

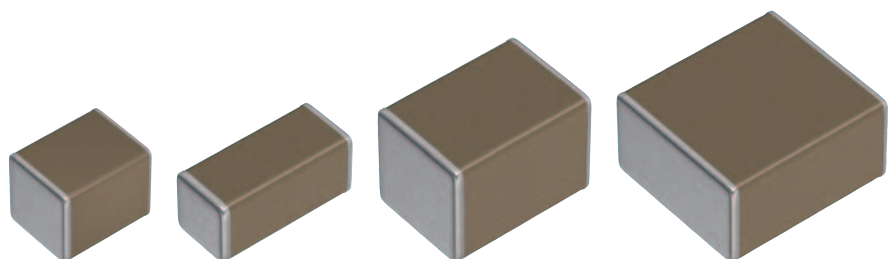
MULTILAYER CERAMIC CHIP CAPACITORS

Commercial grade, high voltage (1,000V and over)

C series

| | |
|--------------|--------------------|
| C3225 | [1210 inch] |
| C4520 | [1808 inch] |
| C4532 | [1812 inch] |
| C5750 | [2220 inch] |

* Dimensions code: JIS[EIA]



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

1. 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 (excepting Pharmaceutical Affairs Law classification Class1,2) | (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 | |

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.

- We may modify products or discontinue production of a product listed in this catalog without prior notification.
- We provide "Delivery Specification" that explain precautions for the specifications and safety of each product listed in this catalog. We strongly recommend that you exchange these delivery specifications with customers that use one of these products.
- If you plan to export a product listed in this catalog, keep in mind that it may be a restricted item according to the "Foreign Exchange and Foreign Trade Control Law". In such cases, it is necessary to acquire export permission in harmony with this law.
- Any reproduction or transferring of the contents of this catalog is prohibited without prior permission from our company.
- We are not responsible for problems that occur related to the intellectual property rights or other rights of our company or a third party when you use a product listed in this catalog. We do not grant license of these rights.
- This catalog only applies to products purchased through our company or one of our company's official agencies. This catalog does not apply to products that are purchased through other third parties.

Notice: Effective January 2013, TDK will use a new catalog number which adds product thickness and packaging specification detail. This new catalog number should be referenced on all catalog orders going forward, and is not applicable for OEM part number orders.
Please be aware the last five digits of the catalog number will differ from the item description (internal control number) on the product label.
Contact your local TDK Sales representative for more information.

(Example)

| Catalog issued date | Catalog number | Item description (on delivery label) |
|------------------------|-----------------------|--------------------------------------|
| Prior to January 2013 | C1608C0G1E103J(080AA) | C1608C0G1E103JT000N |
| January 2013 and later | C1608C0G1E103J080AA | C1608C0G1E103JT000N |

C series

High voltage (1,000V and over)

Type: C3225 [1210 inch], C4520 [1808 inch], C4532 [1812 inch],
C5750 [2220 inch]



SERIES OVERVIEW

High voltage C series, commercial grade of TDK's multilayer ceramic chip capacitor, is a product which has realized the high withstanding voltage characteristic by the unique inner structure. Voltage rating of 1,000V to 3,000V with capacitance range up to 33nF.

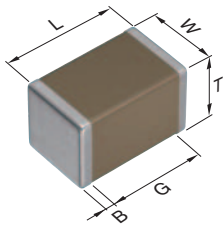
FEATURES

- Voltage rating of 1,000V, 2,000V and 3,000V
- Operating temperature range: -55 to +125°C
- COG and CH types which have excellent stable temperature and DC-bias characteristics are available

APPLICATIONS

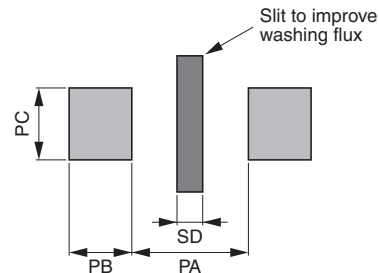
- Wireless charging units such as DC-DC converter and Inverter
- Decoupling, snubber and resonant circuits of high voltage circuits

SHAPE & DIMENSIONS



| | |
|---|------------------|
| L | Body length |
| W | Body width |
| T | Body height |
| B | Terminal width |
| G | Terminal spacing |

