

# SPECIFICATION

SPEC. No. S15CH-027A

DATE: Jul. 2017

To

**Non-Controlled Copy**

CUSTOMER'S PRODUCT NAME

TDK'S PRODUCT NAME

Ceramic insulated capacitors disc type class 2

TYPE:CK45 - \* 3△DOOO□Y◇NA

## RECEIPT CONFIRMATION

DATE: \_\_\_\_\_ YEAR \_\_\_\_\_ MONTH \_\_\_\_\_ DAY \_\_\_\_\_

TDK Corporation

Sales

Electronic Components Sales &  
Marketing Group

Engineering

Ceramic Capacitors Business Group .

APPROVED	Person in charge

APPROVED	CHECKED	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  $350 \pm 10$  degree C/  $3.5 \pm 0.5$ s. as 1 time, and you should use an adequate tip diameter ( $\phi 3$ mm 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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Scope

This specification applies to ceramic insulated capacitors disc type used in electronic equipment.

Mention item

1. Part No.
2. Operating temperature range
3. Test condition
4. Performance
5. Marking
6. Figure & Dimension
7. Label & Transport
8. Notification before the modification

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

- (1) PBBOs (Poly Bromo Biphenyl Oxides)
- (2) PBBs (Poly Bromo Biphenyls)

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

These products shall conform to RoHS Directive.

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

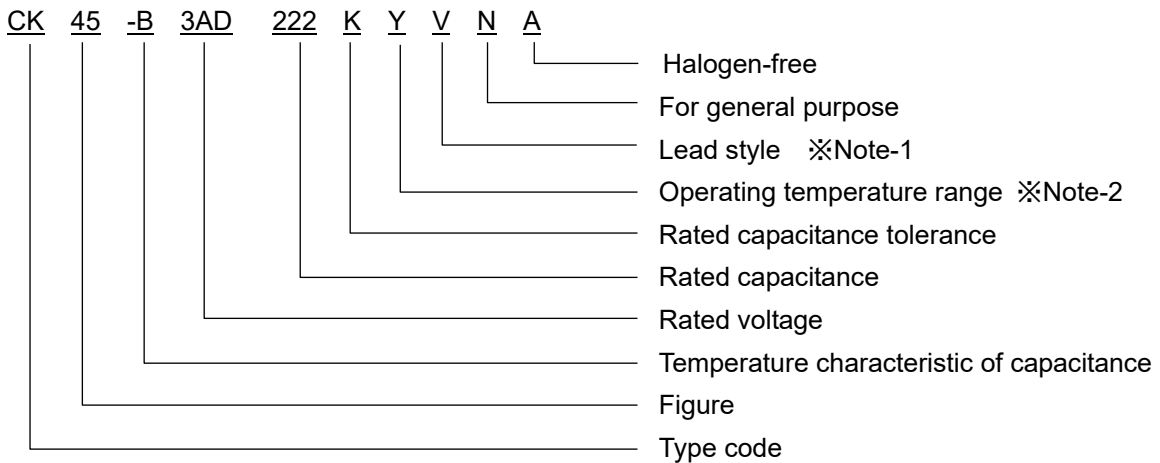
Manufacturing place

Manufacturing site should be TDK Taiwan & TDK Xiamen

Division	Date Issued	SPEC. No.
Ceramic Capacitors Business Group	Aug. 2015	S15CH-027A

1. Part No.

(Example)



※ Note-1

- |            |                                      |
|------------|--------------------------------------|
| Lead style | G : Vertical kink long lead (Bulk)   |
|            | N : Vertical kink short lead (Bulk)  |
|            | V : Vertical kink long lead (Taping) |

2. Operating Temperature range : -25 °C to +105 °C

※ Note-2 Operating temperature range max. is +105 °C  
(Including capacitor's self-heating max. +20 °C)

3. Test condition

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.)

4. Performance

The performances shall comply with Table-1

Table-1

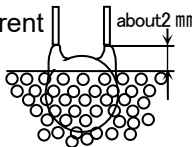
No.	Items		Performance	Test metho								
1	Appearance and dimension		The appearance and dimension shall be as given in paragraph 6 and Table-2 to 8	Visual check and measuring with Micrometer.								
2	Marking		The marking shall be easily legible (Paragraph 5)	Visual check								
3	Withstand voltage	Between terminals	No failure	Twice rated voltage(2kV) 1 to 5 sec. charge and discharge current shall be 50mA or less								
		Between terminal and exterior cladding	No failure	The metallic small ball method 1300V DC (1 to 5 sec.) Charge and discharge current shall be 50mA or less. 								
4	Insulation resistance	Between terminals	10000 MΩ or more	The insulation resistance should be measured with DC500±50V within 60±5 sec.								
5	Capacitance		With the tolerances specified with Table-3 to 8	Measuring frequency : 1kHz ±20 % Measuring voltage : 5Vrms. or less								
6	Dissipation factor ( tanδ )		2.5 % or less									
7	Capacitance temperature characteristic (No voltage application)		B : Within ±10 % E : Within -55 % ~ +20 %	The capacitance measurement should be made at each step specified in Table. temperature coefficient on the basis of a capacity level of Step 3.								
			<table border="1" data-bbox="782 1075 1484 1164"> <thead> <tr> <th>Step</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>8 5±2</td> <td>20 ±2</td> </tr> </tbody> </table> <p style="text-align: center;">Initial :pre-heat 125±2°C, 1h, Leaving room temp. for24±2h.</p>		Step	1	2	3	4	5	Temp.(°C)	20 ±2
Step	1	2	3	4	5							
Temp.(°C)	20 ±2	-25 ±3	20 ±2	8 5±2	20 ±2							
8	Strength of terminal	Tensile strength	Lead wire shall not be disconnected, and capacitor shall not be damaged.	The force of 10N shall be applied to the axial direction of the termination.								
		Bending strength	Lead wire shall not be disconnected, and capacitor shall not be damaged	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.								
9	Resistance vibration	Appearance	No marked defect	Vibration frequency range: 10 to 55Hz. Displacement: 0.75mm Total duration: 6 hours (2 hours for each direction: X,Y,Z)								
		Capacitance change	Within the tolerances specified with No.5									
		Dissipation factor ( tan δ )	Within the value specified with No.6									

