		●		●	●	-55 to +125	16 to 125	6.8 to 560	—	Blue
	H V T	22	135°C		●		●	●	-55 to +135	25 to 63	10 to 330	—	Blue
	H V J	★	150°C		●		●	●	-55 to +150	25 to 63	15 to 68	—	Blue
	H V H F	23	105°C High Capacitance	●	●	●	●	●	-55 to +105	25 to 100	10 to 470	—	Blue
	H V P F	24	125°C High Capacitance	●	●		●	●	-55 to +125	25 to 100	10 to 470	—	Blue
	H V P X	25	125°C High Ripple	●	●		●	●	-55 to +125	25 to 80	22 to 470	—	Blue
	H V T X	26	135°C High Ripple		●	●	●	●	-55 to +135	25 to 35	47 to 470	—	Blue
	H V H Y	27	105°C High Ripple		●	●	●	●	-55 to +105	25 to 35	150 to 470	—	Blue
	H V P Y	28	125°C High Ripple		●		●	●	-55 to +125	25 to 35	270 to 470	—	Blue
	H V T Y	29	135°C High Ripple		●	●	●	●	-55 to +135	25 to 35	270 to 470	—	Blue
	UP GRADE H V H C	30	105°C High Capacitance	●	●		●	●	-55 to +105	16 to 35	56 to 820	—	Blue
	UP GRADE H V P C	31	125°C High Capacitance	●	●		●	●	-55 to +125	16 to 35	33 to 820	—	Blue
	UP GRADE F V C	32	125°C, 135°C High Capacitance	●	●	●	●	●	-55 to +135	16 to 35	220 to 1800	—	Blue
	NEW F V F P	33	125°C, 135°C High Ripple		●	●	●	●	-55 to +135	16	330 to 1000	—	Blue
	F V F	34	150°C Long Life, High Ripple		●	●	●	●	-55 to +150	25 to 80	22 to 680	—	Blue
	F V S	35	125°C, -16V Proof		●		●	●	-55 to +125	35	47 to 220	—	Blue
Radial Lead Type	H E H	★	105°C		●	●	●	●	-55 to +105	50 to 100	10 to 82	—	Blue
	H E H	★	105°C Long Life		●	●	●	●	-55 to +105	16 to 35	47 to 560	—	Blue
	H E P Z	★	125°C		●		●	●	-55 to +125	16 to 35	47 to 560	—	Blue
	H E H F	★	105°C High Capacitance	●	●	●	●	●	-55 to +105	25 to 100	10 to 470	—	Blue
	H E P F	★	125°C High Capacitance	●	●		●	●	-55 to +125	25 to 100	10 to 470	—	Blue
	UP GRADE H E P C	★	125°C High Capacitance	●	●		●	●	-55 to +125	16 to 35	100 to 820	—	Blue
	NEW F E C	36	125°C, 135°C High Capacitance	●	●	●	●	●	-55 to +135	16 to 35	220 to 1800	—	Blue
	NEW F E F	37	125°C, 135°C 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(°C)	Rated Voltage Range(V.DC)	Rated Capacitance Range(μF)	External Appearance	Marking Color
Surface Mount Type	C E - L D	39	4.5mm Height, Long Life	●		●	●	●	-40 to +105	6.3 to 50	10 to 100	—	Black ★ 2
	CE-FSS	40	105°C Small, High Capacitance	●			●	●	-40 to +105	6.3 to 50	4.7 to 220	—	Black
		41						●	-40 to +105	160 to 400	2.2 to 82		
	C E - F S	42	105°C Standard				●	●	-55 to +105	6.3 to 63	0.47 to 12000	—	Black ★ 2
							●	●	-40 to +105	100	1.0 to 330		
	C E - A X	44	Low Impedance		●		●	●	-55 to +105	6.3 to 50	4.7 to 6800	—	Black ★ 2
	C E - Z X	46	Super Low ESR		●		●	●	-55 to +105	6.3 to 50	33 to 1800	—	Black
	UP GRADE C E - Z C	47	Super Low ESR, Small, High Capacitance	●	●		●	●	-55 to +105	6.3 to 63	47 to 4700	—	Black
	C E - L X	48	Low Impedance, Long Life		●	●	●	●	-55 to +105	6.3 to 100	4.7 to 12000	—	Black ★ 2
	C E - G A	50	5.4mm Height, Low Impedance		●		●	●	-55 to +105	6.3 to 63	1.0 to 220	—	Black
	C E - L S	51	Low Impedance, Long Life		●	●	●	●	-40 to +105	6.3 to 50	10 to 330	—	Black
		52				●	●	●	-40 to +105	6.3 to 50	1.0 to 220		
	C E - L H	53	Long Life			●		●	-40 to +105	160 to 400	2.2 to 120	—	Black
	C E - L L	54	Low Impedance, Long Life		●	●	●	●	-40 to +105	6.3 to 50	10 to 1000	—	Black
	C E - L F	55	Low Impedance, Long Life		●	●	●	●	-40 to +105	16 to 50	100 to 470	—	Black
	C E - P C	56	125°C				●	●	-55 to +125	6.3 to 100	2.2 to 4700	—	Black
	C E - P H	58	125°C Low ESR, High Capacitance		●		●	●	-40 to +125	16 to 63	10 to 3900	—	Black
	UP GRADE C E - P S	60	125°C High Capacitance	●			●	●	-40 to +125	16 to 63	47 to 680	—	Black
	C E - P F	61	125°C Long Life, High Ripple			●	●	●	-40 to +125	25 to 35	100 to 330	—	Black
	NEW C E - P B	62	125°C High Capacitance				●	●	-40 to +125	25 to 35	1300 to 3300	—	Black
	C E - T H	63	135°C			●	●	●	-40 to +135	16 to 50	22 to 1000	—	Black
	C E - J X	64	150°C				●	●	-40 to +150	25 to 35	100 to 470	—	Black
	C E - F N	65	105°C 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, 5×4.5, 10×7.7)

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(°C)	Rated Voltage Range(V.DC)	Rated Capacitance Range(μF)	External Appearance	Marking Color
Radial Lead Type 	ME-SZ	66	7mm Height, Temperature of Wide Range	●			●	-55 to +105	6.3 to 50	1.0 to 330	Green	White
	ME-SAX	67	7mm Height, Low Impedance	●	●		●	-55 to +105	6.3 to 35	4.7 to 330	Green	Gold
	ME-SWG	68	7mm Height, Low ESR	●	●			-40 to +105	6.3 to 35	22 to 330	Black	Gold
	ME-LS	69	Long Life, High Reliability		●	●	●	-40 to +105	6.3 to 50	1.0 to 1000	Black	Silver
	ME-CZ	70	Small Standard, Temperature of Wide Range	●			●	-55 to +105	6.3 to 100	2.2 to 15000	Green	White
	ME-CA	72	Small Standard, Low Impedance	●	●			-55 to +105	6.3 to 50	2.2 to 15000	Green	Silver
	ME-CX	74	Small, Low Impedance	●	●		●	-55 to +105	6.3 to 35	47 to 15000	Green	Gold
	ME-AX	76	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
	ME-WX	78	Low Impedance, High Ripple		●			-40 to +105	6.3 to 50	22 to 6800	Green	Gold
	ME-WA	80	Low Impedance, High Ripple, Long Life		●	●		-40 to +105	6.3 to 63	82 to 8200	Black	Gold
	ME-WL	82	Low Impedance, Long Life	●	●	●		-40 to +105	6.3 to 100	2.2 to 470	Green	Silver
	ME-WG	83	Super Low ESR		●			-40 to +105	6.3 to 25	220 to 3300	Green	Gold
	ME-FX	84	Long Life			●	●	-40 to +105	10 to 100	2.2 to 470	Black	White
	ME-FC	85	Guaranteed 105°C (Mid. & High Voltage)					-40 to +105 -25 to +105	160 to 400 450	0.47 to 220 22 to 47	Black	White
	ME-FD	85	105°C, 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	86	105°C, 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	87	7mm Height, Bi-polar	●			●	-40 to +85	6.3 to 50	1.0 to 47	Black	White
	ME-HWN	88	Small, Standard, Bi-polar	●			●	-40 to +85	6.3 to 100	1.0 to 2200	Black	White

★2 Some of specified case sizes' parts will be discontinued. (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	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

Radial Lead Type

Series	Features	alternative series
ME-UW ★1	5mm Height	—
ME-UZ ★1	5mm Height, Temperature of Wide Range	
ME-UAX ★1	5mm Height, Low Impedance	
ME-SWB	7mm Height	ME-SZ
ME-HC	Standard	ME-CZ
ME-FA	105°C Standard	
ME-PX ★1	125°C	—
ME-HPC	Standard(Mid. & High Voltage)	ME-FC(Mid. & High Voltage)
ME-HPD	Long Profile(Mid. & High Voltage)	ME-FD(Mid. & High Voltage)
ME-FAZ ★1	Low Impedance, High Ripple(Mid. & High Voltage)	—
ME-UWN ★1	5mm Height, Bi-polar	—

★1 It will be discontinued.

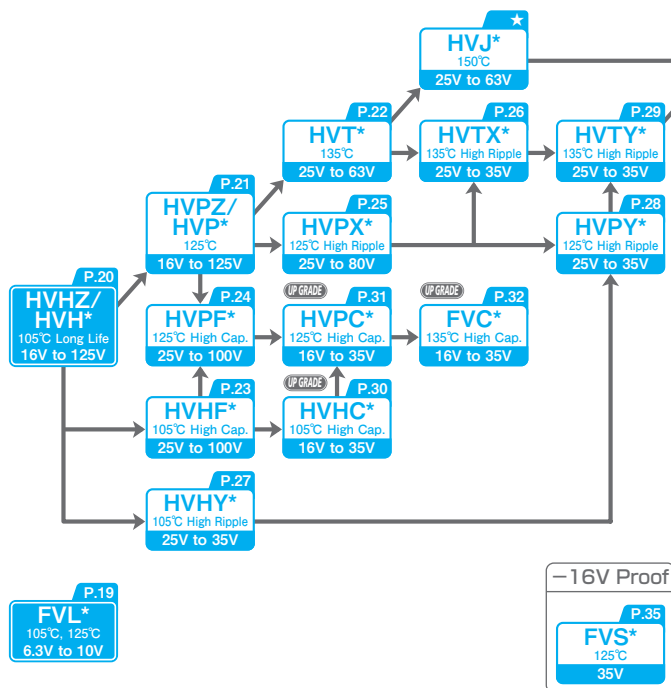
★2 Some of specified case sizes' parts will be discontinued. (4×4.5, 5×4.5)

★3 Some of specified rated voltage parts will be discontinued. (4V)

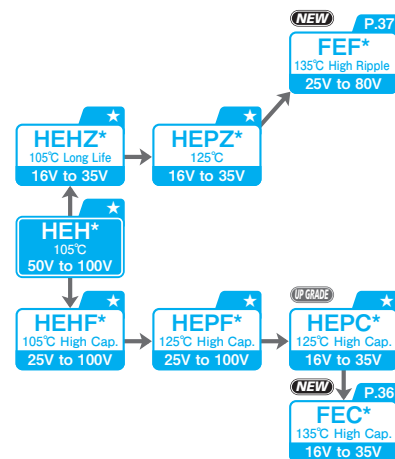
Series Chart

■ Hybrid Conductive Polymer Type **EP-cap**

SURFACE MOUNT TYPE

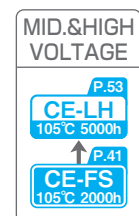
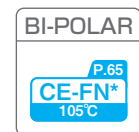
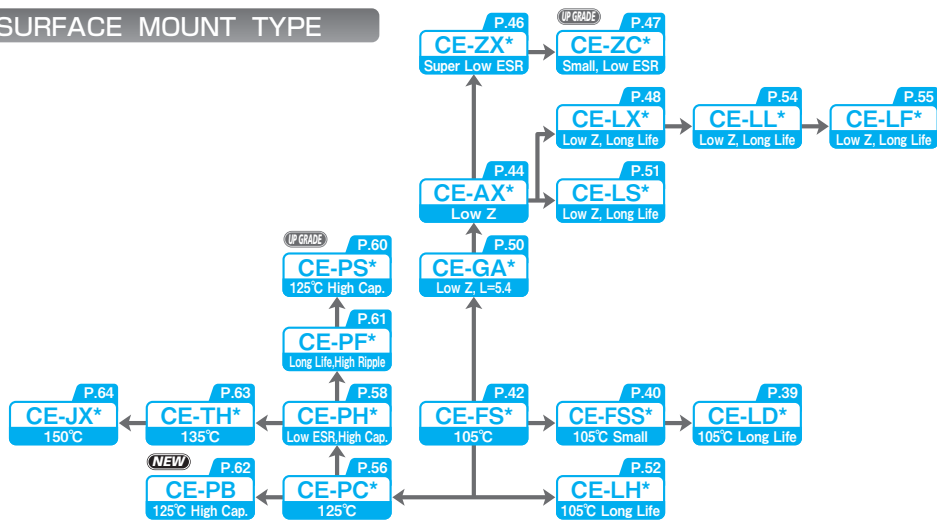


RADIAL LEAD TYPE

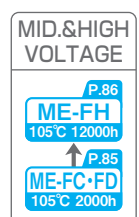
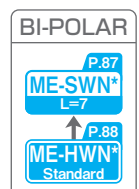
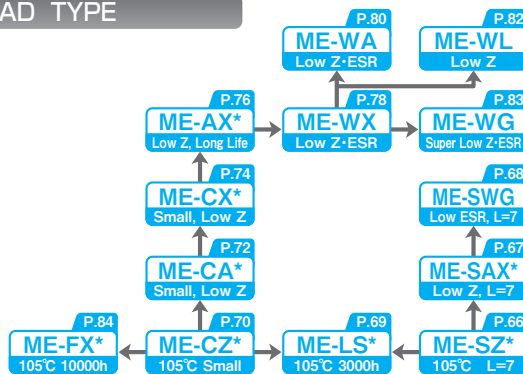


■ Aluminum Electrolytic Type

SURFACE MOUNT TYPE



RADIAL LEAD TYPE



*solvent proof

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

Guidelines and Precautions for Use

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.

Case Diameter	Space
$\phi 6.3$ to $\phi 16$	2mm or more
$\phi 18$	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.

Guidelines and Precautions for Use

- 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 moulder 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.

Guidelines and Precautions for Use

- 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.

Guidelines and Precautions for Use

- 3) For mounting the circuit board, please follow the guideline listed below. Do not use the device 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)

Type code	Surface Mount Type Aluminum Electrolytic Capacitors		Radial Lead Type Aluminum Electrolytic Capacitors	
	CE, HV, FV ★ ¹	CE_T	ME	HE_T, FE_T
Cross section of lead wire (Kind of plating)	($\phi 4$ to $\phi 12.5$)	($\phi 16, \phi 18$)		
Part number (example)	10CE100LX (100 μ F / 10V)	10CE4700LXT (4700 μ F / 10V)	10ME100AX (100 μ F / 10V)	63HEH10MT (10 μ F / 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 directive : (EU) 2015/863" and its concentration is less than the threshold values.

Conforming to European REACH Regulation.

Our products are "articles without any intended release" based on 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

US. Pat. No.7497879, US. Pat. No.7859829, US. Pat. No.7872858, US. Pat. 11380493

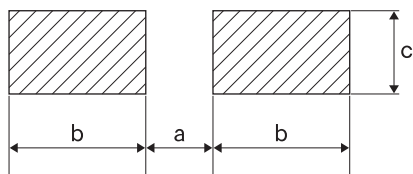
CN. Pat. No.ZL200710109529.7, CN. Pat. No.ZL200810125826.5, CN. Pat. No.ZL200810136119.6

CN. Pat. No.ZL201880097841.5, CN. Pat. No.ZL202080064325.X, CN. Pat. No.ZL202080097732.0

Surface Mount Type Recommended Land Pattern

Land pattern

(Unit:mm)



Size	a	b	c
$\phi 4$	1.0	2.6	1.8
$\phi 5$	1.4	3.0	1.8
$\phi 6.3$	1.8	3.6	1.8
$\phi 8$	2.8	4.1	2.1
$\phi 10$	4.3	4.4	2.5
$\phi 12.5$	4.3	5.8	2.5
$\phi 16$	6.6	6.5	5.0
$\phi 18$	6.6	7.7	5.0

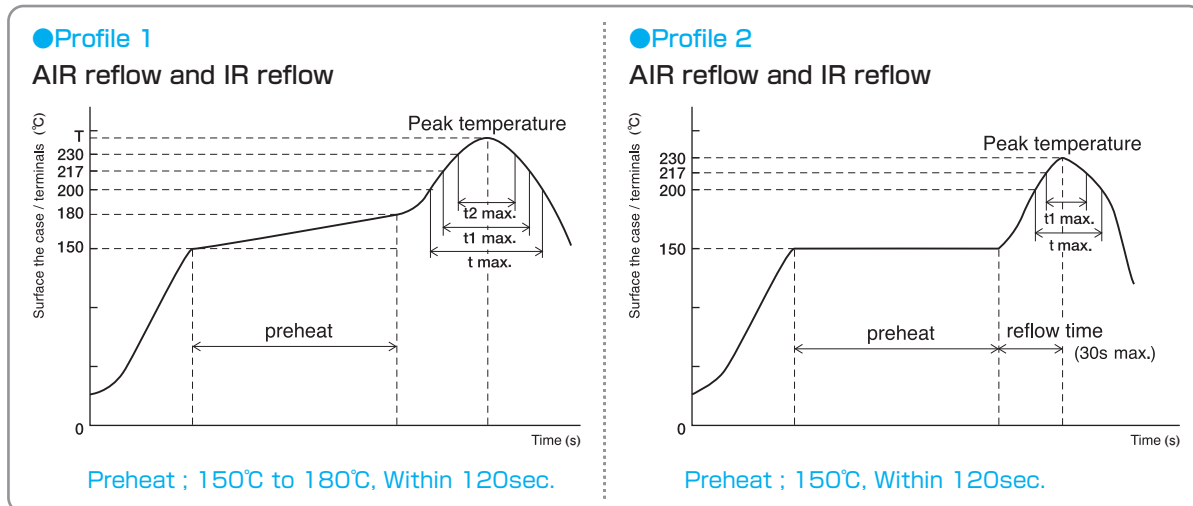
(1) Please refer to page 15-16 for S.M.T Recommended Land Pattern of Anti-vibration Structure(CA Type, HA Type, HC Type, FA Type, FC Type).

Soldering Condition / Reflow Soldering Condition

Soldering Condition

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

Reflow Soldering Condition



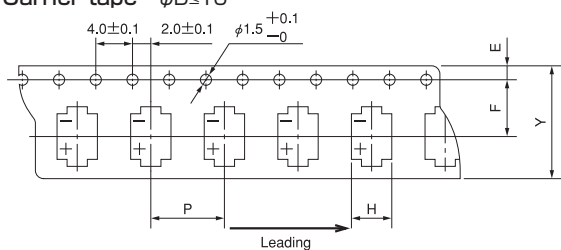
Series	Voltage (V)	Size	Time for more than 200°C (t)	Time for more than 217°C (t1)	Time for more than 230°C (t2)	Peak temperature Within 5sec.(T)	Reflow cycle	Profile
CE-FS, CE-FSS CE-GA, CE-AX CE-LH, CE-LL CE-LF, CE-FN	6.3 to 63	φ4 to φ6.3	Within 70sec.	Within 60sec.	Within 40sec.	250°C	2	1
		φ8	Within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

The maximum cycle of reflow soldering is two times. The second cycle must be done after sufficient cooling time for more than one hour to return the temperatures of circuit boards and components back to room temperature.
Please refer to page 18 for reflow soldering condition of EP-cap.

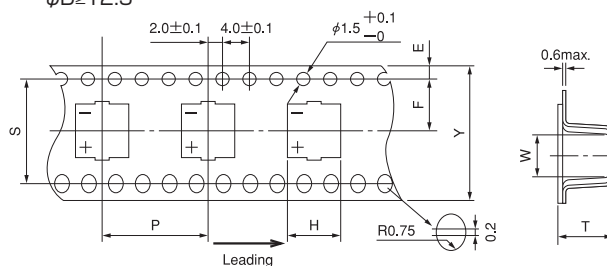
Packaging Specifications

■ Surface Mount Type Taping Specifications (Unit:mm)

Carrier tape $\phi D \leq 10$



$\phi D \geq 12.5$

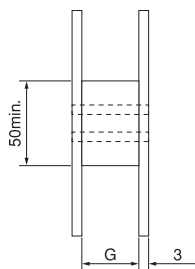
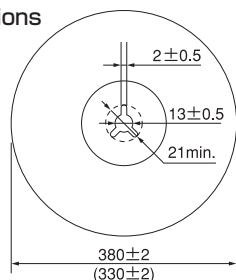


(Unit:mm)

size($\phi D \times L$)	$Y \pm 0.3$	$H \pm 0.2$	$W \pm 0.2$	$P \pm 0.1$	$E \pm 0.1$	$F \pm 0.1$	$T \pm 0.2$	$S \pm 0.1$
$\phi 4 \times 5.4$	12.0	4.7	4.7	8.0	1.75	5.5	5.8	—
$\phi 4 \times 6.0$	12.0	4.7	4.7	8.0	1.75	5.5	6.4	—
$\phi 5 \times 5.4$	12.0	5.7	5.7	12.0	1.75	5.5	5.8	—
$\phi 5 \times 6.0$	12.0	5.7	5.7	12.0	1.75	5.5	6.4	—
$\phi 5 \times 7.0$	12.0	5.7	5.7	12.0	1.75	5.5	7.1	—
$\phi 6.3 \times 4.5$	16.0	7.0	7.0	12.0	1.75	7.5	5.1	—
$\phi 6.3 \times 5.4$	16.0	7.0	7.0	12.0	1.75	7.5	5.8	—
$\phi 6.3 \times 6.0$	16.0	7.0	7.0	12.0	1.75	7.5	6.5	—
$\phi 6.3 \times 7.0$	16.0	7.0	7.0	12.0	1.75	7.5	7.5	—
$\phi 6.3 \times 7.7$	16.0	7.0	7.0	12.0	1.75	7.5	8.2	—
$\phi 6.3 \times 8.4$	16.0	7.0	7.0	12.0	1.75	7.5	9.2	—
$\phi 8 \times 10.2(10.5)$	24.0	8.7	8.7	16.0	1.75	11.5	11.1	—
$\phi 10 \times 10.2(10.5)$	24.0	10.7	10.7	16.0	1.75	11.5	11.2	—
$\phi 10 \times 12.5$	24.0	10.7	10.7	16.0	1.75	11.5	13.3	—
$\phi 10 \times 13.5(13.8)$	24.0	10.7	10.7	16.0	1.75	11.5	14.6	—
$\phi 10 \times 16.5$	24.0	10.7	10.7	16.0	1.75	11.5	17.7	—
$\phi 12.5 \times 13.5$	32.0	13.2(13.9★)	13.2(13.9★)	24.0	1.75	14.2	14.3(14.7★)	28.4
$\phi 16 \times 16.5$	44.0	17.5	17.5	28.0	1.75	20.2	17.3(17.8★)	40.4
$\phi 16 \times 21.5$	44.0	17.5	17.5	28.0	1.75	20.2	22.8	40.4
$\phi 18 \times 16.5$	44.0	19.5	19.5	32.0	1.75	20.2	17.8	40.4
$\phi 18 \times 21.5$	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
$\phi 4, \phi 5$	14
$\phi 6.3$	18
$\phi 8, \phi 10$	26
$\phi 12.5$	34
$\phi 16, \phi 18$	46

