承　认　书

APPROVAL SHEET

客　户： CUSTOMER	SCHUKAT	承认书编号： APP. NO.	**D260022712**
系　列： SERIES	**LP**	使用温度范围： OPERATION TEMP. RANGE	**-40~+85℃**

凯美品牌料号 JAMICON PART NO.：	客户产品料号 CUSTOMER PART NO.：
TLP338M050S1A5Q35L	**CLPW3300/50**

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Revision Change History
变更记录

Version 版本	Change date 日期	Originator 责任人	Change Description 变更描述	Checked 审核
1.0	2026/2/27	邓雷雷	Initial Version 首次发行	高维琴

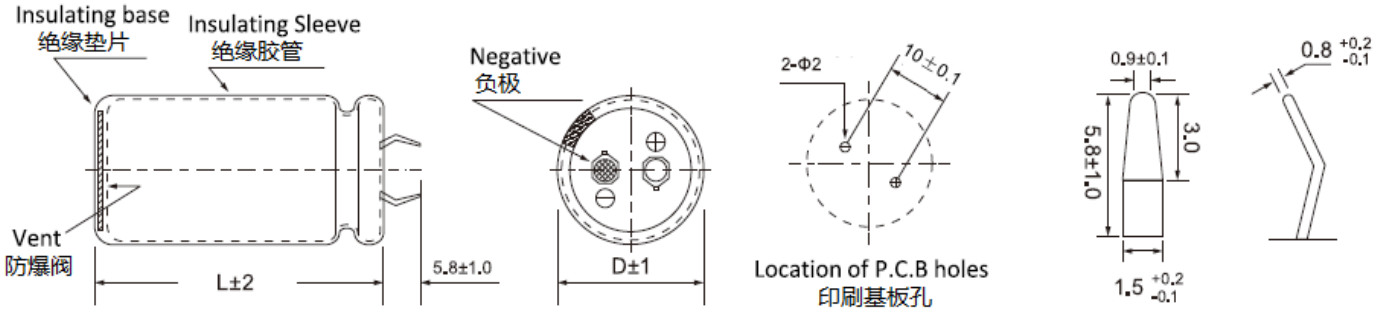
Table of specification and characteristics 规格和特性表

NO	料号 Part NO.	静电容量 CAP(μF) 120Hz 20℃	容量公差 CAP Tol. (%)	工作电压 WV	损失角 DF(%) (MAX) 120Hz 20℃	漏电流 LC(μA) (MAX) 5 min 20℃	纹波电流 RC(mArms) (MAX) 120Hz 85℃	纹波寿命 Ripple Life (Hrs) 85℃	尺寸 Dimensions (mm) φD	L	P
1	TLP338M050S1A5Q35L	3300	±20	50	30	1219	2510	2000	22	35	10.0

Ⅰ. Scope 范围

This standard defines characteristics and dimensions for aluminum electrolytic capacitors named LP series is standard product.
此标准规定了铝质电解电容标准品LP系列的特性和尺寸。

Ⅱ. Construction & Dimensions 尺寸图



Ⅲ. Characteristics 特性

Standard test condition 标准试验条件

Unless otherwise specified all tests shall be performed at, or referred to, an ambient temperature of 20℃ and a relative humidity not greater than 60%.
所有的试验应在环境温度20℃和相对湿度小于等于60%的条件下进行，除非另有规定。

Operating Temperature Range 工作温度范围

10~100VDC -40~+85℃ 160~450VDC -25~+85℃

1. Electrical characteristics 电气特性

(1). Working Voltage and Surge Voltage 工作电压和浪涌电压

WV: Working Voltage 工作电压(VDC)
SV: Surge Voltage 浪涌电压 (V)

W.V.	10	16	25	35	50	63	80	100	160	200	250	350	400	420	450
S.V.	13	20	32	44	63	79	100	125	200	250	300	400	450	470	500

(2). Leakage Current 漏电流

The maximum leakage current is specified in the following formula after DC working voltage applied for 5 minutes.

印加直流工作电压5分钟后的最大漏电流值如下列公式所示：

After rated voltage applied for 5 minutes.施加额定电压5分钟后测量。

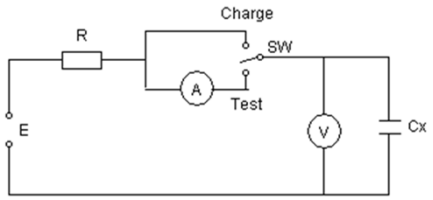
$I \leq 3\sqrt{CV}$ (uA)

where I: Leakage Current (漏电流) (μA)

C: Nominal Capacitance (标称容量) (μF)

V: Rated Voltage (额定电压) (V)

Measurement circuit 测试电路



(3). Dissipation Factor 损失角

Dissipation Factor at 120Hz/ 20℃ shall not exceed the values given in the table below.

