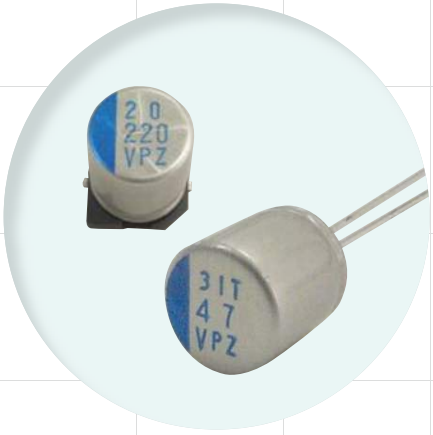
Capacitors General Catalog

2015-6

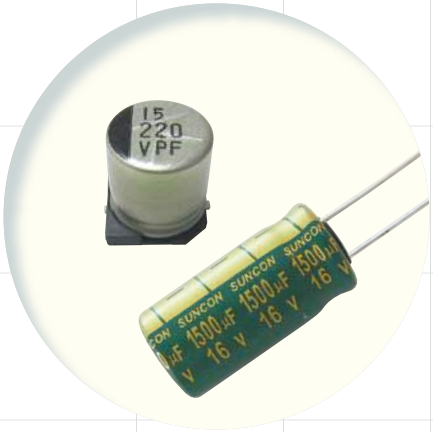
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Aluminum Electrolytic Capacitors with Hybrid Conductive Polymer

EP-cap



Aluminum Electrolytic Capacitors



SUNCON

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 June 2015. 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 life-support systems or aircraft control systems). For such applications, consult our sales department.
- The performance, characteristics, and features of the products described in this catalog are based on the products working alone under prescribed conditions. Data listed here is not intended as a guarantee of performance when working as part of any other product or device. In order to detect problems and situations that cannot be predicted beforehand by evaluation of supplied data, please always perform necessary performance evaluations with these devices as part of the product that they will be used in.
- When using the products listed in this catalog, please always be sure to try to prevent any possible accidents or injury by designing products in a careful and safe manner. If you have any questions concerning the use of these products, please contact any of our sales representatives.
- For any products listed in this catalog that may constitute restricted trade goods under overseas exchange or service trade laws, permission to deliver according to law may be required before importing.
- Unauthorized duplication of this catalog in part or in whole is forbidden.
- Please understand that we cannot be held responsible for any damages to the industrial properties of any third party that arise from the use or application of the products listed in this catalog, with the exception of those items directly related to method of construction.

ISO Certificates

ISO/TS 16949

Izumo Plant · Headquarter
Certificate Number YKA 4005246/TS-B

Masuda Plant · Headquarter
Certificate Number YKA 4005246/TS-A

ISO 9001

Izumo Plant · Masuda Plant · Headquarter Certificate Number YKA 4005246

SUN Electronic (Nantong) Co., Ltd. Certificate Number 01214Q20304R3M

ISO 14001

Izumo Plant · Masuda Plant Certificate Number E0792

SUN Electronic (Nantong) Co., Ltd. Certificate Number 01214E10702R3M

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EOL Notice

Please place your orders with the suggested alternative series.

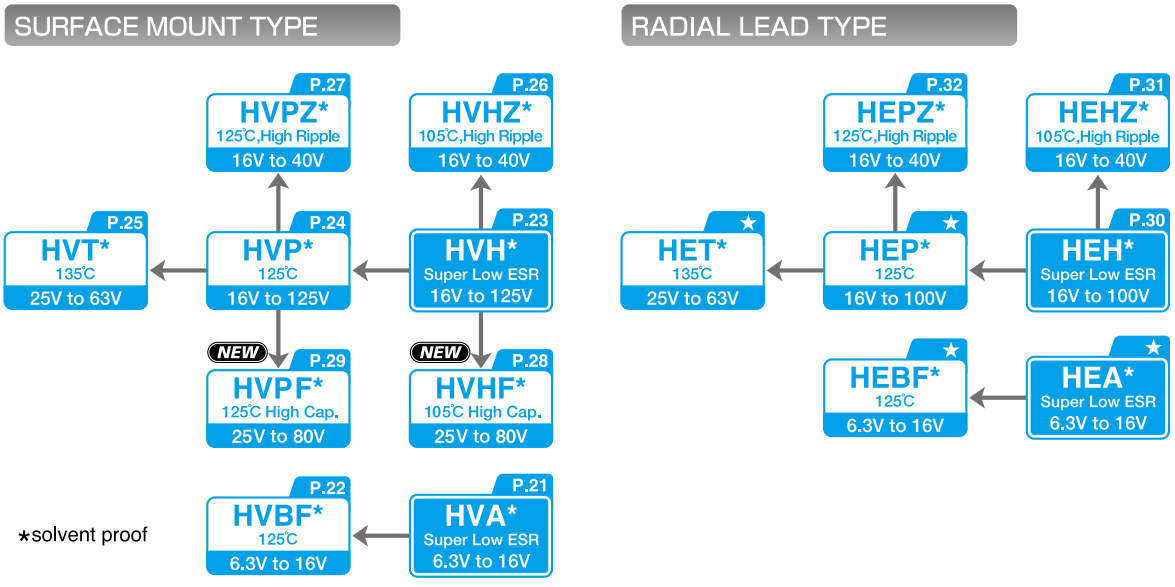
Discontinued series	alternative series	Features
HVB	**HVBF**	Hybrid Conductive Polymer, 125℃
CE-EX	**HVA**	Hybrid Conductive Polymer, Super Low ESR
CE-GS	**CE-GA**	Surface mount type, 5.4mm height, low impedance
CE-GX	**CE-AX**	Surface mount type, low impedance
CE-FC	**CE-FD, LD**	Surface mount type, 4.5mm height
CE-PX	**CE-PC**	Surface mount type, 125℃
MV(ME)-FA	**ME-CZ**	105℃ Standard
ME-FZ	**ME-WA**	Low impedance, High ripple Long life

Series Line-up

Series Line-up of Aluminum Electrolytic Capacitors with Hybrid Conductive Polymer

Classification		Series	Page	Features	Small & Thin type	Low ESR	Long Life	Solvent Proof	Category Temperature Range(℃)	Rated Voltage Range(V.DC)	Rated Capacitance Range(μF)	External Appearance	Marking Color
Surface Mount Type		HVA	21	Super Low ESR		●	●	●	−55 to +105	6.3 to 16	10 to 1000	——	Blue
		HVBF	22	125℃		●	●	●	−55 to +125	6.3 to 16	33 to 1000	——	Blue
		HVH	23	Super Low ESR		●	●	●	−55 to +105	16 to 125	6.8 to 560	——	Blue
		HVP	24	125℃		●	●	●	−55 to +125	16 to 125	6.8 to 560	——	Blue
		HVT	25	135℃		●	●	●	−55 to +135	25 to 63	10 to 330	——	Blue
		HVHZ	26	105℃ High Ripple		●		●	−55 to +105	16 to 40	18 to 560	——	Blue
		HVPZ	27	125℃ High Ripple		●	●	●	−55 to +125	16 to 40	18 to 560	——	Blue
		NEW HVHF	28	105℃ High Capacitance	●	●	●	●	−55 to +105	25 to 80	10 to 470	——	Blue
		NEW HVPF	29	125℃ High Capacitance	●	●	●	●	−55 to +125	25 to 80	10 to 470	——	Blue
Radial Lead Type		HEA	★	Super Low ESR		●	●	●	−55 to +105	6.3 to 16	47 to 1000	——	Blue
		HEBF	★	125℃		●	●	●	−55 to +125	6.3 to 16	100 to 1000	——	Blue
		HEH	30	Super Low ESR		●	●	●	−55 to +105	16 to 100	10 to 560	——	Blue
		HEP	★	125℃		●	●	●	−55 to +125	16 to 100	10 to 560	——	Blue
		HET	★	135℃		●	●	●	−55 to +135	25 to 63	10 to 330	——	Blue
		HEHZ	31	105℃ High Ripple		●		●	−55 to +105	16 to 40	27 to 560	——	Blue
		HEPZ	32	125℃ High Ripple		●		●	−55 to +125	16 to 40	27 to 560	——	Blue

Series Chart



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

Series Line-up

Series Line-up of Surface Mount Type

Classification		Series	Page	Features	Small & Thin type	Low Impedance	Long Life	Solvent Proof	Category Temperature Range(℃)	Rated Voltage Range(V.DC)	Rated Capacitance Range(μF)	External Appearance	Marking Color
Surface Mount Type		CE-BE	34	Super Low Profile 3.9mm Height	●			●	−40 to +85	4 to 50	1.0 to 180	——	Black
		CE-BD	35	Low Profile 4.5mm Height	●			●	−40 to +85	4 to 50	0.47 to 220	——	Black
		CE-BS	36	Standard				●	−40 to +85	4 to 100	0.47 to 6800	——	Black
		CE-BSS	38	Small, Standard	●			●	−40 to +85	6.3 to 50	4.7 to 220	——	Black
		CE-FE	39	105℃ 3.9mm Height	●			●	−40 to +105	6.3 to 50	1.0 to 100	——	Black
		CE-FD	★	105℃ 4.5mm Height	●			●	−40 to +105	6.3 to 50	0.47 to 100	——	Black
		CE-LD	40	4.5mm Height, Long Life	●		●	●	−40 to +105	6.3 to 50	0.47 to 100	——	Black
		CE-FU	41	High Temperature, Reflow Soldering	●			●	−55 to +105	6.3 to 50	1.0 to 100	——	Black
		CE-FS	42	105℃, Standard				●	−55 to +105	6.3 to 63	0.47 to 12000	——	Black
								●	−40 to +105	100	1.0 to 330		
			44						−40 to +105	160 to 400	2.2 to 82		
		CE-FSS	45	105℃ Small High Capacitance	●			●	−40 to +105	6.3 to 50	4.7 to 220	——	Black
		CE-FH	46	Long Life			●	●	−40 to +105	6.3 to 50	1.0 to 4700	——	Black
		CE-GA	47	5.4mm Height, Low Impedance		●		●	−55 to +105	6.3 to 63	1.0 to 220	——	Black
		CE-AX	48	Low Impedance		●		●	−55 to +105	6.3 to 50	4.7 to 6800	——	Black
		CE-KX	50	Super Low Impedance		●		●	−55 to +105	6.3 to 100	2.2 to 6800	——	Black
		NEW CE-ZX	52	Super Low ESR		●		●	−55 to +105	6.3 to 50	33 to 1800	——	Black
		NEW CE-ZC	53	Super Low ESR Small, High Capacitance	●	●		●	−55 to +105	25 to 35	330 to 820	——	Black
		CE-LX	54	Low Impedance, Long Life		●	●	●	−55 to +105	6.3 to 100	4.7 to 12000	——	Black
		CE-LS	56	Low Impedance, Long Life		●	●	●	−40 to +105	6.3 to 50	10 to 330	——	Black
		CE-LH	57	Long Life			●	●	−40 to +105	6.3 to 50	1.0 to 220	——	Black
			58				●		−40 to +105	160 to 400	2.2 to 120		
		CE-LL	59	Low Impedance, Long Life		●	●	●	−25 to +105	6.3 to 50	10 to 1000	——	Black
		CE-PC	60	125℃			●	●	−55 to +125	6.3 to 100	2.2 to 4700	——	Black
		UP GRADE CE-PH	62	125℃ Low ESR, High Capacitance		●	●	●	−40 to +125	16 to 50	10 to 3900	——	Black
		NEW CE-PS	64	125℃ High Capacitance	●			●	−40 to +125	25 to 35	100 to 470	——	Black
		CE-PF	65	125℃ Long Life, High Ripple		●	●	●	−40 to +125	25 to 35	100 to 330	——	Black
		NEW CE-TH	66	135℃			●	●	−40 to +135	16 to 35	47 to 1000	——	Black
		CE-NP	67	Bi-polar				●	−40 to +85	6.3 to 50	1.0 to 100	——	Black
		CE-FN	68	105℃ Bi-polar				●	−55 to +105	6.3 to 63	1.0 to 47	——	Black

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

Series Line-up

Series Line-up of Radial Lead Type

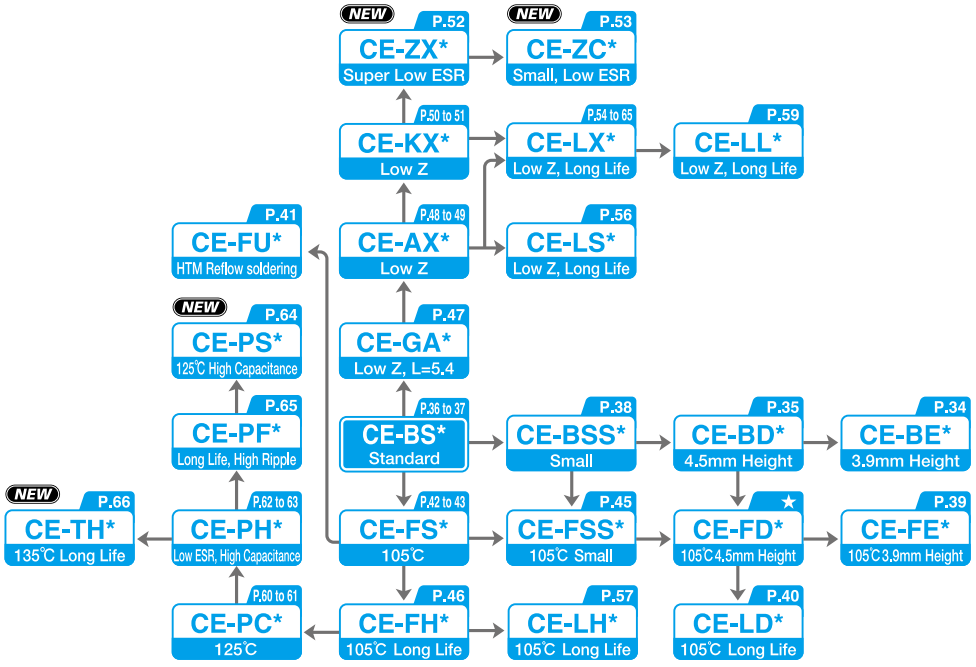
Classification		Series	Page	Features	Small & Thin type	Low Impedance	Long Life	Solvent Proof	Category Temperature Range(℃)	Rated Voltage Range(V.DC)	Rated Capacitance Range(μF)	External Appearance	Marking Color
Radial Lead Type		ME-UW	★	5mm Height	●			●	−40 to +85	4 to 50	10 to 330	Black	White
		ME-SWB	69	7mm Height	●			●	−40 to +85	4 to 63	1.0 to 470	Black	White
		ME-UZ	70	5mm Height, Temperature of Wide Range	●			●	−55 to +105	6.3 to 50	10 to 220	Green	White
		ME-SZ	70	7mm Height, Temperature of Wide Range	●			●	−55 to +105	6.3 to 50	1.0 to 330	Green	White
		ME-UAX	71	5mm Height, Low Impedance	●	●		●	−55 to +105	6.3 to 35	33 to 220	Green	Gold
		ME-SAX	71	7mm Height, Low Impedance	●	●		●	−55 to +105	6.3 to 35	4.7 to 330	Green	Gold
		ME-SWG	72	7mm Height,Low ESR	●	●			−40 to +105	6.3 to 35	22 to 330	Black	Gold
		ME-HC	73	Standard	●			●	−40 to +85	6.3 to 100	2.2 to 15000	Black	White
		ME-CZ	74	Small, Standard, Temperature of Wide Range	●			●	−55 to +105	6.3 to 100	2.2 to 15000	Green	White
		ME-CA	76	Small, Standard, Low Impedance	●	●		●	−55 to +105	6.3 to 50	2.2 to 15000	Green	Silver
		ME-CX	78	Small, Low Impedance	●	●		●	−55 to +105	6.3 to 35	47 to 15000	Green	Gold
		ME-AX	80	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	82	Low Impedance·High Ripple		●			−40 to +105	6.3 to 50	22 to 6800	Green	Gold
		ME-WA	84	Low Impedance·High Ripple, Long Life		●	●		−40 to +105	6.3 to 50	100 to 8200	Black	Gold
		ME-WL	86	Low Impedance, Long Life	●	●	●		−40 to +105	6.3 to 100	2.2 to 470	Green	Silver
		ME-WG	87	Super Low ESR		●			−40 to +105	6.3 to 25	220 to 3300	Green	Gold
		ME-LS	88	Long Life, High Reliability		●	●	●	−40 to +105	6.3 to 50	1.0 to 1000	Black	Silver
		NEW ME-FX	89	Long Life			●	●	−40 to +105	10 to 100	2.2 to 470	Black	White
		ME-PX	90	125℃		●	●	●	−55 to +125	10 to 100	10 to 4700	Clear Green	Black
		ME-HPC	91	Standard (Mid. & High Voltage)					−40 to +85 −25 to +85	160 to 250 350 to 450	0.47 to 220 0.47 to 100	Black	White
		ME-HPD	91	Low Profile (Mid. & High Voltage)					−40 to +85 −25 to +85	160 to 250 350 to 450	47 to 220 10 to 68	Black	White
		ME-FC	92	Guaranteed 105℃ (Mid. & High Voltage)					−40 to +105 −25 to +105	160 to 400 450	0.47 to 220 1.0 to 47	Black	White
		ME-FD	92	105℃, Low Profile (Mid. & High Voltage)					−40 to +105 −25 to +105	160 to 400 450	22 to 220 10 to 33	Black	White
		ME-FH	93	105℃, Long Life (Mid. & High Voltage)			●		−40 to +105 −25 to +105	160 to 400 450	4.7 to 220 6.8 to 68	Black	White
		ME-HLB	★	Low Leakage Current					−40 to +85	16 to 50	2.2 to 100	Blue	Black
		ME-SWN	94	7mm Height,Bi-polar	●			●	−40 to +85	6.3 to 50	1.0 to 47	Black	White
		ME-HWN	95	Small, Standard,Bi-polar	●			●	−40 to +85	6.3 to 100	1.0 to 2200	Black	White

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

Series Chart

SURFACE MOUNT TYPE (LOW VOLTAGE)





BI-POLAR

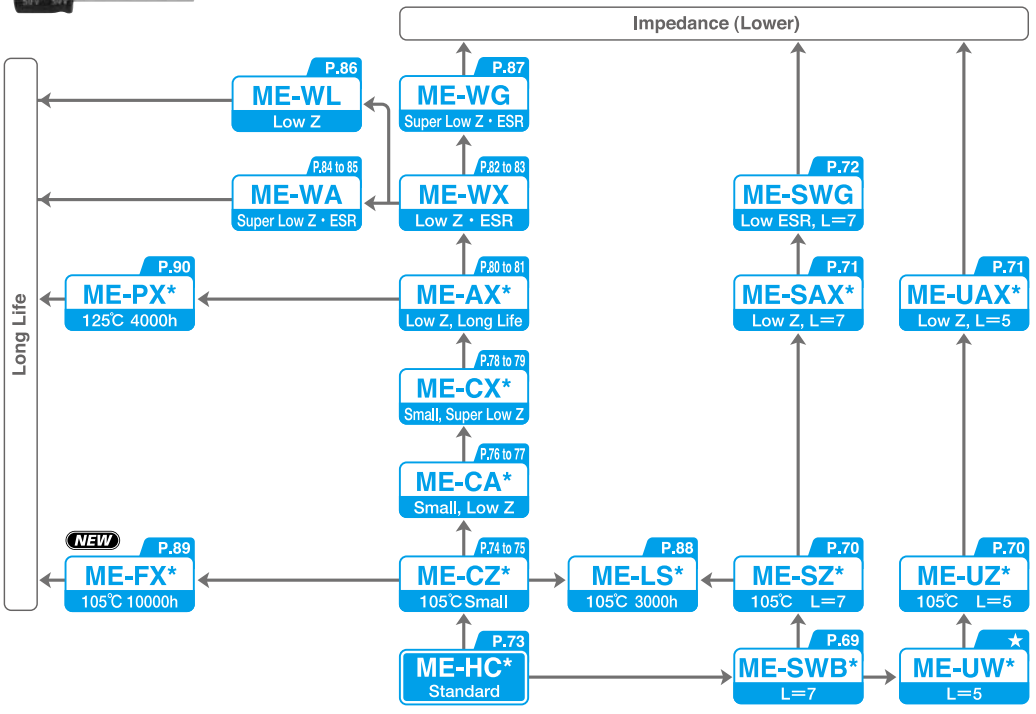
P.68 CE-FN* 105℃
P.67 CE-NP* Standard

MID.&HIGH VOLTAGE

P.58 CE-LH 105℃ 5000h
P.44 CE-FS 105℃ 2000h

RADIAL LEAD TYPE (LOW VOLTAGE)





BI-POLAR

P.94 ME-SWN* L=7
P.95 ME-HWN* Standard

MID.&HIGH VOLTAGE

P.93 ME-FH 105℃ 12000h
P.92 ME-FC・FD 105℃ 2000h
P.91 ME-HPC・HPD 85℃ 2000h

★solvent proof

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

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

For circuit design

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Mounting

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

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

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

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

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

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

7) Do not deform the capacitor.

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

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

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

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

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

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

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

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

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

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

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

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

During use in application

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

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

3) For mounting the circuit board, please follow the guideline listed below.
   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

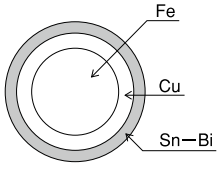
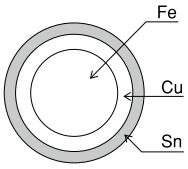
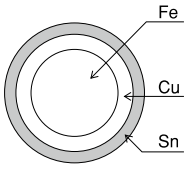
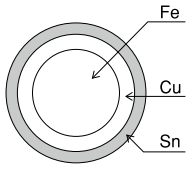
For scraping the capacitor, please follow the guideline listed below.
a) Please make a hole in the capacitor or crush the capacitor before burning it.
b) If not, please ask waste-disposal specialist to take care of them, such as burying in the ground.

For important notice of using the aluminum electrolytic capacitors, we observe the guidelines of EIAJ RCR-2367B "guideline of notabilia for fixed aluminum electrolytic capacitors".
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(HEH). Please contact us if details are required.

■ Environmental Products (Compliance of RoHS Directive)

	Surface Mount Type Aluminum Electrolytic Capacitors		Radial Lead Type Aluminum Electrolytic Capacitors	
Type code	CE, HV★1	CE_T	ME	HE_T
Kind of plating	(φ4 to φ12.5) 	(φ16, φ18) 		
Part number (example)	10CE100BS (100μF/10V)	10CE4700BST (4700μF/10V)	10ME100AX (100μF/10V)	63HEH10MT (10μF/63V)
Sleeve	Not used	Not used	PET	Not used
Moisture Sensitivity Level (MSL)★2	Not applicable No need dry package	Not applicable No need dry package	Not applicable No need dry package	Not applicable No need dry package

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

Conforming to European REACH Regulation.

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

Intellectual Property Rights

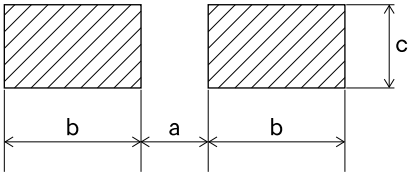
We proactively work on protecting the intellectual property rights of our products.

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

JP. Pat. No.3459547, JP. Pat. No.3851294, JP. Pat. No.4916416
US. Pat. No.7497879, US. Pat. No.7859829, US. Pat. No.7872858

Surface Mount Type Recommended Land Pattern

●Land pattern



(Unit:mm)

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

(1)Please refer to page 16 for S.M.T Recommended Land Pattern of Anti-vibration Structure(CA Type·HA Type) .
(2)Please make your land pattern area as large as possible to prevent a large surface mount type from peeling off a circuit board for anti-vibration.

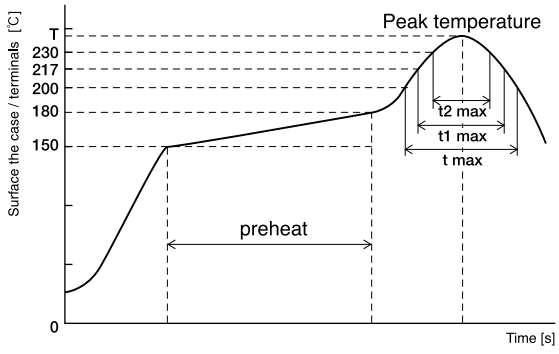
Soldering Condition

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

Reflow Soldering Condition

●Profile 1

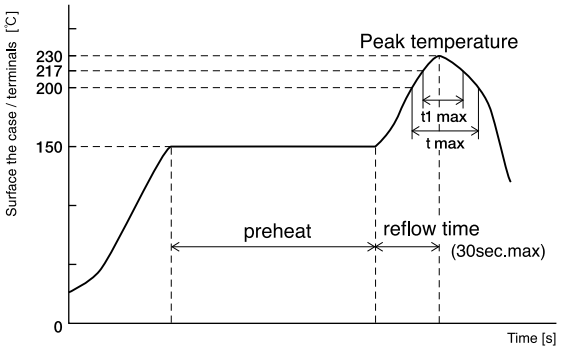
AIR reflow and IR reflow



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

●Profile 2

AIR reflow and IR reflow



Preheat ; 150℃, Within 120sec.

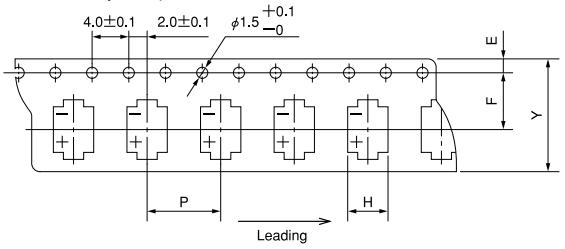
Series	Voltage (V)	Size	Time for more than 200℃ (t)	Time for more than 217℃ (t1)	Time for more than 230℃ (t2)	Peak temperature Within 5sec.(T)	Profile
CE-BS, CE-BSS CE-FS, CE-FSS CE-FH, CE-GA CE-AX, CE-KX CE-ZC, CE-LH CE-LL , CE-NP CE-FN	4 to 63	φ4 to φ6.3	Within 70sec.	Within 60sec.	Within 40sec.	250℃	1
		φ8	Within 60sec.	Within 50sec.	Within 30sec.	245℃	1
		φ10, φ12.5	Within 50sec.	Within 40sec.	Within 20sec.	240℃	1
		φ16, φ18	Within 50sec.	Within 30sec.	Within 15sec.	235℃	1
	80 to 100	φ4 to φ6.3	Within 60sec.	Within 50sec.	Within 40sec.	250℃	1
		φ8	Within 60sec.	Within 40sec.	Within 30sec.	240℃	1
		φ10	Within 50sec.	Within 30sec.	Within 20sec.	240℃	1
		φ12.5	Within 50sec.	Within 30sec.	Within 20sec.	235℃	1
		φ16, φ18	Within 45sec.	Within 20sec.	Within 10sec.	235℃	1
	160 to 400	φ8, φ10	Within 50sec.	Within 30sec.	Within 20sec.	240℃	1
		φ12.5	Within 45sec.	Within 20sec.	Within 10sec.	235℃	1
		φ16, φ18	Within 30sec.	Within 15sec.	—	230℃	2
CE-FU, CE-ZX CE-LX, CE-LS CE-PC, CE-PH CE-PS, CE-PF CE-TH	6.3 to 50	φ4 to φ8	Within 80sec.	Within 70sec.	Within 40sec.	260℃	1
		φ10×10.2 to 13.5	Within 70sec.	Within 60sec.	Within 40sec.	250℃	1
		φ12.5	Within 60sec.	Within 50sec.	Within 30sec.	245℃	1
		φ10×7.7, φ16, φ18	Within 50sec.	Within 40sec.	Within 20sec.	240℃	1
	63	φ6.3	Within 70sec.	Within 60sec.	Within 40sec.	250℃	1
		φ8	Within 60sec.	Within 50sec.	Within 30sec.	245℃	1
		φ10, φ12.5	Within 50sec.	Within 40sec.	Within 20sec.	240℃	1
		φ16, φ18	Within 50sec.	Within 40sec.	Within 15sec.	235℃	1
	80 to 100	φ8	Within 60sec.	Within 50sec.	Within 30sec.	240℃	1
		φ10	Within 50sec.	Within 40sec.	Within 20sec.	240℃	1
		φ12.5	Within 50sec.	Within 40sec.	Within 20sec.	235℃	1
		φ16, φ18	Within 45sec.	Within 30sec.	Within 10sec.	235℃	1
CE-BD, CE-FD, CE-LD	ALL	ALL	Within 60sec.	Within 50sec.	Within 30sec.	245℃	1
CE-BE, CE-FE	ALL	ALL	Within 50sec.	Within 40sec.	Within 20sec.	240℃	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 20 for reflow soldering condition of EP-cap.

