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Disc type capacitors with leads
High voltage ceramic capacitors, commercial grade

RoHS | REACH SVHC-Free | Halogen Free | Lead Free

CK45 series

Product Portal | Search | Selection Guide | Tech Note | Application Guides

FEATURES

- Conform to RoHS directive due to lead(Pb) free of lead-wire and internal solder material.
- Compatible with halogen-free external resin coating.

APPLICATION

DC ballast

PART NUMBER CONSTRUCTION

CK45	-B	3AD	102	K	Y	□	N	A

Series name*	Temperature characteristics	Rated voltage	Nominal capacitance	Capacitance tolerance	Class	Lead-wire type	Application classification	Internal code
	-B ±10%	3AD 1kV DC	101 100pF	K ±10%		G Long lead	N General	A Halogen-free
	-E +20, –55%	3DD 2kV DC	222 2,200pF	Z +80, –20%		N Short lead		
		3FD 3kV DC	103 10,000pF			V Taping		

* Please refer to P-3~4 about the product dimensions.

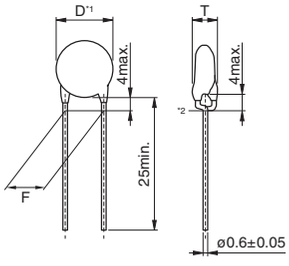
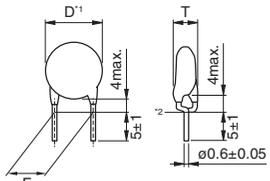
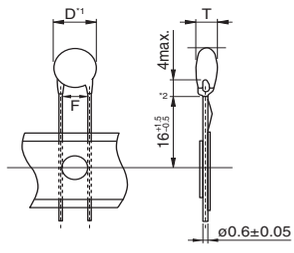
□OPERATING TEMPERATURE RANGE

Temperature characteristics	Operating temperature (°C)	Storage temperature (°C)*
B	–25 to +105	–25 to +105
E	–25 to +105	–25 to +105

The maximum operating temperature of +105°C includes capacitor self-generated heat of up to 20°C.
* After capacitor is mounted on board, the storage temperature range is applied.

□STANDARD LEAD-WIRE SHAPES

Dimemsions in mm

	Symbol G : Bulk/long leads	Symbol N : Bulk/short leads	Symbol V : Taping
Vertical kink			

TDK's standard product is vertical kink. TDK recommends short leads for bulk products.
*1 Body diameter (D) is reference value if D is smaller than maximum dimension of lead to lead distance (F).
*2 Coating on leads shall not extend beyond the bottom of vertical kink.

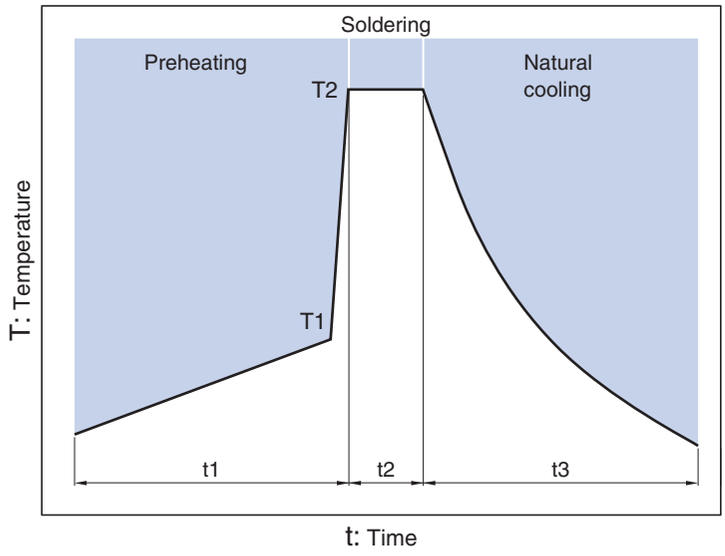
○RoHS Directive Compliant Product: See the following for more details. https://product.tdk.com/en/environment/rohs/index.html
○Halogen-free: Indicate that Cl content is less than 900ppm, Br content is less than 900ppm, and that the total Cl and Br content is less than 1500ppm.

⚠ Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. Please note that the contents may change without any prior notice due to reasons such as upgrading.

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Overview of CK45 series

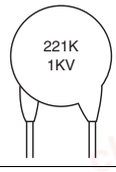
RECOMMENDED FLOW PROFILE



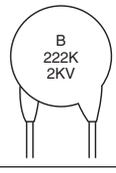
Preheating		Peak		Natural cooling
Temp.	Time	Temp.	Time	Time
T1	t1	T2	t2	t3
110°C min.	30 to 60s.	260°C	Within 10s.	Over 60s.