Minimum Packing Quantity

$\phi D \times L(\text{mm})$	Quantity of 1 Reel($\phi 380$)	Quantity of 1 Reel($\phi 330$)	Quantity of 1 package(Reel)
$\phi 4 \times 5.4$	2000	—	5
$\phi 4 \times 6.0$	2000	—	5
$\phi 5 \times 5.4$	—	1000	5
$\phi 5 \times 6.0$	1000	—	5
$\phi 5 \times 6.0$ EP-cap	1200 ★2	—	5
$\phi 5 \times 7.0$	1000	—	5
$\phi 6.3 \times 4.5$	—	1000	5
$\phi 6.3 \times 5.4$	—	1000	5
$\phi 6.3 \times 6.0$	1000	—	5
$\phi 6.3 \times 7.0$	1000	—	5
$\phi 6.3 \times 7.7$	900	—	5
$\phi 6.3 \times 8.4$	800	—	5
$\phi 8 \times 10.2(10.5)$	500	—	3
$\phi 10 \times 10.2(10.5)$	500	—	3
$\phi 10 \times 12.5$	400	—	3
$\phi 10 \times 13.5(13.8)$	400	—	3
$\phi 10 \times 16.5$	325	—	3
$\phi 12.5 \times 13.5$	250 ★1	—	2
$\phi 16 \times 16.5$	200 ★1	—	2
$\phi 16 \times 21.5$	150 ★2	—	2
$\phi 18 \times 16.5$	175	—	2
$\phi 18 \times 21.5$	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

■ Radial Lead Type Taping Specifications for Automatic Inserting Machines

Fig.1

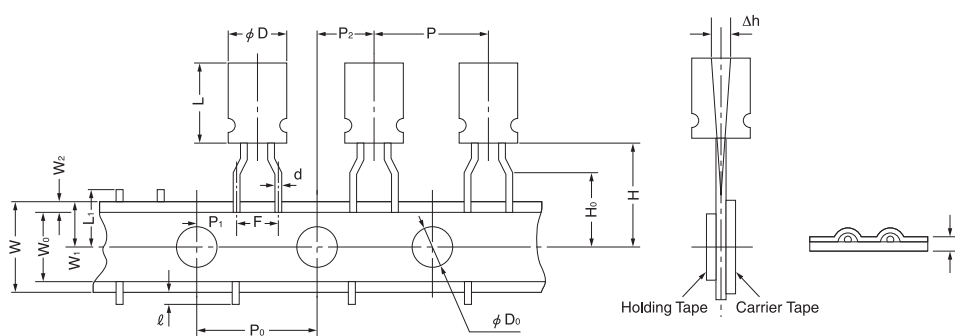


Fig.2

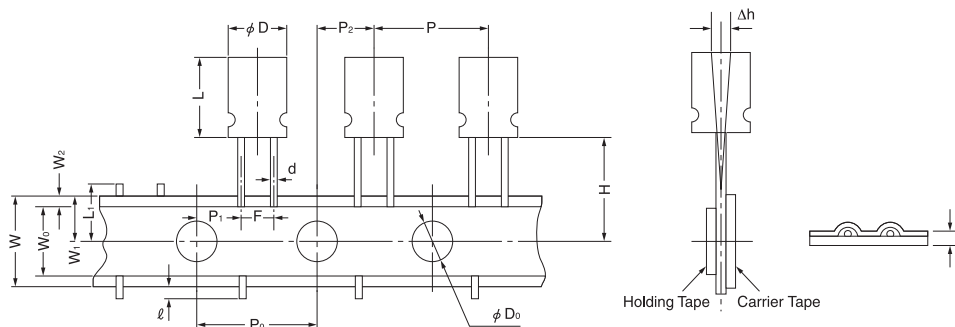
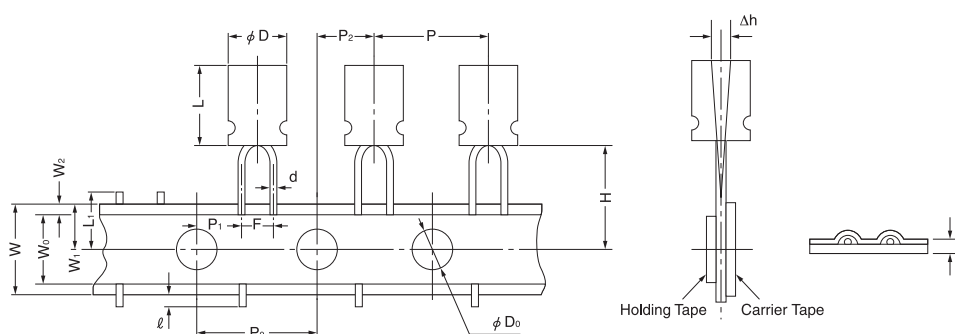


Fig.3



(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	$\pm 0.8 \star 1$	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	15.0	30.0	12.7	12.7	12.7	12.7	12.7
Sprocket hole pitch	P ₀	± 0.2	12.7	12.7	12.7	15.0	15.0	12.7	12.7	12.7	12.7	12.7
Sprocket hole position	P ₁	± 0.5	3.85	3.85	3.85	5.0	3.75	5.1	5.1	5.1	5.1	4.6
	P ₂	± 1.0	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
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
Holding tape width	W ₀	min.	6.0	6.0	6.0	11.5	11.5	6.0	6.0	6.0	6.0	6.0
Sprocket hole position	W ₁	± 0.5	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Holding tape position	W ₂	max.	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Component-base height	H	$\pm 0.75 \star 2$	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
Lead wire clinch height	H ₀	± 0.5	16.0	16.0	16.0	—	—	—	—	—	—	—
Sprocket hole diameter	φD ₀	± 0.2	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
Lead wire protrusion	ℓ	max.	0	0	0	0	0	0	0	0	0	0
Cut position of failures	L ₁	max.	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	+T	+T	+T	+TS	+TS0	+TS	+TS

For EP-cap, only straight taping(Fig.2) is available for φ8/φ10 diameters.

The taping code has to be put after the part number.

Part number 16ME100HC+T

Taping code

+T0, +TS0 (0=Zero)

★1 Fig.2, Fig.3:±0.5

★2 φ10 · φ12.5 with H=18.5:±1.5

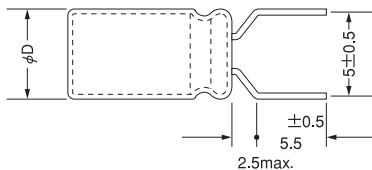
★3 φ16 every two slots in Fig.2

Packaging Specifications

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

1. Lead-wire forming

for $\phi D=5, 6.3, 8\text{mm}$.



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.

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

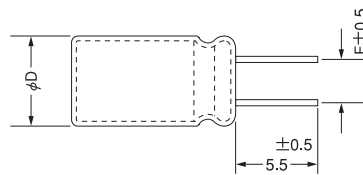
+CA for lead-wire cutting

Example

16ME100CA+FA

200ME10FH+CA

2. Lead-wire cutting



(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

Part number

Example

6	CE	100	LX			
Rated voltage ★1	Type symbol ★2	Rated capacitance symbol ★3	Series symbol			
35	HV	HZ	100	M	+P	
Rated voltage ★1	Type symbol ★2	Series symbol	Rated capacitance symbol ★3	Capacitance tolerance	Reel symbol ★4	
35	FV	F	150	M	+P	
Rated voltage ★1	Type symbol ★2	Series symbol	Rated capacitance symbol ★3	Capacitance tolerance	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 $\phi D=5$, put "+PN")

Minimum Packing Quantity

Bulk

Size	Quantity	Remarks reference
$\phi 4$ to $\phi 8$ ★1	500 PCS.	★1 $\phi 8 \times 12.5\text{L}$; 200 PCS. (ME-WA, ME-WG series Size $\phi 8 \times 11.5\text{L}$; 200 PCS.)
$\phi 10$ to $\phi 12.5$ ★2	200 PCS.	★2 $\phi 12.5 \times 30\text{L}$; 100 PCS.
$\phi 16$ ★3	100 PCS.	★3 $\phi 16 \times 35.5\text{L}$; 50 PCS.
$\phi 18$	50 PCS.	Surface Mount Type ; Please refer to page 11

Taping

Size	Quantity
$\phi 4$	4000 PCS.
$\phi 5$	3000 PCS.
$\phi 6.3$	2500 PCS.
$\phi 8$	1400 PCS.
$\phi 10$	900 PCS.
$\phi 12.5$	600 PCS.
$\phi 16$	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(μ F)	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-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(μ F)	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(μ F)	Frequency:f(Hz)			
		100≤f<1k	1k≤f<10k	10k≤f<100k	100k≤f
ME-SAX	C≤47	0.40	0.80	0.90	1.00
	47<C≤100	0.60	0.80	0.95	1.00
	100<C	0.75	0.85	0.95	1.00
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(μ F)	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

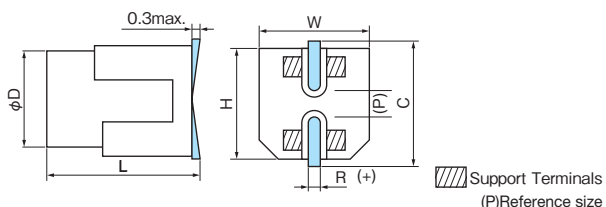
Please refer to page 18 for Ripple Current Frequency Coefficient of EP-cap.
Please contact us for CE-PB series.

CA Type



- Suitable for Automotive Applications

■ Dimensions



A pressure relief vent is provided for $\phi D=8$ or bigger

(Unit : mm)

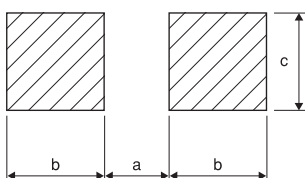
D ± 0.5	L	W ± 0.2	H ± 0.2	C ± 0.2	R	P
8	10.5 ± 0.5	8.3	8.3	9.0	0.7 to 1.0	3.2
8	10.7 ± 0.5 ★	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5 ± 0.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	10.7 ± 0.5 ★	10.3	10.3	11.0	1.0 to 1.4	4.6
10	13.5 ± 1.0	10.3	10.3	11.0	1.0 to 1.4	4.6
12.5	13.5 ± 1.0	13.5	13.5	14.2	1.0 to 1.4	4.6
16	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-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
φ 10	3.8	4.8	4.7
φ 12.5	3.8	6.1	6.9
φ 16	5.0	8.0	9.5
φ 18	5.0	8.6	9.5

■ Part number CA Type

35 CA 1000 LX T

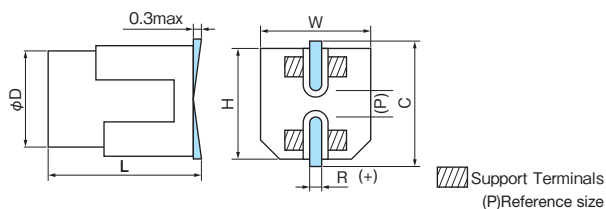
└ Sn plating terminal symbol
└ Series symbol
└ Rated capacitance symbol
└ Type symbol (Anti-vibration Structure: CA)
└ Rated voltage

HA_{Type} • HC_{Type} • FA_{Type} • FC_{Type}



- Suitable for Automotive Applications

■ Dimensions


A pressure relief vent is provided for $\phi D=8$ or bigger

(Unit : mm)

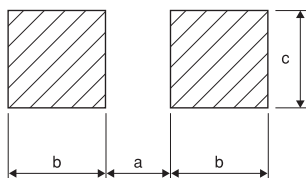
Type	D ± 0.5	L	W ± 0.2	H ± 0.2	C ± 0.2	R	P
HA, FA	6.3	6.0 ± 0.5 ★	6.6	6.6	7.3	0.5 to 0.8	2.2
HA, FA	6.3	7.7 ± 0.5 ★	6.6	6.6	7.3	0.5 to 0.8	2.2
HA, FA	8	10.7 ± 0.5	8.3	8.3	9.0	0.7 to 1.0	3.2
HC, FC	10	10.7 ± 0.5	10.3	10.3	11.0	1.0 to 1.4	4.6
HC, FC	10	12.5 ± 0.5	10.3	10.3	11.0	1.0 to 1.4	4.6
FC	10	13.8 ± 0.5	10.3	10.3	11.0	1.0 to 1.4	4.6
FC	10	16.5 ± 0.5	10.3	10.3	11.0	1.0 to 1.4	4.6

★ Please contact us for applicable series.

■ Surface Mount Type Recommended land pattern

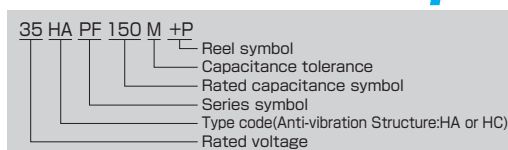
Land pattern
(Anti-vibration Structure)

(Unit : mm)

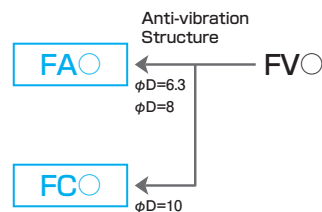
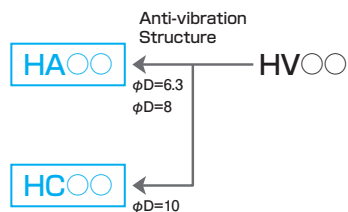
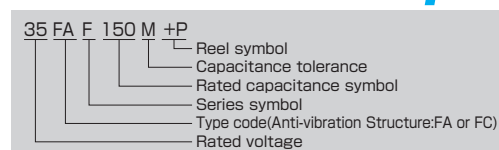


Size	a	b	c
ϕ 6.3	1.6	4.0	3.0
ϕ 8	2.5	4.5	4.7
ϕ 10	3.8	4.8	4.7

■ Part number HA Type•HC Type *EP-cap*



FA Type•FC Type *EP-cap*

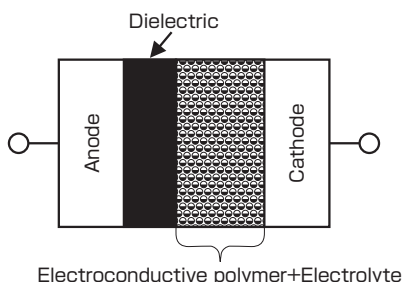


EP-cap Hybrid Conductive Polymer Type

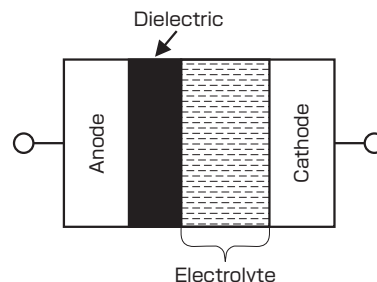
EP-cap is the first hybrid cathode aluminum electrolytic capacitors in the industry using a liquid electrolyte and a high conductive polymer. EP-cap is very low ESR (equivalent series resistance) at high frequencies comparing with the standard aluminum electrolytic capacitors. EP-cap has a self-healing 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°C 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.

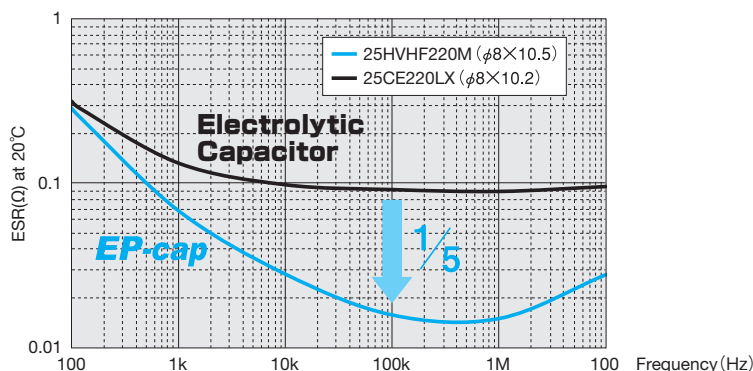
150°C high temperature

Applying a voltage up to the rated voltage is guaranteed.

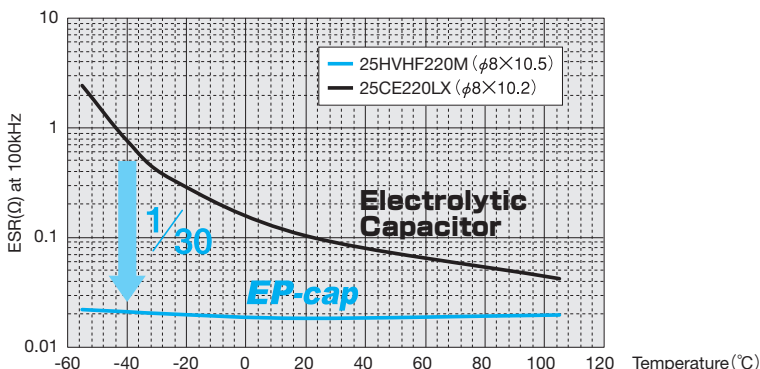
- Voltage derating is not necessary

RoHS compliance (Environmental friendly)

Frequency characteristics



Temperature characteristics



Soldering Condition
Reflow Soldering
Condition
Ripple Current
Frequency
Coefficient

FVL

HVHZ-HVH

HVPZ-HVP

HVT

HVHF

HVPF

HVPX

HVTX

HVHY

HVPY

HVTY

HVHC

HVPC

FVC

FVFP **NEW**

FVF

FVS

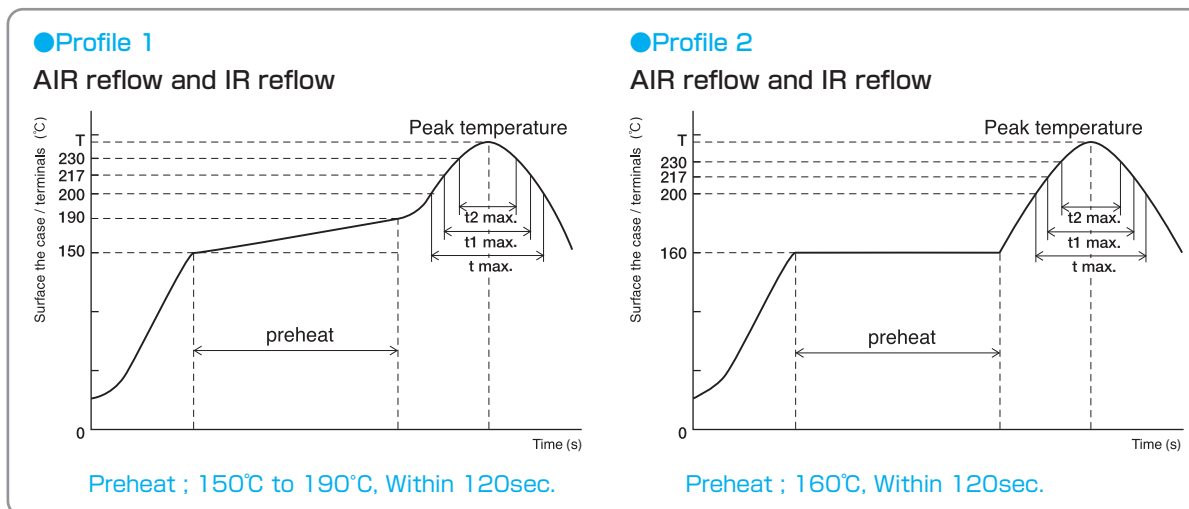
FEC **NEW**

FEF **NEW**

■ Soldering Condition

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

■ Reflow Soldering Condition



Series	Voltage (V)	Size	Time of more than 200°C(t)	Time of more than 217°C(t1)	Time of more than 230°C(t2)	Peak temperature (T)	Reflow cycle	Profile
HVHZ-HVH HVPZ-HVP HVT, HVJ	16 to 63	ALL	Within 100sec.	Within 80sec.	Within 40sec.	260°C ★1	2	1
	80 to 125	ALL	Within 100sec.	Within 80sec.	Within 40sec.	250°C ★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 40sec.	Within 30sec.	260°C ★2	2	2
	80 to 100	ALL	Within 70sec.	Within 40sec.	Within 30sec.	245°C ★3	2	2

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

- ★1 Within 5sec.
- ★2 Less than 260°C
- ★3 Less than 245°C

■ 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≤f<500k
FVL, HVHZ-HVH HVPZ-HVP, HVT HVJ, HVHF, HVPF HVPX, HVTX, HVHY HVPY, HVTY, HVHC HVPC, FVC, FVS, HEH HEHZ, HEPZ, HEHF HEPF, HEPC, FEC	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
FVFP, FVF, FEF	ALL	0.15	0.35	0.55	0.65	0.75	0.80	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

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.

FVL Series

105°C · 125°C

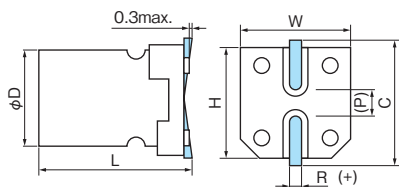
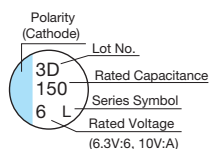


- 105°C : 5,000hours, 125°C : 2,000hours
- 85°C, 85%RH 1,000 to 2,000hours
- Solvent proof (within 2 minutes) • AEC-Q200

Specifications

Items	Condition	Specifications	
Rated voltage (V)	—	6.3	10
Surge voltage (V)	Room temperature	8.2	13
Category temperature range (°C)	—	-55 to +125	
Capacitance tolerance (%)	120Hz/20°C	M : ±20	
Dissipation Factor (tan δ)	tan δ (max.) 120Hz/20°C	0.18	0.16
Leakage current (LC)	μA/after 2minutes (max.), 20°C	The greater value of either 0.05CV or 100	
Endurance	rated voltage applied (With the rated ripple current)	Test	105°C : 5,000hours, 125°C : 2,000hours
		ΔC/C	Within ±30% of the initial value
		tan δ	Less than 200% of the specified value
		ESR	Less than 200% of the specified value
		LC	Less than the specified value
Bias Humidity Test	85°C, 85%RH rated voltage applied	Test	φ6.3 : 1,000hours, φ8, φ10 : 2,000hours
		ΔC/C	Within ±30% of the initial value
		tan δ	Less than 200% of the specified value
		ESR	Less than 200% of the specified value
		LC	Less than the specified value
Shelf Life	125°C, 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)

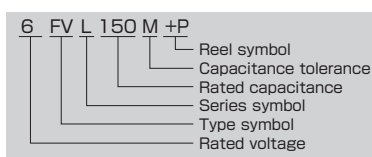
D ^{±0.5}	L ^{±0.3}	W ^{±0.2}	H ^{±0.2}	C ^{±0.2}	R	P
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6

Size, ESR, Rated Ripple Current

Items μF	6.3				10			
	Case size φDxL (mm)	ESR (mΩmax.) (20°C/100kHz)	Rated ripple current (mA rms/100kHz)		Case size φDxL (mm)	ESR (mΩmax.) (20°C/100kHz)	Rated ripple current (mA rms/100kHz)	
			105°C	125°C			105°C	125°C
100					6.3x6.0	36	1700	950
150	6.3x6.0	36	1700	950	6.3x7.7	32	2100	1150
220	6.3x7.7	32	2100	1150				
470					8x10.5	16	3200	1800
560	8x10.5	16	3200	1800				
820					10x10.5	15	3900	2200
1000	10x10.5	15	3900	2200				

Please refer to page 18 for ripple current frequency coefficients.

