

# Multilayer Ceramic Chip Capacitors

## General use(High voltage[Edc: 1kV to 3kV])

### C series

**Type:** C3216[EIA CC1206]  
C3225[EIA CC1210]  
C4520[EIA CC1808]  
C4532[EIA CC1812]  
C5750[EIA CC2220]

**Issue date:** November 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.

## REMINDERS

Please read this before using the product.

### SAFETY REMINDERS

#### REMINDERS

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8. The descriptions in this catalog apply as of November, 2011.

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Conformity to RoHS Directive

### C Series

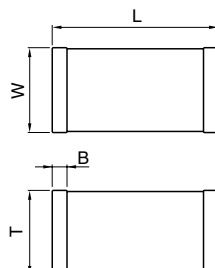
#### FEATURES

- Accommodates high voltages from 1kV to 3kV.
- Complies with ISO8802-3 for LAN applications.

#### APPLICATION EXAMPLES

- Surge protection for LAN lines
- Snubber circuits

#### SHAPES AND DIMENSIONS



#### DIMENSIONS

The dimensions of each product are described within the product name.

#### Dimensions L×W

The 4-digit number in the product name corresponds to the dimensions of L×W.

Refer to the table below for specific values.

Dimension code	Dimensions in mm		
	L	W	B
3216	3.2±0.2	1.6±0.2	0.2min.
3225	3.2±0.4	2.5±0.3	0.2min.
4520	4.5±0.4	2.0±0.3	0.2min.
4532	4.5±0.4	3.2±0.4	0.2min.
5750	5.7±0.4	5.0±0.4	0.2min.

- Dimension tolerances are typical values.

#### Product's Thickness T

The value in parentheses at the end of the product name corresponds to thickness T.

Refer to the table of "CAPACITANCE RANGES" for specific values.

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## PRODUCT IDENTIFICATION

C 4532 C0G 3F 221 K ( 200 K A )  
 (1) (2) (3) (4) (5) (6) (7) (8) (9)

### (1) Series name

#### (2) Dimensions L×W

3216	3.2×1.6mm
3225	3.2×2.5mm
4520	4.5×2.0mm
4532	4.5×3.2mm
5750	5.7×5.0mm

### (3) Capacitance temperature characteristics

#### Class 1 (Temperature compensation)

Temperature characteristics	Capacitance change	Temperature range
C0G	0±30ppm/°C	-55 to +125°C

#### Class 2 (Temperature stable and general purpose)

Temperature characteristics	Capacitance change	Temperature range
X7R	±15%	-55 to +125°C
X7S	±22%	-55 to +125°C

### (4) Rated voltage E<sub>dc</sub>

3A	1000V
3D	2000V
3F	3000V

### (5) Nominal capacitance

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.

100	10pF
471	470pF
102	1,000pF

### (6) Capacitance tolerance

Symbol	Tolerance	Applicable capacitance range
F	±1pF	10pF or less
K	±10%	Over 10pF

### (7) Dimensions T

Expressed by a three-digit number in mm units.

The second and third digits denote the first and second decimal places, respectively.

085	0.85mm
125	1.25mm

### (8) Packaging style

A	ø178mm reel with 4mm-pitch
B	ø178mm reel with 2mm-pitch
C	ø178mm reel with 1mm-pitch
D	ø330mm reel with 4mm-pitch
E	ø330mm reel with 2mm-pitch
F	ø330mm reel with 1mm-pitch
H	Bulk(bag)
J	ø330mm reel with 8mm-pitch
K	ø178mm reel with 8mm-pitch

### (9) TDK internal code

In brochures issued in August, 2011 and later, the product thickness and packing specifications are described at the end of the ordering name [the product name described in brochures] in parentheses.

Since the existing ordering name could not clearly express the product thickness and packing specifications, it has been changed to a new product description method that solves this inconvenience.

Please be aware that the last five digits of the ordering name on the delivery label and those in the brochure differ.

No changes have been made to the delivery name.

