

# Ceramic Capacitors

## For Smoothing SMD

## C Series

### FEATURES

- Providing capacitance values in the range of electrolytic types and long service life, this product is recommended for high-reliability power supply applications.
- Low ESR and excellent frequency characteristics make this capacitor a superior choice for high-frequency and high-density power supplies.

### APPLICATIONS

DC to DC converters, switching power supplies.

### PRODUCT IDENTIFICATION

C 3225 X7R 1E 105 M □  
(1) (2) (3) (4) (5) (6) (7)

(1) Series name

(2) Dimensions L×W

|      |           |
|------|-----------|
| 3225 | 3.2×2.5mm |
| 4532 | 4.5×3.2mm |
| 5750 | 5.7×5.0mm |

(3) Capacitance temperature characteristics

Class 2

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

(4) Rated voltage E<sub>dc</sub>

|    |      |
|----|------|
| 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.

R designates a decimal point.

|     |               |
|-----|---------------|
| 105 | 100000pF[1μF] |
|-----|---------------|

(6) Capacitance tolerance

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

(7) Packaging style

|   |               |
|---|---------------|
| T | Taping (reel) |
| B | Bulk          |

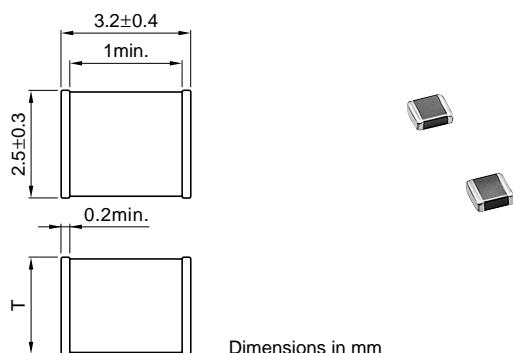
# Ceramic Capacitors

## For Smoothing

### SMD

## C Series

### C3225 (EIA:CC1210) TYPE SHAPES AND DIMENSIONS



### CAPACITANCE RANGES: CLASS 2 (TEMPERATURE STABLE) TEMPERATURE CHARACTERISTICS: X7R(±15%)

RATED VOLTAGE Edc: 50V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 470000             | ±10%      | 1.15±0.15      | C3225X7R1H474K |
|                    | ±20%      | 1.15±0.15      | C3225X7R1H474M |
| 680000             | ±10%      | 1.6±0.2        | C3225X7R1H684K |
|                    | ±20%      | 1.6±0.2        | C3225X7R1H684M |
| 1000000<br>[1µF]   | ±10%      | 1.6±0.2        | C3225X7R1H105K |
|                    | ±20%      | 1.6±0.2        | C3225X7R1H105M |
| 1500000<br>[1.5µF] | ±10%      | 2.0±0.2        | C3225X7R1H155K |
|                    | ±20%      | 2.0±0.2        | C3225X7R1H155M |

RATED VOLTAGE Edc: 25V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 1000000<br>[1µF]   | ±10%      | 1.15±0.15      | C3225X7R1E105K |
|                    | ±20%      | 1.15±0.15      | C3225X7R1E105M |
| 1500000<br>[1.5µF] | ±10%      | 1.15±0.15      | C3225X7R1E155K |
|                    | ±20%      | 1.15±0.15      | C3225X7R1E155M |
| 2200000<br>[2.2µF] | ±10%      | 1.6±0.2        | C3225X7R1E225K |
|                    | ±20%      | 1.6±0.2        | C3225X7R1E225M |
| 3300000<br>[3.3µF] | ±10%      | 1.6±0.2        | C3225X7R1E335K |
|                    | ±20%      | 1.6±0.2        | C3225X7R1E335M |
| 4700000<br>[4.7µF] | ±10%      | 2.0±0.2        | C3225X7R1E475K |
|                    | ±20%      | 2.0±0.2        | C3225X7R1E475M |

