

# DATA SHEET

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## **Mono-axial™ series Leaded ceramic multilayer capacitors**

Product specification  
Supersedes data of 24th October 2001  
File under BCcomponents, BC06

2002 Sep 10

## Leaded ceramic multilayer capacitors

## Mono-axial™ series

### FEATURES

- High capacitance per unit volume
- Low cost.

### APPLICATIONS

These conformally coated axial leaded capacitors are designed for commercial and industrial applications in four dielectrics, NPO (ultra-stable), X7R (stable) and Z5U, Y5V (general purpose). Applications include timing, coupling/decoupling, signal comparison and biasing. Mono-axial™ capacitors are suitable for automatic insertion equipment.

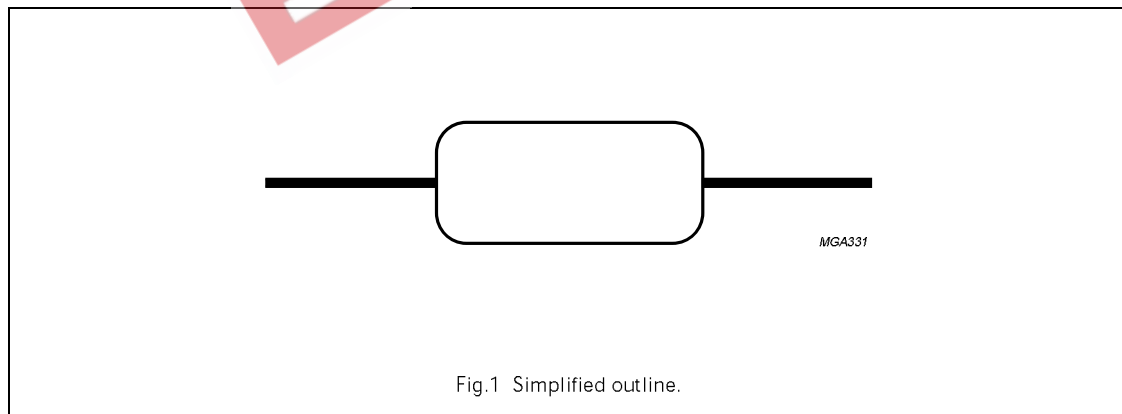
### DESCRIPTION

The basic capacitor construction consists of ceramic dielectric materials processed into a tape with a typical thickness range from 0.025 to 0.076 mm. Metal electrode patterns are applied using a thick film screening process. Multiple layers are stacked and laminated in such a manner that electrodes are alternately exposed when the pattern is cut into individual chip capacitors. The capacitors are fired through a high temperature profile to mature the ceramic and metal into a homogeneous unit.

Metal end terminations are applied and fired to provide electrical connection between the individual layers. Tinned leads are attached using a solder. Encapsulation consists of a moisture resistant gold colour conformal epoxy coating that meets the flame requirements of "UL94V-0".

### QUICK REFERENCE DATA

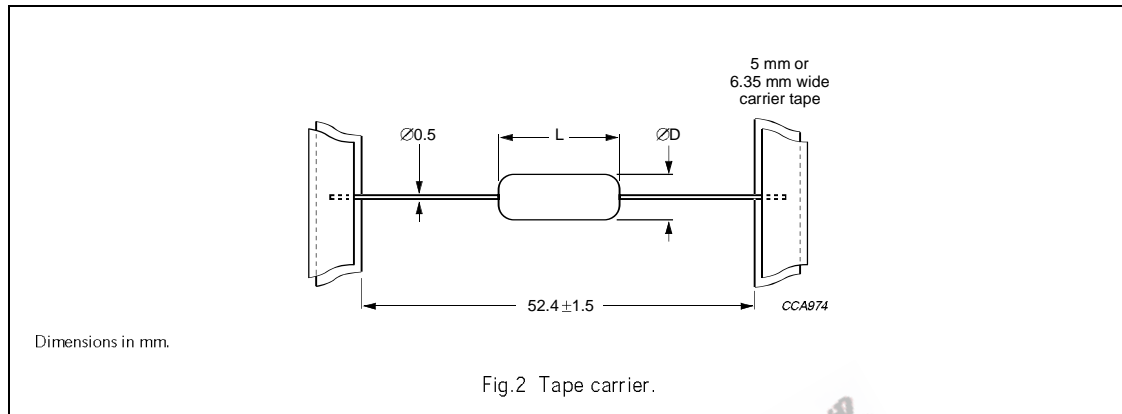
| DESCRIPTION              | VALUE             |                   |                   |                   |                   |                   |                   |                   |
|--------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                          | 2252<br>205 ..... | 2252<br>206 ..... | 2252<br>225 ..... | 2252<br>226 ..... | 2252<br>245 ..... | 2252<br>246 ..... | 2252<br>262 ..... | 2252<br>265 ..... |
| Capacitance range        | 10 to 5600 pF     |                   | 100 pF to 0.22 μF |                   | 1000 pF to 1.0 μF |                   | 0.01 to 1.0 μF    |                   |
| Rated DC voltage         | 50 V              | 100 V             | 50 V              | 100 V             | 50 V              | 100 V             | 25 V              | 50 V              |
| Tolerance on capacitance | ±5%               |                   | ±10%              |                   | ±20%              |                   | +80%/−20%         |                   |
| Temperature coefficient  | NPO               |                   | X7R               |                   | Z5U               |                   | Y5V               |                   |



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### MECHANICAL DATA



### Marking (see Fig.3)

#### Date code (DDD):

Three-digit code; first digit denotes year, last two denote week of manufacture.

