

规格承认书

/Specification for approval

客户名称/CUSTOMER : _____

客户料号/CUSTOMER P.N. : _____

特锐祥料号/TRX P.N. : _____

规格型号/MODEL NO. : _____ Y1 系列承认书

产 品	RoHS 要求	REACH 要求	Halogen 卤素要求
环保要求	■	■	■

制作/prepare	客户确认 (签署) / customer to confirm (signed)
钟金玲	(签认后, 敬请惠还壹份) / (signed subscription, please also one copy)
审核/check	
批准/approve	



TRX 特锐祥

专 注 电 容 器 11 年

四川特锐祥科技股份有限公司

SICHUAN TERUIXIANG TECHNOLOGY INTERNATIONAL CO., LTD

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Y 型 陶瓷交流固定电容器
/Y a.c. ceramic capacitors

编 号/Number	TRX-3-077	版本日期/Date	2014.12.25
发行版次/Issue	B0	页 码/Page	Page 2 of 24

变更履历表/E. C. LIST

物料名称 /Material name	Y1 电容		特锐祥料号 /TRX P.N.		
规格型号 /Model NO.	Y1 系列承认书	资料编号 /Data number	RD2006022	日期 /Date	2020-06-03

项目 /Item	日期/Date	版本 /Edition	变更原因 /Reason	备注/Remarks
1	2014-12-08	新版/ New Version	内容更详细 More detailed content	
2				
3				
4				
5				

修改 / Modify	钟金玲	审核 /check		批准 /approve	
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编 号/Number	TRX-3-077	版本日期/Date	2014.12.25
发行版次/Issue	B0	页 码/Page	Page 3 of 24

附页 / attached sheet:

承认规格 / Recognized specifications

序号 /CODE	客户料号 /CUSTOMER P.N.	特锐祥料号 /TRX P.N.	规格型号 /MODEL NO.	备注 /REMARKS
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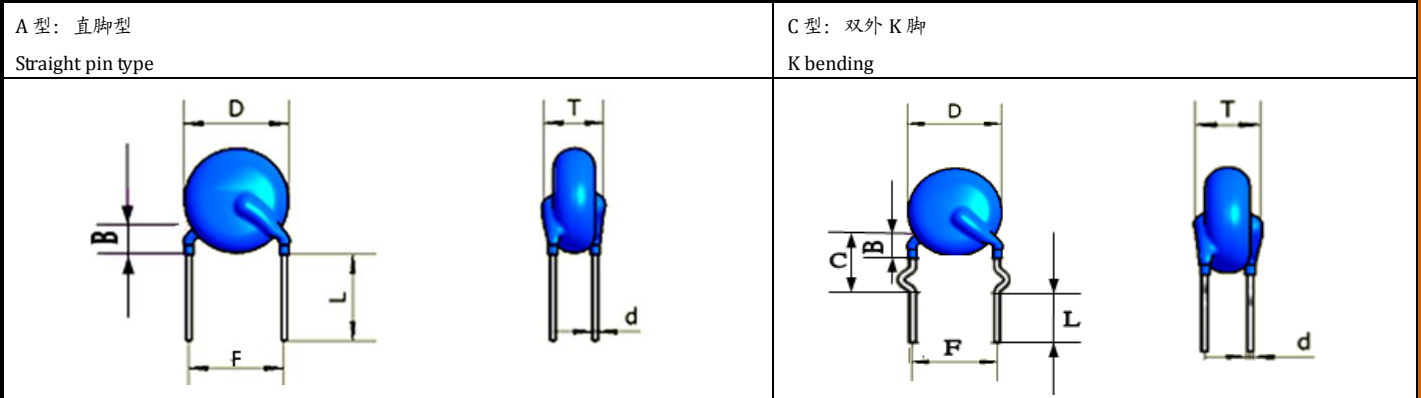
关于 Y 交流陶瓷固定电容器承认书规格型号说明:

适用于连接一个额定电压不超过 1000V 的交流电, 标称频率不超过 100Hz 的电子电气设备。

About Y AC ceramic fixed capacitor acknowledgement specifications description:

Y1 a.c. ceramic capacitors are used in electrical and electronic equipment and connected an a.c. main with nominal voltage not exceeding 1000va.c, and with a nominal frequency not exceeding 100Hz.

编 号/Number	TRX-3-077	版 本 日 期/Date	2014. 12. 25
发 行 版 次/Issue	B0	页 码/Page	Page 4 of 24

附 1. 承 认 规 格 标 准:


材质 Dielectric	电 气 性 能 Electrical characteristics						尺 寸 Dimensions (mm)						
	容量 Capacitance (pF)	静电容量 允许差 Cap.tol	初期 Tanδ Initial Tanδ (max)	额定电压 Rated voltage (V) AC	耐电压 Voltage proof 60s5mA max (V) AC	绝缘电阻 Insulation resistance MΩ MIN	D ± 1.0	T ± 0.8	F ± 0.8	d ± 0.05	L min	B max	C max
Y5P	100	±10%	2.5	500	4000	6000	6.5	4.5	10.0	0.55	20.0	2.5	6.0
	150	±10%	2.5	500	4000	6000	6.5	4.5	10.0	0.55	20.0	2.5	6.0
	220	±10%	2.5	500	4000	6000	6.5	4.5	10.0	0.55	20.0	2.5	6.0
	270	±10%	2.5	500	4000	6000	7.0	4.5	10.0	0.55	20.0	2.5	6.0
	330	±10%	2.5	500	4000	6000	7.5	4.5	10.0	0.55	20.0	2.5	6.0
	390	±10%	2.5	500	4000	6000	7.5	4.5	10.0	0.55	20.0	2.5	6.0
	470	±10%	2.5	500	4000	6000	8.0	4.5	10.0	0.55	20.0	2.5	6.0
	560	±10%	2.5	500	4000	6000	8.0	4.5	10.0	0.55	20.0	2.5	6.0
	680	±10%	2.5	500	4000	6000	9.5	4.5	10.0	0.55	20.0	2.5	6.0
	820	±10%	2.5	500	4000	6000	10.5	4.5	10.0	0.55	20.0	2.5	6.0
1000	±10%	2.5	500	4000	6000	10.5	4.5	10.0	0.55	20.0	2.5	6.0	
Y5U	470	±20%	2.5	500	4000	6000	6.5	4.5	10.0	0.55	20.0	2.5	6.0
	680	±20%	2.5	500	4000	6000	7.5	4.5	10.0	0.55	20.0	2.5	6.0
	1000	±20%	2.5	500	4000	6000	7.5	4.5	10.0	0.55	20.0	2.5	6.0
	1500	±20%	2.5	500	4000	6000	9.0	4.5	10.0	0.55	20.0	2.5	6.0
	2200	±20%	2.5	500	4000	6000	10.0	4.5	10.0	0.55	20.0	2.5	6.0
	3300	±20%	2.5	500	4000	6000	12.5	4.5	10.0	0.55	20.0	2.5	6.0
4700	±20%	2.5	500	4000	6000	14.5	4.5	10.0	0.55	20.0	2.5	6.0	
Y5V	1000	±20%	2.5	500	4000	6000	6.5	4.5	10.0	0.55	20.0	2.5	6.0
	1500	±20%	2.5	500	4000	6000	7.5	4.5	10.0	0.55	20.0	2.5	6.0
	2200	±20%	2.5	500	4000	6000	8.0	4.5	10.0	0.55	20.0	2.5	6.0
	3300	±20%	2.5	500	4000	6000	10.5	4.5	10.0	0.55	20.0	2.5	6.0
	3900	±20%	2.5	500	4000	6000	10.5	4.5	10.0	0.55	20.0	2.5	6.0
	4700	±20%	2.5	500	4000	6000	10.5	4.5	10.0	0.55	20.0	2.5	6.0

TABEL OF CONTENTS 目录清单

1. 品名说明/ Name Description	-----7-8
2. 承认规格尺寸清单/ admitted size list	-----9
3. 产品结构/ product structure	-----10
4. 产品印标 / product marking	-----10
5. 性能测试/ performance test	-----11-16
6. 温度特性/ temperature characteristics	-----16
7. 气候类别/ climate type	-----17
8. 安全认证/ safety certification	-----18
9. 有毒有害物质含量控制要求/ oxic and hazardous substances control requirements	-----18
10. 制造日期代码 (TRX) / Manufacturing date code (TRX)	-----19
11. 储存条件/ Storage conditions	-----19
12. 产品包装/ Product packaging	-----20
13. 敬告与警告/ warning	-----21
14. 电容高压测试操作指引 / Capacitance pressure test operation guide	-----21
15. 有关电容器术语和定义/ Terms and definitions related to capacitor	-----22
16. 陶瓷电容器常识/ Ceramic capacitor common sense	-----23
17. 引用标准/ Reference standard	-----24

编 号/Number	TRX-3-077	版本日期/Date	2014.12.25
发行版次/Issue	B0	页 码/Page	Page 7 of 24

1. How to order 品名说明:

<u>Y1</u>	<u>F</u>	<u>222</u>	<u>M</u>	<u>064</u>	<u>X</u>	<u>280</u>	<u>A</u>
Class	Dielectric	Capacitance	Tolerance	Dielectric diameter	Leads spacing	Leads length	Lead Type
类型	材质	容量	容差	介质直径	脚距	脚长	引线类型

①表示类型/type: Y

②表示温度系数或特性/Temperature coefficient or characteristic: Y5P/Y5U/Y5V

③表示标称容量/ Nominal capacity:

Y5P (容量单位/Capacity unit: PF)											
代码/CODE	101	151	221	271	331	391	471	561	681	821	102
标称容量 / Nominal capacity	100	150	220	270	330	390	470	560	680	820	1000
Y5U (容量单位/Capacity unit: PF)											
代码/CODE	471	102	152	222	272	332	392	472			
标称容量 / Nominal capacity	470	1000	1500	2200	2700	3300	3900	4700			
Y5V (容量单位/Capacity unit: PF)											
代码/CODE	471	102	152	222	272	332	392	472			
标称容量 / Nominal capacity	470	1000	1500	2200	2700	3300	3900	4700			

④表示容量允许误差/Capacity of allowable error:

允许误差/ Permissible error	Y5P	Y5U	Y5V
	±	±	±
	10%	20%	20%

⑤表示介质直径/Medium diameter:

Y5P(介质直径单位: mm 公差: ±1.0)											
容量代码	101	151	221	271	331	391	471	561	681	821	102
介质直径	6.5	6.5	6.5	6.5	7.5	8.5	8.5	9.5	9.5	10.	11.
Y5U(介质直径单位: mm 公差: ±1.0)											
容量代码	471	102	152	222	272	332	392	472			
介质直径	6.5	7.5	9.0	11.	12.	12.	13.	15.			
Y5V(介质直径单位: mm 公差: ±1.0)											
容量代码	471	102	152	222	272	332	392	472			
介质直径	6.5	6.5	7.5	8.5	9.0	10.	11.	11.			

