

MULTILAYER CERAMIC CHIP CAPACITORS

C series, C1005 [EIA: CC0402] type

FEATURES

- High capacitance has been achieved through precision technologies that enable the use of multiple thinner ceramic dielectric layers.
- A monolithic structure ensures superior mechanical strength and reliability.
- High-accuracy automatic mounting is facilitated through the maintenance of very precise dimensional tolerances.
- Composed of only ceramics and metals, these capacitors provide extremely dependable performance, exhibiting virtually no degradation even when subjected to temperature extremes.
- Low stray capacitance ensures high conformity with nominal values, thereby simplifying the circuit design process.
- Low residual inductance assures superior frequency characteristics.

PRODUCT IDENTIFICATION

C	1005	C0G	1E	100	D	X	XXX
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

(1) Series name

(2) Dimensions L×W

1005	1.0×0.5mm
1608	1.6×0.8mm
2012	2.0×1.25mm
3216	3.2×1.6mm

(3) Capacitance temperature characteristics

Class 1 (Temperature compensation)

Temperature characteristics	Temperature coefficient	Temperature range
C0G*	0±30ppm/°C	−55 to +125°C
SL	+350 to −1000ppm/°C	+20 to +85°C

* Please contact us for order.

Class 2 (Temperature stable and general purpose)

Temperature characteristics	Capacitance change	Temperature range
X7R	±15%	−55 to +125°C
X5R	±15%	−55 to +85°C
Z5U	+22, −56%	+10 to +85°C
Y5V	+22, −82%	−30 to +85°C
B	±10%	−25 to +85°C
D	+20, −30%	−25 to +85°C
F	+30, −80%	−25 to +85°C

(4) Rated voltage E_{dc}

0J	6.3V
1A	10V
1C	16V
1E	25V
1H	50V
1N	75V
3F	3kV

CAPACITANCE RANGE AND RATED VOLTAGE

Type	Capacitance range	Rated voltage E _{dc}
C1005	0.5 to 100000pF	6.3 to 50V
C1608	0.5pF to 1μF	6.3 to 50V
C2012	0.5pF to 2.2μF	6.3 to 50V
C3216	1100pF to 10μF	6.3 to 50V

(5) 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.

010	1pF
100	10pF
102	1000pF
0R5	0.5pF
3R5	3.5pF

(6) Capacitance tolerance

Symbol	Tolerance	Applicable capacitance range
C	±0.25pF	10pF or less
D	±0.5pF	
F	±1pF	
J	±5%	Over 10pF
K	±10%	
M	±20%	
Z	+80, −20%	

(7) Packaging style

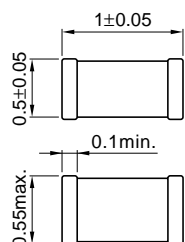
T	Taping (reel)
B	Bulk

(8) TDK internal code

MULTILAYER CERAMIC CHIP CAPACITORS

C series, C1005 [EIA: CC0402] type

SHAPES AND DIMENSIONS



Dimensions in mm



CAPACITANCE RANGES

CLASS 1 (TEMPERATURE COMPENSATION)

TEMPERATURE CHARACTERISTICS:

C0G(0±30ppm/°C)

SL(+350 to -1000ppm/°C)

RATED VOLTAGE E_{dc}: 50V

Capacitance (pF)	Tolerance	Thickness (mm)	Part No.
0.5	±0.25pF	0.5±0.05	C1005XX*1H0R5C
0.75	±0.25pF	0.5±0.05	C1005XX1HR75C
1	±0.25pF	0.5±0.05	C1005XX1H010C
	±0.5pF	0.5±0.05	C1005XX1H010D
1.5	±0.25pF	0.5±0.05	C1005XX1H1R5C
2	±0.25pF	0.5±0.05	C1005XX1H020C
	±0.5pF	0.5±0.05	C1005XX1H020D
3	±0.25pF	0.5±0.05	C1005XX1H030C
	±0.5pF	0.5±0.05	C1005XX1H030D
4	±0.25pF	0.5±0.05	C1005XX1H040C
	±0.5pF	0.5±0.05	C1005XX1H040D
5	±0.25pF	0.5±0.05	C1005XX1H050C
	±0.5pF	0.5±0.05	C1005XX1H050D
6	±0.5pF	0.5±0.05	C1005XX1H060D
	±1pF	0.5±0.05	C1005XX1H060F
7	±0.5pF	0.5±0.05	C1005XX1H070D
	±1pF	0.5±0.05	C1005XX1H070F
8	±0.5pF	0.5±0.05	C1005XX1H080D
	±1pF	0.5±0.05	C1005XX1H080F
9	±0.5pF	0.5±0.05	C1005XX1H090D
	±1pF	0.5±0.05	C1005XX1H090F
10	±0.5pF	0.5±0.05	C1005XX1H100D
	±1pF	0.5±0.05	C1005XX1H100F
11	±5%	0.5±0.05	C1005XX1H110J
12	±5%	0.5±0.05	C1005XX1H120J
	±10%	0.5±0.05	C1005XX1H120K
13	±5%	0.5±0.05	C1005XX1H130J
15	±5%	0.5±0.05	C1005XX1H150J
	±10%	0.5±0.05	C1005XX1H150K
16	±5%	0.5±0.05	C1005XX1H160J
18	±5%	0.5±0.05	C1005XX1H180J
	±10%	0.5±0.05	C1005XX1H180K
20	±5%	0.5±0.05	C1005XX1H200J
22	±5%	0.5±0.05	C1005XX1H220J
	±10%	0.5±0.05	C1005XX1H220K
24	±5%	0.5±0.05	C1005XX1H240J
	±10%	0.5±0.05	C1005XX1H270J
27	±10%	0.5±0.05	C1005XX1H270K
30	±5%	0.5±0.05	C1005XX1H300J
33	±5%	0.5±0.05	C1005XX1H330J
	±10%	0.5±0.05	C1005XX1H330K
36	±5%	0.5±0.05	C1005XX1H360J