CAUTIONS



- A slit of about 1mm on the circuit board is recommended to improve removal of the flux after soldering.
- Ensure that this product is completely dried following washing.
- Because this product will be subjected to high voltages, use only low-activity rosin flux (with 0.2% max. of chlorine).
- Using this product with aluminum circuit boards must be considered a special implementation because the high heat stress levels are involved. In case of using aluminum circuit boards, please contact TDK.

| Type | Dimensions in mm | | | |
|-------|------------------|-----------|-----------|-----------|
| | L | W | T | B |
| C3225 | 3.20±0.40 | 2.50±0.30 | 2.50±0.30 | 0.20 min. |
| C4520 | 4.50±0.40 | 2.00±0.20 | 2.00±0.20 | 0.20 min. |
| C4532 | 4.50±0.40 | 3.20±0.40 | 2.50±0.30 | 0.20 min. |
| C5750 | 5.70±0.40 | 5.00±0.40 | 2.80±0.30 | 0.20 min. |

*Dimensional tolerances are typical values.

CATALOG NUMBER CONSTRUCTION

| | | | | | | | | |
|----------|-------------|------------|-----------|------------|----------|------------|----------|----------|
| C | 5750 | C0G | 3A | 333 | J | 280 | K | C |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |

(1) Series

(2) Dimensions L x W (mm)

| Code | EIA | Length | Width | Terminal width |
|-------|--------|--------|-------|----------------|
| C3225 | CC1210 | 3.20 | 2.50 | 0.20min. |
| C4520 | CC1808 | 4.50 | 2.00 | 0.20min. |
| C4532 | CC1812 | 4.50 | 3.20 | 0.20min. |
| C5750 | CC2220 | 5.70 | 5.00 | 0.20min. |

(3) Temperature characteristics

| Temperature characteristics | Temperature coefficient or capacitance change | Temperature range |
|-----------------------------|---|-------------------|
| C0G | 0±30 ppm/°C | -55 to +125°C |
| CH | 0±60 ppm/°C | -25 to +85°C |
| JB | ±10% | -25 to +85°C |
| X7R | ±15% | -55 to +125°C |

(4) Rated voltage (DC)

| Code | Voltage (DC) |
|------|--------------|
| 3A | 1,000V |
| 3D | 2,000V |
| 3F | 3,000V |

(5) Nominal capacitance (pF)

The capacitance is expressed in three digit codes and in units of pico Farads (pF). The first and second digits identify the first and second significant figures of the capacitance. The third digit identifies the multiplier. R designates a decimal point.

(Example)0R5 = 0.5pF
 101 = 100pF
 225 = 2,200,000pF = 2.2μF

(6) Capacitance tolerance

| Code | Tolerance |
|------|-----------|
| F | ±1pF |
| J | ±5% |
| K | ±10% |
| M | ±20% |

(7) Thickness

| Code | Thickness |
|------|-----------|
| 085 | 0.85 mm |
| 110 | 1.10 mm |
| 130 | 1.30 mm |
| 160 | 1.60 mm |
| 200 | 2.00 mm |
| 230 | 2.30 mm |
| 250 | 2.50 mm |
| 280 | 2.80 mm |

(8) Packaging style

| Code | Style |
|------|-----------------------|
| A | 178mm reel, 4mm pitch |
| K | 178mm reel, 8mm pitch |

(9) Special reserved code




| Code | Description |
|------|-------------------|
| A,C | TDK internal code |


MULTILAYER CERAMIC CHIP CAPACITORS

Capacitance range chart

C3225 [1210 inch]

| Capacitance | | COG |
|-------------|------|----------|
| (pF) | Code | 3A (1kV) |
| 1,000 | 102 | |
| 1,200 | 122 | |
| 1,500 | 152 | |
| 1,800 | 182 | |
| 2,200 | 222 | |
| 2,700 | 272 | |
| 3,300 | 332 | |
| 3,900 | 392 | |
| 4,700 | 472 | |
| 5,600 | 562 | |
| 6,800 | 682 | |
| 8,200 | 822 | |
| 10,000 | 103 | |
| 12,000 | 123 | |
| 15,000 | 153 | |
| 18,000 | 183 | |
| 22,000 | 223 | |

Standard thickness  2.00 mm  2.30 mm  2.50 mm






 Background gray: These products are not recommended for new designs.


■ For details such as the catalog numbers, please refer to the capacitance range table on page 7 and after.

