




# 承 認 書

## SPECIFICATION FOR APPROVAL

客 戶 名 稱 : CUSTOMER	<b>Lomex</b>	承認圖號 : APP. NO.	<b>D170041427</b>
系 列 號 : SERIES	<b>SQ</b>	使用溫度範圍 : OPERATION TEMP. RANGE	<b>-40~+105°C</b>

本公司料號 VENDOR'S PART NO.	貴公司料號 BUYER'S PART NO.
<b>KSQ107M400S1A5N36K</b>	

貴公司承認印 BUYER'S APPROVAL STAMP	智寶電子(東莞)有限公司 TEAPO ELECTRONICS(Dong Guan) CORPORATION	
		
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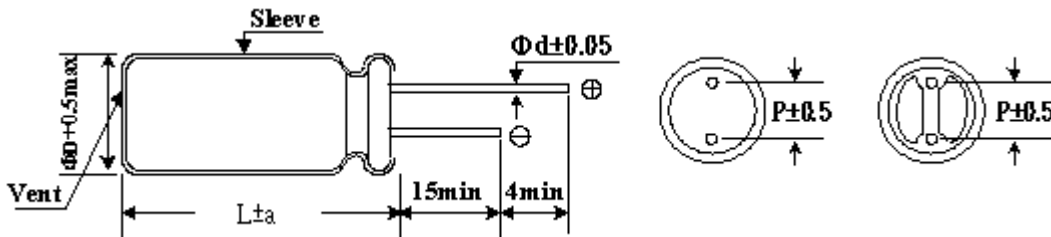
Table of specification and characteristics

NO	料 號 Part NO	靜電容量 CAP (uF) 120HZ 20°C	工作 電壓 WV	損失角 DF(%) (MAX) 120HZ 20°C	洩漏電流 LC(μA) (MAX) 20°C	濾波電流 RC(mArms) (MAX) 120HZ 105°C	濾波壽命 Ripple Life (Hrs) 105°C	尺 寸 Dimensions(mm)		
								ψD	L	P
1	KSQ107M400S1A5N36K	100	400	24	1210	830	2000	18	36	7.5

**I . Scope**

This standard defines characteristics and dimensions for aluminum electrolytic capacitors named SQ Series is High ripple and High voltage product

**II . Construction & Dimensions**



Diameter( φ D)	8	10	13	16	18
Lead space(P)	3.5	5.0		7.5	
Lead diameter( φ d)	0.6	0.6		0.8	
a	1.5	1.5	2.0	2.0	

**III . Characteristics**

**Standard test condition**

Unless otherwise specified all tests shall be performed at, or referred to, an ambient temperature of 20°C and a relative humidity not greater than 60%.

**Operating Temperature Range**

160~450VDC -40~+105°C

**1. Electrical characteristics**

**(1). Rated Voltage and Surge Voltage**

WV: Working Voltage (VDC)

SV: Surge Voltage (V)

WV	160	200	250	350	400	450
SV	200	250	300	400	450	500

**(2). Leakage Current**

The maximum leakage current is specified in the following formula after DC working voltage applied .

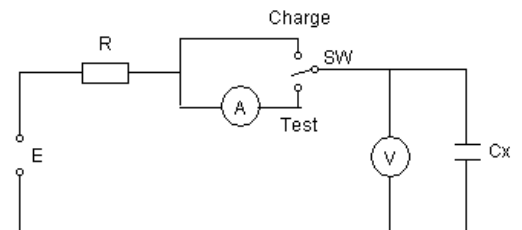
$$I \leq 0.03CV + 10 (\mu A) \text{ for 3 minutes}$$

where I: Leakage Current ( $\mu A$ )

C: Nominal Capacitance ( $\mu F$ )

V: Rated Voltage (V)

Measurement circuit



**(3). Capacitance Tolerance**

Capacitance tolerance should be within the range of  $\pm 20\%$  which is measured at 120Hz/20°C

**(4). Dissipation Factor**

Dissipation Factor at 120Hz/ 20°C shall not exceed the values given in the table below.

WV	160	200	250	350	400	450
DF(%)	15	15	15	24	24	24

**(5). Low Temperature Characteristics**

The ratio of impedance at -25°C/+20°C and -40°C/+20°C of the capacitor shall be less than the following value at 120Hz.

