

● Part Numbering

Chip Monolithic Ceramic Capacitors

(Part Number)

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

① Product ID

② Series

| Product ID | Code | Series |
|------------|----------|---|
| GR | M | Tin Plated Layer |
| | 4 | Only for Information Devices / Tip & Ring |
| | 7 | Only for Camera Flash Circuit |
| ER | B | High Frequency Type |
| GQ | M | High Frequency for Flow/Reflow Soldering |
| GM | A | Monolithic Microchip |
| GN | M | Capacitor Array |
| LL | L | Low ESL Wide Width Type |
| | C | Automotive Low ESL Wide Width Type |
| | A | Eight-termination Low ESL Type |
| | M | Ten-termination Low ESL Type |
| GJ | M | High Frequency Low Loss Type Tin Plated Type |
| | 6 | High Frequency Low Loss Type |
| GA | 2 | for AC250V (r.m.s.) |
| | 3 | Safety Standard Recognized Type |
| GC | P | Automotive Soldering Electrode |
| | M | Automotive Tin Plated Layer |


③ Dimension (L×W)

| Code | Dimension (L×W) | EIA |
|-----------|----------------------------------|-------|
| 02 | 0.4×0.2mm | 01005 |
| 03 | 0.6×0.3mm | 0201 |
| 05 | 0.5×0.5mm | 0202 |
| 08 | 0.8×0.8mm | 0303 |
| 11 | 1.25×1.0mm | 0504 |
| 15 | 1.0×0.5mm | 0402 |
| 18 | 1.6×0.8mm | 0603 |
| 1D | 1.4×1.4mm | |
| 1X | Depends on individual standards. | |
| 21 | 2.0×1.25mm | 0805 |
| 22 | 2.8×2.8mm | 1111 |
| 31 | 3.2×1.6mm | 1206 |
| 32 | 3.2×2.5mm | 1210 |
| 3X | Depends on individual standards. | |
| 42 | 4.5×2.0mm | 1808 |
| 43 | 4.5×3.2mm | 1812 |
| 52 | 5.7×2.8mm | 2211 |
| 55 | 5.7×5.0mm | 2220 |

④ Dimension (T)

| Code | Dimension (T) |
|----------|----------------------------------|
| 2 | 0.2mm |
| 2 | 2-elements (Array Type) |
| 3 | 0.3mm |
| 4 | 4-elements (Array Type) |
| 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 |
| F | 3.2mm |
| M | 1.15mm |
| N | 1.35mm |
| R | 1.8mm |
| S | 2.8mm |
| Q | 1.5mm |
| X | Depends on individual standards. |

With the array type GNM series, "Dimension(T)" indicates the number of elements.

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5 Temperature Characteristics