Part number



Soldering Condition
Reflow Soldering
Condition
Ripple Current
Frequency
Coefficient

FVL

HVHZ-HVH

HVPZ-HVP

HVT

HVHF

HVPF

HVPX

HVTX

HVHY

HVPY

HVTY

HVHC

HVPC

FVC

FVFP **NEW**

FVF

FVS

FEC **NEW**

FEF **NEW**

HVHZ • HVH Series

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

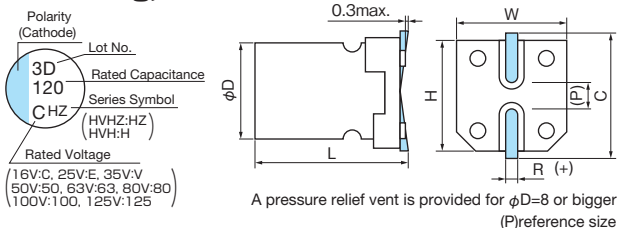
105°C Long Life

- 105°C 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 (°C)	—	-55 to +105							
Capacitance tolerance (%)	120Hz/20°C	M : ±20							
Dissipation Factor(tan δ)	tanδ (max.) 120Hz/20°C	0.16							
Leakage current(LC)	μA/after 2minutes (max.) (20°C)	≤ 63V	0.01CV						
		80V ≤	The greater value of either 0.05CV or 100						
Endurance	105°C rated voltage applied (With the rated ripple current)	Test	16V	φ6.3 : 4,000hours, D≥φ8 : 7,000hours					
			25V≤	φ6.3 : 5,000hours, D≥φ8: 10,000hours					
		ΔC/C	Within ±30% of the initial value						
		tanδ	Less than 200% of the specified value						
		ESR	Less than 200% of the specified value						
		LC	Less than the specified value						
Shelf Life	105°C, 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



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									

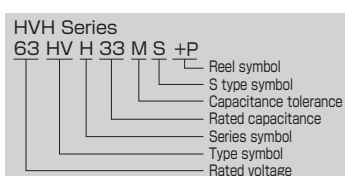
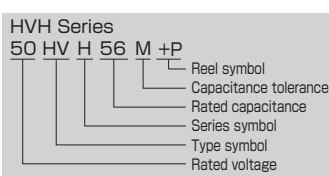
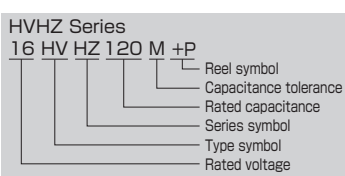
Series	HVH								
μF \ V	63	80	100	125	150	160	180	200	
6.8	6.3×6.0	150	960						
10	6.3×7.7	100	1060						
12				10×10.5	70	1600	10×10.5	80	1450
15				10×10.5	70	1600	10×12.5	60	1660
18				10×12.5	50	1830			
22	8×10.5	40	1560						
33	8×10.5 ★	40	1560						
47	10×10.5	30	2100						
56	10×12.5	22	2400						

Please refer to page 18 for ripple current frequency coefficients.

★ S type

ESR(mΩ)max. at 100kHz, 20°C
Case size:φD×L(mm)
Rated ripple current
mA Arms(100kHz, 105°C)

Part number



HVPZ•HVP Series

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

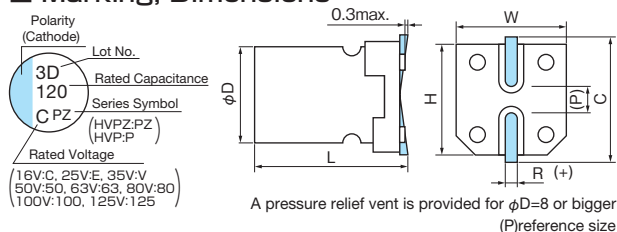
125°C

- 125°C 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 (°C)	—		-55 to +125							
Capacitance tolerance (%)	120Hz/20°C		M : ±20							
Dissipation Factor(tan δ)	tanδ (max.) 120Hz/20°C		0.16							
Leakage current (LC)	μA/after 2minutes (max.) (20°C)	≤ 63V	0.01CV							
		80V ≤	The greater value of either 0.05CV or 100							
Endurance	125°C rated voltage applied (With the rated ripple current)	Test	16V	φ6.3 : 2,000hours, D≥φ8 : 2,500hours						
			25V≤	φ6.3 : 2,000hours, D≥φ8 : 3,000hours						
		ΔC/C	Within ±30% of the initial value							
		tanδ	Less than 200% of the specified value							
		ESR	Less than 200% of the specified value							
		LC	Less than the specified value							
Shelf Life	125°C, 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



■ Size, ESR, Rated Ripple Current

Series	HVPZ						HVP		
μF \ V	16	25	35	50	63	80	100	125	
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
68		6.3×7.7	35	1380					
82	6.3×6.0	38	1320					10×12.5	19
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	150	180	200	220	250	280	300	320
6.8	6.3×6.0	150	670									
10	6.3×7.7	100	740									
12			10×10.5	70	900	10×10.5	80	870	10×10.5	90	750	
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									
47	10×10.5	30	1260									
56	10×12.5	22	1440									

Please refer to page 18 for ripple current frequency coefficients.

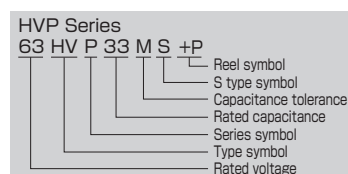
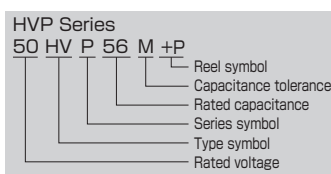
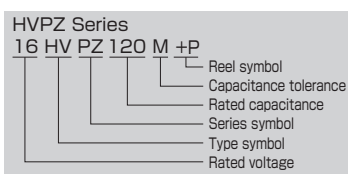
★ S type

ESR(mΩ)max. at 100kHz, 20°C

Case size: φDxL(mm)

Rated ripple current
mA Arms (100kHz, 125°C)

■ Part number



HVT Series

135°C

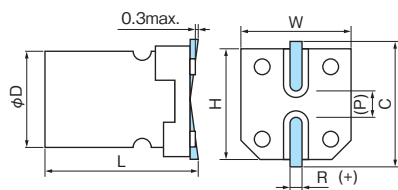
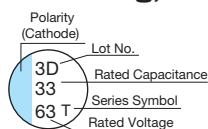


- 135°C 1,000 to 2,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

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 (°C)	—		-55 to +135				
Capacitance tolerance (%)	120Hz/20°C		M : ±20				
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.16				
Leakage current(LC)	μA/after 2minutes (max.), 20°C		The greater value of either 0.01CV				
Endurance	135°C rated voltage applied (With the rated ripple current)	Test	ø6.3 : 1,000hours, D≥ø8 : 2,000hours				
		ΔC/C	Within ±30% of the initial value				
		tanδ	Less than 200% of the specified value				
		ESR	Less than 200% of the specified value				
		LC	Less than the specified value				
Shelf Life	135°C, 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)

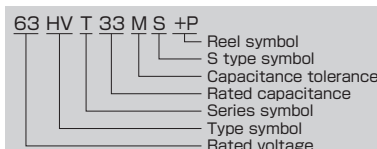
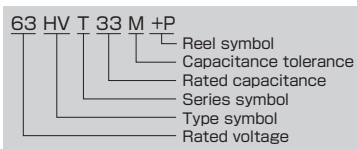
ESR(mΩ)max. at 100kHz, 20°C

Rated ripple current
mA Arms(100kHz, 135°C)

Please refer to page 18 for ripple current frequency coefficients.

★ S type

Part number



HVHF Series

105°C Long Life

High Capacitance

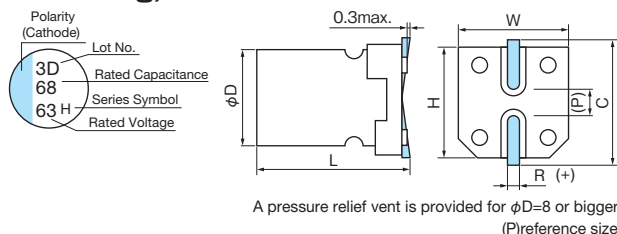


- 105°C 5,000 to 10,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ 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 (°C)	—	-55 to +105					
Capacitance tolerance (%)	120Hz/20°C	M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C	0.14	0.12	0.10	0.08	0.08	0.08
Leakage current(LC)	μA/after 2minutes (max.), 20°C	The greater value of either 0.01CV					
Endurance	105°C rated voltage applied (With the rated ripple current)	Test	10,000hours(φ6.3×6.0 5,000hours)				
		ΔC/C	Within ±30% of the initial value				
		tanδ	Less than 200% of the specified value				
		ESR	Less than 200% of the specified value				
		LC	Less than the specified value				
Shelf Life	105°C, 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
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

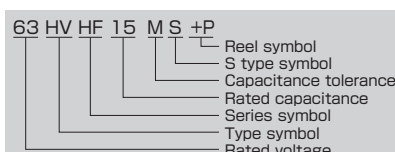
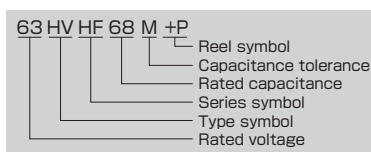
μF \ V	25	35	50	63	80	100
10				6.3×6.0 120 1000		8×10.5 60 1400
15				6.3×6.0 ★ 120 1000 6.3×7.7 80 1500		10×10.5 45 1500
18						10×12.5 40 1580
22			6.3×6.0 80 1100	6.3×7.7 80 1500	8×10.5 45 1550	
27					8×10.5 45 1550	
33			6.3×7.7 40 1600	8×10.5 40 1700	10×10.5 36 1700	
39					10×12.5 32 1800	
47		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 18 for ripple current frequency coefficients.

★ S type

ESR(mΩ)max. at 100kHz, 20°C
Case size:φDxL(mm)Rated ripple current
mA rms(100kHz, 105°C)

■ Part number

Soldering Condition
Reflow Soldering
Condition
Ripple Current
Frequency
Coefficient

FVL

HVHZ-HVH

HVPZ-HVP

HVT

HVHF

HVPF

HVPX

HVTX

HVHY

HVPY

HVTY

HVHC

HVPC

FVC

FVFP **NEW**

FVF

FVS

FEC **NEW**FEF **NEW**

Hybrid Conductive Polymer Type / Surface Mount Type

RoHS compliance

HVPF Series

125°C

High Capacitance

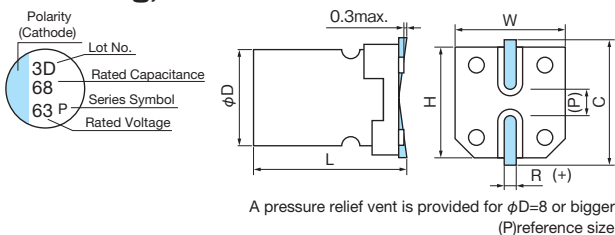


- 125°C 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

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 (°C)	—	-55 to +125					
Capacitance tolerance (%)	120Hz/20°C	M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C	0.14	0.12	0.10	0.08	0.08	0.08
Leakage current(LC)	μA/after 2minutes (max.), 20°C	The greater value of either 0.01CV					
Endurance	125°C, 4,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±30% of the initial value				
		tanδ	Less than 200% of the specified value				
		ESR	Less than 200% of the specified value				
		LC	Less than the specified value				
Shelf Life	125°C, 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
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					5x6.0 ★120, 500 6.3x6.0 120, 700		8x10.5 60, 900
15					6.3x6.0 ★120, 700 6.3x7.7 80, 900		10x10.5 45, 1120
18							10x12.5 40, 1220
22			5x6.0 100, 550	6.3x6.0 80, 750	6.3x7.7 80, 900	8x10.5 45, 1030	
27						8x10.5 45, 1030	
33	5x6.0 80, 550			6.3x7.7 40, 1100	8x10.5 40, 1100	10x10.5 36, 1270	
39						10x12.5 32, 1360	
47			6.3x6.0 60, 900		8x10.5 40, 1100	10x10.5 36, 1270	
56	6.3x6.0 50, 900				10x10.5 30, 1400	10x12.5 32, 1360	
68			6.3x7.7 35, 1400	8x10.5 30, 1250	10x12.5 22, 1650		
82					10x10.5 30, 1400		
100	6.3x7.7 30, 1400			10x10.5 28, 1600	10x12.5 22, 1650		
120				10x10.5 28, 1600			
150			8x10.5 27, 1600	10x12.5 19, 1820			
220	8x10.5 27, 1600						
270			10x10.5 20, 2000				
330	10x10.5 20, 2000		10x12.5 17, 2260				
470	10x12.5 16, 2260						

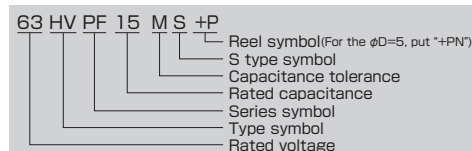
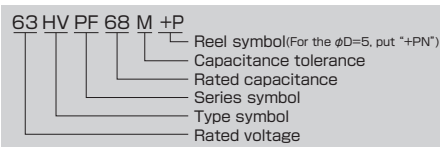
Please refer to page 18 for ripple current frequency coefficients.

★ S type

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

Rated ripple current
mA_{rms}(100kHz, 125°C)

Part number



HVPX Series

125°C

High Ripple Current

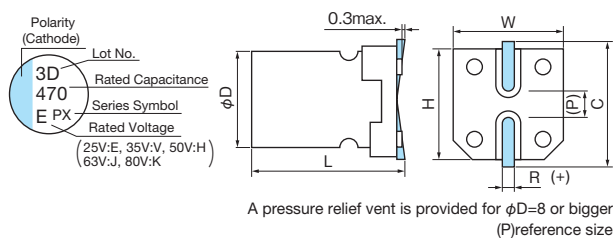


- 125°C 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ 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 (°C)	—	-55 to +125				
Capacitance tolerance (%)	120Hz/20°C	M : ±20				
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C	0.14	0.12	0.10	0.08	0.08
Leakage current(LC)	μA/after 2minutes (max.), 20°C	0.01CV				
Endurance	125°C, 4,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±30% of the initial value			
		tanδ	Less than 200% of the specified value			
		ESR	Less than 200% of the specified value			
		LC	Less than the specified value			
Shelf Life	125°C, 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
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			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 18 for ripple current frequency coefficients.

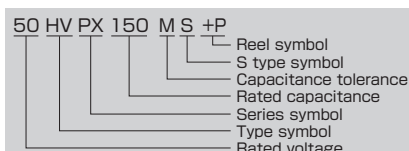
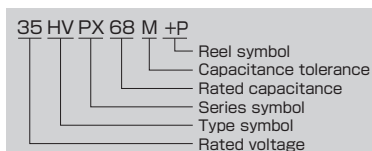
★ S type

Case size: φD×L(mm)

ESR(mΩ)max. at 100kHz, 20°C

Rated ripple current
mA rms(100kHz, 125°C)

■ Part number



HV TX Series

135°C Long Life

High Ripple Current

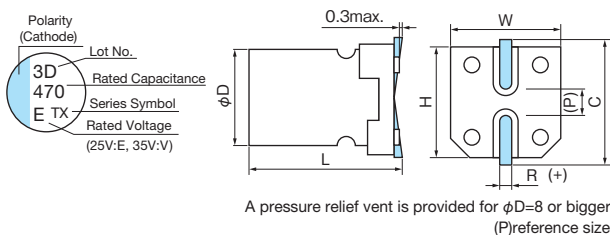


- 135°C 2,000 to 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

Specifications

Items	Condition	Specifications	
Rated voltage (V)	—	25	35
Surge voltage (V)	Room temperature	32	44
Category temperature range (°C)	—	-55 to +135	
Capacitance tolerance (%)	120Hz/20°C	M : ±20	
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C	0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20°C	0.01CV	
Endurance	135°C rated voltage applied (With the rated ripple current)	Test	4,000hours(φ6.3 × 6.0 2,000hours)
		ΔC/C	Within ±30% of the initial value
		tanδ	Less than 200% of the specified value
		ESR	Less than 200% of the specified value
		LC	Less than the specified value
Shelf Life	135°C, 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
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			
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			

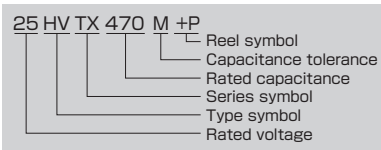
Please refer to page 18 for ripple current frequency coefficients.

Case size:φDxL(mm)

Rated ripple current
mAmps(100kHz, 135°C)

ESR(mΩ)max. at 100kHz, 20°C

Part number



HVHY Series

105°C Long Life

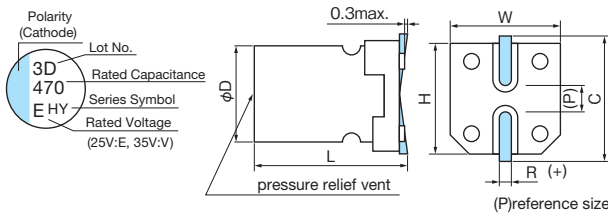
High Ripple Current

- 105°C 10,000hours
- 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 (°C)	—	-55 to +105	
Capacitance tolerance (%)	120Hz/20°C	M : ±20	
Dissipation Factor (tan δ)	tan δ (max.) 120Hz/20°C	0.14	0.12
Leakage current (LC)	μA/after 2minutes (max.), 20°C	0.01CV	
Endurance	105°C, 10,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±30% of the initial value
		tan δ	Less than 200% of the specified value
		ESR	Less than 200% of the specified value
		LC	Less than the specified value
Shelf Life	105°C, 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

Size, ESR, Rated Ripple Current

μF \ V	25	35
150		8×10.5, 20, 4500
220	8×10.5, 20, 4500	
270		10×10.5, 18, 5000
330	10×10.5, 18, 5000	
470	10×12.5, 14, 5500	

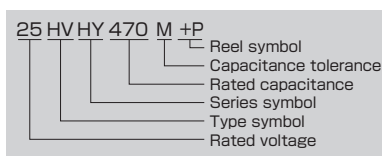
Please refer to page 18 for ripple current frequency coefficients.

Case size: φD×L(mm)

Rated ripple current
mA_{rms}(100kHz, 105°C)

ESR(mΩ)max. at 100kHz, 20°C

Part number



Hybrid Conductive Polymer Type / Surface Mount Type

RoHS compliance

HVPY Series

125°C

High Ripple Current

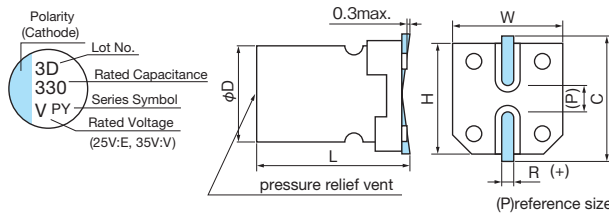


- 125°C 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

Specifications

Items	Condition	Specifications	
Rated voltage (V)	—	25	35
Surge voltage (V)	Room temperature	32	44
Category temperature range (°C)	—	-55 to +125	
Capacitance tolerance (%)	120Hz/20°C	M : ±20	
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C	0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20°C	0.01CV	
Endurance	125°C, 4,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±30% of the initial value
		tanδ	Less than 200% of the specified value
		ESR	Less than 200% of the specified value
		LC	Less than the specified value
Shelf Life	125°C, 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			

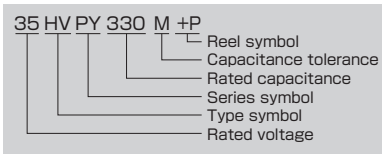
Please refer to page 18 for ripple current frequency coefficients.

Case size:φDxL(mm)

Rated ripple current
mA Arms(100kHz, 125°C)

ESR(mΩ)max. at 100kHz, 20°C

Part number



HV TY Series

135°C Long Life

High Ripple Current

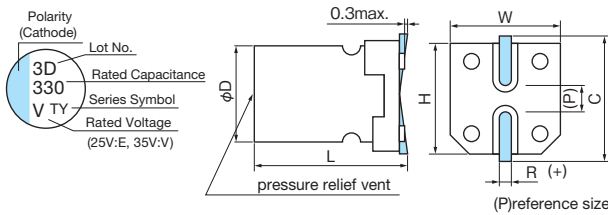


- 135°C 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

Specifications

Items	Condition	Specifications	
Rated voltage (V)	—	25	35
Surge voltage (V)	Room temperature	32	44
Category temperature range (°C)	—	-55 to +135	
Capacitance tolerance (%)	120Hz/20°C	M : ±20	
Dissipation Factor (tan δ)	tan δ (max.) 120Hz/20°C	0.14	0.12
Leakage current (LC)	μA/after 2minutes (max.), 20°C	0.01CV	
Endurance	135°C, 4,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±30% of the initial value
		tan δ	Less than 200% of the specified value
		ESR	Less than 200% of the specified value
		LC	Less than the specified value
Shelf Life	135°C, 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			

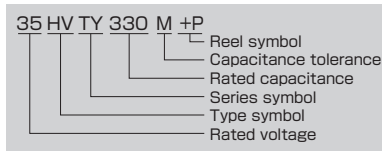
Please refer to page 18 for ripple current frequency coefficients.

Case size: φD×L(mm)

Rated ripple current
mA rms (100kHz, 135°C)

ESR(mΩ) max. at 100kHz, 20°C

Part number



HVHC Series

105°C

High Capacitance

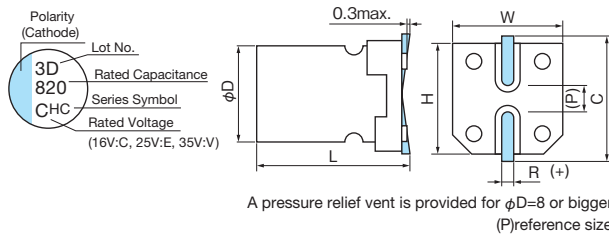
- 105°C 5,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

UP GRADE

Specifications

Items	Condition		Specifications		
Rated voltage (V)	—		16	25	35
Surge voltage (V)	Room temperature		20	32	44
Category temperature range (°C)	—		-55 to +105		
Capacitance tolerance (%)	120Hz/20°C		M : ±20		
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.16	0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20°C		0.01CV		
Endurance	105°C, 5,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±30% of the initial value		
		tanδ	Less than 200% of the specified value		
		ESR	Less than 200% of the specified value		
		LC	Less than the specified value		
Shelf Life	105°C, 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
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						

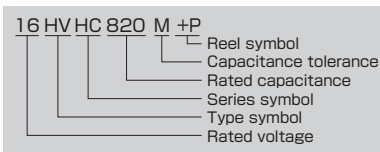
Please refer to page 18 for ripple current frequency coefficients.

