

# MURATA Multilayer Ceramic Chip Capacitors



## CERAMIC CHIP CAPACITORS

This product is RoHS compliant.



RoHS Compliant

### Features:

- No polarity
- COG (NP0), X5R, X7R, Y5V, and Z5U dielectrics
- 6.3, 10, 16, 25, 35 to 50, and 100 Volts
- Available tolerances:  $\pm 25\text{pF}$ ,  $\pm 5\text{pF}$ ,  $\pm 1\text{pF}$ , 1%, 2%, 5%, 10%, 20%,  $+80/-20\%$
- Nickel barrier termination standard-highly resistant to metal migration
- For assistance with global part numbers, please contact a Mouser representative

### Style 0603 (Cont.)

Please call a Mouser representative for information of product not listed.

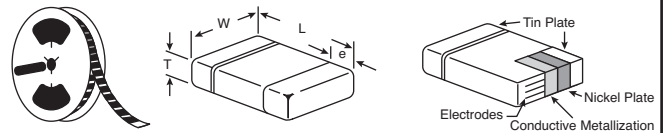
| MOUSER STOCK NO.              | Murata Part No.    | Value (pF) | Volt (DC) | Tol.±   | Price Each |      | Reel Qty. | Price Per Piece |
|-------------------------------|--------------------|------------|-----------|---------|------------|------|-----------|-----------------|
|                               |                    |            |           |         | 1          | 100  |           |                 |
| <b>Temperature Coeff: X5R</b> |                    |            |           |         |            |      |           |                 |
| 81-GRM39R474K10               | GRM188R61A474KA61D | 0.47µF     | 10        | 10%     | .10        | .039 | 4000      | .02             |
| <b>Temperature Coeff: Y5R</b> |                    |            |           |         |            |      |           |                 |
| 81-GRM39Y104Z16D              | GRM188F51C104ZA01D | 0.1µF      | 16        | +80,-20 | .09        | .014 | 4000      | .005            |
| 81-GRM39Y104Z25D              | GRM188F51E104ZA01D | 0.1µF      | 25        | +80,-20 | .09        | .014 | 4000      | .005            |
| 81-GRM39Y224Z16D              | GRM188F51C224ZA01D | 0.22µF     | 16        | +80,-20 | .10        | .03  | 4000      | .016            |

### Style 0805

Please call a Mouser representative for information of product not listed.

