





# 承认书

### SPECIFICATIONS FOR APPROVAL

客户名 (Custome	. •	pla El	<u>ektronil</u>	к Sp. z o.o.	
产品名 (Commod	• •	SP	85°C		
产品型号 (Type/Mo	//-IH	1 250	V2700	OuF Ф89×17	<b>7</b> 0
客户签字加盖公章:					
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	测试 Test	审核 Checked by	批准 Approved by	承认日期 Accept date
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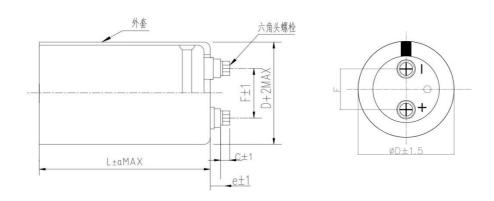
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#### 外形尺寸 AHAPE AND DIMENSONS

螺栓 Screw (SP)



D: φ89mm L: 170mm F: 32mm

螺丝规格 Screw specifications: M5×0.8×12

(mm)					
螺栓的公称直径	α	c	е	F	ΦD
M5	3	6	6	22	50
М5	3	6	6	28	63.5
M6	3	6	6	32	76
M6	3	6	6	32	89

额 定	浪涌	容量	尺寸	引出	温度	容量允许	损失	漏电流	额 定	耐久性
工作	电 压	Cap	(size)	方式	(Temperat	偏差 (20±	角正	$(\mu A)$	纹 波	Enduran ce
电压	Surge	( µ F)		(Ter	ure)	5℃)	切值	/5 分钟	电 流	( hours )
Rated	Voltag			minal		(Nominal	(20±	(20±	(A)	at 85±2℃
voltag	e (V)			type)		capacitan	5℃)	5℃)	Rated	120HZ
e (v)						ce	Dissip	Leakag	ripple	
						tolerance	ation	e	curret	
						)	factor	current		
250	300	27000	89×170	Screw	<b>-</b> 25∼+85℃	±20%	≤0.20	≤5000	5.0	2000

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#### 1.概述 SCOPE

本承认书规定了 SP, 螺栓引出铝电解电容器的技术规范。

This specification covers"SP" series Screw type aluminum electrolytic capacitors.

#### 2.参考标准 APPLICABLE SPECIFICATION

本承认书参考 GB/T2963-2001 和 IEC60384-1-1999 规定。

Japanese Industrial Standard GB/T2963-2001  $\scriptstyle \cdot$  Characteristics and IEC60384-1-1999 except as

specified in this specification.

#### 3.工作温度范围 OPERAT ING TEMPERATURE RANGE

工作温度范围是电容器在施加额定工作电压条件下,可以长期可靠工作的环境温度范围。

-25~+85°C

Operating temperature range is the range of ambient temperature at which the capacitor can be

operated continuously at rated voltage.

-25~+85°C

#### 4.测试环境 CHARACTERISTICS

如果没有其他规定,标准的测试、检验环境条件如下所示:

环境温度: 15 至 35℃

相对湿度: 45 至 75%

大气压力: 86kpa 至 106kpa

如果对测试结果有异议,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 Measurements and tests are as follows.

Ambient temperature:15 to35 °C

Relative humidity:45 to 75%

Air pressure:86kpa to 106kpa

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

Ambient temperature:  $25 \pm 2^{\circ}$ C

Relative humidity:60 to 70%

Air pressure:86kpa to 106kpa

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#### 4.1 电气特性 ELECTRICAL CHARACTERISICS

序号	项目	测试方法	性能 Performancs
NO	Item	Test method	
4.1.1	额定工作电		DC: 250V
	压		
	Rated		
	voltage		
4.1.2	电容量	测试频率: 120Hz±20%	27000 μ F
	Capacitance	测试电路: 串联等效	C: 容量 (μF)
		测试电压: 0.5Vrms 以下	容量偏差: ±20%
		Measuring frequency:120Hz	C:Capacitance(µF)
		Measuring circuit:	Capacitance tolerance:
		Series equivalent circuit	$\pm 20\%$
		Measuring voltage:	
		0.5Vrms or less +1.5 to 2.0VDC	
4.1.3	损失角正切	测试条件与 4.1.2 电容量测试相同	$tg \& \le 0.20$
	值	Testing condition are the same as 4.1.2 for capacitance	
	Dissipation		
	Factor		
4.1.4	漏电流	在电容器两端施加额定工作电压,并串联 1000±100	电压 250V
	Leakage	Ω电阻,在施加电压 5 分钟后,测量漏电流。	5 分钟后
	current	测试电路如下图:	Ic≤5000
		The rated voltage shall be applied across the	Ic: 漏电流 (μA)
		capacitor and its protective resistor which	
		shall then be measured after an electrification	
		period of 5 min.	Voltage 250V
		Measurement circuit	After 5 minutes
		S1	Ic≤5000
			Ic:Leakage
		<u> </u>	current ( $\mu$ A)
		+	V:Rated voltage(V)
		<del>_</del>	
		Rs:Protective resistor $(1000 \pm 100 \Omega)$	
		DC ammeter	
		DC voltmeter	
		S1:Switch	
		S2:Protective switch for an ammeter	

