文件内容歷史紀錄 REVISION HISTORY				
版本 REV.NO.	内容 CONTENTS	日期 DATE	審核 CHECKED	備註 REMARKS
1	新項目送樣	2022/9/21	QA	
2				
3				
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6				
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11				
12				
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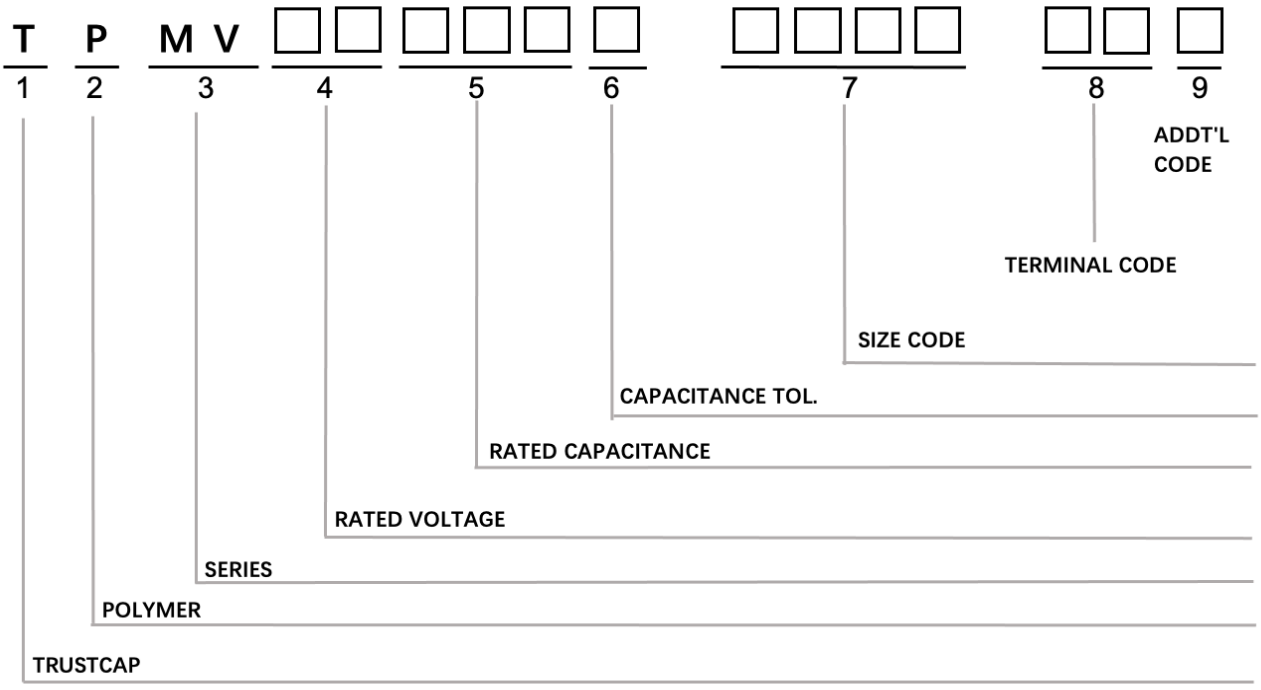
產品系列編碼表 Part Numbering System