941 = 1999, wk 41

#### Capacitance value (CCC):

10 pF to 99 pF; actual value in pF (2 digits only)

100 pF and above; coded capacitance value (same as used in P/N).

#### Capacitance tolerance (T):

Standard EIA tolerance (same as used in P/N).

#### Material code (M):

A = C0G

C = X7R

E = Z5U

Y = Y5V.

#### Voltage code (V):

1 = 100 V

3 = 25 V

5 = 50 V.

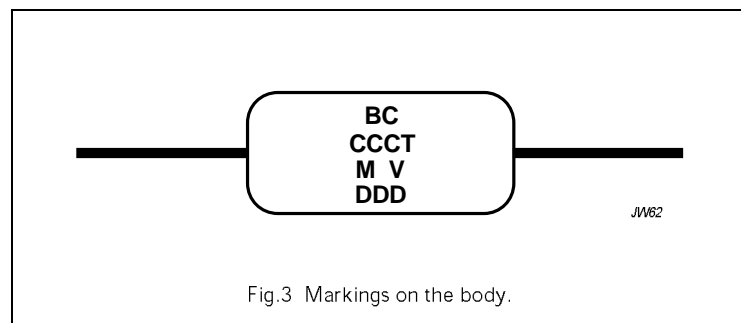
### Physical dimensions

Table 1 Capacitor dimensions and mass

| SIZE | $L_{max}^{(1)}$<br>(mm) | $\varnothing D_{max}^{(1)}$<br>(mm) | MASS<br>(g) |
|------|-------------------------|-------------------------------------|-------------|
| 15   | 3.8<br>(0.150)          | 2.5<br>(0.100)                      | ≈0.14       |
| 20   | 5.0<br>(0.200)          | 3.0<br>(0.120)                      | ≈0.14       |

#### Note

- Dimensions between parentheses are in inches.



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**CAPACITANCE RANGE CHARTS**

**NPO Dielectric**

| CAP.    | SIZE CODE 15 |       | SIZE CODE 20 |       |
|---------|--------------|-------|--------------|-------|
|         | 50 V         | 100 V | 50 V         | 100 V |
| 10 pF   |              |       |              |       |
| 12      |              |       |              |       |
| 15      |              |       |              |       |
| 18      |              |       |              |       |
| 22      |              |       |              |       |
| 27      |              |       |              |       |
| 33      |              |       |              |       |
| 39      |              |       |              |       |
| 47      |              |       |              |       |
| 56      |              |       |              |       |
| 68      |              |       |              |       |
| 82      |              |       |              |       |
| 100     |              |       |              |       |
| 120     |              |       |              |       |
| 150     |              |       |              |       |
| 180     |              |       |              |       |
| 220     |              |       |              |       |
| 270     |              |       |              |       |
| 330     |              |       |              |       |
| 390     |              |       |              |       |
| 470     |              |       |              |       |
| 560     |              |       |              |       |
| 680     |              |       |              |       |
| 820     |              |       |              |       |
| 1000    |              |       |              |       |
| 1200    |              |       |              |       |
| 1500    |              |       |              |       |
| 1800    |              |       |              |       |
| 2200    |              |       |              |       |
| 2700    |              |       |              |       |
| 3300    |              |       |              |       |
| 3900    |              |       |              |       |
| 4700    |              |       |              |       |
| 5600    |              |       |              |       |
| 6800    |              |       |              |       |
| 8200    |              |       |              |       |
| 0.01 μF |              |       |              |       |

**X7R Dielectric**

| CAP.       | SIZE CODE 15 |       | SIZE CODE 20 |       |
|------------|--------------|-------|--------------|-------|
|            | 50 V         | 100 V | 50 V         | 100 V |
| 100-220 pF |              |       |              |       |
| 270        |              |       |              |       |
| 330        |              |       |              |       |
| 390        |              |       |              |       |
| 470        |              |       |              |       |
| 560        |              |       |              |       |
| 680        |              |       |              |       |
| 820        |              |       |              |       |
| 1000       |              |       |              |       |
| 1200       |              |       |              |       |
| 1500       |              |       |              |       |
| 1800       |              |       |              |       |
| 2200       |              |       |              |       |
| 2700       |              |       |              |       |
| 3300       |              |       |              |       |
| 3900       |              |       |              |       |
| 4700       |              |       |              |       |
| 5600       |              |       |              |       |
| 6800       |              |       |              |       |
| 8200       |              |       |              |       |
| 0.01 μF    |              |       |              |       |
| 0.012      |              |       |              |       |
| 0.015      |              |       |              |       |
| 0.018      |              |       |              |       |
| 0.022      |              |       |              |       |
| 0.027      |              |       |              |       |
| 0.033      |              |       |              |       |
| 0.039      |              |       |              |       |
| 0.047      |              |       |              |       |
| 0.056      |              |       |              |       |
| 0.068      |              |       |              |       |
| 0.082      |              |       |              |       |
| 0.10       |              |       |              |       |
| 0.12       |              |       |              |       |
| 0.15       |              |       |              |       |
| 0.22       |              |       |              |       |