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4.1.5	温度特性					阶段 2 阻抗值与阶段 1
	Temperature	阶段	温度	时间		阻抗值相比≤6 要求。
	Characteristic	1	20±2℃	1.5h		Step 2:Impedance ratio
		2	-25 <sup>+0</sup> -₃°C	2h		Ratio to the value at step
					ļ	1,lessthan or equal to6.
		阶段 1: 测	则阻抗			
				)Hz)		
			电谷益恒温贮存 5 120Hz)	- 2 小时,在	热平衡状态测阻	
				ll be measu	red. (  Z 20 ℃	
		120Hz)				
		_	fter the cap edance shall be	_	g stored for 2	
		( Z -25		inde at the	ina saomy.	
4.1.6	耐浪涌电压	充电 30±	5 秒,放电 5.	5±0.5 分钟	作为一个周期,	容量:
	Surge Test	共进行 10				不低于试验前的 80%。
			: 15℃-35℃ 註大气条件下放	置达到热稳定	E,测试各参数	损耗角正切值不大于 200%的表 1 规定值。漏
			application:			电流:
				for $30 \pm 5$ se	ec, with a period	达到 4.1.4 要求
		of $5.5\pm 0$	).5min. perature: 15°	C=35°C		Capacitance:Not less than 80% of value
					l under standard	before test.
		atmosphe			btain thermal	Dissipation factor:
		stability made.	y,after whic	h measurem	nents shall be	Not more 200% of the specified value in Table-
		made.				1.
						Leakage current:
		Test circui	t			To satisfy No.4.1.4
		+		[	] R1   ] R2	
			$(\vee)$	_=	L Cx	
			_		-	s over voltage which may
		often applied		capacitor,the	refore,not applicabl	e to such Over voltages as

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#### 4.2 机械特性 MECHANICAL PERFORMANCE

序号	项目 Item	测试方法	特性
NO		Test method	Performancs
4.2.1	振动试验	依据 JIS C 5102 8.2 和 JIS C 5025 试验。	测量电容量应无接触不良开
	Resistance	在 3 个互相垂直的方向分别施加 2 小时振动,共	路或短路,无可见机械损伤。
	to	6 小时	When the capacitance is
	Vibration	To comply with JIS C 5102 8.2and JIS C5025	measured there shall be no
		Direction and duration of vibration:	intermittent contacts, or open or
		3 orthogonal directions mutually each for 2h,Total	short circuiting There shall be
		6h.	no such mechanical damage.

#### 4.3 耐久性测试 ENDURANCE PERFORMANCE

		以 ENDURANCE PERFORMANC	T .
序号	项目 Item	测试方法 Test method	特性 Performancs
NO	74 -L.) H. LL.	ALIE C NL/C NEW	
4.3.1	稳态湿热	依据 JIS C 5023 进行试验	容量变化: 在初始值±10%范围内损失
	Resistance to	试验温度: 40±2℃	角正切值:满足表 1 要求
	damp	试验时间: 1000±8h	漏电流: 满足 4.1.4 要求
	heat(steady	相对湿度: 90~95%	外观: 无异状
	state)	试验后,电容器在标准大气条件下 1~2小	Variation of capacitance:
		时,然后测试参数	Within $\pm$ 10% of the value before
		To comply with JIS C 5023	test.
		Test Temperature: $40\pm2^{\circ}$ C	Dissipation factor:
		Test time: $1000 \pm 8h$ .	To satisfy Table 1.
		Relative humidity: 90~95%	Leakage current:
		After completion of test,the capacitor	To satisfy No 4.1.4
		shall be subjected to standard atmospheric	Appearance:
		conditions for 1 to 2 hours, after which	No remarkable abnormality.
		measurements shall be made.	
4.3.2	耐久性	85±2℃施加额定纹波电流下的额定电	容量变化: 在初始值±20%范围内损失
	Load life	压持续 2000-0 +48 小时后,恢复至少 24	角正切值: 不超过表 1 所示规定值的
		小时测试	200%
		Aftet applying rated voltage with	漏电流: 满足 4.1.4 要求
		maximum ripple current for 2000-0 +48h at	外观: 无异状
		$85\pm2^{\circ}$ C and then resumed for 24 hours.	Variation of capacitance:
			Within ± 20% of the value before
			test.
			Dissipation factor:
			Not more than 200% of the specified
			value in Table 1. Leakage current :
			To satisfy No 4.1.4
			Appearance:
			No remarkable abnormality.

