

SHELCON

Company Profile

SHELCON GROUP (HOLDING) LIMITED

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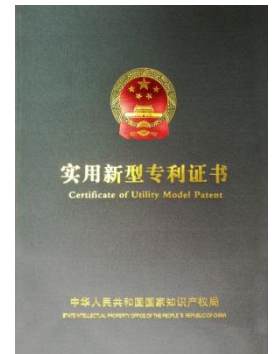
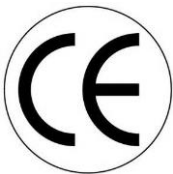




SHELCON GROUP (HOLDING) LIMITED

Introduction

- ❖ Trademark : **SHELCON**
- ❖ Joint venture enterprise: Hong Kong, Japan and China
- ❖ Headquarter: 11/F, Excelsior Building, 68-76 Sha Tsui Road, Tsuen Wan, N.T., HongKong
- ❖ Factory Plant: Huang Jiang Town, Dongguan City in China
- ❖ Product Quality: Fully consistent with the Japanese Industrial Standard (JIS)
- ❖ Certification: Fully compliant with the CE, ROHS, REACH, ISO9001 : 2008

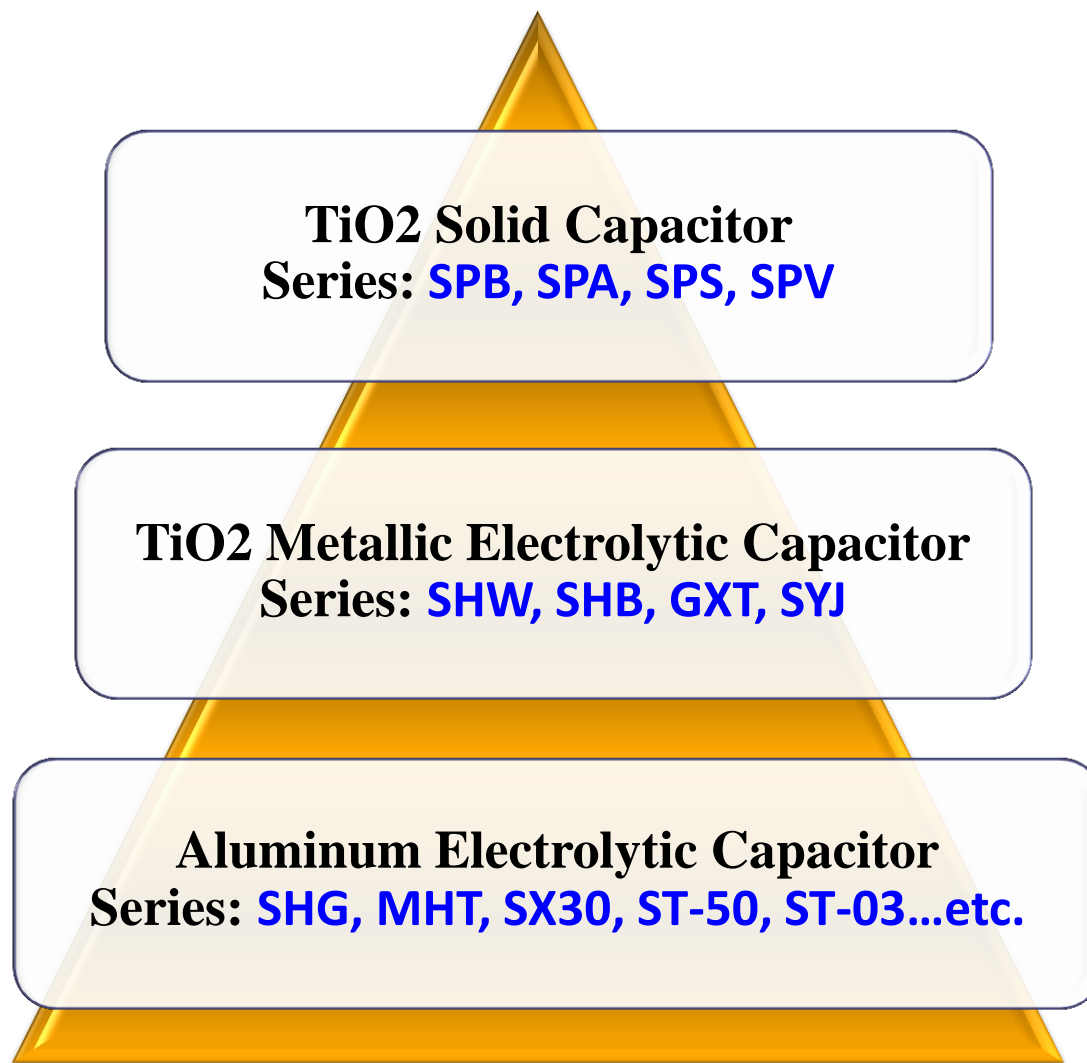


Factory Introduction

- ❖ Establishment : Year 2002
 - ❖ Employees : 110
 - ❖ Factory Area : 6,500 Square Meter
 - ❖ Production Line:
20 sets automatic production lines
 - ❖ Monthly Production : 45,000,000pcs
 - ❖ Product Types:
 - 1) **Aluminum Electrolytic Capacitor:** Radial, Snap-In, Screw type .
 - 2) **TiO₂ Metallic Electrolytic Capacitor:** Radial type only.
 - 3) **TiO₂ Solid Capacitor:** Radial type only.
-
- Radial type > Diameter: 5mm ~ 18mm; Height : 9mm ~ 50mm
 - Snap-In type > Diameter: 20mm ~ 35mm; Height : 20mm ~ 60mm
 - Screw type > Diameter: 50mm ~ 90mm; Height : 70mm ~ 170mm



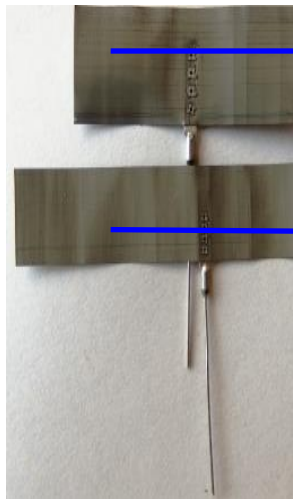
Products & Application



**Product
Efficacy**

Aluminum Electrolytic Capacitor VS TiO₂ Metallic Electrolytic Capacitor & TiO₂ Solid Capacitor

Raw Material difference



Anode

Purity: 99.99% AL

Gray Color

Cathode

Purity: 99.98%AL

Gray Color

Traditional
(General Aluminum
Electrolytic Capacitor)