ESR(mΩ)max. at 100kHz, 20°C

Rated ripple current
mAmps(100kHz, 105°C)

Case size:φD×L(mm)

Part number



HVPC Series

125°C

High Capacitance



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

UP GRADE

Aluminum Electrolytic
Capacitors with Hybrid
Conductive Polymer

Soldering Condition
Reflow Soldering
Condition
Ripple Current
Frequency
Coefficient

FVL

HVHZ-HVH

HVPZ-HVP

HVT

HVHF

HVPF

HVPX

HVTX

HVHY

HVPY

HVTY

HVHC

HVPC

FVC

FVFP **NEW**

FVF

FVS

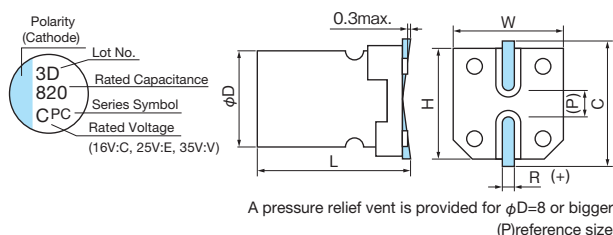
FEC **NEW**

FEF **NEW**

Specifications

Items	Condition	Specifications		
Rated voltage (V)	—	16	25	35
Surge voltage (V)	Room temperature	20	32	44
Category temperature range (°C)	—	-55 to +125		
Capacitance tolerance (%)	120Hz/20°C	M : ±20		
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C	0.16	0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20°C	0.01CV		
Endurance	125°C, 4,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±30% of the initial value	
		tanδ	Less than 200% of the specified value	
		ESR	Less than 200% of the specified value	
		LC	Less than the specified value	
Shelf Life	125°C, 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
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
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			

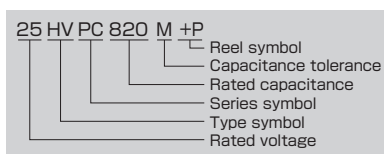
Please refer to page 18 for ripple current frequency coefficients.

ESR(mΩ)max. at 100kHz, 20°C

Rated ripple current
mAmps(100kHz, 125°C)

Case size:φDxL(mm)

Part number



FVC Series

105°C·125°C·135°C

High Ripple Current,
High Capacitance



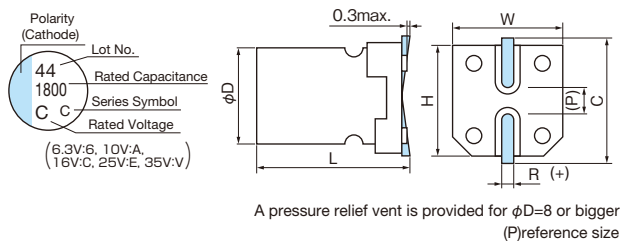
- 105°C 4000hours, 125°C 4,000hours, 135°C 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

UP GRADE

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 (°C)	—		φ5, φ6.3 : -55 to +125 φ8, φ10 : -55 to +135				
Capacitance tolerance (%)	120Hz/20°C		M : ±20				
Dissipation Factor(tan δ)	tanδ (max.) 120Hz/20°C		0.18	0.16	0.16	0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.) (20°C)	≤ 10V	The greater value of either 0.05CV or 100				
		16V ≤	0.01CV				
Endurance	105°C, 125°C, 135°C rated voltage applied (With the rated ripple current)	Test	4,000hours				
		ΔC/C	Within ±30% of the initial value				
		tanδ	Less than 200% of the specified value				
		ESR	Less than 200% of the specified value				
		LC	Less than the specified value				
Shelf Life	φD≤6.3:125°C, φD≥8:135°C, 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)

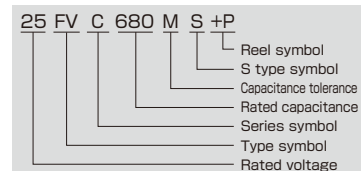
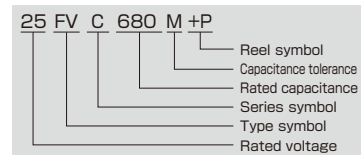
D±0.5	L±0.3	W±0.2	H±0.2	C±0.2	R	P
5	6.0	5.3	5.3	6.0	0.5 to 0.8	1.4
6.3	6.0	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	13.8	10.3	10.3	11.0	1.0 to 1.4	4.6
10	16.5	10.3	10.3	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°C/100kHz)	Rated ripple current(mArms/100kHz)			Case size φDxL (mm)	ESR(mΩmax.) (20°C/100kHz)	Rated ripple current(mArms/100kHz)			Case size φDxL (mm)	ESR(mΩmax.) (20°C/100kHz)	Rated ripple current(mArms/100kHz)		
150			105°C	125°C	135°C	5x6.0	60	2800	1000	—					
220	5x6.0	60	2800	1000	—	6.3x6.0	40	3600	1300	—					
270						6.3x6.0	40	3600	1300	—					
390	6.3x6.0	40	3600	1300	—	6.3x7.7	28	4200	1500	—					
560	6.3x7.7	28	4200	1500	—						8x10.5	27	—	3100	1500
820						8x10.5	18	6000	3700	1800					
1000											10x10.5	20	—	3600	1750
1200	8x10.5	18	6000	3700	1800						10x12.5	16	—	4100	1950
1500						10x10.5	16	6500	4000	1900	10x13.8	15	—	4300	2050
1800						10x12.5	14	7000	4400	2100	10x16.5	11	—	5200	2500
2200	10x10.5	16	6500	4000	1900	10x13.8	12	7800	4900	2300					
2700	10x12.5	14	7000	4400	2100	10x16.5	10	8400	5200	2500					
3300	10x13.8	12	7800	4900	2300										
3900	10x16.5	10	8400	5200	2500										

V Items μF	25					35				
	Case size φDxL (mm)	ESR(mΩmax.) (20°C/100kHz)	Rated ripple current(mArms/100kHz)			Case size φDxL (mm)	ESR(mΩmax.) (20°C/100kHz)	Rated ripple current(mArms/100kHz)		
220			105°C	125°C	135°C	8x10.5	27	—	3100	1500
330	8x10.5	27	—	3100	1500					
390	8x10.5	27	—	3100	1500	10x10.5	20	—	3600	1750
470						10x12.5	16	—	4100	1950
560	10x10.5	20	—	3600	1750	10x13.8	15	—	4300	2050
680	10x10.5★	20	—	3600	1750	10x16.5	11	—	5200	2500
	10x12.5	16	—	4100	1950					
	10x12.5★	16	—	4100	1950					
	10x13.8	15	—	4300	2050					
1000	10x13.8★	15	—	4300	2050					
	10x16.5	11	—	5200	2500					
1200	10x16.5	11	—	5200	2500					

Part number



Please refer to page 18 for ripple current frequency coefficients.

★S type

FVFP Series

125°C · 135°C

High Ripple Current

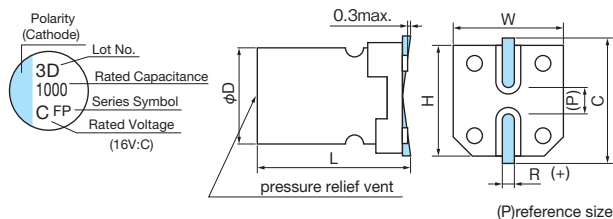
- 125°C 4,000hours, 135°C 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

NEW

Specifications

Items	Condition		Specifications
Rated voltage (V)	—		16
Surge voltage (V)	Room temperature		20
Category temperature range (°C)	—		−55 to +135
Capacitance tolerance (%)	120Hz/20°C		M : ±20
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.16
Leakage current(LC)	μA/after 2minutes (max.), 20°C		0.01CV
Endurance	125°C, 135°C rated voltage applied (With the rated ripple current)	Test	4,000hours
		ΔC/C	Within ±30% of the initial value
		tanδ	Less than 200% of the specified value
		ESR	Less than 200% of the specified value
		LC	Less than the specified value
Shelf Life	135°C, 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)

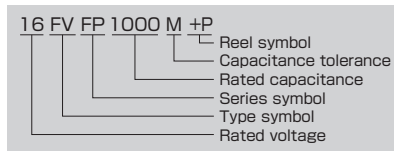
D ± 0.5	L ± 0.3	W ± 0.2	H ± 0.2	C ± 0.2	R	P
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	13.8	10.3	10.3	11.0	1.0 to 1.4	4.6
10	16.5	10.3	10.3	11.0	1.0 to 1.4	4.6

Size, ESR, Rated Ripple Current

Items μF	Case size φDxL (mm)	ESR (mΩmax.) (20°C/100kHz)	16	
			125°C	135°C
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 18 for ripple current frequency coefficients.

Part number



FVF Series

150°C Long Life

High Ripple Current

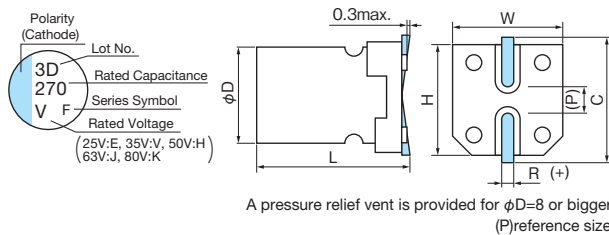


- 125°C 4,000hours, 135°C 4,000hours, 150°C 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

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 (°C)	—	ϕD=6.3 : −55 to +135 ϕD≥8 : −55 to +150				
Capacitance tolerance (%)	120Hz/20°C	M : ±20				
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C	0.14	0.12	0.10	0.08	0.08
Leakage current(LC)	μA/after 2minutes (max.), 20°C	0.01CV				
Endurance	150°C rated voltage applied (With the rated ripple current)	Test	4,000hours			
		ΔC/C	Within ±35% of the initial value			
		tanδ	Less than 200% of the specified value			
		ESR	Less than 250% of the specified value			
		LC	Less than the specified value			
	125°C, 135°C rated voltage applied (With the rated ripple current)	Test	4,000hours			
		ΔC/C	Within ±30% of the initial value			
		tanδ	Less than 200% of the specified value			
		ESR	Less than 200% of the specified value			
		LC	Less than the specified value			
Shelf Life	ϕD=6.3 : 135°C, ϕD≥8 : 150°C, 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)

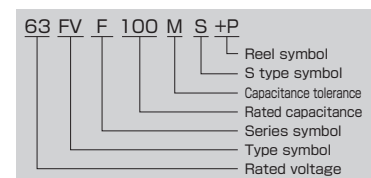
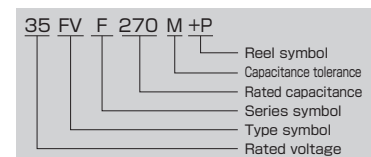
D ± 0.5	L ± 0.3	W ± 0.2	H ± 0.2	C ± 0.2	R	P
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	13.8	10.3	10.3	11.0	1.0 to 1.4	4.6
10	16.5	10.3	10.3	11.0	1.0 to 1.4	4.6

Size, ESR, Rated Ripple Current

V Items μF	25					35					50				
	Case size $\phi D \times L$ (mm)	ESR (m Ω max.) (20°C/100kHz)	Rated ripple current (mA rms/100kHz)			Case size $\phi D \times L$ (mm)	ESR (m Ω max.) (20°C/100kHz)	Rated ripple current (mA rms/100kHz)			Case size $\phi D \times L$ (mm)	ESR (m Ω max.) (20°C/100kHz)	Rated ripple current (mA rms/100kHz)		
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	3500	2500	1200	10×12.5	19	3900	2800	1600
180											10×13.8	18	4400	3100	1800
220	8×10.5	20	3500	2500	1200						10×16.5	13	5100	3700	2100
270						10×10.5	18	4000	3100	1600					
330	10×10.5	18	4000	3100	1600	10×12.5	14	4700	3400	1800					
360						10×13.8	13	5200	3700	2000					
390						10×13.8	13	5200	3700	2000					
470	10×12.5	14	4700	3400	1800	10×16.5	11	5700	4100	2250					
560	10×13.8	13	5200	3700	2000										
680	10×16.5	11	5700	4100	2250										

V Items μF	63					80				
	Case size $\phi D \times L$ (mm)	ESR (m Ω max.) (20°C/100kHz)	Rated ripple current (mA rms/100kHz)			Case size $\phi D \times L$ (mm)	ESR (m Ω max.) (20°C/100kHz)	Rated ripple current (mA rms/100kHz)		
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★ 10×12.5	30 22	3400 3700	2400 2600	1250 1450	10×16.5	16	4400	3200	1800
120	10×12.5★ 10×13.8	22 20	3700 4100	2600 2800	1450 1700					
150	10×13.8★ 10×16.5	20 15	4100 4900	2800 3500	1700 2000					
180	10×16.5	15	4900	3500	2000					

Part number



Please refer to page 18 for ripple current frequency coefficients.

★S type

FVS Series

125°C

–16V Proof



- 125°C 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 (°C)	–	–55 to +125
Capacitance tolerance (%)	120Hz/20°C	M : ±20
Dissipation Factor(tan δ)	tanδ (max.) 120Hz/20°C	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20°C	0.01CV
Endurance	125°C, 4,000hours rated voltage applied (With the rated ripple current)	ΔC/C
		tanδ
		ESR
		LC
Shelf Life	125°C, 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.

Aluminum Electrolytic
Capacitors with Hybrid
Conductive Polymer

Soldering Condition
Reflow Soldering
Condition
Ripple Current
Frequency
Coefficient

FVL

HVHZ-HVH

HVPZ-HVP

HVT

HVHF

HVPF

HVPX

HVTX

HVHY

HVPY

HVTY

HVHC

HVPC

FVC

FVFP **NEW**

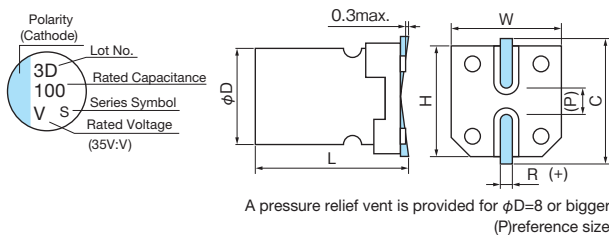
FVF

FVS

FEC **NEW**

FEF **NEW**

Marking, Dimensions



(Unit : mm)

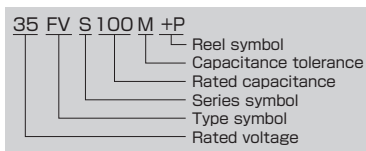
D ± 0.5	L ± 0.3	W ± 0.2	H ± 0.2	C ± 0.2	R	P
6.3	7.7	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.5	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5	10.3	10.3	11.0	1.0 to 1.4	4.6

Size, ESR, Rated Ripple Current

Items μF	Case size φDxL (mm)	ESR(mΩmax.) (20°C/100kHz)	35
			Rated ripple current(mArms/100kHz) 125°C
47	6.3x7.7	35	1400
100	8x10.5	27	1600
150	10x10.5	20	2000
220	10x12.5	17	2260

Please refer to page 18 for ripple current frequency coefficients.

Part number



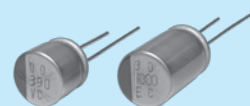
Hybrid Conductive Polymer Type / Radial Lead Type

RoHS compliance

FEC Series

125°C·135°C

High Ripple Current,
High Capacitance



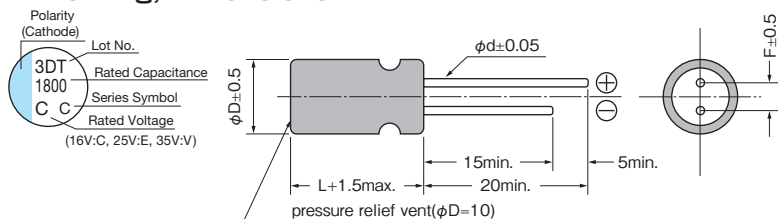
- 125°C 4,000hours, 135°C 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200
- Laminated case

NEW

Specifications

Items	Condition	Specifications		
Rated voltage (V)	—	16	25	35
Surge voltage (V)	Room temperature	20	32	44
Category temperature range (°C)	—	-55 to +135		
Capacitance tolerance (%)	120Hz/20°C	M : ±20		
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C	0.16	0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20°C	0.05CV		
Endurance	125°C, 135°C rated voltage applied (With the rated ripple current)	Test	4,000hours	
		ΔC/C	Within ±30% of the initial value	
		tanδ	Less than 200% of the specified value	
		ESR	Less than 200% of the specified value	
		LC	Less than the specified value	
Shelf Life	135°C, 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	L	F	φd
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	16				25			
	Case size φDxL(mm)	ESR(mΩmax.) (20°C/100kHz)	Rated ripple current(mArms/100kHz)		Case size φDxL(mm)	ESR(mΩmax.) (20°C/100kHz)	Rated ripple current(mArms/100kHz)	
			125°C	135°C			125°C	135°C
330					8×9.5	27	3100	1500
390					8×9.5	27	3100	1500
560	8×9.5	27	3100	1500	10×9.5	20	3600	1750
680					10×9.5 ★	20	3600	1750
					10×11.5	16	4100	1950
820					10×11.5 ★	16	4100	1950
1000	10×9.5	20	3600	1750	10×15	11	5200	2500
1200	10×11.5	16	4100	1950	10×15	11	5200	2500
1800	10×15	11	5200	2500				

V Items μF	35			
	Case size φDxL(mm)	ESR(mΩmax.) (20°C/100kHz)	Rated ripple current(mArms/100kHz)	
			125°C	135°C
220	8×9.5	27	3100	1500
390	10×9.5	20	3600	1750
470	10×11.5	16	4100	1950
680	10×15	11	5200	2500

Please refer to page 18 for ripple current frequency coefficients.

★S type

Part number

16	FE	C	1800	M	T

Sn Plating Terminal Option
Capacitance tolerance
Rated capacitance
Series symbol
Type symbol
Rated voltage

25	FE	C	680	M	S	T

Sn Plating Terminal Option
S type symbol
Capacitance tolerance
Rated capacitance
Series symbol
Type symbol
Rated voltage

FEF Series

125°C·135°C

High Ripple Current



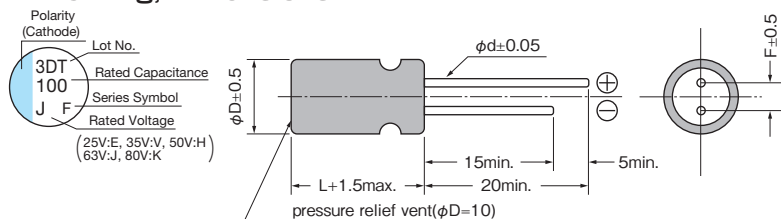
- 125°C 4,000hours, 135°C 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200
- Laminated case

NEW

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 (°C)	—	-55 to +135				
Capacitance tolerance (%)	120Hz/20°C	M : ±20				
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C	0.14	0.12	0.10	0.08	0.08
Leakage current(LC)	μA/after 2minutes (max.), 20°C	The greater value of either 0.05CV or 100				
Endurance	125°C, 135°C rated voltage applied (With the rated ripple current)	Test	4,000hours			
		ΔC/C	Within ±30% of the initial value			
		tanδ	Less than 200% of the specified value			
		ESR	Less than 200% of the specified value			
		LC	Less than the specified value			
Shelf Life	135°C, 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	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

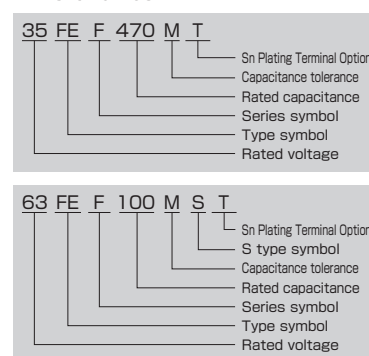
V μF	25				35				50			
	Case size φDxL (mm)	ESR(mΩmax.) (20°C/100kHz)	Rated ripple current(mA rms/100kHz)		Case size φDxL (mm)	ESR(mΩmax.) (20°C/100kHz)	Rated ripple current(mA rms/100kHz)		Case size φDxL (mm)	ESR(mΩmax.) (20°C/100kHz)	Rated ripple current(mA rms/100kHz)	
			125°C	135°C			125°C	135°C			125°C	135°C
33									6.3x7.2	40	2200	1500
68					6.3x7.2	35	2700	1800	8x9.5	30	2900	2100
100	6.3x7.2	30	2700	1800					10x9.5	28	3600	2600
120									10x9.5	28	3600	2600
150					8x9.5	20	3500	2500	10x11.5	19	3900	2800
220	8x9.5	20	3500	2500					10x15	13	5100	3700
270					10x9.5	18	4000	3100				
330	10x9.5	18	4000	3100	10x11.5	14	4700	3400				
470	10x11.5	14	4700	3400	10x15	11	5700	4100				
680	10x15	11	5700	4100								

V μF	63				80			
	Case size φDxL (mm)	ESR(mΩmax.) (20°C/100kHz)	Rated ripple current(mA rms/100kHz)		Case size φDxL (mm)	ESR(mΩmax.) (20°C/100kHz)	Rated ripple current(mA rms/100kHz)	
			125°C	135°C			125°C	135°C
22	6.3x7.2	60	2000	1400				
33					8x9.5	45	2500	1700
47	8x9.5	40	2700	1900				
56	8x9.5	40	2700	1900	10x9.5	36	3200	2200
68					10x11.5	32	3500	2400
82	10x9.5	30	3400	2400				
100	10x9.5 ★	30	3400	2400	10x15	16	4400	3200
	10x11.5	22	3700	2600				
120	10x11.5 ★	22	3700	2600				
150	10x15	15	4900	3500				
180	10x15	15	4900	3500				

Please refer to page 18 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.

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

Features

- Wide voltage range 6.3V to 450V.
- Wide capacitance range 0.47 μ F to 15000 μ F.
- Self-healing mechanism of the dielectric. (aluminum oxide layer)
- Hard to be a short-circuit.
The primary failure 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.

CE-LD Series

Long Life

4.5mm Height

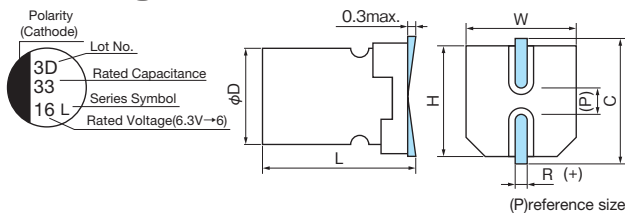


- 105°C 3,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

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 (°C)	—		-40 to +105					
Capacitance tolerance (%)	120Hz/20°C		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.35	0.30	0.20	0.16	0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20°C		0.01CV					
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z _{20°C}	4	3	2	2	2	2
		-40°C Z/Z _{20°C}	10	8	6	4	4	4
Endurance	105°C, 3,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±30% of the initial value					
		tanδ	Less than 300% of the specified value					
		LC	Less than the specified value					
Shelf Life	105°C, 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
6.3	4.5	6.6	6.6	7.3	0.5 to 0.8	2.2

Size, Rated Ripple Current

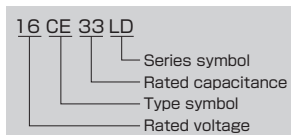
μF \ V	6.3	10	16	25	35	50
10						6.3×4.5 24
22				6.3×4.5 33	6.3×4.5 35	
33			6.3×4.5 36	6.3×4.5 40		
47		6.3×4.5 38	6.3×4.5 43	6.3×4.5 44		
100	6.3×4.5 49	6.3×4.5 52				

Please refer to page 14 for ripple current frequency coefficients.

