

FEATURES

- Low Self Discharge/Up to 8 times energy density compared to standard EDLC
- High Capacitance, Power type
- 3.8V High Operating Voltage
- No Explosion Safety
- RoHS Directive Compliant

APPLICATIONS

- Continuous power support, Back up power, Stand alone or augment existing, Medical backup power/alarm, Water and gas smart meters.

OPERATING TEMPERATURE RANGE

- +350°C (4-5 seconds by soldering)
- No clean soldering recommended.
- Do not wash the super capacitors.

GENERAL SPECIFICATIONS

Item	Performance
Operating temperature	-20°C to +65°C
Storage temperature	-40°C to +65°C
Capacitance range	10F to 750F
Rated voltage	3.8 VDC
Minimum rated voltage	2.5 VDC
Surge voltage	4.2 VDC
Temperature characteristics	Capacitance change: Within $\pm 50\%$ of initial measured value at +25°C (-20°C to +65°C) Internal resistance: Within 10 times of initial specified value at +25°C (at -20°C)
High temperature load time	After 65°C 1000 hours: Capacitance change: $\pm 30\%$ of initial rated value Internal resistance: Within 4 times of initial specified value
Projected cycle life (From rated voltage to 1/2 rated voltage at 25°C)	After 50,000 cycles: Capacitance change: Within $\pm 30\%$ of initial rated value Internal resistance: Within 4 times of initial specified value
Shelf life	After 2 years at 25°C without load, the capacitor shall meet the specified endurance limits.

PART NUMBER SYSTEM

<u>LIC</u>	<u>1840</u>	<u>Q</u>	<u>3R8</u>	<u>507</u>	<u>***</u>
Series	Size Code	Cylindrical Code	Rated Voltage	Nominal Capacity	Special Code

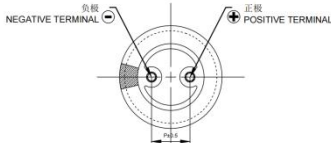
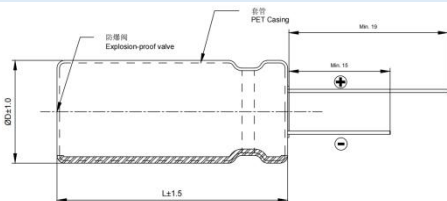
Casing Display:

WARNING Do-Nots! Reverse polarity. Overvoltage. Disassemble. For further information, please contact us. @www.cda-cap.com	Cda® Li-Ion Capacitor LIC1620Q3R8257 250F · 3.8V 284mWh RoHS
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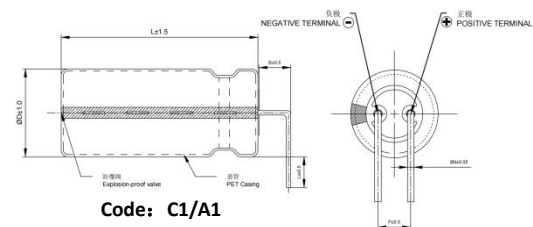
DIMENSIONS

RADIAL LEAD TYPE

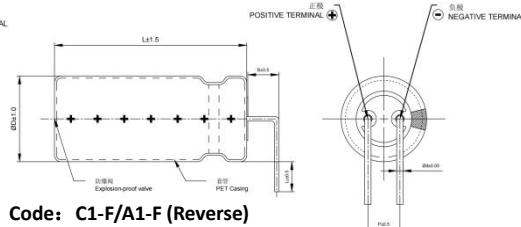


Size (mm)	ΦD	6.3	8	10	13	16	18
	P	2.5	3.5	5.0	5.0	7.5	7.5
	Φd	0.6	0.6	0.6	0.6	0.8	0.8

RADIAL BENT LEAD TYPE



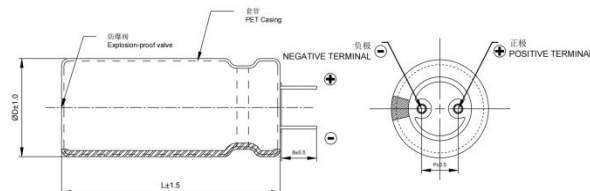
Code: C1/A1



Code: C1-F/A1-F (Reverse)

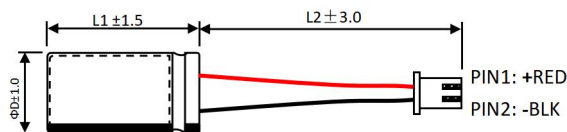
Size (mm)						
ΦD	P	Φd	B		L ₂	
			C1/F	A1/F		
6.3	2.5	0.6	2.0	4.0	4.0	
8	3.5	0.6	2.0	4.0	4.0	
10	5.0	0.6	2.0	4.0	4.0	
13	5.0	0.6	2.0	4.0	4.0	
16	7.5	0.8	2.0	4.0	4.0	
18	7.5	0.8	2.0	4.0	4.0	

