



ALUMINIUM ELECTROLYTIC CAPACITORS



INDEX

Technical Information

- Construction and Manufacturing process 1
- Electrical Characteristics 2
- Application Notes 4
- Precautions 7

Capacitor types

- PG - 6DI -40°C +85°C 8
- PG - 8K -40°C +105°C 17
- PG - LL9 Long life -40°C +85°C 22
- PG - 5KL Long life -40°C +105°C 27
- PG - 2HED (high energy discharge) -40°C +70°C 31
- PG - PED2 (high pulse discharge) -40°C +70°C 33

Terminal styles and dimension

Mounting Accessories

Part Number System

Cautions for proper use of Electrolytic Capacitor



ISO 9001-2015
Quality Standard



ISO 14001-2015
Environmental Standard



ISO 45001-2018
Health and Safety Standard

Alcon started manufacturing aluminium electrolytic capacitors for the Indian entertainment electronics industry in 1977. Over the years the focus has shifted and Alcon now manufactures a large range of high CV screw terminal type aluminium electrolytic capacitors and a large variety of film capacitors for power electronic applications. The range of film capacitors now includes 3 types namely, IGBT snubber capacitors (direct mounting with - different terminals styles to suit all types of power IGBT modules), DC Link capacitors for high frequency application in power electronic and Power film capacitors which are designed for application involving wide operating frequency range of 5 kHz to 1 MHz, high current ratings of 200 to 1250 Arms and voltage ratings of 400 to 1200 Vrms.

With this enlarged range of capacitors, Alcon caters to the increasing needs of the power electronics sector. To improve market share in India and abroad Alcon has now completed the expansion which has enabled it to create additional manufacturing capacity for all capacitor types mentioned above. With this expansion a new more modern, well equipped R & D Laboratory has been established. This will facilitate further product development at Alcon. This laboratory is equipped to collect application data related to all types of capacitors that will be manufactured. Alcon is now fully equipped to cater to the increasing requirements of the target industries and will therefore fall in line with the Governments plans of " Make in India ". Alcon will not only cater to the needs of the AC drives, UPS systems and the Inverter markets but will also cater to requirements of the industries involved in the manufacture of Wireless Electric Vehicle charging, High Frequency Induction Heating Equipment, Windmill and Solar Inverters, Telecom Equipment, besides a host of many special purpose industrial electronic equipment like Health Care (MRI, CT scan and X-ray) Equipment, Welding and Pulse Magnetizing Equipment, to name only a few.

Alcon has been able to meet the exacting quality criteria and standards of Indian as well discerning customers in USA, Germany, Italy, UK, Japan, Norway, Sweden, Denmark, South Korea, Turkey and even the very price conscious customers in China. Alcon believes that quality has to be built into the entire manufacturing process. The finest end products are assured by using the finest inputs, proven technology, modern production processes and equipment's and stringent quality control. Alcon is registered to ISO 9001, ISO 14001 and ISO 45001 signifying Alcon's commitment to quality, reliability and environment protection on the one hand and to safety as per international standards, on the other.

Designing capacitors for special applications requires an in-depth understanding of the application, knowledge of changing technologies, the ability to develop innovative technology concepts and finally, incorporate these concepts into the capacitors design & manufacturing processes. This would give the users high reliability and high performance products. Alcon's capability to make custom designed capacitors is well known. One of Alcon's significant advantage is that every stage of product development and innovation is evaluated in terms of changing technologies and user needs. Custom designed capacitors allow the users to select the right capacitor at the most viable price. Custom-designed capacitors account for almost 50% of Alcon's sales. It is also for this reason that Alcon today exports about 30% of its production and after the current planned expansion the company's target is to export 50% of its annual production. To enable the company to work effectively towards this objective Alcon's range of aluminium electrolytic capacitors now have CE marking and its range of DCL - 41 DC-Link Capacitors are UL approved.

At Alcon, responsiveness to customers needs is an integral part of our marketing strategy. We work with customers, to understand their production operations and application needs, analyse problems and offer optimum and cost effective solutions. We do what it takes to satisfy customer requirements. Alcon has a marketing team with component specific knowledge and experience. Our distributors who are located in all important cities in India and in many cities internationally, function as marketing nerve centres and provide timely deliveries to consumers in their region. Alcon has 23 distributors in India and 18 across the Globe. Alcon has received several awards as a recognition of the company's product quality, service, timely delivery and technology. Last fiscal the company received an award from Emerson Network Power India Pvt. Ltd., which was titled "Emerson Vendor appreciation Award." This year we have received an award titled "Supplier Technology Award" from GE Healthcare. This award is for innovative product designs and development of several new products for GE in India. "GE believes that this is the kind of partnership they look forward to in today's uncertain world."

Alcon's Customers are located in India and in many countries worldwide.



India : New Delhi, Jaipur, Ahmedabad, Baroda, Bhopal, Mumbai, Pune, **Nashik**, Hyderabad, Bangalore, Chennai, Cochin, Coimbatore Trivandrum & Kolkata

International : Australia, China, Czech Republic, Denmark, Estonia, Finland, Germany, Italy, Ukraine, Japan, Latvia, Lithuania, Netherlands, Poland, Russia Federation, Romania, Slovakia, U.K, USA, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Turkey, France, Dubai, Singapore, Norway, Indonesia, Hongkong

Technical Information

Construction

An aluminum electrolytic capacitor consists of two electrically conductive aluminum layers, separated by a dielectric layer. One of the electrodes (the aluminum foil called anode) undergoes a process called 'forming', by which a dielectric layer of aluminum oxide (Al_2O_3) is electrochemically coated on it. The other electrode is a conductive liquid, called the electrolyte. The second aluminum foil, the cathode, acts as a large surfaced contact area for passing current to the electrolyte. The basic principle of the capacitor is to store electrical charge and is defined as:

$$Q = CV$$

Q = charge in Coulombs

C = capacitance, in Farads (between the plates)

V = potential difference between the plates

Based on the formula given above, it can be said that the unit of capacitance, the Farad, is the capacitance between the plates, across which appears a potential difference of 1 Volt when it is charged by 1 Coulomb of electricity. The value of capacitance in a capacitor is directly proportional to the area of the plates and is inversely proportional to the distance between them. Hence capacitance is expressed by the equation:

$$C = \frac{A}{d} \epsilon_0 \epsilon_r$$

A = surface area of the plates in m^2

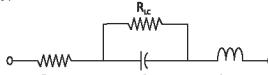
d = distance between the plates
(or dielectric thickness) in metres

ϵ_0 = permittivity of free space
= $8.885 \times 10^{-12} \text{ F/m}$

ϵ_r = relative permittivity of the dielectric
(9.5 for Al_2O_3)

The surface area of the anode is enlarged (up to 200 times) by an electrochemical etching process. Similarly the cathode is also etched to increase the surface area. The thickness of the dielectric layer is very small (in microns) and increases in proportion to the forming voltage (approximately 1.2 nm/v), making the distance between the two plates very small. This construction of aluminum electrolytic capacitors allows for very high capacitance per unit area in comparison with capacitors which use other dielectric materials.

An equivalent circuit of an aluminum electrolytic capacitor is:



R_{ESR} = equivalent series resistance (ESR)

C = capacitance

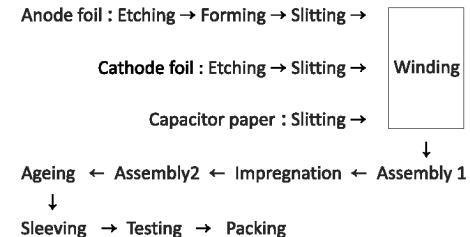
R_{leak} = resistance due to leakage current

L_{ESL} = equivalent series inductance (ESL)

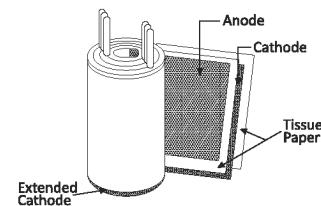
The capacitance of the anode foil will depend on the etching pattern and the forming voltage. The cathode foil is etched and has a thin oxide layer on it, which is caused due to atmospheric oxidation.

Manufacturing Process

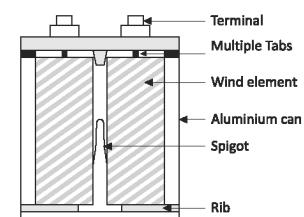
The main stages of the manufacturing process are:



Super pure aluminium foil is etched to increase the surface area. The anode foil undergoes an electrochemical process called forming by which a dielectric layer is 'formed' on it. The anode and cathode are interleaved with different densities and thickness papers and wound into a cylinder as shown in the fig. below. During winding, aluminum tabs are attached to the foil for electrical contacts by a cold welding process.



The capacitor element is impregnated with an electrolyte, under vacuum. In the assembly process, terminals are riveted and/or welded to the tabs and housed in an aluminium can without anchoring material, as shown:



Technical Information

Capacitors are then sealed and aged. The aging process repairs any damage to the oxide layer that may have been caused during the process of assembling the capacitor into the aluminium can. A thorough test is carried out for seepage by placing the capacitors in an oven. A visual check is carried out on each capacitor for any sign of electrolyte leakage.

Next, capacitors are tested for the following electrical parameters.

- i) Capacitance ii) ESR
- iii) Leakage current iv) Tan δ

The capacitors are then sleeved and packed. After completion of the production process, the company's Q.A. Personnel carry out a sample test.

Electrical Characteristics

Rated voltage: The rated voltage is the DC voltage for which the capacitor has been designed. The capacitors can be operated continuously at the full rated voltage within the operating temperature range.

Surge voltage: The surge voltage is the maximum DC voltage that a capacitor can be subjected to, for a very short duration, not exceeding 30 seconds. This includes transients and peak ripple at highest line voltage.

Capacitors are designed to withstand 6 such surge in an hour, at a minimum interval of 10 minutes. The capacitor will withstand the following surge test: The capacitor is connected in series with a current limiting resistor.

The rated surge voltage is applied at room temperature for a period not exceeding 30 seconds. The capacitor is then discharged through a suitable resistor. This cycle (charge discharged) may be repeated for a maximum of 6 cycles in one hour, each being at an interval of 10 minutes.

Ripple voltage: The ripple voltage is the superimposed AC voltage that may be applied to the capacitor provided that:

- i) the sum of DC voltage and superimposed AC Voltage does not exceed the rated voltage.
- ii) rated ripple current is not exceeded.

Reverse voltage: Aluminium electrolytic capacitors are polar capacitors. Reverse voltage $\leq 1.5V$ can be applied for a duration of less than 1 second, but not continuously or repeatedly. The reverse voltage of 1.5 V is the voltage at which the breakdown of the oxide layers on the cathode takes place. Where necessary a diode may be connected to prevent any reverse voltage from appearing on the capacitor.

Selection of current limiting resistor:

- A current limiting resistor, which is to be connected in series with the capacitor, may be chosen as follows:
- for capacitors of rating up to $2500\mu F$, the limiting resistor will be of 1000 ohms.
 - for capacitors of rating higher than $2500\mu F$, the value of current limiting resistor will be determined on the formula:

$$R = \frac{2.5 \times 10^6}{C}$$

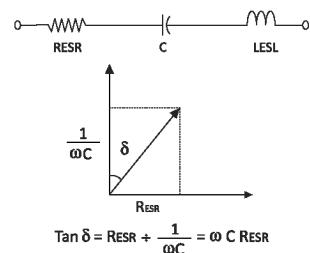
C = capacitance in μF
R = resistor value in Ohms

Capacitance:

- Capacitance can be measured by:
- measuring its AC impedance after taking into account amplitude and phase
 - measuring the charge it will hold when DC voltage is applied DC capacitance is approximately equal to 1.1 to 1.5 times AC capacitance

Notes: Measurement of capacitance is made at frequency of 100 Hz and ambient temperature of 25°C. The value is in microfarads (μF or MFD) and is indicated on the capacitor. Capacitance increases with temperature and decreases with increases in frequency.

Dissipation factor (Tan δ): This is the ratio of ESR to capacitive reactance in the equivalent series circuit. Alternatively, it could be defined as the ratio of effective power (dissipated power) to the reactive power for a sinusoidal voltage:



$$\tan \delta = \frac{1}{\omega C} + \frac{1}{\omega C R_{ESR}}$$

Equivalent series resistance (ESR): The equivalent series resistance is the resistive component of equivalent series circuit. It is related to dissipation factor by the formula:

$$R_{ESR} = \frac{\tan \delta}{\omega C_s}$$

RESR = equivalent series resistance in Ω

Tanδ = dissipation factor

Cs = series capacitance in Farads

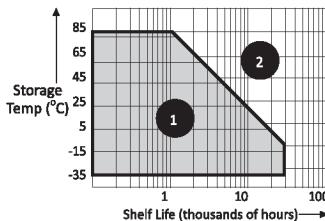
$\omega = 2\pi f$ (f =frequency)

ESR values are measured by the bridge method (to eliminate the resistance of lead wires) at a frequency of 100Hz and ambient temperature of 25°C. ESR

ALUMINIUM ELECTROLYTIC CAPACITORS

Technical Information

temperature graph is shown below:



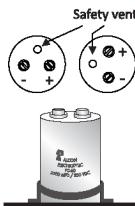
- Region 1 Leakage current remains unchanged
- Region 2 Leakage current increases

In both cases capacitance, ESR and impedance do not change significantly. If the capacitors are in region 2, capacitors should be preconditioned prior to use. The procedure follows under, "preconditioning":

Preconditioning: preconditioning is carried out by applying the rated working voltage across the capacitor. The power source should be a regulated power supply. A suitable current limiting resistor should be connected in series with the capacitor. The voltage should be maintained for one hour after its value has become equal to the rated working voltage applied $\pm 3\%$. After this, the capacitor should be discharged through a resistor of suitable value. The capacitor can now be stored idle for 12 to 24 hours. After this period, the capacitor can be tested for any of the specified parameters.

Application Notes

Mounting positions: During operating, the leakage current of the capacitor will cause electrolysis of the electrolyte. The oxygen produced during electrolysis, helps in 'Self Healing' of the dielectric layer. The minute quantity of hydrogen released at this time, may increase the internal pressure in the capacitor over an extended period of time. All capacitors are provided with a safety vent, which punctures when the pressure inside the capacitor increase beyond the safe limit of 80 psi. Therefore, it is recommended that the capacitors be mounted upright or horizontal, with the vent on top, as shown:

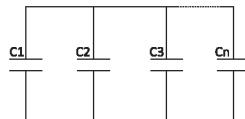


If capacitors are mounted with the safety vent at the lowest position (shown below), a small pool of electrolyte may form near the safety vent. When the vent punctures, the electrolyte may spray out, on to other components, causing damage. Alternatively, the electrolyte may dry and crystallize inside the safety vent, over a period of time, making it non-functional.



- Capacitor bank design:** capacitor may require parallel or series connections or both. This depends on the application.

