

INCAP LIMITED

AN ISO 9001 : 2000 ORGANISATION

ALUMINIUM ELECTROLYTIC CAPACITORS



CATALOGUE

CAT NO : 5

QUALITY POLICY

We in Incap limited shall provide products and services of quality at Competitive prices that meet the requirements of the customers through continual improvement in all our activities

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Certificate of Registration

Number SQ/ ISO 9001 /103

This certificate is awarded to

Incap Limited
1-58, Nidamanuru,
Vijayawada – 521 104
(India)

*in recognition of their establishment & maintenance of Quality Management System
which complies with the requirements of*

ISO 9001 : 2000

The scope of this certificate of registration covers :

Manufacturing and Supply of Aluminium Electrolytic Capacitors

Capacitance Range : 0.1 Mfd - 33000 Mfd

Voltage Range : 6.3 WV - 500 WV

Exclusions : Clauses 7.3 (Design and Development) , 7.5.2 (Validation of processes for production and services provision) and 7.5.4 (Customer Property)

This certificate is valid upto :

31.05. 2006

13. 10. 2003

Date

Originally Registered on 29th May 1997

A. Mathur

(Dr A. Mathur, CEO)

For STQC Directorate



STQC Certification Services
Department of Information Technology
Government of India
Electronics Niketan
6, CGO Complex, Lodi Road,
New Delhi-110003 (INDIA)



*"Further clarifications regarding the scope of this certificate and the applicability of
ISO 9001:2000 requirements may be obtained from STQC Certification Services."*

ABOUT OUR COMPANY

INCAP LIMITED a Public Limited Company with ISO 9001:2000 accreditation is managed by professionally qualified personnel. The company with sound financial discipline, is having its registered office and manufacturing facility located at Nidamanur village which is **12 K.M. away from Vijayawada on N.H. 5** and is accessible by road and rail from different parts of the country. The company has got an installed capacity of 100 million pcs per annum and was established in the year 1992 with technical and financial collaboration from M/s. Lelon Electronics Corporation.

PLANT AND MACHINERY

The Plant is housed in 2.5 acres of land with clean and green atmosphere. We also ensure that the process followed and waste disposable actions are environmental friendly. Machinery which are imported from Japan and Taiwan are maintained with meticulous care to ensure improved productivity of quality products. The performance of the Machine is closely monitored by the team responsible for Maintenance and Production by analysing the percentage yield on weekly basis and making further improvements in the yield by going for innovative techniques.

ABOUT THE PROCESS

All products are processed in a controlled and dust free environment where Temperature, Relative humidity and Human comfort are maintained at the optimum level. The operators are provided with uniform and it is made compulsory to use chlorine free gloves while handling the products till it is hermetically sealed. We have provided Air curtains at the entry to the plant to keep a barrier from outside atmosphere and also to prevent dust coming inside the plant. Operators are trained specific to the nature of the work carried out including the setting precautions and the quality norms so that production is never taken on deviation. Besides, petrol inspector collects samples at regular intervals from all stages of production to see its conformance to the set quality norms.

PRODUCT RANGE

Our product range covers Radial capacitors of

- Low Voltage (85°C and 105°C.)
- Medium & High voltage (85°C and 105°C.)
- Low Leakage
- Long Life & Extended Long Life
- Low ESR (85°C and 105°C.)
- Bi-Polar
- Non-Polar etc.

Our Snap-In type capacitors and Lug type capacitors cover a range of capacitance upto 10,000 uF and a voltage range upto 500 WV. We have satisfactorily developed 105°C special type Snap-in type capacitors up to 450WV and are being regularly supplied to OEM's and Dealers.

New Addition to the product range :

I) Radial Capacitors :

- a) Specially designed capacitors for Electronic Ballast and other Lighting Applications
- b) Import substitute capacitors with DOT approval.

II) Motor Start Capacitors :

- a) 230 V AC Motor Start Capacitors (Single Can and Double Can) for local requirement of single phase pump sets, air conditioners, wet grinders etc.,
- b) 110 V AC, 125 V AC , 140 V AC and 150 V AC single can Motor Start Capacitors meant for export to Singapore, Taiwan, Mexico etc.,

III) LUG Terminal Capacitors :

Starting from 25 diameter to 45 diameter covering a range of very high CV values in Low Voltage, Medium and High Voltages.

IV) Professional Screw Terminal Capacitors :

Starting from 35 diameter to 76 diameter covering a wide range of CV values including high voltage up to 500 WV.

QUALITY ASSURANCE

Materials are sourced from quality suppliers of repute from different parts of the world such as Japan, France, Italy, Korea and Taiwan based on the specification provided by us. Incoming Inspection department verify the quality with respect to the specification and Raw Materials and Components strictly confirming to the specifications are accepted.

All though the finished products are 100% tested in the automatic / semi automatic machines in the production, our Final Inspection Department take random samples as per Incap standards which are inline with International standards and record the observations and sends a copy of the same to customers for verification as an objective evidence of the conformance to the set quality levels.

Reliability of any product depends upon the availability of proper testing apparatus and instruments. Our instruments are calibrated at periodic intervals and are maintained well to prevent the non confirming products going into the market. We are committed to provide quality product and service at competitive prices at all times.

This may be the obvious reason that most of the major OEM's and other buyers started using our product on **DOL (DIRECT ON LINE)** basis.

We strongly believe that right selection of the materials and its proper processing with quality checks at different stages of the process shall contribute to cost effectiveness and **PPM** level quality of the end product.

R&D ACTIVITY

"Customer is the Key to our Progress" and we give utmost importance to the customer feed back regarding Quality, Delivery, Service and Cost. In order to maintain leadership in quality and service, we always analyse competitors product and also the customers input by a comparative evaluation technique and the generated data is used for continuous improvement of our products in line with the changing demand of the actual user. This implies that we make what customers need and supply them to their satisfaction.

R & D Department collects samples of finished products at different intervals and subject them for different tests as per National and International Standards applicable for Aluminium Electrolytic Capacitors.

Our R & D efforts in nut shell **"Boosting the productivity and performance of the products while cutting costs"**

APPROVALS

- 1) Systems Approval : ISO 9001:2000
- 2) Product Approval : LCSO, CACT and C-DOT
- 3) Approvals from MNCs as per their specifications

TRAINING

We firmly believe that continuous training of employees shall only contribute to improved quality with consistency. With this view in mind we organize training program to our employees which are specifically needed to carry out the work in an effective manner. This type of awareness creation coupled with the information on customer feed back improves the mindset of the employees about the changing market requirements and quality which act as an incentive to produce better quality products.

WORK CULTURE

Our employees are the greatest resources to our Company and we see that this resource is growing in positive direction by imparting training on stress relieving and motivate them to take up larger initiatives and to work with dedication and team spirit. Employees providing ideas and suggestions are suitably rewarded which shall promote the generation of innovative ideas.

RELIABILITY and **INTEGRITY** are the corner stones of our services and this structure is serving our customers excellently for several years now. It is our constant endeavor at **INCAP** to provide quality product and work towards **"Customer delight"**.

GENERAL INFORMATION

1. HOW TO ORDER



SERIES



RATED VOLTAGE



CAPACITANCE



SIZE



PACKING



TOLERANCE

a) SERIES : Refer Table of Contents.

b) RATED VOLTAGE :

Voltage in volts (V) is represented by a two digit code showing the real working voltage indicated as follows.

Voltage (VV)	4	6.3	10	13	16	25	35	40	50	63	75	80	100	160	200	250	350	400	450	500
Code	OG	OJ	1A	1B	1C	1E	1V	1G	1H	1J	1K	1L	2A	2C	2D	2E	2V	2G	2W	2X

c) CAPACITANCE :

Rated capacitance in μF is represented by a three digit number. The first two digits are the significant figures of the nominal capacitance and the third digit indicates the number of zeros following these figures. The decimal point is represented by the capital letter R. Please refer to the following example

μF	0.1	0.47	1.0	4.7	10	47	100	470	1000	4700	10000
Part Number	OR1	R47	010	4R7	100	470	101	471	102	472	103

d) SIZE : EX. :

1

2

 = 5 x 11

5x11 - 12	6.3x11 - 13	8x11 - 14	10x13 - 15
10x16 - 16	10x20 - 17	10x25 - 18	13x21 - 19
13x25 - 20	16x16 - 21	16x25 - 22	16x32 - 23
16x36 - 24	18x32 - 25	18x37 - 26	18x43 - 27
22x37 - 28	22x43 - 29	25x25 - 30	25x30 - 31
25x40 - 32	25x50 - 33	25x60 - 34	25x64 - 35
30x35 - 36	30x40 - 37	30x50 - 38	35x30 - 39
35x35 - 40	35x45 - 41	35x52 - 42	35x60 - 43
35x63 - 44	35x68 - 45	40x40 - 46	40x50 - 47
40x63 - 48			

e) PACKING : B - Bulk T - Tape

f) TOLERANCE :

Symbol of W, T, Q, V, M, K and J show special capacitance tolerance which are listed as follows.

W = -10~ + 100%	M = $\pm$ 20%
T = -10~ + 50%	K = $\pm$ 10%
Q = 10~ + 30%	J = $\pm$ 5%
V = 10~ + 20%	

2. SURGE VOLTAGE :

The surge voltage rating is the maximum DC over-voltage to which the capacitors may be subjected of short periods not exceeding approximately 30 seconds at infrequent intervals of not more than five minutes.

Unless otherwise specified, the rated surge voltage of the electrolytic capacitors are as follows :

Rated Voltage (V)	6.3	10	13	16	25	35	40	50	63	75	80	100	160	200	250	350	400	450	500
Surge Voltage (V)	8	13	16	20	32	44	50	63	79	90	100	125	200	250	300	400	450	500	550

TABLE OF CONTENTS

SERIES	FEATURES	VOLTAGE RANGE (Vdc)	OPERATING TEMPERATURE RANGE	CAPACITANCE RANGE (μ F)	LOAD LIFE	Page No.
IG	General Purpose 85°C	6.3 to 100	-40°C to +85°C	0.1 to 22,000	2000 hrs at 85°C	7
IT	General Purpose 105°C	6.3 to 100	-40°C to +105°C	0.1 to 10,000	2000 hrs at 105°C	9
IH1	Medium & High Voltage 85°C	160 to 450	-40°C to +85°C	0.47 to 330	2000 hrs at 85°C	11
IH2	Medium & High Voltage 105°C	160 to 450	-40°C to +105°C	0.47 to 220	2000 hrs at 105°C	13
BP1	Bi-Polar	25 to 100	-40°C to +85°C	1.5 to 10	2000 hrs at 85°C	15
NP1	Non-Polar	6.3 to 100	-40°C to +85°C	0.47 to 2200	2000 hrs at 85°C	17
NP2	Non-Polar	6.3 to 100	-40°C to +105°C	0.47 to 2200	1000 hrs at 105°C	19
IE1	Low ESR 85°C	6.3 to 160	-40°C to +85°C	1 to 10,000	2000 hrs at 85°C	21
IE2	Low ESR 105°C	6.3 to 160	-40°C to +105°C	1 to 10,000	1000 hrs at 105°C	23
LL1	Low Leakage 85°C	6.3 to 100	-40°C to +85°C	0.1 to 4700	2000 hrs at 85°C	25
LL2	Low Leakage 105°C	6.3 to 100	-40°C to +105°C	0.1 to 4700	1000 hrs at 105°C	27
IL1	Ballast Application 85°C (Long Life)	250 to 450	-40°C to +85°C	3.3 to 47	2000 hrs at 85°C	29
IL2	Ballast Application 105°C (Long Life)	250 to 500	-40°C to +105°C	3.3 to 100	2000 hrs at 105°C	30
IL5	Ballast Application 105°C (Extended Long Life)	350 to 450	-40°C to +105°C	3.3 to 10	5000 hrs at 105°C	31
	Taping Specification					32
IS1	Snap-in 85°C	25 to 450	-25°C to +85°C	47 to 15000	2000 hrs at 85°C	33
IS2	Snap-in 105°C	25 to 450	-25°C to +105°C	47 to 15000	1000 hrs at 105°C	35
TUB 5	Invertor and Converter Application 105°C	10 to 100	-55°C to + 105°C	180 to 15000	5000 hrs at 105°C	37
IS2-4T	Invertor and Converter Application 105°C	25 to 100	-40°C to +105°C	4000 to 56000	2000 hrs at 105°C	39
LT1	Lug Terminal 85°C	25 to 450	-40°C to +85°C	470 to 33000	1000 hrs at 85°C	41
MS1	Motor Start (Double Can)	230v AC	-30°C to +70°C	40-60 to 200-250	As per IS 2993	43
MS2	Motor Start (Single Can)	230v AC	-30°C to +70°C		As per IS 2993	43
ST1-G	Screw Terminal 85°C	16-450	-40°C to +85°C	1000-100000	1000 hrs at 85°C	44

Note :

1. Contact Factory for miniaturised 500 V DC Radial, Snap-In type Capacitors.
2. LA1, LA2 Series Capacitors are replaced with high reliability IL1, IL2 series of capacitors.
3. New Products developed :
 - a) 3 Terminal Capacitors - TUB 5
 - b) 4 Terminal Capacitors - IS2-4T
 - c) -55°C to +105°C Capacitors of 63 WV and below

Refer our Screw Terminal Capacitor catalogue for Professional Grade series of Capacitors

APPLICATION GUIDELINES

1. Circuit Design

Ensure that operational and mounting Guidelines specified in the Catalogue and Data Sheets are followed while using Aluminium Electrolytic Capacitors.

1.1 Operating Temperature and Frequency

Electrical Parameters of Electrolytic Capacitors are normally specified at 20°C temperature and 120Hz frequency. These parameters vary with changes in temperature and frequency. Circuit designers should take these changes into consideration while designing the circuit.

1.1.1 Effect of operating temperature on electrical parameters

- At higher temperature, **Leakage Current** and **Capacitance** increases while **Equivalent Series Resistance (ESR)** decreases.
- At lower temperature, **Leakage Current** and **Capacitance** decreases while **Equivalent Series Resistance (ESR)** increases.

