

FEATURES

- High power,high energy density
- Long cycle life,maintenance-free
- 3.0V High Operating Voltage
- High reliability
- No Explosion Safety

APPLICATIONS

- Consumer electronics,Smart meter, Back up power, Stand alone or augment existing,energy/power source.

OPERATING TEMPERATURE RANGE

- -40°C to +65°C @3.0V
- -40°C to +85°C @2.5V

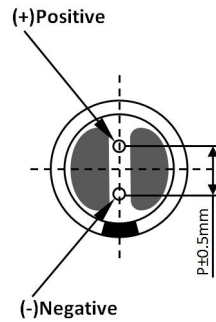
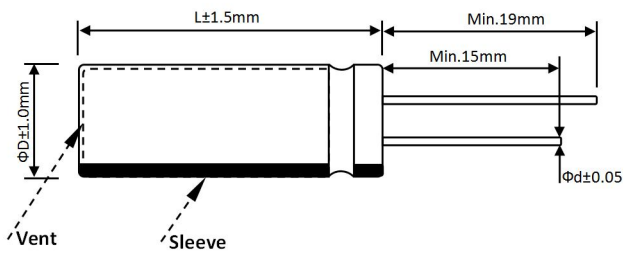


GENERAL SPECIFICATIONS

| Item | Performance |
|---|--|
| Operating temperature | -40°C to +65°C |
| Capacitance range | 0.22F to 600F |
| Capacitance tolerance | -20%~+50% ; -20%~+20%; -10%~+30%; -0%~+30% |
| Rated voltage | 3.0 V |
| Surge voltage | 3.15 V |
| Temperature characteristics | Capacitance change: Within ±30% of initial measured value at +25°C Internal resistance: Within ±200% of initial measured value at +25°C |
| High temperature load time | After 65°C 1000 hours (at:3.0V): Capacitance change: ±30% of initial rated value Internal resistance: Within 3 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 |
| Humidity characteristic | Relative humidity: 90%~95% /Duration of testing:240 hrs /Temperature:40±2°C 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/X,Y,Z(2hrs) /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. |

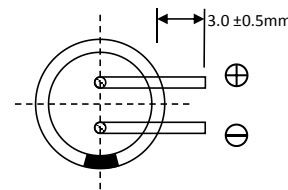
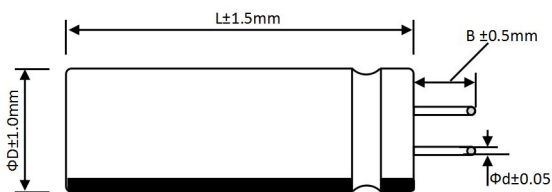
DIMENSIONS

RADIAL LEAD TYPE



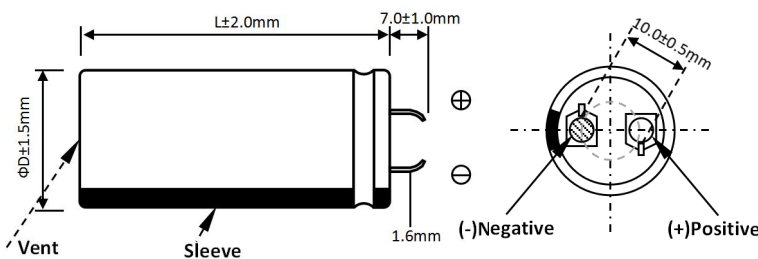
| Size(mm) | | |
|----------|-----|-----|
| ΦD | P | φd |
| 4 | 1.5 | 0.5 |
| 5 | 2.0 | 0.5 |
| 6.3 | 2.5 | 0.6 |
| 8 | 3.5 | 0.6 |
| 10 | 5.0 | 0.6 |
| 13 | 5.0 | 0.6 |
| 16 | 7.5 | 0.8 |
| 18 | 7.5 | 0.8 |