Capacitance range chart


C4520 [1808 inch]

| Capacitance | | COG | | JB | | X7R | |
|-------------|------|----------|----------|----------|----------|----------|----------|
| (pF) | Code | 3F (3kV) | 3F (3kV) | 3D (2kV) | 3A (1kV) | 3D (2kV) | 3A (1kV) |
| 10 | 100 | | | | | | |
| 12 | 120 | | | | | | |
| 15 | 150 | | | | | | |
| 18 | 180 | | | | | | |
| 22 | 220 | | | | | | |
| 27 | 270 | | | | | | |
| 33 | 330 | | | | | | |
| 39 | 390 | | | | | | |
| 47 | 470 | | | | | | |
| 56 | 560 | | | | | | |
| 68 | 680 | | | | | | |
| 82 | 820 | | | | | | |
| 100 | 101 | | | | | | |
| 470 | 471 | | | | | | |
| 1,000 | 102 | | | | | | |

Standard thickness  0.85 mm  1.10 mm  1.30 mm  1.60 mm  2.00 mm

 Background gray: These products are not recommended for new designs.






■ For details such as the catalog numbers, please refer to the capacitance range table on page 7 and after.


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Capacitance range chart

C4532 [1812 inch]

| Capacitance | | C0G | | CH | | JB | | X7R | |
|-------------|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| (pF) | Code | 3F (3kV) | 3F (3kV) | 3D (2kV) | 3A (1kV) | 3D (2kV) | 3A (1kV) | 3D (2kV) | 3A (1kV) |
| 100 | 101 | | | | | | | | |
| 120 | 121 | | | | | | | | |
| 150 | 151 | | | | | | | | |
| 180 | 181 | | | | | | | | |
| 220 | 221 | | | | | | | | |
| 270 | 271 | | | | | | | | |
| 330 | 331 | | | | | | | | |
| 2,200 | 222 | | | | | | | | |
| 4,700 | 472 | | | | | | | | |
| 10,000 | 103 | | | | | | | | |

Standard thickness  1.30 mm  1.60 mm  2.00 mm  2.30 mm  2.50 mm

 Background gray: These products are not recommended for new designs.

■ For details such as the catalog numbers, please refer to the capacitance range table on page 7 and after.

Capacitance range chart

C5750 [2220 inch]

| Capacitance | | C0G |
|-------------|------|-------------|
| (pF) | Code | 3A (1kV) |
| 10,000 | 103 | |
| 12,000 | 123 | |
| 15,000 | 153 | |
| 18,000 | 183 | |
| 22,000 | 223 | |
| 27,000 | 273 | |
| 33,000 | 333 | |

Standard thickness  2.80 mm

 Background gray: These products are not recommended for new designs.

■ For details such as the catalog numbers, please refer to the capacitance range table on page 7 and after.

Capacitance range table

Temperature characteristic: C0G (-55 to +125°C, 0±30ppm/°C)

