



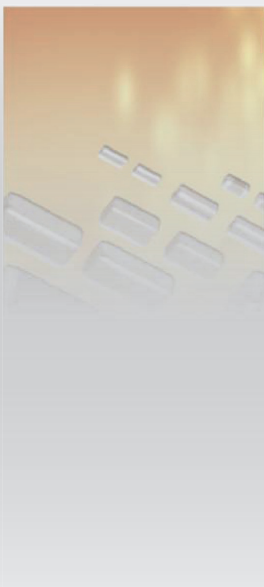
## MULTILAYER CERAMIC CHIP CAPACITORS

### **C Series Commercial Grade High Temperature Application**

Type:

C1005 [EIA CC0402]  
C1608 [EIA CC0603]  
C2012 [EIA CC0805]  
C3216 [EIA CC1206]  
C3225 [EIA CC1210]  
C4532 [EIA CC1812]

Issue date:  
July 2013



## REMINDERS

Please read before using this product

### SAFETY REMINDERS



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Notice : Effective January 2013, TDK will use a new catalog part number which adds product thickness and packaging specification detail. This new part 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 TDK catalog part number will differ from the TDK item description (internal control number) on the product label. Contact your local TDK Sales representative for more information.

(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



## C Series

### High Temperature Application

Type: C1005 [EIA CC0402], C1608 [EIA CC0603], C2012 [EIA CC0805], C3216 [EIA CC1206], C3225 [EIA CC1210], C4532 [EIA CC1812]



#### Features



- With a maximum temperature of 150°C and a capacitance change within  $\pm 15\%$ , the series is suited for devices that operate in high-temperature environments.
- Excellent DC bias properties.

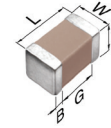
Parameters	Specifications
Temperature	-55 to 150°C
Characteristics	$\Delta C/C$ : $\pm 15\%$ or $0 \pm 30\text{ppm}$
Operating Temperature	-55 to +150°C
Dissipation Factor	5% maximum
Insulation Resistance	10 G $\Omega$ or 500 M $\Omega$ $\cdot$ $\mu\text{F}$ minimum
Voltage Proof	2.5 $\cdot$ Rated Voltage or 3 $\cdot$ Rated Voltage for 1 to 5 seconds Charge/Discharge $\leq 50$ mA

#### Applications



- Automotive applications (engine rooms)
- Measurement instruments used at high temperature environments
- LCD display
- Sensor Module
- Smoothing and decoupling applications for other devices that operate at high temperature

#### Shape & Dimensions



L	Body Length
W	Body Width
T	Body Height
B	Terminal Width
G	Terminal Spacing



#### Part Number Construction

**C • 3225 • X8R • 1C • 106 • K • 250 • A • B**

#### Series Name

#### Dimensions L x W (mm)

Code	Length	Width	Terminal
C1005	1.00 $\pm$ 0.05	0.50 $\pm$ 0.05	0.10 min.
C1608	1.60 $\pm$ 0.10	0.80 $\pm$ 0.10	0.20 min.
C2012	2.00 $\pm$ 0.20	1.25 $\pm$ 0.20	0.20 min.
C3216	3.20 $\pm$ 0.20	1.60 $\pm$ 0.20	0.20 min.
C3225	3.20 $\pm$ 0.40	2.50 $\pm$ 0.30	0.20 min.
C4532	4.50 $\pm$ 0.40	3.20 $\pm$ 0.40	0.20 min.

\* Dimensional tolerances are typical values.

#### Temperature Characteristics

Temperature Characteristics	Capacitance Change	Temperature Range
NPO	0 $\pm$ 30ppm/°C	-55 to +150°C
X8R	$\pm 15\%$	-55 to +150°C

#### Rated Voltage (DC)

Code	Voltage (DC)	Code	Voltage (DC)
1C	16V	1H	50V
1E	25V	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 = 1,000nF

#### Capacitance Tolerance

Code	Tolerance
C	$\pm 0.25\text{pF}$
D	$\pm 0.50\text{pF}$
J	$\pm 5\%$
K	$\pm 10\%$
M	$\pm 20\%$

#### Nominal Thickness

Code	Thickness	Code	Thickness
050	0.50 mm	230	2.30 mm
060	0.60 mm	250	2.50 mm
080	0.80 mm	320	3.20 mm
085	0.85 mm		
115	1.15 mm		
125	1.25 mm		
160	1.60 mm		
200	2.00 mm		
250	2.50 mm		

#### Packaging Style

Code	Style
A	178" Reel, 4mm Pitch
B	178" Reel, 2mm Pitch
K	178" Reel, 8mm Pitch

#### Special Reserved Code

Code	Description
A, B	TDK Internal Code



## Capacitance Range Chart

## EIA CC0402 [C1005]

### Capacitance Range Chart

Temperature Characteristics: NP0 ( $0 \pm 30\text{ppm}/^\circ\text{C}$ ), X8R ( $\pm 15\%$ )  
 Rated Voltage: 50V (1H), 25V (1E), 16V (1C).