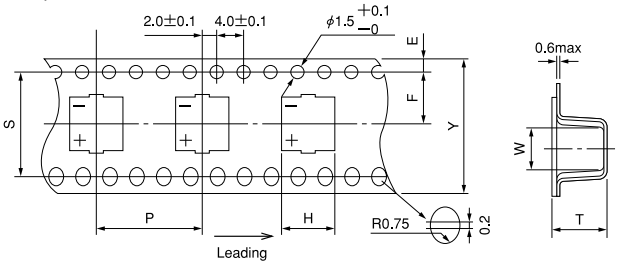
Packaging Specifications

Surface Mount Type Taping Specifications (Unit:mm)

Carrier tape $\phi D \leq 10$



$\phi D \geq 12.5$

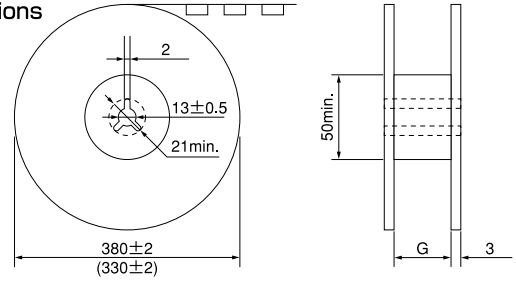


(Unit:mm)

size (φD×L)	Y±0.3	H±0.2	W±0.2	P±0.1	E±0.1	F±0.1	T±0.2	S±0.1
φ4×4.5	12.0	4.7	4.7	8.0	1.75	5.5	5.0	—
φ4×5.4	12.0	4.7	4.7	8.0	1.75	5.5	5.8	—
φ4×6.0	12.0	4.7	4.7	8.0	1.75	5.5	6.4	—
φ5×3.9	12.0	5.7	5.7	12.0	1.75	5.5	4.5	—
φ5×4.5	12.0	5.7	5.7	12.0	1.75	5.5	5.0	—
φ5×5.4	12.0	5.7	5.7	12.0	1.75	5.5	5.8	—
φ5×6.0	12.0	5.7	5.7	12.0	1.75	5.5	6.4	—
φ5×7.0	12.0	5.7	5.7	12.0	1.75	5.5	7.1	—
φ6.3×3.9	16.0	7.0	7.0	12.0	1.75	7.5	4.5	—
φ6.3×4.5	16.0	7.0	7.0	12.0	1.75	7.5	5.1	—
φ6.3×5.4	16.0	7.0	7.0	12.0	1.75	7.5	5.8	—
φ6.3×6.0	16.0	7.0	7.0	12.0	1.75	7.5	6.5	—
φ6.3×7.0	16.0	7.0	7.0	12.0	1.75	7.5	7.5	—
φ6.3×7.7	16.0	7.0	7.0	12.0	1.75	7.5	8.2	—
φ6.3×8.4	16.0	7.0	7.0	12.0	1.75	7.5	9.2	—
φ8×10.2(10.5)	24.0	8.7	8.7	16.0	1.75	11.5	11.1	—
φ10×7.7	24.0	10.7	10.7	16.0	1.75	11.5	8.3	—
φ10×10.2(10.5)	24.0	10.7	10.7	16.0	1.75	11.5	11.2	—
φ10×12.5	24.0	10.7	10.7	16.0	1.75	11.5	13.3	—
φ10×13.5	24.0	10.7	10.7	16.0	1.75	11.5	14.6	—
φ12.5×13.5	32.0	13.2(13.9★)	13.2(13.9★)	24.0	1.75	14.2	14.3(14.7★)	28.4
φ16×16.5	44.0	17.5	17.5	28.0	1.75	20.2	17.3(17.8★)	40.4
φ18×16.5	44.0	19.5	19.5	32.0	1.75	20.2	17.8	40.4
φ18×21.5	44.0	19.5	19.5	32.0	1.75	20.2	22.5	40.4

★ Anti-vibration Structure : CA Type

Reel dimensions



(Unit:mm)

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

Minimum Packing Quantity

φD×L (mm)	Quantity of 1 Reel(φ380)	Quantity of 1 Reel(φ330)	Quantity of 1 package(Reel)
φ4×4.5	2000	—	5
φ4×5.4	2000	—	5
φ4×6.0	2000	—	5
φ5×3.9	—	1000	5
φ5×4.5	—	1000	5
φ5×5.4	—	1000	5
φ5×6.0	1000	—	5
φ5×7.0	1000	—	5
φ6.3×3.9	—	1000	5
φ6.3×4.5	—	1000	5
φ6.3×5.4	—	1000	5
φ6.3×6.0	1000	—	5
φ6.3×7.0	1000	—	5
φ6.3×7.7	900	—	5
φ6.3×8.4	800	—	5
φ8×10.2(10.5)	500	—	3
φ10×7.7	500	—	3
φ10×10.2(10.5)	500	—	3
φ10×12.5	400	—	3
φ10×13.5	400	—	3
φ12.5×13.5	250 ★	—	2
φ16×16.5	200 ★	—	2
φ18×16.5	175	—	2
φ18×21.5	125	—	2

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

★ "+D" has to be put after the part number.

Radial Lead Type Taping Specifications for Automatic Inserting Machines

Fig.1

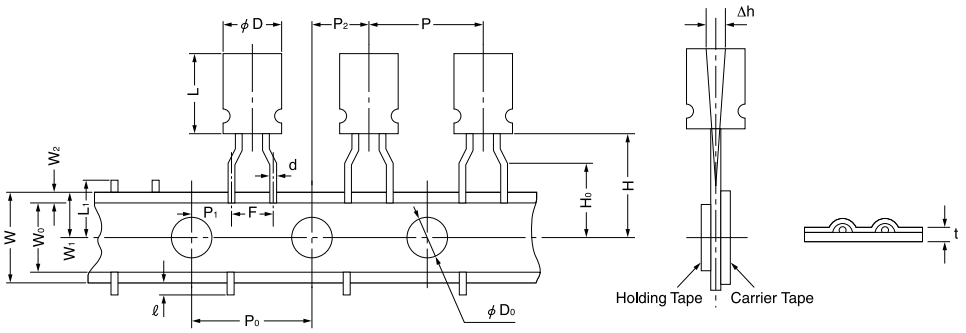


Fig.2

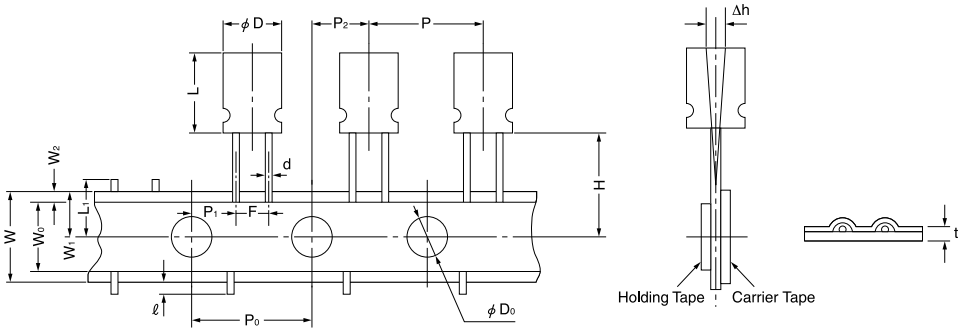
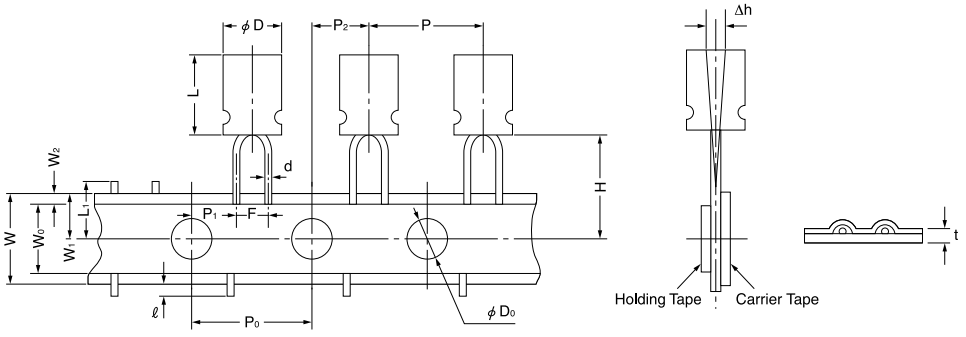


Fig.3



(Unit:mm)

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

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

Only straight taping for EP-cap.
The taping coad has to be put after the part number.
Part number 16ME100HC+T
Taping code

+TO、+TSO (O=Zero)

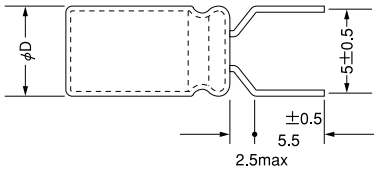
★1 Fig.2, Fig.3:±0.5
★2 φ10 · φ12.5 with H=18.5: $^{+1.5}_{-0.5}$
★3 φ16 every two slots in Fig.2

Packaging Specifications

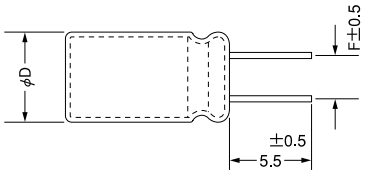
Radial Lead Type Lead-wire Process Standard Specification (Unit:mm)

1.Lead-wire forming

for φD=5,6.3,8mm.



2.Lead-wire cutting



Only lead-wire cutting for EP-cap.

(Unit:mm)

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

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

+FA・・・・・・for lead-wire forming
+CA・・・・・・for lead-wire cutting
Example
16ME100HC+FA
160ME22HPC+CA

Part number

Example

6 — Rated voltage ★1
CE — Type code ★2
100 — Rated capacitance symbol ★3
LX — Series code

★1.6 represents 6.3V as the rated voltage.
★2.Type code
CE: Surface mount type
ME: Radial lead type
CA: Surface mount type (Anti-vibration structure)
★3.R represents the decimal point

●EP-cap : Please refer to page 21 through 30

★3

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

Minimum Packing Quantity

● Long lead

Size	Quantity	Remarks reference
φ4 to φ8★1	500 PCS.	★1.φ8 X 12.5L to 20L ; 200 PCS. (ME-WA, ME-WG series Size φ8X11.5L;200 PCS) ★2.φ12.5 X 30L ; 100 PCS. ★3.φ16 X 35.5L ; 50 PCS. Surface Mount Type ; Please refer to page12
φ10 to φ12.5★2	200 PCS.	
φ16★3	100 PCS.	
φ18	50 PCS.	

● Taping

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

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

Ripple Current Frequency Coefficient

Series	Capacitance:C(μF)	Frequency:F(Hz)			
		100≤F<1k	1k≤F<10k	10k≤F<100k	100k≤F
CE-BE,CE-BD CE-BSS,CE-BS CE-FE, CE-FD, CE-LD CE-FSS, CE-FU CE-FS(6.3 to 100V) CE-FH,CE-LH(6.3 to 50V) CE-NP, 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-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-AX, CE-KX 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 ITEM	0.55	0.80	0.85	1.00
CE-LS CE-LL, 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	ALL ITEM	0.60	0.85	0.93	1.00

Series	Capacitance:C(μF)	Frequency:F(Hz)		
		100≤F<1k	1k≤F<10k	10k≤F
ME-UW, ME-SWB ME-HC, ME-HPC, ME-HPD ME-FC, ME-FD, ME-FH ME-HLB, 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
ME-PX	C<100	0.55	0.80	1.00
	100≤C<1000	0.70	0.90	1.00
	1000≤C	0.90	0.95	1.00
ME-FAZ	C<100	0.35	0.54	1.00
	100≤C	0.50	0.70	1.00

Series	Capacitance:C(μF)	Frequency:F(Hz)			
		100≤F<1k	1k≤F<10k	10k≤F<100k	100k≤F
ME-UAX ME-SAX	C≤47	0.40	0.80	0.90	1.00
	47<C≤100	0.60	0.75	0.95	1.00
	100<C	0.75	0.85	0.95	1.00
ME-UZ 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	0.90	1.00
ME-WX ME-WA ME-WL	C≤33	0.40	0.65	0.90	1.00
	33<C≤1200	0.50	0.80	0.93	1.00
	1200<C	0.60	0.85	0.96	1.00
ME-WG	C≤820	0.45	0.80	0.94	1.00
	820<C≤1800	0.50	0.85	0.96	1.00
	1800<C	0.55	0.88	0.98	1.00
ME-SWG	C≤56	0.22	0.45	0.65	1.00
	56<C	0.28	0.50	0.65	1.00

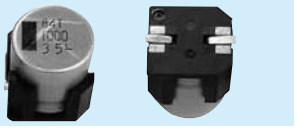
Series	Capacitance:C(μF)	Frequency:F(Hz)				
		50	120	300	1k	10k≤F
CE-FS(160 to 400V) CE-LH(160 to 400V)	ALL ITEM	0.75	1.00	1.20	1.30	1.50

Please refer to page 20 for Ripple Current Frequency Coefficient of EP-cap.

Anti-vibration Structure

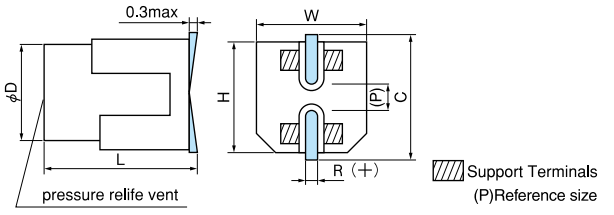
RoHS compliance

CA Type・HA Type



● Suitable for Automotive Applications

■ Dimensions



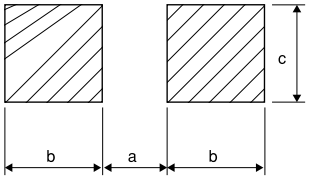
(Unit : mm)

D$^{+0.5max}$	L	W$^{\pm0.2}$	H$^{\pm0.2}$	C$^{\pm0.2}$	R	P
8	10.5$^{\pm0.5}$	8.3	8.3	9.0	0.7 to 1.0	3.2
8	10.7$^{\pm0.5}$★	8.3	8.3	9.0	0.7 to 1.0	3.2
10	10.5$^{\pm0.5}$	10.3	10.3	11.0	1.0 to 1.4	4.6
10	10.7$^{\pm0.5}$★	10.3	10.3	11.0	1.0 to 1.4	4.6
10	12.5$^{\pm1.0}$	10.3	10.3	11.0	1.0 to 1.4	4.6
10	13.5$^{\pm1.0}$	10.3	10.3	11.0	1.0 to 1.4	4.6
12.5	13.5$^{\pm1.0}$	13.5	13.5	14.2	1.0 to 1.4	4.6
16	16.5$^{\pm1.0}$	17.0	17.0	18.0	1.7 to 2.1	7.0
18	16.5$^{\pm1.0}$	19.0	19.0	20.0	1.7 to 2.1	7.0
18	21.5$^{\pm1.0}$	19.0	19.0	20.0	1.7 to 2.1	7.0

★ EP-cap,CE-PF,CE-PH,CE-ZX,CE-ZC,CE-PS,CE-TH
CE-FS(160 to 400V),CE-LH(160 to 400V)

■Surface Mount Type Recommended land pattern

Land pattern
(Anti-vibration Structure)



(Unit : mm)

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

■ Model No.

CA Type

35 CA 1000 LX T
- T: Sn plating terminal code
- LX: Series code
- 1000: Rated capacitance code
- CA: Type code(Anti-vibration Structure:CA)
- 35: Rated voltage

HA Type EP-cap

35 HA H 150 M
- M: Capacitance tolerance
- 150: Rated capacitance code
- H: Series code
- HA: Type code(Anti-vibration Structure:HA)
- 35: Rated voltage

Available for φ8 to φ18 in all series of Surface Mount Type.

EP-cap

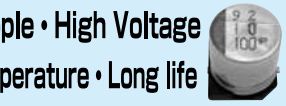
EP-cap is the first hybrid cathode aluminum electrolytic capacitors in the industry using a liquid electrolyte and a high conductive polymer.
EP-cap is very low ESR (equivalent series resistance) at high frequencies comparing with the standard aluminum electrolytic capacitors.
EP-cap has a self-healing mechanism of the dielectric due to a chemical reaction of the liquid electrolyte.
High voltage 125V, high reliability 125℃, high ripple current, high capacitance (HVPZ/HVPF series) and high temperature 135℃ (HVT series) are ready in the line-up.

Basic Construction
Features
Characteristics
Advantages of EP-cap
Soldering Condition
Reflow Soldering Condition
Ripple Current Frequency Coefficient
HVA
HVBF
HVH
HVP
HVT
HVHZ
HVPZ
HVHF
HVPF
HEH
HEHZ
HEPZ

High performance electronic modules

- Comfortable
- Safety
- Space saving

- High Ripple • High Voltage
- High temperature • Long life
- Super low ESR



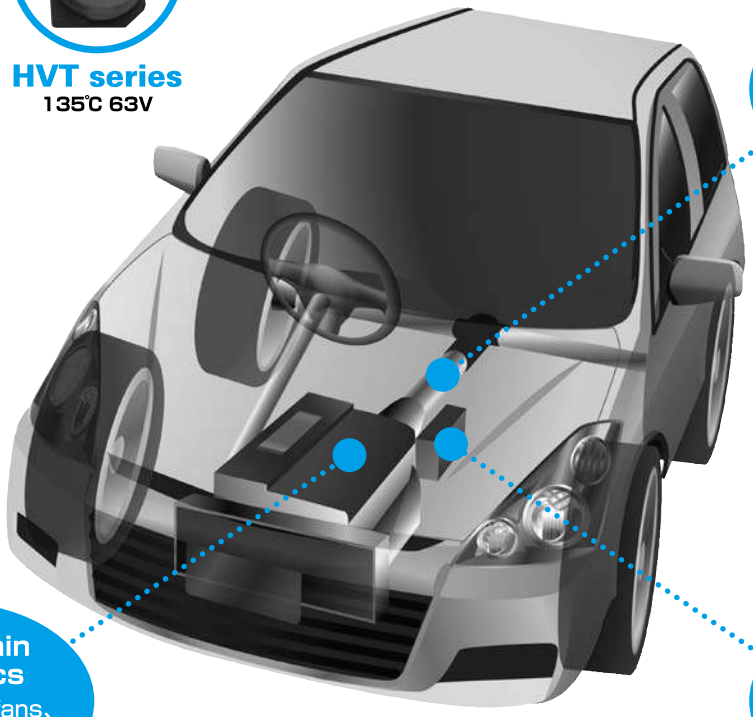
Automotive electronics



HVP series
125℃ 125V



HVT series
135℃ 63V



Chassis electronics
ABS、ESC、TCS、EPS

Power train electronics
EFI、Cooling fans、ECT、HV、ISS、ECU、CVT

Body electronics
AFS、TPMS、Air bags

Energy



Server•Base station

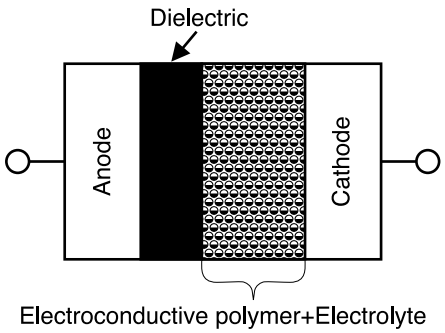


Security camera

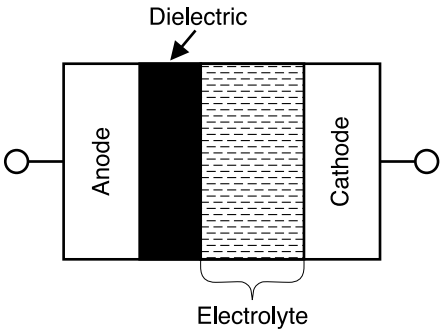


■ Basic Construction

■ EP-cap



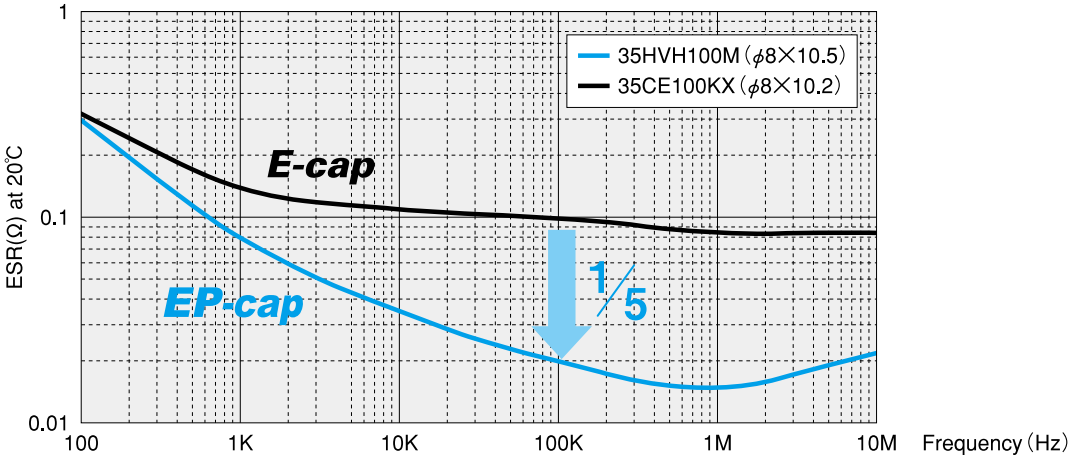
■ Electrolytic Capacitor



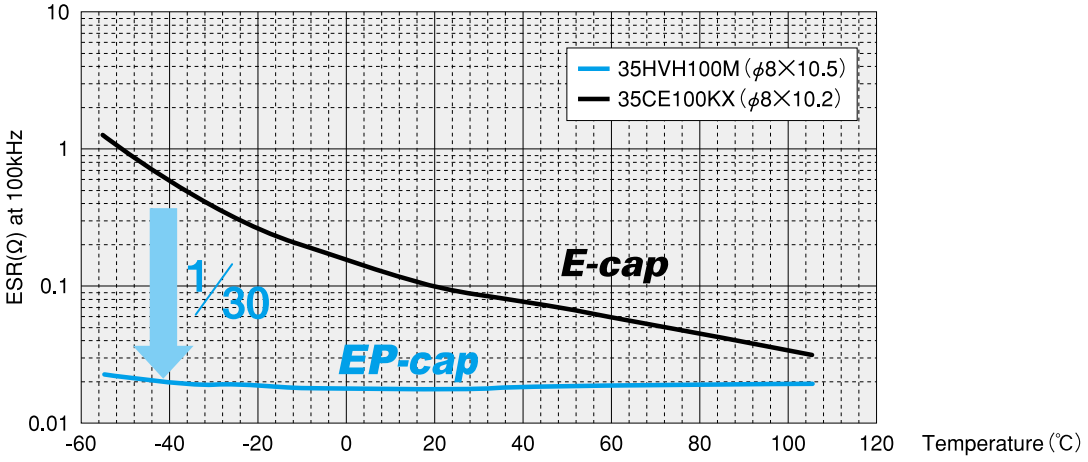
■ Features

- **Super 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.**
- **135℃ 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



Advantages of EP-cap

The industry's first Aluminum Electrolytic Capacitors with Hybrid Conductive Polymer.

E-cap (electrolyte type)

CE-LX Series : 105℃ Long Life, Low Z



φ6.3x7.7 (3pcs.)
100mΩ
900mA
PCB area : 144㎟



φ12.5x13.5 (1pcs.)
60mΩ
1100mA
PCB area : 173㎟



φ18x16.5 (1pcs.)
33mΩ
2060mA
PCB area : 380㎟

EP-cap (Hybrid type)

HVPF Series : 125℃ Super Low ESR • High Ripple • High Capacitance



φ6.3x6.0 (1pcs.)
60mΩ
900mA
PCB area : 48㎟



φ6.3x7.7 (1pcs.)
35mΩ
1400mA
PCB area : 48㎟



φ10x10.5 (1pcs.)
20mΩ
2000mA
PCB area : 113㎟

For high performance of electronic devices

For downsizing, low profile, and light weight

For high-density mounting and reduction of size of board

For high temperature and high reliability

For high productivity by surface mount technology

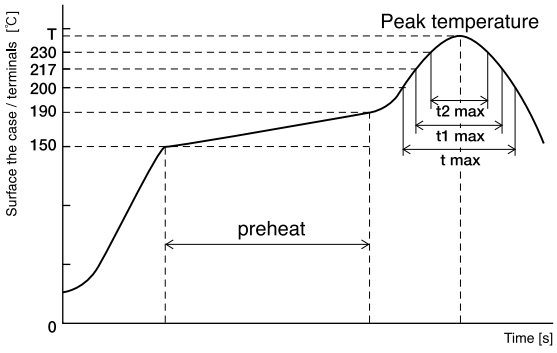
■ Soldering Condition

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

■ Reflow Soldering Condition

●Profile 1

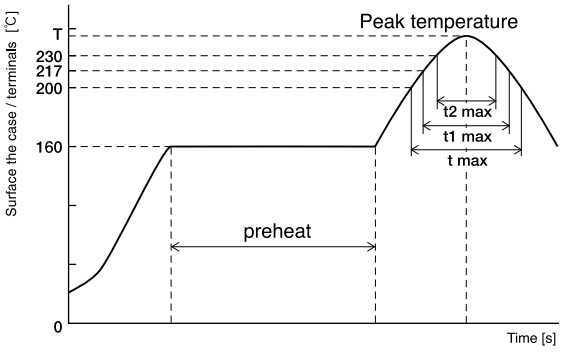
AIR reflow and IR reflow



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

●Profile 2

AIR reflow and IR reflow



Preheat ; 160℃, Within 120sec.

Series	Voltage (V)	Size	Time of more than 200℃ (t)	Time of more than 217℃ (t1)	Time of more than 230℃ (t2)	Peak temperature (T)	Reflow cycle	Profile
HVA,HVBF	6.3 to 16	ALL	Within 100sec.	Within 80sec.	Within 40sec.	250℃ ★1	2	1
HVH,HVP,HVT HVHZ,HVPZ	16 to 63	φ6.3×4.5	Within 60sec.	Within 50sec.	Within 30sec.	250℃ ★1	2	1
		φ6.3×6.0 to φ10	Within 100sec.	Within 80sec.	Within 40sec.	260℃ ★1	2	1
	80 to 125	ALL	Within 100sec.	Within 80sec.	Within 40sec.	250℃ ★1	2	1
HVHF,HVPF	25 to 50	φ6.3	Within 70sec.	Within 40sec.	Within 30sec.	260℃ ★2	2	2
		φ8 to φ10	Within 70sec.	Within 40sec.	Within 30sec.	260℃ ★2	1	2
	63 to 80	ALL	Within 70sec.	Within 40sec.	Within 30sec.	245℃ ★3	2	2

★1 Within 5sec.
★2 Less than 260℃
★3 Less than 245℃

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.

■ Ripple Current Frequency Coefficient

Series	Capacitance : C (μF)	Frequency : F (Hz)			
		100 ≤ F < 1k	1k ≤ F < 10k	10k ≤ F < 100k	100k ≤ F
HVH, HVP, HVT HVHZ, HVPZ HVHF, HVPF HEH, HEP, HET HEHZ, HEPZ	C ≤ 4.7	0.03	0.30	0.65	1.00
	4.7 < C ≤ 33	0.05	0.32	0.67	1.00
	33 < C	0.10	0.35	0.70	1.00
HVA, HVBF HEA, HEBF	C ≤ 10	0.03	0.20	0.50	1.00
	10 < C	0.05	0.20	0.50	1.00

■ Anti-vibration structure

Available for φ8 and φ10.
[Type code]

Standard structure	Anti-vibration structure
HV	HA

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

HVA Series

Super Low ESR



- 105℃, 3,000 to 5,000hours
- Solvent proof (within 2 minutes)

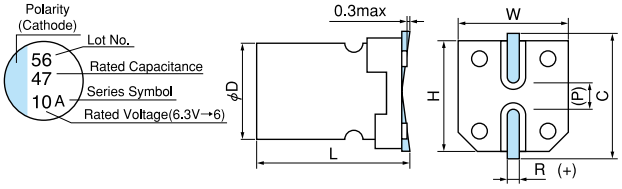
HVBF (P.22)
↑ 125℃
HVA

■ Specifications

Items	Condition		Specifications		
Rated voltage (V)	–		6.3	10	16
Surge voltage (V)	Room temperature		8.2	13	20
Category temperature range (℃)	–		−55 to +105		
Capacitance tolerance (%)	120Hz/20℃		M : ±20		
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.18	0.16	0.14
Leakage current (LC)★	μA/after 2minutes (max)		The greater value of either 0.2CV or 100		
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ6.3 : 3,000hours, D≥φ8 : 5,000hours		
		△C/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		

★Please apply the rated voltage for 120 seconds at 105℃ in case the measured value is bigger than the specified value.