1.1.2 Effects of frequency on electrical parameters

- At higher frequencies, **Capacitance** and **Impedance** decrease while **$\tan \delta$** increase.
- At lower frequencies, **Ripple Current Generated Heat** will rise due to an increase in **Equivalent Series Resistance (ESR)**.

1.2. Operating Temperature and Life Expectancy in accordance with useful life of Capacitance

1.2.1. Life is affected by the increase in temperature. Generally, each 10°C a rise in temperature will reduce the useful life by 50%. Use capacitors at the lowest possible temperature below the maximum rated temperature to get optimum specified results.

1.2.2. If operating conditions exceed the maximum rated limit, the electrical parameters deteriorate rapidly causing irreversible damage to the capacitors.

Check for maximum capacitor operating temperature including ambient temperature, internal capacitor temperature rise due to ripple current and the effect of radiated heat from power source.

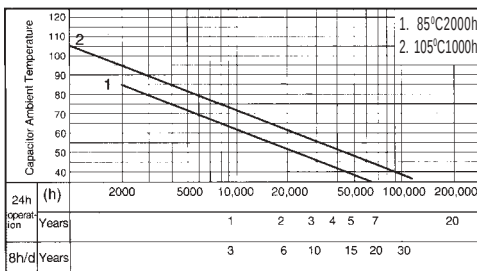
The useful life of Capacitor at maximum operating temperature is as follows.

$$L_2 = L_1 \times 2^{\frac{T_1 - T_2}{10}} \text{ where,}$$

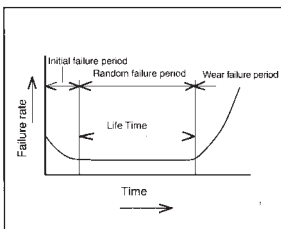
L_1 : Specified life (hrs) at temperature, $T_1^\circ\text{C}$
 L_2 : Useful life (hrs) at temperature, $T_2^\circ\text{C}$
 T_1 : Maximum operating temperature ($^\circ\text{C}$)
 T_2 : Actual operating temperature, [ambient Temperature + Temperature rise due to ripple current heating ($^\circ\text{C}$)]

A quick reference capacitor guide for estimating life is as given below

Useful Life Estimate Quick Reference Guide



Failure rate curve



1.3 Factors Effecting life expectancy

The following misapplication will cause rapid deterioration to capacitor electrical parameters. In addition to rapid heating and gas generation within the capacitor pressure relief vent will operate and result in leakage of electrolyte.

1.3.1 Reverse Voltage

DC capacitors have polarity. Verify correct polarity before insertion. For circuits with changing or uncertain polarity, use DC Bi-polar / Non-polar capacitors. DC Bi-polar/Non-polar Capacitors are not suitable for use in AC circuits.

1.3.2 Charge/Discharge Applications

Standard capacitors are not suitable for use in repeating charge/discharge applications. For charge/discharge applications specially designed Capacitors are to be used.

1.3.3 Over Voltage

Do not apply voltage exceeding the maximum specified rated voltage. Voltage up to the surge voltage are acceptable for very short duration only. Ensure that the sum of the DC voltage and the superimposed AC ripple peak voltage does not exceed the rated voltage.

1.3.4 Ripple Current

Do not apply ripple currents exceeding the maximum specified value. For high ripple current applications, use a capacitor designed for high ripple currents or contact factory with your requirements.

1.4 Using Two or More Capacitors in Series or Parallel

1.4.1 Capacitors Connected in Parallel

Due to difference in ESR value of individual capacitors the ripple handling of the capacitors also vary. Careful design of the Circuit can minimize the possibility of excessive ripple current coming to a capacitor.

1.4.2 Capacitors Connected in Series

Due to difference in DC leakage current in the capacitors connected in series the voltage imbalance shall occur. To avoid, suitable shunt resistors may be provided in the circuit.

1.5 Capacitor Mounting Considerations

1.5.1 Double Sided Circuit Boards

External wiring of the components to be so done if necessary that the extra solder is not collected under the wiring which cause short circuit of the capacitors.

1.5.2 Circuit Board Hole Positioning

The dia of the hole for positioning the capacitor to be designed such that excess solder is not passing through the hole and damaging the insulating sleeve.

1.5.3 Circuit Board Hole Spacing

The Circuit board holes spacing should match the capacitor lead wire spacing within the specified tolerances. Incorrect spacing can cause excessive stress coming on the lead wire during the insertion process. This may result in premature capacitor failure due to short or open circuit, increased leakage current, or electrolyte leakage.

1.5.4 Clearance for Can Top Pressure Relief Vents provided on Aluminium Can (For Radial and Snap Mount)

For capacitors with "Can Vent" require sufficient clearance to allow for proper vent operation. The recommended minimum clearance are as follows.

Upto 16 mm dia	: 2mm
18 dia to 35mm dia	: 3mm

1.5.5 Wiring Near the Pressure Relief Vent

Avoid locating high voltage or high current wiring of circuit board in the paths under the pressure relief vent, to avoid getting it damaged while vent getting open.

1.5.6 Screw /Lug Terminal Capacitor Mounting

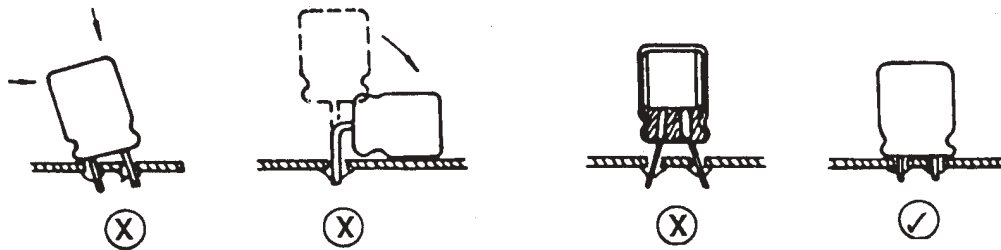
Mount the capacitor by using clamps with the Screw Terminal of capacitor facing upwards.

1.6 Capacitor Sleeve

For Radial type capacitors, PVC sleeve is intended for marking and identification purposes and is not meant to electrically insulate the capacitor.

The sleeving may split or crack if immersed into solvents such as toluene or xylene and then exposed to high temperature.

CAPACITOR POSITIONING METHOD

**CAUTION :**

Provide protection circuits and protection devices to allow safe failure modes.

2. Capacitor Handling Techniques**2.1 Considerations Before Using**

- Capacitors have a finite life. Do not reuse or recycle capacitors from used equipment.
- Transient recovery voltage may be generated in the capacitor due to dielectric absorption. If required, this voltage can be discharged with a resistor of 1 K Ω .
- Capacitors stored for long periods of time may exhibit an increase in leakage current. This can be corrected by gradually applying rated voltage in series through a 1K Ω resistor.
- If large capacitors are dropped, they can be damaged mechanically or electrically. Avoid using dropped capacitors.
- Dented or crushed capacitors should not be used. This shall result in short circuit / reduced life.

2.2 Capacitor Insertion

- Verify the correct capacitance and rated voltage of the capacitor.
- Verify the correct polarity of the capacitor before inserting.
- Verify the correct hole spacing before insertion to avoid stress on the terminals.
- Please ensure that while components are auto inserted, handling and lead trimming are carried out without developing stress at the point where the lead is entering the seal (rubber bung) of the capacitor.

2.3 Manual Soldering

- Please ensure soldering time is less than 3 sec. and temperature not exceeding 350°C
- If the capacitor leads are having a pitch different to that of PCB the leads are to be formed to match the PCB, pitch in such a way that no stress is developed on the capacitor.
- If a soldered capacitor is to be removed and reinserted, avoid excessive stress coming to the capacitor leads.

2.4 Soldering Considerations

- Observe proper soldering conditions (temperature, time, etc.) Do not exceed the specified limits.
- Rapid temperature rises during the preheat operation and resin bonding operation can cause cracking of the capacitor vinyl sleeve. For temperature curing, do not exceed 150°C for a maximum time of 2 minutes.

2.5 Capacitor Handling after Soldering

- Avoid bending of the capacitor after soldering to prevent excessive stress on the leadwires where they enter the seal.
- Do not use the capacitor as a handle when moving the circuit board assembly.
- Avoid striking the capacitor after assembly to prevent failure due to excessive Stress

2.6 Circuit Board Cleaning

- Circuit boards can be immersed or ultrasonically cleaned using suitable cleaning solvents for up to 5 minutes and up to 60°C maximum temperatures. The boards should be thoroughly rinsed and dried.

- Avoid using the following solvent groups.

- ✦ Halogenated cleaning solvents : Halogenated Solvents can permeate the seal and cause internal capacitor corrosion and failure 1-1-1 trichloro ethane should never be used on Aluminium Electrolytic Capacitor.
 - ✦ Alkali solvents : could attack and dissolve the aluminium case.
 - ✦ Petroleum based solvents : shall result deterioration of the rubber seal.
 - ✦ Xylene : Deterioration of the rubber seal could result.
 - ✦ Acetone : Removal of the ink markings on the vinyl sleeve could result. It will spoil the sleeve also.
- A thorough drying after cleaning is required to remove residual cleaning solvents which may be trapped between the capacitor and the circuit board. Avoid drying temperature which exceed the maximum rated temperature of the capacitor.
 - Monitor the contamination levels of the cleaning solvents during use by electrical conductivity, pH, specific gravity, or water content. Chlorine levels can rise with contamination and adversely affect the performance of the capacitor.

3. Precautions for using capacitors**3.1 Environmental Conditions**

Capacitors should not be stored or used in the following environments.

- Temperature exposure above the maximum rated or below the minimum rated temperature of the capacitor.
- Direct contact with water, salt water, or oil.
- High humidity conditions where water could condense on the capacitor.
- Exposure to toxic gases such as hydrogen sulphide, sulphuric acid, nitric acid, chlorine, or ammonia.
- Exposure to ozone radiation, or ultraviolet rays.
- Vibration and shock conditions exceeding specified limit.

3.2 Electrical Precautions

- Avoid touching the terminals of the capacitor to avoid electric shock. The exposed aluminium case is not insulated and could also cause electric shock if touched.
- Avoid short circuiting of the capacitor terminals with conductive materials including liquids such as acids or alkaline solutions.

4. Long Term Storage

Leakage current of a capacitor increases with long time storage. The aluminium oxide film deteriorate as a function of temperature and time. If used without conditioning, an abnormally high current will be required to restore the oxide film. This current surge could cause the circuit or the capacitor to fail. Capacitor should be conditioned by applying rated voltage in series with a 1K Ω , current limiting resistor for a period of min. 30 minutes.

NOTES :

SERIES : IG

TYPE : Radial - Low Voltage

FEATURES	:	85°C, 2000 hours category General Purpose Low Voltage
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SPECIFICATION TABLE :

- | | | | |
|----|--|---|---|
| 1. | OPERATING TEMPERATURE RANGE | : | – 40° C to 85° C |
| 2. | VOLTAGE RANGE | : | 6.3V - 100 VDC |
| 3. | CAPACITANCE RANGE | : | 0.1 μ F to 22,000 μ F |
| 4. | CAPACITANCE TOLERANCE at 25°C, 120 Hz | : | $\pm$ 20% |
| 5. | LEAKAGE CURRENT at 25°C (after 3min. Charging) | : | 0.01 CV or 3 μ A which ever is greater (C=Capacitance Value, V=Rated Voltage) |
| 6. | DISSIPATION FACTOR (Tan δ) at 25°C, 120 Hz | : | |

Voltage	6.3	10	16	25	35	40	50	63	100
DF	0.22	0.22	0.20	0.16	0.16	0.16	0.14	0.12	0.10

Note : For capacitors whose cap value exceeds 1000 μF , specification of "Tan δ " is increased by 0.02 for every addition of 1000 μF and part of it.

7. TEMPERATURE CHARACTERISTICS (impedance ratio at 120 Hz) :

Rated Voltage	6.3	10	16	25	35	40	50 to 100
Z(-40°C) / Z (+20°C)	12	10	8	6	4	4	3

- ## 8. LOAD LIFE TEST :

Test Time	2000 Hrs
Capacitance Change	+ 20% of the initial masured Value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

The Capacitor after load life test for 2000 hrs. at 85°C should meet the above specification

Note : A recovery time of 16 hrs. should be given before taking the measurments after load life test.

9. SHELF TEST :

Test Time	1000 Hrs
Capacitance Change	+ 20% of the initial measured value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

The Capacitor after shelf test for 1000 hrs. at 85°C should meet the above specification

Note : A recovery time of 16 hrs. should be given before taking the measurments after Shelf test.

- ## 10. RIPPLE CURRENT & FREQUENCY MULTIPLIERS :

Cap. (μF) \ Freq. (Hz)	60 (50)	120	500	1K	≥ 10K
Below 100	0.70	1.00	1.30	1.40	1.50
100 to 1000	0.75	1.00	1.20	1.30	1.35
1000 and above	0.80	1.00	1.10	1.12	1.15

- ### 11. RIPPLE CURRENT & TEMPERATURE MULTIPLIERS :

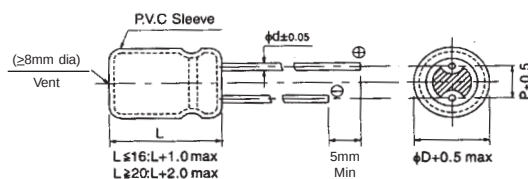
Temperature (°C)	Below 40	50	60	70	85
Multiplier	1.3	1.28	1.25	1.15	1.00

12. MARKING :

Brand Name, Capacitance Value, Working Voltage, Polarity Marking, Operating Temperature, Month of Manufacture & 'Vent' from 8mm and above.

