

REMINDERS

Please read this before using the product.

SAFETY REMINDERS

REMINDERS

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

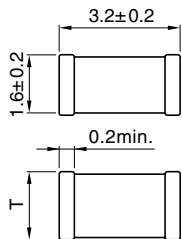
C Series C3216 (EIA CC1206) Type

Conformity to RoHS Directive

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.
- Because electrostatic capacity has been obtained up to the electrolytic capacitor range, these capacitors offer long service life and are optimally suited for power supply designs that require high levels of reliability.
- Owing to their low ESR and excellent frequency characteristics, these products are optimally suited for high frequency and high-density type power supplies.

SHAPES AND DIMENSIONS



Dimensions in mm



PRODUCT IDENTIFICATION

C 3216 CH 1H 103 J □
(1) (2) (3) (4) (5) (6) (7)

(1) Series name

(2) Dimensions L×W

| | |
|------|-----------|
| 3216 | 3.2×1.6mm |
|------|-----------|

(3) Capacitance temperature characteristics
Class 1 (Temperature compensation)

| Temperature characteristics | Capacitance change | Temperature range |
|-----------------------------|--------------------|-------------------|
| CH | 0±60ppm/°C | -25 to +85°C |
| C0G | 0±30ppm/°C | -55 to +125°C |

Class 2 (Temperature stable and general purpose)

| Temperature characteristics | Capacitance change | Temperature range |
|-----------------------------|--------------------|-------------------|
| JB | ±10% | -25 to +85°C |
| JF | +30, -80% | -25 to +85°C |
| X7R | ±15% | -55 to +125°C |
| X5R | ±15% | -55 to +85°C |
| Y5V | +22, -82% | -30 to +85°C |

(4) Rated voltage E_{dc}

| | |
|----|------|
| 0J | 6.3V |
| 1A | 10V |
| 1C | 16V |
| 1E | 25V |
| 1H | 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.

| | |
|-----|---------|
| 010 | 1pF |
| 100 | 10pF |
| 102 | 1,000pF |

(6) Capacitance tolerance

| | |
|---|-----------|
| J | ±5% |
| K | ±10% |
| M | ±20% |
| Z | +80, -20% |

(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.

• All specifications are subject to change without notice.
Please read the precautions before using this catalog.

CAPACITANCE RANGES: CLASS 1 (TEMPERATURE COMPENSATION)**TEMPERATURE CHARACTERISTICS: CH(0±60ppm/°C), C0G(0±30ppm/°C)**RATED VOLTAGE E_{dc}: 50V

| Capacitance (pF) | Tolerance | Thickness T (mm) | Part No. | |
|------------------|-----------|------------------|---------------------------------|----------------------------------|
| | | | Temperature characteristics: CH | Temperature characteristics: C0G |
| 4,700 | ±5% | 0.60±0.10 | C3216CH1H472J | C3216C0G1H472J |
| 6,800 | ±5% | 0.60±0.10 | C3216CH1H682J | C3216C0G1H682J |
| 10,000 | ±5% | 0.85±0.10 | C3216CH1H103J | C3216C0G1H103J |
| 15,000 | ±5% | 1.15±0.10 | C3216CH1H153J | C3216C0G1H153J |
| 22,000 | ±5% | 1.15±0.10 | C3216CH1H223J | C3216C0G1H223J |
| 33,000 | ±5% | 1.60±0.20 | C3216CH1H333J | C3216C0G1H333J |

CAPACITANCE RANGES: CLASS 2**TEMPERATURE CHARACTERISTICS: JB(±10%), X5R/X7R(±15%)**RATED VOLTAGE E_{dc}: 50V

| Capacitance (pF) | Tolerance | Thickness T (mm) | Part No. | | |
|------------------|-----------|------------------|---------------------------------|----------------------------------|----------------------------------|
| | | | Temperature characteristics: JB | Temperature characteristics: X5R | Temperature characteristics: X7R |
| 470,000 | ±10% | 1.6±0.15 | C3216JB1H474K | C3216X5R1H474K | C3216X7R1H474K |
| | ±20% | 1.6±0.15 | C3216JB1H474M | C3216X5R1H474M | C3216X7R1H474M |
| 680,000 | ±10% | 1.6±0.15 | C3216JB1H684K | C3216X5R1H684K | C3216X7R1H684K |
| | ±20% | 1.6±0.15 | C3216JB1H684M | C3216X5R1H684M | C3216X7R1H684M |
| 1,000,000 | ±10% | 1.6±0.15 | C3216JB1H105K | C3216X5R1H105K | C3216X7R1H105K |
| | ±20% | 1.6±0.15 | C3216JB1H105M | C3216X5R1H105M | C3216X7R1H105M |

