

Mid-high Voltage Ceramic Capacitors

Disk type with lead

Safety standard approved

CS series

Issue date: October 2011

- All specifications are subject to change without notice.
 - Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.
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Mid-high Voltage Ceramic Capacitors(Disk with Lead) Safety Standard Approved CS Series

Conformity to RoHS Directive

**BASIC INSULATION TYPE/Operating temperature range: -25 to +105°C(UL standard: -25 to +85°C)
CLASS 2 HIGH DIELECTRIC**

FEATURES

- Flame-resistant reinforced outer insulation prevents fires, electrical shock, and other potential hazards.
- Compliant with the safety standards of 11 countries.
- It has a withstand voltage of AC.2600V
- This product is compatible with halogen-free external resin coating (we recommend halogen-free products as standard).

CAPACITANCE TEMPERATURE CHARACTERISTICS AND TOLERANCE

| Temperature characteristics | Test temperature range | Capacitance tolerance |
|-----------------------------|------------------------|-----------------------|
| B(±10%) | -25 to +85°C | K(±10%) |
| E(+20, -55%) | -25 to +85°C | M(±20%) |
| F(+30, -80%) | -25 to +85°C | M(±20%) |

PRODUCT IDENTIFICATION

| CS | 11 | -E | 2GA | 222 | M | Y | N | S | A |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |

- (1) Type
- (2) Shape
- (3) Capacitance temperature characteristics
- (4) Rated voltage
- (5) Nominal capacitance
- (6) Capacitance tolerance
- (7) Class
- (8) Lead type
- (9) Safety standard
- (10) Halogen-free compatible product

CAPACITANCE AND DIMENSIONS

| Part No. | | Capacitance temperature characteristics | Capacitance (pF) | Capacitance tolerance | Dimensions(mm) | | | | Taping dimensions |
|----------------------|------------------|---|------------------|-----------------------|----------------|--------|---------|----------|-------------------|
| Halogen-free product | Current product | | | | D max. | T max. | F | d | |
| CS70-B2GA101KY□SA | CS70-B2GA101KY□S | B(±10%) | 100 | K(±10%) | 7.0 | 7.0 | 7.5±1.5 | 0.6±0.05 | V2 |
| CS70-B2GA151KY□SA | CS70-B2GA151KY□S | | 150 | K(±10%) | 7.0 | 7.0 | 7.5±1.5 | 0.6±0.05 | V2 |
| CS70-B2GA221KY□SA | CS70-B2GA221KY□S | | 220 | K(±10%) | 7.0 | 7.0 | 7.5±1.5 | 0.6±0.05 | V2 |
| CS85-B2GA331KY□SA | CS85-B2GA331KY□S | | 330 | K(±10%) | 8.5 | 7.0 | 7.5±1.5 | 0.6±0.05 | V2 |
| CS85-B2GA471KY□SA | CS85-B2GA471KY□S | E(+20, -55%) | 470 | K(±10%) | 8.5 | 7.0 | 7.5±1.5 | 0.6±0.05 | V2 |
| CS95-B2GA681KY□SA | CS95-B2GA681KY□S | | 680 | K(±10%) | 9.5 | 7.0 | 7.5±1.5 | 0.6±0.05 | V2 |
| CS10-B2GA102KY□SA | CS10-B2GA102KY□S | | 1,000 | K(±10%) | 10.0 | 7.0 | 7.5±1.5 | 0.6±0.05 | V2 |
| CS80-E2GA102MY□SA | CS80-E2GA102MY□S | | 1,000 | M(±20%) | 8.0 | 7.0 | 7.5±1.5 | 0.6±0.05 | V2 |
| CS90-E2GA152MY□SA | CS90-E2GA152MY□S | F(+30, -80%) | 1,500 | M(±20%) | 9.0 | 7.0 | 7.5±1.5 | 0.6±0.05 | V2 |
| CS11-E2GA222MY□SA | CS11-E2GA222MY□S | | 2,200 | M(±20%) | 10.5 | 7.0 | 7.5±1.5 | 0.6±0.05 | V2 |
| CS13-E2GA332MY□SA | CS13-E2GA332MY□S | | 3,300 | M(±20%) | 12.5 | 7.0 | 7.5±1.5 | 0.6±0.05 | V2 |
| CS14-E2GA392MY□SA | CS14-E2GA392MY□S | | 3,900 | M(±20%) | 13.5 | 7.0 | 7.5±1.5 | 0.6±0.05 | V2 |
| CS15-E2GA472MY□SA | CS15-E2GA472MY□S | F(+30, -80%) | 4,700 | M(±20%) | 14.5 | 7.0 | 7.5±1.5 | 0.6±0.05 | V3 |
| CS12-F2GA472MY□SA | CS12-F2GA472MY□S | | 4,700 | M(±20%) | 12.0 | 7.0 | 7.5±1.5 | 0.6±0.05 | V2 |
| CS17-F2GA103MY□SA | CS17-F2GA103MY□S | | 10,000 | M(±20%) | 16.5 | 7.0 | 10±2 | 0.6±0.05 | — |

