



规格承认书

SPECIFICATION FOR APPROVAL

产品名称 Product Name	直流支撑电容 DCL-LINK CAPACITOR
客户产品型号 Customer Specification	---
客户产品编码 Customer Part No.	---
胜业产品型号 Sheng Ye Specification	DCLT4SY1100-2.2
胜业产品编码 Sheng Ye Part No.	T0022J1100T82N5000

厂商认可

客户名称 Customer	Platan
客户确认 APPROVED	

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1 产品编码介绍 Part NO. introduction

18 位产品编码如下: part no. consists of 19 digits

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
T																	

第 1 位: 产品型号, “T” 表示 DCLT 型号

Digit 1: product type, “T”=“DCLT” series

第 2~5 位: 额定电容量

Digit 2~5: rated capacitance

第 2 位 digit 2	第 3 位 digit 3	第 4 位 digit 4	第 5 位 digit 5
整数部分 Integer part			小数部分 Decimal part
百位 10^2	十位 10^1	个位 10^0	十分位 10^{-1}

例 for example: 1400=140.0 μ F, 0500=50.0 μ F, 0065=6.5 μ F

第 6 位: 容量偏差

Digit 6: Tolerance

J	K	M	C
-5% ~ +5%	-10% ~ +10%	-20% ~ +20%	定制 customized

第 7~10 位: 额定电压,

Digit 7~10: rated voltage

例 for example: 0900=900VDC, 1100=1100VDC

第 11~16 位: 引线特征

Digit 11~16: leads code

第 11 位 Digit 11		第 12 位 Digit 12		第 13 位 Digit 13		第 14 位 Digit 14		第 15~16 位 Digit 15~16	
引线数量 Leads Qty		引线直径 Leads diameter		引线间距 Leads Pitch: P		引线间距 Leads Pitch:P1		引线长度 C Leads length	
代码 code	说明	代码 code	说明	代码 code	说明	代码 code	说明	代码 code	说明
T	2-Pins	8	d=0.8mm	2	P=27.5mm	N	N/A	38	C=3.8mm
F	4-Pins	1	d=1.0mm	3	P=37.5mm	A	P1=10.2mm	60	C=6.0mm
--	--	2	d=1.2mm	5	P=52.5mm	B	P1=12.7mm	--	--
--	--	--	--	--	--	C	P1=20.3mm	--	--

第 17~18 位: 内部特征代码

Digit 17~18: internal identify code



2 产品特性 Product Features

- 可承受高有效值电流、高峰值电流 High Irms rating/ High Ipeak rating
- 自感低 Low self-inductance
- 可靠性高，使用寿命长 High reliability and long life expectancy
- 有自愈特性，采用金属化聚丙烯膜设计 Design of metallized polypropylene film with self-healing property
- 无极性介质 Non-polar
- 符合 AEC-Q200D compliant

3 典型应用 Typical applications

- 高性能直流支撑、直流滤波、储能等 High quality DC-Link, DC filter, ESS, etc
- 工业和高端电源 Industry and high-level power supply
- 变频器 Frequency converter
- 光伏逆变器 PV inverter

4 技术要求 Technical request

引用标准 Reference standard	IEC61071-2007/GB17702-2013
容量偏差 Tolerance	J ($\pm 5\%$) @1V, 1kHz, 20℃
气候类别 Climatic Category	40/85/56
工作温度范围 (外壳) Working temperature (case)	-40℃ ~ 85℃
存储温度范围 Storage temperature	-40℃ ~ 85℃
耐电压 Withstand voltage	Ut-t : 1.5Un, 10s
	Ut-c : 3000VAC(60s, 50Hz, 25℃)
极间绝缘电阻 IR Insulation resistor between terminals	IR x CN $\geq 10000s$ (20℃, 100VDC, 1min)
介质损耗角正切 Dielectric loss factor $\tan\delta_0$	2×10^{-4}
灌封料 Impregnation	环氧树脂 epoxy resin
阻燃等级 Flame retardant grade	UL94-V0 (plastic case)
介质 Dielectric	金属化聚丙烯薄膜 Polypropylene film
工作最高海拔 Altitude	$\leq 2000m$
相对湿度 Relative Humidity	$\leq 90\%$
失效率 Failure rate	$\leq 100fit$
预期寿命 Life expectancy	100,000h (@Un, $\theta_{hs}=70^\circ C$)