RADIAL BENT LEAD TYPE

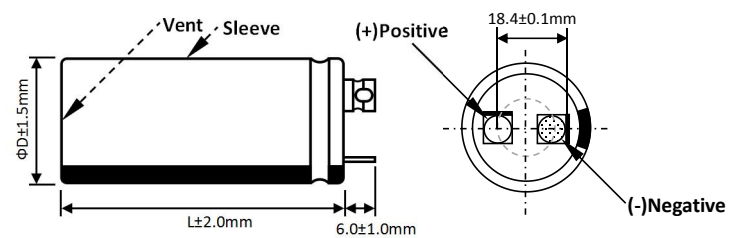


| Style | B(mm) |
|-------|-------|
| A1 | 4.0 |
| C1 | 2.0 |

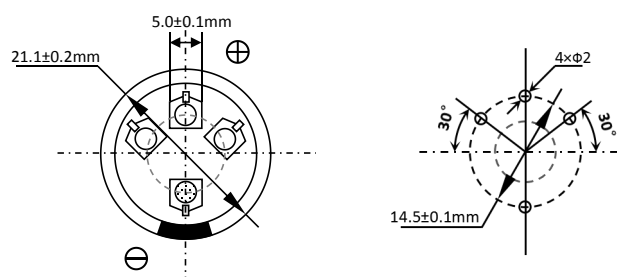
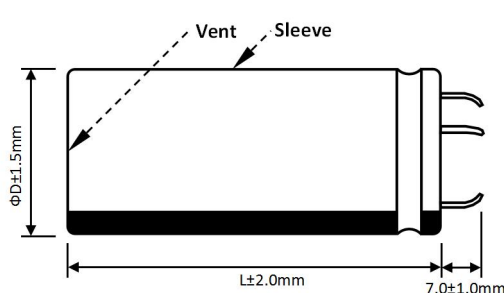
SOLDER PIN TYPE 2-PIN 100~250F PART Terminal S1 type