Case size: φD×L(mm)

Rated ripple current
mA_{rms}(120Hz, 105°C)

Part number



CE-FSS Series

Small, High Capacitance

5.4mm Height

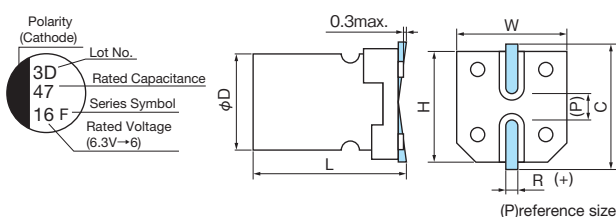


- 105°C 1,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

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 (°C)	—		−40 to +105					
Capacitance tolerance (%)	120Hz/20°C		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.35	0.30	0.26	0.20	0.16	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20°C		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	−25°C Z/Z _{20°C}	4	3	2	2	2	2
		−40°C Z/Z _{20°C}	10	8	6	4	4	4
Endurance	105°C, 1,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±25% of the initial value(6.3V:±30%)					
		tanδ	Less than 300% of the specified value					
		LC	Less than the specified value					
Shelf Life	105°C, 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, Rated Ripple Current

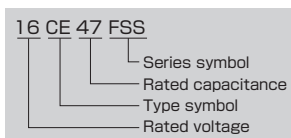
μF \ V	6.3	10	16	25	35	50
4.7						4×5.4 16
10				4×5.4 22	4×5.4 22	5×5.4 23
22		4×5.4 28	4×5.4 28	5×5.4 35	5×5.4 35	6.3×5.4 35
33	4×5.4 29	4×5.4 29	5×5.4 35	5×5.4 45	6.3×5.4 42	
47	4×5.4 36	5×5.4 43	5×5.4 39	6.3×5.4 70		
100	5×5.4 47	5×5.4 47				
150	6.3×5.4 71	6.3×5.4 71				
220	6.3×5.4 74					

Please refer to page 14 for ripple current frequency coefficients.

Case size:φDxL(mm)

Rated ripple current
mA Arms(120Hz, 105°C)

Part number



CE-FS Series

105°C Standard

High Voltage



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

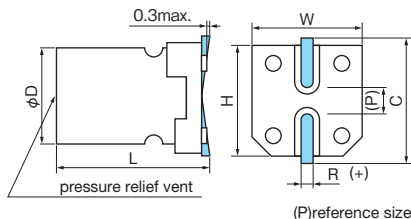
Specifications

Items	Condition		Specifications			
Rated voltage (V)	—		160	200	250	400
Surge voltage (V)	Room temperature		200	250	300	450
Category temperature range (°C)	—		−40 to +105			
Capacitance tolerance (%)	120Hz/20°C		M : ±20			
Dissipation Factor(tan δ)	tanδ (max.) 120Hz/20°C		0.20			0.25
Leakage current(LC)	μA/after 2minutes (max.) (20°C)	CV ≤ 1000	0.03CV +15			
		CV > 1000	0.02CV +25			
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	−25°C Z/Z _{20°C}	3	3	3	6
		−40°C Z/Z _{20°C}	6	6	6	10
Endurance	105°C rated voltage applied (With the rated ripple current)	Test	φ8 : 1,000hours, φ10 to φ16 : 2,000hours			
		ΔC/C	Within ±25% of the initial value			
		tanδ	Less than 200% of the specified value			
		LC	Less than the specified value			
Shelf Life	105°C, 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]

Polarity (Cathode)
 Lot No.
 3D
 10
 200 F
 Rated Capacitance
 Series Symbol
 Rated Voltage



(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

[φD≥12.5]

Polarity (Cathode)
 Lot No.
 Indicated Only φD=16
 3DT
 47
 200 F
 Rated Capacitance
 Series Symbol
 Rated Voltage

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	12.5×13.5 112	16×16.5 115
33	12.5×13.5 137	12.5×13.5 137	16×16.5 150	
47	16×16.5 180	16×16.5 180	16×16.5 180	
68	16×16.5 215	16×16.5 215		
82	16×16.5 235			

Please refer to page 14 for ripple current frequency coefficients.

Case size: φD×L (mm)
16×16.5:CE-FST

Rated ripple current
mA_{rms}(120Hz, 105°C)

Part number

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

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

CE-FS Series

105°C Standard



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

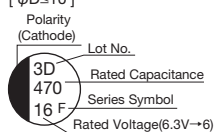
■ Specifications

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 (°C)	—		-55 to +105								-40 to +105
Capacitance tolerance (%)	120Hz/20°C		M : ±20								
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C	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°C		The greater value of either 0.01CV or 3								
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-40°C Z/Z _{20°C}	3	3	2	2	2	2	2	3	
		-55°C Z/Z _{20°C}	8	5	4	3	3	3	3	—	
Endurance	105°C 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	Less than 200% of the specified value								
		LC	Less than the specified value								
Shelf Life	105°C, 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								

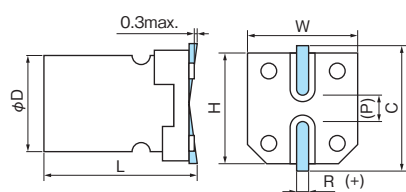
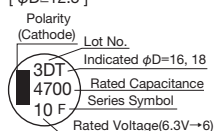
■ Marking, Dimensions

(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	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 ^{±0.3}	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 ^{±0.3}	6.6	6.6	7.3	0.5 to 0.8	2.2
6.3	7.7 ^{±0.3}	6.6	6.6	7.3	0.5 to 0.8	2.2
8	10.2 ^{±0.3}	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.2 ^{±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	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				

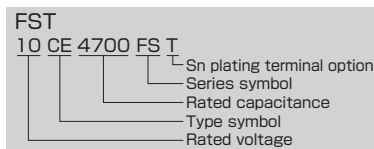
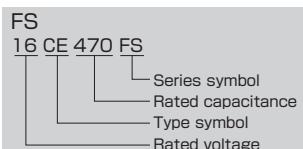
μF \ V	50	63	100
0.47	4×5.4 3.5	4×5.4 3.5	
1.0	4×5.4 7.0	4×5.4 7.0	4×6.0 7.0
2.2	4×5.4 11	4×5.4 11	6.3×6.0 14
3.3	4×5.4 13	5×5.4 14	6.3×6.0 20
4.7	5×5.4 16	5×5.4 16	6.3×6.0 25
10	6.3×5.4 24	6.3×5.4 24	6.3×7.7 35
22	6.3×6.0 42	6.3×7.7 49	8×10.2 84
33	6.3×7.7 60	8×10.2 112	10×10.2 133
47	6.3×7.7 63	8×10.2 119	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 14 for
ripple current frequency coefficients.

Case size: $\phi D \times L$ (mm)
 $\phi 16, \phi 18$: CE-FST

Rated ripple current
mA_{rms}(120Hz, 105°C)

Part number



CE-AX Series

Low Impedance



- 105°C 1,000 to 2,000hours ● We recommend CE-LX series on page 48.
- 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 (°C)	—		-55 to +105					
Capacitance tolerance (%)	120Hz/20°C		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C	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
Leakage current(LC)			Exceeding 1,000μF, +0.02 every 1,000μF					
	μA/after 2minutes (max.), 20°C		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-40°C Z/Z _{20°C}	3	2	2	2	2	2
		-55°C Z/Z _{20°C}	5	4	4	3	3	3
Endurance	105°C rated voltage applied (With the rated ripple current)	Test	φ4 to φ6.3 : 1,000hours, φ8 to φ16 : 2,000hours					
		ΔC/C	Within ±25% of the initial value					
		tanδ	Less than 200% of the specified value					
		LC	Less than the specified value					
Shelf Life	105°C, 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]

Polarity

(Cathode)

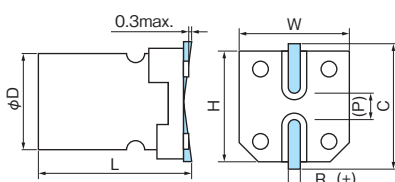
Lot No.
3D
470
16A
Rated Capacitance
Series Symbol
Rated Voltage(6.3V→6)

[φD≥12.5]

Polarity

(Cathode)

Indicated Only φD=16
3DT
4700
10A
Rated Capacitance
Series Symbol
Rated Voltage(6.3V→6)



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	5×6.0 0.76 150	
22			4×6.0 1.80 80	5×6.0 0.76 150	5×6.0 0.76 150	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	6.3×6.0 0.44 230	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	6.3×6.0 0.44 230	6.3×6.0 0.44 230	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	6.3×6.0 0.44 230	6.3×6.0 0.44 230	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 0.17 450	8×10.2 0.39 300
150	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 0.17 450	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	6.3×7.7 0.34 280	8×10.2 0.17 450	8×10.2 0.17 450	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	8×10.2 0.17 450	8×10.2 0.17 450	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	8×10.2 0.17 450	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 14 for
ripple current frequency coefficients.

Case size: $\phi D \times L$ (mm)
16×16.5:CE-AXT

Rated ripple current
mA rms (100kHz, 105°C)

Impedance (Ω)
max. at 100kHz, 20°C

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

CE-ZX Series

Super Low ESR

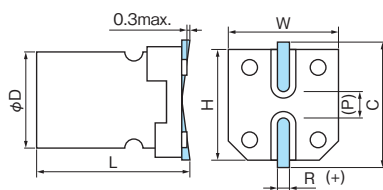
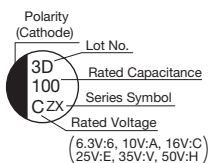


- 30 to 50% less ESR than CE-KX series at high frequencies.
- 105°C 2,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

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 (°C)	—		-55 to +105					
Capacitance tolerance (%)	120Hz/20°C		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.26	0.19	0.16	0.14	0.12	0.10
Leakage current(LC)	μA/after 2minutes (max.), 20°C		0.01CV					
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-40°C Z/Z _{20°C}	3	3	3	3	3	3
		-55°C Z/Z _{20°C}	4	4	4	3	3	3
Endurance	105°C, 2,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±30% of the initial value					
		tanδ	Less than 200% of the specified value					
		LC	Less than the specified value					
Shelf Life	105°C, 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	6.3	10	16	25	35	50
33				→	6.3x6.0 0.26 300	
47			→	→	6.3x6.0 0.26 300	
68			→	6.3x6.0 0.26 300	6.3x7.7 0.16 600	
100	6.3x6.0 0.26 300		6.3x6.0 ★1 0.26 300	→	6.3x7.7 ★1 0.16 600	
150		6.3x6.0 0.26 300	6.3x7.7 0.16 600	→	8x10.5 0.08 850	8x10.5 0.18 670
220	6.3x6.0 0.26 300	→	6.3x7.7 0.16 600	→	8x10.5 0.08 850	10x10.5 0.12 900
330	6.3x7.7 0.16 600	→	→	8x10.5 0.08 850	10x10.5 0.06 1190	10x13.5 ★2 0.10 900
390					10x10.5 0.08 850	
470	→	→	8x10.5 0.08 850	10x10.5 0.06 1190	10x13.5 ★2 0.06 1190	
560				10x10.5 0.08 850		
680		8x10.5 0.08 850	10x10.5 0.06 1190	10x13.5 ★2 0.06 1190		
820			10x10.5 0.08 850			
1000	8x10.5 0.08 850	10x10.5 0.06 1190	10x13.5 ★2 0.06 1190			
1200		10x10.5 0.08 850				
1500	10x10.5 0.06 1190	10x13.5 ★2 0.06 1190				
1800	10x10.5 0.08 850					

→Please use the higher voltage model in the next.

Please refer to page 14 for ripple current frequency coefficients.

★1 ZXS ★2 ZXC

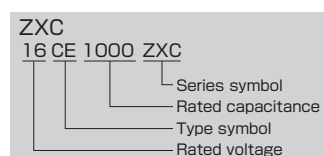
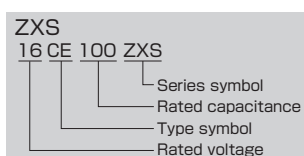
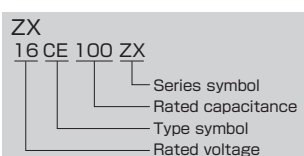
Case size:φDxL(mm)

Rated ripple current

mA rms(100kHz, 105°C)

ESR(Ω)
max. at 100kHz, 20°C

Part number



CE-ZC Series

Super Low ESR

Small, High Capacitance



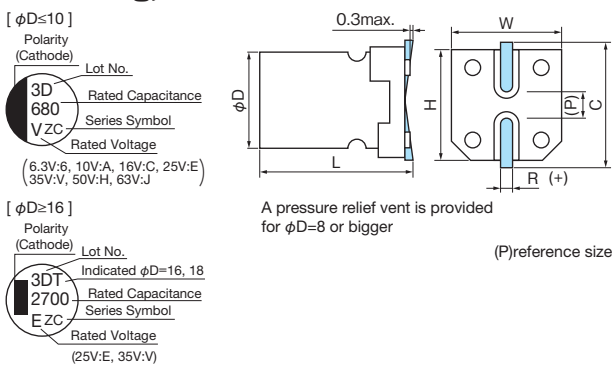
UP GRADE

- 105°C 2,000 to 5,000hours
- 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 (°C)	—		-55 to +105						
Capacitance tolerance (%)	120Hz/20°C		M : ±20						
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.26	0.19	0.16	0.14	0.12	0.10	0.08
Leakage current(LC)	μA/after 2minutes (max.), 20°C		Exceeding 1,000μF, +0.02 every 1,000μF						
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C		0.01CV						
Endurance	105°C rated voltage applied (With the rated ripple current)	-40°C Z/Z _{20°C}	3	3	3	3	3	3	3
		-55°C Z/Z _{20°C}	4	4	4	3	3	3	3
	105°C rated voltage applied (With the rated ripple current)	Test	φ6.3×6.0 to φ10×10.5:2,000hours, φ10×13.5:3,000hours, φ16 to φ18:5,000hours						
		ΔC/C	Within ±30% of the initial value						
		tanδ	Less than 200% of the specified value						
Shelf Life	105°C, 1,000hours(with no voltage load)		Less than the specified value						
	105°C, 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
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
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
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		10×13.5★ 0.14 600	
330	10×10.5 0.12 900		
470	10×13.5★ 0.12 750		

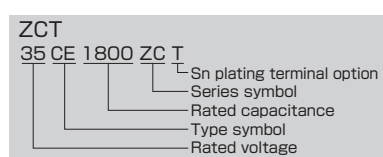
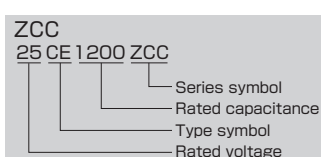
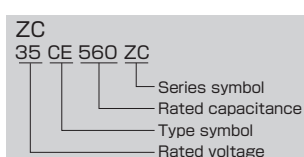
Rated ripple current
 mA rms (100kHz, 105°C)

ESR(Ω)
 max. at 100kHz, 20°C

Case size: φD×L(mm)
 φ16, φ18: CE-ZCT

→Please use the higher voltage model in the next.
 Please refer to page 14 for ripple current frequency coefficients.
 ★ ZCC

Part number



CE-LX Series

Long Life

Low Impedance



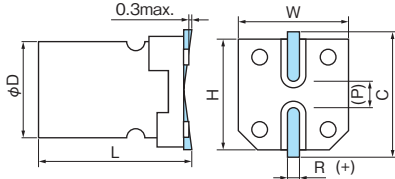
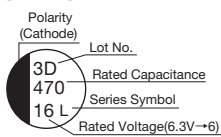
- 105°C 2,000 to 5,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

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 (°C)	—		-55 to +105								
Capacitance tolerance (%)	120Hz/20°C		M : ±20								
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C	φ4 to φ6.3	0.26	0.20	0.16	0.14	0.12	0.12	0.08	—	—
		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°C		The greater value of either 0.01CV or 3								
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-40°C Z/Z _{20°C}	3	3	3	3	3	3	2	2	2
		-55°C Z/Z _{20°C}	4	4	4	3	3	3	3	3	3
Endurance	105°C rated voltage applied (With the rated ripple current)	Test	φ4 to φ6.3 : 2,000hours, φ8 to φ18 : 5,000hours								
		ΔC/C	Within ±30% of the initial value								
		tanδ	Less than 300% of the specified value								
		LC	Less than the specified value								
Shelf Life	105°C, 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

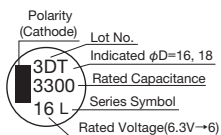
[φD≤10]



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

(P)reference size

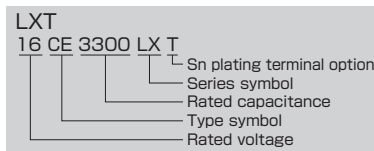
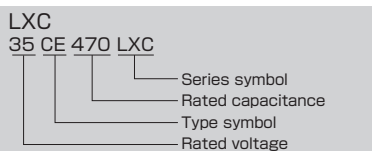
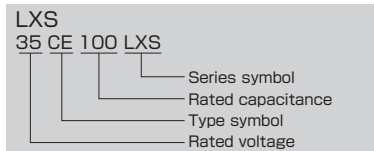
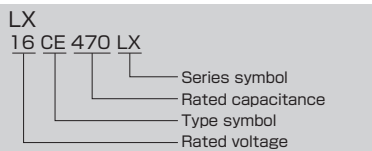
[φD≥12.5]



(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



Size, Impedance, Rated Ripple Current

μF \ V	6.3	10	16	25	35
4.7					4x6.0 1.45 90
10					4x6.0 ★1 1.45 90
15				4x6.0 1.45 90	5x6.0 0.70 170
22		4x6.0 1.45 90	→	→	5x6.0 0.70 170
27	4x6.0 1.45 90	→	5x6.0 0.70 170	→	6.3x6.0 0.39 250
33	→	5x6.0 0.70 170	→	→	6.3x6.0 0.39 250
47	5x6.0 0.70 170	→	→	→	6.3x6.0 0.39 250
56	5x6.0 0.70 170	→	→	6.3x6.0 0.39 250	6.3x7.7 0.30 300
68	→	→	→	6.3x6.0 0.39 250	6.3x7.7 0.30 300
100	5x6.0 ★1 0.70 170	→			6.3x7.7 ★1 0.30 300
	→	→	6.3x6.0 0.39 250	6.3x7.7 0.30 300	8x10.2 0.17 600
150	→	6.3x6.0 0.39 250	6.3x7.7 0.30 300	→	8x10.2 0.17 600
220	6.3x6.0 0.39 250	→	6.3x7.7 0.30 300	→	8x10.2 0.17 600
330	6.3x7.7 0.30 300	→	→	8x10.2 0.17 600	10x10.2 0.090 850
470	→	→	8x10.2 0.17 600	10x10.2 0.090 850	10x13.5 ★2 0.070 950
680	8x10.2 0.17 600	→	10x10.2 0.090 850	10x13.5 ★2 0.070 950	12.5x13.5 0.060 1100
				→	12.5x13.5 0.060 1100
1000	8x10.2 0.17 600	10x10.2 0.090 850	→	12.5x13.5 0.060 1100	16x16.5 0.035 1800
		10x13.5 ★2 0.070 950			
1500	10x10.2 0.090 850	→	12.5x13.5 0.060 1100	→	16x16.5 0.035 1800
2200	→	12.5x13.5 0.060 1100		16x16.5 0.035 1800	18x16.5 0.033 2060
2700					18x21.5 0.028 2260
3300			16x16.5 0.035 1800	18x16.5 0.033 2060	
3900				18x21.5 0.028 2260	
4700		16x16.5 0.035 1800	18x16.5 0.033 2060		
5600			18x21.5 0.028 2260		
6800	16x16.5 0.035 1800	18x16.5 0.033 2060			
8200	18x16.5 0.033 2060	18x21.5 0.028 2260			
10000	18x16.5 0.033 2060				
12000	18x21.5 0.028 2260				

μF \ V	50	63	80	100
4.7	4x6.0 2.90 60			
10	6.3x6.0 0.88 165	6.3x6.0 1.50 80		
22	6.3x6.0 0.88 165	6.3x7.7 1.20 120		
27	6.3x7.7 0.68 195			
33	6.3x7.7 0.68 195			10x10.2 0.65 200
47	6.3x7.7 0.68 195		10x10.2 0.65 200	12.5x13.5 0.32 500
56	8x10.2 0.34 350			
68	8x10.2 0.34 350			12.5x13.5 0.32 500
100	8x10.2 0.34 350	12.5x13.5 0.16 800	12.5x13.5 0.32 500	16x16.5 0.17 793
150	10x10.2 0.18 670	12.5x13.5 0.16 800	12.5x13.5 0.32 500	16x16.5 0.17 793
220	10x10.2 0.18 670	12.5x13.5 0.16 800		18x16.5 0.153 917
330	12.5x13.5 0.12 900	16x16.5 0.082 1410	16x16.5 0.17 793	18x21.5 0.083 1230
470	16x16.5 0.073 1610	16x16.5 0.082 1410	18x16.5 0.153 917	
680	16x16.5 0.073 1610	18x16.5 0.080 1690		
1000	16x16.5 0.073 1610	18x21.5 0.055 1960		
1200	18x16.5 0.068 1900			
1500	18x21.5 0.042 2180			

→Please use the higher voltage model in the next.
Please refer to page 14 for
ripple current frequency coefficients.

Impedance(Ω)
max. at 100kHz, 20℃
Case size:φDxL(mm)
φ16, φ18:CE-LXT
Rated ripple current
mA rms(100kHz, 105℃)

★1 LXS
★2 LXC

Surface
Mount Type
Aluminum Electrolytic
Capacitors

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

CE-GA Series

Low Impedance

5.4mm Height

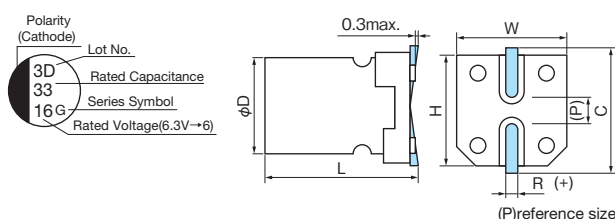


- 105°C 1,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

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 (°C)	—		-55 to +105						
Capacitance tolerance (%)	120Hz/20°C		M : ±20						
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.24	0.20	0.16	0.14	0.12	0.12	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20°C		The greater value of either 0.01CV or 3						
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-40°C Z/Z _{20°C}	3	2	2	2	2	2	2
		-55°C Z/Z _{20°C}	5	4	4	3	3	3	3
Endurance	105°C, 1,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±25% of the initial value						
		tanδ	Less than 200% of the specified value						
		LC	Less than the specified value						
Shelf Life	105°C, 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

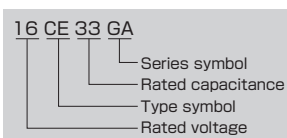
μF V	6.3			10			16			25			35			50			63			
1.0												4	3.1	68	4	7.4	37	4	8.0	20		
2.2												4	2.9	68	4	6.6	45	4	8.0	24		
3.3												4	2.7	68	4	5.4	52	5	3.5	40		
4.7											4	2.3	68	4	2.3	68	5	2.9	75	5	3.5	40
10							4	2.3	68	5	1.1	105	5	1.1	105	6.3	1.3	120	6.3	1.6	65	
22	4	2.3	68	5	1.1	105	5	1.1	105	6.3	0.6	155	6.3	0.6	155	6.3	1.3	120				
33	5	1.1	105	5	1.1	105	6.3	0.6	155	6.3	0.6	155	6.3	0.6	155	6.3	0.6	155				
47	5	1.1	105	6.3	0.6	155	6.3	0.6	155	6.3	0.6	155	6.3	0.6	155							
100	6.3	0.6	155	6.3	0.6	155	6.3	0.6	155													
220	6.3	0.6	155																			

Please refer to page 14 for ripple current frequency coefficients.