■ Marking, Dimensions



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

(Unit : mm)

D$^{+0.5max}$	L$^{\pm0.3}$	W$^{\pm0.2}$	H$^{\pm0.2}$	C$^{\pm0.2}$	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

μF \ V	6.3			10			16		
10							6.3×6.0	54	1130
22							6.3×6.0	54	1130
33				6.3×6.0	40	1510	6.3×6.0	54	1130
47							6.3×7.7 ★	45	1480
				6.3×6.0	40	1510	8×10.5	22	2290
68				6.3×6.0	40	1510	8×10.5	22	2290
100				6.3×7.7 ★	35	1910			
	6.3×6.0	36	1630	8×10.5	18	2800	8×10.5	22	2290
150				6.3×7.7 ★	35	1910			
	6.3×6.0	36	1630	8×10.5	18	2800	10×10.5	20	2920
220	6.3×7.7 ★	32	2020						
	8×10.5	16	3150	8×10.5	18	2800			
330	8×10.5	16	3150	8×10.5	18	2800			
390	8×10.5	16	3150						
470	8×10.5	16	3150	10×10.5	16	3650			
560	8×10.5	16	3150	10×10.5	16	3650			
680	10×10.5	15	3890						
820	10×10.5	15	3890						
1000	10×10.5	15	3890						

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

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

■ Part number

10 HV A 47 M
- Capacitance tolerance
- Rated capacitance
- Series code
- Type code
- Rated voltage

10 HV A 100 M S
- S type code
- Capacitance tolerance
- Rated capacitance
- Series code
- Type code
- Rated voltage

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

HVBF Series

Long Life
125℃



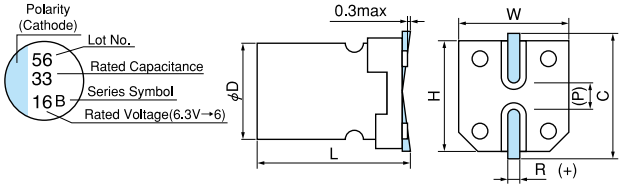
- 125℃, 1,500 to 2,000hours
- Solvent proof (within 2 minutes)

■ Specifications

Items		Condition		Specifications		
Rated voltage (V)		–		6.3	10	16
Surge voltage (V)		Room temperature		8.2	13	20
Category temperature range (℃)		–		−55 to +125		
Capacitance tolerance (%)		120Hz/20℃		M : ±20		
Dissipation Factor (tan δ)		tanδ (max) 120Hz/20℃		0.18	0.16	0.14
Leakage current (LC) ★		μA/after 2minutes (max)		The greater value of either 0.2CV or 100		
Endurance		125℃ rated voltage applied (With the rated ripple current)	Test	φ6.3 : 1,500hours, D≥φ8 : 2,000hours		
			△C/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		

★Please apply the rated voltage for 120 seconds at 125℃ in case the measured value is bigger than the specified value.

■ Marking, Dimensions



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

(Unit : mm)

D$^{+0.5max}$	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

μF \ V	6.3			10			16		
33							6.3×6.0	54	640
47				6.3×6.0	40	850	6.3×7.7	45	830
68				6.3×6.0	40	850			
100	6.3×6.0	36	920	6.3×7.7	35	1020	8×10.5	22	1300
150	6.3×6.0	36	920				10×10.5	20	1650
220	6.3×7.7	32	1140						
330				8×10.5	18	1580			
560	8×10.5	16	1780	10×10.5	16	2060			
1000	10×10.5	15	2200						

Please refer to page 20 for ripple current frequency coefficients.

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

■ Part number

16 HV BF 33 M
- Capacitance tolerance
- Rated capacitance
- Series code
- Type code
- Rated voltage

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

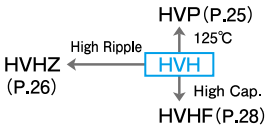
HVH Series

Super Low ESR

High Voltage, Long Life



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

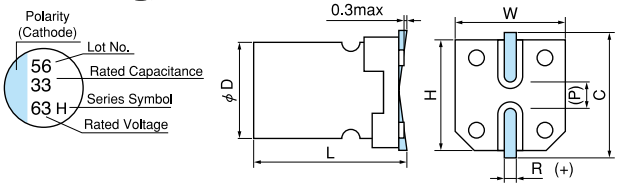


■ Specifications

Items	Condition		Specifications								
Rated voltage (V)	–		16	25	35	40	50	63	80	100	125
Surge voltage (V)	Room temperature		20	32	44	50	63	79	100	125	157
Category temperature range (℃)	–		−55 to +105								
Capacitance tolerance (%)	120Hz/20℃		M : ±20								
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.16								
Leakage current (LC)	μA/after 2minutes (max)	≤ 63V	The greater value of either 0.01CV or 3								
		80V ≤	The greater value of either 0.05CV or 100								
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test 16V	φ6.3 : 4,000hours, D≥φ8 : 7,000hours								
		Test 25V≤	φ6.3×4.5 : 2,000hours, φ6.3×6.0, φ6.3×7.7 : 5,000hours, D≥φ8 : 10,000hours								
		△C/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								

■ Marking, Dimensions

(Unit : mm)



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

D+0.5max	L±0.3	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
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			40			50		
10													6.3×6.0 ★	120	980
12							6.3×4.5	150	640						
15													6.3×7.7	80	1200
18										6.3×6.0	110	1030			
27				6.3×4.5	95	800	6.3×6.0	100	1080	6.3×7.7	70	1250			
33													8×10.5	35	1670
47				6.3×6.0	60	1270	6.3×7.7	60	1300						
56										8×10.5	32	1750	10×10.5	25	2320
68				6.3×7.7	45	1400									
82	6.3×6.0	55	1380										10×12.5	19	2650
100							8×10.5	30	1800	10×10.5	24	2400			
120	6.3×7.7	40	1500							10×12.5	18	2750			
150				8×10.5	27	1900	10×10.5	23	2470						
220							10×12.5	17	2830						
270	8×10.5	26	2000	10×10.5	22	2530									
330				10×12.5	16	2900									
470	10×10.5	21	2600												
560	10×12.5	15	3000												

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

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

Case size:φDxL(mm)

Rated ripple current
mArms(100kHz, 105℃)

ESR(mΩ)
max at 100kHz, 20℃

■ Part number

63 HV H 33 M
- Capacitance tolerance
- Rated capacitance
- Series code
- Type code
- Rated voltage

63 HV H 33 M S
- S type code
- Capacitance tolerance
- Rated capacitance
- Series code
- Type code
- Rated voltage

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

HVP Series

125℃ Super Low ESR

High Voltage, High Reliability



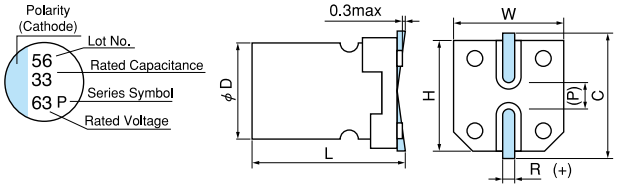
- 125℃, 2,000 to 3,000hours
- Solvent proof (within 2 minutes)

HVT (P.25) 135℃
HVPZ (P.27) ← High Ripple — HVP — High Cap. → HVPF (P.29)

■ Specifications

Items		Condition		Specifications								
Rated voltage (V)		–		16	25	35	40	50	63	80	100	125
Surge voltage (V)		Room temperature		20	32	44	50	63	79	100	125	157
Category temperature range (℃)		–		−55 to +125								
Capacitance tolerance (%)		120Hz/20℃		M : ±20								
Dissipation Factor (tan δ)		tanδ (max) 120Hz/20℃		0.16								
Leakage current (LC)		μA/after 2minutes (max)	≤ 63V	The greater value of either 0.01CV or 3								
			80V ≤	The greater value of either 0.05CV or 100								
Endurance		125℃ rated voltage applied (With the rated ripple current)	Test 16V	φ6.3 : 2,000hours, D≥φ8 : 2,500hours								
			Test 25V≤	φ6.3 : 2,000hours, D≥φ8 : 3,000hours								
			△C/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								

■ Marking, Dimensions



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

(Unit : mm)

D+0.5max	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			40			50		
10													6.3×6.0 ★	120	690
15													6.3×7.7	80	840
18										6.3×6.0	110	720			
27							6.3×6.0	100	760	6.3×7.7	70	870			
33													8×10.5	35	1170
47				6.3×6.0	60	890	6.3×7.7	60	910						
56										8×10.5	32	1220	10×10.5	25	1390
68				6.3×7.7	45	980									
82	6.3×6.0	55	970										10×12.5	19	1590
100							8×10.5	30	1260	10×10.5	24	1440			
120	6.3×7.7	40	1160							10×12.5	18	1650			
150				8×10.5	27	1330	10×10.5	23	1480						
220							10×12.5	17	1700						
270	8×10.5	26	1540	10×10.5	22	1520									
330				10×12.5	16	1740									
470	10×10.5	21	2010												
560	10×12.5	15	2320												

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

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

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

■ Part number

63 HV P 33 M
- Capacitance tolerance
- Rated capacitance
- Series code
- Type code
- Rated voltage

63 HV P 33 M S
- S type code
- Capacitance tolerance
- Rated capacitance
- Series code
- Type code
- Rated voltage

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

HVT Series

135℃



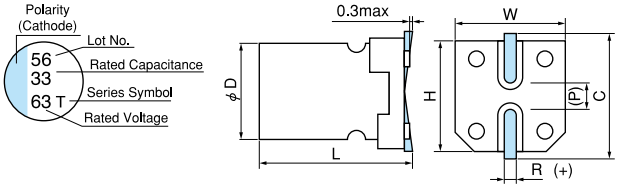
- 135℃, 1,000 to 2,000hours
- Solvent proof (within 2 minutes)

HVT
↑ 135℃
HVP (P.24)

■ Specifications

Items		Condition		Specifications				
Rated voltage	(V)	–		25	35	40	50	63
Surge voltage	(V)	Room temperature		32	44	50	63	79
Category temperature range (℃)		–		−55 to +135				
Capacitance tolerance (%)		120Hz/20℃		M : ±20				
Dissipation Factor (tan δ)		tanδ (max) 120Hz/20℃		0.16				
Leakage current (LC)		μA/after 2minutes (max)		The greater value of either 0.01CV or 3				
Endurance		135℃ rated voltage applied (With the rated ripple current)	Test	φ6.3 : 1,000hours, D≥φ8 : 2,000hours				
			△C/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				

■ Marking, Dimensions



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

(Unit : mm)

D +0.5max	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

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

Please refer to page 20 for ripple current frequency coefficients.

★ S type

■ Part number

63 HV T 33 M
- Capacitance tolerance
- Rated capacitance
- Series code
- Type code
- Rated voltage

63 HV T 33 M S
- S type code
- Capacitance tolerance
- Rated capacitance
- Series code
- Type code
- Rated voltage

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

HVHZ Series

105℃ High Ripple Current



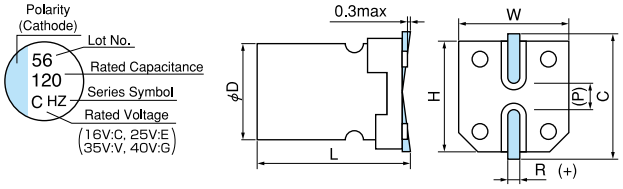
- 105℃, 2,000 to 5,000hours
- Solvent proof (within 2 minutes)

HVPZ (P.27) 125℃ ↑ High Ripple ← HVH (P.23)
HVHZ

■ Specifications

Items	Condition		Specifications			
Rated voltage (V)	–		16	25	35	40
Surge voltage (V)	Room temperature		20	32	44	50
Category temperature range (℃)	–		−55 to +105			
Capacitance tolerance (%)	120Hz/20℃		M : ±20			
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.16			
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3			
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ6.3 : 2,000hours, D≥φ8 : 5,000hours			
		△C/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			

■ Marking, Dimensions



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

(Unit : mm)

D +0.5max	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

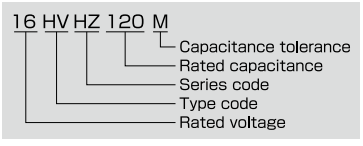
■ Size, ESR, Rated Ripple Current

μF \ V	16			25			35			40		
18										6.3×6.0	55	1510
27							6.3×6.0	50	1530	6.3×7.7	48	1770
47				6.3×6.0	40	1800	6.3×7.7	45	1840			
56										8×10.5	30	2450
68				6.3×7.7	35	1980						
82	6.3×6.0	38	1890									
100							8×10.5	28	2550	10×10.5	21	3380
120	6.3×7.7	32	2070							10×12.5	16	3870
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									

Please refer to page 20 for ripple current frequency coefficients.

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

■ Part number



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

HVPZ Series

125℃ High Reliability
High Ripple Current



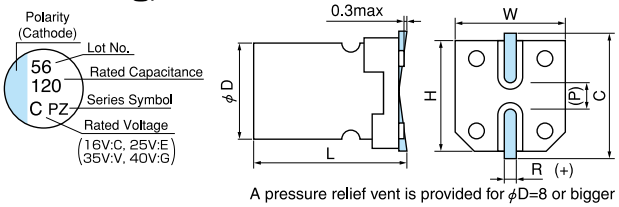
- 125℃, 2,000 to 3,000hours
- Solvent proof (within 2 minutes)

HVPZ ← High Ripple HVP (P.24)

■ Specifications

Items	Condition		Specifications			
Rated voltage (V)	–		16	25	35	40
Surge voltage (V)	Room temperature		20	32	44	50
Category temperature range (℃)	–		−55 to +125			
Capacitance tolerance (%)	120Hz/20℃		M : ±20			
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.16			
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3			
Endurance	125℃ rated voltage applied (With the rated ripple current)	Test 16V	φ6.3 : 2,000hours, D≥φ8 : 2,500hours			
		Test 25V≤	φ6.3 : 2,000hours, D≥φ8 : 3,000hours			
		△C/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			

■ Marking, Dimensions



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

(Unit : mm)

D$^{+0.5max}$	L$^{\pm0.3}$	W$^{\pm0.2}$	H$^{\pm0.2}$	C$^{\pm0.2}$	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			40		
18										6.3×6.0	55	1050
27							6.3×6.0	50	1070	6.3×7.7	48	1230
47				6.3×6.0	40	1260	6.3×7.7	45	1280			
56										8×10.5	30	1710
68				6.3×7.7	35	1380						
82	6.3×6.0	38	1320									
100							8×10.5	28	1780	10×10.5	21	2360
120	6.3×7.7	32	1440							10×12.5	16	2700
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									

Please refer to page 20 for ripple current frequency coefficients.

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

■ Part number

16 HV PZ 120 M
- M: Capacitance tolerance
- 120: Rated capacitance
- PZ: Series code
- HV: Type code
- 16: Rated voltage

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

HVHF Series

105℃ Long Life
High Ripple Current
High Capacitance



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

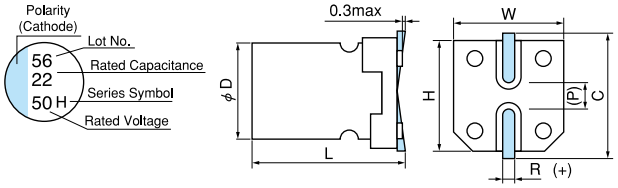
HVH (P.23) ↓ High Cap.
125℃ HVPF (P.29) ← HVHF

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 (℃)	–		−55 to +105				
Capacitance tolerance (%)	120Hz/20℃		M : ±20				
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.14	0.12	0.10	0.08	0.08
Leakage current (LC)	μA/after 2minutes (max)	≤ 63V	The greater value of either 0.01CV or 3				
		80V	The greater value of either 0.05CV or 100				
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	5,000hours				
		△C/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				

■ Marking, Dimensions



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

(Unit : mm)

D +0.5max	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		
10										6.3×6.0	120	1000			
15										6.3×7.7	80	1500			
22							6.3×6.0	80	1100				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									
56	6.3×6.0	50	1300							10×10.5	30	1800			
68				6.3×7.7	35	2000	8×10.5	30	1800	10×12.5	22	2100			
100	6.3×7.7	30	2000												
120							10×10.5	28	2000						
150				8×10.5	27	2300	10×12.5	19	2300						
220	8×10.5	27	2300												
270				10×10.5	20	2500									
330	10×10.5	20	2500	10×12.5	17	2800									
470	10×12.5	16	2800												

Please refer to page 20 for ripple current frequency coefficients.

ESR(mΩ)max at 100kHz, 20℃

Case size:φDxL(mm)

Rated ripple current mArms(100kHz, 105℃)

■ Part number

50 HV HF 22 M
- M: Capacitance tolerance
- 22: Rated capacitance
- HF: Series code
- HV: Type code
- 50: Rated voltage

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

HVPF Series

125℃ Long Life
High Ripple Current High Capacitance



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

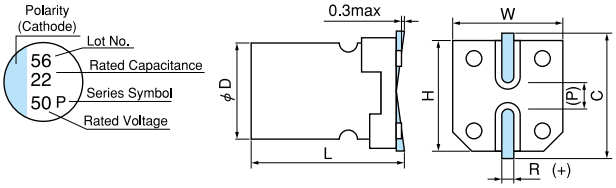
HVP (P.24) ↓ High Cap. HVPF

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 (℃)		–		−55 to +125				
Capacitance tolerance (%)		120Hz/20℃		M : ±20				
Dissipation Factor (tan δ)		tanδ (max) 120Hz/20℃		0.14	0.12	0.10	0.08	0.08
Leakage current (LC)		μA/after 2minutes (max)	≤ 63V	The greater value of either 0.01CV or 3				
			80V	The greater value of either 0.05CV or 100				
Endurance		125℃ rated voltage applied (With the rated ripple current)	Test	4,000hours				
			△C/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				

■ Marking, Dimensions



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

(Unit : mm)

D +0.5max	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		
10										6.3×6.0	120	700			
15										6.3×7.7	80	900			
22							6.3×6.0	80	750				8×10.5	45	1030
33							6.3×7.7	40	1100	8×10.5	40	1100	10×10.5	36	1270
39													10×12.5	32	1360
47				6.3×6.0	60	900									
56	6.3×6.0	50	900							10×10.5	30	1400			
68				6.3×7.7	35	1400	8×10.5	30	1250	10×12.5	22	1650			
100	6.3×7.7	30	1400												
120							10×10.5	28	1600						
150				8×10.5	27	1600	10×12.5	19	1820						
220	8×10.5	27	1600												
270				10×10.5	20	2000									
330	10×10.5	20	2000	10×12.5	17	2260									
470	10×12.5	16	2260												

Please refer to page 20 for ripple current frequency coefficients.

ESR(mΩ)max at 100kHz, 20℃

Case size:φDxL(mm)

Rated ripple current mArms(100kHz, 125℃)

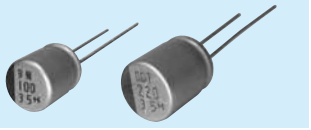
■ Part number

50 HV PF 22 M
- M — Capacitance tolerance
- 22 — Rated capacitance
- PF — Series code
- HV — Type code
- 50 — Rated voltage

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

HEH Series

Super Low ESR
High Voltage, Long Life



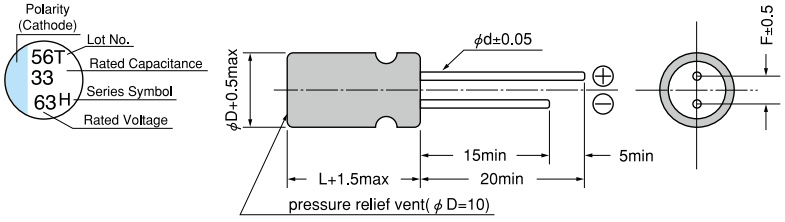
- 105℃ 3,000 to 10,000hours
- Laminated case
- Solvent proof (within 2 minutes)

HET (On the web)
↑ 135℃
HEP (On the web)
↑ 125℃
HEH

■ Specifications

Items	Condition		Specifications							
Rated voltage (V)	–		16	25	35	40	50	63	80	100
Surge voltage (V)	Room temperature		20	32	44	50	63	79	100	125
Category temperature range (℃)	–		−55 to +105							
Capacitance tolerance (%)	120Hz/20℃		M : ±20							
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.16							
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.05CV or 100							
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test 16V	φ6.3 : 3,000hours, D≥φ8 : 7,000hours							
		Test 25V≤	φ6.3 : 5,000hours, D≥φ8 : 10,000hours							
		△C/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							

■ 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

■ Size, ESR, Rated Ripple Current

μF \ V	16			25			35			40		
27										6.3×7.2	70	1250
47							6.3×7.2	60	1300			
56										8×9.5	32	1750
68				6.3×7.2	45	1400						
100							8×9.5	30	1800	10×9.5	24	2400
120	6.3×7.2	40	1500							10×11.5	18	2750
150				8×9.5	27	1900	10×9.5	23	2470			
220							10×11.5	17	2830			
270	8×9.5	26	2000	10×9.5	22	2530						
330				10×11.5	16	2900						
470	10×9.5	21	2600									
560	10×11.5	15	3000									

μF \ V	50			63			80			100		
10				6.3×7.2	100	1060				10×9.5	80	1450
12							10×9.5	70	1600	10×9.5	80	1450
15	6.3×7.2	80	1200				10×9.5	70	1600	10×11.5	60	1660
18							10×11.5	50	1830			
22				8×9.5	40	1560						
33				8×9.5★	40	1560						
	8×9.5	35	1670	10×9.5	30	2100						
47				10×9.5	30	2100						
56	10×9.5	25	2320	10×11.5	22	2400						
82	10×11.5	19	2650									

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

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

■ Part number

63 HE H 33 M T
- T: Sn plating terminal option
- M: Capacitance tolerance
- 33: Rated capacitance
- H: Series code
- HE: Type code
- 63: Rated voltage

63 HE H 33 M S T
- T: Sn plating terminal option
- S: S type code
- M: Capacitance tolerance
- 33: Rated capacitance
- H: Series code
- HE: Type code
- 63: Rated voltage

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

HEHZ Series

105℃ High Ripple Current



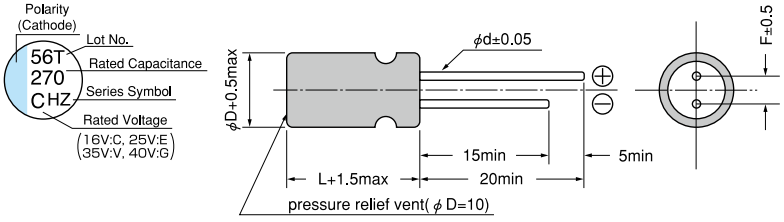
- 105℃ 2,000 to 5,000hours
- Laminated case
- Solvent proof (within 2 minutes)

HEPZ (P.32) 125℃ ↑ High Ripple → HEH (P.30)
HEHZ

■ Specifications

Items		Condition		Specifications			
Rated voltage	(V)	–		16	25	35	40
Surge voltage	(V)	Room temperature		20	32	44	50
Category temperature range (℃)		–		−55 to +105			
Capacitance tolerance (%)		120Hz/20℃		M : ±20			
Dissipation Factor (tan δ)		tanδ (max) 120Hz/20℃		0.16			
Leakage current (LC)		μA/after 2minutes (max)		The greater value of either 0.05CV or 100			
Endurance		105℃ rated voltage applied (With the rated ripple current)	Test	φ6.3 : 2,000hours, D≥φ8 : 5,000hours			
			△C/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			

■ 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

■ Size, ESR, Rated Ripple Current

μF \ V	16			25			35			40		
27										6.3×7.2	48	1770
47							6.3×7.2	45	1840			
56										8×9.5	30	2450
68				6.3×7.2	35	1980						
100							8×9.5	28	2550	10×9.5	21	3380
120	6.3×7.2	32	2070							10×11.5	16	3870
150				8×9.5	25	2690	10×9.5	20	3490			
220							10×11.5	15	4000			
270	8×9.5	23	2820	10×9.5	19	3580						
330				10×11.5	14	4140						
470	10×9.5	18	3750									
560	10×11.5	14	4340									

Please refer to page 20 for ripple current frequency coefficients.

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

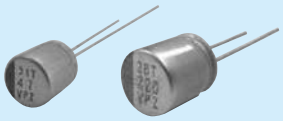
■ Part number

16 HE HZ 270 M T
- Sn plating terminal option
- Capacitance tolerance
- Rated capacitance
- Series code
- Type code
- Rated voltage

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

HEPZ Series

125℃, High Reliability
High Ripple Current



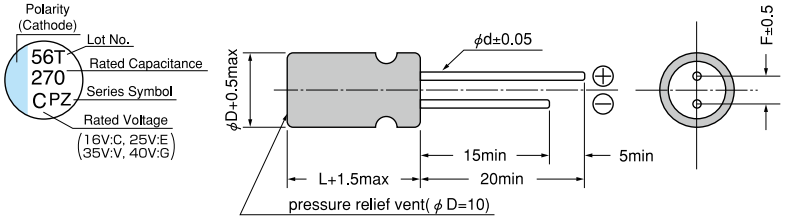
- 125℃, 2,000 to 3,000hours
- Laminated case
- Solvent proof (within 2 minutes)

HEPZ ← High Ripple HEP (On the web)

■ Specifications

Items	Condition		Specifications			
Rated voltage (V)	–		16	25	35	40
Surge voltage (V)	Room temperature		20	32	44	50
Category temperature range (℃)	–		−55 to +125			
Capacitance tolerance (%)	120Hz/20℃		M : ±20			
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.16			
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.05CV or 100			
Endurance	125℃ rated voltage applied (With the rated ripple current)	Test 16V	φ6.3 : 2,000hours, D≥φ8 : 2,500hours			
		Test 25V≤	φ6.3 : 2,000hours, D≥φ8 : 3,000hours			
		△C/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			

■ 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

■ Size, ESR, Rated Ripple Current

μF \ V	16			25			35			40		
27										6.3×7.2	48	1230
47							6.3×7.2	45	1280			
56										8×9.5	30	1710
68				6.3×7.2	35	1380						
100							8×9.5	28	1780	10×9.5	21	2360
120	6.3×7.2	32	1440							10×11.5	16	2700
150				8×9.5	25	1880	10×9.5	20	2440			
220							10×11.5	15	2800			
270	8×9.5	23	1970	10×9.5	19	2500						
330				10×11.5	14	2890						
470	10×9.5	18	2620									
560	10×11.5	14	3030									

Please refer to page 20 for ripple current frequency coefficients.

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

■ Part number

16 HE PZ 270 M T

- T — Sn plating terminal option
- M — Capacitance tolerance
- 270 — Rated capacitance
- PZ — Series code
- HE — Type code
- 16 — Rated voltage

Aluminum Electrolytic Capacitors

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

Features

- Wide voltage range 4V to 450V.
- Wide capacitance range 0.47μF to 15000μF.
- Self-healing mechanism of the dielectric.
  (aluminum oxide layer)
- Hard to be a short-circait.
  The primary filure mode is wear-out.
- The capacitance does not change by voltage.
- Strong to a pulse current and a pulse voltage
  as compared with the other type of capacitors.

