

APPROVAL SHEET

Customer: Ozdisan

Customer Part NO. _____

Part NO. 見該系列規格書






Item: Series For Approval

Catalog Series: SK Series

Date of Issue: JUL.31.2023

Approved NO. : SD20230700940

BUYER'S STAMP	Approved by			

Su' scon	Submitted by			
	Approval	Check	Affirm	Design
				

Su' scon
Electrolytic Capacitor

www.su-scon.com



Taipei - Kuan Kun Electronic Enterprise Co., Ltd.
Tel: 886-2-82269699 Fax: 886-2-82269670
China - DongGuan Kuan Kun Electronic Co., Ltd.
Tel: 86-769-87318000 Fax: 86-769-87318008
HongKong - Kuan Kun Investment (H.K) Co., Ltd.
Tel: 852-23857603 Fax: 852-23858725
China - DongGuan Kuan Yi Electronic Co., Ltd.
Tel: 86-769-39019168 Fax: 86-769-39019167

Halogen
Free
RoHS COMPLIANT Environmental-Benefit Products

RECORD OF REVISION

NO.	VERSION	REASON	DATE	CHECKED	REMARKS
1	A00	First Release	2023.07.31	王代燕	
2					
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SK Series For Approval

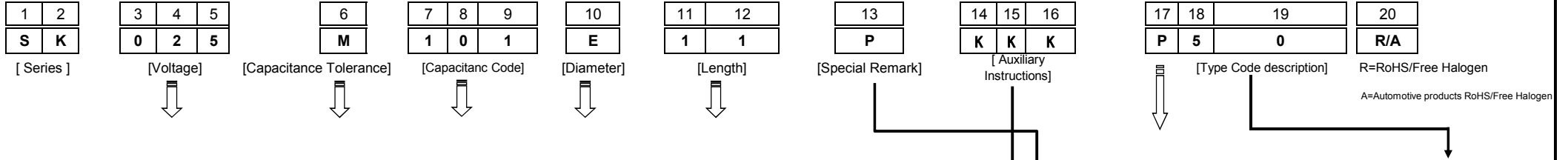
NO.	Customer Part No.	Specification	<i>Su' scon</i> Part No.
1		EC,100uF/25V	SK025M101E11PKKKP50R
2		EC,220uF/25V	SK025M221E11PKKKP50R
3		EC,1000uF/25V	SK025M102G16PKKKP50R
4		EC,220uF/35V	SK035M221F11PKKKP50R
5		EC,33uF/50V	SK050M330D11PKKKP50R
6		EC,10uF/450V	SK450M100GCBPKKKP50R
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Explanation of Parts Numbers (ERP System)

Draw Up:1999.12.15
Revise:2023.06.27

Codification:DKK/III-00-002
Edition:B05

Explanation of Parts Numbers



004=4V	J= ±5 %	0R1=0.1uF	C=4Φ
006=6.3V	K= ±10%	1R0=1uF	D=5Φ
010=10V	M= ±20 %	100=10 uF	5=5.5Φ
016=16V	A= 0 %~+20 %	101=100 uF	E=6.3Φ
025=25V	S= 0 %~+40 %	102=1000 uF	V=6.5Φ
035=35V	R= 0 %~+50 %	103=10000 uF	F=8Φ
050=50V	D= -5 %~+20 %	223=22000 uF	G=10Φ
063=63V	V= -10 %~+20 %	G52=1650 uF	H=12Φ
080=80V	Q= -10 %~+30 %		X=12.5Φ
100=100V	T= -10 %~+50 %		I=13Φ
160=160V	E= -15 %~+20 %	Q=40Φ	Y=14.5Φ
350=350V	I= -30 %~+20 %	W=42Φ	J=16Φ
400=400V	B= +10 %~+30 %	8=45Φ	K=18Φ
420=420V	N= +10 %~+25 %	R=51Φ	L=20Φ
450=450V	C= -5 %~+15 %	S=64Φ	M=22Φ
500=500V	Z= -0 %~+30 %	T=76Φ	N=25Φ
		U=90Φ	O=30Φ
		B=100Φ	P=35Φ

1) Length < 100mm Integer, Input it direct.
2) Length < 100mm Decimal, Please refer the code as below: Ex:11.5 is BB; 5.4 is 5A;
3. Length ≥ 100mm, First digit input No.0~9 · 2nd · 3rd refer as below Code11 Ex:115, Input B5.

Code 11 · 18	Meaning
A	10
B	11
C	12
D	13
E	14
F	15
G	16
H	17
I	18
J	19
K	20
Q	21

Code 12 · 19	Meaning
A	0.4
B	0.5
C	0.6
D	0.7
E	0.8
F	0.9
G	0.1
H	0.2
I	0.3

RADIAL	B=Forming Only C=Lead Cut D=Lead Cut and Crimp N=Lead spacing expand to 2.0 mm then Cut E=Lead spacing expand to 2.5 mm then Cut F=Lead Forming spacing 5.0 mm then Cut H=Lead Forming Cut and Crimp S=Long Lead L=Facing cathode:Lead Cut and Bending (turn right) Z=Facing cathode:Lead Cut and Bending (turn left) P=Taping (Ammo pack) R=Tape and Reel V=V-chip Type (SMD)	<1>Code No.17 is "P","R"Code No.18 · 19 is stand for Lead pitch. <2>Code No.17 is C,N,E,F,D,H,W,K,L,Z, Code No.18 · 19 is stand for Lead length.
	G= LG Type Terminal PCS= PC board pin-out Straight Terminal PCY= PC board pin-out LUG Terminal PCU= PC board pin-out U-Insert Terminal PCB= PC board pin-out Bend Terminal ST= Straight Type Terminal U= 5 Pin Straight Terminal W= Screw Terminal YL= Snap	<3>Code No.17 is S,Code No.18 · 19 be filled in "00" is stand for General Long Lead <4>Code No.17 is "B",Code No.18 · 19 be filled in "00" is stand for Forming Long Lead <5>Code No.17 is "V",Code No.18 · 19 be filled in "00" is Fill code number, does not mean other significance

Code 13	Meaning
T	Convex Rubber seal (Standard : Lead Type 12.5Φ · 13Φ · 16Φ · 18Φ (Breathe freely))
P	Flat Rubber seal (Standard : Lead Type 4Φ ≤ D ≤ 12Φ : 20Φ · 22Φ · 25Φ)
0	Snap-in,U-LUG Type

2.ERP P/N System compare with NCC's Description

- "Finished Products" ----20 Codes ·
- Snap in Type---- "Semi-finished products P/N" has not demand · It's also 20 Codes
- Lead Type---- 16 codes for "Semi-finished products" ·
It's 16 codes (If Specially enquire and 16 codes can not be reached, It will be 20 code for that)
- Codes No.13 : Specially Code · It's difference between clients enquire and same Spec multiple enquired.
- Codes No.14~16 which is for clients Code.
- Length of Lead Cut and Forming bigger than10.0mm or appendix digit · Letters Description ·

