REMINDERS

Please read this before using the product.

SAFETY REMINDERS

⚠ REMINDERS

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8. The descriptions in this catalog apply as of April 2007.

TDK

Multilayer Ceramic Chip Capacitors For High Temperature Guaranteed

Conformity to RoHS Directive

C Series C1005(EIA CC0402) Type

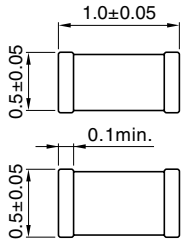
FEATURES

- These products have no polarity.
- Their electrostatic capacity temperature response is stable at 15% even in high temperature ranges (up to 150°C).
- Provides high-precision performance because their electrostatic capacity temperature response is ±7.5% in semi-high temperature ranges (up to 125°C).

APPLICATIONS

- On-vehicle units mounted in motor vehicle engine rooms.
- Measuring instruments used in high temperature environments.
- For time constants and filter circuitry (up to 125°C).
- For temperature compensation (Class 1), Multilayer ceramic chip capacitors with support for high temperatures are prepared as the C0G or NP0 (with Ni internal electrodes) Series.

SHAPES AND DIMENSIONS



Dimensions in mm

PRODUCT IDENTIFICATION

C	1005	X8R	1H	151	K	□
(1)	(2)	(3)	(4)	(5)	(6)	(7)

(1) Series name

(2) Dimensions L×W

1005	1.0×0.5mm

(3) Capacitance temperature characteristics

Class 2 (Temperature stable and general purpose)

Temperature characteristics	Capacitance change	Temperature range
X8R	±15%	–55 to +150°C

(4) Rated voltage Edc

1H	50V
1E	25V

(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.

151	150pF
102	1,000pF
103	10,000pF

(6) Capacitance tolerance

Symbol	Tolerance
K	±10%

(7) Packaging style

T	Taping (reel)
B	Bulk

- Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

CAPACITANCE RANGES: CLASS 2

TEMPERATURE CHARACTERISTICS: X8R(±15%)

RATED VOLTAGE Edc: 50V

Capacitance (pF)	Tolerance	Thickness T (mm)	Part No. Temperature characteristics: X8R
150	±10%	0.50±0.05	C1005X8R1H151K
220	±10%	0.50±0.05	C1005X8R1H221K
330	±10%	0.50±0.05	C1005X8R1H331K
470	±10%	0.50±0.05	C1005X8R1H471K
680	±10%	0.50±0.05	C1005X8R1H681K
1,000	±10%	0.50±0.05	C1005X8R1H102K
1,500	±10%	0.50±0.05	C1005X8R1H152K
2,200	±10%	0.50±0.05	C1005X8R1H222K
3,300	±10%	0.50±0.05	C1005X8R1H332K
4,700	±10%	0.50±0.05	C1005X8R1H472K

RATED VOLTAGE Edc: 25V

Capacitance (pF)	Tolerance	Thickness T (mm)	Part No. Temperature characteristics: X8R
6,800	±10%	0.50±0.05	C1005X8R1E682K
10,000	±10%	0.50±0.05	C1005X8R1E103K

C Series C1608(EIA CC0603) Type

Conformity to RoHS Directive

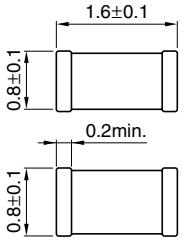
FEATURES

- These products have no polarity.
- Their electrostatic capacity temperature response is stable at 15% even in high temperature ranges (up to 150°C).
- Provides high-precision performance because their electrostatic capacity temperature response is ±7.5% in semi-high temperature ranges (up to 125°C).

APPLICATIONS

- On-vehicle units mounted in motor vehicle engine rooms.
- Measuring instruments used in high temperature environments.
- For time constants and filter circuitry (up to 125°C).
- For temperature compensation (Class 1), Multilayer ceramic chip capacitors with support for high temperatures are prepared as the C0G or NP0 (with Ni internal electrodes) Series.

SHAPES AND DIMENSIONS



Dimensions in mm

PRODUCT IDENTIFICATION

C	1608	X8R	2A	102	K	□
(1)	(2)	(3)	(4)	(5)	(6)	(7)

(1) Series name

(2) Dimensions L×W

1608	1.6×0.8mm

(3) Capacitance temperature characteristics

Class 2 (Temperature stable and general purpose)

Temperature characteristics	Capacitance change	Temperature range
X8R	±15%	–55 to +150°C

(4) Rated voltage Edc

2A	100V
1H	50V
1E	25V

(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.