Applications

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

CE-BE
CE-BD
CE-BS
CE-BSS
CE-FE
CE-LD
CE-FU
CE-FS
CE-FSS
CE-FH
CE-GA
CE-AX
CE-KX
CE-ZX
CE-ZC
CE-LX
CE-LS
CE-LH
CE-LL
CE-PC
CE-PH
CE-PS
CE-PF
CE-TH
CE-NP
CE-FN
ME-SWB
ME-UZ·SZ
ME-UAX·SAX
ME-SWG
ME-HC
ME-CZ
ME-CA
ME-CX
ME-AX
ME-WX
ME-WA
ME-WL
ME-WG
ME-LS
ME-FX
ME-PX
ME-HPC·HPD
ME-FC·FD
ME-FH
ME-SWN
ME-HWN

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

CE-BE Series

Small, Low Profile
3.9mm Height



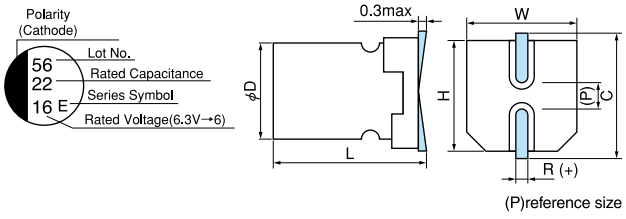
● Solvent proof (within 2 minutes)

CE-BD (P.35)
↓ Low Profile
CE-BE

■ Specifications

Items	Condition		Specifications						
Rated voltage (V)	–		4	6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		5.0	8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +85						
Capacitance tolerance (%)	120Hz/20℃		M : ±20						
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.40	0.30	0.24	0.20	0.16	0.14	0.12
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3						
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	7	4	3	2	2	2	2
		−40℃ Z/Z20℃	15	10	8	6	4	4	4
Endurance	85℃, 1,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value						
		tan δ	Less than 200% of the specified value						
		LC	Less than the specified value						

■ Marking, Dimensions



(P)reference size

(Unit : mm)

D+0.5max	L +0.1 −0.2	W±0.2	H±0.2	C±0.2	R	P
5	3.9	5.3	5.3	6.0	0.5 to 0.8	1.4
6.3	3.9	6.6	6.6	7.3	0.5 to 0.8	2.2

■ Size, Rated Ripple Current

μF \ V	4		6.3		10		16		25		35		50	
1.0													5×3.9	8.4
2.2													5×3.9	14
3.3													5×3.9	17
4.7									5×3.9	18	5×3.9	18	5×3.9	21
10							5×3.9	25	5×3.9	30	5×3.9	29	6.3×3.9	33
22			5×3.9	33	5×3.9	35	5×3.9★ 6.3×3.9	37 45	6.3×3.9	50	6.3×3.9	49		
33	5×3.9	33	5×3.9	40	5×3.9★ 6.3×3.9	43 50	6.3×3.9	50	6.3×3.9	60				
47	5×3.9	40	5×3.9★ 6.3×3.9	48 60	6.3×3.9	55	6.3×3.9	60						
68	5×3.9★ 6.3×3.9	48 60	6.3×3.9	70										
100	5×3.9★ 6.3×3.9	58 70	6.3×3.9	75										
180	6.3×3.9	85												

Please refer to page 15 for ripple current frequency coefficients.
★BES

Rated ripple current mArms(120Hz, 85℃)

Case size:φDxL(mm)

■ Part number

BE
16 CE 22 BE
- Series code
- Rated capacitance
- Type code
- Rated voltage

BES
16 CE 22 BES
- Series code
- Rated capacitance
- Type code
- Rated voltage

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

CE-BD Series

Small, Low Profile

4.5mm Height



- Solvent proof (within 2 minutes)

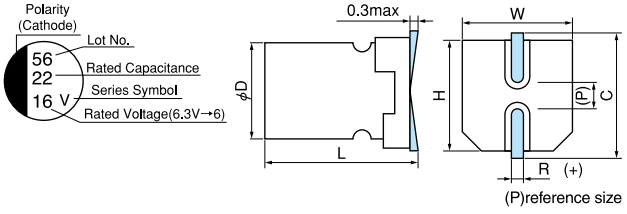
CE-BS (P.36)
↓ Low Profile
CE-BD

CE-BE
CE-BD
CE-BS
CE-BSS
CE-FE
CE-LD
CE-FU
CE-FS
CE-FSS
CE-FH
CE-GA
CE-AX
CE-KX
CE-ZX
CE-ZC
CE-LX
CE-LS
CE-LH
CE-LL
CE-PC
CE-PH
CE-PS
CE-PF
CE-TH
CE-NP
CE-FN

■ Specifications

Items	Condition		Specifications						
Rated voltage (V)	–		4	6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		5.0	8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +85						
Capacitance tolerance (%)	120Hz/20℃		M : ±20						
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.40	0.30	0.24	0.20	0.16	0.14	0.12
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3						
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	7	4	3	2	2	2	2
		−40℃ Z/Z20℃	15	10	8	6	4	4	4
Endurance	85℃, 1,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value						
		tan δ	Less than 200% of the specified value						
		LC	Less than the specified value						

■ Marking, Dimensions



(P)reference size

(Unit : mm)

D +0.5max	L +0.1 −0.2	W ±0.2	H ±0.2	C ±0.2	R	P
4	4.5	4.3	4.3	5.0	0.5 to 0.8	1.0
5	4.5	5.3	5.3	6.0	0.5 to 0.8	1.4
6.3	4.5	6.6	6.6	7.3	0.5 to 0.8	2.2

■ Size, Rated Ripple Current

μF \ V	4		6.3		10		16		25		35		50	
0.47													4×4.5	4.0
1.0													4×4.5	8.4
2.2													4×4.5	14
3.3													4×4.5	17
4.7									4×4.5	17	4×4.5	18	5×4.5	21
10							4×4.5	23	5×4.5	27	5×4.5	29	6.3×4.5	33
22			4×4.5	28	5×4.5	33	5×4.5	37	6.3×4.5	47	6.3×4.5	49		
33	4×4.5	28	5×4.5	37	5×4.5	41	6.3×4.5	51	6.3×4.5	57				
47	4×4.5	33	5×4.5	45	6.3×4.5	53	6.3×4.5	61						
100	5×4.5	56	6.3×4.5	70	6.3×4.5	74								
220	6.3×4.5	96												

Please refer to page 15 for ripple current frequency coefficients.

Rated ripple current mArms(120Hz, 85℃)

Case size:φDxL(mm)

■ Part number

16 CE 22 BD
- BD: Series code
- 22: Rated capacitance
- CE: Type code
- 16: Rated voltage

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

CE-BS Series

Standard



- Solvent proof (within 2 minutes)

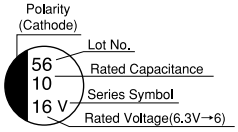
CE-FS (P.42)
↑ 105℃
CE-BS
↓ Small
CE-BSS (P.38)

■ Specifications

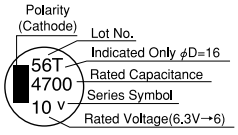
Items	Condition		Specifications								
Rated voltage (V)	–		4	6.3	10	16	25	35	50	63	100
Surge voltage (V)	Room temperature		5.0	8.0	13	20	32	44	63	79	125
Category temperature range (℃)	–		−40 to +85								
Capacitance tolerance (%)	120Hz/20℃		M : ±20								
Dissipation Factor (tanδ)	tanδ (max) 120Hz/20℃	φ4 to φ6.3	0.35	0.26	0.20	0.16	0.14	0.12	0.12	0.12	0.10
		φ8 to φ16	0.40	0.30	0.24	0.20	0.16	0.14	0.12	0.12	0.10
			Exceeding 1,000μF, +0.02 every 1,000μF								
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3								
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	7	4	3	2	2	2	2	2	2
		−40℃ Z/Z20℃	15	8	6	4	4	3	3	3	3
Endurance	85℃, 2,000hours 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								

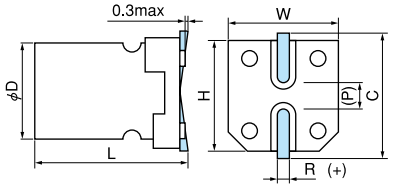
■ Marking, Dimensions

[φD≤10]



[φD≥12.5]





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

(P)reference size

(Unit : mm)

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

■ Size, Rated Ripple Current

μF \ V	4		6.3		10		16		25	
4.7									4×5.4	19
10							4×5.4	25	5×5.4	28
22			4×5.4	31	5×5.4	35	5×5.4	39	6.3×5.4	52
33	4×5.4	26	5×5.4	39	5×5.4	43	6.3×5.4	57	6.3×5.4	63
47	4×5.4	34	5×5.4	47	6.3×5.4	59	6.3×5.4	68	6.3×6.0	68
100	5×5.4	61	6.3×5.4	71	6.3×5.4	76	6.3×5.4	86	6.3×7.7	130
150					6.3×6.0	88	6.3×7.7	135	8×10.2	200
220	6.3×5.4	82	6.3×6.0	95	6.3×7.7	150	6.3×7.7	150	8×10.2	250
									10×7.7	250
330	6.3×6.0	102	6.3×7.7	150	8×10.2	280	8×10.2	280	8×10.2	310
							10×7.7	280		
470	6.3×7.7	150	8×10.2	300	8×10.2	300	8×10.2	330	10×10.2	430
					10×7.7	300				
680			8×10.2	300			10×10.2	450		
			10×7.7	300						
1000			8×10.2	330	10×10.2	450			12.5×13.5	660
	10×7.7	330								
1500			10×10.2	450			12.5×13.5	710		
2200					12.5×13.5	730			16×16.5	1150
3300			12.5×13.5	750			16×16.5	1200		
4700					16×16.5	1260				
6800			16×16.5	1330						

μF \ V	35		50		63		100	
0.47			4×5.4	5	4×5.4	5		
1.0			4×5.4	10	4×5.4	10	4×6.0	10
2.2			4×5.4	15	4×5.4	15	6.3×6.0	20
3.3			4×5.4	18	5×5.4	20	6.3×6.0	28
4.7	4×5.4	20	5×5.4	23	5×5.4	23	6.3×6.0	35
10	5×5.4	30	6.3×5.4	34	6.3×5.4	34	6.3×7.7	50
22	6.3×5.4	54	6.3×6.0	60	6.3×7.7	70	8×10.2	120
33	6.3×6.0	60	6.3×7.7	85	8×10.2	160	10×10.2	190
47	6.3×6.0	70	6.3×7.7	90	8×10.2	170	12.5×13.5	330
68					8×10.2	180	12.5×13.5	350
82			10×7.7	200				
100	6.3×7.7	120	8×10.2	200	10×10.2	280	16×16.5	550
150	8×10.2	220					16×16.5	560
	10×7.7	220						
220	8×10.2	270	10×10.2	320	12.5×13.5	410		
330	10×10.2	340	12.5×13.5	520				
390			12.5×13.5	550				
470	12.5×13.5	590			16×16.5	700		
680	12.5×13.5	610						
1000	16×16.5	1000	16×16.5	940				
1500	16×16.5	1060						

Please refer to page 15 for ripple current frequency coefficients.

Case size:φDxL(mm)
10×7.7:CE-BSA
16×16.5:CE-BST

Rated ripple current
mArms(120Hz, 85℃)

■ Part number

BS
16 CE 10 BS
- BS: Series code
- 10: Rated capacitance
- CE: Type code
- 16: Rated voltage

BSA
10 CE 470 BSA
- BSA: Series code
- 470: Rated capacitance
- CE: Type code
- 10: Rated voltage

BST
10 CE 4700 BS T
- T: Sn plating terminal option
- BS: Series code
- 4700: Rated capacitance
- CE: Type code
- 10: Rated voltage

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

CE-BSS Series

Small, High Capacitance

5.4mm Height



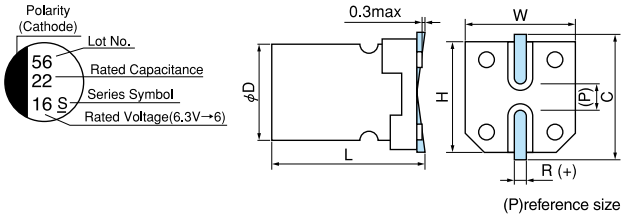
- Solvent proof (within 2 minutes)

CE-BS (P.36)
↓ Small
CE-BSS

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +85					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.28	0.24	0.20	0.16	0.14	0.12
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2
		−40℃ Z/Z20℃	10	8	6	4	4	4
Endurance	85℃, 2,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value					
		tan δ	Less than 200% of the specified value					
		LC	Less than the specified value					

■ Marking, Dimensions



(P)reference size

(Unit : mm)

D+0.5max	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	18
10							4×5.4	20	4×5.4	20	5×5.4	27
22			4×5.4	28	4×5.4	28	5×5.4	35	5×5.4	36	6.3×5.4	40
33	4×5.4	31	4×5.4	32	5×5.4	40	5×5.4	42	6.3×5.4	58		
47	4×5.4	36	5×5.4	43	5×5.4	44	6.3×5.4	65	6.3×5.4	65		
56	5×5.4	46	5×5.4	46	5×5.4	48	6.3×5.4	68				
100	5×5.4	47	5×5.4	50								
150	6.3×5.4	71	6.3×5.4	76								
220	6.3×5.4	74										

Please refer to page 15 for ripple current frequency coefficients.

Rated ripple current mArms(120Hz, 85℃)

Case size:φDxL(mm)

■ Part number

16 CE 22 BSS
- BSS: Series code
- 22: Rated capacitance
- CE: Type code
- 16: Rated voltage

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

CE-FE Series

Small, Low Profile

3.9mm Height



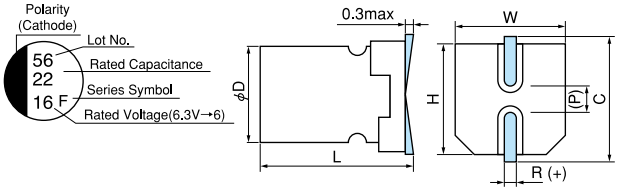
- 105℃, 1,000hours
- Solvent proof (within 2 minutes)

CE-FD (On the web)
↓ Low Profile
CE-FE

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.38	0.32	0.20	0.16	0.14	0.14
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2
		−40℃ Z/Z20℃	10	8	6	4	4	4
Endurance	105℃, 1,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value					
		tan δ	Less than 300% of the specified value					
		LC	Less than the specified value					

■ Marking, Dimensions



(P)reference size

(Unit : mm)

D +0.5max	L +0.1 −0.2	W ±0.2	H ±0.2	C ±0.2	R	P
5	3.9	5.3	5.3	6.0	0.5 to 0.8	1.4
6.3	3.9	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											5×3.9	6
2.2											5×3.9	10
3.3											5×3.9	12
4.7							5×3.9	13	5×3.9	13	5×3.9	16
10					5×3.9	18	5×3.9	21	5×3.9	22	6.3×3.9	23
22					5×3.9★	26						
	5×3.9	23	5×3.9	25	6.3×3.9	31	6.3×3.9	35	6.3×3.9	34		
33			5×3.9★	30								
	5×3.9	28	6.3×3.9	35	6.3×3.9	35	6.3×3.9	42				
47	5×3.9★	34										
	6.3×3.9	42	6.3×3.9	38	6.3×3.9	42						
68	6.3×3.9	49										
100	6.3×3.9	52										

Please refer to page 15 for ripple current frequency coefficients.
★FES

Rated ripple current mArms(120Hz, 105℃)

Case size:φDxL(mm)

■ Part number

FE
16 CE 22 FE
- Series code
- Rated capacitance
- Type code
- Rated voltage

FES
16 CE 22 FES
- Series code
- Rated capacitance
- Type code
- Rated voltage

CE-BE
CE-BD
CE-BS
CE-BSS
CE-FE
CE-LD
CE-FU
CE-FS
CE-FSS
CE-FH
CE-GA
CE-AX
CE-KX
CE-ZX
CE-ZC
CE-LX
CE-LS
CE-LH
CE-LL
CE-PC
CE-PH
CE-PS
CE-PF
CE-TH
CE-NP
CE-FN

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

CE-LD Series

4.5mm Height

Long Life



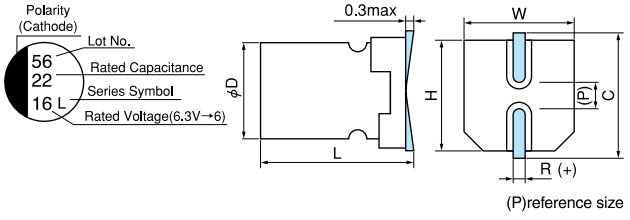
- 105℃, 2,000 to 3,000hours
- Solvent proof (within 2 minutes)

CE-LD ← Long Life CE-FD (On the web)
↑ 105℃
CE-BD (P.35)

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.35	0.30	0.20	0.16	0.14	0.12
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2
		−40℃ Z/Z20℃	10	8	6	4	4	4
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ4 to φ5 : 2,000hours, φ6.3 : 3,000hours					
		△C/C	Within ±30% of the initial value					
		tan δ	Less than 300% of the specified value					
		LC	Less than the specified value					

■ Marking, Dimensions



(P)reference size

(Unit : mm)

D +0.5max	L +0.1 −0.2	W ±0.2	H ±0.2	C ±0.2	R	P
4	4.5	4.3	4.3	5.0	0.5 to 0.8	1.0
5	4.5	5.3	5.3	6.0	0.5 to 0.8	1.4
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	
0.47											4×4.5	2.8
1.0											4×4.5	5.9
2.2											4×4.5	10
3.3											4×4.5	12
4.7							4×4.5	12	4×4.5	13	5×4.5	15
10					4×4.5	17	5×4.5	19	5×4.5	24	6.3×4.5	24
22	4×4.5	20	5×4.5	24	5×4.5	26	6.3×4.5	33	6.3×4.5	35		
33	5×4.5	26	5×4.5	29	6.3×4.5	36	6.3×4.5	40				
47	5×4.5	32	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 15 for ripple current frequency coefficients.

Rated ripple current mArms(120Hz, 105℃)

Case size:φDxL(mm)

■ Part number

16 CE 22 LD
- LD: Series code
- 22: Rated capacitance
- CE: Type code
- 16: Rated voltage

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

CE-FU Series

High Temperature Reflow Soldering

5.4mm Height



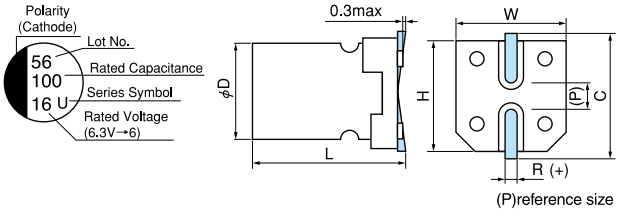
- 105℃, 1,000hours
- Solvent proof (within 2 minutes)

CE-FU
↑ High Temperature Reflow
CE-FS (P.42)

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−55 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.30	0.24	0.20	0.16	0.14	0.12
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−40℃ Z/Z20℃	4	3	2	2	2	2
		−55℃ Z/Z20℃	8	8	4	4	3	3
Endurance	105℃, 1,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value					
		tan δ	Less than 300% of the specified value					
		LC	Less than the specified value					

■ Marking, Dimensions



(P)reference size

(Unit : mm)

D +0.5max	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	
1.0											4×5.4	8
2.2											4×5.4	11
3.3											4×5.4	13
4.7							4×5.4	13	4×5.4	14	5×5.4	16
10					4×5.4	18	5×5.4	20	5×5.4	21	6.3×5.4	24
22	4×5.4	22	5×5.4	25	5×5.4	27	6.3×5.4	36	6.3×5.4	38		
33	5×5.4	27	5×5.4	30	6.3×5.4	40	6.3×5.4	44				
47	5×5.4	33	6.3×5.4	41	6.3×5.4	48						
100	6.3×5.4	50	6.3×5.4	53	6.3×5.4	60						

Please refer to page 15 for ripple current frequency coefficients.

Case size:φDxL(mm)

Rated ripple current mArms(120Hz, 105℃)

■ Part number

16 CE 100 FU
- FU: Series code
- 100: Rated capacitance
- CE: Type code
- 16: Rated voltage

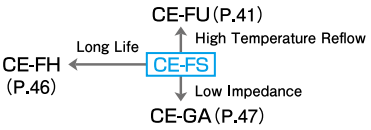
Aluminum Electrolytic Type / Surface Mount Type **RoHS compliance**

CE-FS Series

105℃ Standard



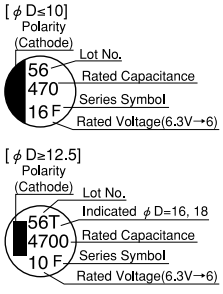
- 105℃, 1,000 to 2,000hours
- Solvent proof (within 2 minutes)

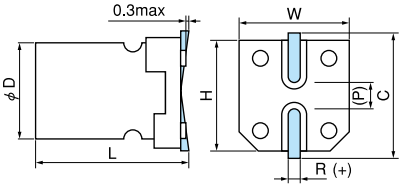


■ Specifications

Items	Condition		Specifications							
Rated voltage (V)	–		6.3	10	16	25	35	50	63	100
Surge Voltage (V)	Room temperature		8.0	13	20	32	44	63	79	125
Category temperature range (℃)	–		−55 to +105							−40 to +105
Capacitance tolerance (%)	120Hz/20℃		M : ±20							
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃	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)		The greater value of either 0.01CV or 3							
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	3	2	2	2	2	2	3
		−55℃ Z/Z20℃	8	5	4	3	3	3	3	–
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ4 to φ6.3, φ10 × 7.7 : 1,000hours, φ8 to φ18 : 2,000hours							
		△C/C	Within ±25% of the initial value							
		tan δ	Less than 200% of the specified value							
		LC	Less than the specified value							

■ Marking, Dimensions





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

(P)reference size

(Unit : mm)

D$^{+0.5max}$	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	$7.7^{±0.3}$	10.3	10.3	11.0	1.0 to 1.4	4.6
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	13	4×5.4	14
10					4×5.4	18	5×5.4	20	5×5.4	21
22	4×5.4	22	5×5.4	25	5×5.4	27	6.3×5.4	36	6.3×5.4	38
33	5×5.4	27	5×5.4	30	6.3×5.4	40	6.3×5.4	44	6.3×6.0	42
47	5×5.4	33	6.3×5.4	41	6.3×5.4	48	6.3×6.0	48	6.3×6.0	49
100	6.3×5.4	50	6.3×5.4	53	6.3×5.4	60	6.3×7.7	91	6.3×7.7	84
150			6.3×6.0	62	6.3×7.7	95	8×10.2	140	8×10.2	155
									10×7.7	155
220	6.3×6.0	67	6.3×7.7	105	6.3×7.7	105	8×10.2	175	8×10.2	190
							10×7.7	175		
330	6.3×7.7	105	8×10.2	195	8×10.2	195	8×10.2	220	10×10.2	300
					10×7.7	195				
470	8×10.2	210	8×10.2	210	8×10.2	230	10×10.2	300	12.5×13.5	410
			10×7.7	210						
680	8×10.2	210			10×10.2	310			12.5×13.5	430
	10×7.7	210								
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
82	10×7.7	140				
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 refer to page 15 for ripple current frequency coefficients.

Case size:φDxL(mm)
10×7.7:CE-FSA
φ16, φ18:CE-FST

Rated ripple current mArms(120Hz, 105℃)

■ Part number

FS
16 CE 470 FS
- Series code
- Rated capacitance
- Type code
- Rated voltage

FSA
10 CE 470 FSA
- Series code
- Rated capacitance
- Type code
- Rated voltage

FST
10 CE 4700 FS T
- Sn plating terminal option
- Series code
- Rated capacitance
- Type code
- Rated voltage

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

CE-FS Series

105℃ Standard
High Voltage

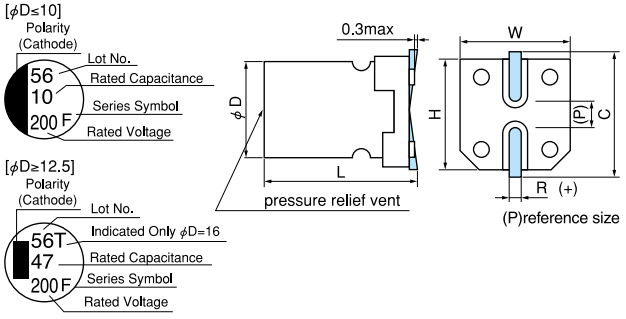


- 160 to 400V, 105℃, 1,000 to 2,000hours
- Non solvent proof

■ Specifications

Items	Condition		Specifications			
Rated voltage (V)	–		160	200	250	400
Surge voltage (V)	Room temperature		200	250	300	450
Category temperature range (℃)	–		−40 to +105			
Capacitance tolerance (%)	120Hz/20℃		M : ±20			
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.20			0.25
Leakage current (LC)	μA/after 2minutes (max)	CV ≤ 1,000	0.03CV +15			
		CV > 1,000	0.02CV +25			
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	3	3	3	6
		−40℃ Z/Z20℃	6	6	6	10
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ8 : 1,000hours, φ10 to φ16 : 2,000hours			
		△C/C	Within ±25% of the initial value			
		tan δ	Less than 200% of the specified value			
		LC	Less than the specified value			

■ Marking, Dimensions



(Unit : mm)

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

■ Size, Rated Ripple Current

μF \ V	160		200		250		400	
2.2							8×10.5	25
3.3					8×10.5	31	10×10.5	36
4.7					8×10.5	37	10×10.5	38
6.8					8×10.5	44	12.5×13.5	47
10	8×10.5	57	10×10.5	64	10×10.5	64	12.5×13.5	57
22	12.5×13.5	112	12.5×13.5	112	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 15 for ripple current frequency coefficients.

Rated ripple current mArms(120Hz, 105℃)

Case size:φDxL(mm) 16×16.5:CE-FST

■ Part number

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

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

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

CE-FSS Series

Small, High Capacitance

5.4mm Height



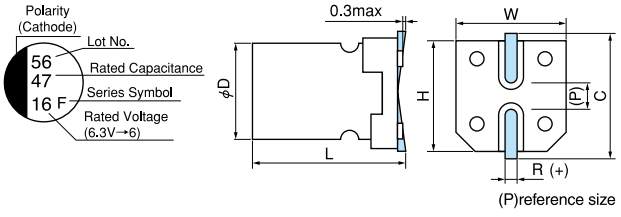
- Solvent proof (within 2 minutes)

CE-FS (P.42)
↓ Small
CE-FSS

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.35	0.30	0.26	0.20	0.16	0.12
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2
		−40℃ Z/Z20℃	10	8	6	4	4	4
Endurance	105℃, 1,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value(6.3WV:±30%)					
		tan δ	Less than 300% of the specified value					
		LC	Less than the specified value					

■ Marking, Dimensions



(Unit : mm)

D+0.5max	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 15 for ripple current frequency coefficients.

Rated ripple current mArms(120Hz, 105℃)

Case size:φDxL(mm)

■ Part number

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

CE-BE
CE-BD
CE-BS
CE-BSS
CE-FE
CE-LD
CE-FU
CE-FS
CE-FSS
CE-FH
CE-GA
CE-AX
CE-KX
CE-ZX
CE-ZC
CE-LX
CE-LS
CE-LH
CE-LL
CE-PC
CE-PH
CE-PS
CE-PF
CE-TH
CE-NP
CE-FN

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

CE-FH Series

Long Life



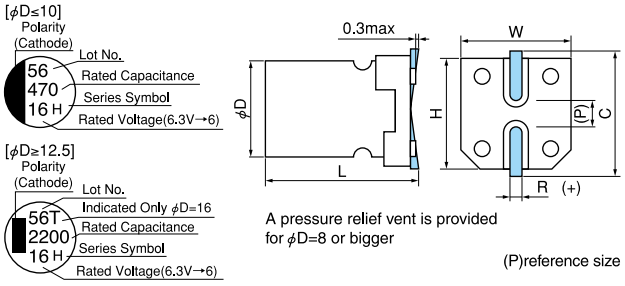
- 105℃, 2,000 to 5,000hours
- Solvent proof (within 2 minutes)

CE-FH ← Long Life — CE-FS (P.42)

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tanδ)	tanδ (max) 120Hz/20℃		0.30	0.24	0.20	0.16	0.14	0.14
			Exceeding 1,000μF, +0.02 every 1,000μF					
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2
		−40℃ Z/Z20℃	8	6	4	4	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ4 to φ6.3 : 2,000hours, φ8 to φ10 : 3,000hours, φ12.5 to φ16 : 5,000hours					
		△C/C	Within ±25% of the initial value					
		tanδ	Less than 250% of the specified value					
		LC	Less than the specified value					

■ Marking, Dimensions



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

(P)reference size

(Unit : mm)

D+0.5max	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, Rated Ripple Current

μF \ V	6.3		10		16		25		35		50	
1.0											4×6.0	7
2.2											4×6.0	11
3.3											4×6.0	13
4.7							4×6.0	13	4×6.0	15	5×6.0	19
10					4×6.0	18	5×6.0	23	5×6.0	25	6.3×6.0	32
22	4×6.0	22	5×6.0	27	5×6.0	30	6.3×6.0	42	6.3×6.0	44	6.3×7.7	60
33	5×6.0	30	5×6.0	35	6.3×6.0	44	6.3×6.0	58	6.3×7.7	77	8×10.2	140
47	5×6.0	36	6.3×6.0	46	6.3×6.0	60	6.3×7.7	91	8×10.2	150	8×10.2	150
100	6.3×6.0	67	6.3×6.0	62	6.3×7.7	95	8×10.2	150	8×10.2	160	10×10.2	220
220	6.3×7.7	105	8×10.2	175	8×10.2	175	8×10.2	195	10×10.2	290	12.5×13.5	340
330	8×10.2	195	8×10.2	195	8×10.2	210	10×10.2	290	12.5×13.5	380		
470	8×10.2	210	8×10.2	210	10×10.2	290	12.5×13.5	400			16×16.5	610
680			10×10.2	300			12.5×13.5	415				
1000	10×10.2	300			12.5×13.5	440			16×16.5	620		
1500			12.5×13.5	480			16×16.5	720				
2200	12.5×13.5	490			16×16.5	785						
3300			16×16.5	820								
4700	16×16.5	860										

Please refer to page 15 for ripple current frequency coefficients.

