Econd® 湖北米朗兴创电子有限公司

MILANG XINGCHUANG ELECTRONICS CO.,LTD

产品承认书

APPROVAL SHEET

客户料号：
Part Number

客　户：
CUSTOMERS

品　名：
DESCRIPTION 铝电解电容

规　格：
SERIES HP470UF250V 25X30

供应商料号
Supplier PN: 470UF250V25x30HP

日　期：
DATE 2025/4/14

发行单位 ISSUE DEPARTMENT	
湖北米朗兴创电子有限公司 工程部	
制作 PREPARED BY	侯业刚 HOU YEGANG
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客户承认栏 APPROVED COLUMN	
合格 □	
不合格 □	
审核 CHECKED	
批准 APPROVED	

贵司确认后，敬请回签一份（After your confirmation, please sign back）

Email:miran-electronics@126.com

表单编号：QA-09

承认书修订履历表

序号 No.	日期 Date	版本 Version	变更内容 Change Content	制作 Prepared by	批准 Approved
1	2025/4/14	A0	首次发行	侯业刚	聂天华

Econd®

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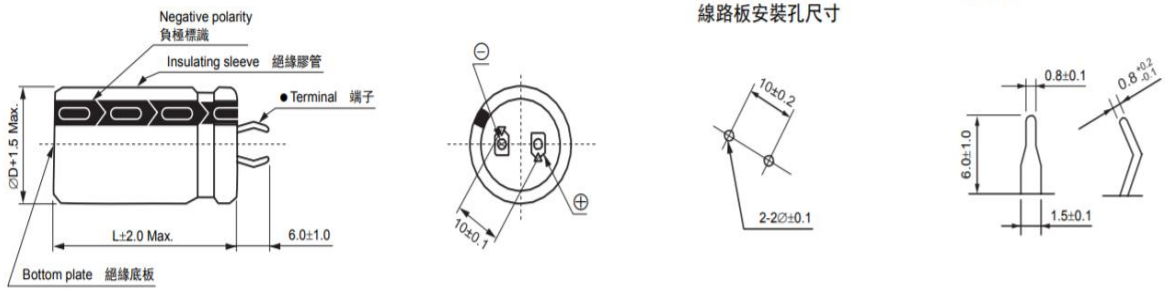
ELECTROLYTIC CAPACITOR SPECIFICATION

HP SERIES

1.外形尺寸图（Dimensions）：单位：mm



● PC board mounting holes dimensions 線路板安裝孔尺寸

● Terminal dimensions 端子尺寸

ΦD	25.0	± 1
L	30.0	± 2
F	10.0	± 0.5

2、部品规格特性表(电容测试条件:25±5℃ 湿度65%±5%,容量\损失测试频率120HZ)

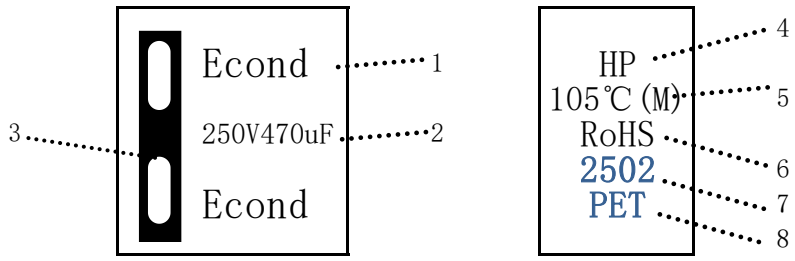
客户料号	系列	标准容量	额定电压	尺寸	容差	损失角	漏电流	阻抗	寿命	纹波电流	浪涌电压	套管	加工形式	工作温度
Part Number	Series	CAP.(uF)	WV(V)	SIZE	Tolerance/120HZ	D.F/120HZ	LC(uA)5min	120Hz(Ω)	life(Hrs)	R.C.A 120Hz105℃	surge voltage	Sleeve	牛角	working temperature (℃)
	HP	470.0	250	25 X 30	- 20 % ～ 20 %	12	1028	/	2000	1.7	300	黑底白字PET		-40～+105
备注														

纹波电流系数（Multiplier for ripple current）：

Freq	50Hz/60Hz	120Hz	1KHz	10KHz	≧50KHz
10-100V	0.90	1.00	1.15	1.25	1.35
160-500V	0.80	1.00	1.3	1.41	1.43

规格内容

3. 胶管标识示意图(Marking):



NO.代表内容 Item

1.公司商标(Logo)

2.电容器规格（额定电压和容量）Capacitance and Rated Vlotage

3.负极表示带 Polarity bar

4.产品系列(Series)

5.工作最高温度与容量范围(Operating Temperature Range and Capacitance Tolerance)

6.环保标识(RoHS)

7.生产周期:如"2502 "其中 25 代表 2025年; 02 代表 02 月份生产.

