



## MULTILAYER CERAMIC CHIP CAPACITORS



### **CKC Series Commercial Grade 2 in 1 Array**

**Type:**

**CKCN27 [EIA CC0302]  
CKCM25 [EIA CC0504]  
CKCL22 [EIA CC0805]**

**Issue date:  
Jan 2014**



## REMINDERS

Please read before using this product

### SAFETY REMINDERS



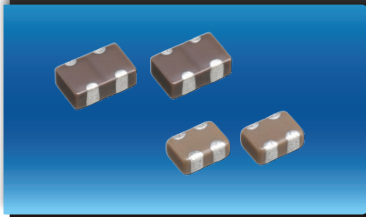
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Notice: Effective January 2013, TDK will use a new catalog number which adds product thickness and packaging specification detail. This new catalog number should be referenced on all catalog orders going forward, and is not applicable for OEM part 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	C1608C0G1E103JT000N
January 2013 and Later	C1608C0G1E103J080AA	C1608C0G1E103JT000N



## CKC Series 2in1 Array

Type: CKCN27 [EIA CC0302], CKCM25 [EIA CC0504], CKCL22 [EIA CC0805]



### Features



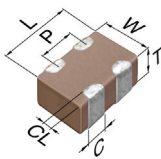
- Multiple capacitors are fitted in a single product, contributing to reduced installation costs.
- The electrostatic capacity range and shape are designed to meet the demands of the cellular phone market.
- Unique electrode construction reduces crosstalk.
- Also available in soft termination.

### Applications



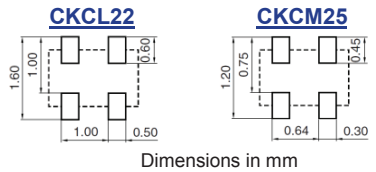
- Cellular telephone interface
- Interface cable circuit
- PC and peripherals
- CPU bus line
- High frequency circuit
- Noise bypass circuit

### Shape & Dimensions



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

### PC Board Pattern



### Catalog Number Construction

**CKC • L22 • X5R • 0J • 225 • M • 085 • A • K**

#### Series Name

#### Dimensions L x W (mm)

Code	Length	Width
N27	0.90 ± 0.05	0.60 ± 0.05
M25	1.37 ± 0.15	1.00 ± 0.15
L22	2.00 ± 0.15	1.25 ± 0.15

#### 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
X5R	±15%	-55 to +85°C
X7R	±15%	-55 to +125°C
X8R	±15%	-55 to +150°C

#### Rated Voltage (DC)

Code	Voltage (DC)	Code	Voltage (DC)
0J	6.3V	1E	25V
1A	10V	1H	50V
1C	16V	2A	100V

#### 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 = 1,00nF = 1µF

#### Capacitance Tolerance

Code	Tolerance
F	± 1pF
K	± 10%
M	± 20%

#### Nominal Thickness

Code	Thickness
045	0.45 mm
060	0.60 mm
080	0.80 mm
085	0.85 mm
100	1.00 mm

#### Packaging Style

Code	Style
A	178" Reel, 4mm Pitch
B	178" Reel, 2mm Pitch

#### Special Reserved Code

Code	Description
A, B, C	TDK Internal Code
K	Soft Termination



## Capacitance Range Chart

## CKCN27(C0906)[EIA CC0302]

### Capacitance Range Chart

Temperature Characteristics: JB ( $\pm 10\%$ ), X5R ( $\pm 15\%$ )  
 Rated Voltage: 6.3V (0J)

Capacitance (pF)	Code	Tolerance	JB	X5R
			0J (6.3V)	0J (6.3V)
100,000	104	M: $\pm 20\%$		

Standard Thickness

0.45 mm



## Capacitance Range Chart

## CKCM25(C1310)[EIA CC0504]

### Capacitance Range Chart

Temperature Characteristics: C0G ( $0 \pm 30\text{ppm}/^\circ\text{C}$ ), CH ( $0 \pm 60\text{ppm}/^\circ\text{C}$ )  
 Rated Voltage: 100V (2A), 50V (1H)

Capacitance (pF)	Code	Tolerance	C0G		CH
			2A (100V)	1H (50V)	1H (50V)
10	100	F: $\pm 1\text{pF}$			
15	150	K: $\pm 10\%$			
22	220	M: $\pm 20\%$			
33	330				
47	470				
68	680				
100	101				

