

**CONTENT (MLCC)**

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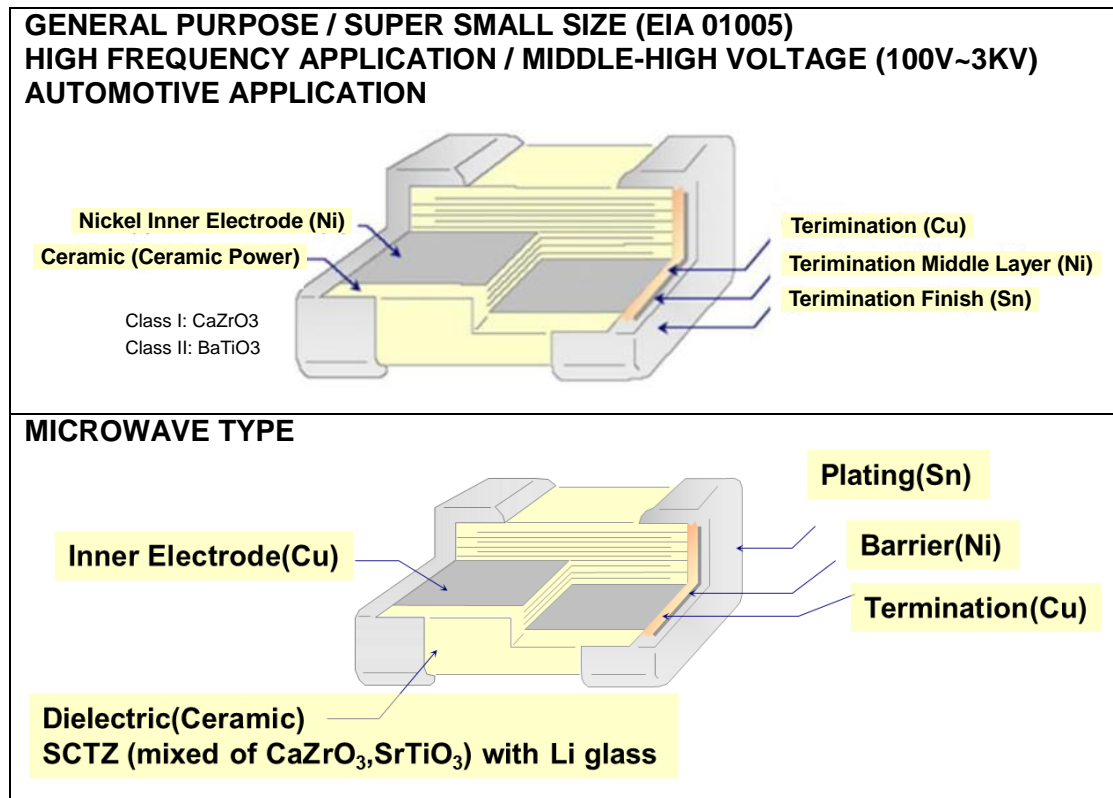
**MLCC**

**E Standard Number**

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| E3  | 1.0 |     |     |     |     |     | 2.2 |     |     |     |     |     | 4.7 |     |     |     |     |     |     |     |     |     |     |     |
| E6  | 1.0 |     |     | 1.5 |     |     | 2.2 |     |     | 3.3 |     |     | 4.7 |     |     | 6.8 |     |     |     |     |     |     |     |     |
| E12 | 1.0 | 1.2 | 1.5 | 1.8 | 2.2 | 2.7 | 3.3 | 3.9 | 4.7 | 5.6 | 6.8 | 8.2 |     |     |     |     |     |     |     |     |     |     |     |     |
| E24 | 1.0 | 1.1 | 1.2 | 1.3 | 1.5 | 1.6 | 1.8 | 2.0 | 2.2 | 2.4 | 2.7 | 3.0 | 3.3 | 3.6 | 3.9 | 4.3 | 4.7 | 5.1 | 5.6 | 6.2 | 6.8 | 7.5 | 8.2 | 9.1 |

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## Structure



## Ordering Code

**C I005 NP0 I01 J G T S Δ**

PRODUCT CODE

C = MLCC

SIZE in mm (EIA CODE, in inch)

0402(01005) 0603(0201) I005 (0402) I608 (0603) 2012 (0805)  
3216 (1206) 3225(1210) 4520 (1808) 4532 (1812)

T. C.

NP0: 0 ± 30ppm/°C -55°C to +125°C X5R: ±15% -55°C to +85°C  
X7R: ±15% X7S:±22% X7T: +22%/-33% X7U: +22%/-56% -55°C to +125°C  
X6S: ±22% -55°C to +105°C

