

Disc type capacitors with leads

High voltage ceramic capacitors, commercial grade, safety standard approved



CS series



FEATURES

- Compliant with IEC and the safety standards of various countries.
- Withstand voltage is 2,600V AC.
- Flame-resistant reinforced outer insulation prevents fires, electrical shock, and other potential hazards.
- Compatible with halogen-free external resin coating.

APPLICATION

Y capacitor for AC adapter, charger, power supplies

PART NUMBER CONSTRUCTION

CS	80	ZU	2GA	222	M	Y	□	K	A		
Series name	Type*	Temperature characteristics	Rated voltage	Nominal capacitance	Capacitance tolerance	Internal control code	Lead-wire type	Application classification	Internal code		
	45		2GA	100	10pF	J	±5%	G	Long lead	K	A
	65	SL		X1:440V AC Y2:300V AC	221	220pF	K	±10%	N		
	70	-B		472	4,700pF	M	±20%	V	Taping		
	75	ZU									
	80	(Z5U)									
	85	-F									
	95										
	11										
	14										

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

OPERATING TEMPERATURE RANGE

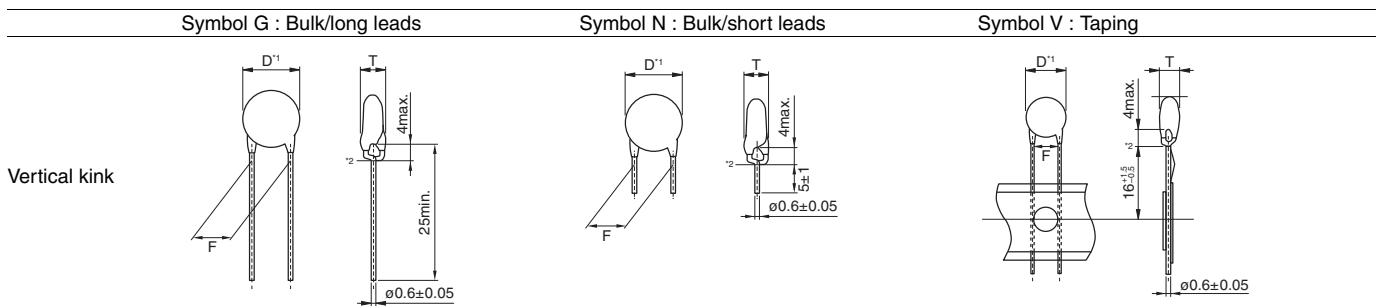
Temperature characteristics	Operating temperature (°C)	Storage temperature (°C)*
SL	-40 to +125	-40 to +125
B	-40 to +125	-40 to +125
ZU (Z5U)	-40 to +125	-40 to +125
F	-40 to +125	-40 to +125

The maximum operating temperature of +125°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

Dimensions in mm



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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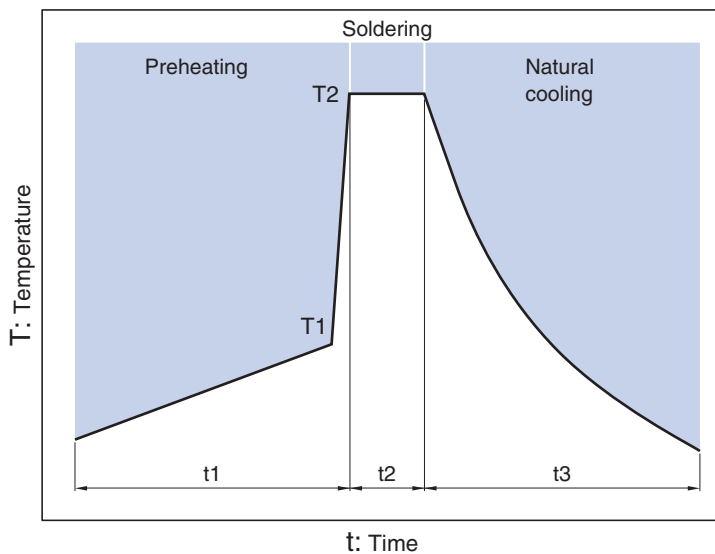
Overview of CS series

