

納入仕様書

SPECIFICATION

仕様書編號

SPEC. No. : XB9-1102-4J1C(00)

發行日 : 2016. 12. 21

DATE:

To

GALAXY 鹽

客戶品名 CUSTOMER' S PRODUCT NAME

TDK 品名 TDK Product Name

Ceramic insulated capacitors disc type class 2
中高壓圓板絕緣形陶瓷電容器(種類 2)

Type 品名 : CK45-E3DD103ZYNNAC

受領欄 RECEIPT CONFIRMATION

受領日 年 月 日
DATE: YEAR MONTH DAY

TDK株式会社
TDK Corporation
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責任者 Sales Manager	担当者 Sales

責任者 Engineering Manager	確認者 Superior	担当者 Engineering Person in Charge
		

Handling precautions for High voltage ceramic capacitors

Please read the following closely before using these products.

Safety precautions

The following precautions should be observed strictly to ensure safety design.

Misuse of the product may lead to smoking of the product.

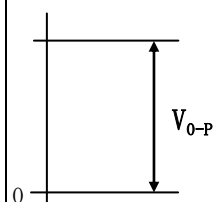
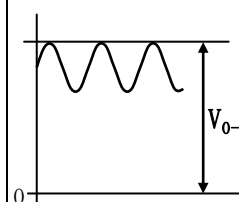
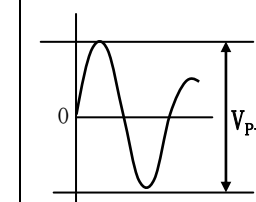
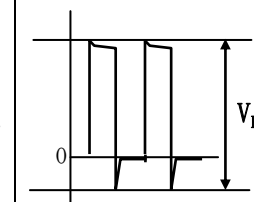
Cautions

1. Operating voltage

Use within the rated voltage of capacitor between terminals. For DC rated voltage application, you should control the peak voltage (V_{0-p}) under the rated voltage in case the AC voltage is superimposed on the DC voltage. Use within the rated voltage includes peak voltage (V_{p-p}) when AC voltage or impulse voltage applied in a circuit. Confirm irregular voltage (surge voltage, static electricity, switching noise, etc) occurs in the equipment used, and use within the rated voltage containing the irregular voltage.

When the capacitor is used as a noise suppressor in the AC primary circuit, the voltage proof test should be within the specified conditions (voltage, time, wave form, etc).

Connect by confirmation of non lose contact, and the voltage is started to apply to the circuit from zero to the specified voltage and it is stopped applying from the voltage to zero.

Voltage	(1)DC voltage	(2)DC + AC voltage	(3)AC voltage	(4)Pulse voltage
Voltage Measuring position				

2. Operating temperature

Be sure to use only those operating temperature described in our catalogue or specification.

Keep the surface temperature under the maximum temperature, which includes the maximum self-heat temperature of 20 degree C.

3. Self-exothermal

Self-exothermal temperature should be within 20 degree C on the condition of atmosphere temperature 25 degree C without the influence of wind such as the cooling fan. Be sure to use a capacitor in a circuit of current increase by AC voltage or pulse voltage applied.

When high frequency voltage or impulse voltage applied in a circuit, reliability should be influenced. Take into considerations the load reduction and self-exothermal temperature, even if voltage should be within the rated voltage.

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Cautions

4. Capacitance change of capacitors

For some of the capacitors, capacitance value may change considerably in the temperature range, or by applied DC voltage. And capacitor has aging characteristic (capacitance decreases by keeping as it is). When you use the capacitor in the time constant circuit, consult TDK whether the capacitor is available or not.

5. Vibration of capacitors

When the capacitor class 2 is used in the AC circuit, or pulse circuit, the capacitor might vibrate or noise might occur in the specified frequency. Be sure to confirm the conditions before using the capacitor.

6. Usage of capacitance and storage

Don't use capacitors in the following environments:

- * Direct sunshine
- * Areas directly exposed to water or salty water
- * Areas that become dewy
- * Areas filled with toxic gases (such as hydrogen sulfide, sulfur dioxide, chlorine, ammonia, etc)
- * Areas exposed to excess vibrations or shock conditions described in our catalogue or specification.

Store capacitors in an environment from -10 to 40 degree C, with 15 to 70%RH for 6 months maximum and use within the period after receiving the capacitors.

7. Inserting precautions

When inserting capacitors into the PC board by automatic insertion machine, confirm the conditions (such as pressure of pusher, adjustment of clinching portion) and minimize the impact force by chucking the body, or clinching the lead terminals.

Distances between the hole position onto a PC board should be equal to the pitch of capacitors.

When stretching the lead terminal, any force may load the bottom of the capacitor body and result in damage to the insulation coating. Severe damages may cause poor reliability.