Parallel connection



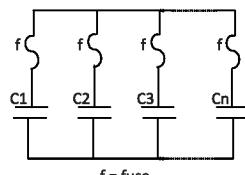
In a bank of 'n' capacitors connected in parallel, each with capacitance rating of C_1, C_2, \dots, C_n and voltage rating V_1, V_2, \dots, V_n , respectively, the effective capacitance and voltage of the bank will be:

$$C_{\text{bank}} = C_1 + C_2 + \dots + C_n$$

$$V_{\text{bank}} = \text{minimum voltage rating of any capacitor in the bank.}$$

It is advisable to use capacitors of the same nominal capacitance value and voltage rating to avoid excessive stress on any one capacitor in the bank. In this circuit, if any capacitor in the bank fails due to an internal short circuit, then all the other capacitors in the bank will discharge through this particular capacitor, leading to an extremely abrupt and severe discharge phenomenon.

Hence it is advisable to connect these capacitors through a fuse:

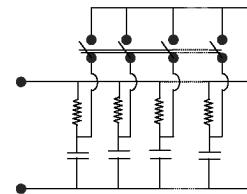


For impulse discharge circuit, where it may not be feasible to use the fuses, the capacitors can be

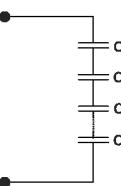
ALUMINIUM ELECTROLYTIC CAPACITORS

Technical Information

protected during charging by means of a suitable current limiting resistor and then connected in parallel at the time of discharge:



Series Connection

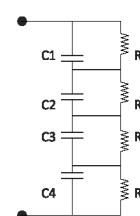


In the bank of 'n' capacitors connected in series, each with capacitance rating of C_1, C_2, \dots, C_n and voltage rating V_1, V_2, \dots, V_n , respectively, the effective capacitance and voltage of the bank will be:

$$\frac{1}{C_{\text{bank}}} = \frac{1}{C_1} + \frac{1}{C_2} + \dots + \frac{1}{C_n}$$

$$V_{\text{bank}} = V_1 + V_2 + \dots + V_n$$

It is advisable to use capacitors of the same nominal capacitance value and voltage rating to avoid excessive stress on any one capacitor in the bank. When capacitors are connected in series, the voltage of any individual capacitor should not exceed the maximum permissible voltage. The total DC voltage applied is divided among individual capacitors in proportion to their insulation resistance value (leakage current). Hence to avoid any imbalance during charging of the bank, it is recommended that a shunt resistor be connected with each capacitor:



The value of the shunt resistance can be computed as follows:

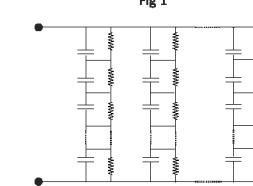
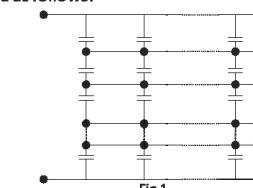
$$A) R = \frac{nV_r - V_b}{L.C.\max \{(V_b / V_r) - ((n+9) / 10)\}}$$

R : Shunt resistance value (minimum) in ohms
Vr : Rated voltage of each capacitor
n : Number of capacitors in ($n \geq 2$)

Vb : Bank voltage
L. C. max : Maximum leakage current of one capacitor (in amp.)

$$B) \text{ Suggested wattage of resistor } V^2 r / R$$

Combined series-parallel connections Capacitors may be connected as follows:



If one capacitor in the series bank (Fig.1) fails due to a short circuit, the other capacitors will be subjected to the total voltage. This may lead to an excess voltage on the other capacitors, causing all capacitors in the bank to fail. Hence it is recommended that capacitors are connected as shown in Fig 2, where only one "series bank" suffers the risk of failure, in the event of a short circuit of one capacitor.

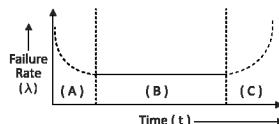
Life Expectancy: During the working life of capacitors, certain physical and parametric changes occur. These changes eventually make the capacitor unusable, either due to "thermal runaway" leading to catastrophic failure or an excessive parametric drift. At a higher temperature, degradation of the material, used to manufacture the capacitor, accelerates these effects. There are many reasons for these changes. Some performance aspects of the capacitors cannot be predicted. Hence evaluation of the capacitor's long term behavior must be determined by 'endurance' tests.

Useful life (service life or operational life) is the life

Technical Information

achieved by the capacitor without exceeding a specified failure rate. Useful life can be prolonged by operating the capacitors at load factors below the rated values specified, like lower operating voltage, ripple current and ambient temperature. Capacitor life can also be prolonged by appropriate cooling methods.

Failure percentage is the ratio of number of failures to total number of inspected capacitors. Failure rate (or long term failure) is the number of components failing per unit time. The characteristic curve is as follows:



Region A is the early failure period (or infant mortality), this can be decreased by improvement in the manufacturing process Region B is the useful life (operational life or service life) where failure rate is nearly constant Region C is the 'wear-out' period. This occurs due to the end of life of the capacitors and occurs when capacitor properties deteriorate. End of life of can be due to:

- i) Catastrophic failure like short circuit, open circuit or operation of the safety vent
- ii) Parametric failure like
 - ESR increases to more than thrice the initial specified limit
 - leakage current greater than specified maximum limit
 - capacitance changes of more than $\pm 30\%$
 - a combination of these

Reliability is the probability that the capacitor will perform satisfactorily under given set of conditions for a given length of time. For calculation of useful life the components are taken from a normally manufactured batch. The components are tested under controlled conditions and the data for long term reliability is based on a confidence level of 55%. The figure can be taken only as a guide for reliability since actual working conditions are likely to deviate significantly from those used in routine testing. Meantime between failure (MTBF) is the inverse of failure rate

$$MTBF = \frac{1}{\lambda}$$

e.g. For given set of conditions

No. of components used in the field

$$N = 12,000$$

$$\text{No. of operating hours} \quad \text{to} = 10,000 \text{ hrs}$$

$$\text{No. of failures} \quad n = 12$$

$$\text{Failures \%} = \frac{n}{N} = \frac{12}{12,000} = 0.1\% = F (\%)$$

$$\text{Failures rate } \lambda = \frac{F (\%)}{\text{to}} = \frac{0.1\%}{10,000} = 0.01\% / 1000 \text{ hours}$$

Forced Air Cooling

All capacitors are designed to ensure that heat from the core is transferred quickly and efficiently to the outer aluminium can. It is recommended that efficient air flow is created to enable the capacitor bank to remain at the lowest possible temperatures. This would increase the life expectancy of the capacitor. From the table given below it will be seen that the ripple current carrying capacity can be enhanced by increasing the air flow rate.

Can Size (DxL) mm	Ripple Current Multiplier Air Flow Rate, metres per second (m/s)			
	< 1.0 m/s Free Convection	1.0 m/s Forced air cooling	2.5 m/s Forced air cooling	5.0 m/s Forced air cooling
35X62	1.00	1.15	1.37	1.54
35X80	1.00	1.15	1.18	1.51
35X105	1.00	1.14	1.33	1.46
50X80	1.00	1.15	1.37	1.55
50X105	1.00	1.14	1.34	1.49
50X120	1.00	1.14	1.33	1.47
63X105	1.00	1.15	1.35	1.51
63X120	1.00	1.14	1.33	1.47
63X145	1.00	1.13	1.32	1.45
76X105	1.00	1.15	1.36	1.52
76X120	1.00	1.15	1.36	1.52
76X145	1.00	1.14	1.32	1.46
76X177	1.00	1.08	1.32	1.37
76X220	1.00	1.12	1.27	1.38
90X105	1.00	1.15	1.37	1.54
90X120	1.00	1.15	1.35	1.51
90X145	1.00	1.14	1.33	1.47
90X220	1.00	1.12	1.27	1.38

Note: Above Ripple Current Multipliers are for Clamp Mounted Capacitors

Technical Information

Precautions

- **Polarity:** Aluminium electrolytic capacitor are polar. Therefore, the capacitors should be connected accordingly. If the polarity of a capacitor is reversed, the capacitor will heat up and normally the safety vent will operate. In extreme cases there is possibility of an explosion and fire.
- **Mechanical stress:** During installation capacitors should not be mechanically damaged.
 - i) Capacitors have been designed with the can being negative. Hence damage to the insulation sleeve may cause a short circuit.
 - ii) The terminals of screw terminal type capacitors (AEST) are made of highly pure aluminium, the screw are made of brass or stainless steel which are a hard material. Hence mismatch of the threads during fitment can cause damage to the threads of the aluminium terminals. Also while connecting the screw terminals, the tightening torque
 - For M5 threading : Maximum 2.5Nm
(thread depth $\geq 8\text{mm}$)
 - For M6 threading : Maximum 4Nm
(thread depth $\geq 9.5\text{mm}$)
 - iii) Vibration resistance test:
To IEC 60068-2-6, test Fc: Displacement amplitude 0-75 mm, frequency range 10... 55Hz, acceleration max. 10 g, duration 3 x 2 h. Capacitor mounted by its body which is rigidly clamped to the work surface.
 - iv) Cleaning agents: Halogenated hydrocarbons, if in contact with capacitor, may cause serious damage. These solvents may decompose the insulation sleeve and reduce insulating properties below permissible levels. Moreover, these may penetrate the capacitor through the capacitor seal leading to premature failure. Commonly used halogenated hydrocarbons and other solvent which should not be used are freon, trichloroethylene, methyl chloride, carbon tetrachloride, acetone, methyl ethyl ketone. Cleaning agents which normally do not have any detrimental effects are methanol, ethanol, propanol and isopropanol.
- **Operating conditions:** During operating, capacitors may fail due to the following:
 - i) Operating in very high ambient conditions.
 - ii) Surge voltage exceeds or surge voltage is applied for longer periods than specified.
 - iii) Voltage on the capacitor exceeds rated voltage
 - iv) Ripple current exceeds the specified values.
 - v) Reverse polarity.
 These can lead to catastrophic failure, with the possibility of an explosion and fire. Hence care should be taken during use. Also capacitors should be used in a well ventilated enclosure.
- **Exposure to electrolyte:** When an electrolyte comes in contact with skin, wash thoroughly with water. If electrolyte comes in contact with eyes, wash thoroughly with water and immediately seek medical advice.
- **Storage:** The following conditions for storage are recommended:
 - i) When not in use capacitors should be kept in their original packing.
 - ii) Capacitors should be stored indoors, away from direct sunlight, at a temperature of 5 to 35°C and a humidity level of less than 70%RH.
 - iii) Capacitors should be stored in an environment free from water, oil, salt water and gases like hydrogen sulphide. Keep away from other chemicals like sulfuric acid, hydrochloric acid, chlorine, ammonia or any corrosive environment.
 - iv) On storage, capacitors should not be subjected to severe mechanical shock or vibration, beyond specified limits.
- **Safety:** Due to the characteristics of electrolytic capacitor there can be a "rebound" voltage of up to 40 to 50V even after the capacitor is discharged for a brief period. Therefore, it is necessary to ensure that the capacitor is totally discharge before using them, so that other sensitive components will not be affected.

ALUMINIUM ELECTROLYTIC CAPACITORS

PG - 6DI



Specifications

- **Voltage range:** 50 VDC to 550 VDC
- **Can size:** 35φ x 62mm to 90φ x 240mm
- **Operating Temperature range :** -40°C to +85°C
- **Capacitance:** 330 MFD to 470000 MFD
Tolerance ±20%
- **Leakage current:** The max. leakage current (IL) is given by the formula:
 $IL = 0.003 CV$ (microamps)
C = capacitance in microfarads
V = DC rated voltage
Pre-conditioning of the capacitors prior to testing for leakage current is essential.
- **Ripple Current:** All capacitors withstand rms ripple current at 100 Hz at 85°C. When capacitors operate at temperatures other than 85°C, the permissible rms ripple current at 85°C should be multiplied by the factors given below:

+40°C	+45°C	+50°C	+65°C
2.2	2.1	1.9	1.6

Where capacitors are required to operate at frequencies other than 100 Hz, the multiplying factors given below, may be used to determine the ripple current capacity, at that frequency.

Frequency Hz	100	120	250	500	1k to 10k	>10K
Multiplying Factor	1.0	1.02	1.05	1.20	1.32	1.35

Notes:

1. Can is negative. However, it is isolated with a PVC insulating sleeve and polypropylene end-disc.
2. The base stud is also negative and can be insulated with a nylon nut. Please see the page regarding mounting accessories for details.
3. Maximum ripple current for each capacitor diameter.

ALUMINIUM ELECTROLYTIC CAPACITORS

-40°C +85°C

PG - 6DI

Useful life

Useful life is a period of time which the capacitor takes to reach "end of life".

For PG-6DI capacitors the useful life is estimated as 12000 hours at maximum rated temperature, ripple current and voltages.

End of the defined as follows:

1. Catastrophic failure : capacitor short or open circuit
2. Mechanical failure : operation of safety vent or sleeve damage
3. Parametric failure :
 - a. Capacitance change ±30%
 - b. ESR exceed three times specified value
 - c. Leakage current exceed specified value

The useful life for a known ripple current load and ambient temperature (T_a) °C is determined on the basis of the "Life graph" shown below.

