

Chip Multilayer Ceramic Capacitors for Automotive



2017

Explanation of Symbols in This Catalog



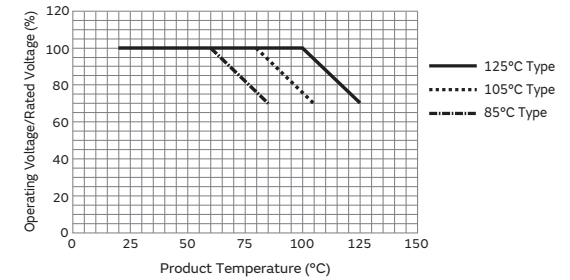
Links are provided to the latest information from the PDF version of the catalog, which is available on the web.

| | |
|--|---|
| General | For applications that do not require the particular reliability such as the general equipment |
| Info-tainment | Infotainment for Automotive The product for entertainment equipment like car navigations, car audios, and body control equipment like wipers, power windows. |
| Power-train | Powertrain/Safety for Automotive Product used for applications (running, turning, stopping and safety devices) which particularly concern human life, such as in devices for automobiles. |
| Medical Device | Medical-grade products for Implanted Medical Devices These products are intended for use in implanted medical devices such as cardiac pacemakers, cochlear implants, insulin pumps and gastric electrostimulators. They are suitable for use in non-critical circuits. *1 *1 Non-critical circuits This term refers to circuits in implanted medical devices that are not directly linked to life support, i.e. circuits that will not directly endanger the life of the patient should the functionality of the device be reduced or halted by failure of the circuit. |
| AEC-Q200 | AEC-Q200 compliant product |
| Safety standard | Safety Standard Certified Product Products that acquired safety standard certification IEC60384-14 and products based on the Electrical Appliance and Material Safety Law of Japan. |
| High Q | Low dissipation for high frequency By devising ceramic materials and electrode materials, low dissipation is achieved in frequency bands of VHF, UHF and microwave or beyond. |
| Low ESL | Low inductance This capacitor is designed so that the parasitic inductance component (ESL) that the capacitor has on the high frequency side becomes lower. |
| Fail safe | Fail safe product This capacitor is designed to prevent failures as much as possible by short mode. |
| Deflecting crack | Product resistant to deflection cracking This capacitor is designed to prevent failures as much as possible by short mode caused by cracking when there is board deflection. |
| Soldering crack | Product with solder cracking suppression This capacitor is configured with metal terminals and leads connected to the chip. The metal terminals and leads relieve the stress from expansion and contraction of the solder, to suppress solder cracking. |
| Anti-noise | Product suitable for acoustic noise reduction and low distortion This product suppresses acoustic noise, which occurs when a ceramic capacitor is used, by devising the materials and configuration. |
| Effective Cap | No DC bias characteristics Polymer capacitor is no capacitance change with DC bias due to aluminum oxidized film for dielectric. |
| EMI FIL® | Low-inductance product suitable for noise suppression. This product has extremely low ESL and is suitable for suppression of noise, including high frequencies. This product can also be used as a low-ESL, high-performance bypass capacitor. |
| Limited to conductive glue mounting | Limited to Conductive Glue Mounting Since silver palladium is used for the external electrodes, the capacitor can be mounted by conductive adhesive. |

Derating 1
 This product is suitable when a voltage continuously applied to a capacitor in an operating circuit, is used below (derated) the rated voltage of the capacitor. This model guarantees the test conditions in the endurance test, at a rated voltage x 100% at the maximum operating temperature. A reliability assurance level equivalent to a common product can be secured, by using this product within the voltage and temperature derated conditions recommended in the figure below.

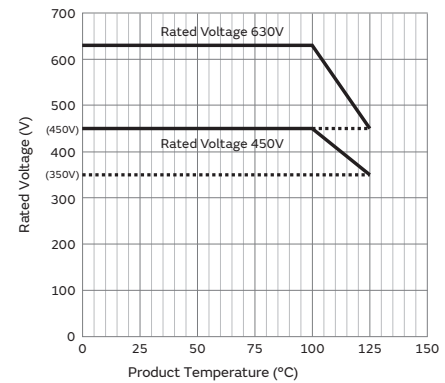
D1
 Derating 1

Recommended Conditions of the Derating Operating Voltage and Temperature



Derating 2
 When the product temperature exceeds 105°C, please use this product within the voltage and temperature derated conditions in the figure below.