Table-1 Continue

No	Items	Performance	Test metho	
10	Resistance to soldering heat	Appearance	No marked defect	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.) Initial :pre-heat 125± 2°C, 1h. Leaving room temp. for 24± 2h. After test: leaving room temp. for 24±2h.
		Capacitance change	B : Within ± 5% E : Within ± 15%	
		Withstand voltage (Between terminals)	No failure	
11	Solderability	At least 3/4 of circumferential dipped into solder shall be covered with new solder	Soldering temperature : 245± 5 °C Dipping time : 2± 0.5 sec. Concentration of solution shall be about 25 % colophonium in weight ratio.	
12	Temperature cycle and dipping cycle	Appearance	No marked defect	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: +105°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,
		Capacitance change	B: Within ± 10 % E :Within ± 20%	
		Dissipation factor ( tan δ )	5.0 % or less	
		Insulation resistance	1000 MΩ or more	
		Withstand voltage (Between terminals)	No failure	
13	Moisture resistance (Steady state)	Appearance	No marked defect	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.
		Capacitance change	B: Within ± 10 % E :Within ± 20%	
		Dissipation factor ( tan δ )	5.0 % or less	
		Insulation resistance	1000 MΩ or more	
14	Moisture resistance loading	Appearance	No marked defect	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
		Capacitance change	B: Within ± 10 % E :Within ± 20%	
		Dissipation factor ( tan δ )	5.0 % or less	
		Insulation resistance	500 MΩ or more	
15	High temperature loading	Appearance	No marked defect	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. Initial :pre-heat 125± 2°C, 1h. Leaving room temp. for 24± 2h. After test: leaving room temp. for 24± 2h Charge and discharge current shall be 50mA or less
		Capacitance change	B :Within ± 10% E :Within ± 20%	
		Dissipation factor ( tan δ )	4.0 % or less	
		Insulation resistance	2000 MΩ or more	

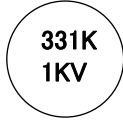


5. Marking

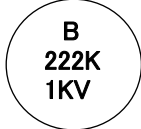
Marking on the one sides  
 Mark color black or nearly colors

Temperature characteristic : B

Dia : 6.0 mm Max.

Marking item	Example
1. Rated capacitance : 331 2. Tolerance capacitance : K 3. Rated voltage : 1kV	


Dia : 6.5 mm Min.\_

Marking item	Example
1. temperature characteristic : B 2. Rated capacitance : 222 3. Tolerance capacitance : K 4. Rated voltage : 1kV	

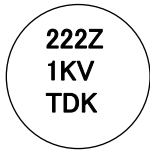
Tolerance of capacitance K : ±10 %

Temperature characteristic : E

Dia : 6.0 mm Max.

Marking item	Example
1. Rated capacitance : 471 2. Tolerance capacitance : Z 3. Rated voltage : 1kV	

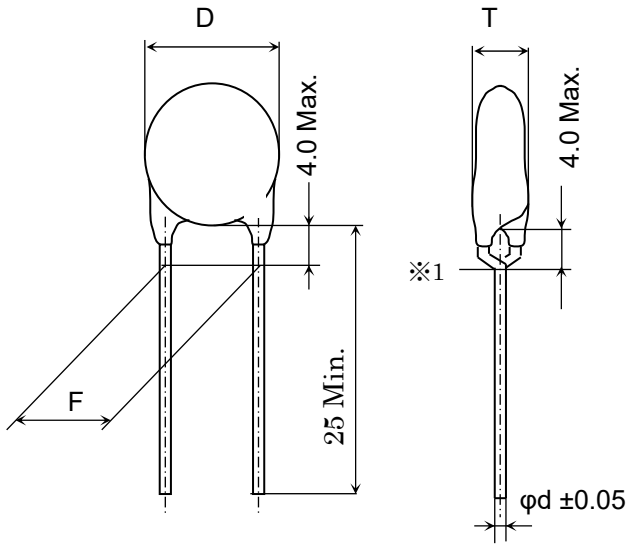
Dia : 6.5 mm Min.

Marking item	Example
1. Rated capacitance : 222 2. Tolerance capacitance : Z 3. Rated voltage : 1kV 4. Manufacture's name : TDK	

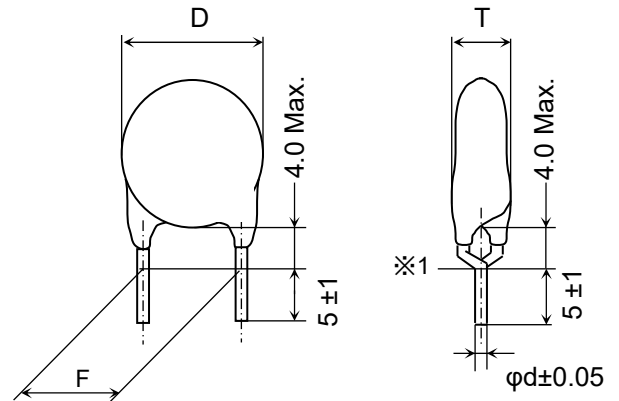
Tolerance of capacitance Z : +80,-20 %

6. Figure & dimension

6.1 Vertical kink long lead (Lead style: G / Bulk)



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



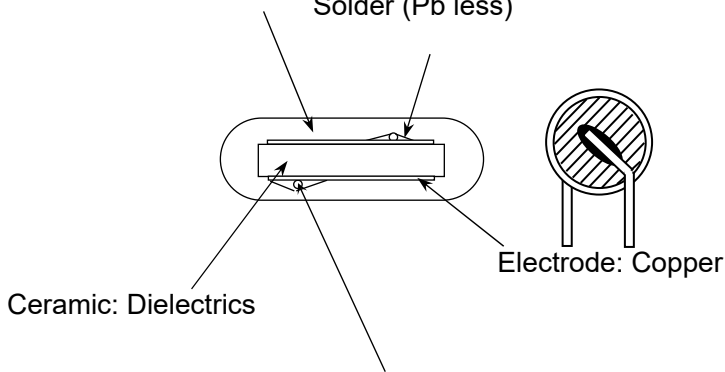
\*1 Coating on lead shall not extend beyond the bottom of vertical kink.