| Capacitance | Dimensions | Thickness (mm) | Capacitance tolerance | Catalog number | |
|-------------|------------|-------------------|--------------------------|------------------------|------------------------|
| | | | | Rated voltage Edc: 3kV | Rated voltage Edc: 1kV |
| 10pF | 4520 | 0.85±0.15 | ±1pF | C4520C0G3F100F085KA | |
| 12pF | 4520 | 0.85±0.15 | ±10% | C4520C0G3F120K085KA | |
| 15pF | 4520 | 1.10±0.20 | ±10% | C4520C0G3F150K110KA | |
| 18pF | 4520 | 1.10±0.20 | ±10% | C4520C0G3F180K110KA | |
| 22pF | 4520 | 1.10±0.20 | ±10% | C4520C0G3F220K110KA | |
| 27pF | 4520 | 1.60±0.20 | ±10% | C4520C0G3F270K160KA | |
| 33pF | 4520 | 1.60±0.20 | ±10% | C4520C0G3F330K160KA | |
| 39pF | 4520 | 1.60±0.20 | ±10% | C4520C0G3F390K160KA | |
| 47pF | 4520 | 1.60±0.20 | ±10% | C4520C0G3F470K160KA | |
| 56pF | 4520 | 2.00±0.20 | ±10% | C4520C0G3F560K200KA | |
| 68pF | 4520 | 2.00±0.20 | ±10% | C4520C0G3F680K200KA | |
| 82pF | 4520 | 2.00±0.20 | ±10% | C4520C0G3F820K200KA | |
| 100pF | 4520 | 2.00±0.20 | ±10% | C4520C0G3F101K200KA | |
| | 4532 | 1.60±0.20 | ±10% | C4532C0G3F101K160KA | |
| 120pF | 4532 | 1.60±0.20 | ±10% | C4532C0G3F121K160KA | |
| 150pF | 4532 | 1.60±0.20 | ±10% | C4532C0G3F151K160KA | |
| 180pF | 4532 | 1.60±0.20 | ±10% | C4532C0G3F181K160KA | |
| 220pF | 4532 | 2.00±0.20 | ±10% | C4532C0G3F221K200KA | |
| 270pF | 4532 | 2.30±0.20 | ±10% | C4532C0G3F271K230KA | |
| 330pF | 4532 | 2.50±0.30 | ±10% | C4532C0G3F331K250KA | |
| 1nF | 3225 | 2.00±0.20 | ±5% | | C3225C0G3A102J200AC |
| 1.2nF | 3225 | 2.00±0.20 | ±5% | | C3225C0G3A122J200AC |
| 1.5nF | 3225 | 2.00±0.20 | ±5% | | C3225C0G3A152J200AC |
| 1.8nF | 3225 | 2.00±0.20 | ±5% | | C3225C0G3A182J200AC |
| 2.2nF | 3225 | 2.00±0.20 | ±5% | | C3225C0G3A222J200AC |
| 2.7nF | 3225 | 2.00±0.20 | ±5% | | C3225C0G3A272J200AC |
| 3.3nF | 3225 | 2.00±0.20 | ±5% | | C3225C0G3A332J200AC |
| 3.9nF | 3225 | 2.00±0.20 | ±5% | | C3225C0G3A392J200AC |
| 4.7nF | 3225 | 2.00±0.20 | ±5% | | C3225C0G3A472J200AC |
| 5.6nF | 3225 | 2.00±0.20 | ±5% | | C3225C0G3A562J200AC |
| 6.8nF | 3225 | 2.00±0.20 | ±5% | | C3225C0G3A682J200AC |
| 8.2nF | 3225 | 2.30±0.20 | ±5% | | C3225C0G3A822J230AC |
| 10nF | 3225 | 2.50±0.30 | ±5% | | C3225C0G3A103J250AC |
| | 5750 | 2.80±0.30 | ±5% | | C5750C0G3A103J280KC |
| 12nF | 3225 | 2.50±0.30 | ±5% | | C3225C0G3A123J250AC |
| | 5750 | 2.80±0.30 | ±5% | | C5750C0G3A123J280KC |
| 15nF | 3225 | 2.50±0.30 | ±5% | | C3225C0G3A153J250AC |
| | 5750 | 2.80±0.30 | ±5% | | C5750C0G3A153J280KC |
| 18nF | 3225 | 2.50±0.30 | ±5% | | C3225C0G3A183J250AC |
| | 5750 | 2.80±0.30 | ±5% | | C5750C0G3A183J280KC |
| 22nF | 3225 | 2.50±0.30 | ±5% | | C3225C0G3A223J250AC |
| | 5750 | 2.80±0.30 | ±5% | | C5750C0G3A223J280KC |
| 27nF | 5750 | 2.80±0.30 | ±5% | | C5750C0G3A273J280KC |
| 33nF | 5750 | 2.80±0.30 | ±5% | | C5750C0G3A333J280KC |

■ Gray items: These products are not recommended for new designs.

Capacitance range table

Temperature characteristic: CH (-25 to +85°C, 0±60ppm/°C)