Impedance(Ω)
max. at 100kHz, 20°C
Case size:φD(mm)

Rated ripple current
mA rms(100kHz, 105°C)

Part number



CE-LS Series

Long Life

Low Impedance

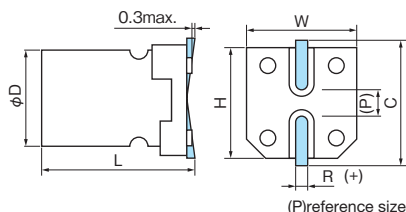
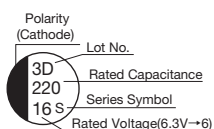


- 105°C 3,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

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 (°C)	—		-40 to +105					
Capacitance tolerance (%)	120Hz/20°C		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.28	0.24	0.22	0.16	0.13	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20°C		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z _{20°C}	4	3	2	2	2	2
		-40°C Z/Z _{20°C}	10	7	5	3	3	3
Endurance	105°C, 3,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±30% of the initial value					
		tanδ	Less than 300% of the specified value					
		LC	Less than the specified value					
Shelf Life	105°C, 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
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	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	5×6.0 1.30 95	6.3×6.0 0.70 140	6.3×6.0 0.70 140	6.3×7.7 0.60 230	
100	6.3×6.0 0.70 140	6.3×6.0 0.70 140	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		6.3×7.7 0.60 230			
330	6.3×7.7 0.60 230					

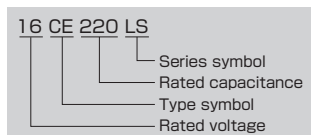
Please refer to page 14 for ripple current frequency coefficients.

Impedance(Ω)
max. at 100kHz, 20°C

Rated ripple current
mA rms (100kHz, 105°C)

Case size: φD×L(mm)

Part number



CE-LH Series

Long Life

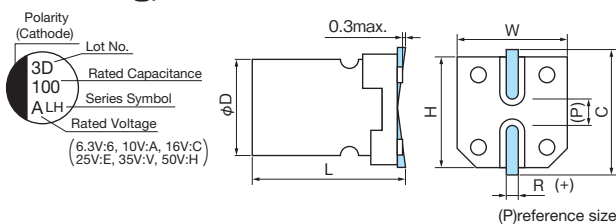


- 105°C 5,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

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 (°C)	—		-40 to +105					
Capacitance tolerance (%)	120Hz/20°C		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.32	0.24	0.20	0.16	0.13	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20°C		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z _{20°C}	4	3	2	2	2	2
		-40°C Z/Z _{20°C}	10	7	5	3	3	3
Endurance	105°C, 5,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±30% of the initial value					
		tanδ	Less than 300% of the specified value					
		LC	Less than the specified value					
Shelf Life	105°C, 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

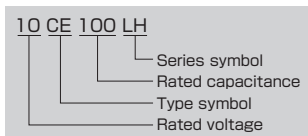
μF \ V	6.3	10	16	25	35	50
1.0						4×6.0 6.2
2.2						4×6.0 11
3.3						4×6.0 14
4.7					4×6.0 15	5×6.0 19
10			4×6.0 18	5×6.0 25	5×6.0 25	6.3×6.0 30
22		5×6.0 30	5×6.0 30	6.3×6.0 42	6.3×6.0 42	6.3×7.7 49
33	5×6.0 35	5×6.0 35	6.3×6.0 48	6.3×6.0 48	6.3×7.7 57	
47	5×6.0 36	6.3×6.0 50	6.3×6.0 50	6.3×7.7 63		
100	6.3×6.0 60	6.3×7.7 81	6.3×7.7 81			
220	6.3×7.7 101					

Please refer to page 14 for ripple current frequency coefficients.

Case size:φDxL(mm)

Rated ripple current
mA rms(120Hz, 105°C)

Part number



CE-LH Series

105°C Long Life

High Voltage



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

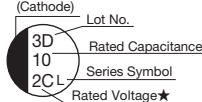
Specifications

Items	Condition		Specifications		
Rated voltage (V)	—		160	200	400
Surge voltage (V)	Room temperature		200	250	450
Category temperature range (°C)	—		−40 to +105		
Capacitance tolerance (%)	120Hz/20°C		M : ±20		
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.20	0.20	0.25
Leakage current(LC)	μA/after 2minutes (max.) (20°C)	CV ≤ 1,000	0.03CV +15		
		CV > 1,000	0.02CV +25		
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	−25°C Z/Z _{20°C}	3	3	6
		−40°C Z/Z _{20°C}	6	6	10
Endurance	105°C, 5,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±30% of the initial value		
		tanδ	Less than 300% of the specified value		
		LC	Less than the specified value		
Shelf Life	105°C, 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

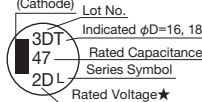
[φD≤10]

Polarity (Cathode)

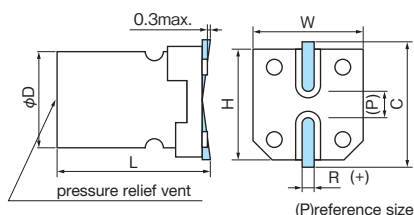


[φD≥12.5]

Polarity (Cathode)



★(160V : 2C, 200V : 2D, 400V : 2G)



(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

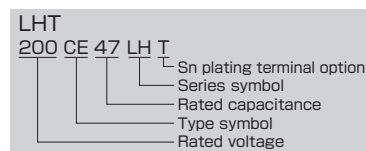
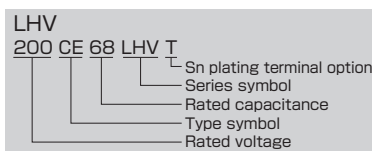
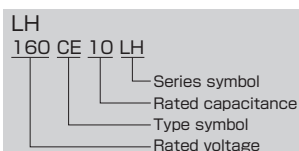
μF \ V	160	200	400
2.2			8×10.5 25
3.3		8×10.5 31	10×10.5 36
4.7		8×10.5 37	10×10.5 38
10	10×10.5 43	10×10.5 43	12.5×13.5 57
22	12.5×13.5 112	12.5×13.5 112	16×16.5 115
27			18×16.5 125
33	12.5×13.5 137	12.5×13.5 137	18×21.5 160
47	16×16.5 180	16×16.5 180	
68	16×16.5 215	16×16.5 215	
		18×16.5 ★ 270	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

Please refer to page 14 for ripple current frequency coefficients.

★LHV

Case size: φD×L(mm)
φ16, φ18: CE-LHTRated ripple current
mA rms (120Hz, 105°C)

Part number



CE-LL Series

Long Life

Low Impedance

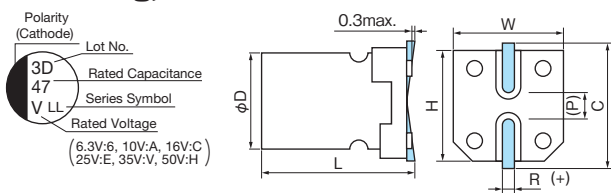


- 105°C 7,000 to 10,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

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 (°C)	—			-40 to +105					
Capacitance tolerance (%)	120Hz/20°C			M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C			0.32	0.28	0.26	0.16	0.14	0.14
Leakage current(LC)	μA/after 2minutes (max.), 20°C			The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C	Z/Z _{20°C}	4	3	2	2	2	2
Endurance	105°C rated voltage applied (With the rated ripple current)	Test	φD ≤ 6.3 : 7,000hours, φD ≥ 8 : 10,000hours						
		ΔC/C	Within ±30% of the initial value						
		tanδ	Less than 300% of the specified value						
		LC	Less than the specified value						
Shelf Life	105°C, 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	5×7.0 2.2 95	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	6.3×7.0 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					

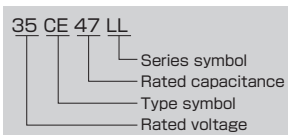
Please refer to page 14 for ripple current frequency coefficients.

Impedance(Ω)
max. at 100kHz, 20°C

Rated ripple current
mA_{rms}(100kHz, 105°C)

Case size:φD×L(mm)

Part number



CE-LF Series

Long Life

Low Impedance



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

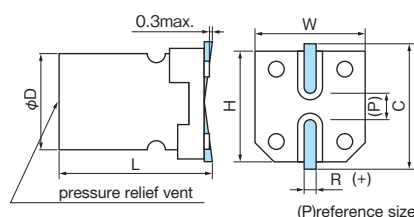
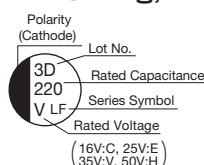
Specifications

Items	Condition		Specifications			
Rated voltage (V)	—		16	25	35	50
Surge voltage (V)	Room temperature		20	32	44	63
Category temperature range (°C)	—		−40 to +105			
Capacitance tolerance (%)	120Hz/20°C		M : ±20			
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.26	0.16	0.14	0.14
Leakage current(LC)	μA/after 2minutes (max.), 20°C		0.01CV			
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	−25°C Z/Z _{20°C}	2	2	2	2
Endurance	105°C, 7,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±30% of the initial value			
		tanδ	Less than 300% of the specified value			
		LC	Less than the specified value			
Shelf Life	105°C, 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.			

Surface Mount Type
Aluminum Electrolytic Capacitors

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

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		

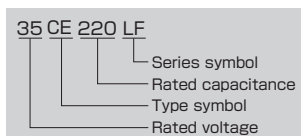
Please refer to page 14 for ripple current frequency coefficients.

Impedance(Ω)
max. at 100kHz, 20°C

Case size: φD×L(mm)

Rated ripple current
mA rms(100kHz, 105°C)

Part number



CE-PC Series

125°C

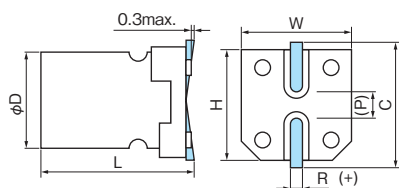
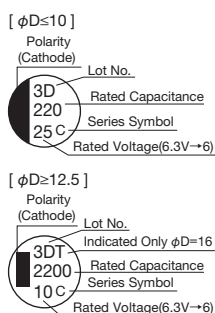


- 125°C 1,000 to 2,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

■ 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 (°C)	—		-55 to +125							
Capacitance tolerance (%)	120Hz/20°C		M : ±20							
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		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°C		The greater value of either 0.01CV or 3							
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z _{20°C}	4	3	2	2	2	2	2	2
		-40°C Z/Z _{20°C}	8	6	4	3	3	3	3	3
Endurance	125°C 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							
		ΔC/C	Within ±30% of the initial value							
		tanδ	Less than 300% of the specified value							
		LC	Less than the specified value							
Shelf Life	125°C, 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	10.2	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	6.3×6.0	1.6	70	6.3×7.7	0.90	110		
100								6.3×7.7	★	0.90	110	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	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	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	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	12.5×13.5	0.12	550		
680		10×10.2	0.30	296	12.5×13.5	0.12	550	12.5×13.5	0.12	550	12.5×13.5	0.12	550		
1000		12.5×13.5	0.12	550	12.5×13.5	0.12	550	12.5×13.5	0.12	550	16×16.5	0.080	900		
1500		12.5×13.5	0.12	550	12.5×13.5	0.12	550	16×16.5	0.080	900	16×16.5	0.080	900		
2200		12.5×13.5	0.12	550	16×16.5	0.080	900	16×16.5	0.080	900					
3300		16×16.5	0.080	900	16×16.5	0.080	900								
4700		16×16.5	0.080	900											

μF	V	35			50			63			100		
2.2					6.3×6.0	3.5	45						
3.3					6.3×6.0	3.5	45						
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				8×10.2	1.0	70
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 refer to page 14 for ripple current frequency coefficients.

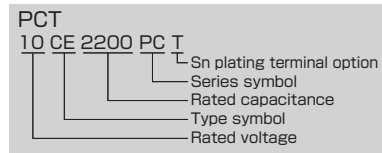
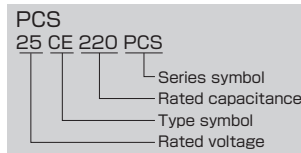
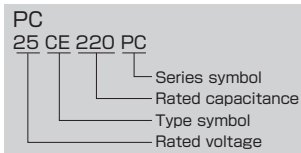
★ PCS

Case size: $\phi D \times L$ (mm)
16×16.5:CE-PCT

Rated ripple current
mA rms (100kHz, 125°C)

ESR(Ω)
max. at 100kHz, 20°C

Part number



Aluminum Electrolytic Type / Surface Mount Type

RoHS compliance

CE-PH Series

125°C Low ESR

High Ripple Current,
High Capacitance

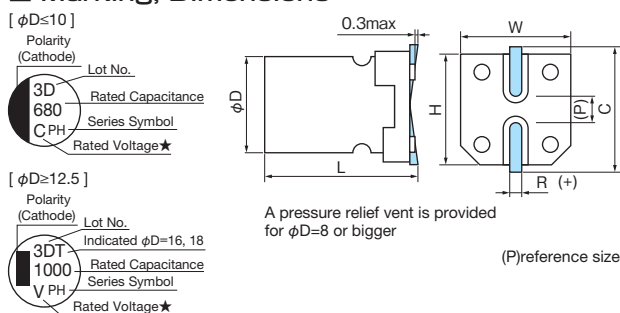


- 125°C 2,000 to 5,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

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 (°C)	—			-40 to +125				
Capacitance tolerance (%)	120Hz/20°C			M : ±20				
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C			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°C			0.01CV				
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C	Z/Z _{20°C}	2	2	2	2	2
		-40°C	Z/Z _{20°C}	4	3	3	3	3
Endurance	125°C rated voltage applied (With the rated ripple current)	Test	φ6.3 to φ10 : 2,000hours, φ12.5 : 3,000hours, φ16,φ18 : 5,000hours					
		ΔC/C	Within ±30% of the initial value					
		tanδ	Less than 300% of the specified value					
		LC	Less than the specified value					
Shelf Life	125°C, 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
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

★(16V:C, 25V:E, 35V:V, 50V:H, 63V:J)

■ 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	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	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 refer to page 14 for ripple current frequency coefficients.

★ PHS

Case size: $\phi\text{D} \times \text{L}$ (mm)
 $\phi 16, \phi 18$: CE-PHT

ESR(Ω)
max. at 100kHz, 20°C

ESR(Ω)
max. at 100kHz, -40°C

Rated ripple current
mA rms (100kHz, 125°C)

■ Part number

PH	16	CE	680	PH

Series symbol
Rated capacitance
Type symbol
Rated voltage

PHS	35	CE	33	PHS

Series symbol
Rated capacitance
Type symbol
Rated voltage

PHT	35	CE	1000	PH	T

Sn plating terminal option
Series symbol
Rated capacitance
Type symbol
Rated voltage

CE-PS Series

125°C

High Capacitance



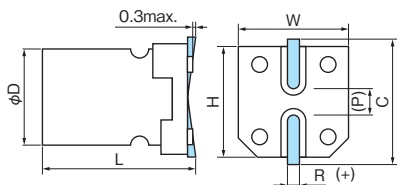
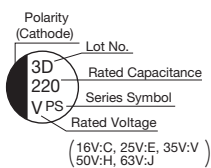
UP GRADE

- 125°C 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 (°C)	—		-40 to +125				
Capacitance tolerance (%)	120Hz/20°C		M : ±20				
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.20	0.16	0.14	0.14	0.14
Leakage current(LC)	μA/after 2minutes (max.), 20°C		0.01CV				
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z _{20°C}	2	2	2	2	2
		-40°C Z/Z _{20°C}	4	3	3	3	3
Endurance	125°C 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				
		ΔC/C	Within ±30% of the initial value				
		tanδ	Less than 300% of the specified value				
		LC	Less than the specified value				
Shelf Life	125°C, 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	10×13.5★ 0.15 710		
680		10×13.5★ 0.15 710			

Please refer to page 14 for ripple current frequency coefficients.

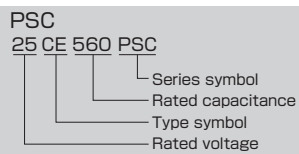
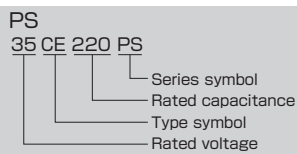
Case size: φD×L(mm)

ESR(Ω)
max. at 100kHz, 20°C

Rated ripple current
mA_{rms}(100kHz, 125°C)

★ PSC

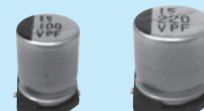
Part number



CE-PF Series

125°C Long Life

High Ripple Current

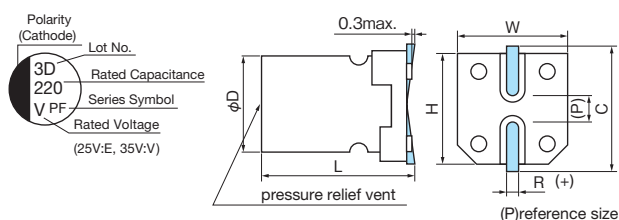


- 125°C 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

Specifications

Items	Condition	Specifications	
Rated voltage (V)	—	25	35
Surge voltage (V)	Room temperature	32	44
Category temperature range (°C)	—	-40 to +125	
Capacitance tolerance (%)	120Hz/20°C	M : ±20	
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C	0.16	0.14
Leakage current(LC)	μA/after 2minutes (max.), 20°C	0.01CV	
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z _{20°C}	2
		-40°C Z/Z _{20°C}	3
Endurance	125°C, 4,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±30% of the initial value
		tanδ	Less than 300% of the specified value
		LC	Less than the specified value
Shelf Life	125°C, 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			

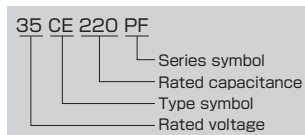
Please refer to page 14 for ripple current frequency coefficients.

ESR(Ω)
max. at 100kHz, 20°C

Rated ripple current
mA_{rms}(100kHz, 125°C)

Case size:φD×L(mm)

Part number



CE-PB Series

125°C High Capacitance

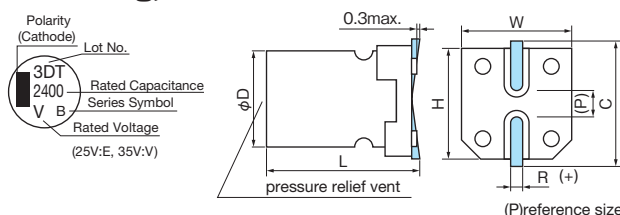
- 125°C 3,000 to 4,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

NEW

Specifications

Items	Condition	Specifications	
Rated voltage (V)	—	25	35
Surge voltage (V)	Room temperature	32	44
Category temperature range (°C)	—	-40 to +125	
Capacitance tolerance (%)	120Hz/20°C	M : ±20	
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C	0.18	0.16
Leakage current(LC)	μA/after 2minutes (max.)	Exceeding 1,000μF, +0.02 every 1,000μF	
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z _{20°C}	2
		-40°C Z/Z _{20°C}	4
Endurance	125°C rated voltage applied	Test	φ16×16.5 : 3,000hours, φ18×21.5 : 4,000hours
		ΔC/C	Within ±35% of the initial value
		tanδ	Less than 300% of the specified value
		LC	Less than the specified value
Shelf Life	125°C, 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	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

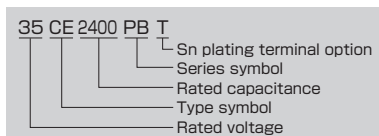
μF \ V	25			35		
1300				16×16.5	0.047	2400
1800	16×16.5	0.047	2400			
2400				18×21.5	0.032	3250
3300	18×21.5	0.032	3250			

Please refer to page 14 for ripple current frequency coefficients.

Case size: φD×L (mm)

ESR(Ω) max. at 100kHz, 20°C
Rated ripple current
mA rms(100kHz, 125°C)

Part number



CE-TH Series

135°C

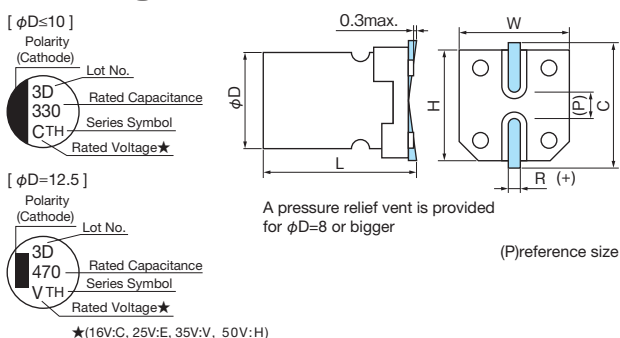


- 135°C 1,000 to 2,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

Specifications

Items	Condition		Specifications			
Rated voltage (V)	—		16	25	35	50
Surge voltage (V)	Room temperature		20	32	44	63
Category temperature range (°C)	—		−40 to +135			
Capacitance tolerance (%)	120Hz/20°C		M : ±20			
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.23	0.18	0.16	0.16
Leakage current(LC)	μA/after 2minutes (max.), 20°C		0.01CV			
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	−25°C Z/Z _{20°C}	2	2	2	2
		−40°C Z/Z _{20°C}	4	3	3	3
Endurance	135°C rated voltage applied (With the rated ripple current)	Test	2,000hours(φ6.3×7.7 1,000hours)			
		ΔC/C	Within ±30% of the initial value			
		tanδ	Less than 300% of the specified value			
		LC	Less than the specified value			
Shelf Life	135°C, 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
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	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			

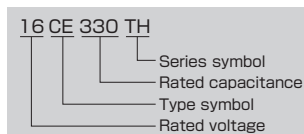
Please refer to page 14 for ripple current frequency coefficients.