Unit : mm

Coating material: Epoxy resin (Color: Blue)

(Flame class): UL94, V-0

Solder (Pb less)



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

6.3 Vertical kink long lead (lead style: V / Taping)

(F=5.0mm, Pitch: 12.7mm, Shape: A, at Table-3~8)

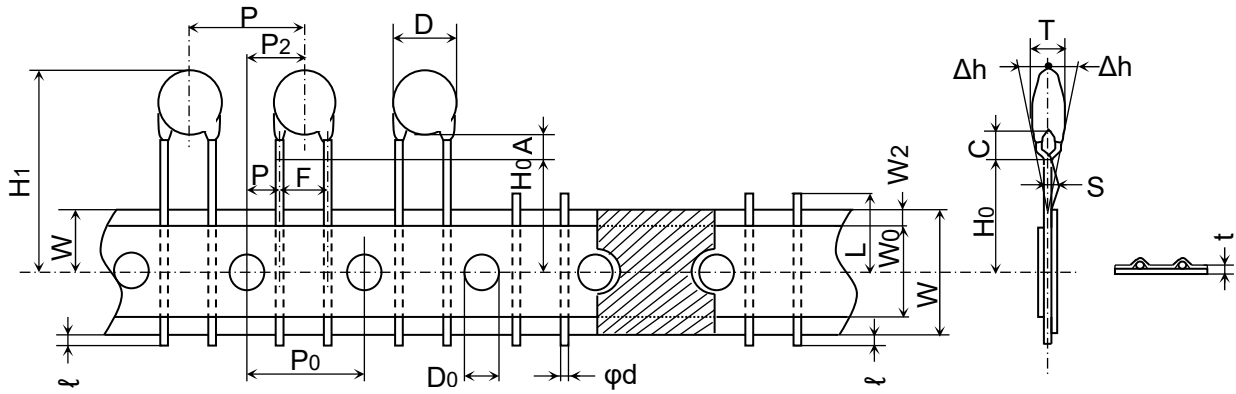


Table-2

Unit : mm

Item Name	Symbol	Dimension	Remarks
Body diameter	D	Table-3~8	
Body thickness	T	Table-3~8	
Lead-wire diameter	$\phi d$	0.6 $\pm$ 0.05	
Pitch of component	P	12.7 $\pm$ 1.0	Including the slant of body
Feed hole pitch	P <sub>0</sub>	12.7 $\pm$ 0.3	Excepting the tape splicing part
Feed hole center to lead	P <sub>1</sub>	3.85 $\pm$ 0.7	
Feed hole center to component	P <sub>2</sub>	6.35 $\pm$ 1.3	Including the slanting body due to bending lead-wire
Lead-to lead distanc	F	5.0 +0.8,-0.2	Measuring point is bottom kink
Component alignment, F-R	$\Delta h$	0 $\pm$ 2.0	Including the slanting body due to bending lead-wire
Tape width	W	18.0 +1.0,-0.5	
Adhesive tape width	W <sub>0</sub>	10.0 Min.	
Hole position	W <sub>1</sub>	9.0 $\pm$ 0.5	
Adhesive tape position	W <sub>2</sub>	4.0 Max.	Adhesive tape do not stick out the tape
Bottom of kink from tape center	H <sub>0</sub>	16.0 +1.5,-0.5	
Height of body from tape center	H <sub>1</sub>	46.0 Max.	
Lead-wire protrusion	$\ell$	1.0 Max.	
Feed hole diameter	D <sub>0</sub>	4.0 $\pm$ 0.2	
Total tape thickness	t	0.6 $\pm$ 0.3	Including adhesive tape
Length of snapped lead	L	11.0 Max.	
Coating on lead	C	4.0 Max.	
Height of kink	A	4.0 Max.	Measuring point is bottom of kink
Spring action	S	2.0 Max.	

6.4 Vertical kink long lead (lead style: V / Taping)

( F=7.5mm, Pitch: 15.0mm, Shape: B, at Table-3~8)

