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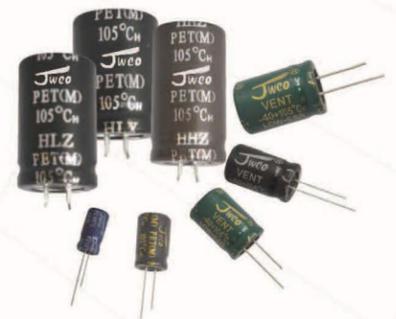
www.jiaweicheng.com

鋁電解電容器製造商

ALUMINUM ELECTROLYTIC CAPACITORS MANUFACTURERS



PRODUCT CATALOG



佳維誠電子有限公司
JIAWEICHENG ELECTRONICS CO.LTD



Company profile

【Every number, all stand for brilliant】

Jia Weicheng Electronic Technology Co., Ltd., Which is a professional R & D, manufacturer, selling integration of high - quality aluminum electrolytic capacitor products, Owns five factories:

Huizhou Jiaweicheng Electronics Co. , Ltd

Dongguan Jiaqing Electronics Co. , Ltd

Dongguan Qingxi Jiaweicheng Electronic Factory

Shenzhen Xingjiaweicheng Electronics Co. , Ltd

Jiangxi Jiaweicheng Electronic Technology Co. , Ltd

Jiangxi Jiaweicheng Electronic Technology Co. , Ltd, is the biggest factory , located in known as "a land flowing with milk and honey" wannian town , Shangrao city, jiangxi province, china. Jiaweicheng is a professional R & D, manufacturing, sales integration of high - quality aluminum electrolytic capacitor factory. Jiaweicheng was founded in 2002, the registered capital of 11,400,000 RMB, with high-quality standards, strong financial strength and reliable work team, Jiaweicheng become one of the biggest E-CAP manufacturer in China . Jiaweicheng covers the area of 150000 square meters, the number of employees is 1200, there is a team with more than 15 years working experiences, we also have automatic aging equipments and the latest X-ray inspection equipments, as well as over 500 automatic production lines, we produce 800 million low-impedance electrolytic capacitors every month , 300 million high voltage capacitors. Our products are very popular in many countries, such as South Korea, the United States, Iran, Brazil, India, Italy and so on.

【Every product, all strive for excellence】

We focus on building the brand "JWCO" with the high quality aluminum electrolytic capacitors products . Jiaweicheng produces a full range of aluminum electrolytic capacitors, major product is high frequency resistance, high voltage products, Regular and long lifetime products, all products have passed the ISO9001 quality system certification and ISO14001 environment system certification and ROHS, reach and other standard certifications. Widely used in communication power supply, UPS power supply, LED driver, telephone, TV, computer and peripheral equipment, frequency conversion air conditioning, high - grade sound, programmable telephone exchange and other fields.

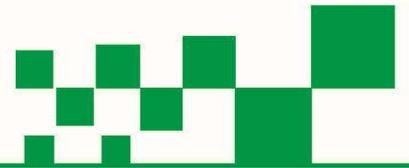
【Every advantage, all from the heart】

Jiaweicheng adhere to "well-designed, excellent material , careful process, sincere cooperation " to bring more competitive products for market and partners since it was founded.

Jiaweicheng has set organizational structure with the exact demanding of R & D and production management. To ensure cost-effective products, the company develop upstream of electronic industry chain, to establish their own raw material production base. We have effective protection of the quality of the products with the A complete quality system and process flow.

In the future, the company will continue to increase investment to enhance the capacity, we will win the market with the concept of "high efficiency, high quality and High performance price ratio". We believe that the quality create value and the strength to win the future.

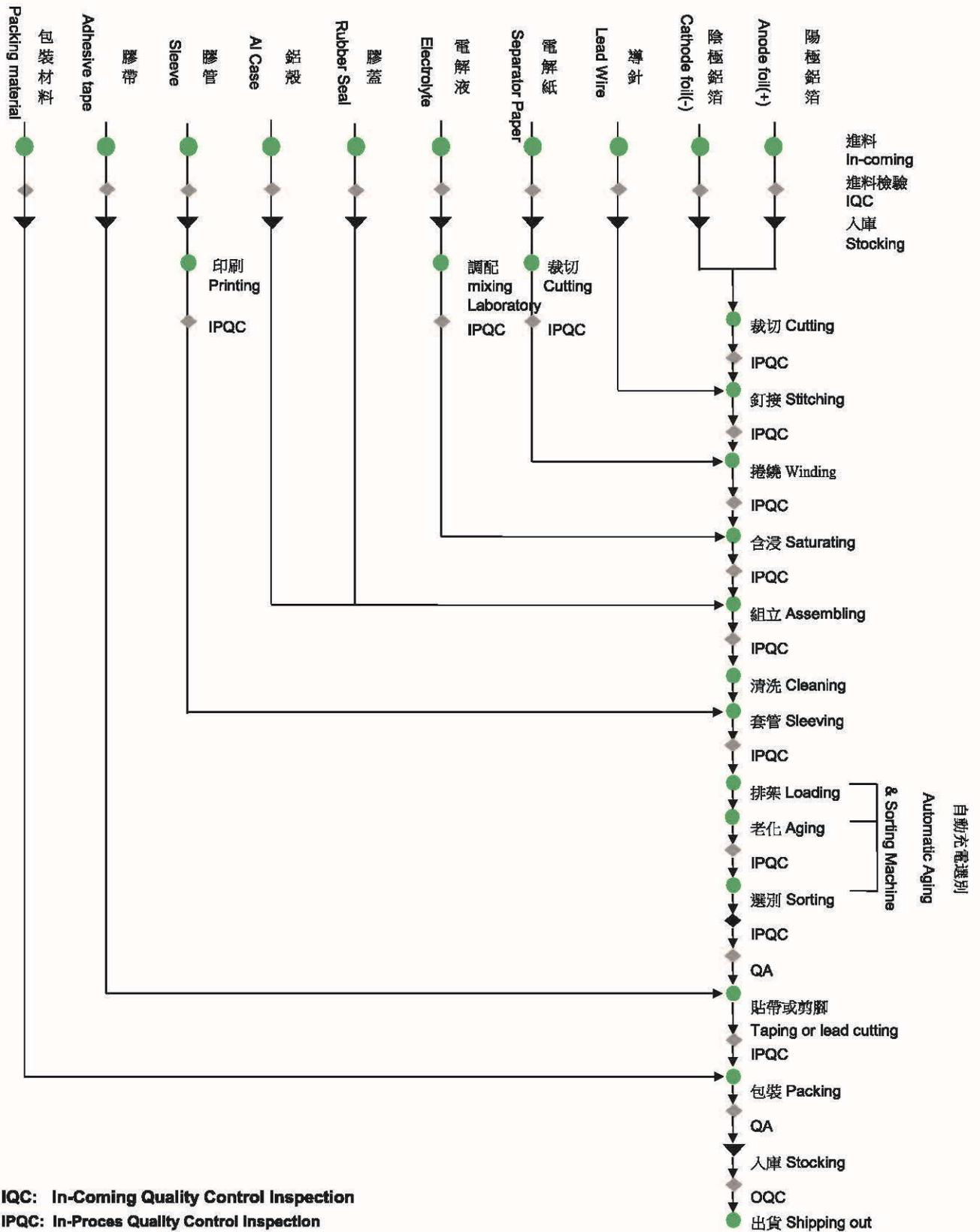
Pioneering and innovative, make arduous efforts, keep pace with development trend. Jiaweicheng electronics, is planning to create a better future with you!



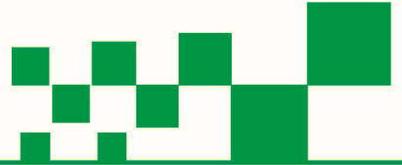
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Automatic Production Flow Chart



IQC: In-Coming Quality Control Inspection
IPQC: In-Process Quality Control Inspection
QA: Quality Assurance Audit
OQC: Outgoing Quality Control Audit



Application Guidelines For Aluminum Electrolytic Capacitors



鋁電解電容器使用需知

1. 電路設計的注意事項

- (1) 在確認使用環境及安裝環境的基礎上，在電容器的產品目錄及規格書上所規定的性能範圍內進行設計。
- (2) 在設計上，應該避免在下述情況下使用：
 - ① 不可超過電容器的最高使用溫度。
 - ② 不可有超過額定紋波電流的電流通過。
 - ③ 不可有超過額定電壓的電壓通過電容器。
 - (a) 要注意紋波電壓(交流部分)重疊到直流電壓上時的峰值不可超過額定電壓。
 - (b) 當兩個電容器串聯時，通過各個電容器的電壓不可超過額定電壓。此時，要在各個電容器上並聯用於防止漏損電流的分壓電阻器。
 - ④ 電容器為極性電容器。要確認有無連接反向電壓或交流電壓。在極性反轉電路中請用雙極性電容器，但是雙極性電容器也不可以用於交流電路。
- (3) 進行電路設計時，請選用與機器壽命相符的電容器。
- (4) 在需要重復進行急速充放電的電路中請選用與條件相符的電容器的。
- (5) 電容器的外殼、輔助引出端子與正、負極以及電路板間必須完全隔離。
- (6) 當電容器套管的絕緣不能保證時，在有絕緣性能特定要求的地方請不要使用。需要外套具有絕緣功能時請諮詢我們。
- (7) 電容器如果在以下環境中使用，可能會發生故障。
 - ① 直接與水、油類、鹽水相接觸的環境或高溫高濕或結露的環境。

1. Caution During Circuit Design

- (1) Please make sure the application and mounting conditions to which the capacitor will be exposed are within the conditions specified in the catalog or alternate product specification (Referred as to specification here after).
- (2) Design Aluminum Electrolytic Capacitors, please pay attention to the points listed below:
 - ① The capacitor shall not be used in an ambient temperature which exceeds the operating temperature specified in the specification.
 - ② Do not apply excessive current which exceeds the allowable ripple current.
 - ③ Make sure that no excess voltage (that is higher than the rated voltage) is applied to the capacitor.
 - (a) Please pay attention so that the peak voltage, which is DC voltage overlapped by ripple current, will not exceed the rated voltage.
 - (b) In the case where more than 2 aluminum electrolytic capacitors are used in series, please make sure that applied voltage will be lower than rated voltage and the voltage be will applied to each capacitor equally using a balancing resistor in parallel with the capacitors.
 - ④ Aluminum electrolytic capacitors are polarized. Make sure that no reverse voltage or AC voltage is applied to the capacitors. Please use Bi-polar capacitors for a circuit that can possibly see reversed polarity. Even Bi-polar capacitors can not be used for ac voltage application.
- (3) Appropriate capacitors which comply with the life requirement of the products should be selected when designing the circuit.
- (4) For a circuit that repeats rapid charging/discharging of electricity, an appropriate capacitor that is capable of enduring such a condition must be used.
- (5) Aluminum case, cathode lead wire, anode lead wire and circuit pattern must be isolated.
- (6) The sleeve of capacitors is not recognized as an insulator, and therefore, the standard capacitor should not be used in a place where insulation function is needed. Please consult with us should you require a higher grade of insulating sleeve.
- (7) Capacitors may fail if they are used under the following conditions:
 - ① Damp conditions such as water, saltwater spray, or oil spray or fumes. High humidity or humidity condensation situations.



Application Guidelines For Aluminum Electrolytic Capacitors



鋁電解電容器使用需知

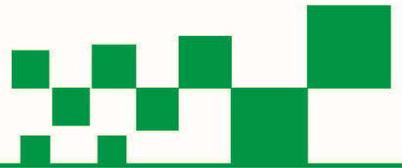
- ② 充滿有毒氣體(硫化物、亞硫酸、亞硝酸、氯氣、氨水等)的環境。
 - ③ 不能置於日照、O₃、紫外線及有放射性物質環境下使用。
 - ④ 有酸性及鹼性溶劑濺落的環境。
 - ⑤ 振動或衝擊條件超過交貨仕様書規定範圍的惡劣環境。
- (8) 在設計電容器的安裝時，必須確認下述內容：
- ① 線路板的孔距必須與電容器兩端子的間距相吻合。
 - ② 在電容器防爆閥的上方盡量不要安裝配線及其它元件，應在防爆閥的上空保留一定的空間。
 - ③ 請勿在電容器的四周及電路板的背面(電容器下面)配置發熱元件。
- (9) 電容器的電氣特性根據溫度及頻率的變動及變化，請在確認該變化量的基礎上進行電路設計。
- (10) 在雙面印刷板上安裝電容器時，電容器的安裝位置避免多餘的基板孔和過孔。
- (11) 並聯兩個以上的電容器時，要充分考慮電流平衡。
- (12) 串聯兩個以上的電容器時，要充分考慮電壓平衡和插入並聯用分壓阻抗。
- ② In an atmosphere filled with toxic gasses (such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, etc.)
 - ③ Being exposed to direct sunlight, ozone, ultraviolet ray, or radiation.
 - ④ Being exposed to acidic or alkaline solutions.
 - ⑤ Under severe conditions where vibration and/or mechanical shock exceed the applicable ranges of the specification.
- (8) In designing a circuit, the following matters should be ensured in advance to the capacitor assembly on the P.C. board.
- ① Design the appropriate hole spacing to match the lead pitch of capacitors.
 - ② Do not locate any wiring and circuit patterns directly above the capacitor vent. Ensure enough free space above the capacitor vent.
 - ③ Do not design a circuit board so that heat generating components are placed near an aluminum electrolytic capacitor or reverse side of P.C. board (under the capacitor).
- (9) Electrical characteristics may vary depending on changes in temperature and frequency. Please consider this variation when you design circuits.
- (10) When you mount capacitors on the double-sided P.C boards, do not place capacitors on circuit patterns or over on unused holes.
- (11) When you install more than 2 capacitors in parallel, consider the balance of current flowing through the capacitors.
- (12) If more than 2 aluminum electrolytic capacitors are used in series, make sure the applied voltage will be lower than the rated voltage and that voltage will be applied to each capacitor equally using a balancing resistor in parallel with each capacitor.

2. 安裝的注意事項

- (1) 除了定期點檢時為檢測電氣性能而拆卸的電容器外，對組裝到設備上已經通電的電容器，拆除後均不能再使用。
- (2) 當電容器產生再生電壓時，請通過約1KΩ的電阻器進行放電。

2. Caution For Assembling Capacitors

- (1) Once a capacitor has been assembled in the set and power applied, even if a capacitor is discharged, an electric potential (restricting voltage) may exist between the terminals.
- (2) Electric potential between positive and negative terminal may exist as a result of returned electromotive force, so please discharge the capacitor using a 1KΩ resistor.



Application Guidelines For Aluminum Electrolytic Capacitors

鋁電解電容器使用需知

(3) 長期保存的電容器,需通過約1KΩ的電阻加壓處理。

(4) 請確認電容器的規格(靜電容量及額定電壓)及極性後,才可進行安裝。

(5) 掉落在地上的電容器及本體已經變形的電容器,請勿再使用。

(6) 安裝時請確認电路板的孔距是否與電容器兩端子的間距吻合。

(7) 自動插入機扭結固定電容器引線的強度不可過大。

(8) 焊接時請注意以下內容:

- ① 焊接條件(溫度、時間)不可超出承認書中所規定的範圍。
- ② 請勿讓烙鐵的烙鐵頭接觸到電容器的本體及不要將電容器本體浸入焊錫溶液中。
- ③ 在進行焊接時,避免其它物件倒下碰到電容器。
- ④ 在進行焊接時,除端子外電容器其它部位不可附著有焊劑。

(9) 電容器焊接在電路板後,請注意以下內容:

- ① 不可將電容器本體傾斜、扭轉等。
- ② 不可讓其它物體碰到電容器。

(10) 電解電容器不得以鹵化化學藥品類似溶劑,作為電容器洗滌用。

(11) 在使用固定劑與塗層劑時,電路板與電容器的封口部之間須乾淨,不可留有焊劑殘渣及污垢。

3.組裝使用注意事項

(1) 不可直接觸摸電容器的端子,有導致觸電的危險。

(2) 不可有導體靠近電容器的兩端子,避免電容器端子之間短路。

(3) Leakage current of aluminum electrolytic capacitors may be increased during long storage time. In this case, the capacitors should be subject to voltage treatment a 1KΩ resistor before use.

(4) Please confirm ratings (voltage and capacitance) and polarity before in stalling capacitors on the P.C. board.

(5) Do not drop capacitors on the floors and damage , nor use a capacitors that was dropped.

(6) Please confirm that lead spacing of the capacitor matches the hole spacing of the P.C. board prior to installation.

(7) Please pay attention that the clinch force is not too strong when capacitors are places and fixed by an automatic insertion machine.

(8) Soldering

- ① Soldering condition (temperature and times) must be confirmed to be within su'scon specification.
- ② Soldering iron should never touch the capacitors body and do not dip capacitors body into melted solder.
- ③ Please avoid contact between other components and the aluminum capacitor.
- ④ Please avoid having flux adhere to any portion except the terminal.

(9) After Soldering

- ① Do not bend or twist the capacitors body after soldering on P.C. board.
- ② Do not hit the capacitors and isolate capacitors from the P.C. board or other device when stacking P.C boards in store.

(10) Standard Aluminum Electrolytic Capacitors should be free from halogenated solvents during P.C. board cleaning after soldering.

(11) Do not use halogenated adhesives and coating materials to fix aluminum electrolytic capacitors.

3.Caution For Assembling Capacitors

(1) Do not directly touch terminal by hand.

(2) Do not short between terminals with conductor near the capacitor.



Application Guidelines For Aluminum Electrolytic Capacitors

鋁電解電容器使用需知



(3) 裝配了電容器的設備請不要在以下環境中使用：

- ① 直接與水、油類、鹽水相接觸的環境或高溫高濕或結露的環境。
- ② 充滿有毒氣體(硫化物、亞硫酸、亞硝酸、氯氣、氨水等)的環境。
- ③ 不能置於日照、O₃、紫外線及有放射性物質環境下使用。
- ④ 有酸性及鹼性溶劑濺落的環境。
- ⑤ 振動或衝擊條件超過交貨仕様書規定範圍的惡劣環境。

4. 電容器的保養與檢修

電容器在工業機器中使用時要進行定期檢修，檢修時請注意電容器的外觀及電氣性能是否符合產品的標準。

5. 安全注意事項

- (1) 在設備使用過程中，電容器的防爆閥開裂，並冒出氣體時，應切斷設備的主電源或從設備上拔下電線插頭。
- (2) 電容器的防爆閥開裂時，因為超過100°C高溫氣體噴出，臉不要接近。噴出的氣體進入眼睛時，立即用清水洗眼睛。如果噴出的電解液濺到皮膚上，請立即使用肥皂進行沖洗。

6. 儲蓄條件

- (1) 電容器的保管建議在室溫5~30°C、相對濕度為75%的條件下保管。
- (2) 不要保存在所述的環境中保管。
 - ① 直接與水、油類、鹽水相接觸的環境或高溫高濕或結露的環境。
 - ② 充滿有毒氣體(硫化物、亞硫酸、亞硝酸、氯氣、氨水等)的環境。
 - ③ 不能置於日照、O₃、紫外線及有放射性物質環境下使用。
 - ④ 有酸性及鹼性溶劑濺落的環境。

(3) Do not use conditions for assembling capacitors.

- ① Damp conditions such as water, saltwater spray, or oil spray or fumes. High humidity or humidity condensation situations.
- ② In an atmosphere filled with toxic gasses (such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, etc.)
- ③ Being exposed to direct sunlight, ozone, ultraviolet ray, or radiation.
- ④ Being exposed to acidic or alkaline solutions.
- ⑤ Under severe conditions where vibration and/or mechanical shock exceed the applicable ranges of the specification.

4. Maintenance Inspection

Please periodically inspect the capacitors that are installed in industrial equipment. Remarkable abnormality such as vent operation, leaking electrolyte etc. Capacitance, dielectric loss tangent, leakage current, and items specified in the specification.

- (1) If you see smoke due to operation of safety vent, turn off the main switch or pull out the plug from the outlet.
- (2) Do not bring your face near the capacitor when the pressure relief vent operates, because the gasses emitted from that are over 100°C. If the gas gets into your eyes, please flush your eyes immediately in pure water. If you breathe the gas, immediately wash out your mouth and throat with water. Do not ingest electrolyte. If your skin is exposed to electrolyte, please wash it away using soap and water.

6. Storage

- (1) It is recommended to keep capacitors between the ambient temperatures of 5°C to 35°C and a relative humidity of 75% or below.
- (2) Confirm that the environment does not have any of the following conditions:
 - ① Damp conditions such as water, saltwater spray, or oil spray or fumes. High humidity or humidity condensation situations.
 - ② In an atmosphere filled with toxic gasses (such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, etc.)
 - ③ Being exposed to direct sunlight, ozone, ultraviolet ray, or radiation.
 - ④ Being exposed to acidic or alkaline solutions.

TAPING SPECIFICATION FOR AUTOMATIC INSERTION

● APPLICATIONS

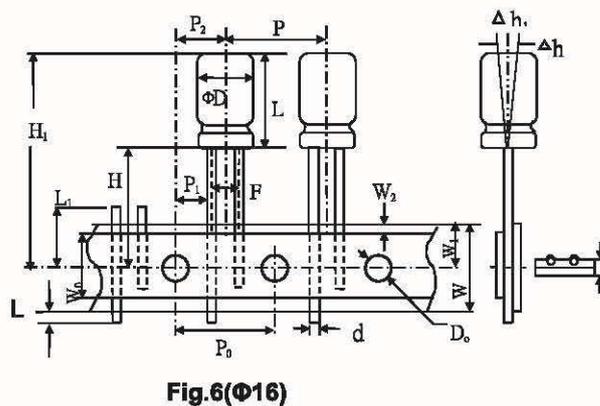
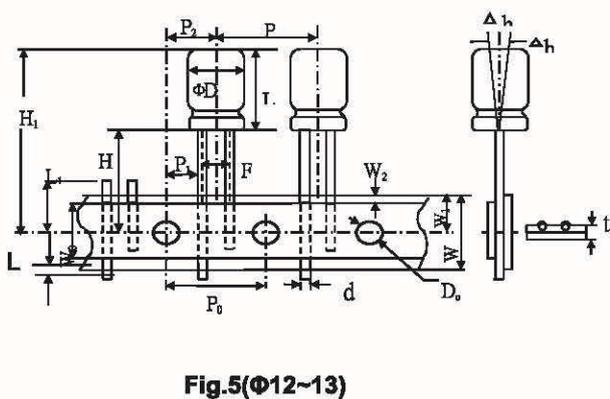
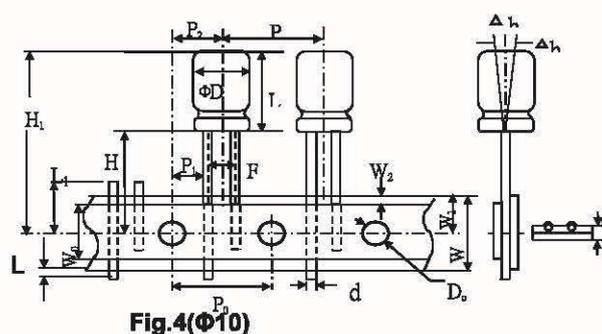
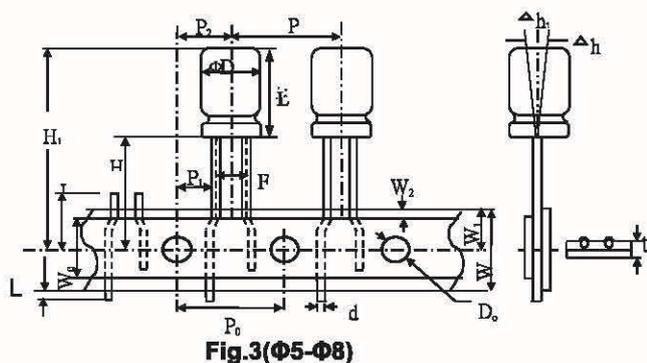
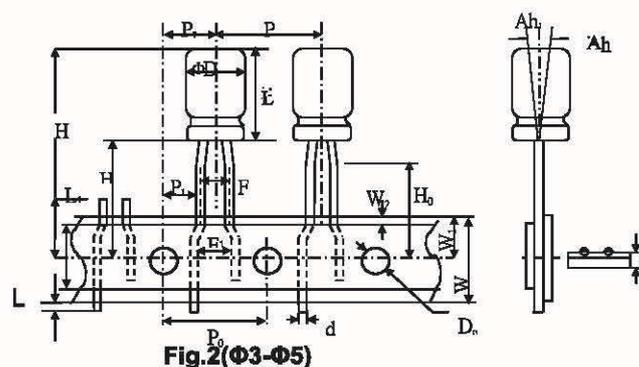
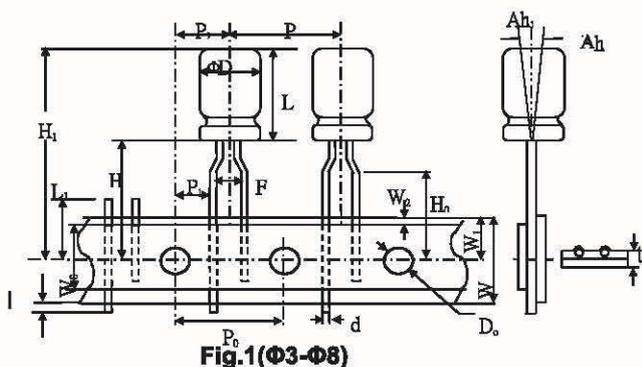
- These specifications include taped single-ended electrolytic capacitors with the body diameters from 4.0 to 16mm.
- Suitable to be used in automatic lead preparation and insertion machines.