8.胶管材质

6.1试验项目 Test item

<table>
<tr><th>NO</th><th>项 目
Items</th><th>条 件
Conditions</th><th>规 格
Specifications</th></tr>
<tr><td>1</td><td>Maximum permissible ripple current</td><td>Temperature:105±2℃
Voltage :DC.Voltage+peak ripple voltage≤ Rated voltage.
Ripple frequency:</td><td>Refer to table</td></tr>
<tr><td>2</td><td>Surge</td><td>Temperature:105±2℃
Applied voltage: see specification
"ON" position : 30 seconds
"OFF" position :5 minutes 30 seconds.
Duration ： 1000 cycles</td><td>1.No electrical or mechanical damage.
2.Capacitance change within ±15%.
3.D.F.smaller than specification volue.
4.Leakage current smaller than specification volue.</td></tr>
<tr><td>3</td><td>Temperature Cycle</td><td>
<table>
<tr><td rowspan="5">One Cycle</td><td>Temperature(℃)</td><td>Time (minutes)</td></tr>
<tr><td>Rated high category temperature±3</td><td>30±3</td></tr>
<tr><td>25℃</td><td>3MAX</td></tr>
<tr><td>Rated low category temperature±3</td><td>30±3</td></tr>
<tr><td>25℃</td><td>3MAX</td></tr>
<tr><td colspan="3">Total number of cycles: 5</td></tr>
</table>
</td><td>1.No appearance defect.
2.Capacitance change within ±5%
3.D.F.smaller than specification value.
4.Leakage current smaller than specification value.</td></tr>
<tr><td>4</td><td>Resistance to Soldering Heat</td><td>Warm up time :120±2 seconds to reach 120±2℃
Solder bath temperature: 260±5℃.
Solder bath composition: Sn-96.5%.
Ag-3.0%
Cu-0.5%
Immersion depth: 1.5 to 2.0mm
Immersion duration: 10±1 seconds</td><td>1.No appearance defect.
2.Capacitance change within ±5%
3.D.F.smaller than specification value.
4.Leakage current smaller than specification</td></tr>
<tr><td>5</td><td>Solder Ability</td><td>Solder bath temperature: 235±5℃.
Solder bath composition: Sn-96.5%.
Ag-3.0%
Cu-0.5%
Immersion depth: 1.5 to 2.0mm
Immersion duration: 10±1 seconds</td><td>A minimum of 95% the immersed surface is to be coated with the new solder</td></tr>
</table>

6.2试验项目 Test item

<table>
<tr><th>NO</th><th>项 目
Items</th><th>条 件
Conditions</th><th>规格
Specifications</th></tr>
<tr><td>6</td><td>Low Temperature Charcteriestics (Max.Impedance Ratio)</td><td colspan="2">
<table>
<tr><td>working Voltage (v)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td></tr>
<tr><td>Impedance Z(-40℃)/Z(+20℃)</td><td>8</td><td>6</td><td>4</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td></tr>
</table>
<table>
<tr><td>working Voltage (v)</td><td>160</td><td>200</td><td>250</td><td>350</td><td>400</td><td>420</td><td>450</td></tr>
<tr><td>Impedance Z(-25℃)/Z(+20℃)</td><td>3</td><td>3</td><td>4</td><td>4</td><td>6</td><td>6</td><td>8</td></tr>
</table>
</td></tr>
<tr><td>7</td><td>High Humidty storage</td><td>Temperature:40±2℃
Relative humidity :90 to 95%
Duration ： 240±8 hours</td><td>1.No electrical or mechanical damage.
2.Capacitance change within ±15%.
3.D.F.smaller than specification volue.
4.Leakage current smaller than specification volue.</td></tr>
<tr><td>8</td><td>Vent</td><td>Conduct under normal lighting for lab work
<table>
<tr><td>Capacitor diameter</td><td>Applied current(A)</td><td>Minutes</td></tr>
<tr><td>Less than 22.4mm</td><td>1</td><td rowspan="2">within 30</td></tr>
<tr><td>More than 22.5mm</td><td>10</td></tr>
</table></td><td>There shall be no explosion,flash,flame,spark or fire from the capacitor during or after the test,nor shall there be expulsion of any metal from the casing</td></tr>
<tr><td>9</td><td>Terminal strength</td><td>tensile strength
winding strength</td><td>
<table>
<tr><td>Time(s)</td><td>Diameter(mm)</td><td>Load(kg)</td></tr>
<tr><td rowspan="3">10±1</td><td>0.5</td><td>0.5</td></tr>
<tr><td>0.6 to 0.8</td><td>1</td></tr>
<tr><td>0.8</td><td>2</td></tr>
<tr><td>cycle</td><td colspan="2">2 bends</td></tr>
</table></td><td>1.No electrical or mechanical damage
2.No appearance damage</td></tr>
<tr><td>10</td><td>Vibration</td><td>Frequency range : 10 Hz to 55 Hz
Amplitude :1.5 mm
Cycle definition:10Hz to 55 Hz and back to 10Hz
Cycle duration :1 minute.
Duration :2 hours per direction (3directions)</td><td>1.No electrical or mechanical damage
2.No appearance damage</td></tr>
<tr><td>11</td><td>Endurance</td><td>Capacitors are placed in an oven and applied voltage for 2000 hours at 105℃.After being restored to 25℃, capacitors shall meet the specifications.</td><td>1.Capacitance change within ±20% of the initial value.
2.D.F.change within ±200% of the specified value.
3.Leakage current smaller than specification value.</td></tr>
<tr><td>12</td><td>Shelf Life</td><td>Capacitors are placed in an oven for 1000 hours at 105 ℃without applying rated working voltage.After being restored to 25℃,capacitors shall meet the specifications</td><td>1.Capacitance change within ±20% of the initial value.
2.D.F.change within ±200% of the specified value.
3.Leakage current within ±200% of the specification value.</td></tr>
</table>