Rated ripple current mArms(120Hz, 105℃)

Case size:φDxL(mm) 16×16.5:CE-FHT

■ Part number

FH
16 CE 470 FH
- Series code
- Rated capacitance
- Type code
- Rated voltage

FHT
16 CE 2200 FH T
- Sn plating terminal option
- Series code
- Rated capacitance
- Type code
- Rated voltage

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

CE-GA Series

Low Impedance
5.4mm Height



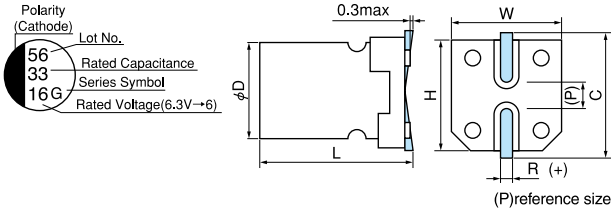
- 105℃, 1,000hours
- Solvent proof (within 2 minutes)

CE-AX (P.48)
↑ Low Impedance
CE-GA
↑ Low Impedance
CE-FS (P.42)

■ Specifications

Items	Condition		Specifications						
Rated voltage (V)	–		6.3	10	16	25	35	50	63
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79
Category temperature range (℃)	–		−55 to +105						
Capacitance tolerance (%)	120Hz/20℃		M : ±20						
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.24	0.20	0.16	0.14	0.12	0.12	0.12
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3						
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	2	2	2	2	2	2
		−55℃ Z/Z20℃	5	4	4	3	3	3	3
Endurance	105℃, 1,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value						
		tan δ	Less than 200% of the specified value						
		LC	Less than the specified value						

■ Marking, Dimensions



(Unit : mm)

D+0.5max	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						
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 15 for ripple current frequency coefficients.

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

■ Part number

16 CE 33 GA
- GA — Series code
- 33 — Rated capacitance
- CE — Type code
- 16 — Rated voltage

CE-BE
CE-BD
CE-BS
CE-BSS
CE-FE
CE-LD
CE-FU
CE-FS
CE-FSS
CE-FH
CE-GA
CE-AX
CE-KX
CE-ZX
CE-ZC
CE-LX
CE-LS
CE-LH
CE-LL
CE-PC
CE-PH
CE-PS
CE-PF
CE-TH
CE-NP
CE-FN

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

CE-AX Series

Low Impedance



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

CE-KX (P.50) — Low Impedance
Long Life
CE-LS (P.56) ← CE-AX

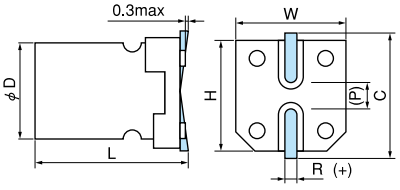
■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−55 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃	φ4 to φ6.3	0.24	0.20	0.16	0.14	0.12	0.12
		φ8 to φ16	0.28	0.24	0.20	0.16	0.14	0.14
			Exceeding 1,000μF, +0.02 every 1,000μF					
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	2	2	2	2	2
		−55℃ Z/Z20℃	5	4	4	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ4 to φ6.3, φ10 × 7.7 : 1,000hours, φ8 to φ16 : 2,000hours					
		△C/C	Within ±25% of the initial value					
		tan δ	Less than 200% of the specified value					
		LC	Less than the specified value					

■ Marking, Dimensions

[φD≤10]
Polarity (Cathode)
Lot No.
56
470
16 A
Rated Capacitance
Series Symbol
Rated Voltage(6.3V→6)

[φD≥12.5]
Polarity (Cathode)
Lot No.
Indicated Only φD=16
56T
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+0.5max	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	7.7	10.3	10.3	11.0	1.0 to 1.4	4.6
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	6.3×7.7	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	6.3×7.7	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	6.3×7.7	0.34	280			
100	6.3×6.0	0.44	230	→			6.3×6.0	0.44	230	6.3×7.7	0.34	280	8×10.2	0.17	450	8×10.2	0.39	300
150	6.3×6.0	0.44	230	6.3×6.0	0.44	230	6.3×7.7	0.34	280	8×10.2	0.17	450	8×10.2	0.17	450	10×10.2	0.21	450
										→			10×7.7	0.17	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	10×10.2	0.21	450
										10×7.7	0.17	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	10×10.2	0.090	670	12.5×13.5	0.14	620
				→			10×7.7	0.17	450									
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			
				10×7.7	0.17	450												
680	8×10.2	0.17	450	→			10×10.2	0.090	670				12.5×13.5	0.066	900			
	10×7.7	0.17	450															
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 15 for
ripple current frequency coefficients.

Case size:φDxL(mm)
10×7.7:CE-AXA
16×16.5:CE-AXT

Impedance(Ω)
max at 100kHz, 20℃

Rated ripple current
mArms(100kHz, 105℃)

■ Part number

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

AXA
10 CE 470 AXA
- Series code
- Rated capacitance
- Type code
- Rated voltage

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

CE-BE
CE-BD
CE-BS
CE-BSS
CE-FE
CE-LD
CE-FU
CE-FS
CE-FSS
CE-FH
CE-GA
CE-AX
CE-KX
CE-ZX
CE-ZC
CE-LX
CE-LS
CE-LH
CE-LL
CE-PC
CE-PH
CE-PS
CE-PF
CE-TH
CE-NP
CE-FN

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

CE-KX Series

Low Impedance



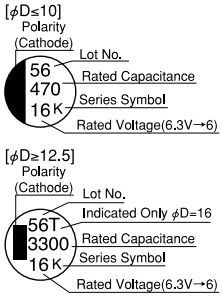
- 10 to 20% less impedance than CE-AX series at high frequencies.
- 105℃, 1,000 to 2,000hours
- Solvent proof (within 2 minutes)

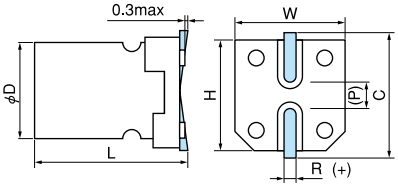
CE-ZX (P.52) — Low ESR
CE-LX (P.54) — Long Life — CE-KX — Low Impedance — CE-AX (P.48)

■ Specifications

Items	Condition		Specifications								
Rated voltage (V)	–		6.3	10	16	25	35	50	63	80	100
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79	100	125
Category temperature range (℃)	–		−55 to +105								
Capacitance tolerance (%)	120Hz/20℃		M : ±20								
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃	φ4 to φ6.3	0.24	0.20	0.16	0.14	0.12	0.12	0.10	0.08	0.07
		φ8 to φ16	0.28	0.24	0.20	0.16	0.14	0.14	0.12	0.10	0.08
			Exceeding 1,000μF, +0.02 every 1,000μF								
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3								
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	2	2	2	2	2	2	2	2
		−55℃ Z/Z20℃	5	4	4	3	3	3	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ4 to φ6.3 : 1,000hours, φ8 to φ16 : 2,000hours								
		△C/C	Within ±25% of the initial value								
		tan δ	Less than 200% of the specified value								
		LC	Less than the specified value								

■ Marking, Dimensions





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

(P)reference size

(Unit : mm)

D +0.5max	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		
4.7													4×6.0	1.45	90
10										4×6.0	1.45	90	5×6.0	0.70	170
15							4×6.0	1.45	90	5×6.0	0.70	170	5×6.0	0.70	170
22				4×6.0	1.45	90	5×6.0	0.70	170	5×6.0	0.70	170	5×6.0	0.70	170
27	4×6.0	1.45	90												
33	→			5×6.0	0.70	170	→			6.3×6.0	0.39	250	6.3×6.0	0.39	250
47	5×6.0	0.70	170	→			6.3×6.0	0.39	250	6.3×6.0	0.39	250	6.3×6.0	0.39	250
56	5×6.0	0.70	170							6.3×6.0	0.39	250			
68	→			6.3×6.0	0.39	250	6.3×6.0	0.39	250	6.3×6.0	0.39	250	6.3×7.7	0.30	300
100	6.3×6.0	0.39	250	→			6.3×6.0	0.39	250	6.3×7.7	0.30	300	8×10.2	0.15	600
150	6.3×6.0	0.39	250	6.3×6.0	0.39	250	6.3×7.7	0.30	300	8×10.2	0.15	600	8×10.2	0.15	600
220	6.3×6.0	0.39	250	6.3×7.7	0.30	300	6.3×7.7	0.30	300	8×10.2	0.15	600	8×10.2	0.15	600
330	6.3×7.7	0.30	300	8×10.2	0.15	600	8×10.2	0.15	600	8×10.2	0.15	600	10×10.2	0.080	850
470	8×10.2	0.15	600	8×10.2	0.15	600	8×10.2	0.15	600	10×10.2	0.080	850	12.5×13.5	0.058	1150
680	8×10.2	0.15	600	→			10×10.2	0.080	850				12.5×13.5	0.058	1150
1000	8×10.2	0.15	600	10×10.2	0.080	850				12.5×13.5	0.058	1150	16×16.5	0.035	1800
1500	10×10.2	0.080	850				12.5×13.5	0.058	1150				16×16.5	0.035	1800
2200				12.5×13.5	0.058	1150				16×16.5	0.035	1800			
3300	12.5×13.5	0.058	1150				16×16.5	0.035	1800						
4700				16×16.5	0.035	1800									
6800	16×16.5	0.035	1800												

μF \ V	50			63			80			100		
2.2										6.3×6.0	2.70	42
3.3										6.3×6.0	2.40	45
4.7	4×6.0	2.55	64	5×6.0	2.00	55	6.3×6.0	2.40	45	6.3×6.0	2.40	45
10	6.3×6.0	0.52	215	6.3×6.0	1.00	90	6.3×7.7	2.00	65	6.3×7.7	2.00	65
22	6.3×6.0	0.52	215	6.3×7.7	0.80	135	8×10.2	0.90	140	8×10.2	0.90	140
33	6.3×7.7	0.44	243	8×10.2	0.35	280	8×10.2	0.90	140	10×10.2	0.50	220
47	6.3×7.7	0.44	243	8×10.2	0.35	280	10×10.2	0.50	220	12.5×13.5	0.24	500
68							12.5×13.5	0.24	500	12.5×13.5	0.24	500
100	8×10.2	0.22	400	10×10.2	0.20	480	12.5×13.5	0.24	500	16×16.5	0.14	800
150							12.5×13.5	0.24	500	16×16.5	0.14	800
220	10×10.2	0.13	585	12.5×13.5	0.14	800						
330	12.5×13.5	0.10	800				16×16.5	0.14	800			
470				16×16.5	0.065	1410						
1000	16×16.5	0.060	1610									

→Please use the higher voltage model in the next.
Please refer to page 15 for
ripple current frequency coefficients.

Case size:φDxL(mm)
16×16.5:CE-KXT

Rated ripple current
mArms(100kHz, 105℃)

Impedance(Ω)
max at 100kHz, 20℃

■ Part number

KX

16 CE 470 KX

- Series code
- Rated capacitance
- Type code
- Rated voltage

KXT

16 CE 3300 KX T

- Sn plating terminal option
- Series code
- Rated capacitance
- Type code
- Rated voltage

CE-BE
CE-BD
CE-BS
CE-BSS
CE-FE
CE-LD
CE-FU
CE-FS
CE-FSS
CE-FH
CE-GA
CE-AX
CE-KX
CE-ZX
CE-ZC
CE-LX
CE-LS
CE-LH
CE-LL
CE-PC
CE-PH
CE-PS
CE-PF
CE-TH
CE-NP
CE-FN

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

CE-ZX Series

Super Low ESR



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

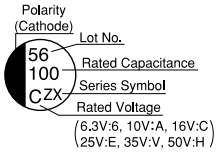
CE-ZX ← Low ESR — CE-KX (P.50)
CE-ZX ↓ Small — CE-ZC (P.53)

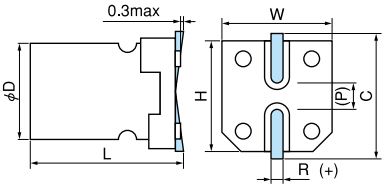
NEW

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	12.5	20	32	44	63
Category temperature range (℃)	–		−55 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.26	0.19	0.16	0.14	0.12	0.10
Leakage current (LC)	μA/after 2minutes (max)		0.01CV					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	3	3	3	3	3
		−55℃ Z/Z20℃	4	4	4	3	3	3
Endurance	105℃, 2,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value					
		tan δ	Less than 200% of the specified value					
		LC	Less than the specified value					

■ Marking, Dimensions





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

(P)reference size

(Unit : mm)

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

■ Size, ESR, Rated Ripple Current

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

Please refer to page 15 for ripple current frequency coefficients.
★1 ZXS ★2 ZXC

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

■ Part number

ZX
16 CE 100 ZX
- ZX: Series code
- 100: Rated capacitance
- CE: Type code
- 16: Rated voltage

ZXS
16 CE 100 ZXS
- ZXS: Series code
- 100: Rated capacitance
- CE: Type code
- 16: Rated voltage

ZXC
16 CE 1000 ZXC
- ZXC: Series code
- 1000: Rated capacitance
- CE: Type code
- 16: Rated voltage

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

CE-ZC Series

Super Low ESR
Small, High Capacitance



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

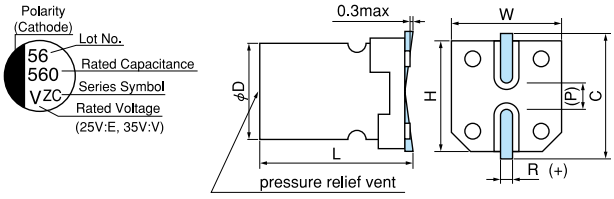
CE-ZX (P.52)
↓ Small
CE-ZC

NEW

■ Specifications

Items	Condition		Specifications	
Rated voltage (V)	–		25	35
Surge voltage (V)	Room temperature		32	44
Category temperature range (℃)	–		−55 to +105	
Capacitance tolerance (%)	120Hz/20℃		M : ±20	
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.14	0.12
Leakage current (LC)	μA/after 2minutes (max)		0.01CV	
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	3
		−55℃ Z/Z20℃	3	3
Endurance	105℃, 2,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value	
		tan δ	Less than 200% of the specified value	
		LC	Less than the specified value	

■ Marking, Dimensions



(P)reference size

(Unit : mm)

D +0.5max	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		
330				8×10.5	0.08	850
470	8×10.5	0.08	850			
560				10×10.5	0.06	1190
820	10×10.5	0.06	1190			

Please refer to page 15 for ripple current frequency coefficients.

Case size:φDxL(mm)

ESR(Ω) max at 100kHz, 20℃

Rated ripple current mArms(100kHz, 105℃)

■ Part number

35 CE 560 ZC
- ZC: Series code
- 560: Rated capacitance
- CE: Type code
- 35: Rated voltage

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

CE-LX Series

Low Impedance
Long Life



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

Long Life
CE-LL (P.59) ← CE-LX

■ Specifications

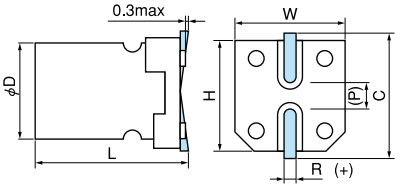
Items	Condition		Specifications								
Rated voltage (V)	–		6.3	10	16	25	35	50	63	80	100
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79	100	125
Category temperature range (℃)	–		−55 to +105								
Capacitance tolerance (%)	120Hz/20℃		M : ±20								
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃	φ4 to φ6.3	0.26	0.20	0.16	0.14	0.12	0.12	0.08	—	—
		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)		The greater value of either 0.01CV or 3								
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	3	3	3	3	3	2	2	2
		−55℃ Z/Z20℃	4	4	4	3	3	3	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ4 to φ6.3, φ10×7.7 : 2,000hours, φ8 to φ18 : 5,000hours								
		△C/C	Within ±30% of the initial value								
		tan δ	Less than 300% of the specified value								
		LC	Less than the specified value								

■ Marking, Dimensions

(Unit : mm)

[φD≤10]
Polarity (Cathode)
Lot No.
56
470
16 L
Rated Capacitance
Series Symbol
Rated Voltage(6.3V→6)

[φD≥12.5]
Polarity (Cathode)
Lot No.
Indicated φD=16, 18
56T
3300
16 L
Rated Capacitance
Series Symbol
Rated Voltage(6.3V→6)



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

(P)reference size

D +0.5max	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	7.7	10.3	10.3	11.0	1.0 to 1.4	4.6
10	10.2	10.3	10.3	11.0	1.0 to 1.4	4.6
10	13.5 ±0.5	10.3	10.3	11.0	1.0 to 1.4	4.6
12.5	13.5 ±0.5	12.8	12.8	13.5	1.0 to 1.4	4.6
16	16.5 ±0.5	16.3	16.3	17.3	1.7 to 2.1	7.0
18	16.5 ±1.0	19.0	19.0	20.0	1.7 to 2.1	7.0
18	21.5 ±1.0	19.0	19.0	20.0	1.7 to 2.1	7.0

■ Part number

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

LXA
16 CE 330 LXA
- Series code
- Rated capacitance
- Type code
- Rated voltage

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

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

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

■ Size, Impedance, Rated Ripple Current

μF \ V	6.3			10			16			25			35		
4.7													4×6.0	1.45	90
10										4×6.0	1.45	90	5×6.0	0.70	170
15							4×6.0	1.45	90	5×6.0	0.70	170	5×6.0	0.70	170
22				4×6.0	1.45	90	5×6.0	0.70	170	5×6.0	0.70	170	5×6.0	0.70	170
27	4×6.0	1.45	90	5×6.0	0.70	170	5×6.0	0.70	170	6.3×6.0	0.39	250	6.3×6.0	0.39	250
33	5×6.0	0.70	170	5×6.0	0.70	170	6.3×6.0	0.39	250	6.3×6.0	0.39	250	6.3×6.0	0.39	250
47	5×6.0	0.70	170	6.3×6.0	0.39	250	6.3×6.0	0.39	250	6.3×6.0	0.39	250	6.3×6.0	0.39	250
56	5×6.0	0.70	170	6.3×6.0	0.39	250	6.3×6.0	0.39	250	6.3×6.0	0.39	250	6.3×7.7	0.30	300
68	6.3×6.0	0.39	250	6.3×6.0	0.39	250	6.3×6.0	0.39	250	6.3×6.0	0.39	250	6.3×7.7	0.30	300
100	5×6.0 ★2	0.70	170										6.3×7.7 ★2	0.30	300
	6.3×6.0	0.39	250	6.3×6.0	0.39	250	6.3×6.0	0.39	250	6.3×7.7	0.30	300	8×10.2	0.17	600
150	6.3×6.0	0.39	250	6.3×6.0	0.39	250	6.3×7.7	0.30	300	8×10.2	0.17	600	8×10.2	0.17	600
													10×7.7 ★1	0.17	600
220	6.3×6.0	0.39	250	6.3×7.7	0.30	300	6.3×7.7	0.30	300	8×10.2	0.17	600	8×10.2	0.17	600
										10×7.7 ★1	0.17	600			
330	6.3×7.7	0.30	300	8×10.2	0.17	600	8×10.2	0.17	600	8×10.2	0.17	600	10×10.2	0.090	850
							10×7.7 ★1	0.17	600						
470	8×10.2	0.17	600	8×10.2	0.17	600	8×10.2	0.17	600	10×10.2	0.090	850	10×13.5★3	0.070	950
				10×7.7 ★1	0.17	600							12.5×13.5	0.060	1100
680	8×10.2	0.17	600	10×10.2	0.090	850	10×10.2	0.090	850	10×13.5★3	0.070	950			
	10×7.7 ★1	0.17	600							12.5×13.5	0.060	1100	12.5×13.5	0.060	1100
1000							10×13.5★3	0.070	950						
	8×10.2	0.17	600	10×10.2	0.090	850	12.5×13.5	0.060	1100	12.5×13.5	0.060	1100	16×16.5	0.035	1800
1500				10×13.5★3	0.070	950									
	10×10.2	0.090	850	12.5×13.5	0.060	1100	12.5×13.5	0.060	1100	16×16.5	0.035	1800	16×16.5	0.035	1800
2200	12.5×13.5	0.060	1100	12.5×13.5	0.060	1100				16×16.5	0.035	1800	18×16.5	0.033	2060
2700													18×21.5	0.028	2260
3300							16×16.5	0.035	1800	18×16.5	0.033	2060			
3900										18×21.5	0.028	2260			
4700				16×16.5	0.035	1800	18×16.5	0.033	2060						
5600							18×21.5	0.028	2260						
6800	16×16.5	0.035	1800	18×16.5	0.033	2060									
8200	18×16.5	0.033	2060	18×21.5	0.028	2260									
10000	18×16.5	0.033	2060												
12000	18×21.5	0.028	2260												

μF \ V	50			63			80			100		
4.7	4×6.0	2.90	60									
10	6.3×6.0	0.88	165	6.3×6.0	1.50	80						
22	6.3×6.0	0.88	165	6.3×7.7	1.20	120						
27	6.3×7.7	0.68	195									
33	6.3×7.7	0.68	195							10×10.2	0.65	200
47	6.3×7.7	0.68	195	10×7.7 ★1	0.70	200	10×10.2	0.65	200	12.5×13.5	0.32	500
56	8×10.2	0.34	350									
68	8×10.2	0.34	350							12.5×13.5	0.32	500
100	8×10.2	0.34	350	12.5×13.5	0.16	800	12.5×13.5	0.32	500	16×16.5	0.17	793
	10×7.7 ★1	0.34	330									
150	10×10.2	0.18	670	12.5×13.5	0.16	800	12.5×13.5	0.32	500	16×16.5	0.17	793
220	10×10.2	0.18	670	12.5×13.5	0.16	800				18×16.5	0.153	917
330	12.5×13.5	0.12	900	16×16.5	0.082	1410	16×16.5	0.17	793	18×21.5	0.083	1230
470	16×16.5	0.073	1610	16×16.5	0.082	1410	18×16.5	0.153	917			
680	16×16.5	0.073	1610	18×16.5	0.080	1690						
1000	16×16.5	0.073	1610	18×21.5	0.055	1960						
1200	18×16.5	0.068	1900									
1500	18×21.5	0.042	2180									

Please refer to page 15 for ripple current frequency coefficients.

Case size:φDxL(mm)
φ16, φ18:CE-LXT

Impedance(Ω)
max at 100kHz, 20℃

Rated ripple current
mArms(100kHz, 105℃)

★1 LXA
★2 LXS
★3 LXC

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

CE-LS Series

Low Impedance
Long Life



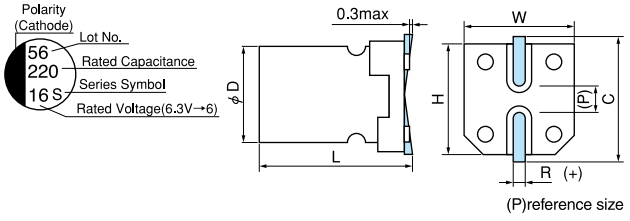
- 105℃, 3,000hours
- Solvent proof (within 2 minutes)

Long Life
CE-LS ← CE-AX (P.48)

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.28	0.24	0.22	0.16	0.13	0.12
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2
		−40℃ Z/Z20℃	10	7	5	3	3	3
Endurance	105℃, 3,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value					
		tan δ	Less than 300% of the specified value					
		LC	Less than the specified value					

■ Marking, Dimensions



(P)reference size

(Unit : mm)

D +0.5max	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 15 for ripple current frequency coefficients.

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

■ Part number

16 CE 220 LS
- LS: Series code
- 220: Rated capacitance
- CE: Type code
- 16: Rated voltage

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

CE-LH Series

Long Life



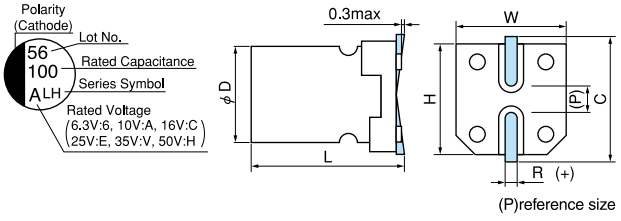
- 105℃, 5,000hours
- Solvent proof (within 2 minutes)

CE-LH ← Long Life — CE-FH (P.46)

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.32	0.24	0.20	0.16	0.13	0.12
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2
		−40℃ Z/Z20℃	10	7	5	3	3	3
Endurance	105℃, 5,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value					
		tan δ	Less than 300% of the specified value					
		LC	Less than the specified value					

■ Marking, Dimensions



(Unit : mm)

D+0.5max	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 15 for ripple current frequency coefficients.

Rated ripple current mArms(120Hz, 105℃)

Case size:φDxL(mm)

■ Part number

10 CE 100 LH
- LH — Series code
- 100 — Rated capacitance
- CE — Type code
- 10 — Rated voltage

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

CE-LH Series

105℃ Long Life
High Voltage



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

■ Specifications

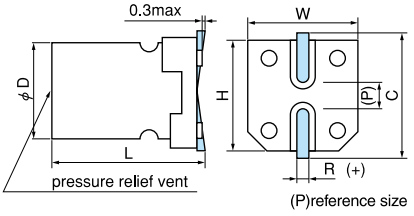
Items	Condition		Specifications		
Rated voltage (V)	–		160	200	400
Surge voltage (V)	Room temperature		200	250	450
Category temperature range (℃)	–		−40 to +105		
Capacitance tolerance (%)	120Hz/20℃		M : ±20		
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.20	0.20	0.25
Leakage current (LC)	μA/after 2minutes (max)	CV ≤ 1,000	0.03CV +15		
		CV > 1,000	0.02CV +25		
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	3	3	6
		−40℃ Z/Z20℃	6	6	10
Endurance	105℃, 5,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value		
		tan δ	Less than 300% of the specified value		
		LC	Less than the specified value		

■ Marking, Dimensions

[φD≤10]
Polarity (Cathode)
Lot No.
56 Rated Capacitance
10
2C L Series Symbol
Rated Voltage★

[φD≥12.5]
Polarity (Cathode)
Lot No.
Indicated φD=16, 18
56T Rated Capacitance
47
2D L Series Symbol
Rated Voltage★

★ (160V : 2C, 200V : 2D, 400V : 2G)



(Unit : mm)

D+0.5max	L	W±0.2	H±0.2	C±0.2	R	P
8	10.5±0.3	8.3	8.3	9.0	0.7~1.0	3.2
10	10.5±0.3	10.3	10.3	11.0	1.0~1.4	4.6
12.5	13.5±0.5	12.8	12.8	13.5	1.0~1.4	4.6
16	16.5±0.5	16.3	16.3	17.3	1.7~2.1	7.0
18	16.5±1.0	19.0	19.0	20.0	1.7~2.1	7.0
18	21.5±1.0	19.0	19.0	20.0	1.7~2.1	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 15 for ripple current frequency coefficients.
★LHV

Rated ripple current mArms(120Hz, 105℃)
Case size:φDxL(mm) φ16, φ18:CE-LHT

■ Part number

LH
160 CE 10 LH
- Series code
- Rated capacitance
- Type code
- Rated voltage

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

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

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

CE-LL Series

Low Impedance
Long Life



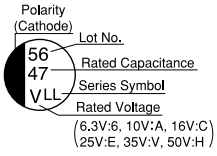
- 105℃, 7,000 to 10,000hours
- Solvent proof (within 2 minutes)

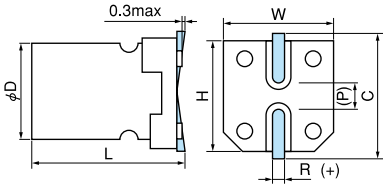
CE-LL ← Long Life — CE-LX (P.54)

■ 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 (℃)	–		−25 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.32	0.28	0.26	0.16	0.14	0.14
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2
Endurance	105℃, rated voltage applied (With the rated ripple current)	Test	φD ≤ 6.3 : 7,000hours, φD ≥ 8 : 10,000hours					
		△C/C	Within ±30% of the initial value					
		tan δ	Less than 300% of the specified value					
		LC	Less than the specified value					

■ Marking, Dimensions





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

(P)reference size

(Unit : mm)

D+0.5max	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 15 for ripple current frequency coefficients.