102	1,000pF
103	10,000pF

(6) Capacitance tolerance

Symbol	Tolerance
K	±10%

(7) Packaging style

T	Taping (reel)
B	Bulk

CAPACITANCE RANGES: CLASS 2

TEMPERATURE CHARACTERISTICS: X8R(±15%)

RATED VOLTAGE Edc: 100V

Capacitance (pF)	Tolerance	Thickness T (mm)	Part No. Temperature characteristics: X8R
1,000	±10%	0.80±0.10	C1608X8R2A102K
1,500	±10%	0.80±0.10	C1608X8R2A152K
2,200	±10%	0.80±0.10	C1608X8R2A222K
3,300	±10%	0.80±0.10	C1608X8R2A332K
4,700	±10%	0.80±0.10	C1608X8R2A472K
6,800	±10%	0.80±0.10	C1608X8R2A682K
10,000	±10%	0.80±0.10	C1608X8R2A103K
15,000	±10%	0.80±0.10	C1608X8R2A153K

- Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

RATED VOLTAGE Edc: 50V

Capacitance (pF)	Tolerance	Thickness T (mm)	Part No. Temperature characteristics: X8R
1,000	±10%	0.80±0.10	C1608X8R1H102K
1,500	±10%	0.80±0.10	C1608X8R1H152K
2,200	±10%	0.80±0.10	C1608X8R1H222K
3,300	±10%	0.80±0.10	C1608X8R1H332K
4,700	±10%	0.80±0.10	C1608X8R1H472K
6,800	±10%	0.80±0.10	C1608X8R1H682K
10,000	±10%	0.80±0.10	C1608X8R1H103K
15,000	±10%	0.80±0.10	C1608X8R1H153K
22,000	±10%	0.80±0.10	C1608X8R1H223K
33,000	±10%	0.80±0.10	C1608X8R1H333K
47,000	±10%	0.80±0.10	C1608X8R1H473K

RATED VOLTAGE Edc: 25V

Capacitance (pF)	Tolerance	Thickness T (mm)	Part No. Temperature characteristics: X8R
68,000	±10%	0.80±0.10	C1608X8R1E683K
100,000	±10%	0.80±0.10	C1608X8R1E104K

• For more information about the products of other capacitance or data, please contact us.

C Series C2012(EIA CC0805) Type

Conformity to RoHS Directive

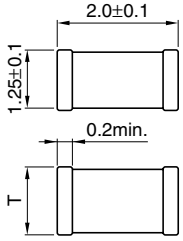
FEATURES

- These products have no polarity.
- Their electrostatic capacity temperature response is stable at 15% even in high temperature ranges (up to 150°C).
- Provides high-precision performance because their electrostatic capacity temperature response is ±7.5% in semi-high temperature ranges (up to 125°C).

APPLICATIONS

- On-vehicle units mounted in motor vehicle engine rooms.
- Measuring instruments used in high temperature environments.
- For time constants and filter circuitry (up to 125°C).
- For temperature compensation (Class 1), Multilayer ceramic chip capacitors with support for high temperatures are prepared as the C0G or NP0 (with Ni internal electrodes) Series.

SHAPES AND DIMENSIONS



Dimensions in mm

PRODUCT IDENTIFICATION

C	2012	X8R	2A	223	K	□
(1)	(2)	(3)	(4)	(5)	(6)	(7)

(1) Series name

(2) Dimensions L×W

2012	2.0×1.25mm

(3) Capacitance temperature characteristics

Class 2 (Temperature stable and general purpose)

Temperature characteristics	Capacitance change	Temperature range
X8R	±15%	–55 to +150°C

(4) Rated voltage Edc

2A	100V
1H	50V
1E	25V

(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.

102	1,000pF
103	10,000pF

(6) Capacitance tolerance

Symbol	Tolerance
K	±10%

(7) Packaging style

T	Taping (reel)
B	Bulk

CAPACITANCE RANGES: CLASS 2

TEMPERATURE CHARACTERISTICS: X8R(±15%)

RATED VOLTAGE Edc: 100V

Capacitance (pF)	Tolerance	Thickness T (mm)	Part No. Temperature characteristics: X8R
22,000	±10%	1.25±0.20	C2012X8R2A223K

RATED VOLTAGE Edc: 50V

Capacitance (pF)	Tolerance	Thickness T (mm)	Part No. Temperature characteristics: X8R
68,000	±10%	1.25±0.20	C2012X8R1H683K
100,000	±10%	1.25±0.20	C2012X8R1H104K

RATED VOLTAGE Edc: 25V

Capacitance (pF)	Tolerance	Thickness T (mm)	Part No. Temperature characteristics: X8R
150,000	±10%	0.85±0.10	C2012X8R1E154K
220,000	±10%	1.25±0.20	C2012X8R1E224K
330,000	±10%	1.25±0.20	C2012X8R1E334K

- For more information about the products of other capacitance or data, please contact us.
- Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

C Series C3216(EIA CC1206) Type

Conformity to RoHS Directive

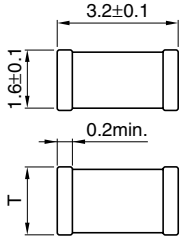
FEATURES

- These products have no polarity.
- Their electrostatic capacity temperature response is stable at 15% even in high temperature ranges (up to 150°C).
- Provides high-precision performance because their electrostatic capacity temperature response is ±7.5% in semi-high temperature ranges (up to 125°C).