8. Soldering

Don't immerse the capacitor body into the molten solder, and don't solder the terminals by reflow soldering. Use PC board, and solder the terminals in the opposite side of the body. Soldering conditions, such as pre-heat temperature, soldering temperature, and soldering time, should be followed by the descriptions in our catalogue or specification. (refer to Fig.-1)

Adjust the amount of solder within the proper volume. Select an appropriate soldering material.

When using soldering iron for installing capacitors or reworking onto the PC board, sufficient pre-heating and temperature control should be used. We recommend that the iron condition is 350 ± 10 degree C / 3.5 ± 0.5 s. as 1 time, and you should use an adequate tip diameter (ϕ 3mm Max.) with the soldering iron as well as a proper wattage (50W Max.). Don't touch the capacitor body directly with soldering tip, except for the terminals of capacitor.

9. Flux

When using flux for soldering capacitors onto the PC board, spread it thinly and uniformly.

Flux will be composed of halogenated material less than 0.1 wt% (cl conversion).

Don't use a strong acid grade of flux. When using water-soluble flux, sufficient cleansing should be done.

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Cautions

10. Cleansing

When the cleansing should not be sufficient, the cleansing liquid or any residue might leave on the capacitor body, they may deteriorate the insulation coating or performance (insulation resistance, etc). When using ultrasonic cleansing, avoid transmitting vibrations onto the PC board. Conditions of ultrasonic cleansing, such as output frequency and time of the method, should be taken into considerations.

After cleansing capacitors, dry them well. Cleansing liquid should not contain electrolyte, nor leave any residue. Through the result of the cleansing method, confirm whether the quality of the capacitors have been affected due to the conditions.

11. Coating or molding

When coating or molding capacitors after installing components onto the PC board, confirm whether the performance of capacitors may not be damaged by the work.

12. Mechanical stress

Don't submit to excessive mechanical shock. Don't use capacitors which may have been damaged due to dropping, etc.

If possible, avoid bending the terminals of capacitors. In an unavoidable case of bending, use a small jig to decrease the mechanical stress on the capacitors.

13. Others

Please contact TDK before using our capacitors listed in this catalogue or specifications for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property, or when intending to use one of our capacitors for other applications than specified in this catalog or specifications.

- * Medical equipment
- * Aerospace equipment
- * Power plant equipment
- * Aircraft equipment
- * Transportation equipment (vehicles, trains, ships, etc)
- * Undersea equipment
- * Traffic signal equipment
- * Disaster prevention, crime prevention equipment
- * Data processing equipment exerting influence on public
- * Application of similar complexity and, or reliability requirements to the applications listed in the above

Please refer to the guideline of notabilia for fixed ceramic capacitors issued by JEITA (Japan Electronics and Information Technology Association, EIAJ RCR-2335).

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HV095F19

中高壓電容器使用注意事項

使用製品前請認真閱讀本規格書。

安全注意點

使用本製品時，請充分考慮注意事項、進行安全設計。錯誤的使用方法可能造成產品異常。



注意

1. 使用電壓

使用電容器時，在端子間印加的電壓應該低於額定電壓。在直流電壓上重迭加交流電壓時，峰值電壓應該低於額定電壓。使用交流電壓或脈衝電壓時，尖峰電壓也應該低於額定電壓。另外，要確認使用的電源設備是不是有可能印加異常電壓（浪湧電壓，靜電，開關突峰電壓），如果產生則異常電壓也應該低於額定電壓（如下圖示）。

交流一次側回路時，用於防止雜波的電容器其交流耐壓試驗的實驗條件不能超過規定的條件（電壓，時間，波形）。並且，確保接觸良好，防止接觸不良發生，電壓從“0”開始上升，下降時也必須下降至“0”。

电压	(1) 直流电压	(2) 直流+交流电压	(3) 交流电压	(4) 脉冲电压
相位 (額定电压)				

2. 使用溫度

使用溫度必須控制在製品納入仕様書規定的溫度範圍內。

另外，使用時，電容器的表面溫度，包括其自身發熱，必須低於最高使用溫度。

3. 自發熱

在環境溫度 25℃，沒有冷卻風扇工作的狀態下，自身發熱（電容器的表面溫度與環境溫度的差值）必須在 20℃以下。在連續印加交流電壓或脈衝電壓，電流較大的回路中，更要特別的注意。在連續印加高頻電壓，高頻脈衝電壓的回路中，雖然在額定電壓以下，也有可能影響到信賴性，所以使用時要考慮到減輕負荷及自身發熱。

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注 意

4. 電容器的靜電容量變化

由於使用溫度和印加電壓的不同，電容器的靜電容量就有可能發生變化。而且，電容器在自然放置其間，靜電容量也有可能減少，也就是 Aging 特性。在特定回路中也會無法使用，所以如有特殊要求請說明。