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### Z5U Dielectric

| CAP.         | SIZE CODE 15 |       | SIZE CODE 20 |       |
|--------------|--------------|-------|--------------|-------|
|              | 50 V         | 100 V | 50 V         | 100 V |
| 1000 pF      |              |       |              |       |
| 1500         |              |       |              |       |
| 2200         |              |       |              |       |
| 3300         |              |       |              |       |
| 4700         |              |       |              |       |
| 6800         |              |       |              |       |
| 0.01 $\mu$ F |              |       |              |       |
| 0.015        |              |       |              |       |
| 0.022        |              |       |              |       |
| 0.033        |              |       |              |       |
| 0.047        |              |       |              |       |
| 0.068        |              |       |              |       |
| 0.10         |              |       |              |       |
| 0.15         |              |       |              |       |
| 0.22         |              |       |              |       |
| 0.33         |              |       |              |       |
| 0.47         |              |       |              |       |
| 0.68         |              |       |              |       |
| 1.0          |              |       |              |       |

### Y5V Dielectric

| CAP.         | SIZE CODE 15 |      | SIZE CODE 20 |      |
|--------------|--------------|------|--------------|------|
|              | 25 V         | 50 V | 25 V         | 50 V |
| 0.01 $\mu$ F |              |      |              |      |
| 0.015        |              |      |              |      |
| 0.022        |              |      |              |      |
| 0.033        |              |      |              |      |
| 0.047        |              |      |              |      |
| 0.068        |              |      |              |      |
| 0.10         |              |      |              |      |
| 0.15         |              |      |              |      |
| 0.22         |              |      |              |      |
| 0.33         |              |      |              |      |
| 0.47         |              |      |              |      |
| 0.68         |              |      |              |      |
| 1.0          |              |      |              |      |

## Leaded ceramic multilayer capacitors

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### ORDERING INFORMATION

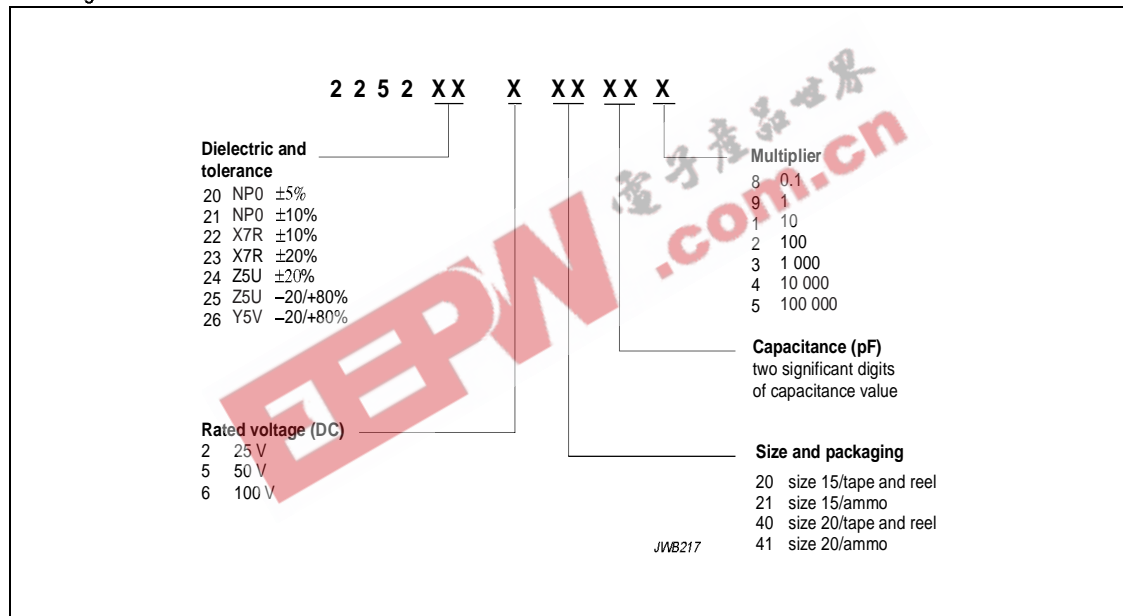
Components may be ordered by using either a simple 15-digit clear text code, or BCcomponents 12NC.