PIN CUTTING: C TYPE



Size (mm)	ΦD	6.3	8	10	13	16	18
	P	2.5	3.5	5.0	5.0	7.5	7.5
	Φd	0.6	0.6	0.6	0.6	0.8	0.8
	B	5.0	5.0	5.0	5.0	5.0	5.0

CONNECTOR: L TYPE



*Connectors can be customized

①Module type specification Applies to D: 6.3mm & 8mm		②Module type specification Applies to D: 10mm & 13mm	
Wire	UL3239 AWG26	Wire	UL3239 AWG24
Terminals	JST ZHR-2	Terminals	JST PHR-2P
Wire length	50mm	Wire length	50mm
③Module type specification Applies to D: 16mm & 18mm			
Wire	UL3239 AWG22/AWG20		
Terminals	HY2.0-2P		
Wire length	50mm		

STANDARD PRODUCTS

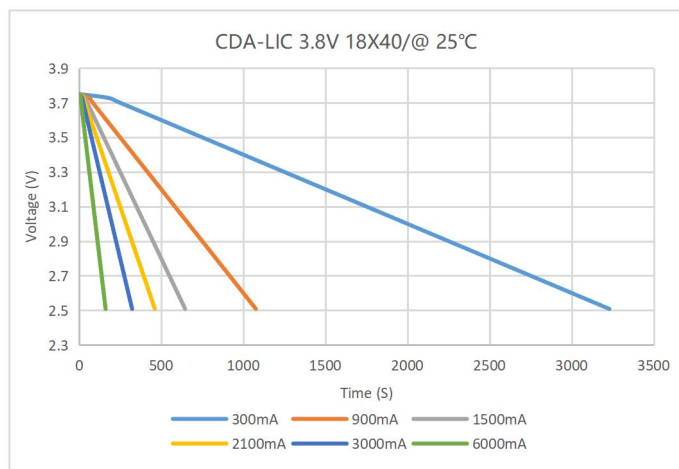
Part Number	Dimensions (mm)		Rated Cap. (F)	Capacitance Tolerance	3.8V-2.5V Battery Cap. (mAh)	ESR AC (1kHz/mΩ)	ESR DC (mΩ)	Leakage Current (72hrs/uA)	Rated Current (A)	Max Current (A)	Energy Storage (mWh)	Weight (g)
	D	L										
LIC0613Q3R8106	6.3	13	10	-20%~+20%	3.6	1500	1800	2	0.05	0.3	11	1.0
LIC0622Q3R8256	6.3*	22	25	-20%~+20%	9	180	270	2	0.25	0.6	28	2.0
LIC0813Q3R8106	8	13	10	-20%~+80%	3.6	600	900	1	0.10	0.5	11	1.5
LIC0813Q3R8206	8	13	20	-20%~+20%	7.2	600	900	1	0.10	0.6	23	1.5
LIC0816Q3R8306	8*	16	30	-20%~+20%	10	350	630	3	0.30	0.7	34	2.0
LIC1013Q3R8256	10	13	25	-20%~+20%	9	400	500	1	0.15	1.0	28	2.65
LIC0820Q3R8256	8	20	25	-20%~+80%	9	300	380	2	0.20	1.5	28	2.0
LIC1013Q3R8306	10	13	30	-20%~+80%	10	300	450	1	0.15	1.0	34	2.65
LIC0825Q3R8306	8	25	30	-20%~+20%	10	200	360	2	0.3	2.0	34	3.5
LIC0820Q3R8406	8	20	40	-20%~+80%	15	200	350	2	0.22	1.7	46	2.0
LIC0825Q3R8506	8	25	50	-20%~+80%	18	180	300	2	0.2	1.0	57	2.7
LIC1313Q3R8706	13	13	70	-20%~+80%	27	200	350	2	0.30	2.0	80	3.5
LIC1020Q3R8806	10	20	80	-20%~+80%	30	120	260	2	0.35	3.0	91	3.0
LIC0825Q3R8906	8	25	90	-20%~+20%	27	300	600	2	0.30	2.0	102	2.5
LIC0825Q3R8107	8*	25	100	-30%~+10%	36	350	600	3	0.36	2.5	114	2.7
LIC1030Q3R8107	10	30	100	-20%~+80%	36	110	235	3	0.60	5.0	114	6.0
LIC1030Q3R8127	10	30	120	-20%~+80%	45	100	230	3	0.60	5.0	137	5.0
LIC1320Q3R8127	13	20	120	-20%~+80%	45	220	330	3	0.60	5.0	137	5.0
LIC1325Q3R8157	13	25	150	-20%~+80%	54	100	210	6	0.65	7.0	170	6.5
LIC1335Q3R8257	13	35	250	-20%~+80%	80	150	280	5	1.10	10.0	284	8.0
LIC1620Q3R8257	16	20	250	-20%~+80%	80	70	165	5	1.10	10.0	284	8.0
LIC1620Q3R8277	16	20	270	-20%~+80%	85	70	165	13	2.0	10.0	307	8.5
LIC1635Q3R8457	16*	35	450	-20%~+80%	170	40	120	10	1.70	15.0	511	15.0
LIC1640Q3R8507	16	40	500	-20%~+80%	200	80	220	15	2.0	20.0	569	16.0
LIC1840Q3R8507	18	40	500	-20%~+80%	200	80	200	15	2.25	30.0	569	20.0
LIC1840Q3R8757	18	40	750	-20%~+80%	300	60	160	20	3.00	30.0	853	20.0