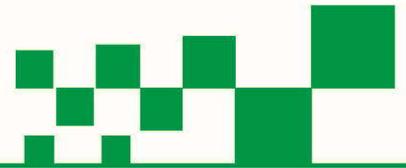
● DESCRIPTION

- Body tape requirements are shown from Fig.1 to Fig.6
- Polarity of capacitors shall be oriented in one direction.
- Leader tapes shall not be provided before the first and after the last capacitor on tape.
- Up to 3 capacitor consecutively missing on tape is permitted but a designed quantity of capacitors shall be packed in each case.
- Removal faulty capacitors from the tape shall be by pulling out or by cutting off leads. Cut off leads remaining on tape shall not protrude more than 2.0 mm from tape edge.

● DIAGRAM OF TAPING DIMENSIONS

(Unit=mm)





● TAPING DIMENSIONS (mm)

Items	Symbol	Case Size										Tolerance	Remark (Page 129)		
		4×5	5×5		4×7	5×7		5×11	6.3×11	8×12	10×13			10×16	10×20
			6.3×5	8×5		6.3×7	8×7								
Lead Wire Diameter	d	0.45	0.45	0.45	0.5	0.5			0.6			±0.05			
Body Height	L	6		8		12		13	14	17	22	MAX			
Intervals of Bodies	P	12.7										±1.0			
Intervals of Punched Holes	P ₀	12.7										±0.2			
Distance between Holes and Lead Wire	P ₁	3.85										±0.7	Fig 1.Fig 4.		
		5.35	5.10	5.10	5.10	5.10	5.10	5.10					Fig 2		
			5.35			5.35							5.10	5.10	Fig 3
Distance between Holes and Body Center	P ₂	6.35										±1.0			
Distance between Lead and Lead	F	5.00										+0.8 -0.2	Fig 1.Fig 4.		
		2.5	2.5		2.5	2.5	2.5	3.5					Fig2		
		2.0	2.0	2.5	2.5	2.0							Fig3.		
Base Tape Width	W	18.0										±0.5			
Adhesive Tape Width	W ₀	12.5										min			
Deviation between Holes and Base Tape	W ₁	9.0										±0.5			
Deviation between Adhesive and Base Tape	W ₂	1.5										max			
Deviation between Body Bottom and Tape Center	H	17.5			18.5	20		18.5			±0.75	Fig 1.Fig 4.			
		17.5			18.5	18.5						Fig 2.Fig 3.			
Lead Wire Clinched Height	H ₀	16.0										±0.5			
Distance between Body Top and Tape Center	H ₁	27.5			32.5			33.0	36.0	41.0	max				
Punched Hole Diameter	D _p	4.0										±0.3			
Lead Wire Protrusion	ℓ	1.0										max			
Length of not Good Lead Slit	L ₁	11.0										max			
Base and Adhesive Tape Thickness	t	0.7										±0.2			
Deviation of Body Alignment	Δh	0										±2.0			
Deviation of Body Alignment	Δh ₁	0										±1.0			

● TAPING DIMENSIONS

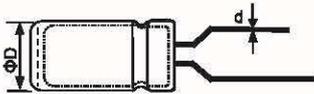
Item	Symbol	Case Size							Tolerance	Remark (Page 129)
		12.5×21	13×21	13×25	13×30	16×26	16×32	16×36		
Lead Wire Diameter	d	0.6				0.8			±0.05	
Body Height	L	23.0	23.0	27.0	32.0	28.0	34.0	36.0	max	
Intervals of Bodies	P	15.0				30.0			±1.0	Fig5.Fig6.
Intervals of Punched Holes	P ₀	15.0							±0.2	
Distance between Holes and Lead Wire	P ₁	5.0			3.75				±0.7	
Distance between Holes and Bodies	P ₂	7.5							±1.0	
Distance between lead and lead	F	5.0			7.5				+0.8 -0.2	
Base Tape Width	W	18.0							±0.5	
Adhesive Tape Width	W ₀	12.5							min	
Deviation between Holes and Base Tape	W ₁	9.0							±0.5	
Deviation between Adhesive and Base Tape	W ₂	1.5							min	
Deviation between Body Bottom and Tape Center	H	18.5							±0.75	Fig5.Fig6.
Distance Between Body Top and Tape Center	H ₁	40.5	40.5	45.5	50.5	46.5	53.5	56.5	max	
Punched Hole Diameter	D _p	4.0							±0.3	
Lead Wire Protrusion	ℓ	1.0							max	
Length of not Good Idea Slit	L ₁	11.0							max	
Base and Adhesive Tape Thickness	t	0.7							±0.2	
Deviation of Body Alignment	Δh	0							±2.0	
Deviation of Body Alignment	Δh ₁	0							±1.0	



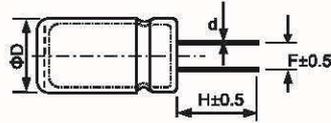
● LEAD CUTTING AND FORMING

With Terminals or Forms as below, Easier Inserting the Units into P.C.Board and Contributing to Higher Mounting Efficiency.

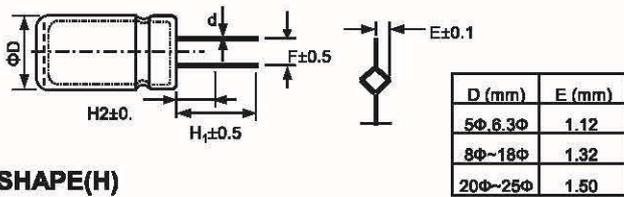
SHAPE(B)



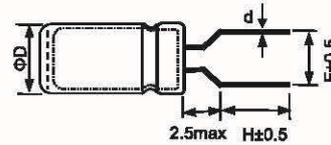
SHAPE(C)



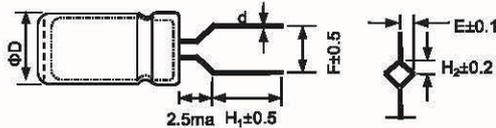
SHAPE(D)



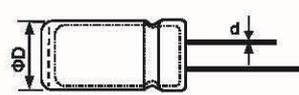
SHAPE(F)



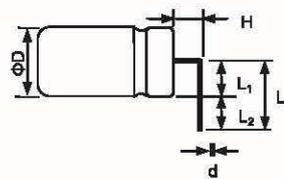
SHAPE(H)



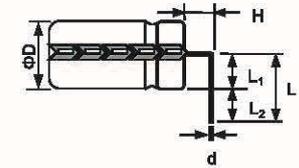
SHAPE(S)



SHAPE(L)

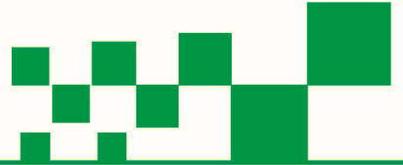


SHAPE(Z)



● SPECIFICATION INFORMATION

Shape NO	Cutting & Forming Methods	D ϕ	4 ϕ	5 ϕ	6.3 ϕ	8 ϕ	10 ϕ	12.5 ϕ	13 ϕ	16 ϕ	18 ϕ	22 ϕ
B	Forming Only	d	0.45	0.5	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8
C	Lead Cut Only	F	1.5	2.0	2.5	3.5	5.0	5.0	5.0	7.5	7.5	10.0
		H	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
D	Lead Cut and Crimp	d	0.45	0.5	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8
		F	-	-	-	-	5.0	5.0	5.0	7.5	7.5	10
		H ₁	-	-	-	-	5.0	5.0	5.0	5.0	5.0	5.0
F	Lead Cut and Form	H ₂	-	-	-	-	1.8	1.8	1.8	1.8	1.8	1.8
		d	-	-	-	-	0.6	0.6	0.6	0.8	0.8	0.8
		F	5.0	5.0	5.0	5.0	-	-	-	-	-	-
H	Lead Cut, Crimp and Form	H	4.0	5.0	5.0	5.0	-	-	-	-	-	-
		d	0.45	0.5	0.5	0.5	-	-	-	-	-	-
		F	5.0	5.0	5.0	5.0	-	-	-	-	-	-
S	Long Lead	H ₁	4.0	5.0	5.0	5.0	-	-	-	-	-	-
		H ₂	1.8	1.8	1.8	1.8	-	-	-	-	-	-
		d	0.45	0.5	0.5	0.5	-	-	-	-	-	-
L / Z	Lead Cutting and Bending	d	0.45	0.5	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8
		F	1.5	2.0	2.5	3.5	5	5	5	7.5	7.5	10
		L ₁	2.2	2.7	3.6	4.5	5.3	6.8	6.8	8.4	9.4	11.4
		L ₂	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
		d	0.45	0.5	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8



Part Number System

Explanation of parts numbers

產品編碼解釋

KM	10 μ F	$\pm 20\%$	50V	Bulk Package	105°C Rubber Bung	5 ϕ ×11L	PVC Sleeve	Black 黑色
KM	100	M	1H	BK	J	0511	V	BK
□□□	□□□	□	□□	□□	□	□□□□	□	□
① Series Numbers 系列號	② Capacitance 容值	③ Capacitance Tolerance 精度	④ Rated Voltage 額定電壓	⑤ Lead Configuration 包裝	⑥ Rubber Type 膠塞	⑦ Case Size 外殼尺寸	⑧ Lead Wire and Sleeve Type 導線及套管類型	⑨ Color 套管顏色

① Series Numbers 系列號

We use 2or3 letters to represent the series numbers.

系列號由 2 到 3 個字母表示。

② Capacitance 容值

容值的單位是 μ F, 用 3 個數字表示。前 2 個數字為有效數字, 第三個數字表示其後面 0 的個數。R 代表小數點。

容值 (μ F)	0.1	0.47	1	4.7	10	47	100	470	1000	4700	10000
代碼(Code)	0R1	R47	010	4R7	100	470	101	471	102	472	103

The unit of capacity value is μ F, which is represented by 3 numbers. The first 2 digits are valid digits, and the third number represents the number of 0 of the following. R represents the decimal point.

③ Capacitance Tolerance 精度

J=-5% ~ +5%	K=-10% ~ +10%	M=-20% ~ +20%	V=-10% ~ +20%
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④ Rated Voltage 額定電壓 (額定電壓用兩個符號表示)

电压 (WV)	2.5	4	6.3	10	16	20	25	35	40	50	63	80	100
代碼(Code)	0E	0G	0J	1A	1C	1D	1E	1V	1G	1H	1J	1K	2A
电压 (WV)	160	200	220	250	330	350	400	420	450	500	525		
代碼(Code)	2C	2D	2U	2E	2M	2V	2G	2P	2W	2H	2Y		

⑤ Lead configuration and package 包裝

BK = Bulk Package 散裝	TA = Formed Lead Taping 成型編帶
FC = Formed & Cut Lead 成型切腳	SA = Straight Lead Taping 直編
CL = Cut Lead 直腳切腳	BC = Bent & Cut Lead 彎腳切腳

⑥ Rubber Type 膠塞類型

F = 85°C Rubber Bung 橡膠塞 85° C	J = 105°C Rubber Bung 橡膠塞 105° C
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⑦ Size 尺寸

ΦD×L	3×5	4×5	4×7	5×5	5×7	5×11	6.3×7	6.3×8	6.3×12	8×7	8×9
Code	0305	0405	0407	0505	0507	0511	0607	0608	0612	0807	0809
ΦD×L	8×12	8×14	8×16	10×13	10×17	10×20	13×21	13×25	16×23	16×25	16×30
Code	0812	0814	0816	1013	1017	1020	1321	1325	1623	1625	1630
ΦD×L	18×25	18×30	18×35	22×40							
Code	1825	1830	1835	2240							

⑧ Lead Wire and Sleeve Type 導線及套管類型

V = PVC sleeve	E = PET sleeve
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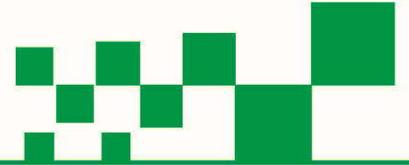
⑨ Color 套管顏色

黑色 Black = BK	綠金 Green&Gold = GN
咖啡 Coffee = CE	橙色 Orange = OE
藍色 Blue&Gold = BD	純綠 Green = PG
黑金 Black&Gold = BG	紫金 Purple&Gold = GE
咖啡金 Coffee&Gold = CG	白金 White&Gold = WG
咖啡銀 Coffee&Silver = CS	黑銀 Black&Silver = BS

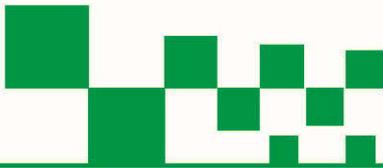
Supplement Code(Optional) 補充編碼

For special control purposes 為其他特殊目的

2.0MM=20	2.5MM=25
3.0MM=30	3.5MM=35
4.0MM=40	5.0MM=50
12MM =12	18 MM=18
20MM =2A	



Series		Applications	Rated Voltage(V)	Capacitance Range(uF)	Temperature Range(°C)	Load Life(hrs)
For Mini Power	KS	Miniature series 7mm height	6.3~50	0.1~100	-25~+105	1000
			6.3~100	0.47~10000	-40~+105	2,000
High reliability type (switch power)	KM	General Purpose	160~400	1~150	-40~+105	2,000
			450	1~100	-40~+105	2,000
			6.3~450	0.1~6800	-40~+105	2,000
	LM	Low Leakage Current	6.3~180	0.47~6800	-40~+105	2,000
	NP	Non-Polarized	6.3~250	1~18000	-40~+105	3,000~5,000
	HPL	High ripple current ,Long life	350~450	1~150	-25~+105	3,000~5,000
6.3~100			0.47~10000	-40~+105	3000~5,000	
Low Impedance type	LF	High frequency , Low ESR	160~400	1~150	-40~+105	3000~5,000
			450	1~100	-40~+105	3000~5,000
			6.3~100	10~10000	-40~+105	5000~8000
For LED driver	HGD	High ripple current , long life	160~250	1~150	-40~+105	5000~8000
			350~500	1~150	-25~+105	5000~8000
			6.3~100	0.1~10000	-40~+105	8000~12000
	HGN	High ripple current ,long life	160~400	1~150	-40~+105	8000~12000
			450	1~100	-25~+105	8000~12000
			160~400	1~47	-40~+105	12000~15000
	HGK	High temperature ,High ripple current ,Long life	450	1~22	-25~+105	12000~15000
			160~400	1~10	-40~+105	15000~20000
	HGC	High temperature ,High ripple current ,Long life	450	1~10	-25~+105	15000~20000
			400	2.2~15	-40~+105	5000~8000
	HSX	Surge voltage	450	2.2~15	-25~+105	5000~8000
			10~100	820~33000	-40~+85	2,000
Snap-in type	HLX	85°C standard product	160~450	100~2200	-25~+85	2,000
			10~250	820~33000	-40~+105	2,000
	HLZ	105°C standard product	350~450	100~2200	-25~+105	2,000
			10~100	330~39000	-40~+105	5000~8000
	HHZ	105°C long life	160~450	82~4700	-25~+105	5000~8000

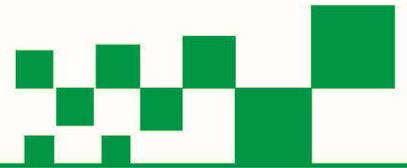


KS series

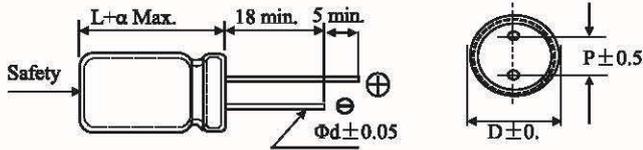
- 微型系列產品 7mm高度。
- 105°C負荷壽命達1000小時。
- 符合RoHS要求。
- Miniature series 7mm height.
- Load life 1000 hours at 105°C.
- RoHS Compliant.
- SPECIFICATIONS



項目Item	特性Performance Characteristics	
適用溫度範圍 Operating Temperature Range	-40to+105°C	-25to+105°C
工作電壓範圍 Rated Voltage Range	6.3to100VDC	160to450VDC
靜電容量誤差 Capacitance Range	0.1to4700 µF	0.47to220 µF
電容量允差 Capacitance Tolerance	±20% (100Hz or 120Hz, +20°C)	
洩漏電流 Leakage Current (+20°C, 最大max)	I ≤ 0.01CV或5 (µA) 額定工作電壓充電1分鐘後讀數, 取 I ≤ 0.01CV or 5 (µA) After 1 minutes, whichever is greater measured with rated working voltage applied	I ≤ 0.03CV+10 (µA) 額定工作電壓充電1分鐘後讀數, 取大者 I ≤ 0.03CV+10 (µA) After 1 minutes, whichever is greater measured with rated working voltage applied
散逸因素 (tan δ) Dissipation Factor (tg δ)	工作電壓 Working Voltage (VDC)	6.3 10 16 25 35 50 63 100 160 200 250 350 400 450
	D.F.(%)最大	22 20 18 14 14 12 12 10 14 14 14 15 15 17
容量>1000 µF時, 每增加1000 µF D.F值增加2%(100Hz or 120Hz, +20°C) For capacitance >1000 µF, Add 2% per another 1000 µF (100Hz or 120Hz, +20°C)		
低溫特性 Low Temperature Characteristics (120Hz)	阻抗比, 最大 Impedance ratio, max	
	工作電壓 Working Voltage (VDC)	6.3 10 16 25 35 50 63 100 160 200 250 350 400 450
	Z - 25°C / Z+20 °C	4 3 2 2 2 2 2 2 2 2 3 5 6 15
Z - 40°C / Z+20 °C	8 6 4 3 3 3 3 3 - - - - -	
容量>1000 µF時, 每增加1000 µF, Z - 25°C / Z+20 °C值增加0.5%, Z - 40°C / Z+20 °C值增加1% For capacitance >1000 µF, and 0.5% per another 1000 µF for Z-25°C/Z+20°C, add 1% per another 1000 µF for Z-40°C/Z+20°C		
負荷壽命 Load Life	試驗條件	Test conditions
	持續時間: 8000~12000小時	Duration time: 1000hours
	環境溫度: +105°C	Ambient temperature: +105°C
	施加電壓: 額定工作電壓 (VDC)	Applied voltage: Rated Working Voltage (VDC)
	施加額定紋波電流	Applied voltage: Rated Working Voltage (mA)
	試驗後要求: 室溫下恢復16小時, +20°C測試	After test requirements: Resume 16 hours at normal temperature
	電容量變化: ≤20%規定值	Capacitance change: ≤20% of the initial measured value
	損耗角正切值: ≤200%初始值	Dissipation Factor: ≤200% of the initial specified value
放置壽命 Shelf Life	試驗條件	Test conditions
	持續時間: 500小時	Duration time: 500hours
	環境溫度: +105°C	Ambient temperature: +105°C
	施加電壓: 無	Applied voltage: None
	試驗後要求: 室溫下恢復16小時, +20°C測試	After test requirements: Resume 16 hours at normal temperature
	電容量變化: ≤20%規定值	Capacitance change: ≤20% of the initial measured value
	損耗角正切值: ≤200%初始值	Dissipation Factor: ≤200% of the initial specified value
	試驗條件漏電流: ≤200%規定值	Leakage Current: ≤200% of the initial specified value

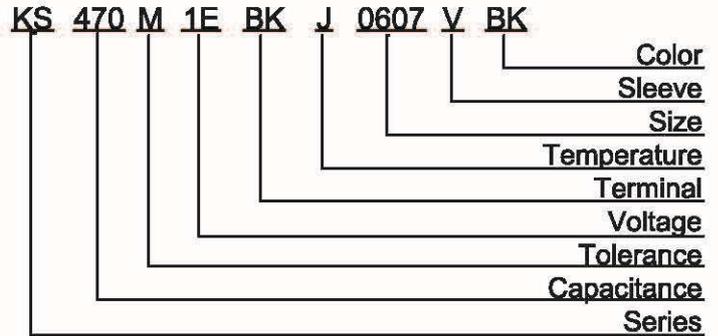


●DIMENSIONS(mm)



Dφ	4	5	6.3	8
F	1.65	2	2.5	3.5
dφ	0.5			

●PART NUMBER SYSTEM



●試驗條件紋波電流頻率調整系數

Multiplier for ripple current vs. frequency

容量 (μF) / Hz		60(50)	120	400	1K	10K	50K~100K
系數	≤10	0.8	1	1.30	1.30	1.65	1.70
	10~100	0.8	1	1.23	1.23	1.48	1.53
	100~1000	0.8	1	1.16	1.16	1.35	1.38
	>1000	0.8	1	1.11	1.11	1.25	1.28

●紋波電流溫度調整系數

Multiplier for ripple current vs. temperature

溫度°C	45	60	70	85	105
系數	2.10	1.90	1.40	1.25	1.00

●標準額定值 STANDARD RATINGS

WV (vdc)	Cap (uF)	Case size φD X L(mm)	tanδ	Ripple current (mA rms/105°C · 120HZ)
6.3V (0J)	22	4x7	0.22	34
	33	5x7	0.22	42
	47	5x7	0.22	50
	100	6.3x7	0.22	77
10V (1A)	22	4x7	0.20	38
	33	5x7	0.20	47
	47	5x7	0.20	65
	100	6.3x7	0.20	87
	220	6.3x7	0.20	135
	330	8x7	0.20	175
16V (1C)	470	8x7	0.20	245
	10	4x7	0.18	29
	22	4x7	0.18	44
	33	5x7	0.18	50
	47	5x7	0.18	60
	100	6.3x7	0.18	105
	220	8x7	0.18	125
	330	8x7	0.18	170
470	8x9	0.18	215	

WV (vdc)	Cap (uF)	Case size φD X L(mm)	tanδ	Ripple current (mA rms/105°C · 120HZ)
25V (1E)	10	5x7	0.14	33
	22	5x7	0.14	51
	33	6.3x7	0.14	65
	47	6.3x7	0.14	80
	100	8x7	0.14	105
35V (1V)	10	5x7	0.14	36
	22	6.3x7	0.14	60
	47	6.3x7	0.14	75
	100	8x7	0.14	110
50V (1H)	0.1	4x7	0.12	1.0
	0.22	4x7	0.12	2.3
	0.33	4x7	0.12	3.5
	0.47	4x7	0.12	5
	1.0	4x7	0.12	10
	2.2	4x7	0.12	19
	3.3	4x7	0.12	24
	4.7	5x7	0.12	29
	10	5x7	0.12	44
	22	6.3x7	0.12	60

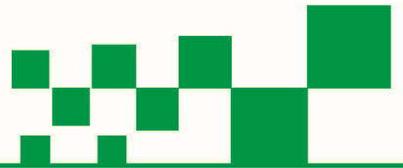
KM series

- 適用於通訊設備、開關電源等電路中。
- 105°C負荷壽命達2000小時。
- 符合RoHS要求。
- Used in communication equipments,switching power supply,etc.
- Load life 2000 hours at 105°C
- RoHS Compliant。