WV	160	200	250	350	400	450
Z(120Hz)						
Z(-25°C) / Z(+20°C)	3	3	3	3	3	3
Z(-40°C) / Z(+20°C)	6	6	6	6	6	6

**(6). Multiplier for Ripple Current**

Frequency coefficient

Frequency(Hz)	50	120	1K	10K	100K	
Coefficient	< 33 $\mu$ F	0.80	1.00	1.36	1.54	1.80
	$\geq$ 33 $\mu$ F	0.85	1.00	1.28	1.35	1.40

**2. Mechanical Characteristics**

**Lead Pull Test**

Capacitors shall be with stand the pull test shown in the following table.

Lead diameter (mm)	Load (Kg)	Test time (sec)
$d \leq 0.5$	0.5	30 <sup>+5</sup> / <sub>-0</sub>
$0.5 < d \leq 0.8$	1.0	30 <sup>+5</sup> / <sub>-0</sub>
$0.8 < d \leq 1.2$	2.5	30 <sup>+5</sup> / <sub>-0</sub>

### 3. Endurance characteristics

#### (1). Ripple Life

To put capacitors into the oven which is staying at  $105\pm 2^{\circ}\text{C}$ , then to add rated voltage in the capacitors. This experiment will be lasted for  $2000+12/-0$  hours. We will examine the electronic characters after getting them cooled down to room temperature. The values must not be over those on following table.

Capacitance Change	Within $\pm 20\%$ of initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	Not more than the specified value

#### (2). Shelf Life

The following specifications shall be satisfied when the capacitors are restored to  $20^{\circ}\text{C}$  after exposing them at  $105\pm 2^{\circ}\text{C}$  for  $1000+12/-0$  hours without voltage applied.

Capacitance Change	Within $\pm 20\%$ of initial value
Dissipation Factor	Not more than 200% of the specified value
Leakage Current	Not more than the specified value

#### (3). Solderability Test

The following specifications shall be satisfied when the lead wires are tested in solder bath at  $245\pm 5^{\circ}\text{C}$  for  $2.5\pm 0.5$  seconds, more than 95% of the terminal surface shall be covered with new solder.

#### (4). Solder Heat Resistance Test

The following specifications shall be satisfied when the lead wires are tested in solder bath at  $275+2/-0^{\circ}\text{C}$  for  $20\pm 0.5$  seconds.

Capacitance Change	$\leq \pm 5\%$ of the initial value
Dissipation factor	$\leq$ Initial specified value
Leakage Current	$\leq$ Initial specified value

## IV. Mounting

The paper separators and the electrolytic-conductive electrolytes in a non-solid aluminum electrolytic capacitor is flammable.

Leaking electrolyte on a PC board can gradually erode the copper traces, possibly causing smoke or burning by short-circuiting the copper traces.

Verify the following points when designing a PC board.

- (1) Provide the appropriate hole spacing on the PC board to match the terminal spacing of the capacitor.
- (2) Make the following open space over the vent so that the vent can operate correctly.

Case diameter

Clearance



- Ⓟ Nominal capacitance
- Ⓟ Working voltage
- Ⓟ Polarity
- Ⓟ Sleeve material & vendor
- Ⓟ Max operating temperature
- Ⓟ Date code(MM/YY)
- Ⓟ EC vendor

**Remark:** Date code numbering system. Date code is indicated manufactured date

Manufactured year

Code	09	10	11	12	13	14	15	16	17
Year	2009	2010	2011	2012	2013	2014	2015	2016	2017

Manufactured month

Month	1	2	3	4	5	6	7	8	9	10	11	12
Code	01	02	03	04	05	06	07	08	09	10	11	12

Manufactured Place

Code	A3
Place	Made in Dong Guan

Sleeve Material

Code	T	C
Material	PET	PVC

Sleeve Supplier(Made in Dongguan)