* □ : Lead shape symbol

LIST OF STANDARD LEAD SHAPES

The lead type is indicated by the letter which is the 15th character of the product name.

Example) TDK Product Name: **CS11-E2GA222MYNSA**

└N: Lead type (Vertical kink, Short)

Dimensions in mm

| | Long lead Symbol G | Short lead Symbol N | Taping Symbol V |
|---------------|-----------------------|------------------------|--------------------|
| Vertical kink | | | |

- We recommend using a vertical kink type.
- For bulk products, we recommend a short lead type with the symbol N.

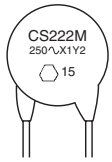
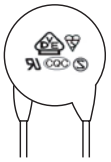
• Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

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HALOGEN-FREE PRODUCT

MARKINGS

| Item | Marking examples |
|------------------------------------|------------------|
| 1. Series | CS |
| 2. Nominal capacitance | 222(2200pF) |
| 3. Capacitance tolerance | M(±20%) |
| 4. Rated voltage Eac | 250V ~ (AC.250V) |
| 5. Sub-class of safety performance | X1Y2 |
| 6. TDK's logogram | |
| 7. Date code | 15 (2011.5)* |

(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.

INTERNATIONALLY CERTIFIED STATUS / IEC60384-14 EN60384-14 Approved

| Safety standard | Standard No. of IEC | Standard No. | Temperature characteristics | Insulation sub-class | Rated voltage Eac(V) | Approval report No. | | |
|-----------------|---------------------|-------------------|-----------------------------|----------------------|----------------------|---------------------|--------------------|--------------------|
| | | | | | | Japan | Taiwan | Xiamen |
| BSI | IEC 60065 | BS EN 60065 | B, E, F | X1, Y2 | 250 | KM37103 | KM37103 | KM37103 |
| | IEC 60384-14 | BS EN60384-14 | | | | | | |
| VDE | IEC 60384-14 | EN 60384-14 | B, E, F | X1, Y2 | 250 | 40029781 | 40029781 | 40029781 |
| SEV | IEC 60384-14 | EN 60384-14 | B, E, F | X1, Y2 | 250 | 10.0120 | 10.0120 | 10.0120 |
| SEMKO | IEC 60384-14 | EN 60384-14 | B, E, F | X1, Y2 | 250 | 912461 | 912461 | 912461 |
| NEMKO | IEC 60384-14 | EN 60384-14 | B, E, F | X1, Y2 | 250 | P09211677 | P09211677 | P09211677 |
| DEMKO | IEC 60384-14 | EN 60384-14 | B, E, F | X1, Y2 | 250 | 315269-01 | 315269-01 | 315269-01 |
| FIMKO | IEC 60384-14 | EN 60384-14 | B, E, F | X1, Y2 | 250 | FI 25553 | FI 25553 | FI 25553 |
| IMQ | IEC 60384-14 | EN 60384-14 | B, E, F | X1, Y2 | 250 | V3692 | V3692 | V3692 |
| SAA | IEC 60065 | AS3250 | B, E, F | — | 400 | CS6268 | CS6268 | CS6268 |
| UL | — | UL 1414 | B, E, F | (X, Y) | 250 | E37861 | E37861 | E37861 |
| | | | | | | | | |
| CSA | IEC 60384-14 | CAN/CSA-E60384-14 | B, E, F | (X, Y) | 250 | 2278972 (LR 35801) | 2278972 (LR 35801) | 2278972 (LR 35801) |
| CQC | IEC 60384-14 | GB-T 14472-1998 | B, E, F | X1, Y2 | 250 | CQC10001051610 | CQC10001051637 | CQC03001004815 |


• Certificate numbers shall be changed owing to the revisions of the related standards.