Capacitance (pF)	Tolerance	Thickness (mm)	Part No.
39	±5%	0.5±0.05	C1005XX*1H390J
	±10%	0.5±0.05	C1005XX1H390K
43	±5%	0.5±0.05	C1005XX1H430J
47	±5%	0.5±0.05	C1005XX1H470J
	±10%	0.5±0.05	C1005XX1H470K
51	±5%	0.5±0.05	C1005XX1H510J
56	±5%	0.5±0.05	C1005XX1H560J
	±10%	0.5±0.05	C1005XX1H560K
62	±5%	0.5±0.05	C1005XX1H620J
68	±5%	0.5±0.05	C1005XX1H680J
	±10%	0.5±0.05	C1005XX1H680K
75	±5%	0.5±0.05	C1005XX1H750J
82	±5%	0.5±0.05	C1005XX1H820J
	±10%	0.5±0.05	C1005XX1H820K
91	±5%	0.5±0.05	C1005XX1H910J
100	±5%	0.5±0.05	C1005XX1H101J
	±10%	0.5±0.05	C1005XX1H101K
110	±5%	0.5±0.05	C1005XX1H111J
120	±5%	0.5±0.05	C1005XX1H121J
	±10%	0.5±0.05	C1005XX1H121K
130	±5%	0.5±0.05	C1005XX1H131J
150	±5%	0.5±0.05	C1005XX1H151J
	±10%	0.5±0.05	C1005XX1H151K
160	±5%	0.5±0.05	C1005XX1H161J
180	±5%	0.5±0.05	C1005XX1H181J
	±10%	0.5±0.05	C1005XX1H181K
200	±5%	0.5±0.05	C1005XX1H201J
220	±5%	0.5±0.05	C1005XX1H221J
	±10%	0.5±0.05	C1005XX1H221K
240	±5%	0.5±0.05	C1005SL1H241J
270	±5%	0.5±0.05	C1005SL1H271J
	±10%	0.5±0.05	C1005SL1H271K
300	±5%	0.5±0.05	C1005SL1H301J
330	±5%	0.5±0.05	C1005SL1H331J
	±10%	0.5±0.05	C1005SL1H331K

* XX: Temperature characteristics C0G or SL

MULTILAYER CERAMIC CHIP CAPACITORS

C series, C1005 [EIA: CC0402] type

CAPACITANCE RANGES

CLASS 2 (TEMPERATURE STABLE)

TEMPERATURE CHARACTERISTICS: X7R ($\pm 15\%$)

RATED VOLTAGE Edc: 50V

Capacitance (pF)	Tolerance	Thickness (mm)	Part No.
220	$\pm 10\%$	0.5 ± 0.05	C1005X7R1H221K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1H221M
270	$\pm 10\%$	0.5 ± 0.05	C1005X7R1H271K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1H271M
330	$\pm 10\%$	0.5 ± 0.05	C1005X7R1H331K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1H331M
390	$\pm 10\%$	0.5 ± 0.05	C1005X7R1H391K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1H391M
470	$\pm 10\%$	0.5 ± 0.05	C1005X7R1H471K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1H471M
560	$\pm 10\%$	0.5 ± 0.05	C1005X7R1H561K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1H561M
680	$\pm 10\%$	0.5 ± 0.05	C1005X7R1H681K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1H681M
820	$\pm 10\%$	0.5 ± 0.05	C1005X7R1H821K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1H821M
1000	$\pm 10\%$	0.5 ± 0.05	C1005X7R1H102K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1H102M
1200	$\pm 10\%$	0.5 ± 0.05	C1005X7R1H122K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1H122M
1500	$\pm 10\%$	0.5 ± 0.05	C1005X7R1H152K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1H152M
1800	$\pm 10\%$	0.5 ± 0.05	C1005X7R1H182K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1H182M
2200	$\pm 10\%$	0.5 ± 0.05	C1005X7R1H222K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1H222M
2700	$\pm 10\%$	0.5 ± 0.05	C1005X7R1H272K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1H272M
3300	$\pm 10\%$	0.5 ± 0.05	C1005X7R1H332K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1H332M
3900	$\pm 10\%$	0.5 ± 0.05	C1005X7R1H392K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1H392M

