



FEATURES

- Unique slim profile design /Lead Type Terminal
- Passive linear voltage balanced cells
- Fast charge time / Molex Mini-Lock connector
- Maintenance-free backup
- Green solution vs. batteries
- Each module has voltage balancing
- RoHS Compliant

APPLICATIONS

- Automatic meter readers
- Automotive subsystems
- Backup power for safe shutdown requirements
- Battery-powered tools and handheld electronic devices
- Data deduplication/Networking last gasp/RAID storage/SSD
- Wireless transmission/Servers



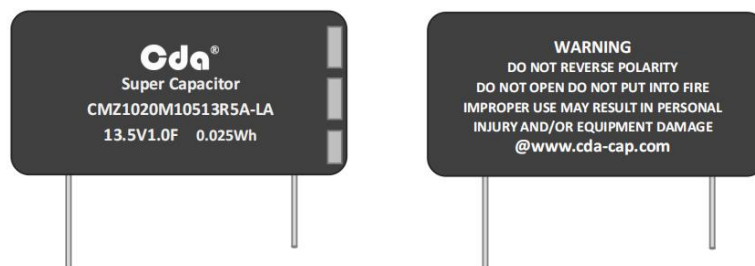
GENERAL SPECIFICATIONS

Item	Performance
Operating temperature	-40°C to +65°C
Capacitance range	0.41F to 30F
Capacitance tolerance	-10%to+30%
Rated voltage	8.1 VDC / 32.4 VDC
Temperature characteristics	Capacitance change: Within ±30% of initial measured value at +25°C Internal resistance: Within ±200% of initial measured value at +25°C
Endurance (At rated voltage & max. operating temp)	After 1000 hours: Capacitance change: ±30% of initial rated value Internal resistance: Within 2 times of initial specified value
Projected load life (At rated voltage 25°C)	After 10 years: Capacitance change: ±30% of initial rated value Internal resistance: Within 2 times of initial specified value
Projected cycle life (From rated voltage to 1/2 rated voltage at 25°C)	After 500,000 cycles: Capacitance change: Within ±30 % of initial rated value Internal resistance: Within 2 times of initial specified value
Vibration resistance	Amplitude:1.5mm /Frequency:10~55Hz /Duration: X,Y,Z(2 hrs)/Duration of testing:6 hrs Capacitance change: Within ±30 % of initial rated value Internal resistance: Within 2 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>CMZ</u>	<u>1860</u>	<u>S</u>	<u>106</u>	<u>32R4</u>	<u>W</u>	<u>**</u>	<u>***</u>
Series	Cell Size	Connection Code	Capacity Code	Rated Voltage	Balance Code	PIN Code	Special Code

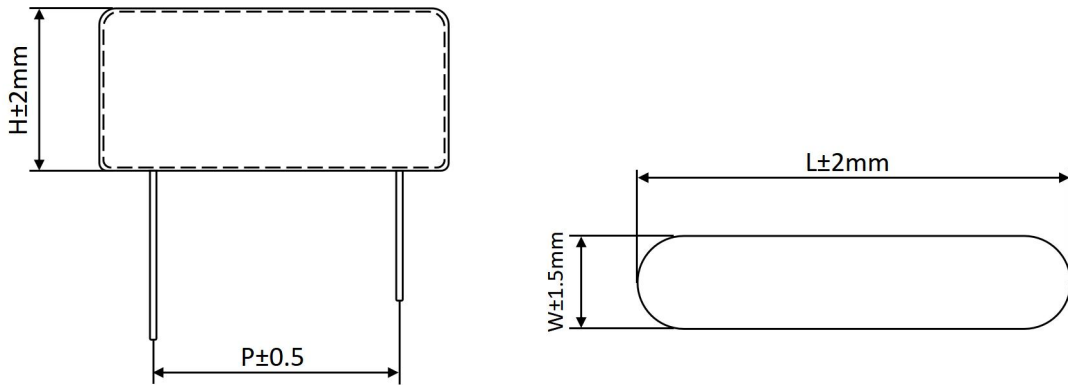
Casing Display:



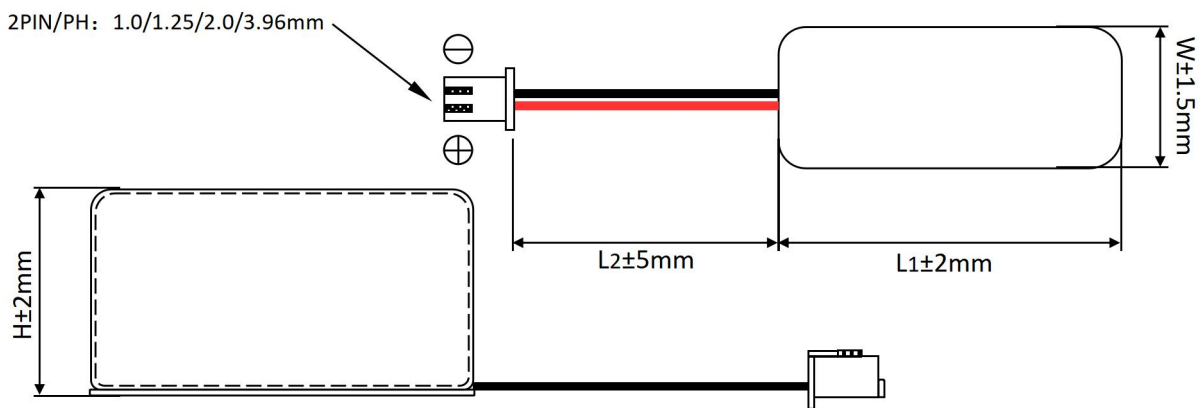
DIMENSIONS



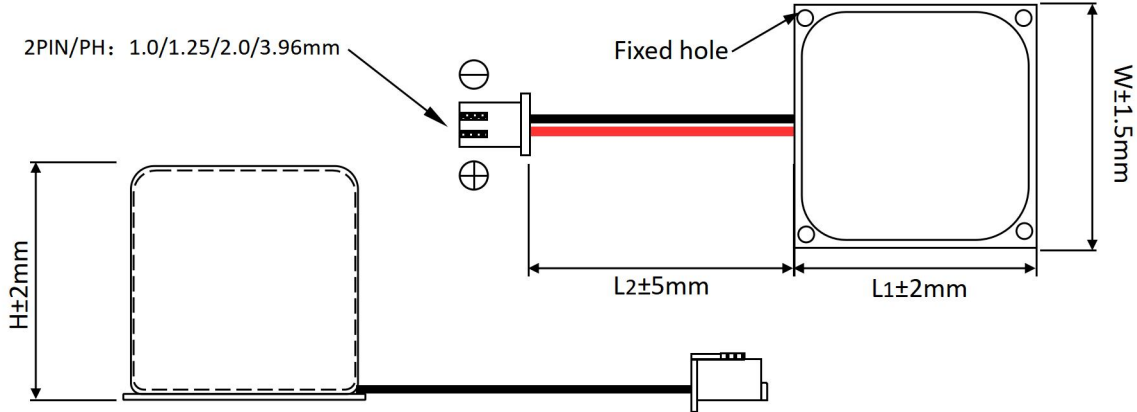
DA Type



LA Type



XR Type



SAFETY AND CERTIFICATIONS

Test standard	IEC62391-1 (cells)
Warnings	Do not add over-voltage, do not reverse polarity
Shipping	No restrictions per UN 3499, UN 3508
Environmental compliance	RoHS, REACH, HF lead free
Material reports	MSDS