●SPECIFICATIONS

項目Item	特性Performance Characteristics																																																										
適用溫度範圍 Operating Temperature Range	-40to+105°C	-25to+105°C																																																									
工作電壓範圍 Rated Voltage Range	6.3to100VDC	160to450VDC																																																									
靜電容量誤差 Capacitance Range	0.1to4700 μF	0.47to220 μF																																																									
電容量允差 Capacitance Tolerance	±20% (100Hz or 120Hz, +20°C)																																																										
洩漏電流 Leakage Current (+20°C, 最大max)	I≤0.01CV或5(μA) 額定工作電壓充電1分鐘後讀數, 取大者 I≤0.01CV or 5(μA) After 1 minutes, whichever is greater measured with rated working voltage applied																																																										
散逸因素 (tan δ) Dissipation Factor (tg δ)	<table border="1"> <thead> <tr> <th>工作電壓Working Voltabe (VDC)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> <th>160</th> <th>200</th> <th>250</th> <th>350</th> <th>400</th> <th>450</th> </tr> </thead> <tbody> <tr> <td>D.F.(%)最大</td> <td>22</td> <td>20</td> <td>18</td> <td>14</td> <td>14</td> <td>12</td> <td>12</td> <td>10</td> <td>14</td> <td>14</td> <td>14</td> <td>15</td> <td>15</td> <td>17</td> </tr> </tbody> </table>														工作電壓Working Voltabe (VDC)	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	D.F.(%)最大	22	20	18	14	14	12	12	10	14	14	14	15	15	17															
	工作電壓Working Voltabe (VDC)	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450																																												
D.F.(%)最大	22	20	18	14	14	12	12	10	14	14	14	15	15	17																																													
容量>1000 μF時, 每增加1000 μF D.F.值增加2%(100Hz or 120Hz, +20°C) For capacitance 1000 μF, Add 2% per another 1000 μF (100Hz or 120Hz, +20°C)																																																											
低溫特性 Low Temperature Characteristics (120Hz)	阻抗比, 最大 Impedance ratio ,max																																																										
	<table border="1"> <thead> <tr> <th>工作電壓 Working Voltage(VDC)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> <th>160</th> <th>200</th> <th>250</th> <th>350</th> <th>400</th> <th>450</th> </tr> </thead> <tbody> <tr> <td>Z - 25°C / Z+20 °C</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>3</td> <td>5</td> <td>6</td> <td>15</td> </tr> <tr> <td>Z - 40°C / Z+20 °C</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table>														工作電壓 Working Voltage(VDC)	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	Z - 25°C / Z+20 °C	4	3	2	2	2	2	2	2	2	2	3	5	6	15	Z - 40°C / Z+20 °C	8	6	4	3	3	3	3	3	-	-	-	-	-	-
	工作電壓 Working Voltage(VDC)	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450																																												
Z - 25°C / Z+20 °C	4	3	2	2	2	2	2	2	2	2	3	5	6	15																																													
Z - 40°C / Z+20 °C	8	6	4	3	3	3	3	3	-	-	-	-	-	-																																													
容量>1000 μF時, 每增加1000 μF, Z - 25°C / Z+20 °C 值增加0.5%, Z - 40°C / Z+20 °C 值增加1% For capacitance>1000 μF, and 0.5% per another 1000 μF for Z-25°C/Z+20°C, add 1% per another 1000 μF for Z-40°C/Z+20°C																																																											
負荷壽命Load Life	試驗條件							Test conditions																																																			
	持續時間:8000~12000小時							Duration time: 2000hours																																																			
	環境溫度:+105°C							Ambient temperature: +105°C																																																			
	施加電壓:額定工作電壓(VDC)							Applied voltage: Rated Working Voltage(DVC)																																																			
	施加額定紋波電流							Applied voltage: Rated Working Voltage(mA)																																																			
	試驗後要求:室溫下恢復16小時,+20°C測試							After test requirements: Resumde 16 hours at normal temperature																																																			
	電容量變化:≤20%規定值							Capacitance change:≤20% of the initial measured value																																																			
	損耗角正切值:≤200%初始值							Dissipation Factor:≤200% of the initial specified value																																																			
放置壽命Shelf Life	試驗條件							Test conditions																																																			
	持續時間: 500小時							Duration time: 500hours																																																			
	環境溫度:+105°C							Ambient temperature:+105°C																																																			
	施加電壓:無							Applied voltage: None																																																			
	試驗後要求:室溫下恢復16小時,+20°C測試							After test requirements: Resumed 16 hours at normal temperature																																																			
	電容量變化:≤20%規定值							Capacitance change:≤20% of the initial measured value																																																			
	損耗角正切值:≤200%初始值							Dissipation Factor:≤200% of the initial specified value																																																			
	試驗條件漏電流:≤200%規定值							Leakage Current:≤200% of the initial specified value																																																			



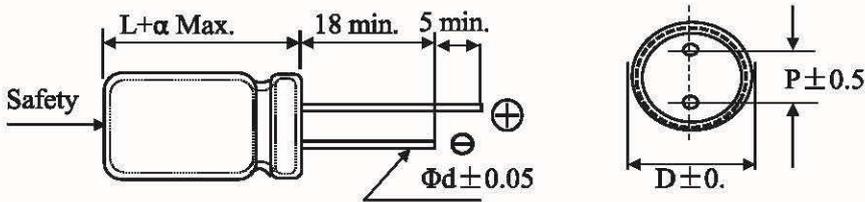
●試驗條件紋波電流頻率調整系數
Multiplier for ripple current vs frequency

容量 (μF) / Hz	60(50)	120	400	1K	10K	50K~100K
≤10	0.8	1	1.30	1.30	1.65	1.70
10~100	0.8	1	1.23	1.23	1.48	1.53
100~1000	0.8	1	1.16	1.16	1.35	1.38
>1000	0.8	1	1.11	1.11	1.25	1.28

●紋波電流溫度調整系數
Multiplier for ripple current vs temperature

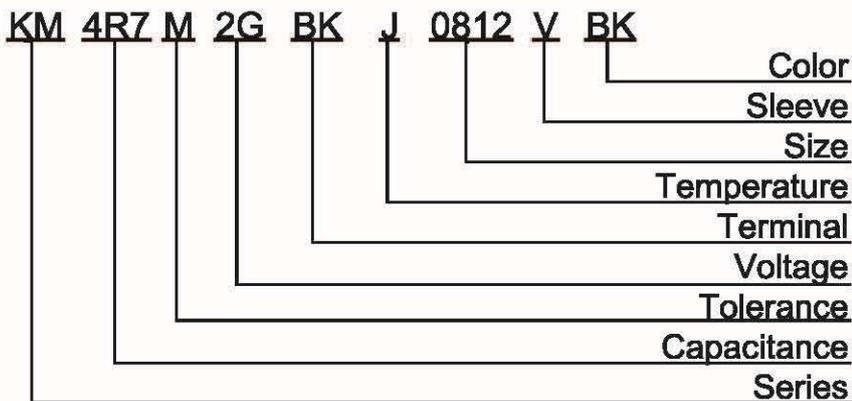
溫度°C	45	60	70	85	105
系數	2.10	1.90	1.40	1.25	1.00

●DIMENSIONS(mm)



DΦ	5	6.3	8	10	13	16	18	22
F	2	2.5	3.5	5.0	5.0	7.5	7.5	10
dΦ	0.5		0.6			0.8		

●PART NUMBER SYSTEM

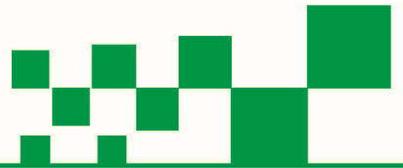




●標準額定値 STANDARD RATINGS

WV (vdc)	Cap (uF)	Case size φD X L(mm)	tanδ	Ripple current (mAmps/105°C · 120HZ)
6.3V (0J)	100	5×11	0.24	94
	220	5×11	0.24	140
	330	5×11	0.24	190
	470	6.3×12	0.24	230
	680	6.3×12	0.24	320
	1000	8×12	0.24	380
	2200	10×17	0.26	710
	3300	10×20	0.28	840
	4700	13×21	0.30	1090
	6800	13×25	0.34	1350
10V (1A)	47	5×11	0.20	68
	100	5×11	0.20	100
	220	6.3×12	0.20	170
	330	6.3×12	0.20	200
	470	6.3×12	0.20	250
	680	8×12	0.20	360
	1000	8×12	0.20	460
	2200	10×20	0.22	760
	3300	13×21	0.24	1000
	4700	13×25	0.26	1260
	6800	16×25	0.30	1570
	10000	16×35	0.38	1890
16V (1C)	10	5×11	0.18	34
	47	5×11	0.18	75
	100	5×11	0.18	110
	220	6.3×12	0.18	180
	330	6.3×12	0.18	260
	470	8×12	0.18	310
	680	10×13	0.18	420
	1000	10×17	0.18	560
	1500	10×20	0.18	720
	2200	13×21	0.20	920
	3300	13×25	0.22	1170
	4700	16×25	0.24	1480
	6800	16×30	0.28	1780
25V (1E)	10	5×11	0.14	36
	22	5×11	0.14	54
	33	5×11	0.14	67
	47	5×11	0.14	80
	100	6.3×12	0.14	130
	220	8×12	0.14	230

WV (vdc)	Cap (uF)	Case size φD X L(mm)	tanδ	Ripple current (mAmps/105°C · 120HZ)
25V (1E)	330	8×12	0.14	310
	470	10×13	0.14	380
	680	10×17	0.14	520
	1000	10×20	0.14	680
	2200	13×21	0.16	1090
	3300	16×25	0.18	1400
	4700	16×30	0.20	1710
	6800	18×35	0.24	2040
	35V (1V)	10	5×11	0.12
22		5×11	0.12	61
33		5×11	0.12	75
47		6.3×12	0.12	90
100		8×12	0.12	150
220		10×13	0.12	270
330		10×13	0.12	350
470		10×17	0.12	460
680		10×20	0.12	635
1000		13×21	0.12	810
2200		13×25	0.14	1260
3300		16×30	0.16	1610
4700		16×35	0.18	1910
50V (1H)	0.10	5×11	0.10	1.3
	0.22	5×11	0.10	2.9
	0.33	5×11	0.10	4.3
	0.47	5×11	0.10	6.2
	1.0	5×11	0.10	13
	2.2	5×11	0.10	20
	3.3	5×11	0.10	25
	4.7	5×11	0.10	30
	10	5×11	0.10	40
	22	5×11	0.10	65
	33	6.3×12	0.10	90
	47	6.3×12	0.10	110
	100	8×12	0.10	180
	220	10×12	0.10	330
	330	10×17	0.10	410
	470	10×20	0.10	530
	1000	13×25	0.10	950
	2200	16×35	0.12	1470
	3300	18×35	0.14	1770
4700	22×50	0.16	2100	



●標準額定値 STANDARD RATINGS

WV (vdc)	Cap (uF)	Case size φD X L(mm)	tanδ	Ripple current (mAmps/105°C · 120HZ)
63V (1J)	10	5×11	0.10	46
	22	6.3×12	0.10	71
	33	6.3×12	0.10	100
	47	8×12	0.10	120
	100	10×13	0.10	215
	220	10×17	0.10	335
	330	10×20	0.10	510
	470	13×21	0.10	640
	1000	16×25	0.10	930
	2200	18×35	0.12	1250
100V (1K)	0.10	5×11	0.10	1.5
	0.22	5×11	0.10	3.4
	0.33	5×11	0.10	5.0
	0.47	5×11	0.10	7.1
	1.0	5×11	0.10	15
	2.2	5×11	0.10	21
	3.3	5×11	0.10	29
	4.7	5×11	0.10	62
	10	6.3×12	0.10	54
	22	8×12	0.10	93
	33	8×12	0.10	130
	47	10×13	0.10	165
	100	10×20	0.10	265
	220	13×25	0.10	440
330	16×25	0.10	540	
470	16×30	0.10	715	
1000	18×40	0.10	985	
160V (2C)	2.2	6.3×12	0.14	26
	3.3	6.3×12	0.14	32
	4.7	6.3×12	0.14	38
	10	8×12	0.14	65
	22	10×17	0.14	108
	33	10×20	0.14	165
	47	13×21	0.14	205
	68	13×25	0.14	265
	100	13×25	0.14	318
	220	16×30	0.14	568
	330	18×35	0.14	710
470	18×40	0.14	870	
250V (2E)	1.0	6.3×12	0.14	16
	2.2	6.3×12	0.14	22

WV (vdc)	Cap (uF)	Case size φD X L(mm)	tanδ	Ripple current (mAmps/105°C · 120HZ)
250V (2E)	3.3	8×12	0.14	34
	4.7	8×12	0.14	48
	10	10×17	0.14	84
	22	10×20	0.14	128
	33	13×21	0.14	185
	47	13×25	0.14	245
	100	16×30	0.14	400
	220	18×35	0.14	660
	330	18×40	0.14	730
	400V (2G)	1.0	8×12	0.15
2.2		8×12	0.15	30
3.3		8×12	0.15	35
4.7		8×14	0.15	52
5.6		10×14	0.15	70
6.8		10×14	0.15	82
10		10×17	0.15	98
15		13×18	0.15	150
22		13×21	0.15	192
33		16×20	0.15	258
47		16×25	0.15	305
68		16×30	0.15	465
82		18×25	0.15	474
100		18×30	0.15	532
120	18×35	0.15	588	
150	18×40	0.15	668	
450V (2W)	1.0	8×12	0.17	18
	2.2	8×12	0.17	25
	3.3	8×14	0.17	36
	4.7	10×14	0.17	55
	5.6	10×17	0.17	70
	6.8	10×20	0.17	80
	10	10×20	0.17	90
	15	13×21	0.17	125
	22	13×25	0.17	168
	33	16×25	0.17	215
	47	16×30	0.17	344
	68	18×30	0.17	455
	82	18×30	0.17	472
	100	18×35	0.17	530
120	18×40	0.17	582	
150	22×40	0.17	700	

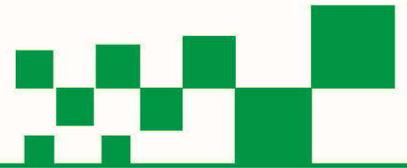
LM series

- 低漏電，高可靠性品。
- 105°C負荷壽命達2000小時。
- 符合RoHS要求。
- Low leakage , high reliability .
- Load life 2000 hours at 105°C .
- RoHS Compliant .



● SPECIFICATIONS

項目Item	特性Performance Characteristics	
適用溫度範圍 Operating Temperature Range	-40to+105°C	-25to+105°C
工作電壓範圍 Rated Voltage Range	6.3to100VDC	160to450VDC
靜電容量誤差 Capacitance Range	0.1to4700 µF	0.47to220 µF
電容量允差 Capacitance Tolerance	±20% (100Hz or 120Hz , +20°C)	
洩漏電流 Leakage Current (+20°C , 最大max)	$I \leq 0.01CV$ 或 $2(\mu A)$ 額定工作電壓充電1分鐘後讀數，取大者 $I \leq 0.01CV$ or $2(\mu A)$ After 1 minutes, whichever is greater measured with rated working voltage applied	
散逸因素 (tan δ) Dissipation Factor (tg δ)	工作電壓 Working Voltage (VDC)	6.3 10 16 25 35 50 63 100 160 200 250 350 400 450
	D.F.(%)最大	22 20 18 14 14 12 12 10 14 14 14 15 15 17
容量>1000 µF時，每增加1000 µF D.F.值增加2%(100Hz or 120Hz , +20°C) For capacitance 1000 µF, Add 2% per another 1000 µF (100Hz or 120Hz , +20°C)		
低溫特性 Low Temperature Characteristics (120Hz)	阻抗比，最大 Impedance ratio ,max	
	工作電壓 Working Voltage (VDC)	6.3 10 16 25 35 50 63 100 160 200 250 350 400 450
	Z - 25°C / Z+20 °C	4 3 2 2 2 2 2 2 2 2 3 5 6 15
容量>1000 µF時，每增加1000 µF，Z - 25°C / Z+20 °C 值增加0.5%，Z - 40°C / Z+20 °C 值增加1% For capacitance>1000 µF , and 0.5% per another 1000 µF for Z-25°C/Z+20°C , add 1% per another 1000 µF for Z-40°C/Z+20°C		
負荷壽命 Load Life	試驗條件	Test conditions
	持續時間:8000~12000小時	Duration time: 2000hours
	環境溫度:+105°C	Ambient temperature: +105°C
	施加電壓:額定工作電壓(VDC)	Applied voltage: Rated Working Voltage(DVC)
	施加額定紋波電流	Applied voltage: Rated Working Voltage(mA)
	試驗後要求:室溫下恢復16小時,+20°C測試	After test requirements: Resumde 16 hours at normal temperature
	電容量變化:≤20%規定值	Capacitance change: ≤ 20% of the initial measured value
	損耗角正切值:≤200%初始值	Dissipation Factor: ≤200% of the initial specified value
放置壽命 Shelf Life	試驗條件	Test conditions
	持續時間: 500小時	Duration time: 500hours
	環境溫度:+105°C	Ambient temperature:+105°C
	施加電壓:無	Applied voltage: None
	試驗後要求:室溫下恢復16小時,+20°C測試	After test requirements: Resumed 16 hours at normal temperature
	電容量變化:≤20%規定值	Capacitance change: ≤ 20% of the initial measured value
	損耗角正切值:≤200%初始值	Dissipation Factor: ≤ 200% of the initial specified value
	試驗條件漏電流:≤200%規定值	Leakage Current: ≤200% of the initial specified value



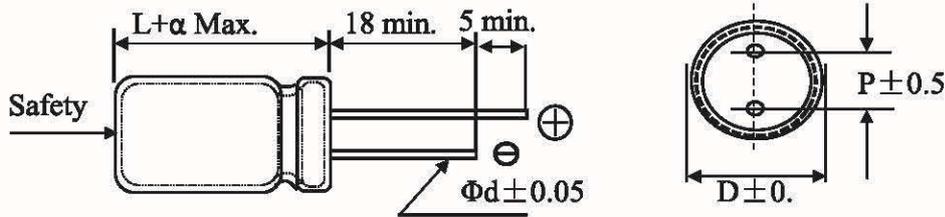
●試驗條件紋波電流頻率調整系數
Multiplier for ripple current vs frequency

容量 (μF) / Hz	60(50)	120	400	1K	10K	50K~100 K
≤10	0.8	1	1.30	1.30	1.65	1.70
10~100	0.8	1	1.23	1.23	1.48	1.53
100~1000	0.8	1	1.16	1.16	1.35	1.38
>1000	0.8	1	1.11	1.11	1.25	1.28

●紋波電流溫度調整系數
Multiplier for ripple current vs temperature

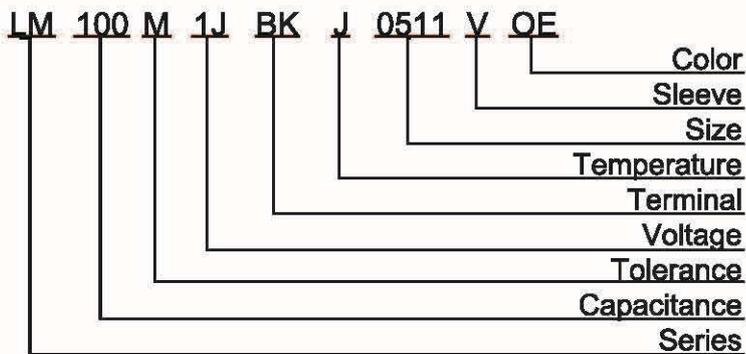
溫度°C	45	60	70	85	105
系數	2.10	1.90	1.40	1.25	1.00

●DIMENSIONS(mm)



DΦ	5	6.3	8	10	13	16	18	22
F	2	2.5	3.5	5.0	5.0	7.5	7.5	10
dΦ	0.5		0.6		0.8			

●PART NUMBER SYSTEM

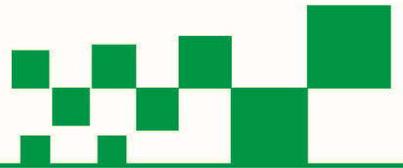




●標準額定値 STANDARD RATINGS

WV (vdc)	Cap (uF)	Case size φD X L(mm)	tanδ	Ripple current (mAmps/105°C · 120HZ)
6.3V (0J)	100	5×11	0.24	94
	220	5×11	0.24	140
	330	5×11	0.24	190
	470	6.3×12	0.24	230
	680	6.3×12	0.24	320
	1000	8×12	0.24	380
	2200	10×17	0.26	710
	3300	10×20	0.28	840
	4700	13×21	0.30	1090
	6800	13×25	0.34	1350
10V (1A)	47	5×11	0.20	68
	100	5×11	0.20	100
	220	6.3×12	0.20	170
	330	6.3×12	0.20	200
	470	6.3×12	0.20	250
	680	8×12	0.20	360
	1000	8×12	0.20	460
	2200	10×20	0.22	760
	3300	13×21	0.24	1000
	4700	13×25	0.26	1260
	6800	16×25	0.30	1570
10000	16×35	0.38	1890	
16V (1C)	10	5×11	0.18	34
	47	5×11	0.18	75
	100	5×11	0.18	110
	220	6.3×12	0.18	180
	330	6.3×12	0.18	260
	470	8×12	0.18	310
	680	10×13	0.18	420
	1000	10×17	0.18	560
	1500	10×20	0.18	720
	2200	13×21	0.20	920
	3300	13×25	0.22	1170
	4700	16×25	0.24	1480
6800	16×30	0.28	1780	
25V (1E)	10	5×11	0.14	36
	22	5×11	0.14	54
	33	5×11	0.14	67
	47	5×11	0.14	80
	100	6.3×12	0.14	130
	220	8×12	0.14	230

WV (vdc)	Cap (uF)	Case size φD X L(mm)	tanδ	Ripple current (mAmps/105°C · 120HZ)
25V (1E)	330	8×12	0.14	310
	470	10×13	0.14	380
	680	10×17	0.14	520
	1000	10×20	0.14	680
	2200	13×21	0.16	1090
	3300	16×25	0.18	1400
	4700	16×30	0.20	1710
	6800	18×35	0.24	2040
	35V (1V)	10	5×11	0.12
22		5×11	0.12	61
33		5×11	0.12	75
47		6.3×12	0.12	90
100		8×12	0.12	150
220		10×13	0.12	270
330		10×13	0.12	350
470		10×17	0.12	460
680		10×20	0.12	635
1000		13×21	0.12	810
2200		13×25	0.14	1260
3300		16×30	0.16	1610
4700		16×35	0.18	1910
50V (1H)	0.10	5×11	0.10	1.3
	0.22	5×11	0.10	2.9
	0.33	5×11	0.10	4.3
	0.47	5×11	0.10	6.2
	1.0	5×11	0.10	13
	2.2	5×11	0.10	20
	3.3	5×11	0.10	25
	4.7	5×11	0.10	30
	10	5×11	0.10	40
	22	5×11	0.10	65
	33	6.3×12	0.10	90
	47	6.3×12	0.10	110
	100	8×12	0.10	180
	220	10×12	0.10	330
	330	10×17	0.10	410
	470	10×20	0.10	530
	1000	13×25	0.10	950
	2200	16×35	0.12	1470
	3300	18×35	0.14	1770
4700	22×50	0.16	2100	



●標準額定値 STANDARD RATINGS

WV (vdc)	Cap (uF)	Case size φD X L(mm)	tanδ	Ripple current (mAmps/105°C · 120HZ)
63V (1J)	10	5×11	0.10	46
	22	6.3×12	0.10	71
	33	6.3×12	0.10	100
	47	8×12	0.10	120
	100	10×13	0.10	215
	220	10×17	0.10	335
	330	10×20	0.10	510
	470	13×21	0.10	640
	1000	16×25	0.10	930
	2200	18×35	0.12	1250
100V (2A)	0.10	5×11	0.10	1.5
	0.22	5×11	0.10	3.4
	0.33	5×11	0.10	5.0
	0.47	5×11	0.10	7.1
	1.0	5×11	0.10	15
	2.2	5×11	0.10	21
	3.3	5×11	0.10	29
	4.7	5×11	0.10	62
	10	6.3×12	0.10	54
	22	8×12	0.10	93
	33	8×12	0.10	130
	47	10×13	0.10	165
	100	10×20	0.10	265
	220	13×25	0.10	440
330	16×25	0.10	540	
470	16×30	0.10	715	
1000	18×40	0.10	985	
160V (2C)	2.2	6.3×12	0.14	26
	3.3	6.3×12	0.14	32
	4.7	6.3×12	0.14	38
	10	8×12	0.14	65
	22	10×17	0.14	108
	33	10×20	0.14	165
	47	13×21	0.14	205
	68	13×25	0.14	265
	100	13×25	0.14	318
	220	16×30	0.14	568
	330	18×35	0.14	710
470	18×40	0.14	870	
250V (2E)	1.0	6.3×12	0.14	16
	2.2	6.3×12	0.14	22