| Temperature Characteristic Codes | | | Temperature Characteristics | | | Operating Temperature Range |
|----------------------------------|-----------------|-----|-----------------------------|-------------------|---|-----------------------------|
| Code | Public STD Code | | Reference Temperature | Temperature Range | Capacitance Change or Temperature Coefficient | |
| 1X | SL *1 | JIS | 20°C | 20 to 85°C | +350 to -1000ppm/°C | -55 to 125°C |
| 2C | CH *1 | JIS | 20°C | 20 to 125°C | 0±60ppm/°C | -55 to 125°C |
| 2P | PH *1 | JIS | 20°C | 20 to 85°C | -150±60ppm/°C | -25 to 85°C |
| 2R | RH *1 | JIS | 20°C | 20 to 85°C | -220±60ppm/°C | -25 to 85°C |
| 2S | SH *1 | JIS | 20°C | 20 to 85°C | -330±60ppm/°C | -25 to 85°C |
| 2T | TH *1 | JIS | 20°C | 20 to 85°C | -470±60ppm/°C | -25 to 85°C |
| 3C | CJ *1 | JIS | 20°C | 20 to 125°C | 0±120ppm/°C | -55 to 125°C |
| 3P | PJ *1 | JIS | 20°C | 20 to 85°C | -150±120ppm/°C | -25 to 85°C |
| 3R | RJ *1 | JIS | 20°C | 20 to 85°C | -220±120ppm/°C | -25 to 85°C |
| 3S | SJ *1 | JIS | 20°C | 20 to 85°C | -330±120ppm/°C | -25 to 85°C |
| 3T | TJ *1 | JIS | 20°C | 20 to 85°C | -470±120ppm/°C | -25 to 85°C |
| 3U | UJ *1 | JIS | 20°C | 20 to 85°C | -750±120ppm/°C | -25 to 85°C |
| 4C | CK *1 | JIS | 20°C | 20 to 125°C | 0±250ppm/°C | -55 to 125°C |
| 5C | C0G *1 | EIA | 25°C | 25 to 125°C | 0±30ppm/°C | -55 to 125°C |
| 5G | X8G *1 | EIA | 25°C | 25 to 150°C | 0±30ppm/°C | -55 to 150°C |
| 6C | C0H *1 | EIA | 25°C | 25 to 125°C | 0±60ppm/°C | -55 to 125°C |
| 6C | CH *1,*3 | EIA | 25°C | 25 to 125°C | 0±60ppm/°C | -55 to 125°C |
| 6P | P2H *1 | EIA | 25°C | 25 to 85°C | -150±60ppm/°C | -55 to 125°C |
| 6R | R2H *1 | EIA | 25°C | 25 to 85°C | -220±60ppm/°C | -55 to 125°C |
| 6S | S2H *1 | EIA | 25°C | 25 to 85°C | -330±60ppm/°C | -55 to 125°C |
| 6T | T2H *1 | EIA | 25°C | 25 to 85°C | -470±60ppm/°C | -55 to 125°C |
| 7C | CJ *1*3 | EIA | 25°C | 25 to 125°C | 0±120ppm/°C | -55 to 125°C |
| 7U | U2J *1 | EIA | 25°C | 25 to 85°C | -750±120ppm/°C | -55 to 125°C |
| 8C | CK *1,*3 | EIA | 25°C | 25 to 125°C | 0±250ppm/°C | -55 to 125°C |
| B1 | B *2 | 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 |
| C7 | X7S | EIA | 25°C | -55 to 125°C | ±22% | -55 to 125°C |
| E4 | Z5U | EIA | 25°C | 10 to 85°C | +22, -56% | 10 to 85°C |
| F1 | F *2 | JIS | 20°C | -25 to 85°C | +30, -80% | -25 to 85°C |
| F5 | Y5V | EIA | 25°C | -30 to 85°C | +22, -82% | -30 to 85°C |
| L8 | X8L | EIA | 25°C | -55 to 150°C | +15, -40% | -55 to 150°C |
| R1 | R *2 | JIS | 20°C | -55 to 125°C | ±15% | -55 to 125°C |
| R3 | R | 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 |
| R9 | X8R | EIA | 25°C | -55 to 150°C | ±15% | -55 to 150°C |
| C8 | X6S | EIA | 25°C | -55 to 105°C | ±22% | -55 to 105°C |
| 9E | ZLM | *4 | 20°C | -25 to 20°C | -4700+100/-2500ppm/°C | -25 to 85°C |
| | | | | 20 to 85°C | -4700+500/-1000ppm/°C | |
| W0 | - | - | 25°C | -55 to 125°C | ±10% *5 | -55 to 125°C |
| | | | | | +22, -33% *6 | |

*1 Please refer to table for Capacitance Change under reference temperature.


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

*3 ER series only.

*3,*4 Murata Temperature Characteristic Code.

*5 Apply DC350V bias.

*6 No DC bias.

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● Capacitance Change from each temperature

JIS Code


| Murata Code | Capacitance Change from 20°C (%) | | | | | |
|-------------|----------------------------------|-------|-------|-------|-------|-------|
| | -55°C | | -25°C | | -10°C | |
| | Max. | Min. | Max. | Min. | Max. | Min. |
| 1X | - | - | - | - | - | - |
| 2C | 0.82 | -0.45 | 0.49 | -0.27 | 0.33 | -0.18 |
| 2P | - | - | 1.32 | 0.41 | 0.88 | 0.27 |
| 2R | - | - | 1.70 | 0.72 | 1.13 | 0.48 |
| 2S | - | - | 2.30 | 1.22 | 1.54 | 0.81 |
| 2T | - | - | 3.07 | 1.85 | 2.05 | 1.23 |
| 3C | 1.37 | -0.90 | 0.82 | -0.54 | 0.55 | -0.36 |
| 3P | - | - | 1.65 | 0.14 | 1.10 | 0.09 |
| 3R | - | - | 2.03 | 0.45 | 1.35 | 0.30 |
| 3S | - | - | 2.63 | 0.95 | 1.76 | 0.63 |
| 3T | - | - | 3.40 | 1.58 | 2.27 | 1.05 |
| 3U | - | - | 4.94 | 2.84 | 3.29 | 1.89 |
| 4C | 2.56 | -1.88 | 1.54 | -1.13 | 1.02 | -0.75 |

EIA Code

| Murata Code | Capacitance Change from 25°C (%) | | | | | |
|--------------|----------------------------------|-------|-------|-------|-------|-------|
| | -55°C | | -30°C | | -10°C | |
| | Max. | Min. | Max. | Min. | Max. | Min. |
| 5C/5G | 0.58 | -0.24 | 0.40 | -0.17 | 0.25 | -0.11 |
| 6C | 0.87 | -0.48 | 0.59 | -0.33 | 0.38 | -0.21 |
| 6P | 2.33 | 0.72 | 1.61 | 0.50 | 1.02 | 0.32 |
| 6R | 3.02 | 1.28 | 2.08 | 0.88 | 1.32 | 0.56 |
| 6S | 4.09 | 2.16 | 2.81 | 1.49 | 1.79 | 0.95 |
| 6T | 5.46 | 3.28 | 3.75 | 2.26 | 2.39 | 1.44 |
| 7U | 8.78 | 5.04 | 6.04 | 3.47 | 3.84 | 2.21 |