13. STANDARDS : As per IEC 384-4.

14. DIMENSIONS (NOT TO SCALE) :



LEAD SPACING AND DIAMETER

[illegible]

15. DIMENSIONS Vs PERMISSIBLE RIPPLE CURRENT :

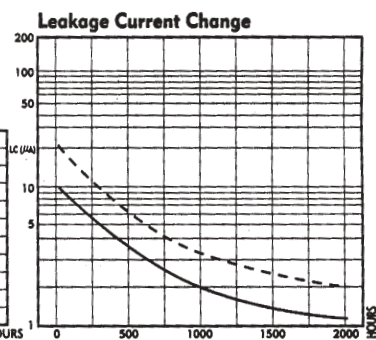
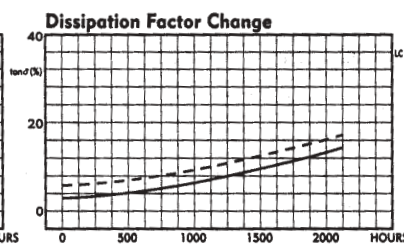
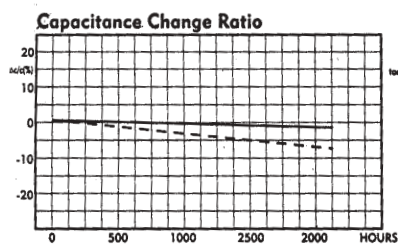
Dimensions : D x L (mm), Ripple Current (I_A) : mA/rms at 120 Hz 85°C

W.V. μF	6.3		10		16		25		35		40		50		63		100	
	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A
0.1													5x11	2.0	5x11	3	5x11	3
0.22													5x11	3.5	5x11	4.5	5x11	5
0.33													5x11	5	5x11	7.5	5x11	8
0.47													5x11	9	5x11	14	5x11	16
1													5x11	19	5x11	20	5x11	23
2.2													5x11	30	5x11	32	5x11	34
3.3													5x11	35	5x11	37	5x11	42
4.7													5x11	45	5x11	52	6.3x11	54
10					5x11	40	5x11	50	5x11	54	5x11	57	5x11	62	5x11	65	6.3x11	85
22					5x11	70	5x11	78	5x11	90	5x11	95	5x11	100	6.3x11	112	8x11	120
33					5x11	100	5x11	101	6.3x11	103	6.3x11	106	6.3x11	120	8x11	143	10x13	170
47					5x11	115	5x11	121	6.3x11	140	6.3x11	150	6.3x11	160	8x11	204	10x13	220
100	5x11	130	5x11	146	6.3x11	170	6.3x11	204	8x11	215	8x11	220	8x11	275	10x13	297	13x21	400
150					6.3x11	210	8x11	240										
220	6.3x11	205	6.3x11	220	8x11	302	8x11	330	10x13	381	10x16	400	10x16	434	10x20	485	16x25	710
330	8x11	283	8x11	303	8x11	370	10x16	400	10x16	510	10x20	550	10x20	600	13x21	675	16x32	900
470	8x11	340	8x11	500	10x13	505	10x16	601	10x26	630	10x20	675	13x21	760	13x21	920	16x36	1050
1000	10x13	550	10x16	650	10x16	800	13x21	1000	13x21	1145	16x25	1200	16x25	1350	16x32	1510	18x43	1950
1500											18x32	1500			18x37	1750		
2200	10x20	985	13x21	1100	13x21	1330	16x25	1575	16x32	1900	16x32	1925	18x32	2000	22x37	2100		
3300	13x21	1245	13x21	1460	16x25	1720	16x32	1900	18x37	2190			22x37	2500				
4700	16x25	1675	16x25	1800	16x32	2000	18x37	2200	18x43	2500			22x43	3300				
6800			16x36	2050														
10000	16x32	2375	22x37	2500	22x37	3000	22x43	3420										
15000					22x43	4000												
22000					22x43	4100												

16. LIFE TEST AT RATED VOLTAGE AND TEMPERATURE :

_____ 47 μF 25 WV

..... 100 μF 25 WV



TYPE	:	Radial - Low Voltage
FEATURES	:	105°C, 2000 hours category General Purpose Low Voltage

1.	OPERATING TEMPERATURE RANGE	:	- 40° C to 105° C
2.	VOLTAGE RANGE	:	6.3V - 100 VDC
3.	CAPACITANCE RANGE	:	0.1 μ F to 10000 μ F
4.	CAPACITANCE TOLERANCE at 25°C, 120 Hz	:	+ 20%
5.	LEAKAGE CURRENT at 25°C (after 3min. Charging)	:	0.01 CV or 3 μ A which ever is greater (C=Capacitance Value, V=Rated Voltage)
6.	DISSIPATION FACTOR (Tan ϕ) at 25°C, 120 Hz	:	

Voltage	6.3	10	16	25	35	40	50	63	100
DE	0.22	0.22	0.20	0.16	0.16	0.16	0.14	0.12	0.10

7. TEMPERATURE CHARACTERISTICS (impedance ratio at 120 Hz) :

Rated Voltage	6.3	10	16	25	35	40	50 to 100
Z(-40°C) / Z(+20°C)	12	10	8	6	4	4	3

Test Time	2000 Hrs
Capacitance Change	+ 20% of the initial masured Value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

Note : A recovery time of 16 hrs. should be given before taking the measurments after load life test.

Test Time	1000 Hrs
Capacitance Change	+ 20% of the initial mesured value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

Note : A recovery time of 16 hrs. should be given before taking the measurments after shelf test.

Cap. (μF) \ Freq. (Hz)	60 (50)	120	500	1K	≥ 10K
Below 100	0.70	1.00	1.30	1.40	1.50
100 to 1000	0.75	1.00	1.20	1.30	1.35
1000 and above	0.80	1.00	1.10	1.12	1.15

Temperature (°C)	Below 40	50	60	70	85	90	105
Multiplier	1.9	1.8	1.7	1.6	1.35	1.25	1.0

Brand Name, Capacitance Value, Working Voltage, Polarity Marking, Operating Temperature, Month of Manufacture & 'Vent' from 8mm and above.

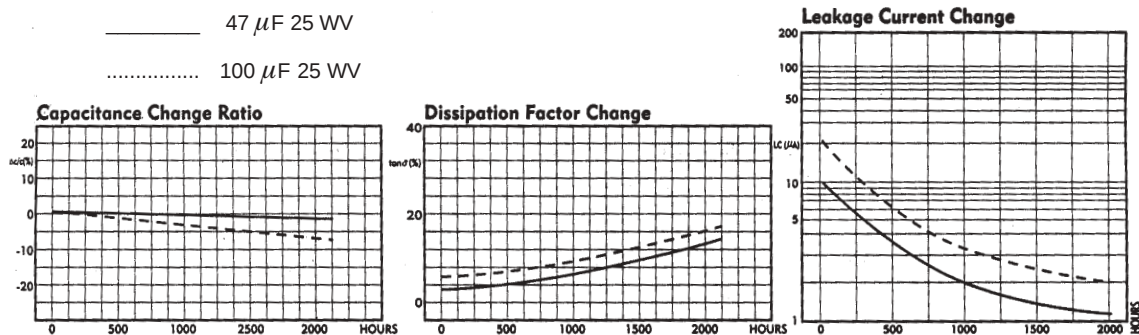
Technical drawing of a PVC sleeve with dimensions and tolerances:

- Top View:** Shows a rectangular sleeve with a central opening. The length is labeled L . The width of the sleeve is labeled $\phi D \pm 0.05$. The central opening has a diameter of $\phi 16 \pm 0.05$. The sleeve is labeled "PVC Sleeve".
- Side View:** Shows the sleeve with a central opening. The length is labeled L . The width of the sleeve is labeled $\phi D \pm 0.05$. The central opening has a diameter of $\phi 16 \pm 0.05$. The sleeve is labeled "PVC Sleeve".
- Front View:** Shows the sleeve with a central opening. The length is labeled L . The width of the sleeve is labeled $\phi D \pm 0.05$. The central opening has a diameter of $\phi 16 \pm 0.05$. The sleeve is labeled "PVC Sleeve".
- Dimensions and Tolerances:**
 - Length: $L \leq 16: L + 1.0 \text{ max}$
 - Width: $\phi D \pm 0.05$
 - Central Opening Diameter: $\phi 16 \pm 0.05$
 - Minimum Length: 5 mm Min

[illegible]

14. DIMENSIONS Vs PERMISSIBLE RIPPLE CURRENT :Dimensions : D x L (mm), Ripple Current (I_A): mA/rms at 120 Hz 105°C

μF	W.V.		6.3		10		16		25		35		40		50		63		100	
	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A
0.1															5x11	1.2	5x11	2.3	5x11	2.4
0.22															5x11	2.1	5x11	3.4	5x11	3.75
0.33															5x11	3.8	5x11	5.7	5x11	6.2
0.47															5x11	7	5x11	10.5	5x11	12.5
1															5x11	15	5x11	15	5x11	18
2.2															5x11	23	5x11	25	5x11	26
3.3															5x11	27	5x11	28	5x11	32
4.7															5x11	35	5x11	39	6.3x11	42
10					5x11	35	5x11	41	5x11	44	5x11	47	5x11	48	5x11	48	5x11	50	6.3x11	65
22					5x11	60	5x11	63	5x11	71	5x11	75	5x11	78	6.3x11	84	8x11	91		
33					5x11	70	5x11	75	6.3x11	82	6.3x11	87	6.3x11	91	8x11	108	10x13	130		
47			5x11	79	5x11	90	5x11	97	6.3x11	115	6.3x11	120	6.3x11	123	8x11	155	10x13	170		
100	5x11	111	5x11	125	6.3x11	146	6.3x11	165	8x11	175	8x11	180	8x11	208	10x13	224	13x21	300		
150					6.3x11	178	8x11	204												
220	6.3x11	175	6.3x11	190	8x11	260	8x11	270	10x13	300	10x16	325	10x16	330	10x20	365	16x25	534		
330	8x11	245	8x11	260	8x11	316	10x16	322	10x16	405	10x20	450	10x20	460	13x21	507	16x32	676		
470	8x11	290	8x11	430	10x13	431	10x16	500	10x26	504	10x20	540	13x21	570	13x21	700	16x36	790		
1000	10x13	460	10x16	560	10x16	685	13x21	804	13x21	916	16x25	970	16x25	1015	16x32	1150	18x43	1500		
1500			10x20	740	13x21	900	13x21	1030			18x32	1250			18x37	1350				
2200	10x20	840	13x21	935	13x21	1132	16x25	1260	16x32	1530	16x32	1540	18x32	1550	22x37	1600				
3300	13x21	1060	13x21	1250	16x25	1475	16x32	1530	18x37	1670			22x37	1750						
4700	16x25	1450	16x25	1500	16x32	1700	18x37	1775	18x43	2000			22x43	2500						
6800			16x36	1710																
10000	16x32	2020	22x37	2125	22x37	2600	22x43	3200												

15. LIFE TEST AT RATED VOLTAGE AND TEMPERATURE :

TYPE	: Radial Medium & High Voltage
FEATURES	: 85°C, 2000 hours assured Standard Series for General Purpose Medium & High Voltage

1.	OPERATING TEMPERATURE RANGE	:	– 40° C to 85° C
2.	VOLTAGE RANGE	:	160V - 450 VDC
3.	CAPACITANCE RANGE	:	0.47 μ F to 330 μ F
4.	CAPACITANCE TOLERANCE at 25°C, 120 Hz	:	+ 20%
5.	LEAKAGE CURRENT at 25°C (after 3min. Charging)	:	0.03 CV + 15 μ A (CV $\leq$ 1000) 0.02 CV + 25 μ A (CV> 1000) (C=Capacitance Value, V=Rated Voltage)
6.	DISSIPATION FACTOR (Tan δ) at 25°C, 120 Hz	:	

Voltage	160	200	250	350	400	420	450
DE	0.12	0.14	0.17	0.20	0.25	0.25	0.25

- | Rated Voltage | 160 | 200 | 250 | 350 | 400 | 420 | 450 |
|---------------------|-----|-----|-----|-----|-----|-----|-----|
| Z(-40°C) / Z(+20°C) | 4 | 4 | 4 | 6 | 8 | 8 | 8 |

- | Test Time | 2000 Hrs |
|--------------------|------------------------------------|
| Capacitance Change | + 20% of the initial masured Value |
| Dissipation Factor | Less than 200% of Specified Value |
| Leakage Current | Within specified Value |

Note : A recovery time of 16 hrs. should be given before taking the measurments after load life test.

- | Test Time | 1000 Hrs |
|--------------------|------------------------------------|
| Capacitance Change | + 20% of the initial mesured value |
| Dissipation Factor | Less than 200% of Specified Value |
| Leakage Current | Within specified Value |

Note : A recovery time of 16 hrs. should be given before taking the measurments after shelf test.

- | Cap. (μF) \ Freq. (Hz) | 60 (50) | 120 | 500 | 1K | ≥ 10K |
|------------------------|---------|------|------|------|-------|
| Below 100 | 0.70 | 1.00 | 1.30 | 1.40 | 1.50 |
| 100 to 1000 | 0.75 | 1.00 | 1.20 | 1.30 | 1.35 |
| 1000 and above | 0.80 | 1.00 | 1.10 | 1.12 | 1.15 |

- | Temperature (°C) | Below 40 | 50 | 60 | 70 | 85 |
|------------------|----------|------|------|------|------|
| Multiplier | 1.3 | 1.28 | 1.25 | 1.15 | 1.00 |

- Brand Name, Capacitance Value, Working Voltage, Polarity Marking, Operating Temperature, Month of Manufacture & Vent from 8mm and above.