WV (vdc)	Cap (uF)	Case size φD X L(mm)	tanδ	Ripple current (mAmps/105°C · 120HZ)
250V (2E)	3.3	8×12	0.14	34
	4.7	8×12	0.14	48
	10	10×17	0.14	84
	22	10×20	0.14	128
	33	13×21	0.14	185
	47	13×25	0.14	245
	100	16×30	0.14	400
	220	18×35	0.14	660
	330	18×40	0.14	730
	400V (2G)	1.0	8×12	0.15
2.2		8×12	0.15	30
3.3		8×12	0.15	35
4.7		8×14	0.15	52
5.6		10×14	0.15	70
6.8		10×14	0.15	82
10		10×17	0.15	98
15		13×18	0.15	150
22		13×21	0.15	192
33		16×20	0.15	258
47		16×25	0.15	305
68		16×30	0.15	465
82		18×25	0.15	474
100		18×30	0.15	532
120		18×35	0.15	588
150	18×40	0.15	668	
450V (2W)	1.0	8×12	0.17	18
	2.2	8×12	0.17	25
	3.3	8×14	0.17	36
	4.7	10×14	0.17	55
	5.6	10×17	0.17	70
	6.8	10×20	0.17	80
	10	10×20	0.17	90
	15	13×21	0.17	125
	22	13×25	0.17	168
	33	16×25	0.17	215
	47	16×30	0.17	344
	68	18×30	0.17	455
	82	18×30	0.17	472
	100	18×35	0.17	530
	120	18×40	0.17	582
150	22×40	0.17	700	

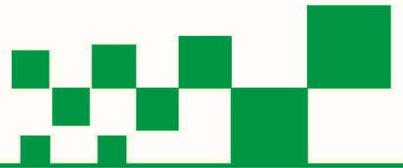
NP series

- 普通無極性，適用於直流雙向回路。
- 105°C負荷壽命達2000小時。
- 符合RoHS要求。
- Ordinary polarity free, suitable for DC bidirectional loop。
- Load life 2000 hours at 105°C。
- RoHS Compliant。



SPECIFICATIONS

項目Item	特性Performance Characteristics														
適用溫度範圍 Operating Temperature Range	-25to+105°C														
工作電壓範圍 Rated Voltage Range	6.3to100VDC														
靜電容量誤差 Capacitance Range	0.1to470 μF														
電容量允差 Capacitance Tolerance	±20% (100Hz or 120Hz, +20°C)														
洩漏電流 Leakage Current (+20°C, 最大max)	I≤0.02CV或5(μA) 額定工作電壓充電1分鐘後讀數，取大者 I≤0.02CV or5(μA)After1minutes,whichever is greater measured with rated working voltage applied														
散逸因素 (tan δ) Dissipation Factor (tg δ)	工作電壓Working Voltage (VDC)	10	16	25	35	50	63	100	160	250					
	D.F.(%)最大	24	22	20	18	16	15	14	16	16					
容量>1000 μF時，每增加1000 μF D.F值增加2%(100Hz or 120Hz, +20°C) For capacitance>1000 μF, Add 2% per another 1000 μF (100Hz or 120Hz, +20°C)															
低溫特性 Low Temperature Characteristics (120Hz)	阻抗比, 最大Impedance ratio ,max														
	工作電壓 Working Voltage(VDC)	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
	Z - 25°C / Z+20 °C	4	3	2	2	2	2	2	2	2	2	3	5	6	15
	Z - 40°C / Z+20 °C	8	6	4	3	3	3	3	3	-	-	-	-	-	-
容量>1000 μF時，每增加1000 μF，Z - 25°C / Z+20 °C值增加0.5%，Z - 40°C / Z+20 °C值增加1% For capacitance>1000 μF, and 0.5% per another 1000 μF for Z-25°C/Z+20°C, add 1% per another 1000 μF for Z-40°C/Z+20°C															
負荷壽命Load Life	試驗條件 Test conditions														
	持續時間:8000~12000小時 Duration time: 2000hours														
	環境溫度:+105°C Ambient temperature: +105°C														
	施加電壓:額定工作電壓(VDC) Applied voltage: Rated Working Voltage(DVC)														
	施加額定紋波電流 Applied voltage: Rated Working Voltage(mA)														
	試驗後要求:室溫下恢復16小時,+20°C測試 After test requirements: Resumed 16 hours at normal temperature														
	電容量變化:≤20%規定值 Capacitance change: ≤ 20% of the initial measured value														
	損耗角正切值:≤200%初始值 Dissipation Factor:≤200% of the initial specified value														
放置壽命Shelf Life	試驗條件 Test conditions														
	持續時間: 500小時 Duration time: 500hours														
	環境溫度:+105°C Ambient temperature:+105°C														
	施加電壓:無 Applied voltage: None														
	試驗後要求:室溫下恢復16小時,+20°C測試 After test requirements: Resumed 16 hours at normal temperature														
	電容量變化:≤20%規定值 Capacitance change: ≤ 20% of the initial measured value														
	損耗角正切值:≤200%初始值 Dissipation Factor:≤200% of the initial specified value														
試驗條件漏電流:≤200%規定值 Leakage Current:≤200% of the initial specified value															



●試驗條件紋波電流頻率調整系數

Multiplier for ripple current vs.frequency

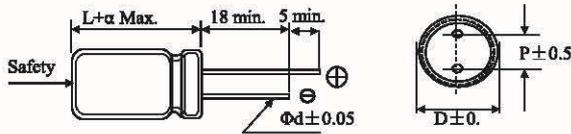
容量 (μF) / Hz	60(50)	120	1K	≥10K
系數	<100	0.8	1.0	1.30
	≥100	0.8	1.0	1.15

●紋波電流溫度調整系數

Multiplier for ripple current vs.temperature

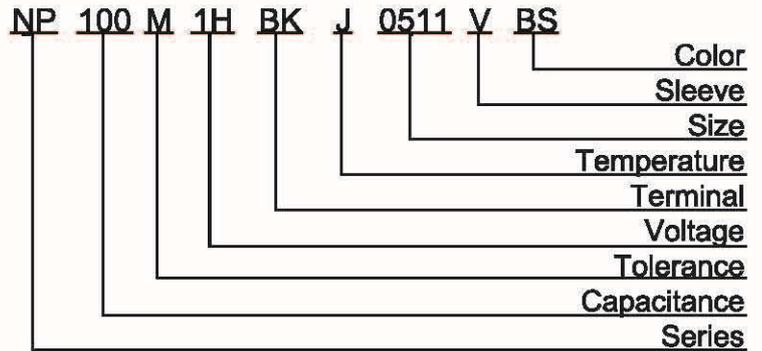
溫度°C	45	60	70	85	105
系數	2.10	1.90	1.40	1.20	1.00

●DIMENSIONS(mm)



Dφ	5	6.3	8	10	13	16	18	22
F	2	2.5	3.5	5.0	5.0	7.5	7.5	10
dφ	0.5		0.6		0.8			

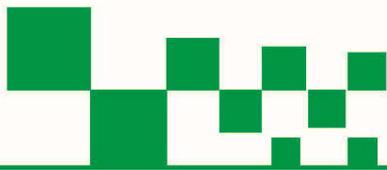
●PART NUMBER SYSTEM



●無極性特性通用標準額定值 Generic standard ratings for nonpolar properties

WV (vdc)	Cap (μF)	Case size φD X L(mm)	tanδ	Ripple current (mArms)
10V (1A)	33	5×11	0.24	64
	47	5×11	0.24	76
	100	6.3×12	0.24	125
	220	8×12	0.24	215
	330	10×13	0.24	354
	470	10×13	0.24	410
	1000	10×20	0.24	720
16V (1C)	47	6.3×12	0.22	95
	100	8×12	0.22	160
	220	10×13	0.22	275
	330	10×17	0.22	375
	470	10×17	0.22	485
	1000	13×21	0.22	855
25V (1E)	10	5×11	0.20	34
	22	6.3×12	0.20	65
	47	6.3×12	0.20	95
	100	8×12	0.20	160
	220	10×13	0.20	305
	330	10×17	0.20	450
	470	13×21	0.20	540
35V (1V)	33	8×12	0.18	100
	47	8×12	0.18	120
	100	10×13	0.18	230
	220	10×20	0.18	410

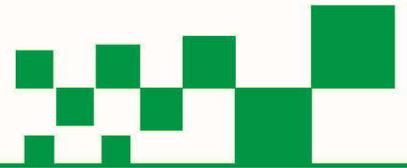
WV (vdc)	Cap (μF)	Case size φD X L(mm)	tanδ	Ripple current (mArms)
35V (1V)	330	13×26	0.18	505
	470	13×26	0.18	655
50V (1H)	0.47	5×11	0.16	11
	1	5×11	0.16	17
	2.2	5×11	0.16	25
	3.3	5×11	0.16	27
	4.7	6.3×12	0.16	34
	6.8	6.3×12	0.16	35
	10	6.3×12	0.16	52
	22	8×12	0.16	89
	33	8×12	0.16	105
	47	10×13	0.16	150
	100	10×20	0.16	265
63V (1J)	220	13×26	0.16	480
	330	16×30	0.16	650
	1	5×11	0.15	18
	2.2	5×11	0.15	26
	3.3	6.3×12	0.15	28
	4.7	6.3×12	0.15	34
	6.8	8×12	0.15	38
	10	8×12	0.15	57
	22	8×12	0.15	95
	33	10×13	0.15	135
	47	10×20	0.15	180



●無極性特性通用標準額定値 Generic standard ratings for nonpolar properties

WV (vdc)	Cap (μ F)	Case size ϕ D X L(mm)	tan δ	Ripple current (mArms/105°C , 120HZ)
63V (1J)	100	13×21	0.15	320
	220	16×26	0.15	575
	330	18×36	0.15	710
100V (1K)	1	6.3×12	0.14	21
	2.2	10×17	0.14	34
	3.3	10×17	0.14	39
	4.7	10×17	0.14	47
	6.8	10×20	0.14	48
	10	10×20	0.14	71
	22	13×21	0.14	135
	33	13×21	0.14	220
	47	13×25	0.14	240
	100	16×26	0.14	425
160V (2C)	1	8×12	0.16	28
	2.2	10×17	0.16	42

WV (vdc)	Cap (μ F)	Case size ϕ D X L(mm)	tan δ	Ripple current (mArms/105°C , 120HZ)
160V (2C)	3.3	10×20	0.16	43
	4.7	10×20	0.16	52
	6.8	13×21	0.16	60
	10	13×21	0.16	89
	22	13×25	0.16	150
	33	16×25	0.16	230
250V (2E)	47	16×30	0.16	265
	1	10×13	0.16	34
	2.2	10×17	0.16	50
	3.3	10×20	0.16	57
	4.7	13×21	0.16	89
	6.8	13×21	0.16	92
	10	13×25	0.16	135
	22	16×25	0.16	220
	33	18×30	0.16	320



HPL series

- Load life:105°C 3,000~5,000 hours.standard product
- Rohs Compliance.
- 105°C 壽命3,000~5,000小時長壽命品。



● SPECIFICATIONS

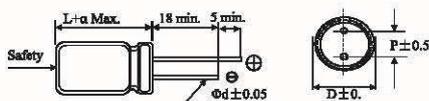
Items 項目	Characteristics 特性										
Capacitance Tolerance 靜電容量誤差	±20%(120Hz, 20°C)										
Operating Temperature Range 適用溫度範圍	-40~ +105°C						-25~ +105°C				
Rated Voltage Range 工作電壓範圍	6.3~100V _{DC}				160~250V _{DC}			350~450V _{DC}			
Leakage Current 洩漏電流	I ≤ 0.01 CV or 3 (uA) (After 2 minutes application of DC working voltage, at 20°C)						I ≤ 0.03 CV + 20 (uA) (After 3 minutes application of DC working voltage, at 20°C)				
Dissipation Factor 散逸因素 (tan δ)	Measurement Frequency:120HZ.Temperature :20°C										
	Rated Voltage (V)	6.3	10	16	25	35	50	63	100	160-250	350-450
	tan δ (MAX)	0.24	0.20	0.16	0.15	0.12	0.10	0.09	0.08	0.20	0.25
When nominal capacitance exceeds 1000uF, add 0.02 to the value above for each 1000uF increase. (20°C、120Hz)											
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率 (最大值)	Measurement Frequency:120HZ.										
	Rated Voltage (V _{DC})	6.3	10	16	25	35	50~100	160~250	350~400	450	
	Z(-25°C)/Z(+20°C)	5	4	3	2	2	2	3	6	15	
	Z(-40°C)/Z(+20°C)	10	8	6	4	3	3	4	-	-	
Load Life 耐久性	After application of the rated voltage at 105°C 3,000~5,000 hours ,the capacitors shall meet the requirement below										
	Capacitance Change	≤ ± 20% of the Initial Value						ΦD	≤ 100	160~250	350~500
	tan δ	≤ 200% of the Initial Specified Value						Φ=5,6,3	3000	4000	4000
	Leakage Current	≤ The Initial Specified Value						Φ=8,10	4000	5000	5000
								Φ ≥ 13	5000	5000	5000
Shelf Life 放置壽命	1000hours, no voltage applied, at 105°C。 After Test: U _R to be applied for 30 minutes, 24 to 48 hours before measurement.										
	Capacitance Change	≤ ± 20% of the Initial Value									
	tan δ	≤ 200% of the Initial Specified Value									
	Leakage Current	≤ 200% The Initial Specified Value									
● Frequency Coefficient for Permissible Ripple Current											
Rated Voltage (V)	Capacitance (uF)	Frequency (Hz)									
		50	120	1K	≤ 20K						
≤ 100	<100	0.75	1.00	1.57	2.00						
	100~470	0.80	1.00	1.34	1.50						
	>470	0.85	1.00	1.10	1.15						
≥ 160	0.47~1000	0.85	1.00	1.40	1.50						

Aluminum Electrolytic Capacitors



HPL series

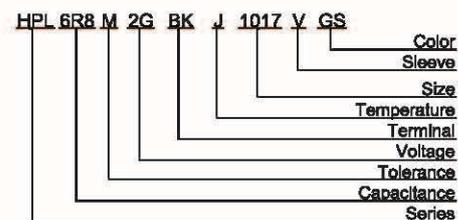
● DIMENSIONS (mm)



α	ℓ < 161.0
	ℓ ≥ 162.0

ΦD	5	6.3	8	10	13	16	18	20	22
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	7.5	10
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8	0.8	0.8

● PART NUMBER SYSTEM

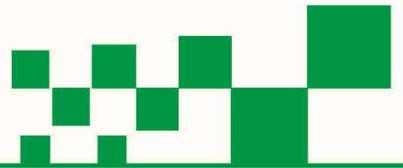


● STANDARD RATINGS

D×L(mm); R.C.: (mA rms) at 105°C, 120Hz;

Cap (μF)	WV(V) (code)	6.3 (0J)		10 (1A)		16 (1C)		25 (1E)		35 (1V)		50 (1H)		63 (1J)	
		D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.
0.1~0.47												5X11	12		
1												5X11	16		
2.2												5X11	25		
3.3												5X11	35		
4.7								5X11	32	5X11	33	5X11	38		
6.8								5X11	37	5X11	39	5X11	50	5X11	52
10						5X11	44	5X11	45	5X11	49	5X11	56	5X11	68
22	5X11	58		5X11	61	5X11	65	5X11	67	5X11	78	5X11	89	6.3X12	112
33	5X11	68		5X11	79	5X11	81	5X11	85	5X11	93	6.3X12	130	8X12	145
47	5X11	80		5X11	89	5X11	97	5X11	100	6.3X12	133	6.3X12	152	8X12	174
56	5X11	92		5X11	103	5X11	107	5X11	121	6.3X12	136	6.3X12	171	8X12	187
68	5X11	105		5X11	121	5X11	150	5X11	158	6.3X12	173	6.3X12	208	8X12	234
100	5X11	113		5X11	145	6.3X12	157	6.3X12	179	8X12	197	8X12	270	10X13	292
220	5X11	176	6.3X12	223	8X12	248	8X12	318	10X13	347	10X17	583	10X20	693	
330	6.3X12	240	6.3X12	275	8X12	361	10X13	391	10X17	490	10X20	737	13X21	770	
470	6.3X12	292	8X12	339	8X14	427	10X17	545	10X20	627	13X21	902	13X25	1012	
560	8X12	350	8X12	443	8X14	475	10X17	594	10X20	644	13X21	963	13X25	1177	
680	8X12	413	8X12	538	8X16	548	10X20	704	13X21	770	13X25	1040	16X26	1337	
1000	8X14	502	10X13	645	10X17	768	10X20	919	13X21	1194	13X25	1485	16X31	1848	
1500	10X17	669	10X20	798	10X20	993	13X21	1155	13X25	1370	16X31	1810	18X32	1975	
2200	10X20	912	10X20	988	13X21	1231	13X25	1447	16X26	1678	16X36	2200	18X35	2288	
3300	10X20	1154	13X21	1395	13X25	1580	16X26	1847	16X36	2145	18X35	2541	22X40	2695	
4700	13X21	1447	13X25	1671	16X28	1958	18X31	2310	18X35	2640	22X40	2915	22X50	3089	
6800	13X25	1795	16X26	2056	16X36	2374	18X35	2767	22X40	2761	22X50	3080			
10000	16X26	2112	18X36	2265	18X35	2903	22X40	2860	22X50	3210					
15000	16X36	2829	18X35	2820	22X40	2991	22X50	3350							
22000	18X40	2805	22X40	3620	22X50	3650									

Cap (μF)	WV(V) (code)	100 (2A)		160 (2C)		200 (2D)		250 (2E)		350 (2V)		400 (2G)		450 (2W)	
		D×L	R.C.												
0.1		5X11	1.7												
0.22		5X11	3.7												
0.33		5X11	5.5												
0.47		5X11	12												
1		5X11	18	6.3X12	15	6.3X12	18	6.3X12	18	8X12	22	8X12	23	10X17	20
2.2		5X11	28	6.3X12	24	6.3X12	25	8X12	31	8X12	31	8X12	35	10X17	39
3.3		5X11	40	8X12	33	8X12	39	8X12	48	10X13	50	10X13	50	10X20	53
4.7		5X11	46	8X12	46	8X12	46	10X13	57	10X13	62	10X17	66	10X20	77
6.8		5X11	54	8X12	54	8X12	55	10X13	68	10X13	76	10X17	84	13X21	88
10		6.3X12	69	10X13	69	10X17	80	10X17	86	10X20	87	10X20	101	13X21	107
22		8X12	127	10X17	130	10X20	152	13X21	165	13X25	178	13X25	189	16X28	193
33		8X12	167	10X20	185	13X21	187	13X21	215	16X26	237	16X26	231	16X31	303
47		10X17	231	13X21	233	13X25	264	13X25	274	16X26	308	16X28	319	18X32	352
68		10X17	271	13X21	303	13X25	308	16X26	319	16X31	336	16X31	435	18X35	462
82		10X17	299	13X25	365	13X25	386	16X26	413	16X31	435	18X32	462	18X35	539
100		10X20	402	16X28	424	16X28	446	16X31	479	18X32	528	18X35	529	18X40	572
120		10X25	457	16X26	440	16X26	475	16X31	495	18X35	561	18X40	605	22X40	677
150		13X21	579	16X26	482	16X31	567	18X32	583	18X40	605	22X40	770		
220		13X25	762	16X26	660	18X35	693	18X40	715						
330		16X28	952	18X35	957	22X35	1109								
470		16X31	1238	18X40	1100	22X40	1238								
1000		18X35	2321	22X50	1790										



LF series

- 高頻率，低阻抗，高可靠性。
- 105°C負荷壽命達3000到5000小時。
- 符合RoHS要求。
- High frequency , low impedance , high reliability .
- Load life 3000 hours to 5000hours at 105°C
- RoHS Compliant .



●SPECIFICATIONS

項目Item	特性Performance Characteristics		
適用溫度範圍 Operating Temperature Range	-40to+105°C	-25to+105°C	
工作電壓範圍 Rated Voltage Range	6.3to100VDC	160to450VDC	
靜電容量誤差 Capacitance Range	0.1to4700 μF	0.47to220 μF	
電容量允差 Capacitance Tolerance	±20% (100Hz or 120Hz , +20°C)		
洩漏電流 Leakage Current (+20°C , 最大max)	I ≤ 0.01CV或5 (μA) 額定工作電壓充電1分鐘後讀數, 取大者 I ≤ 0.01CV or 5 (μA) After 1minutes, whichever is greater measured with rated working voltage applied	I ≤ 0.02CV+10 (μA) 額定工作電壓充電1分鐘後讀數, 取大者 I ≤ 0.02CV+10 (μA) After 1minutes, whichever is greater measured with rated working voltage applied	
散逸因素 (tan δ) Dissipation Factor (tg δ)	工作電壓Working Voltabe (VDC)	6.3 10 16 25 35 50 63 100 160 200 250 400 450	
	D.F.(%)最大	20 18 16 14 12 10 10 10 14 14 14 15 17	
容量>1000 μF時 , 每增加1000 μF D.F.值增加2% (100Hz or 120Hz , +20°C) For capacitance 1000 μF, Add 2% per another 1000 μF (100Hz or 120Hz , +20°C)			
低溫特性 Low Temperature Characteristics (120Hz)	阻抗比 , 最大Impedance ratio , max		
	工作電壓 Working Voltage(VDC)	6.3 10 16 25 35 50 63 100 160 200 250 350 400 450	
	Z - 25°C / Z+20 °C	4 3 2 2 2 2 2 2 2 2 3 5 6 15	
Z - 40°C / Z+20 °C	8 6 4 3 3 3 3 3 - - - - -		
容量>1000 μF時 , 每增加1000 μF , Z - 25°C / Z+20 °C值增加0.5%, Z - 40°C / Z+20 °C值增加1% Fpr capacitance>1000 μF , and 0.5% per another 1000 μF for Z-25°C/Z+20°C, add 1% per another 1000 μF for Z-40°C/Z+20°C			
負荷壽命Load Life	試驗條件	Test conditions	
	持續時間:8000~12000小時	Duration time: 2000hours	
	環境溫度:+105°C	Ambient temperature: +105°C	
	施加電壓:額定工作電壓(VDC)	Applied voltage: Rated Working Voltage(DVC)	
	施加額定紋波電流	Applied voltage: Rated Working Voltage(mA)	
	試驗後要求:室溫下恢復16小時,+20°C測試	After test requirements: Resumde 16 hours at normal temperature	
	電容量變化:≤20%規定值	Capacitance change:≤20% of the initial measured value	
	損耗角正切值:≤200%初始值	Dissipation Factor:≤200% of the initial specified value	
放置壽命Shelf Life	試驗條件	Test conditions	
	持續時間: 500小時	Duration time: 500hours	
	環境溫度:+105°C	Ambient temperature:+105°C	
	施加電壓:無	Applied voltage: None	
	試驗後要求:室溫下恢復16小時,+20°C測試	After test requirements: Resumed 16 hours at normal temperature	
	電容量變化:≤20%規定值	Capacitance change:≤20% of the initial measured value	
	損耗角正切值:≤200%初始值	Dissipation Factor:≤200% of the initial specified value	
	試驗條件漏電流:≤200%規定值	Leakage Current:≤200% of the initial specified value	



試驗條件紋波電流頻率調整系數

Multiplier for ripple current vs. frequency

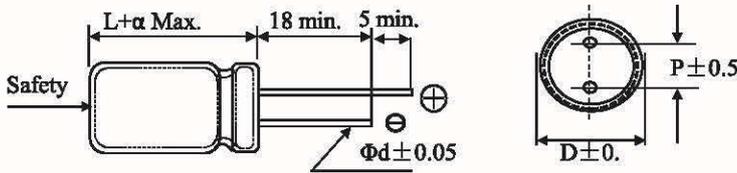
容量 (μF) / Hz	120	1K	10K	50K~100K
<220	0.40	0.75	0.90	1.00
220 ≤ cap < 680	0.50	0.85	0.94	1.00
680 ≤ cap < 2200	0.60	0.87	0.95	1.00
2200 ≤ cap < 4700	0.75	0.90	0.95	1.00
Cap ≥ 4700	0.85	0.95	0.98	1.00

紋波電流溫度調整系數

Multiplier for ripple current vs. temperature

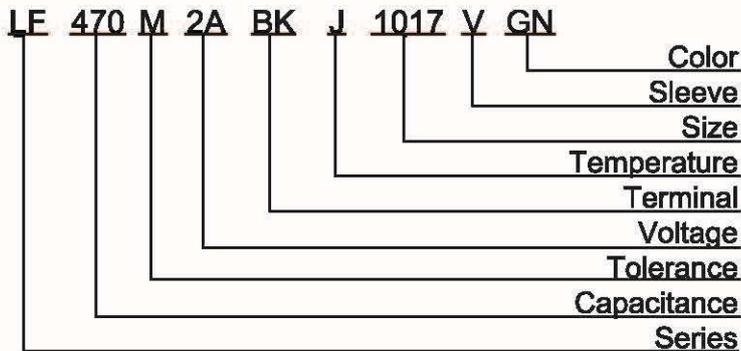
溫度°C	45	60	70	85	105
系數	2.10	1.90	1.40	1.25	1.00

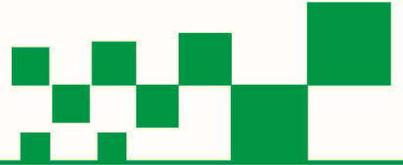
●DIMENSIONS(mm)