5. 電容器的振動

電容器（種類Ⅱ）在交流回路或者脈衝回路中使用時，由於特定的頻率，電容器本身可能會發生振動，或者發出聲音，噪音。所以在使用之前，請確認能否符合貴司要求。

6. 電容器的使用及保存（保管）

請不要在以下地方使用（保管）電容器。

- 受到阳光直射的地方。
- 直接接触到水，盐水的地方
- 凝結露水的地方
- 有腐蚀性气体的地方，如：硫化氢，亚硫酸，氯气，氨气等
- 振动或者冲击条件超过制品说明书货纳入式样书的规格范围的恶劣环境

電容器請不要保管在高溫高濕的環境中，而應該保管在室溫 $-10\sim 40^{\circ}\text{C}$ ，濕度 $15\sim 70\%RH$ 以內的環境中，並在納入後 6 個月內使用。

7. 安裝上的注意點

用自動插件機把電容器插入到基板上時，要確認並管理自動插件機的插件條件（推杆壓力、剪切部的調整等），製品拔取、導線剪切時，不要對製品施加過度的衝擊和壓力。電容器的端子間距要與基板孔的間隔一致。（外力改變導線間距的時候，有可能會損壞導線根部的塗料，如果發生此類的損壞，就有可能導致信賴性下降。）

8. 焊錫

- 焊錫時，不要將電容器本體浸到焊錫液中。
不要使用回流焊。
- 插入基板後，請於電容器正反面與基板接觸的部位作焊接。
- 波峰焊錫條件（預熱的溫度及時間，焊錫的溫度及時間）在製品說明書或納入仕様書的規格範圍內。（參考圖-1）
- 焊錫量要適中，請選定合適的焊錫材料。
- 修正作業時，要進行充分地預熱，並特別注意電烙鐵的直徑（約 3ϕ 以下）以及功率（約 $50W$ 以下）。在溫度 $350 \pm 10^{\circ}\text{C}$ 下，加熱時間控制在 3.5 ± 0.5 秒內。且僅能進行一次修正。
- 電烙鐵的先端不要直接接觸到電容器引腳以外的部位。

9. 助焊劑

把電容器放到印刷基板上進行焊錫時，要使用必要最小量的助焊劑進行均勻的塗布。使用的助焊劑的鹵系物質含有量應該小於 $0.1\%wt$ （Cl 換算）。而且，不能使用強酸性物質。使用水溶性的助焊劑時，要充分洗淨。

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注 意

1 0 . 洗淨

若未進行充分洗淨，助焊劑的殘渣及其他的異物附著在電容器表面，有可能使電容器的塗裝樹脂惡化，使電容器的性能（絕緣抵抗）惡化。用超音波洗淨的話，要做到直接振動不傳導到基板。要注意超音波洗淨條件中的輸出頻率以及時間。洗淨後要進行充分的乾燥。另外，洗淨液中不能含有電解質，注意沒有殘留電解質殘渣。洗淨前，要確認實際的洗淨條件不會對電容器的品質造成影響。

1 1 . 樹脂塗裝及樹脂成形

電容器安裝到基板上後進行樹脂塗裝及樹脂成形時，要確認安裝狀態不會對品質有所影響。不要對電容器施加超過其使用溫度範圍的熱度。由於熱膨脹、收縮應力會使電容器的絕緣塗料生傷痕、變形有可能導致電容器的機械強度以及信賴性下降。接著劑、塗裝樹脂含有有機溶劑的話，要確認其對電容器品質沒有影響。同時，如果乾燥、硬化不完全，可能導致電容器樹脂蓬鬆，導致絕緣不良。

1 2 . 機械壓力

不要給電容器施加過度的機械性衝擊，由於落下等原因，電容器受到過度的衝擊或振動就有可能導致失效。儘量不要對電容器端子進行彎曲加工，一定要進行彎曲加工的話，請使用不會對端子本體造成機械性衝擊的治具。

1 3 . 本仕様書中記載的製品使用在廣泛使用的標準用途的一般電子設備(影音設備、自動化辦公設備、通信設備、家用電器、娛樂設備、電腦、個人電器、事務機器、計測機器、工業用機器人)上，而且這些一般電子設備只限於通常的操作及使用方法。但是如果製品用於有高安全性，信賴性要求的用途，或者可能會對社會造成重大影響的以下特定用途，我們並不保證其適合性及其性能的發揮，如果因為使用時超出本仕様書的條件或使用在特殊用途上而發生損害，本公司不予負責，請瞭解。

- ①航空，航天機器
- ②運輸工具(汽車，電車，船舶等)
- ③醫療設備
- ④發電控制用設備
- ⑤核能相關設備
- ⑥海底設備
- ⑦交通相關控制設備
- ⑧公共性的高情報處理設備
- ⑨軍事用途設備
- ⑩電加熱設備，燃燒設備
- ⑪防災及防暴設備
- ⑫各種安全機器
- ⑬其他被公認為特定用途的部件、設備

另外，本製品使用於廣泛使用的標準用途時，為了進一步確認安全性，請注意設計保護回路、備用回路等。

其他關於電容器的使用注意事項請參照[電子機器用固定磁器電容器的使用注意事項指導書] JEITA 發行 (EIAJ RCR-2335)。

P L P 仕様 No.