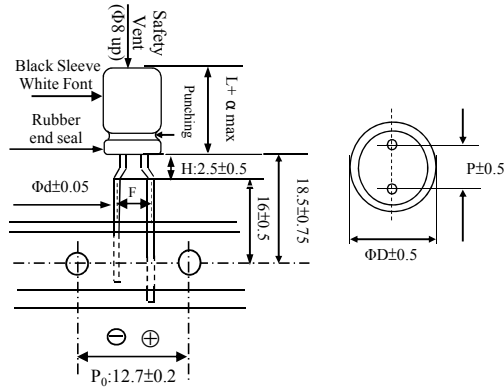
Description	Standard	special			Specific code when needed
		Ripple current	ESR	Other	
14th digit code	K	C	K	K	001-999 ; A01-A99 etc
15th digit code	K	K	R	K	
16th digit code	K	K	K	* Please consult separately for details	

Description	Dissipation factor	Endurance (Lode Life)	Voltage resistance of aluminum foil	sleeve color	Leakage current	size	Temperature	surge test
項目	DF	壽命	絕緣耐壓	代客膠管	漏電流	尺寸	溫度	雷擊測試
Code	D	E	F	G	L	S	T	V

FOR APPROVAL

DIMENSIONS(mm)

ΦD	5	6.3	8
L	11	11	11
α	1.0	1.0	1.0
P	2.0	2.5	3.5
F ^{+0.8} _{-0.2}	5.0	5.0	5.0
φd	0.5	0.5	0.5



Customer:	Electrolytic Capacitors	Su'scon
Ozdisan	SK Series	Code

Electric Characteristics:											
Ozdisan	Su'scon	Cap. (uF)	Cap. Tol. (%)	Rate Volt. (V-DC)	Surge Volt. (V-DC)	Oper. Temp. (°C)	Nominal Case Size D*L(mm)	Leakage Current Max (uA)	D.F. MAX (%)	R.C 120Hz (mA rms)	Load Life (hours)
P/N	P/N										
	SK025M101E11PKKKP50R	100	±20	25	32	105	6.3*11	25	15	163	2000
	SK025M221E11PKKKP50R	220	±20	25	32	105	6.3*11	55	15	200	2000
	SK035M221F11PKKKP50R	220	±20	35	44	105	8*11	77	12	295	2000
	SK050M330D11PKKKP50R	33	±20	50	63	105	5*11	16	10	88	2000

REMARKS:

<p>1. Leakage Current Test:</p> <p>2. Operating temperature:</p> <p>3. Dissipation Factor Test:</p> <p>4. Capacitance Test:</p> <p>5. Ripple Current Test:</p> <p>6. Load Life:</p> <p>Capacitance Change:</p> <p>tanδ:</p> <p>Leakage Current:</p> <p>7. Shelf Life:</p> <p>Capacitance Change :</p> <p>tanδ:</p> <p>Leakage Current:</p> <p>8. when have characteristic requested :</p>	<p>6.3V~100V at 20°C for 2 minutes; 160V~500V at 20°C for 3 minutes;</p> <p>6.3V~250V -40°C~ +105°C ;350V~500V -25°C~ +105°C ;</p> <p>at 20°C, 120 Hz.</p> <p>at 20°C, 120 Hz.</p> <p>at 105°C, 120Hz ;</p> <p>2000 hours, subjected to DC voltage with the rated ripple current is applied at 105°C.</p> <p>Within±20% of initial value;</p> <p>200% or less of initial specified value;</p> <p>According to the specified value which stated in the catalogue to do the life testing;</p> <p>Initial specified value or less;</p> <p>The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hours 105°C without voltage applide. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.</p> <p>Within±20% of initial value;</p> <p>200% or less of initial specified value;</p> <p>Initial specified value or less.</p> <p>Load life & shelf life test and etc. , judgment standard reference to our catalogue.</p>
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●SPECIFICATION

Voltage Range 工作電壓範圍	6.3V~100V	160V~500V										
Leakage Current 洩漏電流	I ≤ 0.01CV or 3(uA), Which is greater. (After 2 minutes application of working voltage)	I ≤ 0.03CV + 20(uA), (After 3 minutes application of working voltage)										
Dissipation Factor 散逸因素 (損失角) (tan δ)	Measurement Frequency:120Hz. Temperature:20°C											
	Rate Voltage(V)	6.3	10	16	25	35	50	63	80	100	160~250	350~500
	tanδ (MAX)	0.24	0.20	0.16	0.15	0.12	0.10	0.09	0.08	0.08	0.20	0.25
	When nominal capacitance over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF .											
Standards 參照標準	JIS C-5101-4(IEC 60384)											

●RIPPLE CURRENT COEFFICIENTS

Frequency coefficient of allowable ripple current

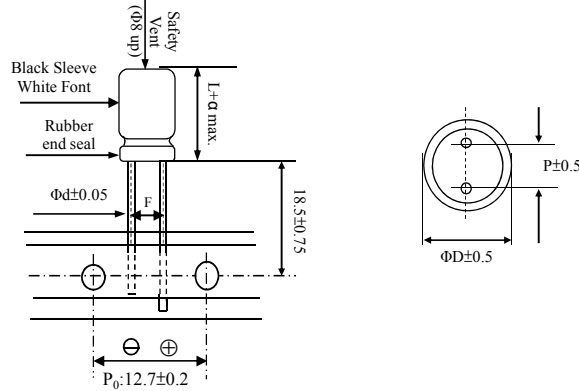
Rated Voltage (V)	Capacitance(uF)	Frequency(Hz)			
		50	120	1K	≥20k
≤ 100	<100	0.75	1.00	1.40	1.50
	100~470	0.75	1.00	1.20	1.30
	>470	0.85	1.00	1.10	1.15
≥ 160	0.47~470	0.75	1.00	1.10	1.50

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

FOR APPROVAL

DIMENSIONS(mm)

ΦD	10	10
L	12.5	16
α	1.5	2.0
P	5.0	5.0
F ^{+0.8} _{-0.2}	5.0	5.0
Φd	0.6	0.6



Customer: Ozdisan	Electrolytic Capacitors SK Series	Su'scon Code

Electric Characteristics:											
Ozdisan P/N	Su'scon P/N	Cap. (uF)	Cap. Tol. (%)	Rate Volt. (V-DC)	Surge Volt. (V-DC)	Oper. Temp. (°C)	Nominal Case Size D*L(mm)	Leakage Current Max (uA)	D.F. MAX (%)	R.C 120Hz (mA rms)	Load Life (hours)
	SK025M102G16PKKKP50R	1000	±20	25	32	105	10*16	250	15	650	2000
	SK450M100GCBPKKKP50R	10	±20	450	500	105	10*12.5	155	25	140	2000