| MOUSER STOCK NO.              | Murata Part No.    | Value (pF) | Volt (DC) | Tol.± | Price Each |      | Reel Qty. | Price Per Piece |
|-------------------------------|--------------------|------------|-----------|-------|------------|------|-----------|-----------------|
|                               |                    |            |           |       | 1          | 100  |           |                 |
| <b>Temperature Coeff: COG</b> |                    |            |           |       |            |      |           |                 |
| 81-GRM40C010C50D              | GRM2165C1H1R0CD01D | 1          | 50        | 25pF  | .17        | .098 | 4000      | .022            |
| 81-GRM40C1R5C50D              | GRM2165C1H1R5CD01D | 1.5        | 50        | 25pF  | .17        | .098 | 4000      | .022            |
| 81-GRM40C2R2C50D              | GRM2165C1H2R2CD01D | 2.2        | 50        | 25pF  | .17        | .098 | 4000      | .022            |
| 81-GRM2165C1H3R0CD01D         | GRM2165C1H3R0CD01D | 3          | 50        | 25pF  | .17        | .098 | 4000      | .022            |
| 81-GRM2165C1H4R0CD01D         | GRM2165C1H4R0CD01D | 4          | 50        | 25pF  | .17        | .098 | 4000      | .022            |
| 81-GRM40C4R7C50D              | GRM2165C1H4R7CD01D | 4.7        | 50        | 25pF  | .17        | .098 | 4000      | .022            |
| 81-GRM40C5R6C50D              | GRM2165C1H5R6CD01D | 5.6        | 50        | 25pF  | .19        | .102 | 4000      | .03             |
| 81-GRM2165C1H6R8CD01D         | GRM2165C1H6R8CD01D | 6.8        | 50        | 25pF  | .17        | .086 | 4000      | .023            |
| 81-GRM2165C1H7R0CZ01D         | GRM2165C1H7R0CZ01D | 7          | 50        | 25pF  | .19        | .102 | 4000      | .03             |
| 81-GRM40C8R2C50D              | GRM2165C1H8R2CZ01D | 8.2        | 50        | 25pF  | .19        | .102 | 4000      | .03             |
| 81-GRM40C100D50D              | GRM2165C1H100JZ01D | 10         | 50        | 5%    | .17        | .098 | 4000      | .022            |
| 81-GRM2165C1H120JZ01D         | GRM2165C1H120JZ01D | 12         | 50        | 5%    | .17        | .086 | 4000      | .023            |
| 81-GRM40C150J50D              | GRM2165C1H150JZ01D | 15         | 50        | 5%    | .17        | .10  | 4000      | .023            |
| 81-GRM40C180J50D              | GRM2165C1H180JZ01D | 18         | 50        | 5%    | .17        | .086 | 4000      | .023            |
| 81-GRM40C200J50D              | GRM2165C1H200JZ01D | 20         | 50        | 5%    | .09        | .051 | 4000      | .026            |
| 81-GRM2165C1H220JZ01D         | GRM2165C1H220JZ01D | 22         | 50        | 5%    | .17        | .10  | 4000      | .023            |
| 81-GRM40C270J50D              | GRM2165C1H270JZ01D | 27         | 50        | 5%    | .17        | .086 | 4000      | .023            |
| 81-GRM2165C1H330JZ01D         | GRM2165C1H330JZ01D | 33         | 50        | 5%    | .17        | .10  | 4000      | .023            |
| 81-GRM40C390J50D              | GRM2165C1H390JZ01D | 39         | 50        | 5%    | .17        | .086 | 4000      | .023            |
| 81-GRM2165C1H470JZ01D         | GRM2165C1H470JZ01D | 47         | 50        | 5%    | .17        | .10  | 4000      | .023            |
| 81-GRM40C680J50D              | GRM2165C1H680JZ01D | 68         | 50        | 5%    | .17        | .10  | 4000      | .023            |
| 81-GRM2165C1H820JZ01D         | GRM2165C1H820JZ01D | 82         | 50        | 5%    | .17        | .086 | 4000      | .023            |
| 81-GRM40C101J50D              | GRM2165C1H101JA01D | 100        | 50        | 5%    | .09        | .027 | 4000      | .015            |
| 81-GRM2165C2A101JA01D         | GRM2165C2A101JA01D | 100        | 100       | 5%    | .10        | .037 | 4000      | .019            |
| 81-GRM2165C1H121JA01D         | GRM2165C1H121JA01D | 120        | 50        | 5%    | .16        | .081 | 4000      | .019            |
| 81-GRM40C151J50D              | GRM2165C1H151JA01D | 150        | 50        | 5%    | .10        | .036 | 4000      | .02             |
| 81-GRM2165C1H181JA01D         | GRM2165C1H181JA01D | 180        | 50        | 5%    | .16        | .081 | 4000      | .019            |
| 81-GRM40C221J50D              | GRM2165C1H221JA01D | 220        | 50        | 5%    | .16        | .067 | 4000      | .019            |
| 81-GRM40C331J50D              | GRM2165C1H331JA01D | 330        | 50        | 5%    | .10        | .044 | 4000      | .023            |
| 81-GRM40C391J50D              | GRM2165C1H391JA01D | 390        | 50        | 5%    | .10        | .045 | 4000      | .024            |
| 81-GRM2152C2A471JA01L         | GRM2165C2A471JA01L | 470        | 100       | 5%    | .10        | .063 | 4000      | .033            |
| 81-GRM40C55A1J50D             | GRM2165C1H55JA01D  | 560        | 50        | 5%    | .09        | .058 | 4000      | .03             |
| 81-GRM40C681J50D              | GRM2165C1H681JA01D | 680        | 50        | 5%    | .10        | .06  | 4000      | .031            |
| 81-GRM40C102J50D              | GRM2165C1H102JA01D | 1000       | 50        | 5%    | .10        | .035 | 4000      | .018            |
| 81-GRM2165C1H152JA01D         | GRM2165C1H152JA01D | 1500       | 50        | 5%    | .14        | .076 | 4000      | .021            |
| 81-GRM21A5C2E100JW1D          | GRM21A5C2E100JW01D | 10         | 250       | 5%    | .42        | .174 | 4000      | .056            |
| 81-GRM21A5C2E120JW1D          | GRM21A5C2E120JW01D | 12         | 250       | 5%    | .42        | .174 | 4000      | .056            |
| 81-GRM21A5C2E150JW1D          | GRM21A5C2E150JW01D | 15         | 250       | 5%    | .42        | .174 | 4000      | .056            |
| 81-GRM21A5C2E180JW1D          | GRM21A5C2E180JW01D | 18         | 250       | 5%    | .42        | .174 | 4000      | .056            |
| 81-GRM21A5C2E220JW1D          | GRM21A5C2E220JW01D | 22         | 250       | 5%    | .42        | .174 | 4000      | .056            |
| 81-GRM21A5C2E270JW1D          | GRM21A5C2E270JW01D | 27         | 250       | 5%    | .42        | .174 | 4000      | .056            |
| 81-GRM21A5C2E330JW1D          | GRM21A5C2E330JW01D | 33         | 250       | 5%    | .42        | .174 | 4000      | .056            |
| 81-GRM21A5C2E390JW1D          | GRM21A5C2E390JW01D | 39         | 250       | 5%    | .42        | .174 | 4000      | .056            |
| 81-GRM21A5C2E470JW1D          | GRM21A5C2E470JW01D | 47         | 250       | 5%    | .42        | .174 | 4000      | .056            |
| 81-GRM21A5C2E560JW1D          | GRM21A5C2E560JW01D | 56         | 250       | 5%    | .42        | .174 | 4000      | .056            |
| 81-GRM21A5C2E680JW1D          | GRM21A5C2E680JW01D | 68         | 250       | 5%    | .42        | .174 | 4000      | .056            |
| 81-GRM21A5C2E820JW1D          | GRM21A5C2E820JW01D | 82         | 250       | 5%    | .42        | .174 | 4000      | .056            |
| 81-GRM21A5C2E101JW1D          | GRM21A5C2E101JW01D | 100        | 250       | 5%    | .42        | .174 | 4000      | .056            |
| <b>Temperature Coeff: X7R</b> |                    |            |           |       |            |      |           |                 |
| 81-GRM40X221K50D              | GRM216R71H221KA01D | 220        | 50        | 10%   | .09        | .049 | 4000      | .015            |
| 81-GRM40X471K50D              | GRM216R71H471KA01D | 470        | 50        | 10%   | .15        | .049 | 4000      | .014            |
| 81-GRM40X102K50D              | GRM216R71H102KA01D | 1000       | 50        | 10%   | .11        | .045 | 4000      | .009            |
| 81-GRM40X102K100D             | GRM219R72A102KA01D | 1000       | 100       | 10%   | .17        | .071 | 4000      | .02             |
| 81-GRM40X152K50D              | GRM216R71H152KA01D | 1500       | 50        | 10%   | .10        | .04  | 4000      | .01             |
| 81-GRM40X222K50D              | GRM216R71H222KA01D | 2200       | 50        | 10%   | .10        | .021 | 4000      | .009            |
| 81-GRM40X332K50D              | GRM216R71H332KA01D | 3300       | 50        | 10%   | .10        | .04  | 4000      | .01             |
| 81-GRM40X392K50D              | GRM216R71H392KA01D | 3900       | 50        | 10%   | .11        | .042 | 4000      | .01             |
| 81-GRM216R71H472KA            | GRM216R71H472KA01D | 4700       | 50        | 10%   | .10        | .021 | 4000      | .009            |
| 81-GRM40X682K50D              | GRM216R71H682KA01D | 6800       | 50        | 10%   | .15        | .04  | 4000      | .013            |
| 81-GRM216R71E103KA01          | GRM216R71E103KA01D | 10000      | 25        | 10%   | .10        | .022 | 4000      | .014            |
| 81-GRM40X103K50D              | GRM216R71H103KA01D | 10000      | 50        | 10%   | .11        | .023 | 4000      | .007            |
| 81-GRM40X153K50D              | GRM216R71H153KA01D | 15000      | 50        | 10%   | .15        | .051 | 4000      | .016            |
| 81-GRM40X223K50D              | GRM216R71H223KA01D | 22000      | 50        | 10%   | .10        | .031 | 4000      | .017            |