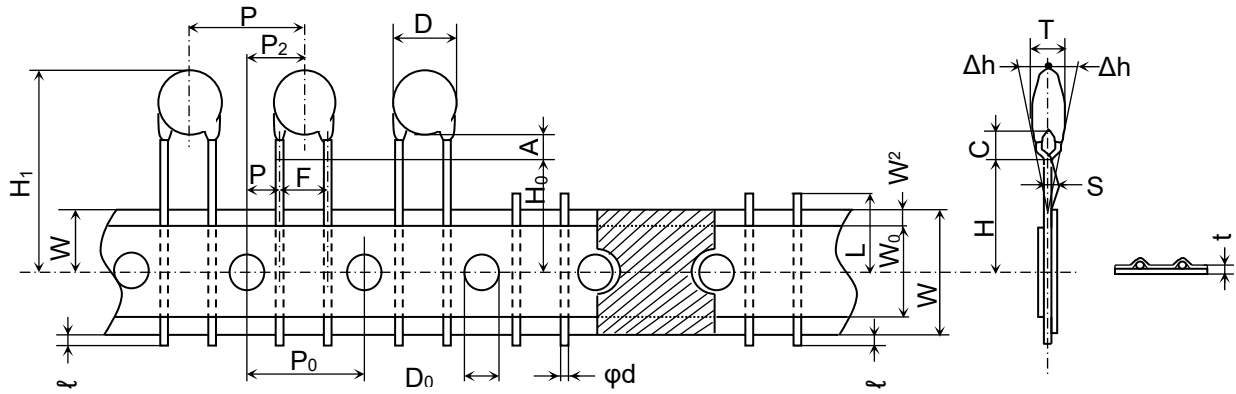


Table-2 Continue

Unit: mm

Item Name	Symbol	Dimension	Remarks
Body diameter	D	Table-3~8	
Body thickness	T	Table-3~8	
Lead-wire diameter	$\phi d$	0.6 $\pm$ 0.05	
Pitch of component	P	15.0 $\pm$ 1.0	Including the slant of body
Feed hole pitch	$P_0$	15.0 $\pm$ 0.3	Excepting the tape splicing part
Feed hole center to lead	$P_1$	3.75 $\pm$ 0.7	
Feed hole center to component	$P_2$	7.5 $\pm$ 1.3	Including the slanting body due to bending lead-wire
Lead-to lead distanc	F	7.5 $\pm$ 0.8	Measuring point is bottom kink
Component alignment, F-R	$\Delta h$	0 $\pm$ 2.0	Including the slanting body due to bending lead-wire
Tape width	W	18.0 +1.0,-0.5	
Adhesive tape width	$W_0$	10.0 Min.	
Hole position	$W_1$	9.0 $\pm$ 0.5	
Adhesive tape position	$W_2$	4.0 Max.	Adhesive tape do not stick out the tape
Bottom of kink from tape center	$H_0$	16.0 +1.5,-0.5	
Height of body from tape center	$H_1$	46.0 Max.	
Lead-wire protrusion	$\ell$	1.0 Max.	
Feed hole diameter	$D_0$	4.0 $\pm$ 0.2	
Total tape thickness	t	0.6 $\pm$ 0.3	Including adhesive tape
Length of snapped lead	L	11.0 Max.	
Coating on lead	C	4.0 Max.	
Height of kink	A	4.0 Max.	Measuring point is bottom of kink
Spring action	S	2.0 Max.	

6.5 Vertical kink long lead (lead style: V / Taping)

(F=7.5mm, Pitch: 30.0mm, Shape: C, at Table-3~8)

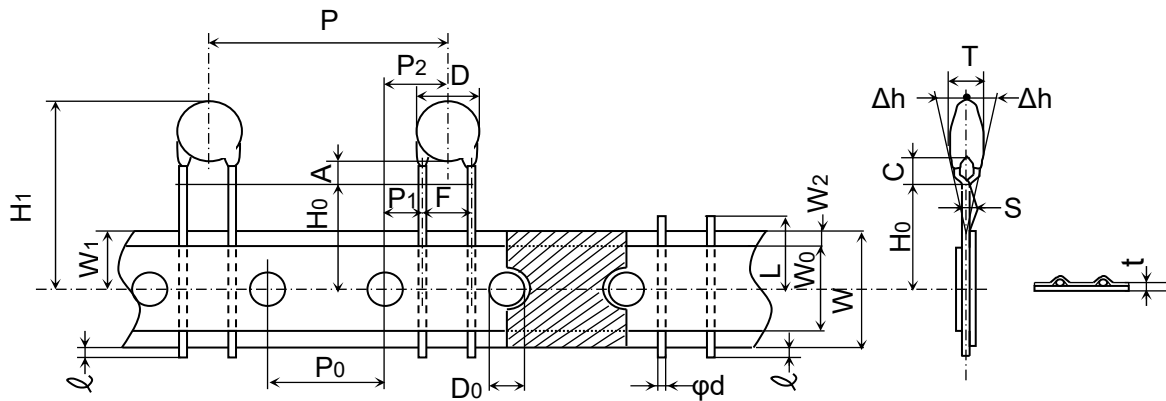


Table-2 Continue

Unit: mm

Item Name	Symbol	Dimension	Remarks
Body diameter	D	Table-3~8	
Body thickness	T	Table-3~8	
Lead-wire diameter	$\phi d$	0.6 ±0.05	
Pitch of component	P	30.0 ±1.0	Including the slant of body
Feed hole pitch	$P_0$	15.0 ±0.3	Excepting the tape splicing part
Feed hole center to lead	$P_1$	3.75 ±0.7	
Feed hole center to component	$P_2$	7.5±1.3	Including the slanting body due to bending lead-wire
Lead-to lead distanc	F	7.5±0.8	Measuring point is bottom kink
Component alignment, F-R	$\Delta h$	0 ± 2.0	Including the slanting body due to bending lead-wire
Tape width	W	18.0 +1.0,-0.5	
Adhesive tape width	$W_0$	10.0 Min.	
Hole position	$W_1$	9.0 ±0.5	
Adhesive tape position	$W_2$	4.0 Max.	Adhesive tape do not stick out the tape
Bottom of kink from tape center	$H_0$	16.0 +1.5,-0.5	
Height of body from tape center	$H_1$	46.0 Max.	
Lead-wire protrusion	$l$	1.0 Max.	
Feed hole diameter	$D_0$	4.0 ±0.2	
Total tape thickness	t	0.6 ±0.3	Including adhesive tape
Length of snapped lead	L	11.0 Max.	
Coating on lead	C	4.0 Max.	
Height of kink	A	4.0 Max.	Measuring point is bottom of kink
Spring action	S	2.0 Max.	

Note-1 Use the gummed tape to connect two ends of broken tape.