CURRENT PRODUCT

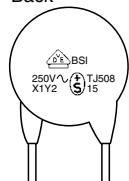
MARKINGS

| Item | Marking examples |
|---|------------------|
| 1. Series | CS |
| 2. Nominal capacitance | 222(2200pF) |
| 3. Capacitance tolerance | M(±20%) |
| 4. Rated voltage Eac | 250V ~ (AC.250V) |
| 5. Withstand voltage Eac | X1Y2 |
| 6. Sub-class of safety performance | |
| 7. TDK's logogram | 15 (2011.5)* |
| 8. Date code | |
| 9. Regulatory body safety standards compliance markings | |

Front



Back



(Marking position of the monogram is reference.)

| | | | | | | | |
|----------------|-----|-------------------|--------|-----------------|--|----------------|--|
| BSI (U.K.) | BSI | SEV (Switzerland) | TJS508 | FIMKO (Finland) | | NEMKO (Norway) | |
| SEMKO (Sweden) | | UL (U.S.A.) | | DEMKO (Denmark) | | IMQ (Italy) | |
| VDE (Germany) | | CSA (Canada) | | | | | |

* 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).

INTERNATIONALLY CERTIFIED STATUS / IEC60384-14 EN60384-14 Approved

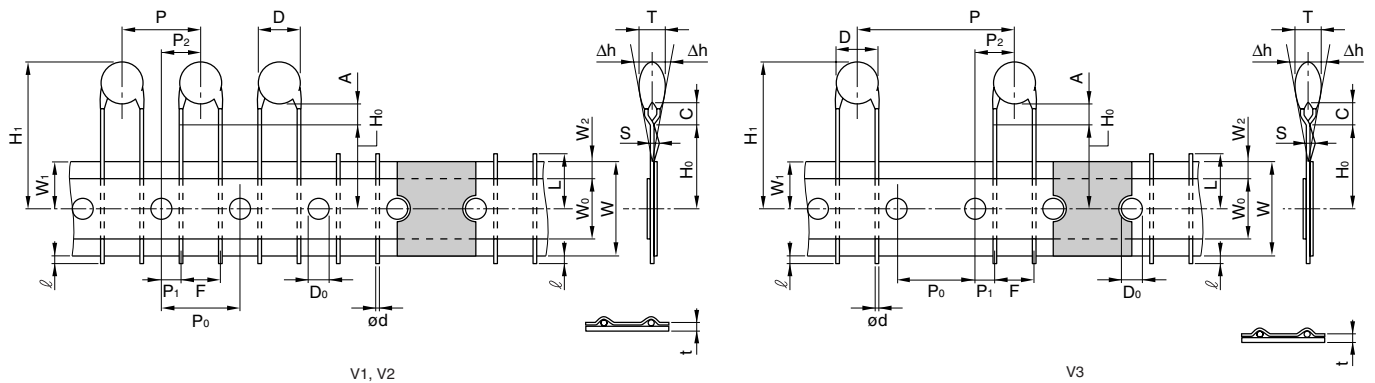
| Safety standard | Standard No. of IEC | Standard No. | Temperature characteristics | Insulation sub-class | Rated voltage Eac(V) | Approval report No. | | |
|-----------------|---------------------|-----------------------|-----------------------------|----------------------|----------------------|---------------------|-----------|------------|
| | | | | | | Japan | Taiwan | Xiamen |
| BSI | IEC 60065 | BS EN 60065 | B, E, F | X1, Y2 | 250 | 226494 | 226494 | 226494 |
| | IEC 60384-14 | BS EN60384-14 | | | | | | |
| VDE | IEC 60384-14 | EN60384-14 | B, E, F | X1, Y2 | 250 | 138559 | 138560 | 122006 |
| SEV | IEC 60384-14 | EN60384-14 | B, E, F | X1, Y2 | 250 | 09.0962 | 09.0962 | 09.0962 |
| SEMKO | IEC 60384-14 | EN60384-14 | B, E, F | X1, Y2 | 250 | 915556 | 915556 | 915394 |
| NEMKO | IEC 60384-14 | EN60384-14 | B, E, F | X1, Y2 | 250 | P09211507 | P09211507 | P08209309 |
| DEMKO | IEC 60384-14 | EN60384-14 | B, E, F | X1, Y2 | 250 | 315179-01 | 315179-01 | 314664-02 |
| FIMKO | IEC 60384-14 | EN60384-14 | B, E, F | X1, Y2 | 250 | FI 25453 | FI 25453 | FI 24306A1 |
| IMQ | IEC 60384-14 | EN60384-14 | B, E, F | X1, Y2 | 250 | V3692 | V3692 | V3692 |
| SAA | IEC 60065 | AS3250 | B, E, F | — | 400 | 6268 | 6268 | 6268 |
| UL | — | UL 1414 | B, E, F | (X, Y) | 250 | E37861 | E37861 | E37861 |
| | | | | | | | | |
| CSA | — | CSA C22.2 No.0 & No.1 | B, E, F | (X, Y) | 250 | LR35801 | LR65972 | LR65972 |