Capacitance (pF)	Code	Tolerance	NP0		X8R	
			1H (50V)	1H (50V)	1E (25V)	1C (16V)
1	010	C: $\pm 0.25\text{pF}$	■			
1.5	1R5	D: $\pm 0.50\text{pF}$	■			
2	020	J: $\pm 5\%$	■			
2.2	2R2	K: $\pm 10\%$	■			
3	030	M: $\pm 20\%$	■			
3.3	3R3		■			
4	040		■			
4.7	4R7		■			
5	050		■			
6	060		■			
6.8	6R8		■			
7	070		■			
8	080		■			
9	090		■			
10	100		■			
12	120		■			
15	150		■	■		
18	180		■	■		
22	220		■	■		
27	270		■	■		
33	330		■	■		
39	390		■	■		
47	470		■	■		
56	560		■	■		
68	680		■	■		
82	820		■	■		
100	101		■	■		
120	121		■	■		
150	151		■	■		
180	181		■	■		
220	221		■	■		
270	271		■	■		
330	331		■	■		
390	391		■	■		
470	471		■	■		
560	561		■	■		
680	681		■	■		
820	821		■	■		
1,000	102		■	■		
1,500	152		■	■		
2,200	222		■	■		
3,300	332		■	■		
4,700	472		■	■		
6,800	682		■	■	■	
10,000	103		■	■	■	
15,000	153		■	■	■	
22,000	223		■	■	■	
33,000	333		■	■	■	■
47,000	473		■	■	■	■

Standard Thickness  
 ■ 0.50 mm



## Capacitance Range Chart

## EIA CC0603 [C1608]

### Capacitance Range Chart

Temperature Characteristics: NP0 ( $0 \pm 30\text{ppm}/^\circ\text{C}$ ), X8R ( $\pm 15\%$ )  
 Rated Voltage: 100V (2A), 50V (1H), 25V (1E), 16V (1C)

Capacitance (pF)	Code	Tolerance	NP0		Capacitance (pF)	Code	Tolerance	NP0		X8R			
			2A (100V)	1H (50V)				2A (100V)	1H (50V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)
1	010	C: $\pm 0.25\text{pF}$	■	■	1,000	102	C: $\pm 0.25\text{pF}$	■	■	■	■		
1.5	1R5	D: $\pm 0.50\text{pF}$	■	■	1,200	122	D: $\pm 0.50\text{pF}$	■	■	■	■		
2	020	J: $\pm 5\%$	■	■	1,500	152	J: $\pm 5\%$	■	■	■	■		
2.2	2R2	K: $\pm 10\%$	■	■	1,800	182	K: $\pm 10\%$	■	■	■	■		
3	030	M: $\pm 20\%$	■	■	2,200	222	M: $\pm 20\%$	■	■	■	■		
3.3	3R3		■	■	2,700	272		■	■	■	■		
4	040		■	■	3,300	332		■	■	■	■		
4.7	4R7		■	■	3,900	392		■	■	■	■		
5	050		■	■	4,700	472		■	■	■	■		
6	060		■	■	5,600	562		■	■	■	■		
6.8	6R8		■	■	6,800	682		■	■	■	■		
7	070		■	■	8,200	822		■	■	■	■		
8	080		■	■	10,000	103		■	■	■	■		
9	090		■	■	15,000	153		■	■	■	■		
10	100		■	■	22,000	223		■	■	■	■		
12	120		■	■	33,000	333		■	■	■	■		
15	150		■	■	47,000	473		■	■	■	■		
18	180		■	■	68,000	683		■	■	■	■		
22	220		■	■	100,000	104		■	■	■	■	■	
27	270		■	■	150,000	154		■	■	■	■	■	
33	330		■	■	220,000	224		■	■	■	■	■	■
39	390		■	■	330,000	334		■	■	■	■	■	■
47	470		■	■	470,000	474		■	■	■	■	■	■
56	560		■	■				■	■	■	■	■	■
68	680		■	■				■	■	■	■	■	■
82	820		■	■				■	■	■	■	■	■
100	101		■	■				■	■	■	■	■	■
120	121		■	■				■	■	■	■	■	■
150	151		■	■				■	■	■	■	■	■
180	181		■	■				■	■	■	■	■	■
220	221		■	■				■	■	■	■	■	■
270	271		■	■				■	■	■	■	■	■
330	331		■	■				■	■	■	■	■	■
390	391		■	■				■	■	■	■	■	■
470	471		■	■				■	■	■	■	■	■
560	561		■	■				■	■	■	■	■	■
680	681		■	■				■	■	■	■	■	■
820	821		■	■				■	■	■	■	■	■

Standard Thickness  
 0.80 mm



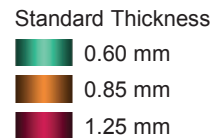
## Capacitance Range Chart

## EIA CC0805 [C2012]

### Capacitance Range Chart

Temperature Characteristics: NP0 (0 ± 30ppm/°C), X8R (±15%)  
 Rated Voltage: 100V (2A), 50V (1H), 25V (1E), 16V (1C)