-
- Technical drawing of a Vent with a P.V.C Sleeve. The drawing includes a side view and a top view.
- Side View Dimensions:**
- Sleeve Length: $L \leq 16; L + 1.0 \text{ max}$
 - Sleeve Diameter: $\phi \pm 0.05$
 - Minimum Length: $L \geq 20; L + 2.0 \text{ max}$
 - Minimum Diameter: 5mm Min
- Top View Dimensions:**
- Maximum Diameter: $\phi D + 0.5 \text{ max}$

[illegible]

14. DIMENSIONS Vs PERMISSIBLE RIPPLE CURRENT :

Dimensions : D x L (mm), Ripple Current (I_A): mA/rms at 120 Hz 85°C

W.V. μF	160		200		250		350		400		420		450	
	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A
0.47					6.3x11	12								
1.0	5x11	17	6.3x11	18	6.3x11	18	6.3x11	22	8x11	25	8x11	25	8x11	26
2.2	6.3x11	28	8x11	30	8x11	31	8x11	35	10x13	36	10x13	36	10x13	38
3.3	8x11	38	8x11	40	8x11	42	10x13	43	10x16	45	10x20	48	10x20	50
4.7	8x11	45	8x11	48	10x13	50	10x20	51	10x20	52	10x20	60	10x20	65
10	10x16	75	10x16	78	10x16	85	13x21	93	16x25	95	16x25	100	16x25	110
22	10x16	125	10x20	120	13x21	130	16x25	135	16x25	148	16x32	155	16x32	160
33	10x20	170	13x21	185	16x25	200	16x32	210	16x32	225	16x36	240	16x36	250
47	13x21	200	16x25	210	16x25	215	16x36	240	16x36	260	18x37	265	18x37	270
100	16x25	350	16x32	375	16x32	390	18x37	450						
150	16x36	450	18x32	460										
220	18x37	550	18x37	575										
330	22x37	675												

Note :

We Recommend to use only IL1 / IL2 / IL5 series of Capacitors for CFL / BALLAST / INVERTOR / CONVERTOR and OTHER HIGH RELIABLE APPLICATIONS.

Large radial capacitors of 22 ϕ and 25 ϕ can be supplied to meet specific requirement.

[illegible]

14. DIMENSIONS Vs PERMISSIBLE RIPPLE CURRENT :Dimensions : D x L (mm) Ripple Current (I_A) : mA/rms at 120 Hz 105°C

W.V. mF	160		200		250		350		400		420		450	
	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A
0.47					6.3x11	11	6.3x11	11.1	8x11	11.2	8x11	11.5	8x11	12
1.0	5x11	13.8	6.3x11	14.2	6.3x11	15.8	8x11	17	8x11	17.5	8x11	17.8	10x13	18.5
2.2	6.3x11	22	8x11	23	8x11	24.2	8x11	24.5	10x13	29	10x13	30	10x13	31
3.3	8x11	32	8x11	33	8x11	35	10x13	33	10x16	40	10x16	42	10x16	48
4.7	8x11	35	8x11	41	10x13	40	10x20	42	10x20	45	10x20	56	10x20	60
10	10x16	55	10x16	65	10x20	72	13x21	80	16x25	87	16x25	100	16x25	100
22	10x20	95	10x20	112	13x21	125	13x21	130	16x25	145	16x32	148	16x32	150
33	13x21	140	13x21	160	16x25	165	16x32	170	16x32	185	16x36	190	16x36	200
47	13x21	160	16x25	190	16x32	205	16x36	212	16x36	220	18x37	230	18x37	250
100	16x32	280	16x32	300	16x36	320	18x37	335						
150	16x36	365												
220	18x37	435												

Note :

We Recommend to use only IL1 / IL2 / IL5 series of Capacitors for CFL / BALLAST / INVERTOR / CONVERTOR and OTHER HIGH RELIABLE APPLICATIONS.

Large radial capacitors of 22 ϕ and 25 ϕ can be supplied to meet specific requirement.

TYPE

: Radial - Bi-polar

: 85°C, 2000 hours Category

SPECIFICATION TABLE

- | | | | |
|----|--|---|---|
| 1. | OPERATING TEMPERATURE RANGE | : | – 40°C to 85°C |
| 2. | VOLTAGE RANGE | : | 25 - 100 VDC |
| 3. | CAPACITANCE RANGE | : | 1.5 μ F to 10 μ F |
| 4. | CAPACITANCE TOLERANCE at 25°C, 120 Hz | : | $\pm$ 20% |
| 5. | LEAKAGE CURRENT at 25°C | : | 0.2 CV (C=Capacitance Value, V=Rated Voltage) |
| 6. | DISSIPATION FACTOR (Tan δ) at 25°C, 120 Hz | : | |

Voltage	25	63	100
DF	0.05	0.08	0.10

- ## 7. LOAD LIFE TEST

Test Time	2000 Hrs
Capacitance Change	+ 20% of the initial masured Value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

The Capacitor after load life test for 2000 hrs. at 85°C should meet the above specification. Voltage connection to be reversed after every 250 hrs of test.

Note : A recovery time of 16 hrs. should be given before taking the measurments after load life test.

- ### 8. SHELF TEST :

Test Time	1000 Hrs
Capacitance Change	+ 20% of the initial mesured value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

The Capacitor after shelf test for 1000 hrs. at 85°C should meet the above specification.

Note : A recovery time of 16 hrs. should be given before taking the measurments after load life test.

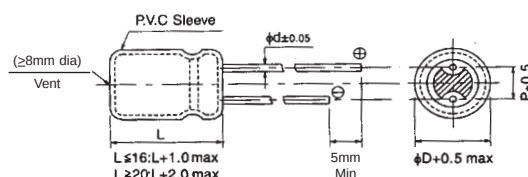
- ### 9. RIPPLE CURRENT & FREQUENCY MULTIPLIERS :

Cap. (μF) \ Freq. (Hz)	60 (50)	120	500	1K	≥ 10K
Below 100	0.70	1.00	1.30	1.40	1.50
100 to 1000	0.75	1.00	1.20	1.30	1.35
1000 and above	0.80	1.00	1.10	1.12	1.15

10. MARKING :

Brand Name, Capacitance Value, Working Voltage, Operating Temperature, Month of Manufacture & 'Vent' from 8 and above.

11. DIAGRAM DIMENSIONS :



LEAD SPACING AND DIAMETER

[illegible]

12. DIMENSIONS Vs PERMISSIBLE RIPPLE CURRENT :

Dimensions : D x L (mm) Ripple Current (I_A) : A/rms at 120 Hz 85°C

W.V. μF	25		63	100
	DxL	I_A	DxL	DxL
1.5	8x11	2.0	10x13	10x13
2.2	10x13	3.0	10x13	10x20
3.3	13x21	4.0	10x13	10x20
4.7	16x25	7.0	10x16	10x20
6.8	16x32	8.0	10x20	13x21
8.2	16x36	8.1	10x20	13x21
10	16x36	8.2	10x20	13x21
For use in Horizontal deflection correction Circuits in T.V.			For use in Hi-Fi Network Circuits.	

For 63 vv and 100 vv capacitors, ripple current is as per the requirment of customer.

TYPE

: Radial - Non-polar

: 85°C, 2000 hours Category, General purpose

Non-polar Capacitors which can be used in either Polarity and are Suitable for indeterminate polarity circuits.

SPECIFICATION TABLE

- | | | | |
|----|--|---|--|
| 1. | OPERATING TEMPERATURE RANGE | : | – 40°C to 85°C |
| 2. | VOLTAGE RANGE | : | 6.3 - 100 V DC |
| 3. | CAPACITANCE RANGE | : | 0.47 μ F to 2200 μ F |
| 4. | CAPACITANCE TOLERANCE at 25°C, 120 Hz | : | $\pm$ 20% |
| 5. | LEAKAGE CURRENT at 25°C | : | 0.03 CV (C=Capacitance Value, V=Rated Voltage) |
| 6. | DISSIPATION FACTOR (Tan δ) at 25°C, 120 Hz | : | |

Voltage	6.3	10	16	25	35	50	63	100
DF	30	30	25	25	25	16	16	16

- ## 7. LOAD LIFE TEST

Test Time	2000 Hrs
Capacitance Change	+ 20% of the initial masured Value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

The Capacitor after load life test for 2000 hrs. at 85°C should meet the above specification. Voltage connection to be reversed after every 250 hrs of test.

Note : A recovery time of 16 hrs. should be given before taking the measurments after load life test.

- ### 8. SHELF TEST :

Test Time	1000 Hrs
Capacitance Change	+ 20% of the initial mesured value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

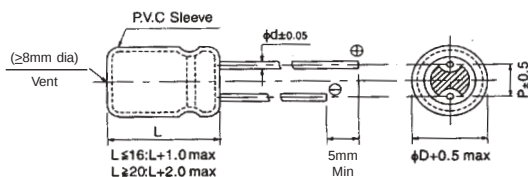
The Capacitor after shelf test for 1000 hrs. at 85°C should meet the above specification.

Note : A recovery time of 16 hrs. should be given before taking the measurments after load life test.

9. MARKING :

Brand Name, Capacitance Value, Working Voltage, Operating Temperature, Month of Manufacture & 'Vent' from 8 and above.

10. DIAGRAM DIMENSIONS :



LEAD SPACING AND DIAMETER

[illegible]

11. DIMENSIONS Vs PERMISSIBLE RIPPLE CURRENT :

Dimensions : D x L (mm) Ripple Current (I_A) : mA/rms at 120 Hz 85°C

[illegible]

TYPE

: Radial - Non-polar

: 105°C, 1000 hours Category

Non-polar Capacitors which can be used in either Polarity and are Suitable for indeterminate polarity circuits.

•

- | | | | |
|----|--|---|--|
| 1. | OPERATING TEMPERATURE RANGE | : | – 40°C to 105°C |
| 2. | VOLTAGE RANGE | : | 6.3 - 100 V DC |
| 3. | CAPACITANCE RANGE | : | 0.47 μ F to 2200 μ F |
| 4. | CAPACITANCE TOLERANCE at 25°C, 120 Hz | : | $\pm$ 20% |
| 5. | LEAKAGE CURRENT at 25°C | : | 0.03 CV (C=Capacitance Value, V=Rated Voltage) |
| 6. | DISSIPATION FACTOR (Tan δ) at 25°C, 120 Hz | : | |

Voltage	25	63	100
DF	25	16	16

-

Test Time	1000 Hrs
Capacitance Change	+ 20% of the initial masured Value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

The Capacitor after load life test for 1000 hrs. at 85°C should meet the above specification. Voltage connection to be reversed after every 250 hrs of test.

Note : A recovery time of 16 hrs. should be given before taking the measurments after load life test.

- | Test Time | 500 Hrs |
|--------------------|------------------------------------|
| Capacitance Change | + 20% of the initial mesured value |
| Dissipation Factor | Less than 200% of Specified Value |
| Leakage Current | Within specified Value |

The Capacitor after shelf test for 5000 hrs. at 85°C should meet the above specification.

Note : A recovery time of 16 hrs. should be given before taking the measurments after load life test.

- Brand Name, Capacitance Value, Working Voltage, Operating Temperature, Month of Manufacture & 'Vent' from 8 and above.

-
- Technical drawing of the Vent connector showing side and end views with dimensions:
- Side View:**
 - Label: **P.V.C Sleeve**
 - Input: $(\geq 8\text{mm dia})$
 - Output: **Vent**
 - Length: L
 - Dimensions: $L \leq 16: L + 1.0 \text{ max}$, $L \geq 20: L + 2.0 \text{ max}$
 - Pin diameter: $\phi d \pm 0.05$
 - Pin length: 5mm Min
 - End View:**
 - Outer diameter: $\phi D + 0.5 \text{ max}$
 - Pin diameter: $\phi d \pm 0.5$

LEAD SPACING AND DIAMETER

[illegible]

11. DIMENSIONS Vs PERMISSIBLE RIPPLE CURRENT :

Dimensions : D x L (mm) Ripple Current (I_A) : mA/rms at 120 Hz 85°C

[illegible]

TYPE	:	Radial - Low Voltage
FEATURES	:	85°C, 2000 hours category Low ESR Type

1.	OPERATING TEMPERATURE RANGE	:	– 40° C to 85° C
2.	VOLTAGE RANGE	:	6.3V - 160 V DC
3.	CAPACITANCE RANGE	:	1 μ F to 10,000 μ F
4.	CAPACITANCE TOLERANCE at 25°C, 120 Hz	:	+ 20%
5.	LEAKAGE CURRENT at 25°C (after 3min. Charging)	:	0.002CV or 0.4 μ A which ever is greater for V $\leq$ 100 0.01CV for V>100 (C=Capacitance Value, V=Rated Voltage)
6.	DISSIPATION FACTOR (Tan δ) at 25°C, 120 Hz	:	

Note : For capacitors whose cap value exceeds 1000 μf , specification of "Tan δ " is increased by 0.02 for every addition of 1000 μF and part of it.