* * Please contact CDA or your agent for product characteristics data prior to purchase.

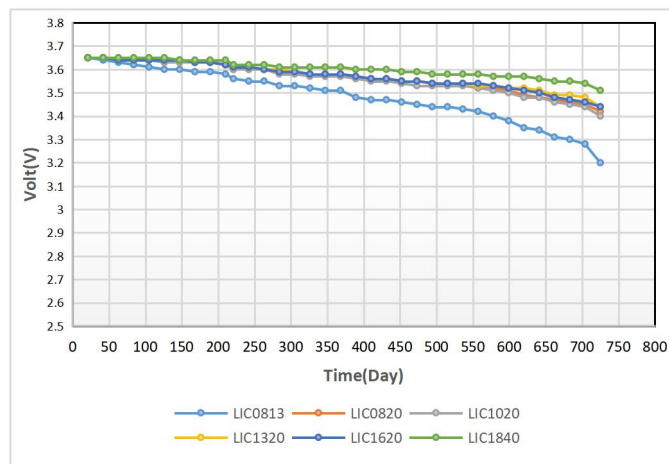
*operating temperature can be extended to 85°C with appropriate voltage.

THE FEATURE DIAGRAM

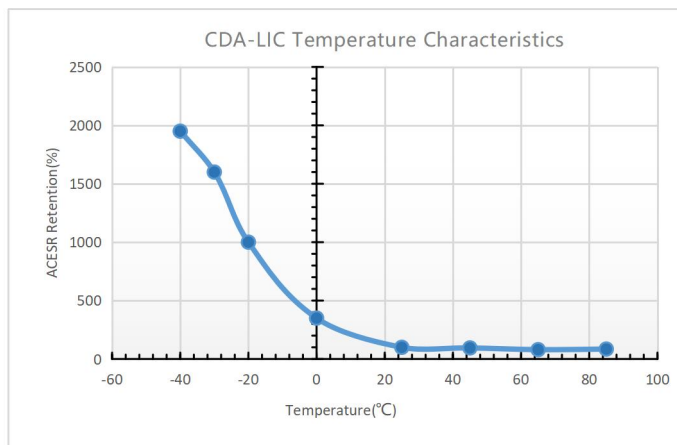
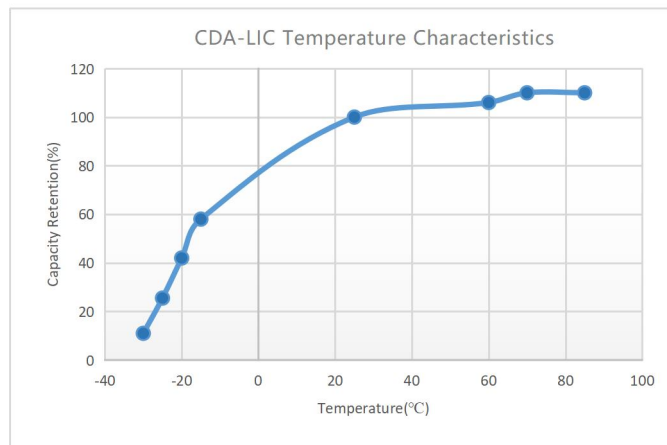
● Discharge multiplier characteristics