REMARKS:

1. Leakage Current Test:	6.3V~100V at 20°C for 2 minutes; 160V~500V at 20°C for 3 minutes;
2. Operating temperature:	6.3V~250V -40°C~ +105°C ;350V~500V -25°C~ +105°C ;
3. Dissipation Factor Test:	at 20°C, 120 Hz.
4. Capacitance Test:	at 20°C, 120 Hz.
5. Ripple Current Test:	at 105°C, 120Hz ;
6. Load Life:	2000 hours, subjected to DC voltage with the rated ripple current is applied at 105°C.
Capacitance Change:	Within±20% of initial value;
tanδ:	200% or less of initial specified value; According to the specified value which stated in the catalogue to do the life testing;
Leakage Current:	Initial specified value or less;
7. Shelf Life:	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hours 105°C without voltage applide. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.
Capacitance Change :	Within±20% of initial value;
tanδ:	200% or less of initial specified value;
Leakage Current:	Initial specified value or less.
8. when have characteristic requested :	Load life & shelf life test and etc. , judgment standard reference to our catalogue.

●SPECIFICATION

Voltage Range 工作電壓範圍	6.3V~100V	160V~500V										
Leakage Current 洩漏電流	$I \leq 0.01CV$ or 3(uA), Which is greater. (After 2 minutes application of working voltage)	$I \leq 0.03CV + 20(uA)$, (After 3 minutes application of working voltage)										
Dissipation Factor 散逸因素 (損失角) (tan δ)	Measurement Frequency:120Hz. Temperature:20°C											
	Rate Voltage(V)	6.3	10	16	25	35	50	63	80	100	160~250	350~500
	tanδ (MAX)	0.24	0.20	0.16	0.15	0.12	0.10	0.09	0.08	0.08	0.20	0.25
	When nominal capacitance over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF .											
Standards 參照標準	JIS C-5101-4(IEC 60384)											

●RIPPLE CURRENT COEFFICIENTS

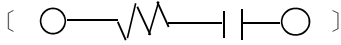
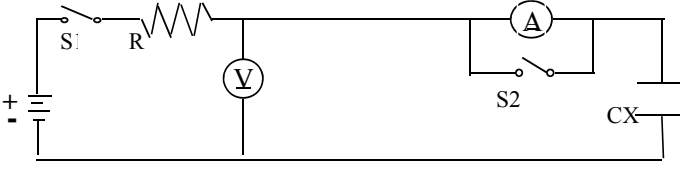
Frequency coefficient of allowable ripple current					
Rated Voltage (V)	Capacitance(uF)	Frequency(Hz)			
		50	120	1K	≥20k
≤ 100	<100	0.75	1.00	1.40	1.50
	100~470	0.75	1.00	1.20	1.30
	>470	0.85	1.00	1.10	1.15
≥ 160	0.47~470	0.75	1.00	1.10	1.50

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

1. Scope 適用範圍：

This specification applies to aluminium electrolytic capacitor, used in electronic equipment.
本說明對於用電子儀器設備進行檢測之鋁電解電容器適用。

2. Electrical characteristics 電氣特性：

NO.	ITEM 項目	TEST METHOD 測試方法	SPECIFICATION 規格		
2.1	Rated voltage 額定電壓				
2.2	Capacitance 靜電容量	1. Measuring frequency : 120 ± 12Hz 測定頻率	Voltage range、capacitance range Dissipation factor, see specification of this series. 電壓、容量範圍、損失角請看該系列之規格說明。		
2.3	Dissipation factor 散逸因素 (損失角)	2. Measuring voltage : ≤ 0.5Vrms + 0.5 ~ 2.0VDC 測定電壓			
		3. Measurement circuit : 測定電路 			
2.4	Leakage current 泄漏電流	DC leakage current shall be measured after 2~3 minutes application of the DC rated working voltage through the 1000 Ω resistor at 20°C. 在20°C通過1000Ω的電阻施加直流工作電壓2~3分鐘後測定直流泄漏電流。  R : 1000 ± 100Ω A : DC current meter V : DC voltage meter S1 : Switch 開關 S2 : Switch for protect of current meter CX : Testing capacitor	leakage current, see specification of this series. 泄漏電流請看該系列之規格說明。		
2.5	Temperature characteristics 溫度特性	STEP	TEMPERATURE	STORAGE TIME	Step 2. Impedance ratio (Z_T / Z_{T0}) less than specified value. 阻抗比：低於規定值。 Step 4 1.Capacitance change : within ± 20% of the initial measured value. 靜電容量變化：最初測定值的 ± 20%以內。 2.Leakage current : Under 125 °C for 10 times specification values, 105 °C for 8 times the specification values, 85 °C for 5 times the specification values 125°C為規格值10倍以下，105°C為為規格值8倍以下，85°C為規格值5倍以下 Tan δ : less than specified value . 損失角：低於規定值。 No damage or leakage of electrolyte . 無損傷或電解液漏出。
		1	20 ± 2 °C	30 minutes	
		2	Minimum specification temperature最低規格溫度 -55 °C or -40°C or -25 °C ± 3 °C	2 hours	
		3	20 ± 2 °C	30minutes	
		4	Maximum specification temperature 最高規格溫度 85 °C or 105 °C or 125°C or 130 °C ± 2 °C	2 hours	
		5	20 ± 2 °C	30 minutes	
Step 1. Measure the capacitance and impedance. 測定靜電容量及阻抗 (Z_{T0}) . (Z , 20°C , 120Hz ± 10%) Step 2. Measure the impedance at thermal balance after 2 hours. 達到熱平衡2小時後測定阻抗 (Z_T) . (Z , Minimum specification temperature最低規格溫度, 120Hz ± 10%) Step 4. After the highest specification temperature reaches thermal equilibrium for 2 hours the electrostatic capacity and leakage current loss are measured. 最高規格溫度達到熱平衡2小時後測定靜電容量及漏電流損失角。 備註：以具體規格工作範圍為準。 Remarks: Subject to the working range of specific specifications.					