Impedance(Ω) max at 100kHz, 20℃

Case size:φDxL(mm)

Rated ripple current mArms (100kHz, 105℃)

■ Part number

35 CE 47 LL
- LL — Series code
- 47 — Rated capacitance
- CE — Type code
- 35 — Rated voltage

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

CE-PC Series 125℃



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

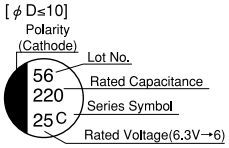
CE-PH (P.62) — Low ESR ↑ — 125℃ — CE-PC ← CE-FH (P.46)

■ Specifications

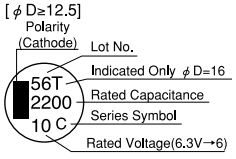
Items	Condition		Specifications							
Rated voltage (V)	–		6.3	10	16	25	35	50	63	100
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79	125
Category temperature range (℃)	–		−55 to +125							
Capacitance tolerance (%)	120Hz/20℃		M : ±20							
Dissipation Factor (tanδ)	tanδ (max) 120Hz/20℃		0.30	0.24	0.20	0.16	0.14	0.14	0.12	0.10
			Exceeding 1,000μF, +0.02 every 1,000μF							
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3							
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2	2	2
		−40℃ Z/Z20℃	8	6	4	3	3	3	3	3
Endurance	125℃ rated voltage applied (With the rated ripple current)	Test	6.3 to 50V 2,000hours. (φD=6.3 : 1,000hours.), 63 to 100V 1,500hours							
		△C/C	Within ±30% of the initial value							
		tanδ	Less than 300% of the specified value							
		LC	Less than the specified value							

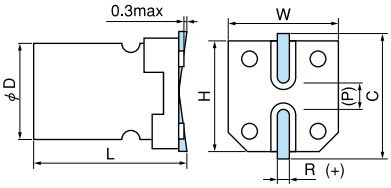
■ Marking, Dimensions

[φD≤10]



[φD≥12.5]





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

(P)reference size

(Unit : mm)

D+0.5max	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 15 for ripple current frequency coefficients.

★ PCS

Case size:φDxL(mm)
16×16.5:CE-PCT

ESR(Ω)
max at 100kHz, 20℃

Rated ripple current
mArms(100kHz, 125℃)

■ Part number

PC

25 CE 220 PC

- Series code
- Rated capacitance
- Type code
- Rated voltage

PCS

25 CE 220 PCS

- Series code
- Rated capacitance
- Type code
- Rated voltage

PCT

10 CE 2200 PC T

- Sn plating terminal option
- Series code
- Rated capacitance
- Type code
- Rated voltage

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

CE-PH Series

125℃ Low ESR

High Ripple Current, High Capacitance



- 125℃, 2,000 to 5,000hours
- Suitable for Automotive Applications.
- Solvent proof (within 2 minutes)

CE-PS (P.64) ↑ High Cap.
CE-PF (P.65) ← Long Life — CE-PH — ↑ Low ESR CE-PC(P.60)

φ6.3×6.0 50V

NEW

CE-BE
CE-BD
CE-BS
CE-BSS
CE-FE
CE-LD
CE-FU
CE-FS
CE-FSS
CE-FH
CE-GA
CE-AX
CE-KX
CE-ZX
CE-ZC
CE-LX
CE-LS
CE-LH
CE-LL
CE-PC
CE-PH
CE-PS
CE-PF
CE-TH
CE-NP
CE-FN

■ Specifications

Items		Condition		Specifications			
Rated voltage (V)		–		16	25	35	50
Surge voltage (V)		Room temperature		20	32	44	63
Category temperature range (℃)		–		−40 to +125			
Capacitance tolerance (%)		120Hz/20℃		M : ±20			
Dissipation Factor (tan δ)		tanδ (max) 120Hz/20℃		0.20	0.16	0.14	0.14
				Exceeding 1,000μF, +0.02 every 1,000μF			
Leakage current (LC)		μA/after 2minutes (max)		0.01CV			
Impedance ratio at low temperature		Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2	2	2
			−40℃ Z/Z20℃	4	3	3	3
Endurance		125℃ rated voltage applied (With the rated ripple current)	Test	φ6.3 to φ10 : 2,000hours, φ12.5 : 3,000hours, φ16,φ18 : 5,000hours			
			△C/C	Within ±30% of the initial value			
			tan δ	Less than 300% of the specified value			
			LC	Less than the specified value			

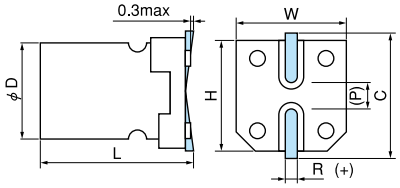
■ Marking, Dimensions

(Unit : mm)

[φD≤10]
Polarity (Cathode)
Lot No.
56 Rated Capacitance
680
C PH Series Symbol
Rated Voltage★

[φD≥12.5]
Polarity (Cathode)
Lot No.
Indicated φD=16, 18
56T Rated Capacitance
1000
V PH Series Symbol
Rated Voltage★

★ (16V:C, 25V:E, 35V:V, 50V:H)



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

(P)reference size

D +0.5max	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
18	16.5 ±1.0	19.0	19.0	20.0	1.7 to 2.1	7.0
18	21.5 ±1.0	19.0	19.0	20.0	1.7 to 2.1	7.0

■ Size, ESR, Rated Ripple Current

μF \ V	16				25				35			
22									6.3×6.0	1.6	–	110
33									6.3×6.0★	1.6	–	110
					6.3×6.0	1.6	–	110	6.3×7.7	0.45	5.0	200
47	6.3×6.0	1.6	–	110					6.3×7.7	0.45	5.0	200
100	6.3×7.7	0.45	5.0	200	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				
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	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
910					12.5×13.5	0.08	1.0	1200				
1000	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
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
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			
10	6.3×6.0	2.0	–	70
47	8×10.5	0.45	5.0	250
100	10×10.5	0.30	3.0	350
220	12.5×13.5	0.15	1.5	700
470	16×16.5	0.09	0.9	1000
680	18×16.5	0.07	0.7	1200
1000	18×21.5	0.05	0.5	1650

Case size:φDxL(mm)
ESR(Ω) max at 100kHz, 20℃
ESR(Ω) max at 100kHz, −40℃
Rated ripple current mArms(100kHz, 125℃)

Please refer to page 15 for ripple current frequency coefficients.

★PHS

■ Part number

PH
16 CE 680 PH
- Series code
- Rated capacitance
- Type code
- Rated voltage

PHS
35 CE 33 PHS
- Series code
- Rated capacitance
- Type code
- Rated voltage

PHT
35 CE 1000 PH T
- Sn plating terminal option
- Series code
- Rated capacitance
- Type code
- Rated voltage

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

CE-PS Series

125℃ High Capacitance



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

NEW

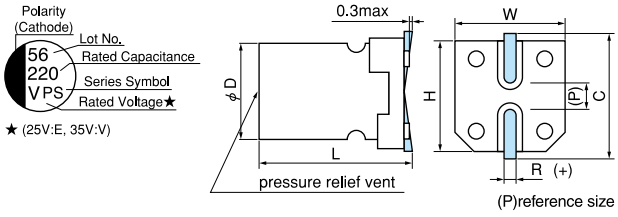
CE-PS
↑ High Cap.
CE-PH (P.62)

CE-BE
CE-BD
CE-BS
CE-BSS
CE-FE
CE-LD
CE-FU
CE-FS
CE-FSS
CE-FH
CE-GA
CE-AX
CE-KX
CE-ZX
CE-ZC
CE-LX
CE-LS
CE-LH
CE-LL
CE-PC
CE-PH
CE-PS
CE-PF
CE-TH
CE-NP
CE-FN

■ Specifications

Items	Condition		Specifications	
Rated voltage (V)	–		25	35
Surge voltage (V)	Room temperature		32	44
Category temperature range (℃)	–		−40 to +125	
Capacitance tolerance (%)	120Hz/20℃		M : ±20	
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.16	0.14
Leakage current (LC)	μA/after 2minutes (max)		0.01CV	
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2
		−40℃ Z/Z20℃	3	3
Endurance	125℃ rated voltage applied (With the rated ripple current)	Test	2,000hours(6.3×7.7 1,000hours)	
		△C/C	Within ±30% of the initial value	
		tan δ	Less than 300% of the specified value	
		LC	Less than the specified value	

■ Marking, Dimensions



(Unit : mm)

D +0.5max	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

■ Size, ESR, Rated Ripple Current

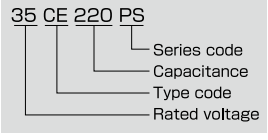
μF \ V	25			35		
100				6.3×7.7	0.60	220
150	6.3×7.7	0.60	220			
220				8×10.5	0.30	300
330	8×10.5	0.30	300	10×10.5	0.20	500
470	10×10.5	0.20	500			

Please refer to page 15 for ripple current frequency coefficients.

Rated ripple current mArms (100kHz, 125℃)

ESR (Ω) max at 100kHz, 20℃

■ Part number



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

CE-PF Series

125℃ Long Life
High Ripple Current



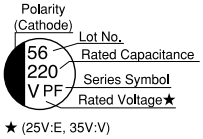
- 125℃ 4,000hours ● Suitable for Automotive Applications.
- Solvent proof (within 2 minutes)

CE-PF ← Long Life — CE-PH (P.62)

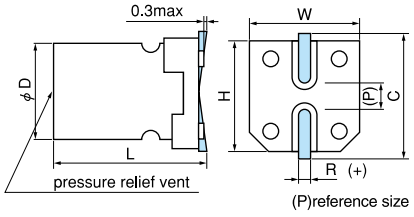
■ Specifications

Items	Condition		Specifications	
Rated voltage (V)	–		25	35
Surge voltage (V)	Room temperature		32	44
Category temperature range (℃)	–		−40 to +125	
Capacitance tolerance (%)	120Hz/20℃		M : ±20	
Dissipation Factor (tanδ)	tanδ (max) 120Hz/20℃		0.16	0.14
Leakage current (LC)	μA/after 2minutes (max)		0.01CV	
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2
		−40℃ Z/Z20℃	3	3
Endurance	125℃, 4,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value	
		tanδ	Less than 300% of the specified value	
		LC	Less than the specified value	

■ Marking, Dimensions



★ (25V:E, 35V:V)



(P)reference size

(Unit : mm)

D+0.5max	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 15 for ripple current frequency coefficients.

ESR (Ω) max at 100kHz, 20℃

Rated ripple current mArms (100kHz, 125℃)

Case size:φD(mm)

■ Part number

35 CE 220 PF
- Series code
- Capacitance
- Type code
- Rated voltage

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

CE-TH Series 135℃



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

NEW

CE-TH
↑ 135℃
CE-PH(P.62)

■ Specifications

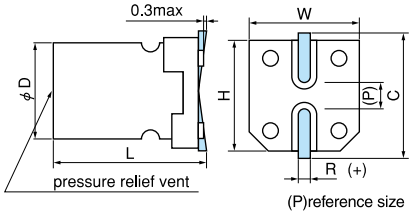
Items		Condition		Specifications			
Rated voltage (V)		–		16	25	35	50
Surge voltage (V)		Room temperature		20	32	44	63
Category temperature range (℃)		–		−40 to +135			
Capacitance tolerance (%)		120Hz/20℃		M : ±20			
Dissipation Factor (tan δ)		tanδ (max) 120Hz/20℃		0.23	0.18	0.16	0.16
Leakage current (LC)		μA/after 2minutes (max)		0.01CV			
Impedance ratio at low temperature		Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2	2	2
			−40℃ Z/Z20℃	4	3	3	3
Endurance		135℃, 2,000hrs. rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value			
			tan δ	Less than 300% of the specified value			
			LC	Less than the specified value			

■ Marking, Dimensions

[φD≤10]
Polarity (Cathode)
Lot No.
56
330
C TH
Rated Capacitance
Series Symbol
Rated Voltage★

[φD≥12.5]
Polarity (Cathode)
Lot No.
56
470
V TH
Rated Capacitance
Series Symbol
Rated Voltage★

★ (16V:C, 25V:E, 35V:V, 50V:H)



(Unit : mm)

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

■ Size, Rated Ripple Current

μF \ V	16			25			35			50		
47										8×10.5	0.60	160
100							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 15 for ripple current frequency coefficients.

Case size:φD(mm)
Rated ripple current mArms (100kHz, 135℃)
ESR(Ω) max at 100kHz, 20℃

■ Part number

35 CE 220 TH
- Series code
- Rated capacitance
- Type code
- Rated voltage

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

CE-NP Series

Bi-polar

5.4mm Height

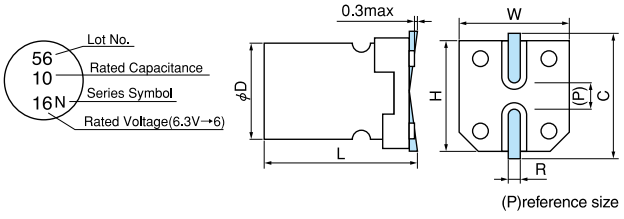


- 85℃, 2,000hours
- Solvent proof (within 2 minutes)

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +85					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.26	0.22	0.20	0.20	0.20	0.18
Leakage current (LC)	μA/after 1minute (max)		0.03CV + 6					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2
		−40℃ Z/Z20℃	8	6	4	4	3	3
Endurance	500hours×4(alternately) 85℃,rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value					
		tan δ	Less than 200% of the specified value					
		LC	Less than the specified value					

■ Marking, Dimensions



(Unit : mm)

D+0.5max	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	
1.0											4	10
2.2									4	8.4	5	15
3.3							4	10	5	17	5	18
4.7					4	12	5	19	5	20	6.3	23
10			4	17	5	25	6.3	28	6.3	30	6.3	23
22	5	31	6.3	35	6.3	39	6.3	41				
33	6.3	39	6.3	43	6.3	57						
47	6.3	47										
100	6.3	50										

Please refer to page 15 for ripple current frequency coefficients.

Rated ripple current mArms (120Hz, 85℃)

Case size:φD(mm)

■ Part number

16 CE 10 NP

- Series code
- Rated capacitance
- Type code
- Rated voltage

CE-BE
CE-BD
CE-BS
CE-BSS
CE-FE
CE-LD
CE-FU
CE-FS
CE-FSS
CE-FH
CE-GA
CE-AX
CE-KX
CE-ZX
CE-ZC
CE-LX
CE-LS
CE-LH
CE-LL
CE-PC
CE-PH
CE-PS
CE-PF
CE-TH
CE-NP
CE-FN

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

CE-FN Series

Bi-polar 105℃
5.4mm Height

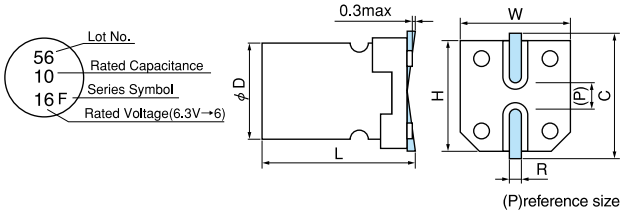


- 105℃, 1,000hours
- Solvent proof (within 2 minutes)

■ Specifications

Items		Condition			Specifications						
Rated voltage	(V)	–			6.3	10	16	25	35	50	63
Surge voltage	(V)	Room temperature			8.0	13	20	32	44	63	79
Category temperature range (℃)		–			−55 to +105						
Capacitance tolerance (%)		120Hz/20℃			M : ±20						
Dissipation Factor (tan δ)		tanδ (max) 120Hz/20℃			0.24	0.22	0.20	0.20	0.20	0.18	0.16
Leakage current (LC)		μA/after 1minute (max)			0.03CV + 6						
Impedance ratio at low temperature		Based the value at 120Hz, +20℃	−40℃	Z/Z20℃	3	3	2	2	2	2	2
			−55℃	Z/Z20℃	8	6	4	4	3	3	3
Endurance		500hours×2(alternately) 105℃,rated voltage applied (With the rated ripple current)	△C/C		Within ±25% of the initial value						
			tan δ		Less than 200% of the specified value						
			LC		Less than the specified value						

■ Marking, Dimensions



(P)reference size

(Unit : mm)

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

■ Size, Rated Ripple Current

μF \ V	6.3		10		16		25		35		50		63	
1.0											4	7.0	4	7.0
2.2									4	5.9	5	10	5	10
3.3							4	7.0	5	12	5	13	6.3	13
4.7					4	8.0	5	13	5	14	6.3	16	6.3	16
10			4	12	5	17	6.3	20	6.3	21	6.3	18		
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 15 for ripple current frequency coefficients.

Rated ripple current mArms (120Hz, 105℃)

Case size:φD(mm)

■ Part number

16 CE 10 FN
- Series code
- Rated capacitance
- Type code
- Rated voltage

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

ME-SWB Series

Standard

7mm Height



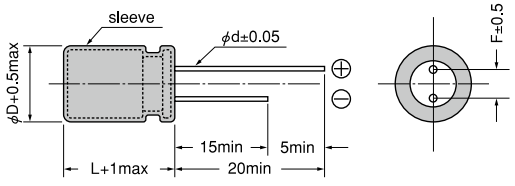
- Solvent proof (within 3 minutes)

ME-HC (P.73)
↓ Low Profile
ME-SWB

■ Specifications

Items		Condition		Specifications							
Rated voltage (V)		–		4.0	6.3	10	16	25	35	50	63
Surge voltage (V)		Room temperature		5.0	8.0	13	20	32	44	63	79
Category temperature range (℃)		–		−40 to +85							
Capacitance tolerance (%)		120Hz/20℃		M : ±20							
Dissipation Factor (tan δ)		tanδ (max) 120Hz/20℃		0.35	0.24	0.20	0.16	0.14	0.12	0.10	0.10
Leakage current (LC)		μA/after 2minutes (max)		The greater value of either 0.01CV or 3							
Impedance ratio at low temperature		Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	7	4	3	2	2	2	2	2
			−40℃ Z/Z20℃	15	10	7	6	4	4	4	4
Endurance		85℃, 2,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value							
			tan δ	Less than 200% of the specified value							
			LC	Less than the specified value							

■ Dimensions



(単位: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	4.0		6.3		10		16		25		35		50		63	
1.0													4×7	10	4×7	10
2.2													4×7	15	4×7	17
3.3									4×7	16	4×7	17	4×7	18	4×7	21
4.7									4×7	19	4×7	20	4×7	23	5×7	26
10							4×7	25	4×7	28	5×7	30	5×7	34	6.3×7	43
22			4×7	31	4×7	35	4×7	39	5×7	52	6.3×7	54	6.3×7	60	6.3×7	65
33	4×7	26	4×7	39	4×7	43	5×7	57	6.3×7	63	6.3×7	65	6.3×7	70		
47	4×7	34	4×7	47	5×7	59	5×7	68	6.3×7	70	6.3×7	75	6.3×7	80		
100	5×7	61	5×7	71	6.3×7	80	6.3×7	91	6.3×7	100	6.3×7	105				
220	6.3×7	82	6.3×7	103	6.3×7	110	6.3×7	110								
330	6.3×7	100	6.3×7	110												
470	6.3×7	110														

Please refer to page 15 for ripple current frequency coefficients.

Rated ripple current
mArms (120Hz, 85℃)

Case size:φDxL(mm)

■ Part number

16 ME 33 SWB
- SWB: Series code
- 33: Rated capacitance
- ME: Type code
- 16: Rated voltage

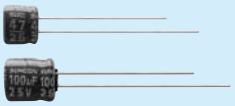
ME-SWB
ME-UZ·SZ
ME-UAX·SAX
ME-SWG
ME-HC
ME-CZ
ME-CA
ME-CX
ME-AX
ME-WX
ME-WA
ME-WL
ME-WG
ME-LS
ME-FX
ME-PX
ME-HPC·HPD
ME-FC·FD
ME-FH
ME-SWN
ME-HWN

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

ME-UZ·SZ Series

5mm Height, Wide Temperature

7mm Height, Wide Temperature



(ME-UZ)

(ME-SZ)

- ME-UZ : 105℃, 1,000hours, Solvent proof (within 2 minutes)
- ME-SZ : 105℃, 1,000hours, Solvent proof (within 3 minutes)

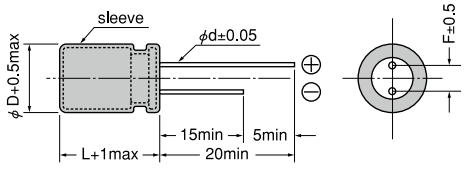
ME-UZ ↑ Low Z ME-UW (On the web)

ME-SZ ↑ Low Z ME-SWB (P.69)

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−55 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tanδ)	tanδ (max) 120Hz/20℃		0.24	0.20	0.16	0.14	0.12	0.10
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	2	2	2	2	2
		−55℃ Z/Z20℃	5	4	4	3	3	3
Endurance	105℃, 1,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value					
		tanδ	Less than 200% of the specified value					
		LC	Less than the specified value					

■ 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

●ME-UZ series

μF \ V	6.3			10			16			25			35			50		
10																6.3×5	2.0	70
22										6.3×5	1.6	100	6.3×5	2.0	70	6.3×5	2.0	70
33							6.3×5	1.6	100	6.3×5	1.6	100	6.3×5	2.0	70			
47				6.3×5	1.6	100	6.3×5	1.6	100	6.3×5	1.6	100	6.3×5	2.0	70			
100	6.3×5	1.6	100	6.3×5	1.6	100	6.3×5	1.6	100									
220	6.3×5	1.6	100															

●ME-SZ series

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 15 for ripple current frequency coefficients.

Rated ripple current mArms(100kHz, 105℃)

Impedance(Ω) max at 100kHz, 20℃

Case size:φDxL(mm)

■ Part number

UZ

16 ME 33 UZ

- Series code
- Rated capacitance
- Type code
- Rated voltage

SZ

16 ME 10 SZ

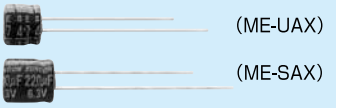
- Series code
- Rated capacitance
- Type code
- Rated voltage

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

ME-UAX·SAX Series

Low Impedance

5mm Height(UAX), 7mm Height(SAX)



- ME-UAX : 105℃, 1,000hours, Solvent proof (within 2 minutes)
- ME-SAX : 105℃, 1,000hours, Solvent proof (within 3 minutes)

ME-UAX → Low Z → ME-UZ (P.70)

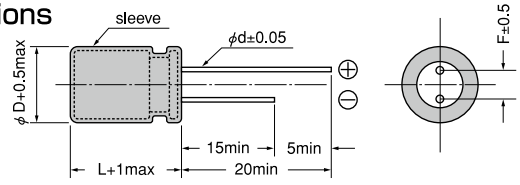
ME-SAX → Low Z → ME-SZ (P.70)

ME-SWB
ME-UZ·SZ
ME-UAX·SAX
ME-SWG
ME-HC
ME-CZ
ME-CA
ME-CX
ME-AX
ME-WX
ME-WA
ME-WL
ME-WG
ME-LS
ME-FX
ME-PX
ME-HPC·HPD
ME-FC·FD
ME-FH
ME-SWN
ME-HWN

■ Specifications

Items		Condition		Specifications				
Rated voltage (V)		–		6.3	10	16	25	35
Surge voltage (V)		Room temperature		8.0	13	20	32	44
Category temperature range (℃)		–		−55 to +105				
Capacitance tolerance (%)		120Hz/20℃		M : ±20				
Dissipation Factor (tanδ)		tanδ (max) 120Hz/20℃		0.24	0.20	0.16	0.14	0.12
Leakage current (LC)		μA/after 2minutes (max)		The greater value of either 0.01CV or 3				
Impedance ratio at low temperature		Based the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	2	2	2	2
			−55℃ Z/Z20℃	5	4	4	3	3
Endurance		105℃, 1,000hours 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				

■ 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

●ME-UAX series

μF \ V	6.3			10			16			25			35		
33										6.3×5	0.44	230	6.3×5	0.44	230
47							6.3×5	0.44	230	6.3×5	0.44	230	6.3×5	0.44	230
56										6.3×5	0.44	230			
68				6.3×5	0.44	230	6.3×5	0.44	230						
100	6.3×5	0.44	230				6.3×5	0.44	230						
150	6.3×5	0.44	230												
220	6.3×5	0.44	230												

●ME-SAX series

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 15 for ripple current frequency coefficients.

Rated ripple current mArms(100kHz, 105℃)

Impedance(Ω) max at 100kHz, 20℃

Case size:φDxL(mm)

■ Part number

UAX

16 ME 47 UAX

- UAX — Series code
- 47 — Rated capacitance
- ME — Type code
- 16 — Rated voltage

SAX

16 ME 22 SAX

- SAX — Series code
- 22 — Rated capacitance
- ME — Type code
- 16 — Rated voltage

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

ME-SWG Series

Low ESR, Small
7mm Height



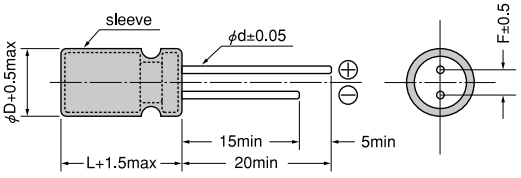
- 105℃, 1,000 to 2,000hours
- Non solvent proof

ME-SWG
↑ Low ESR
ME-SAX (P.71)

■ Specifications

Items	Condition		Specifications				
Rated voltage (V)	–		6.3	10	16	25	35
Surge voltage (V)	Room temperature		8.0	13	20	32	44
Category temperature range (℃)	–		−40 to +105				
Capacitance tolerance (%)	120Hz/20℃		M : ±20				
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.24	0.20	0.16	0.14	0.12
Leakage current (LC)	μA/after 2minutes (max)		0.03CV				
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2	2	2	2
		−40℃ Z/Z20℃	3	3	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ5 : 1,000hours, φ6.3 : 2,000hours, (6ME330SWG, 10ME220SWG : 1,000hours)				
		△C/C	Within ±25% of the initial value (6.3V, 10V : ±30%)				
		tan δ	Less than 200% of the specified value				
		LC	Less than the specified value				

■ Dimensions



(Unit : mm)

φD	5	6.3
F	2.0	2.5
φd	0.45	0.45

■ Size, ESR, Rated Ripple Current

V / Items / μF	6.3			10			16			25			35		
	Case size φDxL (mm)	ESR (Ωmax) 20℃/100kHz	Ripple current (mArms) 105℃/100kHz	Case size φDxL (mm)	ESR (Ωmax) 20℃/100kHz	Ripple current (mArms) 105℃/100kHz	Case size φDxL (mm)	ESR (Ωmax) 20℃/100kHz	Ripple current (mArms) 105℃/100kHz	Case size φDxL (mm)	ESR (Ωmax) 20℃/100kHz	Ripple current (mArms) 105℃/100kHz	Case size φDxL (mm)	ESR (Ωmax) 20℃/100kHz	Ripple current (mArms) 105℃/100kHz
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 15 for ripple current frequency coefficients.

