

## MM20 appendix

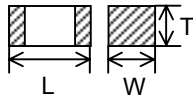


## Ultra-small GRM series / GRM022 (01005 Chip size)

### Features

1. Small chip size, 01005 (L: 0.4 x W: 0.2 x T: 0.2mm).
2. No polarity.
3. GRM022 series is suited to only reflow soldering.
4. GRM series is offered with a Ni barrier termination plated with Matte Tin (Sn), and is RoHS compliant.
5. Stringent dimensional tolerances allow highly reliable, high-speed automatic chip placement on PCBs.
6. GRM022 series is suited to miniature microwave module, portable equipment and high-frequency circuit.

### Chip dimension



| (in mm)  |            |            |            |
|----------|------------|------------|------------|
| EIA size | L          | W          | T          |
| 01005    | 0.4+/-0.02 | 0.2+/-0.02 | 0.2+/-0.02 |

### Chip size and Capacitance range

| Type              | TC  | WV  | Capacitance Range |      |       |        |        |       |  |                |
|-------------------|-----|-----|-------------------|------|-------|--------|--------|-------|--|----------------|
|                   |     |     | 1pF               | 10pF | 100pF | 1000pF | 0.01uF | 0.1uF |  |                |
| GRM022<br>(01005) | C0G | 16  | ■                 | ■    | ■     | ■      |        |       |  | 0.2pF - 47pF   |
|                   | C0G | 10  |                   |      |       | ■      |        |       |  | 51-100pF       |
|                   |     | 6.3 |                   |      |       | ■      |        |       |  |                |
|                   | X7R | 10  |                   |      |       | ■      | ■      |       |  | 100pF - 560pF  |
| X5R               | 6.3 |     |                   |      |       | ■      | ■      | ■     |  | 680pF - 0.01uF |

### Global Part Numbering

|     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| GR  | M   | 02  | 2   | 5C  | 1C  | 100 | J   | D05 | L    |
| -1- | -2- | -3- | -4- | -5- | -6- | -7- | -8- | -9- | -10- |

#### -1-:Product ID

| Code | Product |
|------|---------|
| GR   | MLCC    |

#### -5-:Temperature Characteristics

| Code | TC  | Temp. Range | Cap. Change or Temp. Coefficient | Operating Temp. |
|------|-----|-------------|----------------------------------|-----------------|
| 5C   | C0G | -55 to 125C | 0+/-30ppm/C                      | -55 to 125C     |
| 7U   | U2J | -55 to 85C  | -750+/-120ppm/C                  | -55 to 125C     |
| R7   | X7R | -55 to 125C | +/-15%                           | -55 to 125C     |
| C8   | X6S | -55 to 105C | +/-22%                           | -55 to 105C     |
| R6   | X5R | -55 to 85C  | +/-15%                           | -55 to 85C      |

#### -2-:Series

| Code | Product                |
|------|------------------------|
| M    | Tin Plated Termination |

#### -6-:Rated Voltage

| Code | Rated Voltage |
|------|---------------|
| 0G   | DC 4V         |
| 0J   | DC 6.3V       |
| 1A   | DC 10V        |
| 1C   | DC 16V        |
| 1E   | DC 25V        |
| 1H   | DC 50V        |

#### -8-:Capacitance Tolerance

| Code | Cap. Tol. | TC                   |
|------|-----------|----------------------|
| B    | +/-0.1pF  | C0G,U2J(under 1pF)   |
| C    | +/-0.25pF | C0G,U2J(1 to 5pF)    |
| D    | +/-0.5pF  | C0G,U2J(under 10pF)  |
| J    | +/-5%     | C0G,U2J(10pF & over) |
| K    | +/-10%    | X7R, X6S, X5R        |
| M    | +/-20%    | X7R, X6S, X5R        |

#### -3-:Dimension (LxW)

| Code | Dimension (LxW)      |
|------|----------------------|
| 02   | 0.4x0.2mm(EIA:01005) |
| 03   | 0.6x0.3mm (EIA:0201) |

#### -7-:Capacitance

| Code | Capacitance |
|------|-------------|
| R10  | 0.1pF       |
| 1R0  | 1pF         |
| 100  | 10pF        |
| 102  | 1,000pF     |
| 104  | 0.1uF       |