STANDARD PRODUCTS



Part Number	Rated Voltage (V)	Rated Cap (F)	GMV (F)	Dimensions (mm)			ESR AC (mΩ) (1 KHz)	ESR DC (mΩ)	Peak Current(A)	Leakage Current (72hrs/mA)
				W	L	H				
8.1V Series - Custom Super Capacitor Module										
CMZ1030S3358R1W-DA	8.1	3.33	3	11	31	33	135	204	8.06	0.030
CMZ1025S3358R1W-DA	8.1	3.33	3	11	31	28	180	270	6.89	0.033
CMZ1325S6658R1W-DA	8.1	6.66	6	14	40	28	120	180	11	0.050
CMZ1625S7358R1W-DA	8.1	7.33	6.6	17	49	28	75	114	17.42	0.068
CMZ1630S1168R1W-DA	8.1	11.33	10	17	49	33	60	90	23.05	0.080
CMZ1346S1368R1W-DA	8.1	13.33	12	14	40	49	60	90	24.55	0.080
CMZ1840S1668R1W-DA	8.1	16.66	14	19	55	43	48	72	30.68	0.105
CMZ1840S2768R1W-DA	8.1	27.33	25	19	55	43	54	90	40.15	0.130
10.8V Series - Custom Super Capacitor Module										
CMZ1025S25510R8W-DA	10.8	2.5	2.2	11	41	28	240	360	7.11	0.033
CMZ1326S45510R8W-DA	10.8	4.5	4	14	53	29	160	240	12.05	0.050
CMZ1625S55510R8W-DA	10.8	5.5	4.9	17	65	28	100	152	18.20	0.068
CMZ1630S70510R8W-DA	10.8	7	6.3	17	65	33	80	120	21.32	0.075
CMZ1635S85510R8W-DA	10.8	8.5	7.6	17	65	38	80	120	23.05	0.080
CMZ1346S10610R8W-DA	10.8	10	9	14	53	49	80	120	25.05	0.080
CMZ1835S11610R8W-DA	10.8	11.25	10	19	73	38	72	108	25.96	0.088
CMZ1840S20610R8W-DA	10.8	20.5	18	19	73	43	72	120	41.05	0.130
CMZ1860S25610R8W-DA	10.8	25	22	19	73	63	52	80	45.76	0.240
CMZ1860S30610R8W-DA	10.8	30	27	19	73	63	52	80	48.50	0.280
13.5V Series - Custom Super Capacitor Module										
CMZ1020S40413R5W-DA	13.5	0.4	0.36	11	51	23	450	675	4.03	0.020
CMZ1020S10513R5W-DA	13.5	1	0.9	11	51	23	375	565	4.32	0.015
CMZ1030S20513R5W-DA	13.5	2	1.8	11	51	33	225	340	8.06	0.030
CMZ1320S30513R5W-DA	13.5	3	2.7	14	66	23	225	340	10.06	0.040
CMZ1325S40513R5W-DA	13.5	4	3.6	14	66	28	200	300	11.68	0.050
CMZ1335S44513R5W-DA	13.5	4.4	3.9	14	66	38	150	225	15.88	0.060
CMZ1625S50513R5W-DA	13.5	5	4.5	17	81	28	125	190	17.42	0.068
CMZ1630S56513R5W-DA	13.5	5.6	5	17	81	33	100	150	21.32	0.075
CMZ1346S68513R5W-DA	13.5	6.8	6.1	14	66	49	100	150	23.02	0.080
CMZ1346S80513R5W-DA	13.5	8	7.2	14	66	49	100	150	24.55	0.080
CMZ1835S90513R5W-DA	13.5	9	8.1	19	91	38	90	135	30.92	0.110
CMZ1840S12613R5W-DA	13.5	12	11	19	91	43	75	115	34.47	0.150
CMZ1840S16613R5W-DA	13.5	16.4	14	19	91	43	90	150	41.05	0.130
CMZ1860S20613R5W-DA	13.5	20	18	19	91	63	65	100	45.76	0.240
CMZ1860S24613R5W-DA	13.5	24	21	19	91	63	65	100	48.50	0.280
16.2V Series - Custom Super Capacitor Module										
CMZ1025S16516R2W-DA	16.2	1.66	1.4	11	61	28	360	540	7.11	0.030
CMZ1320S25516R2W-DA	16.2	2.5	2.2	14	79	23	270	408	10.06	0.040
CMZ1330S36516R2W-DA	16.2	3.66	3.2	14	79	33	210	318	13.17	0.055
CMZ1630S46516R2W-DA	16.2	4.66	4.1	17	97	33	120	180	21.32	0.075
CMZ1635S56516R2W-DA	16.2	5.66	5	17	97	38	120	180	23.05	0.080
CMZ1835S58516R2W-DA	16.2	5.83	5.2	19	109	38	108	162	25.96	0.088
CMZ1346S66516R2W-DA	16.2	6.66	5.9	14	79	43	120	180	24.55	0.080
CMZ1840S75516R2W-DA	16.2	7.5	6.7	19	109	43	96	144	30.68	0.105
CMZ1840S10616R2W-DA	16.2	10	9	19	109	43	90	138	34.47	0.150
CMZ1840S13616R2W-DA	16.2	13.66	12	19	109	43	108	180	41.02	0.130
CMZ1860S16616R2W-DA	16.2	16.6	15	19	109	63	78	120	45.76	0.240
CMZ1860S20616R2W-DA	16.2	20	18	19	109	63	78	120	48.50	0.280
21.6V Series - Custom Super Capacitor Module										
CMZ1016S50421R6W-LA	21.6	0.5	0.4	22	41	20	720	1080	4.03	0.020
CMZ1020S60421R6W-LA	21.6	0.62	0.5	22	41	23	600	904	4.32	0.015
CMZ1030S12521R6W-LA	21.6	1.25	1.1	22	41	33	360	544	8.06	0.030
CMZ1330S27521R6W-LA	21.6	2.75	2.4	28	53	33	280	424	13.17	0.055
CMZ1630S35521R6W-LA	21.6	3.5	3.1	34	65	33	160	240	21.32	0.075
CMZ1630S42521R6W-LA	21.6	4.25	3.8	34	65	33	160	240	23.05	0.080
CMZ1346S50521R6W-LA	21.6	5	4.5	28	53	49	160	240	24.55	0.080
CMZ1840S56521R6W-LA	21.6	5.62	5	38	73	43	128	192	30.68	0.105
CMZ1840S75521R6W-LA	21.6	7.5	6.7	38	73	43	120	184	34.47	0.150
CMZ1840S10621R6W-LA	21.6	10.25	9.2	38	73	43	144	240	41.02	0.130
CMZ1860S12621R6W-LA	21.6	12.5	11	38	73	63	104	160	45.76	0.240
CMZ1860S15621R6W-LA	21.6	15	13	38	73	63	104	160	48.50	0.280