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4.3.3	<b>宣祖盼方</b> 建	1 左 05 → 2 ♡ 阳兆	1 度环接下玉色芳贮	容量变化:初始值±20%范围内。损耗
4.3.3	高温贮存试	1、 在 85±2℃限温		
	验	存 1000 <sub>-0</sub> <sup>+48</sup> h,至/		角正切值:不超过表 1 所列规定值的
	SHELF	The capacitors are t		200%
	LIFE	voltage applied at a t	_	漏电流: 不超过 4.1.4 规定值的 200%
	TEST	2°C for 1000 <sub>-0</sub> <sup>+48</sup> h ar	nd then resumed 16	外观: 无异状
		hours.		Variation of capacitance: Within $\pm 20\%$
				of the value before test.
				Dissipation factor:
				Not more than 200% of the specified
				value in Table 1.
				Leakage current:
				Not more than 200% of the
				satisfy No.4.1.4
				Appearance:
				No remarkable abnormality.
4.3.4	防爆试验	AC test 交流试验:		上述过程中应无引线、铝箔等散射,无
	SAFETY	施加电压: 不超过定	格电压 0.7 倍的交	火花产生。
	VENT	流电压或低于交流电	L压 250V 的任意电	The vent device is actuated under the test
		压。 Applied volt	age:AC voltage not	conditions,thereby preventing
		exceeding 0.7 times	of the rated direct	terminals,metal pieces,etc,of the
		voltage or 250 V AC	whichever is the low	capacitor from scattering due to burst,the
		Frequency 频率: 50	Hz or 60 Hz.	case from separating from the seal
		Series resistor:refer to	the table below.	packing,or the capacitor from producing
		串联阻抗:参照下表	₹.	flame.
		Capacitance(C) 容	Series resistor 串	
		量	联阻抗	
		C≤1 µ F	1000 Ω	
		1 μ F <c≤10 td="" μ<=""><td>100 Ω</td><td></td></c≤10>	100 Ω	
		F		
		10 μ F < C ≤ 100	10 Ω	
		μF		
		100 µ F < C ≤	1 Ω	
		1000 µ F		
		1000 μ F < C ≤	0.1 Ω	
		10000 μ F		
		10000 μ F <c< td=""><td>*</td><td></td></c<>	*	
		相当于试验频率的一	L	
		*Resistance is equiva		
		impedance by test free		
		DC test 直流测试:	1	
		施加反向电压是通入	以下由流。	
		Where case size 外壳		
		D $\leq$ 22.4mm: 1A d.c		
		10A d.c.max	.mga <i>D- 22</i> .7mm;	
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注: 1.此要求对于直径 6mm 或以上之电容器
2.试验开始, 经 30 分钟后防爆装置仍不动, 试验终止。
Note:1.This requirement applies to capacitors with diameter of 6mm or more.
2.When the pressure relief divice does not oveven 30minutes after commencement of to the test may be ended.

纹波电流频率修正系数 Frequency correction factor for ripple current

Freq(Hz	50	120	400	1 K	10~50K
10~50	0.80	1.0	1.03	1.05	1.08
63~100	0.80	1.0	1.05	1.07	1.10
160~450	0.80	1.0	1.10	1.13	1.18

#### 温度系数 Temperature coefficient

温度(°C) UR (V)	40	55	70	85
10~100	2.1	1.8	1.5	1
160~450	2.6	2.2	1.7	1

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#### 5、标记 MARKING

#### 5.1 在电容器体上应注明如下内容:

- (1) **DM** 商标
- (2) 工作电压
- (3) 型号规格
- (4) 负极标志
- (5) 额定温度

The following items shall be marked indelibly on the capacitor.

- (1) DM mark.
- (2) Rated voltage.
- (3) Type and specification
- (4) Polarity of the terminals
- (5) Pacted temperature

#### **5.2** 标记颜色

套管颜色: 黑色

标记颜色:白

Sleeve color: black

Marking color: white

包装 PACKING

#### 6.1 包装标签 PACKING LABEL

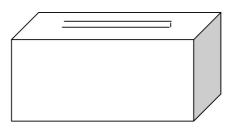


型号	CD91D	容偏	±20%
规格	250V27000 µ F	尺寸	89×170
数量	9 只 pcs	检验员	
日期		工号	

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#### 6.2 包装按下图包装方式

The packaging shall be as shown in the following figure.