H V 0 9 5 F 1 9

Scope 適用範圍

This specification applies to ceramic insulated capacitors disc type used in electronic equipment.
本納入仕様書適用於使用在標準用途的一般電子設備中的中高壓圓板絕緣形陶瓷電容器

Relative standards 相關規格

- JIS C 6422-1991 [用於電子機器上的固定陶瓷電容器 (種類 2)]
- JIS C 5102-1994 [用於電子機器上的固定電容器的試驗方法]

Mention item 記載內容

- | | |
|---|---------|
| 1. Part No. | 品名 |
| 2. Operating temperature range | 使用溫度範圍 |
| 3. Test condition | 試驗條件 |
| 4. Performance | 性能 |
| 5. Marking | 記號 |
| 6. Figure & Dimension | 形狀及尺寸 |
| 7. Label & Transport | 標籤內容及運輸 |
| 8. Notification before the modification | 變更的事前聯絡 |

We do not use the following material (1), (2) in these products.

本製品未使用下列物質名的溴化阻燃劑。

- (1) PBBs (Poly Bromo Biphenyls)
- (2) PBDEs (Poly Brominated Diphenyl Ethers)

We do not use Class I and II ODS (Ozone depleting substances) in all our process of these products.

在本製品的加工、組裝等全過程中，未使用 CLASS 1 & 2 破壞臭氧層化學物質。

These products shall conform to RoHS Directive.

本製品符合 RoHS 指令。

These products are Halogen-free. (Br ≤ 900ppm, Cl ≤ 900ppm, Br+Cl ≤ 1500ppm)

本製品為無鹵品。

Manufacturing place 生產場所

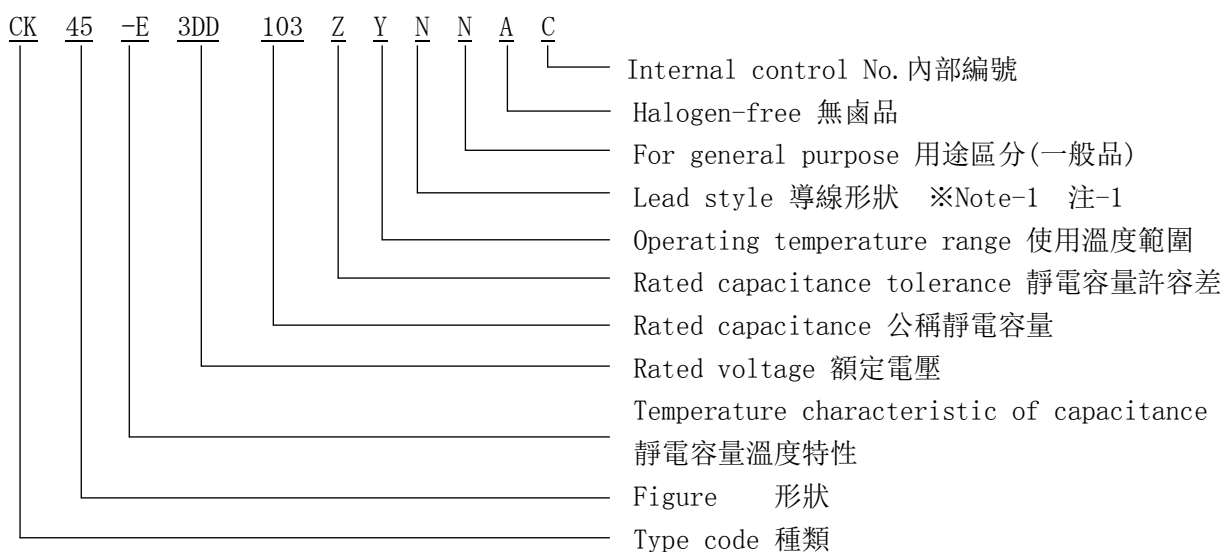
Manufacturing site should be TDK Taiwan & TDK Xiamen.