D2
 Derating 2

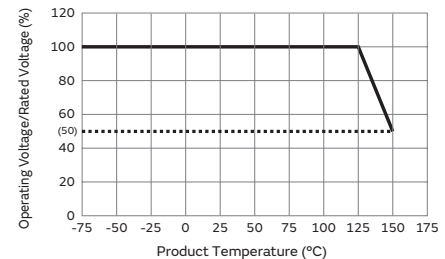


Derating 3
 Please apply the derating curve according to the operating temperature.
 Please refer to detailed specifications sheet for details.

D3
 Derating 3

Derating 4
 When the product temperature exceeds 125°C, please use this product within the voltage and temperature derated conditions in the figure below.

D4
 Derating 4



Derating 5
 Please apply the rated voltage derating over 150°C. Please refer to detailed specifications sheet for details.

D5
 Derating 5

Selection Guide for Capacitors

Infotainment for automotive

SMD

Solder mounting

Chip type

| | | | |
|--|------------|--|-----|
| | GRT | | P23 |
|--|------------|--|-----|

Powertrain/Safety for automotive

SMD

Solder mounting

Chip type

| | | | |
|--|------------|-----------------|--|
| | GCM | | P29 |
| | GC3 | Anti-noise | High effective capacitance & high ripple current P37 |
| | GCJ | Fail safe | Soft termination P39 |
| | GGM | Water Resistant | WEB |
| | GCQ | High Q | WEB |
| | GCD | Fail safe | MLSC design P45 |
| | GCE | Fail safe | Soft termination MLSC design P47 |
| | GGD | Fail safe | MLSC design WEB |
| | NFM | Low ESL | 3 terminals P49 |

Metal terminal type

| | | | | | | |
|--|------------|-----------------|------------------|------------------|--|-----|
| | KCM | Anti-noise | Deflecting crack | Soldering crack | P51 | |
| | KC3 | Anti-noise | Deflecting crack | Soldering crack | High effective capacitance & high ripple current P54 | |
| | KCA | Safety standard | Anti-noise | Deflecting crack | Soldering crack | P57 |

Limited to Conductive Glue Mounting

Chip type

| | | | | | |
|--|------------|------------------|-----------------|--|-----|
| | GCB | Deflecting crack | Soldering crack | Ni plating + Pd plating termination conductive glue mounting | WEB |
| | GCG | Deflecting crack | Soldering crack | AgPd termination conductive glue mounting | P60 |

Lead type

Solder mounting

| | | | | | |
|--|------------|-----------------|------------------|-----------------|----------------------------|
| | RCE | Anti-noise | Deflecting crack | Soldering crack | WEB |
| | RHE | Anti-noise | Deflecting crack | Soldering crack | 150°C operation leaded WEB |
| | RHS | Anti-noise | Deflecting crack | Soldering crack | 200°C operation leaded WEB |
| | DE6 | Safety standard | | | WEB |

Medical-grade products for implanted medical devices

SMD

Solder mounting

Chip type

| | | | |
|--|------------|--|-----|
| | GCH | | WEB |
|--|------------|--|-----|

For general

General SMD

Solder mounting

Chip type

| | | | |
|--|------------|------------------|--|
| | GRM | | WEB |
| | GRM | | For LCD backlight inverter circuit only WEB |
| | GR3 | Anti-noise | High effective capacitance & high ripple current WEB |
| | GRJ | Deflecting crack | Soft termination WEB |
| | GXM | Water Resistant | WEB |
| | GR4 | | For information devices only WEB |
| | GR7 | | For camera flash circuit only WEB |
| | GJM | High Q | WEB |
| | GQM | High Q | High power WEB |
| | GA2 | | Based on the Electrical Appliance and Material Safety Law of Japan WEB |
| | GA3 | Safety standard | WEB |
| | LLL | Low ESL | LW reversed WEB |
| | LLA | Low ESL | 8 terminals WEB |
| | LLM | Low ESL | 10 terminals WEB |
| | LLR | Low ESL | LW reversed controlled ESR WEB |
| | NFM | Low ESL | 3 terminals WEB |
| | GJ4 | Anti-noise | Low distortion WEB |
| | GJ8 | Anti-noise | Low acoustic noise WEB |

On interposer board

| | | | |
|--|------------|------------|-----|
| | ZRA | Anti-noise | WEB |
| | ZRB | Anti-noise | WEB |

Metal terminal type

| | | | | | |
|--|------------|------------|------------------|-----------------|--|
| | KRM | Anti-noise | Deflecting crack | Soldering crack | WEB |
| | KR3 | Anti-noise | Deflecting crack | Soldering crack | High effective capacitance & high ripple current WEB |

Resin molding SMD type

| | | | |
|--|------------|-----------------|-----|
| | DK1 | Safety standard | WEB |
|--|------------|-----------------|-----|