### Capacitance Range Chart

Temperature Characteristics: JB ( $\pm 10\%$ ), X5R ( $\pm 15\%$ ), X7R ( $\pm 15\%$ ), X8R ( $\pm 15\%$ )  
 Rated Voltage: 50V (1H), 25V (1E), 16V (1C), 10V (1A), 6.3V (0J)

Capacitance (pF)	Code	Tolerance	JB					X5R					X7R		X8R
			1H (50V)	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)	1H (50V)	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)	1H (50V)	1E (25V)	1H (50V)
220	221	F: $\pm 1\text{pF}$													
330	331	K: $\pm 10\%$													
470	471	M: $\pm 20\%$													
680	681														
1,000	102														
1,500	152														
2,200	222														
3,300	332														
4,700	472														
6,800	682														
10,000	103														
22,000	223														
47,000	473														
100,000	104														
220,000	224														
470,000	474														
1,000,000	105														

Standard Thickness

0.60 mm

0.80 mm



## Capacitance Range Chart

## CKCL22(2012) [EIA CC0805]

### Capacitance Range Chart

Temperature Characteristics: C0G (0 ± 30ppm/°C), CH (0 ± 60ppm/°C), JB (± 10%)  
 Rated Voltage: 100V (2A), 50V (1H), 25V (1E), 16V (1C), 10V (1A), 6.3V (0J)

Capacitance (pF)	Code	Tolerance	C0G		CH	JB					
			2A (100V)	1H (50V)	1H (50V)	1H (50V)	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)	
10	100	F: ± 1pF	■	■	■						
15	150	K: ± 10%	■	■	■						
22	220	M: ± 20%	■	■	■						
33	330		■	■	■						
47	470		■	■	■						
68	680		■	■	■						
100	101		■	■	■						
150	151		■	■	■						
220	221		■	■	■						
330	331		■	■	■						
470	471		■	■	■						
1,000	102					■					
2,200	222					■					
4,700	472					■					
10,000	103					■	■				
22,000	223					■	■				
47,000	473					■	■				
100,000	104					■	■	■			
220,000	224							■	■		
470,000	474							■	■	■	
1,000,000	105							■	■	■	■
2,200,000	225							■	■	■	■

Standard Thickness 0.85 mm

### Capacitance Range Chart

Temperature Characteristics: X5R (± 15%), X7R (±15%)  
 Rated Voltage: 100V (2A), 50V (1H), 25V (1E), 16V (1C), 10V (1A), 6.3V (0J)

Capacitance (pF)	Code	Tolerance	X5R					X7R			
			1H (50V)	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)	2A (100V)	1H (50V)	1E (25V)	1A (10V)
470	471	F: ± 1pF	■					■	■		
1,000	102	K: ± 10%	■					■	■		
2,200	222	M: ± 20%	■					■	■		
4,700	472		■					■	■		
10,000	103		■	■				■	■		
22,000	223		■	■				■	■		
47,000	473		■	■				■	■		
100,000	104		■	■	■			■	■		
220,000	224				■	■					■
470,000	474				■	■					■
1,000,000	105				■	■	■				
2,200,000	225				■	■	■				