Capacitance (pF)	Code	Tolerance	NP0		X8R			
			2A (100V)	1H (50V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)
1,000	102	J: ± 5%	█					
1,200	122	K: ± 10%	█					
1,500	152	M: ± 20%	█					
1,800	182		█					
2,200	222		█					
2,700	272		█	█				
3,300	332		█	█				
3,900	392		█	█				
4,700	472		█	█				
5,600	562		█	█				
6,800	682		█	█				
8,200	822		█	█				
10,000	103		█	█				
15,000	153			█				
22,000	223			█	█			
33,000	333			█	█			
47,000	473				█	█		
68,000	683				█	█		
100,000	104					█	█	
150,000	154						█	█
220,000	224						█	█
330,000	334							█
470,000	474							█
680,000	684							█
1,000,000	105							█



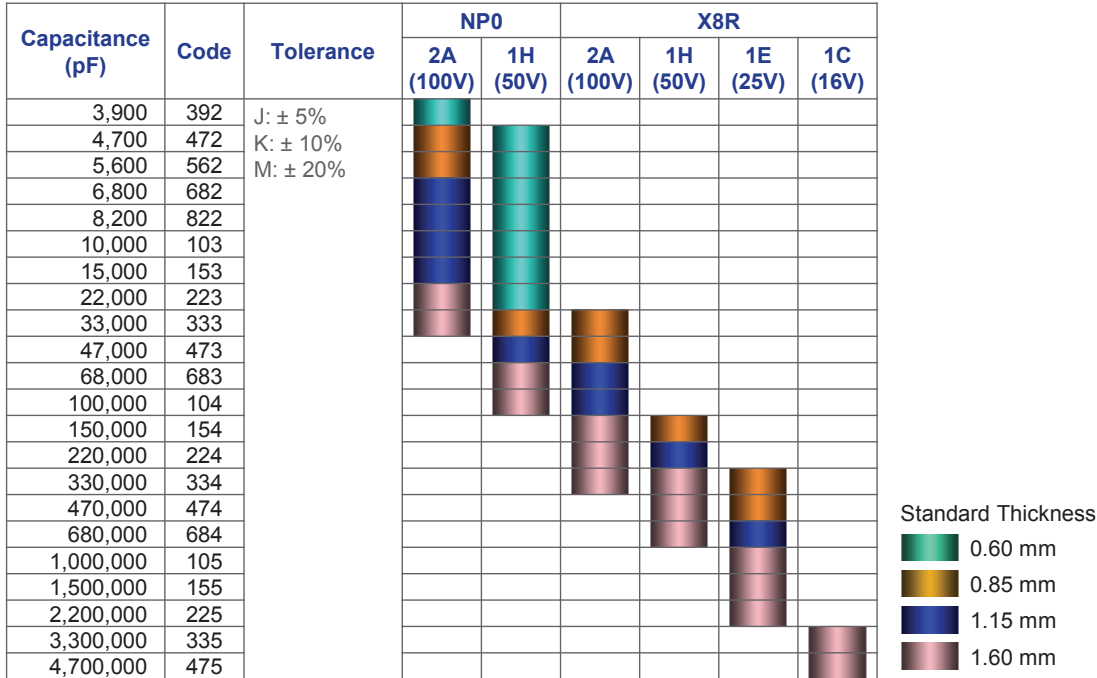


## Capacitance Range Chart

## EIA CC1206 [C3216]

### Capacitance Range Chart

Temperature Characteristics: NP0 (0 ± 30ppm/°C), X8R (±15%)  
 Rated Voltage: 100V (2A), 50V (1H), 25V (1E), 16V (1C)

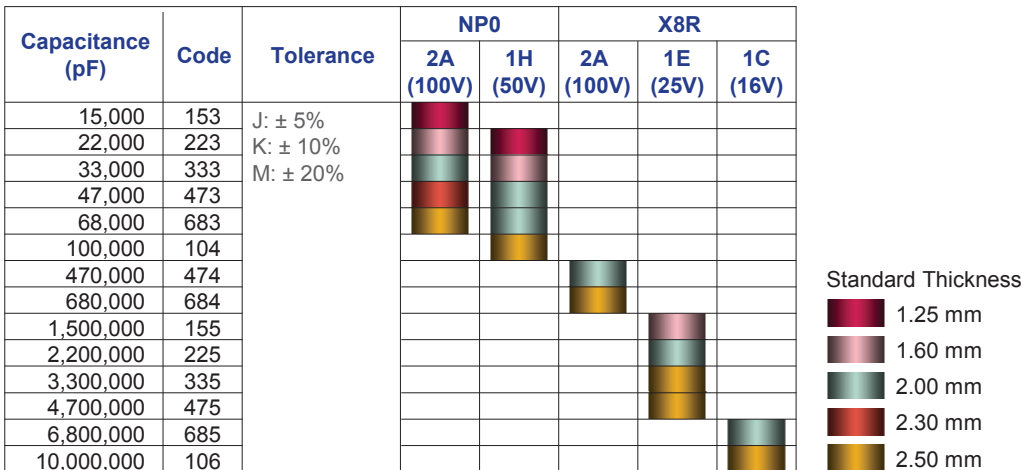


## Capacitance Range Chart

## EIA CC1210 [C3225]

### Capacitance Range Chart

Temperature Characteristics: NP0 (0 ± 30ppm/°C), X8R (±15%)  
 Rated Voltage: 100V (2A), 50V (1H), 25V (1E), 16V (1C)





