

Multilayer Ceramic Chip Capacitors

General use(Low ESL, Flipped type)

C series

Type: C0510[EIA CC0204]
 C0816[EIA CC0306]
 C1220[EIA CC0508]
 C1632[EIA CC0612]

Issue date: August 2011

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 - 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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REMINDERS

Please read this before using the product.

SAFETY REMINDERS

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1. If you intend to use a product listed in this catalog for a purpose that may cause loss of life or other damage, you must contact our company's sales window.
2. We may modify products or discontinue production of a product listed in this catalog without prior notification.
3. 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.
4. 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.
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8. The descriptions in this catalog apply as of August, 2011.

Multilayer Ceramic Chip Capacitors

General Use(Low ESL, Flipped Type)

Conformity to RoHS Directive

C Series

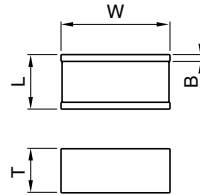
FEATURES

- Features excellent decoupling characteristics, even at high frequency ranges, due to small ESL.
- Suited for high-performance processors, with a substantial lineup of small and low-profile products.
- Excellent countermeasure against high-frequency noise in communication terminals, such as smartphones.

APPLICATION EXAMPLES

- High-speed decoupling of CPUs, GPUs and DDR memories of computers, games and AV devices

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
0510	0.52±0.05	1.0±0.05	0.1min.
0816	0.8±0.1	1.6±0.1	0.1min.
1220	1.25±0.2	2.0±0.2	0.2min.
1632	1.6±0.2	3.2±0.2	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 1632 X5R 1H 104 M (070 A C)
 (1) (2) (3) (4) (5) (6) (7) (8) (9)

(1) Series name

(2) Dimensions L×W

0510	0.5×1.0mm
0816	0.8×1.6mm
1220	1.25×2.0mm
1632	1.6×3.2mm

(3) Capacitance temperature characteristics

Class 2 (Temperature stable and general purpose)

Temperature characteristics	Capacitance change	Temperature range
X5R	±15%	-55 to +85°C
X6S	±22%	-55 to +105°C
X7R	±15%	-55 to +125°C
X7S	±22%	-55 to +125°C

(4) Rated voltage E_{dc}

0G	4V
0J	6.3V
1A	10V
1C	16V
1E	25V
1H	50V

(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.

474	470,000pF
225	2,200,000pF (2.2μF)

(6) Capacitance tolerance

Symbol	Tolerance
M	±20%

(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.

050	0.50mm
085	0.85mm
115	1.15mm

(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 2
TEMPERATURE CHARACTERISTICS: X5R(±15%)

Capacitance	Dimension L×W	Thickness T(mm)	Capacitance tolerance	Part No.		
				Rated voltage Edc: 50V	Rated voltage Edc: 25V	Rated voltage Edc: 16V
10nF	0816	0.50±0.10	±20%			C0816X5R1C103M(050AC)
	1220	0.85±0.15	±20%	C1220X5R1H103M(085AC)		
	1632	0.70±0.10	±20%	C1632X5R1H103M(070AC)		
22nF	0816	0.50±0.10	±20%			C0816X5R1C223M(050AC)
	1220	0.85±0.15	±20%	C1220X5R1H223M(085AC)		
	1632	0.70±0.10	±20%	C1632X5R1H223M(070AC)		
47nF	0816	0.50±0.10	±20%			C0816X5R1C473M(050AC)
	1220	0.85±0.15	±20%	C1220X5R1H473M(085AC)		
	1632	0.70±0.10	±20%	C1632X5R1H473M(070AC)		
100nF	0816	0.50±0.10	±20%			C0816X5R1C104M(050AC)
	1220	0.85±0.15	±20%	C1220X5R1E104M(085AC)		
	1632	0.70±0.10	±20%	C1632X5R1H104M(070AC)		
220nF	1220	0.85±0.15	±20%			C1220X5R1C224M(085AC)
	1632	0.70±0.10	±20%	C1632X5R1E224M(070AC)		
		1.15±0.15	±20%	C1632X5R1H224M(115AC)		
470nF	1632	0.70±0.10	±20%			C1632X5R1C474M(070AC)
		1.15±0.15	±20%	C1632X5R1E474M(115AC)		
1µF	1632	1.15±0.15	±20%			C1632X5R1C105M(115AC)

TEMPERATURE CHARACTERISTICS: X5R(±15%)