DΦ	5	6.3	8	10	13	16	18	22
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10
dΦ	0.5		0.6		0.8			

●PART NUMBER SYSTEM





標準額定値 STANDARD RATINGS (Impedance : at20°C 100KHz/Ωmax , Ripple current : mArms/105°C100KHz)

WV (vdc)	Cap (uF)	Case size φD X L(mm)	tanδ	Impedance (Ωmax)	Ripple current (mArms)	
6.3V (0J)	100	5×11	0.20	1.00	170	
	220	5×11	0.20	0.65	310	
	330	6.3×12	0.20	0.42	390	
	470	6.3×12	0.20	0.25	450	
	680	8×12	0.20	0.21	520	
	820	10×13	0.20	0.19	680	
	1000	10×13	0.20	0.17	750	
	1200	10×17	0.20	0.15	950	
	2200	10×20	0.22	0.09	1300	
	3300	13×21	0.24	0.06	1650	
	4700	13×25	0.26	0.036	2100	
	6800	16×25	0.28	0.026	2450	
10V (1A)	100	5×11	0.18	0.80	210	
	220	6.3×12	0.18	0.35	340	
	330	6.3×12	0.18	0.27	460	
	470	8×12	0.18	0.25	580	
	680	10×13	0.18	0.11	765	
	1000	10×17	0.18	0.076	1040	
	1500	10×20	0.18	0.062	1400	
	2200	13×21	0.20	0.041	1755	
	3300	13×25	0.22	0.031	1900	
	4700	16×25	0.24	0.030	2100	
16V (1C)	10	5×11	0.16	4.70	74	
	22	5×11	0.16	2.60	114	
	47	5×11	0.16	1.10	155	
	100	6.3×12	0.16	0.50	265	
	220	6.3×12	0.16	0.25	400	
	330	8×12	0.16	0.156	590	
	470	8×14	0.16	0.124	750	
	680	10×17	0.16	0.092	1100	
	1000	10×20	0.16	0.065	1350	
	1500	13×21	0.16	0.056	1630	
	2200	13×25	0.18	0.035	2000	
	3300	16×25	0.20	0.033	2790	
	4700	16×35	0.22	0.026	2880	
	25V (1E)	10	5×11	0.14	2.56	85
22		5×11	0.14	1.95	125	
33		6.3×12	0.14	1.42	155	
47		6.3×12	0.14	1.1	205	
100		6.3×12	0.14	0.35	320	
220		8×12	0.14	0.15	550	
25V (1E)	330	10×13	0.14	0.114	820	
	470	10×17	0.14	0.076	1200	
	680	10×20	0.14	0.065	1320	
	1000	13×21	0.14	0.045	1650	
	1500	13×21	0.14	0.038	2210	
	2200	13×25	0.16	0.036	2650	
	3300	16×30	0.18	0.026	3240	
	4700	16×35	0.20	0.024	3650	
	35V (1V)	10	5×11	0.12	2.37	105
		22	5×11	0.12	1.5	150
		33	6.3×12	0.12	1.21	180
		47	6.3×12	0.12	0.80	280
100		8×12	0.12	0.25	450	
220		10×13	0.12	0.114	750	
330		10×17	0.12	0.079	1050	
470		10×20	0.12	0.065	1200	
680		13×21	0.12	0.056	1570	
1000		13×25	0.12	0.042	1900	
2200		16×25	0.14	0.034	2850	
3300		18×30	0.16	0.026	3100	
4700		18×40	0.18	0.024	3500	
50V (1H)		0.47	5×11	0.10	5.40	25
	1.0	5×11	0.10	4.00	40	
	2.2	5×11	0.10	2.80	55	
	3.3	5×11	0.10	2.20	60	
	4.7	5×11	0.10	2.00	90	
	10	5×11	0.10	1.82	120	
	22	6.3×12	0.10	1.35	135	
	33	6.3×12	0.10	0.80	250	
	47	8×12	0.10	0.65	280	
	100	10×13	0.10	0.17	480	
	220	10×17	0.10	0.096	930	
	330	10×20	0.10	0.065	1150	
	470	10×20	0.10	0.055	1590	
	680	13×25	0.10	0.044	1930	
	1000	13×25	0.10	0.036	2300	
	2200	16×35	0.12	0.032	3040	
	3300	18×35	0.14	0.025	3100	
	63V (1J)	10	6.3×12	0.10	1.75	110
22		8×12	0.10	0.80	240	
33		8×12	0.10	0.61	270	

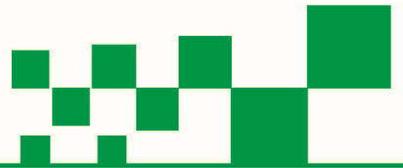


Aluminum Electrolytic Capacitors



標準額定値 STANDARD RATINGS (Impedance : at20°C 100KHz/Ωmax , Ripple current : mArms/105°C100KHz)

WV (vdc)	Cap (μF)	Case size φD X L(mm)	tanδ	Impedance (Ωmax)	Ripple current (mArms)	WV (vdc)	Cap (μF)	Case size φD X L(mm)	tanδ	Impedance (Ωmax)	Ripple current (mArms)
63V (1J)	47	10×13	0.10	0.56	300	250V (2E)	6.8	10×17	0.14	/	140
	100	10×17	0.10	0.14	610		10	10×20	0.14	/	160
	220	10×20	0.10	0.08	1100		22	13×21	0.14	/	185
	330	13×21	0.10	0.055	1250		33	13×25	0.14	/	260
	470	13×25	0.10	0.053	1620		47	16×25	0.14	/	405
	1000	16×35	0.10	0.034	2350		100	16×35	0.14	/	675
100V (2A)	0.47	5×11	0.10	5.90	20	400V (2G)	220	18×40	0.14	/	910
	1.0	5×11	0.10	4.40	30		1.0	8×12	0.15	/	36
	2.2	5×11	0.10	3.30	42		2.2	8×12	0.15	/	65
	3.3	6.3×12	0.10	2.80	55		3.3	8×14	0.15	/	86
	4.7	6.3×12	0.10	2.60	72		4.7	10×14	0.15	/	120
	10	8×12	0.10	1.77	130		5.6	10×14	0.15	/	130
	22	8×12	0.10	0.85	220		6.8	10×17	0.15	/	160
	33	10×13	0.10	0.69	320		10	10×20	0.15	/	245
	47	10×17	0.10	0.58	370		15	13×21	0.15	/	270
	100	10×20	0.10	0.30	560		22	13×25	0.15	/	305
	220	13×25	0.10	0.13	880		33	16×25	0.15	/	335
	330	16×30	0.10	0.10	1440		47	16×30	0.15	/	560
160V (2C)	470	18×30	0.10	0.09	1650	68	16×35	0.15	/	750	
	2.2	6.3×12	0.14	/	55	82	18×30	0.15	/	820	
	3.3	8×12	0.14	/	70	100	18×40	0.15	/	950	
	4.7	8×12	0.14	/	72	450V (2W)	1.0	8×12	0.17	/	41
	10	10×13	0.14	/	91		2.2	10×13	0.17	/	60
	22	10×17	0.14	/	205		3.3	10×17	0.17	/	89
	33	10×20	0.14	/	260		4.7	10×20	0.17	/	130
	47	13×21	0.14	/	320		5.6	10×20	0.17	/	140
	68	13×25	0.14	/	410		6.8	13×21	0.17	/	145
100	16×25	0.14	/	500	10		13×25	0.17	/	165	
220	16×30	0.14	/	820	15		13×25	0.17	/	195	
330	18×35	0.14	/	1000	22		16×25	0.17	/	255	
250V (2E)	1.0	6.3×12	0.14	/	50	33	16×30	0.17	/	360	
	2.2	8×12	0.14	/	72	47	18×30	0.17	/	550	
	3.3	8×12	0.14	/	75	68	18×40	0.17	/	700	
	4.7	10×13	0.14	/	100						



HGD series

- Load life:105°C 5,000~8,000hours.
- 105°C high-temperature resistance,high ripple current and long life.
- Suitable for LED lighting driver and the electronic ballast.
- Rohs Compliance.
- 壽命: 5,000~8,000小時。
- 105°C耐高溫,耐高紋波及長壽命品
- 適用LED驅動及電子鎮流器。



●SPECIFICATIONS

Items 項目	Characteristics 特性									
Capacitance Tolerance 靜電容量誤差	±20%(120Hz, 20°C)									
Operating Temperature Range 適用溫度範圍	-40~+105°C									
Rated Voltage Range 工作電壓範圍	6.3~100V									
Leakage Current 洩漏電流	I ≤ 0.01 CV or 3 (uA) (After 2 minutes application of DC working voltage, at 20°C)									
Dissipation Factor 散逸因素 (tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C									
	Rated Voltage(V)	6.3	10	16	25	35	50	63	100	
	tan δ (MAX)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	
	When nominal capacitance exceeds 1000uF, add 0.02 to the value above for each 1000uF increase. (20°C、120Hz)									
Low Temperature Stability 低溫特性	Measurement Frequency: 120Hz.									
	Rated Voltage (V)	6.3	10	16	25	35	50	63	100	
	Impedance Ratio (MAX) 阻抗比率 (最大值)	Z (-25°C) / Z (20°C)	4	3	3	3	3	3	2	2
	Z (-40°C) / Z (20°C)	8	6	4	4	3	3	3	3	
Load Life 耐久性	After application of the rated voltage at 105°C 10000 hours ,the capacitors shall meet the requirement below ,									
	Size		ΦD ≤ 6.3		ΦD = 8,10		ΦD ≥ 13			
	Voltage	6.3~10WV		4000 hours		6000 hours		8000 hours		
		16~100WV		5000 hours		7000 hours		10000 hours		
	Capacitance Change			Within ± 25% of Initial Value						
	tan δ			200% or less of Initial Specified Value						
Leakage Current			Initial Specified Value or less							
Shelf Life(105°C) 放置壽命	1000hours, no voltage applied, at 105°C. After Test: U _R to be applied for 30 minutes, 24 to 48 hours before measurement.									
	Capacitance Change			Within ± 20% of Initial Value						
	tan δ			200% or less of Initial Specified Value						
	Leakage Current			Initial Specified Value or less						

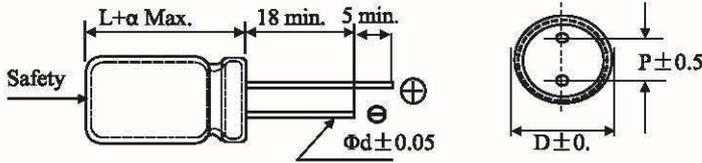
●Frequency Coefficient for Permissible Ripple Current

Capacitance(uF)	Frequency(Hz)				
	50	120	300	1K	100K
≤33	0.5	0.55	0.7	0.90	1.00
47~330	0.60	0.70	0.85	0.95	1.00
470~1000	0.65	0.75	0.90	0.98	1.00
1200~18000	0.70	0.80	0.95	1.00	1.00

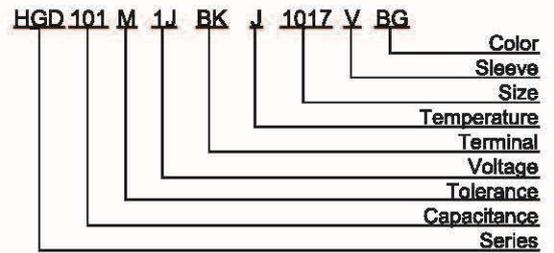


HGD series

●DIMENSIONS(mm)



●PART NUMBER SYSTEM

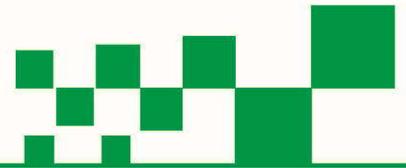


ΦD	5	6.3	8	10	13	16	18	α	(L<16)1.0
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5		(L≥16)2.0
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8		

●STANDARD RATINGS

D×L(mm); R.C.: (mA rms)at 105°C,100KHz; IMP: (Ω max) at 20°C, -10°C 100KHz.

Cap (uF)	WV(V) (Code)	6.3 (8)				10 (13)			
		D×L	IMP		R.C.	D×L	IMP		R.C.
			20°C	-10°C			20°C	-10°C	
100					5×11	0.580	2.300	215	
150		5×11	0.570	2.300	210	5×11	0.580	2.300	230
220		6.3×12	0.250	0.900	320	6.3×12	0.220	0.870	340
330		6.3×12	0.210	0.870	340	6.3×12	0.220	0.870	380
470		8×12	0.150	0.580	345	8×12	0.130	0.520	640
680		8×12	0.130	0.520	645	8×16	0.086	0.350	845
	10×13					0.080	0.310	865	
820		10×13	0.080	0.320	865	10×17	0.070	0.280	1015
1000		8×16	0.085	0.350	870	8×20	0.068	0.270	1050
	10×17					0.060	0.240	1215	
1200		8×20	0.071	0.260	1050	10×20	0.045	0.180	1410
	10×17	0.062	0.240	1215					
1500		10×20	0.045	0.180	1410	10×25	0.041	0.170	1610
	13×17					0.049	0.160	1450	
1800		13×17	0.048	0.160	1460	13×21	0.039	0.150	1710
2200		10×25	0.042	0.170	1650	10×30	0.030	0.120	1920
	13×21					0.035	0.120	1910	
	16×15					0.042	0.120	1900	
2700		10×30	0.030	0.120	1900	18×15	0.042	0.110	2220
	16×15	0.041	0.120	1945					
3300		13×21	0.034	0.120	1900	13×25	0.026	0.089	2230
3900		13×25	0.026	0.088	2240	13×30	0.023	0.078	2660
	18×15	0.042	0.110	2210	16×22	0.026	0.078	2540	
4700		13×30	0.023	0.078	2650	13×35	0.020	0.065	2890
5600		13×35	0.020	0.065	2890	13×40	0.016	0.055	3360
	16X22	0.026	0.077	2540	16×26	0.020	0.060	2940	
					18×20	0.025	0.066	2870	
6800		13×40	0.016	0.055	3350	16×32	0.016	0.050	3460
	16×26	0.020	0.060	2940					
	18×20	0.025	0.066	2870	18×25				
8200		16×32	0.016	0.050	3450	16×36	0.015	0.044	3610
	18×32					0.015	0.040	4180	
10000		16×36	0.014	0.044	3620	16×40	0.013	0.038	4090
	18×25	0.018	0.049	3150	18×35	0.012	0.038	4150	



HGD series

● **STANDARD RATINGS** D×L(mm); R.C.: (mA rms) at 105°C, 100KHz; IMP: (Ω max) at 20°C, -10°C 100KHz.

Cap (μ F)	WV(V) (Code) Item	16 (20)			25 (32)				
		D×L	IMP		R.C.	D×L	IMP		R.C.
			20°C	-10°C			20°C	-10°C	
47					5×11	0.570	2.300	200	
56		5×11	0.570	2.300	220	5×11	0.570	2.300	240
100		6.3×12	0.210	0.820	310	6.3×12	0.210	0.870	340
120		6.3×12	0.210	0.870	340				
220		8×12	0.190	0.850	510	8×12	0.120	0.520	650
330		8×12	0.120	0.520	650	8×16	0.087	0.350	850
	10×13					0.081	0.320	870	
470		8×16	0.086	0.350	840	8×20	0.070	0.270	1050
		10×13	0.080	0.320	865	10×17	0.060	0.240	1210
680		8×20	0.069	0.270	1060	10×20	0.045	0.180	1410
		10×17	0.060	0.240	1210	13×17	0.049	0.160	1460
820		10×20	0.052	0.220	1310	10×25	0.041	0.170	1660
1000		10×20	0.045	0.180	1410	10×30	0.030	0.120	1920
		13×17	0.050	0.160	1450	13×21	0.034	0.120	1910
						16×15	0.042	0.120	1940
1200		10×25	0.043	0.170	1650	18×15	0.043	0.110	2220
1500		10×30	0.030	0.120	1920	13×25	0.026	0.089	2240
		13×21	0.035	0.120	1910				
		16×15	0.042	0.120	1940				
1800		13×25	0.028	0.095	2140	13×30	0.024	0.078	2660
						16×22	0.026	0.078	2540
2200		13×25	0.026	0.089	2240	13×35	0.020	0.065	2890
		18×15	0.042	0.110	2220	18×20	0.025	0.066	2870
2700		13×30	0.023	0.077	2650	13×40	0.016	0.056	3360
		16×22	0.026	0.078	2540	16×26	0.021	0.060	2940
3300		13×35	0.020	0.066	2890	16×32	0.016	0.050	3460
						18×25	0.018	0.048	3150
3900		13×40	0.016	0.056	3350	18×25	0.014	0.043	3620
		16×26	0.021	0.060	2930				
		16×22	0.025	0.067	2860				
4700		16×32	0.016	0.050	3450	16×40	0.012	0.038	4090
		18×25	0.018	0.049	3150	18×35	0.013	0.038	4230
5600		16×35	0.015	0.044	3620	18×35	0.011	0.032	4290
		18×32	0.015	0.040	4180				
6800		16×40	0.012	0.038	4080				
8200		18×35	0.014	0.038	4230				
10000		18×40	0.011	0.032	4290				

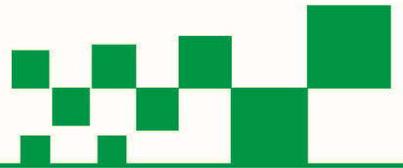


HGD series

●STANDARD RATINGS

D×L(mm); R.C.: (mA rms) at 105°C, 100KHz; IMP: (Ω max) at 20°C, -10°C 100KHz.

Cap (μ F)	WV(V) (Code) Item	35 (44)			50 (63)				
		D×L	IMP		R.C.	D×L	IMP		R.C.
			20°C	-10°C			20°C	-10°C	
22					5×11	0.700	2.800	180	
33		5×11	0.560	2.300	220				
47		6.3×12	0.350	1.400	280	6.3×12	0.380	1.500	220
56		6.3×12	0.210	0.860	340	6.3×12	0.300	1.200	300
100		8×12	0.150	0.560	510	8×12	0.160	0.670	560
120						8×16	0.120	0.480	740
150		8×12	0.130	0.520	650	10×13	0.120	0.480	770
180						8×20	0.090	0.360	920
220		8×16	0.086	0.350	850	10×17	0.083	0.340	1050
		10×13	0.080	0.320	865				
270		8×20	0.070	0.260	1060	10×20	0.060	0.240	1230
						13×17	0.062	0.200	1250
330		10×17	0.060	0.240	1210	10×25	0.053	0.220	1450
470		10×20	0.045	0.180	1410	10×30	0.043	0.170	1695
		13×17	0.048	0.150	1460	13×21	0.044	0.150	1670
						16×15	0.054	0.170	1695
560		10×25	0.041	0.160	1650	13×25	0.033	0.110	1950
						18×15	0.053	0.150	1940
680		10×30	0.030	0.120	1920	13×30	0.030	0.100	2320
		13×21	0.033	0.132	1910				
		16×15	0.041	0.143	1950				
820						13×35	0.023	0.081	2520
						16×22	0.033	0.100	2220
1000		13×25	0.028	0.088	2230	13×40	0.020	0.069	2930
		18×15	0.040	0.110	2220	16×26	0.025	0.075	2555
						18×20	0.036	0.097	2490
1200		13×30	0.023	0.078	2660	16×32	0.021	0.066	3020
		16×22	0.026	0.078	2530	18×25	0.025	0.070	2750
1500		13×35	0.020	0.065	2880	16×36	0.018	0.056	3150
1800		13×40	0.016	0.056	3350	16×40	0.016	0.048	3720
		16×26	0.020	0.060	2940				
		18×20	0.025	0.066	2870				
2200		16×32	0.016	0.050	3500	18×35	0.017	0.046	3690
		18×25	0.019	0.049	3140				
2700		16×36	0.015	0.044	3620	18×40	0.014	0.038	3810
		18×32	0.014	0.040	4180				
3300		16×40	0.013	0.038	4090				
		18×35	0.014	0.038	4230				
3900		18×40	0.012	0.033	4290				



HGD series

●STANDARD RATINGS D×L(mm); R.C.: (mA rms) at 105°C, 100KHz; IMP: (Ωmax) at 20°C, -10°C 100KHz.

Cap (μF)	WV(V) (Code)	63 (1J)			100 (2A)				
		D×L	IMP		R.C.	D×L	IMP		
			20°C	-10°C			20°C	-10°C	
6.8					5×11	2.200	9.200	56	
15		5×11	2.200	9.200	56	6.3×12	1.200	5.000	120
27					8×12	0.620	2.800	235	
33		6.3×12	1.200	5.000	120				
39					8×16	0.450	2.100	310	
47		8×12	0.680	3.100	190	10×13	0.430	1.800	290
56		8×12	0.620	2.800	235	8×20	0.320	1.600	365
68					10×17	0.300	1.500	358	
82		8×16	0.450	2.100	310	10×20	0.210	0.940	470
		10×13	0.430	1.800	300	13×17	0.230	1.100	468
100		10×17	0.350	1.800	320	10×25	0.200	0.840	536
120		8×20	0.330	1.600	362	10×30	0.150	0.710	666
		10×17	0.300	1.500	357	13×21	0.160	0.640	690
150					16×15	0.140	0.660	795	
180		10×20	0.200	0.940	470	13×25	0.120	0.450	790
		13×17	0.230	1.100	465	18×15	0.120	0.500	930
220		10×25	0.200	0.840	531	13×30	0.100	0.420	905
						16×22	0.090	0.370	1050
270		10×30	0.150	0.700	663	13×35	0.082	0.350	1060
		13×21	0.160	0.640	690				
		16×15	0.130	0.650	795				
330		13×25	0.120	0.450	790	13×40	0.070	0.300	1190
						18×20	0.080	0.300	1250
390		18×15	0.120	0.500	920	16×32	0.053	0.200	1570
						18×25	0.056	0.210	1490
470		13×30	0.100	0.420	910	16×36	0.045	0.170	1790
		16×22	0.090	0.380	1040	18×32	0.047	0.170	1640
560		13×35	0.082	0.350	1050	16×40	0.040	0.150	2030
		16×26	0.073	0.270	1250				
680		13×40	0.070	0.300	1190	18×35	0.040	0.150	1790
		18×20	0.080	0.300	1240				
820		16×32	0.053	0.200	1580	18×40	0.036	0.130	2340
		18×25	0.057	0.210	1490				
1000		16×36	0.045	0.170	1790				
		18×32	0.047	0.170	1640				
1200		16×40	0.039	0.150	2020				
		18×35	0.040	0.150	1790				
1500		18×40	0.035	0.130	2340				

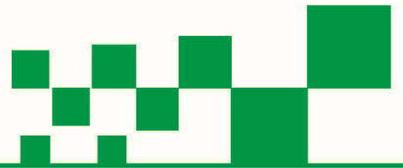
HGD series

- Load life:105°C 5,000~8,000hours.
- 105°C high-temperature resistance,high ripple current and long life.
- Suitable for LED lighting driver and the electronic ballast.
- Rohs Compliance.
- 壽命: 5,000~8,000小時
- 105°C耐高溫,耐高紋波及長壽命品
- 適用LED驅動及電子鎮流器.