NO.	ITEM 項目	TEST METHOD 測試方法	SPECIFICATION 規格
2.6	Surge test 突波試驗	<p>Rated surge voltage shall be applied (switch on) for 30 ± 5 seconds and then shall be applied (switch off) with discharge for 330 ± 5 seconds at room temperature . This cycle shall be repeated for 1000 cycles .</p> <p>Duration of one cycle is 6 ± 0.5 minutes .</p> <p>在常溫下施加 (合上開關) 額定涌浪電壓 30 ± 5 秒, 然後停止施加 (斷開開關) 涌浪電壓並且放電 330 ± 5 秒. 這個循環要重復 1000 次. 以 6 ± 0.5 分鐘為一個循環周期 .</p>	<p>Capacitance change : within $\pm 15\%$ of the initial specified value. 靜電容量變化 : 最初規定值的 $\pm 15\%$ 以內.</p> <p>Tan δ : less than specified value . 損失角 : 低于規定值 .</p> <p>Leakage current : less than specified value . 泄漏電流 : 低于規定值 .</p>

3. Mechanical characteristics 機械特性 :

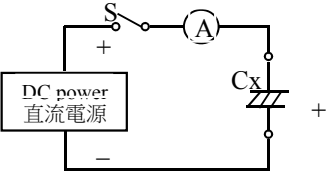
NO.	ITEM 項目	TEST METHOD 測試方法	SPECIFICATION 規格																				
3.1	Lead strength 端子強度	<p>(A) Tensile strength 拉伸強度 :</p> <p>wire lead terminal 導針型 :</p> <table border="1"> <tr> <td>d (mm)</td> <td>$0.35 < d \leq 0.5$</td> <td>$0.5 < d \leq 0.8$</td> <td>$0.8 < d \leq 1.25$</td> </tr> <tr> <td>load (Kg)</td> <td>0.51</td> <td>1.0</td> <td>2.0</td> </tr> </table> <p>snap-in terminal 尖腳型 :</p> <table border="1"> <tr> <td>d (mm)</td> <td>snap-in terminal 尖腳端子</td> </tr> <tr> <td>load (Kg)</td> <td>2.0</td> </tr> </table> <p>The capacitor shall withstand the constant tensile force specified between the body and each lead for 10 seconds without damage either mechanical or electrical. 電容器各端子要承受規定的荷重 10 秒, 不能有電氣或機械特性上的損傷.</p> <p>(B) Bending strength 彎曲強度 :</p> <p>wire lead terminal 導針型 :</p> <table border="1"> <tr> <td>d (mm)</td> <td>$0.35 < d \leq 0.5$</td> <td>$0.5 < d \leq 0.8$</td> <td>$0.8 < d \leq 1.25$</td> </tr> <tr> <td>load (Kg)</td> <td>0.25</td> <td>0.51</td> <td>1.0</td> </tr> </table> <p>With the capacitor in a vertical position apply the load specified axially to each lead . The capacitor shall be rotated slowly from the vertical to the horizontal position , back to the vertical position . The 180° in the opposite direction and back the original position . About five seconds off Performance of capacitor shall not have changed and leads shall be undamaged .</p> <p>給在豎直位置的電容器的每一端子以軸方向施加規定荷重, 慢慢將電容器由豎直位置轉至水平位置. 然後向相反方向彎曲 180°, 再回到原來位置(約5秒)取下. 電容器性能不能有變化及端子不能有損傷.</p>	d (mm)	$0.35 < d \leq 0.5$	$0.5 < d \leq 0.8$	$0.8 < d \leq 1.25$	load (Kg)	0.51	1.0	2.0	d (mm)	snap-in terminal 尖腳端子	load (Kg)	2.0	d (mm)	$0.35 < d \leq 0.5$	$0.5 < d \leq 0.8$	$0.8 < d \leq 1.25$	load (Kg)	0.25	0.51	1.0	<p>When the capacitance is measured, there shall be no intermittent contacts, or open- or short- circuiting. 測定靜電容量時, 不能有接觸不良, 開路或短路.</p> <p>Capacitance change : within $\pm 5\%$ of the initial specified value. 靜電容量變化 : 最初規定值的 $\pm 5\%$ 以內.</p> <p>Tan δ : less than specified value . 損失角 : 低于規定值 .</p> <p>Leakage current : less than specified value . 泄漏電流 : 低于規定值 .</p> <p>There shall be no such mechanical damage as terminal damage etc. 不能有如端子受損之類的機械特性上的損傷.</p>
d (mm)	$0.35 < d \leq 0.5$	$0.5 < d \leq 0.8$	$0.8 < d \leq 1.25$																				
load (Kg)	0.51	1.0	2.0																				
d (mm)	snap-in terminal 尖腳端子																						
load (Kg)	2.0																						
d (mm)	$0.35 < d \leq 0.5$	$0.5 < d \leq 0.8$	$0.8 < d \leq 1.25$																				
load (Kg)	0.25	0.51	1.0																				

NO.	ITEM 項目	TEST METHOD 測試方法	SPECIFICATION 規格
3.2	Vibration resistance 耐振性	<p>The frequency of the vibration shall vary uniformly within the range 10 to 55 Hz with the amplitude of 1.5 mm , completing the cycle in the internal of one minute .</p> <p>The capacitor shall be securely mounted by its leads with hold the body of capacitor .</p> <p>The capacitor shall be vibrated in three mutually X .Y.Z perpendicular directions for a period of 2 hours in each direction .</p> <p>振動頻率要均勻，範圍為 10 Hz, 到 55 Hz , 振幅為 1.5 mm , 在 1 分鐘內完成該循環 .</p> <p>電容器將由端子牢固地固定 .</p> <p>電容器會被向三個互相垂直的方向X.Y.Z每個方向振動 2 小時 .</p>	<p>No damage or leakage of electrolyte .</p> <p>無損傷或電解液漏出 .</p> <p>Capacitance change : within $\pm 5\%$ of the initial measured value .</p> <p>容量變化：最初測定值的 $\pm 5\%$ 以內 .</p> <p>Tan δ : less than specified value .</p> <p>損失角：低于規定值 .</p> <p>Leakage current : less than specified value .</p> <p>泄漏電流：低于規定值 .</p>
3.3	Solderability 焊錫性	<p>Solder:Sn96.5Ag3Cu0.5</p> <p>1.Capacitor needle part into the flux concentration 25% 5 ~ 10 seconds.</p> <p>2.The leads are dipped in the solder bath of Sn at $245 \pm 5^\circ\text{C}$ for 3 ± 0.5 seconds . The dipping depth should be set at 1.5 ~ 2.0 mm .</p> <p>焊錫種類：Sn96.5Ag3Cu0.5</p> <p>1.將電容器導針部分浸入濃度為25%的助焊劑中5~10秒</p> <p>2. 端子浸沒在 $245 \pm 5^\circ\text{C}$ 的錫焊液中 3 ± 0.5 秒 . 浸沒深度設定為 1.5 ~ 2.0 mm .</p>	<p>The solder alloy shall cover the 95% or more of the dipped lead's area .</p> <p>錫液要覆蓋導針浸入表面積的 95% 以上 .</p>