1	Company	TRUSTCAP
	Code	T

2	Type	Conductive Polymer Aluminum
	Code	P

3	
Series	Code
PF	PF

4	
Voltage (W.V.)	Code
6.3	0J
7.5	0T
10	1A
12	1T
16	1C
25	1E
30	1F
35	1V
50	1H

5	
Cap. (μf)	Code
47	470
56	560
68	680
100	101
220	221
330	331
470	471
1000	102
1500	152
2200	222

6	
Cap. Tol. (%)	Code
±10	K
±20	M
-10~+30	Q
-10~+50	T
Special	A

7	
Size Code (mm) D x L	Code
8 x 8	0808
8 x 16	0816
10 x 16	1016
10 x 21	1021

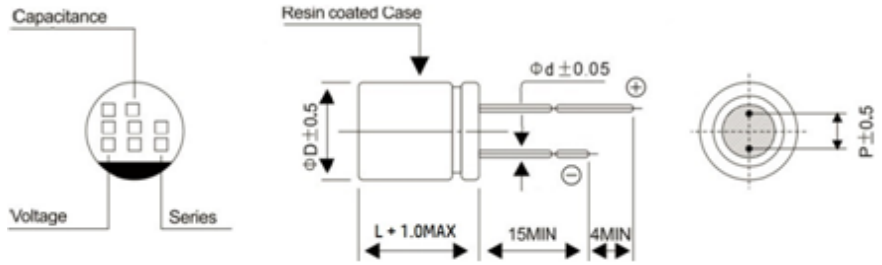
8	
Terminal	Code
Bulk	BS
Taping	T

规格表 Table								
客户料號 Customer Part Number	信容料號 TRUSTCAP Part Number	额定電壓 Rated voltage (V)	容量 Capacitance (μF)	尺寸 Case Size DxL (mm)	損耗 正切 值tan δ	漏電流 Leakage Current (μA)	ESR +20℃ 100kHz (mΩ)	紋波電流 Rated RC (mArms) 105℃ 100kHz
/	TPPF1C471M0808BS	16V	470	8x8	0.08	1504	10	4900

一. 概述 SCOPE

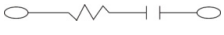
本產品規格書適用於信容科技股份有限公司固態鋁電解電容產品。
The specification is adapted to Conductive Polymer Aluminum Solid Capacitors of TRUSTCAP TECHNOLOGY Co.,Ltd.

二. 外形圖及尺寸表 Case size table



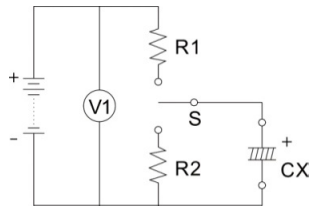
Dϕ ±0.5	L + 1.0Max	P ±0.5	ϕd ±0.05	
8	8	3.5	0.6	
10	16	5.0	0.6	
10	21	5.0	0.6	

三. 技術性能 Specifications

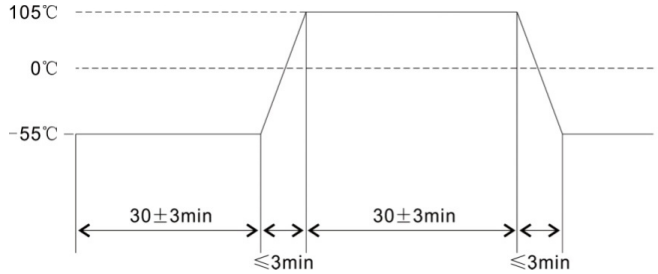
1	系列 SERIES	PF	
2	額定電壓 Rated voltage	16V	
3	工作温度範圍 Operating temperature range	工作温度範圍是指電容器在額定電壓下能持續工作所允许外部環境的温度範圍 The operating temperature range is the ambient temperature range at which the capacitor can be operated continuously at rated voltage. SPEC:-55~+105℃	
4	電容容量 Capacitance	測量等效電路圖	
		測量温度20℃	measuring temperature 20°C
		測量频率120Hz	measuring frequency 120Hz
		測量電壓 0.5Vrms	measuring voltage 0.5Vrms
		標稱電容量允许偏差:±20% Max.	Nominal Capacitance Tolerance:±20% Max.
5	損耗角正切值的測量應要和測量電容容量相同的條件下進行 Measurement should be made under the same conditions as those given for the measurement of capacitance		
	損耗正切值 （tan δ）	$U_R(V)$	16V
		tanδ	0.08
6	漏電流 leakage current	將額定電壓加在電容和1000± 100Ω的保護電阻上。在充電2分鐘后，按下列等式計算漏電流。施加額定電壓2分鐘後，應滿足下列要求：i ≤0.2CV or 200μA（取較大者） The rated voltage shall be applied to the capacitor and its protective resistor which is 1000± 100Ω. The leakage current shall be measured after an electrification period of 2min. The following specifications shall be satisfied: i ≤0.2CV or 200μA and take the greater	
7	等效串聯阻抗 Equivalent Series Resistance (ESR)	測量等效電路圖 measuring circuit equivalent series circuit	
		測量温度20℃	measuring temperature 20°C
		測量频率100kHz	measuring frequency 100kHz
		測量電壓0.5Vrms	measuring voltage 0.5Vrms
8	最大紋波電流 Maximum permissible ripple current	在規定的某一頻率下的最大交流電流，在該電流下電容器連續工作。在測過耐久性後，此要求仍要满足。在此，DC電壓加上最大紋波電壓小于等於額定電壓。 The maximum sinusoidal alternating current at the specified frequency, the capacitor can be operated continuously. This requirement shall be satisfied after the electrical endurance test. DC voltage +peak ripple voltage≤rated voltage.	