Wire bonding mounting

Bonding

Chip type

| | | | |
|--|------------|--|---------------|
| | GMA | | Microchip WEB |
| | GMD | | WEB |

Lead type

Solder mounting

| | | | | | |
|--|------------|--------------------|------------------|-----------------|--|
| | RDE | Anti-noise | Deflecting crack | Soldering crack | WEB |
| | DEH | | | | High temperature low loss WEB |
| | DEA | | | | High temperature Class 1 WEB |
| | DEB | | | | Class 2 WEB |
| | DEC | | | | WEB |
| | DEF | | | | For LCD backlight inverter circuit only WEB |
| | DHR | Ultra-high-voltage | Deflecting crack | Soldering crack | WEB |
| | DEJ | | | | Based on the Electrical Appliance and Material Safety Law of Japan WEB |
| | DE1 | Safety standard | | | X1/Y1 Class certified product WEB |
| | DE2 | Safety standard | | | X1/Y2 Class certified product WEB |

Screw termination mounting

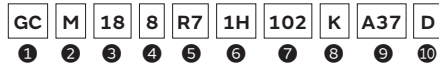
| | | | | | |
|--|------------|--------------------|--|--|---------------------------|
| | DHS | Ultra-high-voltage | | | WEB |
| | DHK | Ultra-high-voltage | | | High voltage AC rated WEB |

● Part Numbering

Chip Multilayer Ceramic Capacitors for Automotive



(Part Number)



① Product ID

② Series

| Product ID | Code | Series |
|------------|------|--|
| GC | 3 | High effective capacitance & High allowable ripple current |
| | D | Specially designed product to reduce shorts |
| | E | Specially designed product to reduce shorts & resin electrode product |
| | G | Limited to conductive glue mounting |
| | J | Soft termination type |
| | M | For automotive |
| GR | T | Meet AEC-Q200 for infotainment |
| KC | 3 | Metal terminal type/High effective capacitance & High allowable ripple current |
| | A | Metel terminal type/ Safety standard certified product |
| | M | Metal terminal type |

③ Chip Dimension (L x W)

| Code | Dimension (L x W) | EIA |
|------|-------------------|------|
| 03 | 0.6 x 0.3mm | 0201 |
| 15 | 1.0 x 0.5mm | 0402 |
| 18 | 1.6 x 0.8mm | 0603 |
| 21 | 2.0 x 1.25mm | 0805 |
| 31 | 3.2 x 1.6mm | 1206 |
| 32 | 3.2 x 2.5mm | 1210 |
| 43 | 4.5 x 3.2mm | 1812 |
| 55 | 5.7 x 5.0mm | 2220 |

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 | | *4 | | -10°C | | | |
| | | | | | Max. | | Min. | Max. | Min. | Max. | Min. | |
| 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 |
| 5G | X8G | *2 | 25°C | 25 to 150°C | 0±30ppm/°C | -55 to 150°C | 0.58 | -0.24 | 0.4 | -0.17 | 0.25 | -0.11 |
| 7U | U2J | EIA | 25°C | 25 to 125°C *3 | -750±120ppm/°C | -55 to 125°C | 8.78 | 5.04 | 6.04 | 3.47 | 3.84 | 2.21 |
| 9E | ZLM | *2 | 20°C | -55 to -40°C | -4700+1000/-2500ppm/°C | -55 to 125°C | - | - | - | - | - | - |
| | | | | -40 to 20°C | -5350±750ppm/°C | | - | - | - | - | - | |
| | | | | 20 to 85°C | -4700±500ppm/°C | | - | - | - | - | - | |
| | | | | 85 to 125°C | -4700+2000/-1000ppm/°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 | - | - | - | - | - | - |
| D7 | X7T | EIA | 25°C | -55 to 125°C | +22%, -33% | -55 to 125°C | - | - | - | - | - | - |
| L8 | X8L | *2 | 25°C | -55 to 150°C | +15%, -40% | -55 to 150°C | - | - | - | - | - | - |
| M8 | X8M | *2 | 25°C | -55 to 150°C | +15%, -50% | -55 to 150°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 | - | - | - | - | - | - |

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

*2 Murata Temperature Characteristic Code.