4. Reliability 信賴度 .

NO.	ITEM 項目	TEST METHOD 測試方法	SPECIFICATION 規格
4.1	Soldering heat resistance 焊錫耐熱性	<p>1.Solder:Sn96.5Ag3Cu0.5</p> <p>2.The leads immerse in the solder bath of Sn at $260 \pm 5^\circ\text{C}$ for 10 ± 1 seconds until a distance of 1.5 ~ 2mm from the case .</p> <p>3.Keep the take out the samples at room temperature is often wet in the more than 2 HRS.</p> <p>temperature is often wet in the more than 2 HRS.</p> <p>1.焊錫種類：Sn96.5Ag3Cu0.5</p> <p>2. 導針引線在 $260 \pm 5^\circ\text{C}$ 的錫焊液中浸沒至離本體 1.5 ~ 2 mm 的地方 10 ± 1 秒鐘 .</p> <p>3.將取出的樣品在常溫常濕中保留2Hrs以上.</p>	<p>No damage or leakage of electrolyte .</p> <p>無損傷或電解液漏出 .</p> <p>Capacitance change : within $\pm 5\%$ of the initial measured value .</p> <p>容量變化：最初測定值的 $\pm 5\%$ 以內 .</p> <p>Tan δ : less than specified value .</p> <p>損失角：低于規定值 .</p> <p>Leakage current : less than specified value .</p> <p>泄漏電流：低于規定值 .</p>

NO.	ITEM 項目	TEST METHOD 測試方法	SPECIFICATION 規格
4.2	Damp heat (steady state) 耐濕性 (穩定狀態)	<p>1. The experiment of measuring early characteristics will have samples in the wet thermal control box.</p> <p>2. Subject the capacitors to $40 \pm 2^{\circ}\text{C}$ and 95% In corresponding to the temperature and humidity conditions placed 500 \pm 8 hours.</p> <p>3. Keep the take out the samples at room temperature is often wet in the more than 2 HRS.</p> <p>1. 將已測初期特性的實驗樣品放入調溫調濕箱中</p> <p>2. 電容器在 $40 \pm 2^{\circ}\text{C}$ 及相對濕度 95% . 在相對應溫濕度條件下放置 500 \pm 8 小時 .</p> <p>3. 將取出的樣品在常溫常濕中保留 2Hrs 以上 .</p>	<p>Capacitance change : within $\pm 10\%$ of the initial measured value . 容量變化 : 最初測定值的 $\pm 10\%$ 以內 .</p> <p>Tan δ : less than 120% of the initial specified value . 損失角 : 低于規定值的 120% .</p> <p>Leakage current : less than specified value . 泄漏電流 : 低于規定值 .</p>
4.3	Load life 高溫負荷	<p>2000 hours, subjected to DC voltage with the rated ripple current is applied at 105°C .</p> <p>the measurements shall meet the following limits .</p> <p>Measurements shall be performed after 6 hours exposed at room temperature .</p> <p>在 105°C 環境下 , 連續加載額定直流電壓并疊加紋波電流 2000 小時后 .</p> <p>按以下條件測試 :</p> <p>測試在室溫露置 6 小時後進行 .</p>	<p>Capacitance change : within $\pm 20\%$ of the initial measured value . 容量變化 : 最初測定值的 $\pm 20\%$ 以內 .</p> <p>Tan δ : less than 200% of the initial specified value . 損失角 : 低于規定值的 200% .</p> <p>Leakage current : less than specified value . 泄漏電流 : 低于規定值 .</p> <p>Appearance : no abnormal . 外觀 : 無異常 .</p>
4.4	Shelf life 高溫無負荷	<p>After storage for 1000 hours at 85°C or 105°C or 125°C or $130^{\circ}\text{C} \pm 2^{\circ}\text{C}$ without voltage application , the measurements shall meet the following limits .</p> <p>Measurements shall be performed after exposed for 6 hrs at room temperature after application of DC rated voltage to the capacitor for Z minutes .</p> <p>在 85°C or 105°C or 125°C or $130^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 環境當中不施加直流定格電壓放置 Z 小時後 , 按以下條件測試 .</p> <p>測試在室溫露置 6 小時 , 施加直流定格電壓 進行</p> <p>(Z : see shelf life of this series. 見該系列放置壽命說明 .)</p>	<p>Capacitance change Tan δ . Rate of change: please have a look at this series of shelf life standard . 容量 . 損失角 , 的變化標準 : 請見該系列的放置壽命說明標準</p> <p>less than specified value . 泄漏電流 : 低于初期規定值 .</p> <p>Appearance : no abnormal . 外觀 : 無異常 .</p>
4.5	Storage at low temperature 低溫貯存	<p>1. The capacitor shall be stored at temperature of $-40 \pm 3^{\circ}\text{C}$ for 16(-0/+2) hours , during which time no voltage shall be applied . And then the capacitor shall be subjected to standard atmospheric conditions for 16 hours or more , after which measurements shall be made .</p> <p>電容器在 $-40 \pm 3^{\circ}\text{C}$ 環境當中貯存 16(-0/+2) 小時 , 其間不施加電壓 , 之後 , 在標準大氣壓中露置 16 小時以上 , 然後進行測試 .</p>	<p>Capacitance change : within $\pm 10\%$ of the initial value . 容量變化 : 最初值的 $\pm 10\%$ 以內 .</p> <p>Tan δ : less than specified value . 損失角 : 低于規定值 .</p> <p>Leakage current : less than specified value . 泄漏電流 : 低于規定值 .</p> <p>Appearance : no abnormal . 外觀 : 無異常 .</p>

NO.	ITEM 項目	TEST METHOD 測試方法	SPECIFICATION 規格
4.6	Pressure relief 防爆試驗	<p>DC test 直流測試： Send the following electricities while applying the inverse voltage .</p> <p>施加反向電壓時通入下記電流 .</p> <p>where case size 外殼尺寸 (D 直徑)：</p> <p style="text-align: center;">D ≤ 22.4 mm : 1 A d.c. max D > 22.4 mm : 10 A d.c. max</p> <p>Note : 1. This requirement applies to capacitors with a diameter of 8 mm or more . 2. When the pressure relief device does not open even 30 minutes after commencement of test , the test may be ended .</p> <p>注 : 1. 此要求對於直徑 8 mm 或以上之電容器適用 . 2. 試驗開始 , 經 30 分鐘後防爆裝置仍不動作 , 試驗終止 .</p>	<p>DC test circuit 直流試驗回路</p>  <p>S : Switch 開關 (A) : DC current meter 直流電流計 Cx : testing capacitor 供試電容器</p> <p>The pressure relief device shall open in such a way as to avoid any danger of fire or explosion of capacitor elements (terminal and metal foil etc) or cover .</p> <p>防爆裝置必須動作打開為合格 . 以防止發生火災、爆炸或金屬片飛濺 .</p>

5. Marking 標識：

Marking on capacitors include :

電容器上的標識包括

- Su'scon trade-mark
Su'scon 商標
- Working voltage
工作電壓
- Norminal capacitance
標準靜電容量
- Tolerance
靜電容量許容差
- Polarity
極性
- Maximum operating temperature
最高使用溫度
- Date code
周 期

