东莞市创慧电子有限公司
DONGGUAN CHUANGHUI ELECTRONICS CO.,LTD

承 认 书

S P E C I F I C A T I O N

客户名称Customer:	立创
客户料号Customer No:	C41355789
产品名称Product:	铝电解电容器
产品系列Series:	CD11B 105℃ 2000H
产品规格Specification:	400V150μF D18X32L
创慧料号CH No:	CD11B2GM151M320T
成型方式Molding mode:	长脚
版 本 号Version No:	A0
送样日期Sampled Date:	
备注Remarks: :	0755-83868833

创慧承认 CHUANGHUI VALIDATION			客户承认 CUSTOMER VALIDATION
经办 PREPARED	审核 CHECKED	批准 APPROVAL	
邓瑶玲	王彬	刘劲松	

东莞市创慧电子有限公司 技术品质部

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修订履历表Revision records

版号 Version	修订日期 Revised Date	修订页码 Revised Page	修订内容 Revised Content	拟制 Prepared	批准 Approval
A0	2024/8/15	/	新规格送样	邓瑶玲	刘劲松

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4、性能参数一览表：Table of technical parameters

创慧料号 CH P/N	规格 Specifications	尺寸 Size	系列 Series	温度 Operating Temperature	寿命 Life	套管 Sleeve
CD11B2GM151M320T	400V150μF	D18X32L	CD11B	-40+105℃	2000H	黑底白字

4.1 电容特性 Electrical Characteristics

额定电压	浪涌电压	标称容量	容差	损耗角正切值	漏电流	纹波电流	阻抗
Rated Voltage VDC	Surge Voltage VDC	Nominal Capacitance (μF)	Capacitance Tolerance 20℃ 120Hz	Dissipation Factor (tanδ %) max20℃120Hz	Leakage Current 2min. 20℃(μA)	Permissible Ripple Current (mArms)	Impedance (Ω) 20℃
						105℃ 120HZ	120HZ
400	450	150	±20%	20	1215	531	/

5. 测试条件及方法 Test conditions and methods

a) 测试容量及损耗Capacity and Dissipation Factor：

环境温度：25至35℃，相对湿度：45至85%，大气压力：86kpa至106kpa

如果相对测试结果有异议，可以在以下条件测试：

环境温度：25±2℃；相对湿度：60至70%；大气压力：86kpa至106kpa

Unless otherwise specified, the standard range of atmospheric conditions for making

Ambient temperature:25 to 35℃； Relative humidity:45 to 85%； Air pressure:86kpa to 106kpa

If there may be doubt on the results ,measurement shall be made within the following limits.

Ambient temperature:25±2℃， Relative humidity:60 to 70% Air pressure:86kpa to 106kpa

b) 测试漏电流Leakage current：

额定电压通电2分钟后Applied rated voltage for 2 minute，

6.3~120WV I≤0.01CVor 3uA(取小值)； ≥160WV I≤0.02CV (uA)+15uA

其中，C=容量,单位uF;V=额定电压,单位V

Where， C=Nominal capacitance in uF； V:=Rated voltage in v.