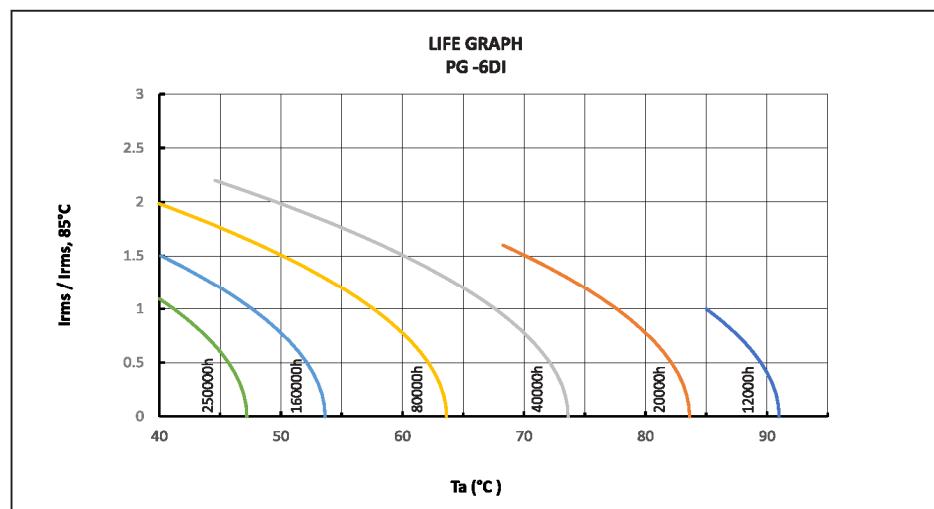
Manufacturing Date Code Chart

The manufacturing code shall consists of four digits (alphanumeric). The first two shall denote the date (numeric). The third stands for the month (alpha-numeric). The fourth stands for the year (alphabet)

First two spaces DATE	Third space MONTH	Fourth space YEAR
01	1 = JANUARY	A = 2012
02	2 = FEBRUARY	B = 2013
03	3 = MARCH	C = 2014
.	4 = APRIL	D = 2015
.	5 = MAY	E = 2016
.	6 = JUNE	F = 2017
10	7 = JULY	G = 2018
11	8 = AUGUST	H = 2019
.	9 = SEPTEMBER	J = 2020
.	X = OCTOBER	K = 2021
.	Y = NOVEMBER	L = 2022
31	Z = DECEMBER	M = 2023

For example :

1. Manufacturing code 023A will mean 2nd March, 2012
2. Manufacturing code 10XA will mean 10th October, 2012



ALUMINIUM ELECTROLYTIC CAPACITORS

PG - 6DI

-40°C +85°C

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (milliohm)	Ripple Current (Irms) at 100 Hz, 85°C (Amps)	Can size Nominal D x L mm	Case code	Ordering code
50	60	4700	70.8	4.29	35x62	025	SA047000050AA025__M01
		5600	61.6	4.60	35x62	025	SA056000050AA025__M01
		6800	59.6	4.68	35x62	025	SA068000050AA025__M01
		10000	44.6	6.05	35x80	012	SA100000050AA012__M01
		10000	46.1	7.26	50x80	020	SA100000050AA020__M01
		15000	22.2	9.70	35x105	013	SA150000050AA013__M01
		22000	17.9	11.66	50x80	020	SA220000050AA020__M01
		27000	14.1	13.11	50x80	020	SA270000050AA020__M01
		33000	11.7	16.24	50x105	022	SA330000050AA022__M01
		47000	10.3	19.67	63x105	026	SA470000050AA026__M01
		68000	10.8	21.45	76x105	028	SA680000050AA028__M01
		82000	10.9	22.55	76x120	041	SA820000050AA041__M01
		100000	9.7	23.96	76x120	041	SA1000H0050AA041__M01
		150000	8.9	27.12	76x146	081	SA1500H0050AA081__M01
		180000	8.0	27.50	90x105	093	SA1800H0050AA093__M01
		220000	6.6	32.00	90X120	097	SA2200H0050AA097__M01
		270000	6.5	35.00	90X146	095	SA2700H0050AA095__M01
		330000	5.7	42.50	76x240	091	SA3300H0050AA091__M01
		390000	4.9	48.50	90x220	094	SA3900H0050AA094__M01
		470000	4.1	55.00	90x240	098	SA4700H0050AA098__M01
63	75	4700	55.6	4.84	35x62	025	SA047000063AA025__M01
		5600	43.1	5.50	35x62	025	SA056000063AA025__M01
		6800	37.5	6.60	35x80	012	SA068000063AA012__M01
		10000	27.5	7.70	35x80	012	SA100000063AA012__M01
		10000	24.6	9.94	50x80	020	SA100000063AA020__M01
		15000	21.6	10.60	50x80	020	SA150000063AA020__M01
		22000	17.6	13.26	50x105	022	SA220000063AA022__M01
		27000	15.1	14.30	50x105	022	SA270000063AA022__M01
		33000	14.7	16.50	63x105	026	SA330000063AA026__M01
		47000	12.6	19.81	76x105	028	SA470000063AA028__M01
		68000	11.2	22.31	76x120	041	SA680000063AA041__M01
		82000	10.4	23.10	76x120	041	SA820000063AA041__M01
		82000	10.4	24.10	90X105	093	SA820000063AA093__M01
		100000	9.6	26.05	76x146	081	SA1000H0063AA081__M01
		150000	8.2	28.60	90X120	097	SA1500H0063AA097__M01
		180000	7.8	35.00	76x220	092	SA1800H0063AA092__M01
		180000	7.7	32.00	90X146	095	SA1800H0063AA095__M01
		220000	7.0	38.50	76x240	091	SA2200H0063AA091__M01
		270000	6.7	41.50	90x220	094	SA2700H0063AA094__M01
		330000	6.3	44.50	90x240	098	SA3300H0063AA098__M01

Custom designed capacitors available

ALUMINIUM ELECTROLYTIC CAPACITORS

PG - 6DI

-40°C +85°C

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (milliohm)	Ripple Current (Irms) at 100 Hz, 85°C (Amps)	Can size Nominal D x L mm	Case code	Ordering code
75	90	4700	40.7	6.34	35x80	012	SA047000075AA012__M01
		5600	33.3	7.00	35x80	012	SA056000075AA012__M01
		6800	25.4	9.09	35x105	013	SA068000075AA013__M01
		10000	20.9	10.79	50x80	020	SA100000075AA020__M01
		10000	20.7	12.20	50x105	022	SA100000075AA022__M01
		15000	17.6	13.26	50x105	022	SA150000075AA022__M01
		22000	14.8	16.46	63x105	026	SA220000075AA026__M01
		27000	13.8	17.05	63x105	026	SA270000075AA026__M01
		33000	12.6	19.80	76x105	028	SA330000075AA028__M01
		47000	11.9	21.60	76x120	041	SA470000075AA041__M01
		68000	10.5	25.00	76x146	081	SA680000075AA081__M01
		68000	10.5	24.00	90X105	093	SA680000075AA093__M01
		82000	9.2	27.00	90X120	097	SA820000075AA097__M01
		100000	8.8	33.00	76x220	092	SA1000H0075AA092__M01
		120000	8.5	30.50	90X146	095	SA1200H0075AA095__M01
		150000	8.2	35.60	76x240	091	SA1500H0075AA091__M01
		180000	7.3	39.50	90x220	094	SA1800H0075AA094__M01
		220000	6.2	44.60	90x240	098	SA2200H0075AA098__M01
100	115	2200	87.9	3.85	35x62	025	SA0220000100AA025__M01
		2700	77.2	4.60	35x80	012	SA0270000100AA012__M01
		3300	65.3	5.00	35x80	012	SA0330000100AA012__M01
		4700	34.0	6.93	35x80	012	SA0470000100AA012__M01
		5600	30.0	9.00	50x80	020	SA0560000100AA020__M01
		6800	24.6	9.94	50x80	020	SA0680000100AA020__M01
		10000	17.6	13.26	50x105	022	SA1000000100AA022__M01
		15000	14.8	16.45	63x105	026	SA1500000100AA026__M01
		22000	11.1	21.09	76x105	028	SA2200000100AA028__M01
		27000	10.2	22.00	76x105	028	SA2700000100AA028__M01
		33000	8.9	24.94	76x120	041	SA3300000100AA041__M01
		33000	8.3	27.00	90X105	093	SA3300000100AA093__M01
		47000	8.2	28.31	76x146	081	SA4700000100AA081__M01
		47000	7.5	30.00	90X120	097	SA4700000100AA097__M01
		56000	7.3	33.00	90X146	095	SA5600000100AA095__M01
		68000	7.1	36.70	76x220	092	SA6800000100AA092__M01
		82000	6.8	39.00	76x240	091	SA8200000100AA091__M01
		100000	6.5	42.00	90x220	094	SA1000H0100AA094__M01
		120000	5.4	48.00	90x240	098	SA1200H0100AA098__M01

Custom designed capacitors available



ALUMINIUM ELECTROLYTIC CAPACITORS

PG - 6DI

-40°C +85°C

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (milliohm)	Ripple Current (Irms) at 100 Hz, 85°C (Amps)	Can size Nominal D x L mm	Case code	Ordering code
150	172	1000	205.7	3.19	35x105	013	SA010000150AA013__M01
		2000	66.5	6.05	50x80	020	SA020000150AA020__M01
		2200	63.4	6.19	50x80	020	SA022000150AA020__M01
		2500	59.3	7.22	50x105	022	SA025000150AA022__M01
		3300	49.5	8.99	63x105	026	SA033000150AA026__M01
		4700	36.5	9.2	50x105	022	SA047000150AA022__M01
		4700	36.2	10.52	63x105	026	SA047000150AA026__M01
		5600	33.1	11.00	63x105	026	SA056000150AA026__M01
		6800	27.3	12.10	63x105	026	SA068000150AA026__M01
		10000	19.6	14.3	63x105	026	SA100000150AA026__M01
		10000	19.6	16.50	63x146	035	SA100000150AA035__M01
		12000	15.8	20.34	76x146	081	SA120000150AA081__M01
		15000	14.1	19.4	63x145	035	SA150000150AA035__M01
		15000	14.1	21.54	76x146	081	SA150000150AA081__M01
		22000	13.6	26.50	76x220	092	SA220000150AA092__M01
		22000	13.6	21.10	90X105	093	SA220000150AA093__M01
		27000	11.9	28.40	76x220	092	SA270000150AA092__M01
		27000	11.9	23.80	90X120	097	SA270000150AA097__M01
		33000	9.4	32.00	76x220	092	SA330000150AA092__M01
		33000	9.4	29.00	90X146	095	SA330000150AA095__M01
		39000	8.7	34.50	76x240	091	SA390000150AA091__M01
		47000	7.7	38.50	90x220	094	SA470000150AA094__M01
		56000	7.3	41.20	90x240	098	SA270000150AA098__M01
200	230	1000	150.0	3.30	35x80	012	SA010000200AA012__M01
		1500	141.2	3.85	35x105	013	SA015000200AA013__M01
		2200	85.8	6.00	50x105	022	SA022000200AA022__M01
		3300	62.5	8.00	63x105	026	SA033000200AA026__M01
		4700	45.9	8.2	50x105	022	SA047000200AA022__M01
		4700	45.0	10.00	63x120	039	SA047000200AA039__M01
		5600	28.1	12.65	63x120	039	SA056000200AA039__M01
		6800	23.7	13.0	63x105	026	SA068000200AA026__M01
		6800	23.1	15.51	76x120	041	SA068000200AA041__M01
		8200	21.6	16.04	76x120	041	SA082000200AA041__M01
		10000	18.4	16.4	76x105	028	SA100000200AA028__M01
		10000	18.1	19.00	76x146	081	SA100000200AA081__M01
		10000	18.1	18.25	90X105	093	SA100000200AA093__M01
		12000	16.4	20.00	76x146	081	SA120000200AA081__M01
		15000	14.7	25.51	76x220	092	SA150000200AA092__M01
		15000	14.7	21.40	90X120	097	SA150000200AA097__M01
		22000	11.8	28.50	76x220	092	SA220000200AA092__M01
		22000	11.8	25.90	90X146	095	SA220000200AA095__M01
		27000	10.3	31.70	76x240	091	SA270000200AA091__M01
		33000	9.6	34.50	90x220	094	SA330000200AA094__M01
		39000	8.4	38.50	90x240	098	SA390000200AA098__M01

Custom designed capacitors available

ALUMINIUM ELECTROLYTIC CAPACITORS

PG - 6DI

-40°C +85°C

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (milliohm)	Ripple Current (Irms) at 100 Hz, 85°C (Amps)	Can size Nominal D x L mm	Case code	Ordering code
250	288	470	280.2	2.16	35x62	025	SA004700250AA025__M01
		680	184.7	3.37	35x105	013	SA006800250AA013__M01
		1000	119.6	4.51	50x80	020	SA010000250AA020__M01
		2000	62.3	7.04	50x105	022	SA020000250AA022__M01
		2200	55.7	7.45	50x105	022	SA022000250AA022__M01
		2500	45.1	9.42	63x105	026	SA025000250AA026__M01
		3300	43.6	9.58	63x105	026	SA033000250AA026__M01
		4700	37.3	10.4	63x105	026	SA047000250AA026__M01
		4700	37.2	11.00	63x120	039	SA047000250AA039__M01
		5600	28.1	12.65	63x120	039	SA056000250AA039__M01
		6800	17.8	16.7	76x105	028	SA068000250AA028__M01
		6800	17.8	19.16	76x146	081	SA068000250AA081__M01
		8200	16.7	19.80	76x146	081	SA082000250AA081__M01
		8200	15.1	20.00	90X105	093	SA082000250AA093__M01
		10000	14.2	18.7	76x105	028	SA100000250AA028__M01
		10000	14.1	21.54	76x146	081	SA100000250AA081__M01
		10000	14.1	21.85	90X120	097	SA100000250AA097__M01
		12000	13.5	22.00	76x146	081	SA120000250AA081__M01
		15000	12.9	27.20	76x220	092	SA150000250AA092__M01
		18000	10.8	31.00	76x240	091	SA180000250AA091__M01
		18000	10.9	27.00	90X146	095	SA180000250AA095__M01
		22000	10.0	33.80	90x220	094	SA220000250AA094__M01
		27000	7.7	38.50	90x220	094	SA270000250AA094__M01
315	362	2200	55.8	8.5	63x105	026	SA022000315AA026__M01
		3300	59.3	9.7	76x120	041	SA033000315AA041__M01
		4700	37.9	12.1	76x120	041	SA047000315AA041__M01
		5600	36.9	13.3	76x146	081	SA056000315AA081__M01
		6800	22.8	16.9	76x146	081	SA068000315AA081__M01
		6800	22.7	16.3	90X105	093	SA068000315AA093__M01
		8200	22.8	20.5	76x220	092	SA082000315AA092__M01
		8200	22.8	17.2	90X120	097	SA082000315AA097__M01
		10000	16.3	24.2	76x220	092	SA100000315AA092__M01
		12000	13.3	26.8	76x220	092	SA120000315AA092__M01
		12000	13.3	24.4	90X146	095	SA120000315AA095__M01
		15000	12.2	29.1	76x240	091	SA150000315AA091__M01
		15000	12.2	30.7	90x220	094	SA150000315AA094__M01