MARKINGS

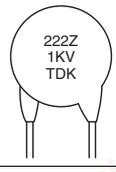
D dimension: 6.0mm max.

Item	Markings	Description	Marking example
1. Nominal capacitance	221	220pF	
2. Capacitance tolerance	K	±10%	
3. Rated voltage	1KV	1kV DC	

D dimension: 6.5mm min., temperature characteristic: B

Item	Markings	Description	Marking example
1. Temperature characteristic	B	B characteristic	
2. Nominal capacitance	222		
3. Capacitance tolerance	K	2,200pF	
4. Rated voltage	2KV	±10%	
		2kV DC	

D dimension: 6.5mm min., temperature characteristic: E

Item	Markings	Description	Marking example
1. Nominal capacitance	222	2,200pF	
2. Capacitance tolerance	Z	+80,-20%	
3. Rated voltage	1KV	1kV DC	
4. Manufacturer	TDK	TDK	

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CK45 type

RATED VOLTAGE Edc: 1kV

CAPACITANCE AND DIMENSIONS

Temperature characteristics	Capacitance	Capacitance tolerance	Dimensions (mm)					Part numbers		
			Dmax. *	Tmax.	F (applied to bulk)	F (applied to taping)	Taping dimensions***	Bulk/long leads (Symbol: G)	Bulk/short leads (Symbol: N)	Taping (Symbol: V)
B	100pF	±10%	(5.5)	5.0	5.0±1.5	5.0+0.8,–0.2	V1	CK45-B3AD101KYGNA	CK45-B3AD101KYNNA	CK45-B3AD101KYVNA
B	150pF	±10%	(5.5)	5.0	5.0±1.5	5.0+0.8,–0.2	V1	CK45-B3AD151KYGNA	CK45-B3AD151KYNNA	CK45-B3AD151KYVNA
B	220pF	±10%	(5.5)	5.0	5.0±1.5	5.0+0.8,–0.2	V1	CK45-B3AD221KYGNA	CK45-B3AD221KYNNA	CK45-B3AD221KYVNA
B	330pF	±10%	(5.5)	5.0	5.0±1.5	5.0+0.8,–0.2	V1	CK45-B3AD331KYGNA	CK45-B3AD331KYNNA	CK45-B3AD331KYVNA
B	470pF	±10%	(5.5)	5.0	5.0±1.5	5.0+0.8,–0.2	V1	CK45-B3AD471KYGNA	CK45-B3AD471KYNNA	CK45-B3AD471KYVNA
B	680pF	±10%	(5.5)	5.0	5.0±1.5	5.0+0.8,–0.2	V1	CK45-B3AD681KYGNA	CK45-B3AD681KYNNA	CK45-B3AD681KYVNA
B	1,000pF	±10%	6.0**	5.0	5.0±1.5	5.0+0.8,–0.2	V1	CK45-B3AD102KYGNA	CK45-B3AD102KYNNA	CK45-B3AD102KYVNA
B	1,500pF	±10%	7.0	5.0	5.0±1.5	5.0+0.8,–0.2	V1	CK45-B3AD152KYGNA	CK45-B3AD152KYNNA	CK45-B3AD152KYVNA
B	2,200pF	±10%	8.5	5.0	5.0±1.5	5.0+0.8,–0.2	V1	CK45-B3AD222KYGNA	CK45-B3AD222KYNNA	CK45-B3AD222KYVNA
B	3,300pF	±10%	9.5	5.0	5.0±1.5	5.0+0.8,–0.2	V1	CK45-B3AD332KYGNA	CK45-B3AD332KYNNA	CK45-B3AD332KYVNA
B	4,700pF	±10%	11.0	5.0	5.0±1.5	5.0+0.8,–0.2	V1	CK45-B3AD472KYGNA	CK45-B3AD472KYNNA	CK45-B3AD472KYVNA
E	470pF	+80, –20%	(5.5)	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-E3AD471ZYGNA	CK45-E3AD471ZYNNA	CK45-E3AD471ZYVNA
E	1,000pF	+80, –20%	(5.5)	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-E3AD102ZYGNA	CK45-E3AD102ZYNNA	CK45-E3AD102ZYVNA
E	2,200pF	+80, –20%	6.5**	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-E3AD222ZYGNA	CK45-E3AD222ZYNNA	CK45-E3AD222ZYVNA
E	4,700pF	+80, –20%	8.5	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-E3AD472ZYGNA	CK45-E3AD472ZYNNA	CK45-E3AD472ZYVNA
E	10,000pF	+80, –20%	11.0	5.0	7.5±1.5	7.5±0.8	V2	CK45-E3AD103ZYGNA	CK45-E3AD103ZYNNA	CK45-E3AD103ZYVNA

* The values in parentheses "( )" are reference values.
Click the part number for details.
** Reference values are applied to bulk products.
***Please refer to p-5 about the taping dimemsions.