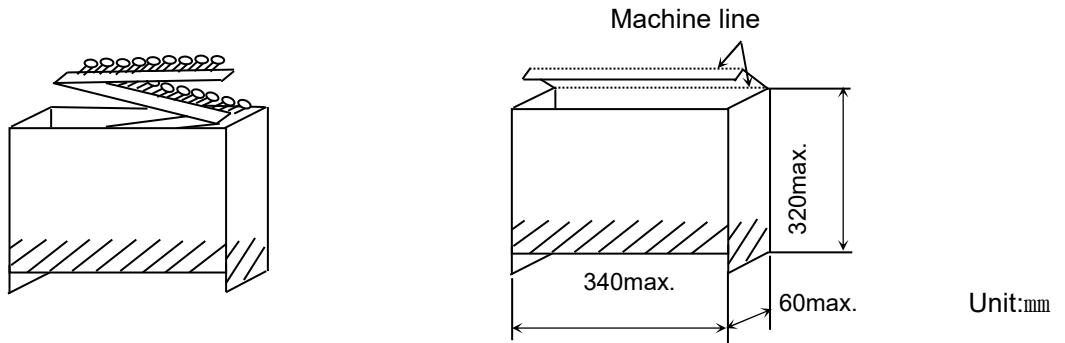
Note-2 Dropouts of parts shall be limited to no more than three consecutive parts.

Note-3 Packaging method and dimensions see below.

Note-4 Quantity 

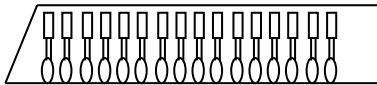
Pitch: 12.7mm	1000 pcs. /Box.
Pitch: 15.0mm	1000 pcs. /Box.
Pitch: 30.0mm	500 pcs. /Box.

Packaging : Ammo pack



Note-5 Package of shipment

Capacitors pack in downward

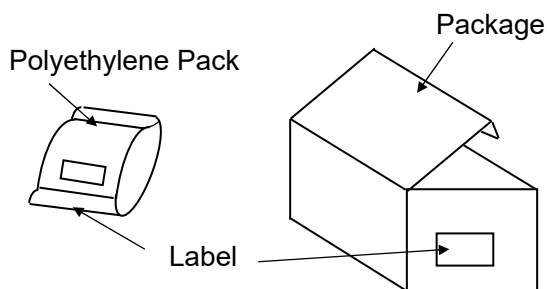


## 7. Label and transport

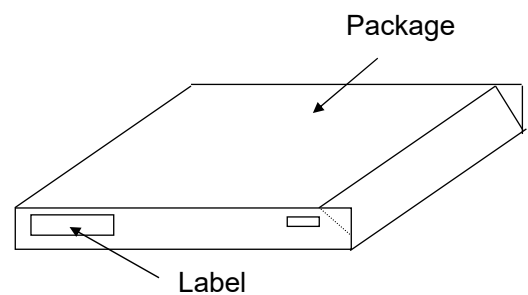
Capacitors shall be packaged prior to shipment so as to prevent damage during transportation and storage. Shipping carton contains the following information on the label.

- a) TDK item name
- b) Quantity
- c) TDK inspection number
- d) Manufacturer's name
- e) Country of origin

Bulk



Taping



## 8. Notification before the modification

We'll previously notify the modified place of manufacture, manufactured articles and materials.

T.C. : B

Rated voltage : DC 1kV

Vertical kink long lead (lead style: G / Bulk)

Table-3

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)			
					D Max.	T Max.	F	φd
	CK45-B3AD101KYGNA	100	B	± 10	5.5	5.0	5 ±1.5	0.6
	CK45-B3AD151KYGNA	150	B	± 10	5.5	5.0	5 ±1.5	0.6
	CK45-B3AD221KYGNA	220	B	± 10	5.5	5.0	5 ±1.5	0.6
	CK45-B3AD331KYGNA	330	B	± 10	5.5	5.0	5 ±1.5	0.6
	CK45-B3AD471KYGNA	470	B	± 10	5.5	5.0	5 ±1.5	0.6
	CK45-B3AD681KYGNA	680	B	± 10	5.5	5.0	5 ±1.5	0.6
	CK45-B3AD102KYGNA	1000	B	± 10	6.0	5.0	5 ±1.5	0.6
	CK45-B3AD152KYGNA	1500	B	± 10	7.0	5.0	5 ±1.5	0.6
	CK45-B3AD222KYGNA	2200	B	± 10	8.5	5.0	5 ±1.5	0.6
	CK45-B3AD332KYGNA	3300	B	± 10	9.5	5.0	5 ±1.5	0.6
	CK45-B3AD472KYGNA	4700	B	± 10	11.0	5.0	5 ±1.5	0.6

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

Table-3 Continue

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)			
					D Max.	T Max.	F	φd
	CK45-B3AD101KYNNA	100	B	± 10	5.5	5.0	5 ±1.5	0.6
	CK45-B3AD151KYNNA	150	B	± 10	5.5	5.0	5 ±1.5	0.6
	CK45-B3AD221KYNNA	220	B	± 10	5.5	5.0	5 ±1.5	0.6
	CK45-B3AD331KYNNA	330	B	± 10	5.5	5.0	5 ±1.5	0.6
	CK45-B3AD471KYNNA	470	B	± 10	5.5	5.0	5 ±1.5	0.6
	CK45-B3AD681KYNNA	680	B	± 10	5.5	5.0	5 ±1.5	0.6
	CK45-B3AD102KYNNA	1000	B	± 10	6.0	5.0	5 ±1.5	0.6
	CK45-B3AD152KYNNA	1500	B	± 10	7.0	5.0	5 ±1.5	0.6
	CK45-B3AD222KYNNA	2200	B	± 10	8.5	5.0	5 ±1.5	0.6
	CK45-B3AD332KYNNA	3300	B	± 10	9.5	5.0	5 ±1.5	0.6
	CK45-B3AD472KYNNA	4700	B	± 10	11.0	5.0	5 ±1.5	0.6

Vertical kink long lead (lead style: V / Taping)