Custom designed capacitors available



ALUMINIUM ELECTROLYTIC CAPACITORS

PG - 6DI

-40°C +85°C

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (milliohm)	Ripple Current (Irms) at 100 Hz, 85°C (Amps)	Can size Nominal D x L mm	Case code	Ordering code
350	385	330	386.0	2.06	35x80	012	SA003300350AA012__M01
		1000	116.5	5.15	50x105	022	SA010000350AA022__M01
		1500	94.6	6.50	63x105	026	SA015000350AA026__M01
		2200	51.4	7.8	50x105	022	SA022000350AA022__M01
		2200	51.2	9.37	63x120	039	SA022000350AA039__M01
		3300	37.7	10.3	63x105	026	SA033000350AA026__M01
		3300	37.9	10.89	63x120	039	SA033000350AA039__M01
		3300	42.4	11.44	76x120	041	SA033000350AA041__M01
		4700	33.6	12.2	76x105	028	SA047000350AA028__M01
		4700	33.6	13.95	76x146	081	SA047000350AA081__M01
		5600	25.7	15.95	76x146	081	SA056000350AA081__M01
		6800	22.0	15.9	76x120	041	SA068000350AA041__M01
		6800	22.0	17.25	76x146	081	SA068000350AA081__M01
		8200	20.7	21.50	76x220	092	SA082000350AA092__M01
		8200	20.8	18.00	90X120	097	SA082000350AA097__M01
		10000	15.0	20.9	76x146	081	SA100000350AA081__M01
		10000	15.0	25.30	76x220	092	SA100000350AA092__M01
		12000	12.7	28.50	76x240	091	SA120000350AA091__M01
		12000	12.7	25.00	90X146	095	SA120000350AA095__M01
		15000	11.2	32.00	90x220	094	SA150000350AA094__M01
400	440	680	203.8	3.46	50x80	020	SA006800400AA020__M01
		1000	107.6	5.36	50x105	022	SA010000400AA022__M01
		1000	107.5	6.10	63x105	026	SA010000400AA026__M01
		1500	100.3	6.32	63x105	026	SA015000400AA026__M01
		2200	62.5	8.49	63x120	039	SA022000400AA039__M01
		3300	51.5	10.39	76x120	041	SA033000400AA041__M01
		4700	40.3	12.74	76x146	081	SA047000400AA081__M01
		5600	36.6	13.37	76x146	081	SA056000400AA081__M01
		6800	38.2	15.84	76x220	092	SA068000400AA092__M01
		6800	38.2	12.58	90X105	093	SA068000400AA093__M01
		8200	31.9	17.33	76x220	092	SA082000400AA092__M01
		8200	31.8	14.55	90X120	097	SA082000400AA097__M01
		10000	26.5	17.30	90X146	095	SA100000350AA095__M01
		12000	22.4	22.60	90x220	094	SA120000350AA094__M01
		12000	22.4	21.50	76x240	091	SA120000350AA091__M01
		15000	20.2	23.85	90x220	094	SA150000400AA094__M01

Custom designed capacitors available

ALUMINIUM ELECTROLYTIC CAPACITORS

PG - 6DI

-40°C +85°C

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (milliohm)	Ripple Current (Irms) at 100 Hz, 85°C (Amps)	Can size Nominal D x L mm	Case code	Ordering code
450	495	470	279.9	2.95	50x80	020	SA004700450AA020__M01
		680	121.9	5.03	50x105	022	SA006800450AA022__M01
		1000	107.6	6.10	63x105	026	SA010000450AA026__M01
		1500	96.6	6.82	63x120	039	SA015000450AA039__M01
		2200	72.8	7.4	63x105	026	SA022000450AA026__M01
		2200	72.7	7.87	63x120	039	SA022000450AA039__M01
		3300	52.2	9.8	76x105	028	SA033000450AA028__M01
		3300	52.1	11.20	76x146	081	SA033000450AA081__M01
		4700	33.8	13.92	76x146	081	SA047000450AA081__M01
		4700	33.8	13.36	90X105	093	SA047000450AA093__M01
		5600	28.6	15.35	90X120	097	SA056000450AA097__M01
		6800	25.1	16.50	90X146	095	SA068000450AA095__M01
		8200	20.2	21.78	76x220	092	SA082000450AA092__M01
		8200	20.2	19.80	90X146	095	SA082000450AA095__M01
		10000	18.5	23.65	76x240	091	SA100000450AA091__M01
		12000	17.2	25.85	90x220	094	SA120000450AA094__M01
		15000	15.1	27.00	90X240	098	SA150000450AA098__M01
500	550	820	154.0	4.95	50x105	022	SA008200500AA022__M01
		1000	138.2	5.23	50x105	022	SA010000500AA022__M01
		1500	99.3	7.02	63x105	026	SA015000500AA026__M01
		2200	67.9	9.0	63x120	039	SA022000500AA039__M01
		2200	68.0	9.44	76x105	028	SA022000500AA028__M01
		3300	54.8	10.9	63x146	035	SA033000500AA035__M01
		3300	54.6	12.10	76x146	081	SA033000500AA081__M01
		4700	41.4	13.9	76x146	081	SA047000500AA081__M01
		4700	41.7	13.30	90X105	093	SA047000500AA093__M01
		5600	39.7	14.40	90X120	097	SA056000500AA097__M01
		6800	33.5	17.00	90X146	095	SA068000500AA095__M01
		8200	27.1	21.60	76x240	091	SA082000500AA091__M01
		8200	27.1	22.75	90x220	094	SA082000500AA094__M01
		10000	21.7	22.9	90x175	096	SA100000500AA096__M01
		10000	21.7	25.40	90x220	094	SA100000500AA094__M01

Custom designed capacitors available

ALUMINIUM ELECTROLYTIC CAPACITORS

PG - 6DI

-40°C +85°C

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (milliohm)	Ripple Current (Irms) at 100 Hz, 85°C (Amps)	Can size Nominal D x L mm	Case code	Ordering code
550	600	560	223.4	3.30	50x80	020	SA005600550AA020_M01
		680	213.8	3.80	50x105	022	SA006800550AA022_M01
		820	167.0	4.30	50x105	022	SA008200550AA022_M01
		1000	152.5	4.50	50x105	022	SA010000550AA022_M01
		1000	152.6	5.12	63x105	026	SA010000550AA026_M01
		1200	132.2	5.50	63x105	026	SA012000550AA026_M01
		1500	113.4	6.30	63x120	026	SA015000550AA026_M01
		1800	110.6	6.94	63x146	035	SA018000550AA035_M01
		1800	110.5	6.70	76x105	028	SA018000550AA028_M01
		2200	83.6	7.98	63x146	035	SA022000550AA035_M01
		2200	83.6	8.15	76x120	041	SA022000550AA041_M01
		2200	83.6	8.50	90x105	093	SA022000550AA093_M01
		2700	80.8	9.00	76x146	081	SA027000550AA081_M01
		3300	59.4	10.50	76x146	081	SA033000550AA081_M01
		4700	52.5	13.50	76x220	092	SA047000550AA092_M01
		5600	50.6	14.30	76x240	091	SA056000550AA091_M01
		5600	50.7	12.50	90x146	095	SA056000550AA095_M01
		8200	44.8	16.00	90x220	094	SA082000550AA094_M01
		10000	38.3	18.00	90x240	098	SA100000550AA098_M01

Custom designed capacitors available

ALUMINIUM ELECTROLYTIC CAPACITORS

-40°C +105°C

PG - 8K



Specifications

- **Voltage range :** 50VDC to 500VDC
- **Can size :** 35φ x 62mm to 90φ x 220mm
- **Operating Temperature range :** -40°C to +105°C
- **Capacitance :** 1000 MFD to 200000 MFD
Tolerance ±20%
- **Leakage current:** The max. leakage current (IL) is given by the formula:
$$IL = 0.003 CV \text{ (microamps)}$$

C = capacitance in microfarads
V = DC rated voltage
Pre-conditioning of the capacitors prior to testing for leakage current is essential.
- **Ripple Current:** All capacitors withstand rms ripple current at 100 Hz at 105°C. When capacitors operate at temperatures other than 105°C, the permissible rms ripple current at 105°C should be multiplied by the factors given below:

+40°C	+45°C	+50°C	+65°C
2.7	2.6	2.5	2.2

Where capacitors are required to operate at frequencies other than 100 Hz, the multiplying factors given below, may be used to determine the ripple current capacity, at that frequency.

Frequency Hz	100	120	250	500	1k to 10k	>10K
Multiplying Factor	1.0	1.02	1.05	1.20	1.32	1.35

Notes:

1. Can is negative. However, it is isolated with a PVC insulating sleeve and polypropylene end-disc.
2. The base stud is also negative and can be insulated with a nylon nut. Please see the page regarding mounting accessories for details.
3. Maximum ripple current for each capacitor diameter.

Capacitor Diameter (mm)	35	50	63	76	90
Max. Ripple Current (Amps)	20	20	40	40	72

Application

High Temperature 105 °C for High Ripple Current Applications like, PWM Inverters, High KVA On-Line UPS, Frequency Converters, AC Drives, Renewable Energy Power Supplies, elevators drive

Capacitor mounting

Capacitors are available in screw terminals in three mounting styles

- AEST - Screw terminals with plain insulated base. *see page 35, 36*
- AEST-D - Screw terminals with stud mounting. *see page 35, 36*
- AEST-AL - Capacitor with aluminium bottom disc. *see page 37*

Capacitor Terminal Style

Capacitors are available in two different terminal style, round and across flat. Below table summarizes the available terminal styles in different capacitors diameter

Capacitors Diameter (mm)	35	50	63	76	90
Terminal Style - Round	○	○	○	○	○
Terminal Style - Across Flat	○	○	○	○	○

For details see pages 35, 36, 37

Marking on capacitors

Each capacitor will have the following information printed on it, sequentially:

- The Company's symbol followed by the words ALCON ELECTRONICS
- The capacitor grade viz. PG-8K
- The capacitance value __ MFD, rated voltage __ VDC
- The surge voltage
- Capacity tolerance
- Climatic category
- Part number on non-standard capacitors
- CE marking

ALUMINIUM ELECTROLYTIC CAPACITORS

PG - 8K

-40°C +105°C

Useful life

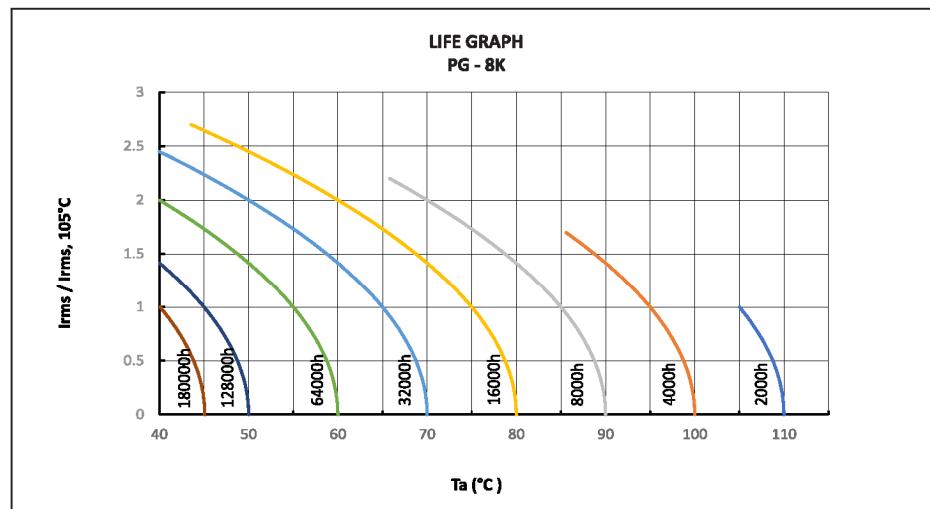
Useful life is a period of time which the capacitor takes to reach "end of life".

For PG-8K capacitors the useful life is estimated as 2000 hours at maximum rated temperature, ripple current and voltages.

End of the defined as follows :

1. Catastrophic failure : capacitor short or open circuit
2. Mechanical failure : operation of safety vent or sleeve damage
3. Parametric failure :
 - a. Capacitance change $\pm 30\%$
 - b. ESR exceed three times specified value
 - c. Leakage current exceed specified value

The useful life for a known ripple current load and ambient temperature (T_a) °C is determined on the basis of the "Life graph" shown below.



ALUMINIUM ELECTROLYTIC CAPACITORS

PG - 8K

-40°C +105°C

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (milliohms)	Ripple Current at 100 Hz, 85°C (Amps)	Ripple Current (Irms) at 100 Hz, 105°C (Amps)	Can size Nominal	Case Code	Ordering code
50	60	4700	30.1	10.4	6	35x62	025	SA047000050AB025____M01
		6800	25.7	11.2	6.5	35x62	025	SA068000050AB025____M01
		10000	26.6	14.0	8.1	35x105	013	SA100000050AB013____M01
		10000	24.5	15.7	9.1	50x80	020	SA100000050AB020____M01
		15000	24.1	14.7	8.5	35x105	013	SA150000050AB013____M01
		22000	16.5	19.2	11.1	50x80	020	SA220000050AB020____M01
		33000	14.1	23.4	13.5	50x105	022	SA330000050AB022____M01
		47000	12.2	28.5	16.5	63x105	026	SA470000050AB026____M01
		68000	11.4	32.9	19	76x105	028	SA680000050AB028____M01
		100000	9.1	38.9	22.5	76x120	041	SA1000H0050AB041____M01
		150000	7.5	46.7	27	76x146	081	SA1500H0050AB081____M01
		220000	7.8	55.4	32	76x220	092	SA2200H0050AB092____M01
63	75	4700	26.5	11.1	6.4	35x62	025	SA047000063AB025____M01
		6800	22.2	12.1	7	35x62	025	SA068000063AB025____M01
		10000	19.7	16.3	9.4	35x105	013	SA100000063AB013____M01
		10000	19.7	17.6	10.15	50x80	020	SA100000063AB020____M01
		15000	17.4	18.7	10.8	50x80	020	SA150000063AB020____M01
		22000	15.2	22.5	13	50x105	022	SA220000063AB022____M01
		33000	13.0	27.7	16	63x105	026	SA330000063AB026____M01
		47000	11.4	32.9	19	76x105	028	SA470000063AB028____M01
		68000	10.3	39.8	23	76x146	081	SA680000063AB081____M01
		100000	6.1	57.1	33	90x145	095	SA1000H0063AB095____M01
		100000	6.2	62.3	36	76x220	092	SA1000H0063AB092____M01
		150000	4.8	76.8	44.4	90x220	094	SA1500H0063AB094____M01
75	90	4700	31.2	11.4	6.6	35x80	012	SA047000075AB012____M01
		6800	31.9	12.8	7.4	35x105	013	SA068000075AB013____M01
		10000	29.1	16.3	9.4	50x105	022	SA100000075AB022____M01
		15000	23.3	18.2	10.5	50x105	022	SA150000075AB022____M01
		22000	19.1	22.8	13.2	63x105	026	SA220000075AB026____M01
		33000	14.3	29.4	17	76x105	028	SA330000075AB028____M01
		47000	12.4	33.4	19.3	76x120	041	SA470000075AB041____M01
		68000	11.2	38.2	22.1	76x146	081	SA680000075AB081____M01
		100000	9.8	49.3	28.5	76x220	092	SA1000H0075AB092____M01
100	115	2200	56.1	7.6	4.4	35x62	025	SA0220000100AB025____M01
		3300	52.3	8.8	5.1	35x80	012	SA0330000100AB012____M01
		4700	43.9	10.9	6.3	35x105	013	SA0470000100AB013____M01
		6800	34.2	13.3	7.7	50x80	020	SA0680000100AB020____M01
		10000	21.7	18.9	10.9	50x105	022	SA1000000100AB022____M01
		15000	18.3	23.4	13.5	63x105	026	SA1500000100AB026____M01
		22000	17.2	26.8	15.5	76x105	028	SA2200000100AB028____M01
		33000	13.6	34.6	20	76x146	081	SA3300000100AB081____M01
		47000	11.5	41.5	24	90x145	095	SA4700000100AB095____M01
		47000	12.8	43.3	25	76x220	092	SA4700000100AB092____M01
		68000	10.0	48.8	28.2	76x220	092	SA6800000100AB092____M01
		100000	6.9	64.4	37.2	90x220	094	SA1000H0100AB094____M01