Anode

Purity: 99.99% AL

Gray Color

Cathode

TiO₂

Black Color

New Generation
(**TiO₂ Metallic**
Electrolytic Capacitor & TiO₂ Solid
Capacitor)

TiO₂ Solid Capacitor

New Generation of Solid Capacitor

“Better performance than the Polymer Solid Electrolytic Capacitor”

● **Product Series :** SPB, SPA, SPS, SPV

● **Endurance :** 2,000 ~ 5,000 hours

● **Operating Voltage Range :** 6.3V ~ 35V

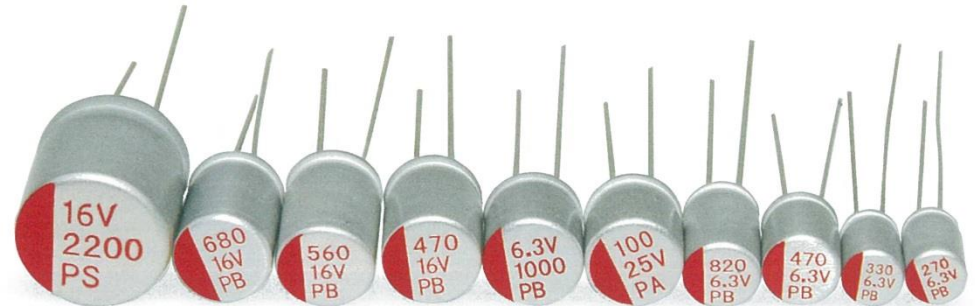
● **Operating Temperature :** -55°C to +105 °C / +125 °C

● **Ultra Small Size、 Super Large capacity、 Ultra Low ESR、 Extra Long Life 、 High Ripple Current**

● **Ram Material & Characteristic :**

Main raw material comes from Japan and Germany. Producing by Japanese technology. The product are provided with solid structure by our only technologies, and another excellent parameters, liked Ultra Low ESR, Higher Ripple Current, Ultra small size, Extra long life time, Super large capacity, so the features has been exceed the Polymer Capacitor as well as better performance. Basically, it will not burn or explode by using correctly.

Load life of **5000** hours at 105 °C, and Load life of **2000** hours at 125 °C .



TiO₂ Solid Capacitor :

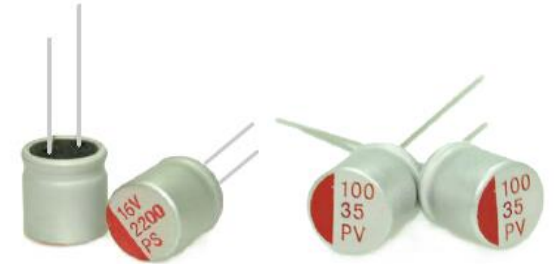
SPA/ SPB / SPS / SPV series : 6.3V ~ 35V

- Ultra-low ESR 《100KHz /20°C (mΩ max)》
 - **SPA series** 25V: 11~12mΩ
 - **SPB series** 6.3V-16V: The lowest 7mΩ
 - **SPS series** 16V-25V: 10-12mΩ
 - **SPV series** 35V: 20mΩ
- Super Mini-size (**SPV series**)
- Large Capacitance (**SPS series**)

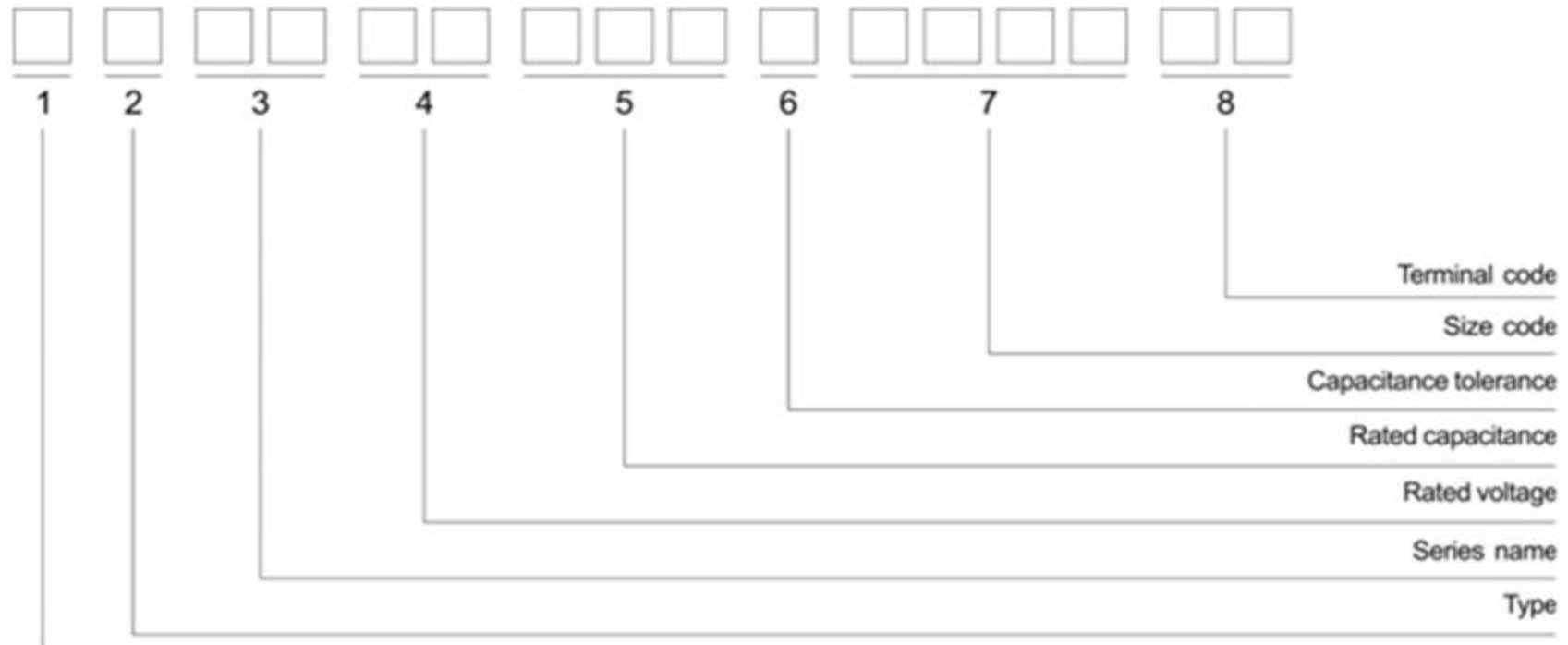
● Application Reference:

Communication network products, ABS device, GPS control board, Digital products, Car audio, Electric vehicles control board, Mother board, Mobile charger and adapter, USB multi-quick charger, LED & special lighting driver, notebook, power module, Server/Router, Automotive Electronic, Professional Power Amplifier, Adapter, Slim DVD, Military power supply, Inverter, Converter, power supply units..... etc .