CERTIFIED STATUS OF VARIOUS COUNTRIES

Safety standard	IEC standard No.	Standard No.	Temperature characteristics	Sub-class	Rated voltage	Approval report No.*	
						Taiwan	Xiamen
BSI	BS EN 60384-14 IEC 60384-14	BS EN 60065 (8.8, 14.2) BS EN 60384-14					KM37103
VDE							40017930
SEV							19.0043
SEMKO							1910408
NEMKO		EN 60384-14		X1,Y2	X1:440V AC Y2:300V AC		P19223652
DEMKO			SL,B,Z5U,F				D-04986
FIMKO							FI 140177
IMQ	IEC 60384-14						V3692
SAA		AS3250					CS6268
CSA		CSA-E60384-14					1785515
UL		UL60384-14					E37861
CQC		GB/T14472-1998					CQC12001082619
KTL		K60384-14		X1	440V AC	SZ03001-12006	SU03047-12006
			Y2	300V AC	SZ03001-12008	SU03047-12008	

* Certificate numbers shall be changed owing to the revisions of the related standards and renewal of certificate.

RECOMMENDED FLOW PROFILE



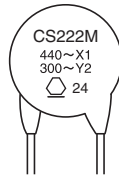

Preheating		Peak		Natural cooling
Temp.	Time	Temp.	Time	Time
T1	t1	T2	t2	t3
100 to 120°C	30 to 60s.	260°C	Within 10s.	Over 60s.

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.

CS series

MARKINGS

Item	Markings	Description	Marking examples
1.Series	CS	CS series	 <p>CS222M 440~X1 300~Y2 24</p>
2.Nominal capacitance	222	2,200pF	
3.Capacitance tolerance	M	±20%	
4.Rated voltage Eac	440~X1 300~Y2	X1: 440V AC Y2: 300V AC	
5.TDK's trademark		Production base code	
6.Date code	24	2022.04*	

(Marking position is reference.)

* Year and month of production: last digit of year + month denoted by 1, 2, 3, 4, 5, 6, 7, 8, 9, O (October), N (November), or D (December).

* The expression has become simplified due to a revision in the standards.

RATED VOLTAGE Eac: X1:440V、Y2:300V

CAPACITANCE AND DIMENSIONS

Temperature characteristics	Capacitance	Capacitance tolerance	Dimensions (mm)				Part numbers		
			Dmax. *	Tmax.	F (applied to bulk)	F (applied to taping)	Bulk/long leads (Symbol: G)	Bulk/short leads (Symbol: N)	Taping (Symbol: V)
SL	10 pF	±5 %	(7.0)	5.0	7.5±1.5	7.5±0.8	CS45SL2GA100JYGKA	CS45SL2GA100JYNKA	CS45SL2GA100JYVKA
SL	15 pF	±5 %	(7.0)	5.0	7.5±1.5	7.5±0.8	CS45SL2GA150JYGKA	CS45SL2GA150JYNKA	CS45SL2GA150JYVKA
SL	22 pF	±5 %	(7.0)	5.0	7.5±1.5	7.5±0.8	CS45SL2GA220JYGKA	CS45SL2GA220JYNKA	CS45SL2GA220JYVKA
SL	33 pF	±5 %	(7.0)	5.0	7.5±1.5	7.5±0.8	CS45SL2GA330JYGKA	CS45SL2GA330JYNKA	CS45SL2GA330JYVKA
SL	47 pF	±5 %	(7.0)	5.0	7.5±1.5	7.5±0.8	CS45SL2GA470JYGKA	CS45SL2GA470JYNKA	CS45SL2GA470JYVKA
SL	68 pF	±5 %	(7.5)	5.0	7.5±1.5	7.5±0.8	CS45SL2GA680JYGKA	CS45SL2GA680JYNKA	CS45SL2GA680JYVKA
B	100 pF	±10 %	(7.0)	5.0	7.5±1.5	7.5±0.8	CS65-B2GA101KYGKA	CS65-B2GA101KYNKA	CS65-B2GA101KYVKA
B	150 pF	±10 %	(7.0)	5.0	7.5±1.5	7.5±0.8	CS65-B2GA151KYGKA	CS65-B2GA151KYNKA	CS65-B2GA151KYVKA
B	220 pF	±10 %	(7.0)	5.0	7.5±1.5	7.5±0.8	CS65-B2GA221KYGKA	CS65-B2GA221KYNKA	CS65-B2GA221KYVKA
B	330 pF	±10 %	(7.0)	5.0	7.5±1.5	7.5±0.8	CS70-B2GA331KYGKA	CS70-B2GA331KYNKA	CS70-B2GA331KYVKA
B	470 pF	±10 %	(7.5)	5.0	7.5±1.5	7.5±0.8	CS75-B2GA471KYGKA	CS75-B2GA471KYNKA	CS75-B2GA471KYVKA
B	680 pF	±10 %	8.5**	5.0	7.5±1.5	7.5±0.8	CS85-B2GA681KYGKA	CS85-B2GA681KYNKA	CS85-B2GA681KYVKA
Z5U	1000 pF	±20 %	(7.0)	5.0	7.5±1.5	7.5±0.8	CS65ZU2GA102MYGKA	CS65ZU2GA102MYNKA	CS65ZU2GA102MYVKA
Z5U	1500 pF	±20 %	(7.5)	5.0	7.5±1.5	7.5±0.8	CS75ZU2GA152MYGKA	CS75ZU2GA152MYNKA	CS75ZU2GA152MYVKA
Z5U	2200 pF	±20 %	(8.0)	5.0	7.5±1.5	7.5±0.8	CS80ZU2GA222MYGKA	CS80ZU2GA222MYNKA	CS80ZU2GA222MYVKA
Z5U	3300 pF	±20 %	9.5	5.0	7.5±1.5	7.5±0.8	CS95ZU2GA332MYGKA	CS95ZU2GA332MYNKA	CS95ZU2GA332MYVKA
Z5U	4700 pF	±20 %	10.5	5.0	7.5±1.5	7.5±0.8	CS11ZU2GA472MYGKA	CS11ZU2GA472MYNKA	CS11ZU2GA472MYVKA
F	10000 pF	±20 %	14.5	5.0	7.5±1.5	7.5±0.8	CS14-F2GA103MYGKA	CS14-F2GA103MYNKA	CS14-F2GA103MYVKA