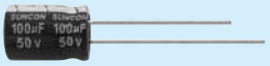
■ Part number

25 ME 100 SWG
- SWG — Series code
- 100 — Rated capacitance
- ME — Type code
- 25 — Rated voltage

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

ME-HC Series

Standard



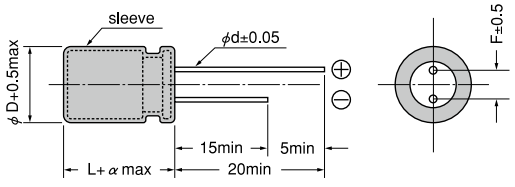
● Solvent proof (within 5 minutes)

ME-CZ (P.74)
↑ 105℃·Low Impedance
ME-HC

■ Specifications

Items	Condition		Specifications							
Rated voltage (V)	–		6.3	10	16	25	35	50	63	100
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79	125
Category temperature range (℃)	–		−40 to +85							
Capacitance tolerance (%)	120Hz/20℃		M : ±20							
Dissipation Factor (tanδ)	tanδ (max) 120Hz/20℃		0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.10
			Exceeding 1,000μF, +0.02 every 1,000μF							
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3							
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	5	4	3	2	2	2	2	2
		−40℃ Z/Z20℃	12	10	8	6	4	4	4	4
Endurance	85℃, 2,000hours, 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							

■ 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	6.3		10		16		25		35		50		63		100	
2.2											5x11	20	5x11	20	5x11	30
3.3											5x11	28	5x11	28	5x11	40
4.7							5x11	25			5x11	38	5x11	40	5x11	50
10					5x11	28	5x11	40	5x11	45	5x11	50	5x11	60	6.3x11	70
22			5x11	38	5x11	50	5x11	60	5x11	75	5x11	90	5x11	105	8x11.5	120
33	5x11	50	5x11	58	5x11	60	5x11	80	5x11	90	5x11	110	6.3x11	130	8x12.5	145
47	5x11	60	5x11	70	5x11	85	5x11	90	5x11	125	6.3x11	135	6.3x11	160	10x12.5	180
100	5x11	120	5x11	125	5x11	165	6.3x11	180	6.3x11	200	8x11.5	250	8x12.5	280	10x20	350
220	5x11	210	5x11	210	6.3x11	260	8x11.5	320	8x11.5	320	10x12.5	410	10x16	450	12.5x25	550
330	6.3x11	260	6.3x11	295	8x11.5	360	8x11.5	380	10x12.5	440	10x16	580	10x20	600	16x25	750
470	6.3x11	330	6.3x11	330	8x11.5	380	10x12.5	540	10x16	585	10x20	750	12.5x20	800	16x30	950
1000	8x11.5	420	10x12.5	620	10x16	740	10x20	940	12.5x20	1000	12.5x25	1150	16x25	1250		
2200	10x16	890	10x20	1000	12.5x20	1150	12.5x25	1350	16x25	1500	16x31.5	1700				
3300	10x20	1080	12.5x20	1300	12.5x25	1500	16x25	1600	16x35.5	1750	18x35.5	1850				
4700	12.5x20	1400	12.5x25	1550	16x25	1750	16x31.5	1900	18x35.5	2000						
6800	12.5x25	1600	16x25	1800	16x31.5	1900	18x35.5	2000								
10000	16x25	1750	16x31.5	1900	18x35.5	2000										
15000	16x35.5	1900	18x35.5	2000												

Please refer to page 15 for ripple current frequency coefficients.

Rated ripple current
mArms (120Hz, 85℃)

Case size:φDxL(mm)

■ Part number

6 ME 15000 HC
- HC: Series code
- 15000: Rated capacitance
- ME: Type code
- 6: Rated voltage

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

ME-CZ Series

Wide Temperature
Small Standard



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

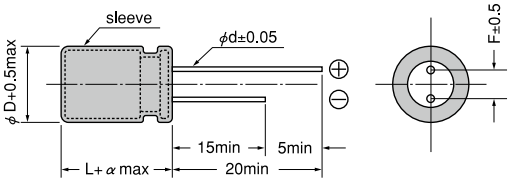
ME-CA (P.76)
↑ Low Impedance
ME-CZ
↑ 105℃
ME-HC (P.73)

ME-SWB
ME-UZ·SZ
ME-UAX·SAX
ME-SWG
ME-HC
ME-CZ
ME-CA
ME-CX
ME-AX
ME-WX
ME-WA
ME-WL
ME-WG
ME-LS
ME-FX
ME-PX
ME-HPC·HPD
ME-FC·FD
ME-FH
ME-SWN
ME-HWN

■ Specifications

Items	Condition		Specifications							
Rated voltage (V)	–		6.3	10	16	25	35	50	63	100
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79	125
Category temperature range (℃)	–		−55 to +105							
Capacitance tolerance (%)	120Hz/20℃		M : ±20							
Dissipation Factor (tanδ)	tanδ (max) 120Hz/20℃		0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.10
			Exceeding 1,000μF, +0.02 every 1,000μF							
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3							
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−40℃ Z20℃	4	4	3	3	2	2	2	2
		−55℃ Z20℃	10	8	6	5	4	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ5 to φ8 : 1,000hours, φ10 : 2,000hours, φ12.5 to φ18 : 3,000hours							
		△C/C	Within ±25% of the initial value							
		tanδ	Less than 200% of the specified value							
		LC	Less than the specified value							

■ 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, Impedance, Rated Ripple Current

V / Items / Case size φDxL(mm)	6.3			10		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
5×11	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

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

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

■ Size, Impedance, Rated Ripple Current

V / Items / Case size φDxL(mm)	16			25		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
5×11	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

V / Items / Case size φDxL(mm)	35			50		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
5×11				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)

V / Items / Case size φDxL(mm)	63			100		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
5×11	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 15 for ripple current frequency coefficients.

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

ME-CA Series

Low Impedance
Small



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

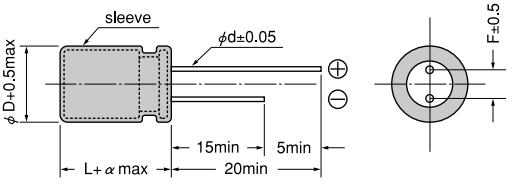
ME-CX (P.78)
↑ Low Impedance
ME-CA
↑ Low Impedance
ME-CZ (P.74)

ME-SWB
ME-UZ·SZ
ME-UAX·SAX
ME-SWG
ME-HC
ME-CZ
ME-CA
ME-CX
ME-AX
ME-WX
ME-WA
ME-WL
ME-WG
ME-LS
ME-FX
ME-PX
ME-HPC·HPD
ME-FC·FD
ME-FH
ME-SWN
ME-HWN

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−55 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tanδ)	tanδ (max) 120Hz/20℃		0.28	0.24	0.20	0.16	0.14	0.12
			Exceeding 1,000μF, +0.02 every 1,000μF					
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	3	2	2	2	2
		−55℃ Z/Z20℃	6	5	4	4	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ5 to φ8 : 1,000hours, φ10 : 2,000hours, φ12.5 to φ16 : 3,000hours					
		△C/C	Within ±25% of the initial value					
		tanδ	Less than 200% of the specified value					
		LC	Less than the specified value					

■ Dimensions



α : L<20 α=1.5, L≥20 α=2.0
A pressure relief vent is provided for φD=6.3 or bigger

(Unit : mm)

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

■ Size, Impedance, Rated Ripple Current

V / Items / Case size φDxL(mm)	6.3			10		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11	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			

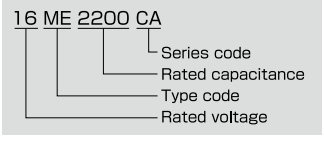
■ Size, Impedance, Rated Ripple Current

V / Items / Case size φDxL(mm)	16			25		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11	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

V / Items / Case size φDxL(mm)	35			50		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11				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 15 for ripple current frequency coefficients.

■ Part number



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

ME-CX Series

Low Impedance
Small, Long Life



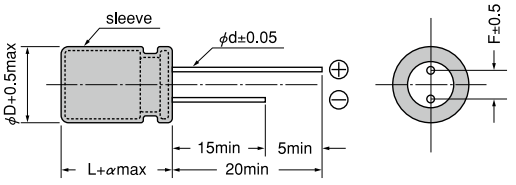
- 105℃, 2,000 to 7,000hours
- Solvent proof (within 5 minutes)

Long Life
ME-AX (P.80) ← ME-CX → Low Impedance ME-CA (P.76)

■ Specifications

Items	Condition		Specifications				
Rated voltage (V)	–		6.3	10	16	25	35
Surge voltage (V)	Room temperature		8.0	13	20	32	44
Category temperature range (℃)	–		−55 to +105				
Capacitance tolerance (%)	120Hz/20℃		M : ±20				
Dissipation Factor (tanδ)	tanδ (max) 120Hz/20℃		0.22	0.19	0.16	0.14	0.12
			Exceeding 1,000μF, +0.02 every 1,000μF				
Leakage current (LC)	μA/after 2minutes (max)		0.01CV				
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−40℃ Z/Z20℃	3	2	2	2	2
		−55℃ Z/Z20℃	4	4	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ5 to φ6.3 : 2,000hours, φ8 : 3,000hours, φ10 : 4,000hours, φ12.5 : 5,000hours, φ16 to φ18 : 7,000hours				
		△C/C	Within ±25% of the initial value				
		tanδ	Less than 200% of the specified value				
		LC	Less than the specified value				

■ Dimensions



α : L<20 α=1.5, L≥20 α=2.0

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

(Unit : mm)

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

★φ12.5×30:φd=0.8

■ Size, Impedance, Rated Ripple Current

V / Items / Case size φDxL(mm)	6.3 Capacitance (μF)	6.3 Impedance(Ωmax) (20℃/100kHz)	6.3 Rated ripple current(mArms) (105℃/10k to 200kHz)	10 Capacitance (μF)	10 Impedance(Ωmax) (20℃/100kHz)	10 Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11	180	0.34	205	150	0.34	205
6.3×11	330	0.17	330	270	0.17	330
6.3×11	390	0.17	330	330	0.17	330
8×11.5	680	0.11	580	470	0.11	580
8×11.5				560	0.11	580
8×15	1000	0.080	750	680	0.080	750
8×20	★1 1200	0.060	1000	★1 1000	0.060	1000
8×20	★1 1500	0.060	1000			
10×12.5	1200	0.063	900	820	0.063	900
10×16	1500	0.049	1200	1000	0.049	1200
10×16				1200	0.049	1200
10×20	2200	0.036	1450	1500	0.036	1450
10×22	2700	0.036	1500	1800	0.036	1500
12.5×20	3900	0.035	1660	2700	0.035	1660
12.5×25	4700	0.027	2000	3900	0.027	2000
12.5×25	5600	0.027	2000			
12.5×30	★1 6800	0.024	2450	★1 4700	0.024	2450
16×21	★2 5600	0.032	2000	★2 3900	0.032	2000
16×25	6800	0.022	2560	4700	0.022	2560
16×25	8200	0.022	2560	5600	0.022	2560
16×31.5	10000	0.017	3010	6800	0.017	3010
16×31.5				8200	0.017	3010
16×35.5	12000	0.016	3150	10000	0.016	3150
18×21	★2 6800	0.030	2490	★2 5600	0.030	2490
18×25	★2 10000	0.022	2740	★2 6800	0.022	2740
18×30.5	★2 12000	0.017	3330	★2 10000	0.017	3330
18×35.5	15000	0.016	3680	12000	0.016	3680

★1 CXL ★2 CXS

Aluminum Electrolytic Type / Radial Lead Type — RoHS compliance

■ Size, Impedance, Rated Ripple Current

V / Items / Case size φDxL(mm)	16			25		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11	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
8×15	470	0.080	750	330	0.080	750
8×20	680	0.060	1000	470	0.060	1000
10×12.5	560	0.063	900	390	0.063	900
10×12.5				★2 470	0.063	900
10×16	820	0.049	1200	560	0.049	1200
10×16				★2 680	0.049	1200
10×20	1000	0.036	1450	680	0.036	1450
10×20				820	0.036	1450
10×20				★2 1000	0.036	1450
10×22	1200	0.036	1500	1000	0.036	1500
12.5×20	1500	0.035	1660	1200	0.035	1660
12.5×20	1800	0.035	1660	1500	0.035	1660
12.5×25	2200	0.027	2000	1800	0.027	2000
12.5×25	2700	0.027	2000	2200	0.027	2000
12.5×30	★1 3300	0.024	2450	★1 2200	0.024	2450
16×21	★2 2700	0.032	2000	★2 1800	0.032	2000
16×25	3300	0.022	2560	2700	0.022	2560
16×25	3900	0.022	2560			
16×31.5	4700	0.017	3010	3300	0.017	3010
16×31.5	5600	0.017	3010			
16×35.5	6800	0.016	3150	3900	0.016	3150
18×21	★2 3300	0.030	2490	★2 2200	0.030	2490
18×25	★2 4700	0.022	2740	★2 3300	0.022	2740
18×30.5				★2 3900	0.017	3330
18×35.5				4700	0.016	3680
18×35.5	8200	0.016	3680	5600	0.016	3680

V / Items / Case size φDxL(mm)	35		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11	47	0.34	205
6.3×11	100	0.17	330
8×11.5	150	0.11	580
8×15	220	0.080	750
8×20	★1 330	0.060	1000
10×12.5	270	0.063	900
10×12.5	★2 330	0.063	900
10×16	330	0.049	1200
10×16	390	0.049	1200
10×16	★2 470	0.049	1200
10×20	470	0.036	1450
10×20	560	0.036	1450
10×20	★2 680	0.036	1450
10×22	680	0.036	1500
12.5×20	820	0.035	1660
12.5×20	1000	0.035	1660
12.5×25	1200	0.027	2000
12.5×25	1500	0.027	2000
12.5×30	★1 1500	0.024	2450
16×21	★2 1200	0.032	2000
16×25	1800	0.022	2560
16×31.5	2700	0.017	3010
16×35.5	3300	0.016	3150
18×21	★2 1500	0.030	2490
18×25	2200	0.022	2740
18×30.5	★2 3300	0.017	3330
18×35.5	3900	0.016	3680

★1 CXL
★2 CXS

Please refer to page 15 for ripple current frequency coefficients.

■ Part number

CX
6 ME 1000 CX
- CX: Series code
- 1000: Rated capacitance
- ME: Type code
- 6: Rated voltage

CXL
10 ME 1000 CXL
- CXL: Series code
- 1000: Rated capacitance
- ME: Type code
- 10: Rated voltage

CXS
10 ME 3900 CXS
- CXS: Series code
- 3900: Rated capacitance
- ME: Type code
- 10: Rated voltage

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

ME-AX Series

Low Impedance

Long Life



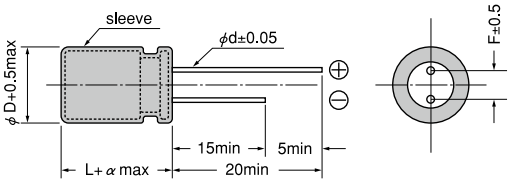
- 105℃, 2,500 to 10,000hours
- Solvent proof (within 5 minutes)

ME-WX (P.82)
Low Impedance ↑
Long Life
ME-AX ← ME-CX (P.78)

■ Specifications

Items	Condition			Specifications							
Rated voltage (V)	–			6.3	10	16	25	35	50	63	100
Surge voltage (V)	Room temperature			8.0	13	20	32	44	63	79	125
Category temperature range (℃)	–			−55 to +105							−40 to +105
Capacitance tolerance (%)	120Hz/20℃			M : ±20							
Dissipation Factor (tanδ)	tanδ (max) 120Hz/20℃			0.22	0.19	0.16	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)			The greater value of either 0.01CV or 3							
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−40℃	Z/Z20℃	3	2	2	2	2	2	2	2
		−55℃	Z/Z20℃	4	4	3	3	3	2	2	–
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test		φ5 : 2,500hours, φ6.3 : 3,000hours, φ8×11.5, φ8×12.5 : 3,500hours, φ8×15, φ8×20 : 4,500hours, φ10 : 5,000hours, φ12.5 : 7,000hours, φ16 to φ18 : 10,000hours							
		△C/C		Within ±20% of the initial value							
		tanδ		Less than 200% of the specified value							
		LC		Less than the specified value							

■ 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, Impedance, Rated Ripple Current

V / Items / Case size φDxL(mm)	6.3			10		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11	150	0.42	190	100	0.42	190
6.3×11	270	0.22	300	220	0.22	300
8×11.5	470	0.11	560	330	0.11	560
8×12.5	560	0.11	570	390	0.11	570
8×15	680	0.085	730	470	0.085	730
8×20	1000	0.069	800	★1 680	0.069	800
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 470 AX
- Series code
- Rated capacitance
- Type code
- Rated voltage

AXL
16 ME 470 AXL
- Series code
- Rated capacitance
- Type code
- Rated voltage

AXS
25 ME 470 AXS
- Series code
- Rated capacitance
- Type code
- Rated voltage

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

■ Size, Impedance, Rated Ripple Current

V / Items / Case size φDxL(mm)	16			25		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11	68	0.42	190	47	0.42	190
6.3×11	150	0.22	300	100	0.22	300
8×11.5	220	0.11	560	150	0.11	560
8×12.5	270	0.11	570	180	0.11	570
8×15	330	0.085	730	220	0.085	730
8×20	★1 470	0.069	800	330	0.069	800
10×12.5	470	0.085	800	270	0.085	800
10×16	560	0.062	1050	390	0.062	1050
10×16	680	0.062	1050	★2 470	0.068	1050
10×20	820	0.044	1250	560	0.044	1250
10×22	1000	0.039	1450	680	0.039	1450
12.5×20	1200	0.038	1600	1000	0.038	1600
12.5×25	1800	0.029	1800	1200	0.029	1800
16×25	2700	0.022	2100	1800	0.022	2100
16×31.5	3900	0.018	2350	2700	0.018	2350
16×35	4700	0.018	2550	3300	0.018	2550
18×35.5	5600	0.018	2800	3900	0.018	2800

V / Items / Case size φDxL(mm)	35			50		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11	4.7	1.2	115	4.7	2.0	90
5×11	10	0.90	140	10	1.7	110
5×11	22	0.42	190	15	1.2	130
5×11	33	0.42	190	22	0.70	160
6.3×11	47	0.22	300	33	0.43	220
6.3×11	68	0.22	300	47	0.43	220
8×11.5	100	0.11	560	68	0.26	360
8×12.5	120	0.11	570	82	0.24	400
8×15	150	0.085	730	100	0.18	500
8×20	★1 220	0.069	800	150	0.16	650
10×12.5	220	0.085	800	120	0.16	550
10×16	270	0.062	1050	180	0.12	760
10×20	330	0.044	1250	270	0.088	950
10×22	470	0.039	1450	330	0.072	1000
12.5×20	680	0.038	1600	470	0.059	1200
12.5×25	1000	0.029	1800	560	0.045	1400
16×25	1500	0.022	2100	1000	0.039	1750
16×31.5	2200	0.018	2350	1200	0.025	2100
16×35	★1 2200	0.018	2550	1500	0.025	2300
18×35.5	2700	0.018	2800	1800	0.024	2400

V / Items / Case size φDxL(mm)	63			100		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/10k to 200kHz)
5×11	18	1.6	140	5.6	2.7	120
6.3×11	33	0.90	200	12	1.4	170
8×11.5	68	0.52	275	22	0.81	230
8×12.5	★1 68	0.47	300	★1 22	0.79	250
8×15	82	0.34	360	27	0.64	295
8×20	★1 120	0.21	510	★1 39	0.36	400
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 15 for ripple current frequency coefficients.

★1 AXL ★2 AXS

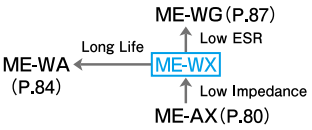
Aluminum Electrolytic Type / Radial Lead Type **RoHS compliance**

ME-WX Series

Low Impedance
High Ripple Current



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

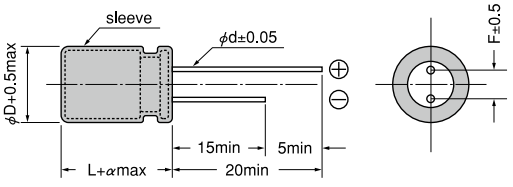


ME-SWB
ME-UZ·SZ
ME-UAX·SAX
ME-SWG
ME-HC
ME-CZ
ME-CA
ME-CX
ME-AX
ME-WX
ME-WA
ME-WL
ME-WG
ME-LS
ME-FX
ME-PX
ME-HPC·HPD
ME-FC·FD
ME-FH
ME-SWN
ME-HWN

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tanδ)	tanδ (max) 120Hz/20℃		0.22	0.19	0.16	0.14	0.12	0.10
			Exceeding 1,000μF, +0.02 every 1,000μF					
Leakage current (LC)	μA/after 2minutes (max)		0.01CV					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2	2	2	2	2
		−40℃ Z/Z20℃	3	3	3	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ5 to φ6.3 : 2,000hours, φ8 : 3,000hours, φ10 : 4,000hours, φ12.5 to φ16 : 5,000hours					
		△C/C	Within ±25% of the initial value					
		tanδ	Less than 200% of the specified value					
		LC	Less than the specified value					

■ Dimensions



α: L<20 α=1.5, L≥20 α=2.0
A pressure relief vent is provided for φD=6.3 or bigger

(Unit : mm)

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

★φ12.5×30:φd=0.8

■ Size, Impedance, Rated Ripple Current

V / Items / Case size φDxL(mm)	6.3			10		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
5×11	150	0.30	250	100	0.30	250
6.3×11	330	0.13	405	220	0.13	405
8×11.5	560	0.072	760	470	0.072	760
8×15	820	0.056	995	★1 680	0.056	995
8×20	★1 1200	0.041	1250	★1 1000	0.041	1250
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	★3 2200	0.022	2150	★3 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	★2 3900	0.018	3140
16×25	6800	0.016	3460	5600	0.016	3460

★1 WXL ★2 WXS ★3 WXV

■ Size, Impedance, Rated Ripple Current

V / Items / Case size φDxL(mm)	16			25		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
5×11	56	0.30	250	47	0.30	250
6.3×11	120	0.13	405	100	0.13	405
8×11.5	330	0.072	760	220	0.072	760
8×15	★1 470	0.056	995	330	0.056	995
8×20	★1 680	0.041	1250	★1 470	0.041	1250
10×12.5	470	0.053	1030	★2 330	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	★3 1200	0.022	2150	★3 820	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	★2 2700	0.018	3140	★2 1800	0.018	3140
16×25	3900	0.016	3460	2700	0.016	3460

V / Items / Case size φDxL(mm)	35			50		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
5×11	33	0.30	250	22	0.34	238
6.3×11	56	0.13	405	47	0.14	385
8×12.5	★3 150	0.072	760	100	0.074	724
8×15	220	0.056	995	120	0.061	950
8×20	★1 270	0.041	1250	180	0.046	1190
10×12.5	★2 220	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	★3 560	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	★2 1200	0.018	3140	820	0.023	2730
16×25	1800	0.016	3460	1000	0.021	3010

Please refer to page 15 for ripple current frequency coefficients.

★1 WXL ★2 WXS ★3 WXV

■ Part number

WX
6 ME 1000 WX
- Series code
- Rated capacitance
- Type code
- Rated voltage

WXL
10 ME 1000 WXL
- Series code
- Rated capacitance
- Type code
- Rated voltage

WXS
25 ME 330 WXS
- Series code
- Rated capacitance
- Type code
- Rated voltage

WXV
35 ME 560 WXV
- Series code
- Rated capacitance
- Type code
- Rated voltage

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

ME-WA Series

105℃, Small, Long Life

Low Impedance, High Ripple Current



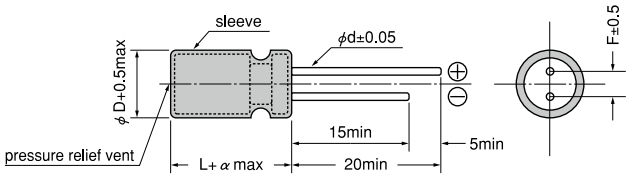
- 105℃, 8,000 to 10,000hours
- Non solvent proof

ME-WA ← Long Life — ME-WX (P.82)

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tanδ)	tanδ (max) 120Hz/20℃		0.22	0.19	0.16	0.14	0.12	0.10
			Exceeding 1,000μF, +0.02 every 1,000μF					
Leakage current (LC)	μA/after 2minutes (max)		0.03CV					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2	2	2	2	2
		−40℃ Z/Z20℃	3	3	3	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ8 : 8,000hours, φ10 to φ16 : 10,000hours					
		△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					

■ Dimensions



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

(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 / Case size φDxL(mm)	6.3			10		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
8×11.5	820	0.059	945	680	0.059	945
8×15	★1 1200	0.046	1250	★1 1000	0.046	1250
8×20	1500	0.031	1500	★1 1500	0.031	1500
10×12.5	1200	0.043	1330	1000	0.043	1330
10×16	1800	0.030	1760	1500	0.030	1760
10×20	2200	0.021	1960	1800	0.021	1960
10×22	2700	0.020	2250	2200	0.020	2250
12.5×20	3900	0.019	2480	3300	0.019	2480
12.5×25	4700	0.016	2900	3900	0.016	2900
12.5×30	5600	0.014	3450	★1 4700	0.014	3450
16×21	6800	0.018	3250	4700	0.018	3250
16×25	8200	0.014	3630	6800	0.014	3630

★1 WAL

■ Size, Impedance, Rated Ripple Current

V / Items / Case size φDxL(mm)	16			25		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
8×11.5	470	0.059	945	330	0.059	945
8×15	★1 680	0.046	1250	390	0.046	1250
8×20	★1 1000	0.031	1500	560	0.031	1500
10×12.5	680	0.043	1330	470	0.043	1330
10×16	1000	0.030	1760	680	0.030	1760
10×20	1500	0.021	1960	820	0.021	1960
10×22	1800	0.020	2250	1000	0.020	2250
12.5×20	2200	0.019	2480	1500	0.019	2480
12.5×25	2700	0.016	2900	1800	0.016	2900
12.5×30	★1 3300	0.014	3450	★1 2200	0.014	3450
16×21	3300	0.018	3250	2200	0.018	3250
16×25	4700	0.014	3630	3300	0.014	3630

V / Items / Case size φDxL(mm)	35			50		
	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)	Capacitance (μF)	Impedance(Ωmax) (20℃/100kHz)	Rated ripple current(mArms) (105℃/100kHz)
8×11.5	220	0.059	945	100	0.074	724
8×15	270	0.046	1250	120	0.061	950
8×20	390	0.031	1500	180	0.046	1190
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

Please refer to page 15 for ripple current frequency coefficients.

★1 WAL

■ Part number

WA

10 ME 1000 WA
- WA: Series code
- 1000: Rated capacitance
- ME: Type code
- 10: Rated voltage

WAL

16 ME 1000 WAL
- WAL: Series code
- 1000: Rated capacitance
- ME: Type code
- 16: Rated voltage

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

ME-WL Series

105℃, Small, Low Impedance

Long Life



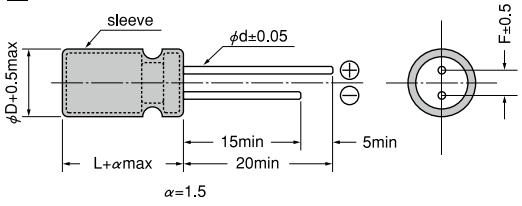
- 105℃, 4,000 to 5,000hours
- Non solvent proof

ME-WL
↑ Low Impedance
ME-WX (P.82)

■ Specifications

Items	Condition		Specifications							
Rated voltage (V)	–		6.3	10	16	25	35	50	63	100
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	79	125
Category temperature range (℃)	–		−40 to +105							
Capacitance tolerance (%)	120Hz/20℃		M : ±20							
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.22	0.19	0.16	0.14	0.12	0.10	0.10	0.10
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3							
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	2	2	2	2	2	2
		−40℃ Z/Z20℃	8	6	4	3	3	3	3	3
Endurance	105℃, rated voltage applied (With the rated ripple current)	test	4,000hours		5,000hours					
		△C/C	Within ±25% of the initial value							
		tan δ	Less than 200% of the specified value							
		LC	Less than the specified value							

■ 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 15 for ripple current frequency coefficients.

