MULTILAYER CERAMIC CHIP CAPACITORS

CLL Series
Commercial Grade
Ultra Low Inductance

Type: CLLC1A [EIA CC0603]
CLLE1A [EIA CC0805]
CLLG1A [EIA CC1206]

Issue date:
April 2013

REMINDERS

Please read before using this product

SAFETY REMINDERS

REMINDERS

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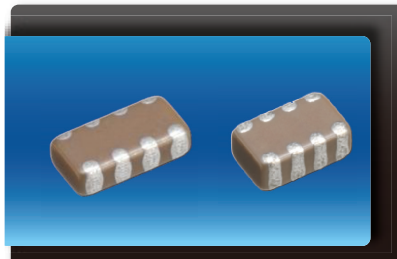
(Example)

Catalog Issued date	TDK Part Number (In Catalog)	TDK Item Description (On Delivery Label)
Prior to January 2013	C1608C0G1E103J	C1608C0G1E103JT000N
January 2013 and Later	C1608C0G1E103J080AA	C1608C0G1E103JT000N



CLL Series

Ultra Low Inductance

Type: CLLC1A [EIA CC0603], CLLE1A [EIA CC0805], CLLG1A [EIA CC1206]

Lead Free | RoHS COMPLIANT | Ecological

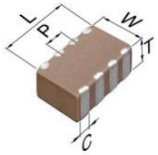
Features

- Features a unique internal structure that cancels magnetic fields to reduce equivalent series inductance.
- Eight side terminal electrodes in one capacitor.
- Small and low profile design enables undersurface mounting for semiconductor packages.

Applications

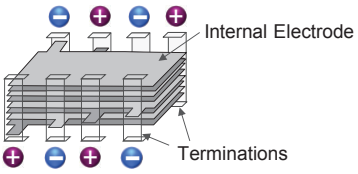
- Decoupling CPU power line
- High speed digital IC, decoupling
- GPU, CPU

Shape & Dimensions



L	Body Length
W	Body Width
T	Body Height
C	Terminal Width
P	Terminal Spacing

Design Structure



Part Number Construction

CLL • E1A • X7S • 0G • 685 • M • 050 • A • C

Series Name

Dimensions L x W (mm)

Code	Length	Width
C1A	1.60 ± 0.10	0.80 ± 0.10
E1A	2.00 ± 0.15	1.25 ± 0.15
G1A	3.20 ± 0.15	1.60 ± 0.15

Temperature Characteristics

Temperature Characteristics	Capacitance Change	Temperature Range
X6S	±22%	-55 to +105°C
X7R	±15%	-55 to +125°C
X7S	±22%	-55 to +125°C

Rated Voltage (DC)

Code	Voltage (DC)
0G	4.0V
0J	6.3V
1A	10V

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.

Ex. 0R2 = 0.2pF; 103 = 10,000pF; 105 = 1,000,000pF = 100nF = 1µF

Capacitance Tolerance

Code	Tolerance
M	± 20%

Nominal Thickness

Code	Thickness
050	0.50 mm
055	0.55 mm
085	0.85 mm

Packaging Style

Code	Style
A	178” Reel, 4mm Pitch

Special Reserved Code

Code	Description
C	TDK Internal Code

Capacitance Range Chart

CLLC1A(1608) [EIA CC0603]

Capacitance Range Chart

Temperature Characteristics: X6S (± 22%), X7R (±15%), X7S (± 22%)
Rated Voltage: 4V (0G)

Capacitance (pF)	Code	Tolerance	X6S	X7R	X7S
			0G (4V)	0G (4V)	0G (4V)
47,000	473	M: ± 20%			
100,000	104				
330,000	334				
470,000	474				
680,000	684				
1,000,000	105				
2,200,000	225				
4,700,000	475				

Capacitance Range Chart

CLLE1A(2012) [EIA CC0805]

Capacitance Range Chart

Temperature Characteristics: X7R (±15%), X7S (± 22%)
Rated Voltage: 10V (1A), 6.3V (0J), 4V (0G)

Capacitance (pF)	Code	Tolerance	X7R			X7S		
			1A (10V)	0J (6.3V)	0G (4V)	1A (10V)	0J (6.3V)	0G (4V)
47,000	473	M: ± 20%						
100,000	104							
150,000	154							
220,000	224							
330,000	334							
470,000	474							
680,000	684							
1,000,000	105							
1,500,000	155							
2,200,000	225							
4,700,000	475							
6,800,000	685							

Capacitance Range Chart

CLLG1A(3216) [EIA CC1206]

Capacitance Range Chart

Temperature Characteristics: X7R (±15%),
Rated Voltage: 10V (1A), 6.3V (0J)