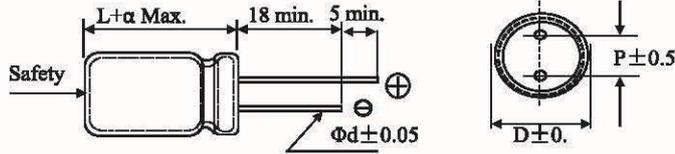
● SPECIFICATIONS

Items 項目	Characteristics 特性								
Capacitance Tolerance 靜電容量誤差	-20%~+20%(M, 120Hz, 20°C)								
Operating Temperature Range 適用溫度範圍	-40~ +105°C				-25~ +105°C				
Rated Voltage Range 工作電壓範圍	160~250VDC				350~500VDC				
Leakage Current 洩漏電流	$I \leq 0.02CV+10\mu A$ (at 20°C ,after 2 minutes)								
Dissipation Factor 散逸因素 (tan δ)	Measurement Frequency:120HZ.Temperature :20°C								
	Rated Voltage (VDC)	160	200	250	350	400	450	500	
	tan δ (MAX)	0.15	0.15	0.15	0.15	0.20	0.20	0.24	
When nominal capacitance over 1000uF ,tanδ shall be added 0.02 to the listed value with increase of every 1000uF									
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率 (最大值)	Measurement Frequency:120HZ								
	Rated Voltage (VDC)	160	200	250	350	400	450	500	
	Z(-25°C)/Z(+20°C)	3	3	3	3	6	6	8	
Z(-40°C)/Z(+20°C)	6	6	6	6	6	-	-		
Load Life 耐久性	After application of the rated DC voltage at 105°C 5,000~8,000 hours , the capacitors shall meet the requirement below								
	Capacitance Change	Within ± 20% of Initial Value							
	tan δ	200% or less of Initial Specified Value						case dia	ΦD5-6.3
	Leakage Current	Initial Specified Value or less						life time (hours)	5000
Shelf Life 放置壽命	1000hours, no voltage applied, at 105°C. After Test: UR to be applied for 30 minutes, 24 to 48 hours before measurement								
	Capacitance Change	Within ± 20% of Initial Value							
	tan δ	200% or less of Initial Specified Value							
	Leakage Current	200% the Initial Specified Value or less							
● Frequency Coefficient for Permissible Ripple Current									
WV(V _{DC})	Frequency (Hz)	120	1K	10K~30K	30K~100K				
	160~250 W.V	0.55	0.85	0.90	1.00				
	350~450 W.V	0.50	0.80	0.90	1.00				

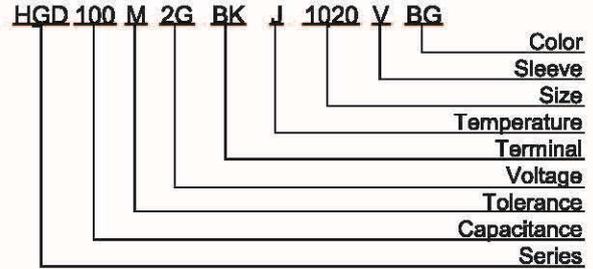


HGD series

●DIMENSIONS (mm)



●PART NUMBER SYSTEM



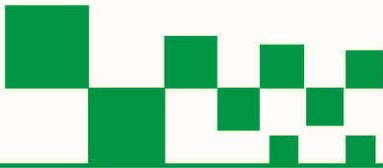
ΦD	5	6.3	8	10	13	16	18	20	22	α	(L<16)1.0 (L≥16)2.0
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	7.5	10.0		
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8	0.8	0.8		

●STANDARD RATINGS

D×L (mm)D×L (mm); R.C.: (mA rms) at 105°C 100KHz;

Cap (uF)	WV(V) (code) Item	160 (2C)		200 (2D)		250 (2E)		350 (2V)		400 (2G)		450 (2W)		500 (2H)	
		D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.
1.0	6.3×9	36	6.3×9	38	6.3×9	40	6.3×9	45	6.3×9	55	6.3×9	55			
	6.3×12	40	6.3×12	42	6.3×12	46	6.3×12	50	6.3×12	59	8×12	60			
1.5	6.3×12	50	6.3×9	50	6.3×9	54	6.3×9	55	6.3×9	65	8×9	65			
			6.3×12	54	6.3×12	58	6.3×12	60	8×12	72	8×12	70			
1.8	6.3×9	50	6.3×9	54	6.3×9	58	6.3×9	60	8×9	70	8×9	68			
	6.3×12	56	6.3×12	60	6.3×12	62	6.3×12	64	8×12	75	8×12	72			
2.2	6.3×9	56	6.3×9	60	6.3×9	62	6.3×12	70	6.3×12	72	8×12	72			
	6.3×12	60	6.3×12	68	6.3×12	70	6.3×12	75	8×9	78	8×16	75			
2.8	6.3×9	60	6.3×9	68	6.3×9	70	6.3×12	75	8×9	78	8×12	75			
	6.3×12	65	6.3×12	71	6.3×12	78	6.3×12	82	8×16	85	8×16	79			
3.3	6.3×9	65	6.3×9	72	6.3×9	75	8×12	82	8×12	85	8×16	86			
	6.3×12	68	6.3×12	78	6.3×12	80	8×12	82	8×16	95	10×13	80			
4.7	6.3×9	70	6.3×12	85	8×9	92	8×12	102	8×12	104	8×20	100			
	8.3×12	72	8×9	88	8×12	102	8×12	102	8×16	110	10×13	100			
5.6	6.3×9	72	8×9	92	8×9	95	8×16	110	8×16	128	10×17	115			
	8×12	76	8×12	98	8×12	105	8×16	110	10×17	138	10×17	115			
6.8	8×9	86	8×12	98	8×12	105	8×16	128	8×16	138	10×20	158			
	8×12	96	8×16	103	8×16	115	10×13	128	10×20	148	10×20	158			
8.2	8×12	136	8×12	148	8×16	120	8×20	144	10×17	218	10×20	209			
					10×13	110	10×13	150	10×20	230	10×20	209			
10	8×12	208	8×16	216	8×16	216	10×13	180	10×17	226	10×20	225	13×21	259	
	8×16	216	10×13	200	10×13	175	10×13	180	10×20	238	13×17	225	13×25	272	
15	8×16	225	8×16	225	8×20	250	10×20	280	10×20	270	13×21	332	13×25	356	
	10×13	200	8×20	250	10×17	250	10×20	280	13×21	300	13×21	332	16×20	356	
22	8×20	360	8×20	380	10×17	380	13×20	410	13×21	380	13×25	427	16×25	453	
	10×17	360	10×17	380	10×17	380	13×20	410	16×20	420	13×25	427	16×25	453	
33	10×20	450	10×20	450	13×17	450	13×25	480	13×25	500	16×26	522	18×26	567	
			13×17	450	13×21	470	13×25	480	16×26	550	16×26	522	18×26	567	
47	10×20	500	13×17	520	13×17	520	16×20	600	16×26	680	16×35	700	18×30	713	
			13×21	580	13×21	580	16×20	600	18×20	637	16×35	700	18×30	713	
68	13×21	600	13×25	665	16×26	720	16×26	720	18×32	760	18×32	769	22×36	1080	
			13×25	665	16×26	720	16×26	720	18×32	760	18×32	769	22×36	1080	
100	13×25	722	16×25	760	16×30	836	18×32	900	18×32	950	18×36	940	22×36	1400	
			16×25	760	16×30	836	18×32	900	18×32	950	18×36	940	22×36	1400	
150	16×25	798	16×30	895	18×32	978	18×38	1450							
			16×30	895	18×32	978	18×38	1450							

*当以上参考数据无法满足贵司需求时请他联络我司业务部或工程部协商解决!



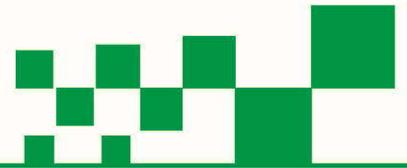
HGN series

- 耐高溫,耐高紋波及長壽命品。
- 壽命:105°C 8,000~12,000小時。
- 適用於LED驅動及電子鎮流器。
- High-temperature resistance,high ripple current and long life.
- Load life:105°C 8,000~12,000 hours
- RoHS Compliant.



●SPECIFICATIONS

項目Item	特性Performance Characteristics	
適用溫度範圍 Operating Temperature Range	-40to+105°C	
工作電壓範圍 Rated Voltage Range	6.3to100VDC	
靜電容量誤差 Capacitance Range	0.1to4700 μ F	
電容量允差 Capacitance Tolerance	±20% (100Hz or 120Hz , +20°C)	
洩漏電流 Leakage Current (+20°C , 最大max)	I ≤0.01CV或5 (μ A) 額定工作電壓充電1分鐘後讀數, 取大者 I ≤0.01CV or 5(μ A)After1minutes, whichever is greater measured with rated working voltage applied	
散逸因素 (tan δ) Dissipation Factor (tg δ)	工作電壓Working Voltage (VDC)	6.3 10 16 25 35 50 63 100
	D.F.(%)最大	20 18 16 14 12 10 10 10
容量>1000 μ F時, 每增加1000 μ F D.F值增加2%(100Hz or 120Hz , +20°C) For capacitance 1000 μ F, Add 2%per another 1000 μ F (100Hz or 120Hz , +20°C)		
低溫特性 Low Temperature Characteristics (120Hz)	阻抗比, 最大Impedance ratio ,max	
	工作電壓 Working Voltage(VDC)	6.3 10 16 25 35 50 63 100 160 200 250 350 400 450
	Z - 25°C / Z+20 °C	4 3 2 2 2 2 2 2 2 2 3 5 6 15
Z - 40°C / Z+20 °C	8 6 4 3 3 3 3 3 - - - - -	
容量>1000 μ F時, 每增加1000 μ F, Z - 25°C / Z+20 °C值增加0.5%, Z - 40°C / Z+20 °C值增加1% For capacitance>1000 μ F, and 0.5% per another 1000 μ F for Z-25°C/Z+20°C, add 1% per another 1000 μ F for Z-40°C/Z+20°C		
負荷壽命Load Life	試驗條件	Test conditions
	持續時間:8000~12000小時	Duration time: 8000~10000hours
	環境溫度:+105°C	Ambient temperature: +105°C
	施加電壓:額定工作電壓(VDC)	Applied voltage: Rated Working Voltage(DVC)
	施加額定紋波電流	Applied voltage: Rated Working Voltage(mA)
	試驗後要求:室溫下恢復16小時,+20°C測試	After test requirements: Resumde 16 hours at normal temperature
	電容量變化:≤20%規定值	Capacitance change:≤20% of the initial measured value
損耗角正切值:≤200%初始值	Dissipation Factor:≤200% of the initial specified value	
漏電流:≤規定值	Leakage Current:≤The initial specified value	
放置壽命Shelf Life	試驗條件	Test conditions
	持續時間:1000小時	Duration time: 1000 hours
	環境溫度:+105°C	Ambient temperature:+105°C
	施加電壓:無	Applied voltage: None
	試驗後要求:室溫下恢復16小時,+20°C測試	After test requirements: Resumed 16 hours at normal temperature
	電容量變化:≤20%規定值	Capacitance change:≤20% of the initial measured value
	損耗角正切值:≤200%初始值	Dissipation Factor:≤200% of the initial specified value
試驗條件漏電流:≤200%規定值	Leakage Current:≤200% of the initial specified value	



試驗條件紋波電流頻率調整系數

Multiplier for ripple current vs. frequency

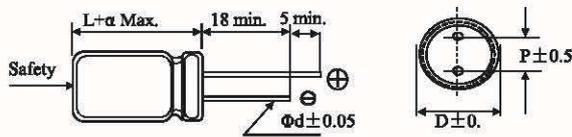
容量 (μF) / Hz		120	1K	10K	50K~100K
系數	<47	0.42	0.70	0.90	1.00
	47 ≤ cap < 330	0.50	0.73	0.92	1.00
	330 ≤ cap < 820	0.55	0.77	0.94	1.00
	820 ≤ cap < 2200	0.60	0.80	0.96	1.00
	Cap ≥ 2200	0.70	0.85	0.98	1.00

紋波電流溫度調整系數

Multiplier for ripple current vs. temperature

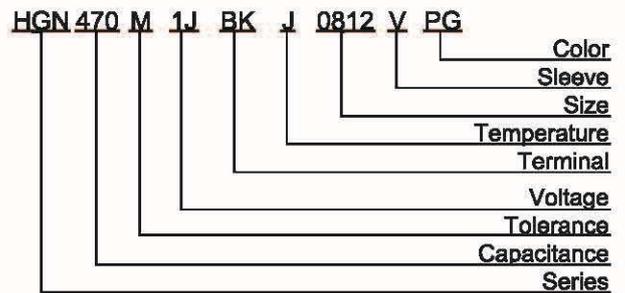
溫度℃	45	60	70	85	105
系數	2.10	1.90	1.40	1.25	1.00

●DIMENSIONS(mm)



Dφ	5	6.3	8	10	13	16	18	22
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10
dφ	0.5			0.6		0.8		

●PART NUMBER SYSTEM



●標準額定值 STANDARD RATINGS (Impedance : at 20℃ 100KHz/Ωmax · Ripple current : mArms/105℃ 100KHz)

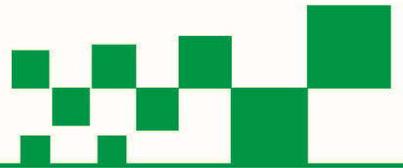
WV (vdc)	Cap (μF)	Case size φD X L(mm)	tanδ	Impedance (Ωmax)	Ripple current (mArms)
6.3V (0J)	100	5×11	0.20	1.00	170
	220	5×11	0.20	0.65	310
	330	6.3×12	0.20	0.42	390
	470	6.3×12	0.20	0.25	450
	680	8×12	0.20	0.21	520
	820	10×13	0.20	0.19	680
	1000	10×13	0.20	0.17	750
	1200	10×17	0.20	0.15	950
	2200	10×20	0.22	0.09	1300
	3300	13×21	0.24	0.06	1650
10V (1A)	100	5×11	0.18	0.80	210
	220	6.3×12	0.18	0.35	340
	330	6.3×12	0.18	0.27	460
	470	8×12	0.18	0.25	580
	680	10×13	0.18	0.11	765
	1000	10×17	0.18	0.076	1040
	1500	10×20	0.18	0.062	1400
	2200	13×21	0.20	0.041	1755
	3300	13×25	0.22	0.031	1900
	4700	16×25	0.24	0.030	2100
16V (1C)	10	5×11	0.16	4.70	74
	22	5×11	0.16	2.60	114
	47	5×11	0.16	1.10	155

WV (vdc)	Cap (μF)	Case size φD X L(mm)	tanδ	Impedance (Ωmax)	Ripple current (mArms)
16V (1C)	100	6.3×12	0.16	0.50	265
	220	6.3×12	0.16	0.25	400
	330	8×12	0.16	0.156	590
	470	8×14	0.16	0.124	750
	680	10×17	0.16	0.092	1100
	1000	10×20	0.16	0.065	1350
	1500	13×21	0.16	0.056	1630
	2200	13×25	0.18	0.035	2000
	3300	16×25	0.20	0.033	2790
	4700	16×35	0.22	0.026	2880
25V (1E)	10	5×11	0.14	2.56	85
	22	5×11	0.14	1.95	125
	33	6.3×12	0.14	1.42	155
	47	6.3×12	0.14	1.1	205
	100	6.3×12	0.14	0.35	320
	220	8×12	0.14	0.15	550
	330	10×13	0.14	0.114	820
	470	10×17	0.14	0.076	1200
	680	10×20	0.14	0.065	1320
	1000	13×21	0.14	0.045	1650
	1500	13×21	0.14	0.038	2210
	2200	13×25	0.16	0.036	2650
	3300	16×30	0.18	0.026	3240



●標準額定値 STANDARD RATINGS (Impedance : at20℃ 100KHz/Ωmax · Ripple current : mA rms/105℃ 100KHz)

WV (vdc)	Cap (uF)	Case size φD X L(mm)	tanδ	Impedance (Ωmax)	Ripple current (mA rms)	WV (vdc)	Cap (uF)	Case size φD X L(mm)	tanδ	Impedance (Ωmax)	Ripple current (mA rms)
35V (1V)	10	5×11	0.12	2.37	105	63V (1J)	10	6.3×12	0.10	1.75	110
	22	5×11	0.12	1.5	150		22	8×12	0.10	0.80	240
	33	6.3×12	0.12	1.21	180		33	8×12	0.10	0.61	270
	47	6.3×12	0.12	0.80	280		47	10×13	0.10	0.56	300
	100	8×12	0.12	0.25	450		100	10×17	0.10	0.14	610
	220	10×13	0.12	0.114	750		220	10×20	0.10	0.08	1100
	330	10×17	0.12	0.079	1050		330	13×21	0.10	0.055	1250
	470	10×20	0.12	0.065	1200		470	13×25	0.10	0.053	1620
	680	13×21	0.12	0.056	1570		47	10×13	0.10	0.56	300
	1000	13×25	0.12	0.042	1900		100	10×17	0.10	0.14	610
	2200	16×25	0.14	0.034	2850		220	10×20	0.10	0.08	1100
50V (1H)	0.47	5×11	0.10	5.40	25	330	13×21	0.10	0.055	1250	
	1.0	5×11	0.10	4.00	40	470	13×25	0.10	0.053	1620	
	2.2	5×11	0.10	2.80	55	1000	16×35	0.10	0.034	2350	
	3.3	5×11	0.10	2.20	60	100V (2A)	0.47	5×11	0.10	5.90	20
	4.7	5×11	0.10	2.00	90		1.0	5×11	0.10	4.40	30
	10	5×11	0.10	1.82	120		2.2	5×11	0.10	3.30	42
	22	6.3×12	0.10	1.35	135		3.3	6.3×12	0.10	2.80	55
	33	6.3×12	0.10	0.80	250		4.7	6.3×12	0.10	2.60	72
	47	8×12	0.10	0.65	280		10	8×12	0.10	1.77	130
	100	10×13	0.10	0.17	480		22	8×12	0.10	0.85	220
	220	10×17	0.10	0.096	930		33	10×13	0.10	0.69	320
	330	10×20	0.10	0.065	1150		47	10×17	0.10	0.58	370
	470	10×20	0.10	0.055	1590		100	10×20	0.10	0.30	560
	680	13×25	0.10	0.044	1930		220	13×25	0.10	0.13	880
	1000	13×25	0.10	0.036	2300		330	16×30	0.10	0.10	1440
3300	18×35	0.14	0.025	3100	470		18×30	0.10	0.09	1650	



HGN series

- Load life:130°C 1,000~2000hours or 105°C 8,000~12,000 hours ,
- 130°C high-temperature resistance high ripple current and long life.
- Suitable for LED lighting driver and the electronic ballast.
- Rohs Compliance.
- 壽命:130°C 1,000~2000小時 或 105°C 8,000~12,000小時.
- 130°C耐高溫,耐高紋波及長壽命品
- 適用於LED驅動及電子鎮流器.

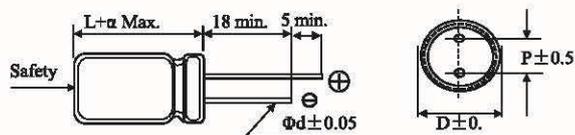


● SPECIFICATIONS

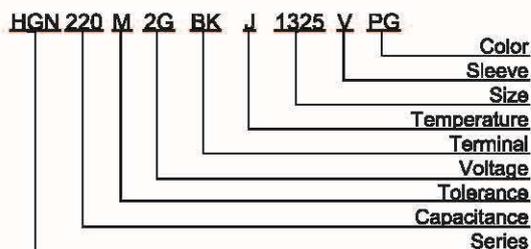
Items 項目	Characteristics 特性							
Capacitance Tolerance 靜電容量誤差	-20%~+20%(M,120Hz, 20°C)							
Operating Temperature Range 適用溫度範圍	-40~ +130°C			-25~ +130°C				
Rated Voltage Range 工作電壓範圍	160~400V _{DC}			450V _{DC}				
Leakage Current 洩漏電流	Rated Voltage (160~400V _{DC})	I ≤ 0.02CV+10uA(at 20°C, after 2 minutes)						
	Rated Voltage (450V _{DC})	I ≤ 0.03CV+10uA(at 20°C, after 2 minutes)						
Dissipation Factor 散逸因素 (tan δ)	Measurement Frequency:120HZ. Temperature :20°C							
	Rated Voltage (V _{DC})	160	200	250	350	400	450	
	tan δ (MAX)	0.15	0.15	0.15	0.20	0.20	0.20	
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率 (最大值)	Measurement Frequency:120HZ.							
	Rated Voltage (V _{DC})	160	200	250	350	400	450	
	Z(-25°C)/Z(+20°C)	3	3	5	5	5	8	
	Z(-40°C)/Z(+20°C)	8	8	8	8	8	-	
Load Life 負荷壽命	After application of the rated voltage at 130°C 1,000~2000 hours or 105°C 8,000~12,000 hours , the capacitors shall meet the requirement below ,							
	Capacitance Change	Within ± 20% of Initial Value		life time	130°C		105°C	
		tan δ	200% or less of Initial Specified Value		case dia	160~450	160~450	500
	Leakage Current		Initial Specified Value or less		φ=6.3	1000	8000	-
				φ≥8	2000	12000	10000	
Shelf Life 放置壽命	1000hours, no voltage applied, at 105°C. After Test: UR to be applied for 30 minutes, 24 to 48 hours before measurement							
	Capacitance Change	Within ± 20% of Initial Value						
	tan δ	200% or less of Initial Specified Value						
	Leakage Current	200% the Initial Specified Value or less						
● Frequency Coefficient for Permissible Ripple Current								
WV(V _{DC})	Frequency (Hz)	120	1K	10K~30K	30K~100K			
	160~500 W.V	0.50	0.80	0.90	1.00			

HGN series

●DIMENSIONS (mm)



●PART NUMBER SYSTEM



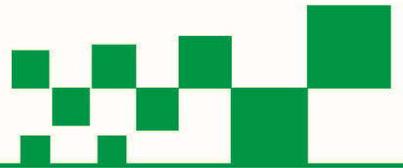
ΦD	6.3	8	10	13	16	18	22	α	(L<16)1.0
P	2.5	3.5	5.0	5	7.5	7.5	10		(L≥16)2.0
Φd	0.5	0.5	0.6	0.6	0.8	0.8	0.8		

●STANDARD RATINGS

D×L (mm); R.C.: (mA rms) at 105°C or 130°C 100KHz

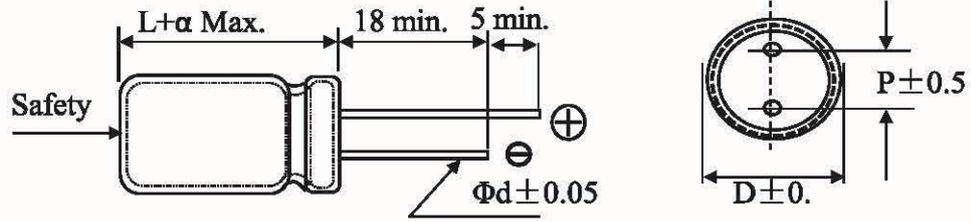
Cap (uF)	WV(V) (code) Item	160 (2C)			200 (2D)			250 (2E)		
		D×L	105°C R.C.	130°C R.C.	D×L	105°C R.C.	130°C R.C.	D×L	105°C R.C.	130°C R.C.
1.0		6.3×9	45	30	6.3×9	52	40	6.3×9	52	40
		6.3×12	50	34	6.3×12	56	42	6.3×12	56	42
1.5		6.3×9	50	34	6.3×9	56	42	6.3×12	56	42
		6.3×12	55	36	6.3×12	60	45	8×12	60	45
1.8		6.3×9	58	38	6.3×9	60	45	6.3×9	60	45
		6.3×12	64	42	6.3×12	68	50	6.3×12	68	50
2.2		6.3×9	64	42	6.3×9	68	50	6.3×9	68	50
		6.3×12	70	46	6.3×12	74	55	6.3×12	74	55
2.8		6.3×9	68	45	6.3×9	74	55	6.3×9	74	55
		6.3×12	75	49	6.3×12	80	60	6.3×12	84	62
3.3		6.3×9	72	47	6.3×9	86	65	6.3×9	86	65
		6.3×12	80	52	6.3×12	96	72	6.3×12	100	74
4.7		8×9	82	54	6.3×12	128	102	8×9	120	95
		8×12	86	56	8×12	154	122	8×12	154	122
5.6		8×9	88	58	8×12	150	120	8×12	165	132
		8×12	98	64						
6.8		8×9	100	65	8×9	158	125	8×9	158	125
		8×16	110	72	8×16	228	182	8×16	228	182
8.2		8×16	115	76	10×13	220	170	8×16	274	192
								10×12	235	165
10		8×16	225	146	8×16	290	202	8×16	294	205
		10×13	210	130	10×13	280	195	10×13	280	185
15		8×16	288	188	8×16	338	235	10×17	378	245
					10×17	350	240			
22		10×17	475	309	10×17	446	290	10×20	490	300
					10×20	492	320			
33		10×20	570	372	10×20	570	370	13×17	550	358
					13×21	600	390	13×21	610	398
47		13×25	660	429	13×17	600	390	13×17	610	398
					13×21	660	408	13×21	648	420
68		13×25	800	520	16×26	860	560	16×26	874	568
100		16×26	1120	728	16×26	1060	690	16×30	1140	740
150		16×30	1280	832	16×35	1290	840	18×32	1400	910

** 当以上参考数据无法满足贵司需求时请您联络我司业务部或工程部协商解决!



HGN series

●DIMENSIONS (mm)



ΦD	6.3	8	10	13	16	18	22
P	2.5	3.5	5.0	5	7.5	7.5	10
Φd	0.5	0.5	0.6	0.6	0.8	0.8	0.8

α	(L<16)1.0 (L \geq 16)2.0
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●STANDARD RATINGS

D \times L (mm); R.C.: (mA rms) at 105 $^{\circ}$ C or 130 $^{\circ}$ C 100KHz

Cap (μ F)	WV(V) (code) Item	350 (2V)			400 (2G)			450 (2W)		
		D \times L	105 $^{\circ}$ C R.C.	130 $^{\circ}$ C R.C.	D \times L	105 $^{\circ}$ C R.C.	130 $^{\circ}$ C R.C.	D \times L	105 $^{\circ}$ C R.C.	130 $^{\circ}$ C R.C.
1.0	6.3 \times 9	6.3 \times 9	52	40	6.3 \times 9	62	55	8 \times 12	68	56
	6.3 \times 12	6.3 \times 12	58	44	8 \times 12	72	66			
1.5	6.3 \times 12	6.3 \times 12	65	50	8 \times 9	75	68	8 \times 12	84	74
	8 \times 12	8 \times 12	68	52	8 \times 16	92	80			
1.8	6.3 \times 12	6.3 \times 12	70	54	8 \times 9	80	70	8 \times 12	90	76
	8 \times 12	8 \times 12	74	57	8 \times 16	104	88			
2.2	6.3 \times 12	6.3 \times 12	78	60	6.3 \times 12	85	72	8 \times 12	91	78
	8 \times 12	8 \times 12	82	63	8 \times 16	110	94	8 \times 16	92	78
2.8	8 \times 12	8 \times 12	90	68	8 \times 16	120	96	8 \times 16	120	96
3.3	8 \times 12	8 \times 12	100	75	8 \times 12	120	96	8 \times 16	125	100
	10 \times 13	10 \times 13	105	78	8 \times 16	128	102			
4.7	8 \times 12	8 \times 12	135	108	8 \times 12	148	110	10 \times 17	168	125
5.6	8 \times 16	8 \times 16	160	125	8 \times 12	148	110	10 \times 17	168	125
	10 \times 20	10 \times 20	195	142	10 \times 17	180	135	10 \times 17	180	135
6.8	8 \times 20	8 \times 20	195	142	10 \times 17	210	148	10 \times 20	220	154
	10 \times 13	10 \times 13	190	128	10 \times 20	220	154			
8.2	10 \times 17	10 \times 17	250	164	10 \times 17	252	164	10 \times 20	266	174
	10 \times 20	10 \times 20	250	164	10 \times 20	266	174			
10	10 \times 20	10 \times 20	300	195	10 \times 17	288	187	13 \times 21	300	198
	10 \times 20	10 \times 20	300	195	10 \times 20	304	198			
15	10 \times 20	10 \times 20	380	247	13 \times 17	360	234	13 \times 21	400	260
	10 \times 20	10 \times 20	380	247	13 \times 21	400	260			
22	13 \times 21	13 \times 21	476	309	13 \times 25	532	346	13 \times 25	580	377
	13 \times 21	13 \times 21	476	309	13 \times 25	532	346	16 \times 20	500	325
33	13 \times 25	13 \times 25	650	422	16 \times 26	608	395	16 \times 26	665	432
	16 \times 20	16 \times 20	600	390	16 \times 26	608	395			
47	13 \times 25	13 \times 25	750	487	16 \times 30	792	515	16 \times 30	780	507
	16 \times 20	16 \times 20	740	480	18 \times 26	792	515			
68	16 \times 30	16 \times 30	880	572	18 \times 32	900	585	18 \times 32	900	585
	18 \times 26	18 \times 26	880	572	18 \times 32	900	585			
100	18 \times 32	18 \times 32	1160	754	18 \times 40	1180	768	18 \times 40	1180	768

* 当以上参考数据无法满足贵司需求时请您联络我司业务部或工程部协商解决!

