

## ● Part Numbering

### Chip Monolithic Ceramic Capacitors for General

(Part Number)

|    |   |    |   |    |    |     |   |     |   |
|----|---|----|---|----|----|-----|---|-----|---|
| GR | M | 18 | 8 | B1 | 1H | 102 | K | A01 | D |
| ①  | ② | ③  | ④ | ⑤  | ⑥  | ⑦   | ⑧ | ⑨   | ⑩ |

#### ① Product ID ② Series

| Product ID | Code | Series                                                                            |
|------------|------|-----------------------------------------------------------------------------------|
| GA         | 2    | Products based on the Electrical Appliance and Material Safety Law of Japan       |
|            | 3    | Safety standard certified type                                                    |
| GJ         | 4    | Audio signal low distortion type                                                  |
|            | 8    | Acoustic noise reduction type                                                     |
|            | M    | High frequency HiQ type<br>1005(in mm)/0402(in inch) size max.                    |
| GM         | A    | Wire bondable vertical electrode type                                             |
|            | D    | Wire bondable/AuSn solderable type                                                |
| GQ         | M    | High frequency HiQ type<br>1608(in mm)/0603(in inch) size min.                    |
| GR         | 3    | High effective capacitance &<br>High allowable ripple current                     |
|            | 4    | For Ethernet LAN & primary-secondary<br>coupling of DC-DC converters              |
|            | 7    | Product limited to camera flash units                                             |
|            | J    | Resin external electrode type                                                     |
|            | M    | General purpose products                                                          |
| KR         | 3    | Metal terminal type/High effective capacitance<br>& High allowable ripple current |
|            | M    | Metal terminal type                                                               |
| LL         | A    | 8 terminal low ESL type                                                           |
|            | L    | LW reversed low ESL type                                                          |
|            | M    | 10 terminal low ESL type                                                          |
|            | R    | ESR controlled low ESL type                                                       |
| ZR         | A    | On interposer substrates<br>(Chip < interposer substrates)                        |
|            | B    | On interposer substrates<br>(Chip ≥ interposer substrates)                        |

#### ③ Chip Dimensions (L x W) (Except ZRA)

| Code | Dimensions (L x W) | EIA    |
|------|--------------------|--------|
| 02   | 0.4 x 0.2mm        | 01005  |
| 03   | 0.6 x 0.3mm        | 0201   |
| 05   | 0.5 x 0.5mm        | 0202   |
| 08   | 0.8 x 0.8mm        | 0303   |
| 0D   | 0.38 x 0.38mm      | 015015 |
| 15   | 1.0 x 0.5mm        | 0402   |
| 18   | 1.6 x 0.8mm        | 0603   |
| 1U   | 0.6 x 1.0mm        | 02404  |
| 21   | 2.0 x 1.25mm       | 0805   |
| 22   | 2.8 x 2.8mm        | 1111   |
| 31   | 3.2 x 1.6mm        | 1206   |
| 32   | 3.2 x 2.5mm        | 1210   |
| 42   | 4.5 x 2.0mm        | 1808   |
| 43   | 4.5 x 3.2mm        | 1812   |
| 52   | 5.7 x 2.8mm        | 2211   |
| 55   | 5.7 x 5.0mm        | 2220   |

#### ③ Dimensions (L x W) (ZRA Only)

| Code | Dimensions (L x W) |
|------|--------------------|
| 21   | 2.4 x 1.65mm       |

#### ④ Height Dimension (T) (Except KR□)

| Code | Dimension (T)                    |
|------|----------------------------------|
| 2    | 0.2mm                            |
| 3    | 0.3mm                            |
| 4    | 0.4mm                            |
| 5    | 0.5mm                            |
| 6    | 0.6mm                            |
| 7    | 0.7mm                            |
| 8    | 0.8mm                            |
| 9    | 0.85mm                           |
| A    | 1.0mm                            |
| B    | 1.25mm                           |
| C    | 1.6mm                            |
| D    | 2.0mm                            |
| E    | 2.5mm                            |
| M    | 1.15mm                           |
| N    | 1.35mm                           |
| Q    | 1.5mm                            |
| R    | 1.8mm                            |
| S    | 2.8mm                            |
| X    | Depends on individual standards. |

#### ④ Height Dimension (T) (KR□ Only)

| Code | Dimension (T) |
|------|---------------|
| E    | 1.8mm         |
| F    | 1.9mm         |
| K    | 2.7mm         |
| L    | 2.8mm         |
| Q    | 3.7mm         |
| T    | 4.8mm         |
| W    | 6.4mm         |

Continued on the following page. 

(Part Number)

| GR | M | 18 | 8 | B1 | 1H | 102 | K | A01 | D  |
|----|---|----|---|----|----|-----|---|-----|----|
| 1  | 2 | 3  | 4 | 5  | 6  | 7   | 8 | 9   | 10 |

 Continued from the preceding page.