## Capacitance Range Chart

## EIA CC1812 [C4532]

### Capacitance Range Chart

Temperature Characteristics: NP0 (0 ± 30ppm/°C)  
 Rated Voltage: 100V (2A), 50V (1H)

Capacitance (pF)	Code	Tolerance	NP0		Standard Thickness
			2A (100V)	1H (50V)	
47,000	473	J: ± 5%			1.60 mm
68,000	683				2.00 mm
100,000	104				2.50 mm
150,000	154				3.20 mm
220,000	224				



## Capacitance Range Chart

## EIA CC2220 [C5750]

### Capacitance Range Chart

Temperature Characteristics: NP0 (0 ± 30ppm/°C)  
 Rated Voltage: 100V (2A)

Capacitance (pF)	Code	Tolerance	NP0	Standard Thickness
			2A (100V)	
150,000	154	J: ± 5%		2.30 mm





## Capacitance Range Table

### Class 1 (Temperature Compensating)

Temperature Characteristics: NP0 (-55 to +150°C, 0±30 ppm/°C)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number			
				Rated Voltage Edc: 100V	Rated Voltage Edc: 50V	Rated Voltage Edc: 25V	Rated Voltage Edc: 16V
1 pF	1005	0.50 ± 0.05	± 0.25pF		C1005NP01H010C050BA		
	1608	0.80 ± 0.10	± 0.25pF	C1608NP02A010C080AA	C1608NP01H010C080AA		
1.5 pF	1005	0.50 ± 0.05	± 0.25pF		C1005NP01H1R5C050BA		
	1608	0.80 ± 0.10	± 0.25pF	C1608NP02A1R5C080AA	C1608NP01H1R5C080AA		
2 pF	1005	0.50 ± 0.05	± 0.25pF		C1005NP01H020C050BA		
	1608	0.80 ± 0.10	± 0.25pF	C1608NP02A020C080AA	C1608NP01H020C080AA		
2.2 pF	1005	0.50 ± 0.05	± 0.25pF		C1005NP01H2R2C050BA		
	1608	0.80 ± 0.10	± 0.25pF	C1608NP02A2R2C080AA	C1608NP01H2R2C080AA		
3 pF	1005	0.50 ± 0.05	± 0.25pF		C1005NP01H030C050BA		
	1608	0.80 ± 0.10	± 0.25pF	C1608NP02A030C080AA	C1608NP01H030C080AA		
3.3 pF	1005	0.50 ± 0.05	± 0.25pF		C1005NP01H3R3C050BA		
	1608	0.80 ± 0.10	± 0.25pF	C1608NP02A3R3C080AA	C1608NP01H3R3C080AA		
4 pF	1005	0.50 ± 0.05	± 0.25pF		C1005NP01H040C050BA		
	1608	0.80 ± 0.10	± 0.25pF	C1608NP02A040C080AA	C1608NP01H040C080AA		
4.7 pF	1005	0.50 ± 0.05	± 0.25pF		C1005NP01H4R7C050BA		
	1608	0.80 ± 0.10	± 0.25pF	C1608NP02A4R7C080AA	C1608NP01H4R7C080AA		
5 pF	1005	0.50 ± 0.05	± 0.25pF		C1005NP01H050C050BA		
	1608	0.80 ± 0.10	± 0.25pF	C1608NP02A050C080AA	C1608NP01H050C080AA		
6 pF	1005	0.50 ± 0.05	± 0.50pF		C1005NP01H060D050BA		
	1608	0.80 ± 0.10	± 0.50pF	C1608NP02A060D080AA	C1608NP01H060D080AA		
6.8 pF	1005	0.50 ± 0.05	± 0.50pF		C1005NP01H6R8D050BA		
	1608	0.80 ± 0.10	± 0.50pF	C1608NP02A6R8D080AA	C1608NP01H6R8D080AA		
7 pF	1005	0.50 ± 0.05	± 0.50pF		C1005NP01H070D050BA		
	1608	0.80 ± 0.10	± 0.50pF	C1608NP02A070D080AA	C1608NP01H070D080AA		
8 pF	1005	0.50 ± 0.05	± 0.50pF		C1005NP01H080D050BA		
	1608	0.80 ± 0.10	± 0.50pF	C1608NP02A080D080AA	C1608NP01H080D080AA		
9 pF	1005	0.50 ± 0.05	± 0.50pF		C1005NP01H090D050BA		
	1608	0.80 ± 0.10	± 0.50pF	C1608NP02A090D080AA	C1608NP01H090D080AA		
10 pF	1005	0.50 ± 0.05	± 0.50pF		C1005NP01H100D050BA		
	1608	0.80 ± 0.10	± 0.50pF	C1608NP02A100D080AA	C1608NP01H100D080AA		
12 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H120J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A120J080AA	C1608NP01H120J080AA		
15 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H150J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A150J080AA	C1608NP01H150J080AA		
18 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H180J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A180J080AA	C1608NP01H180J080AA		
22 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H220J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A220J080AA	C1608NP01H220J080AA		
27 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H270J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A270J080AA	C1608NP01H270J080AA		
33 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H330J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A330J080AA	C1608NP01H330J080AA		
39 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H390J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A390J080AA	C1608NP01H390J080AA		
47 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H470J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A470J080AA	C1608NP01H470J080AA		
56 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H560J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A560J080AA	C1608NP01H560J080AA		
68 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H680J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A680J080AA	C1608NP01H680J080AA		
82 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H820J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A820J080AA	C1608NP01H820J080AA		
100 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H101J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A101J080AA	C1608NP01H101J080AA		
120 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H121J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A121J080AA	C1608NP01H121J080AA		
150 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H151J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A151J080AA	C1608NP01H151J080AA		
180 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H181J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A181J080AA	C1608NP01H181J080AA		