Code	A	B	C	D
Supplier	So Li	Yin Xing	Chi Yuan	Yun Lin

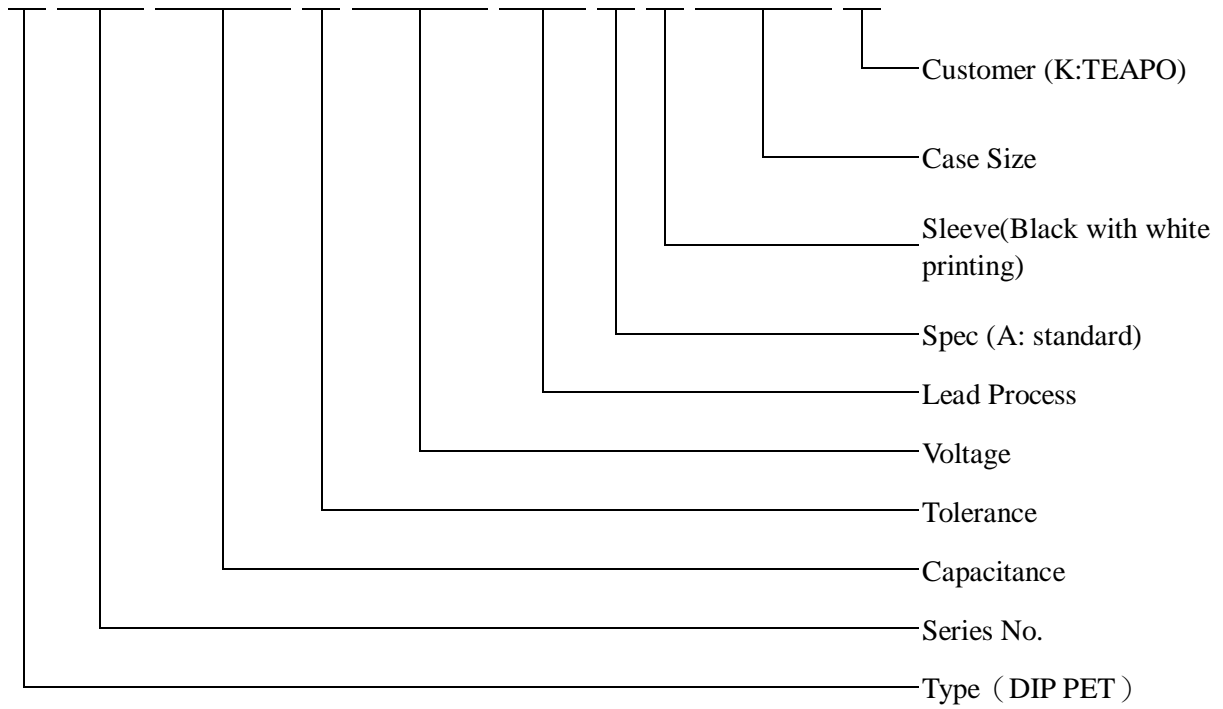
\*The above code descriptions are just examples, they haven't completely shown all sleeve suppliers

**VII. Catalog numbering**

TEAPO SQ TYPE (Part Number)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

K	S	Q	1	0	7	M	4	0	0	S	1	A	5	N	3	6	K
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### VIII. PACKAGING SPECIFICATION

#### Miniature Aluminum Electrolytic Capacitors

For Bulk: Standard Cutting & Forming

Classification	Standard Bulk				Cutting & Forming				Min. ordering amount kpcs
	Vinyl bag	inner box 289*168*279 (mm)	outer carton 355*297*290 (mm)	gross weight (kg)	Vinyl bag	inner box 289*168*135 (mm)	outer carton 355*297*290 (mm)	gross weight (kg)	
4×5	2,000	24,000	48,000	13	2,000	20,000	80,000	20	25
4×7	2,000	20,000	40,000	11	2,000	16,000	64,000	17	25
5×5	2,000	20,000	40,000	12	2,000	16,000	64,000	18	25
5×7	2,000	16,000	32,000	13	2,000	16,000	64,000	23	25
5×11	1,000	12,000	24,000	13	1,000	10,000	40,000	22	25
6.3×5	2,000	16,000	32,000	11	2,000	10,000	40,000	16	20
6.3×7	2,000	12,000	24,000	10	2,000	10,000	40,000	15	20
6.3×11	1,000	10,000	20,000	14	1,000	7,000	28,000	17	20
8×7	500	10,000	20,000	14	500	6,500	26,000	16	15
8×9,8×11,8×12	500	7,500	15,000	17	500	4,000	16,000	18	15
8×14	500	5,000	10,000	12	500	3,000	12,000	14	15
8×15	500	5,000	10,000	16	500	2,000	8,000	13	15
8×20	200	4,000	8,000	14	200	2,000	8,000	14	15
10×12.5	200	4,000	8,000	15	200	2,000	8,000	15	12
10×15	200	3,600	7,200	16	200	2,000	8,000	18	12
10X16,10×17	200	3,600	7,200	17	200	1,600	6,400	15	12
10×20	200	3,000	6,000	19	200	1,400	5,600	17	12
10×25	200	2,400	4,800	17	200	1,200	4,800	16	12
10X35	200	1,800	3,600	15	200	800	3,200	13	10
13×18,13×20	200	1,800	3,600	15	200	600	2,400	10	10
13×25	200	1,200	2,400	14	200	600	2,400	14	10
13×30	100	1,200	2,400	16	100	500	2,000	14	10
13×34,13×36	100	1,000	2,000	14	100	300	1,200	12	10
13×38,13×40	100	800	1,600	15	100	300	1,200	15	10