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

*4 -25°C (Reference Temperature 20°C) / -30°C (Reference Temperature 25°C)

④ Height Dimension (T) (Except KC□)

| Code | Dimension (T) |
|------|----------------------------------|
| 3 | 0.3mm |
| 5 | 0.5mm |
| 6 | 0.6mm |
| 8 | 0.8mm |
| 9 | 0.85mm |
| A | 1.0mm |
| B | 1.25mm |
| C | 1.6mm |
| D | 2.0mm |
| E | 2.5mm |
| M | 1.15mm |
| Q | 1.5mm |
| X | Depends on individual standards. |

④ Height Dimension (T) (KC□ Only)

| Code | Dimension (T) |
|------|---------------|
| L | 2.8mm |
| Q | 3.7mm |
| T | 4.8mm |
| W | 6.4mm |

Continued on the following page. ↗

(Part Number)

| | | | | | | | | | |
|----|---|----|---|----|----|-----|---|-----|----|
| GC | M | 18 | 8 | R7 | 1H | 102 | K | A37 | D |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Continued from the preceding page. ↘

⑥ Rated Voltage

| Code | | Rated Voltage |
|------------------|-------------------------|--|
| Standard Product | Voltage Derated Product | |
| 0E | - | DC2.5V |
| 0G | - | DC4V |
| 0J | EC | DC6.3V |
| 1A | ED | DC10V |
| 1C | EE | DC16V |
| 1E | EF | DC25V |
| YA | EG | DC35V |
| 1H | EH | DC50V |
| 1J | - | DC63V |
| 1K | - | DC80V |
| 2A | EL | DC100V |
| 2E | - | DC250V |
| 2W | LP | DC450V |
| 2J | LQ | DC630V |
| 3A | - | DC1kV |
| MF | - | X1/Y2: AC250V (Safety Standard Certified Type MF) |

⑦ Capacitance

Expressed by three-digit alphanumerics. The unit is pico-farad (pF). The first and second figures are significant digits, and the third figure expresses the number of zeros that 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 letter, 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 |
|------|-------------------------|
| C | ±0.25pF |
| D | ±0.5pF (Less than 10pF) |
| | ±0.5% (10pF and over) |
| J | ±5% |
| K | ±10% |
| M | ±20% |

⑨ Individual Specification Code

Expressed by three figures.

⑩ Package

| Code | Package |
|------|------------------------|
| L | ø180mm Embossed Taping |
| D/W | ø180mm Paper Taping |
| K | ø330mm Embossed Taping |
| J | ø330mm Paper Taping |

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

3 Terminal Low ESL Multilayer Ceramic Capacitors



(Part Number)

| | | | | | | | | |
|----|---|----|----|-----|---|----|---|---|
| NF | M | 3D | CC | 102 | R | 1H | 3 | L |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

1 Product ID 2 Series

| Product ID | Series |
|------------|-------------------------|
| NFM | 3 Terminal Low ESL Type |

3 Dimensions (LxW)

| Code | Dimensions (LxW) | EIA |
|------|------------------|------|
| 21 | 2.0x1.25mm | 0805 |
| 31 | 3.2x1.6mm | 1206 |

4 Features

| Code | Features | |
|------|----------------------------------|--------------------------------------|
| HC | Powertrain/Safety for Automotive | For Signal Lines / For Large Current |
| HK | | For Very Large Current |

5 Capacitance

Expressed by three figures. The unit is in pico-farad (pF). The first and second figures are significant digits, and the third figure expresses the number of zeros that follow the two figures.

6 Characteristics

| Code | Capacitance Temperature Characteristics |
|------|---|
| R | ±15%, +15/-18% |

7 Rated Voltage

| Code | Rated Voltage |
|------|---------------|
| 1A | 10V |
| 1C | 16V |
| 1H | 50V |
| 2A | 100V |

8 Electrode

| Code | Electrode |
|------|------------|
| 3 | Sn Plating |

9 Packaging

| Code | Packaging |
|------|-------------------------------|
| L | Embossed Taping (ø180mm Reel) |
| D | Paper Taping (ø180mm Reel) |

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

AEC-Q200 Compliant Chip Multilayer Ceramic Capacitors for Infotainment

GRT Series



Capacitor meet AEC-Q200 (Grade2 or Grade3).

Features

① This product has cleared test conditions meet AEC-Q200.

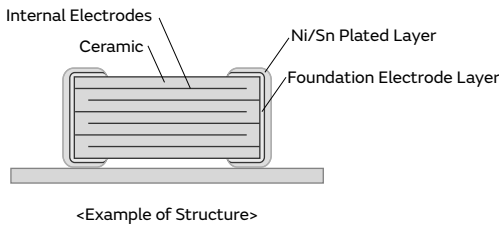
This series is designed for use in Car Multimedia, Car Interior, Car Comfort application and General Electronic equipment. It is not appropriate for use in applications critical to passenger safety and car driving function (e.g. ABS, AIRBAG, etc.). Please use the GCM series is in critical applications.

| | General Purpose GRM Series Maximum operating temperature: 125°C | AEC-Q200 meteed GRT Series Maximum operating temperature: 125°C |
|-------------------|--|--|
| Items | Test Method | Test Method |
| Temperature Cycle | Temperature Cycle: 5 cycles | Temperature Cycle: 1,000 cycles |
| Humidity Loading | Test temperature: 40±2°C Test humidity: 90 to 95%RH Test time: 500 hours | Test temperature: 85±2°C Test humidity: 80 to 85%RH Test time: 1,000 hours |

② Meet AEC-Q200 (Grade2 or Grade3).