### DIMENSIONS: mm



| Part No. | L         | W         | T (max)    | e          | g min. |
|----------|-----------|-----------|------------|------------|--------|
| GRM188   | 1.6 ±0.1  | 0.8 ±0.1  | 0.8 ±0.1   | 0.2 to 0.5 | 0.5    |
| GRM216   | 2.0 ±0.1  | 1.25 ±0.1 | 0.6 ±0.1   | 0.2 to 0.7 | 0.7    |
| GRM219   |           |           | 0.85 ±0.1  |            |        |
| GRM21B   |           |           | 1.25 ±0.1  |            |        |
| GRM316   | 3.2 ±0.15 | 1.6 ±0.15 | 0.6 ±0.1   | 0.3 to 0.8 | 1.5    |
| GRM319   |           |           | 0.85 ±0.1  |            |        |
| GRM31M   |           |           | 1.15 ±0.1  |            |        |
| GRM32M   | 3.2 ±0.3  | 2.5 ±0.2  | 1.15 ±0.1  | 0.3        | 1.0    |
| GRM32N   | 3.2 ±0.2  | 2.5 ±0.2  | 1.35 ±0.15 | 0.3        | 1.0    |
| GRM43R   | 4.5 ±0.4  | 3.2 ±0.3  | 1.8 ±0.2   | 0.3        | 2.0    |