RATED VOLTAGE Edc: 2kV

CAPACITANCE AND DIMENSIONS

Temperature characteristics	Capacitance	Capacitance tolerance	Dimensions (mm)					Part numbers		
			Dmax. *	Tmax.	F (applied to bulk)	F (applied to taping)	Taping dimensions***	Bulk/long leads (Symbol: G)	Bulk/short leads (Symbol: N)	Taping (Symbol: V)
B	100pF	±10%	(5.5)	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-B3DD101KYGNA	CK45-B3DD101KYNNA	CK45-B3DD101KYVNA
B	150pF	±10%	(5.5)	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-B3DD151KYGNA	CK45-B3DD151KYNNA	CK45-B3DD151KYVNA
B	220pF	±10%	(5.5)	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-B3DD221KYGNA	CK45-B3DD221KYNNA	CK45-B3DD221KYVNA
B	330pF	±10%	(5.5)	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-B3DD331KYGNA	CK45-B3DD331KYNNA	CK45-B3DD331KYVNA
B	470pF	±10%	(5.5)	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-B3DD471KYGNA	CK45-B3DD471KYNNA	CK45-B3DD471KYVNA
B	680pF	±10%	6.5**	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-B3DD681KYGNA	CK45-B3DD681KYNNA	CK45-B3DD681KYVNA
B	1,000pF	±10%	7.5	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-B3DD102KYGNA	CK45-B3DD102KYNNA	CK45-B3DD102KYVNA
B	1,500pF	±10%	8.5	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-B3DD152KYGNA	CK45-B3DD152KYNNA	CK45-B3DD152KYVNA
B	2,200pF	±10%	10.0	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-B3DD222KYGNA	CK45-B3DD222KYNNA	CK45-B3DD222KYVNA
B	3,300pF	±10%	11.5	5.0	7.5±1.5	7.5±0.8	V2	CK45-B3DD332KYGNA	CK45-B3DD332KYNNA	CK45-B3DD332KYVNA
B	4,700pF	±10%	14.0	5.0	7.5±1.5	7.5±0.8	V2	CK45-B3DD472KYGNA	CK45-B3DD472KYNNA	CK45-B3DD472KYVNA
E	470pF	+80, –20%	(5.5)	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-E3DD471ZYGNA	CK45-E3DD471ZYNNA	CK45-E3DD471ZYVNA
E	1,000pF	+80, –20%	(6.0)	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-E3DD102ZYGNA	CK45-E3DD102ZYNNA	CK45-E3DD102ZYVNA
E	2,200pF	+80, –20%	8.0	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-E3DD222ZYGNA	CK45-E3DD222ZYNNA	CK45-E3DD222ZYVNA
E	4,700pF	+80, –20%	10.5	5.0	5.0±1.5	5.0+0.8, –0.2	V1	CK45-E3DD472ZYGNA	CK45-E3DD472ZYNNA	CK45-E3DD472ZYVNA
E	10,000pF	+80, –20%	14.5	5.0	7.5±1.5	7.5±0.8	V3	CK45-E3DD103ZYGNA	CK45-E3DD103ZYNNA	CK45-E3DD103ZYVNA

* The values in parentheses "( )" are reference values.
Click the part number for details.
** Reference values are applied to bulk products.
***Please refer to p-5 about the taping dimemsions.

• For more information about products with other capacitance or other data, please contact us.