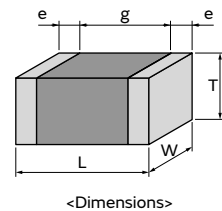
105°C product: Grade2.
 85°C product: Grade3.

③ Sn plating is applied to the external electrodes; excellent solderability.



Specifications

| | |
|-------------------|--|
| Size | 0.6×0.3mm to 3.2×2.5mm |
| Rated Voltage | 2.5Vdc to 100Vdc |
| Capacitance | 0.50pF to 100μF |
| Main Applications | Such as Information and Comfort equipment, car navigation, communication module and entertainment system |



GRT Series

GCM Series

GC3 Series

GCM Series

GCD Series

GCE Series

NMF Series

KCM Series

KC3 Series

KCA Series

GCG Series

△Caution / Notice

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GRT Series

GCM Series

GC3 Series

G CJ Series

GCD Series

GCE Series

NMF Series

KCM Series

KC3 Series

KCA Series

GCG Series

Caution/
 Notice

GRT Series Temperature Compensating Type Part Number List

1.0×0.5mm

| T max. | Rated Voltage | TC Code | Cap. | Tol. | Part Number |
|--------|---------------|--------------------|--------------------|--------------------|--------------------|
| 0.55mm | 100Vdc | COG | 1.0pF | ±0.25pF | GRT1555C2A1R0CA02# |
| | | | 2.0pF | ±0.25pF | GRT1555C2A2R0CA02# |
| | | | 3.0pF | ±0.25pF | GRT1555C2A3R0CA02# |
| | | | 4.0pF | ±0.25pF | GRT1555C2A4R0CA02# |
| | | | 5.0pF | ±0.25pF | GRT1555C2A5R0CA02# |
| | | | 6.0pF | ±0.5pF | GRT1555C2A6R0DA02# |
| | | | 7.0pF | ±0.5pF | GRT1555C2A7R0DA02# |
| | | | 8.0pF | ±0.5pF | GRT1555C2A8R0DA02# |
| | | | 9.0pF | ±0.5pF | GRT1555C2A9R0DA02# |
| | | | 10pF | ±5% | GRT1555C2A100JA02# |
| | | | 12pF | ±5% | GRT1555C2A120JA02# |
| | | | 15pF | ±5% | GRT1555C2A150JA02# |
| | | | 18pF | ±5% | GRT1555C2A180JA02# |
| | | | 22pF | ±5% | GRT1555C2A220JA02# |
| | | | 27pF | ±5% | GRT1555C2A270JA02# |
| | | | 33pF | ±5% | GRT1555C2A330JA02# |
| | | | 39pF | ±5% | GRT1555C2A390JA02# |
| | | | 47pF | ±5% | GRT1555C2A470JA02# |
| | | | 56pF | ±5% | GRT1555C2A560JA02# |
| | | | 68pF | ±5% | GRT1555C2A680JA02# |
| | | | 82pF | ±5% | GRT1555C2A820JA02# |
| | 100pF | ±5% | GRT1555C2A101JA02# | | |
| | 50Vdc | COG | 1.0pF | ±0.25pF | GRT1555C1H1R0CA02# |
| | | | 2.0pF | ±0.25pF | GRT1555C1H2R0CA02# |
| | | | 3.0pF | ±0.25pF | GRT1555C1H3R0CA02# |
| | | | 4.0pF | ±0.25pF | GRT1555C1H4R0CA02# |
| | | | 5.0pF | ±0.25pF | GRT1555C1H5R0CA02# |
| | | | 6.0pF | ±0.5pF | GRT1555C1H6R0DA02# |
| | | | 7.0pF | ±0.5pF | GRT1555C1H7R0DA02# |
| | | | 8.0pF | ±0.5pF | GRT1555C1H8R0DA02# |
| | | | 9.0pF | ±0.5pF | GRT1555C1H9R0DA02# |
| | | | 10pF | ±5% | GRT1555C1H100JA02# |
| | | | 12pF | ±5% | GRT1555C1H120JA02# |
| | | | 15pF | ±5% | GRT1555C1H150JA02# |
| | | | 18pF | ±5% | GRT1555C1H180JA02# |
| | | | 22pF | ±5% | GRT1555C1H220JA02# |
| | | | 27pF | ±5% | GRT1555C1H270JA02# |
| | | | 33pF | ±5% | GRT1555C1H330JA02# |
| | | | 39pF | ±5% | GRT1555C1H390JA02# |
| | | | 47pF | ±5% | GRT1555C1H470JA02# |
| | | | 56pF | ±5% | GRT1555C1H560JA02# |
| | | | 68pF | ±5% | GRT1555C1H680JA02# |
| 82pF | | | ±5% | GRT1555C1H820JA02# | |
| 100pF | ±5% | GRT1555C1H101JA02# | | | |
| 120pF | ±5% | GRT1555C1H121JA02# | | | |
| 150pF | ±5% | GRT1555C1H151JA02# | | | |
| 180pF | ±5% | GRT1555C1H181JA02# | | | |
| 220pF | ±5% | GRT1555C1H221JA02# | | | |
| 270pF | ±5% | GRT1555C1H271JA02# | | | |
| 330pF | ±5% | GRT1555C1H331JA02# | | | |
| 390pF | ±5% | GRT1555C1H391JA02# | | | |
| 470pF | ±5% | GRT1555C1H471JA02# | | | |