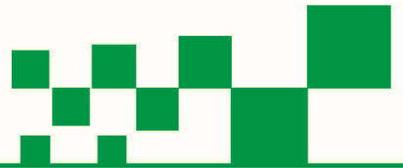
HGK series

- Suitable for LED lighting driver and the electronic ballast.
- Load life:105°C 12,000~20,000 hours ,.
- Rohs Compliance.
- 適用於LED驅動及電子鎮流器.
- 壽命:105°C 12,000~20,000小時



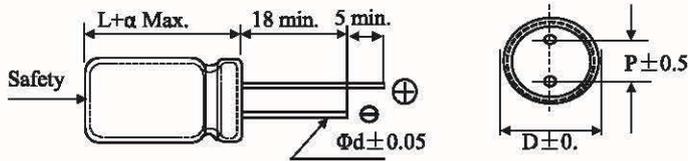
● SPECIFICATIONS

Items 項目	Characteristics 特性						
Capacitance Tolerance 靜電容量誤差	-20%~+20%(M, 120Hz, 20°C)						
Operating Temperature Range 適用溫度範圍	-40~ +105°C			-25~ +105°C			
Rated Voltage Range 工作電壓範圍	160~400V _{DC}			450V _{DC}			
Leakage Current 洩漏電流	Rated Voltage (160~400V)	I ≤ 0.02CV+10uA(at 20°C, after 2 minutes)					
	Rated Voltage (450V _{DC})	I ≤ 0.03CV+10uA(at 20°C, after 2 minutes)					
Dissipation Factor 散逸因素 (tan δ)	Measurement Frequency:120HZ.Temperature :20°C						
	Rated Voltage (V _{DC})	160	200	250	350	400	450
	tan δ (MAX)	0.24	0.24	0.24	0.24	0.24	0.24
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率 (最大值)	Measurement Frequency:120HZ.						
	Rated Voltage (V _{DC})	160	200	250	350	400	450
	Z(-25°C)/Z(+20°C)	3	3	3	5	5	8
	Z(-40°C)/Z(+20°C)	8	8	8	8	8	—
Load Life 負荷壽命	After application of the rated voltage at 105°C 12,000~20,000 hours ,the capacitors shall meet the requirement below						
	Capacitance Change	Within ± 30% of Initial Value				case	life time
	tan δ	300% or less of Initial Specified Value				6.3X9,6.3X11,8X9,10X9	12000
	Leakage Current	Initial Specified Value or less				8X12,8X16,8X20,10X12	15000
Shelf Life 放置壽命	1000hours, no voltage applied, at 105°C。 After Test: UR to be applied for 30 minutes, 24 to 48 hours before measurement						
	Capacitance Change	Within ± 20% of Initial Value					
	tan δ	200% or less of Initial Specified Value					
	Leakage Current	200% the Initial Specified Value or less					
● Frequency Coefficient for Permissible Ripple Current							
Frequency (Hz)	120	1K	10K	100K			
WV(V _{DC})	160~450W.V	0.50	0.80	0.90	1.00		

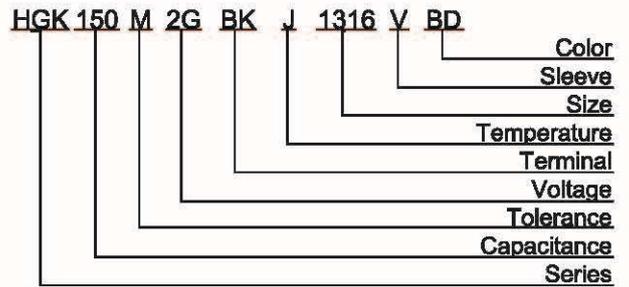


HGK series

●DIMENSIONS (mm)



●PART NUMBER SYSTEM



ΦD	6.3	8	10	13	16	18	20	22		
P	2.5	3.5	5.0	5.0	7.5	7.5	7.5	10.5	α	(L<16)1.0
Φd	0.5	0.5	0.6	0.6	0.8	0.8	0.8	0.8		(L≥16)2.0

●STANDARD RATINGS

D×L (mm); R.C.: (mA rms) at 105°C 100KHz;

Cap (uF)	WV(V) (code) Item	160 (2C)		200 (2D)		250 (2E)		350 (2V)		400 (2G)		450 (2W)	
		D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.
1.0		6.3×12	50	6.3×12	52	6.3×12	52	6.3×12	56	6.3×12	54	6.3×12	54
1.5		6.3×12	62	6.3×12	60	6.3×12	60	6.3×12	66	8×12	66	8×12	70
1.8		6.3×12	72	6.3×12	64	6.3×12	64	6.3×12	72	8×12	72	8×12	80
2.2		6.3×12	76	6.3×12	72	6.3×12	72	8×12	85	8×12	82	8×12	88
2.8		6.3×12	80	6.3×12	84	6.3×12	88	8×12	92	8×12	88	8×16	100
3.3		6.3×12	92	6.3×12	88	6.3×12	92	8×12	100	8×12	100	8×16 10×13	110 120
4.7		6.3×12	104	6.3×12	102	6.3×12 8×12	120 135	8×12	128	10×13	126	10×13	140
5.6		6.3×12	110	8×12	116	8×12	132	8×16	136	10×13	158	10×17	180
6.8		6.3×12	124	8×12	128	8×12	160	10×13	168	10×17	180	10×17	200
8.2		8×12	135	8×12	144	8×12	180	10×17	180	10×17	190	10×20	238
10		8×12	150	8×12	160	8×12 8×16	200 220	10×17	210	10×17	224	10×20	284
15		8×12	190	8×16	240	10×13	270	10×20	290	13×17	290	13×21	330
22		10×13	250	10×17	340	10×17	370	13×21	380	13×21	380	13×25	420
33		10×17	412	10×20	550	13×21	562						
47		10×20	525	13×17	725	13×21	788						

* 当以上参考数据无法满足贵司需求时请您联络我司业务部或工程部协商解决!



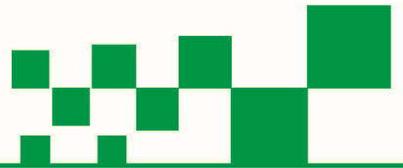
HGC series

- 130°C high-temperature resistance, high ripple current and long life.
- Suitable for LED lighting driver and the electronic ballast.
- Load life: 105°C 15,000~20,000 hours.
- Rohs Compliance.
- 130°C耐高溫,耐高紋波及長壽命品
- 適用於LED驅動及電子鎮流器.
- 壽命:105°C 15,000~20,000小時



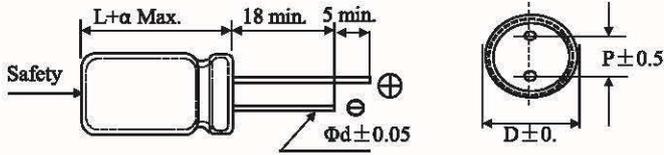
● SPECIFICATIONS

Items 項目	Characteristics 特性							
Capacitance Tolerance 靜電容量誤差	-20%~+20%(120Hz, 20°C)							
Operating Temperature Range 適用溫度範圍	-40~ +130°C			-25~ +130°C (450V _{DC})				
Rated Voltage Range 工作電壓範圍	160~400V _{DC}			450V _{DC}				
Leakage Current 洩漏電流	Rated Voltage (160~400V)	I ≤ 0.02CV+10uA(at 20°C ,after 2 minutes)						
	Rated Voltage (450V)	I ≤ 0.03CV+10uA(at 20°C ,after 2 minutes)						
Dissipation Factor 散逸因素 (tan δ)	Measurement Frequency:120HZ, Temperature :20°C							
	Rated Voltage (V _{DC})	160	200	250	350	400	450	
	tan δ (MAX)	0.15	0.15	0.15	0.2	0.2	0.2	
Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率 (最大值)	Measurement Frequency:120HZ.							
	Rated Voltage (V _{DC})	160	200	250	350	400	450	
	Z(-25°C)/Z(+20°C)	3	3	3	5	5	8	
	Z(-40°C)/Z(+20°C)	6	6	6	6	6	-	
Load Life 負荷壽命	After application of the rated voltage at 105°C 15,000~20,000 hours ,the capacitors shall meet the requirement below ,							
	Capacitance Change	Within ± 30% of Initial Value				case	130°C	105°C
	tan δ	300% or less of Initial Specified Value				6.3x12 8x12	life time(hours)	life time(hours)
	Leakage Current	Initial Specified Value or less				8x16 10x17 10x20 13x20	4000	15000
Shelf Life 放置壽命	1000hours, no voltage applied, at 105°C. UR to be applied for 30 minutes, 24 to 48 hours before measurement. After Test:							
	Capacitance Change	Within ± 20% of Initial Value						
	tan δ	200% or less of Initial Specified Value						
	Leakage Current	200% the Initial Specified Value or less						
● Frequency Coefficient for Permissible Ripple Current								
WV(V _{DC})	Frequency (Hz)	120	1K	10K	100K			
160~450W.V		0.50	0.80	0.90	1.00			

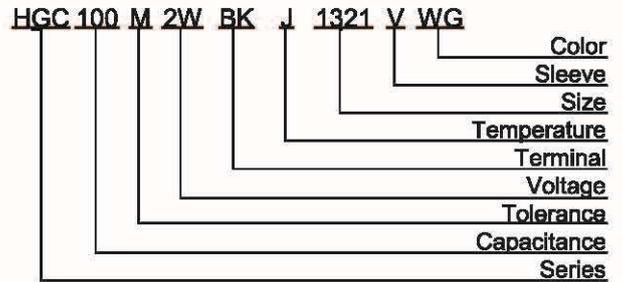


HGC series

●DIMENSIONS (mm)



●PART NUMBER SYSTEM



ΦD	6.3	8	10	13
P	2.5	3.5	5.0	5.0
Φd	0.5	0.5	0.6	0.6

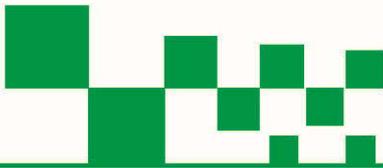
α	(L<16)1.0
	(L≥16)2.0

●STANDARD RATINGS

D×L (mm); R.C.: (mA rms) at 105°C 100KHz;

Cap (μF)	WV(V) (code) Item	160 (2C)		200 (2D)		250 (2E)		350 (2V)		400 (2G)		450 (2W)	
		D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.
1.0										6.3×12	25	6.3×12	30
1.2										6.3×12	25	6.3×12	30
1.5								6.3×12	28	8×12	32	8×12	35
1.8						6.3×12	35	6.3×12	28	8×12	35	8×12	35
2.2				6.3×12	40	6.3×12	40	6.3×12	30	8×12	40	8×12	40
2.7				6.3×12	40	6.3×12	45	8×12	35	8×12	45	8×12	40
3.3	6.3×12	50	6.3×12	40	8×12	50	8×12	40	8×16	55	8×16	60	
3.9	6.3×12	50	8×12	50	8×12	55	8×12	45	8×16	55	8×16	60	
4.7	6.3×12	50	8×12	55	8×12	60	8×12	50	10×17	65	10×17	65	
5.6	6.3×12	50	8×12	60	8×12	70	8×16	58	10×17	70	10×17	68	
6.8	8×12	60	8×12	65	8×16	90	8×16	70	10×20	95	10×20	90	
8.2	8×12	70	8×16	75	8×16	90	10×17	80	13×21	105	13×21	100	
10	8×12	70	8×16	90	10×17	130	10×17	80	13×21	115	13×21	120	

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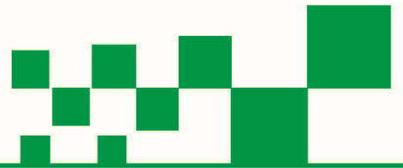
HSX series

- Suitable for LED lighting driver and the electronic ballast.
- Load life:105°C 5,000 hours.
- Rohs Compliance.
- 防浪涌雷击，适用于LED驱动电源及电子整流器等。
- 壽命:105°C 5,000小時



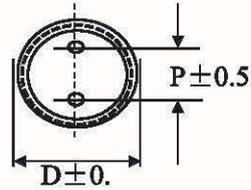
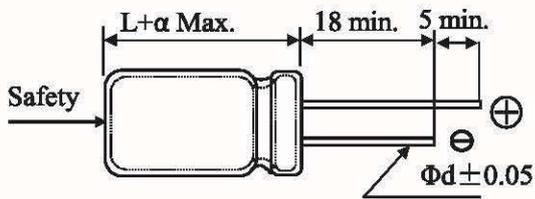
● SPECIFICATIONS

Items 項目	Characteristics 特性				
Capacitance Tolerance 靜電容量误差	-20%~+20%(120Hz, 20°C)				
Operating Temperature Range 適用溫度範圍	-40~ +105°C		-25~ +105°C		
Rated Voltage Range 工作電壓範圍	400V _{DC}		450V _{DC}		
Leakage Current 洩漏電流	Rated Voltage (400V)	$I \leq 0.02CV+10\mu A$ (at 20°C, after 2 minutes)			
	Rated Voltage (450V)	$I \leq 0.03CV+10\mu A$ (at 20°C, after 2 minutes)			
Dissipation Factor 散逸因素 (tan δ)	Measurement Frequency:120HZ.Temperature :20°C				
	Rated Voltage (V)	400	450		
	tan δ (MAX)	0.24	0.24		
Low Temperature Stability 低温特性 Impedance Ratio(Max) 阻抗比率 (最大值)	Measurement Frequency:120HZ.				
	Rated Voltage (V _{DC})	400	450		
	Z(-25°C)/Z(+20°C)	6	8		
	Z(-40°C)/Z(+20°C)	7	-		
Load Life 負荷壽命	After application of the rated voltage at 105°C 5,000 hours ,the capacitors shall meet the requirement below ,				
	Capacitance Change	Within ± 20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	Initial Specified Value or less			
Shelf Life 放置壽命	1000hours, no voltage applied, at 105°C. After Test: UR to be applied for 30 minutes, 24 to 48 hours before measurement				
	Capacitance Change	Within ± 20% of Initial Value			
	tan δ	200% or less of Initial Specified Value			
	Leakage Current	200% the Initial Specified Value or less			
● Frequency Coefficient for Permissible Ripple Current					
WV(V _{DC})	Frequency (Hz)	120	1K	10K	100K
	160~450	0.50	0.80	0.90	1.00



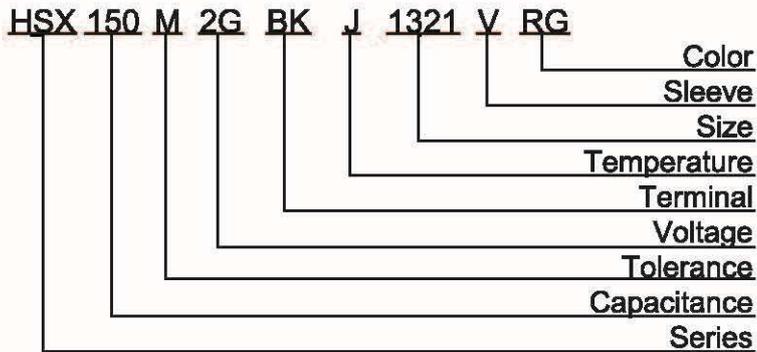
HSX series

•DIMENSIONS (mm)



ΦD	8	10
P	3.5	5.0
Φd	0.5	0.6
α	(L<16)1.0	
	(L≥16)2.0	

•PART NUMBER SYSTEM



●STANDARD RATINGS

D×L (mm); R.C.: (mA rms) at 105°C 100KHz;

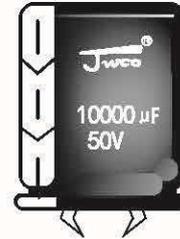
WV(V)	Cap(uF)	2.2		3.3		4.7		6.8		10		15	
	Item	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.
400(2G)		8×12	70	8×12	82	8×12	93	10×13	133	10×17	200	13×17	240
450(2W)		8×12	70	8×12	82	10×13	98	10×17	142	10×20	202	13×21	298

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HLX series

- Load life:85°C 2,000hours.
- High ripple current resistance.
- Suitable for wave filtering retune circuit of power input/output for civil electronic product, such as: TV set, audio..... etc.
- 寿命:85°C 2,000小时
- 耐高纹波。
- 适用于民用电子产品输入/输出电源的滤波回路，如电视机、音响等。

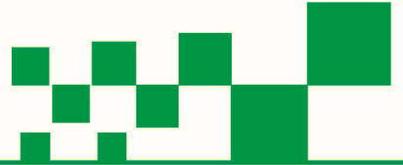


●SPECIFICATIONS

Items 項目	Characteristics 特性							
Capacitance Tolerance 靜電容量误差	±20%(120Hz, 20°C)							
Operating temperature Range 適用溫度範圍	-40~+85°C				-25~+85°C			
Rated Voltage Range 工作電壓範圍	10~100V _{DC}				160~450V _{DC}			
Leakage Current 洩漏電流	I ≤ 3√CV or 3000 (uA), which is greater. (After 5 minutes application of working voltage)							
Dissipation Factor 散逸因素 (tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C							
	Rated Voltage(V)	10	16	25	35	50~80	100~250	350~450
	tan δ (MAX)	0.50	0.40	0.35	0.30	0.25	0.20	0.25
Low Temperature Stability 低溫特性	Measurement Frequency:120Hz.							
	Rated Voltage(V)	10~100		160~250		350~450		
	Impedance Ratio(MAX) 阻抗比率(最大值)	Z(-25°C)/Z(20°C)		4		4		8
		Z(-40°C)/Z(20°C)		12		15		-
Load Life 負荷壽命	2000 hours, with application of working voltage at 85°C							
	Capacitance Change	Within ± 20% of Initial Value						
	tan δ	200% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Shelf Life 放置壽命	1000hours, no voltage applied, at 85°C. After Test: U _R to be applied for 30 minutes, 24 to 48 hours before measurement.							
	Capacitance Change	Within ± 20% of Initial Value						
	tan δ	150% or less of Initial Specified Value						
	Leakage Current	Initial Specified Value or less						
Standards 參照標準	JIS C 5141 and JIS C 5102							

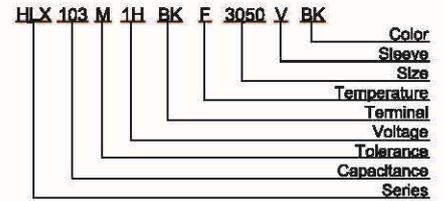
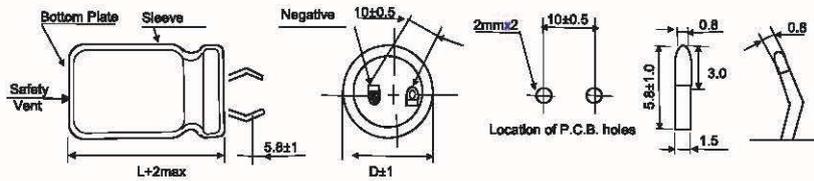
Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	50	120	1K	≥10K
10~100 WV	0.88	1.00	1.15	1.15
160~250 WV	0.85	1.00	1.15	1.20
350~450 WV	0.88	1.00	1.10	1.15



HLX series

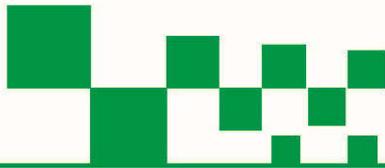
● DIMENSIONS (mm)



● STANDARD RATINGS

D×L(mm); R.C.: (A rms) at 85°C, 120Hz

Cap (uF)	WV(V)	10 (1A)		16 (1C)		25 (1E)		35 (1V)		50 (1H)		63 (1J)		80 (1K)	
		Item	D×L	R.C.	D×L										
820														22×25	1.47
1000												22×25	1.67	22×25	1.80
1500												22×25	1.85	22×30	1.98
2200										22×25	2.29	22×30	2.84	22×35	2.92
2700										22×30	2.55	22×35	3.08	22×40	3.10
3300								22×25	2.59	22×30	2.92	25×30	3.17	22×45	3.63
3900								22×25	2.68	22×35	2.99	22×45	3.47	25×45	3.74
4700						22×25	2.74	22×30	2.90	22×30	3.40	30×30	3.59	25×50	3.98
						25×25	3.03	25×25	3.03	22×40	3.47	22×50	3.73	30×40	4.21
6800				22×25	2.62	22×30	2.83	22×40	3.09	30×55	4.25	35×30	4.63	30×55	5.15
						25×25		22×35	3.09	22×50		30×45	4.77	30×50	
8200				22×25	3.19	22×35	3.27	30×25	3.36	30×35	4.47	30×45	5.32	35×45	5.46
						25×25	3.43	22×40	3.43	22×50	4.86			35×50	
10000	22×25	2.29	22×30	3.39	22×40	3.74	22×50	3.91	25×50	5.48	35×40	6.06	35×50	6.69	
			25×25		22×35		35×25		30×40		35×45	6.45	35×55	6.74	
					25×30		25×40		30×50	5.73	30×50		35×60		
15000	22×30	3.04	22×35	4.35	25×40	4.26	30×40	5.51	35×40	6.73	35×50	7.54	35×70	8.64	
			25×30		22×50	4.51	25×50	6.22	25×65	7.10	35×55	8.09			
					25×45		35×35		35×45		35×65				
22000	22×40	3.88	22×50	5.18	25×50	5.74	35×45	6.62	35×45	7.83	35×80	8.45			
	30×40		25×35	5.18	30×40	5.74	35×40	6.62	35×65	7.83					
	25×30		25×40	5.18	30×45	5.74	35×50	6.62							
27000	22×45	4.60	25×45	6.06	30×50	6.62	35×50	7.54							
	25×35		30×35	6.06	35×40	6.62	35×50	7.54							
33000	22×50	5.73	25×50	6.40	35×45	7.46	35×45	7.65							
	25×40		30×40	6.40	35×50	7.46	35×45	7.65							