RATED VOLTAGE Edc: 25V

Capacitance (pF)	Tolerance	Thickness (mm)	Part No.
4700	$\pm 10\%$	0.5 ± 0.05	C1005X7R1E472K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1E472M
5600	$\pm 10\%$	0.5 ± 0.05	C1005X7R1E562K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1E562M
6800	$\pm 10\%$	0.5 ± 0.05	C1005X7R1E682K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1E682M

RATED VOLTAGE Edc: 16V

Capacitance (pF)	Tolerance	Thickness (mm)	Part No.
8200	$\pm 10\%$	0.5 ± 0.05	C1005X7R1C822K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1C822M
10000	$\pm 10\%$	0.5 ± 0.05	C1005X7R1C103K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1C103M
12000	$\pm 10\%$	0.5 ± 0.05	C1005X7R1C123K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1C123M
15000	$\pm 10\%$	0.5 ± 0.05	C1005X7R1C153K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1C153M
18000	$\pm 10\%$	0.5 ± 0.05	C1005X7R1C183K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1C183M
22000	$\pm 10\%$	0.5 ± 0.05	C1005X7R1C223K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1C223M
27000	$\pm 10\%$	0.5 ± 0.05	C1005X7R1C273K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1C273M
33000	$\pm 10\%$	0.5 ± 0.05	C1005X7R1C333K
	$\pm 20\%$	0.5 ± 0.05	C1005X7R1C333M

TEMPERATURE CHARACTERISTICS: X5R ($\pm 15\%$)

RATED VOLTAGE Edc: 10V

Capacitance (pF)	Tolerance	Thickness (mm)	Part No.
39000	$\pm 10\%$	0.5 ± 0.05	C1005X5R1A393K
	$\pm 20\%$	0.5 ± 0.05	C1005X5R1A393M
47000	$\pm 10\%$	0.5 ± 0.05	C1005X5R1A473K
	$\pm 20\%$	0.5 ± 0.05	C1005X5R1A473M

RATED VOLTAGE Edc: 6.3V

Capacitance (pF)	Tolerance	Thickness (mm)	Part No.
56000	$\pm 10\%$	0.5 ± 0.05	C1005X5R0J563K
	$\pm 20\%$	0.5 ± 0.05	C1005X5R0J563M
68000	$\pm 10\%$	0.5 ± 0.05	C1005X5R0J683K
	$\pm 20\%$	0.5 ± 0.05	C1005X5R0J683M
82000	$\pm 10\%$	0.5 ± 0.05	C1005X5R0J823K
	$\pm 20\%$	0.5 ± 0.05	C1005X5R0J823M
100000	$\pm 10\%$	0.5 ± 0.05	C1005X5R0J104K
	$\pm 20\%$	0.5 ± 0.05	C1005X5R0J104M

TEMPERATURE CHARACTERISTICS: Y5V ($+22, -82\%$)

RATED VOLTAGE Edc: 50V

Capacitance (pF)	Tolerance	Thickness (mm)	Part No.
1000	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1H102Z
	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1H152Z
1500	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1H222Z
	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1H332Z
2200	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1H472Z
	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1H682Z
3300	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1H103Z
	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1H153Z
4700	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1H223Z
	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1H333Z
6800	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1H473Z
	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1H683Z
10000	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1C104Z
	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1C154Z
15000	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1C224Z
	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1C334Z

RATED VOLTAGE Edc: 25V

Capacitance (pF)	Tolerance	Thickness (mm)	Part No.
22000	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1E223Z
	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1E333Z

RATED VOLTAGE Edc: 16V

Capacitance (pF)	Tolerance	Thickness (mm)	Part No.
33000	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1C333Z
	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1C473Z
47000	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1C683Z
	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1C104Z
68000	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1C154Z
	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1C224Z
100000	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1C334Z
	$+80, -20\%$	0.5 ± 0.05	C1005Y5V1C474Z