四. 測試方法及要求 Tests and requirements

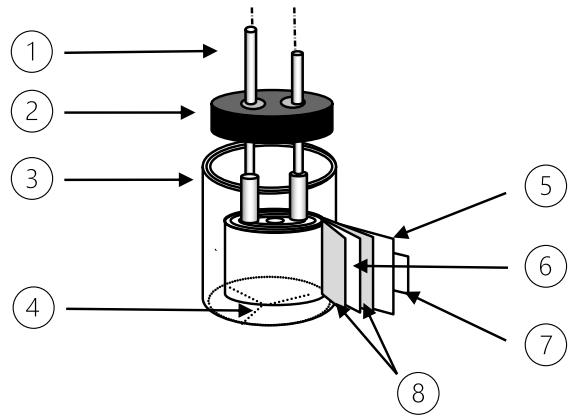
<table>
<tr><td rowspan="7">1</td><td rowspan="7">浪涌测试
Surge test</td><td colspan="3">循環測試1000次，每次充電30±5秒，再放電大約5分30秒，在15~35°C環境下。
在標準温度条件下存放使其稳定，然后進行測量。測試電路圖如下。
1000 cycles of charging for 30±5s then discharging for 5.5min at 15~35°C. Keep it stable at standard temperature, and measure it. The test circuit diagram is as follows.

Rated voltage Surge voltage Rated Temp.
16V 18.4V 105°C</td></tr>
<tr><td rowspan="3"> 
</td><td>VZ：浪涌電壓
Surge voltage</td><td>V1：直流電壓
DC voltage</td></tr>
<tr><td>R1：保護電阻
（1KΩ）
Protective resistor</td><td>R2：放電電阻
Discharge resistor</td></tr>
<tr><td>CX:測试電容
Test capacitor</td><td>S:開關
Switch</td></tr>
<tr><td colspan="3">1)電容量變化: ±20%實測值以內
Change in capacitance: Within±20% of the initial measured value</td></tr>
<tr><td colspan="3">2)损耗正切值:小于等于150%規格值
Tangent of the loss angle: ≦150% of the initial specified value</td></tr>
<tr><td colspan="3">3)等效串聯電阻ESR 小于等于150%規格值
ESR（equivalent series resistance）≦150% of the initial specified value</td></tr>
<tr><td colspan="3">4)漏電流小于等于規格值
Leakage current≦The initial specified value</td></tr>
<tr><td colspan="3">5)外觀：產品外觀無異常
Appearance: No notable change to be found</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">可焊性
Solderability</td><td colspan="3">焊料 : H60A 或 H63A, (符合JIS Z 3282規定)
焊錫溫度：230±5°C
浸漬時間：2±0.5s
助焊劑：松香乙醇溶液中松香濃度約為25%
乙醇（JIS K 8101）、松香（JIS K 5902）
Solder : H60A or H63A, Specified in JIS Z 3282
Temperature of solder: 230±5°C
Dipped time: 2±0.5s
Flux: Ethanol solution of rosin concentration of rosin is about 25%
Ethanol (JIS K 8101), Rosin (JIS K 5902)</td></tr>
<tr><td colspan="3">端頭浸漬部分圓周面至少 3/4 應覆蓋有新焊料。
At least 3/4 of circumferential surface of the dipped portion of termination shall be covered with new solder.</td></tr>
</table>