⑥表示脚距/Pitch: (公差: ±0.8)

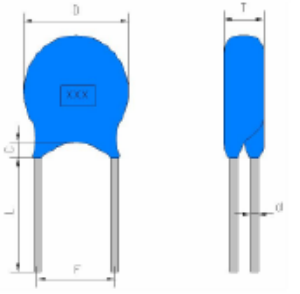
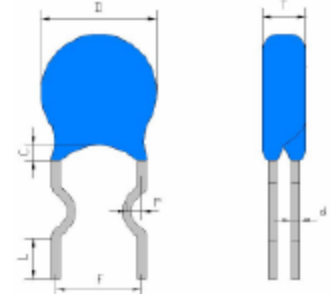
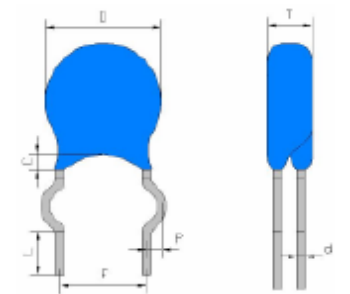
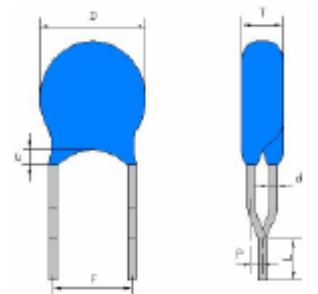
Y1 和 Y2 类一般有 10.0mm 和 7.5mm 两种, 常见 Y1 类为 10.0mm, Y2 类为 7.5mm.

⑦表示脚长/Feet Long:

标准: $0 < L \leq 28.0$

表示例如: 280 为 28.0, 028 为 2.8

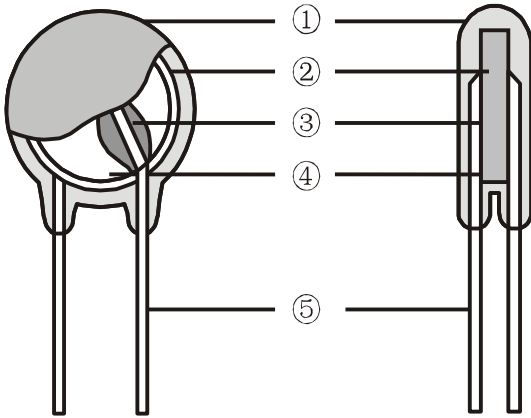
⑧表示引出脚形状/Pin shape:

			
A 型	B 型	C 型	D 型
直脚型 / Straight pin type	内 K 弯型 / Within the K bending	外 K 弯型 / K bending	前后弯型 / Before and after bending

以上提到的各种代码为本公司规定标准应用!

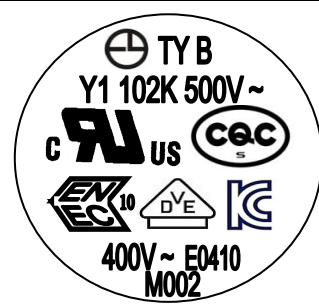

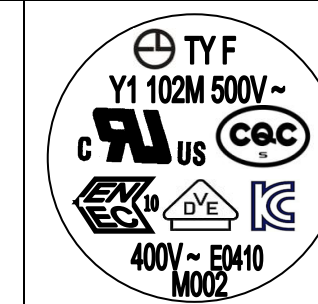
/ Various code mentioned above for the company standard application!







3. 产品结构解剖/ Products of anatomical structure:



NO.	组成/constituent	材料 /material
①	涂层/Coating	Epoxy
②	陶瓷介质 /Ceramic medium	Ceramic
③	焊料/Solder	Soldering tin
④	电极/Electrode	Silver oxide
⑤	引线框架 /Lead Frame	CP wire

4. 产品印标/ Product marking:

范例 / Example			
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说明/ Explain	
公司注册商标/品牌 / registered trademark / brand	
参考型号/type/model reference	TY
介质代码/code of Dielectric	B (Y5P) /E (Y5U) /F (Y5V)
型号 /capacitor classed sub-class	Y1
标称容量/ Nominal capacity	102/471...
容量允差/ Capacity of tolerance	M (± 20%) /K (± 10%)
安规认证标志 / Safety certification mark	UL 认证 
	CQC 认证 
	ENEC 欧洲认证 
	VDE 认证 
	KC 认证 
KC VDE ENEC 电压/ voltage for KC VDE ENEC	400V/500V ⁻ (400VAC/500V)
UL CQC 电压/ voltage for UL CQC	500V ⁻ (500VAC)
日期代码/code of making time	E0410

5. 性能测试/ Performance test:

NO	Item 项目		Performance 性能	measuring method 测试方法												
1	4.1 Visual examination 目视检查		No visible damage legible marking lead frame is not oxidation and its surface is without sundries. 无可见损伤 标记清晰 引线框架无氧化、表面无杂物	unaided eye or magnifier 肉眼或放大镜												
2	4.1 Dimension 尺寸		accorder Table 见表	vernier caliper 游标卡尺												
3	4.1 Printing 印字		accorder design 见图	magnifier 放大镜												
4	4.2.1 Voltage proof 耐压	Between lead wire 引线之间	No permanent break-down or flashover during the test period 没有永久性的损坏或测试期间 无闪络	test voltage: 测试电压 4000VAC frequency: 频率 50/60Hz duration: 持续时间 60 seconds leakage current: 漏电流 5mA max												
		Body insulation 绝缘体	No permanent break-down or flashover during the test period 没有永久性的损坏或测试期间 无闪络	test voltage: 测试电压 4000VAC frequency: 频率 50/60Hz duration: 持续时间 60 seconds leakage current: 漏电流 5mA max												
5	4.2.2 Capacitance 电容量		Within specified tolerance 规定的公差 K: $\pm 10\%$ M: $\pm 20\%$	Temperature: 温度 $25 \pm 3^\circ\text{C}$ Humidity: 湿度 $55 \pm 30\%RH$ Voltage: 电压 $1.0 \pm 0.2V$ Frequency: 频率 $1 \pm 0.2KHZ$												
6	4.2.3 Dissipation factor 损耗因数		Within specified tolerance 规定的公差 Y5P: $\leq 2.5\%$ Y5U: $\leq 5.0\%$ Y5V: $\leq 5.0\%$	Temperature: 温度 $25 \pm 3^\circ\text{C}$ Humidity: 湿度 $55 \pm 30\%RH$ Voltage: 电压 $1.0 \pm 0.2V$ Frequency: 频率 $1 \pm 0.2KHZ$												
7	4.2.4 Capacitor-temperature characteristic 电容器的温度特性		Y5P: $\pm 10\%$ Y5U: $+22\% \sim -56\%$ Y5V: $+22\% \sim -82\%$	Temperature tolerance: 耐温性 $\pm 2^\circ\text{C}$ <table border="1" style="margin-left: 20px;"> <tr> <td>step</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>Tem ($^\circ\text{C}$)</td> <td>+20</td> <td>-25</td> <td>+20</td> <td>+85</td> <td>+20</td> </tr> </table> $\Delta = (C_x - C_0) / C_0$ C _x capacitor for step 2, 4 C ₀ capacitor for step 3	step	1	2	3	4	5	Tem ($^\circ\text{C}$)	+20	-25	+20	+85	+20
step	1	2	3	4	5											
Tem ($^\circ\text{C}$)	+20	-25	+20	+85	+20											