在120 Hz / 20℃条件下的DF值不应超过下表中给出的值。

W.V.		10	16	25	35	50	63	80~100	160~250	350~450
tanδ (%)	CV≦100000	50	40	35	25	25	25	20	20	25
	CV＞100000	60	50	45	35	30	30	25	20	25

(4). Low Temperature Characteristics 低温特性

The ratio of impedance at -25℃/+20℃ and -40℃/+20℃ of the capacitor shall be less than the following value at 120Hz.

电容器在120Hz的条件下,分别在-25℃/+20℃和-40℃/+20℃的阻抗比，应小于以下的规格值：

WV额定电压 / Z阻抗(120Hz)	10~100	160~250	350~500
Z(-25℃) / Z(+20℃)	4	6	8
Z(-40℃) / Z(+20℃)	15	—	—

(5). Multiplier for Ripple Current 纹波电流频率修正系数

Frequency coefficient 频率系数

Frequency 频率(Hz)	60	120	1k	10k	100k
W.V.	Coefficient系数				
10~35V	0.90	1.00	1.05	1.10	1.10
50~100V	0.90	1.00	1.15	1.20	1.20
160~250V	0.80	1.00	1.35	1.45	1.50
350~450V	0.90	1.00	1.30	1.40	1.45

Temperature coefficient 温度系数

The temperature around the capacitor 电容器周围温度 (℃)	45	60	70	85
Coefficient系数	1.55	1.30	1.20	1.00

2. Mechanical Characteristics 机械特性

Lead Pull Test 端子拉力测试

Capacitors shall be with stand the pull test shown in the following table.
电容器的导针应能承受下表所示的拉力测试

Mechanical Characteristics 机械特性	Load 负荷 (kg)	Test time 测试时间(sec)
Terminal Strength 端子强度	2.0	10±1.0

3. Endurance characteristics 耐久特性

(1). Ripple Life 纹波寿命

After applying rated voltage with rated ripple current for 2000+12/-0 hours at 85±2℃,when the capacitors are restored to 20℃ the capacitors shall meet the following requirements.
在85±2℃环境中，不超过额定电压的范围下叠加额定纹波电流，连续加载额定电压2000+12/-0小时后，待温度恢复到20℃进行测量时，应满足以下要求。

Capacitance Change 容量变化	Within ±20% of initial value 在初始值的±20%以内
Dissipation Factor 损失角	Not more than 150% of specified value 不超过规格值的150%
Leakage Current 漏电流	Not more than the specified value 不超过规格值

(2). Shelf life 高温无负荷寿命

The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1000+12/-0 hours at 85±2℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.
在85℃±2℃环境中，无负荷放置1000+12/-0小时后待温度恢复到20℃，特性测量前需先进行試验前处理（处理方法参照JIS C 5101-4 4.1项），测量时应满足以下要求。

Capacitance Change 容量变化	Within ±20% of initial value 在初始值的±20%以内
Dissipation Factor 损失角	Not more than 150% of specified value 不超过规格值的150%
Leakage Current 漏电流	Not more than the specified value 不超过规格值

(3). Solderability test 焊锡性试验

The following specifications shall be satisfied when the lead wires are tested in solder bath at 245±5℃ for 2.5±0.5 seconds, more than 95% of the terminal surface shall be covered with new solder.

当端子在245±5℃的焊锡槽中试验2.5±0.5秒后，95%以上的端子表面应当要被新焊料覆盖。

(4). Solder Heat Resistance Test 焊锡耐热试验

The following specifications shall be satisfied when the lead wires are tested in solder bath at 275+2/-0℃ for 20±0.5 seconds.

当端子在275+2/-0℃的焊锡槽中试验20±0.5秒后，应当满足以下要求：

Capacitance Change 容量变化	≦±5% of the initial value ≦初始值的±5%
Dissipation factor 损失角	≦Initial specified value 低于初始规格值
Leakage Current 漏电流	≦Initial specified value 低于初始规格值

Ⅳ. Mounting 安装

The paper separators and the electrolytic-conductive electrolytes in a non-solid aluminum electrolytic capacitor is flammable.