3	耐焊接熱 Resistance to soldering heat	電容器的端子側應放置在 250°C 的加熱板上30秒。 然後在標準大氣條件下放置 1 到 2 小時，再進行測量。 The terminal side of the capacitor shall be placed on the heat panel at 250°C for a period of 30 seconds. And then it shall be subjected to standard atmospheric condition for 1 to 2 hours before measurement.
		1)電容量變化: ±20%實測值以內 Change in capacitance: Within±20% of the initial measured value
		2)損耗正切值:小于等于規格值 Tangent of the loss angle: ≦ the initial specified value
		3)等效串聯電阻ESR 小于等于規格值 ESR（equivalent series resistance）≦ the initial specified value
		4)漏電流小于等于規格值 Leakage current≦The initial specified value
		5)外觀：產品外觀無異常 Appearance: No notable change to be found
4	高温高濕 Dampheat, steady state	電容器在温度60±2℃，相對湿度90%到95%条件下存放500hrs，無施加電壓。然后在標準條件下放置1到2小时后进行测量。 the capacitor shall be stored at a temperature of 60±2℃ and relative humidity of 90 to 95% for 500 hours without voltage applied. And then the capacitor shall be subjected to standard atmospheric conditions for 1 to 2hours, after which measurements shall be made.
		1)電容量變化: -20 到+40%實測值以內 Change in capacitance: Whthin -20 to +40% of the initial measured value
		2)損耗正切值:小于等于150%規格值 Tangent of the loss angle: ≦150% of the initial specified value
		3)等效串聯電阻ESR 小于等于150%規格值 ESR（equivalent series resistance）≦150% of the initial specified value
		4)漏電流小于等于規格值 Leakage current≦The initial specified value
		5)外觀：產品外觀無異常 Appearance: No notable change to be found
5	高温儲存 High Temp. storage	在+105温度下不外加電壓儲存，電容器存放1000小时。然后在标准条件下放1到2小时进行测量 The capacitor shall be stored at +105℃ temperature for 1000 hours. During which time no voltage shall be applied. And then the capacitor shall be subjected to standard atmospheric conditions for 1 to 2hours, after which measurements shall be made.
		1)電容量變化: ±20%實測值以內 Change in capacitance: Within±20% of the initial measured value
		2)損耗正切值:小于等于150%規格值 Tangent of the loss angle: ≦150% of the initial specified value
		3)等效串聯電阻ESR 小于等于150%規格值 ESR（equivalent series resistance）≦150% of the initial specified value
		4)漏電流小于等于規格值 Leakage current≦The initial specified value
		5)外觀：產品外觀無異常 Appearance: No notable change to be found

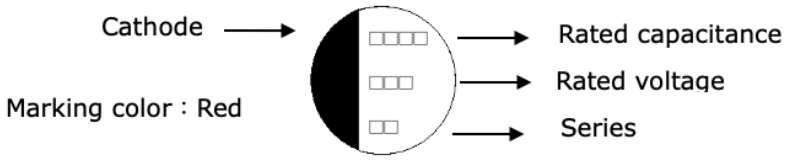
6	耐久性 Endurance	電容在105±2°C,加载直流電2000小时后，需在標準室温條件下放置 1~2小时後，再進行測量。 Applying DC rated voltage for 2000hours at 105 ± 2°C, capacitor shall be subjected to standard atmospheric conditions for 1~2hours, after which measurement shall be made.
		1)電容量變化: ±20%實測值以內 Change in capacitance: Within±20% of the initial measured value
		2)損耗正切值:小于等于150%規格值 Tangent of the loss angle: ≦150% of the initial specified value
		3)等效串聯電阻ESR 小于等于150%規格值 ESR（equivalent series resistance）≦150% of the initial specified value
		4)漏電流小于等于規格值 Leakage current≦The initial specified value
7	快速變温 Rapid change of temperature	在圖1的温度循環要求下，進行5个循環，需在標準室温條件下放置 1~2小时後，再進行測量。。 The capacitor shall be subjected to the temperature cycle requirements as Figure 1 for 5 cycles, and then measured after 1-2 hours under standard atmospheric conditions.
		 Figure.1
		1)電容量變化: ±10%實測值以內 Change in capacitance: Within±10% of the initial measured value
		2)損耗正切值:小于等于規格值 Tangent of the loss angle: ≦ the initial specified value
		3)漏電流小于等于規格值 Leakage current≦The initial specified value