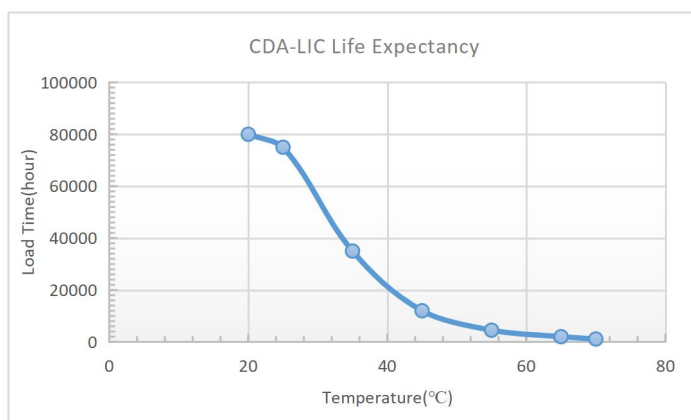
● LIC two-year self-discharge data



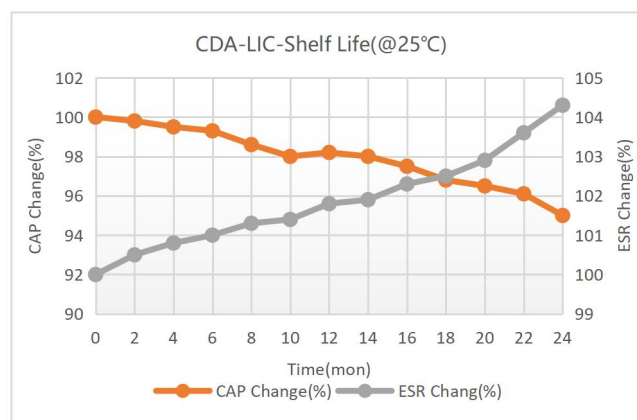
● Representative average temperature characteristics of capacitance and ESR.



● Lifetime estimation at different temperatures.



● Shelf life at room temperature (@25 °C)



SAFETY RECOMMENDATIONS 

WARNINGS

- To Avoid Short Circuit, after usage or test, Lithium Ion Capacitor voltage needs to discharge to $> 2.5V$ (Not lower than 2.5V).
- Do not Apply Over-voltage, Reverse Charge, Burn or Heat Higher than 150°C, explosion-proof valve may break open.
- Do not Press, Damage or disassemble the Lithium Ion Capacitor, housing could heat to high temperature causing Burns.
- If you observe Overheating or Burning Smell from the capacitor disconnect Power immediately, and do not touch.

***Caution:** For all products with PET sleeves, the use of any type of cleaning agent is prohibited for cleaning. During all welding processes, it is recommended to protect the shrink film from contact with any liquids (including but not limited to: water, strong acids, strong alkalis, strong oxidizing solutions, and strong solvents), so as to avoid the risk of damage, cracking, and discoloration of the outer shrink film.

Circuit Design:

1. Circuit designs should include:

01. Overvoltage and undervoltage protection.
02. Charge and discharge currents should be controlled within cell ratings.
03. Cell balancing for multi-cell series.
2. Adequate clearance should be provided above the pressure vent to allow it to function properly in the event of a gas buildup.
3. The capacitor casing is an uninsulated live part of the cell and must be appropriately secured, enclosed in the product and provided appropriate spacing to prevent shorts.

Failure to follow these precautions will result in:

1. Electric shock
2. Damage to the cell, including:
 01. Overheating.
 02. Leakage
 03. Chemical burns
 04. Smoke
 05. Explosion.

Measuring

- Capacitance, Equivalent series resistance (ESR) and Leakage current are measured.
- Leakage current at +20 °C after 72 hour charge and hold.
- Stored energy (mWh) = $\frac{0.5 \times (V^2_{\min 1} - V^2_{\min 2}) \times C}{3600} \times 1000$
- Peak power (W) = $\frac{V^2}{4 \times ESR}$
- Pulse current for 1 second from full rate voltage to minimum rated voltage.
(A) = $\frac{(V_{\min 1} - V_{\min 2}) \times C}{(1 + ESR \times C)}$
- Continuous current with a 15 °C temperature rise.

$$\text{Continuous current (A)} = \sqrt{\frac{\Delta T}{ESR \times R_{th}}}$$

- Short circuit current is for safety information only. Do not use as operating current.

- Cycling between rated voltage and 2.5 V, 3 second rest at +20 °C.

Note: Do not discharge Lithium Ion Capacitor below minimum working voltage.

Optimal Storage Conditions

- Temperature: 25°C, relative humidity: $\leq 60\%$, with no voltage applied.
- Avoid direct exposure to sunlight.
- Prevent direct contact with water, salt, oil, or other chemicals.
- Prevent direct contact with corrosive substances, acids, alkalis, or toxic gases.
- Avoid storage in dusty environments.
- Avoid storage in environments with shock and vibration.

REGULATORY

- MSDS, UN38.3, UL1642, IEC-62133-2
- RoHS Compliant

TRANSPORTATION

Not subjected to US DOT or IATA regulations
UN3508, <0.3Wh, Non-Hazardous Goods
International shipping description –
“Electronic Products –Capacitor”

PRECAUTIONS DURING USE 