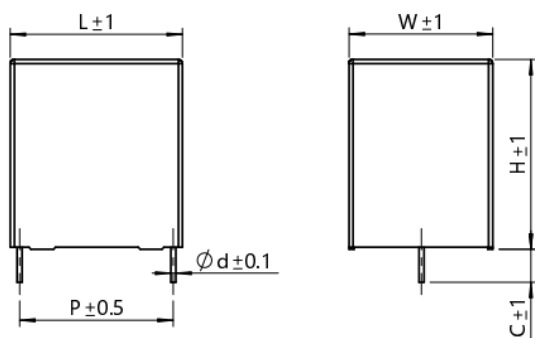
(1) I_{max} 是在 $\theta_{amb}=70^\circ C$, $f=10kHz$, 外壳表面温升 $\Delta T \leq 15^\circ C$ 时的最大电流有效值。

I_{max} means the max. permitted current, when at $70^\circ C$ ambient temperature, $f=10kHz$ and the capacitor's surface temperature rising $\Delta T \leq 15^\circ C$.

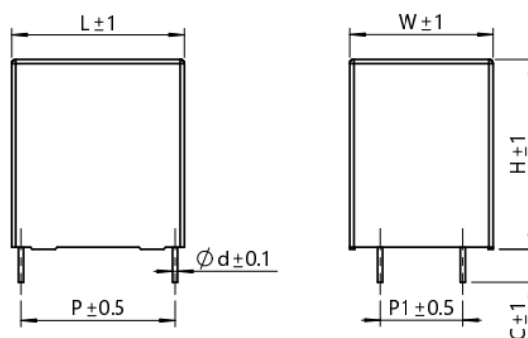


5 外形尺寸 Outline Drawing

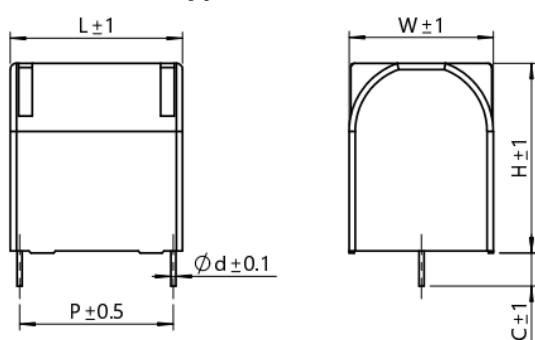
Type A: 方底 2-Pin



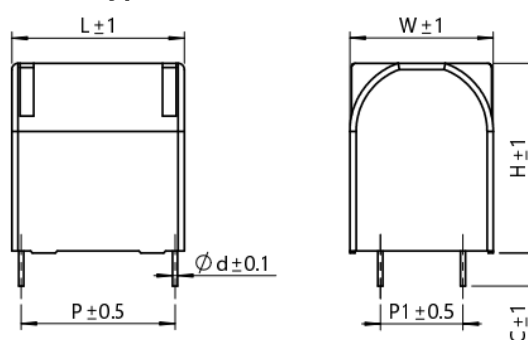
Type B: 方底 4-Pin



Type C: 圆弧底 2-Pin



Type D: 圆弧底 4-Pin



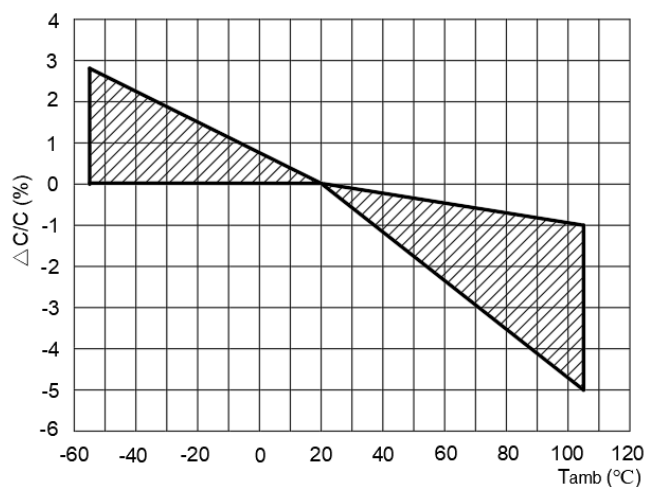
注：所有尺寸单位均为毫米(mm) PS: All dimensions are in millimeters (mm)