五. 結構圖 Structure



No.	Compositions	
1	Lead Wire	
2	Seal Rubber	
3	AL Case	
4	Safty Vent	
5	Anode Foil	
6	Cathode Foil	
7	Tape	
8	Separator	

六. 標示 Marking



七. 包裝 Packing

包裝標籤標示 Packing Label Marked
(下面項目應該體現在標籤上 The following items shall be marked on the label)
(盤/內盒/外箱 Reel/inside box/outer carton)
系列、額定容值、額定電壓 Series、Rate Capacitance、Rate Voltage
尺寸 Size
數量 Quantity
物料編碼 P/N
批號 LOT Number

八. 固態鋁電解電容使用注意事項 Guidelines For Using Aluminum Polymer Capacitor.

為了使你獲得電解電容的最佳性能和延長電解電容的使用壽命，在使用電解電容前，請務必閱讀本注意事項。
Upon using Aluminum Electrolytic Capacitors，please proper handing and observing to following important points will insure optimum capacitor performance and long life.

1	直流電解電容是有極性的。DC electrolytic capacitors are polarized. 確定極性，極性標誌在電容器的基体上。以免因極性反可能引起電路短路或電容器損壞，當極性不固定或不確定的，使用無極性電容器。注意直流電容器不能使用于交流。Make sure of the polarity. The polarity is marked to on the body of the capacitor .Application of the reversed voltage cause a short circuit or damage the capacitor. Use bipolar capacitors when the polarity is not determined or unknown. Note that DC electrolytic capacitors can not be used for AC application.
2	使用電壓不要大于額定電壓。Do not apply voltage higher than rated voltage. 使用電壓大于額定電壓，漏電流會增大，可能損壞電容器。建議工作電壓为額定電壓的70%-80%，電容器在建議工作電壓下使用可以延长電容器的壽命。If a voltage exceeding the rated voltage is applied, the leakage current will increase, which damage the capacitor. Recommended working voltage is 70 to 80 percent of tatted voltage. Using capacitors at recommended working voltage prolongs capacitor life.
3	不要使用過量紋波電流通過電容器。Do not allow excessive ripple current through the capacitor. 流過電容器的紋波電流超過許可值，將會引起電容器發熱，電容量减少，損耗電容器。通過電容器的紋波電流不要大於允许值。The flow of ripple current over permissible ripple current will cause heat of the capacitor, which may decrease the capacitance and damage the capacitor. Ripple current on the capacitor must be at or bellow allowable level.
4	快速充放電路中，使用專門設計的電容器。Use specially designed capacitors for the circuits where charge and discharge are frequency repeated. 在經受快速的周期性充放電電路中，電容器可能受到損害，它的壽命因容量下降、温升等原因而縮短，在這種電路中，一定要使用專門設計的電容器。In the circuit subjected to rapid charge cycles, capacitors may be damaged, its life may be shortened by capacitance decrease, heat rise, ect. Be sure and use special capacitors in these applications.
5	工作温度範圍。Operating temperature range. 電容器的特性随工作温度變化而變化，在温度較高的情况下，容量，漏電流增大，損耗减少；在低温情况下，容量和漏電流下降，損耗增大。電容器在較低温度下使用会確保延长壽命。The characteristics of capacitors change with the operating temperature. The capacitance and leakage current increase and tgδ decrease at higher temperatures. The capacitance and leakage current decrease and tgδ at increase lower temperature. Usage at lower temperature will ensure longer life.
6	核對工作频率。Check operating frequency. 電解電容器的容量通常是在100HZ或者120HZ下測得的。然而要記住容量随频率的升高而下降，tanδ随频率的升高而增大，并使周圍温度升高。The capacitance of electrolytic capacitors is usually measured at 100Hz or 120Hz. However, remember that capacitance decrease and tgδ increase as the applied frequency becomes higher whereas the ambient temperature becomes higher.
7	長時間存放的電容器，在使用前加額定直流電壓处理。 Apply rated DC voltage treatment to the capacitors which have been stored for a long time. 長時間的存放，實際對電容器的容量和tanδ没有多大的影響，然而往往會使漏電流增大，耐壓降低。長時間存放後的電容器處理，首先逐漸施加直流電壓至額定電壓，然後再使用。Long periods of storage have virtually no effect on a capacitor's capacitance and tgδ. Such periods tend however, to increase leakage current and decrease withstand voltage. After removing capacitors from long-duration storage, first apply a gradually increasing DC voltage to rated voltage and then use them.
8	電容器的外殼與陰極是通過電解液連接的，如果電容器的外殼必須與線路絕緣, 則電容器的安裝位置處，一定要採取絕緣措施。 The capacitor's case and cathode terminal connect through the electrolyte. If the case is to be completely insulated, that insulation must be at the capacitor's mounting point.
9	電容器的端子或者引線上不要施加過大的力。 過大的力施加到端子和引線上，可能引起引線的断裂或端子分裂，轉而会引起内部鏈接的破壞 Do not apply excessive force to the terminals and leads. The excessive strong force applied to the terminals and lead wires may cause leads to break or terminals to separate and, in turn, cause the internal contact to fail.