#### Clear text code

EXAMPLE: A103K15X7RF5TAA

| PRODUCT TYPE   | CAPACITANCE (pF)  | TOLERANCE  | SIZE CODE (mm)                                 | DIELECTRIC                     | RATED VOLTAGE                     | LEAD DIA. (mm)        | PACKAGING                          |
|----------------|---|--|--|--------------------------------|-----------------------------------|-----------------------|------------------------------------|
| A = mono-axial | two significant digits followed by the number of zeros:<br>101 = 100<br>103 = 10000 | J = ±5%<br>K = ±10%<br>M = ±20%<br>Z = +80%/-20% | 15 = 3.8 (.150") max.<br>20 = 5.0 (.200") max. | COG (NP0)<br>X7R<br>Z5U<br>Y5V | E = 25 V<br>F = 50 V<br>H = 100 V | 5 = 0.5 (0.020") max. | TAA = tape & reel<br>UAA = ammpack |

#### Ordering code 12NC



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**Table 2** Capacitance, rated voltage, mechanical dimensions and ordering information

| C                              | U <sub>R(DC)</sub><br>(V) | SIZE<br>CODE | CLEAR TEXT CODE | CATALOGUE NUMBER |
|--------------------------------|---------------------------|--------------|-----------------|------------------|
| <b>NPO (C0G) ±5% tolerance</b> |                           |              |                 |                  |
| 10 pF                          | 50                        | 15           | A100J15C0GF5UAA | 2252 205 21109   |
|                                | 100                       | 15           | A100J15C0GH5UAA | 2252 206 21109   |
| 12 pF                          | 50                        | 15           | A120J15C0GF5UAA | 2252 205 21129   |
| 15 pF                          | 50                        | 15           | A150J15C0GF5UAA | 2252 205 21159   |
| 18 pF                          | 50                        | 15           | A180J15C0GF5UAA | 2252 205 21189   |
| 22 pF                          | 50                        | 15           | A220J15C0GF5UAA | 2252 205 21229   |
|                                | 100                       | 15           | A220J15C0GH5UAA | 2252 206 21229   |
| 27 pF                          | 50                        | 15           | A270J15C0GF5UAA | 2252 205 21279   |
| 33 pF                          | 50                        | 15           | A330J15C0GF5UAA | 2252 205 21339   |
| 39 pF                          | 50                        | 15           | A390J15C0GF5UAA | 2252 205 21399   |
| 47 pF                          | 50                        | 15           | A470J15C0GF5UAA | 2252 205 21479   |
|                                | 100                       | 15           | A470J15C0GH5UAA | 2252 206 21479   |
| 56 pF                          | 50                        | 15           | A560J15C0GF5UAA | 2252 205 21569   |
| 68 pF                          | 50                        | 15           | A680J15C0GF5UAA | 2252 205 21689   |
| 82 pF                          | 50                        | 15           | A820J15C0GF5UAA | 2252 205 21829   |
| 100 pF                         | 50                        | 15           | A101J15C0GF5UAA | 2252 205 21101   |
|                                | 100                       | 15           | A101J15C0GH5UAA | 2252 206 21101   |
| 150 pF                         | 50                        | 15           | A151J15C0GF5UAA | 2252 205 21151   |
| 220 pF                         | 50                        | 15           | A221J15C0GF5UAA | 2252 205 21221   |
|                                | 100                       | 15           | A221J15C0GH5UAA | 2252 206 21221   |
| 330 pF                         | 50                        | 15           | A331J15C0GF5UAA | 2252 205 21331   |
| 470 pF                         | 50                        | 15           | A471J15C0GF5UAA | 2252 205 21471   |
|                                | 100                       | 15           | A471J15C0GH5UAA | 2252 206 21471   |
| 680 pF                         | 50                        | 15           | A681J15C0GF5UAA | 2252 205 21681   |
| 1000 pF                        | 50                        | 15           | A102J15C0GF5UAA | 2252 205 21102   |
|                                | 100                       | 20           | A102J20C0GH5UAA | 2252 206 41102   |
| 1500 pF                        | 50                        | 15           | A152J15C0GF5UAA | 2252 205 21152   |
| 2200 pF                        | 50                        | 15           | A222J15C0GF5UAA | 2252 205 21222   |
| 3300 pF                        | 50                        | 20           | A332J20C0GF5UAA | 2252 205 41332   |
| 4700 pF                        | 50                        | 20           | A472J20C0GF5UAA | 2252 205 41472   |
| 5600 pF                        | 50                        | 20           | A562J20C0GF5UAA | 2252 205 41562   |

