TDK

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:
Apr 2014

REMINDERS

Please read before using this product

SAFETY REMINDERS

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

C Series

High Temperature Application

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

Lead Free · RoHS COMPLIANT · Ecological

Features

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

Parameters	Specifications
Temperature Characteristics	-55 to 150°C ΔC/C: ±15% or 0 ± 30ppm
Operating Temperature	-55 to +150°C
Dissipation Factor	5% maximum
Insulation Resistance	10 GΩ or 500 MΩ • μF minimum
Voltage Proof	2.5 • Rated Voltage or 3 • Rated Voltage for 1 to 5 seconds Charge/Discharge ≤ 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

Catalog 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 ± 0.05	0.50 ± 0.05	0.10 min.
C1608	1.60 ± 0.10	0.80 ± 0.10	0.20 min.
C2012	2.00 ± 0.20	1.25 ± 0.20	0.20 min.
C3216	3.20 ± 0.20	1.60 ± 0.20	0.20 min.
C3225	3.20 ± 0.40	2.50 ± 0.30	0.20 min.
C4532	4.50 ± 0.40	3.20 ± 0.40	0.20 min.

*Dimensional tolerances are typical values.

Temperature Characteristics

Temperature Characteristics	Temperature Coefficient or Capacitance Change	Temperature Range
NP0	0 ± 30ppm/°C	-55 to +150°C
X8R	± 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	± 0.25pF
D	± 0.50pF
J	± 5%
K	± 10%
M	± 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

• All specifications are subject to change without notice.

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Capacitance Range Chart

EIA CC0402 [C1005]

Capacitance Range Chart

Temperature Characteristics: NP0 (0 ± 30ppm/ºC), 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	010	C: ± 0.25pF						
1.5	1R5	D: ± 0.50pF						
2	020	J: ± 5%						
2.2	2R2	K: ± 10%						
3	030	M: ± 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

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Capacitance Range Chart

EIA CC0603 [C1608]

Capacitance Range Chart

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

Capacitance (pF)	Code	Tolerance	NP0	
			2A (100V)	1H (50V)
1	010	C: ± 0.25pF D: ± 0.50pF J: ± 5% K: ± 10% M: ± 20%		
1.5	1R5			
2	020			
2.2	2R2			
3	030			
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			

Capacitance (pF)	Code	Tolerance	NP0		X8R			
			2A (100V)	1H (50V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)
1,000	102	C: ± 0.25pF D: ± 0.50pF J: ± 5% K: ± 10% M: ± 20%						
1,200	122							
1,500	152							
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							

Standard Thickness

0.80 mm

• All specifications are subject to change without notice.

Capacitance Range Chart

EIA CC0805 [C2012]

Capacitance Range Chart

Temperature Characteristics: NP0 (0 ± 30ppm/ºC), 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							

Standard Thickness
- 0.60 mm
- 0.85 mm
- 1.25 mm

• All specifications are subject to change without notice.

Capacitance Range Chart

EIA CC1206 [C3216]

Capacitance Range Chart

Temperature Characteristics: NP0 (0 ± 30ppm/ºC), 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)
3,900	392	J: ± 5%						
4,700	472	K: ± 10%						
5,600	562	M: ± 20%						
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							
1,500,000	155							
2,200,000	225							
3,300,000	335							
4,700,000	475							

Standard Thickness
- 0.60 mm
- 0.85 mm
- 1.15 mm
- 1.60 mm

Capacitance Range Chart

EIA CC1210 [C3225]

Capacitance Range Chart

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

Capacitance (pF)	Code	Tolerance	NP0		X8R		
			2A (100V)	1H (50V)	2A (100V)	1E (25V)	1C (16V)
15,000	153	J: ± 5%					
22,000	223	K: ± 10%					
33,000	333	M: ± 20%					
47,000	473						
68,000	683						
100,000	104						
470,000	474						
680,000	684						
1,500,000	155						
2,200,000	225						
3,300,000	335						
4,700,000	475						
6,800,000	685						
10,000,000	106						

Standard Thickness
- 1.25 mm
- 1.60 mm
- 2.00 mm
- 2.30 mm
- 2.50 mm

• All specifications are subject to change without notice.

Capacitance Range Chart

EIA CC1812 [C4532]

Capacitance Range Chart

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

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

Standard Thickness
- 1.60 mm
- 2.00 mm
- 2.50 mm
- 3.20 mm

Capacitance Range Chart

EIA CC2220 [C5750]

Capacitance Range Chart

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

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

Standard Thickness
- 2.30 mm

• All specifications are subject to change without notice.

Capacitance Range Table

Class 1 (Temperature Compensating)

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

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 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%	C1005NP02A101J050BA	C1005NP01H101J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A101J080AA	C1608NP01H101J080AA		
120 pF	1005	0.50 ± 0.05	± 5%	C1005NP02A121J050BA	C1005NP01H121J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A121J080AA	C1608NP01H121J080AA		
150 pF	1005	0.50 ± 0.05	± 5%	C1005NP02A151J050BA	C1005NP01H151J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A151J080AA	C1608NP01H151J080AA		
180 pF	1005	0.50 ± 0.05	± 5%	C1005NP02A181J050BA	C1005NP01H181J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A181J080AA	C1608NP01H181J080AA		

• All specifications are subject to change without notice.