| T max. | Rated Voltage | TC Code | Cap. | Tol. | Part Number |
|--------|---------------|---------|--------|--------------------|--------------------|
| 0.55mm | 50Vdc | COG | 560pF | ±5% | GRT1555C1H561JA02# |
| | | | 680pF | ±5% | GRT1555C1H681JA02# |
| | | | 820pF | ±5% | GRT1555C1H821JA02# |
| | | | 1000pF | ±5% | GRT1555C1H102JA02# |
| | 25Vdc | COG | 10pF | ±5% | GRT1555C1E100JA02# |
| | | | 12pF | ±5% | GRT1555C1E120JA02# |
| | | | 15pF | ±5% | GRT1555C1E150JA02# |
| | | | 18pF | ±5% | GRT1555C1E180JA02# |
| | | | 22pF | ±5% | GRT1555C1E220JA02# |
| | | | 27pF | ±5% | GRT1555C1E270JA02# |
| | | | 33pF | ±5% | GRT1555C1E330JA02# |
| | | | 39pF | ±5% | GRT1555C1E390JA02# |
| | | | 47pF | ±5% | GRT1555C1E470JA02# |
| | | | 56pF | ±5% | GRT1555C1E560JA02# |
| | | | 68pF | ±5% | GRT1555C1E680JA02# |
| | | | 82pF | ±5% | GRT1555C1E820JA02# |
| | | | 100pF | ±5% | GRT1555C1E101JA02# |
| | | | 120pF | ±5% | GRT1555C1E121JA02# |
| | | | 150pF | ±5% | GRT1555C1E151JA02# |
| | | | 180pF | ±5% | GRT1555C1E181JA02# |
| | | | 220pF | ±5% | GRT1555C1E221JA02# |
| 270pF | | | ±5% | GRT1555C1E271JA02# | |
| 330pF | | | ±5% | GRT1555C1E331JA02# | |
| 390pF | | | ±5% | GRT1555C1E391JA02# | |
| 470pF | | | ±5% | GRT1555C1E471JA02# | |
| 560pF | | | ±5% | GRT1555C1E561JA02# | |
| 680pF | | | ±5% | GRT1555C1E681JA02# | |
| 820pF | | | ±5% | GRT1555C1E821JA02# | |
| 1000pF | | | ±5% | GRT1555C1E102JA02# | |