STANDARD PRODUCTS



Part Number	Rated Voltage (V)	Rated Cap (F)	GMV (F)	Dimensions (mm)			ESR AC (mΩ) (1 KHz)	ESR DC (mΩ)	Peak Current(A)	Leakage Current (72hrs/mA)
				W	L	H				
24.0V Series - Custom Super Capacitor Module										
CMZ1030S12524R0W-XR	24	1.2	1	45	32	35	450	680	8	0.030
CMZ1625S27524R0W-XR	24	2.7	2.4	60	50	30	230	345	17	0.065
CMZ1630S33524R0W-XR	24	3.3	3	60	50	35	190	360	19	0.075
CMZ1635S38524R0W-XR	24	3.8	3.5	60	50	40	180	380	24	0.095
CMZ1835S55524R0W-XR	24	5.5	5	66	56	40	170	250	30	0.110
CMZ1840S55524R0W-XR	24	5.5	5	66	56	45	150	225	31	0.105
CMZ1840S66524R0W-XR	24	6.6	6	66	56	45	140	210	35	0.150
CMZ1840S77524R0W-XR	24	7.7	7	66	56	45	140	200	36	0.125
CMZ1840S91524R0W-XR	24	9.1	8	66	56	45	140	200	38	0.140
CMZ1860S11624R0W-XR	24	11.1	10	66	56	65	130	190	51	0.350
CMZ1860S13624R0W-XR	24	13.3	12	66	56	65	130	190	52	0.280
27.0V Series - Custom Super Capacitor Module										
CMZ1020S50427R0W-LA	27.0	0.5	0.45	22	51	23	600	900	5.80	0.020
CMZ1030S10527R0W-LA	27.0	1	0.9	22	51	33	450	680	8.06	0.030
CMZ1330S22527R0W-LA	27.0	2.2	2	28	66	33	350	530	13.17	0.055
CMZ1625S22527R0W-LA	27.0	2.2	2	34	81	28	250	380	17.42	0.068
CMZ1630S28527R0W-LA	27.0	2.8	2.5	34	81	33	200	300	21.32	0.075
CMZ1630S34527R0W-LA	27.0	3.4	3	34	81	33	200	300	23.05	0.080
CMZ1346S40527R0W-LA	27.0	4.0	3.6	28	66	49	200	300	24.55	0.080
CMZ1840S45527R0W-LA	27.0	4.5	4	38	91	43	160	240	30.68	0.105
CMZ1840S60527R0W-LA	27.0	6	5.4	38	91	43	150	230	34.47	0.150
CMZ1840S82527R0W-LA	27.0	8.2	7.3	38	91	43	180	300	41.02	0.130
CMZ1860S10627R0W-LA	27.0	10	9	38	91	63	130	200	45.76	0.240
CMZ1860S12627R0W-LA	27.0	12	11	38	91	63	130	200	48.50	0.280
32.4V Series - Custom Super Capacitor Module										
CMZ1020S41432R4W-LA	32.4	0.41	0.36	22	61	23	900	1356	5.29	0.020
CMZ1030S83432R4W-LA	32.4	0.83	0.74	22	61	33	540	816	8.06	0.030
CMZ1330S18532R4W-LA	32.4	1.83	1.6	28	79	33	420	636	13.17	0.055
CMZ1630S23532R4W-LA	32.4	2.33	2	34	97	33	240	360	21.32	0.075
CMZ1630S28532R4W-LA	32.4	2.83	2.5	34	97	33	240	360	23.05	0.080
CMZ1346S33532R4W-LA	32.4	3.33	3	28	79	49	240	360	24.55	0.080
CMZ1840S37532R4W-LA	32.4	3.75	3.5	38	109	43	192	288	30.68	0.105
CMZ1840S50532R4W-LA	32.4	5	4.5	38	109	43	180	276	34.47	0.150
CMZ1840S68532R4W-LA	32.4	6.83	6.1	38	109	43	216	360	41.02	0.130
CMZ1860S83532R4W-LA	32.4	8.33	7.4	38	109	63	156	240	45.76	0.240
CMZ1860S10632R4W-LA	32.4	10	9	38	109	63	156	240	48.50	0.280

