

# Mid-high Voltage Ceramic Capacitors

Disk type with lead

Safety standard approved

CD 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 CD Series

Conformity to RoHS Directive

**REINFORCED 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.
- This ceramic capacitor meets European Class II (reinforced insulation) Safety Standards VDE, SEV, SEMKO, BS. Since it is rated at a withstand voltage of AC.4000V, it can be used in single-unit configurations within European Class II devices.
- 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%)               |

## PRODUCT IDENTIFICATION

| CD  | 12  | -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) |        |          |          |
|----------------------|-------------------|-----------------------------------------|------------------|-----------------------|----------------|--------|----------|----------|
| Halogen-free product | Current product   |                                         |                  |                       | D max.         | T max. | F        | d        |
| CD70-B2GA101KY□*SA   | CD70-B2GA101KY□*S | B(±10%)                                 | 100              | K(±10%)               | 7.0            | 7.0    | 10+2, -1 | 0.6±0.05 |
| CD70-B2GA151KY□SA    | CD70-B2GA151KY□S  |                                         | 150              | K(±10%)               | 7.0            | 7.0    | 10+2, -1 | 0.6±0.05 |
| CD85-B2GA221KY□SA    | CD85-B2GA221KY□S  |                                         | 220              | K(±10%)               | 8.5            | 7.0    | 10+2, -1 | 0.6±0.05 |
| CD90-B2GA331KY□SA    | CD90-B2GA331KY□S  |                                         | 330              | K(±10%)               | 9.0            | 7.0    | 10+2, -1 | 0.6±0.05 |
| CD90-B2GA391KY□SA    | CD90-B2GA391KY□S  |                                         | 390              | K(±10%)               | 9.0            | 7.0    | 10+2, -1 | 0.6±0.05 |
| CD95-B2GA471KY□SA    | CD95-B2GA471KY□S  |                                         | 470              | K(±10%)               | 9.5            | 7.0    | 10+2, -1 | 0.6±0.05 |
| CD75-E2GA681MY□SA    | CD75-E2GA681MY□S  | E(+20, -55%)                            | 680              | M(±20%)               | 7.5            | 7.0    | 10+2, -1 | 0.6±0.05 |
| CD85-E2GA102MY□SA    | CD85-E2GA102MY□S  |                                         | 1,000            | M(±20%)               | 8.5            | 7.0    | 10+2, -1 | 0.6±0.05 |
| CD10-E2GA152MY□SA    | CD10-E2GA152MY□S  |                                         | 1,500            | M(±20%)               | 10.0           | 7.0    | 10+2, -1 | 0.6±0.05 |
| CD12-E2GA222MY□SA    | CD12-E2GA222MY□S  |                                         | 2,200            | M(±20%)               | 11.5           | 7.0    | 10+2, -1 | 0.6±0.05 |
| CD14-E2GA332MY□SA    | CD14-E2GA332MY□S  |                                         | 3,300            | M(±20%)               | 13.5           | 7.0    | 10+2, -1 | 0.6±0.05 |
| CD15-E2GA392MY□SA    | CD15-E2GA392MY□S  |                                         | 3,900            | M(±20%)               | 14.5           | 7.0    | 10+2, -1 | 0.6±0.05 |
| CD16-E2GA472MY□SA    | CD16-E2GA472MY□S  |                                         | 4,700            | M(±20%)               | 15.5           | 7.0    | 10+2, -1 | 0.6±0.05 |

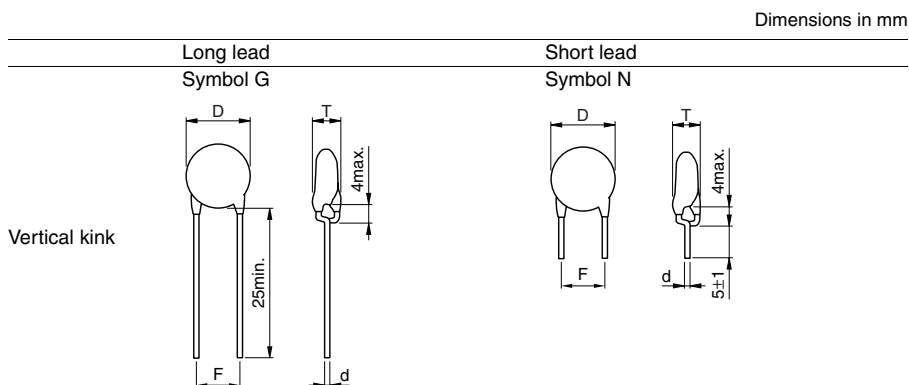
\* □ : Lead shape symbol

## 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: **CD12-E2GA222MYNSA**

└─N: Lead type (Vertical kink, Short)



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

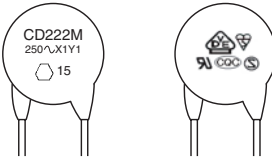
• Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

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## HALOGEN-FREE PRODUCT

### MARKINGS

| Item                               | Marking examples      |
|------------------------------------|-----------------------|
| 1. Series                          | CD                    |
| 2. Nominal capacitance             | 222(2200pF)           |
| 3. Capacitance tolerance           | M( $\pm 20\%$ )       |
| 4. Rated voltage Eac               | 250V $\sim$ (AC.250V) |
| 5. Sub-class of safety performance | X1Y1                  |
| 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