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| C                         | U <sub>R(DC)</sub><br>(V) | SIZE<br>CODE | CLEAR TEXT CODE | CATALOGUE NUMBER |
|---------------------------|---------------------------|--------------|-----------------|------------------|
| <b>X7R ±10% tolerance</b> |                           |              |                 |                  |
| 100 pF                    | 50                        | 15           | A101K15X7RF5UAA | 2252 225 21101   |
|                           | 100                       | 15           | A101K15X7RH5UAA | 2252 226 21101   |
| 150 pF                    | 50                        | 15           | A151K15X7RF5UAA | 2252 225 21151   |
|                           | 100                       | 15           | A151K15X7RH5UAA | 2252 226 21151   |
| 220 pF                    | 50                        | 15           | A221K15X7RF5UAA | 2252 225 21221   |
|                           | 100                       | 15           | A221K15X7RH5UAA | 2252 226 21221   |
| 330 pF                    | 50                        | 15           | A331K15X7RF5UAA | 2252 225 21331   |
| 470 pF                    | 50                        | 15           | A471K15X7RF5UAA | 2252 225 21471   |
|                           | 100                       | 15           | A471K15X7RH5UAA | 2252 226 21471   |
| 680 pF                    | 50                        | 15           | A681K15X7RF5UAA | 2252 225 21681   |
| 1000 pF                   | 50                        | 15           | A102K15X7RF5UAA | 2252 225 21102   |
|                           | 100                       | 15           | A102K15X7RH5UAA | 2252 226 21102   |
| 1500 pF                   | 50                        | 15           | A152K15X7RF5UAA | 2252 225 21152   |
| 2200 pF                   | 50                        | 15           | A222K15X7RF5UAA | 2252 225 21222   |
|                           | 100                       | 15           | A222K15X7RH5UAA | 2252 226 21222   |
| 3300 pF                   | 50                        | 15           | A332K15X7RF5UAA | 2252 225 21332   |
| 4700 pF                   | 50                        | 15           | A472K15X7RF5UAA | 2252 225 21472   |
|                           | 100                       | 15           | A472K15X7RH5UAA | 2252 226 21472   |
| 6800 pF                   | 50                        | 15           | A682K15X7RF5UAA | 2252 225 21682   |
| 0.01 µF                   | 50                        | 15           | A103K15X7RF5UAA | 2252 225 21103   |
|                           | 100                       | 15           | A103K15X7RH5UAA | 2252 226 21103   |
| 0.015 µF                  | 50                        | 15           | A153K15X7RF5UAA | 2252 225 21153   |
| 0.022 µF                  | 50                        | 15           | A223K15X7RF5UAA | 2252 225 21223   |
|                           | 100                       | 15           | A223K15X7RH5UAA | 2252 226 21223   |
| 0.033 µF                  | 50                        | 15           | A333K15X7RF5UAA | 2252 225 21333   |
| 0.047 µF                  | 50                        | 15           | A473K15X7RF5UAA | 2252 225 21473   |
|                           | 100                       | 20           | A473K20X7RH5UAA | 2252 226 41473   |
| 0.068 µF                  | 50                        | 15           | A683K15X7RF5UAA | 2252 225 21683   |
| 0.1 µF                    | 50                        | 15           | A104K15X7RF5UAA | 2252 225 21104   |
|                           | 100                       | 20           | A104K20X7RH5UAA | 2252 226 41104   |



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| C                             | U <sub>R(DC)</sub><br>(V) | SIZE<br>CODE | CLEAR TEXT CODE | CATALOGUE NUMBER |
|-------------------------------|---------------------------|--------------|-----------------|------------------|
| <b>Z5U ±20% tolerance</b>     |                           |              |                 |                  |
| 1 000 pF                      | 50                        | 15           | A102M15Z5UF5UAA | 2252 245 21102   |
|                               | 100                       | 15           | A102M15Z5UH5UAA | 2252 246 21102   |
| 2 200 pF                      | 50                        | 15           | A222M15Z5UF5UAA | 2252 245 21222   |
| 4 700 pF                      | 50                        | 15           | A472M15Z5UF5UAA | 2252 245 21472   |
| 0.01 µF                       | 50                        | 15           | A103M15Z5UF5UAA | 2252 245 21103   |
|                               | 100                       | 15           | A103M15Z5UH5UAA | 2252 246 21103   |
| 0.022 µF                      | 50                        | 15           | A223M15Z5UF5UAA | 2252 245 21223   |
| 0.047 µF                      | 50                        | 15           | A473M15Z5UF5UAA | 2252 245 21473   |
| 0.1 µF                        | 50                        | 15           | A104M15Z5UF5UAA | 2252 245 21104   |
|                               | 100                       | 20           | A104M20Z5UH5UAA | 2252 246 41104   |
| 0.22 µF                       | 50                        | 15           | A224M15Z5UF5UAA | 2252 245 21224   |
| 0.47 µF                       | 50                        | 20           | A474M20Z5UF5UAA | 2252 245 41474   |
| 0.68 µF                       | 50                        | 20           | A684M20Z5UF5UAA | 2252 245 41684   |
| 1.00 µF                       | 50                        | 20           | A105M20Z5UF5UAA | 2252 245 41105   |
| <b>Y5V +80/-20% tolerance</b> |                           |              |                 |                  |
| 0.01 µF                       | 50                        | 15           | A103Z15Y5VF5UAA | 2252 265 21103   |
| 0.022 µF                      | 50                        | 15           | A223Z15Y5VF5UAA | 2252 265 21223   |
| 0.047 µF                      | 50                        | 15           | A473Z15Y5VF5UAA | 2252 265 21473   |
| 0.1 µF                        | 25                        | 15           | A104Z15Y5VE5UAA | 2252 262 21104   |
|                               | 50                        | 15           | A104Z15Y5VF5UAA | 2252 265 21104   |
| 0.22 µF                       | 25                        | 20           | A224Z20Y5VE5UAA | 2252 262 41224   |
|                               | 50                        | 20           | A224Z20Y5VF5UAA | 2252 265 41224   |
| 0.47 µF                       | 25                        | 20           | A474Z20Y5VE5UAA | 2252 262 41474   |
|                               | 50                        | 20           | A474Z20Y5VF5UAA | 2252 265 41474   |
| 1.0 µF                        | 25                        | 20           | A105Z20Y5VE5UAA | 2252 262 41105   |