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CK45 type

RATED VOLTAGE Edc: 3kV

CAPACITANCE AND DIMENSIONS

Temperature characteristics	Capacitance	Capacitance tolerance	Dimensions (mm)					Part numbers		
			Dmax. *	Tmax.	F (applied to bulk)	F (applied to taping)	Taping dimensions***	Bulk/long leads (Symbol: G)	Bulk/short leads (Symbol: N)	Taping (Symbol: V)
B	100pF	±10%	(5.5)	6.0	7.5±1.5	7.5±0.8	V2	CK45-B3FD101KYGNA	CK45-B3FD101KYNNA	CK45-B3FD101KYVNA
B	150pF	±10%	(5.5)	6.0	7.5±1.5	7.5±0.8	V2	CK45-B3FD151KYGNA	CK45-B3FD151KYNNA	CK45-B3FD151KYVNA
B	220pF	±10%	(5.5)	6.0	7.5±1.5	7.5±0.8	V2	CK45-B3FD221KYGNA	CK45-B3FD221KYNNA	CK45-B3FD221KYVNA
B	330pF	±10%	(6.5)	6.0	7.5±1.5	7.5±0.8	V2	CK45-B3FD331KYGNA	CK45-B3FD331KYNNA	CK45-B3FD331KYVNA
B	470pF	±10%	(7.0)	6.0	7.5±1.5	7.5±0.8	V2	CK45-B3FD471KYGNA	CK45-B3FD471KYNNA	CK45-B3FD471KYVNA
B	680pF	±10%	(8.0)	6.0	7.5±1.5	7.5±0.8	V2	CK45-B3FD681KYGNA	CK45-B3FD681KYNNA	CK45-B3FD681KYVNA
B	1,000pF	±10%	9.0**	6.0	7.5±1.5	7.5±0.8	V2	CK45-B3FD102KYGNA	CK45-B3FD102KYNNA	CK45-B3FD102KYVNA
B	1,500pF	±10%	10.5	6.0	7.5±1.5	7.5±0.8	V2	CK45-B3FD152KYGNA	CK45-B3FD152KYNNA	CK45-B3FD152KYVNA
B	2,200pF	±10%	12.5	6.0	7.5±1.5	7.5±0.8	V2	CK45-B3FD222KYGNA	CK45-B3FD222KYNNA	CK45-B3FD222KYVNA
E	470pF	+80, –20%	(6.0)	6.0	7.5±1.5	7.5±0.8	V2	CK45-E3FD471ZYGNA	CK45-E3FD471ZYNNA	CK45-E3FD471ZYVNA
E	1,000pF	+80, –20%	(7.5)	6.0	7.5±1.5	7.5±0.8	V2	CK45-E3FD102ZYGNA	CK45-E3FD102ZYNNA	CK45-E3FD102ZYVNA
E	2,200pF	+80, –20%	9.5	6.0	7.5±1.5	7.5±0.8	V2	CK45-E3FD222ZYGNA	CK45-E3FD222ZYNNA	CK45-E3FD222ZYVNA
E	4,700pF	+80, –20%	12.5	6.0	7.5±1.5	7.5±0.8	V2	CK45-E3FD472ZYGNA	CK45-E3FD472ZYNNA	CK45-E3FD472ZYVNA

* The values in parentheses "( )" are reference values.
Click the part number for details.
** Reference values are applied to bulk products.
***Please refer to p-5 about the taping dimemsions.

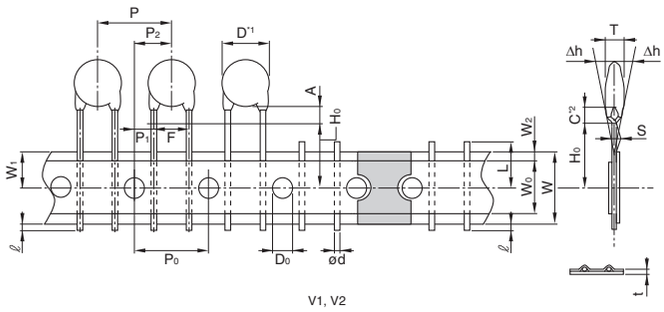
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⚠ Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use.
Please note that the contents may change without any prior notice due to reasons such as upgrading.

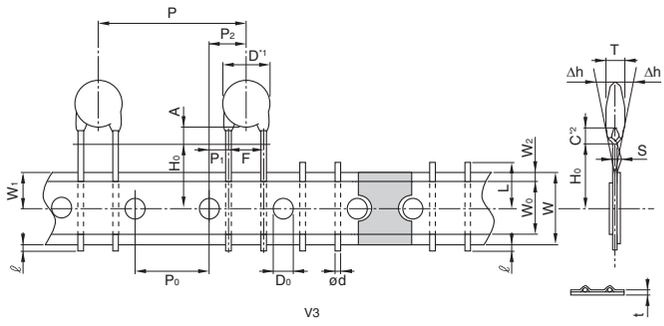
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CK45 type