本製品的生產場所為臺灣 TDK 及廈門 TDK。

改訂履歷				
	版	年月日	担当	變更內容
Division 事業部 (部)			Date Issued 作成日	Dwg. No. 仕様書編號
Ceramic Capacitors Business Group 陶瓷電容器製造部			2014. 12. 29	XB9-1102-4J1C (00)

1. Part No. 形名

(Example 例)



※ Note-1 注-1

Lead style 導線形狀 N : Vertical kink short lead (Bulk) 側彎短導線形 (散裝品)

2. Operating Temperature range 使用溫度範圍 : -25 °C to +105 °C ※ Note-2 注-2

※ Note-2 注-2 Operating temperature range max. is +105 °C

(Including capacitor's self-heating max. +20 °C)

最高使用溫度為+105°C, 包含電容器自身發熱+20°C MAX. 在內。

3. Test condition 試驗狀態

Test and measurement shall be made at the standard condition, (Temperature 15 to 35 °C, relative humidity 45 to 75 % and atmospheric pressure 860 to 1060 hPa.), Unless otherwise specification herein. If doubt occurred on the value of measurement, and remeasurement was requested by customer capacitors shall be measured at the reference condition (Temperature 20 ±2 °C , relative humidity 60 to 70 % and atmospheric pressure 860 to 1060 hPa.)

無特別規定時, 在標準狀態(溫度 15 ~35°C , 相對濕度 45 ~75% , 860~1060hPa.)下進行試驗及測定。假如對標準狀態的測定值判定有疑問或特別要求的情況下, 以判定狀態測定(溫度 20 ±2 °C、相對濕度 60 ~70 %、氣壓 860~1060 Pa.)結果判定。

4. Performance 性能

The performances shall comply with Table-1

電容器必須滿足表-1 各項規格要求。

Table-1 表-1

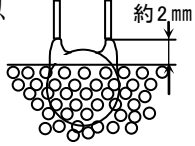
No. 編碼	Items 項目	Performance 性能	Test method 試驗方法												
1	Appearance and dimension 外觀及尺寸	The appearance and dimension shall be as given in paragraph 6 and Table-2 參照內容 6 及表-2	Visual check and measuring with Micrometer. 目視檢查外觀 尺寸使用游標卡尺測定												
2	Marking 記號	The marking shall be easily legible (Paragraph 5) 參照內容 5, 記號清晰且易讀。	Visual check 目視檢查。												
3	Withstand voltage 耐電壓	Between terminals 端子間	No failure 無異常												
		Between terminal and exterior cladding 端子外裝間	No failure 無異常												
			Twice rated voltage 1 to 5 sec. charge and discharge current shall be 50mA or less 以 2 倍的額定電壓測定 1~5 秒鐘, 其充放電流限制在 50mA 以下。												
			The metallic small ball method 1300V DC (1 to 5 sec.) Charge and discharge current shall be 50mA or less. 使用金屬小球法。以 DC1300V 之電壓測定 1~5 秒種。其充放電流限制在 50mA 以下。 												
4	Insulation resistance 絕緣阻抗	Between terminals 端子間	10000 MΩ or more 以上												
			The insulation resistance should be measured with DC500±50V within 60±5 sec. 以 DC 500±50V 電壓測定 60±5 秒后之值。												
5	Capacitance 靜電容量	With the tolerances specified with Table-3 to 5 符合表 3~5 規定之許容差	Measuring frequency : 1kHz ±20 % Measuring voltage : 5Vrms. or less 測定頻率 : 1kHz ±20 % 測定電壓 : 5V(rms) 以下												
6	Dissipation factor (tan δ)	2.5 % or less 以下													
7	Capacitance temperature characteristic 靜電容量溫度特性 (No voltage application) 不加電壓	B : Within ±10 % 以內 E : Within -55 % ~ +20 % 以內	The capacitance measurement should be made at each step specified in Table. temperature coefficient on the basis of a capacity level of Step 3. 按下表溫度測定容量值。溫度係數以步驟 3 的容量值為基準。												
			<table border="1"> <thead> <tr> <th>Step 步驟</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>Temp. (°C)</td> <td>20±2</td> <td>-25±3</td> <td>20±2</td> <td>85±2</td> <td>20±2</td> </tr> </tbody> </table>	Step 步驟	1	2	3	4	5	Temp. (°C)	20±2	-25±3	20±2	85±2	20±2
Step 步驟	1	2	3	4	5										
Temp. (°C)	20±2	-25±3	20±2	85±2	20±2										
8	Strength of terminal 端子強度	Tensile strength 抗張強度	Lead wire shall not be disconnected, and capacitor shall not be damaged 導線不斷裂, 電容器不破損												
			The force of 10N shall be applied to the axial direction of the termination. 在導線引出方向施加 10N 的力。												

Table-1 Continue 表-1 (續)