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| ELECTRICAL CHARACTERISTICS  |   |
|---|---|
| <b>Table 3</b> Electrical data for NPO, X7R, Z5U and Y5V  |   |
| The capacitors meet the essential requirements of "EIA 198".<br>Unless stated otherwise all electrical values apply at an ambient temperature of $25 \pm 3$ °C, at barometric pressures of 650 to 800 mm of mercury, and relative humidity not to exceed 75%. |   |
| DESCRIPTION   | VALUE   |
| <b>Capacitors with temperature coefficient NPO</b>  |   |
| Capacitance range:  |   |
| at 1 MHz, 1 V; where $C \leq 1000$ pF   | 10 to 1000 pF   |
| at 1 kHz, 1 V; where $C > 1000$ pF  | 1200 to 5600 pF   |
| Tolerance on the capacitance  | $\pm 5\%$ ; $\pm 10\%$  |
| Rated DC voltage  | 50 and 100 V  |
| Dielectric strength   | 250% of rated voltage   |
| Insulation resistance at rated voltage  | $100000 \text{ M}\Omega$ or $1000 \text{ M}\Omega \times \frac{1}{140 + 20 \times C}$ , whichever is less at rated voltage within 2 minutes of charging |
| Temperature coefficient of the capacitance  | $0 \times 10^{-6}/\text{K}$   |
| Tolerance on the temperature coefficient  | $\pm 30 \times 10^{-6}/\text{K}$  |
| Dissipation factor:   |   |
| at 1 MHz, 1 V; where $C \leq 30$ pF   | <   |
| at 1 kHz, 1 V; where $C > 30$ pF  | $< 15 \times 10^{-4}$   |
| Operating temperature range   | $-55$ to $+125$ °C  |
| Storage temperature range   | $25 \pm 15$ °C  |
| <b>Capacitors with temperature coefficient X7R</b>  |   |
| Capacitance range at 1 kHz, 1 V   | 100 pF to 0.22 $\mu\text{F}$  |
| Tolerance on the capacitance  | $\pm 10\%$ , $\pm 20\%$   |
| Maximum capacitance change with respect to capacitance value at 25 °C   | $\pm 15\%$  |
| Rated DC voltage  | 50 V and 100 V  |
| Dielectric strength   | 250% of rated voltage   |
| Insulation resistance at rated voltage  | $100000 \text{ M}\Omega$ or $1000 \text{ M}\Omega \times \mu\text{F}$ , whichever is less at rated voltage within 2 minutes of charging                 |
| Dissipation factor at 1 kHz, 1 V  | $\leq 2.5\%$  |
| Operating temperature range   | $-55$ to $+125$ °C  |
| Storage temperature range   | $25 \pm 15$ °C  |
| Ageing  | typical 1% per time decade  |

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| DESCRIPTION   | VALUE   |
|---|---|
| <b>Capacitors with temperature coefficient Z5U</b>                    |   |
| Capacitance range at 1 kHz, 0.5 V                                     | 1 000 pF to 1.00 $\mu$ F  |
| Tolerance on the capacitance  | $\pm 20\%$ ; +80%/-20%  |
| Maximum capacitance change with respect to capacitance value at 25 °C | +22%/-56%   |
| Rated DC voltage  | 50 and 100 V  |
| Dielectric strength   | 250% of rated voltage   |
| Insulation resistance at rated voltage                                | 10 000 $M\Omega$ or 1 000 $M\Omega \times \mu$ F, whichever is less at rated voltage within 2 minutes of charging |
| Dissipation factor at 1 kHz, 0.5 V                                    | $\leq 4\%$  |
| Operating temperature range   | 10 to 85 °C   |
| Storage temperature range   | 25 $\pm$ 15 °C  |
| Ageing  | typical 6% per time decade  |
| <b>Capacitors with temperature coefficient Y5V</b>                    |   |
| Capacitance range at 1 kHz, 1 V                                       | 0.01 to 1.0 $\mu$ F   |
| Tolerance on the capacitance  | +80%/-20%   |
| Maximum capacitance change with respect to capacitance value at 25 °C | +22%/-82%   |
| Rated DC voltage  | 25 V and 50 V   |
| Dielectric strength   | 250% of rated voltage   |
| Insulation resistance at rated voltage                                | 10 000 $M\Omega$ or 1 000 $M\Omega \times \mu$ F, whichever is less at rated voltage within 2 minutes of charging |
| Dissipation factor at 1 kHz, 1 V                                      | $\leq 5\%$  |
| Operating temperature range   | -30 to +85 °C   |
| Storage temperature range   | 25 $\pm$ 15 °C  |
| Ageing  | typical 6% per time decade  |