Nowadays, miniaturized military electronic countermeasure equipment can also be widely used.



TiO₂ Solid Capacitor Part Numbering System (1)



Part Numbering System

Example PB Series, Rated voltage(V)=6.3V, Rated Capacitance(μ F)=330(μ F), Capacitance Tolerance= $\pm 20\%$;

Case Size $\Phi D \times L$ (mm)=6.3x8;

P/N. : PB0J331M6380

Capacitance Tolerance	
K	$\pm 10\%$
M	$\pm 20\%$
V	-10% +20%
Q	-10% +30%
T	-10% +50%

Lead Forming/Cutting
LF
LC
LK

TiO2 Solid Capacitor

Part Numbering System (2)

[illegible]

TiO₂ Metallic Electrolytic Capacitor

New Generation Aluminum Electrolytic Capacitors

“Can be the replacement of
Polymer Solid Electrolytic Capacitors of some application,
which is in higher market price!”

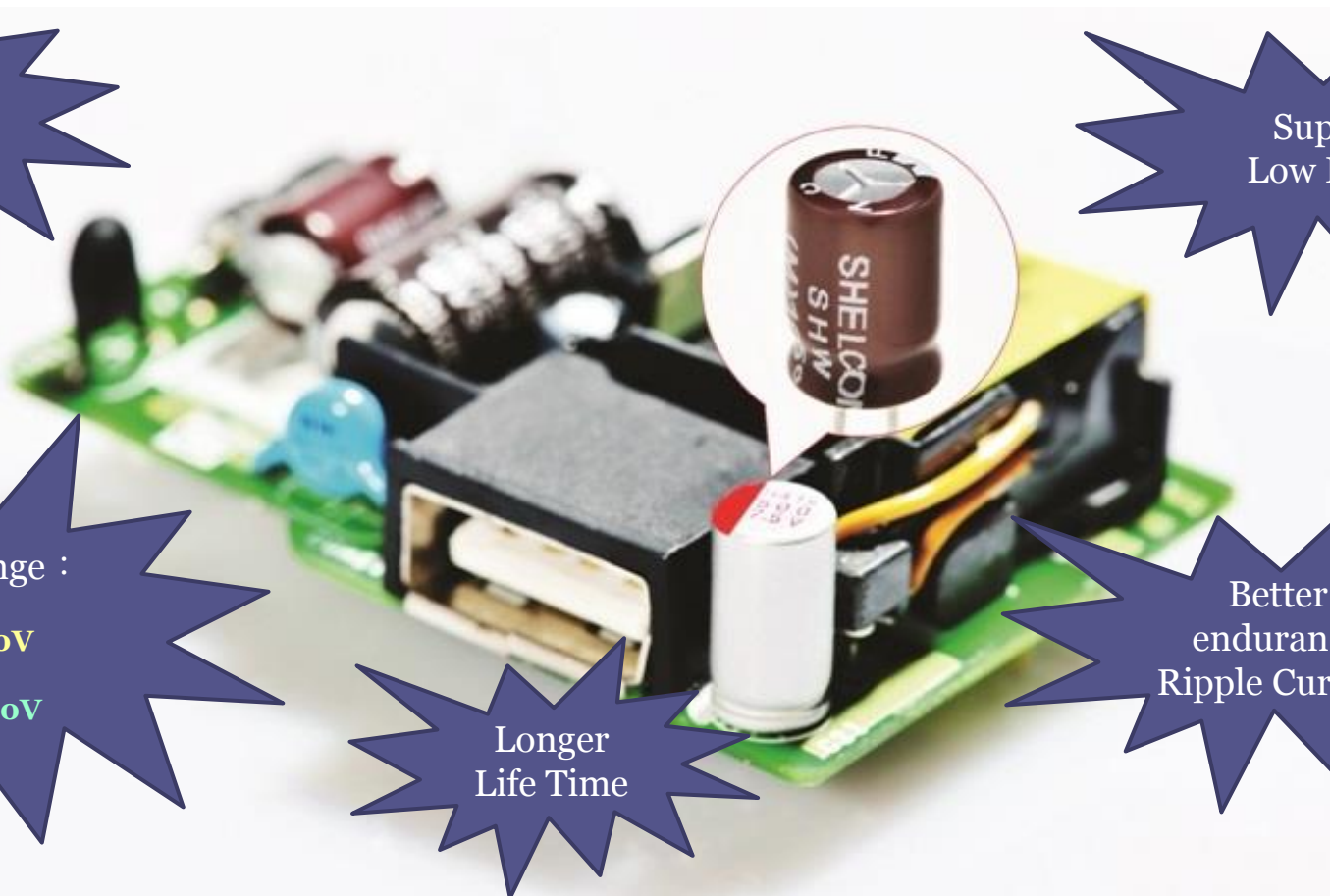
Down size
2-5 times

Super
Low ESR

Voltage Range :
Output :
DC 6.3V - 100V
Input:
DC 400V-450V

Longer
Life Time

Better
endurance
Ripple Current



TiO₂ Metallic Electrolytic Capacitor

■ Product Series:

SHW/SHB: 105°C 、 GXT: 125°C (Out-put)

SYJ: 105°C (In-put)

■ Voltage Range:

DC: 6.3V – 100V for Out-put

DC: 400V & 450V for In-put

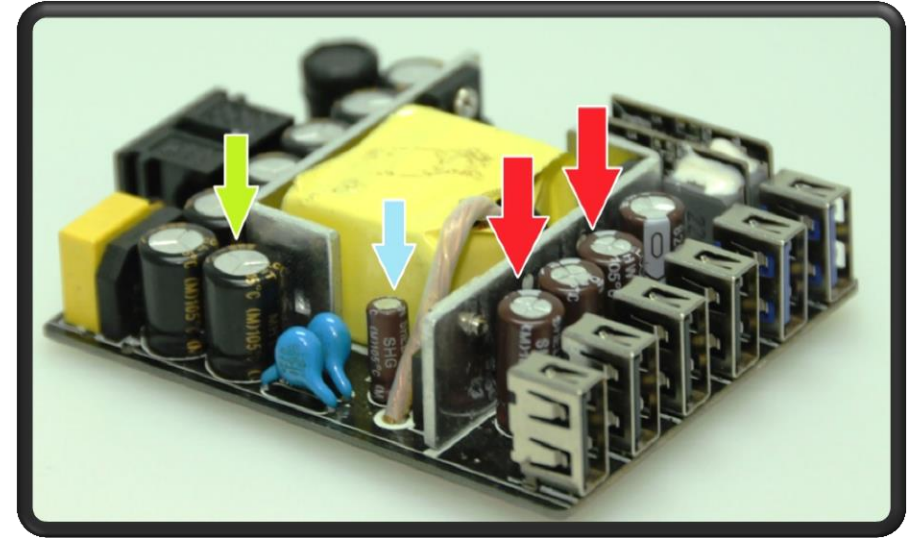
■ Prime Material: JAPAN

■ Technology Basis :