CAPACITANCE CODE

Expressed in pico-farads and identified by a three-digit number.  
First two digits represent significant figures.  
Last digit specifies the number of zeros.  
(Use 9 for 1.0 through 9.9pF ; Use 8 for 0.20 through 0.99pF)

Examples:

| Code | Cap (pF) |
|------|----------|
| 478  | 0.47     |
| 229  | 2.2      |
| 101  | 100      |
| 102  | 1000     |

TOLERANCE CODE

A: ± 0.05pF B: ± 0.1pF C: ± 0.25pF D: ± 0.5pF F: ±1% G: ±2%  
J: ±5% K: ±10% M: ±20%

VOLTAGE CODE

B: 4V C: 6.3V D:10V E:16V F: 25V N: 35V G: 50V H:100V  
J: 200V K: 250V L: 500V M: 630V P:1KV Q: 2KV R: 3KV S: 4KV

PACKAGING CODE

T: Paper tape reel Ø180mm (7") P: Embossed tape reel Ø180mm (7")  
N: Paper tape reel Ø250mm (10") D: Embossed tape reel Ø250mm (10")  
A: Paper tape reel Ø330mm (13") E: Embossed tape reel Ø330mm (13")  
W: Special Packing

Application Code

S: Standard Q: High Q/Low ESR F: Microwave A: Automotive Infotainment with AEC-Q200  
H: Microwave with AEC-Q200 B: Soft termination with AEC-Q200

Thickness Code

| Code    | Thick (mm)     | Code | Thick(mm) | Code | Thick (mm) | Code | Thick (mm) |
|---------|----------------|------|-----------|------|------------|------|------------|
| (blank) | Standard Thick | M    | 0.70      | G    | 1.25       | S    | 1.90       |
| Z       | 0.20           | D    | 0.80      | H    | 1.50       | --   | --         |
| A       | 0.30           | E    | 0.85      | L    | 1.60       | --   | --         |
| Q       | 0.45           | I    | 0.95      | N    | 2.00       | --   | --         |
| B       | 0.50           | J    | 1.00      | P    | 2.50       | --   | --         |
| C       | 0.60           | F    | 1.15      | R    | 3.20       | --   | --         |

## Product Range

- General Purpose (Class I: Temperature Compensating Type)
- NP0 Series

| Series     | Size (inch) | Capacitance Range (F) |       |      |       |       |      |       |       |
|------------|-------------|-----------------------|-------|------|-------|-------|------|-------|-------|
|            |             | 0.1pF                 | 1pF   | 10pF | 100pF | 1nF   | 10nF | 100nF |       |
| C0603NP0_S | 0201        |                       | 0.2pF |      |       | 1nF   |      |       |       |
| C1005NP0_S | 0402        |                       | 0.2pF |      |       | 2.2nF |      |       |       |
| C1608NP0_S | 0603        |                       | 0.3pF |      |       |       | 10nF |       |       |
| C2012NP0_S | 0805        |                       |       | 10pF |       |       |      | 22nF  |       |
| C3216NP0_S | 1206        |                       |       | 10pF |       |       |      |       | 100nF |

- X8G Series

| Series     | Size (inch) | Capacitance Range (F) |     |      |       |     |      |       |  |
|------------|-------------|-----------------------|-----|------|-------|-----|------|-------|--|
|            |             | 0.1pF                 | 1pF | 10pF | 100pF | 1nF | 10nF | 100nF |  |
| C1005X8G_S | 0402        |                       |     |      | 100pF | 1nF |      |       |  |
| C1608X8G_S | 0603        |                       |     |      | 100pF | 1nF |      |       |  |

- General Purpose (Class II: High Dielectric Constant Type)

- X5R Series

| Series     | Size (inch) | Capacitance Range (F) |     |       |       |       |       |       |       |
|------------|-------------|-----------------------|-----|-------|-------|-------|-------|-------|-------|
|            |             | 100pF                 | 1nF | 10nF  | 100nF | 1uF   | 10uF  | 100uF | 220uF |
| C0603X5R_S | 0201        |                       |     | 2.2nF |       |       | 4.7uF |       |       |
| C1005X5R_S | 0402        |                       |     | 10nF  |       |       |       | 22uF  |       |
| C1608X5R_S | 0603        |                       |     |       | 33nF  |       |       | 47uF  |       |
| C2012X5R_S | 0805        |                       |     |       |       | 470nF | 2.2uF |       | 100uF |
| C3216X5R_S | 1206        |                       |     |       |       | 1uF   |       |       | 220uF |
| C3225X5R_S | 1210        |                       |     |       |       |       | 4.7uF |       | 220uF |