Table-3 Continue

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)				Shape
					D Max.	T Max.	F	φd	
	CK45-B3AD101KYVNA	100	B	± 10	5.5	5.0	5+0.8,-0.2	0.6	A
	CK45-B3AD151KYVNA	150	B	± 10	5.5	5.0	5+0.8,-0.2	0.6	A
	CK45-B3AD221KYVNA	220	B	± 10	5.5	5.0	5+0.8,-0.2	0.6	A
	CK45-B3AD331KYVNA	330	B	± 10	5.5	5.0	5+0.8,-0.2	0.6	A
	CK45-B3AD471KYVNA	470	B	± 10	5.5	5.0	5+0.8,-0.2	0.6	A
	CK45-B3AD681KYVNA	680	B	± 10	5.5	5.0	5+0.8,-0.2	0.6	A
	CK45-B3AD102KYVNA	1000	B	± 10	6.0	5.0	5+0.8,-0.2	0.6	A
	CK45-B3AD152KYVNA	1500	B	± 10	7.0	5.0	5+0.8,-0.2	0.6	A
	CK45-B3AD222KYVNA	2200	B	± 10	8.5	5.0	5+0.8,-0.2	0.6	A
	CK45-B3AD332KYVNA	3300	B	± 10	9.5	5.0	5+0.8,-0.2	0.6	A
	CK45-B3AD472KYVNA	4700	B	± 10	11.0	5.0	5+0.8,-0.2	0.6	A

T.C. : B  
 Rated voltage : DC 2kV

Vertical kink long lead (lead style: G / Bulk)

Table-4

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)			
					D Max.	T Max.	F	φd
	CK45-B3DD101KYGNA	100	B	± 10	5.5	5.0	5±1.5	0.6
	CK45-B3DD151KYGNA	150	B	± 10	5.5	5.0	5±1.5	0.6
	CK45-B3DD221KYGNA	220	B	± 10	5.5	5.0	5±1.5	0.6
	CK45-B3DD331KYGNA	330	B	± 10	5.5	5.0	5±1.5	0.6
	CK45-B3DD471KYGNA	470	B	± 10	5.5	5.0	5±1.5	0.6
	CK45-B3DD681KYGNA	680	B	± 10	6.5	5.0	5±1.5	0.6
	CK45-B3DD102KYGNA	1000	B	± 10	7.5	5.0	5±1.5	0.6
	CK45-B3DD152KYGNA	1500	B	± 10	8.5	5.0	5±1.5	0.6
	CK45-B3DD222KYGNA	2200	B	± 10	10.0	5.0	5±1.5	0.6
	CK45-B3DD332KYGNA	3300	B	± 10	11.5	5.0	7.5±1.5	0.6
	CK45-B3DD472KYGNA	4700	B	± 10	14.0	5.0	7.5±1.5	0.6

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

Table-4 Continue

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)			
					D Max.	T Max.	F	φd
	CK45-B3DD101KYNNA	100	B	± 10	5.5	5.0	5±1.5	0.6
	CK45-B3DD151KYNNA	150	B	± 10	5.5	5.0	5±1.5	0.6
	CK45-B3DD221KYNNA	220	B	± 10	5.5	5.0	5±1.5	0.6
	CK45-B3DD331KYNNA	330	B	± 10	5.5	5.0	5±1.5	0.6
	CK45-B3DD471KYNNA	470	B	± 10	5.5	5.0	5±1.5	0.6
	CK45-B3DD681KYNNA	680	B	± 10	6.5	5.0	5±1.5	0.6
	CK45-B3DD102KYNNA	1000	B	± 10	7.5	5.0	5±1.5	0.6
	CK45-B3DD152KYNNA	1500	B	± 10	8.5	5.0	5±1.5	0.6
	CK45-B3DD222KYNNA	2200	B	± 10	10.0	5.0	5±1.5	0.6
	CK45-B3DD332KYNNA	3300	B	± 10	11.5	5.0	7.5±1.5	0.6
	CK45-B3DD472KYNNA	4700	B	± 10	14.0	5.0	7.5±1.5	0.6

Vertical kink long lead (lead style: V / Taping)

Table-4 Continue

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)				Shape
					D Max.	T Max.	F	φd	
	CK45-B3DD101KYVNA	100	B	± 10	5.5	5.0	5+0.8,-0.2	0.6	A
	CK45-B3DD151KYVNA	150	B	± 10	5.5	5.0	5+0.8,-0.2	0.6	A
	CK45-B3DD221KYVNA	220	B	± 10	5.5	5.0	5+0.8,-0.2	0.6	A
	CK45-B3DD331KYVNA	330	B	± 10	5.5	5.0	5+0.8,-0.2	0.6	A
	CK45-B3DD471KYVNA	470	B	± 10	5.5	5.0	5+0.8,-0.2	0.6	A
	CK45-B3DD681KYVNA	680	B	± 10	6.5	5.0	5+0.8,-0.2	0.6	A
	CK45-B3DD102KYVNA	1000	B	± 10	7.5	5.0	5+0.8,-0.2	0.6	A
	CK45-B3DD152KYVNA	1500	B	± 10	8.5	5.0	5+0.8,-0.2	0.6	A
	CK45-B3DD222KYVNA	2200	B	± 10	10.0	5.0	5+0.8,-0.2	0.6	A
	CK45-B3DD332KYVNA	3300	B	± 10	11.5	5.0	7.5±0.8	0.6	B
	CK45-B3DD472KYVNA	4700	B	± 10	14.0	5.0	7.5±0.8	0.6	B



T.C. : B  
 Rated voltage : DC 3kV

Vertical kink long lead (lead style: G / Bulk)