RATED VOLTAGE E_{dc}: 25V

| Capacitance (pF) | Tolerance | Thickness T (mm) | Part No. | | |
|------------------|-----------|------------------|---------------------------------|----------------------------------|----------------------------------|
| | | | Temperature characteristics: JB | Temperature characteristics: X5R | Temperature characteristics: X7R |
| 1,500,000 | ±10% | 1.6±0.15 | C3216JB1E155K | C3216X5R1E155K | C3216X7R1E155K |
| | ±20% | 1.6±0.15 | C3216JB1E155M | C3216X5R1E155M | C3216X7R1E155M |
| 2,200,000 | ±10% | 1.6±0.15 | C3216JB1E225K | C3216X5R1E225K | C3216X7R1E225K |
| | ±20% | 1.6±0.15 | C3216JB1E225M | C3216X5R1E225M | C3216X7R1E225M |
| 3,300,000 | ±10% | 1.6±0.15 | C3216JB1E335K | C3216X5R1E335K | C3216X7R1E335K |
| | ±20% | 1.6±0.15 | C3216JB1E335M | C3216X5R1E335M | C3216X7R1E335M |
| 4,700,000 | ±10% | 1.6±0.15 | C3216JB1E475K | C3216X5R1E475K | C3216X7R1E475K |
| | ±20% | 1.6±0.15 | C3216JB1E475M | C3216X5R1E475M | C3216X7R1E475M |

RATED VOLTAGE E_{dc}: 16V

| Capacitance (pF) | Tolerance | Thickness T (mm) | Part No. | | |
|------------------|-----------|------------------|---------------------------------|----------------------------------|----------------------------------|
| | | | Temperature characteristics: JB | Temperature characteristics: X5R | Temperature characteristics: X7R |
| 2,200,000 | ±10% | 1.6±0.15 | C3216JB1C225K | C3216X5R1C225K | C3216X7R1C225K |
| | ±20% | 1.6±0.15 | C3216JB1C225M | C3216X5R1C225M | C3216X7R1C225M |
| 3,300,000 | ±10% | 1.6±0.15 | C3216JB1C335K | C3216X5R1C335K | C3216X7R1C335K |
| | ±20% | 1.6±0.15 | C3216JB1C335M | C3216X5R1C335M | C3216X7R1C335M |
| 4,700,000 | ±10% | 1.6±0.15 | C3216JB1C475K | C3216X5R1C475K | C3216X7R1C475K |
| | ±20% | 1.6±0.15 | C3216JB1C475M | C3216X5R1C475M | C3216X7R1C475M |
| 6,800,000 | ±10% | 1.6±0.15 | C3216JB1C685K | C3216X5R1C685K | C3216X7R1C685K |
| | ±20% | 1.6±0.15 | C3216JB1C685M | C3216X5R1C685M | C3216X7R1C685M |
| 10,000,000 | ±10% | 1.6±0.15 | C3216JB1C106K | C3216X5R1C106K | C3216X7R1C106K |
| | ±20% | 1.6±0.15 | C3216JB1C106M | C3216X5R1C106M | C3216X7R1C106M |

TEMPERATURE CHARACTERISTICS: JB($\pm 10\%$), X5R($\pm 15\%$)
RATED VOLTAGE E_{dc}: 50V

| Capacitance (pF) | Tolerance | Thickness T (mm) | Part No. | |
|---------------------|------------|---------------------|---------------------------------|----------------------------------|
| | | | Temperature characteristics: JB | Temperature characteristics: X5R |
| 470,000 | $\pm 10\%$ | 0.85 \pm 0.10 | C3216JB1H474K | C3216X5R1H474K |
| | $\pm 20\%$ | 0.85 \pm 0.10 | C3216JB1H474M | C3216X5R1H474M |

RATED VOLTAGE E_{dc}: 25V

| Capacitance (pF) | Tolerance | Thickness T (mm) | Part No. | |
|---------------------|------------|---------------------|---------------------------------|----------------------------------|
| | | | Temperature characteristics: JB | Temperature characteristics: X5R |
| 1,000,000 | $\pm 10\%$ | 0.85+0.15,-0.10 | C3216JB1E105K | C3216X5R1E105K |
| | $\pm 20\%$ | 0.85+0.15,-0.10 | C3216JB1E105M | C3216X5R1E105M |
| 1,500,000 | $\pm 10\%$ | 0.85+0.15,-0.10 | C3216JB1E155K | C3216X5R1E155K |
| | $\pm 20\%$ | 0.85+0.15,-0.10 | C3216JB1E155M | C3216X5R1E155M |
| 3,300,000 | $\pm 10\%$ | 0.85+0.15,-0.10 | C3216JB1E335K | C3216X5R1E335K |
| | $\pm 20\%$ | 0.85+0.15,-0.10 | C3216JB1E335M | C3216X5R1E335M |

RATED VOLTAGE E_{dc}: 16V

| Capacitance (pF) | Tolerance | Thickness T (mm) | Part No. | |
|---------------------|------------|---------------------|---------------------------------|----------------------------------|
| | | | Temperature characteristics: JB | Temperature characteristics: X5R |
| 1,000,000 | $\pm 10\%$ | 0.85 \pm 0.10 | C3216JB1C105K | C3216X5R1C105K |
| | $\pm 20\%$ | 0.85 \pm 0.10 | C3216JB1C105M | C3216X5R1C105M |
| 1,500,000 | $\pm 10\%$ | 0.85 \pm 0.10 | C3216JB1C155K | C3216X5R1C155K |
| | $\pm 20\%$ | 0.85 \pm 0.10 | C3216JB1C155M | C3216X5R1C155M |