Capacitance Range Table

Class 1 (Temperature Compensating)

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

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	1005	0.50 ± 0.05	± 5%	C1005NP02A221J050BA	C1005NP01H221J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A221J080AA	C1608NP01H221J080AA		
270 pF	1005	0.50 ± 0.05	± 5%	C1005NP02A271J050BA	C1005NP01H271J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A271J080AA	C1608NP01H271J080AA		
330 pF	1005	0.50 ± 0.05	± 5%	C1005NP02A331J050BA	C1005NP01H331J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A331J080AA	C1608NP01H331J080AA		
390 pF	1005	0.50 ± 0.05	± 5%	C1005NP02A391J050BA	C1005NP01H391J050BA		
	1608	0.80 ± 0.10	± 5%	C1608NP02A391J080AA	C1608NP01H391J080AA		
470 pF	1005	0.50 ± 0.05	± 5%	C1005NP02A471J050BA	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		
		0.80 +0.15/-0.1	± 5%	C1608NP02A272J080AA			
	2012	0.60 ± 0.15	± 5%		C2012NP01H272J060AA		
		1.25 ± 0.20	± 5%	C2012NP02A272J125AA			
3.3 nF	1608	0.80 ± 0.10	± 5%		C1608NP01H332J080AA		
		0.80 +0.15/-0.1	± 5%	C1608NP02A332J080AA			
	2012	0.60 ± 0.15	± 5%		C2012NP01H332J060AA		
		1.25 ± 0.20	± 5%	C2012NP02A332J125AA			
3.9 nF	1608	0.80 ± 0.10	± 5%		C1608NP01H392J080AA		
	2012	0.60 ± 0.15	± 5%		C2012NP01H392J060AA		
		1.25 ± 0.20	± 5%	C2012NP02A392J125AA			
	3216	0.60 ± 0.15	± 5%	C3216NP02A392J060AA			
4.7 nF	1608	0.80 ± 0.10	± 5%		C1608NP01H472J080AA		
	2012	0.60 ± 0.15	± 5%		C2012NP01H472J060AA		
		1.25 ± 0.20	± 5%	C2012NP02A472J125AA			
	3216	0.60 ± 0.15	± 5%		C3216NP01H472J060AA		
		0.85 ± 0.15	± 5%	C3216NP02A472J085AA			
5.6 nF	1608	0.80 ± 0.10	± 5%		C1608NP01H562J080AA		
	2012	0.60 ± 0.15	± 5%		C2012NP01H562J060AA		
		1.25 ± 0.20	± 5%	C2012NP02A562J125AA			
	3216	0.60 ± 0.15	± 5%		C3216NP01H562J060AA		
		0.85 ± 0.15	± 5%	C3216NP02A562J085AA			
6.8 nF	1608	0.80 ± 0.10	± 5%		C1608NP01H682J080AA		
	2012	0.60 ± 0.15	± 5%		C2012NP01H682J060AA		
		1.25 ± 0.20	± 5%	C2012NP02A682J125AA			
	3216	0.60 ± 0.15	± 5%		C3216NP01H682J060AA		
		1.15 ± 0.15	± 5%	C3216NP02A682J115AA			
8.2 nF	1608	0.80 ± 0.10	± 5%		C1608NP01H822J080AA		
	2012	0.60 ± 0.15	± 5%		C2012NP01H822J060AA		
		1.25 ± 0.20	± 5%	C2012NP02A822J125AA			
	3216	0.60 ± 0.15	± 5%		C3216NP01H822J060AA		
		1.15 ± 0.15	± 5%	C3216NP02A822J115AA			
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			