**5** Temperature Characteristics

| Temperature Characteristic Codes |                 | Temperature Characteristics |                   |                                               |                     | Operating Temperature Range | Capacitance Change Each Temperature (%) |       |       |       |      |       |
|----------------------------------|-----------------|-----------------------------|-------------------|-----------------------------------------------|---------------------|-----------------------------|-----------------------------------------|-------|-------|-------|------|-------|
| Code                             | Public STD Code | Reference Temperature       | Temperature Range | Capacitance Change or Temperature Coefficient | -55°C               |                             | *6                                      |       | -10°C |       |      |       |
|                                  |                 |                             |                   |                                               | Max.                |                             | Min.                                    | Max.  | Min.  | Max.  | Min. |       |
| 1C                               | CG              | JIS                         | 20°C              | 20 to 125°C                                   | 0±30ppm/°C          | -55 to 125°C                | 0.54                                    | -0.23 | 0.33  | -0.14 | 0.22 | -0.09 |
| 1X                               | SL              | JIS                         | 20°C              | 20 to 85°C                                    | +350 to -1000ppm/°C | -55 to 125°C                | -                                       | -     | -     | -     | -    | -     |
| 2C                               | CH              | JIS                         | 20°C              | 20 to 125°C                                   | 0±60ppm/°C          | -55 to 125°C                | 0.82                                    | -0.45 | 0.49  | -0.27 | 0.33 | -0.18 |
| 3C                               | CJ              | JIS                         | 20°C              | 20 to 125°C                                   | 0±120ppm/°C         | -55 to 125°C                | 1.37                                    | -0.9  | 0.82  | -0.54 | 0.55 | -0.36 |
| 3U                               | UJ              | JIS                         | 20°C              | 20 to 85°C                                    | -750±120ppm/°C      | -25 to 85°C                 | -                                       | -     | 4.94  | 2.84  | 3.29 | 1.89  |
| 4C                               | CK              | JIS                         | 20°C              | 20 to 125°C                                   | 0±250ppm/°C         | -55 to 125°C                | 2.56                                    | -1.88 | 1.54  | -1.13 | 1.02 | -0.75 |
| 5C                               | C0G             | EIA                         | 25°C              | 25 to 125°C                                   | 0±30ppm/°C          | -55 to 125°C                | 0.58                                    | -0.24 | 0.4   | -0.17 | 0.25 | -0.11 |
| 6C                               | C0H             | EIA                         | 25°C              | 25 to 125°C                                   | 0±60ppm/°C          | -55 to 125°C                | 0.87                                    | -0.48 | 0.59  | -0.33 | 0.38 | -0.21 |
| 7U                               | U2J             | EIA                         | 25°C              | 25 to 125°C *5                                | -750±120ppm/°C      | -55 to 125°C                | 8.78                                    | 5.04  | 6.04  | 3.47  | 3.84 | 2.21  |
| 9C                               | CGJ             | *2                          | 20°C              | 20 to 85°C                                    | 0±30ppm/°C          | -55 to 85°C                 | 0.54                                    | -0.23 | 0.33  | -0.14 | 0.22 | -0.09 |
| B1                               | B *1            | JIS                         | 20°C              | -25 to 85°C                                   | ±10%                | -25 to 85°C                 | -                                       | -     | -     | -     | -    | -     |
| B3                               | B               | JIS                         | 20°C              | -25 to 85°C                                   | ±10%                | -25 to 85°C                 | -                                       | -     | -     | -     | -    | -     |
| C6                               | X5S             | EIA                         | 25°C              | -55 to 85°C                                   | ±22%                | -55 to 85°C                 | -                                       | -     | -     | -     | -    | -     |
| C7                               | X7S             | EIA                         | 25°C              | -55 to 125°C                                  | ±22%                | -55 to 125°C                | -                                       | -     | -     | -     | -    | -     |
| C8                               | X6S             | EIA                         | 25°C              | -55 to 105°C                                  | ±22%                | -55 to 105°C                | -                                       | -     | -     | -     | -    | -     |
| D6                               | X5T             | EIA                         | 25°C              | -55 to 85°C                                   | +22%, -33%          | -55 to 85°C                 | -                                       | -     | -     | -     | -    | -     |
| D7                               | X7T             | EIA                         | 25°C              | -55 to 125°C                                  | +22%, -33%          | -55 to 125°C                | -                                       | -     | -     | -     | -    | -     |
| D8                               | X6T             | EIA                         | 25°C              | -55 to 105°C                                  | +22%, -33%          | -55 to 105°C                | -                                       | -     | -     | -     | -    | -     |
| E7                               | X7U             | EIA                         | 25°C              | -55 to 125°C                                  | +22%, -56%          | -55 to 125°C                | -                                       | -     | -     | -     | -    | -     |
| R1                               | R *1            | JIS                         | 20°C              | -55 to 125°C                                  | ±15%                | -55 to 125°C                | -                                       | -     | -     | -     | -    | -     |
| R6                               | X5R             | EIA                         | 25°C              | -55 to 85°C                                   | ±15%                | -55 to 85°C                 | -                                       | -     | -     | -     | -    | -     |
| R7                               | X7R             | EIA                         | 25°C              | -55 to 125°C                                  | ±15%                | -55 to 125°C                | -                                       | -     | -     | -     | -    | -     |
| R8                               | R *1            | JIS                         | 20°C              | -25 to 85°C                                   | ±15%                | -25 to 85°C                 | -                                       | -     | -     | -     | -    | -     |
| W0                               | X7T             | EIA                         | 25°C              | -55 to 125°C                                  | ±10% *3             | -55 to 125°C                | -                                       | -     | -     | -     | -    | -     |
|                                  |                 |                             |                   |                                               | +22%, -33% *4       |                             | -                                       | -     | -     | -     | -    | -     |
| Z7                               | X7R             | EIA                         | 25°C              | -55 to 125°C                                  | ±15% *7             | -55 to 125°C                | -                                       | -     | -     | -     | -    | -     |