Custom designed capacitors available

ALUMINIUM ELECTROLYTIC CAPACITORS

PG - 8K

-40°C +105°C

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (milliohm)	Ripple Current at 100 Hz, 85°C (Amps)	Ripple Current (Imax) at 100 Hz, 105°C (Amps)	Can size Nominal D x L mm	Case Code	Ordering code
150	172	1000	151.2	5.2	3	35x80	012	SA010000150AB012____M01
		1500	114.7	6.7	3.9	35x105	013	SA015000150AB013____M01
		2200	98.9	7.3	4.2	35x105	013	SA022000150AB013____M01
		3300	85.1	9.5	5.5	50x105	022	SA033000150AB022____M01
		4700	59.1	11.4	6.6	50x105	022	SA047000150AB022____M01
		6800	49.6	14.2	8.2	63x105	026	SA068000150AB026____M01
		10000	34.1	19.7	11.4	63x145	035	SA100000150AB035____M01
		12000	31.3	22.8	13.2	76x146	081	SA120000150AB081____M01
		15000	23.9	26.1	15.1	76x146	081	SA150000150AB081____M01
		22000	17.3	37.2	21.5	76x220	092	SA220000150AB092____M01
		33000	11.0	51.0	29.5	90x220	094	SA330000150AB094____M01
200	230	1000	141.6	5.4	3.1	35x80	012	SA010000200AB012____M01
		1500	94.3	7.4	4.3	35x105	013	SA015000200AB013____M01
		2200	72.2	9.2	5.3	50x80	020	SA022000200AB020____M01
		3300	69.1	10.6	6.1	50x105	022	SA033000200AB022____M01
		4700	64.3	12.5	7.2	63x105	026	SA047000200AB026____M01
		6800	47.8	16.1	9.3	76x105	028	SA068000200AB028____M01
		10000	25.9	25.1	14.5	76x146	081	SA100000200AB081____M01
		12000	19.3	29.1	16.8	76x146	081	SA120000200AB081____M01
		15000	18.3	32.9	19	90x145	095	SA150000200AB095____M01
		22000	14.4	40.7	23.5	76x220	092	SA220000200AB092____M01
		27000	12.7	47.5	27.44	90x220	094	SA270000200AB094____M01
250	288	1000	114.7	6.7	3.9	35x105	013	SA010000250AB020____M01
		1500	88.0	8.3	4.8	50x80	020	SA015000250AB020____M01
		2200	71.5	10.4	6	50x105	022	SA022000250AB022____M01
		3300	53.4	13.7	7.9	63x105	026	SA033000250AB026____M01
		4700	41.3	17.3	10	76x105	028	SA047000250AB028____M01
		6800	32.3	22.5	13	76x146	081	SA068000250AB081____M01
		10000	20.8	28.0	16.2	76x175	090	SA100000250AB090____M01
		12000	18.1	36.3	21	76x220	092	SA120000250AB092____M01
		15000	15.7	35.5	20.5	90X175	096	SA150000250AB096____M01
		15000	15.8	38.9	22.5	76x220	092	SA150000250AB092____M01
		22000	9.9	53.8	31.1	90x220	094	SA220000250AB094____M01
315	362	1000	126.7	6.9	4	50x80	020	SA010000315AB020____M01
		1500	107.2	8.5	4.9	50x105	022	SA015000315AB022____M01
		2200	66.1	12.3	7.1	63x105	026	SA022000315AB026____M01
		3300	58.6	14.5	8.4	76x105	028	SA033000315AB028____M01
		4700	37.5	18.2	10.5	76x105	028	SA047000315AB028____M01
		6800	27.8	24.2	14	76x146	081	SA068000315AB081____M01
		10000	22.1	32.9	19	76x220	092	SA100000315AB092____M01
		15000	16.4	41.7	24.1	90x220	094	SA150000315AB094____M01
		22000	11.0	51.0	29.5	90x220	094	SA220000315AB094____M01

Custom designed capacitors available

ALUMINIUM ELECTROLYTIC CAPACITORS

PG - 8K

-40°C +105°C

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (milliohm)	Ripple Current at 100 Hz, 85°C (Amps)	Ripple Current (Imax) at 100 Hz, 105°C (Amps)	Can size Nominal D x L mm	Case Code	Ordering code
350	385	1000	114.9	7.3	4.2	50x80	020	SA010000350AB020____M01
		1500	79.2	9.9	5.7	50x105	022	SA015000350AB022____M01
		2200	64.3	12.5	7.2	63x105	026	SA022000350AB026____M01
		3300	41.6	16.4	9.5	63x120	039	SA033000350AB039____M01
		3300	41.3	17.3	10	76x105	028	SA033000350AB028____M01
		4700	37.9	20.8	12	76x146	081	SA047000350AB081____M01
		6800	21.6	30.3	17.5	90x145	095	SA068000350AB095____M01
		6800	23.3	32.0	18.5	76x220	092	SA068000350AB092____M01
		10000	17.3	37.2	21.5	76x220	092	SA100000350AB092____M01
		15000	15.3	43.3	25	90x220	094	SA150000350AB094____M01
400	440	1000	109.6	7.4	4.3	50x80	020	SA010000400AB020____M01
		1500	76.5	10.0	5.8	50x105	022	SA015000400AB022____M01
		2200	60.9	12.8	7.4	63x105	026	SA022000400AB026____M01
		3300	46.2	17.0	9.8	63x145	035	SA033000400AB035____M01
		4700	36.6	21.1	12.2	76x146	081	SA047000400AB081____M01
		6800	33.2	26.8	15.5	76x220	092	SA068000400AB092____M01
		10000	19.7	38.1	22	90x220	094	SA100000400AB094____M01
		12000	16.6	41.5	24	90x220	094	SA120000400AB094____M01
415	456	1000	100.1	7.8	4.5	50x80	020	SA010000415AB020____M01
		1500	73.9	10.2	5.9	50x105	022	SA015000415AB022____M01
		2200	60.0	14.4	8.3	76x105	028	SA022000415AB028____M01
		3300	43.5	19.4	11.2	76x146	081	SA033000415AB081____M01
		4700	32.8	24.6	14.2	90x145	095	SA047000415AB095____M01
		6800	24.9	31.0	17.9	76x220	092	SA068000415AB092____M01
		10000	17.0	41.0	23.7	90x220	094	SA100000415AB094____M01
		12000	14.7	44.1	25.5	90x220	094	SA120000415AB094____M01
450	495	1000	98.9	8.8	5.1	50x105	022	SA010000450AB022____M01
		1500	81.4	11.1	6.4	63x105	026	SA015000450AB026____M01
		2200	57.2	14.7	8.5	76x105	028	SA022000450AB028____M01
		3300	36.6	21.1	12.2	76x146	081	SA033000450AB081____M01
		4700	31.8	22.7	13.1	76x146	081	SA047000450AB081____M01
		6800	21.9	33.0	19.1	76x220	092	SA068000450AB092____M01
		10000	14.0	45.2	26.1	90x220	094	SA100000450AB094____M01
500	550	1000	127.1	7.8	4.5	50x105	022	SA010000500AB022____M01
		1500	86.7	10.7	6.2	63x105	026	SA015000500AB026____M01
		2200	63.0	14.0	8.1	76x105	028	SA022000500AB028____M01
		3300	42.0	19.7	11.4	76x146	081	SA033000500AB081____M01
		3300	38.7	19.7	11.4	90x105	093	SA033000500AB093____M01
		4700	31.0	25.3	14.6	90x146	095	SA047000500AB095____M01
		4700	36.9	25.4	14.7	76x220	092	SA047000500AB092____M01
		5600	24.6	28.4	16.4	90x175	096	SA056000500AB096____M01
		6800	21.0	33.7	19.5	76x220	092	SA068000500AB092____M01

Custom designed capacitors available

ALUMINIUM ELECTROLYTIC CAPACITORS

PG - LL9 Long Life Grade



-40°C +85°C

Capacitor Diameter (mm)	50	63	76	90	100	120
Max. Ripple Current (Amps)	20	40	40	72	72	72

Application

Long Life Grade for High Voltage, Compact design, High Ripple Current Applications like PWM Inverters, High KVA On-Line UPS, Frequency Converters, AC Drives, Telecom SMPS. Static frequency inverters / servo-drives

Capacitor mounting

Capacitors are available in screw terminals in three mounting styles

- AEST - Screw terminals with plain insulated base. *see page 35, 36*
- AEST-D - Screw terminals with stud mounting. *see page 35, 36*
- AEST-AL - Capacitor with aluminium bottom disc. *see page 37*

Capacitor Terminal Style

Capacitors are available in two different terminal style, round and across flat. Below table summarizes the available terminal styles in different capacitors diameter

Capacitors Diameter (mm)	50	63	76	90	100	120
Terminal Style - Round	○	○	○	○		
Terminal Style - Across Flat	○	○	○	○	○	○

For details see pages 6, 7, 8

Marking on capacitors

Each capacitor will have the following information printed on it, sequentially:

- The Company's symbol  followed by the words ALCON ELECTRONICS
- The capacitor grade viz. PG-LL9
- The capacitance value __ MFD, rated voltage __ VDC
- The surge voltage
- Capacity tolerance
- Climatic category
- Part number on non-standard capacitors
- CE marking

Specifications

- **Voltage range :** 315 VDC to 450 VDC
- **Can size :** 50φ x 80mm to 120φ x 240mm
- **Operating Temperature range :** -40°C to +85°C
- **Capacitance :** 1000 MFD to 38000 MFD
Tolerance ± 20%
- **Leakage current:** The max. leakage current (IL) is given by the formula:
 $IL = 0.003 CV$ (microamps)
C = capacitance in microfarads
V = DC rated voltage
Pre-conditioning of the capacitors prior to testing for leakage current is essential.
- **Ripple Current:** All capacitors withstand rms ripple current at 100 Hz at 85°C. When capacitors operate at temperatures other than 85°C, the permissible rms ripple current at 85°C should be multiplied by the factors given below:

+40°C	+45°C	+50°C	+65°C
2.2	2.1	1.9	1.6

Where capacitors are required to operate at frequencies other than 100 Hz, the multiplying factors given below, may be used to determine the ripple current capacity, at that frequency.

Frequency Hz	100	120	250	500	1k to 10k	>10K
Multiplying Factor	1.0	1.02	1.05	1.20	1.32	1.35

Notes:

1. Can is negative, However, it is isolated with a PVC insulating sleeve and mylar end-disc.
2. The base stud is also negative and can be insulated with a nylon nut. Please see the page regarding mounting accessories for details.
3. Maximum ripple current for each capacitor diameter.

ALUMINIUM ELECTROLYTIC CAPACITORS

-40°C +85°C

PG - LL9 Long Life Grade

-40°C +85°C

Useful life

Useful life is a period of time which the capacitor takes to reach "end of life".

For PG-LL9 capacitors the useful life is estimated as 15000 hours at maximum rated temperature, ripple current and voltages.

End of the defined as follows:

1. Catastrophic failure : capacitor short or open circuit
2. Mechanical failure : operation of safety vent or sleeve damage
3. Parametric failure :
 - a. Capacitance change ±30%
 - b. ESR exceed three times specified value
 - c. Leakage current exceed specified value

The useful life for a known ripple current load and ambient temperature (T_a) °C is determined on the basis of the "Life graph" shown below.

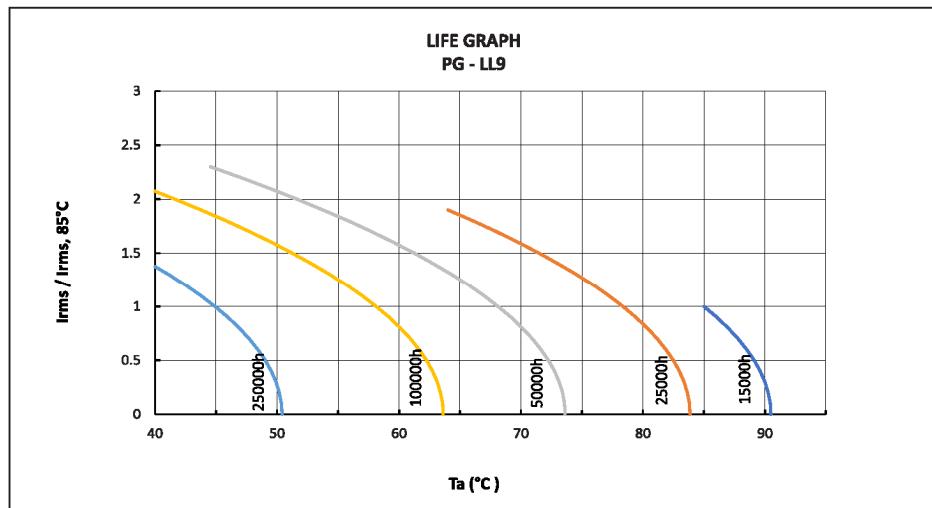
Manufacturing Date Code Chart

The manufacturing code shall consists of four digits (alphanumeric). The first two shall denote the date (numeric). The third stands for the month (alpha-numeric). The fourth stands for the year (alphabet)

First two spaces DATE	Third space MONTH	Fourth space YEAR
01	1 = JANUARY	A = 2012
02	2 = FEBRUARY	B = 2013
03	3 = MARCH	C = 2014
.	4 = APRIL	D = 2015
.	5 = MAY	E = 2016
.	6 = JUNE	F = 2017
10	7 = JULY	G = 2018
11	8 = AUGUST	H = 2019
.	9 = SEPTEMBER	J = 2020
.	X = OCTOBER	K = 2021
.	Y = NOVEMBER	L = 2022
31	Z = DECEMBER	M = 2023

For example :