外箱 carton

#### Φ**89** 包装<u>方式</u>:

产品尺寸	外箱	每箱	泡沫盒	每层	每箱产
	尺寸	数量	尺寸	数量	品层数
Φ89×170	$325\times325\times220$	9	310×310×63	9	1

包装示意图 Package Sample Picture:





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#### 7.其他说明

## 7.1 铝电解电容器使用注意事项 IMPORTANT INFORMATION ON THE APPLICATION OF ALUMINUM ELECTROLYTIC CAPACITORS

(1) 、直流铝电解电容器应按正确的极性使用 DC electrolytic capacitors are polarized

当直流铝电解电容器按反极性接入电路时,电容器会导致电子线路短路,由此产生的 电流会引致电容器损坏。若电路中有可能再负引线施加正极电压,请选无极性产品。

When reverse voltage is applied on DC electrolytic capacitor, the capacitor will becomes short circuited please use non polarized capacitors in the circuit be damage due to abnormal current flows through the capacitors since thw circuit where the positive voltage may be applied to the cathode terminal.

(2) 、在额定工作电压一下作用 Use capacitor within rated voltage

当电容器上所施加电压高于额定工作电压时,电容器的漏电流将上升,其电气特性将 在 短时内劣化直至损坏。请注意电压峰值勿超出额定工作电压。

When capacitor is used at higher voltage than the rated voltage, leakage current increases, characteristics drastically deteriorste and damage in a short period may occur as a result. Please take extra caution that the peak voltage should not exceed the rated voltage.

(3) 、作快速充放电使用 Charge and discharge application.

当常规电容器被用作快速充电用途。其使用寿命可能会因为容量下降,温度急剧上升 等 而缩减

When aluminum electrolytic capacitors for general purpose are employed in rapid charge and discharge application, its life expectancy may be shortened by capacitance decrease, heat rise, etc.

#### (4) 、电容器储存 Store the capacitor

当铝电解电容器作了长期储存后,其漏电流通常升高,贮存温度愈高,漏电流上升愈快。因此应注意贮存环境的选择,在电容器上施加电压后,漏电流值将不断下降,在铝电 解电容器的漏电流值上升对电路有不良影响的,请在使用前充电处理。

I creased leakage current is common in aluminum capacitors which have been stored for long period of time. The Higher the storage temperature, the higher the leakage current increase, therefore please take precautions concerning the storage location. The leakage current

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decrease gradually as voltage is applied to the capacitor. In cases where increased leakage current causes problems in the circuit, apply voltage (aging) before using.

(5) 、施加纹波电流应小于额定值 Ripple current applied to capacitor should not exceed the rated value.

施加纹波电流超过额定值后,会导致电容器体过热,容量下降,寿命缩短。所施加纹 波电压的峰值应小于额定工作电压。

Excessive heat will reduce capacitance and result in shortened life of capacitorif ripple currents exceeding the specified rated value are applied. The peak value of the ripple voltage should be less than the rated voltage.

#### (6) 、引出线强度 Lead stress

当拉力施加到电容器引出线,该拉力将作用于电容器内部,这将导致电容器内部短 路, 开路或漏电流上升。在电容器焊装到电路板,请勿强烈摇动电容器。

When a strong force is applied to the lead wires or terminals, stress is put on the internal connections. This may result in short circuit, open circuit or increased leakage current. It is not advisable to bend or handle a capacitor after it has been soldered to the PC board.

#### (7) 、焊接过程耐热性 Heat resistance at the soldering process

铝电解电容器装至电路板进行浸焊或波焊时,其塑料套管可能因焊接时间过长、温 度 过高而发生破裂或二次收缩。

In the dip soldering process of PC board with aluminum electrolytic capacitors mounted, secondary shrinkage or crack of PVC sleeve may be observed when solder temperature is too high or dipping time is too long.

(8) 、电路板的安装孔孔距及安装位置 Hole pitch and position of PC board.

电路板安装孔的设计应与产品说明书的引线脚距一致,如果将电容器强行插入孔距不 配套的电路板,那么会有应力作用于引出线,这将导致短路或漏电流上升。

A PC board must be designed so its hole pitch coincides with the lead pitch(lesd spacing) of the capacitor specified by the catalog or specifications when a capacitor is forcibly inserted into an unmatached hole pitch, a stress is put on the leads. This could result in a short circuit or increased leakage current.

7.2 本产品无铅, 无污染 This product is lead free and environmental friendly

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