\*1 Capacitance change is specified with 50% rated voltage applied.

\*2 Murata Temperature Characteristic Code.

\*3 Apply DC350V bias.

\*4 No DC bias.

\*5 Rated Voltage 100Vdc max: 25 to 85°C

\*6 -25°C (Reference Temperature 20°C) / -30°C (Reference Temperature 25°C)

\*7 Range of capacitance change rate with 50% rated voltage applied (See detailed specifications sheet).

Continued on the following page. 

(Part Number)

| GR | M | 18 | 8 | B1 | 1H | 102 | K | A01 | D  |
|----|---|----|---|----|----|-----|---|-----|----|
| 1  | 2 | 3  | 4 | 5  | 6  | 7   | 8 | 9   | 10 |

 Continued from the preceding page.

#### ⑥ Rated Voltage

| Code | Rated Voltage                                         |
|------|-------------------------------------------------------|
| OE   | DC2.5V                                                |
| OG   | DC4V                                                  |
| OJ   | DC6.3V                                                |
| 1A   | DC10V                                                 |
| 1C   | DC16V                                                 |
| 1D   | DC20V                                                 |
| 1E   | DC25V                                                 |
| 1H   | DC50V                                                 |
| 1J   | DC63V                                                 |
| 1K   | DC80V                                                 |
| 2A   | DC100V                                                |
| 2D   | DC200V                                                |
| 2E   | DC250V                                                |
| 2W   | DC450V                                                |
| 2H   | DC500V                                                |
| 2J   | DC630V                                                |
| 3A   | DC1kV                                                 |
| 3D   | DC2kV                                                 |
| 3F   | DC3.15kV                                              |
| BB   | DC350V                                                |
| E2   | AC250V                                                |
| GB   | X2; AC250V (Safety Standard Certified Type GB)        |
| GD   | Y3; AC250V (Safety Standard Certified Type GD)        |
| GF   | Y2, X1/Y2; AC250V (Safety Standard Certified Type GF) |
| YA   | DC35V                                                 |

#### ⑦ Capacitance

Expressed by three-digit alphanumerics. The unit is picofarad (pF). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two numbers. If there is a decimal point, it is expressed by the capital letter "R." In this case, all figures are significant digits. If any alphabet, other than "R", is included, this indicates the specific part number is a non-standard part.

Ex.)

| Code | Capacitance |
|------|-------------|
| R50  | 0.50pF      |
| 1R0  | 1.0pF       |
| 100  | 10pF        |
| 103  | 10000pF     |

#### ⑧ Capacitance Tolerance

| Code | Capacitance Tolerance            |
|------|----------------------------------|
| B    | ±0.1pF                           |
| C    | ±0.25pF                          |
| D    | ±0.5pF (10pF and below)          |
|      | ±0.5% (10pF and over)            |
| F    | ±1%                              |
| G    | ±2%                              |
| J    | ±5%                              |
| K    | ±10%                             |
| M    | ±20%                             |
| R    | Depends on individual standards. |
| W    | ±0.05pF                          |

#### ⑨ Individual Specification Code (Except LLR)

Expressed by three figures.

#### ⑨ ESR (LLR Only)

| Code | ESR    |
|------|--------|
| E01  | 100mΩ  |
| E03  | 220mΩ  |
| E05  | 470mΩ  |
| E07  | 1000mΩ |

#### ⑩ Packaging

| Code  | Packaging              |
|-------|------------------------|
| L     | ø180mm Embossed Taping |
| D/E/W | ø180mm Paper Taping    |
| K     | ø330mm Embossed Taping |
| J/F   | ø330mm Paper Taping    |
| B     | Bulk                   |
| C     | Bulk Case              |
| T     | Bulk Tray              |

Please contact us if you find any part number not provided in this table.