## Capacitance Range Table

### Class 1 (Temperature Compensating)

Temperature Characteristics: NP0 (-55 to +150°C, 0±30 ppm/°C)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number			
				Rated Voltage Edc: 100V	Rated Voltage Edc: 50V	Rated Voltage Edc: 25V	Rated Voltage Edc: 16V
220 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H221J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A221J080AA	C1608NP01H221J080AA		
270 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H271J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A271J080AA	C1608NP01H271J080AA		
330 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H331J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A331J080AA	C1608NP01H331J080AA		
390 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H391J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A391J080AA	C1608NP01H391J080AA		
470 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H471J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A471J080AA	C1608NP01H471J080AA		
560 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H561J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A561J080AA	C1608NP01H561J080AA		
680 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H681J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A681J080AA	C1608NP01H681J080AA		
820 pF	1005	0.50 ± 0.05	± 5%		C1005NP01H821J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A821J080AA	C1608NP01H821J080AA		
1 nF	1005	0.50 ± 0.05	± 5%		C1005NP01H102J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A102J080AA	C1608NP01H102J080AA		
	2012	0.60 ± 0.15	± 5%	C2012NP02A102J060AA			
1.2 nF	1608	0.80 ± 0.10	± 5%	C1608NP02A122J080AA	C1608NP01H122J080AA		
	2012	0.60 ± 0.15	± 5%	C2012NP02A122J060AA			
1.5 nF	1608	0.80 ± 0.10	± 5%	C1608NP02A152J080AA	C1608NP01H152J080AA		
	2012	0.60 ± 0.15	± 5%	C2012NP02A152J060AA			
1.8 nF	1608	0.80 ± 0.10	± 5%	C1608NP02A182J080AA	C1608NP01H182J080AA		
	2012	0.85 ± 0.15	± 5%	C2012NP02A182J085AA			
2.2 nF	1608	0.80 ± 0.10	± 5%	C1608NP02A222J080AA	C1608NP01H222J080AA		
	2012	0.85 ± 0.15	± 5%	C2012NP02A222J085AA			
2.7 nF	1608	0.80 ± 0.10	± 5%		C1608NP01H272J080AA		
	2012	0.80 +0.15/-0.1	± 5%	C1608NP02A272J080AA			
		0.60 ± 0.15	± 5%		C2012NP01H272J060AA		
3.3 nF	1608	0.80 ± 0.10	± 5%		C1608NP01H332J080AA		
	2012	0.80 +0.15/-0.1	± 5%	C1608NP02A332J080AA			
		0.60 ± 0.15	± 5%		C2012NP01H332J060AA		
3.9 nF	1608	0.80 ± 0.10	± 5%		C1608NP01H392J080AA		
	2012	0.60 ± 0.15	± 5%		C2012NP01H392J060AA		
		1.25 ± 0.20	± 5%	C2012NP02A392J125AA			
4.7 nF	1608	0.80 ± 0.10	± 5%		C1608NP01H472J080AA		
	2012	0.60 ± 0.15	± 5%		C2012NP01H472J060AA		
		1.25 ± 0.20	± 5%	C2012NP02A472J125AA			
5.6 nF	1608	0.80 ± 0.10	± 5%		C1608NP01H562J080AA		
	2012	0.60 ± 0.15	± 5%		C2012NP01H562J060AA		
		1.25 ± 0.20	± 5%	C2012NP02A562J125AA			
6.8 nF	1608	0.80 ± 0.10	± 5%		C1608NP01H682J080AA		
	2012	0.60 ± 0.15	± 5%		C2012NP01H682J060AA		
		1.25 ± 0.20	± 5%	C2012NP02A682J125AA			
8.2 nF	1608	0.80 ± 0.10	± 5%		C1608NP01H822J080AA		
	2012	0.60 ± 0.15	± 5%		C2012NP01H822J060AA		
		1.25 ± 0.20	± 5%	C2012NP02A822J125AA			
10 nF	1608	0.80 ± 0.10	± 5%		C1608NP01H103J080AA		
	2012	0.60 ± 0.15	± 5%		C2012NP01H103J060AA		
		1.25 ± 0.20	± 5%	C2012NP02A103J125AA			
3216	0.60 ± 0.15	± 5%		C3216NP01H103J060AA			
	1.15 ± 0.15	± 5%	C3216NP02A103J115AA				