非固态电容器内中的电解纸和电解液都是易燃品。

Leaking electrolyte on a PC board can gradually erode the copper traces, possibly causing smoke or burning by short-circuiting the copper traces.

PC板上漏液会逐渐侵蚀铜丝,很可能由于铜丝短路导致冒烟或燃烧。

Verify the following points when designing a PC board.

在设计PC板时需验证以下要点：

(1) Provide the appropriate hole spacing on the PC board to match the terminal spacing of the capacitor.在PC板上保留适当的孔距以匹配电容器的端子间距。

(2) Make the following open space over the vent so that the vent can operate correctly.

Case diameter 铝壳直径	Clearance 间隔
φ22 ~ φ35 mm	≧3 mm
≧φ40 mm	≧5 mm

(3) Do not place any wires or copper traces over the vent of the capacitor.
请不要在电容器的防爆阀上方放置任何电线或铜丝。

(4) Installing a capacitor with the vent facing the PC board needs an appropriate ventilation hole in PC board. 在安装电容器时，如果防爆阀正对PC板，则PC板上需要开一个适当的通风孔。

(5) Do not pass any copper traces beneath the seal side of a capacitor.
The trace must pass 1 or 2 mm to the side of the capacitor.
请不要在电容器的封口部下面进行电路配线。如果在电容器附近配线,请确保线路与电容器间隔1~2㎜。

(6) Avoid placing any heat-generating objects adjacent to a capacitor or even on the reverse side of the PC board.
请不要在电容器周围或PC板的背面放置任何发热部件。

(7) Do not pass any via holes or underneath a capacitor.
请不要从电容器通孔或电容器底部穿过。

(8) In designing double-sided PC boards, do not locate any copper trace under the seal side of capacitor.设计双面PC板时，请不要在电容器的封口面放置任何铜丝。

(9) The liquid aluminum electrolytic capacitor can't be reflow soldering, please contact us if you need to do that. 液态铝电解电容器不能进行回流焊，如需进行回流焊请与我司联系。

(10) In order to enhance the vibration resistance of the capacitor, it is recommended to be fixed on the PCB with fixed adhesive when installed.
为增强电容的抗振动能力，建议安装时用固定胶辅助其固定于PCB上。

V. Storage Condition 储存条件

(1) Aluminum Electrolytic Capacitors should not be stored in high temperatures or where there is a high level of humidity. The suitable storage condition is 5~35℃ and less than 75% in relative humidity.
铝电解电容器不应当储存在高温或高湿的条件下.合适的储存条件为5~35℃,相对湿度低于75%。

(2) Aluminum Electrolytic Capacitors should not be stored in damp conditions such as water, saltwater spray or oil spray.
铝电解电容器不应当储存在潮湿的条件下，如水、盐水喷雾或油雾

(3) Do not store Aluminum Electrolytic Capacitors in an environment full of hazardous gas (hydrogen sulfide , sulfurous acid gas, nitrous acid, chlorine gas, ammonium, etc…).
请不要将铝电解电容器存储在一个充满有害气体的环境下(硫化氢、二氧化硫、亚硝酸、氯气、铵气等…)。

(4) Aluminum Electrolytic Capacitors should not be stored under exposure to ozone, ultraviolet rays or radiation.
铝电解电容器储存不应暴露在臭氧、紫外线辐射和射线中。

(5) If a capacitor has been stored for more than one year under normal temperature (shorter if high temperature) and it shows increased leakage current, then a treatment by voltage application is recommended. The capacitor which hasn't been treated mustn't be used directly.
如果电容器在常温下储存超过一年(高温条件下不超过一年),出现漏电流上升现象,
那么建议对电容器进行加压处理.未被处理过的电容器不能直接使用。

VI. Marking 标识

Marking on capacitor include 电容器上的标识包含：

正面 Front side

← JAMICON trademark 商标

← Negative Polarity of the Terminal 负极标示线

3300uF 50 V ← Capacitance and Rate voltage 标称容量和工作电压

LP P 85℃ ← Series and Maximan operating temperature, PET Sleeve.
系列和最高工作温度及PET胶管

CO (M) ← Sleeve Suppiler and Capacitors tolerance
胶管供应商及容量公差范围

背面（镭射） Back side (Laser printing)

×××××××××× ← Batch number 批号

××× ← Weeks of production 生产周期

Remark: Date code numbering system. Date code is indicated manufactured date
备注:周期编号系统,周期是表示生产日期.