Continued 续表

NO	Item 项目	Performance 性能	measuring method 测试方法
8	4.2.5 Insulation resistance 绝缘电阻	Between lead wire 引线之间	6000MΩ MIN
		Body insulation 绝缘体	6000MΩ MIN
9	4.3 Robustness of terminations 端坚固性	Tensile 承受拉力	force: >10N
		Bending 使弯曲	Lead wire shall not cut off. Capacitor shall not be broken. No visible damage. 导线不得断裂 电容器不被破坏 无可见损伤
10	4.4 Resistance to soldering heat 耐焊接热	visual examination 目视检查	no visible damage 无可见 损伤
		voltage proof 耐压	accorder 4.2.1 见 4.2.1
		Capacitance 电容量	Y5P: ±10% Y5U: ±20% Y5V: ±20%
		dissipation factor 损耗因数	Y5P: ≤2.5% Y5U: ≤2.5% Y5V: ≤2.5%
		Insulation resistance 绝缘电阻	accorder 4.2.5 见 4.2.5
11	4.5 Solderability 可焊性	Good tinning as evidenced by free flowing of the solder with wetting of the terminations or solder shall flow within 3s. 包锡良好, 在 3 秒内流合。	Bath temperature: 浸泡温度 235 ± 5°C Immersion time: 浸泡时间 2 ± 0.5seconds Depth of immersion (from the seating plane or component body): 浸入深度 (从座位 或本体): Capacitors below 2 ⁰ -0.5mm, using a thermal insulating screen of 1.5 ± 0.5mm thickness. 电容器在 20-0.5mm 下, 使用隔热屏 1.5 ± 0.5mm 厚度。

Continued 续表

NO	Item 项目	Performance 性能		measuring method 测试方法
12	4.6 Rapid change of temperature 温度的快速变化	visual examination 目视检查	No visible damage 无可见损伤	upper category temperature 上限类别温度 $+125 \pm 3^{\circ}\text{C}$ lower category temperature 下限类别温度 $-25 \pm 3^{\circ}\text{C}$ number of cycles : 5 duration of exposure at the temperature limits: 30minutes 在温度范围的曝光时间: 30 分钟 Capacitor shall be placed at $25 \pm 3^{\circ}\text{C}$ for $24 \pm 2\text{h}$ before initial measurements. 测量前电容应放置在 $25 \pm 3^{\circ}\text{C}$ 下 24 ± 2 小时
		voltage proof 耐压	accorder 4.2.1 见 4.2.1	
		Capacitance 电容量	Y5P: $\pm 10\%$ Y5U: $\pm 20\%$ Y5V: $\pm 20\%$	
		dissipation factor 损耗因数	Y5P: $\leq 2.5\%$ Y5U: $\leq 2.5\%$ Y5V: $\leq 2.5\%$	
		Insulation resistance 绝缘电阻	accorder 4.2.5	
13	4.7 Vibration 振动	Capacitor shall not visible damage 电容器无可见损伤		Frequency rangs: 频率范围 $10 \rightarrow 55 \rightarrow 10\text{Hz}$ swing: 振幅 0.75mm , The total duration shall be 6 hours. 总时间为 6 小时 duration of exposure at X, Y, Z: 2hours 在 X, Y, Z 曝光时间为 2 小时
14	4.12 Damp heat (steady state) 湿热 (稳态)	visual examination 目视检查	No visible damage 无可见损伤	test temperature: 测试温度 $40 \pm 2^{\circ}\text{C}$ humidity: 湿度 $95 \pm 3\%RH$ duration: 持续时间 $500+24/-0\text{hours}$ voltage: 500VAC (U_R) for one half of the samples. 样本的一半 U_R 为 500V capacitor shall be placed at $25 \pm 3^{\circ}\text{C}$ for $24 \pm 2\text{hours}$ before measurements. 测量前电容应放置在 $25 \pm 3^{\circ}\text{C}$ 下 24 ± 2 小时
		Capacitance 电容量	$\Delta = (C_x - C_0) / C_0$ $\Delta: \pm 15\%$	
		voltage proof 耐压	accorder 4.2.1	
		Insulation resistance 绝缘电阻	$\geq 3000\text{M}\Omega$ $\Delta = (R_x - R_0) / R_0$ $\Delta > 50\%$	

Continued 续表

NO	Item 项目	Performance 性能	measuring method 测试方法
15	4.13 Impulse voltage 脉冲电压	<p>No permanent breakdown or flashover during the test period. 试验期间没有永久性击穿或闪络</p> <p>If any three successive impulses are shown by the oscilloscope monitor to have had a waveform indicating that no self-healing breakdowns or flashovers have taken place in the capacitor, then no further impulses shall be applied and the capacitor shall be counted as conforming. 如果连续三次的冲击示波器监测显示有波形表明在电容器没有发生自愈的故障或闪络, 并没有进一步的脉冲, 电容器应算作合格</p> <p>If all 24 impulses have been applied to the capacitor and 3 or more of them are of a waveform indicating that no self-healing breakdowns or flashovers have occurred, then the capacitor shall be counted as conforming. 如果所有 24 个脉冲被应用到电容器, 显示 3 个或更多的波形表示没有自愈的故障或闪络发生, 电容器应算作不合格。</p> <p>If less than three impulses are of the required waveform, then the capacitor shall be counted as a nonconforming item. 如果少于三的冲动所要求的波形, 然后电容器应视为不合格项目。</p>	<p>Peak impulse voltage: 脉冲峰值电压 8.0KV</p> <p>Impulses distance : 脉冲距离 > 10seconds</p> <p>Impulses times: 脉冲时间 24</p>