RATED VOLTAGE Edc: 16V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 3300000<br>[3.3µF] | ±10%      | 1.6±0.2        | C3225X7R1C335K |
|                    | ±20%      | 1.6±0.2        | C3225X7R1C335M |
| 4700000<br>[4.7µF] | ±10%      | 1.6±0.2        | C3225X7R1C475K |
|                    | ±20%      | 1.6±0.2        | C3225X7R1C475M |

### TEMPERATURE CHARACTERISTICS: X5R(±15%)

RATED VOLTAGE Edc: 10V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 4700000<br>[4.7µF] | ±10%      | 1.6±0.2        | C3225X5R1A475K |
|                    | ±20%      | 1.6±0.2        | C3225X5R1A475M |
| 6800000<br>[6.8µF] | ±10%      | 2.0±0.2        | C3225X5R1A685K |
|                    | ±20%      | 2.0±0.2        | C3225X5R1A685M |
| 10000000<br>[10µF] | ±20%      | 2.3±0.2        | C3225X5R1A106M |

RATED VOLTAGE Edc: 6.3V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 15000000<br>[15µF] | ±20%      | 2.0±0.2        | C3225X5R0J156M |
| 22000000<br>[22µF] | ±20%      | 2.5±0.3        | C3225X5R0J226M |

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

RATED VOLTAGE Edc: 50V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 4700000<br>[4.7µF] | +80, -20% | 1.6±0.2        | C3225Y5V1H475Z |

RATED VOLTAGE Edc: 25V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 4700000<br>[4.7µF] | +80, -20% | 1.6±0.2        | C3225Y5V1E475Z |
| 10000000<br>[10µF] | +80, -20% | 1.6±0.2        | C3225Y5V1E106Z |

RATED VOLTAGE Edc: 16V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 10000000<br>[10µF] | +80, -20% | 1.6±0.2        | C3225Y5V1C106Z |
| 22000000<br>[22µF] | +80, -20% | 2.0±0.2        | C3225Y5V1C226Z |

RATED VOLTAGE Edc: 10V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 22000000<br>[22µF] | +80, -20% | 2.0±0.2        | C3225Y5V1A226Z |
| 47000000<br>[47µF] | +80, -20% | 2.0±0.2        | C3225Y5V1A476Z |

- For more information about products with other capacitance or other data, please contact us.
- Please contact us for the capacitance tolerance ±10% products of 10µF min. with temperature characteristics B, X7R and X5R.

△ Specifications which provide more details for the proper and safe use of the described product are available upon request.  
All specifications are subject to change without notice.

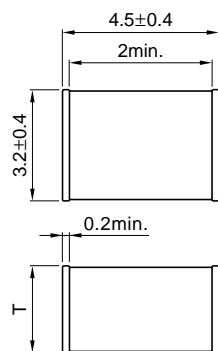
# Ceramic Capacitors

## For Smoothing

### SMD

## C Series

### C4532 (EIA:CC1812) TYPE SHAPES AND DIMENSIONS



Dimensions in mm

### CAPACITANCE RANGES:

#### CLASS 2 (TEMPERATURE STABLE)

#### TEMPERATURE CHARACTERISTICS: X7R(±15%)

RATED VOLTAGE E<sub>dc</sub>: 50V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 1000000<br>[1μF]   | ±10%      | 1.15±0.15      | C4532X7R1H105K |
|                    | ±20%      | 1.15±0.15      | C4532X7R1H105M |
| 1500000<br>[1.5μF] | ±10%      | 1.6±0.2        | C4532X7R1H155K |
|                    | ±20%      | 1.6±0.2        | C4532X7R1H155M |
| 2200000<br>[2.2μF] | ±10%      | 1.6±0.2        | C4532X7R1H225K |
|                    | ±20%      | 1.6±0.2        | C4532X7R1H225M |
| 3300000<br>[3.3μF] | ±10%      | 2.0±0.2        | C4532X7R1H335K |
|                    | ±20%      | 2.0±0.2        | C4532X7R1H335M |