6 技术参数 Technical parameters

C	L	W	H	P	P1	d	C	dv/dt	$\tan\delta$ (10^{-4})	ESR	I _{max}	I _{peak}	Type	Part No.
μf	mm	mm	mm	mm	mm	mm	mm	V/μs	1kHz	mΩ	A	kA		
Undc: 1100Vdc @85°C														
2.2	31	15	24.5	27.5	--	0.8	5	58	10	15.8	4	128	A	T0022J1100T82N5000

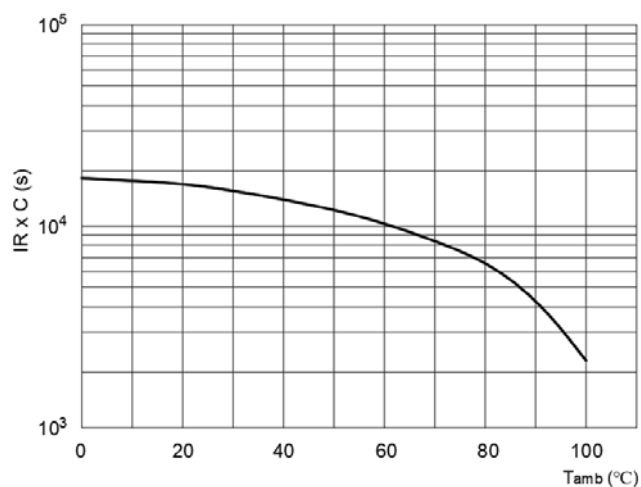


7 特征图表(典型值) Feature graph (Typical value)



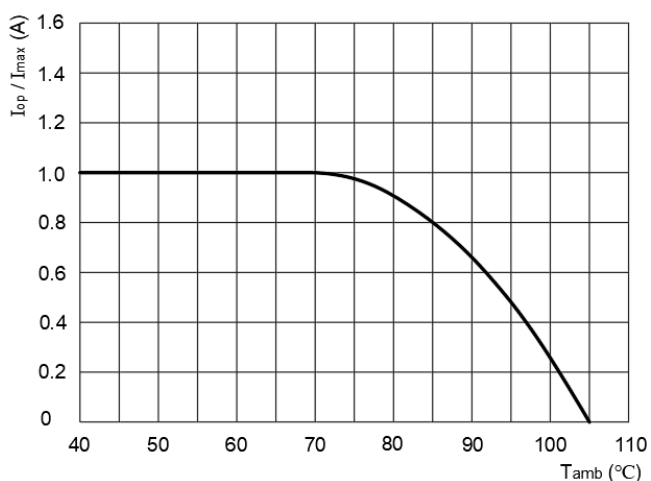
容量随温度变化曲线(典型值)

Capacitance VS Temperature (Typical value)

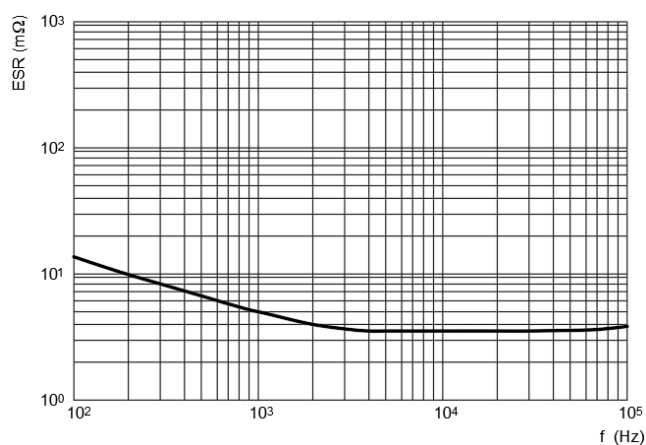


绝缘电阻随温度变化曲线(典型值)

Insulation resistor VS Temperature (Typical value)