SOLDER PIN TYPE 2-PIN 350~600F PARTS Terminal Z2 type



SOLDER PIN TYPE 4-PIN 350~600F PART Terminal S4 type





CXP(3.0V)Series



www.cda-cap.com

STANDARD PRODUCTS

| Part Number | Working Voltage (V DC) | Rated Cap. (F) | Dimensions (mm) D*L | Max.ESR | | Maximum Leakage (72hrs/mA) | Maximum Peak Current(A) | Maximum Endurance Current(A) | Power Density (W/Kg) | Maximum Energy (W.h) | Energy Density (Wh/kg) |
|----------------------------------|------------------------|----------------|------------------------|-----------------|------------|----------------------------|-------------------------|------------------------------|----------------------|----------------------|------------------------|
| | | | | ESRAC (1kHz/mΩ) | ESRDC (mΩ) | | | | | | |
| Radial Lead(Miniaturized) | | | | | | | | | | | |
| CXP-3R0224R-TWX | 3.0 | 0.22 | 4*10 | 1000 | 1820 | 0.001 | 0.19 | 0.09 | 1028.6 | 0.0002 | 0.71 |
| CXP-3R0224R-TW | 3.0 | 0.22 | 5*10 | 700 | 1200 | 0.002 | 0.36 | 0.10 | 1021.7 | 0.0002 | 0.87 |
| CXP-3R0304R-TW | 3.0 | 0.3 | 4*10 | 700 | 1200 | 0.001 | 0.25 | 0.10 | 1123.1 | 0.0003 | 0.79 |
| CXP-3R0354R-TW | 3.0 | 0.35 | 5*10 | 600 | 1000 | 0.002 | 0.40 | 0.12 | 1253.1 | 0.0004 | 1.05 |
| CXP-3R0504R-TW | 3.0 | 0.5 | 5*12 | 400 | 700 | 0.002 | 0.44 | 0.15 | 1330.0 | 0.0006 | 1.08 |
| CXP-3R0604R-TW | 3.0 | 0.6 | 4*22 | 700 | 1200 | 0.003 | 0.50 | 0.16 | 1350.0 | 0.0007 | 1.75 |
| CXP-3R0105R-TWV | 3.0 | 1.0 | 4*25 | 550 | 900 | 0.003 | 0.60 | 0.18 | 1263.2 | 0.0013 | 2.19 |
| CXP-3R0105R-TWX | 3.0 | 1 | 6.3*12 | 240 | 1500 | 0.006 | 0.60 | 0.29 | 1108 | 0.0013 | 1.92 |
| CXP-3R0125R-TW | 3.0 | 1.2 | 5*22 | 200 | 400 | 0.006 | 1.29 | 0.33 | 3085.7 | 0.0015 | 2.68 |
| CXP-3R0125R-TWX | 3.0 | 1.2 | 6.3*11 | 250 | 500 | 0.006 | 1.10 | 0.20 | 3085.7 | 0.0013 | 1.86 |
| CXP-3R0355R-TW | 3.0 | 3.5 | 6.3*22 | 90 | 130 | 0.010 | 2.71 | 0.53 | 4114.3 | 0.0041 | 3.93 |
| CXP-3R0455R-TW | 3.0 | 4.5 | 6.3*25 | 90 | 120 | 0.010 | 3.0 | 0.56 | 3512.2 | 0.0050 | 4.07 |
| Radial Lead | | | | | | | | | | | |
| CXP-3R0105R-TW | 3.0 | 1 | 8*12 | 180 | 860 | 0.006 | 1.21 | 0.47 | 1322 | 0.0013 | 1.32 |
| CXP-3R0205R-TWX | 3.0 | 2 | 8*12 | 130 | 260 | 0.006 | 1.15 | 0.26 | 1483 | 0.0025 | 2.75 |
| CXP-3R0205R-TW | 3.0 | 2 | 8*16 | 100 | 360 | 0.010 | 2.21 | 0.61 | 2609 | 0.0025 | 2.17 |
| CXP-3R0335R-TW | 3.0 | 3.3 | 8*20 | 98 | 280 | 0.012 | 3.31 | 0.74 | 2660 | 0.0041 | 2.84 |
| CXP-3R0405R-TW | 3.0 | 4 | 10*20 | 75 | 113 | 0.018 | 4.20 | 0.90 | 4141 | 0.0063 | 2.47 |
| CXP-3R0505R-TWX | 3.0 | 5 | 8*25 | 90 | 135 | 0.015 | 4.48 | 0.87 | 4141 | 0.0063 | 3.23 |
| CXP-3R0505R-TW | 3.0 | 5 | 10*20 | 75 | 113 | 0.018 | 4.80 | 0.97 | 3794 | 0.0063 | 2.47 |
| CXP-3R0705R-TW | 3.0 | 7 | 10*20 | 70 | 170 | 0.020 | 4.79 | 0.79 | 2118 | 0.0088 | 2.92 |
| CXP-3R0705R-TWQ | 3.0 | 7 | 10*25 | 60 | 150 | 0.024 | 6.44 | 1.20 | 2769 | 0.0088 | 3.37 |
| CXP-3R0106R-TWX | 3.0 | 10 | 10*25 | 55 | 83 | 0.030 | 8.22 | 1.25 | 4156 | 0.0125 | 3.97 |
| CXP-3R0106R-TWQ | 3.0 | 10 | 10*30 | 45 | 68 | 0.036 | 8.96 | 1.51 | 4417 | 0.0125 | 3.45 |
| CXP-3R0106R-TW | 3.0 | 10 | 12.5*20 | 45 | 68 | 0.036 | 8.96 | 1.42 | 4033 | 0.0125 | 3.15 |
| CXP-3R0126R-TW | 3.0 | 12 | 12.5*25 | 40 | 60 | 0.048 | 10.47 | 1.66 | 4288 | 0.0150 | 3.57 |
| CXP-3R0156R-TWX | 3.0 | 15 | 12.5*30 | 35 | 53 | 0.062 | 12.59 | 1.93 | 4209 | 0.0188 | 3.84 |
| CXP-3R0156R-TW | 3.0 | 15 | 12.5*25 | 30 | 45 | 0.048 | 13.43 | 1.92 | 5581 | 0.0188 | 4.36 |
| CXP-3R0206R-TW | 3.0 | 20 | 12.5*25 | 35 | 47 | 0.050 | 13.64 | 1.66 | 3981 | 0.0250 | 3.91 |
| CXP-3R0206R-TWQ | 3.0 | 20 | 12.5*30 | 33 | 45 | 0.072 | 15.08 | 1.98 | 4195 | 0.0250 | 4.81 |
| CXP-3R0226R-TW | 3.0 | 22 | 12.5*35 | 34 | 48 | 0.060 | 14.50 | 1.97 | 3103 | 0.0275 | 4.58 |
| CXP-3R0256R-TWQ | 3.0 | 25 | 12.5*35 | 26 | 41 | 0.082 | 18.99 | 2.40 | 4858 | 0.0313 | 5.48 |
| CXP-3R0256R-TW | 3.0 | 25 | 16*25 | 25 | 38 | 0.082 | 19.35 | 2.41 | 3491 | 0.0313 | 3.79 |
| CXP-3R0306R-TW | 3.0 | 30 | 16*30 | 20 | 30 | 0.090 | 23.68 | 2.92 | 3930 | 0.0375 | 4.09 |
| CXP-3R0356R-TWX | 3.0 | 35 | 16*30 | 20 | 40 | 0.070 | 21.88 | 3.09 | 3103 | 0.0438 | 5.03 |
| CXP-3R0356R-TW | 3.0 | 35 | 16*35 | 18 | 25 | 0.105 | 26.99 | 3.30 | 4310 | 0.0438 | 4.71 |
| CXP-3R0506R-TW | 3.0 | 50 | 18*40 | 18 | 20 | 0.075 | 37.50 | 3.96 | 4154 | 0.0625 | 4.81 |
| CXP-3R0606R-TW | 3.0 | 60 | 18*40 | 15 | 20 | 0.100 | 40.90 | 2.00 | 4000 | 0.0750 | 5.56 |
| CXP-3R0107R-TWV | 3.0 | 100 | 18*60 | 13 | 20 | 0.260 | 50.85 | 5.30 | 2523 | 0.1250 | 5.69 |
| CXP-3R0127R-TWV | 3.0 | 120 | 18*60 | 12 | 15 | 0.300 | 61.45 | 6.72 | 2688 | 0.1370 | 6.20 |