Innovative nano rare precious metal, Good and wider temperature working range, small size, low impedance at high frequency . Enable to tolerate high reverse voltage in circuit, long life. Wide application in products that require small size, high ripple current and large capacitance. The **TiO₂ Metallic Electrolytic Capacitor features small size, stable (the anode will not spitted or cracked and mix with the electrolyte), and low leakage (**Less than 18% rebound within two years**) .**

■ Application Reference:



















Display card board, Computer board, DC-DC power supply units, AC-DC power supply units, LED power supply units, Router, Internet & Communication apparatus....etc





















SHF (Standard E-Cap) vs SHW (TiO2 E-Cap) vs Polymer E-Cap

Series	Spec	Size	ESR(Ω)	Ripple(mA)	Series	Spec	Size	ESR(Ω)	Ripple(mA)
SHF	10V 1000	10x12.5	0.12	700	SHW	25V 2200	12.5x25	0.035	1900
SHW	10V 1000	6.3x14	0.045	1200	SHW	25V 2200	10x20	0.025	3450
Polymer	10V 1000	10x12.5	0.008	2000	SHF	6.3V 4700	12.5x25	0.034	1850
SHF	50v 100	8x12.5	0.25	400	SHW	6.3V 4700	10x16	0.02	3690
SHW	50v 100	6.3x11	0.11	550	SHF	16V 5600	18x35	0.029	2000
Polymer	50v 100	10x12.5	0.025	3300	SHW	16V 5600	18x16	0.02	3840
SHF	50v 2200	18x35.5	0.025	2200	SHF	6.3V 2200	13x20	0.062	1300
SHW	50v 2200	18x25	0.022	3890	SHW	6.3V 2200	8x15	0.025	1870

SHG (Standard E-Cap) vs SYJ 400V(TiO2 E-Cap)

	Series	Spec	Size	Ripple @ 100khz		Series	Spec	Size	Ripple @ 100khz
	SHG	400V 4.7	8x12	150 mA		SHG	400V 47	16x20	900 mA
	SYJ	400V 2.2	6.3x11	262 mA		SYJ	400V 22	13x16 13x20	1218 mA 1260 mA
	SHG	400V 6.8	10x13	220 mA		SHG	400V 68	18x25	1180 mA
	SYJ	400V 3.3	8x12	304 mA		SYJ	400V 33	13x25 16x20	1428 mA 1553 mA
	SHG	400V 10	10x16	280 mA		SHG	400V 82	18x32	1470 mA
	SYJ	400V 4.7	8x12	409 mA		SYJ	400V 47	16x20 16x25	1553 mA 1575 mA
	SHG	400V 15	10x20	350 mA		SHG	400V 100	18x32	1550 mA
	SYJ	400V 6.8	10x13	441 mA		SYJ	400V 68	18x25	1817 mA
	SHG	400V 22	13x20	550 mA					
	SYJ	400V 10	10x16	1029 mA					

SHG (Standard E-Cap) vs SYJ 450V(TiO2 E-Cap)

	Series	Spec	Size	Ripple @ 100khz		Series	Spec	Size	Ripple @ 100khz
	SHG	450V 4.7	10x13	280 mA		SHG	450V 33	16x25	1050 mA
	SYJ	450V 3.3	8x12	325 mA		SYJ	450V 15	13x20	1102 mA
	SHG	450V 6.8	10x16	350 mA		SHG	450V 47	18x25	1100 mA
	SYJ	450V 4.7	10x13	430 mA		SYJ	450V 22	16x20	1123 mA
	SHG	450V 10	10x20	550 mA		SHG	450V 68	18x32	1255 mA
	SYJ	450V 6.8	10x16	462 mA		SYJ	450V 33	16x25	1465 mA
	SHG	450V 15	13x20	760 mA		SHG	450V 82	18x32	1350 mA
	SYJ	450V 10	10x20	966 mA		SHG	450V 47	16x25	1701 mA
	SHG	450V 22	16x20	900 mA					
	SYJ	450V 10	13x16	1039 mA					

TiO₂ Metallic Electrolytic Capacitor : Advantaged Products (1)

SHW / SHB / GXT Series for Output : 6.3V ~ 100V (TiO₂ Metallic Electrolytic Capacitor)

- High frequency, Super low ESR, Ultra low impedance,
Longer life-time: 10000Hours, Super high Ripple Current
- Super Mini-size: (SHW / GXT series) & Super Smaller size (SHB series)
- Higher temperature: 125°C (GXT series), Standard temperature: 105°C (SHW / SHB series)
- Especially good for DC/DC inverter, design on back-light system
- Good for VGA card, NOTE BOOK, M/B, Power system, Router, Network



DC/AC Inverter



Router

TiO2 Metallic Electrolytic Capacitor : Advantaged Products (2)

SYJ Series for Input : 400V 、 450V (TiO₂ Metallic Electrolytic Capacitor)

■ **SYJ Series** is an organic metal (TiO₂) high-pressure product, instead of the traditional rely on the capacity to solve the problem of Ripple Current, its superiority is compact, suitable for smaller size and high power supply used



- High frequency, Super low ESR, Ultra low impedance, Longer life-time: 5000Hours
- Super high Ripple Current, Super Mini-size, Wide Temperature Range: -25 °C to +105°C
- Extremely performance for power supply and LED lighting