Classification	Standard Bulk				Cutting & Forming				Min. ordering amount kpcs
	Vinyl bag	inner box (mm)	outer carton (mm)	gross weight (kg)	Vinyl bag	inner box (mm)	outer carton (mm)	gross weight (kg)	
16X15、16X20	200	1000	2000	22	200	1000	2000	22	5
16X25	200	1000	2000	24	-	500	4000	44	5
16X30、16X32、	200	800	1600	20	-	500	3000	37	5
16X36、16X40	200	600	1200	22	-	500	3000	55	5
16X45	100	500	1000	22	-	-	-	-	5
18X15、18X20	200	800	1600	21	-	-	-	-	2.5
18X22、18X25	200	800	1600	23	-	500	2000	28	2.5
18X30	100	600	1200	25	-	-	-	-	2.5
18X32、18X36、 18X40	100	500	1000	25	-	500	1000	25	2.5
18X45、18X50	100	300	600	21	-	600	1200	40	2.5
20X25	-	-	-	-	-	400	800	20	1.5
22X32	-	-	-	-	-	320	1920	55	1.5
22X30	-	-	-	-	-	400	800	25	1.5
22X35、22X40	100	300	600	21	-	400	800	27	1.5



**For Taping Ammo & Reel**

Classification	Ammo Tape					Reel Tape			Min. ordering amount kpcs
	inner box (mm)	quantity (pcs)	outer carton (mm)	quantity (pcs)	gross weight (kg)	inner carton 350*350*110 (mm)	outer carton 370*370*600 (mm)	gross weight (kg)	
4 φ	340×275×50	3,000	355×297×290	15,000	6	3,000	15,000	8	25
5 φ	340×230×50	2,000	355×252×290	10,000	6 ~ 7	2,400	12,000	8	25
6.3 φ	340×275×50	2,000	355×297×290	10,000	8	2,000	10,000	6	20
8 φ ×5-16L	340×230×50	1,000	355×252×290	5,000	7	1,600	8,000	12	15
8 φ ×20L	340×230×58	1,000	355×252×315	5,000	7	1,000	5,000	12	15
10 φ ×10~17L	340×230×50	600	355×252×290	3,000	7				12
10 φ ×20~25L	340×230×58	600	355×252×315	3,000	7	-	-	-	12
10 φ ×30L	340×230×65	600	355×252×290	2,400	7	-	-	-	12
13 φ ×32L below	315×275×65	400	355×297×290	1,600	5	-	-	-	10
13 φ ×36L above	315×275×74	400	355×297×337	1,600	5	-	-	-	10
16 φ ×32L below	315×275×65	300	355×297×290	1,200	5	-	-	-	5
16 φ ×36L above	315×275×74	300	355×297×337	1,200	5	-	-	-	5

Note : For 10 φ Reel Tape :

size	inner carton(pcs)	outer carton(pcs)
10 φ ×10~16L	1,200	6,000
10 φ ×17~20L	1,000	5,000

**IX. Others**

(1) All Teapo capacitors comply to RoHS(Restriction of Hazardous Substances) requirements where Chromium VI(Cr+6),Cadmium(Cd) , Mercury(Hg), Lead(pb), Polybrominated biphenyls(PBBs)and Polybrominated biphenyl/diphenyl ethers (PBBEs/PBDEs) have not been detected [lower than MDL (Method Detection Limit)] per SGS certification test report..

(2)Satisfied characteristic JIS C 5101

(3)Aluminum Electrolytic Capacitors may be damaged by corrosion which is caused by any halogenated hydrocarbon solvents.

Please let us know in advance the solvent name and conditions for your PCB cleaning

**X. Lead processing type and Taping**

**Code S1: Standard Type**