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



CXP(3.0V)Series



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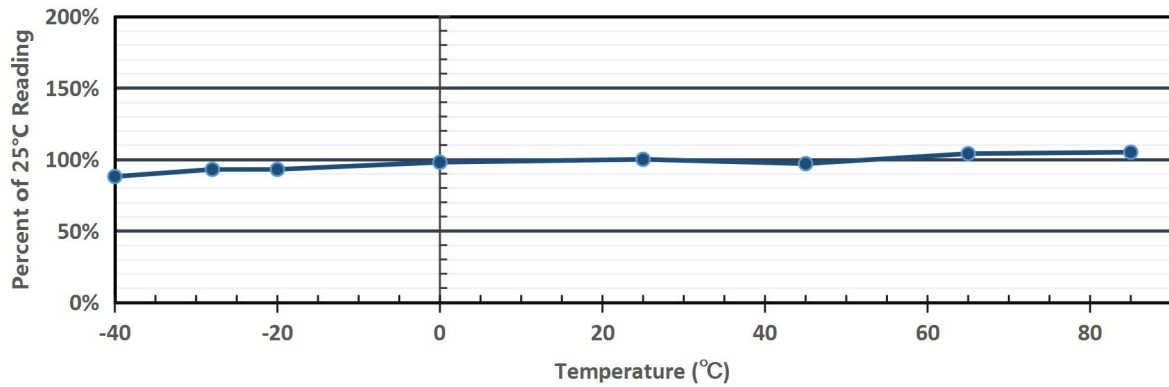
STANDARD PRODUCTS