6. 纹波电流系数 Ripple Current Multipliers

a) 频率倍加系数 Frequency Coefficient

频率（HZ） / 容量（CAP）	120	1K	10K	100K
100＜CAP≤1000	1.00	1.25	1.35	1.38

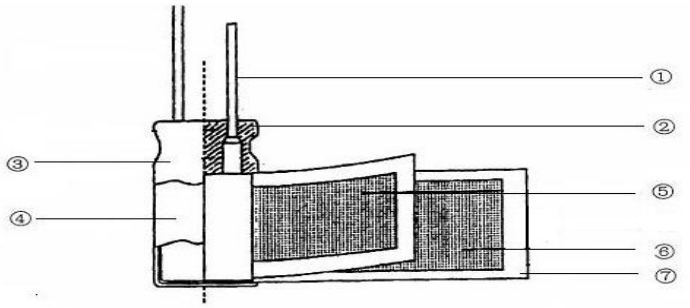
b) 温度倍加系数 Temperature Coefficient

环境温度（℃）	40	60	70	85	105
修正系数	2.4	2.1	1.78	1.65	1

7.产品结构与尺寸 Product Structure and Dimension

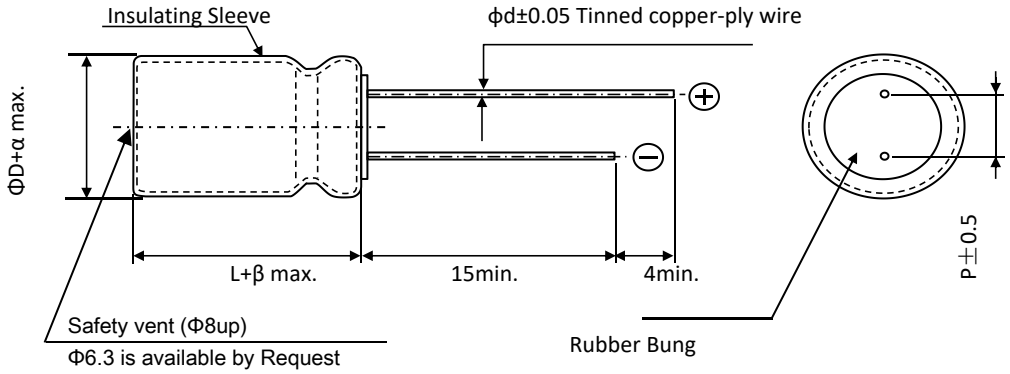
7.1 产品结构 Product structure ：

序号	1	2	3	4	5	6	7	8
部件名称 Component name	导针 Lead PIN	皮头 Rubber	铝壳 Case	套管材质 Sleeve Material	正极箔 Anode Foil	负极箔 Cathode Foil	电解纸 Paper	电解液 Electrolyte
本体材料 Body Material	铝＋CP线 Aluminum & CP line	三元乙丙胶	铝 Aluminum	PET	铝 Aluminum	铝 Aluminum	植物纤维 Plant fiber	有机溶液 Organic solution



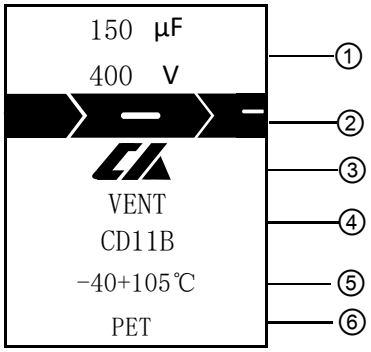
7.2 外形尺寸图 Product Dimension （Unit: mm）

D ±0.5	L ±2	P±0.5	d±0.05
18	32	7.5	0.8



8. 标记Markings

序号	说明Instructions
1	工作电压和标称容量 Rated Voltage & Nominal Capacitance
2	负极标志 Cathode Mark
3	商标Trade Mark
4	产品系列及防爆标识（≥Φ8）
5	额定温度 Rated Temperature
6	胶管材质 Sleeve Material



9. 包装说明Packing instructions：

9.1 先用塑料袋包装，然后再放置于包装箱中，具体包装数量请参照《创慧包装标准》 Pack with plastic bags, and then placed in a carton, please refer to 《Packing Standard》for specific packing quantity.

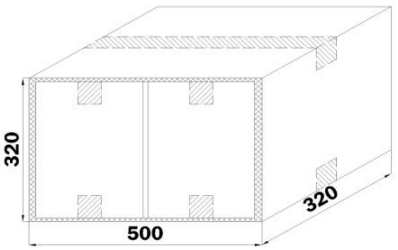
9.2 包装标识：采用中性标签，注明客户名、订单号、料号、产品系列、规格、尺寸、数量、生产日期和生产批号 Label Marking: indicate customer name, purchase number, part number, product series,specifications, size, quantity, production date and lot number, shown as below.

9.3 包装图示 Packing Figure

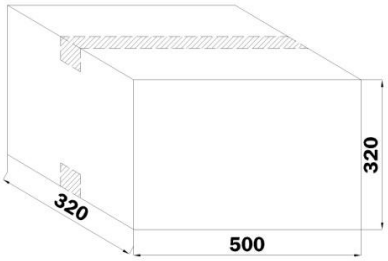
a) 标签Label

CH	T74800	
订单号 P.O	/	CH221102053
料号P/N	CD11B2GM151M320T	
系列series	CD11B	黑底白字 PET
规格Spec	400V150μF	±20%
尺寸 Size	D18X32L	长脚
数量 Qty	100PCS	

b) 内箱Inner Carton



c) 外箱Outer Carton



10. 料号编码规则 Material number encoding rules ：

CD11B	2G	M	151	M32	0	T
①系列Series	②电压 Voltage	③容差 Capacitance Tolerance	④容量Capacitance	⑤尺寸Size	⑥成型 Finishing	⑦胶管Sleeve

①系列 Series	CD110	CD288H	CD288L	CD26G	CD26M	CD26L	CD110L	NP	LL
	CD288S	CD26K	CD26C	CD293	CD294	CD296	CD133	CD134	CD136

②电压V	4	6.3	10	16	25	35	50	63	80	100	120	140	160	180	200	250	315	350	400	420	450	500
代号Code	0G	0J	1A	1C	1E	1V	1H	1J	1K	2A	2B	2S	2C	2Z	2D	2E	2F	2V	2G	2J	2W	2H