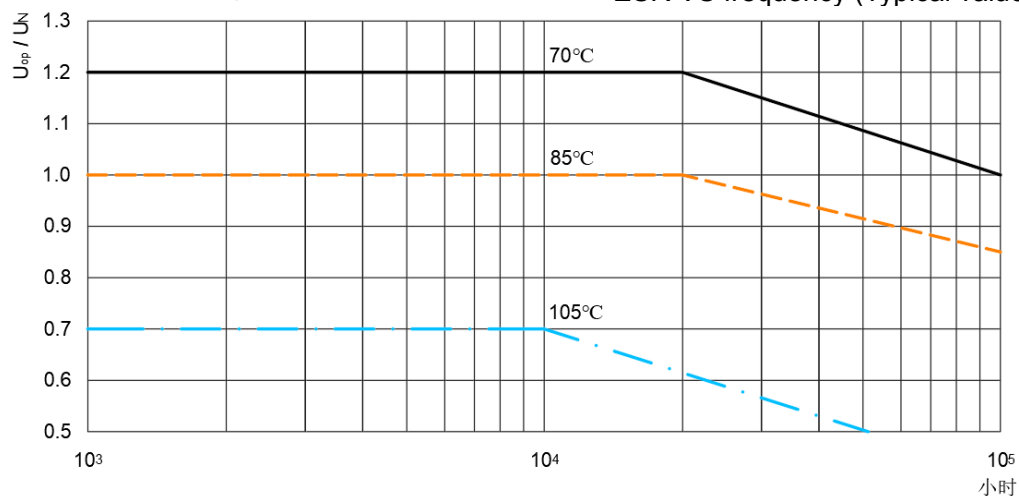


电流随温度变化曲线(典型值)

 I_{max} VS Temperature (Typical value)

ESR 随频率变化曲线(典型值)

ESR VS frequency (Typical value)

不同电压和温度下的预期寿命曲线(典型值)
Capacitance VS Temperature (Typical value)



8 试验项目 Test Items

8.1 出厂试验 Routine Test

序号 No.	项目 Test Item	测试标准和条件 Test standard and condition	性能要求 Requirements
1	外观检查 External inspection	目视及量规测量。Visual check and Gauge measurement	符合规格书内图纸要求 Comply with the drawing require
2	极间电压试验 Voltage test between terminals	$U=1.5U_n$ (10s, 25℃)	无击穿和闪络, 允许有自愈性击穿。 neither puncture nor flashover shall occur. Self-healing breakdowns are permitted.
3	极壳电压试验 Voltage test between terminals to case	$U=3000V_{ac}$ (10s, 25℃)	无击穿和闪络。 neither puncture nor flashover shall occur.
4	电容和 $\tan\delta$ 测量 Capacitance and $\tan\delta$ measurements	在端子间的电压试验之后进行, 测试频率100Hz。Shall be measured after voltage test between terminals, measured at 100Hz	容量 Capacitance tolerance: $\pm 5\%$ @100Hz 损耗 $\tan\delta \leq 0.0010$ @1kHz



8.2 型式试验 Type Test

序号 NO.	项目 Test Items	测试标准和条件 Test standard and condition	性能要求 Requirements
1	外观检查 Appearance inspection	目视及量规测量; Visual check and Gauge measurement	符合规格书内图纸要求; Comply with the drawing require
2	引出端强度 Robustness of terminals	1) 拉力试验 Tensile strength (Ua1) $d \leq 0.8\text{mm}$ 10N $0.8\text{mm} < d \leq 1.2\text{mm}$ 20N 2) 弯曲试验 Bending test (Ub1) $d \leq 0.8\text{mm}$ 5N $0.8\text{mm} < d \leq 1.2\text{mm}$ 10N 弯曲 bending angle: $4 \times 90^\circ$ 持续时间 duration: 2s~3s	外观无可见损伤 No visible damage $ \Delta C/C_0 \leq 0.5\%$ $\Delta \tan \delta \leq 0.0050$
	耐焊接热 Resistance to soldering heat	焊槽法 Solder bath: Tb, 方法 1A 焊槽温度 Temperature : $260^\circ\text{C} \pm 5^\circ\text{C}$ 浸渍时间 Immersion : $10\text{s} \pm 1\text{s}$	
3	振动 Vibration	频率 : $f = 10 \sim 55\text{Hz}$; 振幅 : $a = \pm 0.35\text{mm}$ 每一轴向实验持续时间为10个频率周期 (3个轴向互成 90°), 每分钟一倍频程 Test duration per axis = 10 frequency cycles (3 axes offset from each other by 90°), 1 octave/min	外观无可见损伤 No visible damage $ \Delta C/C_0 \leq 0.5\%$; $\Delta \tan \delta \leq 0.0050$
4	冲击放电 Surge discharge	试验电压 Test voltage : $1.1U_N$; 十分钟内五次充放电 ; 5 times discharge within 10 mins 试验完五分钟内进行极间耐电压测试 ; Within 5 min after this test, subject a voltage test between terminals	无永久性击穿或闪络 允许自愈性击穿 None puncture or flashover occurs. Self-healing is permitted $ \Delta C/C_0 \leq 1\%$ $\tan \delta \leq 1.2 \times \tan \delta_0 + 0.0001$
	端子间电压 Voltage test between terminals	试验电压 Voltage : $1.5 \times U_{NDC}$ 持续时间 Duration : 60s (室温 room temperature)	
5	自愈性 Self-healing	施加电压(直流) Voltage (DC) : $1.5 \times U_N$ 持续时间 Duration : 10s 如果在以上试验时间内自愈性击穿次数 < 5 次, 则缓慢升高电压直到发生 5 次自愈为止 ,或直到电压达到 $2.5U_N$;如果电压达到 $2.5U_N$ 时, 自愈性击穿次数仍 < 5 次, 则保持 $2.5U_N$ 的电压 10s。 If fewer than five clearings occur during this time, the voltage shall be increased slowly	$ \Delta C/C_0 \leq 0.5\%$ $\tan \delta \leq 1.1 \times \tan \delta_0 + 0.0001$