Table-5

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)			
					D Max.	T Max.	F	φd
	CK45-B3FD101KYGNA	100	B	± 10	5.5	6.0	7.5±1.5	0.6
	CK45-B3FD151KYGNA	150	B	± 10	5.5	6.0	7.5±1.5	0.6
	CK45-B3FD221KYGNA	220	B	± 10	5.5	6.0	7.5±1.5	0.6
	CK45-B3FD331KYGNA	330	B	± 10	6.5	6.0	7.5±1.5	0.6
	CK45-B3FD471KYGNA	470	B	± 10	7.0	6.0	7.5±1.5	0.6
	CK45-B3FD681KYGNA	680	B	± 10	8.0	6.0	7.5±1.5	0.6
	CK45-B3FD102KYGNA	1000	B	± 10	9.0	6.0	7.5±1.5	0.6
	CK45-B3FD152KYGNA	1500	B	± 10	10.5	6.0	7.5±1.5	0.6
	CK45-B3FD222KYGNA	2200	B	± 10	12.5	6.0	7.5±1.5	0.6

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

Table-5 Continue

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)			
					D Max.	T Max.	F	φd
	CK45-B3FD101KYNNA	100	B	± 10	5.5	6.0	7.5±1.5	0.6
	CK45-B3FD151KYNNA	150	B	± 10	5.5	6.0	7.5±1.5	0.6
	CK45-B3FD221KYNNA	220	B	± 10	5.5	6.0	7.5±1.5	0.6
	CK45-B3FD331KYNNA	330	B	± 10	6.5	6.0	7.5±1.5	0.6
	CK45-B3FD471KYNNA	470	B	± 10	7.0	6.0	7.5±1.5	0.6
	CK45-B3FD681KYNNA	680	B	± 10	8.0	6.0	7.5±1.5	0.6
	CK45-B3FD102KYNNA	1000	B	± 10	9.0	6.0	7.5±1.5	0.6
	CK45-B3FD152KYNNA	1500	B	± 10	10.5	6.0	7.5±1.5	0.6
	CK45-B3FD222KYNNA	2200	B	± 10	12.5	6.0	7.5±1.5	0.6

Vertical kink long lead (lead style: V / Taping)

Table-5 Continue

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)				Shape
					D Max.	T Max.	F	φd	
	CK45-B3FD101KYVNA	100	B	± 10	5.5	6.0	7.5 ±0.8	0.6	B
	CK45-B3FD151KYVNA	150	B	± 10	5.5	6.0	7.5 ±0.8	0.6	B
	CK45-B3FD221KYVNA	220	B	± 10	5.5	6.0	7.5 ±0.8	0.6	B
	CK45-B3FD331KYVNA	330	B	± 10	6.5	6.0	7.5 ±0.8	0.6	B
	CK45-B3FD471KYVNA	470	B	± 10	7.0	6.0	7.5 ±0.8	0.6	B
	CK45-B3FD681KYVNA	680	B	± 10	8.0	6.0	7.5 ±0.8	0.6	B
	CK45-B3FD102KYVNA	1000	B	± 10	9.0	6.0	7.5 ±0.8	0.6	B
	CK45-B3FD152KYVNA	1500	B	± 10	10.5	6.0	7.5 ±0.8	0.6	B
	CK45-B3FD222KYVNA	2200	B	± 10	12.5	6.0	7.5 ±0.8	0.6	B

T.C. : E

Rated voltage : DC 1kV

Vertical kink long lead (lead style: G / Bulk)

Table-6

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)			
					D Max.	T Max.	F	φd
	CK45-E3AD471ZYGNA	470	E	+80,-20	5.5	5.0	5 ±1.5	0.6
	CK45-E3AD102ZYGNA	1000	E	+80,-20	5.5	5.0	5 ±1.5	0.6
	CK45-E3AD222ZYGNA	2200	E	+80,-20	6.5	5.0	5 ±1.5	0.6
	CK45-E3AD472ZYGNA	4700	E	+80,-20	8.5	5.0	5 ±1.5	0.6
	CK45-E3AD103ZYGNA	10000	E	+80,-20	11.5	5.0	7.5 ±1.5	0.6

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

Table-6 Continue

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)			
					D Max.	T Max.	F	φd
	CK45-E3AD471ZYNNNA	470	E	+80,-20	5.5	5.0	5 ±1.5	0.6
	CK45-E3AD102ZYNNNA	1000	E	+80,-20	5.5	5.0	5 ±1.5	0.6
	CK45-E3AD222ZYNNNA	2200	E	+80,-20	6.5	5.0	5 ±1.5	0.6
	CK45-E3AD472ZYNNNA	4700	E	+80,-20	8.5	5.0	5 ±1.5	0.6
	CK45-E3AD103ZYNNNA	10000	E	+80,-20	11.5	5.0	7.5 ±1.5	0.6

Vertical kink long lead (lead style: V / Taping)

Table-6 Continue

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)				Shape
					D Max.	T Max.	F	φd	
	CK45-E3AD471ZYVNA	470	E	+80,-20	5.5	5.0	5+0.8,-0.2	0.6	A
	CK45-E3AD102ZYVNA	1000	E	+80,-20	5.5	5.0	5+0.8,-0.2	0.6	A
	CK45-E3AD222ZYVNA	2200	E	+80,-20	6.5	5.0	5+0.8,-0.2	0.6	A
	CK45-E3AD472ZYVNA	4700	E	+80,-20	8.5	5.0	5+0.8,-0.2	0.6	A
	CK45-E3AD103ZYVNA	10000	E	+80,-20	11.5	5.0	7.5 ±0.8	0.6	B

T.C. : E  
 Rated voltage : DC 2kV

Vertical kink long lead (lead style: G / Bulk)

Table-7

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)			
					D Max.	T Max.	F	φd
	CK45-E3DD471ZYGNA	470	E	+80,-20	5.5	5.0	5 ±1.5	0.6
	CK45-E3DD102ZYGNA	1000	E	+80,-20	6.0	5.0	5 ±1.5	0.6
	CK45-E3DD222ZYGNA	2200	E	+80,-20	8.0	5.0	5 ±1.5	0.6
	CK45-E3DD472ZYGNA	4700	E	+80,-20	10.5	5.0	5 ±1.5	0.6
	CK45-E3DD103ZYGNA	10000	E	+80,-20	14.5	5.0	7.5 ±1.5	0.6