③容差代码code	J	K	M	W	T	Q	P
容差C.T.	±5%	±10%	±20%	-0%～+20%	-10%～+20%	-20%～+30%	-15%～+20%

④容量Cap.	0.1	0.22	0.33	0.47	1	2.2	3.3	4.7	6.8	10	22	33	47	68	100	220	330	3300
编码Code	R10	R22	R33	R47	1R0	2R2	3R3	4R7	6R8	100	220	330	470	680	101	221	331	332

⑤尺寸															
直径D	4	5	6.3	8	10	12.5	13	16	18	20	22	25	30	35	
编码Code	C	D	E	F	G	H	K	L	M	N	O	P	Q	R	
高度H	5	7	9	11	12	13	16	18	19	20	25	26	27	30	35	45
编码Code	05	07	09	11	12	13	16	18	19	20	25	26	27	30	35	45

⑥成型 Finishing	散装 Bulk	编带 Taping P=5.0	剪脚 Cut Lead L=3.5	K脚 剪脚 L=4.5	S脚 剪脚 L=4.5	卧式 H01=4.0	卧式 H02=4.0	贴片 SMD
编码Code	0	TP5	C35	K45	S45	H140	H240	S

⑦胶管Sleeve	PVC	PET
编码Code	C	T

11.环保执行情况 RoHS Implementation：

本公司所生产的产品符合欧盟ROHS，REACH环保要求。
Products comply with the RoHS and REACH standard.

12.可靠性测试Reliability test：

12.1 温度测试 Temperature Test （at 120Hz）

测试方法Test Methods：

当电容器达到每个阶段的温度并趋于稳定时，方可测量其参数
Measure the capacitor when it reaches the temperature at each stage steadily.

Stage	1	2	3	4	5	6
Test Temperature (℃)	20±2	-25±3	-40±3	20±2	105±2	20±2

测试标准Test Criteria：

a）在105度下，漏电流测量须少于10次
At +105℃, The leakage current measured shall not more than 10 times of its specified value.

b）阻抗比值应不超过下表
At- 40℃(-25℃), Impedance (Z) ratio shall not exceed the value of the following table

W.V.(v)		400
阻抗比 Impedance Ratio	Z-25℃/Z+20℃	6
ZT/Z+20℃(max.)	Z-40℃/Z+20℃	/

12.2 Load life Test 寿命试验

在下表温度的条件下，施加额定电压及最大纹波电流下表规定时间后，在室温20℃完全恢复测试，满足下表性能变化：
Under the condition of the following table temperature, after applying the rated voltage and the maximum ripple current for the time specified in the table below, the test is completely restored at 20℃ at room temperature to meet the performance changes in the table below:

Life hours	105℃	2000H
Capacitance change 容量变化	≤±20% of the initial value ≤初始值±20%	
Tanδ 损耗	≤200% of the initial specified value ≤规定值2倍	
漏电流Leakage Current	≤The initial specified value ≤规定值	

12.3 Shelf life 高温贮存

在105℃高温条环境下储存1000H后，电容器完全恢复在20℃条件下测试满足下列要求.
After 1000H storage at 105℃, the capacitor is fully recovered and tested at 20℃ to meet the following requirements

Capacitance change 容量变化	≤±20% of the initial value ≤初始值±20%
Tanδ 损耗	≤200% of the initial specified value ≤规定值2倍
漏电流Leakage Current	≤200% of the initial specified value ≤规定值2倍