TAPING DIMENSIONS



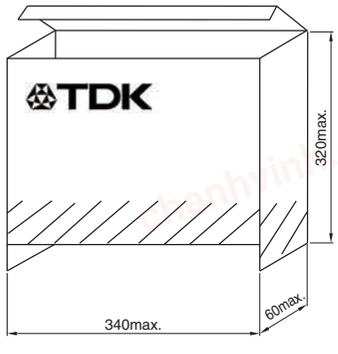
V1, V2



V3

Item	Symbols	Dimensions (mm)			Remarks
		V1	V2	V3	
Body diameter	D	Refer to P-3~4			*1 Body diameter (D) is reference value if D is smaller than maximum dimension of lead to lead distance (F).
Body thickness	T	Refer to P-3~4			
Lead-wire diameter	ød	0.6±0.05	0.6±0.05	0.6±0.05	
Pitch of component	P	12.7±1.0	15.0±1.0	30.0±1.0	Including the slant of body
Feed hole pitch	P_0	12.7±0.3	15.0±0.3	15.0±0.3	Excepting the tape splicing part
Feed hole center to lead-wire	P_1	3.85±0.7	3.75±0.7	3.75±0.7	
Feed hole center to component center	P_2	6.35±1.3	7.5±1.3	7.5±1.3	Including the slanting body due to bending lead-wire
Lead-to lead distance	F	5+0.8, –0.2	7.5±0.8	7.5±0.8	Measuring point is bottom kink
Component alignment	Δh	0±2.0	0±2.0	0±2.0	Including the slanting body due to bending lead-wire
Carrier tape width	W	18.0+1.0,–0.5	18.0+1.0,–0.5	18.0+1.0,–0.5	
Adhesive tape width	W_0	10.0 Min.	10.0 Min.	10.0 Min.	
Hole position	W_1	9.0±0.5	9.0±0.5	9.0±0.5	
Adhesive tape position	W_2	4.0 Max.	4.0 Max.	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	16.0+1.5,–0.5	16.0+1.5,–0.5	
Lead-wire protrusion	ℓ	1.0 Max.	1.0 Max.	1.0 Max.	
Feed hole diameter	D_0	4.0±0.2	4.0±0.2	4.0±0.2	
Carrier tape thickness (Including adhesive tape)	t	0.6±0.3	0.6±0.3	0.6±0.3	Including adhesive tape
Length of snipped lead-wire	L	11.0 Max.	11.0 Max.	11.0 Max.	
Coating on lead-wire	C	4.0 Max.	4.0 Max.	4.0 Max.	*2 Coating on leads shall not extend beyond the bottom of vertical kink.
Height of kink	A	4.0 Max.	4.0 Max.	4.0 Max.	Measuring point is bottom kink
Spring action	S	2.0 Max.	2.0 Max.	2.0 Max.	

AMMO PACK INNER BOX SIZE



Dimensions in mm

PACKAGE QUANTITY

Type	Package quantity	
	Bulk (pieces / bag)	Taping (pieces / box)
CK45	1000	1000

* 500 pieces applies to the following part.
CK45-E3DD103ZYVNA

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REMINDERS FOR USING THESE PRODUCTS

Before using these products, be sure to request the delivery specifications.

SAFETY REMINDERS

Please pay sufficient attention to the warnings for safe designing when using this products.

⚠ REMINDERS

- Do not use or store in locations where there are conditions such as gas corrosion (salt, acid, alkali, etc.).
- Before soldering, be sure to preheat components.
  The preheating temperature should be set so that the temperature difference between the solder temperature and product temperature does not exceed 150°C.
- Soldering corrections after mounting should be within the range of the conditions determined in the specifications.
  If overheated, a short circuit, performance deterioration, or lifespan shortening may occur.
- Self heating (temperature increase) occurs when the power is turned ON, so the tolerance should be sufficient for the set thermal design.
- Do not use for a purpose outside of the contents regulated in the delivery specifications.
- The products listed on this catalog are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.
  The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property.
  If you intend to use the products in the applications listed below or if you have special requirements exceeding the range or conditions set forth in the each catalog, please contact us.

(1) Aerospace/aviation equipment
(2) Transportation equipment (cars, electric trains, ships, etc.)
(3) Medical equipment
(4) Power-generation control equipment
(5) Atomic energy-related equipment
(6) Seabed equipment
(7) Transportation control equipment
(8) Public information-processing equipment
(9) Military equipment
(10) Electric heating apparatus, burning equipment
(11) Disaster prevention/crime prevention equipment
(12) Safety equipment
(13) Other applications that are not considered general-purpose applications

- Please refer to the guideline of notabilia for fixed ceramic capacitors issued by JEITA(Japan Electronics and Information Technology Association, EIAJ RCR-2335).
  This guideline describes general precautions* for using fixed ceramic capacitors. Please carefully confirm it and use capacitors safely.
  * Items for check, explanation/reason/concrete example and failure examples, etc.

When designing your equipment even for general-purpose applications, you are kindly requested to take into consideration securing protection circuit/device or providing backup circuits in your equipment.