APPLICATIONS

- On-vehicle units mounted in motor vehicle engine rooms.
- Measuring instruments used in high temperature environments.
- For time constants and filter circuitry (up to 125°C).
- For temperature compensation (Class 1), Multilayer ceramic chip capacitors with support for high temperatures are prepared as the C0G or NP0 (with Ni internal electrodes) Series.

SHAPES AND DIMENSIONS



Dimensions in mm

PRODUCT IDENTIFICATION

C	3216	X8R	2A	333	K	□
(1)	(2)	(3)	(4)	(5)	(6)	(7)

(1) Series name

(2) Dimensions L×W

3216	3.2×1.6mm

(3) Capacitance temperature characteristics

Class 2 (Temperature stable and general purpose)

Temperature characteristics	Capacitance change	Temperature range
X8R	±15%	–55 to +150°C

(4) Rated voltage Edc

2A	100V
1H	50V
1E	25V

(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.

333	33,000pF
104	100,000pF

(6) Capacitance tolerance

Symbol	Tolerance
K	±10%

(7) Packaging style

T	Taping (reel)
B	Bulk

CAPACITANCE RANGES: CLASS 2

TEMPERATURE CHARACTERISTICS: X8R(±15%)

RATED VOLTAGE Edc: 100V

Capacitance (pF)	Tolerance	Thickness T (mm)	Part No. Temperature characteristics: X8R
33,000	±10%	0.85±0.15	C3216X8R2A333K
47,000	±10%	0.85±0.15	C3216X8R2A473K
68,000	±10%	1.15±0.15	C3216X8R2A683K
100,000	±10%	1.15±0.15	C3216X8R2A104K
150,000	±10%	1.60±0.20	C3216X8R2A154K

RATED VOLTAGE Edc: 50V

Capacitance (pF)	Tolerance	Thickness T (mm)	Part No. Temperature characteristics: X8R
150,000	±10%	0.85±0.15	C3216X8R1H154K
220,000	±10%	1.15±0.15	C3216X8R1H224K
330,000	±10%	1.60±0.20	C3216X8R1H334K
470,000	±10%	1.60±0.20	C3216X8R1H474K

- Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

RATED VOLTAGE Edc: 25V

Capacitance (pF)	Tolerance	Thickness T (mm)	Part No. Temperature characteristics: X8R
330,000	±10%	0.85±0.15	C3216X8R1E334K
470,000	±10%	0.85±0.15	C3216X8R1E474K
680,000	±10%	1.15±0.15	C3216X8R1E684K
1,000,000	±10%	1.60±0.20	C3216X8R1E105K

• For more information about the products of other capacitance or data, please contact us.

C Series C3225(EIA CC1210) Type

Conformity to RoHS Directive

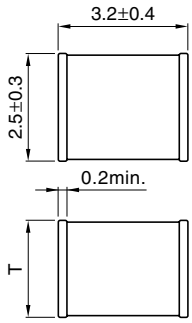
FEATURES

- These products have no polarity.
- Their electrostatic capacity temperature response is stable at 15% even in high temperature ranges (up to 150°C).
- Provides high-precision performance because their electrostatic capacity temperature response is ±7.5% in semi-high temperature ranges (up to 125°C).

APPLICATIONS

- On-vehicle units mounted in motor vehicle engine rooms.
- Measuring instruments used in high temperature environments.
- For time constants and filter circuitry (up to 125°C).
- For temperature compensation (Class 1), Multilayer ceramic chip capacitors with support for high temperatures are prepared as the C0G or NP0 (with Ni internal electrodes) Series.

SHAPES AND DIMENSIONS



Dimensions in mm

PRODUCT IDENTIFICATION

C	3225	X8R	1E	155	K	□
(1)	(2)	(3)	(4)	(5)	(6)	(7)

(1) Series name

(2) Dimensions L×W

3225	3.2×2.5mm

(3) Capacitance temperature characteristics

Class 2 (Temperature stable and general purpose)

Temperature characteristics	Capacitance change	Temperature range
X8R	±15%	–55 to +150°C

(4) Rated voltage Edc

1E	25V

(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.

155	1,500,000pF

(6) Capacitance tolerance

Symbol	Tolerance
K	±10%

(7) Packaging style

T	Taping (reel)
B	Bulk

CAPACITANCE RANGES: CLASS 2

TEMPERATURE CHARACTERISTICS: X8R(±15%)

RATED VOLTAGE Edc: 25V

Capacitance (pF)	Tolerance	Thickness T (mm)	Part No. Temperature characteristics: X8R
1,500,000	±10%	1.60±0.20	C3225X8R1E155K
2,200,000	±10%	2.00±0.20	C3225X8R1E225K
3,300,000	±10%	2.50±0.30	C3225X8R1E335K

- For more information about the products of other capacitance or data, please contact us.
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