Continued 续表

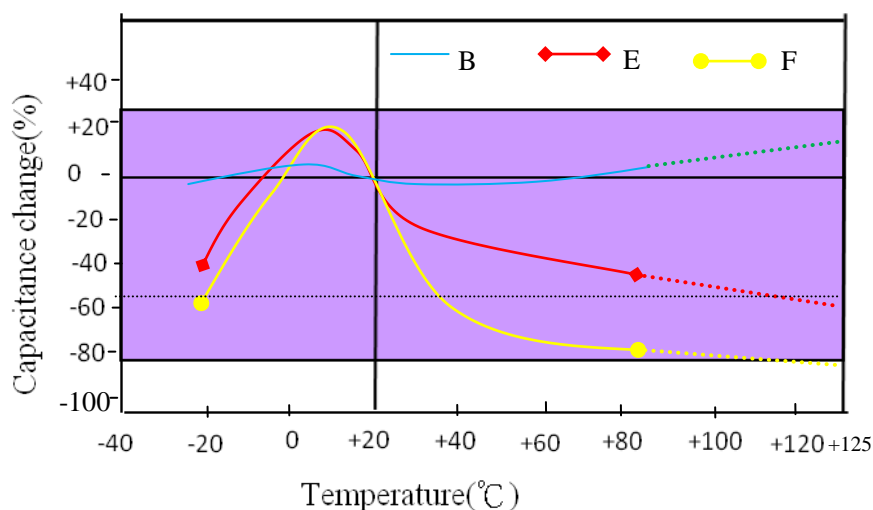
NO	Item 项目	Performance 性能		measuring method 测试方法			
16	4.14 Endurance 持久性	visual examination 目视检查	Novisible damage 无可见损伤	Test temperature: 测试温度 $125 \pm 3^{\circ}\text{C}$ Duration: 持续时间 $1000+24/-0$ hours test voltage: 测试电压 850VAC (1.7UR), except that once every hour the voltage shall be increased to 1000v r.m.s. for 0.1s. 850VAC (UR), 除了每小时一次的电压应增加至 1000V 的均方根 0.1s. Each of these voltage shall be applied To each capacitor individually through a resistor of $47\Omega \pm 5\%$. 这些电压应施通过加到每个电容器分别 $47\Omega \pm 5\%$ 电阻 Capacitor shall be placed at $25 \pm 3^{\circ}\text{C}$ for 24 ± 2 hours before measurements. 测量前电容应放置在 $25 \pm 3^{\circ}\text{C}$ 下 24 ± 2 小时			
		Capacitance 电容量	$\Delta = (C_x - C_0) / C_0$ $\Delta: \pm 20\%$				
		voltage proof 耐压	accorder 4.2.1				
		Insulation resistance 绝缘电阻	$\geq 3000\text{M}\Omega$ $\Delta = (R_x - R_0) / R_0$ $\Delta > 50\%$				
17	4.15 Charge and Discharge 充放电	Capacitance 电容量	$\Delta = (C_x - C_0) / C_0$ $\Delta: \pm 20\%$	Charge voltage: 充电电压 $707\text{VAC} (\sqrt{2}U_R)$ number of cycles: 循环次数 10000 the rate of approximately: 大概速度 one operation per second. 每秒一次操作 Each cycle shall consist of charging and discharging the capacitor. 每个周期电容器将充放电 Each capacitor shall be individually charged by applying the test voltage through a resistor with the value 每个电容器应通过与电阻值施加测试电压单独充电 $R = \frac{220 \times 10^{-6}}{C_R} \Omega$ Capacitor shall be placed at $25 \pm 3^{\circ}\text{C}$ for 24 ± 2 hours before measurements. 测量前电容应放置在 $25 \pm 3^{\circ}\text{C}$ 下 24 ± 2 小时			
		Insulation resistance 绝缘电阻	$\geq 3000\text{M}\Omega$ $\Delta = (R_x - R_0) / R_0$ $\Delta > 50\%$				
18	4.17 Passive flammability 阻燃性	category: 级别 B		category: 级别 B			
		The burning time of any specimen shall not exceed the time specified. 任何试样的燃烧时间不超过指定的时间。		volume ranges 容量范围	flame time 火焰时间	Maximum burning time 最大燃烧时间	
		Burning droplets or glowing parts falling down shall not ignite the tissue paper. 液滴燃烧或灼热的部分为不点燃纸巾。		$V < 250\text{mm}^3$	5S	$\leq 30\text{S}$	
				$250 < V \leq 500\text{mm}^3$	10S	$\leq 30\text{S}$	
				$500 < V \leq 1750\text{mm}^3$	20S	$\leq 30\text{S}$	
		$V > 1750\text{mm}^3$	30S	$\leq 30\text{S}$			

编 号/Number	TRX-3-077	版本日期/Date	2014.12.25
发行版次/Issue	B0	页 码/Page	Page 16 of 24

Continued 续表

NO	Item 项目	Performance 性能	measuring method 测试方法
19	4.19 Component solvent Resistant 耐溶剂性	No visible damage. Performance accorder 4.2.1~4.2.5 无可见损伤 按照 4.2.1 ~ 4.2.5 性能	Solvent to be used: 使用的溶剂 30±5%isopropyl alcohol and 70±5%fluxional compound 30±5%异丙醇和 70±5%微化物 Solvent temperature: 溶剂温度 23±5℃ The capacitor shall be immerged in solvent for 5±0.5seconds. 电容器应浸没在溶剂中 5±0.5 秒。 Recovery time: 恢复时间 8hours
20	4.20 Solvent resistance of the marking 标志耐溶剂性	The marking shall be legible 标志应清晰	Solvent to be used: 使用的溶剂 30±5%isopropyl alcohol and 70±5%fluxional compound 30±5%异丙醇和 70±5%微化物 Solvent temperature: 溶剂温度 23±5℃ The capacitor shall be immerged in solvent for 5±0.5seconds and its markshall be wiped with pletget for 10times. 电容器应浸没在溶剂中 5±0.5 秒, 用纱布擦拭标志 10 次