• Certificate numbers shall be changed owing to the revisions of the related standards.

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TAPING DIMENSIONS

VERTICAL KINK LEAD TYPE



| Item | Symbol | Dimensions(mm) | | | Remarks |
|--------------------------------------|----------------|---|----------------|----------------|--|
| | | V1 | V2 | V3 | |
| Body diameter | D | Depends on the specification of each product. | | | |
| Body thickness | T | Depends on the specification of each product. | | | |
| 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 | 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 | |
| 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 |
| 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 | 11.5min. | 11.5min. | 11.5min. | |
| Hole position | W ₁ | 9.0±0.5 | 9.0±0.5 | 9.0±0.5 | |
| Adhesive tape position | W ₂ | 3.0max. | 3.0max. | 3.0max. | 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 | |
| Height of body from tape center | H ₁ | 46.0max. | 46.0max. | 46.0max. | |
| Lead-wire protrusion | ℓ | 1.0max. | 1.0max. | 1.0max. | |
| Feed hole diameter | D ₀ | 4.0±0.2 | 4.0±0.2 | 4.0±0.2 | |
| Total tape thickness | t | 0.6±0.3 | 0.6±0.3 | 0.6±0.3 | Do not including adhesive tape |
| Length of snapped lead | L | 11.0max. | 11.0max. | 11.0max. | |
| Coating on lead | C | 4.0max. | 4.0max. | 4.0max. | |
| Height of kink | A | 4.0max. | 4.0max. | 4.0max. | Measuring point is bottom kink |
| Spring action | S | 2.0max. | 2.0max. | 2.0max. | |

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

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[NCD102K1KVY5FF](#) [NCD103M1KVZ5UF](#) [NCD331K1KVY5FF](#) [440LT68AP-R](#) [CK60AX471M](#) [AOL-1502-02](#) [NCD103M1KVZ5UJTBF](#)
[DEF2CLH040CN3A](#) [DEF2CLH080DA3B](#) [0811-040-X7R0-102K](#) [8903D0](#) [90410-10](#) [CK61BX471K](#) [YV101103Z060HAND5P](#)
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[YP102391K050BAND5P](#) [YP501101K040BAND5P](#) [ZU102103M100BAND5H](#) [YP102681K060B20C6P](#) [YP501121K040B20C6P](#)
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[YP501472K100B20C6P](#) [ZU102103M100B20C0P](#) [YV500223Z080HAND5P](#) [F121K25S3NN63J5R](#) [F121K25S3NP63K7R](#)
[F121K25S3NR63K7R](#) [F122K47S3NP63K7R](#) [F681K43S3NR63K7R](#) [S470J25SL0N6TJ5R](#) [HVCC103Y6P152MEAX](#) [S103Z43Y5VN6TJ5R](#)
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