- X6S Series

| Series     | Size (inch) | Capacitance Range (F) |     |      |       |     |       |       |       |
|------------|-------------|-----------------------|-----|------|-------|-----|-------|-------|-------|
|            |             | 100pF                 | 1nF | 10nF | 100nF | 1uF | 10uF  | 100uF | 220uF |
| C0603X6S_S | 0201        |                       |     |      | 100nF |     | 2.2uF |       |       |
| C1005X6S_S | 0402        |                       |     |      |       | 1uF | 10uF  |       |       |
| C1608X6S_S | 0603        |                       |     |      |       | 1uF | 10uF  |       |       |
| C2012X6S_S | 0805        |                       |     |      |       |     | 2.2uF | 22uF  |       |
| C3216X6S_S | 1206        |                       |     |      |       |     | 10uF  | 47uF  |       |
| C3225X6S_S | 1210        |                       |     |      |       |     | 10uF  |       | 100uF |

- X7R Series

| Series     | Size (inch) | Capacitance Range (F) |       |      |       |       |       |       |       |
|------------|-------------|-----------------------|-------|------|-------|-------|-------|-------|-------|
|            |             | 100pF                 | 1nF   | 10nF | 100nF | 1uF   | 10uF  | 100uF | 220uF |
| C0603X7R_S | 0201        | 100pF                 |       |      |       | 220nF |       |       |       |
| C1005X7R_S | 0402        | 100pF                 |       |      |       |       | 2.2uF |       |       |
| C1608X7R_S | 0603        | 100pF                 |       |      |       |       |       | 10uF  |       |
| C2012X7R_S | 0805        | 100pF                 |       |      |       |       |       |       | 22uF  |
| C3216X7R_S | 1206        |                       | 220nF |      |       |       |       |       | 22uF  |
| C3225X7R_S | 1210        |                       |       |      |       |       | 2.2uF |       | 47uF  |

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- X7S Series  
Please refer “Part Number & Characteristic” of “General Purpose”.
- X7T Series  
Please refer “Part Number & Characteristic” of “General Purpose”.
- X7U Series  
Please refer “Part Number & Characteristic” of “General Purpose”.
- Super Small Size(EIA 01005)  
Please refer “Part Number & Characteristic” of “Super Small Size”.

■ High Frequency Application

| Series     | Size (inch) | Capacitance Range (F) |       |      |       |  |  |  |  |
|------------|-------------|-----------------------|-------|------|-------|--|--|--|--|
|            |             | 0.1pF                 | 1pF   | 10pF | 100pF |  |  |  |  |
| C0603NP0_Q | 0201        |                       | 0.2pF | 10pF |       |  |  |  |  |
| C1005NP0_Q | 0402        |                       | 0.2pF |      | 33pF  |  |  |  |  |
| C1608NP0_Q | 0603        |                       | 0.3pF |      | 22pF  |  |  |  |  |

■ Middle-High Voltage

● NP0 Series

| Series     | Size (inch) | Capacitance Range (F) |       |      |       |       |       |       |  |
|------------|-------------|-----------------------|-------|------|-------|-------|-------|-------|--|
|            |             | 0.1pF                 | 1pF   | 10pF | 100pF | 1nF   | 10nF  | 100nF |  |
| C0603NP0_S | 0201        |                       | 0.2pF |      |       | 220pF |       |       |  |
| C1005NP0_S | 0402        |                       | 0.2pF |      |       | 1nF   |       |       |  |
| C1608NP0_S | 0603        |                       | 0.3pF |      |       |       | 2.2nF |       |  |
| C2012NP0_S | 0805        |                       |       | 10pF |       | 3.3nF |       |       |  |
| C3216NP0_S | 1206        |                       |       | 10pF |       |       |       | 100nF |  |

● X7R Series

| Series     | Size (inch) | Capacitance Range (F) |     |      |       |     |       |       |       |
|------------|-------------|-----------------------|-----|------|-------|-----|-------|-------|-------|
|            |             | 100pF                 | 1nF | 10nF | 100nF | 1uF | 10uF  | 100uF | 220uF |
| C1005X7R_S | 0402        | 100pF                 |     | 10nF |       |     |       |       |       |
| C1608X7R_S | 0603        | 100pF                 |     |      | 100nF |     |       |       |       |
| C2012X7R_S | 0805        | 100pF                 |     |      |       | 1uF |       |       |       |
| C3216X7R_S | 1206        | 100pF                 | 1nF |      |       |     | 4.7uF |       |       |
| C3225X7R_S | 1210        |                       | 1nF |      |       |     | 4.7uF |       |       |