1.6×0.8mm

| T max. | Rated Voltage | TC Code | Cap. | Tol. | Part Number |
|--------|---------------|--------------------|-------|---------|--------------------|
| 0.9mm | 100Vdc | COG | 1.0pF | ±0.25pF | GRT1885C2A1R0CA02# |
| | | | 2.0pF | ±0.25pF | GRT1885C2A2R0CA02# |
| | | | 3.0pF | ±0.25pF | GRT1885C2A3R0CA02# |
| | | | 4.0pF | ±0.25pF | GRT1885C2A4R0CA02# |
| | | | 5.0pF | ±0.25pF | GRT1885C2A5R0CA02# |
| | | | 6.0pF | ±0.5pF | GRT1885C2A6R0DA02# |
| | | | 7.0pF | ±0.5pF | GRT1885C2A7R0DA02# |
| | | | 8.0pF | ±0.5pF | GRT1885C2A8R0DA02# |
| | | | 9.0pF | ±0.5pF | GRT1885C2A9R0DA02# |
| | | | 10pF | ±5% | GRT1885C2A100JA02# |
| | | | 12pF | ±5% | GRT1885C2A120JA02# |
| | | | 15pF | ±5% | GRT1885C2A150JA02# |
| | | | 18pF | ±5% | GRT1885C2A180JA02# |
| | | | 22pF | ±5% | GRT1885C2A220JA02# |
| | | | 27pF | ±5% | GRT1885C2A270JA02# |
| | | | 33pF | ±5% | GRT1885C2A330JA02# |
| | | | 39pF | ±5% | GRT1885C2A390JA02# |
| | | | 47pF | ±5% | GRT1885C2A470JA02# |
| 56pF | ±5% | GRT1885C2A560JA02# | | | |
| 68pF | ±5% | GRT1885C2A680JA02# | | | |

Part number # indicates the package specification code.

GRT Series Temperature Compensating Type Info-tainment AEC-Q200 Part Number List

(→ 1.6×0.8mm)

| T max. | Rated Voltage | TC Code | Cap. | Tol. | Part Number | | |
|--------|---------------|--------------------|--------------------|------|--------------------|---------|--------------------|
| 0.9mm | 100Vdc | COG | 82pF | ±5% | GRT1885C2A820JA02# | | |
| | | | 100pF | ±5% | GRT1885C2A101JA02# | | |
| | | | 120pF | ±5% | GRT1885C2A121JA02# | | |
| | | | 150pF | ±5% | GRT1885C2A151JA02# | | |
| | | | 180pF | ±5% | GRT1885C2A181JA02# | | |
| | | | 220pF | ±5% | GRT1885C2A221JA02# | | |
| | | | 270pF | ±5% | GRT1885C2A271JA02# | | |
| | | | 330pF | ±5% | GRT1885C2A331JA02# | | |
| | | | 390pF | ±5% | GRT1885C2A391JA02# | | |
| | | | 470pF | ±5% | GRT1885C2A471JA02# | | |
| | | | 560pF | ±5% | GRT1885C2A561JA02# | | |
| | | | 680pF | ±5% | GRT1885C2A681JA02# | | |
| | | | 820pF | ±5% | GRT1885C2A821JA02# | | |
| | | | 1000pF | ±5% | GRT1885C2A102JA02# | | |
| | | | 1200pF | ±5% | GRT1885C2A122JA02# | | |
| | | | 1500pF | ±5% | GRT1885C2A152JA02# | | |
| | | | 50Vdc | COG | 1.0pF | ±0.25pF | GRT1885C1H1R0CA02# |
| | | | | | 2.0pF | ±0.25pF | GRT1885C1H2R0CA02# |
| | 3.0pF | ±0.25pF | | | GRT1885C1H3R0CA02# | | |
| | 4.0pF | ±0.25pF | | | GRT1885C1H4R0CA02# | | |
| | 5.0pF | ±0.25pF | | | GRT1885C1H5R0CA02# | | |
| | 6.0pF | ±0.5pF | | | GRT1885C1H6R0DA02# | | |
| | 7.0pF | ±0.5pF | | | GRT1885C1H7R0DA02# | | |
| | 8.0pF | ±0.5pF | | | GRT1885C1H8R0DA02# | | |
| | 9.0pF | ±0.5pF | | | GRT1885C1H9R0DA02# | | |
| | 10pF | ±5% | | | GRT1885C1H100JA02# | | |
| | 12pF | ±5% | | | GRT1885C1H120JA02# | | |
| | 15pF | ±5% | | | GRT1885C1H150JA02# | | |
| | 18pF | ±5% | | | GRT1885C1H180JA02# | | |
| | 22pF | ±5% | | | GRT1885C1H220JA02# | | |
| | 27pF | ±5% | | | GRT1885C1H270JA02# | | |
| | 33pF | ±5% | GRT1885C1H330JA02# | | | | |
| | 39pF | ±5% | GRT1885C1H390JA02# | | | | |
| 47pF | ±5% | GRT1885C1H470JA02# | | | | | |
| 56pF | ±5% | GRT1885C1H560JA02# | | | | | |
| 68pF | ±5% | GRT1885C1H680JA02# | | | | | |
| 82pF | ±5% | GRT1885C1H820JA02# | | | | | |
| 100pF | ±5% | GRT1885C1H101JA02# | | | | | |
| 120pF | ±5% | GRT1885C1H121JA02# | | | | | |
| 150pF | ±5% | GRT1885C1H151JA02# | | | | | |
| 180pF | ±5% | GRT1885C1H181JA02# | | | | | |
| 220pF | ±5% | GRT1885C1H221JA02# | | | | | |
| 270pF | ±5% | GRT1885C1H271JA02# | | | | | |
| 330pF | ±5% | GRT1885C1H331JA02# | | | | | |
| 390pF | ±5% | GRT1885C1H391JA02# | | | | | |
| 470pF | ±5% | GRT1885C1H471JA02# | | | | | |
| 560pF | ±5% | GRT1885C1H561JA02# | | | | | |
| 680pF | ±5% | GRT1885C1H681JA02# | | | | | |
| 820pF | ±5% | GRT1885C1H821JA02# | | | | | |
| 1000pF | ±5% | GRT1885C1H102JA02# | | | | | |
| 1200pF | ±5% | GRT1885C1H122JA02# | | | | | |
| 1500pF | ±5% | GRT1885C1H152JA02# | | | | | |
| 1800pF | ±5% | GRT1885C1H182JA02# | | | | | |
| 2200pF | ±5% | GRT1885C1H222JA02# | | | | | |