## Leaded ceramic multilayer capacitors

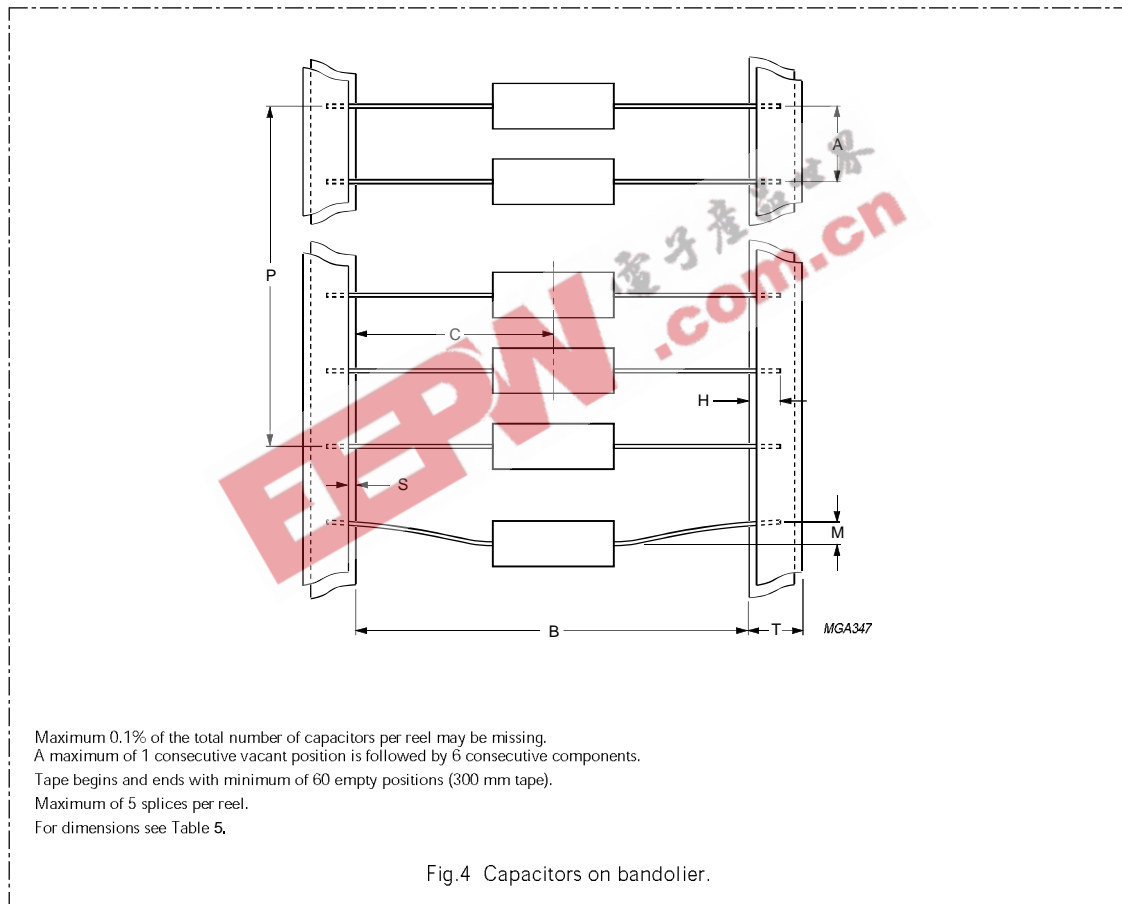
## Mono-axial™ series

### PACKAGING

**Table 4** Packaging quantities and box dimensions; see Fig.6

| PACKAGING    | SIZE CODE | SMALLEST PACKAGING QUANTITY (SPQ) | BOX DIMENSIONS<br>L × W × H<br>(mm) |
|--------------|-----------|-----------------------------------|-------------------------------------|
| Tape on reel | 15; 20    | 7000                              | 370 × 370 × 90                      |
| Ammopack     | 15; 20    | 4000                              | 265 × 85 × 95                       |