*NOTE: GMV = Guaranteed Minimum Value.

DESCRIPTION OF MODULE DESIGN

Cells separation

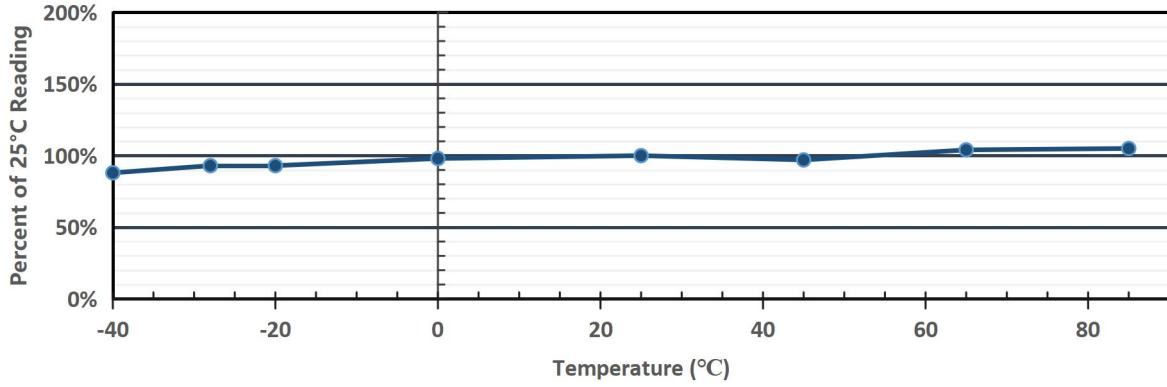
Cells can be classified by capacitance, internal resistance, leakage current and self discharge to improve precision of the group matching, so as to improve the reliability and stability of the module.

Circuit design

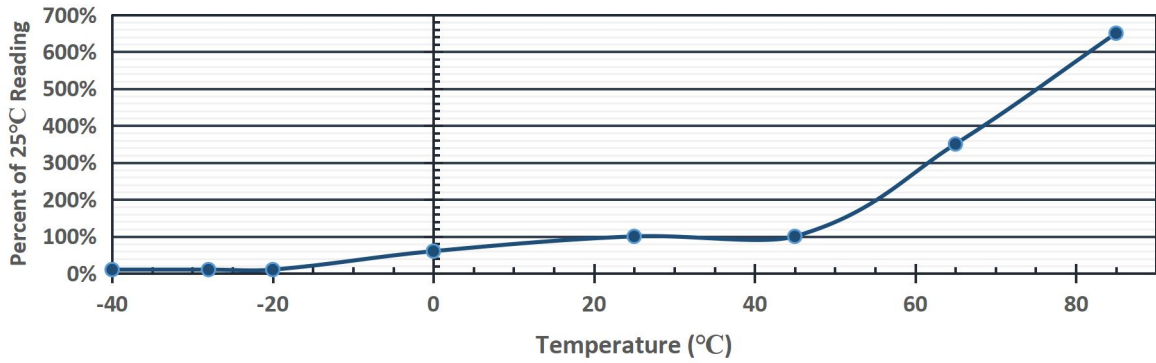
Function:	design by client's requirement.
Property:	design by client's applicat load characteristic.
Balance mode:	active and passive.
Detection:	cell's over-charge test, over temperature test, counter charging test, etc.
Communication mode:	designed according to client's requirement, such as mode of SPI、RS232、RS485、CAN、12C、SMBUS ethernet or optical fiber communication.
PCB:	sturdy, firm, low internal resistance, high over-current, good property of heat dissipation
Additional function:	monitoring voltage of every parallel module, calculate surplus capacitance of module, and even surplus capacitance and conditions of each cell.
Environmental compliance	RoHS, ,MSDS,REACH, lead free No restrictions, per UN3499 with all cells <10 watt-hours