Lead Wire

Su'scon

100 uF
25 V

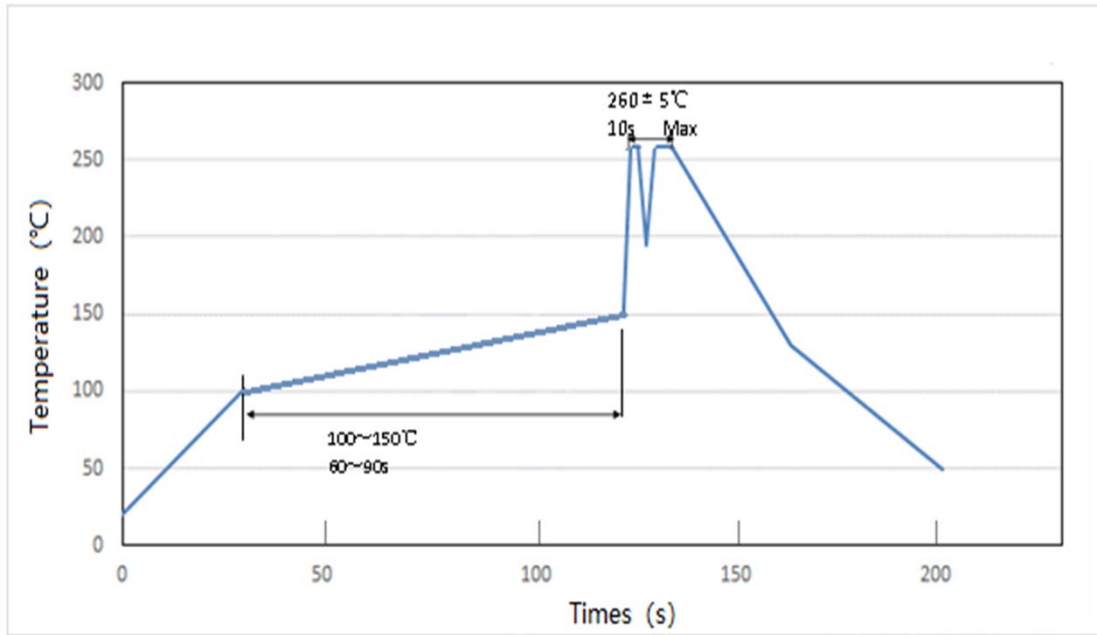


SK 105°C

2016 (M)

東莞冠坤電子有限公司
Dong Guan Kuan Kun Electronic Co., LTD

The Temperature Record of wave soldering machine



項目 Items	溫度 Temperature	時間 Time	備註 Remark
預熱溫度 Preheat temp. range	100°C~150°C	60~90sec max	升溫速率：1~2°C /sec Ramp-up rate
錫波溫度 Tin wave temperature	255~265°C	錫焊時間:5~10sec Soldering time	/
整個波峰焊接工藝總時間 Total time of the wave about soldering	/	3min以內 within 3 mins	/

鋁電解電容器存放環境與控制

Storage Conditions and Control for Aluminum Electrolytic Capacitor

1. 環境溫度：5°C ~ 35°C，環境相對濕度：75%以下。

Store the capacitor at a temperature of 5°C to 35°C and at a relative humidity of less than 75% .

2. 存放環境不應有陽光直射，不宜高溫。

Store the capacitor in low temperature places free from direct sun shine .

3. 存放環境不能有鹽分、油含量高的霧氣。

Store the capacitor in places free from oil vapor、salt water vapor.

4. 存放在遠離氯氣、氨氣、硫化氫、亞硫酸、硝酸等有害氣體含量高的地方。

Store the capacitor in places far from toxic gases (chlorine、 ammonium、 hydrogen sulfide、 sulphurous acid、 nitric acid , etc) .

5. 儲存環境不能有臭氧、紫外線或輻射。

Store the capacitor in place free from Ozone、ultraviolet ray or radiation .

Detergent needing attention:

使用清潔劑之注意事項:

Hydrogen carbide liquid and halogen liquid can cause Aluminium Electrolytic Capacitor to corrode. Some of Safe and Unsafe detergent are as follows;

鋁質電解電容器會受含有碳化氫鹵素容劑之侵蝕,下列為各種安全與不安全之清潔劑,為避免不必要的損失,您所使用有關印刷基板之清潔劑名請事先告知本公司.

Safe 安全	Unsafe 不安全
Methanol 甲醇	1.1.2- trichloroethane 1.1.2- 三氯乙烷
Ethanol 乙醇	Tetrachloroethylene 四氯化碳
Propanol 丙醇	Chloroform(colorless volatilizable liquid) 哥羅仿(無色揮發性液體)
Butanol 丁醇	Dichloromethane 二氯甲烷
Detergent 去垢劑	Trichlorethylene 三氯甲烯
	Dimethybenzene 二甲苯

Caution for Proper use of PET Sleeve in Electrolytic Capacitors

Caution: Avoid PET sleeve to contact water , Because the PET material will be dissolved by water at high temperature

1. PET sleeve water dissolved conditions

(1) When PET sleeve contact water it will not action.

During production process, The PET sleeve have water or water in case of Capacitor and capacitor in high temperature, The PET sleeve will dissolved.

(2) Avoid use list solvents to clean the PET sleeve capacitors.

1、 Aromatic Hydrocarbon(s)

Example: Solvent	Status
Benzene	To dissolved
Toluene	To dissolved
Xylene	To dissolved

2、 Low molecular Ketones & Esters

Example:

Methyl Ethyl Ketone(MEK)
Dimethyl Ketone(Acetone)
Methyl Isobutyl Ketone(MIBK)
Cyclohexanone
Ethyl Acetate(EA)