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

■ Part number

16 ME 120 WL
- Series code
- Rated capacitance
- Type code
- Rated voltage

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

ME-WG Series

Super Low ESR, Small



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

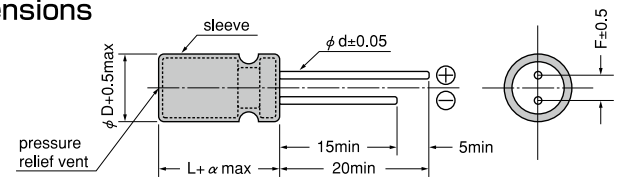
ME-WG
↑ Low ESR
ME-WX (P.82)

ME-SWB
ME-UZ·SZ
ME-UAX·SAX
ME-SWG
ME-HC
ME-CZ
ME-CA
ME-CX
ME-AX
ME-WX
ME-WA
ME-WL
ME-WG
ME-LS
ME-FX
ME-PX
ME-HPC·HPD
ME-FC·FD
ME-FH
ME-SWN
ME-HWN

■ Specifications

Items	Condition		Specifications			
Rated voltage (V)	–		6.3	10	16	25
Surge voltage (V)	Room temperature		8.0	13	20	32
Category temperature range (℃)	–		−40 to +105			
Capacitance tolerance (%)	120Hz/20℃		M : ±20			
Dissipation Factor (tanδ)	tanδ (max) 120Hz/20℃		0.22	0.19	0.16	0.14
			Exceeding 1,000μF, +0.02 every 1,000μF			
Leakage current (LC)	μA/after 2minutes (max)		0.03CV			
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	2	2	2	2
		−40℃ Z/Z20℃	3	3	3	3
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ8×11.5, φ8×16, φ10×12.5, φ10×16 : 2,000hours, φ8×20 : 3,000hours, φ10×20, φ10×23 : 4,000hours			
		△C/C	Within ±25% of the initial value			
		tanδ	Less than 200% of the specified value			
		LC	Less than the specified value			

■ Dimensions



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

(Unit : mm)

φD	8	10
F	3.5	5.0
φd	0.6	0.6

■ Size, ESR, Rated Ripple Current

V / Items / μF	6.3			10			16			25		
	Case size φDxL (mm)	ESR (mΩmax) 20℃/100kHz	Ripple current (mArms) 105℃/100kHz	Case size φDxL (mm)	ESR (mΩmax) 20℃/100kHz	Ripple current (mArms) 105℃/100kHz	Case size φDxL (mm)	ESR (mΩmax) 20℃/100kHz	Ripple current (mArms) 105℃/100kHz	Case size φDxL (mm)	ESR (mΩmax) 20℃/100kHz	Ripple current (mArms) 105℃/100kHz
220										8×11.5	30	1110
330							8×11.5	30	1140	8×11.5	32	1080
										10×12.5 ★3	25	1440
470				8×11.5	30	1140	8×11.5	36	1140	8×20 ★1	18	1820
										10×12.5	27	1390
										10×16 ★3	20	1920
680				8×11.5	36	1140	8×16 ★1	28	1490	10×16	22	1830
							10×12.5	26	1540	10×20 ★3	16	2180
820	8×11.5	36	1140									
1000	8×11.5	30	1140	8×16 ★1	28	1490	8×20 ★1	19	1870	10×23 ★1	16	2180
				10×12.5	26	1540	10×16	19	2000			
1200	8×16	28	1490	8×20 ★1	19	1870						
1500	8×20 ★1	19	1870	8×20 ★1	19	1870	10×20	13	2550			
	8×20 ★2	16	1950	10×16	19	2000						
	10×12.5	26	1540									
	10×16 ★3	18	2000									
1800	8×20 ★2	16	1950	10×20	13	2550	10×23	12	2800			
	10×16	19	2000									
2200	10×20	13	2550	10×23	12	2800						
3300	10×23	12	2800									

Please refer to page 15 for ripple current frequency coefficients.

★1 WGL ★2 WGL2 ★3 WGV

■ Part number

WG
10 ME 1000 WG
- Series code
- Rated capacitance
- Type code
- Rated voltage

WGL
6 ME 1500 WGL
- Series code
- Rated capacitance
- Type code
- Rated voltage

WGL2
6 ME 1500 WGL2
- Series code
- Rated capacitance
- Type code
- Rated voltage

WGV
25 ME 470 WGV
- Series code
- Rated capacitance
- Type code
- Rated voltage

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

ME-LS Series 105℃ Long Life



- 105℃, 3,000hours
- Solvent proof (φ4 to 6.3 : within 3 minutes, φ8 : within 5 minutes)

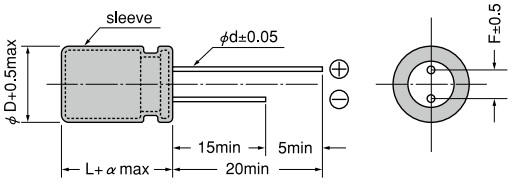
ME-LS ← Long Life — ME-SZ (P.70)

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.30	0.28	0.24	0.18	0.16	0.14
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	5	4	3	2	2	2
		−40℃ Z/Z20℃	10	8	6	4	3	3
Endurance	105℃, 3,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±30% of the initial value					
		tan δ	Less than 300% of the specified value					
		LC	Less than the specified value					

■ Dimensions

(Unit : mm)



α : L≦7.5 α=1.0, L=11.5 α=1.5
A pressure relief vent is provided for φ8×11.5

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																4×7	17.0	23
2.2																4×7	13.0	26
3.3																4×7	11.0	29
4.7													4×7	6.6	37	5×7	9.0	37
10							4×7	4.2	46	4×7	4.2	46	5×7	2.3	74	6.3×7	2.5	84
22	4×7	4.2	46				5×7	2.3	74	5×7	2.3	74	6.3×7	1.2	120	6.3×7.5	1.6	112
33				5×7	2.3	74				6.3×7	1.2	120	6.3×7.5	0.75	163			
47	5×7	2.3	74				6.3×7	1.2	120	6.3×7.5	0.75	163	6.3×7.5	0.75	163			
100	6.3×7	1.2	120				6.3×7.5	0.75	163									
150				6.3×7.5	0.75	163												
220	6.3×7.5	0.75	163							8×11.5	0.40	298	8×11.5	0.40	298			
330										8×11.5	0.40	298						
470							8×11.5	0.40	298									
1000	8×11.5	0.40	298															

Please refer to page 15 for ripple current frequency coefficients.

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

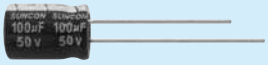
■ Part number

6 ME 1000 LS
- LS — Series code
- 1000 — Rated capacitance
- ME — Type code
- 6 — Rated voltage

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

ME-FX Series

Long Life



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

ME-FX ← Long Life ME-CZ (P.74)

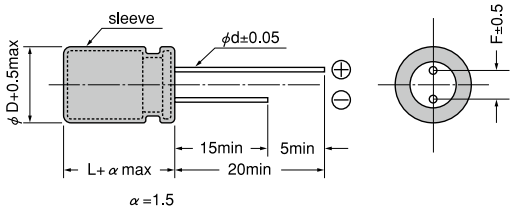
NEW

ME-SWB
ME-UZ·SZ
ME-UAX·SAX
ME-SWG
ME-HC
ME-CZ
ME-CA
ME-CX
ME-AX
ME-WX
ME-WA
ME-WL
ME-WG
ME-LS
ME-FX
ME-PX
ME-HPC·HPD
ME-FC·FD
ME-FH
ME-SWN
ME-HWN

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		10	16	25	35	50	100
Surge voltage (V)	Room temperature		13	20	32	44	63	125
Category temperature range (℃)	–		−40 to +105					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.45	0.35	0.30	0.22	0.19	0.15
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	8	6	4	4	3	3
Endurance	105℃, 10,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value					
		tan δ	Less than 300% of the specified value					
		LC	Less than the specified value					

■ 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	5×11	70
10									5×11	90	6.3×11	150
22									5×11	110	8×11.5	230
33					5×11	130	5×11	130	6.3×11	190		
47			5×11	130	5×11	130	6.3×11	210	6.3×11	190		
100			6.3×11	210	6.3×11	210	8×11.5	330	8×12.5	270		
220	6.3×11	210	8×11.5	330	8×11.5	330						
330	8×11.5	330	8×11.5	330								
470	8×11.5	330										

Please refer to page 15 for ripple current frequency coefficients.

Case size:φDxL(mm)

Rated ripple current mArms(100kHz, 105℃)

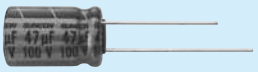
■ Part number

10ME220FX

- Series code
- Rated capacitance
- Type code
- Rated voltage

ME-PX Series

125℃, 4,000Hours
High Peformance



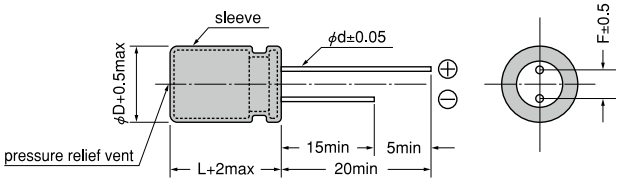
- 125℃, 2,000 to 4,000hours
- Solvent proof (within 5 minutes)

ME-PX
↑ 125℃
ME-AX (P.80)

■ 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 (℃)	–		−55 to +125					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tanδ)	tanδ (max) 120Hz/20℃		0.20	0.16	0.14	0.12	0.10	0.08
			Exceeding 1,000μF, +0.02 every 1,000μF					
Leakage current (LC)	μA/after 2minutes (max)		The greater value of either 0.01CV or 3					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−40℃ Z/Z20℃	2	2	2	2	2	2
		−55℃ Z/Z20℃	4	3	3	3	2	2
Endurance	125℃ rated voltage applied (With the rated ripple current)	Test	φ8 : 2,000hours, φ10 : 3,000hours, φ12.5 to φ18 : 4,000hours					
		△C/C	Within ±30% of the initial value					
		tanδ	Less than 300% of the specified value					
		LC	Less than the specified value					

■ Dimensions



(Unit : mm)

φD	8	10	12.5	16	18
F	3.5	5.0	5.0	7.5	7.5
φd	0.6	0.6	0.6	0.8	0.8

■ Size, Impedance, Rated Ripple Current

μF \ V	10			16			25			35			50			100		
10													8×11.5	0.95	150	8×11.5	1.5	150
22													8×11.5	0.65	210	8×12.5	1.5	190
33													8×12.5	0.45	230	10×12.5	0.75	330
47										8×12.5	0.45	230	8×12.5	0.45	230	10×16	0.57	400
100				8×11.5	0.39	250	8×12.5	0.26	280	10×12.5	0.35	315	10×12.5	0.35	315	12.5×20	0.29	580
220	8×12.5	0.26	280	10×12.5	0.20	350	10×12.5	0.17	380	10×16	0.29	420	10×20	0.20	560	16×25	0.22	670
330	10×12.5	0.20	350	10×12.5	0.17	380	10×16	0.15	490	10×20	0.20	560	12.5×20	0.12	630	16×31.5	0.15	810
470	10×12.5	0.17	380	10×16	0.15	490	10×20	0.12	590	12.5×20	0.12	630	12.5×25	0.10	770	18×31.5	0.11	950
1000	10×20	0.12	590	12.5×20	0.073	770	12.5×25	0.050	1050	16×25	0.058	980	16×31.5	0.045	1200			
2200	12.5×25	0.050	1050	16×25	0.044	1150	16×31.5	0.030	1500									
3300	16×25	0.044	1150	16×31.5	0.030	1500												
4700	16×31.5	0.030	1500															

Please refer to page 15 for ripple current frequency coefficients.

Impedance(Ω) max at 100kHz, 20℃
Case size:φDxL(mm)
Rated ripple current mArms(10k to 100kHz, 125℃)

■ Part number

50 ME 220 PX
- PX: Series code
- 220: Rated capacitance
- ME: Type code
- 50: Rated voltage

ME-SWB
ME-UZ·SZ
ME-UAX·SAX
ME-SWG
ME-HC
ME-CZ
ME-CA
ME-CX
ME-AX
ME-WX
ME-WA
ME-WL
ME-WG
ME-LS
ME-FX
ME-PX
ME-HPC·HPD
ME-FC·FD
ME-FH
ME-SWN
ME-HWN

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

ME-HPC·HPD Series

Standard, High Voltage

Low Profile, High Voltage



● Non solvent proof

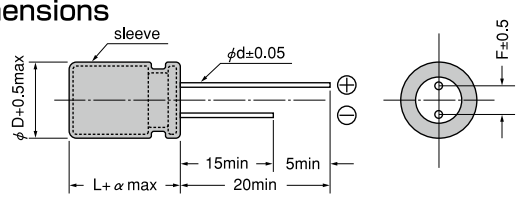
ME-FC (P.92) ↑ 105℃ ME-HPC

ME-FD (P.92) ↑ 105℃ ME-HPD

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		160	200	250	350	400	450
Surge voltage (V)	Room temperature		200	250	300	400	450	500
Category temperature range (℃)	–		−40 to +85			−25 to +85		
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tanδ)	tanδ (max) 120Hz/20℃		0.20	0.20	0.20	0.25	0.25	0.25
Leakage current (LC)	μA/after 2minutes (max)	CV ≤ 1,000	0.03CV +15					
		CV > 1,000	0.02CV +25					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	3	3	3	4	6	12
		−40℃ Z/Z20℃	6	6	6	–	–	–
Endurance	85℃, 2,000hours rated voltage applied (With the rated ripple current)	△C/C	Within ±20% of the initial value					
		tanδ	Less than 200% of the specified value					
		LC	Less than the specified value					

■ 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	10	5×11	11	5×11	12	6.3×11	14	6.3×11	14		
1.0	5×11	21	5×11	23	5×11	25	6.3×11	29	8×11.5	29	8×12.5	26
2.2	6.3×11	31	6.3×11	34	6.3×11	35	8×11.5	40	8×11.5	40	10×16	40
3.3	6.3×11	40	6.3×11	46	8×11.5	48	8×12.5	52	10×12.5	52	10×20	52
4.7	6.3×11	55	8×11.5	57	8×11.5	59	10×12.5	67	10×16	67	12.5×20	67
10	8×11.5	90	8×12.5	92	10×12.5	94	10×16	100	10×20	100	12.5×25 16×21	100
22	10×12.5	153	10×16	160	10×20	170	12.5×20	175	12.5×25 16×21	180	16×25 18×21	180
33	10×20	195	10×20	210	12.5×20	220	12.5×25 16×21	225	16×25 18×21	230	16×30 18×25	220
47	12.5×20	245	12.5×20	250	12.5×25 16×21	260	16×25 18×21	260	16×30 18×25	270	18×35.5	245
68	12.5×20	310	12.5×25 16×21	325	16×25 18×21	335	16×35.5 18×25	340	16×35.5 18×30.5	345		
82	12.5×25 16×21	380	16×21	390	16×30 18×25	400	18×30.5	405	18×35.5	420		
100	12.5×25 16×21	410	16×25 18×21	430	16×30 18×25	432	18×35.5	440				
150	16×30 18×25	550	16×35.5 18×30.5	575	18×35.5	588						
220	16×35.5 18×30.5	745	18×35.5	760								

Please refer to page 15 for ripple current frequency coefficients.
Upper : ME-HPC series(0.47μF to 4.7μF:ME-HPC series)
Lower : ME-HPD series

Rated ripple current mArms(120Hz, 85℃)

Case size:φDxL(mm)

■ Part number

HPC
160 ME 33 HPC
- Series code
- Rated capacitance
- Type code
- Rated voltage

HPD
450 ME 10 HPD
- Series code
- Rated capacitance
- Type code
- Rated voltage

ME-FC·FD Series

105℃, High Voltage

105℃ Low Profile, High Voltage



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

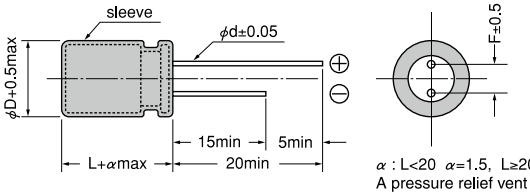
ME-FC ↑ 105℃ ME-HPC (P.91)

ME-FD ↑ 105℃ ME-HPD (P.91)

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		160	200	250	350	400	450
Surge voltage (V)	Room temperature		200	250	300	400	450	500
Category temperature range (℃)	–		−40 to +105					−25 to +105
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.20	0.20	0.20	0.25	0.25	0.25
Leakage current (LC)	μA/after 2minutes (max)	CV ≤ 1,000	0.03CV + 15					
		CV > 1,000	0.02CV + 25					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	3	3	3	4	6	6
		−40℃ Z/Z20℃	6	6	6	8	10	–
Endurance	105℃ rated voltage applied (With the rated ripple current)	Test	φ5 to φ8 : 1,000hours, φ10 to φ18 : 2,000hours					
		△C/C	Within ±20% of the initial value					
		tan δ	Less than 200% of the specified value					
		LC	Less than the specified value					

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

Please refer to page 15 for ripple current frequency coefficients.
Upper : ME-FC series(0.47μF to 4.7μF:ME-FC series)
Lower : ME-FD series

Rated ripple current mArms(120Hz, 105℃)

Case size:φDxL(mm)

■ Part number

FC
160 ME 33 FC
- FC: Series code
- 33: Rated capacitance
- ME: Type code
- 160: Rated voltage

FD
450 ME 10 FD
- FD: Series code
- 10: Rated capacitance
- ME: Type code
- 450: Rated voltage

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

ME-FH Series

105℃, Small, Long Life

High Voltage



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

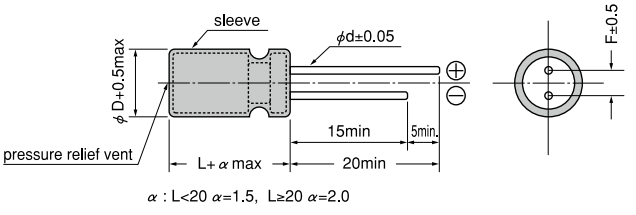
ME-FH ← Long Life — ME-FC·FD (P.92)

ME-SWB
ME-UZ·SZ
ME-UAX·SAX
ME-SWG
ME-HC
ME-CZ
ME-CA
ME-CX
ME-AX
ME-WX
ME-WA
ME-WL
ME-WG
ME-LS
ME-FX
ME-PX
ME-HPC·HPD
ME-FC·FD
ME-FH
ME-SWN
ME-HWN

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		160	200	250	350	400	450
Surge voltage (V)	Room temperature		200	250	300	400	450	500
Category temperature range (℃)	–		−40 to +105					−25 to +105
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.20	0.20	0.20	0.25	0.25	0.25
Leakage current (LC)	μA/after 2minutes (max)		0.02CV + 25					
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	3	3	3	4	6	6
		−40℃ Z/Z20℃	6	6	6	8	10	–
Endurance	105℃, rated voltage applied (With the rated ripple current)	Test	φ10 : 10,000hours, φ12.5 to φ18 : 12,000hours					
		△C/C	Within ±20% of the initial value					
		tan δ	Less than 200% of the specified value					
		LC	Less than the specified value					

■ Dimensions



α : L<20 α=1.5, L≥20 α=2.0

(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	10×20	58
10			10×12.5	105	10×16	106	10×16	100	10×20	108	12.5×20	145
22			10×16	173	10×20	184	12.5×20	184	12.5×25	195	16×25	218
33	10×16	190	10×20	227	12.5×20	238	12.5×25	224	16×25	249	16×31.5	243
47	10×20	270	12.5×20	270	12.5×25	282	16×25	282	16×31.5	292	18×31.5	304
68	12.5×20	336	12.5×20	325	16×25	364	16×31.5	334	18×31.5	346	18×41	340
82	12.5×20	346	12.5×25	370	16×25	403	18×31.5	360	18×35.5	420		
100	12.5×25	410	16×25	436	16×31.5	418			18×41	500		
150	16×25	500	16×31.5	470	18×31.5	545						
220	16×31.5	570	18×31.5	660								

Please refer to page 15 for ripple current frequency coefficients.

Rated ripple current mArms(120Hz, 105℃)

Case size:φDxL(mm)

■ Part number

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

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

ME-SWN Series

Bi-polar

7mm Height



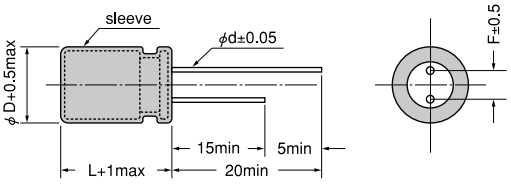
- 85℃, 1,000hours
- Solvent proof (within 3 minutes)

ME-SWB
ME-UZ·SZ
ME-UAX·SAX
ME-SWG
ME-HC
ME-CZ
ME-CA
ME-CX
ME-AX
ME-WX
ME-WA
ME-WL
ME-WG
ME-LS
ME-FX
ME-PX
ME-HPC·HPD
ME-FC·FD
ME-FH
ME-SWN
ME-HWN

■ Specifications

Items	Condition		Specifications					
Rated voltage (V)	–		6.3	10	16	25	35	50
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63
Category temperature range (℃)	–		−40 to +85					
Capacitance tolerance (%)	120Hz/20℃		M : ±20					
Dissipation Factor (tan δ)	tanδ (max) 120Hz/20℃		0.24	0.22	0.20	0.18	0.16	0.16
Leakage current (LC)	μA/after 1minute (max)		0.03CV + 6					
Endurance	500hours×2(alternately) 85℃,rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value					
		tan δ	Less than 200% of the specified value					
		LC	Less than the specified value					

■ 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 15 for ripple current frequency coefficients.

Case size:φDxL(mm)

Rated ripple current mArms(120Hz, 85℃)

■ Part number

16 ME 33 SWN

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

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

ME-HWN Series

Bi-polar

Standard

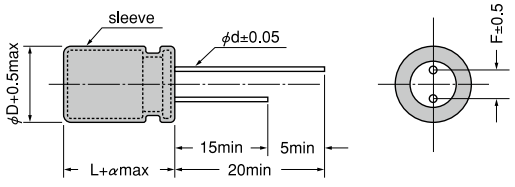


- 85℃, 2,000hours
- Solvent proof (within 5 minutes)

■ Specifications

Items	Condition		Specifications						
Rated voltage (V)	–		6.3	10	16	25	35	50	100
Surge voltage (V)	Room temperature		8.0	13	20	32	44	63	125
Category temperature range (℃)	–		−40 to +85						
Capacitance tolerance (%)	120Hz/20℃		M : ±20						
Dissipation Factor (tanδ)	tanδ (max) 120Hz/20℃		0.24	0.20	0.18	0.16	0.14	0.13	0.10
			Exceeding 1,000μF, +0.02 every 1,000μF						
Leakage current (LC)	μA/after 1minute (max)		0.03CV + 6						
Impedance ratio at low temperature	Based the value at 120Hz, +20℃	−25℃ Z/Z20℃	4	3	3	2	2	2	2
		−40℃ Z/Z20℃	10	8	8	6	4	4	4
Endurance	500hours×4(alternately) 85℃,rated voltage applied (With the rated ripple current)	△C/C	Within ±25% of the initial value						
		tanδ	Less than 200% of the specified value						
		LC	Less than the specified value						

■ Dimensions



α: L<20 α=1.5, L≥20 α=2.0
A pressure relief vent is provided for φD=6.3 or bigger

(Unit : mm)

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

■ Size List, Rated Ripple Current

μF \ V	6.3		10		16		25		35		50		100	
1.0											5×11	10		
2.2											5×11	20	5×11	25
3.3											5×11	28	6.3×11	30
4.7							5×11	25	5×11	30	5×11	38	6.3×11	45
10					5×11	28	5×11	40	5×11	45	6.3×11	50	8×12.5	70
22			5×11	38	5×11	50	5×11	60	6.3×11	75	6.3×11	90	10×16	120
33	5×11	50	5×11	58	5×11	60	6.3×11	80	6.3×11	90	8×11.5	110	10×20	170
47	5×11	60	5×11	70	6.3×11	85	6.3×11	90	8×11.5	125	10×12.5	135	12.5×20	200
100	6.3×11	120	6.3×11	125	8×11.5	165	8×12.5	180	10×12.5	200	10×20	250		
220	8×11.5	210	8×12.5	225	10×12.5	260	10×16	320	10×20	350	12.5×25	410		
330	8×11.5	260	10×12.5	295	10×16	360	10×20	425	12.5×20	440				
470	10×12.5	330	10×16	390	10×20	420	12.5×20	540	12.5×25	585				
1000	10×20	560	12.5×20	620	12.5×25	740								
2200	12.5×25	890												

Please refer to page 15 for ripple current frequency coefficients.

Rated ripple current mArms(120Hz, 85℃)

Case size:φDxL(mm)

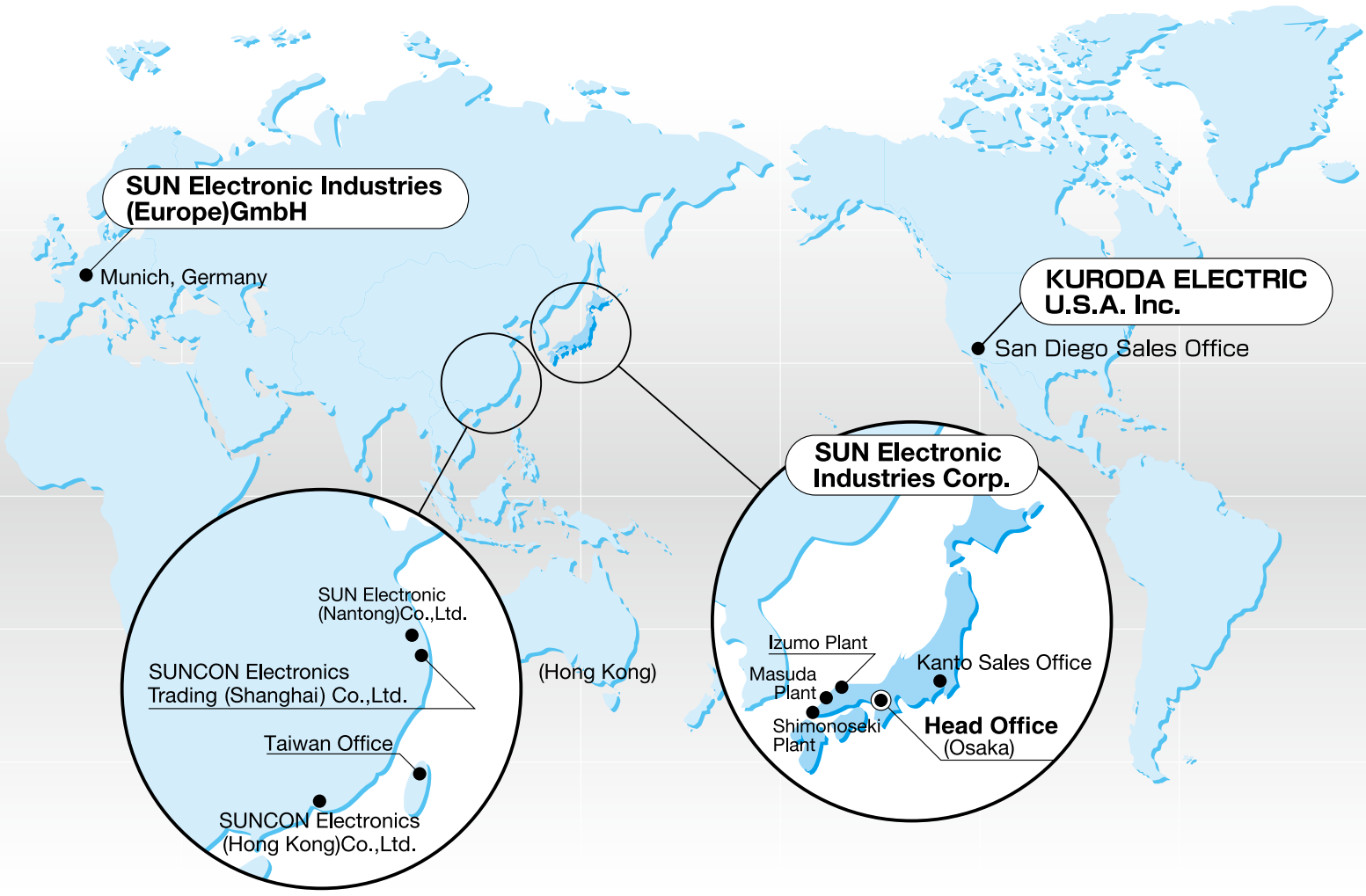
■ Part number

50 ME 10 HWN
- HWN: Series code
- 10: Rated capacitance
- ME: Type code
- 50: Rated voltage

ME-SWB
ME-UZ·SZ
ME-UAX·SAX
ME-SWG
ME-HC
ME-CZ
ME-CA
ME-CX
ME-AX
ME-WX
ME-WA
ME-WL
ME-WG
ME-LS
ME-FX
ME-PX
ME-HPC·HPD
ME-FC·FD
ME-FH
ME-SWN
ME-HWN

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