Manufactured year 生产年份

Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Code	3	4	5	6	7	8	9	10	1	2

Manufactured month 生产月份

Month	1	2	3	4	5	6	7	8	9	10	11	12
Code	01	05	09	13	18	22	26	30	35	40	44	48

Sleeve Suppiler 胶管供货商

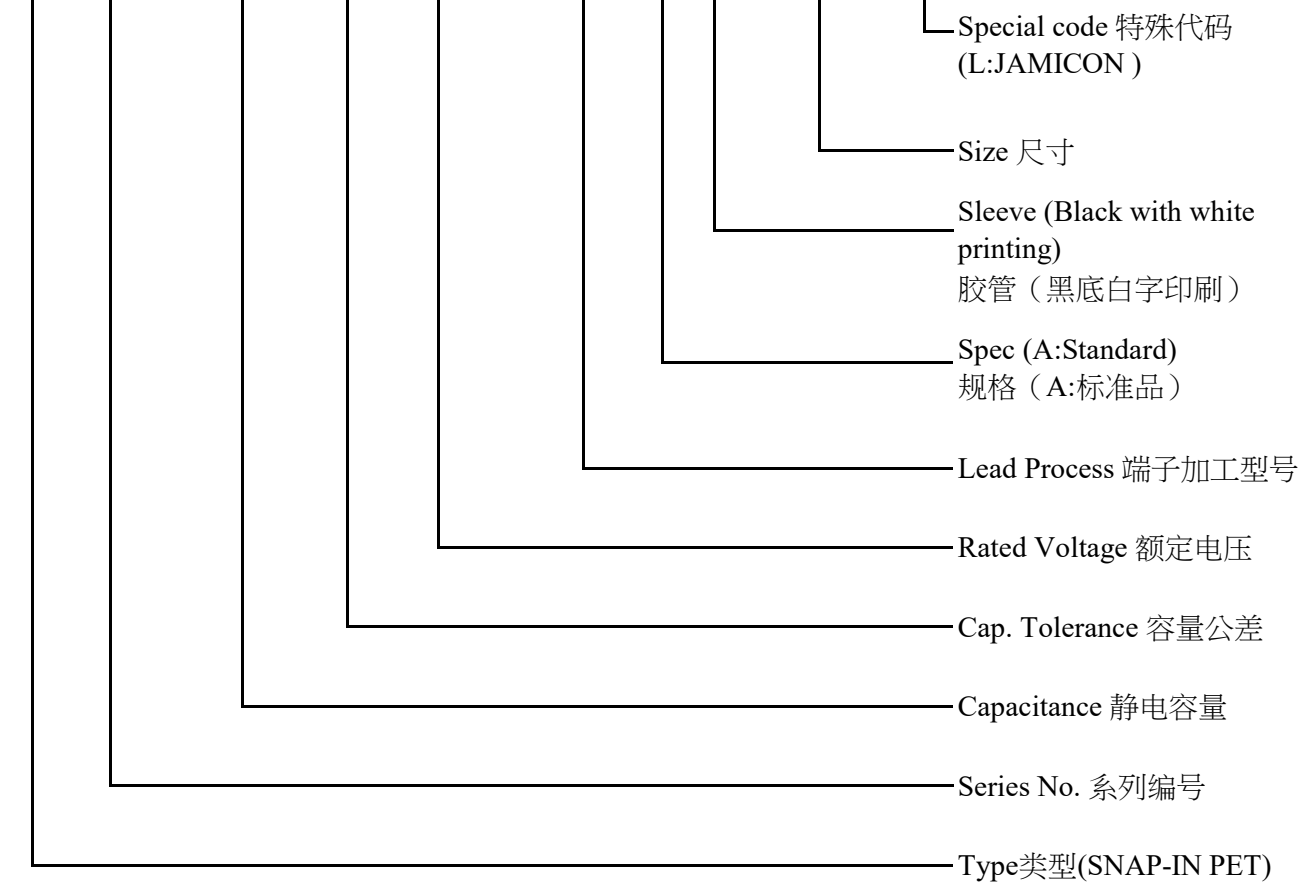
Supplier	Yun Lin云林	Shun Peng顺鹏
Code	C0	C2

※ The above code descriptions are just examples, they haven't completely shown all sleeve suppliers.
以上代码表描述仅为举例,并没有完全显示出所有胶管供货商