ESR(Ω)
max. at 100kHz, 20°C

Rated ripple current
mA rms(100kHz, 135°C)

Case size: φD×L(mm)

Part number



CE-JX Series

150°C



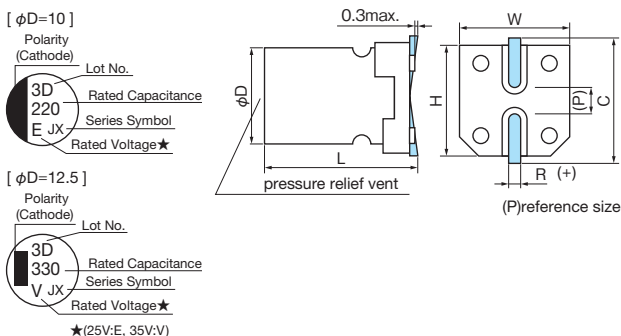
- 150°C 1,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

Specifications

Items	Condition	Specifications	
Rated voltage (V)	—	25	35
Surge voltage (V)	Room temperature	32	44
Category temperature range (°C)	—	-40 to +150	
Capacitance tolerance (%)	120Hz/20°C	M : ±20	
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C	0.16	0.14
Leakage current(LC)	μA/after 2minutes (max.), 20°C	0.01CV	
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z _{20°C}	2
		-40°C Z/Z _{20°C}	3
		△C/C	Within ±30% of the initial value
Endurance	150°C, 1,000hours rated voltage applied (With the rated ripple current)	tanδ	Less than 300% of the specified value
		LC	Less than the specified value
Shelf Life	150°C, 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	W ^{±0.2}	H ^{±0.2}	C ^{±0.2}	R	P
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

Size, ESR, Rated Ripple Current

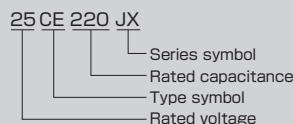
μF \ V	25			35		
100				10×10.5	0.20	120
150				10×10.5	0.20	120
220	10×10.5	0.20	150	12.5×13.5	0.15	550
330	12.5×13.5	0.15	650	12.5×13.5	0.15	650
470	12.5×13.5	0.15	700			

Please refer to page 14 for ripple current frequency coefficients.

Case size:φD×L(mm)

ESR(Ω) max. at 100kHz, 20°C
Rated ripple current mArms(100kHz, 150°C)

Part number



CE-FN Series

105°C Bi-polar

5.4mm Height

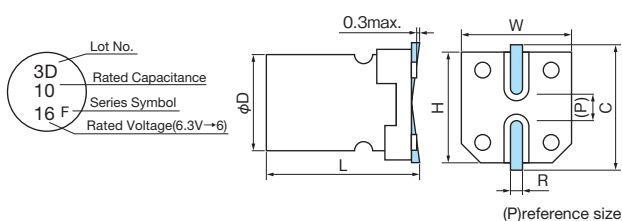


- 105°C 1,000hours
- Solvent proof (within 2 minutes)
- AEC-Q200

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 (°C)	—		-55 to +105						
Capacitance tolerance (%)	120Hz/20°C		M : ±20						
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.24	0.22	0.20	0.20	0.20	0.18	0.16
Leakage current(LC)	μA/after 1minute (max.), 20°C		0.03CV + 6						
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-40°C Z/Z _{20°C}	3	3	2	2	2	2	2
		-55°C Z/Z _{20°C}	8	6	4	4	3	3	3
Endurance	500hours×2(alternately) 105°C,rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value						
		tanδ	Less than 200% of the specified value						
		LC	Less than the specified value						
Shelf Life	105°C, 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, Rated Ripple Current

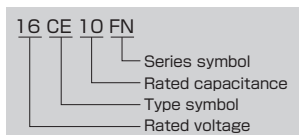
μF \ V	6.3	10	16	25	35	50	63
1.0						4	7.0
2.2					4	5.9	10
3.3				4	7.0	5	12
4.7			4	8.0	5	13	14
10		4	12	5	17	6.3	20
22	5	22	6.3	25	6.3	27	
33	6.3	27	6.3	30	6.3	40	
47	6.3	33					

Please refer to page 14 for ripple current frequency coefficients.

Case size: φD(mm)

Rated ripple current
mAmps(120Hz, 105°C)

Part number



ME-SZ Series

7mm Height, Wide Temperature

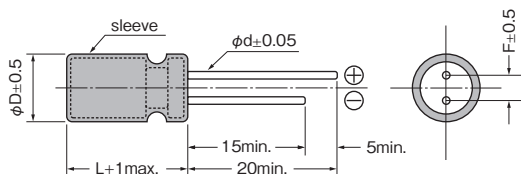


- 105°C 1,000hours, Solvent proof (within 3 minutes)

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 (°C)	—		-55 to +105					
Capacitance tolerance (%)	120Hz/20°C		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.24	0.20	0.16	0.14	0.12	0.10
Leakage current(LC)	μA/after 2minutes (max.), 20°C		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-40°C Z/Z _{20°C}	3	2	2	2	2	2
		-55°C Z/Z _{20°C}	5	4	4	3	3	3
Endurance	105°C, 1,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±25% of the initial value					
		tanδ	Less than 200% of the specified value					
		LC	Less than the specified value					
Shelf Life	105°C, 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	4	5	6.3
F	1.5	2.0	2.5
φd	0.45	0.45	0.45

Size, Impedance, Rated Ripple Current

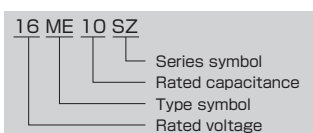
μF \ V	6.3			10			16			25			35			50		
1.0																4×7	10	30
2.2																4×7	7.8	35
3.3																4×7	6.2	40
4.7										4×7	4.2	50	4×7	6.0	40	5×7	3.1	70
10							4×7	4.2	50	5×7	2.0	85	5×7	3.1	70	6.3×7	1.6	100
22	4×7	4.2	50	5×7	2.0	85	5×7	2.0	85	6.3×7	1.2	120	6.3×7	1.6	100	6.3×7	1.6	100
33	5×7	2.0	85	5×7	2.0	85	6.3×7	1.2	120	6.3×7	1.2	120	6.3×7	1.6	100	6.3×7	1.6	100
47	5×7	2.0	85	6.3×7	1.2	120	6.3×7	1.2	120	6.3×7	1.2	120	6.3×7	1.6	100	6.3×7	1.6	100
100	6.3×7	1.2	120	6.3×7	1.2	120	6.3×7	1.2	120	6.3×7	1.2	120	6.3×7	1.6	100			
220	6.3×7	1.2	120	6.3×7	1.2	120	6.3×7	1.2	120									
330	6.3×7	1.2	120															

Please refer to page 14 for ripple current frequency coefficients.

Case size: φD×L (mm)

Impedance (Ω)
max. at 100kHz, 20°CRated ripple current
mA rms (100kHz, 105°C)

Part number



ME-SAX Series

Low Impedance

7mm Height

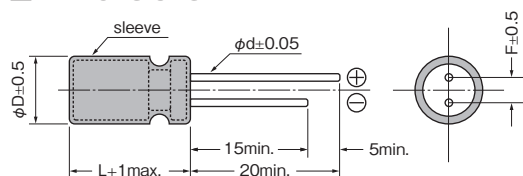


- 105°C 1,000hours, Solvent proof (within 3 minutes)

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 (°C)	—		-55 to +105				
Capacitance tolerance (%)	120Hz/20°C		M : ±20				
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.24	0.20	0.16	0.14	0.12
Leakage current (LC)	μA/after 2minutes (max.), 20°C		The greater value of either 0.01CV or 3				
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-40°C Z/Z _{20°C}	3	2	2	2	2
		-55°C Z/Z _{20°C}	5	4	4	3	3
Endurance	105°C, 1,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±25% of the initial value				
		tanδ	Less than 200% of the specified value				
		LC	Less than the specified value				
Shelf Life	105°C, 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	4	5	6.3
F	1.5	2.0	2.5
φd	0.45	0.45	0.45

Size, Impedance, Rated Ripple Current

μF \ V	6.3	10	16	25	35
4.7					4×7 1.15 90
10				4×7 1.15 90	5×7 0.49 160
15			4×7 1.15 90	5×7 0.49 160	6.3×7 0.29 280
22		4×7 1.15 90	5×7 0.49 160	5×7 0.49 160	6.3×7 0.29 280
33		5×7 0.49 160	5×7 0.49 160	6.3×7 0.24 280	6.3×7 0.29 280
47	5×7 0.49 160	5×7 0.49 160	6.3×7 0.24 280	6.3×7 0.24 280	6.3×7 0.29 280
68				6.3×7 0.24 280	
100		6.3×7 0.24 280	6.3×7 0.24 280	6.3×7 0.29 280	
150		6.3×7 0.24 280	6.3×7 0.29 280		
220	6.3×7 0.24 280	6.3×7 0.29 280	6.3×7 0.29 280		
330	6.3×7 0.29 280				

Please refer to page 14 for ripple current frequency coefficients.

Case size: φD×L (mm)

Impedance (Ω)
max. at 100kHz, 20°CRated ripple current
mA rms (100kHz, 105°C)

Part number

16	ME	22	SAX
			Series symbol
			Rated capacitance
			Type symbol
			Rated voltage

ME-SWG Series

Low ESR, Small

7mm Height

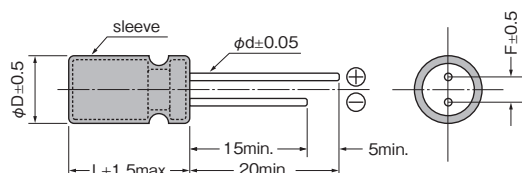


- 105°C 1,000 to 2,000hours
- Non solvent proof

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 (°C)	—		-40 to +105				
Capacitance tolerance (%)	120Hz/20°C		M : ±20				
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.24	0.20	0.16	0.14	0.12
Leakage current(LC)	μA/after 2minutes (max.), 20°C		0.03CV				
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z _{20°C}	2	2	2	2	2
		-40°C Z/Z _{20°C}	3	3	3	3	3
Endurance	105°C rated voltage applied (With the rated ripple current)	Test	φ5 : 1,000hours, φ6.3 : 2,000hours, (6ME330SWG, 10ME220SWG : 1,000hours)				
		△C/C	Within ±25% of the initial value(6.3V, 10V : ±30%)				
		tanδ	Less than 200% of the specified value				
		LC	Less than the specified value				
Shelf Life	105°C, 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
F	2.0	2.5
φd	0.45	0.45

Size, ESR, Rated Ripple Current

μF \ V	6.3				10				16				25				35			
22													5×7	0.17	390		5×7	0.17	390	
39									5×7	0.17	390		5×7	0.17	390					
47																	6.3×7	0.082	760	
56					5×7	0.17	390													
100	5×7	0.17	390		6.3×7	0.082	760	6.3×7	0.082	760			6.3×7	0.082	760					
150	6.3×7	0.082	760		6.3×7	0.082	760	6.3×7	0.082	760										
220	6.3×7	0.082	760		6.3×7	0.082	760													
330	6.3×7	0.082	760																	

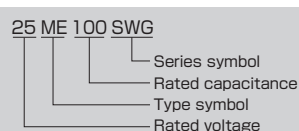
Please refer to page 14 for ripple current frequency coefficients.

ESR(Ω)
max. at 100kHz, 20°C

Rated ripple current
mA rms (100kHz, 105°C)

Case size: φD×L(mm)

Part number



ME-LS Series

105°C

Long Life

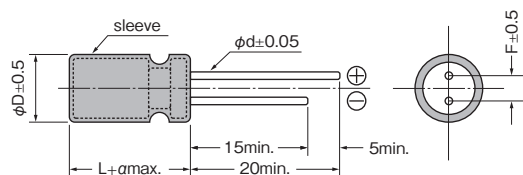


- 105°C 3,000hours
- Solvent proof ($\phi 4$ to 6.3 : within 3 minutes, $\phi 8$: within 5 minutes)

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 (°C)	—		-40 to +105					
Capacitance tolerance (%)	120Hz/20°C		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.30	0.28	0.24	0.18	0.16	0.14
Leakage current (LC)	μA/after 2minutes (max.), 20°C		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z _{20°C}	5	4	3	2	2	2
		-40°C Z/Z _{20°C}	10	8	6	4	3	3
Endurance	105°C, 3,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±30% of the initial value					
		tanδ	Less than 300% of the specified value					
		LC	Less than the specified value					
Shelf Life	105°C, 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


 $\alpha : L \leq 7.5 \quad \alpha = 1.0, L = 11.5 \quad \alpha = 1.5$

A pressure relief vent is provided for $\phi 8 \times 11.5$

(Unit : mm)

ϕD	4	5	6.3	8
F	1.5	2.0	2.5	3.5
ϕd	0.45	0.45	0.45	0.60

Size, Impedance, Rated Ripple Current

μF	V	6.3	10	16	25	35	50
1.0							4x7 17.0 23
2.2							4x7 13.0 26
3.3							4x7 11.0 29
4.7						4x7 6.6 37	5x7 9.0 37
10				4x7 4.2 46	4x7 4.2 46	5x7 2.3 74	6.3x7 2.5 84
22	4x7 4.2 46			5x7 2.3 74	5x7 2.3 74	6.3x7 1.2 120	6.3x7.5 1.6 112
33			5x7 2.3 74		6.3x7 1.2 120	6.3x7.5 0.75 163	
47	5x7 2.3 74			6.3x7 1.2 120	6.3x7.5 0.75 163	6.3x7.5 0.75 163	
100	6.3x7 1.2 120			6.3x7.5 0.75 163			
150			6.3x7.5 0.75 163				
220	6.3x7.5 0.75 163				8x11.5 0.40 298	8x11.5 0.40 298	
330					8x11.5 0.40 298		
470				8x11.5 0.40 298			
1000	8x11.5 0.40 298						

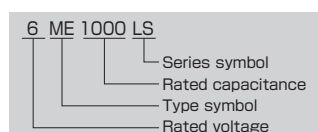
Please refer to page 14 for ripple current frequency coefficients.

Case size: $\phi D \times L$ (mm)

Rated ripple current
mA Arms (100kHz, 105°C)

Impedance (Ω)
max. at 100kHz, 20°C

Part number



ME-CZ Series

Small Standard

Wide Temperature

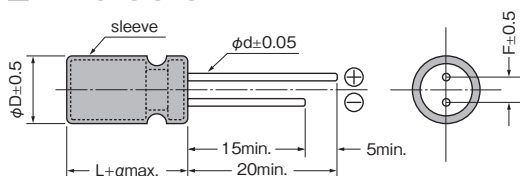


- 105°C 1,000 to 3,000hours
- Solvent proof (within 5 minutes)

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 (°C)	—		-55 to +105							
Capacitance tolerance (%)	120Hz/20°C		M : ±20							
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		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°C		The greater value of either 0.01CV or 3							
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-40°C Z/Z _{20°C}	4	4	3	3	2	2	2	2
		-55°C Z/Z _{20°C}	10	8	6	5	4	3	3	3
Endurance	105°C rated voltage applied (With the rated ripple current)	Test	φ5 to φ8 : 1,000hours, φ10 : 2,000hours, φ12.5 to φ18 : 3,000hours							
		ΔC/C	Within ±25% of the initial value							
		tanδ	Less than 200% of the specified value							
		LC	Less than the specified value							
Shelf Life	105°C, 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


 $\alpha : L < 20 \quad \alpha = 1.5, L \geq 20 \quad \alpha = 2.0$

A pressure relief vent is provided for $\phi D = 6.3$ or bigger

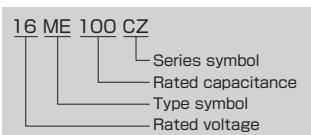
(Unit : mm)

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

Size, Impedance, Rated Ripple Current

Case size $\phi D \times L$ (mm)	Items V	6.3			10		
		Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)
5×11		220	1.4	160	100	1.4	150
6.3×11		330	0.58	240	220	0.58	240
6.3×11		470	0.55	250	330	0.55	250
8×11.5		1000	0.26	450	470	0.39	370
10×12.5					1000	0.16	560
10×16		2200	0.12	760			
10×20		3300	0.10	900	2200	0.10	900
12.5×20		4700	0.072	1100	3300	0.074	1100
12.5×25		6800	0.054	1420	4700	0.054	1420
16×25		10000	0.043	1700	6800	0.043	1700
16×31.5					10000	0.035	1950
16×35.5		15000	0.032	2100			
18×35.5					15000	0.028	2400

Part number



Size, Impedance, Rated Ripple Current

Case size φD×L(mm)	Items	16			25		
		Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)
5×11		100	1.4	150	47	1.4	150
6.3×11		220	0.55	240	100	0.60	240
8×11.5		330	0.35	370	220	0.39	370
8×11.5		470	0.28	450	330	0.34	400
10×12.5					470	0.17	560
10×16		1000	0.13	760			
10×20					1000	0.10	900
12.5×20		2200	0.075	1100			
12.5×25		3300	0.054	1320	2200	0.062	1320
16×25		4700	0.043	1600	3300	0.043	1600
16×31.5		6800	0.035	1900	4700	0.035	1900
18×35.5		10000	0.028	2300	6800	0.028	2200

Case size φD×L(mm)	Items	35			50		
		Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)
5×11					2.2	5.5	40
5×11					3.3	4.0	50
5×11					4.7	2.8	80
5×11					10	2.3	90
5×11		33	2.1	120	22	2.2	110
5×11		47	2.1	140	33	2.1	120
6.3×11		100	1.1	180	47	1.1	180
8×11.5		220	0.46	360	100	0.55	310
10×12.5		330	0.26	500	220	0.30	500
10×16		470	0.18	650	330	0.20	650
10×20					470	0.13	800
12.5×20		1000	0.11	900			
12.5×25					1000	0.10	1100
16×25		2200	0.056	1400			
16×31.5					2200	0.055	1650
16×35.5		3300	0.038	1800			
18×35.5		4700 ★	0.035	2000	3300	0.035	2000

★ Available 40V(40ME4700CZ)

Case size φD×L(mm)	Items	63			100		
		Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)
5×11		2.2	8.3	42	2.2	11	42
5×11		3.3	6.0	58	3.3	8.0	58
5×11		4.7	4.2	64	4.7	5.6	64
5×11		10	2.8	90			
5×11		22	2.4	140			
6.3×11		33	1.4	200	10	1.7	108
6.3×11		47	1.3	240			
8×11.5					22	0.83	235
8×12.5		100	0.60	300	33	0.60	300
10×12.5					47	0.39	330
10×16		220	0.22	520			
10×20		330	0.17	765	100	0.24	450
12.5×20		470	0.14	960			
12.5×25					220	0.15	700
16×25		1000	0.065	1100	330	0.090	950
16×30					470	0.085	1100

Please refer to page 14 for ripple current frequency coefficients.

ME-CA Series

Small

Low Impedance

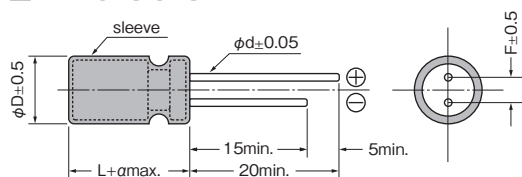


- 105°C 1,000 to 3,000hours
- Solvent proof (within 5 minutes)

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 (°C)	—			-55 to +105					
Capacitance tolerance (%)	120Hz/20°C			M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C			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°C			The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-40°C	Z/Z _{20°C}	3	3	2	2	2	2
		-55°C	Z/Z _{20°C}	6	5	4	4	3	3
Endurance	105°C rated voltage applied (With the rated ripple current)	Test		φ5 to φ8 : 1,000hours, φ10 : 2,000hours, φ12.5 to φ16 : 3,000hours					
		ΔC/C		Within ±25% of the initial value					
		tanδ		Less than 200% of the specified value					
		LC		Less than the specified value					
Shelf Life	105°C, 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



$$\alpha : L < 20 \quad \alpha = 1.5, L \geq 20 \quad \alpha = 2.0$$

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

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

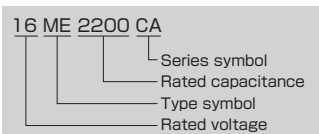
Size, Impedance, Rated Ripple Current

Case size φD×L(mm)	Items	16			25		
		Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/10k to 200kHz)
5×11		100	0.50	180			
6.3×11		220	0.24	280	100	0.30	280
8×11.5		330	0.16	410	220	0.16	410
8×11.5		470	0.15	560	330	0.15	560
10×12.5					470	0.086	710
10×16		1000	0.066	950			
10×20					1000	0.047	1150
12.5×20		2200	0.042	1460			
12.5×25		3300	0.035	1780	2200	0.035	1780
16×25		4700	0.026	2000	3300	0.026	2000
16×31.5		6800	0.022	2200	4700	0.022	2200

Case size φD×L(mm)	Items	35			50		
		Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/10k to 200kHz)
5×11					2.2	3.0	45
5×11					3.3	2.7	55
5×11					4.7	2.0	90
5×11					10	1.7	110
5×11		33	0.72	180	22	1.2	120
5×11		47	0.50	180	33	0.95	130
6.3×11		100	0.24	280	47	0.56	190
8×11.5		220	0.15	560	100	0.30	320
10×12.5		330	0.086	710	220	0.16	520
10×16		470	0.066	950	330	0.12	670
10×20					470	0.088	820
12.5×20		1000	0.042	1460			
12.5×25					1000	0.053	1200
16×25		2200	0.026	2000			
16×31.5					2200	0.029	1750
16×35.5		3300	0.022	2200			

Please refer to page 14 for ripple current frequency coefficients.

Part number



ME-CX Series

Small, Long Life

Low Impedance

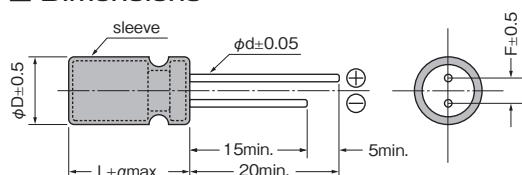


- 105°C 2,000 to 7,000hours
- Solvent proof (within 5 minutes)

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 (°C)	—		-55 to +105				
Capacitance tolerance (%)	120Hz/20°C		M : ±20				
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		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°C		0.01CV				
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-40°C Z/Z _{20°C}	3	2	2	2	2
		-55°C Z/Z _{20°C}	4	4	3	3	3
Endurance	105°C 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	Less than 200% of the specified value				
		LC	Less than the specified value				
Shelf Life	105°C, 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


 $\alpha : L < 20 \quad \alpha = 1.5, L \geq 20 \quad \alpha = 2.0$

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

Case size φD×L (mm)	Items	6.3			10		
		Capacitance (µF)	Impedance (Ωmax.) (20°C/100kHz)	Rated ripple current (mA) (105°C/10k to 200kHz)	Capacitance (µF)	Impedance (Ωmax.) (20°C/100kHz)	Rated ripple current (mA) (105°C/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

Size, Impedance, Rated Ripple Current

Case size φD×L(mm)	Items	16			25		
		Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/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

Case size φD×L(mm)	Items	35		
		Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/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

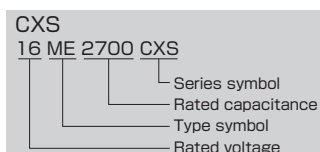
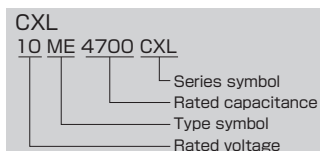
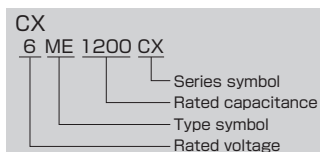
Please refer to page 14 for ripple current frequency coefficients.