### Capacitors on bandolier



## Leaded ceramic multilayer capacitors

## Mono-axial™ series

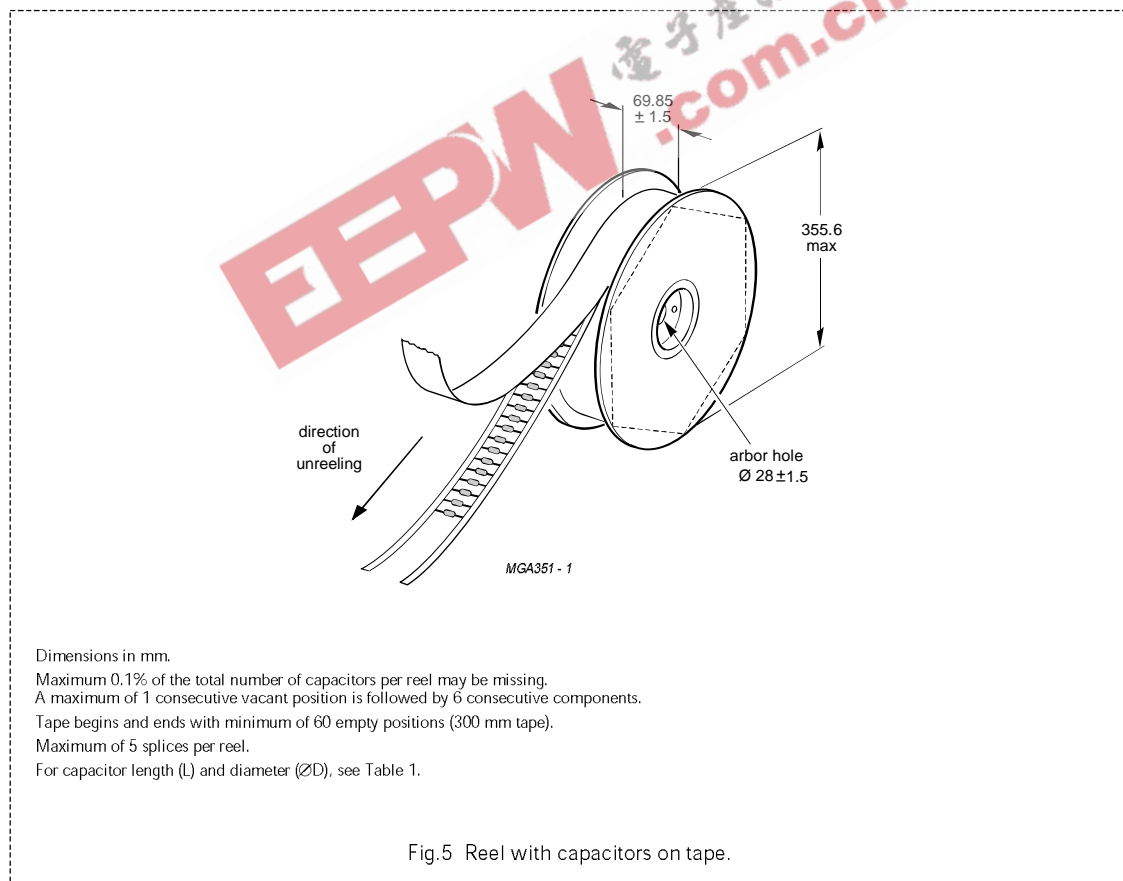
**Table 5** Dimensions of bandolier; see Fig.4

| SYMBOL           | PARAMETER                                  | DIMENSIONS |              |
|------------------|--|------------|--------------|
|                  |  | mm         | inch         |
| B <sup>(1)</sup> | inside tape spacing                        | 52.4 ±1.5  | 2.062 ±0.059 |
| C                | centre-to-tape-spacing                     | ±0.8       | ±0.031       |
| P                | cumulative pitch, 6 consecutive components | ±1.5       | ±0.059       |
| A                | components pitch                           | 5 ±0.5     | 0.197 ±0.015 |
| M                | lead bend                                  | <1.2       | <0.047       |
| S                | exposed adhesive                           | <0.51      | <0.020       |
| T                | tape width                                 | 6.35       | 0.250        |
| H                | lead sandwich                              | >3.96      | >0.156       |

### Note

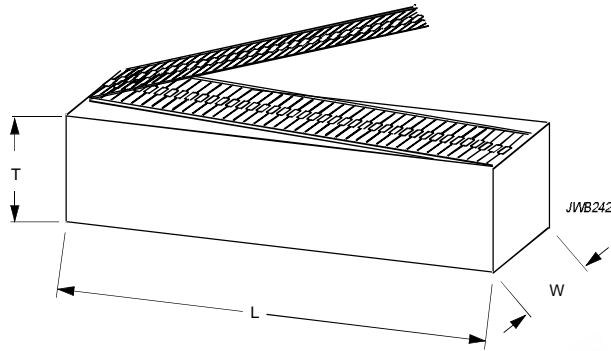
1. Inside tape spacing 26.0 +1.51/-0.0 is available on request.

### REEL DATA



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## AMMOPACK DATA



Dimensions in mm.

Maximum 0.5% of the total number of capacitors per box may be missing.

A maximum of 2 consecutive vacant positions is followed by 6 consecutive components.

Tape begins and ends with minimum of 24 empty positions (300 mm tape).

Maximum of 5 splices per box.

Cumulative pitch tolerance over 20 consecutive units not to exceed  $\pm 1.0$  mm.

Lead space (F) shall be measured at  $3.6 \pm 0.5$  mm from the capacitor seating plane.

For dimensions see Table 4.

Fig.6. Ammopack with capacitors on tape.