

# Multilayer Ceramic Chip Capacitors

## General use(Low ESL, Ultra low inductance)

### CLL series

Type:            **CLLC1A**  
                     **CLLE1A**

Issue date:     August 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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# REMINDERS

Please read this before using the product.

## SAFETY REMINDERS

### REMINDERS

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

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Conformity to RoHS Directive

### CLL Series

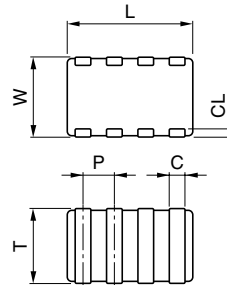
#### FEATURES

- Reduces parasitic inductance by cancelling out magnetic fields with a unique internal structure.
- Small and low-profile, and mountable on undersurfaces of semiconductor packages.

#### APPLICATION EXAMPLES

- High-speed decoupling of CPUs and GPUs

#### SHAPES AND DIMENSIONS



#### DIMENSIONS

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

##### Dimensions L×W

The fourth alphabet in the product name corresponds to the dimensions of L×W.

Refer to the table below for specific values.

Dimensions in mm					
Type	L	W	P	C	CL
C	1.60±0.10	0.80±0.10	0.40±0.10	0.25±0.10	0.15±0.10
E	2.00±0.15	1.25±0.15	0.50±0.10	0.25 <sup>+0.15</sup> <sub>-0.10</sub>	0.20 <sup>+0.15</sup> <sub>-0.10</sub>

- 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

CLL E 1 A X7S 0G 475 M ( 050 A C )  
 (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)

### (1) Series name

### (2) Dimensions L×W

C	1.6×0.8mm
E	2.0×1.25mm

### (3) Number of elements

1	1-element
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### (4) Pin position

A	Both sides
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### (5) Capacitance temperature characteristics

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

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

0G	4V
0J	6.3V
1A	10V

### (7) 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)

### (8) Capacitance tolerance

Symbol	Tolerance
M	±20%

### (9) 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

### (10) 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

### (11) 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: 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
100nF	2012	0.50+0.05/-0.10	±20%	CLLE1AX7R1A104M(050AC)		
150nF	2012	0.50+0.05/-0.10	±20%	CLLE1AX7R1A154M(050AC)		
220nF	2012	0.50+0.05/-0.10	±20%	CLLE1AX7R1A224M(050AC)		
330nF	2012	0.50+0.05/-0.10	±20%	CLLE1AX7R1A334M(050AC)		
470nF	2012	0.50+0.05/-0.10	±20%		CLLE1AX7R0J474M(050AC)	
680nF	2012	0.50+0.05/-0.10	±20%		CLLE1AX7R0J684M(050AC)	
1µF	2012	0.85±0.10	±20%		CLLE1AX7R0J105M(085AC)	
1.5µF	2012	0.85±0.10	±20%		CLLE1AX7R0J155M(085AC)	

**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
330nF	1608	0.50+0.05/-0.10	±20%			CLLC1AX7S0G334M(050AC)
470nF	1608	0.50+0.05/-0.10	±20%			CLLC1AX7S0G474M(050AC)
680nF	1608	0.50+0.05/-0.10	±20%			CLLC1AX7S0G684M(050AC)
1µF	1608	0.50+0.05/-0.10	±20%			CLLC1AX7S0G105M(050AC)
	2012	0.50+0.05/-0.10	±20%			CLLE1AX7S0G105M(050AC)
1.5µF	2012	0.50+0.05/-0.10	±20%			CLLE1AX7S0G155M(050AC)
	1608	0.50+0.05/-0.10	±20%			CLLC1AX7S0G225M(050AC)
2.2µF	2012	0.50+0.05/-0.10	±20%			CLLE1AX7S0G225M(050AC)
		0.85±0.10	±20%			CLLE1AX7S0G225M(085AC)
4.7µF	2012	0.50+0.05/-0.10	±20%			CLLE1AX7S0G475M(050AC)
		0.85±0.10	±20%			CLLE1AX7S0G475M(085AC)

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## TDK:

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