[illegible]

13. DIMENSIONS Vs PERMISSIBLE RIPPLE CURRENT and ESRDimensions : D x L (mm), ESR (Ω) at 120 Hz ; Ripple Current (I_A) : mA/rms at 10 KHz 85°C ;

W.V. μF	6.3		10		16		25		35		50		63		100		160	
	DxL	ESR I_A	DxL	ESR I_A	DxL	ESR I_A	DxL	ESR I_A	DxL	ESR I_A	DxL	ESR I_A	DxL	ESR I_A	DxL	ESR I_A	DxL	ESR I_A
1													5x11	30.0 20.8	6.3x11	28.0 30	6.3x11	26.5 32
2.2													5x11	25.0 33	6.3x11	22.0 35	8x11	17.0 48
3.3													5x11	18.0 39	6.3x11	15.5 43	10x13	14.2 68
4.7											14.7 5x11	48	5x11	13.0 54	8x11	12.0 59	10x13	10.2 87
10					5x11	7.0 32	5x11	6.61 53	5x11	6.4 60	5x11	6.1 65	5x11	5.9 68	8x11	5.2 96	13x21	4.6 153
22					5x11	4.2 75	6.3x11	3.8 81	6.3x11	3.5 94	6.3x11	3.4 108	6.3x11	3.0 123	10x13	2.8 161	13x21	2.5 226
33					5x11	4.0 105	6.3x11	3.4 107	8x11	3.0 123	8x11	2.2 139	10x13	2.1 185	10x16	2.0 242	16x25	1.8 269
47					6.3x11	2.8 120	6.3x11	2.2 134	8x11	2.1 157	8x11	1.7 170	10x13	1.5 215	13x21	1.4 330	16x25	1.3 351
100	5x11	2.2 102	6.3x11	2.1 157	8x11	1.3 178	8x11	1.1 206	10x13	1.0 274	10x13	0.75 300	10x16	0.7 386	13x25	0.6 469	16x36	0.5 571
220	8x11	1.1 230	8x11	0.9 245	10x13	0.7 329	10x13	0.5 364	10x20	0.45 494	13x21	0.35 608	13x21	0.32 707	16x32	0.22 816		
330	10x13	0.74 350	10x13	0.6 385	10x16	0.4 494	10x16	0.36 547	13x21	0.3 695	13x25	0.25 803	16x25	0.23 852	16x32	0.17 1163		
470	10x13	0.55 400	10x16	0.4 505	10x16	0.25 589	10x20	0.22 745	13x25	0.20 898	16x25	0.16 940	16x25	0.15 1020	18x32	0.1 1656		
1000	10x20	0.22 700	10x20	0.19 882	13x21	0.12 1065	13x21	0.11 1108	16x25	0.1 1175	16x25	0.09 1400	16x32	0.07 1525	18x43	0.05 3312		
2200	13x21	0.15 1099	13x25	0.12 1269	16x25	0.08 1559	16x25	0.07 1830	16x32	0.05 1950	18x32	0.04 2050	22x37	0.038 2150				
3300	13x25	0.12 1346	16x25	0.1 1909	16x32	0.05 1935	16x32	0.04 2000	18x37	0.035 2200	22x37	0.03 2550						
4700	16x32	0.1 1886	16x32	0.05 2447	18x32	0.042 2480	18x37	0.038 2500	18x43	0.032 2550	22x43	0.02 3315						
6800			18x32	0.04 3436														
10000							22x43	0.03 3500					Max. ESR at 120 Hz (Ω) / + 25°C Ripple current at 10 KHz +85°C (mA)					

Higher Ripple can be developed as per customer's specification if the demand regular and continuous

TYPE	: Radial - Low Voltage
FEATURES	: 105°C, 1000 hours category Low ESR Type

1.	OPERATING TEMPERATURE RANGE	:	– 40° C to 105° C
2.	VOLTAGE RANGE	:	6.3V - 160 VDC
3.	CAPACITANCE RANGE	:	1 μ F to 10,000 μ F
4.	CAPACITANCE TOLERANCE at 25°C, 120 Hz	:	+ 20%
5.	LEAKAGE CURRENT at 25°C (after 3min. Charging)	:	0.002CV or 0.4 μ A which ever is greater for V $\leq$ 100 0.01CV for V>100 (C=Capacitance Value, V=Rated Voltage)
6.	DISSIPATION FACTOR (Tan δ) at 25°C, 120 Hz	:	

Note : For capacitors whose cap value exceeds 1000 μf , specification of "Tan δ " is increased by 0.02 for every addition of 1000 μF and part of it.

[illegible]

13. DIMENSIONS Vs PERMISSIBLE RIPPLE CURRENT and ESRDimensions : D x L (mm), ESR (Ω) at 120 Hz ; Ripple Current (I_A): mA/rms at 10 KHz 85°C ;

W.V. μ F	6.3		10		16		25		35		50		63		100		160	
	DxL	ESR I _A	DxL	ESR I _A	DxL	ESR I _A	DxL	ESR I _A	DxL	ESR I _A	DxL	ESR I _A	DxL	ESR I _A	DxL	ESR I _A	DxL	ESR I _A
1													5x11	28.2 21.4		26.3 30.9		24.4 33
2.2													5x11	23.5 34		20.7 36.1		15.9 49.4
3.3													5x11	16.9 40.2		14.6 44.3		13.3 70
4.7											5x11	13.9 49.4		12.2 56		11.3 61		9.4 89.6
10					5x11	6.8 33	5x11	6.4 54	5x11	6.2 61	5x11	5.8 67	5x11	5.6 70	8x11	4.9 99	13x21	4.4 156
22					5x11	4.0 76.5	6.3x11	3.68 83	6.3x11	3.4 96	6.3x11	3.23 111	6.3x11	2.82 127	10x13	2.6 166	13x21	1.93 233
33					5x11	3.8 107	6.3x11	3.3 109	8x11	2.8 125	8x11	2.1 143	10x13	1.97 191	10x16	1.84 249	16x25	1.6 277
47					6.3x11	2.7 122	6.3x11	2.1 137	8x11	2.0 160	8x11	1.6 175	10x13	1.4 221	13x21	1.29 340	16x25	1.2 362
100	5x11	2.1 104	6.3x11	2.0 160	8x11	1.25 182	8x11	1.06 210	10x13	0.96 279	10x13	0.71 309	10x16	0.66 398	13x25	0.55 483	16x36	0.45 588
150					8x11	1.06 247	8x1	0.77 281										
220	8x11	1.05 240	8x11	0.87 255	10x13	0.65 336	10x13	0.48 371	10x20	0.43 504	10x20	0.33 511	13x21	0.3 728	16x32	0.2 840		
330	10x13	0.71 357	10x13	0.58 393	10x16	0.38 504	10x16	0.35 558	13x21	0.28 709	13x21	0.23 717	16x25	0.22 877	16x32	0.15 1198		
470	10x13	0.53 408	10x16	0.38 515	10x16	0.24 601	10x20	0.21 760	13x25	0.19 916	13x25	0.15 922	16x25	0.14 1051	18x32	0.09 1706		
1000	10x20	0.2 714	10x20	0.18 900	13x21	0.11 1086	13x21	0.095 1130	16x25	0.09 1199	16x25	0.08 1442	16x32	0.06 1571	18x43	0.04 3411		
2200	13x21	0.14 1121	13x25	0.11 1294	16x25	0.07 1590	16x25	0.06 1867	16x32	0.05 1989	18x32	0.04 2112	22x37	0.03 2215				
3300	13x25	0.11 1373	16x25	0.09 1947	16x32	0.045 1974	16x32	0.038 2040	18x37	0.033 2244	22x37	0.028 2627						
4700	16x32	0.09 1924	16x32	0.04 2496	18x32	0.038 2530	18x37	0.033 2575	18x43	0.028 2601	22x43	0.019 3415						
6800			18x32	0.03 3505														
10000							22x43	0.029 3570				Max. ESR at 120 Hz (Ω) / + 25°C Ripple currendnt at 10 KHz +85°C (mA)						

Higher Ripple can be developed as per customer's specification if the demand regular and continuous

TYPE	:	Radial - Low Voltage
FEATURES	:	85°C, 2000 hours category Very Low Leakage type

1.	OPERATING TEMPERATURE RANGE	:	– 40° C to 85° C
2.	VOLTAGE RANGE	:	6.3V - 100 VDC
3.	CAPACITANCE RANGE	:	0.1 μ F to 4700 μ F
4.	CAPACITANCE TOLERANCE at 25°C, 120 Hz	:	+ 20%
5.	LEAKAGE CURRENT at 25°C (after 3min. Charging)	:	0.002 CV or 0.4 μ A which ever is greater (C=Capacitance Value, V=Rated Voltage)
6.	DISSIPATION FACTOR (Tan δ) at 25°C, 120 Hz	:	

Voltage	6.3	10	16	25	35	40	50	63	100
DE	0.22	0.22	0.20	0.16	0.16	0.16	0.14	0.12	0.10

7. TEMPERATURE CHARACTERISTICS (impedance ratio at 120 Hz) :

Rated Voltage	6.3	10	16	25	35	40	50 to 100
Z(-40°C) / Z(+20°C)	12	10	8	6	4	4	3

Test Time	2000 Hrs
Capacitance Change	+ 20% of the initial masured Value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

Note : A recovery time of 16 hrs. should be given before taking the measurments after load life test.

Test Time	1000 Hrs
Capacitance Change	+ 20% of the initial mesured value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

Note : A recovery time of 16 hrs. should be given before taking the measurments after Shelf test.

Cap. (μF) \ Freq. (Hz)	60 (50)	120	500	1K	≥ 10K
Below 100	0.70	1.00	1.30	1.40	1.50
100 to 1000	0.75	1.00	1.20	1.30	1.35
1000 and above	0.80	1.00	1.10	1.12	1.15

12. STANDARDS : As per IEC 384-4.

Technical drawing of a Vent with a P.V.C. Sleeve. The drawing includes a side view and a top view.

Side View Dimensions:

- Vent diameter: $\geq 8\text{mm (dia)}$
- Sleeve length: L
- Sleeve length constraints: $L \leq 16; L + 1.0 \text{ max}$ and $L \geq 20; L + 2.0 \text{ max}$
- Central hole diameter: $\phi d \pm 0.05$
- Fastener: Nut and Washer
- Fastener length: 5mm Min

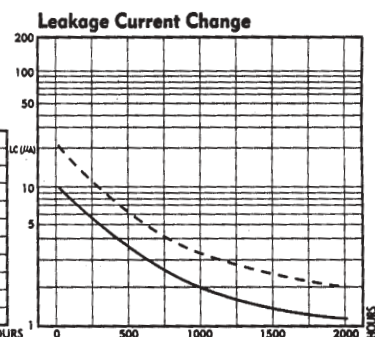
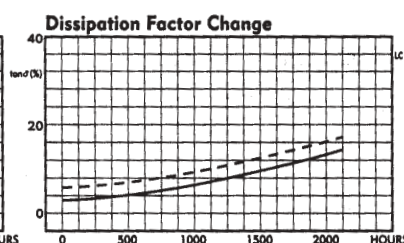
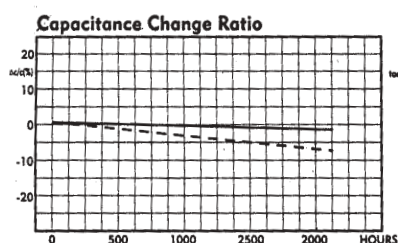
Top View Dimensions:

- Outer diameter: $\phi D + 0.5 \text{ max}$
- Thickness: 5mm Min

[illegible]

14. DIMENSIONS Vs PERMISSIBLE RIPPLE CURRENT :Dimensions : D x L (mm), Ripple Current (I_A) : mA/rms at 120 Hz 85°C

W.V. μF	6.3		10		16		25		35		40		50		63		100	
	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A
0.1													5x11	2.0	5x11	3	5x11	3
0.22													5x11	3.5	5x11	4.5	5x11	5
0.33													5x11	5	5x11	7.5	5x11	8
0.47													5x11	9	5x11	14	5x11	16
1													5x11	19	5x11	20	5x11	23
2.2													5x11	30	5x11	32	5x11	34
3.3													5x11	35	5x11	37	5x11	42
4.7													5x11	45	5x11	52	6.3x11	54
10					5x11	40	5x11	50	5x11	54	5x11	57	5x11	62	5x11	65	6.3x11	85
22					5x11	70	5x11	78	5x11	90	5x11	95	5x11	100	6.3x11	112	8x11	120
33					5x11	100	5x11	101	6.3x11	103	6.3x11	106	6.3x11	120	8x11	143	10x13	170
47					5x11	115	5x11	121	6.3x11	140	6.3x11	150	6.3x11	160	8x11	204	10x13	220
100	5x11	130	5x11	146	6.3x11	170	6.3x11	204	8x11	215	8x11	220	8x11	275	10x13	297	13x21	400
150					6.3x11	210	8x11	240										
220	6.3x11	205	6.3x11	220	8x11	302	8x11	330	10x13	381	10x16	400	10x16	434	10x20	485	16x25	710
330	8x11	283	8x11	303	8x11	370	10x16	400	10x16	510	10x20	550	10x20	600	13x21	675	16x32	900
470	8x11	340	8x11	500	10x13	505	10x16	601	10x26	630	10x20	675	13x21	760	13x21	920	16x36	1050
1000	10x13	550	10x16	650	10x16	800	13x21	1000	13x21	1145	16x25	1200	16x25	1350	16x32	1510	18x43	1950
1500											18x32	1500			18x37	1750		
2200	10x20	985	13x21	1100	13x21	1330	16x25	1575	16x32	1900	16x32	1925	18x32	2000	22x37	2100		
3300	13x21	1245	13x21	1460	16x25	1720	16x32	1900	18x37	2190			22x37	2500				
4700	16x25	1675	16x25	1800	16x32	2000	18x37	2200	18x43	2500			22x43	3300				

16. LIFE TEST AT RATED VOLTAGE AND TEMPERATURE :_____ 47 μF 25 WV..... 100 μF 25 WV

TYPE	: Radial - Low Voltage
FEATURES	: 105°C, 1000 hours category Very Low Leakage type

1.	OPERATING TEMPERATURE RANGE	:	– 40° C to 105° C
2.	VOLTAGE RANGE	:	6.3V - 100 V DC
3.	CAPACITANCE RANGE	:	0.1 μ F to 4700 μ F
4.	CAPACITANCE TOLERANCE at 25°C, 120 Hz	:	+ 20%
5.	LEAKAGE CURRENT at 25°C (after 3min. Charging)	:	0.002 CV or 0.4 μ A which ever is greater (C=Capacitance Value, V=Rated Voltage)
6.	DISSIPATION FACTOR (Tan δ) at 25°C, 120 Hz	:	

Voltage	6.3	10	16	25	35	40	50	63	100
DE	0.22	0.22	0.20	0.16	0.16	0.16	0.14	0.12	0.10

7. TEMPERATURE CHARACTERISTICS (impedance ratio at 120 Hz) :

Rated Voltage	6.3	10	16	25	35	40	50 to 100
Z(-40°C) / Z (+20°C)	12	10	8	6	4	4	3

8. LOAD LIFE TEST :

Test Time	1000 Hrs
Capacitance Change	+ 20% of the initial masured Value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

Note : A recovery time of 16 hrs. should be given before taking the measurments after load life test.

9. SHELF TEST :

Test Time	500 Hrs
Capacitance Change	+ 20% of the initial mesured value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

Note : A recovery time of 16 hrs. should be given before taking the measurments after Shelf test.