* The values in parentheses "()" are reference values.

** Reference value is applied to bulk product.

■ Gray items: These products are not recommended for new designs. Click the part number for details.

● Please refer to p-4 about the taping dimensions.

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

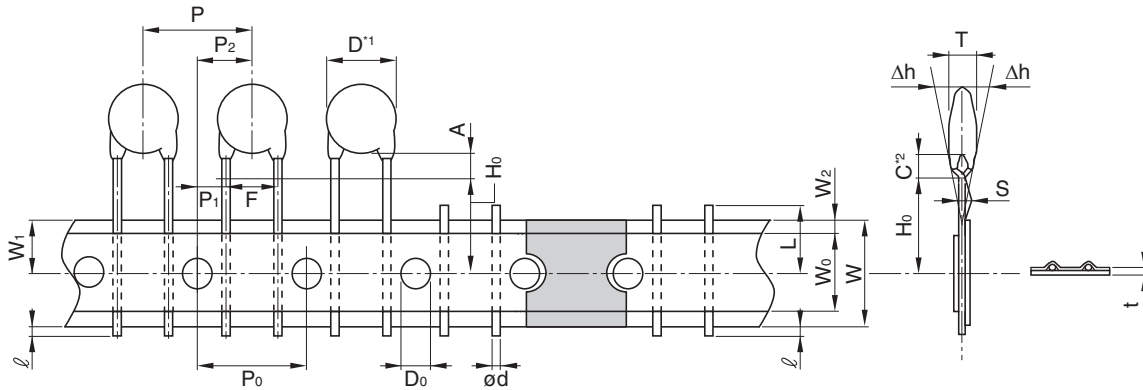
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TAPING DIMENSIONS



Item	Symbols	Dimensions (mm)	Remarks
Body diameter	D	Refer to P-3	*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	
Lead-wire diameter	ød	0.6±0.05	
Pitch of component	P	15.0±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-wire	P ₁	3.75±0.7	
Feed hole center to component center	P ₂	7.5±1.3	Including the slanting body due to bending lead-wire
Lead-to lead distance	F	7.5±0.8	Measuring point is bottom kink
Component alignment	Δh	0±2.0	Including the slanting body due to bending lead-wire
Carrier 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	
Lead-wire protrusion	ℓ	1.0 Max.	
Feed hole diameter	D ₀	4.0±0.2	
Carrier tape thickness (Including adhesive tape)	t	0.6±0.3	Including adhesive tape
Length of snapped lead-wire	L	11.0 Max.	
Coating on lead-wire	C	4.0 Max.	*2 Coating on leads shall not extend beyond the bottom of vertical kink.
Height of kink	A	4.0 Max.	Measuring point is bottom kink
Spring action	S	2.0 Max.	

AMMO PACK INNER BOX SIZE



Dimensions in mm

PACKAGE QUANTITY

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

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

- 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.