ER□ Series

| Murata Code | Capacitance Change from 25°C (%) | | | | | |
|-------------|----------------------------------|-------|-------|-------|-------|-------|
| | -55°C | | -30°C | | -10°C | |
| | Max. | Min. | Max. | Min. | Max. | Min. |
| 5C | 0.43 | -0.22 | 0.28 | -0.16 | 0.17 | -0.11 |
| 6C | 0.73 | -0.44 | 0.48 | -0.32 | 0.29 | -0.20 |
| 7C | 1.33 | -0.93 | 0.88 | -0.64 | 0.54 | -0.42 |
| 8C | 2.61 | -0.97 | 1.73 | -1.36 | 1.07 | -0.86 |

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⑥ Rated Voltage

| Code | Rated Voltage |
|-----------|--|
| 0G | DC4V |
| 0J | DC6.3V |
| 1A | DC10V |
| 1C | DC16V |
| 1E | DC25V |
| 1H | DC50V |
| 2A | DC100V |
| 2D | DC200V |
| 2E | DC250V |
| YD | DC300V |
| 2H | DC500V |
| 2J | DC630V |
| 3A | DC1kV |
| 3D | DC2kV |
| 3F | DC3.15kV |
| BB | DC350V (for Camera Flash Circuit) |
| E2 | AC250V |
| GB | X2; AC250V (Safety Standard Recognized Type GB) |
| GC | X1/Y2; AC250V (Safety Standard Recognized Type GC) |
| GD | Y3; AC250V (Safety Standard Recognized Type GD) |
| GF | Y2, X1/Y2; AC250V (Safety Standard Recognized Type GF) |

⑧ Capacitance Tolerance

| Code | Capacitance Tolerance | TC | Series | Capacitance Step | |
|----------|-----------------------|---------------------|----------------------------------|------------------|-----------------|
| B | ±0.1pF | CΔ | GJM | ≤5pF | E24 Series, 1pF |
| C | ±0.25pF | CΔ-SL | GRM/ERB/GQM | ≤5pF | * 1pF |
| | | CΔ | GJM | <10pF | E24 Series, 1pF |
| D | ±0.5pF | CΔ-SL | GRM | 6.0 to 9.0pF | * 1pF |
| | | CΔ | ERB/GQM/GJM | 5.1 to 9.1pF | E24 Series |
| F | ±1% | CΔ | GRM03/15/GJM03/15 | 5.0 to 9.9pF | 0.1pF |
| G | ±2% | CΔ | GJM | ≥10pF | E12 Series |
| | | CΔ | GQM | ≥10pF | E24 Series |
| | | CΔ | GRM03/15/GJM03/15 | 2.0 to 9.9pF | 0.1pF |
| J | ±5% | CΔ-SL | GRM/GA3 | ≥10pF | E12 Series |
| | | CΔ | ERB/GQM/GJM | ≥10pF | E24 Series |
| | | CΔ | GRM03/15/GJM03/15 | 1.0 to 4.9pF | 0.1pF |
| K | ±10% | B, R, X7R, X5R, ZLM | GRM/GR7/GA3 | E6 Series | |
| | | CΔ | GR4 | E12 Series | |
| M | ±20% | Z5U | GRM | 0.2 to 1.9pF | 0.1pF |
| | | B, R, X7R, X7S | GRM/GMA/LLL/LLC/LLA/LLM | E6 Series | |
| | | X7R | GA2 | E3 Series | |
| | | CΔ | GRM03/15/GJM03/15 | 0.1 to 0.9pF | 0.1pF |
| Z | +80%, -20% | F, Y5V | GRM | E3 Series | |
| R | | | Depends on individual standards. | | |

* E24 series is also available.

⑨ Individual Specification Code


Expressed by three figures.

⑦ Capacitance

Expressed by three figures. The unit is pico-farad (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.

Ex.)

| Code | Capacitance |
|------------|-------------|
| R50 | 0.5pF |
| 1R0 | 1.0pF |
| 100 | 10pF |
| 103 | 10000pF |

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ⓐ Packaging

| Code | Packaging |
|------|--------------------------|
| L | ø178mm Plastic Taping |
| D | ø178mm Paper Taping |
| K | ø330mm Plastic Taping |
| J | ø330mm Paper Taping |
| E | ø178mm Special Packaging |
| F | ø330mm Special Packaging |
| B | Bulk |
| C | Bulk Case |
| T | Bulk Tray |