| Capacitance | Dimensions | Thickness (mm) | Capacitance tolerance | Catalog number | |
|-------------|------------|----------------|-----------------------|------------------------|--|
| | | | | Rated voltage Edc: 3kV | |
| 10pF | 4520 | 0.85±0.15 | ±1pF | C4520CH3F100F085KA | |
| 12pF | 4520 | 0.85±0.15 | ±10% | C4520CH3F120K085KA | |
| 15pF | 4520 | 1.10±0.20 | ±10% | C4520CH3F150K110KA | |
| 18pF | 4520 | 1.10±0.20 | ±10% | C4520CH3F180K110KA | |
| 22pF | 4520 | 1.10±0.20 | ±10% | C4520CH3F220K110KA | |
| 27pF | 4520 | 1.60±0.20 | ±10% | C4520CH3F270K160KA | |
| 33pF | 4520 | 1.60±0.20 | ±10% | C4520CH3F330K160KA | |
| 39pF | 4520 | 1.60±0.20 | ±10% | C4520CH3F390K160KA | |
| 47pF | 4520 | 1.60±0.20 | ±10% | C4520CH3F470K160KA | |
| 56pF | 4520 | 2.00±0.20 | ±10% | C4520CH3F560K200KA | |
| 68pF | 4520 | 2.00±0.20 | ±10% | C4520CH3F680K200KA | |
| 82pF | 4520 | 2.00±0.20 | ±10% | C4520CH3F820K200KA | |
| 100pF | 4520 | 2.00±0.20 | ±10% | C4520CH3F101K200KA | |
| | 4532 | 1.60±0.20 | ±10% | C4532CH3F101K160KA | |
| 120pF | 4532 | 1.60±0.20 | ±10% | C4532CH3F121K160KA | |
| 150pF | 4532 | 1.60±0.20 | ±10% | C4532CH3F151K160KA | |
| 180pF | 4532 | 1.60±0.20 | ±10% | C4532CH3F181K160KA | |
| 220pF | 4532 | 2.00±0.20 | ±10% | C4532CH3F221K200KA | |
| 270pF | 4532 | 2.30±0.20 | ±10% | C4532CH3F271K230KA | |
| 330pF | 4532 | 2.50±0.30 | ±10% | C4532CH3F331K250KA | |

■ Gray items: These products are not recommended for new designs.

Capacitance range table

Temperature characteristic: JB (-25 to +85°C, ±10%)

| Capacitance | Dimensions | Thickness (mm) | Capacitance tolerance | Catalog number | |
|-------------|------------|----------------|-----------------------|------------------------|------------------------|
| | | | | Rated voltage Edc: 2kV | Rated voltage Edc: 1kV |
| 470pF | 4520 | 1.30±0.20 | ±10% | C4520JB3D471K130KA | C4520JB3A471K130KA |
| | | | ±20% | C4520JB3D471M130KA | C4520JB3A471M130KA |
| 1nF | 4520 | 1.30±0.20 | ±10% | C4520JB3D102K130KA | C4520JB3A102K130KA |
| | | | ±20% | C4520JB3D102M130KA | C4520JB3A102M130KA |
| 2.2nF | 4532 | 1.30±0.20 | ±10% | C4532JB3D222K130KA | |
| | | | ±20% | C4532JB3D222M130KA | |
| 4.7nF | 4532 | 1.60±0.20 | ±10% | | C4532JB3A472K160KA |
| | | | ±20% | | C4532JB3A472M160KA |
| 10nF | 4532 | 2.00±0.20 | ±10% | | C4532JB3A103K200KA |
| | | | ±20% | | C4532JB3A103M200KA |

Capacitance range table

Temperature characteristic: X7R (-55 to +125°C, ±15%)

| Capacitance | Dimensions | Thickness (mm) | Capacitance tolerance | Catalog number | |
|-------------|------------|----------------|-----------------------|------------------------|------------------------|
| | | | | Rated voltage Edc: 2kV | Rated voltage Edc: 1kV |
| 470pF | 4520 | 1.30±0.20 | ±10% | C4520X7R3D471K130KA | C4520X7R3A471K130KA |
| | | | ±20% | C4520X7R3D471M130KA | C4520X7R3A471M130KA |
| 1nF | 4520 | 1.30±0.20 | ±10% | C4520X7R3D102K130KA | C4520X7R3A102K130KA |
| | | | ±20% | C4520X7R3D102M130KA | C4520X7R3A102M130KA |
| 2.2nF | 4532 | 1.30±0.20 | ±10% | C4532X7R3D222K130KA | |
| | | | ±20% | C4532X7R3D222M130KA | |
| 4.7nF | 4532 | 1.60±0.20 | ±10% | | C4532X7R3A472K160KA |
| | | | ±20% | | C4532X7R3A472M160KA |
| 10nF | 4532 | 2.00±0.20 | ±10% | | C4532X7R3A103K200KA |
| | | | ±20% | | C4532X7R3A103M200KA |

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