### Style 0805 (Cont.)

Please call a Mouser representative for information of product not listed.

| MOUSER STOCK NO.                      | Murata Part No.    | Value (pF) | Volt (DC) | Tol.±   | Price Each |      | Reel Qty. | Price Per Piece |
|---------------------------------------|--------------------|------------|-----------|---------|------------|------|-----------|-----------------|
|                                       |                    |            |           |         | 1          | 100  |           |                 |
| <b>Temperature Coeff: X7R (Cont.)</b> |                    |            |           |         |            |      |           |                 |
| 81-GRM40X333K50D                      | GRM219R71H333KA01D | 33000      | 50        | 10%     | .10        | .039 | 4000      | .02             |
| 81-GRM40X473K25L                      | GRM219R71E473KA01L | 47000      | 25        | 10%     | .17        | .07  | 3000      | .025            |
| 81-GRM40X473K50L                      | GRM21BR71H473KA01L | 47000      | 50        | 10%     | .10        | .036 | 3000      | .019            |
| 81-GRM40X683K50L                      | GRM21BR71H683KA01L | 68000      | 50        | 10%     | .11        | .071 | 3000      | .037            |
| 81-GRM40X104K16L                      | GRM219R71C104KA01D | 0.1µF      | 16        | 10%     | .09        | .034 | 4000      | .018            |
| 81-GRM40X104K25D                      | GRM219R71E104KA01D | 0.1µF      | 25        | 10%     | .10        | .033 | 3000      | .016            |
| 81-GRM40X104K50L                      | GRM21BR71H104KA01L | 0.1µF      | 50        | 10%     | .10        | .034 | 3000      | .016            |
| 81-GRM40X154K16L                      | GRM21BR71C154KA01L | 0.15µF     | 16        | 10%     | .13        | .081 | 3000      | .042            |
| 81-GRM40X7R22AK050AL                  | GRM21BR71H224KA01L | 0.22µF     | 50        | 10%     | .31        | .144 | 3000      | .046            |
| 81-GRM40X334K16L                      | GRM21BR71C334KA01L | 0.33µF     | 16        | 10%     | .14        | .091 | 3000      | .047            |
| 81-GRM40X474K16L                      | GRM219R71C474KC01L | 0.47µF     | 16        | 10%     | .21        | .134 | 3000      | .069            |
| <b>Temperature Coeff: Y5V</b>         |                    |            |           |         |            |      |           |                 |
| 81-GRM40Y104Z25D                      | GRM216F51E104ZA01D | 0.1µF      | 25        | +80,-20 | .10        | .035 | 4000      | .009            |
| 81-GRM40Y104Z50D                      | GRM219F51H104ZA01D | 0.1µF      | 50        | +80,-20 | .10        | .041 | 4000      | .01             |
| 81-GRM40Y224Z25D                      | GRM219F51E224ZA01D | 0.22µF     | 25        | +80,-20 | .09        | .053 | 4000      | .027            |
| 81-GRM40Y474Z16L                      | GRM21BF51C474ZA01L | 0.47µF     | 16        | +80,-20 | .12        | .073 | 3000      | .038            |
| 81-GRM40Y5V474Z025AL                  | GRM21BF51E474ZA01L | 0.47µF     | 25        | +80,-20 | .11        | .073 | 3000      | .038            |
| <b>Temperature Coeff: Z5U</b>         |                    |            |           |         |            |      |           |                 |
| 81-GRM40Z247M50D                      | GRM216E41H473MA01D | 47000      | 50        | 20%     | .15        | .038 | 4000      | .013            |
| 81-GRM40Z104M50D                      | GRM219E41H104MA01D | 0.1µF      | 50        | 20%     | .22        | .05  | 4000      | .013            |

### Style 1206

Please call a Mouser representative for information of product not listed.

| MOUSER STOCK NO.              | Murata Part No.    | Value (pF) | Volt (DC) | Tol.± | Price Each |      | Reel Qty. | Price Per Piece |
|-------------------------------|--------------------|------------|-----------|-------|------------|------|-----------|-----------------|
|                               |                    |            |           |       | 1          | 100  |           |                 |
| <b>Temperature Coeff: COG</b> |                    |            |           |       |            |      |           |                 |
| 81-GRM426C180J050D            | GRM3165C1H180JZ01D | 18pF       | 50        | 5%    | .20        | .125 | 4000      | .065            |
|                               |                    |            |           |       |            |      |           |                 |