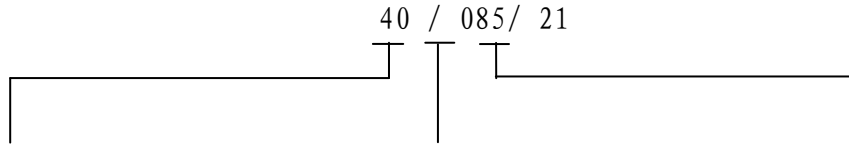
6. 电容温度特性:



编 号/Number	TRX-3-077	版本日期/Date	2014.12.25
发行版次/Issue	B0	页 码/Page	Page 17 of 24

7. Climatic category 气候类别

According to EIA STANDARD RS 198
 根据环境影响评估标准 RS 198



Category temperature lower limit in days 类别温度下限 1st SET	Upper category temperature 类别温度上限 2nd SET	Steady state damp heat test time in days 稳态湿热试验时间天数 3rd SET
--	---	--

1st SET : Minimum ambient temperature of operation (Cold test) 操作的最低环境温度 (冷态试验)

2nd SET: Maximum ambient temperature of operation (Dry heat test) 运行的最高环境温度 (干热试验)

3rd SET : Number of days (Damp heat steady state test) 天数 (稳态湿热试验)

Category Examples 等级举例 according to IEC 60068-1 根据 IEC 60068-1

25/085/04
 25/085/21
 40/085/21
 55/125/21
 55/125/56

First set 第一组

Two digits denoting the minimum ambient temperature of operation (Cold test)
 两位数字表示操作的最低环境温度 (冷态试验)

65	-65°C
55	-55°C
40	-40°C
25	-25°C
10	-10°C
00	0°C
05	+5°C

Second set 第二组

Three digits denoting the maximum ambient temperature of operation (Dry heat test)
 三位数表示的最大工作环境温度 (干热试验)






155	+155°C
125	+125°C
110	+110°C
085	+85°C
080	+80°C
075	+75°C
070	+70°C

Third set 第三组

Two digits denoting the number of days (Damp heat steady state test)
 两位数字表示的天数 (稳态湿热试验)

56	56 days
21	21 days
10	10 days
04	4 days
00	The component is not required to be exposed to damp heat. 组件不需要暴露于湿热

8. 安全认证

NO	COUNTRY	STANDARD NO.	CLASS TYPE W. V C. C P. F. C	FILE NO.	MARK
1	GERMANY EUROPE	VDE DIN EN 60384-14 (VDE 0565 Teil 1-1): 2006-04 EN60384-14: 2005-08 IEC 60384-14 (ed. 3)	Y1 TY AC 400V 25/125/21C	40031733	 
2	USA CSA	UL CUL UL 60384-14 2010 CSA E60384-14 : 09	Y1 TY AC400/500V 25/125/21B	E315719	
3	CHINA	CQC IEC 60384-14: 2005	Y1 TY AC500V 25/125/21B	CQC14001107432	
4	KOREA	KC KC60384-14 (2015-09) KC 60384-1 (2015-09)	Y1 TY AC500V 25/125/21B	HU03034-17001A	

9. Requirements for concentration limits for certain hazardous substances 有毒有害物质含量控制要求

RoHS2.0 2011/65/EU

halogen 卤素

REACH No190 7/2006

**RoHS H.F.
REACH**

Substances 物质名称	concentration (unit: ppm) 含量
Cadmium and cadmium compounds 镉及镉化合物	<100
Lead and lead compounds 铅及铅化合物	<1000
Mercury and mercury compounds 汞及汞化合物	<1000
Hexavalent chromium compounds 铬及铬化合物	<1000
Polubrominated biphenyls 多溴联苯 PBBS	<1000
Polubrominated diphenylethers 多溴联苯醚 PBDES	<1000
Cd+Pb+ Hg + Cr ⁺⁶ (packing materials) 镉+铅+汞+六价铬	<100
Cl 氯	<900
Br 溴	<900
Cl+Br 氯+溴	<1500
SVHC (155item) REACH 高关注物质 155 项	<1000

10. Manufacturing date codes 制造日期代码 (TRX 特锐祥)

code of year 年代码				code of month 月代码		code of day 日代码			
year	code	year	code	month	code	day	code	day	code
		2020	M	1	01	1	01	16	16
		2021	N	2	02	2	02	17	17
2010	A	2022	P	3	03	3	03	18	18
2011	B	2023	R	4	04	4	04	19	19
2012	C	2024	S	5	05	5	05	20	20
2013	D	2025	T	6	06	6	06	21	21
2014	E	2026	U	7	07	7	07	22	22
2015	F	2027	V	8	08	8	08	23	23
2016	H	2028	W	9	09	9	09	24	24
2017	J	2029	X	10	10	10	10	25	25
2018	K			11	11	11	11	26	26
2019	L			12	12	12	12	27	27
						13	13	28	28
						14	14	29	29
						15	15	30	30
								31	31

Note: the year code repeats once every 20 years for a one-week period.

注：年份代码每 20 年为一周期重复一次。

11. Storage conditions 贮存条件

(1). The capacitors are must not stored in a corrosive atmosphere, where sulphide or chloride gas, acid, alkali or salt are present. Exposure of the components to moisture, should be avoided.