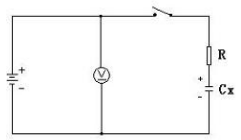
<table>
<tr><td>12.8
耐焊接热
Resistance to soldering heat</td><td>焊槽法Solder bath method:
焊锡温度Solder temperature: 260±5℃
浸入时间Immersion time: 10±1sec
电路板厚度Circuit board thickness: 1.6mm
<table><tr><td>Capacitance Variation
容量变化</td><td>在初始值±10%以内
Within ±10% of the initial value</td></tr><tr><td>Tan δ 损耗</td><td rowspan="2">≤the initial specified value
≤规定值</td></tr><tr><td>漏电流Leakage Current</td></tr><tr><td>外观Appearance</td><td>无异常No Abnormaility</td></tr></table></td></tr>
<tr><td>12.9
稳态湿热
Resistance to damp heat (steady state)</td><td>依据JIS C 5023进行试验 According to GB test JIS C 5023:
试验温度 Test Temperature:40±2℃
试验时间 Test Time:240±8h
相对湿度 Relative humidity:90～95%
试验后,将电容放置在标准大气条件下1～2小时，然后测试其参数
After the test, the capacitor was placed in standard atmospheric
<table><tr><td>Capacitance Variation
容量变化</td><td>在初始值±10%以内
Within ±10% of the initial value</td></tr><tr><td>Tan δ 损耗</td><td rowspan="2">≤the initial specified value
≤规定值</td></tr><tr><td>漏电流Leakage Current</td></tr><tr><td>外观Appearance</td><td>无异常No Abnormaility</td></tr></table></td></tr>
<tr><td>12.10
防瀑试验
Test for Satefy VENT</td><td>在电容器两极施加反向工作电压，其中通过的电流为1A，在测试时防爆装置应能在30分钟内动作。
D. C. Application test: The reverse working voltage is applied to the two poles of the capacitor, and the current passing through is 1A. If the vent is opened within 30 minutes, the test is considered to be passed
上述过程中应无引线、铝箔等散射，无火花产生。
In the above process, there shall be no lead, aluminum foil and other scattering, and no spark.</td></tr>
<tr><td colspan="2">以上数据仅供参考，使用寿命长短取决于工作的环境温度、连续工作时间、电流大小等许多其他因素，实际结果可能有所不同。
The above data is forreference only,the service life depends on the working environment temperature,continuous working time,current size and many other factors,the actual results may b edifferent</td></tr>
</table>

12.4 耐浪涌电压 Surge Test

在测试温度于15℃-35℃下，循环充电30±5秒并放电5.5±0.5分钟 1000次后，
把电容器放置在标准大气条件下达到热稳定，再测试各参数并满足以下条件.
Under the temperature of 15℃-35℃, after cyclic charging for 30±5 seconds and discharging for 5.5±0.5 minutes for 1000 times, place the capacitors under standard atmospheric conditions to achieve thermal stability, and then test the parameters which below conditions shall be satisfied.

Capacitance change 容量变化	≤20% of the initial value ≤初始值20%
Tan δ 损耗	≤200% of the initial specified value ≤规定值2倍
漏电流Leakage Current	≤The initial specified value ≤规定值
外观Appearance	无异常No Abnormaility

Test circuit



Note: This requirement is applicable only to instantaneous over voltage which may be applied to terminals of capacitors, therefore, not applicable to such over voltages as often applied.

12.5 端子强度 Terminal Srength

端子抗拉强度：
沿电容器端子引线方向施加下表的拉力，10±1秒。
The pull force of the table below is applied along the lead wire of the capacitor terminal for 10 ± 1 second.

引线直径 φ	0.45	0.5	0.6	0.8	1
拉力N	5		10		20

端子抗弯强度：
在电容器引线施加下表固定重力，然后将电容体弯折90°后回到原位，再向相反方向弯折90°后回到原位。上述过程在5秒内完成。
Apply the following table fixed gravity to the lead of the capacitor, then bend the capacitor back to its original position after 90°, then bend it in the opposite direction after 90°, The above process is completed in 5 seconds.

引线直径 φ	0.45	0.5	0.6	0.8	1
拉力N	2.5		5		10

12.6 振动试验 Resistance to Vibration

依据JIS C 5102.8.2和JIS C 5025试验，在3个互相垂直的方向分别施加2小时振动,共6小时。
According to GB test JIS C 5102.8.2 and JIS C 5025. Vibration was applied for 2 hours in 3 mutually perpendicular directions for a total of 6 hours.

测试时电容器应无接触不良开路、短路或无可见机械损伤。
The capacitor shall be free of bad contact and open or short circuit and no visible mechanical damage during the test

12.7 可焊性 Solder Ability

依据Comply with: IEC60068-6-6
焊锡温度Soldering temperature: 250±5℃
浸入时间Dipping time: 2±0.5sec
浸入焊锡的引线表面积约90%以上应附着新锡
New tin should be attached to more than 90% of the surface area of the lead immersed in solder

13. 使用注意事项Precautions For Use

13.1 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。

Ordinary aluminum electrolytic capacitors are polar, the polarity is marked on the capacitor, pay attention not to reverse when using; If the connection is reversed, the capacitor is in short circuit state, so that the capacitor is damaged; Bipolar capacitors are used in circuits where polarity is unknown or often variable. Please note that the bipolar capacitors listed in the catalog may not be used in AC circuits.

13.2 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。

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.

13.3 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。

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.

13.4 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。

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.

13.5 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。

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℃.