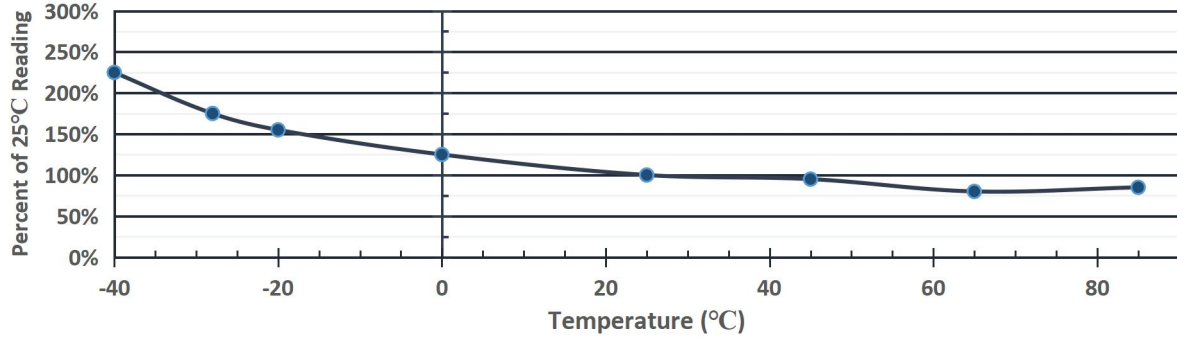
CAPACITANCE VS. TEMPERATURE



LEAKAGE CURRENT VS. TEMPERATURE



EQUIVALENT SERIES RESISTANCE VS. TEMPERATURE





LIFE TIME AND TEMPERATURE PERFORMANCE

The life of a Super Capacitor is impacted by a combination of operating voltage and the operating temperature according to the following equation :

$$L = L_0 \times 3.25^{\frac{T_0 - T}{10}} \times 1.52^{\frac{V_0 - V}{0.1}}$$

L : is the theoretical lifetime at T temperature;

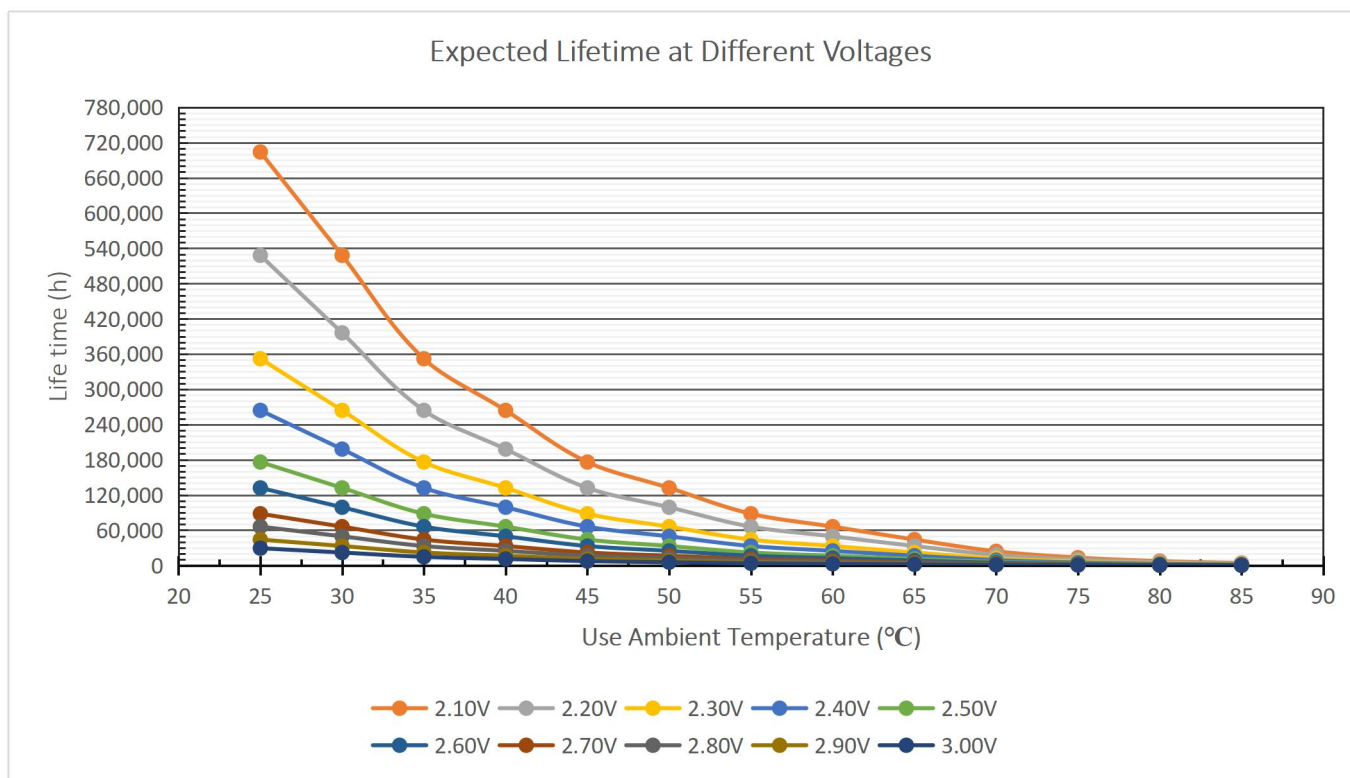
L₀ : is the working life of the highest rated working temperature;