10. RIPPLE CURRENT & FREQUENCY MULTIPLIERS :

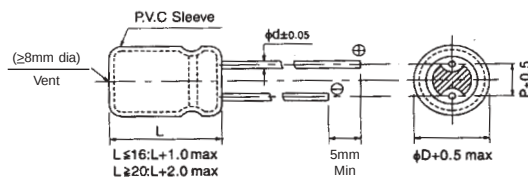
Cap. (μF) \ Freq. (Hz)	60 (50)	120	500	1K	≥ 10K
Below 100	0.70	1.00	1.30	1.40	1.50
100 to 1000	0.75	1.00	1.20	1.30	1.35
1000 and above	0.80	1.00	1.10	1.12	1.15

11. MARKING :

Brand Name, Capacitance Value, Working Voltage, Polarity Marking, Operating Temperature, Month of Manufacture & 'Vent' from 8mm and above.

12. STANDARDS : As per IEC 384-4.

13. DIMENSIONS (NOT TO SCALE)

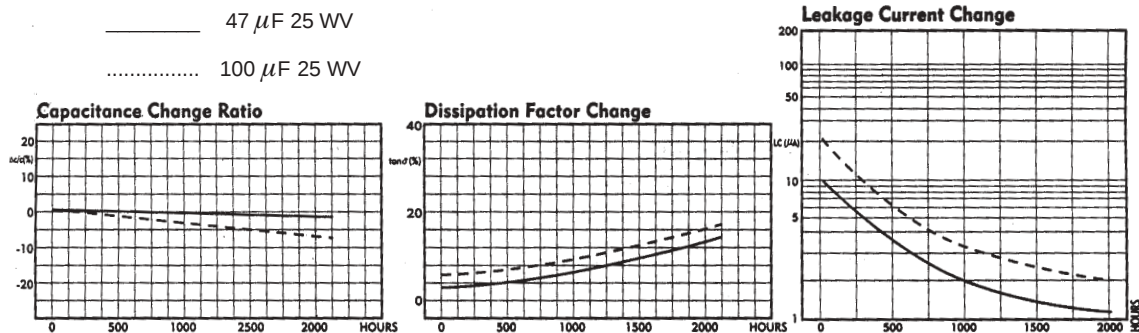


LEAD SPACING AND DIAMETER

[illegible]

14. DIMENSIONS Vs PERMISSIBLE RIPPLE CURRENT :Dimensions : D x L (mm), Ripple Current (I_A): mA/rms at 120 Hz 105°C

μF	W.V. 6.3		10		16		25		35		40		50		63		100	
	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A
0.1													5x11	1.2	5x11	2.3	5x11	2.4
0.22													5x11	2.1	5x11	3.4	5x11	3.75
0.33													5x11	3.8	5x11	5.7	5x11	6.2
0.47													5x11	7	5x11	10.5	5x11	12.5
1													5x11	15	5x11	15	5x11	18
2.2													5x11	23	5x11	25	5x11	26
3.3													5x11	27	5x11	28	5x11	32
4.7													5x11	35	5x11	39	6.3x11	42
10					5x11	35	5x11	41	5x11	44	5x11	47	5x11	48	5x11	50	6.3x11	65
22					5x11	60	5x11	63	5x11	71	5x11	75	5x11	78	6.3x11	84	8x11	91
33					5x11	70	5x11	75	6.3x11	82	6.3x11	87	6.3x11	91	8x11	108	10x13	130
47			5x11	79	5x11	90	5x11	97	6.3x11	115	6.3x11	120	6.3x11	123	8x11	155	10x13	170
100	5x11	111	5x11	125	6.3x11	146	6.3x11	165	8x11	175	8x11	180	8x11	208	10x13	224	13x21	300
150					6.3x11	178	8x11	204										
220	6.3x11	175	6.3x11	190	8x11	260	8x11	270	10x13	300	10x16	325	10x16	330	10x20	365	16x25	534
330	8x11	245	8x11	260	8x11	316	10x16	322	10x16	405	10x20	450	10x20	460	13x21	507	16x32	676
470	8x11	290	8x11	430	10x13	431	10x16	500	10x26	504	10x20	540	13x21	570	13x21	700	16x36	790
1000	10x13	460	10x16	560	10x16	685	13x21	804	13x21	916	16x25	970	16x25	1015	16x32	1150	18x43	1500
1500			10x20	740	13x21	900	13x21	1030			18x32	1250			18x37	1350		
2200	10x20	840	13x21	935	13x21	1132	16x25	1260	16x32	1530	16x32	1540	18x32	1550	22x37	1600		
3300	13x21	1060	13x21	1250	16x25	1475	16x32	1530	18x37	1670								
4700	16x25	1450	16x25	1500	16x32	1700	18x37	1775	18x43	2000								

15. LIFE TEST AT RATED VOLTAGE AND TEMPERATURE :

SERIES : IL 1

TYPE : Radial, medium and high voltage

FEATURES : Low ESR, Long Life
2000 Hrs life at 85°C

SPECIFICATION TABLE :

1. OPERATING TEMPERATURE RANGE : - 40° C to 85°C
2. VOLTAGE RANGE : 250V - 450 V DC
3. CAPACITANCE RANGE : 3.3 μ F to 47 μ F
4. CAPACITANCE TOLERANCE at 25°C, 120 Hz : $\pm$ 20%
5. LEAKAGE CURRENT at 25°C :
Charging at rated voltage for 3min 0.01 CV (C=Capacitance Value, V=Rated Voltage)
6. DISSIPATION FACTOR (Tan δ) at 25°C, 120 Hz :

Voltage	250	350	400	450
DF	0.15	0.15	0.15	0.15

7. DIMENSIONS :

Dimensions : D x L (mm), Ripple Current (I_A) : mA/rms at 100 KHz 85°C

W.V. μ F	250		350		400		450	
	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A
3.3			10x16	82	10x16	92	10x16	115
4.7			10x16	116	10x16 10x20	126 156	10x20	180
6.8			10x20	155	10x20	170	13x21	202
8.2			10x20	170	13x21	185	13x21	230
10	10x20	201	13x21	220	13x21	209	13x21 13x25	255 289
22	13x21	295	13x25	365	13x25	405	16x25	579
33	16x25	410	16x25	440	16x25	540	16x32	607
47	16x25	480	16x32	523	16x36	710	18x37	810

Rating not covered in this series and for non std.
Sizes contact factory.

SERIES : IL 2

- TYPE** : Radial, medium and high voltage
- FEATURES** : Low ESR, High Ripple Current, Long Life
Suitable for CFL / BALLAST / INVERTOR /
CONVERTOR and OTHER
HIGH RELIABLE APPLICATIONS.
2000 Hrs Life at 105°C

SPECIFICATION TABLE

1. OPERATING TEMPERATURE RANGE : - 40° C to 105°C
2. VOLTAGE RANGE : 250V - 500 V DC
3. CAPACITANCE RANGE : 3.3 μ F to 100 μ F
4. CAPACITANCE TOLERANCE at 25°C, 120 Hz : $\pm$ 20%
5. LEAKAGE CURRENT at 25°C :
Charging at rated voltage for 3min 0.006 C V (C=Capacitance Value, V=Rated Voltage)
6. DISSIPATION FACTOR (Tan δ) at 25°C, 120 Hz :



Voltage	250	350	400	450	500
DF	0.15	0.15	0.15	0.12	0.12

7. DIMENSIONS :

Dimensions : D x L (mm), Ripple Current (I_A) : mA/rms at 100 KHz 105°C

W.V. μ F	250		350		400		450		500	
	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A
3.3			10x16	85	10x16 10x26	95 120	10x16 10x20	120 150		
4.7			10x16	120	10x16 10x20	130 160	10x16 10x20	190	10x25	168
6.8			10x20	162	10x20	175	13x21	210	13x21	220
8.2			13x21	180	13x21	190	13x21	240	13x25	270
10	10x20	210	13x21	230	13x21 13x25	215 240	13x21 13x25	265 300	13x25	310
22	13x21	310	13x25	380	16x25	502	16x25	600	16x32	500
33	16x23	430	16x25	460	16x25	560	16x32	630		
47	16x25	510	16x32	540	16x36	735	18x37	840		
68							18x43	1020		
82							25x30	1071		
100							25x30	1124		

Rating not covered in this series and for non std.
Sizes contact factory.

SERIES : IL 5

- TYPE** : Radial low, medium and high voltage
- FEATURES** : Low ESR, Extremely Low Impedance Extended Long Life
High Reliability. Suitable for CFL / BALLAST / INVERTOR /
CONVERTOR and OTHER HIGH RELIABLE APPLICATIONS.
2000 Hrs Life at 105°C
5000 hrs life at 105°C

SPECIFICATION TABLE

1. OPERATING TEMPERATURE RANGE : - 40° C to 105°C
2. VOLTAGE RANGE : 350V - 450 V DC
3. CAPACITANCE RANGE : 3.3 μ F to 10 μ F
4. CAPACITANCE TOLERANCE at 25°C, 120 Hz : $\pm$ 20%
5. LEAKAGE CURRENT at 25°C :
Charging at rated voltage for 3min 0.006 CV (C=Capacitance Value, V=Rated Voltage)
6. DISSIPATION FACTOR (Tan δ) at 25°C, 120 Hz :



Voltage	350	400	450
DF	0.15	0.12	0.10

7. DIMENSIONS :

Dimensions : D x L (mm), Ripple Current (I_A) : mA/rms at 100 KHz 105°C

W.V. μ F	350		400		450	
	DxL	I_A	DxL	I_A	DxL	I_A
3.3	10x20	88	10x20	125	10x20	154
4.7	10x20	125	10x20	165	10x25	195
10	13x25	240	13x25	248	16x25	315

Rating not covered in this series and for non std.
Sizes contact factory.

SPECIFICATIONS FOR TAPING

1. Scope :

This standard describes the process of lead taping & packaging for taped Radial Aluminium electrolytic Capacitors for Automatic Insertion System.

2. Features :

2.1 By use of special adhesive tapes and backing paper leadwires are firmly held, for self supported stay insertion in boards.

2.2. Available for capacitor sizes of 5x11, 6.3x11, 8x11 and 10x13.

2.3. Capacitors are provided in lead formed and straight lead as per the specific requirements.
(if mentioned as taped then the capacitors are lead formed and taped to 5mm pitch)

3. Packaging :

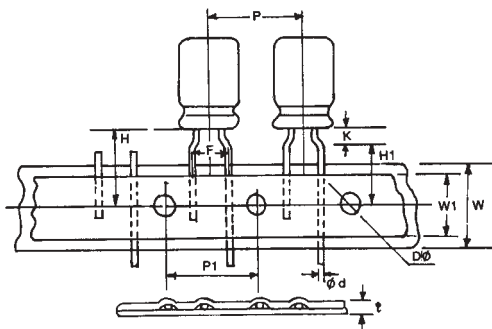
Ammo packs are arranged for out feed for either end polarity marked on the packaging to feed (plus) + first or (minus) –first.

4.

	Ammo Pack			
Case Size	5x11	6x11	8x11	10x13
Qty per Pack	2000	1500	1000	600

Lead Taping Dimensions :

5.1 Figure



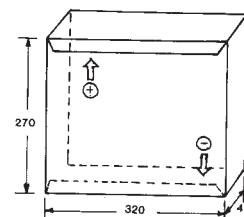
5.2 Dimension : in mm

Item		Size		
		5x11	6x11	8x11
Lead wire Diameter	$\phi d \pm 0.05$	0.5	0.5	0.5
Pitch of component	$P \pm 1.0$	12.7	12.7	12.7
Feed hole pitch	$P1 \pm 0.3$	12.7	12.7	12.7
Lead to lead distance	$F \pm 0.5$	5.0	5.0	5.0
Clinch height	K	2.5	2.5	2.5h
Height of component from tape centre	H	18.5	18.5	20.0
Lead wire clinch height	$H1 \pm 0.5$	16.0	16.0	16.0
Tape width	W	18.0	18.0	18.0
Hold down tape width	$W1 \pm 0.3$	13.0	13.0	13.0
Feed hole diameter	$\phi D \pm 0.2$	4.0	4.0	4.0
Total tape thickness	$t \pm 0.2$	0.7	0.7	0.7

6. PACKAGING : (Dimensions are in mm)

6.1 Ammo Pack

Note : Contact Factory for Straight lead taped capacitors specification.



SERIES : IS 1

TYPE : Snap-in

FEATURES : General Purpose Snap-in Capacitors for direct PCB mounting

SPECIFICATION TABLE :

1. OPERATING TEMPERATURE RANGE : -40°C to 85°C -25°C to $+85^{\circ}\text{C}$
2. VOLTAGE RANGE : 25V to 100 VDC 160V to 450VDC
3. CAPACITANCE RANGE : $3300\ \mu\text{F}$ to $15000\ \mu\text{F}$ 47~ $1000\ \mu\text{F}$
4. CAPACITANCE TOLERANCE at 25°C , 120 Hz : $\pm 20\%$
5. LEAKAGE CURRENT (I)
(Charging at rated voltage for 5min.) : $0.06\text{CV}+200\ \mu\text{A}$ or 3mA which ever is smaller
I : Leakage current (μA) C : Rated Capacitance (μF) V : Rated Voltage (V)
6. DISSIPATION FACTOR (Tan δ) at 25°C , 120 Hz :

Voltage	≤ 25	35	50	63	80 ~ 100	160 ~ 250	350 ~ 450
DF	0.25	0.20	0.20	0.20	0.15	0.15	0.15

Note : The above value increase by 0.02 for every additional $1000\ \mu\text{F}$ and part of it.

7. LOAD LIFE TEST :

Test Time	2000 Hrs
Capacitance Change	+ 20% of the initial measured Value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

The Capacitor after load life test for 2000 hrs. at 85°C should meet the above specification**Note** : A recovery time of 16 hrs. should be given before taking the measurements after load life test.

8. SHELF TEST :

Test Time	1000 Hrs
Capacitance Change	+ 20% of the initial measured value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

The Capacitor after shelf test for 1000 hrs. at 85°C should meet the above specification**Note** : A recovery time of 16 hrs. should be given before taking the measurements after shelf test.