Standard Thickness 0.85 mm



## Capacitance Range Table

### Class 1 (Temperature Compensating)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number	
				Rated Voltage Edc: 100V	Rated Voltage Edc: 50V
10 pF	1310	0.60 ± 0.10	± 1pF	CKCM25C0G2A100F060AK	CKCM25C0G1H100F060AK
		0.66 max.	± 1pF		CKCM25C0G1H100F060AA
	2012	0.85 ± 0.15	± 1%		CKCL22C0G1H100F085AA
				CKCL22C0G2A100F085AK	CKCL22C0G1H100F085AK
15 pF	1310	0.60 ± 0.10	± 10%	CKCM25C0G2A150K060AK	CKCM25C0G1H150K060AK
		0.66 max.	± 10%		CKCM25C0G1H150K060AA
	2012	1.00 max.	± 10%		CKCL22C0G1H150K100AA
					CKCL22C0G1H150K100AA
22 pF	1310	0.60 ± 0.10	± 10%	CKCM25C0G2A220K060AK	CKCM25C0G1H220K060AK
		0.66 max.	± 10%		CKCM25C0G1H220K060AA
	2012	0.85 ± 0.15	± 10%		CKCL22C0G1H220K085AA
				CKCL22C0G2A220K085AK	CKCL22C0G1H220K085AK
33 pF	1310	0.60 ± 0.10	± 10%	CKCM25C0G2A330K060AK	CKCM25C0G1H330K060AK
		0.66 max.	± 10%		CKCM25C0G1H330K060AA
	2012	1.00 max.	± 10%		CKCL22C0G1H330K100AA
					CKCL22C0G1H330K100AA
47 pF	1310	0.60 ± 0.10	± 10%	CKCM25C0G2A470K060AK	CKCM25C0G1H470K060AK
		0.66 max.	± 10%		CKCM25C0G1H470K060AA
	2012	0.85 ± 0.15	± 10%		CKCL22C0G1H470K085AA
				CKCL22C0G2A470K085AK	CKCL22C0G1H470K085AK
68 pF	1310	0.60 ± 0.10	± 10%	CKCM25C0G2A680K060AK	CKCM25C0G1H680K060AK
		0.66 max.	± 10%		CKCM25C0G1H680K060AA
	2012	1.00 max.	± 10%		CKCL22C0G1H680K100AA
					CKCL22C0G1H680K100AA
100 pF	1310	0.60 ± 0.10	± 10%	CKCM25C0G2A101K060AK	CKCM25C0G1H101K060AK
		0.66 max.	± 10%		CKCM25C0G1H101K060AA
	2012	0.85 ± 0.15	± 10%		CKCL22C0G1H101K085AA
				CKCL22C0G2A101K085AK	CKCL22C0G1H101K085AK
150 pF	2012	1.00 max.	± 10%		CKCL22C0G1H151K100AA
220 pF	2012	0.85 ± 0.15	± 10%		CKCL22C0G1H221K085AA
330 pF	2012	1.00 max.	± 10%		CKCL22C0G1H331K100AA
470 pF	2012	0.85 ± 0.15	± 10%		CKCL22C0G1H471K085AA
				CKCL22C0G2A471K085AK	CKCL22C0G1H471K085AK

### Class 1 (Temperature Compensating)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number	
				Rated Voltage Edc: 100V	Rated Voltage Edc: 50V
10 pF	1310	0.66 max.	± 1pF		CKCM25CH1H100F060AA
		1.00 max.	± 1pF		CKCL22CH1H100F100AA
15 pF	1310	0.66 max.	± 10%		CKCM25CH1H150K060AA
		1.00 max.	± 10%		CKCL22CH1H150K100AA
22 pF	1310	0.66 max.	± 10%		CKCM25CH1H220K060AA
		1.00 max.	± 10%		CKCL22CH1H220K100AA
33 pF	1310	0.66 max.	± 10%		CKCM25CH1H330K060AA
		1.00 max.	± 10%		CKCL22CH1H330K100AA
47 pF	1310	0.66 max.	± 10%		CKCM25CH1H470K060AA
		1.00 max.	± 10%		CKCL22CH1H470K100AA
68 pF	1310	0.66 max.	± 10%		CKCM25CH1H680K060AA
		1.00 max.	± 10%		CKCL22CH1H680K100AA
100 pF	1310	0.66 max.	± 10%		CKCM25CH1H101K060AA
		1.00 max.	± 10%		CKCL22CH1H101K100AA
150 pF	2012	1.00 max.	± 10%		CKCL22CH1H151K100AA
220 pF	2012	1.00 max.	± 10%		CKCL22CH1H221K100AA
330 pF	2012	1.00 max.	± 10%		CKCL22CH1H331K100AA
470 pF	2012	1.00 max.	± 10%		CKCL22CH1H471K100AA



## Capacitance Range Table

### Class 2 (Temperature Stable)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number			
				Rated Voltage Edc: 100V	Rated Voltage Edc: 50V	Rated Voltage Edc: 25V	Rated Voltage Edc: 16V
1 nF	1310	0.60 ± 0.10	± 20%		CKCM25JB1H102M060AA		
	2012	0.85 ± 0.15	± 20%		CKCL22JB1H102M085AA		
2.2 nF	1310	0.60 ± 0.10	± 20%		CKCM25JB1H222M060AA		
	2012	0.85 ± 0.15	± 20%		CKCL22JB1H222M085AA		
4.7 nF	1310	0.60 ± 0.10	± 20%		CKCM25JB1H472M060AA		
	2012	0.85 ± 0.15	± 20%		CKCL22JB1H472M085AA		
10 nF	1310	0.60 ± 0.10	± 20%			CKCM25JB1E103M060AA	
	2012	0.85 ± 0.15	± 20%		CKCL22JB1H103M085AA		
22 nF	1310	0.60 ± 0.10	± 20%				CKCM25JB1C223M060AA
	2012	0.85 ± 0.15	± 20%		CKCL22JB1H223M085AA		
47 nF	2012	0.85 ± 0.15	± 20%		CKCL22JB1H473M085AA	CKCL22JB1E473M085AA	
100 nF	2012	0.85 ± 0.15	± 20%		CKCL22JB1H104M085AB	CKCL22JB1E104M085AA	
220 nF	2012	0.85 ± 0.15	± 20%				CKCL22JB1C224M085AA
1 µF	2012	0.85 ± 0.15	± 20%				CKCL22JB1C105M085AB