1. Manufacturing code 023A will mean 2nd March, 2012
2. Manufacturing code 10XA will mean 10th October, 2012



ALUMINIUM ELECTROLYTIC CAPACITORS

PG - LL9 Long Life Grade

-40°C +85°C

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (milliohm)	Ripple Current (Irms) at 100 Hz, 85°C (Amps)	Can size Nominal D x L mm	Case code	Ordering code
315	362	2200	77.08	7	50x105	022	SA022000315AC022_M01
		3300	62.31	8.9	63x105	026	SA033000315AC026_M01
		3900	44.77	10.5	63x105	026	SA039000315AC026_M01
		4700	43.47	11.8	63x145	035	SA047000315AC035_M01
		4700	42.12	12.1	76x105	028	SA047000315AC028_M01
		5600	35.93	13.1	76x105	028	SA056000315AC028_M01
		6800	31.59	15.4	76x146	081	SA068000315AC081_M01
		8200	30.21	18.0	76x220	092	SA082000315AC092_M01
		8200	26.99	18.0	100X105	082	SA082000315AC082_M01
		10000	28.48	18.5	76x220	092	SA100000315AC092_M01
		10000	24.23	20.1	100X120	083	SA100000315AC083_M01
		12000	18.50	23	76x220	092	SA120000315AC092_M01
		12000	21.74	23	100X146	084	SA120000315AC084_M01
		12000	18.50	23	120X105	086	SA120000315AC086_M01
		15000	15.41	25.2	76x220	092	SA150000315AC092_M01
		15000	16.01	27.5	120X120	087	SA150000315AC087_M01
		18000	14.00	31	100X175	085	SA180000315AC085_M01
		22000	12.68	36	100X220	099	SA220000315AC099_M01
		27000	11.46	38	120X175	042	SA270000315AC042_M01
		38000	10.25	46	120X240	044	SA380000315AC044_M01
350	385	1500	92.64	5.8	50x80	020	SA015000350AC020_M01
		2200	72.85	7.2	50x105	022	SA022000350AC022_M01
		3300	58.31	9.2	63x105	026	SA033000350AC026_M01
		3900	48.38	10.1	63x105	026	SA039000350AC026_M01
		4700	37.53	12.7	63x145	035	SA047000350AC035_M01
		4700	37.64	12.8	76x105	028	SA047000350AC028_M01
		5600	33.34	13.6	76x105	028	SA056000350AC028_M01
		6800	29.27	16.0	76x145	081	SA068000350AC081_M01
		8200	27.11	19.0	76x220	092	SA082000350AC092_M01
		8200	26.99	18.0	100X105	082	SA082000350AC082_M01
		10000	18.66	22.9	76x220	092	SA100000350AC092_M01
		10000	18.58	22.9	100X120	083	SA100000350AC083_M01
		12000	16.85	24.1	76x220	092	SA120000350AC092_M01
		12000	17.01	26.0	100X145	084	SA120000350AC084_M01
		12000	16.99	24.0	120X120	087	SA120000350AC087_M01
		15000	13.62	29.2	90x220	094	SA150000350AC094_M01
		15000	14.00	31.0	100X175	085	SA150000350AC085_M01
		18000	11.64	29.0	120X145	088	SA180000350AC088_M01
		22000	11.38	38.0	100X220	099	SA220000350AC099_M01
		27000	9.84	41.0	120X175	042	SA270000350AC042_M01
		33000	9.13	47.0	120X220	043	SA330000350AC043_M01
		38000	8.02	52.0	120X240	044	SA380000350AC044_M01

Custom designed capacitors available

ALUMINIUM ELECTROLYTIC CAPACITORS

PG - LL9 Long Life Grade

-40°C +85°C

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (milliohm)	Ripple Current (Irms) at 100 Hz, 85°C (Amps)	Can size Nominal D x L mm	Case code	Ordering code
400	440	1500	89.53	5.9	50x105	022	SA015000400AC022_M01
		2200	70.87	7.3	63x105	026	SA022000400AC026_M01
		3300	54.69	9.5	63x105	026	SA033000400AC026_M01
		3900	44.28	11.8	76x105	028	SA039000400AC028_M01
		4700	35.39	13.2	76x105	028	SA047000400AC028_M01
		5600	33.30	15.0	76x145	081	SA056000400AC081_M01
		5600	32.12	16.5	100X105	082	SA056000400AC082_M01
		6800	25.62	17.1	76x146	081	SA068000400AC081_M01
		6800	25.63	19.5	100X120	083	SA068000400AC083_M01
		8200	20.62	19.0	90x145	095	SA082000400AC095_M01
		8200	20.93	22.0	100X145	084	SA082000400AC084_M01
		10000	17.72	23.5	76x220	092	SA100000400AC092_M01
		10000	17.91	26.0	120X120	087	SA100000400AC087_M01
		12000	15.25	27.6	90x220	094	SA120000400AC094_M01
		12000	14.94	30.0	100X175	085	SA120000400AC085_M01
		18000	13.02	37.0	100X240	045	SA180000400AC045_M01
		22000	11.82	32.0	120X220	043	SA220000400AC043_M01
		27000	10.25	46.0	120X240	044	SA270000400AC044_M01
415	456	1500	89.39	6.5	50x105	022	SA015000415AC022_M01
		2200	69.95	8.4	63x105	026	SA022000415AC026_M01
		3300	52.87	10.8	76x105	028	SA033000415AC028_M01
		3900	42.82	12.0	76x105	028	SA039000415AC028_M01
		4700	31.46	14.0	76x105	028	SA047000415AC028_M01
		5600	30.39	15.7	76x145	081	SA056000415AC081_M01
		5600	30.26	17.0	100X105	082	SA056000415AC082_M01
		6800	23.12	18.0	76x146	081	SA068000415AC081_M01
		6800	23.19	20.5	100X120	083	SA068000415AC083_M01
		8200	19.33	22.5	76x220	092	SA082000415AC092_M01
		8200	19.16	24.5	100X145	084	SA082000415AC084_M01
		8200	18.92	24.0	120X105	086	SA082000415AC086_M01
		10000	15.66	25.0	76x220	092	SA100000415AC092_M01
		10000	16.01	27.5	120X120	087	SA100000415AC087_M01
		12000	14.30	28.5	90x220	094	SA120000415AC094_M01
		12000	13.86	32.0	120X145	088	SA120000415AC088_M01
		12000	13.56	31.5	100X175	085	SA120000415AC085_M01
		15000	32.45	22.5	100X220	099	SA150000415AC099_M01
		18000	29.76	27.0	100X240	045	SA180000415AC045_M01
		18000	31.28	23.0	120X175	042	SA180000415AC042_M01
		22000	28.73	26.5	120X220	043	SA220000415AC043_M01
		27000	25.80	29.0	120X240	044	SA270000415AC044_M01

Custom designed capacitors available

ALUMINIUM ELECTROLYTIC CAPACITORS

PG - LL9 Long Life Grade

-40°C +85°C

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (milliohm)	Ripple Current (rms) at 100 Hz, 85°C (Amps)	Can size Nominal D x L mm	Case code	Ordering code
450	495	1000	141.08	4.7	50x80	020	SA010000450AC020_M01
		1500	86.70	6.6	50x105	022	SA015000450AC022_M01
		2200	65.21	8.7	63x105	026	SA022000450AC026_M01
		3300	48.25	11.2	63x145	035	SA033000450AC035_M01
		3300	48.29	11.3	76x105	028	SA033000450AC028_M01
		4700	32.43	15.2	76x146	081	SA047000450AC081_M01
		4700	32.12	16.5	100X105	082	SA047000450AC082_M01
		5600	29.27	16.0	76x146	081	SA056000450AC081_M01
		5600	29.42	18.2	100X120	083	SA056000450AC083_M01
		6800	24.23	20.1	76x220	092	SA068000450AC092_M01
		6800	23.58	21.5	120X105	086	SA068000450AC086_M01
		8200	17.72	23.5	76x220	092	SA082000450AC092_M01
		8200	17.91	26.0	120X120	087	SA082000450AC087_M01
		10000	16.54	26.5	90x220	094	SA100000450AC094_M01
		10000	17.16	28.0	100X175	085	SA100000450AC085_M01
		12000	16.88	29.0	120X145	088	SA120000450AC088_M01
		15000	15.42	34.0	100X240	045	SA150000450AC045_M01
		18000	13.97	38.0	120X220	043	SA180000450AC043_M01
		22000	12.30	42.0	120X240	044	SA220000450AC044_M01

Custom designed capacitors available

ALUMINIUM ELECTROLYTIC CAPACITORS

PG - 5KL

-40°C +105°C



Capacitor Diameter (mm)	50	63	76	90
Max. Ripple Current (Amps)	20	40	40	72

Application

High Ripple Current Applications like, PWM Inverters, High KVA On-Line UPS, Frequency Converters, AC Drives, Railway Traction drives, High Reliability Power Supplies, Wind generators drives, solar inverters

Capacitor mounting

Capacitors are available in screw terminals in three mounting styles

- AEST - Screw terminals with plain insulated base. *see page 35, 36*
- AEST-D - Screw terminals with stud mounting. *see page 35, 36*
- AEST-AL - Capacitor with aluminium bottom disc. *see page 37*

Capacitor Terminal Style

Capacitors are available in two different terminal style, round and across flat. Below table summarizes the available terminal styles in different capacitors diameter

Capacitors Diameter (mm)	50	63	76	90
Terminal Style - Round	○	○	○	○
Terminal Style - Across Flat	○	○	○	○

For details see pages 35, 36, 37

Marking on capacitors

Each capacitor will have the following information printed on it, sequentially:

- The Company's symbol followed by the words ALCON ELECTRONICS
- The capacitor grade viz. PG-5KL
- The capacitance value __ MFD, rated voltage __ VDC
- The surge voltage
- Capacity tolerance
- Climatic category
- Part number on non-standard capacitors
- CE marking

ALUMINIUM ELECTROLYTIC CAPACITORS

PG - 5KL

-40°C +105°C

Useful life

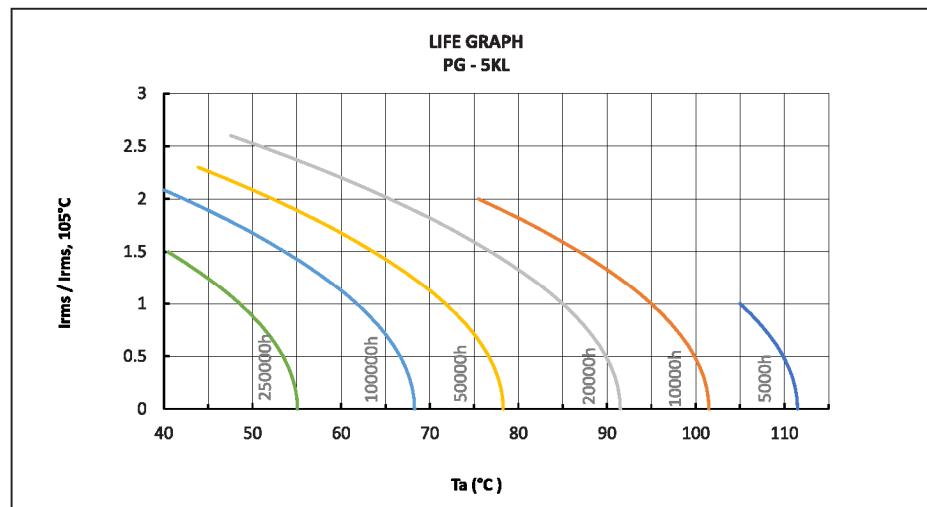
Useful life is a period of time which the capacitor takes to reach "end of life".

For PG-5KL capacitors the useful life is estimated as 5000 hours at maximum rated temperature, ripple current and voltages.

End of the defined as follows :

1. Catastrophic failure : capacitor short or open circuit
2. Mechanical failure : operation of safety vent or sleeve damage
3. Parametric failure :
 - a. Capacitance change $\pm 30\%$
 - b. ESR exceed three times specified value
 - c. Leakage current exceed specified value

The useful life for a known ripple current load and ambient temperature (T_a) °C is determined on the basis of the "Life graph" shown below.



ALUMINIUM ELECTROLYTIC CAPACITORS

-40°C +105°C

PG - 5KL

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (milliohms)	Ripple Current at 100 Hz, 85°C (Amps)	Ripple Current (Irms) at 100 Hz, 105°C (Amps)	Can size Nominal	Case Code	Ordering code
350	385	1800	77.1	8.3	4.9	50x105	022	SA018000350AE022_M01
		2200	69.1	9.9	5.8	63x105	026	SA022000350AE026_M01
		2700	51.5	11.5	6.7	63x105	026	SA027000350AE026_M01
		3300	44.2	14.1	8.2	63x105	026	SA033000350AE026_M01
		3900	41.3	14.6	8.5	76x105	028	SA039000350AE028_M01
		4700	33.1	18.1	10.6	76x105	028	SA047000350AE028_M01
		5600	25.7	21.8	12.7	76x120	041	SA056000350AE041_M01
		6800	20.6	26.8	15.7	90x120	097	SA068000350AE097_M01
		8200	18.0	28.2	16.5	76x175	090	SA082000350AE090_M01
		8200	18.0	28.6	16.7	90x120	097	SA082000350AE097_M01
		10000	14.2	34.6	20.3	76x220	092	SA100000350AE092_M01
		10000	14.2	35.0	20.5	90x146	095	SA100000350AE095_M01
		12000	12.3	37.7	22.0	90x175	096	SA120000350AE096_M01
		15000	9.9	46.0	26.9	90x220	094	SA150000350AE094_M01
		15000	9.8	45.7	26.7	90x175	096	SA150000350AE096_M01
		18000	8.2	55.2	32.3	90x220	094	SA180000350AE094_M01
400	440	1800	76.0	9.4	5.5	50x105	022	SA018000400AE022_M01
		2200	52.6	11.3	6.6	63x105	026	SA022000400AE026_M01
		2700	49.7	13.3	7.8	63x105	026	SA027000400AE026_M01
		3300	38.7	16.0	9.3	63x120	039	SA033000400AE039_M01
		3900	33.5	18.0	10.5	76x105	028	SA039000400AE028_M01
		4700	28.4	20.3	11.9	63x146	035	SA047000400AE035_M01
		4700	28.3	20.7	12.1	76x120	041	SA047000400AE041_M01
		5600	23.2	25.2	14.8	90x120	097	SA056000400AE097_M01
		6800	19.3	27.3	16.0	76x146	081	SA068000400AE081_M01
		6800	19.3	27.7	16.2	90x120	097	SA068000400AE097_M01
		8200	16.8	31.9	18.6	76x220	092	SA082000400AE092_M01
		8200	15.5	33.5	19.6	90x146	095	SA082000400AE095_M01
		10000	12.9	39.9	23.3	76x220	092	SA100000400AE092_M01
		12000	11.2	43.2	25.3	90x175	096	SA120000400AE096_M01
		15000	8.9	53.2	31.1	90x220	094	SA150000400AE094_M01