7.1 使用注意事项

1、Aluminum electrolytic capacitor has polarity. The polarity is marked on body of the capacitor. If polarity is connected in the wrong direction, the circuit will be shortened and the capacitor may be damaged. In the circuits where the polarity is unknown or constantly change, am bipolar capacitor should be used. Please note that the am bipolar capacitors described in this catalog must not be used in AC applications.

普通铝电解电容器是有极性的，其极性在电容器上标出，在使用时注意不要接反；如果接反，则电容器在短路状态，使电容器受到损坏；在极性不明或是极性经常变动的电路中，则使用双极性电容器。请注意，目录中的双极性电容器不一定能使用在交流电路中。

2、Do not apply DC voltage exceeding the rated working voltage of the capacitor. when a capacitor is used at a higher voltage than rated working voltage, leakage current increase and the capacitor's life is shortened. 70%-80% of the working voltage is recommended for the sake of capacitor usage life. When AC voltage is superimposed to DC voltage, the sum of the DC voltage and the peak AC voltage should not exceed the rated working voltage of the capacitor.

施加于电容器两端的直流电压不能高于额定的工作电压，当电容器上施加的电压高于额定工作电压时，漏电流会增大，电容器的寿命会缩短。推荐电容器的实际工作电压不要超过其额定工作电压的70%-80%使用，这样有助于延长电容器的使用寿命。当交流电压叠加在直流电压上时，直流电压和交流电压峰值之和不能超过电容器的额定工作电压。

3、Do not apply ripple current exceeding the rated max ripple current. Excessive heat can result if too much ripple current is applied. Excessive heat can shorten the life of the capacitor and in some cases failure may occur. The peak value of the ripple current should be less than the DC voltage.

施加在电容器上的纹波电流不要超过额定纹波电流范围；如果纹波电流过大，产品会过热，从而造成电容器的恶化，寿命缩短；施加的纹波电压要低于直流电压。

4、General aluminum electrolytic capacitor is not suitable for frequent charging and discharging, otherwise the capacitor maybe damaged because of over heating. Specified capacitors can be designed to meet the requirements.

普通的铝电解电容器不适用于频繁的充放电，如果频繁的充放电，会使电容器过热而导致失效或损坏。特殊设计的电容器才可以满足此要求。

5、The life of an aluminum electrolytic capacitor is greatly affected by the ambient temperatures. The lower the operating Temperature the longer the life expectancy of the capacitor. In general, the Arrhenius'rule can be applied to aluminum electrolytic capacitor: which says the life of a capacitor decrease half when operating temperature increase 10℃,

电容器的寿命受到周围环境温度的影响很大，在室温下使用可保证有较长的寿命。铝电解电容器的寿命与环境温度的关系遵从阿伦尼亚斯原则，即：环境温度每升高10℃，寿命会降低一半。

6、When capacitors are soldered on the board, the sleeve maybe result the secondary shrinkage due to excessive heat. Please take note: the melted temperature should be lower 350℃ and the time less 3 seconds. If melted solder comes in direct contact with the sleeping ,the sleeve will be damaged Please avoid this situation.

电容器焊接到线路板上时，套管会因为温度过高而发生二次收缩。请注意：手工焊接时，焊接温度应低于350℃，时间少于3秒。请避免烙铁头直接与套管接触，否则套管将损坏。

7、The vent needs a space to work well make the space above the vent ,the space required is depending up on the case diameter. Following is the recommended space:

防爆阀需要有一个空间才能有效，该空间在防爆阀正上方，大小其决于铝壳尺寸，以下推荐的容间大小：

8、Do not apply excessive force to the lead and terminal .Do not pick out capacitor by force after soldering to the PC board, dot not move the Pc board by picking the capacitor.