No. 編碼	Items 項目		Performance 性能	Test method 試驗方法
8	Strength of terminal 端子強度	Bending strength 彎曲強度	Lead wire shall not be disconnected, and capacitor shall not be damaged 導線不斷裂，電容器不破損	The force of 5N shall be applied to the axial direction of the terminal and the body shall be inclined through an angle of 90 degrees, then the body shall be returned to the original position. Furthermore the body shall be inclined to the other direction of 90 degrees. This operation shall be carried out two times. 在導線引出方向施加 5N 的力，將電容器本體旋轉到 90° 位置後釋放到 180° 相反位置後並回到原點。重复 2 次。
9	Vibration resistance 耐振性	Appearance 外觀	No marked defect 無明顯異常	Vibration frequency range: 10 to 55Hz. Displacement: 0.75mm Total duration: 6 hours (2 hours for each direction: X, Y, Z) 頻率: 10~55 Hz 位移: 0.75mm 時間: 在 X, Y, Z 3 個方向各 2 小時，共計 6 小時。
		Capacitance change 靜電容量變化率	Within the tolerances specified with No.5 符合編號-5 規定之許容差	
		Dissipation factor (tan δ)	Within the value specified with No.6 符合編號-6 的記載的規格值	
10	Resistance to soldering heat 焊錫耐熱性	Appearance 外觀	No marked defect 無明顯異常	Soldering temperature: 350 ± 10°C / 3.5 ± 0.5 s or 260 ± 5°C / 10 ± 1 s Dipping depth: 1.5 to 2.0mm from the bottom of lead terminal. (shielding board shall be used.) 焊錫溫度: 350 ± 10°C / 3.5 ± 0.5 秒 或者、260 ± 5 °C / 10 ± 1 秒 浸漬位置: 離導線根部 1.5mm~2mm (使用遮擋板) 焊錫後在常溫常濕中放置 1~2 小時後再測試。
		Capacitance change 靜電容量變化率	B : within ± 5 % 以內 E : within ± 15 % 以內	
		Withstand voltage 耐電壓 (Between terminals 端子間)	No failure 無異常	
11	Solderability 焊錫性		At least 3/4 of circumferential dipped into solder shall be covered with new solder 導線橫截面上須有圓周之 75% 以上面積被焊錫所履蓋	Soldering temperature : 245 ± 5 °C Dipping time : 2 ± 0.5 sec. Concentration of solution shall be about 25 % colophonium in weight ratio. 焊錫溫度: 245 ± 5 °C 焊錫時間: 2 ± 0.5 秒 松脂濃度為 25Wt%。

Table-1 Continue 表-1 (續)

No. 編碼	Items 項目	Performance 性能	Test method 試驗方法	
12	Temperature cycle and dipping cycle 溫度及浸漬循環	Appearance 外觀	No marked defect 無明顯異常	Temperature cycles first, then dipping cycle should be tested. Temperature cycle: 5 cycles Step 1: -25°C, 30 min. Step 2: room temp., 3 min. Step 3: +125°C, 30 min. Step 4: room temp., 3 min. Dipping cycle: 2 cycle Step 1: +65°C, 15 min. Step 2: 0°C, 15 min. (saturated aqueous solution of salt) Precondition :pre-heat 125±3°C, 1hr, leaving room temp. for 24±2 hrs. 溫度循環: 5 cycles 步驟 1: -25°C、30 分 步驟 2: 常溫、3 分 步驟 3: +125°C、30 分 步驟 4: 常溫、3 分 浸漬循環: 2 cycles 步驟 1: +65°C、15 分 (清水) 步驟 2: 0°C、15 分 (飽和食鹽水) 前處理: 在 125±3°C 的條件下, 進行 1 小時熱處理, 再至於標準狀態下 24±2 小時後進行測定, 所得值為初期值。 後處理: 試驗後至於標準狀態下 24±2 小時後, 再測定。
		Capacitance change 靜電容量變化率	B : Within ±10 % 以內 E : Within ±20 % 以內	
		Dissipation factor (tan δ)	5.0 % or less 以下	
		Insulation resistance 絕緣阻抗	1000 MΩ or more 以上	
		Withstand voltage 耐電壓 (Between terminals 端子間)	No failure 無異常	
13	Moisture resistance 耐濕性 (Steady state 定常狀態)	Appearance 外觀	No marked defect 無明顯異常	Test temperature : 40 ±2 °C Relative humidity : 90 to 95 % Test time : 500 +24, -0 hours Capacitors shall be measured after leaving it under room temperature for 1 to 2 hours. 在 40 ±2 °C、相對濕度 90 ~95 % 的恒溫恒濕環境中放置 500 +24, -0 小時後, 取出在室溫下放置 1 ~2 小時後測定。
		Capacitance change 靜電容量變化率	B : Within ±10 % 以內 E : Within ±20 % 以內	
		Dissipation factor (tan δ)	5.0 % or less 以下	
		Insulation resistance 絕緣阻抗	1000 MΩ or more 以上	
14	High temperature loading 高溫負荷	Appearance 外觀	No marked defect 無明顯異常	Test temperature : 105 ±3 °C Test time : 1000 +48, -0 hours 150% rated voltage applied. Capacitors shall be measured after leaving it under room temperature for 1 to 2 hours. Charge and discharge current shall be 50mA or less 在 105 ±3 °C 的恒溫槽中連續印加 1.5 倍額定電壓的直流電壓, 持續 1000 +48, -0 小時, 取出后在室溫下放置 1 ~2 小時后測定。 其充放電流限制在 50mA 以下。
		Capacitance change 靜電容量變化率	B : Within ±10 % 以內 E : Within ±20 % 以內	
		Dissipation factor (tan δ)	4.0 % or less 以下	
		Insulation resistance 絕緣阻抗	2000 MΩ or more 以上	