| Part Number | Working Voltage (V DC) | Rated Cap. (F) | Dimensions (mm) | Max.ESR | | Leakage (72hrs/mA) | Maximum Peak Current(A) | Maximum Endurance Current(A) | Power Density (W/Kg) | Maximum Energy (W.h) | Energy Density (Wh/kg) |
|--|------------------------|----------------|-----------------|-----------------|------------|--------------------|-------------------------|------------------------------|----------------------|----------------------|------------------------|
| | | | D*L | ESRAC (1kHz/mΩ) | ESRDC (mΩ) | | | | | | |
| SOLDER PIN TYPE 2-PIN | | | | | | | | | | | |
| CXP-3R0107R-TW | 3.0 | 100 | 22*45 | 8.0 | 11.2 | 0.276 | 70.75 | 6.84 | 4231 | 0.1250 | 5.48 |
| CXP-3R0127R-TW | 3.0 | 120 | 22*50 | 7.5 | 10.5 | 0.345 | 79.65 | 7.40 | 3594 | 0.1500 | 5.24 |
| CXP-3R0157R-TWX | 3.0 | 150 | 22*55 | 7.0 | 9.8 | 0.460 | 93.40 | 7.00 | 3800 | 0.2000 | 7.00 |
| CXP-3R0167R-TW | 3.0 | 160 | 22*55 | 7.0 | 9.5 | 0.460 | 94.20 | 8.00 | 3800 | 0.2100 | 7.00 |
| CXP-3R0157R-TW | 3.0 | 150 | 25*50 | 7.0 | 9.8 | 0.460 | 91.09 | 8.22 | 3150 | 0.1875 | 5.36 |
| CXP-3R0227R-TW | 3.0 | 220 | 30*50 | 6.0 | 8.4 | 0.598 | 115.87 | 9.83 | 2726 | 0.2750 | 5.83 |
| CXP-3R0257R-TW | 3.0 | 250 | 30*55 | 5.5 | 7.7 | 0.667 | 128.21 | 10.71 | 2877 | 0.3125 | 6.41 |
| SOLDER PIN TYPE 2-PIN / SOLDER PIN TYPE 4-PIN | | | | | | | | | | | |
| CXP-3R0357R-TW | 3.0 | 350 | 35*60 | 3 | 3.5 | 1.00 | 235.90 | 13.90 | 2657 | 0.4300 | 6.83 |
| CXP-3R0367R-TW | 3.0 | 360 | 35*60 | 4.0 | 5.4 | 0.98 | 183.42 | 14.49 | 2657 | 0.4500 | 5.98 |
| CXP-3R0387R-TW | 3.0 | 380 | 35*60 | 3.8 | 5.1 | 1.05 | 193.26 | 14.86 | 2751 | 0.4750 | 6.21 |
| CXP-3R0407R-TW | 3.0 | 400 | 35*66 | 3.5 | 4.7 | 1.15 | 207.61 | 16.15 | 2537 | 0.5000 | 5.55 |
| CXP-3R0437R-TW | 3.0 | 430 | 35*66 | 3.2 | 4.5 | 1.24 | 223.14 | 16.55 | 2505 | 0.5625 | 5.87 |
| CXP-3R0487R-TW | 3.0 | 480 | 35*70 | 3.1 | 4.4 | 1.35 | 234.30 | 17.17 | 2405 | 0.6050 | 6.13 |
| CXP-3R0507R-TW | 3.0 | 500 | 35*65 | 2.9 | 3.4 | 1.30 | 277.70 | 18.75 | 2405 | 0.6250 | 7.81 |
| CXP-3R0607R-TW | 3.0 | 600 | 35*70 | 3 | 3.5 | 1.50 | 290.30 | 19.95 | 3760 | 0.7500 | 9.14 |

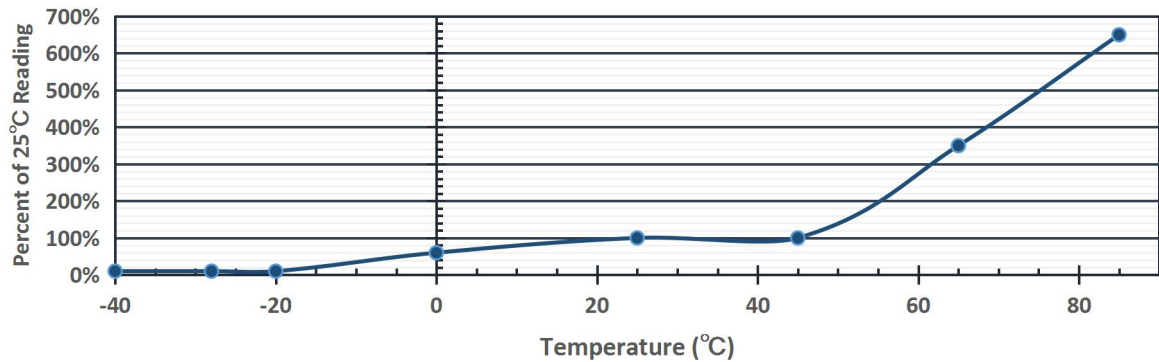
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QUALITY AND RELIABILITY

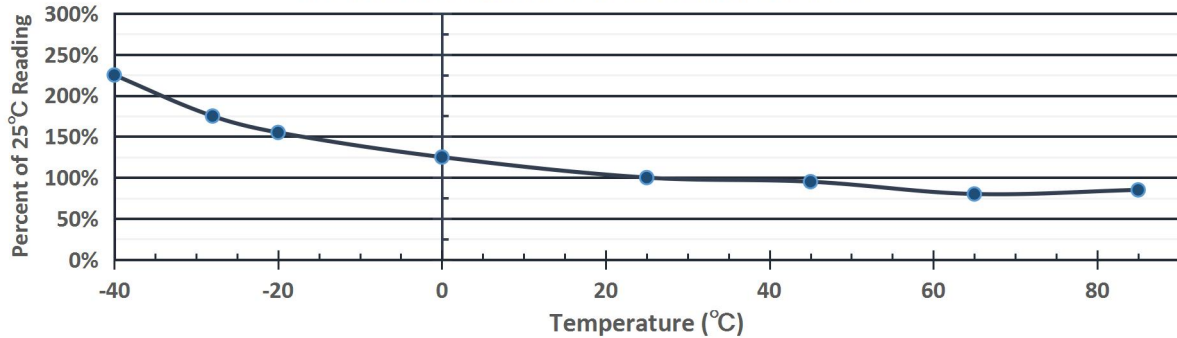
CAPACITANCE VS. TEMPERATURE



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 :