13.6 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280℃，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。

When the capacitor is welded to the circuit board, the casing will shrink again due to high temperature. Please note: when welding manually, the welding temperature should be lower than 280℃ and the time should be less than 3 seconds. Please avoid the soldering tip directly contact with the casing, otherwise the casing will be damaged.

13.7 防爆阀需要有一个空间才能有效，该空间在防爆阀正上方，大小取决于铝壳尺寸，以下推荐的空间大小The vent needs a space to be effective; the space is directly above the vent and the space required is depending up on the case diameter. Following is the recommended space:

产品直径 Case Diameter	Φ5～Φ16	Φ18～Φ35	Φ40 or more
最小间隙 Space(min)	2mm	3mm	5mm

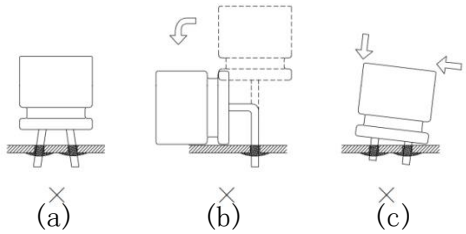
13.8 不要对电容器的引线或引出端施加应力，当电容器焊接到PCB板上后，不要强行取出电容器，不要提着电容器来搬动PCB板。Do not stress the lead of the capacitor. When the capacitor is welded to the PCB board, do not forcibly remove the capacitor. Do not carry the capacitor to move the PCB.

以下电容器受力典型例子 Please avoid below circumstances:

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

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

(c) 焊接后产品不要倾斜
Do not tilt the product after welding;



13.9 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。

The aluminum shell is not insulated from the cathode. On the PCB board, do not set any lead under the aluminum electrolytic capacitor. The auxiliary terminal is not insulated from the cathode.

13.10 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。

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.

13.11 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。

When moving, testing and using aluminum electrolytic capacitors, please handle with care and avoid deformation and damage of products caused by external forces, which will affect their appearance and electrical properties.

13.12 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；电容器的浪涌电压如下表。

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:

额定电压（V）	4	6.3	10	16	25	35	50	63	80	100	160	200	250	315	350	400	450	500
浪涌电压（V）	5	8	13	20	32	44	63	79	100	125	200	250	300	365	400	450	500	550

13.13 请不要在下述环境下使用电容器
Please DO NOT use capacitors in the following circumstances:

a)直接与水、盐水及油类相接触、或相对湿度超过75%的环境
directly with water, salt and oil in contact, or more than 75% relative humidity environment;

b)充满有害气体的环境（硫化物、H2SO3、HNO2、C12、氨水等）
an environment filled with harmful gases (sulfide, H2SO3, HNO2, C12, ammonia, etc.);

c)置于日照、O3、紫外线及有放射性物质的环境
sunlight, O3, UV rays and radioactive substances environment;

d)振动及冲击的恶劣环境
impact of vibration and harsh environments;

c)使用含卤素的固定剂、树脂涂层剂固化电容器
use of halogen-fixed, resin-coated curing agent capacitors.

使用其他固定剂、涂层剂时，请客户确认以下内容
The use of other fixatives, coating agents, ask the customer to confirm the following:

a)电容器散热变差所造成的寿命缩短
Thermal variation caused by the capacitor shorten the life span;

b)固化剂与电容器本体的化学反应
curing agent and the capacitor body's chemical reactions.

东莞市创慧电子有限公司
DONGGUAN CHUANGHUI ELECTRONICS CO.,LTD

14.样品检验报告Sample inspection report

客　户 Customer	/		检验日期 Date	2024/8/15	样品数量 Sample QTY	10 PCS	
创慧料号 CH P/N	CD11B2GM151M320T	系列 Series	CD11B	规　格	400V150μF	尺寸	D18X32L

记录 Record	容量(μF) Capacitance (120Hz)	损耗 DF % (120Hz)≤	阻抗（Ω） ESR≤ 120HZ	漏电流（μA） Leakage Current≤
	120 ～ 180	20	/	1215
1	138.3	5.1		54.2
2	136.3	5.0		59.3
3	137.0	5.1		55.1
4	138.5	4.4		58.4
5	137.2	4.3		59.1
6	138.3	5.0		54.0
7	138.3	5.1		56.3
8	136.7	5.2		56.4
9	137.9	5.2		58.0
10	138.4	4.7		60.6
最大值	138.5	5.2		60.6
最小值	136.3	4.3		54.0
平均值	137.7	4.9		57.1

检测设备	H2612 容量测试仪　焊锡炉	抽样标准
	QE2612 漏电流测仪　数显卡尺	GB/T2828.1-2003
检验判定	■合　格　　□不合格	
备注		

检验员	邓瑶玲	审　核	石彬	批准	刘劲松