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number	
				Rated Voltage Edc: 10V	Rated Voltage Edc: 6.3V
47 nF	1310	0.60 ± 0.10	± 20%	CKCM25JB1A473M060AA	
100 nF	0906	0.45 ± 0.05	± 20%		CKCN27JB0J104M045BK
	1310	0.60 ± 0.10	± 20%		CKCM25JB0J104M060AA
220 nF	1310	0.60 ± 0.10	± 20%		CKCM25JB0J224M060AA
470 nF	1310	0.80 ± 0.10	± 20%		CKCM25JB0J474M080AA
	2012	0.85 ± 0.15	± 20%	CKCL22JB1A474M085AA	
1 µF	1310	0.80 ± 0.10	± 20%		CKCM25JB0J105M080AA
	2012	0.85 ± 0.15	± 20%		CKCL22JB0J105M085AA
2.2 µF	2012	0.85 ± 0.15	± 20%		CKCL22JB0J225M085AA

### Class 2 (Temperature Stable)

Temperature Characteristics: X5R (-55 to +85°C, ±15%)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number			
				Rated Voltage Edc: 100V	Rated Voltage Edc: 50V	Rated Voltage Edc: 25V	Rated Voltage Edc: 16V
1 nF	1310	0.60 ± 0.10	± 20%		CKCM25X5R1H102M060AA		
	2012	0.85 ± 0.15	± 20%		CKCL22X5R1H102M085AA		
2.2 nF	1310	0.60 ± 0.10	± 20%		CKCM25X5R1H222M060AA		
	2012	0.85 ± 0.15	± 20%		CKCL22X5R1H222M085AA		
4.7 nF	1310	0.60 ± 0.10	± 20%		CKCM25X5R1H472M060AA		
	2012	0.85 ± 0.15	± 20%		CKCL22X5R1H472M085AA		
10 nF	1310	0.60 ± 0.10	± 20%			CKCM25X5R1E103M060AA	
	2012	0.85 ± 0.15	± 20%		CKCL22X5R1H103M085AA		
22 nF	1310	0.60 ± 0.10	± 20%				CKCM25X5R1C223M060AA
	2012	0.85 ± 0.15	± 20%		CKCL22X5R1H223M085AA		CKCM25X5R1C223M060AK
47 nF	2012	0.85 ± 0.15	± 20%		CKCL22X5R1H473M085AA	CKCL22X5R1E473M085AA	
100 nF	2012	0.85 ± 0.15	± 20%		CKCL22X5R1H104M085AB	CKCL22X5R1E104M085AA	
220 nF	2012	0.85 ± 0.15	± 20%				CKCL22X5R1C224M085AA
							CKCL22X5R1C224M085AK
1 µF	2012	0.85 ± 0.15	± 20%				CKCL22X5R1C105M085AC



## Capacitance Range Table

### Class 2 (Temperature Stable)

Temperature Characteristics: X5R (-55 to +85°C, ±15%)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number	
				Rated Voltage Edc: 10V	Rated Voltage Edc: 6.3V
47 nF	1310	0.60 ± 0.10	± 20%	CKCM25X5R1A473M060AA	
				CKCM25X5R1A473M060AK	
100 nF	0906	0.45 ± 0.05	± 20%		CKCN27X5R0J104M045BK
	1310	0.60 ± 0.10	± 20%		CKCM25X5R0J104M060AA
					CKCM25X5R0J104M060AK
220 nF	1310	0.60 ± 0.10	± 20%		CKCM25X5R0J224M060AA
					CKCM25X5R0J224M060AK
					CKCM25X5R0J474M080AA
470 nF	1310	0.80 ± 0.10	± 20%		CKCM25X5R0J474M080AA
					CKCM25X5R0J474M080AK
					CKCL22X5R1A474M085AA
1 µF	2012	0.85 ± 0.15	± 20%		CKCL22X5R1A474M085AK
					CKCM25X5R0J105M080AA
					CKCM25X5R0J105M080AK
2.2 µF	2012	0.85 ± 0.15	± 20%		CKCL22X5R0J105M085AA
					CKCL22X5R0J105M085AK
					CKCL22X5R0J225M085AA
					CKCL22X5R0J225M085AK