Capacitance	Dimension L×W	Thickness T(mm)	Capacitance tolerance	Part No.		
				Rated voltage Edc: 10V	Rated voltage Edc: 6.3V	Rated voltage Edc: 4V
220nF	0816	0.50±0.10	±20%	C0816X5R1A224M(050AC)		
470nF	0816	0.50±0.10	±20%		C0816X5R0J474M(050AC)	
	1220	0.85±0.15	±20%	C1220X5R1A474M(085AC)		
1µF	0816	0.50±0.10	±20%		C0816X5R0J105M(050AC)	
	1220	0.85±0.15	±20%	C1220X5R1A105M(085AC)		
2.2µF	1632	0.70±0.10	±20%	C1632X5R1A105M(070AC)		
		1.15±0.15	±20%	C1632X5R1A225M(115AC)		
4.7µF	1632	1.30±0.15	±20%	C1632X5R0J475M(130AC)		
10µF	1632	1.30±0.15	±20%	C1632X5R0J106M(130AC)		

TEMPERATURE CHARACTERISTICS: X6S(±22%)

Capacitance	Dimension L×W	Thickness T(mm)	Capacitance tolerance	Part No.		
				Rated voltage Edc: 10V	Rated voltage Edc: 6.3V	Rated voltage Edc: 4V
100nF	0510	0.30±0.05	±20%	C0510X6S0G104M(030BC)		
220nF	0510	0.30±0.05	±20%	C0510X6S0G224M(030BC)		
470nF	0510	0.30±0.05	±20%	C0510X6S0G474M(030BC)		
4.7µF	0816	0.50±0.10	±20%	C0816X6S0G475M(050AC)		

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

Capacitance	Dimension L×W	Thickness T(mm)	Capacitance tolerance	Part No.		
				Rated voltage Edc: 50V	Rated voltage Edc: 25V	Rated voltage Edc: 16V
10nF	0816	0.50±0.10	±20%			C0816X7R1C103M(050AC)
	1220	0.85±0.15	±20%	C1220X7R1H103M(085AC)		
	1632	0.70±0.10	±20%	C1632X7R1H103M(070AC)		
22nF	0816	0.50±0.10	±20%			C0816X7R1C223M(050AC)
	1220	0.85±0.15	±20%	C1220X7R1H223M(085AC)		
	1632	0.70±0.10	±20%	C1632X7R1H223M(070AC)		
47nF	0816	0.50±0.10	±20%			C0816X7R1C473M(050AC)
	1220	0.85±0.15	±20%	C1220X7R1H473M(085AC)		
	1632	0.70±0.10	±20%	C1632X7R1H473M(070AC)		
100nF	0816	0.50±0.10	±20%			C0816X7R1C104M(050AC)
	1220	0.85±0.15	±20%	C1220X7R1E104M(085AC)		
	1632	0.70±0.10	±20%	C1632X7R1H104M(070AC)		
220nF	1220	0.85±0.15	±20%			C1220X7R1C224M(085AC)
	1632	0.70±0.10	±20%	C1632X7R1E224M(070AC)		
		1.15±0.15	±20%	C1632X7R1H224M(115AC)		
470nF	1632	0.70±0.10	±20%			C1632X7R1C474M(070AC)
		1.15±0.15	±20%	C1632X7R1E474M(115AC)		
1µF	1632	1.15±0.15	±20%			C1632X7R1C105M(115AC)

TEMPERATURE CHARACTERISTICS: X7R(±15%)

Capacitance	Dimension L×W	Thickness T(mm)	Capacitance tolerance	Part No.		
				Rated voltage Edc: 10V	Rated voltage Edc: 6.3V	Rated voltage Edc: 4V
220nF	0816	0.50±0.10	±20%		C0816X7R0J224M(050AC)	
470nF	1220	0.85±0.15	±20%	C1220X7R0J474M(085AC)		
1µF	1220	0.85±0.15	±20%	C1220X7R0J105M(085AC)		
	1632	0.70±0.10	±20%	C1632X7R0J105M(070AC)		
2.2µF	1632	1.15±0.15	±20%	C1632X7R0J225M(115AC)		

TEMPERATURE CHARACTERISTICS: X7S(±22%)

Capacitance	Dimension L×W	Thickness T(mm)	Capacitance tolerance	Part No.		
				Rated voltage Edc: 10V	Rated voltage Edc: 6.3V	Rated voltage Edc: 4V
470nF	0816	0.50±0.10	±20%			C0816X7S0G474M(050AC)
1µF	0816	0.50±0.10	±20%	C0816X7S0G105M(050AC)		
2.2µF	0816	0.50±0.10	±20%	C0816X7S0G225M(050AC)		
4.7µF	1632	1.30±0.15	±20%	C1632X7S0G475M(130AC)		
10µF	1632	1.30±0.15	±20%	C1632X7S0G106M(130AC)		

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