9. RIPPLE CURRENT & FREQUENCY MULTIPLIERS :

Cap. (μF) \ Freq. (Hz)	50 (60)	120	300	1K	$\geq 10\text{K}$
Below 100	0.90	1.00	1.07	1.15	1.15
100 to 1000	0.88	1.00	1.07	1.15	1.20
1000 and above	0.90	1.00	1.03	1.10	1.15

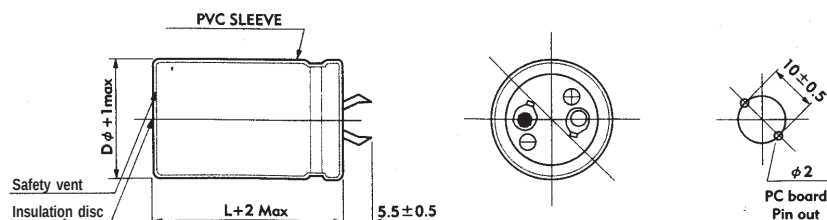
10. RIPPLE CURRENT & TEMPERATURE MULTIPLIERS :

Temperature ($^{\circ}\text{C}$)	Below 40	60	70	85
Multiplier	1.8	1.4	1.2	1

11. MARKING :

Brand name, Capacitance Value, Working Voltage, Polarity marking, Operating Temperature and month of manufacture.

12. DIAGRAM DIMENSIONS (Not to scale) :



13. DIMENSIONS Vs PERMISSIBLE RIPPLE CURRENT :

Dimensions : D x L (mm), Ripple Current (I_A): mA/rms at 120 Hz 85°C

W.V. μF	25		35		40		50		63		100	
	DxL	I _A	DxL	I _A	DxL	I _A	DxL	I _A	DxL	I _A	DxL	I _A
3300							22x37	2700	25x40	2700		
4700	22x43	2000	25x25	2400			22x43	3000	25x50	3200		
5000	25x40	2100	25x40	2500			25x50	3100	30x50	3700	35x52	4700
6800	30x35	2900	30x35	3000			25x50	3700	35x45	4300		
10000	30x40	3200	30x50	3600			30x50	4900				
15000			35x52	4500	30x50	5100	35x52	6300				

[illegible]

SERIES : IS 2

TYPE : Snap-in

FEATURES : General Purpose Snap-in Capacitors for direct PCB mounting

SPECIFICATION TABLE :

1. OPERATING TEMPERATURE RANGE : -25°C to 105°C -25°C to $+105^{\circ}\text{C}$
2. VOLTAGE RANGE : 25V to 100 VDC 160V to 450VDC
3. CAPACITANCE RANGE : $3300\ \mu\text{F}$ to $15000\ \mu\text{F}$ 47~ $1000\ \mu\text{F}$
4. CAPACITANCE TOLERANCE at 25°C , 120 Hz : $\pm 20\%$
5. LEAKAGE CURRENT : $0.06\text{CV} + 200\ \mu\text{A}$ or 3mA which ever is smaller
(Charging at rated voltage for 5min.)
I : Leakage Current (μA) C : Rated Capacitance (μF) V : Rated Voltage (V)
6. DISSIPATION FACTOR (Tan δ) at 25°C , 120 Hz :

Voltage	≤ 25	35	50	63	80 ~ 100	160 ~ 250	350 ~ 450
DF	0.25	0.20	0.20	0.20	0.15	0.15	0.15

Note : The above value increase by 0.02 for every additional $1000\ \mu\text{F}$ and part of it.

7. LOAD LIFE TEST :

Test Time	1000 Hrs
Capacitance Change	+ 20% of the initial measured Value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

The Capacitor after load life test for 1000 hrs. at 105°C should meet the above specification

Note : A recovery time of 16 hrs. should be given before taking the measurements after load life test.

8. SHELF TEST :

Test Time	500 Hrs
Capacitance Change	+ 20% of the initial measured value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

The Capacitor after shelf test for 500 hrs. at 105°C should meet the above specification

Note : A recovery time of 16 hrs. should be given before taking the measurements after shelf test.

9. RIPPLE CURRENT & FREQUENCY MULTIPLIERS :

Cap. (μF) \ Freq. (Hz)	50 (60)	120	300	1K	$\geq 10\text{K}$
Below 100	0.90	1.00	1.07	1.15	1.15
100 to 1000	0.88	1.00	1.07	1.15	1.20
1000 and above	0.90	1.00	1.03	1.10	1.15

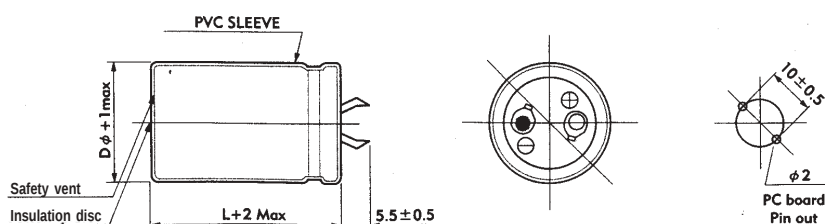
10. RIPPLE CURRENT & TEMPERATURE MULTIPLIERS :

Temperature ($^{\circ}\text{C}$)	Below 40	50	60	70	85	90	105
Multiplier	1.9	1.8	1.7	1.6	1.35	1.25	1.0

11. MARKING :

Brand name, Capacitance Value, Working Voltage, Polarity marking, Operating Temperature and month of manufacture.

12. DIAGRAM DIMENSIONS (Not to scale) :



13. DIMENSIONS Vs PERMISSIBLE RIPPLE CURRENT :

Dimensions : D x L (mm), Ripple Current (I_A) : mA/rms at 120 Hz 105°C

W.V. μF	25		35		40		50		63		100	
	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A
3300							22x37	1750	25x40	2050	30x60	2750
4700	22x43	1450	25x25	1500			22x43	2100	25x50	2400		
5000	25x40	1500	25x40	1600			25x50	2200	30x50	2450	35x52	2950
6800	30x35	1700	30x35	1950			25x50	2500	35x45	2700		
10000	30x40	2200	30x50	2500			30x50	3300				
15000			35x52	3350	30x50	3400	35x52	3500				

W.V. μF	160		200		250		400		420		450	
	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A
47							25x25	380	25x25	390	25x25	410
68							22x37	450	22x37	470	25x30	500
100							22x37	750	25x30	760	25x40	780
150							25x40	810	25x40	825	25x50	850
220	22x37	800	25x30	850	25x30	910	25x50	1020	25x50	1030	25x60	1060
330	25x40	1110	25x40	1200	30x40	1350	35x45	1385	35x45	1420	35x45	1520
470	25x40	1320	25x40	1410	25x50	1600	35x52	1760	35x52	1800	35x52	1840
					30x50	1632						
560	25x50	1410	25x50	1600	35x50	1750	35x60	1820			35x60	1930
1000	35x45	2100	35x52	2200								

SERIES : TUB-5

TYPE : Snap-in

FEATURES : 105°C, 3 Terminal large tubular extended long life low ESR, Low Impedence Capacitors for Stable and reverse proof mounting. Suitable for high reliable invertor and convertor applications

SPECIFICATION TABLE

1. OPERATING TEMPERATURE RANGE : - 55°C to +105°C
2. VOLTAGE RANGE : 10V to 100 VDC
3. CAPACITANCE RANGE : 180 μ F to 15000 μ F
4. CAPACITANCE TOLERANCE at 25°C, 120 Hz : - 10% to +75%
5. LEAKAGE CURRENT : 0.004CV at +25°C
(Charging at rated voltage for 5min.)
I : Leakage Current (μ A) C : Rated Capacitance (μ F) V : Rated Voltage (V)
6. TEMPERATURE CHARACTERISTICS :

	At 120Hz, -55°C/+20°C	At 120Hz, -105°C/+20°C
Impedance ratio	6max.	1max
Capacitance Change	$\pm 35\%$	$\pm 15\%$
ESR	$\leq 20 \times$ initial specified value	$\leq$ initial specified value
Leakage current	$\leq$ initial specified value	$\leq 5 \times$ initial specified value



7. LOAD LIFE TEST :

Test Time	5000 Hrs
Capacitance Change	+ 20% of the initial measured Value
ESR	$\leq 300\%$ of Specified Value
Leakage Current	$\leq$ initial Specified Value

The Capacitor after load life test for 5000 hrs. at 105°C should meet the above specification

Note : A recovery time of 16 hrs. should be given before taking the measurments after load life test.

8. SHELF TEST :

Test Time	1000 Hrs
Capacitance Change	+ 20% of the initial mesured value
ESR	$\leq 200\%$ of Specified Value
Leakage Current	$\leq 5 \times$ initial specified Value

The Capacitor after shelf test for 1000 hrs. at 105°C should meet the above specification

Note : A recovery time of 16 hrs. should be given before taking the measurments after shelf test.

9. RIPPLE CURRENT & FREQUENCY MULTIPLIERS :

DC Voltage \ Freq. (Hz)	50 (60)	120	300	1K	20K
10 to 16V	0.65	0.75	0.78	0.80	1.0
25 to 50V	0.45	0.60	0.70	0.75	1.0
63 to 100V	0.28	0.50	0.65	0.75	1.0

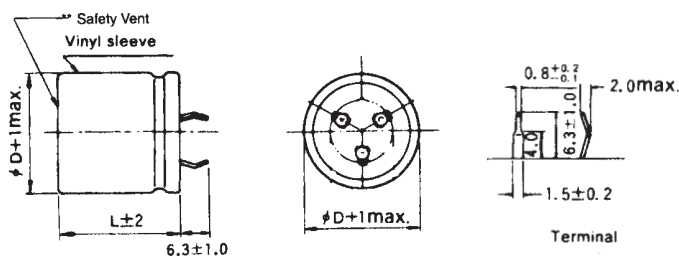
10. RIPPLE CURRENT & TEMPERATURE MULTIPLIERS :

Temperature (°C)	+65°C	+85°C	+105°C
Multiplier	1.36	1.0	0.35

11. MARKING :

Brand name, Capacitance Value, Working Voltage, Polarity marking, Operating Temperature and month of manufacture.

12. DIAGRAM DIMENSIONS (Not to scale) :



13. DIMENSIONS Vs ESR, IMPEDENCE and RIPPLE CURRENT

Rated Voltage (VVDC)	Capacitance (μ F)	Nominal Case Size* DxL (mm)	Maximum ESR (Ω) at + 25°C		Maximum Impedance (Ω) at +25°C, 100KHz	Maximum Ripple Current (A rms) at +85°C, 20KHz
			120Hz	10KHz		
10 13 V Surge	3300	22x37	0.054	0.0309	0.0305	4.53
	5600	22x43	0.027	0.0160	0.0177	6.58
	4700	25x30	0.039	0.0272	0.0273	5.04
	6800	25x40	0.030	0.0141	0.0170	7.40
	10000	25x50	0.017	0.0105	0.0148	9.01
	15000	25x64	0.012	0.0080	0.0129	11.04
16 20 V Surge	2200	22x37	0.072	0.0312	0.0308	4.50
	3300	22x43	0.048	0.0162	0.0179	6.55
	2700	25x30	0.058	0.0274	0.0276	5.01
	4700	25x40	0.038	0.0142	0.0172	7.37
	6800	25x50	0.026	0.0106	0.0150	8.97
	10000	25x64	0.017	0.0081	0.0130	10.98
25 32 V Surge	1000	22x37	0.111	0.0315	0.0311	4.48
	1800	22x43	0.062	0.0163	0.0181	6.52
	1500	25x30	0.078	0.0277	0.0279	4.99
	2700	25x40	0.046	0.0144	0.0173	7.33
	3900	25x50	0.030	0.0108	0.0157	8.93
	4700	25x64	0.025	0.0082	0.0131	10.93
35 44 V Surge	820	22x37	0.111	0.0318	0.0314	4.46
	1500	22x43	0.062	0.0165	0.0182	6.49
	1200	25x30	0.078	0.0280	0.0281	4.97
	1800	25x40	0.046	0.0145	0.0175	7.30
	2700	25x50	0.030	0.0109	0.0153	8.88
	3900	25x64	0.025	0.0082	0.0132	10.88
40 50 V Surge	1500	25x40	0.040	0.0170	0.0182	5.6
	2700	25x64	0.034	0.0160	0.0153	7.2
50 63 V Surge	560	22x37	0.173	0.0832	0.0780	2.76
	820	22x43	0.118	0.0432	0.0411	4.01
	680	25x30	0.146	0.0767	0.0715	3.00
	1200	25x40	0.083	0.0398	0.0389	4.41
	1500	25x50	0.066	0.0298	0.0305	5.37
	2200	25x64	0.045	0.0226	0.0242	6.57
63 79 V Surge	330	22x37	0.201	0.0857	0.0791	2.72
	560	22x43	0.118	0.0445	0.0417	3.95
	470	25x30	0.146	0.0790	0.0736	2.96
	680	25x40	0.104	0.0410	0.0401	4.34
	1000	25x50	0.071	0.0306	0.0314	5.29
	1500	25x64	0.047	0.0233	0.0249	6.47
100 125 V Surge	180	22x37	0.302	0.0907	0.0812	2.64
	270	22x43	0.201	0.0470	0.0428	3.84
	220	25x30	0.273	0.0836	0.0779	2.87
	390	25x40	0.156	0.0434	0.0425	4.22
	560	25x50	0.104	0.0324	0.0333	5.14
	820	25x64	0.086	0.0246	0.0264	6.29

*The case sizes in table are with no sleeve, refer to diagrams for case sizes with sleeve

SERIES : IS2-4T**TYPE** : Snap-in, Low voltage**FEATURES** : 105°C, Longer life High Ripple capability and better stability in mounting for Inverter and Converter applications
4 Terminal type Capacitors**SPECIFICATION TABLE**

- | | |
|--|---|
| 1. OPERATING TEMPERATURE RANGE | : - 40°C to +105°C |
| 2. VOLTAGE RANGE | : 25V to 100 VDC |
| 3. CAPACITANCE RANGE | : 400 μ F to 56000 μ F |
| 4. CAPACITANCE TOLERANCE at 25°C, 120 Hz | : - 0% to +30% |
| 5. LEAKAGE CURRENT
(Charging at rated voltage for 5min.)
(V) | : 0.006CV at +25°C
I : Leakage Current (μ A) C : Rated Capacitance (μ F) V : Rated Voltage |
| 6. LOAD LIFE TEST : | |

Test Time	2000 Hrs
Capacitance Change	$\leq + 20\%$ of the initial measured Value
ESR	$\leq 200\%$ of Specified Value
Leakage Current	$\leq$ initial Specified Value

The Capacitor after load life test for 2000 hrs. at 105°C should meet the above specification

Note : A recovery time of 16 hrs. should be given before taking the measurements after load life test.