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

Table-7 Continue

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)			
					D Max.	T Max.	F	φd
	CK45-E3DD471ZYNNNA	470	E	+80,-20	5.5	5.0	5 ±1.5	0.6
	CK45-E3DD102ZYNNNA	1000	E	+80,-20	6.0	5.0	5 ±1.5	0.6
	CK45-E3DD222ZYNNNA	2200	E	+80,-20	8.0	5.0	5 ±1.5	0.6
	CK45-E3DD472ZYNNNA	4700	E	+80,-20	10.5	5.0	5 ±1.5	0.6
	CK45-E3DD103ZYNNNA	10000	E	+80,-20	14.5	5.0	7.5 ±1.5	0.6

Vertical kink long lead (lead style: V / Taping)

Table-7 Continue

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)				Shape
					D Max.	T Max.	F	φd	
	CK45-E3DD471ZyvNA	470	E	+80,-20	5.5	5.0	5+0.8,-0.2	0.6	A
	CK45-E3DD102ZyvNA	1000	E	+80,-20	6.0	5.0	5+0.8,-0.2	0.6	A
	CK45-E3DD222ZyvNA	2200	E	+80,-20	8.0	5.0	5+0.8,-0.2	0.6	A
	CK45-E3DD472ZyvNA	4700	E	+80,-20	10.5	5.0	5+0.8,-0.2	0.6	A
	CK45-E3DD103ZyvNA	10000	E	+80,-20	14.5	5.0	7.5 ±0.8	0.6	C

T.C. : E  
 Rated voltage : DC 3kV

Vertical kink long lead (lead style: G / Bulk)

Table-8

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)			
					D Max.	T Max.	F	φd
	CK45-E3FD471ZYGNA	470	E	+80,-20	6.0	6.0	7.5 ±1.5	0.6
	CK45-E3FD102ZYGNA	1000	E	+80,-20	7.5	6.0	7.5 ±1.5	0.6
	CK45-E3FD222ZYGNA	2200	E	+80,-20	9.5	6.0	7.5 ±1.5	0.6
	CK45-E3FD472ZYGNA	4700	E	+80,-20	12.5	6.0	7.5 ±1.5	0.6

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

Table-8 Continue

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)			
					D Max.	T Max.	F	φd
	CK45-E3FD471ZYNNA	470	E	+80,-20	6.0	6.0	7.5 ±1.5	0.6
	CK45-E3FD102ZYNNA	1000	E	+80,-20	7.5	6.0	7.5 ±1.5	0.6
	CK45-E3FD222ZYNNA	2200	E	+80,-20	9.5	6.0	7.5 ±1.5	0.6
	CK45-E3FD472ZYNNA	4700	E	+80,-20	12.5	6.0	7.5 ±1.5	0.6

Vertical kink long lead (lead style: V / Taping)

Table-8 Continue

Your part No.	TDK part No.	Cap. (pF)	T.C.	C-Tol. (%)	Dimension (Unit : mm)				Shape
					D Max.	T Max.	F	φd	
	CK45-E3FD471ZYVNA	470	E	+80,-20	6.0	6.0	7.5 ±0.8	0.6	B
	CK45-E3FD102ZYVNA	1000	E	+80,-20	7.5	6.0	7.5 ±0.8	0.6	B
	CK45-E3FD222ZYVNA	2200	E	+80,-20	9.5	6.0	7.5 ±0.8	0.6	B
	CK45-E3FD472ZYVNA	4700	E	+80,-20	12.5	6.0	7.5 ±0.8	0.6	B

Flow soldering recommended condition

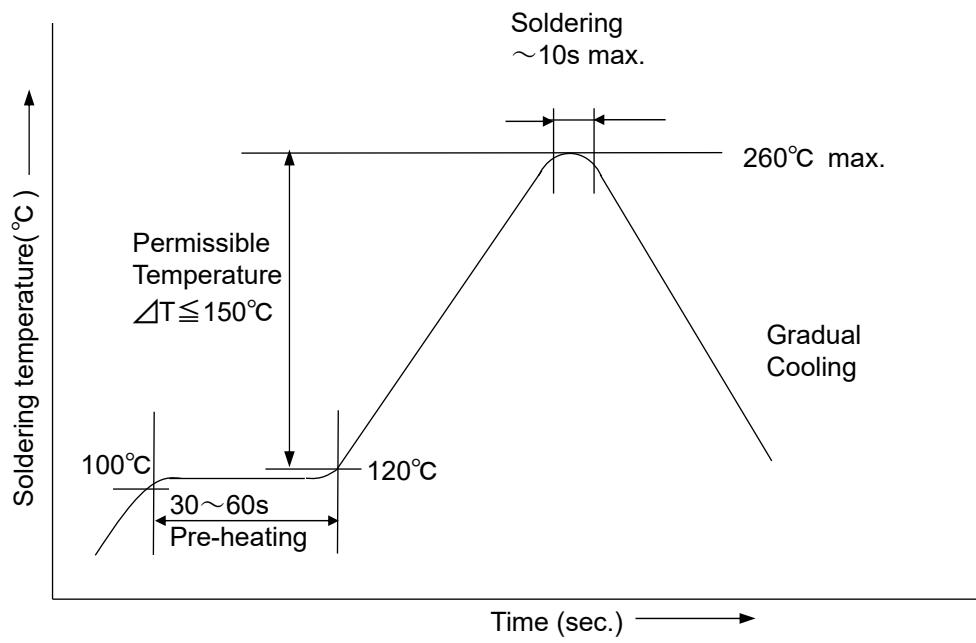


Fig-1