Custom designed capacitors available

ALUMINIUM ELECTROLYTIC CAPACITORS

PG - 5KL

-40°C +105°C

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (milliohm)	Ripple Current at 100 Hz, 85°C (Amps)	Ripple Current (Imax) at 100 Hz, 105°C (Amps)	Can size Nominal	Case Code	Ordering code
450	495	1000	102.8	7.2	4.2	50x80	020	SA010000450AE020_M01
		1200	89.8	8.7	5.1	50x105	022	SA012000450AE022_M01
		1500	70.8	9.8	5.7	63x105	026	SA012000450AE026_M01
		1800	62.2	11.9	6.9	63x105	026	SA018000450AE026_M01
		2200	49.1	13.4	7.8	63x105	026	SA022000450AE026_M01
		2700	38.7	16.0	9.3	63x120	039	SA027000450AE039_M01
		3300	31.0	19.4	11.4	63x146	035	SA033000450AE035_M01
		3300	30.9	19.9	11.6	76x120	041	SA033000450AE041_M01
		3900	25.8	24.0	14.0	90x120	097	SA039000450AE097_M01
		4700	23.1	24.9	14.6	76x146	081	SA047000450AE081_M01
		4700	23.2	25.2	14.8	90x120	097	SA047000450AE097_M01
		5600	19.3	29.7	17.3	76x175	090	SA056000450AE090_M01
		5600	19.4	30.0	17.5	90x146	095	SA056000450AE095_M01
		8200	12.9	40.3	23.6	76x220	092	SA082000450AE092_M01
		8200	12.9	39.9	23.3	90x175	096	SA082000450AE096_M01
500	550	680	141.4	6.1	3.6	50x80	020	SA006800500AE020_M01
		1000	96.5	8.4	4.9	50x105	022	SA010000500AE022_M01
		1800	58.1	12.3	7.2	63x105	026	SA018000500AE026_M01
		2700	38.7	17.4	10.2	63x146	035	SA027000500AE035_M01
		2700	38.6	17.8	10.4	76x120	041	SA027000500AE041_M01
		3300	30.9	21.9	12.8	90x120	097	SA033000500AE097_M01
		3900	25.8	25.7	15.0	76x175	090	SA039000500AE090_M01
		3900	25.8	24.0	14.0	90x120	097	SA039000500AE097_M01
		4700	21.9	27.9	16.3	76x175	090	SA047000500AE090_M01
		4700	21.9	28.2	16.5	90x146	095	SA047000500AE095_M01
		5600	18.1	34.1	19.9	76x220	092	SA056000500AE092_M01
		5600	18.0	33.7	19.7	90x175	096	SA056000500AE096_M01
		8200	12.6	44.6	26.1	90x220	094	SA082000500AE094_M01

Custom designed capacitors available

ALUMINIUM ELECTROLYTIC CAPACITORS

-40°C +70°C

PG-2HED - High Energy Discharge



Capacitors Diameter (mm)	50	63	76	90
Terminal Style - Round	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Terminal Style - Across Flat	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

For details see pages 35, 36, 37

Marking on capacitors

Each capacitor will have the following information printed on it, sequentially:

Specifications

- Voltage range : 350 VDC to 450 VDC
- Can sizes : 50φ x 105mm to 90φ x 220mm
- Operating temperature range : - 40°C to + 70°C
- Capacitance : 680 MFD to 6800 MFD
- Tolerance : -10% to +20%
- Notes :
 - Can is negative, However, it is isolated with a PVC insulating sleeve and polypropylene end-disc.
 - The base stud is also negative and can be insulated with a nylon nut. Please see the page regarding mounting accessories for details.

Application

PG-2HED range is designed for large instant energy discharge application like capacitor discharge welding, magnetisers and other pulse discharge applications.

Capacitor mounting

Capacitors are available in screw terminals in three mounting styles

- AEST - Screw terminals with plain insulated base. *see page 35, 36*
- AEST-D - Screw terminals with stud mounting. *see page 35, 36*
- AEST-AL - Capacitor with aluminium bottom disc. *see page 37*

Capacitor Terminal Style

Capacitors are available in two different terminal style, round and across flat. Below table summarizes the available terminal styles in different capacitors diameter

Manufacturing Date Code Chart

The manufacturing code shall consists of four digits (alphanumeric). The first two shall denote the date (numeric). The third stands for the month (alpha-numeric). The fourth stands for the year (alphabet)

First two spaces DATE	Third space MONTH	Fourth space YEAR
01	1 = JANUARY	A = 2012
02	2 = FEBRUARY	B = 2013
03	3 = MARCH	C = 2014
.	4 = APRIL	D = 2015
.	5 = MAY	E = 2016
.	6 = JUNE	F = 2017
10	7 = JULY	G = 2018
11	8 = AUGUST	H = 2019
.	9 = SEPTEMBER	J = 2020
.	X = OCTOBER	K = 2021
.	Y = NOVEMBER	L = 2022
31	Z = DECEMBER	M = 2023

For example :

- Manufacturing code 023A will mean 2nd March, 2012
- Manufacturing code 10XA will mean 10th October, 2012

ALUMINIUM ELECTROLYTIC CAPACITORS

PG-2HED - High Energy Discharge

-40°C +70°C

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	Max. Tan Delta at 100Hz, 25°C	Max. Leakage Current at rated voltage and 25°C (micro-amp)	Can size Nominal D x L mm	Case Code	Ordering code
350	385	1500	0.12	3150	50X105	022	SA015000350HD022____M01
		2200	0.12	4620	63X105	026	SA022000350HD026____M01
		3300	0.12	6930	63X145	035	SA033000350HD035____M01
		3900	0.12	8190	76X105	028	SA039000350HD028____M01
		4700	0.12	9870	76X145	081	SA047000350HD081____M01
		5600	0.12	11760	76X145	081	SA056000350HD081____M01
		6800	0.12	14280	76X220	092	SA068000350HD092____M01
		8200	0.12	17220	76X220	092	SA082000350HD092____M01
		10000	0.12	21000	76X220	092	SA100000350HD092____M01
		12000	0.12	25200.0	90X175	096	SA120000350HD096____M01
		15000	0.12	31500.0	90X220	094	SA150000350HD094____M01
400	440	1500	0.12	3600	63X105	026	SA015000400HD026____M01
		2200	0.12	4620	63X105	026	SA022000400HD026____M01
		3300	0.12	6930	76X105	028	SA033000400HD028____M01
		3900	0.12	8190	76X145	081	SA039000400HD081____M01
		4700	0.12	9870	76X145	081	SA047000400HD081____M01
		5600	0.12	11760	76X175	090	SA056000400HD090____M01
		6800	0.12	14280	90X145	095	SA068000400HD095____M01
		8200	0.12	17220	90X175	096	SA082000400HD096____M01
		10000	0.12	21000	90X220	094	SA100000400HD094____M01
		12000	0.12	25200	90X220	094	SA120000400HD094____M01
450	495	1000	0.12	2700	63X105	026	SA010000450HD026____M01
		1500	0.12	4050	63X105	026	SA015000450HD026____M01
		2200	0.12	5940	63X145	035	SA022000450HD035____M01
		3300	0.12	8910	76X145	081	SA033000450HD081____M01
		4700	0.12	12690	76X175	090	SA047000450HD090____M01
		5600	0.12	15120	90X145	095	SA056000450HD095____M01
		6800	0.12	18360	76X220	092	SA068000450HD092____M01
		8200	0.12	22140	90X220	094	SA082000450HD094____M01
		10000	0.12	27000	90X220	094	SA100000450HD094____M01

Custom designed capacitors available

ALUMINIUM ELECTROLYTIC CAPACITORS

PG-PED2 - High Pulse Discharge

-40°C +70°C



Standard Capacitor Values

Capacitors Diameter (mm)	50	63	76	90
Terminal Style - Round	○	○	○	○
Terminal Style - Across Flat	○	○	○	○

For details see pages 35, 36, 37

Marking on capacitors

Each capacitor will have the following information printed on it, sequentially:

- The Company's symbol  followed by the words ALCON ELECTRONICS
- The capacitor grade viz. PG-PED2
- The capacitance value __ MFD, rated voltage __ VDC
- The surge voltage
- Capacity tolerance
- Climatic category
- Part number on non-standard capacitors
- CE marking

Useful life for Charge and Discharge

Test Conditions

1. Discharges 1000000
2. Pulse repetition period 2 sec.
3. Number of pulses with minimum repetition period 200
4. Pause after case 3 60 mins.
5. Average pulse sequence with pauses 20 sec.
6. Pulses per week 5000
7. Charge resistance 10 Ω
8. Discharge resistance 0.5 Ω

Applications

PG-PED2 range is designed for large Instant Energy Discharge application like Laser, X-Ray, Welding, Accelerator, magnetisers and other pulse discharge applications.

Capacitor mounting

Capacitors are available in screw terminals in three mounting styles

- AEST** - Screw terminals with plain insulated base. *see page 35, 36*
- AEST-D** - Screw terminals with stud mounting. *see page 35, 36*
- AEST-AL** - Capacitor with aluminium bottom disc. *see page 37*

Capacitor Terminal Style

Capacitors are available in two different terminal style, round and across flat. Below table summarizes the available terminal styles in different capacitors diameter

Manufacturing Date Code Chart

The manufacturing code shall consists of four digits (alphanumeric). The first two shall denote the date (numeric). The third stands for the month (alpha-numeric). The fourth stands for the year (alphabet)

First two spaces DATE	Third space MONTH	Fourth space YEAR
01	1 = JANUARY	A = 2012
02	2 = FEBRUARY	B = 2013
03	3 = MARCH	C = 2014
.	4 = APRIL	D = 2015
.	5 = MAY	E = 2016
.	6 = JUNE	F = 2017
10	7 = JULY	G = 2018
11	8 = AUGUST	H = 2019
.	9 = SEPTEMBER	J = 2020
.	X = OCTOBER	K = 2021
.	Y = NOVEMBER	L = 2022
31	Z = DECEMBER	M = 2023

For example :

1. Manufacturing code 023A will mean 2nd March, 2012
2. Manufacturing code 10XA will mean 10th October, 2012

ALUMINIUM ELECTROLYTIC CAPACITORS

PG-PED2 - High Pulse Discharge

-40°C +70°C

Standard Capacitor Values

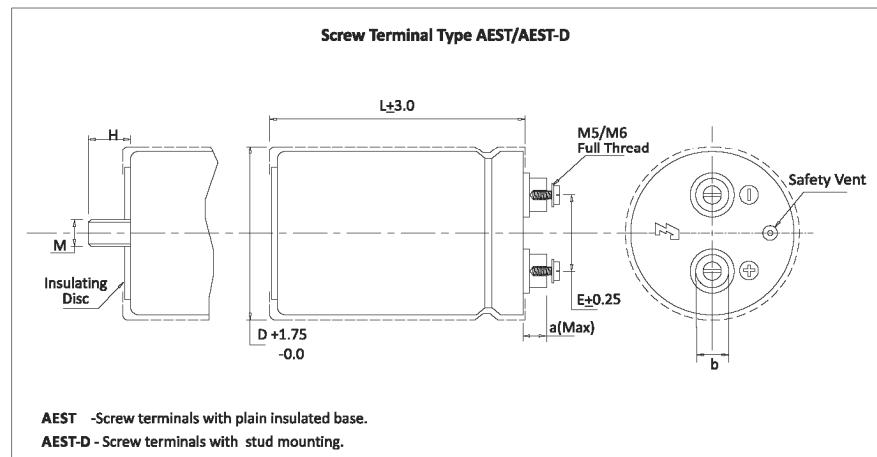
Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	Max. Tan Delta at 100Hz, 25°C	Max. Leakage Current at rated voltage and 25°C (micro-amp)	Can size Nominal D x L mm	Case Code	Ordering code
350	385	680	0.1	1428	50X105	022	SA006800350PD022_M01
		1000	0.1	2100	63X105	026	SA010000350PD026_M01
		1200	0.1	2520	63X120	039	SA012000350PD039_M01
		1500	0.1	3150	76X105	028	SA015000350PD028_M01
		2200	0.1	4620	76X145	081	SA022000350PD081_M01
		3300	0.1	6930	76X175	090	SA033000350PD090_M01
		4700	0.1	9870	90X145	095	SA047000350PD095_M01
		5600	0.1	11760	90X175	096	SA056000350PD096_M01
		6800	0.1	14280	90X220	094	SA068000350PD094_M01
400	440	680	0.1	1632	50X105	022	SA006800400PD022_M01
		1000	0.1	2400	63X105	026	SA010000400PD026_M01
		1200	0.1	2880	63X120	039	SA012000400PD039_M01
		1500	0.1	3600	76X105	028	SA015000400PD028_M01
		2200	0.1	5280	76X145	081	SA022000400PD081_M01
		3300	0.1	7920	90X145	095	SA033000400PD095_M01
		4700	0.1	11280	90X175	096	SA047000400PD096_M01
		5600	0.1	13440	90X220	094	SA056000400PD094_M01
450	495	680	0.1	1836	50X105	022	SA006800450PD022_M01
		1000	0.1	2700	63X105	026	SA010000450PD026_M01
		1200	0.1	3240	63X120	039	SA012000450PD039_M01
		1500	0.1	4050	76X105	028	SA015000450PD028_M01
		2200	0.1	5940	76X145	081	SA022000450PD081_M01
		3300	0.1	8910	90X145	095	SA033000450PD095_M01
		4700	0.1	12690	90X175	096	SA047000450PD096_M01
		5600	0.1	15120	90X220	094	SA056000450PD094_M01

Custom designed capacitors available

ALUMINIUM ELECTROLYTIC CAPACITORS

Terminal Style And Dimension

Terminal Style And Dimension With Round Insert



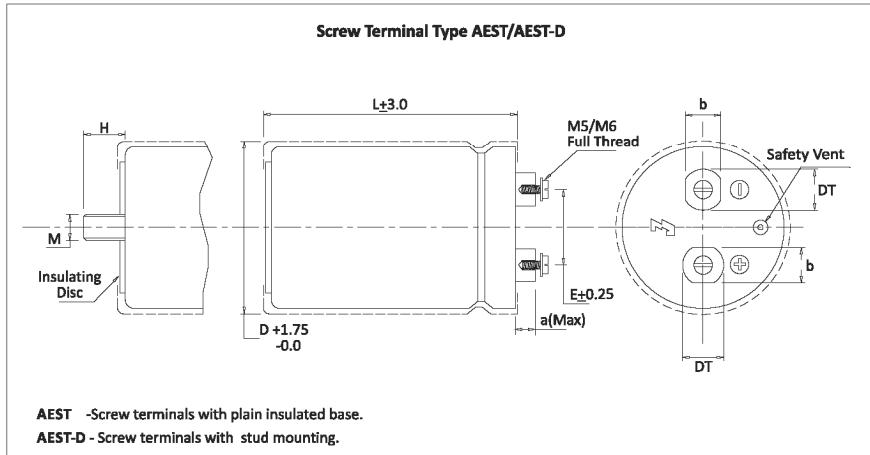
Dimension in mm.