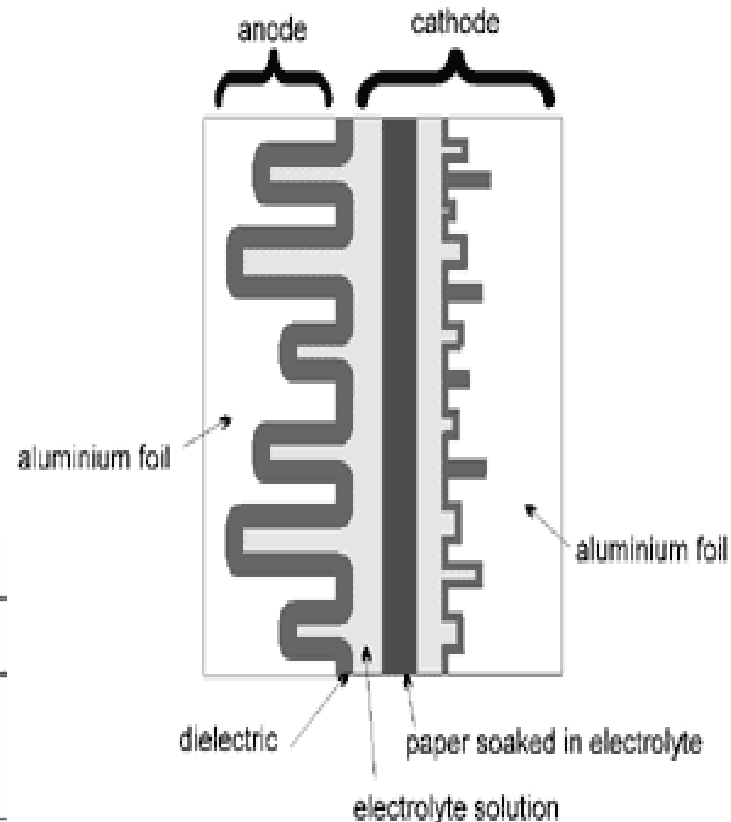
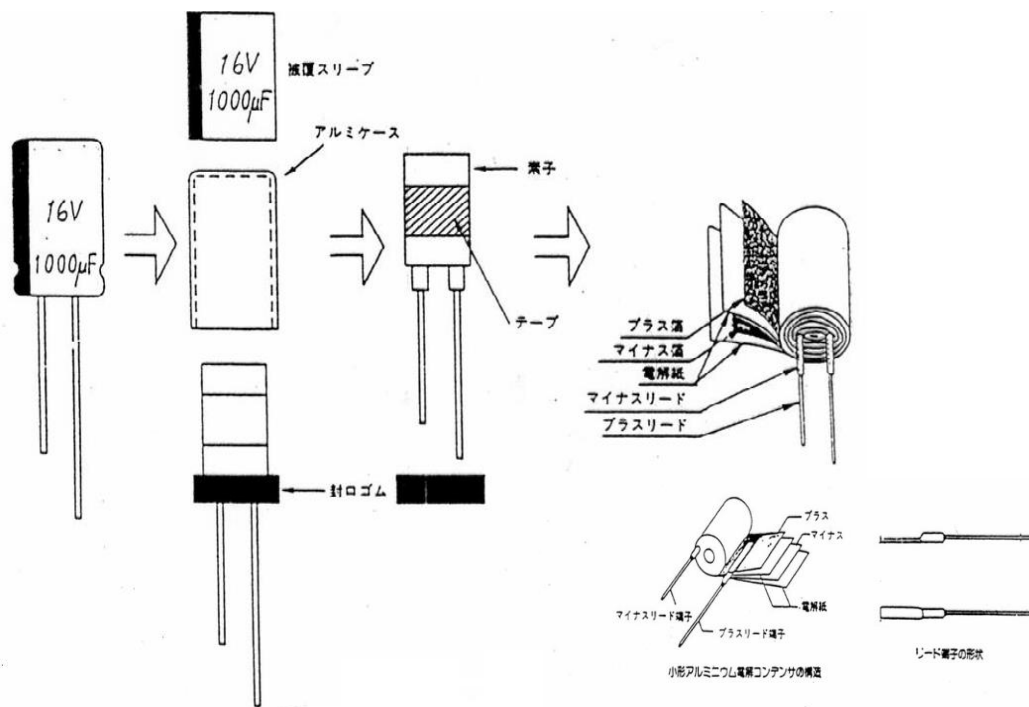
■ **STANDARD SIZE**

WV (VDC)	Cap(μ F)/120Hz	Case size	Ripple(mArms 105℃ 120Hz)
额定电压	静电容量	尺寸DxL	纹波电流
400	2.2	6.3*11	125
	3.3	8*12	145
	4.7	8*12	195
	6.8	10*13	210
	10	10*13	450
	10	10*16	490
	15	10*16	510
	15	10*20	530
	22	13*16	580
	22	13*20	600
	33	13*25	680
	33	16*20	710
	47	16*20	730
	47	16*25	750
	68	18*25	790
100	18*32	820	

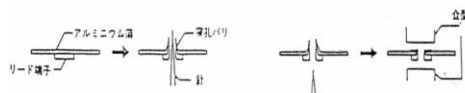
WV (VDC)	Cap(μ F)/120Hz	Case size	Ripple(mArms 105℃120Hz)
额定电压	静电容量	尺寸DxL	纹波电流
450	2.2	8*12	130
	3.3	8*12	155
	4.7	10*13	205
	6.8	10*16	220
	10	10*20	460
	10	13*16	495
	15	13*20	525
	22	16*20	535
	33	16*25	698
	47	18*25	810

Aluminum Electrolytic Capacitor

電解コンデンサの構造(製品を完成品から分解したフローチャート)



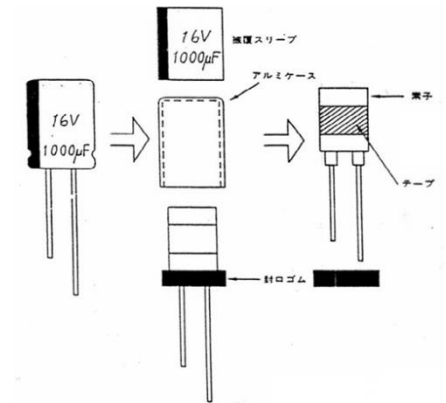
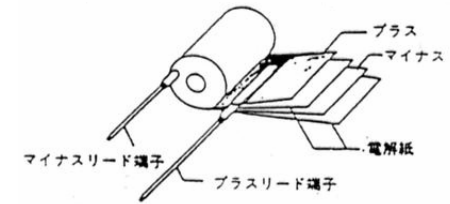
ニウム箔とリード線端子の接続方法(ステッチングとも書われます)



Aluminum Electrolytic Capacitor :

Main Suppliers of Materials

Material	Supplier
Aluminum Foil	KDK (Japan) JCC (Japan) K---JCC (Korea)
Rubber	Taiwan (Production in China)
Lead Wire	Taiwan (Production in China)
Insulation Paper	NKK (Japan) / KN (China)
Electrolyte	Japan / China (by Shelcon Factory)
Aluminum Case	Taiwan (Production in China)
Sleeve	Taiwan (Production in China)
Tapping Material	Japan / Taiwan (Production in China)