3、 Halogenated Hydrocarbon

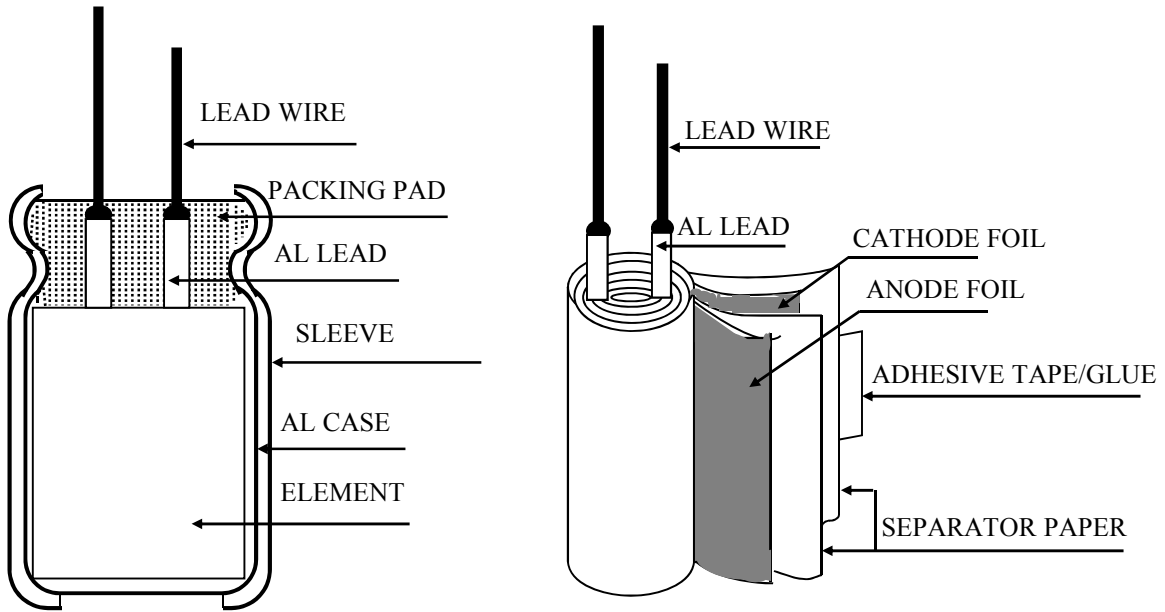
Example:

Methylene Chloride (MC)
Trichloroethyle (TCE)

2. When PET sleeve or case of capacitor dirty with oil that will not dissolved, During production process when their temperature rise up to 80°C, The sleeve will shrink unsmooth.

ELECTROLYTIC ALUMINUM CAPACITORS

STRUCTURE and MATERIALS



*MINIATURE SIZED TYPE CAPACITORS COMPONENT

PART NAME	MATERIALS
LEAD WIRE	TIN COATED COPPER COVERED STEEL WIRE
AL LEAD	ALUMINUM 99.92% OVER
PACKING PAD	SYNTHETIC RUBBER OR BAKE PAD
SLEEVE	INK
	P.E.T (Polyethylene Terephthalate Resin)
AL CASE	ALUMINUM 99.5% OVER
ANODE FOIL	FORMED ALUMINUM 99.9% OVER
CATHODE FOIL	FORMED ALUMINUM 98.4% OVER
SEPARATOR PAPER	INSULATION PAPER
ADHESIVE TAPE/GLUE	ADHESIVE TAPE:POLY PROPYLENE FILM;GLUE:PVA

6. PRECAUTIONS AND GUIDELINES TO USERS

When using aluminum electrolytic capacitors, pay strict attention to the following:

1. Electrolytic capacitors for DC application require polarization.

Confirm the polarity. If used in reversed polarity, the circuit life may be shortened or the capacitor may be damaged. For use on circuits whose polarity is occasionally reversed, or whose polarity is unknown, use bi-polarized capacitors(BP-series). Also, note that the electrolytic capacitor cannot be used for AC application.

2. Do not apply a voltage exceeding the capacitor's voltage rating.

If a voltage exceeding the capacitor's voltage rating is applied, the capacitor may be damaged as leakage current increases. When using the capacitor with AC voltage superimposed on DC voltage, care must be exercised that the peak value of AC voltage does not exceed the rated voltage.

3. Do not allow excessive ripple current to pass.

Use the electrolytic capacitor at current values within the permissible ripple range. If the ripple current exceeds the specified value, request capacitors for high ripple current applications.

4. Ascertain the operating temperature range.

Use the electrolytic capacitors according to the specified operating temperature range. Usage at room temperature will ensure longer life.

5. The electrolytic capacitor is not suitable for circuits in which charge and discharge are frequently repeated.

If used in circuits in which charge and discharge are frequently repeated, the capacitance value may drop, or the capacitor may be damaged. Please consult our engineering department for assistance in these applications.

If the electrolytic capacitor is allowed to stand for a long time, its withstand voltage is liable to drop, resulting in increased leakage current. If the rated voltage is applied to such a product, a large leakage current occurs and this generates internal heat, which damaged the capacitor. If the electrolytic capacitor is allowed to stand for a long time, therefore, use it after giving voltage treatment.(However,the electrolytic capacitors can be guarantee for 2 years if keep in the normal temperature.)

6. Be careful of temperature and time when soldering.

When soldering a printed circuit board with various components, care must be taken that the soldering temperature is not too high and that the dipping time is not too long. Other wise, there will be adverse effects on the electrical characteristics and insulation sleeve of electrolytic capacitors in the case of small-sized electrolytic capacitors, nothing abnormal will occur if dipping is performed at less than 260 °C for less than 10 seconds.

7. Do not place a soldering iron body of the capacitor.

The electrolytic capacitor is covered with a vinyl sleeve. If the soldering iron comes in contact with the electrolytic capacitor body during wiring, damage to the vinyl sleeve and/or case may result in defective insulation, or improper protection

8. Cleaning circuit boards after soldering.

Some solvents have adverse effects on capacitors.
Please refer to the next page.

9. Do not apply excessive force to the lead wires or terminals.

If excessive force is applied to the lead wires and terminals, they may be broken or their connections with the internal elements may be affected. (For strength of terminals, refer to JIS C5101-1, JIS C5101-4)

10. Care should be used in selecting a storage area.

If electrolytic capacitors are exposed to high temperatures caused by such things as direct sunlight, the life of the capacitor may be adversely affected. Storage in a high humidity atmosphere may affect the solderability of lead wires and terminals.

11. Surge voltage:

Rated surge voltage shall be applied for 30 seconds and then shall be applied with discharge,for 330 seconds at room temperature .This cycle shall be repeated for 1000 cycles;Duration of one cycle is 6 minutes ;then to judge capacitor's characteristics and appearance.

Rated Voltage(WV)	4	6.3	8	10	16	25	35	50	63	80	100	160	200	250	350	400	420	450	500
Surge Voltage(SV)	5	8	10	13	20	32	44	63	79	100	125	200	250	300	400	450	470	500	550

For methods of testing, refer to JIS C 5101-1, JIS C 5101-4.