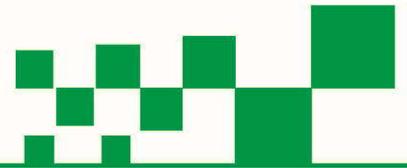


HLX series

●STANDARD RATINGS

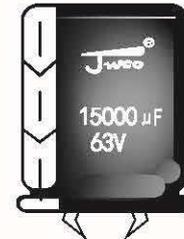
D×L(mm); R.C.: (A rms) at 85°C, 120Hz

Cap (uF)	WV(V) Item	100 (2A)		160 (2C)		200 (2D)		250 (2E)		350 (2V)		400 (2G)		450 (2W)	
		D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.
100										22x30 25x25 22x25	0.85	22x35 22x30 25x25	1.16	25x30 22x35 25x25	1.16
120										22x30 25x25	1.02	22x35 25x25	1.27	22x40 25x30	1.33
150								22x25	1.21	22x35 25x30	1.28	25x35 22x40 25x25 25x30	1.38	22x40 22x45 30x30 25x35	1.58
180								22x30	1.35			25x35	1.63	25x40 30x30	1.71
220				22x20	1.23	22x25 25x20 22x30 22x35	1.51 1.55	22x35 22x30 25x25	1.58	22x45 25x35	1.62	30x30 22x40 22x50 25x40	1.94	25x40 25x45 25x50 30x40	1.94 1.95
330				22x25 25x20	1.60	25x25 22x30 22x35 22x40	2.07 2.12	22x35 25x30	2.12	25x50 30x40	2.19	25x50 35x30 35x35 30x45	2.33 2.53	30x40 25x50 30x45 35x40	2.77 3.07
470	22x20	1.88	22x30 25x25 22x40	2.01 2.13	22x40 25x30 22x50	2.48 2.65	25x40 22x45 25x35	2.83	30x50 35x40	2.68	35x40 35x45 35x50 30x50	3.10 3.43	35x45 35x50 30x65	3.21 3.36	
560			22x35 25x30	2.23	25x30 22x40 22x45 25x35	2.83 2.95	25x45 25x40 30x35	3.09	35x45	3.62	35x45 35x50	3.70	35x50 35x55	3.47	
680	22x25	1.69	22x35 25x30	2.61	25x40 22x45 22x50 25x45	2.95 3.12	25x50 30x40	3.54	35x50 35x50	3.78	35x50 35x60 35x65	3.85 4.05	35x50 35x60	4.25	
820	22x25 25x20	2.07	22x40 25x35	3.03	25x40 22x50 25x45 30x35	3.43 3.69	30x45 35x40 35x45 30x50	3.86 4.04	35x50	3.94	35x60	4.21			
1000	22x30 25x25	2.13	25x40 22x45 30x35	3.54	25x50 25x45 30x45 30x40	3.76 4.17	25x50 30x50 35x45	4.20 4.33	35x55	4.41	35x65 35x70 40x65	4.52 4.62			
1500	22x35 25x30	2.72	30x45 25x55 35x35	4.36	25x55 35x35 30x50 35x40	4.65 5.52	35x50	5.70							
2200	22x45 30x30 25x40	3.47	35x45	5.15	35x60 35x50	6.70									



HLZ series

- 105°C Load life 2000 hours high temperature resistance and ripple current resistance, high reliability.
- Suitable for wave filtering return circuit for power of equipment, such as: computer.
- 105°C 寿命 2000小时 耐高温、耐纹波、高信赖度。
- 适用于电脑设备之电源滤波回路。



● SPECIFICATIONS

Items 項目	Characteristics 特性										
Capacitance Tolerance 靜電容量误差	±20%(120Hz, 20°C)										
Operating Temperature Range 適用溫度範圍	-40~+105°C						-25~+105°C				
Rated Voltage Range 工作電壓範圍	10~250V _{DC}						350~450V _{DC}				
Leakage Current 洩漏電流	I ≤ 3√CV or 3000 (uA), which is greater. (After 5 minutes application of working voltage)										
Dissipation Factor 散逸因素 (tan δ)	Measurement Frequency:120Hz. Temperature:20°C										
	Rated Voltage(V)	10	16	25	35	50	63	80	100	160~250	350~450
	tan δ (MAX)	0.45	0.40	0.35	0.30	0.25	0.25	0.20	0.20	0.15	0.20
Low Temperature Stability 低溫特性	Measurement Frequency:120Hz.										
	Rated Voltage(V)	10	16	25	35	50	63~100		160~250		350~450
Impedance Ratio(MAX) 阻抗比率(最大值)	Z(-25°C)/Z(20°C)	6	6	4	4	4	4		4		8
	Z(-40°C)/Z(20°C)	16	15	10	10	8	6		15		-
Load Life 負荷壽命	2000 hours, with application of working voltage at 105°C										
	Capacitance Change	Within ± 20% of Initial Value									
	tan δ	200% or less of Initial Specified Value									
	Leakage Current	Initial Specified Value or less									
Shelf Life 放置壽命	1000hours, no voltage applied, at 105°C . After Test : U _R to be applied for 30 minutes, 24 to 48 hours before measurement.										
	Capacitance Change	Within ± 15% of Initial Value									
	tan δ	200% or less of Initial Specified Value									
	Leakage Current	Initial Specified Value or less									
Standards 參照標準	JIS C 5141 and JIS C 5102										

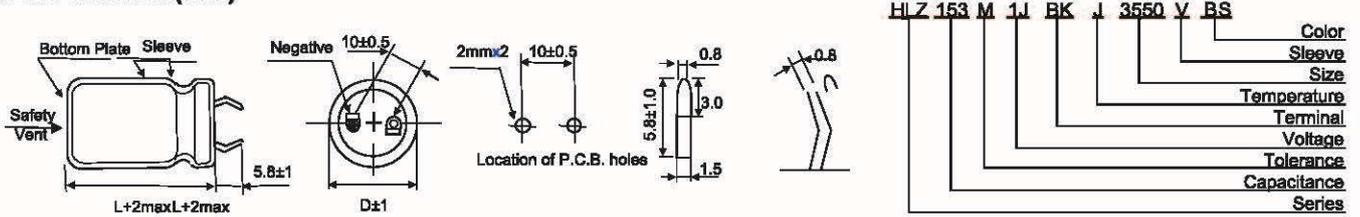
Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	50	120	1K	10K	100K
10~100WV	0.88	1.00	1.15	1.15	1.20
160~250WV	0.85	1.00	1.15	1.20	1.20
350~450WV	0.88	1.00	1.10	1.15	1.20



HLZ series

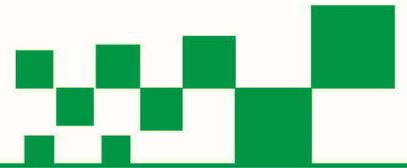
● DIMENSIONS(mm)



● STANDARD RATINGS

D×L(mm); R.C.: (A rms) at 105°C, 120Hz; IMP: (Ω max)

Cap (uF)	WV(V)	10 (1A)			16 (1C)			25 (1E)			35 (1V)			50 (1H)		
		Item	D×L	R.C.	IMP	D×L	R.C.	IMP	D×L	R.C.	IMP	D×L	R.C.	IMP	D×L	R.C.
2200														22×30		
														25×25	1.76	0.182
														25×35	1.82	0.161
2700											22×25	1.33	0.174	22×35	1.90	0.148
														25×30		
3300											22×25	1.43	0.151	22×35	1.99	0.132
											22×30	1.50	0.142	22×40	2.17	0.123
														25×30		
3900								22×25	1.49	0.137	22×30	1.72	0.120	22×45	2.45	0.104
													25×35			
4700								22×30	1.74	0.114	22×35	1.95	0.098	22×50	2.64	0.090
											25×25			22×45	2.70	0.086
													25×40			
5600								22×30			22×40			25×45		
								25×25	1.93	0.096	25×30	2.19	0.083	30×35	3.01	0.074
6800					22×25	1.98	0.098	22×35			22×40	2.31	0.071	30×40	3.25	0.071
											22×45			22×50		
								25×30	2.22	0.079	25×35	2.52	0.069	25×45	3.64	0.069
													30×35			
8200					22×30			22×40			22×40			30×45		
						2.29	0.082		2.40	0.066	22×50	2.84	0.057		3.96	0.050
					25×25			25×35			25×40			35×35		
10000		22×25	2.07	0.077	22×30			22×45			25×45			25×50	4.24	0.048
					22×35	2.37	0.062		2.73	0.058			30×40			
					25×30			25×40			30×35	3.19	0.054	35×35	4.42	0.046
													35×40			
12000	22×30				22×40			22×50			25×50			35×40	4.79	0.042
		2.40	0.068			2.54	0.056		3.15	0.050		3.56	0.046	30×40		
	25×25				25×30			25×45			30×40			35×45		
													35×50	4.97	0.039	
15000	22×35				22×45			25×45			30×45					
		2.50	0.055		25×35	2.96	0.045	25×50	3.47	0.040	35×35	4.01	0.037			
18000	22×40				22×50			30×45								
		2.65	0.048		25×40	3.52	0.042	35×35	3.90	0.038	35×40	4.54	0.030			
22000	22×45				25×40			30×50								
		2.95	0.045		25×45	3.74	0.040	35×40	4.40	0.034	35×50	5.26	0.025			



HLZ series

● STANDARD RATINGS

D×L(mm); R.C.: (A rms) at 105°C, 120Hz; IMP: (Ω max)

Cap (μ F)	WV (V)	63 (1J)			80 (1K)			100 (2A)			160 (2C)			200 (2D)		
		Item	D×L	R.C.	IMP	D×L	R.C.									
220														22×25	0.91	0.906
330											22×30	1.39	0.605	22×30	1.52	0.681
470											22×35 25×30	1.72	0.426	22×40 25×35 25×30	1.81	0.426
560								22×25	1.19	0.476	22×40 25×30	1.86	0.357	20×50 30×30 22×45 25×35	1.90 1.97	0.390 0.356
680								22×30	1.23	0.393	22×45 25×35 25×40	1.89	0.294	25×35 22×45 25×40 30×30	1.97 2.03	0.251 0.293
820					22×25	1.14	0.326	22×30 25×25	1.45	0.324	25×35 22×50 25×40	2.19	0.246	30×40 30×30 25×50 30×35	2.07 2.24	0.262 0.245
1000					22×30	1.32	0.275	30×30 22×35 25×30	1.60	0.268	22×50 35×35 25×45 30×35	2.31 2.42	0.225 0.202	30×40 30×45 30×50 35×35	2.46 2.53	0.220 0.202
1500		22×30 25×25	1.60	0.223	25×30 22×40	1.73	0.186	22×45 25×40	2.18	0.177	30×50 25×55 35×40	3.37	0.138	35×40 30×50 35×50 35×45	3.06 3.27	0.156 0.134
2200		22×35 25×30 22×40	2.02 2.10	0.158 0.135	30×30 25×40 35×25	2.21	0.133	25×45 25×50 30×40 35×40	2.78 2.92	0.123 0.110	30×60 35×50	3.85	0.093			
2700		22×45 25×35	2.33	0.126	25×45 30×35	2.55	0.099	30×45 35×35	3.10	0.098						
3300		25×40 30×30	2.53	0.102	22×50 25×45 35×30 30×40	2.73 2.88	0.080 0.086	35×30 30×40 35×40 30×50	3.31 3.65	0.090 0.081						
3900		25×45 30×35	2.66	0.087	30×45 35×35	3.12	0.070	35×45	3.98	0.068						
4700		22×45 25×50 30×40	2.88 3.20	0.081 0.075	25×50 30×40 30×50	3.39 3.62	0.07 0.068	30×50 35×50	4.18	0.058						
5600		30×45 35×35	3.50	0.060	30×40 35×45	4.20	0.048									
6800		25×50 30×40 35×40	3.55 3.89	0.054 0.050	35×45 30×50 35×50	4.32 4.40	0.038 0.035									

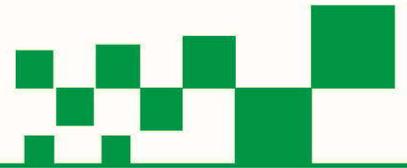


HLZ series

● STANDARD RATINGS

D×L(mm); R.C.: (A rms) at 105°C, 120Hz; IMP: (Ω max)

Cap (uF)	WV(V) Item	250 (2E)			350 (2V)			400 (2G)			450 (2W)					
		D×L	R.C.	IMP	D×L	R.C.	IMP	D×L	R.C.	IMP	D×L	R.C.	IMP			
100								22×30	0.79	3.318	22×35	0.82	3.318			
							22×35	25×30								
							25×30	22×40								
150					22×40	0.87	1.770	25×30	0.98	2.214	25×35	1.04	2.214			
											25×35			25×40		
											22×45			22×50		
180	22×30	1.08	1.106		22×45	1.11	1.475	30×30	1.21	1.842	30×35	1.27	1.842			
															25×40	25×45
															25×35	22×50
220	22×30	1.2	0.905		25×40	1.27	1.208	25×40	1.27	1.650	25×40	1.36	1.621			
															30×35	35×30
	25×25														25×45	25×50
															30×40	35×40
270	22×35	1.31	0.738		25×45	1.34	0.984	25×50	1.42	1.230	30×40	1.49	1.421			
															25×50	25×50
	25×30														35×30	35×45
															30×40	30×50
330	22×40	1.49	0.605		30×40	1.54	0.806	25×50	1.56	1.010	35×35	1.65	1.150			
															30×40	30×45
	25×35														30×45	30×50
															35×35	35×50
390	22×45	1.67	0.512		30×45	1.56	0.681	25×50	1.66	0.930		1.96	0.852			
															35×35	35×55
	25×35														35×40	
															30×50	
470	25×40	1.74						35×45	1.93	0.710	35×50	2.04	0.620			
	22×45															
	22×50															
	30×35		1.79	0.425				30×50			35×55					
560	25×45	2.02	0.357		35×50	2.08	0.473	30×50	2.33	0.588						
	30×35												35×50			
680	25×50	2.25	0.294		35×50	2.31	0.420									
820	30×45	2.52	0.246													
1000	30×50	2.74	0.201													
	35×40															



HHZ series

- 105°C Load life 5000 hours high temperature resistance and ripple current resistance, high reliability.
- 105°C 寿命 5,000 小时耐高溫、耐紋波、高信賴度。



●SPECIFICATIONS

Items 項目	Characteristics 特性									
Capacitance Tolerance 靜電容量誤差	±20%(120Hz, 20°C)									
Operating Temperature Range 適用溫度範圍	-40~+105°C					-25~+105°C				
Rated Voltage Range 工作電壓範圍	10~100V _{DC}					160~450V _{DC}				
Leakage Current 洩漏電流	I ≤ 3 √ CV or 3000 (uA), which is greater. (After 5 minutes application of working voltage)									
Dissipation Factor 散逸因素 (tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C									
	Rated Voltage(V)	10	16	25	35	50	63	80~100	160~400	420~450
	tan δ (MAX)	0.60	0.45	0.30	0.25	0.20	0.15	0.15	0.15	0.20
When the capacitance exceed 1,000uF, 0.01shall be added every 1,000uF increase										
Low Temperature Stability 低溫特性	Measurement Frequency:120Hz.									
	Rated Voltage(V)	10	16	25	35	50	63	80~100	160~400	420~450
	Impedance Ratio(MAX) 阻抗比率(最大值)	Z(-25°C)/Z(20°C)	4	4	3	3	2	2	2	4
	Z(-40°C)/Z(20°C)	15	15	10	8	6	6	5	-	-
Load Life 負荷壽命	5000 hours, with application of working voltage at 105°C									
	Capacitance Change	Within ± 20% of Initial Value								
	tan δ	200% or less of Initial Specified Value								
	Leakage Current	Initial specified value or less								
Shelf Life 放置壽命	1000hours, no voltage applied, at 105°C • After Test : U _R to be applied for 30 minutes, 24 to 48 hours before measurement.									
	Capacitance Change	Within ± 15% of Initial Value								
	tan δ	200% or less of Initial Specified Value								
	Leakage Current	Initial Specified Value or less								
Standards 參照標準	JIS C 5141 and JIS C 5102									

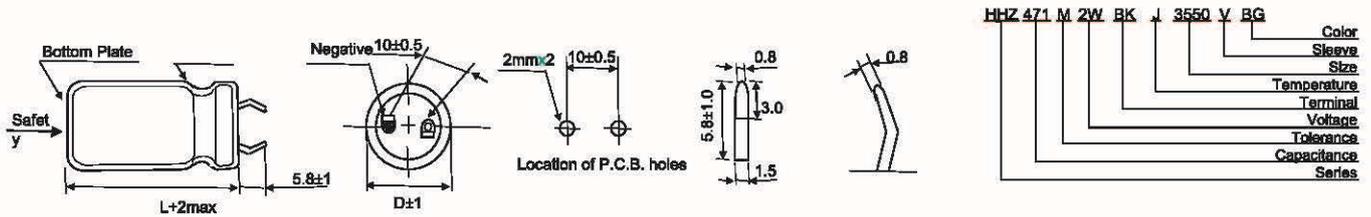
● Frequency Coefficient for Permissible Ripple Current

Frequency(Hz)	50	120	1K	10K	50K
10~100 WV	0.90	1.00	1.05	1.10	1.15
160~250 WV	0.80	1.00	1.15	1.45	1.50
315~450 WV	0.76	1.00	1.14	1.40	1.42



HHZ series

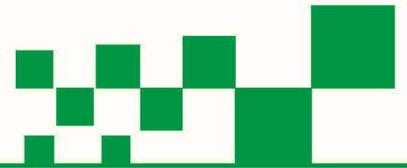
● DIMENSIONS (mm)



● STANDARD RATINGS

D×L(mm); R.C.: (A rms) at 105°C, 120Hz

Cap (µF)	WV(V) (Code) Item	10 (1A)		16 (1C)		25 (1E)		35 (1V)		50 (1H)	
		D×L	R.C.								
2200								22x25	1.11	22x35	1.32
2700										22x40	1.51
										25x30	1.48
3300								22x30	1.42	25x35	1.71
								25x25	1.41	30x30	1.72
										35x25	1.74
3900						22x25	1.32	22x35	1.58	22x50	1.91
								25x30	1.59	25x40	1.89
4700						22x30	1.51	22x40	1.78	30x35	2.12
						25x25	1.52	30x25	1.78	35x30	2.16
5600				22x25	1.45	22x35	1.71	25x35	1.98	25x50	2.39
								30x30	1.99	30x40	2.39
								35x25	2.03	35x35	2.41
6800				22x30	1.67	22x40	1.92	22x50	2.26	30x50	2.79
				25x25	1.66	25x30	1.88	25x40	2.25	35x40	2.79
						30x25	1.90				
8200				22x35	1.88	25x35	2.15	25x50	2.57		
						30x30	2.16	30x35	2.51		
						35x25	2.19	35x30	2.56		
10000		22x30	1.65	22x40	2.12	22x50	2.45	30x40	2.87		
		25x25	1.63	25x30	2.08	25x40	2.44	35x35	2.88		
				30x25	2.12						
12000		22x35	1.84	25x35	2.38	25x50	2.78	30x50	3.32		
		25x30	1.85	30x30	2.37	30x35	2.71	35x40	3.31		
		30x25	1.88	35x25	2.41	35x30	2.76				
15000		22x40	2.11	22x50	2.74	30x40	3.14				
		25x35	2.15	25x40	2.72	35x35	3.16				
18000		22x50	2.45	25x50	3.12	30x50	3.63				
		25x40	2.42	30x35	3.03	35x40	3.62				
		30x30	2.38	35x30	3.09						
		35x25	2.41								
22000		30x35	2.72	30x40	3.47						
		35x30	2.78	35x35	3.49						
27000		25x50	3.12	30x50	4.07						
		30x40	3.14	35x40	4.05						
33000		35x35	3.48								
39000		30x50	3.98								
		35x40	3.95								



HHZ series

● STANDARD RATINGS

D×L(mm); R.C.: (A rms) at 105°C, 120Hz

Cap (μ F)	WV(V) (Code) Item	63 (1J)		80 (1K)		100 (2A)		160 (2C)		200 (2D)	
		D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.
330										22x25	1.22
390								22x25	1.32	22x30	1.38
470										22x35	1.55
560						22x30	0.99	22x30	1.66	22x40	1.73
						25x25	0.98	25x25	1.67	30x25	1.77
680			22x25	0.97	22x35	1.12	22x35	1.87	22x45	1.82	
								25x30	1.89	25x35	1.86
								30x25	1.95	30x30	1.97
820			22x30	1.12	22x40	1.26	22x40	2.09	25x50	2.17	
						25x30	1.24			25x40	2.09
						30x25	1.25			30x35	2.21
1000		22x25	1.00	22x35	1.26	25x35	1.41	22x45	2.37	25x45	2.35
				25x25	1.24	30x30	1.42	22x50	2.41	25x50	2.39
						35x25	1.44	25x35	2.38	30x40	2.53
								30x30	2.39	35x30	2.60
1200		22x30	1.16	22x40	1.42	22x50	1.60	25x40	2.67	30x45	2.85
		25x25	1.15	25x30	1.4	25x40	1.59	25x45	2.71	30x45	2.87
				30x25	1.41	30x35	1.61	30x35	2.68	35x35	2.88
								30x40	2.76		
								35x30	2.85		
1500		22x35	1.32	25x35	1.62	25x50	1.86	25x50	3.09	35x40	3.34
						30x40	1.87	30x45	3.16		
						35x30	1.85	35x35	3.21		
1800		22x40	1.49	22x50	1.84	35x35	2.06	30x50	3.53	35x45	3.74
		25x30	1.46	25x40	1.83			35x40	3.64		
		30x25	1.48	30x30	1.79						
2200		25x35	1.67	25x50	2.10	30x50	2.40	35x45	4.14		
		30x30	1.68	30x35	2.06	35x40	2.39				
		35x25	1.70	35x25	2.09						
2700		22x50	1.92	30x40	2.35						
		25x40	1.91	35x35	2.36						
		30x35	1.93								
3300		25x50	2.2	30x50	2.75						
		35x30	2.18	35x40	2.73						
3900		30x40	2.41								
		35x35	2.43								
4700		30x50	2.79								
		35x40	2.78								



HHZ series

● STANDARD RATINGS

D×L(mm); R.C.: (A rms) at 105°C 120Hz

Cap (μ F)	WV(V) (Code) Item	250 (2E)		350 (2V)		400 (2G)		450 (2W)	
		D×L	R.C.	D×L	R.C.	D×L	R.C.	D×L	R.C.
82								22x25	0.60
100						22x25	0.66	22x30	0.69
120						22x30	0.75	22x35	0.76
150				22x30	0.84	22x35	0.85	22x40	0.88
						25x25	0.86	22x45	0.90
								25x30	0.89
180				25x25	0.94	22x40	0.96	22x50	1.01
						25x30	0.97	25x40	1.02
						30x25	1.21	30x30	1.03
220		22x25	1.01	22x35	1.05	22x45	1.09	25x45	1.16
				22x40	1.06	25x35	1.12	30x35	1.17
				25x30	1.07	35x25	1.21	35x30	1.23
270		22x30	1.20	22x45	1.21	22x50	1.24	25x50	1.31
				25x35	1.24	25x40	1.26	30x40	1.33
				30x30	1.27	25x45	1.29	35x35	1.38
				35x25	1.34	30x30	1.27		
330		25x25	1.32	22x50	1.37	25x50	1.44	30x45	1.51
				25x40	1.39	30x35	1.43		
				30x35	1.42	35x30	1.51		
390		22x35	1.44	25x45	1.55	30x40	1.61	30x50	1.67
		25x30	1.43	30x40	1.59	35x35	1.66	35x40	1.73
		30x25	1.50	35x30	1.65			35x45	1.76
470		22x40	1.62	25x50	1.73	30x45	1.83	35x50	1.98
				30x45	1.81	30x50	1.85		
				35x35	1.82	35x40	1.89		
560		22x45	1.81	30x50	2.01	35x45	2.13		
		22x50	1.84	35x40	2.06				
		25x35	1.78						
		30x30	1.83						
680		35x25	1.90						
		25x40	2.01	35x45	2.34				
		25x45	2.04						
		30x35	2.06						
820		35x30	2.14						
		25x50	2.28						
		30x40	2.33						
1000		30x45	2.38						
		35x35	2.37						
		30x50	2.68						
		35x40	2.71						



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