* Used by SGS environmental protection certification of qualified suppliers

Aluminum Electrolytic Capacitor : Advantaged Products (1)

SHG series

- Ultra long life time up to 10000Hours
- Ultra low temperature: -55°C
- Low impedance, High Ripple Current
- Good for Ballast Lighting, LED lighting, LED Driver, Power Supply



LED Driver

Aluminum Electrolytic Capacitor : Advantaged Products (2)

MHT series

- High Voltage Range: 400V, Smaller Size
- Wide Operating Temperature Range : -25°C to +105 °C
- Load life of 4000hours in **MHT Series** at 105°C
- Miniaturization products for LED Lighting, LED Driver and Power Supply



MHT SERIES

MHT系列

■ STANDARD SIZE

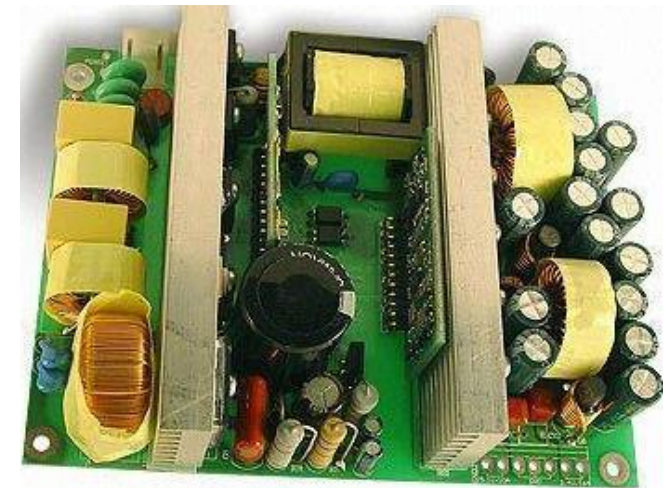
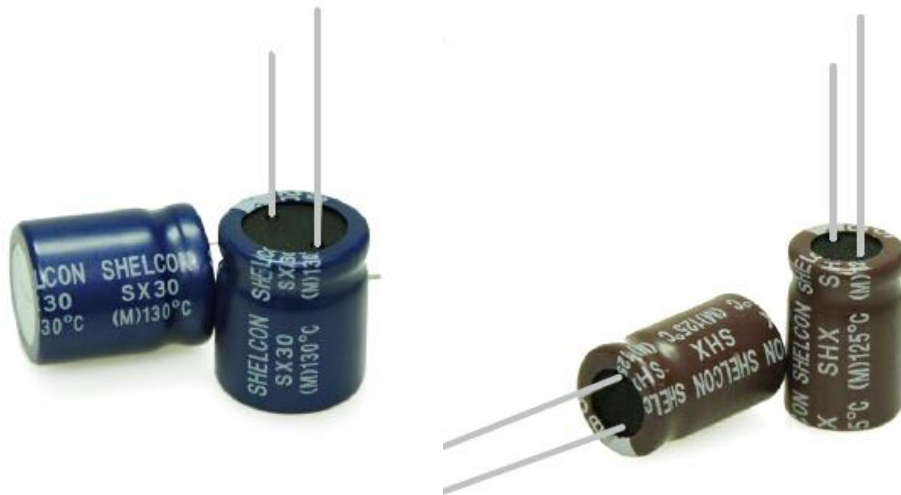
标准品一览表

WV(VDC)	Cap(μ F)/120Hz	Case size	Ripple(mArms 105°C/100KHz)	WV(VDC)	Cap(μ F)/120Hz	Case size	Ripple(mArms 105°C/100KHz)
额定电压	静电容量	尺寸DxL	纹波电流	额定电压	静电容量	尺寸DxL	纹波电流
400	4.7	8*9	115	450	4.7	8*9	135
	6.8	8*12	125		6.8	8*12	160
	10	8*12.5	145		8.2	8*13	220
	10	10*13	160		10	10*13	245
	15	10*13	220		15	10*16	255
	15	8*20	235		22	13*16	295
	22	10*17	255		33	13*20	320
	22	13*16	275		33	16*16	345
	33	10*25	315		47	16*20	380
	33	13*20	385		47	18*16	495
	47	13*25	420		68	18*25	610
	47	16*17	465		82	18*25	710
	68	16*22	560		100	18*30	780
	100	16*32	585		120	18*34	820
	100	18*25	650		150	18*40	1150

Aluminum Electrolytic Capacitor : Advantaged Products (3)

SHX / SHO / SX30 series

- 125°C & 130°C High Temperature
- Low impedance, High Ripple, Life-time: 4000-5000Hours
- Good for high temperature work, for I.P.C , Network , Telecom & Industrial Power Supply



Industrial Power Supply

Aluminum Electrolytic Capacitor : Advantaged Products (4)

ST-50 / ST-100 / SHA / SHP / SHM / SHR series

- High reliability, High Ripple Current **SNAP-IN** type
- Good for Power Supply of Industrial & Telecom, such as Inverter, Welding Machine ... etc .



Industrial Power Supply



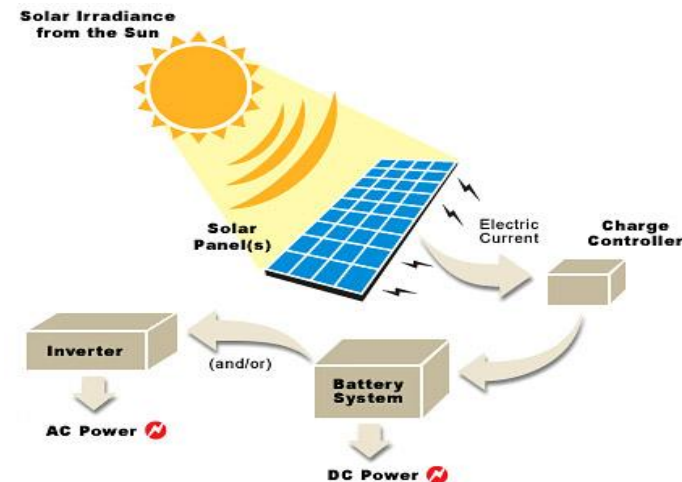
Welding Machine



Aluminum Electrolytic Capacitor : Advantaged Products (5)

ST-03 series

- Long Life Time: 3000hours, High Ripple Current **SCREW** type
- Wide Voltage range: 160V to 450V
- Wide Operating Temperature range: -25 °C to +105°C
- Diameter: 50mm - 90mm
- Good for Hit Power Supply, Driver, Inverter, Solar Products, Charging Pile