Terminal	D	E	L	a (Max)	b±0.1	M	H±1.0
M5	35	12.6	62	7.8	9.5	—	—
M5	35	12.6	80	7.8	9.5	—	—
M5	35	12.6	105	7.8	9.5	—	—
M5	50	22.1	80	7.8	9.5	M 12	17.0
M5	50	22.1	105	7.8	9.5	M 12	17.0
M5	50	22.1	120	7.8	9.5	M 12	17.0
M5	63	28.5	105	7.8	12.0	M 12	17.0
M5	63	28.5	120	7.8	12.0	M 12	17.0
M5	63	28.5	146	7.8	12.0	M 12	17.0
M5	76	31.6	105	7.8	12.0	M 12	17.0
M5	76	31.6	120	7.8	12.0	M 12	17.0
M5	76	31.6	146	7.8	12.0	M 12	17.0
M5	76	31.6	175	7.8	12.0	M 12	17.0
M5	76	31.6	220	7.8	12.0	M 12	17.0
M5	76	31.6	240	7.8	12.0	M 12	17.0
M6	76	31.6	105	5.3*	16.0	M 12	17.0
M6	76	31.6	120	5.3*	16.0	M 12	17.0
M6	76	31.6	146	5.3*	16.0	M 12	17.0
M6	76	31.6	175	5.3*	16.0	M 12	17.0
M6	76	31.6	220	5.3*	16.0	M 12	17.0
M6	76	31.6	240	5.3*	16.0	M 12	17.0
M6	90	32	105	5.3*	16.0	M 12	17.0
M6	90	32	146	5.3*	16.0	M 12	17.0
M6	90	32	175	5.3*	16.0	M 12	17.0
M6	90	32	220	5.3*	16.0	M 12	17.0
M6	90	32	240	5.3*	16.0	M 12	17.0

* Low Post Design

Terminal Style And Dimension

Terminal Style And Dimension With Across Flat Insert

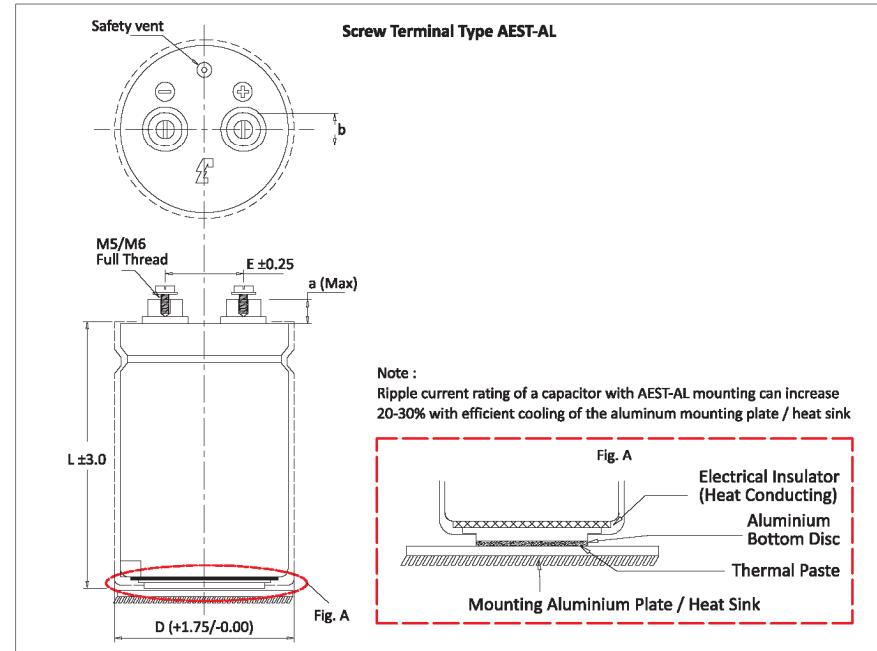


Dimension in mm.

Terminal	D	E	L	a (Max)	b	DT	M	H \pm 1.0
M5	50	22.1	80	5.5	10	13	12	17
M5	50	22.1	105	5.5	10	13	12	17
M5	50	22.1	120	5.5	10	13	12	17
M6	63	28.5	105	6.5	13	15	12	17
M6	63	28.5	120	6.5	13	15	12	17
M6	63	28.5	146	6.5	13	15	12	17
M6	76	31.6	105	6.5	13	15	12	17
M6	76	31.6	120	6.5	13	15	12	17
M6	76	31.6	146	6.5	13	15	12	17
M6	76	31.6	175	6.5	13	15	12	17
M6	76	31.6	220	6.5	13	15	12	17
M6	76	31.6	240	6.5	13	15	12	17
M6	90	32	105	6.5	13	15	12	17
M6	90	32	120	6.5	13	15	12	17
M6	90	32	146	6.5	13	15	12	17
M6	90	32	175	6.5	13	15	12	17
M6	90	32	220	6.5	13	15	12	17
M6	90	32	240	6.5	13	15	12	17
M6	100	32	105	6.5	13	15	12	17
M6	100	32	120	6.5	13	15	12	17
M6	100	32	146	6.5	13	15	12	17
M6	100	32	175	6.5	13	15	12	17
M6	100	32	220	6.5	13	15	12	17
M6	100	32	240	6.5	13	15	12	17
M6	120	41.50	105	6.5	13	15	12	17
M6	120	41.50	120	6.5	13	15	12	17
M6	120	41.50	146	6.5	13	15	12	17
M6	120	41.50	175	6.5	13	15	12	17
M6	120	41.50	220	6.5	13	15	12	17
M6	120	41.50	240	6.5	13	15	12	17

Terminal Style And Dimension

Terminal Style And Dimension



Dimension in mm.

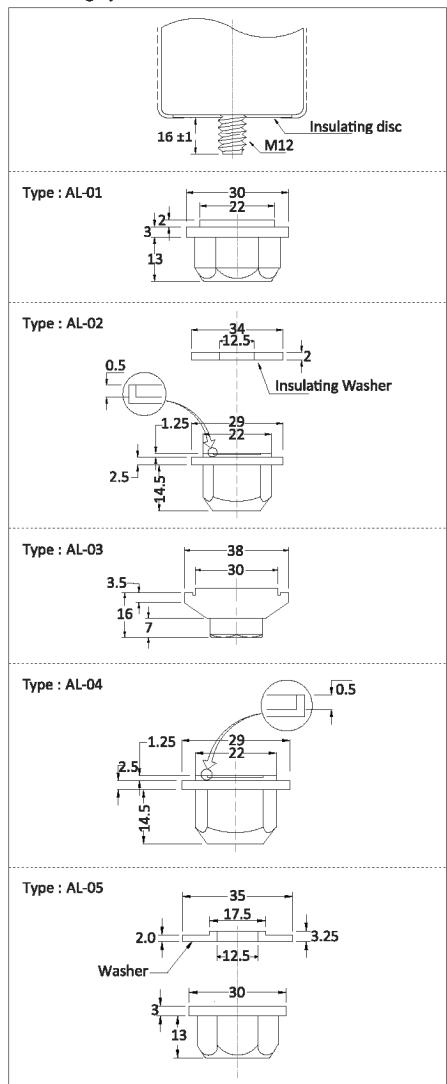
Terminal	D	E	L	a (Max)	b \pm 0.1
M5	63	28.5	105	7.8	12
M5	63	28.5	120	7.8	12
M5	63	28.5	146	7.8	12
M5	76	31.6	105	7.8	12
M5	76	31.6	120	7.8	12
M5	76	31.6	146	7.8	12
M5	76	31.6	175	7.8	12
M5	76	31.6	220	7.8	12
M5	76	31.6	240	7.8	12
M6	76	31.6	105	5.3 *	16
M6	76	31.6	120	5.3 *	16
M6	76	31.6	146	5.3 *	16
M6	76	31.6	175	5.3 *	16
M6	76	31.6	220	5.3 *	16
M6	76	31.6	240	5.3 *	16
M6	90	32	105	5.3 *	16
M6	90	32	146	5.3 *	16
M6	90	32	175	5.3 *	16
M6	90	32	220	5.3 *	16
M6	90	32	240	5.3 *	16

* Low Post Design

Mounting Accessories

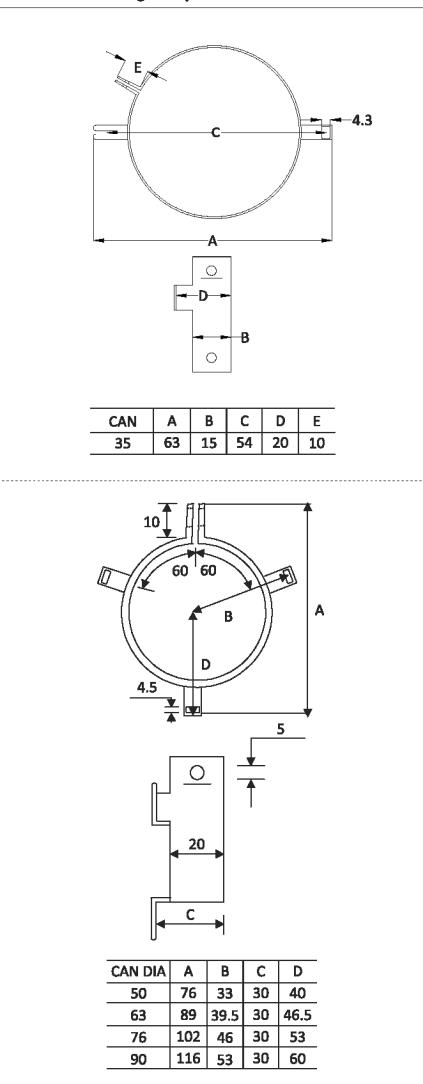
Mounting Accessories

* Insulating Nylon Nut and Washers for Cans with Bottom Stud



Dimension in mm.

* Vertical Mounting Clamps



Part Number System

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2	3 to 7	8 to 11	12 to 13	14 to 16	17 to 20	21	22 to 23														

Standard / Non-standard

S - Standard
N - Non-standard

Series

A - Aluminium Electrolytic Capacitors
I - IGBT Snubber Capacitors
D - DC-Link Capacitors
P - Power Film Capacitors

Capacitance Rating

example : 00001 - 1 MFD
01U20 - 1.2 MFD
04700 - 4700 MFD
00680 - 680 MFD
00U10 - 0.1 MFD
3300H - 330000 MFD

Voltage Rating

example : 1000 - 1000 VDC/VRMS
0700 - 700 VDC/VRMS
0500 - 500 VDC/VRMS

Grade

example : AA - PG6DI
PD - PG-PED2
HD - PG-2HED
AC - PG-LL9
AE - PG-5KL

Case code (Refer table)

Terminal Style

example :
00ST - AEST
0STD - AEST-D
STAL - AEST-AL
0FLT - AFLT

Tolerance

M : ±20%

Canias Code

By Default - 01

Cautions For Proper Use Of Aluminium Electrolytic Capacitors

To use Aluminum Electrolytic Capacitors properly, please pay attention to the points listed below.

1) To avoid rapid deterioration of electrical Specifications, please avoid using following types of electrical loads on Aluminum Electrolytic Capacitors

- reverse voltage
- voltage beyond rated voltage
- ripple current beyond rated value
- severe charging/discharging

During such conditions, capacitors get overheated and there can be evolution of gas, which will be increase the internal pressure enough to operate the safety vent.

In some rare /extreme condition, capacitors may catch fire or explode.

2) Storage & use conditions

- Keep Aluminum Electrolytic Capacitors away from the following environments:
 1. Damp atmosphere where spray of water, saltwater or oil is expected, or where condensation of these may occur.
 2. Atmosphere including hazardous gas/fumes such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia or bromine. Exposure to ozone, ultraviolet rays or radiation is not advisable.
 3. Severe vibration or shock beyond the condition specified in the catalog or specification sheets.
 4. Any condition that does not conform to the operating specifications mentioned in the specification sheet or catalogue.

3) Cautions during assembly process

1. Follow the orientation instruction as in catalogue.
2. Keep capacitors from falling onto the floor. Do not use capacitors if they have fallen on to a hard surface.
3. Use the specified value of torque stated in the catalog or specification sheets to tighten the screw terminals.

4) Periodical checks

Visual inspection of pressure relief vent operation and leakage of electrolyte.

5) Disposal

- For disposal do either of the followings.
 1. Incineration (at high temperature over 800°C) after piercing or crushing capacitor body.
 2. Consignment to specialists of industrial waste. As per the compliance prescribed by the law.



Other Products



Power Film Capacitors- High and Medium Frequency

Capacitance Range	- 0.010 MFD to 85 MFD
Max Power	- 100 KVAR to 1500 KVAR
Frequency Range	- 5.2 KHz to 1900 KHz
Max Current	- Up to 3000 Amps

Typical Applications

Induction Heating, Plasma Generators, Medical Equipment, Wireless EV Chargers, Magnetisers and Traction Equipment.



DC-Link Capacitors – Screw terminal and PCB mounting

Capacitance Range	- 1 MFD to 2350 MFD
Rated Voltage Range	- 400 VDC to 2400 VDC
Mounting Pitch	- 45 mm (for screw terminal) 27.5, 37.5, 52.5 mm (for PCB mounting)
Frequency Range	- 10 KHz to 100 KHz

Typical Applications

High Frequency Ripple Filtering in UPS, AC Drives, High Power IGBT Inverter, Induction Heating Equipment, Traction & Medical Equipment.

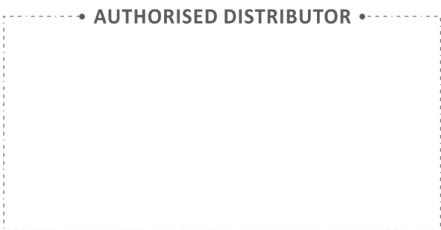


IGBT Snubber Capacitors- Direct Mounting & Axial

Capacitance Range	- 0.1 MFD to 3.30 MFD
Rated Voltage Range	- 600 VDC to 3000 VDC
Mounting Pitch	- 22, 23, 23.5, 24.5, 25, 26.50, 27, 27.5, 37, 37.5, 38, 38.5, 48.5, 55, 57.5, 78 mm (for direct mounting type)
I_{RMS} max.	- 2 Amps to 34.50 Amps

Typical Applications

Multi Level IGBT Snubber, IGBT Protection, Snubber Networks Protection Circuits, SMPS, Resonance Tank Circuits.



Designed and Printed by Delta Graphics



34-B, MIDC Industrial Estate, Satpur, Nashik - 422 007. India.

Phone : +91 - 0253 - 235 0533, +91 - 0253 - 235 0237 Fax : +91 - 0253 - 235 1682

e-mail : mail@alconelectronics.com website : www.alconelectronics.com

CIN : U32109MH1973PTCO16792

Catalogue No. AEPL - ALUMINUM ELECTROLYTIC CAPACITORS - FEBRUARY-2020

The specification shown in this catalogue (1 to 40) pertain to the current manufacturing range of the company. The Company reserves the right to change and /or modify any part of or whole of the specifications as a result of research and development and as may be necessary, without prior notice.

All Products not for marketing / sale in all countries.

© Alcon Electronics Pvt. Ltd.



800.348.5580
630.208.2200

rellpower.com
rellpower@rell.com

Distribution
Partner