★1 CXL
★2 CXS

Radial
Lead Type
Aluminum Electrolytic
Capacitors

ME-SZ
ME-SAX
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

Part number



ME-AX Series

Long Life

Low Impedance

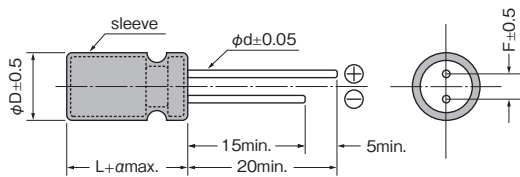


- 105°C 2,500 to 10,000hours
- Solvent proof (within 5 minutes)

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 (°C)	—		-55 to +105								-40 to +105
Capacitance tolerance (%)	120Hz/20°C		M : ±20								
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		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°C		The greater value of either 0.01CV or 3								
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-40°C Z/Z _{20°C}	3	2	2	2	2	2	2	2	
		-55°C Z/Z _{20°C}	4	4	3	3	3	2	2	—	
Endurance	105°C 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								
		ΔC/C	Within ±20% of the initial value								
		tanδ	Less than 200% of the specified value								
		LC	Less than the specified value								
Shelf Life	105°C, 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


 $\alpha : L < 20 \quad \alpha = 1.5, L \geq 20 \quad \alpha = 2.0$

A pressure relief vent is provided for $\phi D = 6.3$ 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

Size, Impedance, Rated Ripple Current

Case size φD×L (mm)	Items	6.3			10		
		Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/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
	Series symbol
	Rated capacitance
	Type symbol
	Rated voltage

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

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

Size, Impedance, Rated Ripple Current

V Case size Items φD×L(mm)	16			25		
	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/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 Case size Items φD×L(mm)	35			50		
	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/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 Case size Items φD×L(mm)	63			100		
	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/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 14 for ripple current frequency coefficients.

★1 AXL ★2 AXS

Radial
Lead Type
Aluminum Electrolytic
Capacitors

ME-SZ
ME-SAX
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

ME-WX Series

High Ripple Current

Low Impedance

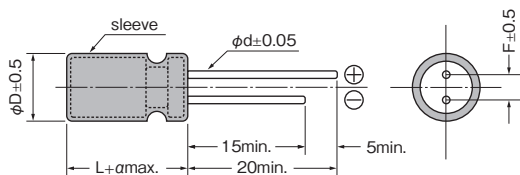


- 105°C 2,000 to 5,000hours
- Non solvent proof

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 (°C)	—		-40 to +105					
Capacitance tolerance (%)	120Hz/20°C		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		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°C		0.01CV					
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z _{20°C}	2	2	2	2	2	2
		-40°C Z/Z _{20°C}	3	3	3	3	3	3
Endurance	105°C 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					
		ΔC/C	Within ±25% of the initial value					
		tanδ	Less than 200% of the specified value					
		LC	Less than the specified value					
Shelf Life	105°C, 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



$$\alpha : L < 20 \quad \alpha = 1.5, L \geq 20 \quad \alpha = 2.0$$

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

Case size φD×L (mm)	Items	6.3			10		
		Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/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

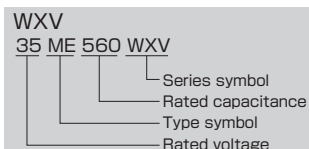
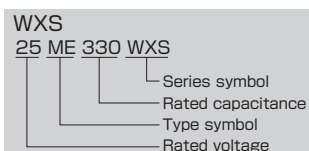
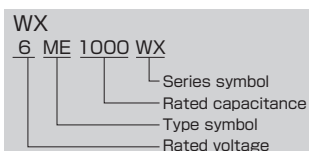
Case size φD×L(mm)	Items	16			25		
		Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)
5×11		56	0.30	250	47	0.30	250
6.3×11		120	0.13	405	100	0.13	405
8×11.5		330	0.072	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

Case size φD×L(mm)	Items	35			50		
		Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/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 14 for ripple current frequency coefficients.

★1 WXS ★2 WXV

■ Part number



ME-WA Series

105°C, Small, Long Life

Low Impedance, High Ripple Current

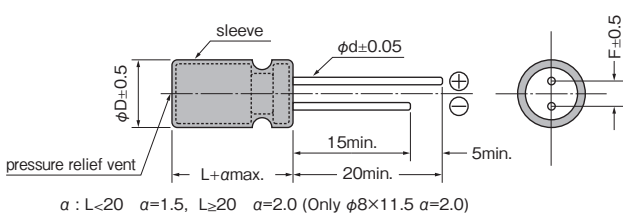


- 105°C 8,000 to 10,000hours
- Non solvent proof

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 (°C)	—		-40 to +105						
Capacitance tolerance (%)	120Hz/20°C		M : ±20						
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		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°C		0.03CV						
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z _{20°C}	2	2	2	2	2	2	2
		-40°C Z/Z _{20°C}	3	3	3	3	3	3	3
Endurance	105°C rated voltage applied (With the rated ripple current)	Test	φ8 : 8,000hours, φ10 to φ16 : 10,000hours						
		ΔC/C	Within ±25% of the initial value(6.3V, 10V : ±30%)						
		tanδ	Less than 200% of the specified value						
		LC	Less than the specified value						
Shelf Life	105°C, 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	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	6.3			10		
		Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)
Case size φD×L(mm)							
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

Case size φD×L(mm)	Items	16			25		
		Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/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

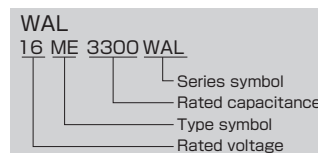
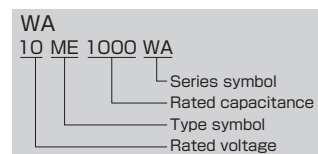
Case size φD×L(mm)	Items	35			50		
		Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)	Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/100kHz)
8×11.5		220	0.059	945	100	0.074	724
10×12.5		330	0.043	1330	150	0.061	979
10×16		470	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

Case size φD×L(mm)	Items	63		
		Capacitance (μF)	Impedance(Ωmax.) (20°C/100kHz)	Rated ripple current(mArms) (105°C/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 14 for ripple current frequency coefficients.

★1 WAL

Part number



ME-WL Series

Small, Long Life

Low Impedance

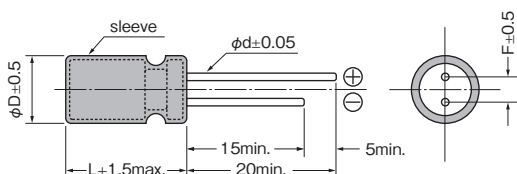


- 105°C 4,000 to 5,000hours
- Non solvent proof

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 (°C)	—		−40 to +105							
Capacitance tolerance (%)	120Hz/20°C		M : ±20							
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.22	0.19	0.16	0.14	0.12	0.10	0.10	0.10
Leakage current(LC)	μA/after 2minutes (max.), 20°C		The greater value of either 0.01CV or 3							
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	−25°C Z/Z _{20°C}	4	3	2	2	2	2	2	2
		−40°C Z/Z _{20°C}	8	6	4	3	3	3	3	3
Endurance	105°C rated voltage applied (With the rated ripple current)	Test	4,000hours		5,000hours					
		ΔC/C	Within ±25% of the initial value							
		tanδ	Less than 200% of the specified value							
		LC	Less than the specified value							
Shelf Life	105°C, 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		
2.2				5×11	2.50	43						
3.3				5×11	2.20	53						
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 14 for ripple current frequency coefficients.

Impedance(Ω)
max. at 100kHz, 20°C

Rated ripple current
mA rms(100kHz, 105°C)

Case size:φD×L(mm)

Part number

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

ME-WG Series

Super Low ESR, Small

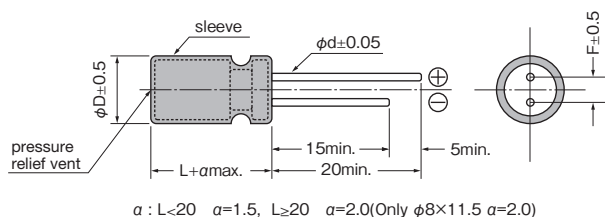


- 105°C 2,000 to 4,000hours
- Non solvent proof

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 (°C)	—		-40 to +105			
Capacitance tolerance (%)	120Hz/20°C		M : ±20			
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.22	0.19	0.16	0.14
			Exceeding 1,000μF, +0.02 every 1,000μF			
Leakage current(LC)	μA/after 2minutes (max.), 20°C		0.03CV			
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z _{20°C}	2	2	2	2
		-40°C Z/Z _{20°C}	3	3	3	3
Endurance	105°C 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			
		ΔC/C	Within ±25% of the initial value			
		tanδ	Less than 200% of the specified value			
		LC	Less than the specified value			
Shelf Life	105°C, 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	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 φD×L (mm)	ESR (Ωmax.) 20°C/100kHz	Ripple current (mA rms) 105°C/100kHz	Case size φD×L (mm)	ESR (Ωmax.) 20°C/100kHz	Ripple current (mA rms) 105°C/100kHz	Case size φD×L (mm)	ESR (Ωmax.) 20°C/100kHz	Ripple current (mA rms) 105°C/100kHz	Case size φD×L (mm)	ESR (Ωmax.) 20°C/100kHz	Ripple current (mA rms) 105°C/100kHz
220							8×11.5	0.030	1140	8×11.5	0.030	1110
330							8×11.5	0.030	1140	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
680				8×11.5	0.036	1140	10×12.5	0.026	1540	10×16 ★2	0.022	1830
820	8×11.5	0.036	1140							10×20 ★2	0.016	2180
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 14 for ripple current frequency coefficients.

★1 WGL ★2 WGV

Part number

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

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

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

ME-FX Series

Long Life

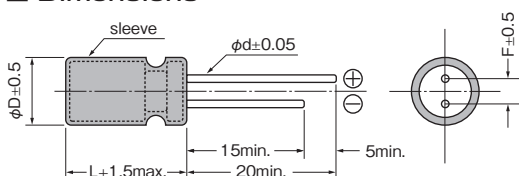


- 105°C 10,000hours
- Solvent proof(within 5 minutes)

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 (°C)	—		-40 to +105					
Capacitance tolerance (%)	120Hz/20°C		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.45	0.35	0.30	0.22	0.19	0.15
Leakage current(LC)	μA/after 2minutes (max.), 20°C		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z _{20°C}	8	6	4	4	3	3
Endurance	105°C, 10,000hours rated voltage applied (With the rated ripple current)	ΔC/C	Within ±25% of the initial value					
		tanδ	Less than 300% of the specified value					
		LC	Less than the specified value					
Shelf Life	105°C, 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

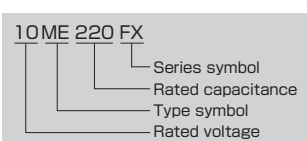
μF	V	10	16	25	35	50	100
2.2						5×11	35
3.3						5×11	70
4.7						5×11	80
10						5×11	90
22						5×11	110
33				5×11	130	6.3×11	190
47			5×11	130	6.3×11	210	6.3×11
100			6.3×11	210	6.3×11	210	8×11.5
220	6.3×11	210	8×11.5	330	8×11.5	330	8×12.5
330	8×11.5	330	8×11.5	330			
470	8×11.5	330					

Please refer to page 14 for ripple current frequency coefficients.

Case size:φD×L(mm)

Rated ripple current
mAmps(100kHz, 105°C)

Part number



ME-FC·FD Series

105°C, High Voltage

105°C Low Profile, High Voltage

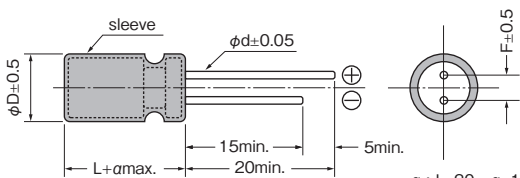


- 105°C 1,000 to 2,000hours
- Non solvent proof

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 (°C)	—		-40 to +105					-25 to +105
Capacitance tolerance (%)	120Hz/20°C		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.20	0.20	0.20	0.25	0.25	0.25
Leakage current(LC)	μA/after 2minutes (max.) (20°C)	CV ≤ 1,000	0.03CV +15					
		CV > 1,000	0.02CV +25					
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z _{20°C}	3	3	3	4	6	6
		-40°C Z/Z _{20°C}	6	6	6	8	10	—
Endurance	105°C rated voltage applied (With the rated ripple current)	Test	φ5 to φ8 : 1,000hours, φ10 to φ18 : 2,000hours					
		ΔC/C	Within ±20% of the initial value					
		tanδ	Less than 200% of the specified value					
		LC	Less than the specified value					
Shelf Life	105°C, 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

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	12.5×25 123	12.5×25 126	16×25 125
33	10×20 137	10×20 147	12.5×20 154	16×25 158	16×25 161	18×30 154
47	12.5×20 172	12.5×20 175	12.5×25 182	16×30 182	16×30 189	18×35.5 172
68	12.5×20 217	12.5×25 228	16×25 235	16×35.5 242	18×35.5 249	
82	12.5×25 270	16×21 277	16×30 284	18×35.5 294		
100	12.5×25 287	16×25 301	16×35.5 302			
150	16×30 385	16×35.5 403	18×35.5 412			
220	16×35.5 522	18×35.5 532				

Please refer to page 14 for ripple current frequency coefficients.
Upper : ME-FC series(0.47μF to 4.7μF:ME-FC series)
Lower : ME-FD series

Case size:φD×L(mm)

Rated ripple current
mA rms(120Hz, 105°C)

Part number

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

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

ME-FH Series

105°C, Small, Long Life

High Voltage

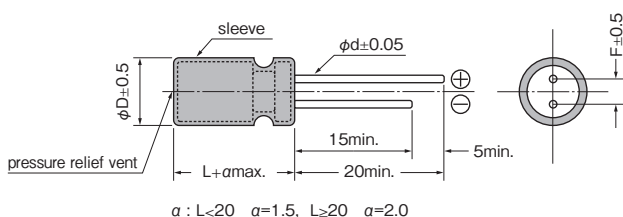


- 105°C 10,000 to 12,000hours
- Non solvent proof

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 (°C)	—		-40 to +105						-25 to +105
Capacitance tolerance (%)	120Hz/20°C		M : ±20						
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.20	0.20	0.20	0.25	0.25	0.25	
Leakage current(LC)	μA/after 2minutes (max.), 20°C		0.02CV +25						
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z _{20°C}	3	3	3	4	6	6	
		-40°C Z/Z _{20°C}	6	6	6	8	10	—	
Endurance	105°C rated voltage applied (With the rated ripple current)	Test	φ10 : 10,000hours, φ12.5 to φ18 : 12,000hours						
		ΔC/C	Within ±20% of the initial value						
		tanδ	Less than 200% of the specified value						
		LC	Less than the specified value						
Shelf Life	105°C, 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

Size, Rated Ripple Current

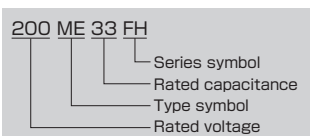
μF \ V	160	200	250	350	400	450
4.7					10×12.5	57
6.8					10×16	88
10		10×12.5	105	10×16	100	10×20
22		10×16	173	10×20	184	12.5×20
33	10×16	190	10×20	227	12.5×25	195
47	10×20	270	12.5×20	270	12.5×25	195
68	12.5×20	336	12.5×20	325	16×25	249
82	12.5×20	346	12.5×25	370	16×25	249
100	12.5×25	410	16×25	436	16×31.5	292
150	16×25	500	16×31.5	470	18×31.5	346
220	16×31.5	570	18×31.5	660	18×35.5	420

Please refer to page 14 for ripple current frequency coefficients.

Case size: φD×L(mm)

Rated ripple current
mA Arms(120Hz, 105°C)

Part number



ME-SWN Series

Bi-polar

7mm Height

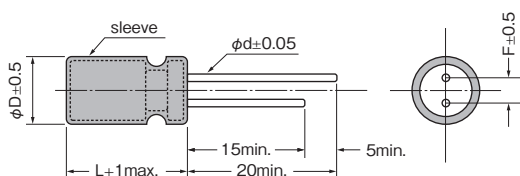


- 85°C 1,000hours
- Solvent proof(within 3 minutes)

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 (°C)	—		-40 to +85					
Capacitance tolerance (%)	120Hz/20°C		M : ±20					
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		0.24	0.22	0.20	0.18	0.16	0.16
Leakage current(LC)	μA/after 1 minutes (max.), 20°C		0.03CV +6					
Endurance	500hours×2(alternately) 85°C, rated voltage applied (With the rated ripple current)	ΔC/C	Within ±25% of the initial value					
		tanδ	Less than 200% of the specified value					
		LC	Less than the specified value					
Shelf Life	85°C, 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	4	5	6.3
F	1.5	2.0	2.5
ϕd	0.45	0.45	0.45

Size, Rated Ripple Current

μF \ V	6.3	10	16	25	35	50
1.0						4×7 10
2.2					4×7 10	5×7 15
3.3				4×7 16	5×7 17	5×7 18
4.7				4×7 19	5×7 20	6.3×7 23
10		4×7 17	4×7 25	5×7 28	6.3×7 30	6.3×7 34
22	5×7 31	5×7 35	6.3×7 39	6.3×7 52		
33	5×7 39	6.3×7 43	6.3×7 57			
47	6.3×7 47	6.3×7 59	6.3×7 68			

Please refer to page 14 for ripple current frequency coefficients.

Case size: $\phi D \times L$ (mm)

Rated ripple current
mA rms (120Hz, 85°C)

Part number

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

ME-HWN Series

Bi-polar

Standard

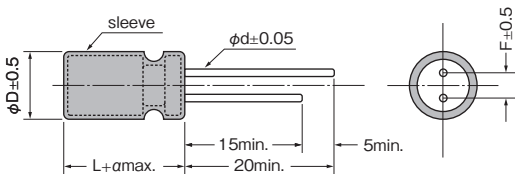


- 85°C 2,000hours
- Solvent proof(within 5 minutes)

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 (°C)	—		-40 to +85						
Capacitance tolerance (%)	120Hz/20°C		M : ±20						
Dissipation Factor(tan δ)	tanδ(max.) 120Hz/20°C		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 1 minute (max.), 20°C		0.03CV +6						
Impedance ratio at low temperature	Based on the value at 120Hz, +20°C	-25°C Z/Z20°C	4	3	3	2	2	2	2
		-40°C Z/Z20°C	10	8	8	6	4	4	4
Endurance	500hours×4(alternately) 85°C, rated voltage applied (With the rated ripple current)	ΔC/C	Within ±25% of the initial value						
		tanδ	Less than 200% of the specified value						
		LC	Less than the specified value						
Shelf Life	85°C, 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


 $a : L < 20 \quad a = 1.5, L \geq 20 \quad a = 2.0$

A pressure relief vent is provided for $\phi D = 6.3$ 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

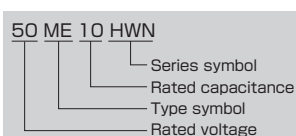
$\mu F \backslash V$	6.3	10	16	25	35	50	100
1.0						5×11	10
2.2						5×11	20
3.3						5×11	28
4.7				5×11	25	5×11	30
10			5×11	28	5×11	40	5×11
22		5×11	38	5×11	50	5×11	60
33	5×11	50	5×11	58	5×11	60	6.3×11
47	5×11	60	5×11	70	6.3×11	85	6.3×11
100	6.3×11	120	6.3×11	125	8×11.5	165	8×12.5
220	8×11.5	210	8×12.5	225	10×12.5	260	10×16
330	8×11.5	260	10×12.5	295	10×16	360	10×20
470	10×12.5	330	10×16	390	10×20	420	12.5×20
1000	10×20	560	12.5×20	620	12.5×25	740	
2200	12.5×25	890					

Please refer to page 14 for ripple current frequency coefficients.

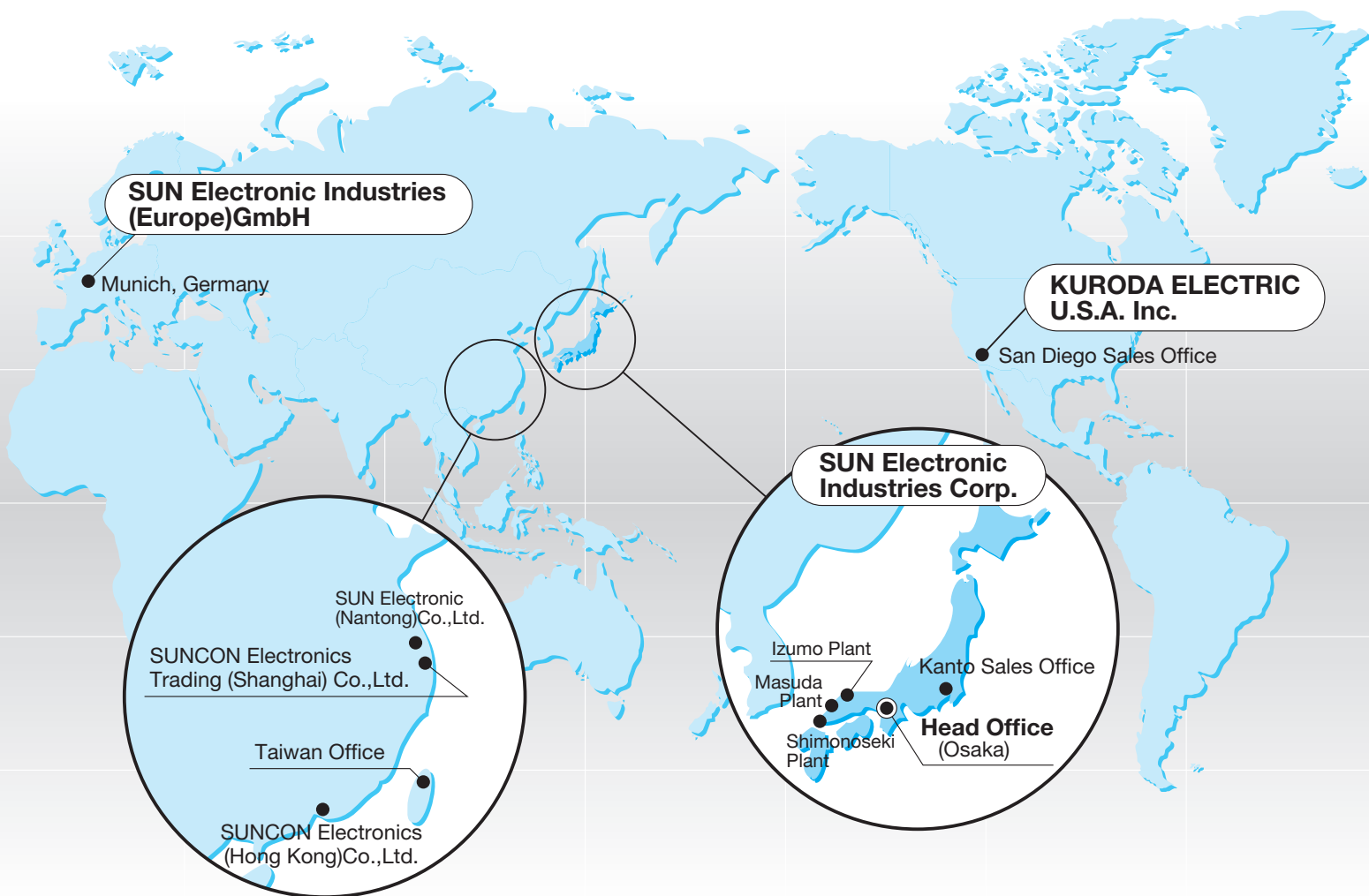
Case size: $\phi D \times L$ (mm)

Rated ripple current
mA rms (120Hz, 85°C)

Part number



network expanding around the world



Head Office



Izumo Plant



Masuda Plant



SUN Electronic(Nantong)Co.,Ltd.





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