$$LS = L_R \times 2^X \times 2^Y$$

Which is $X = (T_m - T_a) / 10$ $Y = (V_r - V_a) / 0.2$

L_s = Expected life of the super capacitor in the application

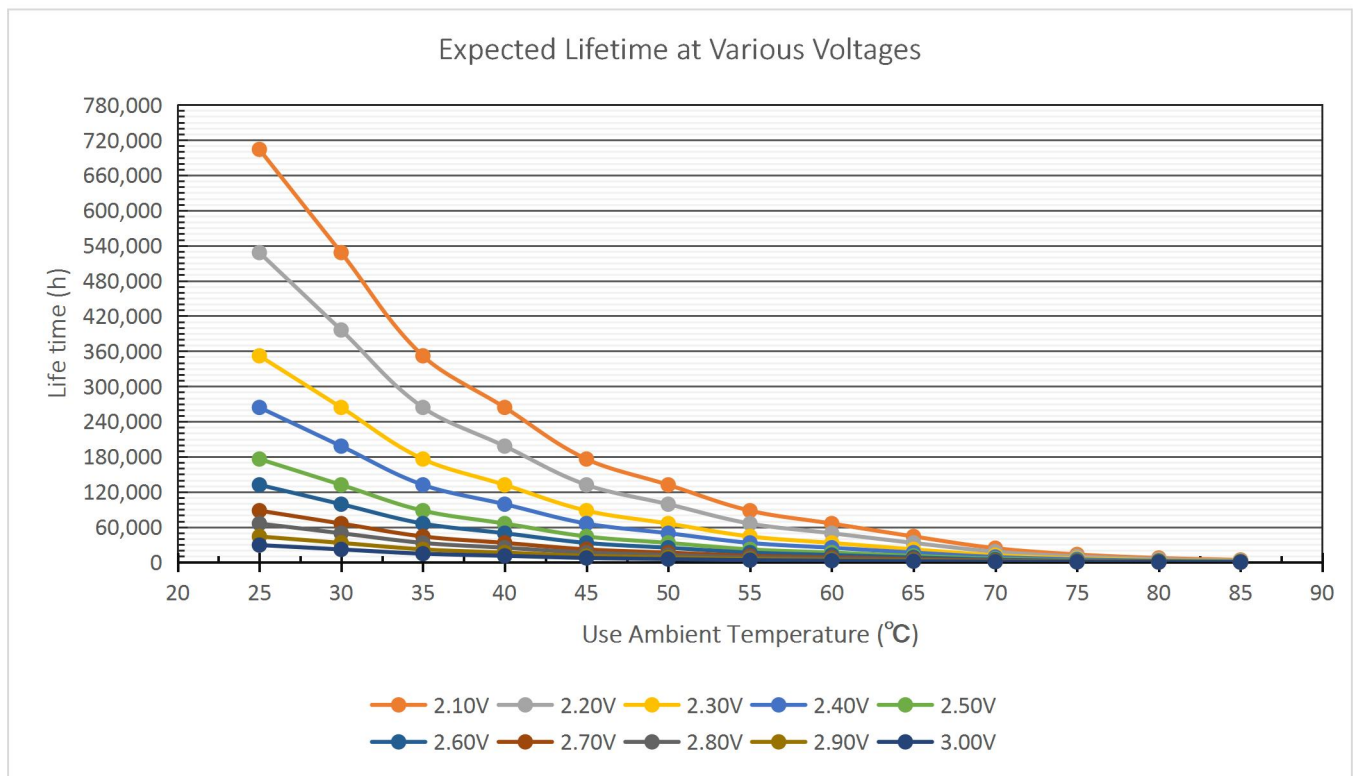
L_R = Load life rating of the super capacitor

T_m = Max temperature rating of the super capacitor

T_a = Ambient temperature of the application

V_r = Rated voltage of the super capacitor

V_a = Maximum applied voltage on the super capacitor in the application



SAFETY RECOMMENDATIONS

WARNINGS

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

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”

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.

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.