## Capacitance Range Table

### Class 1 (Temperature Compensating)

Temperature Characteristics: NP0 (-55 to +150°C, 0±30 ppm/°C)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number			
				Rated Voltage Edc: 100V	Rated Voltage Edc: 50V	Rated Voltage Edc: 25V	Rated Voltage Edc: 16V
15 nF	2012	0.85 ± 0.15	± 5%		C2012NP01H153J085AA		
		0.60 ± 0.15	± 5%		C3216NP01H153J060AA		
	3216	1.15 ± 0.15	± 5%	C3216NP02A153J115AA			
22 nF	2012	1.25 ± 0.20	± 5%		C2012NP01H223J125AA		
		0.60 ± 0.15	± 5%		C3216NP01H223J060AA		
	3216	1.60 ± 0.20	± 5%	C3216NP02A223J160AA			
33 nF	2012	1.25 ± 0.20	± 5%		C2012NP01H333J125AA		
		0.85 ± 0.15	± 5%		C3216NP01H333J085AA		
	3216	1.60 +0.3/-0.1	± 5%	C3216NP02A333J160AA			
47 nF	3225	1.60 ± 0.20	± 5%		C3225NP01H473J160AA		
		2.00 ± 0.20	± 5%	C3225NP02A333J200AA			
	4532	2.00 ± 0.20	± 5%	C4532NP02A473J200KA			
68 nF	3216	1.15 ± 0.15	± 5%		C3216NP01H473J115AA		
		2.00 ± 0.20	± 5%		C3225NP01H473J200AA		
	3225	2.30 ± 0.20	± 5%	C3225NP02A473J230AA			
100 nF	3216	1.60 ± 0.20	± 5%		C3216NP01H683J160AA		
		2.00 ± 0.20	± 5%		C3225NP01H683J200AA		
	4532	2.50 ± 0.30	± 5%	C3225NP02A683J250AA			
150 nF	3216	1.60 ± 0.20	± 5%		C3216NP01H104J160AA		
		2.00 ± 0.20	± 5%		C3225NP01H104J250AA		
	4532	2.00 ± 0.20	± 5%	C4532NP01H104J200KA			
220 nF	3216	1.60 ± 0.20	± 5%		C3216NP01H154J160AA		
		2.50 ± 0.30	± 5%	C4532NP02A154J230KA			
	4532	2.30 ± 0.20	± 5%	C5750NP02A154J230KA			

### Class 2 (Temperature Stable)

Temperature Characteristics: X8R (-55 to +150°C, ±15%)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number			
				Rated Voltage Edc: 100V	Rated Voltage Edc: 50V	Rated Voltage Edc: 25V	Rated Voltage Edc: 16V
150 pF	1005	0.50 ± 0.05	± 10%		C1005X8R1H151K050BA		
			± 20%		C1005X8R1H151M050BA		
220 pF	1005	0.50 ± 0.05	± 10%		C1005X8R1H221K050BA		
			± 20%		C1005X8R1H221M050BA		
330 pF	1005	0.50 ± 0.05	± 10%		C1005X8R1H331K050BA		
			± 20%		C1005X8R1H331M050BA		
470 pF	1005	0.50 ± 0.05	± 10%		C1005X8R1H471K050BA		
			± 20%		C1005X8R1H471M050BA		
680 pF	1005	0.50 ± 0.05	± 10%		C1005X8R1H681K050BA		
			± 20%		C1005X8R1H681M050BA		
1 nF	1005	0.50 ± 0.05	± 10%		C1005X8R1H102K050BA		
			± 20%		C1005X8R1H102M050BA		
1.5 nF	1608	0.80 ± 0.10	± 10%	C1608X8R2A102K080AA	C1608X8R1H102K080AA		
			± 20%	C1608X8R2A102M080AA	C1608X8R1H102M080AA		
2.2 nF	1005	0.50 ± 0.05	± 10%		C1005X8R1H152K050BA		
			± 20%		C1005X8R1H152M050BA		
3.3 nF	1608	0.80 ± 0.10	± 10%	C1608X8R2A152K080AA	C1608X8R1H152K080AA		
			± 20%	C1608X8R2A152M080AA	C1608X8R1H152M080AA		
4.7 nF	1005	0.50 ± 0.05	± 10%		C1005X8R1H222K050BA		
			± 20%		C1005X8R1H222M050BA		
6.8 nF	1608	0.80 ± 0.10	± 10%	C1608X8R2A222K080AA	C1608X8R1H222K080AA		
			± 20%	C1608X8R2A222M080AA	C1608X8R1H222M080AA		
10 nF	1005	0.50 ± 0.05	± 10%		C1005X8R1H332K050BA		
			± 20%		C1005X8R1H332M050BA		
15 nF	1608	0.80 ± 0.10	± 10%	C1608X8R2A332K080AA	C1608X8R1H332K080AA		
			± 20%	C1608X8R2A332M080AA	C1608X8R1H332M080AA		