Capacitance (pF)	Code	Tolerance	X7R	
			1A (10V)	0J (6.3V)
1,000,000	105	M: ± 20%		
2,200,000	225			

Standard Thickness

0.50 mm

0.85 mm

Capacitance Range Table

Class 2 (Temperature Stable)

Temperature Characteristics: X6S (-55 to +105ºC, ±22%)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number		
				Rated Voltage Edc: 10V	Rated Voltage Edc: 6.3V	Rated Voltage Edc: 4.0V
4.7 µF	1608	0.50 ± 0.05	± 20%			CLLC1AX6S0G475M050AC

Class 2 (Temperature Stable)

Temperature Characteristics: X7R (-55 to +125ºC, ±15%)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number		
				Rated Voltage Edc: 10V	Rated Voltage Edc: 6.3V	Rated Voltage Edc: 4.0V
47 nF	2012	0.50 ± 0.05	± 20%			CLLE1AX7R0G473M050AC
100 nF	1608	0.50 ± 0.05	± 20%			CLLC1AX7R0G104M050AC
	2012	0.50 +0.05/-0.10	± 20%	CLLE1AX7R1A104M050AC		
		0.50 ± 0.05	± 20%			CLLE1AX7R0G104M050AC
150 nF	2012	0.50 +0.05/-0.10	± 20%	CLLE1AX7R1A154M050AC		
220 nF	2012	0.50 +0.05/-0.10	± 20%	CLLE1AX7R1A224M050AC		
330 nF	2012	0.50 +0.05/-0.10	± 20%	CLLE1AX7R1A334M050AC		
470 nF	2012	0.50 +0.05/-0.10	± 20%		CLLE1AX7R0J474M050AC	
680 nF	2012	0.50 +0.05/-0.10	± 20%		CLLE1AX7R0J684M050AC	
1 µF	2012	0.85 ± 0.10	± 20%		CLLE1AX7R0J105M085AC	CLLE1AX7R0G105M085AC
	3216	0.85 ± 0.10	± 20%	CLLG1AX7R1A105M085AC		
1.5 µF	2012	0.85 ± 0.10	± 20%		CLLE1AX7R0J155M085AC	
2.2 µF	3216	0.85 ± 0.10	± 20%		CLLG1AX7R0J225M085AC	

Class 2 (Temperature Stable)

Temperature Characteristics: X7S (-55 to +125ºC, ±22%)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number		
				Rated Voltage Edc: 10V	Rated Voltage Edc: 6.3V	Rated Voltage Edc: 4.0V
47 nF	1608	0.50 ± 0.05	± 20%			CLLC1AX7S0G473M050AC
	2012	0.50 ± 0.05	± 20%			CLLE1AX7S0G473M050AC
100 nF	1608	0.50 ± 0.05	± 20%			CLLC1AX7S0G104M050AC
	2012	0.50 ± 0.05	± 20%			CLLE1AX7S0G104M050AC
150 nF	2012	0.50 ± 0.05	± 20%	CLLE1AX7S1A154M050AC		
220 nF	2012	0.50 ± 0.05	± 20%	CLLE1AX7S1A224M050AC		
330 nF	1608	0.50 +0.05/-0.10	± 20%			CLLC1AX7S0G334M050AC
	2012	0.50 ± 0.05	± 20%	CLLE1AX7S1A334M050AC		
470 nF	1608	0.50 +0.05/-0.10	± 20%			CLLC1AX7S0G474M050AC
	2012	0.50 ± 0.05	± 20%		CLLE1AX7S0J474M050AC	
680 nF	1608	0.50 +0.05/-0.10	± 20%			CLLC1AX7S0G684M050AC
	2012	0.50 ± 0.05	± 20%		CLLE1AX7S0J684M050AC	
1 µF	1608	0.50 +0.05/-0.10	± 20%			CLLC1AX7S0G105M050AC
	2012	0.50 +0.05/-0.10	± 20%			CLLE1AX7S0G105M050AC
1.5 µF	2012	0.50 +0.05/-0.10	± 20%			CLLE1AX7S0G155M050AC
		0.85 ± 0.10	± 20%		CLLE1AX7S0J155M085AC	
2.2 µF	1608	0.50 ± 0.05	± 20%			CLLC1AX7S0G225M050AC
	2012	0.50 +0.05/-0.10	± 20%			CLLE1AX7S0G225M050AC
		0.85 ± 0.10	± 20%			CLLE1AX7S0G225M085AC
4.7 µF	2012	0.50 ± 0.05	± 20%			CLLE1AX7S0G475M050AC
		0.85 ± 0.10	± 20%			CLLE1AX7S0G475M085AC
6.8 µF	2012	0.50 ± 0.05	± 20%			CLLE1AX7S0G685M050AC