		until five clearings have occurred since the start of the test or until the voltage has reached 2,5 times the rated voltage. If fewer than five clearings have occurred when the voltage has reached 2,5 UN, for a time of 10 s the test shall be finished.	
6	温度快速变化 Rapid change of temperature	低温 Low T_A : -40°C 高温 High T_B : $+85^{\circ}\text{C}$ 暴露持续时间 Duration : $t_1=30\text{mins}$ 转换时间 Change time : $t_2\leq 3\text{mins}$ 循环次数 Cycle : 5 times	无可见损伤 ; No visible damage $ \Delta C/C_0 \leq 2\%$; $\Delta \tan\delta\leq 0.0150$
7	热稳定实验 Thermal stability	温度 Temperature : 室温 Room temperature 电流 Current : 1.1I _{rms} 时间 Duration:48h 实验时最后6h , 至少测量4次电容外壳温度 During the last 6 hour, the case temperature shall be measured at least 4 times;	实验时最后6h , 温升增加量应小于 1°C During last 6 hours, the temperature rise shall not increase by more than 1 K. $ \Delta C/C_0 \leq 2\%$; $\Delta \tan\delta\leq 0.0150$
8	稳态湿热 Damp heat steady state	温度 Temperature : $40^{\circ}\text{C}\pm 2^{\circ}\text{C}$ 湿度 Humidity : $93\pm 3\%\text{RH}$ 持续时间 Duration : 56 days	外观无可见损伤 无永久性击穿或闪络 No visible damage None puncture or flashover occurs. $ \Delta C/C_0 \leq 2\%$ $\Delta \tan\delta\leq 0.0150$
	极间耐压 Voltage test between terminals	$1.5U_N$, 60s	
	极壳耐压Voltage test between terminal to case	$(\sqrt{2}U_N+1000)\text{VAC}$ or 2000VAC , 取较大值 , 10s	
9	耐久性测试 Endurance	测试顺序 : 1) $1.3\times U_{\text{NDC}}$, $+85^{\circ}\text{C}$, 500hours 2) $1.4\times I_{\text{peak}}$, discharge 1000 times $1.3\times U_{\text{NDC}}$, $+85^{\circ}\text{C}$, 500小时	$ \Delta C/C_0 \leq 3\%$; $\Delta \tan\delta\leq 0.0150$
10	耐湿负荷 THB test	温度Temperature : $60\pm 2^{\circ}\text{C}$; 湿度Humidity : $93\pm 2\%\text{RH}$; 试验电压Voltage : $1.0U_n$; 持续时间Duration : 1000h ;	$ \Delta C/C_0 \leq 10\%$; $\Delta \tan\delta\leq 0.0150$

注1 : 电容值测试频率 : 1kHz , 损耗角正切值测试频率 : 10kHz ;

注2 : C_0 为试验之前的值 , ΔC 为试验前、后电容值的变化 ;

注3 : $\tan\delta_0$ 为试验之前的值 , $\tan\delta$ 为试验之后的值 , $\Delta \tan\delta$ 为试验前、后损耗角正切值的变化。

Note1: Capacitance measured @1kHz; $\tan\delta$ measured @10kHz

Note2: C_0 : initial value before test; ΔC : change of capacitance before and after test

Note3: $\tan\delta_0$: initial value before test; $\tan\delta$: value after test; $\Delta \tan\delta$: change of loss angle before and after test



9 最高允许电压 Max. Permitted Voltage

电容器运行在下表所示的电压水平和持续时间内无任何故障。应当认识到，在任何长时期高于额定电压值下的运行都将缩短整个产品寿命。

The capacitor runs at the voltage level and duration shown in the table below without any failure. It should be recognized that any long-term operation above the rated voltage will shorten the entire service life.