Table-1 Continue 表-1 (續)

No. 編碼	Items 項目	Performance 性能	Test method 試驗方法
15	Moisture resistance loading 耐濕負荷	Appearance 外觀	No marked defect 無明顯異常
		Capacitance change 靜電容量變化率	B : Within $\pm 10\%$ 以內 E : Within $\pm 20\%$ 以內
		Dissipation factor ($\tan \delta$)	5.0 % or less 以下
		Insulation resistance 絕緣阻抗	500 M Ω or more 以上
			Test temperature : 40 ± 2 °C Relative humidity : 90 to 95 % Test time : 500 +24, -0 hours rated voltage applied. Capacitors shall be measured after leaving it under room temperature for 1 to 2 hours. Charge and discharge current shall be 50mA or less. 在 40 ± 2 °C、相對濕度 90 ~95 % 的恒溫恒濕中連續印加額定電壓，持續 500 +24, -0 小時，取出后在室溫下放置 1 ~ 2 小時后測定。 其充放電流限制在 50mA 以下。

5. Marking 記號

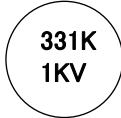
Marking on the one sides 單面記號
 Mark color black or nearly colors 記號表示顏色為黑色或與黑色相近之顏色

Temperature characteristic : B

靜電容量許容差: B

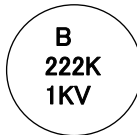
Dia: 6.0 mm Max.

製品直徑: 6.0 mm以下

Marking item 表示項目	Example 表示例
1. Rated capacitance 公稱靜電容量 : 331 2. Tolerance capacitance 靜電容量許容差 : K 3. Rated voltage 額定電壓 : 1kV	

Dia: 6.5 mm Min.

製品直徑: 6.5 mm以上

Marking item 表示項目	Example 表示例
1. temperature characteristic 靜電容量溫度特性 : B 2. Rated capacitance 公稱靜電容量 : 222 3. Tolerance capacitance 靜電容量許容差 : K 4. Rated voltage 額定電壓 : 1kV	

Tolerance of capacitance K : $\pm 10\%$


靜電容量許容差記號

Temperature characteristic : E

靜電容量許容差: E

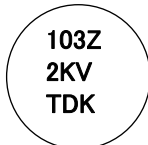
Dia: 6.0 mm Max.

製品直徑: 6.0 mm以下

Marking item 表示項目	Example 表示例
1. Rated capacitance 公稱靜電容量 : 471 2. Tolerance capacitance 靜電容量許容差 : Z 3. Rated voltage 額定電壓 : 1kV	

Dia: 6.5 mm Min.

製品直徑: 6.5 mm以上

Marking item 表示項目	Example 表示例
1. Rated capacitance 公稱靜電容量 : 103 2. Tolerance capacitance 靜電容量許容差 : Z 3. Rated voltage 額定電壓 : 2kV 4. Manufacture' s name 製造業者名 : TDK	

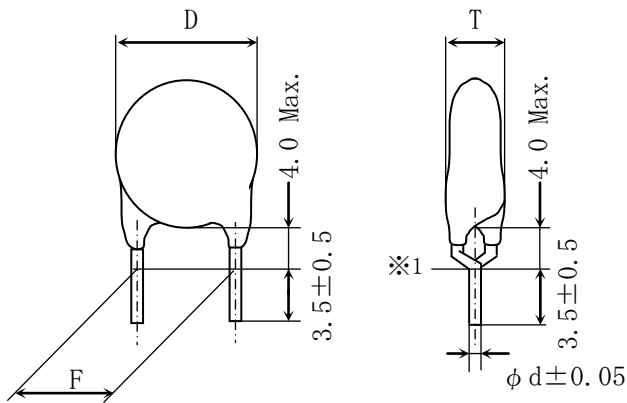
Tolerance of capacitance Z : $\pm \frac{80}{20}\%$

靜電容量許容差記號

6. Figure & dimension 形狀及尺寸

Vertical kink short lead (Lead style: N / Bulk)

側彎短導線形(記號:N / 散裝品)



Unit : mm

單位

※1 Coating on lead shall not extend beyond the bottom of vertical kink.