RATED VOLTAGE E<sub>dc</sub>: 25V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 3300000<br>[3.3μF] | ±10%      | 1.6±0.2        | C4532X7R1E335K |
|                    | ±20%      | 1.6±0.2        | C4532X7R1E335M |
| 4700000<br>[4.7μF] | ±10%      | 1.6±0.2        | C4532X7R1E475K |
|                    | ±20%      | 1.6±0.2        | C4532X7R1E475M |
| 6800000<br>[6.8μF] | ±10%      | 2.0±0.2        | C4532X7R1E685K |
|                    | ±20%      | 2.0±0.2        | C4532X7R1E685M |
| 10000000<br>[10μF] | ±20%      | 2.5±0.3        | C4532X7R1E106M |

RATED VOLTAGE E<sub>dc</sub>: 16V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 4700000<br>[4.7μF] | ±10%      | 1.6±0.2        | C4532X7R1C475K |
|                    | ±20%      | 1.6±0.2        | C4532X7R1C475M |
| 6800000<br>[6.8μF] | ±10%      | 1.6±0.2        | C4532X7R1C685K |
|                    | ±20%      | 1.6±0.2        | C4532X7R1C685M |
| 10000000<br>[10μF] | ±20%      | 2.3±0.2        | C4532X7R1C106M |

### TEMPERATURE CHARACTERISTICS: X5R(±15%)

RATED VOLTAGE E<sub>dc</sub>: 25V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 15000000<br>[15μF] | ±20%      | 2.8±0.3        | C4532X5R1E156M |

RATED VOLTAGE E<sub>dc</sub>: 16V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 22000000<br>[22μF] | ±20%      | 2.3±0.2        | C4532X5R1C226M |

RATED VOLTAGE E<sub>dc</sub>: 10V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 22000000<br>[22μF] | ±20%      | 1.6±0.2        | C4532X5R1A226M |
| 33000000<br>[33μF] | ±20%      | 2.3±0.2        | C4532X5R1A336M |

RATED VOLTAGE E<sub>dc</sub>: 6.3V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 47000000<br>[47μF] | ±20%      | 2.5±0.3        | C4532X5R0J476M |

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

RATED VOLTAGE E<sub>dc</sub>: 50V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 10000000<br>[10μF] | +80, -20% | 2.0±0.2        | C4532Y5V1H106Z |

RATED VOLTAGE E<sub>dc</sub>: 25V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 22000000<br>[22μF] | +80, -20% | 2.0±0.2        | C4532Y5V1E226Z |

RATED VOLTAGE E<sub>dc</sub>: 16V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 47000000<br>[47μF] | +80, -20% | 2.5±0.3        | C4532Y5V1C476Z |

RATED VOLTAGE E<sub>dc</sub>: 10V

| Capacitance (pF)     | Tolerance | Thickness (mm) | Part No.       |
|----------------------|-----------|----------------|----------------|
| 100000000<br>[100μF] | +80, -20% | 2.5±0.3        | C4532Y5V1A107Z |

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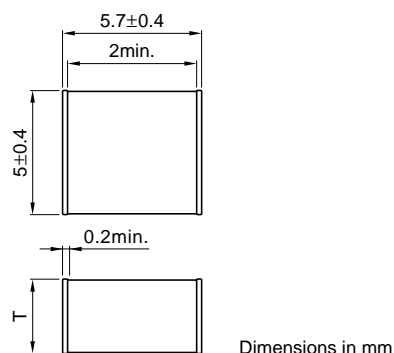
# Ceramic Capacitors

## For Smoothing

### SMD

## C Series

### C5750 (EIA:CC2220) TYPE SHAPES AND DIMENSIONS



### CAPACITANCE RANGES:

#### CLASS 2 (TEMPERATURE STABLE)

#### TEMPERATURE CHARACTERISTICS: X7R(±15%)

RATED VOLTAGE E<sub>dc</sub>: 50V

| Capacitance (pF)    | Tolerance | Thickness (mm) | Part No.       |
|---------------------|-----------|----------------|----------------|
| 22000000<br>[2.2μF] | ±10%      | 1.6±0.2        | C5750X7R1H225K |
|                     | ±20%      | 1.6±0.2        | C5750X7R1H225M |
| 33000000<br>[3.3μF] | ±10%      | 1.6±0.2        | C5750X7R1H335K |
|                     | ±20%      | 1.6±0.2        | C5750X7R1H335M |
| 47000000<br>[4.7μF] | ±10%      | 2.0±0.2        | C5750X7R1H475K |
|                     | ±20%      | 2.0±0.2        | C5750X7R1H475M |
| 68000000<br>[6.8μF] | ±10%      | 2.5±0.3        | C5750X7R1H685K |
|                     | ±20%      | 2.5±0.3        | C5750X7R1H685M |