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■ Microwave Type

| Series     | Size (inch) | Capacitance Range (F) |       |      |       |       |      |       |  |
|------------|-------------|-----------------------|-------|------|-------|-------|------|-------|--|
|            |             | 0.1pF                 | 1pF   | 10pF | 100pF | 1nF   | 10nF | 100nF |  |
| C0402NP0_F | 01005       |                       | 0.2pF |      | 22pF  |       |      |       |  |
| C0603NP0_F | 0201        |                       | 0.2pF |      | 33pF  |       |      |       |  |
| C1005NP0_F | 0402        |                       | 0.2pF |      | 100pF |       |      |       |  |
| C1608NP0_F | 0603        |                       | 0.3pF |      | 100pF |       |      |       |  |
| C2012NP0_F | 0805        |                       | 0.5pF |      |       | 150pF |      |       |  |

■ Automotive Application

● NP0 Series

| Series     | Size (inch) | Capacitance Range (F) |       |      |       |       |       |       |  |
|------------|-------------|-----------------------|-------|------|-------|-------|-------|-------|--|
|            |             | 0.1pF                 | 1pF   | 10pF | 100pF | 1nF   | 10nF  | 100nF |  |
| C0603NP0_A | 0201        |                       | 0.2pF |      |       | 220pF |       |       |  |
| C1005NP0_A | 0402        |                       | 0.2pF |      |       |       | 1.5nF |       |  |
| C1608NP0_A | 0603        |                       | 0.3pF |      |       |       |       | 10nF  |  |
| C2012NP0_A | 0805        |                       | 0.5pF |      |       |       | 1nF   | 10nF  |  |
| C3216NP0_A | 1206        |                       |       |      | 100pF |       |       | 10nF  |  |

Microwave Type

| Series     | Size (inch) | Capacitance Range (F) |       |      |       |      |      |       |  |
|------------|-------------|-----------------------|-------|------|-------|------|------|-------|--|
|            |             | 0.1pF                 | 1pF   | 10pF | 100pF | 1nF  | 10nF | 100nF |  |
| C0603NP0_H | 0201        |                       | 0.2pF |      | 100pF |      |      |       |  |
| C1005NP0_H | 0402        |                       | 0.2pF |      | 100pF |      |      |       |  |
| C1608NP0_H | 0603        |                       | 0.3pF |      | 100pF |      |      |       |  |
| C2012NP0_H | 0805        |                       | 0.5pF |      |       | 150F |      |       |  |

● X7R Series







| Series     | Size (inch) | Capacitance Range (F) |     |      |       |       |       |       |       |
|------------|-------------|-----------------------|-----|------|-------|-------|-------|-------|-------|
|            |             | 100pF                 | 1nF | 10nF | 100nF | 1uF   | 10uF  | 100uF | 220uF |
| C0603X7R_A | 0201        | 100pF                 |     |      | 100nF |       |       |       |       |
| C1005X7R_A | 0402        | 100pF                 |     |      |       | 220nF |       |       |       |
| C1608X7R_A | 0603        | 100pF                 |     |      |       |       | 2.2uF |       |       |
| C2012X7R_A | 0805        |                       | 1nF |      |       |       | 4.7uF |       |       |

● X8R Series

| Series     | Size (inch) | Capacitance Range (F) |     |      |       |     |      |       |       |
|------------|-------------|-----------------------|-----|------|-------|-----|------|-------|-------|
|            |             | 100pF                 | 1nF | 10nF | 100nF | 1uF | 10uF | 100uF | 220uF |
| C1005X7R_A | 0402        |                       | 1nF |      | 100nF |     |      |       |       |
| C1608X7R_A | 0603        |                       | 1nF |      | 100nF |     |      |       |       |

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**Catalogue Series**

|   |  |
|---|--|
| <p>General Purpose</p>  <p>Darfon-General Purpose</p>      | <p>Middle-High Voltage(100V~3KV)</p>  <p>Darfon-M-H voltage</p>      |
| <p>Microwave Type (F Series)</p>  <p>Darfon-Microwave</p> | <p>High Q &amp; Low ESR Type (Q Series)</p>  <p>Darfon-Q Series</p> |
| <p>Automotive Application</p>  <p>Darfon-Automotive</p>  | <p>Super small size(EIA 01005)</p>  <p>Darfon-Super Small Size</p> |