### Class 2 (Temperature Stable)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number			
				Rated Voltage Edc: 100V	Rated Voltage Edc: 50V	Rated Voltage Edc: 25V	Rated Voltage Edc: 16V
470 pF	2012	0.85 ± 0.15	± 20%	CKCL22X7R2A471M085AK			
1 nF	1310	0.60 ± 0.10	± 20%		CKCM25X7R1H102M060AA		
					CKCM25X7R1H102M060AK		
					CKCL22X7R1H102M085AA		
2.2 nF	2012	0.85 ± 0.15	± 20%		CKCL22X7R2A102M085AK		
					CKCM25X7R1H222M060AA		
					CKCM25X7R1H222M060AK		
4.7 nF	1310	0.60 ± 0.10	± 20%		CKCL22X7R1H222M085AA		
					CKCM25X7R1H472M060AA		
					CKCM25X7R1H472M060AK		
10 nF	2012	0.85 ± 0.15	± 20%		CKCL22X7R2A472M085AK		
					CKCM25X7R1E103M060AA		
					CKCM25X7R1E103M060AK		
22 nF	1310	0.60 ± 0.10	± 20%		CKCL22X7R1H103M085AA		
					CKCL22X7R1H103M085AK		
					CKCL22X7R2A103M085AK		
47 nF	2012	0.85 ± 0.15	± 20%		CKCL22X7R1H223M085AA		
					CKCL22X7R1H223M085AK		
					CKCL22X7R1H473M085AA	CKCL22X7R1E473M085AA	
100 nF	2012	0.85 ± 0.15	± 20%		CKCL22X7R1H473M085AK	CKCL22X7R1E473M085AK	
					CKCL22X7R1H104M085AA	CKCL22X7R1E104M085AA	
					CKCL22X7R1H104M085AK	CKCL22X7R1E104M085AA	
220 nF	2012	0.85 ± 0.15	± 20%				CKCL22X7R1A224M085AA
							CKCL22X7R1A224M085AK





## Capacitance Range Table

### Class 2 (Temperature Stable)

Temperature Characteristics: X8R (-55 to +125°C, ±15%)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number			
				Rated Voltage Edc: 100V	Rated Voltage Edc: 50V	Rated Voltage Edc: 25V	Rated Voltage Edc: 16V
220 pF	1310	0.60 ± 0.10	± 20%		CKCM25X8R1H221M060AK		
		0.66 max.	± 20%		CKCM25X8R1H221M060AA		
330 pF	1310	0.60 ± 0.10	± 20%		CKCM25X8R1H331M060AK		
		0.60 ± 0.10	± 20%		CKCM25X8R1H471M060AK		
470 pF	1310	0.60 ± 0.10	± 20%		CKCM25X8R1H471M060AA		
		0.66 max.	± 20%		CKCM25X8R1H471M060AA		
680 pF	1310	0.60 ± 0.10	± 20%		CKCM25X8R1H681M060AK		
		0.60 ± 0.10	± 20%		CKCM25X8R1H102M060AK		
1 nF	1310	0.60 ± 0.10	± 20%		CKCM25X8R1H102M060AA		
		0.66 max.	± 20%		CKCM25X8R1H102M060AA		
1.5 nF	1310	0.60 ± 0.10	± 20%		CKCM25X8R1H152M060AK		
		0.60 ± 0.10	± 20%		CKCM25X8R1H222M060AK		
2.2 nF	1310	0.60 ± 0.10	± 20%		CKCM25X8R1H222M060AA		
		0.66 max.	± 20%		CKCM25X8R1H332M060AK		
3.3 nF	1310	0.60 ± 0.10	± 20%		CKCM25X8R1H332M060AA		
		0.60 ± 0.10	± 20%		CKCM25X8R1H472M060AK		
4.7 nF	1310	0.60 ± 0.10	± 20%		CKCM25X8R1H472M060AA		
		0.66 max.	± 20%		CKCM25X8R1H682M060AK		
6.8 nF	1310	0.60 ± 0.10	± 20%		CKCM25X8R1H682M060AA		
		0.66 max.	± 20%		CKCM25X8R1H682M060AA		