T : is the actual working temperature;

T₀ : is the highest rated working temperature;

V : is the actual working voltage;

V₀ : is the highest rated working voltage.



*Note : Estimated lifespan: The estimated lifespan under different operating voltages and operating temperatures in a theoretical environment. For the actual service life, please contact us to discuss the working conditions.



SAFETY RECOMMENDATIONS

WARNINGS

- To Avoid Short Circuit, after usage or test, SuperCapacitors voltage needs to discharge to $\leq 0.1V$.
- Do not Apply Over-voltage, Reverse Charge, Burn or Heat Higher than $150^{\circ}C$, explosion-proof valve may break open.
- Do not Press, Damage or disassemble the SuperCapacitor, 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.

PRECAUTIONS FOR WELDING

When soldering supercapacitors to a PCB, the temperature & time that the body of the supercapacitor sees during soldering can have a negative effect on performance. We advise following these guidelines:

- Do not immerse the supercapacitors in solder. Only the leads should come in contact with the solder.
- Ensure that the body of the supercapacitor is never in contact with the molten solder, the PCB or other components during soldering.
- Excessive temperatures or excessive temperature cycling during soldering may cause the safety vent to burst or the case to shrink or crack, potentially damaging the PCB or other components, and significantly reduce the life of the capacitor.

HAND SOLDERING

Keep distance between the supercapacitor body and the tip of the soldering iron and the tip should never touch the body of the capacitor. Contact between supercapacitor body and soldering iron will cause extensive damage to the supercapacitor, and change its electrical properties. It is recommended that the soldering iron temperature should be less than $350^{\circ}C$, and contact time should be limited to less than 4 seconds. Too much exposure to terminal heat during soldering can cause heat to transfer to the body of the supercapacitor, potentially damaging the electrical properties of the supercapacitor.

REGULATORY

- MSDS
- RoHS Compliant
- Reach Compliant

TRANSPORTATION

Not subjected to US DOT or IATA regulations
 UN3499, <10Wh, Non-Hazardous Goods
 International shipping description –
 “Electronic Products – Capacitor”

WAVE SOLDERING

Only use wave soldering on Radial type supercapacitors. The PCB should be preheated only from the bottom and for less than 60 seconds, with temperature at, or below, $100^{\circ}C$ on the top side of the board for PCBs equal to or greater than 0.8 mm thick.

Solder Temperature ($^{\circ}C$)	Suggested Solder Time (s)	Maximum Solder Time (s)
220	7	9
240	7	9
250	5	7
260	3	5

REFLOW SOLDERING

Infrared or conveyor over reflow techniques can be used on these supercapacitors. Do not use a traditional reflow oven without clear rated reflow temperature for supercapacitors.