Aluminum Electrolytic Capacitor : Advantaged Products (6)

SHY / SHK series

- General high frequency, Low ESR, Long Life-time: 5000-12000Hours
- General low impedance, High Ripple Current
- Good for VGA card, Mother Board, Power Supply, Router, Telecom

SHT series

- High frequency, Very Low ESR, Non solvent-proof type
- Super low impedance for personal computer and storage equipment
- Endurance with Ripple Current, Standard Temperature: 105°C
- Life-time: 6000-8000Hours

SHC series

- Small diameter long length (slim case)
- High Ripple Current, Life-time: 3000Hours
- Good for Netbook Computer & Notebook Computer Power Adaptor



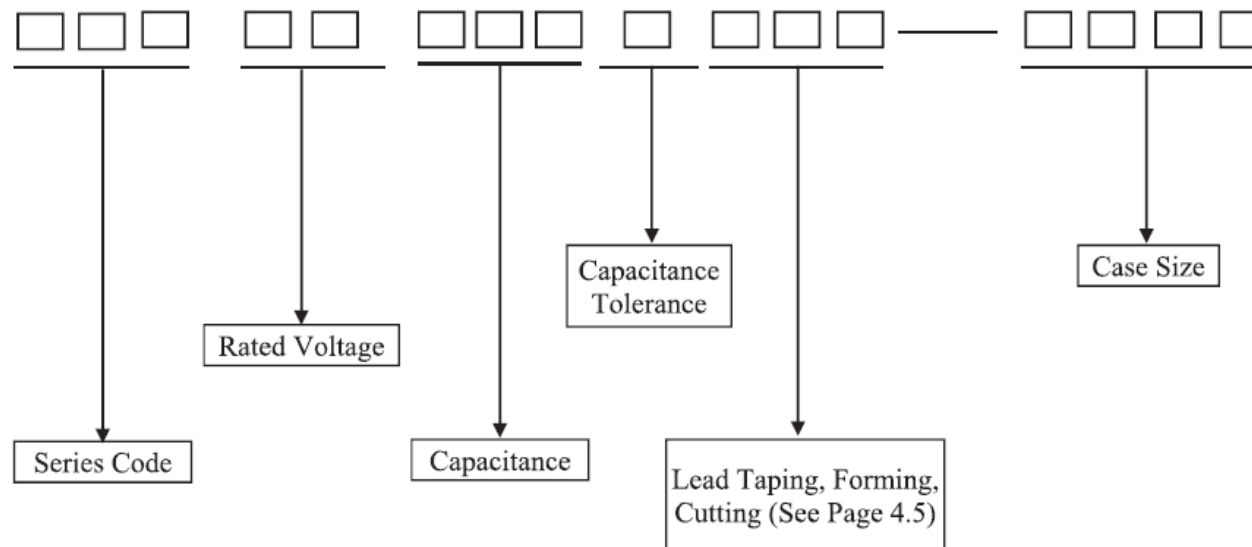
Aluminum Electrolytic Capacitor : Part Numbering System (1)

SHELCON

Radial Lead Aluminum Electrolytic Capacitors

Part Numbering System

Example SH series 50V10 μ F Φ 5x11L Taping Code (TB)



Capacitance Tolerance	
K	$\pm 10\%$
M	$\pm 20\%$
V	$-10\% +20\%$
Q	$-10\% +30\%$
T	$-10\% +50\%$

Lead Forming/Cutting	
LF	
LC	
LK	

Aluminum Electrolytic Capacitor : Part Numbering System (2)

Formed lead code	Forming method	Dimensions (mm)				Shape
		ΦD	F	P	i	
LF	Forming and cutting	4	5	1.5	-	
		5	5	2.0	-	
		6.3	5	2.5	-	
		8	5	3.5	-	
LC	Cutting	10	5	5.0	-	
		13	5	5.0	-	
		16	7.5	7.5	-	
		18	7.5	7.5	-	
		20	10	10.0	-	
LK	"KinK" forming (Snap-in type forming)	22	10	10.0	-	
		4	5	1.5	1.1	
		5	5	2.0	1.1	
		6.3	5	2.5	1.1	
		8	5	3.5	1.3	
		10	5	5.0	1.3	
		13	5	5.0	1.3	
		16	7.5	7.5	1.3	
		18	7.5	7.5	1.3	