有害物質目錄表
Hazardous substances management table of contents

區分 Type	物質名稱（中文名）Name(chinese)	物質名稱(英文名）Name(English)	有害物質包含與否	
			有 Yes	無 No
Level A-Ⅰ	铅以及它的化合物	Lead and its compounds	14PPM	
	镉以及它的化合物	Cadmium and its compounds		NO
	水银以及它的化合物	Mercury and its compounds		NO
	六价铬以及它的化合物	Hexavalent chromium ang its compounds		NO
	多溴化的联苯	Polybrominated biphenyls		NO
	聚溴二苯醚	Polybrominated diphenylethers		NO
Level A-Ⅱ	多氯化联苯（PCB）	Polybrominated biphenyls（PCB)		NO
	多氯化萘（PCN)	Polybrominated naphthalenes(PCN)		NO
	三磷酸盐	Polybrominated terphenyls(PCT)		NO
	氯化涂石蜡（SCCP）	Short-chain chlorinated paraffins(SCCP)		NO
	石棉以及它的化合物	Asbestos ang its compounds		NO
	臭氧层破坏物质	Ozone Depleting Substances		NO
	偶氮化合物	Azo compounds		NO
	镍以及它的化合物	Specific organic tin conpounds		NO
	有机锡类化合物	Nickel and its compounds		NO
	砷以及它的化合物	Specific organic tin conpounds		NO
	甲醛	Formaldehydes		NO
Level B	氯化乙烯树脂	Polyvinyl chloride,(PET)		NO
	磷苯二甲酸盐	Phthalates		NO
	铍以及他的化合物	Berylium and its compounds		NO
	锑及其它的化合物	Antimony and its compounds		NO
	硒及其它的化合物	Selenium and its compounds		NO
	钯及其它的化合物	Palladium and its compounds		NO
	铋及其化合物	Bismuth and its compounds		NO
	其他氯类难燃试剂	Other chlorinated flame retardants		NO
	其他溴类难燃试剂	Other brominnated flame retardants		NO
Note	1. 原則上按照公司的管理規定，但由管理總部提出根據客戶的要求制定的另行有害物質管理目錄來執行的要求時，應優先按照管理總部的管理目錄來記載。 2. 確認合作企業現在是否在使用這類物質，應記錄使用與否。			