## Capacitance Range Table

### Class 2 (Temperature Stable)

Temperature Characteristics: X8R (-55 to +150°C, ±15%)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number			
				Rated Voltage Edc: 100V	Rated Voltage Edc: 50V	Rated Voltage Edc: 25V	Rated Voltage Edc: 16V
4.7 nF	1005	0.50 ± 0.05	± 10%		C1005X8R1H472K050BA		
			± 20%		C1005X8R1H472M050BA		
	1608	0.80 ± 0.10	± 10%	C1608X8R2A472K080AA	C1608X8R1H472K080AA		
			± 20%	C1608X8R2A472M080AA	C1608X8R1H472M080AA		
6.8 nF	1005	0.50 ± 0.05	± 10%		C1005X8R1H682K050BB	C1005X8R1E682K050BA	
			± 20%		C1005X8R1H682M050BB	C1005X8R1E682M050BA	
	1608	0.80 ± 0.10	± 10%	C1608X8R2A682K080AA	C1608X8R1H682K080AA		
			± 20%	C1608X8R2A682M080AA	C1608X8R1H682M080AA		
10 nF	1005	0.50 ± 0.05	± 10%		C1005X8R1H103K050BB	C1005X8R1E103K050BA	
			± 20%		C1005X8R1H103M050BB	C1005X8R1E103M050BA	
	1608	0.80 ± 0.10	± 10%	C1608X8R2A103K080AA	C1608X8R1H103K080AA		
			± 20%	C1608X8R2A103M080AA	C1608X8R1H103M080AA		
15 nF	1005	0.50 ± 0.05	± 10%			C1005X8R1E153K050BB	
			± 20%			C1005X8R1E153M050BB	
	1608	0.80 ± 0.10	± 10%	C1608X8R2A153K080AA	C1608X8R1H153K080AA		
			± 20%	C1608X8R2A153M080AA	C1608X8R1H153M080AA		
22 nF	1005	0.50 ± 0.05	± 10%			C1005X8R1E223K050BB	
			± 20%			C1005X8R1E223M050BB	
	1608	0.80 ± 0.10	± 10%	C1608X8R2A223K080AB	C1608X8R1H223K080AA		
			± 20%	C1608X8R2A223M080AB	C1608X8R1H223M080AA		
2012	1.25 ± 0.20	± 10%	C2012X8R2A223K125AA				
		± 20%	C2012X8R2A223M125AA				
33 nF	1005	0.50 ± 0.05	± 10%				C1005X8R1C333K050BB
			± 20%				C1005X8R1C333M050BB
	1608	0.80 ± 0.10	± 10%	C1608X8R2A333K080AB	C1608X8R1H333K080AA		
			± 20%	C1608X8R2A333M080AB	C1608X8R1H333M080AA		
	2012	1.25 ± 0.20	± 10%	C2012X8R2A333K125AB			
			± 20%	C2012X8R2A333M125AB			
3216	0.85 ± 0.15	± 10%	C3216X8R2A333K085AA				
		± 20%	C3216X8R2A333M085AA				
47 nF	1005	0.50 ± 0.05	± 10%				C1005X8R1C473K050BB
			± 20%				C1005X8R1C473M050BB
	1608	0.80 ± 0.10	± 10%		C1608X8R1H473K080AA		
			± 20%		C1608X8R1H473M080AA		
	2012	1.25 ± 0.20	± 10%	C2012X8R2A473K125AB			
			± 20%	C2012X8R2A473M125AB			
3216	0.85 ± 0.15	± 10%	C3216X8R2A473K085AA				
		± 20%	C3216X8R2A473M085AA				
68 nF	1608	0.80 ± 0.10	± 10%		C1608X8R1H683K080AB	C1608X8R1E683K080AA	
			± 20%		C1608X8R1H683M080AB	C1608X8R1E683M080AA	
	2012	1.25 ± 0.20	± 10%	C2012X8R2A683K125AB	C2012X8R1H683K125AA		
			± 20%	C2012X8R2A683M125AB	C2012X8R1H683M125AA		
3216	1.15 ± 0.15	± 10%	C3216X8R2A683K115AA				
		± 20%	C3216X8R2A683M115AA				
100 nF	1608	0.80 ± 0.10	± 10%		C1608X8R1H104K080AB	C1608X8R1E104K080AA	
			± 20%		C1608X8R1H104M080AB	C1608X8R1E104M080AA	
	2012	1.25 ± 0.20	± 10%		C2012X8R1H104K125AA		
			± 20%		C2012X8R1H104M125AA		
3216	1.15 ± 0.15	± 10%	C3216X8R2A104K115AA				
		± 20%	C3216X8R2A104M115AA				
150 nF	1608	0.80 ± 0.10	± 10%			C1608X8R1E154K080AB	
			± 20%			C1608X8R1E154M080AB	
	2012	0.85 ± 0.15	± 10%				C2012X8R1E154K085AA
			± 20%				C2012X8R1E154M085AA
	1.25 ± 0.20	± 10%			C2012X8R1H154K125AB		
		± 20%			C2012X8R1H154M125AB		
3216	0.85 ± 0.15	± 10%			C3216X8R1H154K085AA		
		± 20%			C3216X8R1H154M085AA		
1.60 ± 0.20	± 10%	C3216X8R2A154K160AA					
	± 20%	C3216X8R2A154M160AA					