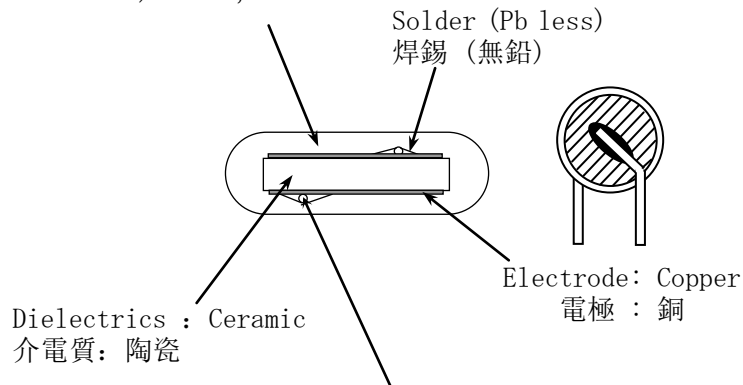
P長(塗料付著長度)不可超出成形部位根部。

Your part No. 客戶料號	TDK part No. TDK 品名	Cap. 公稱靜電 容量 (pF)	T.C 溫度 特性	C-Tol. 靜電容量 許容差(%)	Dimension (Unit : mm) 尺寸 單位			
					D Max.	T Max.	F	φ d
	CK45-E3DD103ZYNNAC	10000	E	+80, -20	14.5	5.0	7.5 ± 1.5	0.6

Coating material: Epoxy resin (Color: Blue)

絕緣塗料: 環氧樹脂(藍色)

(Flame class): UL94, V-0



Lead wire: CP wire (Tin plated copper covers steel wire, Pb less)

導線: CP線(無鉛鍍錫銅包鋼線)

7. Label and transport 標籤及運輸

Capacitors shall be packaged prior to shipment so as to prevent damage during transportation and storage. Shipping carton contains the following information on the label.
 出貨時，採用使製品在運輸及保管中免受損傷的包裝方式。
 包裝箱加貼如下內容的標籤。

- | | |
|--------------------------|--------|
| a) TDK item name | 製品名稱 |
| b) Quantity | 數量 |
| c) TDK inspection number | 出貨檢查編號 |
| d) Manufacturer's name | 製造商名 |
| e) Country of origin | 原產國 |

8. Notification before the modification 變更的事前聯絡

We'll previously notify the modified place of manufacture, manufactured articles and materials.
 製造場所、製造方法及材料變更時，事先聯絡，告知變更。

Flow soldering recommended condition 焊錫建議條件

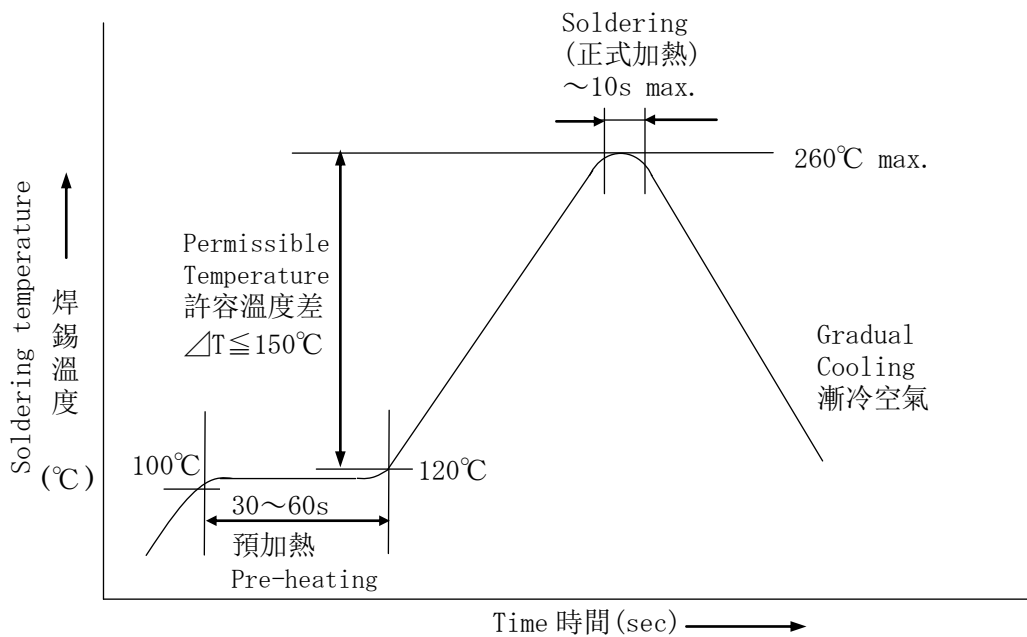


Fig-1(圖-1)