防潮，防尘，防压，防跌倒，防酸碱物质，避免阳光直射和结露。

(2). Capacitors can be stored for short periods at any temperature within the entire range of category temperature.

(3). 电容器可在额定的气候类别温度范围内短期（3 个月）贮存。

For long storage periods, however, the following conditions should be observed:

电容器长时间贮存应需要满足下列条件:

■ Storage temperature: -25 to +40°C

贮存温度: -25 to +40°C

■ Maximum relative humidity 80%, no dew allowed on the capacitor.

贮存湿度: 不超过 80%，并无结露现象

■ Maximum duration 12months.

贮存期限: 最大 12 个月

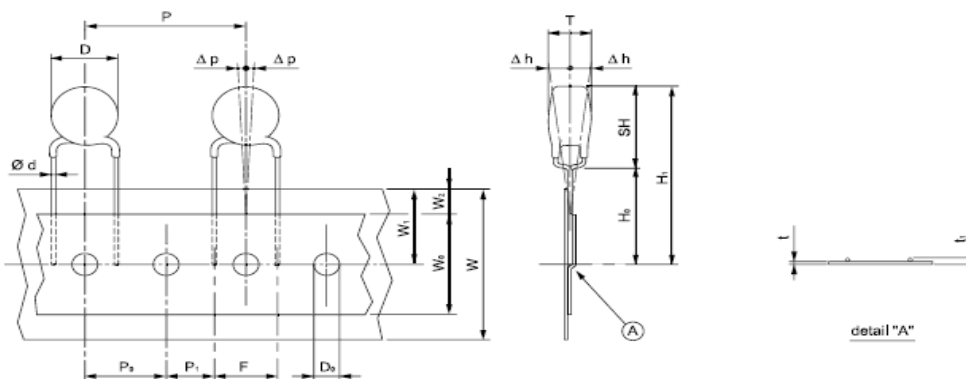
12. Packing 包装

A: bulk 散装

DIMENSION 尺寸	Lead length 引线长度	Bag 每袋
$\Phi D < 8\text{mm}$	$\leq 10\text{mm}$	1000PCS
	$> 10\text{mm}$	500PCS
$\Phi D \geq 8\text{mm}$		500PCS

B: TAPE 编带 (1000PCS/BOX)

Capacitors on tape type pitch 7.5mm /10mm 电容器定位



Parameter 参数	Symbol 符号	Taping Specifications 编带规格 (unit: mm)		
		Pitch 7.5	Pitch 10	Tolerance
lead diameter 线径	Φd	0.55	0.55	± 0.1
pitch between capacitors 电容器间距	p	12.7	25.4	± 1.0
feed-hole pitch 孔距	P_0	12.7	12.7	± 0.3
feed-hole centre to lead centre 进料孔中心到引线中心距	P_1	8.95	7.62	± 0.7
lead spacing 引线间距	F	7.5	10.0	± 1.0
component alignment 准线	Δh	0	0	± 3.0
deviation along tape, left or right 沿胶带偏差, 左或右	Δp	0	0	± 1.3
tape width 编带宽度	w	18.0	18.0	± 0.5
hold-down tape width 压带宽度	W_0	12.0	12.0	-
hole position 孔的位置	W_1	9.0	9.0	± 0.5
hold-down tape position 压带位置	W_2	3.0	3.0	-
seated height to tape centre 底座到编带中心	H_0	20.0	20.0	± 1.0
maximum component height 带中心到顶最大高度	H_1	37.0	37.0	-
feed-hole diameter 进料孔直径	D_0	4.0	4.0	± 0.2
total tape thickness 带总厚度	t	0.50	0.50	± 0.2
maximum thickness of tape and wires 胶带和引线的最大厚度	t_1	1.0	1.0	-

编 号/Number	TRX-3-077	版本日期/Date	2014.12.25
发行版次/Issue	B0	页 码/Page	Page 21 of 24

13. Cautions and warnings 敬告和警告

- ①. Attention is drawn to the fact that repetition of the voltage proof test by the user may damage the capacitor.
用户进行的重复耐电压试验可能损坏电容器，故试验后的电容器不可以当合格品再使用。
- ②. Do not place the capacitor a PC board whose hole space differs from the specified lead space.
电容器在 PCB 板上安装时要求 PCB 板孔径需与电容器脚距相吻合，相反可能会导致电容器与 PCB 板焊接不良，电容器引脚断裂或本体破坏而损坏电容器。
- ③. Avoid any compressive, tensile or flexural stress. 避免任何挤压，弯折，外部撞击。
- ④. Please consult us first if you wish to embed the capacitor in plastic resins.
在电容器上进行树脂成型时，应事先咨询我司相关技术人员。
- ⑤. Do not move the capacitor after it has been soldered to the board.
焊接于 PCB 板的电容器不可用力移动或将本体用力倾斜。
- ⑥. Do not pick up the PC board by the soldered capacitor.
不可于焊接于 PCB 板后的电容将板提取，可能破坏电容焊接和包封层破损。

14. Voltage proof test guide 电容高压测试操作指引

A. Correct Method

正确方法



Operate explain: 操作说明

- (1). Set up test voltage , current and time in high voltage instrument. 设定耐压仪测试电压，电流，测试时间。
- (2). The two pins of capacitor are nipped in fixture of high voltage instrument. 将电容两引脚夹于高压输出端夹具上，使引脚与夹具接触牢固。
- (3). Give the start button a slight press and the capacitor changed and tested, high voltage instrument stop output when the time arrived. 按下启动按钮，电压输出，电容进行高压测试，测试时间完成时，耐压仪自动切断电压输出。

B. Error Method

错误方法



Operate explain: 描述

Capacitor was test with high voltage test probe for electriferous touch the two pins of capacitor.
直接用带电的测试棒去接触电容的两引脚进行测试。

15. Terms and definitions on capacitors 有关电容器术语和定义

(1). a. c. capacitor 交流电容器

Capacitor designed essentially for application with a power-frequency alternating voltage.