Lead Forming/Cutting

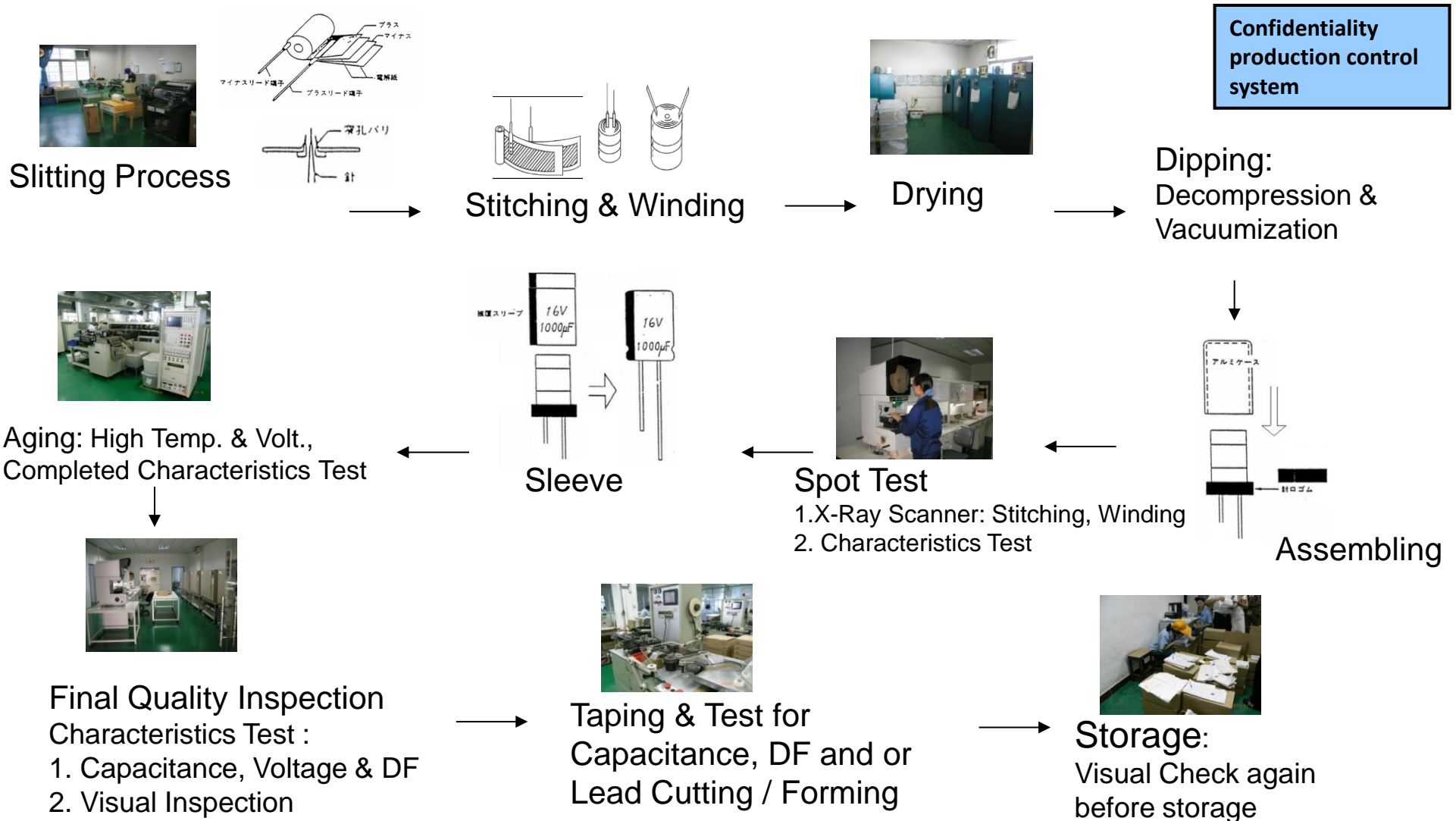
LF

LC

LK

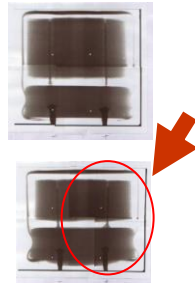
* Lead diameter (Φd) depends on capacitor specifications

Aluminum Electrolytic Capacitor Manufacturing Process





Reliability Laboratory: 1) X-Ray Scanner



2) X-Ray Inspection



3) Life Test



4) Characteristics Test



Aging: All Characteristics 100% tested under high temp. & pressure



100% Visual Inspection



Taping & 100% Characteristics Inspection



100% Visual Inspection before Storage



Inspection After Storage



Finished Goods Storage Management



Materials Storage Management



ISO System Management

Advantage & Target

TiO₂ Solid Capacitor

- **Advantage:** Better than the Polymer Solid Electrolytic Capacitors and Completely Replacement.
- **Target:** Fully replaced by the power manufacturer of using Japanese, Taiwanese Brand Polymer.

TiO₂ Metallic Electrolytic Capacitor

- **Advantage:** The size, efficacy and price are the middle level of the Polymer and standard E-Cap.
- **Target:** Fully applied in the ultra small size product of power manufacturer.

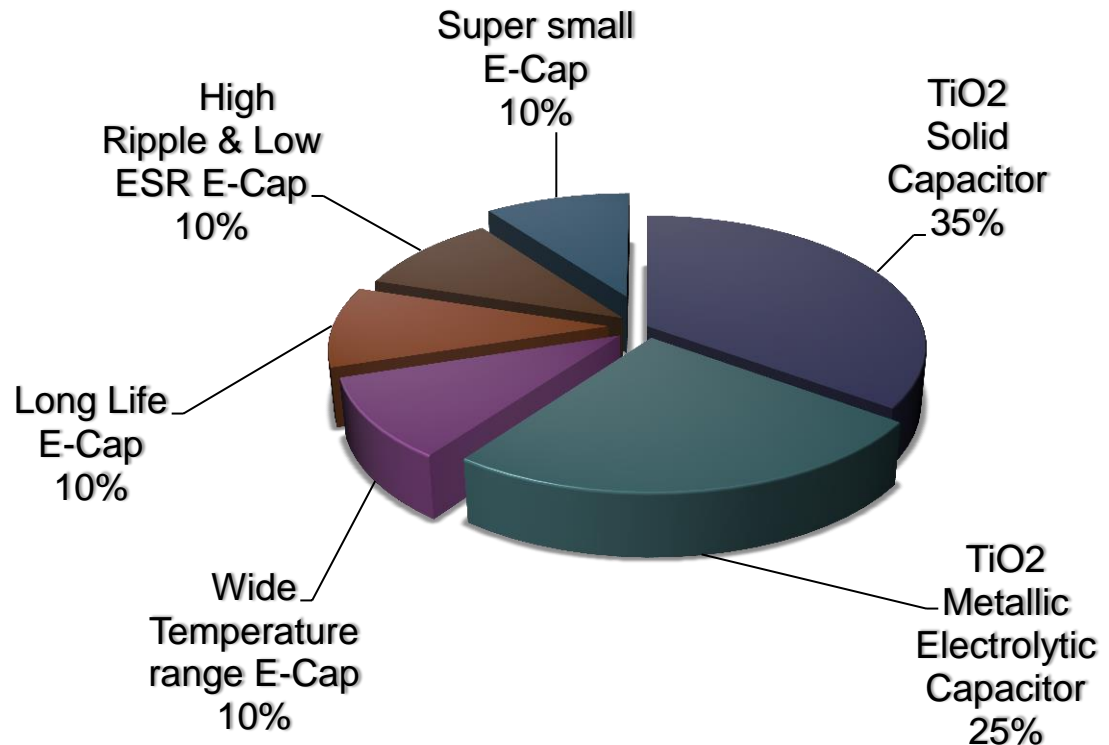
Aluminum Electrolytic Capacitor

- **Advantage:** Japanese Quality, Competitive price, Fast Lead Time.
- **Target:** Fully replaced by the power manufacturer of using Japanese, Taiwanese Brand E-Cap.

Current Products & Future Directions

- ◆ Expand Voltage Resistant to 100V. Larger Capacitance Value.
(TiO₂ Solid Capacitor)
- ◆ High Voltage Resistant: 400V, 450V, and smaller size.
(TiO₂ Metallic Electrolytic Capacitor)
- ◆ Higher Ripple Current resistant, Lower ESR, Smaller Size and Longer life time. (All Products)
- ◆ Product Directions:
 - TiO₂ Solid Capacitor
 - TiO₂ Metallic Electrolytic Capacitor
 - Long Life & Ultra-small size Aluminum Electrolytic Capacitor

Percentage of Products



~ Thanks for your kindly attention ~
Please feel free to contact us:
sales@shelcon.com.hk