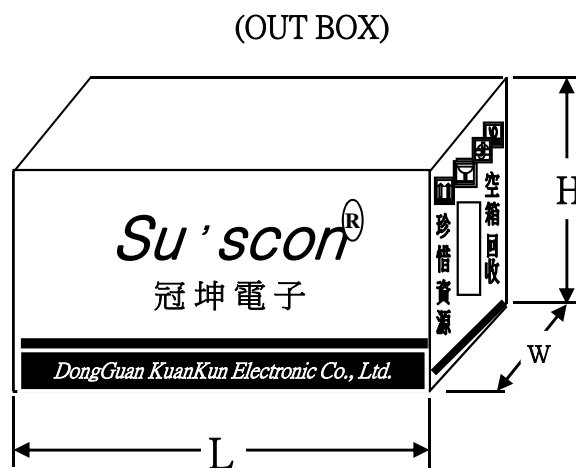
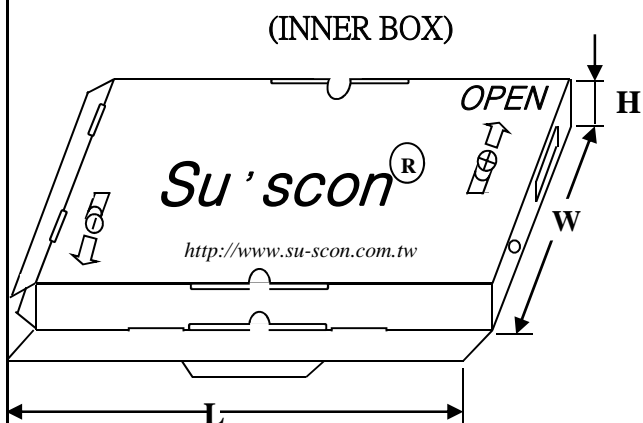
※ The above mentioned material according to EIAJRCR-2367B (issued in March, 2002), titled "Guideline of notabilia for aluminum electrolytic capacitors for use in electronic equipment". Please refer to the book for details.

ALUMINUM ELECTROLYTIC CAPACITORS

(貼品包裝圖 packing drawing of the taping Type)

1) BOX

單位Unit :mm



內盒尺寸Size of Inner box :
(L)320x(W)235x(H)51

外箱尺寸Outer box size :
(L)490x(W)330x(H)275

2)明細表Details

尺寸Size (Φ×L)	數量quality (PCS/盒box)	每箱擺放標準 the placing standards of each box	外箱總數量 the total quality in outer box (KPCS/箱box)
5×11	2000	一層2盒×5	20
6.3×11	1500	一層2盒×5	15
8×11	1000	一層2盒×5	10

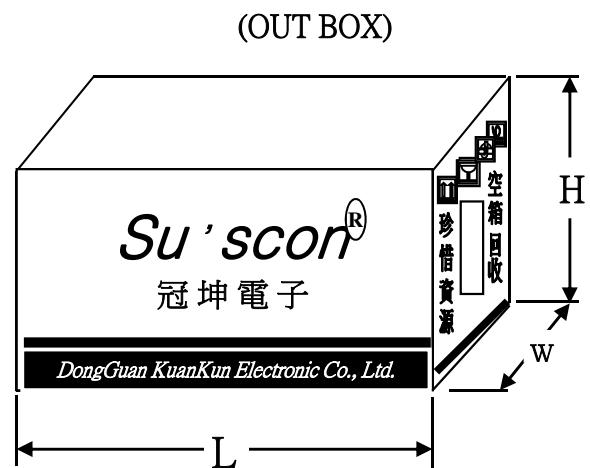
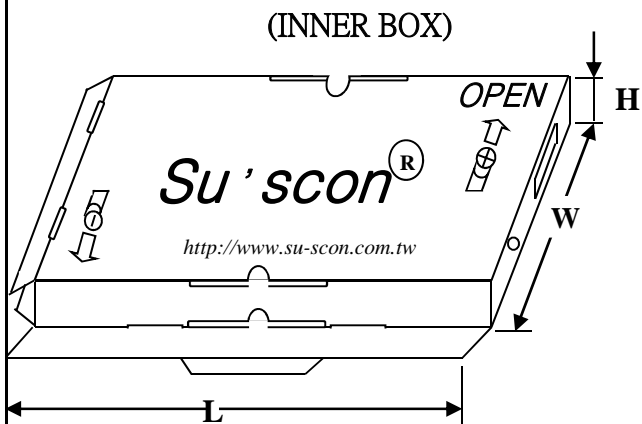
KUAN KUN ELECTRONIC ENTERPRISE CO.,LTD.

ALUMINUM ELECTROLYTIC CAPACITORS

(貼品包裝圖 packing drawing of the taping Type)

1) BOX

單位Unit :mm



內盒尺寸Size of Inner box :
(L)320x(W)218x(H)51

外箱尺寸Outer box size :
(L)335x(W)233x(H)275

2)明細表Details

尺寸Size (Φ×L)	數量quality (PCS/盒box)	每箱擺放標準 the placing standards of each box	外箱總數量 the total quality in outer box (KPCS/箱box)
10×12.5	600	一層1盒×5	3

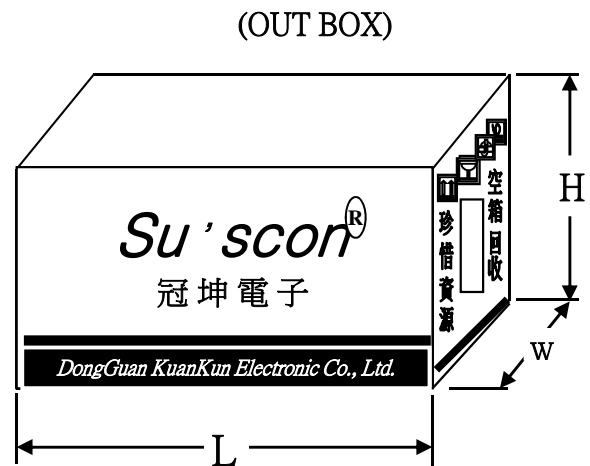
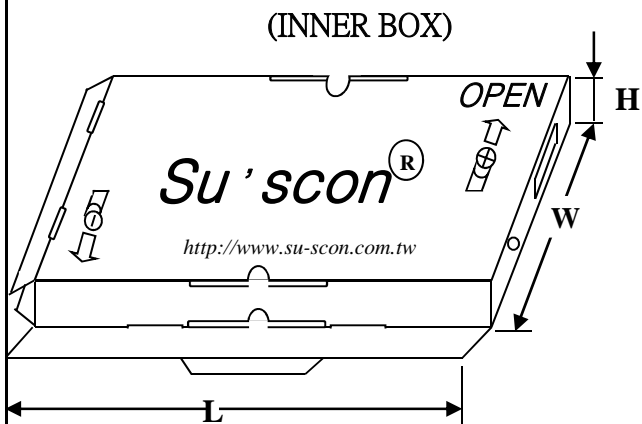
KUAN KUN ELECTRONIC ENTERPRISE CO.,LTD.

ALUMINUM ELECTROLYTIC CAPACITORS

(貼品包裝圖 packing drawing of the taping Type)

1) BOX

單位Unit :mm



內盒尺寸Size of Inner box :
(L)320x(W)218x(H)57

外箱尺寸Outer box size :
(L)335x(W)233x(H)305

2)明細表Details

尺寸Size (Φ×L)	數量quality (PCS/盒box)	每箱擺放標準 the placing standards of each box	外箱總數量 the total quality in outer box (KPCS/箱box)
10×16	600	一層1盒×5	3

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