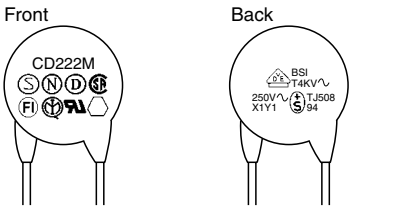
| Safety standard | Standard No. of IEC | Standard No.      | Temperature characteristics | Insulation sub-class | Rated voltage Eac(V) | Approval report No. |                    |                    |
|-----------------|---------------------|-------------------|-----------------------------|----------------------|----------------------|---------------------|--------------------|--------------------|
|                 |                     |                   |                             |                      |                      | Japan               | Taiwan             | Xiamen             |
| BSI             | IEC 60065           | BS EN 60065       | B, E                        | X1, Y1               | 250                  | KM37103             | KM37103            | KM37103            |
|                 | IEC 60384-14        | BS EN60384-14     |                             |                      |                      |                     |                    |                    |
| VDE             | IEC 60384-14        | EN 60384-14       | B, E                        | X1, Y1               | 250                  | 40029780            | 40029780           | 40029780           |
| SEV             | IEC 60384-14        | EN 60384-14       | B, E                        | X1, Y1               | 250                  | 10.0121             | 10.0121            | 10.0121            |
| SEMKO           | IEC 60384-14        | EN 60384-14       | B, E                        | X1, Y1               | 250                  | 912465              | 912465             | 912465             |
| NEMKO           | IEC 60384-14        | EN 60384-14       | B, E                        | X1, Y1               | 250                  | P09211658           | P09211658          | P09211658          |
| DEMKO           | IEC 60384-14        | EN 60384-14       | B, E                        | X1, Y1               | 250                  | 315294-01           | 315294-01          | 315294-01          |
| FIMKO           | IEC 60384-14        | EN 60384-14       | B, E                        | X1, Y1               | 250                  | FI 25522            | FI 25522           | FI 25522           |
| IMQ             | IEC 60384-14        | EN 60384-14       | B, E                        | X1, Y1               | 250                  | V3691               | V3691              | V3691              |
| SAA             | IEC 60065           | AS3250            | B, E                        | —                    | 400                  | CS6268              | CS6268             | CS6268             |
| UL              | —                   | UL 1414           | B, E                        | (X, Y)               | 250                  | E37861              | E37861             | E37861             |
| CSA             | IEC 60384-14        | CAN/CSA-E60384-14 | B, E                        | (X, Y)               | 250                  | 2278970 (LR 35801)  | 2278970 (LR 35801) | 2278970 (LR 35801) |
| CQC             | IEC 60384-14        | GB-T 14472-1998   | B, E                        | X1, Y1               | 250                  | CQC10001051611      | CQC10001051638     | CQC03001004816     |

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

## CURRENT PRODUCT

### MARKINGS

| Item                                                    | Marking examples      |
|---------------------------------------------------------|-----------------------|
| 1. Series                                               | CD                    |
| 2. Nominal capacitance                                  | 222(2200pF)           |
| 3. Capacitance tolerance                                | M( $\pm 20\%$ )       |
| 4. Rated voltage Eac                                    | 250V $\sim$ (AC.250V) |
| 5. Withstand voltage Eac                                | T4KV $\sim$ (AC.4kV)  |
| 6. Sub-class of safety performance                      | X1Y1                  |
| 7. TDK's logogram                                       |                       |
| 8. Date code                                            | 15 (2011.5)*          |
| 9. Regulatory body safety standards compliance markings |                       |



(Marking position of the monogram is reference.)

|                |              |                          |                 |                |
|----------------|--------------|--------------------------|-----------------|----------------|
| BSI (U.K.)     | BSI          | SEV (Switzerland)  TJ508 | 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                        | X1, Y1               | 250                  | 226495              | 226495    | 226495    |
|                 | IEC 60384-14        | BS EN60384-14         |                             |                      |                      |                     |           |           |
| VDE             | IEC 60384-14        | EN60384-14            | B, E                        | X1, Y1               | 250                  | 138526              | 138550    | 124321    |
| SEV             | IEC 60384-14        | EN60384-14            | B, E                        | X1, Y1               | 250                  | 09.0963             | 09.0963   | 09.0963   |
| SEMKO           | IEC 60384-14        | EN60384-14            | B, E                        | X1, Y1               | 250                  | 915564              | 915564    | 915396    |
| NEMKO           | IEC 60384-14        | EN60384-14            | B, E                        | X1, Y1               | 250                  | P09211509           | P09211509 | P08209310 |
| DEMKO           | IEC 60384-14        | EN60384-14            | B, E                        | X1, Y1               | 250                  | 315180-01           | 315180-01 | 314712-02 |
| FIMKO           | IEC 60384-14        | EN60384-14            | B, E                        | X1, Y1               | 250                  | FI 25452            | FI 25452  | FI 24307  |
| IMQ             | IEC 60384-14        | EN60384-14            | B, E                        | X1, Y1               | 250                  | V3691               | V3691     | V3691     |
| SAA             | IEC 60065           | AS3250                | B, E                        | —                    | 400                  | 6268                | 6268      | 6268      |
| UL              | —                   | UL 1414               | B, E                        | (X, Y)               | 250                  | E37861              | E37861    | E37861    |
| CSA             | —                   | CSA C22.2 No.0 & No.1 | B, E                        | (X, Y)               | 250                  | LR35801             | LR65972   | LR65972   |

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

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

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