(Example)

Brochure issued date	Ordering name (description in the brochure)	Delivery name (description on the delivery label)
Prior to July, 2011	C1608X5R1C105K	C1608X5R1C105KT000N
August, 2011 or later	C1608X5R1C105K(080AA)	C1608X5R1C105KT000N

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**CAPACITANCE RANGES: CLASS 1 (TEMPERATURE COMPENSATION)**
**TEMPERATURE CHARACTERISTICS: C0G(0±30ppm/°C)**

Capacitance	Dimension L×W	Thickness T(mm)	Capacitance tolerance	Part No.		
				Rated voltage Edc: 3000V	Rated voltage Edc: 2000V	Rated voltage Edc: 1000V
10pF	4520	0.85±0.15	±1pF	C4520C0G3F100F(085KA)		
12pF	4520	0.85±0.15	±10%	C4520C0G3F120K(085KA)		
15pF	4520	1.10±0.20	±10%	C4520C0G3F150K(110KA)		
18pF	4520	1.10±0.20	±10%	C4520C0G3F180K(110KA)		
22pF	4520	1.10±0.20	±10%	C4520C0G3F220K(110KA)		
27pF	4520	1.60±0.20	±10%	C4520C0G3F270K(160KA)		
33pF	4520	1.60±0.20	±10%	C4520C0G3F330K(160KA)		
39pF	4520	1.60±0.20	±10%	C4520C0G3F390K(160KA)		
47pF	4520	1.60±0.20	±10%	C4520C0G3F470K(160KA)		
56pF	4520	2.00±0.20	±10%	C4520C0G3F560K(200KA)		
68pF	4520	2.00±0.20	±10%	C4520C0G3F680K(200KA)		
82pF	4520	2.00±0.20	±10%	C4520C0G3F820K(200KA)		
100pF	4520	2.00±0.20	±10%	C4520C0G3F101K(200KA)		
	4532	1.60±0.20	±10%	C4532C0G3F101K(160KA)		
120pF	4532	1.60±0.20	±10%	C4532C0G3F121K(160KA)		
150pF	4532	1.60±0.20	±10%	C4532C0G3F151K(160KA)		
180pF	4532	1.60±0.20	±10%	C4532C0G3F181K(160KA)		
220pF	4532	2.00±0.20	±10%	C4532C0G3F221K(200KA)		
270pF	4532	2.30±0.20	±10%	C4532C0G3F271K(230KA)		
330pF	4532	2.50±0.30	±10%	C4532C0G3F331K(250KA)		

**CAPACITANCE RANGES: CLASS 2**
**TEMPERATURE CHARACTERISTICS: X7R(±15%)**

Capacitance	Dimension L×W	Thickness T(mm)	Capacitance tolerance	Part No.		
				Rated voltage Edc: 3000V	Rated voltage Edc: 2000V	Rated voltage Edc: 1000V
470pF	4520	1.30±0.20	±10%	C4520X7R3D471K(130KA)		
1nF	4520	1.30±0.20	±10%	C4520X7R3D102K(130KA)		
2.2nF	4532	1.30±0.20	±10%	C4532X7R3D222K(130KA)		
4.7nF	4532	1.60±0.20	±10%	C4532X7R3A472K(160KA)		
10nF	4532	2.00±0.20	±10%	C4532X7R3A103K(200KA)		

**TEMPERATURE CHARACTERISTICS: X7S(±22%)**

Capacitance	Dimension L×W	Thickness T(mm)	Capacitance tolerance	Part No.		
				Rated voltage Edc: 3000V	Rated voltage Edc: 2000V	Rated voltage Edc: 1000V
100pF	3216	0.85±0.15	±10%	C3216X7S3D101K(085AA)		
220pF	3216	0.85±0.15	±10%	C3216X7S3D221K(085AA)		
470pF	3216	1.30±0.20	±10%	C3216X7S3D471K(130AA)		
1nF	3216	0.85±0.15	±10%	C3216X7S3A102K(085AA)		
	3225	2.00±0.20	±10%	C3225X7S3D102K(200AA)		
2.2nF	3216	1.30±0.20	±10%	C3216X7S3A222K(130AA)		
	3225	2.30±0.20	±10%	C3225X7S3D222K(230AA)		
4.7nF	4520	1.60±0.20	±10%	C4520X7S3A222K(160KA)		
	3225	1.60±0.20	±10%	C3225X7S3A472K(160AA)		
	4520	1.60±0.20	±10%	C4520X7S3A472K(160KA)		
10nF	5750	2.00±0.20	±10%	C5750X7S3D472K(200KA)		
	4532	1.60±0.20	±10%	C4532X7S3A103K(160KA)		
22nF	5750	2.50±0.20	±10%	C5750X7S3D103K(250KA)		
	5750	1.60±0.20	±10%	C5750X7S3A223K(160KA)		
47nF	5750	2.50±0.20	±10%	C5750X7S3A473K(250KA)		

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