NOTE: a. c. capacitor may be used on d. c. supplies having the same voltage as the a. c. r. m. s. rated voltage of the capacitor.

电容器的设计基本上与电源频率的交流电压的应用。

注：交流电容器可用于直流电源具有相同的电压为交流有效值额定电压的电容。

(2). capacitor of class Y Y 电容器

Capacitor of a type suitable for use in situations where failure of the capacitor could lead to danger of electric shock.

电容器的类型适用的情况下，电容器的失效可能会导致触电危险。

(3). rated voltage 额定电压

Either the r. m. s. operating voltage of rated frequency or the d. c. operating voltage, which may be applied continuously to the terminations of a capacitor at any temperature between the lower and the upper category temperatures.

额定电压是在额定温度下，可以连续施加在电容器引出端上的最大直流电压。

(4). tangent of loss angle($\tan \delta$) 损耗角正切

The power loss of the capacitor divided by the reactive power of the capacitor at a sinusoidal voltage at a specified frequency.

在规定频率的正弦电压下，电容器的损耗功率除以电容器的无功功率。

(5). temperature characteristic of capacitor 电容量温度特性

The maximum reversible variation of capacitance produced over a given temperature range within the category temperature range, normally expressed as a percentage of the

电容量温度特性是在一个不超出类别温度范围的给定温度范围内，所出现的电容量

最大可逆变化。一般此变化表示相对 20℃ 时电容量的百分比。

16. general knowledge for ceramic Capacitors 陶瓷电容器常识

(1). for capacitance and Dissipation factor ($\tan \delta$) : 容量和损耗测试

①. The capacitor is tested after be clamped with the test tool, can't take the capacitor's noumenon for test with hand. Capacitance and dissipation factor are not exact because of temperature in hand and test result is not right. 用测试夹具紧密接触或夹住电容两脚进行测试读数,不可用手拿着电容本体进行测试。因手温传给电容本体后会影响到电容的容量和损耗,造成测试结果有出入而引起误判。

②. The capacitor's capacitance and Dissipation factor after voltage tested may not test before the capacitor is stored for 24 hours after voltage test. the capacitor must be discharge between leads before test, or else voltage of remainder attaint test apparatus. 耐压测试后的产品在进行容量和损耗测试前必须是电容已经放置 24 小时以上,并且在测试时需将电容两引脚进行短路放电,避免残余电量损坏测试仪表。

(2). for Voltage proof: 耐电压

Charge to capacitor after AC or DC Voltage, value, time and current are seted in test apparatus, clamping capacitor's lead with clamp for test apparatus output. Space between clamps for test apparatus output must meet standard, or else flashover will be happened between two leads if space is too small. Capacitor's configuration was be destroyed if great current will be happened in capacitor for moment. 先调节好测试用耐压仪的测试电压性质,数值,最大电流和测试时间,再用测试仪两电源输出端夹子夹住电容的两支引脚,且两夹具的内间距不能小于电容脚距(若两夹具的内间距小于电容脚距时,在充电测试中会因爬电距离过小产生飞弧,瞬间在电容内部产生大电流而破坏电容结构。

编 号/Number	TRX-3-077	版本日期/Date	2014.12.25
发行版次/Issue	B0	页 码/Page	Page 24 of 24

17. Normative references 引用标准

- (1). IEC 60384-1: 2008 Fixed capacitors for use in electronic equipment Part 1: Generic specification
电子设备用固定电容器 第 1 部分 通用规范
- (2). IEC 60384-14 3rd ed: 2005 Fixed capacitors for use in electronic equipment Part 14: Sectional specification (Fixed capacitors for electromagnetic interference suppression and connection to the supply mains)
电子设备用固定电容器 第 14 部分 分规范 (用于抑制电磁干扰和电源连接固定电容器)
- (3). GB/T 5169.5-1997 (IDT IEC 60695-2-2:1991) Fire hazard testing for electronic products Part 2: Test methods Section 2: Needle-flame test
电子产品着火危险实验 第 2 部分 实验方法 第 2 节: 针焰试验
- (4). GB/T 2693-2001 (IDT IEC 60384-1: 1999) Fixed capacitors for use in electronic equipment- Part 1: Generic specification
电子设备用固定电容器 第 1 部分 通用规范
- (5). GB/T 2828.1-2003 (IDT ISO 2859-1:1999) Sampling procedures for inspection by attributes- Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-blot inspection
计数抽样检验程序 第 1 部分 按接受限 (AQL) 检索的逐批检验抽样计划
- (6). GB/T 2471-1995 (IDT IEC 63:1963): Preferred number series for resistors and capacitors
电阻器和电容器优先数系
- (7). GB/T 2691-1994 (IDT IEC 62:1992): Marking codes for resistors and capacitors
电阻器和电容器的标志代码
- (8). SJ/T 11363-2006: Requirements for concentration limits for certain hazardous substances in electronic information products
电子信息产品中有毒有害物质的限量要求
- (9). SJ/T 11364-2006: Marking for control of pollution caused by electronic information products
电子信息产品污染控制标识要求
- (10). SJ/T 11365-2006: Testing methods for hazardous substances in electronic information products
电子信息产品中有毒有害物质的检测方法
- (11). 2011/65/EU: (RoHS2.0) The Restriction of the use of certain Hazardous substances in Electrical and Electronic Equipment
电子电气设备中限制使用某些有害物质指令
- (12). 2002/96/EC (WEEE): Waste Electrical and Electronic Equipment
废旧电子电气设备指令
- (13). 94/62/EC (2005/20/EC): Europe Parliament and Council Directive 94/62/EC of 20 December 1994 on Packaging and packaging waste
关于包装和包装废物的 1994 年 12 月 20 日欧洲议会和理事会指令 94/62/EC
- (14). No1907/2006 (REACH): Registration, Evaluation, Authorization and Restriction of Chemicals (151item)
化学品注册、评估、许可和限制