7. SHELF TEST :

Test Time	1000 Hrs
Capacitance Change	$\leq + 20\%$ of the initial measured value
ESR	$\leq 200\%$ of Specified Value
Leakage Current	$\leq 5 \times$ initial specified Value

The Capacitor after shelf test for 1000 hrs. at 105°C should meet the above specification

Note : A recovery time of 16 hrs. should be given before taking the measurements after shelf test.

8. RIPPLE CURRENT & FREQUENCY MULTIPLIERS :

DC Voltage \ Freq. (Hz)	50 (60)	120	500	1K	$\geq 10K$
25 to 100V	0.93	1.00	1.05	1.08	1.15

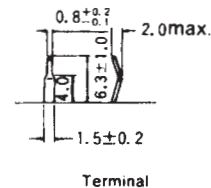
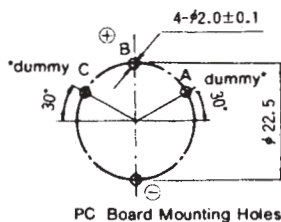
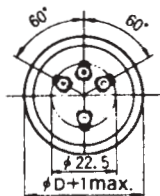
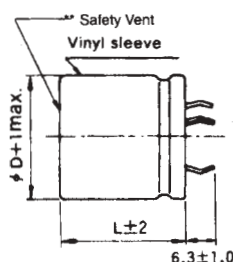
9. RIPPLE CURRENT & TEMPERATURE MULTIPLIERS :

Temperature (°C)	+45°C	+60°C	+70°C	+85°C	+105°C
Multiplier	2.35	2.2	2.0	1.7	1.0

10. MARKING :

Brand name, Capacitance Value, Working Voltage, Polarity marking, Operating Temperature and month of manufacture.

11. DIAGRAM DIMENSIONS (Not to scale)



12. DIMENSIONS Vs ESR and RIPPLE CURRENT

Rated Voltage (WVDC)	Capacitance (μ F)	Nominal Case Size DxL (mm)	Maximum ESR (Ω) at + 25°C		Maximum Ripple Current (A rms) at +85°C	
			120Hz	20KHz	120Hz	20KHz
25	33000	40x40	0.018	0.016	9.35	10.75
	47000	40x50	0.019	0.015	10.50	12.07
	56000	40x63	0.015	0.012	11.40	13.11
35	22000	40x40	0.023	0.017	8.5	9.77
50	15000	40x40	0.022	0.018	8.16	9.38
	22000	40x50	0.026	0.019	8.67	9.97
	27000	40x63	0.021	0.016	9.52	10.95
63	*4000	35x63	0.016	0.011	13.9	15.6
	4700	40x40	0.020	0.018	6.5	7.47
	12000	40x40	0.03	0.028	7.68	8.83
	15000	40x50	0.033	0.025	7.82	8.99
	18000	40x63	0.028	0.020	8.50	9.77
100	4700	40x40	0.053	0.04	6.46	7.43
	6800	40x50	0.049	0.038	7.14	8.21
	8200	40x63	0.040	0.030	7.8	8.97

*Specially Designed to match the specification of popular MNC

SERIES : LT 1

TYPE : Lug Terminal
FEATURES : 85° C, General Purpose

SPECIFICATION TABLE :

- | | | | |
|---|---|---|--------------------|
| 1. OPERATING TEMPERATURE RANGE | : | - 40° C to 85°C | -25 to +85°C |
| 2. VOLTAGE RANGE | : | 25V to 100 VDC | 160V to 450VDC |
| 3. CAPACITANCE RANGE | : | 1000 μ F to 33000 μ F | 470 ~ 2200 μ F |
| 4. CAPACITANCE TOLERANCE at 25°C, 120 Hz | : | $\pm$ 20% | |
| 5. LEAKAGE CURRENT (I)
(Charging at rated voltage for 5min.) | : | 0.06CV+200 μ A or 3mA which ever is smaller
I: Leakage Current (μ A) C : Rated Capacitance (μ F) V : Rated Voltage (V) | |
| 6. DISSIPATION FACTOR (Tan δ) at 25° C, 120 Hz | : | | |



Voltage	≤ 25	35 ~ 63	80 ~ 100	160 ~ 250	350 ~ 450
DF	0.25	0.20	0.15	0.15	0.15

Note : The above value increase by 0.02 for every additional 1000 μ F and part of it.

7. LOAD LIFE TEST :

Test Time	1000 Hrs
Capacitance Change	+ 20% of the initial masured Value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

The Capacitor after load life test for 1000 hrs. at 85°C should meet the above specification

Note : A recovery time of 16 hrs. should be given before taking the measurments after load life test.

8. SHELF TEST :

Test Time	500 Hrs
Capacitance Change	+ 20% of the initial mesured value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

The Capacitor after shelf test for 500 hrs. at 85°C should meet the above specification

Note : A recovery time of 16 hrs. should be given before taking the measurments after shelf test.

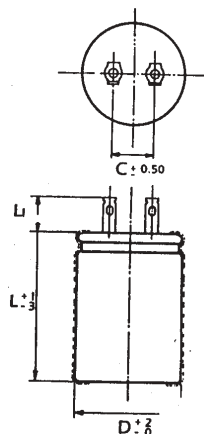
9. RIPPLE CURRENT & TEMPERATURE MULTIPLIERS :

Temperature (°C)	Below 40	60	70	85
Multiplier	1.8	1.4	1.2	1

10. MARKING :

Brand name, Capacitance Value, Working Voltage, Polarity marking, Operating Temperature and month of manufacture.

11. DIAGRAM DIMENSIONS (Not to scale) :



12. DIMENSIONS Vs PERMISSIBLE RIPPLE CURRENT :

Dimensions : D x L (mm) Ripple Current (I_A) : mA/rms at 120 Hz 85°C

μF \ W.V.	25		35		40		50		63		100	
	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A
1000											30x40	1.2
1500												
2000							30x50	2.0			30x50	2.2
2200												
2500							30x50	2.1			30x50	2.2
4700			30x40	2.5					30x50	2.75	35x68	4.0
5000	30x50	2.1					30x50	3.2	30x50	3.5	35x68	4.1
6800									35x52	3.73	40x68	4.8
10000	30x50	2.7	30x50	3.5			30x50	4.2	35x68	4.7	45x68	6.8
15000	35x52	3.7	35x52	4.1	30x50	4.5	35x52	4.8	35x68	5.6		
22000	35x68	4.5	35x68	5.4	35x68	6.0	40x68	6.9				
33000	35x68	5.3	40x68	6.3								

μF \ W.V.	160		200		250		350		450	
	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A
470									35x68	2.6
1000	35x68	2.1	35x68	2.5	40x68	2.2	40x68	4.8		
1500	35x68	2.75	35x68	2.6						
2200	40x68	3.75	40x68	4.1						

Note : For non std. Sizes contact factory.
LT2 series (105°C) Contact factory for specification

230V AC MOTOR START CAPACITORS

As per IS 2993



Motor Rating HP	Mfd	Case Size	
		MS 1 Series (Double Can)	MS 2 Series (Single Can)
1/4	40/60	40x90	35x52
1/3	60/80	40x90	35x52
1/2	80/100	40x90	35x52
3/4	100/120	40x110	35x68
1	120/150	40x110	35x68
1 1/4	150/200	45x130	40x86
1 1/4 – 2	200/250	45x130	40x86

NOTE : Contact Factory for 110V AC single can and double can motor start capacitors

Compact size Rugged Bakelite Body Capacitors with dual quick connect terminals can be supplied as import substitute. Voltage ranges 110 V AC - 250 V AC

SERIES : ST 1 - G

TYPE : Screw Terminal

FEATURES : 85°C, Professional Grade

SPECIFICATION TABLE

- | | | |
|---|--|--------------------|
| 1. OPERATING TEMPERATURE RANGE | : - 40° C to 85°C | -25°C to +85°C |
| 2. VOLTAGE RANGE | : 16V to 100 VDC | 160V to 450VDC |
| 3. CAPACITANCE RANGE | : 2200 μ F to 100000 μ F | 1000-10000 μ F |
| 4. CAPACITANCE TOLERANCE at 25°C, 120 Hz | : $\pm$ 20% | |
| 5. LEAKAGE CURRENT (I)
(Charging at rated voltage for 5min.) | : 0.06CV+200 μ A or 5mA which ever is smaller
I : Leakage Current (μ A) C : Rated Capacitance (μ F) V : Rated Voltage (V) | |
| 6. LOAD LIFE TEST : | | |

Test Time	1000 Hrs
Capacitance Change	+ 20% of the initial masured Value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

The Capacitor after load life test for 1000 hrs. at 85°C should meet the above specification

Note : A recovery time of 16 hrs. should be given before taking the measurments after load life test.

7. SHELF TEST :

Test Time	500 Hrs
Capacitance Change	+ 20% of the initial mesured value
Dissipation Factor	Less than 200% of Specified Value
Leakage Current	Within specified Value

The Capacitor after shelf test for 500 hrs. at 85°C should meet the above specification

Note : A recovery time of 16 hrs. should be given before taking the measurments after shelf test.

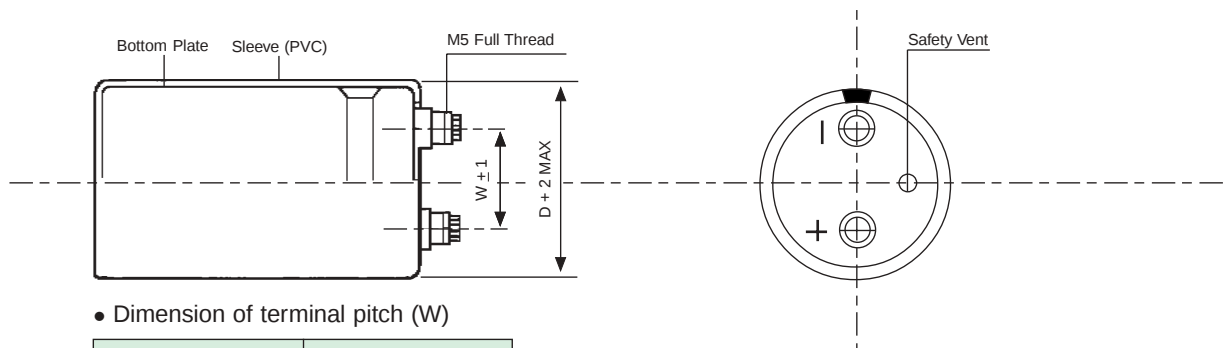
8. RIPPLE CURRENT & TEMPERATURE MULTIPLIERS :

Temperature (°C)	Below 40	60	70	85
Multiplier	1.8	1.4	1.2	1

9. MARKING :

Brand name, Capacitance Value, Working Voltage, Polarity marking, Operating Temperature and month of manufacture.

10. DIAGRAM DIMENSIONS :



ϕD	W
35	13
50	22.0
63.6	28.6
76	32

11. DIMENSIONS Vs PERMISSIBLE RIPPLE CURRENT :

Dimensions : D x L (mm) Ripple Current (I_A) : A/rms at 120 Hz 85°C

W.V. μF	16		25		40		50		63		100	
	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A
2200											35x62	3.2
2500					35x62	2.65	35x62	3.05			35x62	3.35
4700			35x62	3.5	35x62	3.8	35x62	3.9	35x62	4.5	50x80	5.6
5000							35x62	4.0	35x62	4.65	50x80	5.8
6800			35x62	3.9	35x62	4.2	35x62	4.5	35x62	5.7	50x80	7.2
10000	35x62	4.0	35x62	4.5	35x62	5.5	35x68	5.6	35x80	6.5	50x80 50x105	8.5 9.2
15000	35x62	4.58	35x62	5.3	35x80 50x68	7.0 7.5	35x80 50x80	8.5 9.4	50x80	9.6		
20000							50x80	9.8	50x80	10.0		
22000	35x62	5.3	35x68	5.35	50x68	9.5	50x80	10.2				
25000							50x80	10.5				
33000	35x62 35x80	6.14 6.14	50x68	8.2	50x80	11.8						
47000	35x68 50x80	6.6 6.6	50x80	9.35	50x80	13.2						
100000	50x80	13.7	50x80	14.5					76x145	15.5		

W.V. μF	160		200		250		350		450	
	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A	DxL	I_A
1000	35x80 50x80	3.4 3.8	35x80	3.50	50x80	3.55	50x80	3.8	50x105	4.0
1500	35x80 50x80	4.0 5.0	35x80	4.1						
2200	50x80	4.1	50x80	4.3	50x80 63x105	4.5 6.2	63x145	6.0	63x96 63x120	6.6 6.8
3300	50x80	6.2	50x80 63x105	6.5 7.0	63x120	7.1	63x96 63x120 76x105	7.3 7.45 8.0	76x105 76x145	7.9 8.15
4700			63x120	9.0	63x145	9.2	76x105 76x120 76x145	9.3 9.3 9.8	76x130 76x145	10.0 10.2
10000	63x96	10.3	63x96 76x145	10.8 13.8	63x130 76x145	11.6 14.9				

Following Capacitors can be supplied

- 1) Equivalent to foreign substitute such as ITELCOND, KENDEIL, EPCOS etc.,
- 2) Capacitors with higher ripple for specific application
- 3) 105°C 2000 hrs category especially for Railway Applications.

NOTES

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NOTES





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