#### -9-:Individual Specification Code

#### -10-:Packaging

| Code | Packaging                   |
|------|-----------------------------|
| B    | Bulk in nylon bag           |
| D    | Φ178mm Paper Taping (W8P2)  |
| L    | Φ180mm Embossed Tape (W4P1) |

#### -4-:Dimension (T)

| Code | Dimension (T) |
|------|---------------|
| 2    | 0.2mm         |
| 3    | 0.3mm         |

## Ultra-small GRM series / GRM022 (01005 Chip size)

### Murata P/N List < C0G >

| Size       | Chip T (mm) | TC   | WV    | Cap   | Cap Tol            | Murata Global P/N  | Sample          | M.P.            |
|------------|-------------|------|-------|-------|--------------------|--------------------|-----------------|-----------------|
| 01005      | 0.2+/-0.02  | C0G  | 16V   | 0.2pF | +/-0.1pF           | GRM0225C1CR20BD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 0.3pF | +/-0.1pF           | GRM0225C1CR30BD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 0.4pF | +/-0.1pF           | GRM0225C1CR40BD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 0.5pF | +/-0.1pF           | GRM0225C1CR50BD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 0.6pF | +/-0.1pF           | GRM0225C1CR60BD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 0.7pF | +/-0.1pF           | GRM0225C1CR70BD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 0.8pF | +/-0.1pF           | GRM0225C1CR80BD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 0.9pF | +/-0.1pF           | GRM0225C1CR90BD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 1.0pF | +/-0.25pF          | GRM0225C1C1R0CD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 1.2pF | +/-0.25pF          | GRM0225C1C1R2CD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 1.5pF | +/-0.25pF          | GRM0225C1C1R5CD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 1.8pF | +/-0.25pF          | GRM0225C1C1R8CD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 2.0pF | +/-0.25pF          | GRM0225C1C2R0CD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 2.2pF | +/-0.25pF          | GRM0225C1C2R2CD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 2.7pF | +/-0.25pF          | GRM0225C1C2R7CD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 3.0pF | +/-0.25pF          | GRM0225C1C3R0CD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 3.3pF | +/-0.25pF          | GRM0225C1C3R3CD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 3.9pF | +/-0.25pF          | GRM0225C1C3R9CD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 4.0pF | +/-0.25pF          | GRM0225C1C4R0CD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 4.7pF | +/-0.25pF          | GRM0225C1C4R7CD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 5.0pF | +/-0.25pF          | GRM0225C1C5R0CD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 5.6pF | +/-0.5pF           | GRM0225C1C5R6DD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 6.0pF | +/-0.5pF           | GRM0225C1C6R0DD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 6.8pF | +/-0.5pF           | GRM0225C1C6R8DD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 7.0pF | +/-0.5pF           | GRM0225C1C7R0DD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 8.0pF | +/-0.5pF           | GRM0225C1C8R0DD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 8.2pF | +/-0.5pF           | GRM0225C1C8R2DD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 9.0pF | +/-0.5pF           | GRM0225C1C9R0DD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 10pF  | +/-5%              | GRM0225C1C100JD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 12pF  | +/-5%              | GRM0225C1C120JD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 15pF  | +/-5%              | GRM0225C1C150JD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 18pF  | +/-5%              | GRM0225C1C180JD05L | Available       | Mass Production |
|            | 0.2+/-0.02  | C0G  | 16V   | 22pF  | +/-5%              | GRM0225C1C220JD05L | Available       | Mass Production |
| 0.2+/-0.02 | C0G         | 16V  | 27pF  | +/-5% | GRM0225C1C270JD05L | Available          | Mass Production |                 |
| 0.2+/-0.02 | C0G         | 16V  | 33pF  | +/-5% | GRM0225C1C330JD05L | Available          | Mass Production |                 |
| 0.2+/-0.02 | C0G         | 16V  | 39pF  | +/-5% | GRM0225C1C390JD05L | Available          | Mass Production |                 |
| 0.2+/-0.02 | C0G         | 16V  | 47pF  | +/-5% | GRM0225C1C470JD05L | Available          | Mass Production |                 |
| 0.2+/-0.02 | C0G         | 6.3V | 56pF  | +/-5% | GRM0225C0J560JD05L | Available          | Mass Production |                 |
| 0.2+/-0.02 | C0G         | 6.3V | 68pF  | +/-5% | GRM0225C0J680JD05L | Available          | Mass Production |                 |
| 0.2+/-0.02 | C0G         | 6.3V | 82pF  | +/-5% | GRM0225C0J820JD05L | Available          | Mass Production |                 |
| 0.2+/-0.02 | C0G         | 6.3V | 100pF | +/-5% | GRM0225C0J101JD05L | Available          | Mass Production |                 |