## Capacitance Range Table

### Class 2 (Temperature Stable)

Temperature Characteristics: X8R (-55 to +150°C, ±15%)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number			
				Rated Voltage Edc: 100V	Rated Voltage Edc: 50V	Rated Voltage Edc: 25V	Rated Voltage Edc: 16V
220 nF	1608	0.80 ± 0.10	± 10%			C1608X8R1E224K080AB	
			± 20%			C1608X8R1E224M080AB	
	2012	1.25 ± 0.20	± 10%		C2012X8R1H224K125AB	C2012X8R1E224K125AA	
			± 20%		C2012X8R1H224M125AB	C2012X8R1E224M125AA	
	3216	1.15 ± 0.15	± 10%		C3216X8R1H224K115AA		
			± 20%		C3216X8R1H224M115AA		
	1.60 ± 0.20	± 10%	C3216X8R2A224K160AB				
		± 20%	C3216X8R2A224M160AB				
330 nF	1608	0.80 ± 0.10	± 10%				C1608X8R1C334K080AB
			± 20%				C1608X8R1C334M080AB
	2012	1.25 ± 0.20	± 10%			C2012X8R1E334K125AA	
			± 20%			C2012X8R1E334M125AA	
	3216	0.85 ± 0.15	± 10%			C3216X8R1E334K085AA	
			± 20%			C3216X8R1E334M085AA	
	1.60 ± 0.20	± 10%	C3216X8R2A334K160AB	C3216X8R1H334K160AA			
		± 20%	C3216X8R2A334M160AB	C3216X8R1H334M160AA			
470 nF	1608	0.80 ± 0.10	± 10%				C1608X8R1C474K080AB
			± 20%				C1608X8R1C474M080AB
	2012	1.25 ± 0.20	± 10%			C2012X8R1E474K125AB	
			± 20%			C2012X8R1E474M125AB	
	3216	0.85 ± 0.15	± 10%			C3216X8R1E474K085AA	
			± 20%			C3216X8R1E474M085AA	
	1.60 ± 0.20	± 10%		C3216X8R1H474K160AA			
		± 20%		C3216X8R1H474M160AA			
680 nF	3225	2.00 ± 0.20	± 10%	C3225X8R2A474K200AB			
			± 20%	C3225X8R2A474M200AB			
	2012	1.25 ± 0.20	± 10%				C2012X8R1C684K125AB
			± 20%				C2012X8R1C684M125AB
	3216	1.15 ± 0.15	± 10%			C3216X8R1E684K115AA	
			± 20%			C3216X8R1E684M115AA	
	1.60 ± 0.20	± 10%		C3216X8R1H684K160AB			
		± 20%		C3216X8R1H684M160AB			
1 µF	3225	2.50 ± 0.30	± 10%	C3225X8R2A684K250AB			
			± 20%	C3225X8R2A684M250AB			
	2012	1.25 ± 0.20	± 10%				C2012X8R1C105K125AB
			± 20%				C2012X8R1C105M125AB
	3216	1.60 ± 0.20	± 10%		C3216X8R1H105K160AB	C3216X8R1E105K160AA	
			± 20%		C3216X8R1H105M160AB	C3216X8R1E105M160AA	
1.5 µF	3216	1.60 ± 0.20	± 10%			C3216X8R1E155K160AB	
			± 20%			C3216X8R1E155M160AB	
	3225	1.60 ± 0.20	± 10%			C3225X8R1E155K160AA	
			± 20%			C3225X8R1E155M160AA	
	3216	1.60 ± 0.20	± 10%			C3216X8R1E225K160AB	
			± 20%			C3216X8R1E225M160AB	
3225	2.00 ± 0.20	± 10%			C3225X8R1E225K200AA		
		± 20%			C3225X8R1E225M200AA		
3.3 µF	3216	1.60 ± 0.20	± 10%				C3216X8R1C335K160AB
			± 20%				C3216X8R1C335M160AB
	3225	2.50 ± 0.30	± 10%			C3225X8R1E335K250AA	
			± 20%			C3225X8R1E335M250AA	
	3216	1.60 ± 0.20	± 10%				C3216X8R1C475K160AB
			± 20%				C3216X8R1C475M160AB
3225	2.50 ± 0.30	± 10%			C3225X8R1E475K250AB		
		± 20%			C3225X8R1E475M250AB		
6.8 µF	3225	2.00 ± 0.20	± 10%				C3225X8R1C685K200AB
			± 20%				C3225X8R1C685M200AB
	3225	2.50 ± 0.30	± 10%				C3225X8R1C106K250AB
			± 20%				C3225X8R1C106M250AB