RATED VOLTAGE E_{dc}: 10V

| Capacitance (pF) | Tolerance | Thickness T (mm) | Part No. | |
|---------------------|------------|---------------------|---------------------------------|----------------------------------|
| | | | Temperature characteristics: JB | Temperature characteristics: X5R |
| 2,200,000 | $\pm 10\%$ | 0.85 \pm 0.10 | C3216JB1A225K | C3216X5R1A225K |
| | $\pm 20\%$ | 0.85 \pm 0.10 | C3216JB1A225M | C3216X5R1A225M |
| 3,300,000 | $\pm 10\%$ | 0.85+0.15,-0.10 | C3216JB1A335K | C3216X5R1A335K |
| | $\pm 20\%$ | 0.85+0.15,-0.10 | C3216JB1A335M | C3216X5R1A335M |

RATED VOLTAGE E_{dc}: 6.3V

| Capacitance (pF) | Tolerance | Thickness T (mm) | Part No. | |
|---------------------|------------|---------------------|---------------------------------|----------------------------------|
| | | | Temperature characteristics: JB | Temperature characteristics: X5R |
| 10,000,000 | $\pm 10\%$ | 1.6 \pm 0.15 | C3216JB0J106K | C3216X5R0J106K |
| | $\pm 20\%$ | 1.6 \pm 0.15 | C3216JB0J106M | C3216X5R0J106M |
| 15,000,000 | $\pm 20\%$ | 1.6 \pm 0.15 | C3216JB0J156M | C3216X5R0J156M |
| 22,000,000 | $\pm 20\%$ | 0.85 \pm 0.10 | C3216JB0J226M | C3216X5R0J226M |
| 33,000,000 | $\pm 20\%$ | 1.30 \pm 0.15 | C3216JB0J336M | C3216X5R0J336M |
| 47,000,000 | $\pm 20\%$ | 1.6 \pm 0.15 | C3216JB0J476M | C3216X5R0J476M |

TEMPERATURE CHARACTERISTICS: X5R/X7R(±15%)

RATED VOLTAGE Edc: 16V

| Capacitance (pF) | Tolerance | Thickness T (mm) | Part No. | |
|---------------------|-----------|---------------------|----------------------------------|----------------------------------|
| | | | Temperature characteristics: X5R | Temperature characteristics: X7R |
| 3,300,000 | ±10% | 1.15±0.15 | C3216X5R1C335K | C3216X7R1C335K |
| | ±20% | 1.15±0.15 | C3216X5R1C335M | C3216X7R1C335M |
| 4,700,000 | ±10% | 1.6±0.15 | C3216X5R1C475K | C3216X7R1C475K |
| | ±20% | 1.6±0.15 | C3216X5R1C475M | C3216X7R1C475M |

TEMPERATURE CHARACTERISTICS: X5R(±15%)

RATED VOLTAGE Edc: 6.3V

| Capacitance (pF) | Tolerance | Thickness T (mm) | Part No. |
|---------------------|-----------|---------------------|----------------------------------|
| | | | Temperature characteristics: X5R |
| 15,000,000 | ±20% | 1.6±0.15 | C3216X5R0J156M |

TEMPERATURE CHARACTERISTICS: JF(+30, -80%), Y5V(+22, -82%)

RATED VOLTAGE Edc: 50V

| Capacitance (pF) | Tolerance | Thickness T (mm) | Part No. | |
|---------------------|-----------|---------------------|---------------------------------|----------------------------------|
| | | | Temperature characteristics: JF | Temperature characteristics: Y5V |
| 4,700,000 | +80,-20% | 1.6±0.15 | C3216JF1H475Z | C3216Y5V1H475Z |

RATED VOLTAGE Edc: 25V

| Capacitance (pF) | Tolerance | Thickness T (mm) | Part No. | |
|---------------------|-----------|---------------------|---------------------------------|----------------------------------|
| | | | Temperature characteristics: JF | Temperature characteristics: Y5V |
| 10,000,000 | +80,-20% | 1.6±0.15 | C3216JF1E106Z | C3216Y5V1E106Z |

RATED VOLTAGE Edc: 16V

| Capacitance (pF) | Tolerance | Thickness T (mm) | Part No. | |
|---------------------|-----------|---------------------|---------------------------------|----------------------------------|
| | | | Temperature characteristics: JF | Temperature characteristics: Y5V |
| 22,000,000 | +80,-20% | 1.6±0.20 | C3216JF1C226Z | C3216Y5V1C226Z |

RATED VOLTAGE Edc: 6.3V

| Capacitance (pF) | Tolerance | Thickness T (mm) | Part No. | |
|---------------------|-----------|---------------------|---------------------------------|----------------------------------|
| | | | Temperature characteristics: JF | Temperature characteristics: Y5V |
| 47,000,000 | +80,-20% | 1.6±0.15 | C3216JF0J476Z | C3216Y5V0J476Z |

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

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