不要对电容器的引线或引出端施加应力，当电容器焊接到PCB板上后，不要强行取出电容器，不要提着电容器来搬动PCB板。

Following examples are typical stress to capacitors to be prevented.：以下电容器受力典型例子

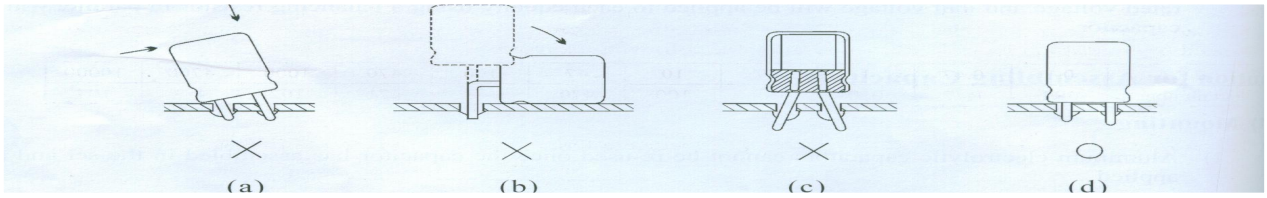
(a) Do not lean after soldered. 焊接后产品不要倾斜

(b) Do not bend the capacitor after soldering.焊接后不要弯倒电容器

(C) Mismatch of the terminals and the install holes on the PC board.引出端间距不合PC板上安装孔

(d) Correct installation way.正确的安装方式

7.2 使用注意事项



9、The aluminum case is not insulated from the cathode. Do not locate any copper or any via hole under the aluminum capacitors, on the PC board. Also, the dummy terminal is not insulated from the cathode. The dummy terminal must not be connected electrically to the anode .Other wise, both cases may cause a short circuit.

铝壳与阴极是不绝缘的，在PCB板上，不要在铝电解电容器下设任何导线，辅助端子和阴极也不是绝缘的，辅助端子和阳极一定不要有电的连接，否则产品将会造成短路。

10、The capacitor shall storage in the condition of normal temperature ,non-acid ,non-alkali and normal humidity. If the capacitors have been stored for a longtime and leakage current is a critical parameter ,the parts can be re formed by applying voltage before using them.

电容器要贮存在常温、常湿、无酸、无碱的环境下，并且要避免阳光直射，如果电容器贮存超过6个月以上时，通常其漏电流有增大，对使用寿命上有影响，在使用时请串排上1KΩ之保护电阻，使其持续负载额定工作电压30分钟。

11、When move, check and use the aluminum electrolytic capacitor, do it carefully to avoid distortion, damage, appearance, or performance.

铝电解电容器在搬动、检验及使用时，要轻拿轻放，请避免由外力的原因使产品变形、碰伤，影响其外观和电气性能。

12、The surge voltage rating is the maximum DC over-voltage to which the capacitor may be subjected for short periods, not exceeding approximately 30 seconds at infrequent intervals of more than five minutes. The rated surge voltage is as follows:

浪涌电压是短时间内电容器可以承受的最大直流过电压，在5分钟的连续间隔里，该直流电压施加在电容器上的时间大约不超过30秒；电容器的浪涌电压见第3页表。

13、Please do not use capacitors in the following circumstances:

a) directly with water, salt and oil in contact, or more than 75% relative humidity environment;

b) an environment filled with harmful gases (sulfide, H2SO3, HNO2, Cl2, ammonia, etc.);

c) placed in sunlight, O3, UV rays and radioactive substances in the environment;

d) the impact of vibration and harsh environments;

c) use of halogen-fixed, resin-coated curing agent capacitors.

The use of other fixatives, coating agents, ask the customer to confirm the following:

a) Thermal variation caused by the capacitor shorten the life span;

b) curing agent and the capacitor body's chemical reactions.

请不要在下述环境下使用电容器：

使用其他固定剂、涂层剂时，请客户确认以下内容：

b)充满有害气体的环境（硫化物、H2SO3、HNO2、Cl2、氨水等）；

c)置于日照、O3、紫外线及有放射性物质的环境；

d)振动及冲击的恶劣环境；

c)使用含卤素的固定剂、树脂涂层剂固化电容器。

使用其他固定剂、涂层剂时，请客户确认以下内容：

a)电容器散热变差所造成的寿命缩短；

b)固化剂与电容器本体的化学反应。

Announce: If you have not carried on the standard on the standard operation according to the operating instructions, our company will not undertake any res passivity.

声明：如果您不按我们的使用说明进行规范操作，我们将不承担任何责任。