RATED VOLTAGE E<sub>dc</sub>: 25V

| Capacitance (pF)    | Tolerance | Thickness (mm) | Part No.       |
|---------------------|-----------|----------------|----------------|
| 68000000<br>[6.8μF] | ±10%      | 1.6±0.2        | C5750X7R1E685K |
|                     | ±20%      | 1.6±0.2        | C5750X7R1E685M |
| 10000000<br>[10μF]  | ±20%      | 2.0±0.2        | C5750X7R1E106M |
| 15000000<br>[15μF]  | ±20%      | 2.3±0.2        | C5750X7R1E156M |
| 22000000<br>[22μF]  | ±20%      | 2.5±0.3        | C5750X7R1E226M |

RATED VOLTAGE E<sub>dc</sub>: 16V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 15000000<br>[15μF] | ±20%      | 2.0±0.2        | C5750X7R1C156M |
| 22000000<br>[22μF] | ±20%      | 2.3±0.2        | C5750X7R1C226M |

#### TEMPERATURE CHARACTERISTICS: X5R(±15%)

RATED VOLTAGE E<sub>dc</sub>: 50V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 10000000<br>[10μF] | ±20%      | 2.3±0.2        | C5750X5R1H106M |

RATED VOLTAGE E<sub>dc</sub>: 25V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 22000000<br>[22μF] | ±20%      | 2.3±0.2        | C5750X5R1E226M |

RATED VOLTAGE E<sub>dc</sub>: 16V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 33000000<br>[33μF] | ±20%      | 2.0±0.2        | C5750X5R1C336M |
| 47000000<br>[47μF] | ±20%      | 2.3±0.2        | C5750X5R1C476M |

RATED VOLTAGE E<sub>dc</sub>: 10V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 68000000<br>[68μF] | ±20%      | 2.3±0.2        | C5750X5R1A686M |

RATED VOLTAGE E<sub>dc</sub>: 6.3V

| Capacitance (pF)     | Tolerance | Thickness (mm) | Part No.       |
|----------------------|-----------|----------------|----------------|
| 100000000<br>[100μF] | ±20%      | 2.8±0.3        | C5750X5R0J107M |

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

RATED VOLTAGE E<sub>dc</sub>: 50V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 22000000<br>[22μF] | +80, -20% | 2.0±0.2        | C5750Y5V1H226Z |

RATED VOLTAGE E<sub>dc</sub>: 25V

| Capacitance (pF)   | Tolerance | Thickness (mm) | Part No.       |
|--------------------|-----------|----------------|----------------|
| 47000000<br>[47μF] | +80, -20% | 2.0±0.2        | C5750Y5V1E476Z |

RATED VOLTAGE E<sub>dc</sub>: 16V

| Capacitance (pF)     | Tolerance | Thickness (mm) | Part No.       |
|----------------------|-----------|----------------|----------------|
| 100000000<br>[100μF] | +80, -20% | 2.5±0.3        | C5750Y5V1C107Z |

RATED VOLTAGE E<sub>dc</sub>: 10V

| Capacitance (pF)     | Tolerance | Thickness (mm) | Part No.       |
|----------------------|-----------|----------------|----------------|
| 100000000<br>[100μF] | +80, -20% | 2.5±0.3        | C5750Y5V1A107Z |

- For more information about products with other capacitance or other data, please contact us.
- Please contact us for the capacitance tolerance ±10% products of 10μF min. with temperature characteristics B, X7R and X5R.

⚠ Specifications which provide more details for the proper and safe use of the described product are available upon request.  
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