过电压 over voltage	一天之内的最长持续时间 Longest duration time within 1 day	说明
$1.1 U_N$	30% of on-load duration	系统调整
$1.15 U_N$	30mins	系统调整
$1.2 U_N$	5mins	系统调整
$1.3 U_N$	1min	系统调整

注 1: 在电容器寿命中，允许有 $1.5U_N$ 、历时 30ms 的过电压 1000 次。可以耐受而不显著降低电容器寿命的过电压幅值取决于其持续时间、施加次数和电容器温度。另外，这些值是假设当电容器的内部温度低于 0°C 但仍在温度类别之内时可能出现的过电压。

注 2: 平均施加电压不得高于规定电压。

Note1: During the life of the capacitor, 1,000 times over-voltage of $1.5U_N$ and 30ms are allowed.

Whether a bearable over-voltage cause service life decrease, it depends on duration time, apply times and temperature of capacitor. In addition, these values assume that the overvoltage that may occur when the internal temperature of the capacitor is lower than 0°C but still within the temperature category.

Note 2: The average applied voltage must not be higher than the specified voltage.

10 贮存条件 Storage condition

由于大气中存在氯化物、氢硫化物、硫酸物质等，所以产品贮存在大气中，必须注意引出端的可焊性会变差。产品不能暴露在高温和高湿状态，必须保存在以下环境中(在不拆开原包装的基础上)：

温度： $-40^{\circ}\text{C} \sim +40^{\circ}\text{C}$

湿度：年平均值不超过 70%RH

全年任意 30 天不超过 80%RH，电容器表面不允许有凝露

产品贮存时间(从产品包装或产品本体上的日期算起)：不超过 24 个月

超期影响：引出端可焊性可能变差，电容量可能存在轻微漂移。

Due to the presence of hydrochloride, hydrosulfide, sulfuric acid, etc. in the atmosphere, when the product is stored in the atmosphere, attention must be paid to the deterioration of the solder ability of the terminal. The product cannot be exposed to high temperature and high humidity, and must be stored in the following environment (based on not opening the original packaging):

Temperature: $-40^{\circ}\text{C} \sim +40^{\circ}\text{C}$

Humidity: Annual average does not exceed 70%RH

No more than 80%RH for any 30 days of the year, no condensation on the capacitor surface

Product storage time (calculated from the date on the product packaging or product body): no more than 24 months



Effect of overdue period: The solder ability of the terminals may be deteriorated, and the capacitance may change slightly.

11 注意事项 Matters need attention

- 避免过载使用电容器
- 使用时不可以超过产品允许的最高温度
- 不可以对电容器端子施加任何机械应力
- 避免任何压缩、拉伸或弯曲应力
- 不可以有腐蚀性的环境中使用或储存电容器，在有灰尘的环境中，应定期对电容器特别是端子进行维护和清洁，以防端子之间或端子与地之间形成导电路径
- 电容器焊接在 PC 板上之后，不可以移动或晃动电容器
- 不可以通过抓取已焊接在 PC 板上的电容器来拿起 PC 板
- 不可以将电容器放置在电镀孔间距与电容器指定的引线间距不一致的 PC 板上
- 避免外部能源输入，如火灾或电力
- 电容器的使用寿命不是无限的，最大使用寿命可能会随电容器的使用状况而变化
- Avoid use of capacitors under overloading
- Do not exceed the max temperature during operation
- Do not apply any mechanical stress to the capacitor terminals
- Avoid any compression, tension or bending stress
- Do not use or store capacitors in a corrosive environment. In a dusty environment, the capacitors, especially the terminals, should be maintained and cleaned regularly to prevent the formation of conductive paths between the terminals or between the terminals and the ground.
- After the capacitor is soldered on the PC board, do not move or shake the capacitor
- Do not pick up the PC board by grabbing the capacitors that have been soldered on the PC board
- Do not place the capacitor on the PC board where the pitch of the plating holes is inconsistent with the specified lead pitch of the capacitor
- Avoid external energy input, such as fire or electricity
- The service life of the capacitor is not unlimited, the maximum service life may vary with the use of the capacitor