Ⅶ. Catalog numbering

JAMICON TYPE 类型(Part Number 料号)：

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
T	L	P	3	3	8	M	0	5	0	S	1	A	5	Q	3	5	L



Ⅷ.Packaging specification(包装规格)

Large Can Type Aluminum Electrolytic Capacitors (大型铝电解电容器)

Packaging Methods 包装方式 : Row packaging 排装

Size φ别	Height高度 (mm)	Inner box size 內箱尺寸	Inner box size 外箱尺寸	Inner box Qty. 內箱数量(pcs）	Outer carton Qty. 外箱数量(pcs）
φ22	20~30	XAA-3112020531	XAN-4253242352	100	800
	31~55	XAA-3112020701	XAN-4253242352	100	600
	56~70	XAA-3112020901	XAN-4253242002	100	400
	71~90	XAA-3112021051	XAN-4253242352	100	400
φ25	20~30	XAA-3462110531	XAN-4403582352	100	800
	31~55	XAA-3462110701	XAN-4403582352	100	600
	56~70	XAA-3462110901	XAN-4403582002	100	400
	71~90	XAA-3462111051	XAN-4403582352	100	400
φ30	20~30	XAA-3112020531	XAN-4253242352	50	400
	31~55	XAA-3112020701	XAN-4253242352	50	300
	56~70	XAA-3112020901	XAN-4253242002	50	200
	71~90	XAA-3112021051	XAN-4253242352	50	200
φ30.5	20~30	XAA-3112020531	XAN-4253242352	45	360
	31~55	XAA-3112020701	XAN-4253242352	45	270
	56~70	XAA-3112020901	XAN-4253242002	45	180
	71~90	XAA-3112021051	XAN-4253242352	45	180
φ35	20~30	XAA-3112020531	XAN-4253242352	40	320
	31~55	XAA-3112020701	XAN-4253242352	40	240
	56~70	XAA-3112020901	XAN-4253242002	40	160
	71~90	XAA-3112021051	XAN-4253242352	40	160
φ40	20~30	XAA-3462110531	XAN-4403582352	40	320
	31~55	XAA-3462110701	XAN-4403582352	40	240
	56~70	XAA-3462110901	XAN-4403582002	40	160
	71~90	XAA-3462111051	XAN-4403582352	40	160
φ45	31~55	XAA-3112020701	XAN-4253242352	24	144
	56~70	XAA-3112020901	XAN-4253242002	24	96
	71~90	XAA-3112021051	XAN-4253242352	24	96
	91~160	XAA-3112021801	XAN-4253242002	24	48

IX. Others

(1) All the Jamicon capacitors, which are authenticated by the SGS, and the test report shows that the inspection results of Hexavalent Chromium VI(Cr(VI)), Cadmium (Cd), Mercury (Hg), Lead (Pb), Polybrominated Biphenyls (PBBs),Polybrominated Diphenyl Ether (PBDEs),Bis(2-ethylhexyl) phthalate(DEHP)，Dibutyl phthalate (DBP),Butyl benzyl phthalate (BBP)，Diisobutyl phthalate (DIBP),comply with the RoHS requirements.

凯美所有电容器经SGS认证测试报告中所检测的六价铬(Cr^{+6})，镉(Cd)，汞（Hg），铅(Pb)，多溴联苯(PBBs)，多溴联苯醚(PBDEs)，邻苯二甲酸二(2-乙基已基)酯(DEHP)，邻苯二甲酸二丁酯(DBP)，邻苯二甲酸甲苯基丁酯(BBP)，邻苯二甲酸二异丁酯(DIBP)，均符合RoHS要求。

(2)Satisfied characteristic JIS C 5101. 符合JIS C 5101特性.

(3)Aluminum Electrolytic Capacitors may b e damaged by corrosion which is caused by any halogenated hydrocarbon solvents.

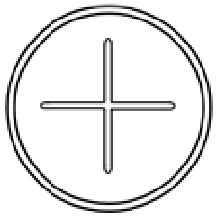
铝电解电容器可能会被卤化烃类溶剂导致的腐蚀而损坏。

Please let us know in advance the solvent name and conditions for your PCB cleaning

请让我们事先了解贵司印刷线路板使用的清洗剂的名称和清洗条件。

X. There are two types of vent shapes in Figure A and Figure B simultaneously

产品防爆阀形状有图A和图B两种同时存在



图A

图B