- 1) "\*" of under development P/N have not fixed yet.
- 2) Q1 = January to March, Q2 = April to June, Q3 = July to September, Q4 = October to December
- 3) This is muRata's development schedule, which may change due to progress of each development works.
- 4) Above individual specification code and packaging code were decided with muRata standard specification, and it may change due to the special requirement by customer's drawing.
- 5) Sample marked "-" in Sample column are built upon your request.  
Lead time will be around 4wks (might be extended depending on production schedule).
- 6) W8P2 paper tape is also available.  
Please contact Murata Sales or Product Engineer directly.

## Ultra-small GRM series / GRM022 (01005 Chip size)

### Murata P/N List < C0G , X7R , X5R >

01005 X5R characteristic

| Size  | Chip T (mm) | TC  | WV   | Cap     | Cap Tol | Murata Global P/N  | Sample    | M.P.            |
|-------|-------------|-----|------|---------|---------|--------------------|-----------|-----------------|
| 01005 | 0.2+/-0.02  | C0G | 10V  | 56pF    | +/-5%   | GRM0225C1A560J**** | 08Q3      | 08Q4            |
|       | 0.2+/-0.02  | C0G | 10V  | 68pF    | +/-5%   | GRM0225C1A680J**** | 08Q3      | 08Q4            |
|       | 0.2+/-0.02  | C0G | 10V  | 82pF    | +/-5%   | GRM0225C1A820J**** | 08Q3      | 08Q4            |
|       | 0.2+/-0.02  | C0G | 10V  | 100pF   | +/-5%   | GRM0225C1A101J**** | 08Q3      | 08Q4            |
|       | 0.2+/-0.02  | X7R | 10V  | 100pF   | +/-10%  | GRM022R71A101KA01L | Available | Mass Production |
|       | 0.2+/-0.02  | X7R | 10V  | 150pF   | +/-10%  | GRM022R71A151KA01L | Available | Mass Production |
|       | 0.2+/-0.02  | X7R | 10V  | 220pF   | +/-10%  | GRM022R71A221KA01L | Available | Mass Production |
|       | 0.2+/-0.02  | X7R | 10V  | 330pF   | +/-10%  | GRM022R71A331KA01L | Available | Mass Production |
|       | 0.2+/-0.02  | X7R | 10V  | 470pF   | +/-10%  | GRM022R71A471KA01L | Available | Mass Production |
|       | 0.2+/-0.02  | X7R | 10V  | 560pF   | +/-10%  | GRM022R71A561KA01L | Available | Mass Production |
|       | 0.2+/-0.02  | X5R | 6.3V | 680pF   | +/-10%  | GRM022R60J681KE19L | Available | Mass Production |
|       | 0.2+/-0.02  | X5R | 6.3V | 1,000pF | +/-10%  | GRM022R60J102KE19L | Available | Mass Production |
|       | 0.2+/-0.02  | X5R | 6.3V | 1,500pF | +/-10%  | GRM022R60J152KE19L | Available | Mass Production |
|       | 0.2+/-0.02  | X5R | 6.3V | 2,200pF | +/-10%  | GRM022R60J222KE19L | Available | Mass Production |
|       | 0.2+/-0.02  | X5R | 6.3V | 3,300pF | +/-10%  | GRM022R60J332KE19L | Available | Mass Production |
|       | 0.2+/-0.02  | X5R | 6.3V | 4,700pF | +/-10%  | GRM022R60J472KE19L | Available | Mass Production |
|       | 0.2+/-0.02  | X5R | 6.3V | 6,800pF | +/-10%  | GRM022R60J682KE19L | Available | Mass Production |
|       | 0.2+/-0.02  | X5R | 6.3V | 0.01uF  | +/-10%  | GRM022R60J103KE19L | Available | Mass Production |

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