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Capacitance Range Table

Class 1 (Temperature Compensating)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog 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		
	3216	0.60 ± 0.15	± 5%		C3216NP01H153J060AA		
		1.15 ± 0.15	± 5%	C3216NP02A153J115AA			
	3225	1.25 ± 0.20	± 5%	C3225NP02A153J125AA			
22 nF	2012	1.25 ± 0.20	± 5%		C2012NP01H223J125AA		
	3216	0.60 ± 0.15	± 5%		C3216NP01H223J060AA		
		1.60 ± 0.20	± 5%	C3216NP02A223J160AA			
	3225	1.25 ± 0.20	± 5%		C3225NP01H223J125AA		
		1.60 ± 0.20	± 5%	C3225NP02A223J160AA			
33 nF	2012	1.25 ± 0.20	± 5%		C2012NP01H333J125AA		
	3216	0.85 ± 0.15	± 5%		C3216NP01H333J085AA		
		1.60 +0.3/-0.1	± 5%	C3216NP02A333J160AA			
	3225	1.60 ± 0.20	± 5%		C3225NP01H333J160AA		
		2.00 ± 0.20	± 5%	C3225NP02A333J200AA			
47 nF	3216	1.15 ± 0.15	± 5%		C3216NP01H473J115AA		
	3225	2.00 ± 0.20	± 5%		C3225NP01H473J200AA		
		2.30 ± 0.20	± 5%	C3225NP02A473J230AA			
	4532	1.60 ± 0.20	± 5%		C4532NP01H473J160KA		
		2.00 ± 0.20	± 5%	C4532NP02A473J200KA			
68 nF	3216	1.60 ± 0.20	± 5%		C3216NP01H683J160AA		
	3225	2.00 ± 0.20	± 5%		C3225NP01H683J200AA		
		2.30 ± 0.20	± 5%	C3225NP02A683J230AA			
	4532	1.60 ± 0.20	± 5%		C4532NP01H683J160KA		
		2.50 ± 0.30	± 5%	C4532NP02A683J250KA			
100 nF	3216	1.60 ± 0.20	± 5%		C3216NP01H104J160AA		
	3225	2.50 ± 0.30	± 5%		C3225NP01H104J250AA		
	4532	2.00 ± 0.20	± 5%		C4532NP01H104J200KA		
		3.20 ± 0.30	± 5%	C4532NP02A104J320KA			
150 nF	4532	2.50 ± 0.30	± 5%		C4532NP01H154J250KA		
	5750	2.30 ± 0.20	± 5%	C5750NP02A154J230KA			
220 nF	4532	3.20 ± 0.30	± 5%		C4532NP01H224J320KA		

Class 2 (Temperature Stable)

Temperature Characteristics: X8R (-55 to +150ºC, ±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
150 pF	1005	0.50 ± 0.05	± 10%	C1005X8R2A151K050BA	C1005X8R1H151K050BA		
			± 20%	C1005X8R2A151M050BA	C1005X8R1H151M050BA		
220 pF	1005	0.50 ± 0.05	± 10%	C1005X8R2A221K050BA	C1005X8R1H221K050BA		
			± 20%	C1005X8R2A221M050BA	C1005X8R1H221M050BA		
330 pF	1005	0.50 ± 0.05	± 10%	C1005X8R2A331K050BA	C1005X8R1H331K050BA		
			± 20%	C1005X8R2A331M050BA	C1005X8R1H331M050BA		
470 pF	1005	0.50 ± 0.05	± 10%	C1005X8R2A471K050BA	C1005X8R1H471K050BA		
			± 20%	C1005X8R2A471M050BA	C1005X8R1H471M050BA		
680 pF	1005	0.50 ± 0.05	± 10%	C1005X8R2A681K050BA	C1005X8R1H681K050BA		
			± 20%	C1005X8R2A681M050BA	C1005X8R1H681M050BA		
1 nF	1005	0.50 ± 0.05	± 10%	C1005X8R2A102K050BA	C1005X8R1H102K050BA		
			± 20%	C1005X8R2A102M050BA	C1005X8R1H102M050BA		
	1608	0.80 ± 0.10	± 10%	C1608X8R2A102K080AA	C1608X8R1H102K080AA		
			± 20%	C1608X8R2A102M080AA	C1608X8R1H102M080AA		
1.5 nF	1005	0.50 ± 0.05	± 10%	C1005X8R2A152K050BA	C1005X8R1H152K050BA		
			± 20%	C1005X8R2A152M050BA	C1005X8R1H152M050BA		
	1608	0.80 ± 0.10	± 10%	C1608X8R2A152K080AA	C1608X8R1H152K080AA		
			± 20%	C1608X8R2A152M080AA	C1608X8R1H152M080AA		
2.2 nF	1005	0.50 ± 0.05	± 10%	C1005X8R2A222K050BA	C1005X8R1H222K050BA		
			± 20%	C1005X8R2A222M050BA	C1005X8R1H222M050BA		
	1608	0.80 ± 0.10	± 10%	C1608X8R2A222K080AA	C1608X8R1H222K080AA		
			± 20%	C1608X8R2A222M080AA	C1608X8R1H222M080AA		
3.3 nF	1005	0.50 ± 0.05	± 10%	C1005X8R2A332K050BB	C1005X8R1H332K050BA		
			± 20%	C1005X8R2A332M050BB	C1005X8R1H332M050BA		
	1608	0.80 ± 0.10	± 10%	C1608X8R2A332K080AA	C1608X8R1H332K080AA		
			± 20%	C1608X8R2A332M080AA	C1608X8R1H332M080AA		

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Capacitance Range Table

Class 2 (Temperature Stable)

Temperature Characteristics: X8R (-55 to +150ºC, ±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
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			

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Capacitance Range Table

Class 2 (Temperature Stable)

Temperature Characteristics: X8R (-55 to +150ºC, ±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 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		
	3225	2.00 ± 0.20	± 10%	C3225X8R2A474K200AB			
			± 20%	C3225X8R2A474M200AB			
680 nF	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		
	3225	2.50 ± 0.30	± 10%	C3225X8R2A684K250AB			
			± 20%	C3225X8R2A684M250AB			
1 μF	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	
2.2 μF	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	
4.7 μF	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
10 μF	3225	2.50 ± 0.30	± 10%				C3225X8R1C106K250AB
			± 20%				C3225X8R1C106M250AB

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