| T max. | Rated Voltage | TC Code | Cap. | Tol. | Part Number | | |
|--------|---------------|---------|---------|------|--------------------|-----|--------------------|
| 0.9mm | 50Vdc | COG | 2700pF | ±5% | GRT1885C1H272JA02# | | |
| | | | 3300pF | ±5% | GRT1885C1H332JA02# | | |
| | | | 3900pF | ±5% | GRT1885C1H392JA02# | | |
| | | | 4700pF | ±5% | GRT1885C1H472JA02# | | |
| | | | 5600pF | ±5% | GRT1885C1H562JA02# | | |
| | | | 6800pF | ±5% | GRT1885C1H682JA02# | | |
| | | | 8200pF | ±5% | GRT1885C1H822JA02# | | |
| | | | 10000pF | ±5% | GRT1885C1H103JA02# | | |
| | | | 25Vdc | COG | 560pF | ±5% | GRT1885C1E561JA02# |
| | | | | | 680pF | ±5% | GRT1885C1E681JA02# |
| | 820pF | ±5% | | | GRT1885C1E821JA02# | | |
| | 1000pF | ±5% | | | GRT1885C1E102JA02# | | |
| | 1200pF | ±5% | | | GRT1885C1E122JA02# | | |
| | 1500pF | ±5% | | | GRT1885C1E152JA02# | | |
| | 4700pF | ±5% | | | GRT1885C1E472JA02# | | |
| | 5600pF | ±5% | | | GRT1885C1E562JA02# | | |
| | 6800pF | ±5% | | | GRT1885C1E682JA02# | | |
| | 8200pF | ±5% | | | GRT1885C1E822JA02# | | |
| | 10000pF | ±5% | | | GRT1885C1E103JA02# | | |

2.0×1.25mm

| T max. | Rated Voltage | TC Code | Cap. | Tol. | Part Number |
|--------|---------------|---------|---------|------|--------------------|
| 1.35mm | 50Vdc | COG | 18000pF | ±5% | GRT21B5C1H183JA02# |
| | | | 22000pF | ±5% | GRT21B5C1H223JA02# |

3.2×1.6mm

| T max. | Rated Voltage | TC Code | Cap. | Tol. | Part Number | | |
|--------|---------------|---------|---------|------|--------------------|-----|--------------------|
| 1.8mm | 50Vdc | COG | 56000pF | ±5% | GRT31C5C1H563JA02# | | |
| | | | 68000pF | ±5% | GRT31C5C1H683JA02# | | |
| | | | 82000pF | ±5% | GRT31C5C1H823JA02# | | |
| | | | 0.10μF | ±5% | GRT31C5C1H104JA02# | | |
| | | | 0.12μF | ±5% | GRT31C5C1E124JA02# | | |
| | 25Vdc | COG | 0.10μF | ±5% | GRT31C5C1E104JA02# | | |
| | | | 0.12μF | ±5% | GRT31C5C1E124JA02# | | |
| | | | 16Vdc | COG | 0.12μF | ±5% | GRT31C5C1C124JA02# |

Part number # indicates the package specification code.

GRT Series High Dielectric Constant Type Part Number List

0.6×0.3mm

| T max. | Rated Voltage | TC Code | Cap. | Tol. | Part Number | | |
|--------|---------------|---------|--------------------|--------------------|--------------------|--------------------|--|
| 0.33mm | 35Vdc | X5R | 0.10μF | ±10% | GRT033R6YA104KE01# | D1 | |
| | | X7R | 470pF | ±10% | GRT033R71E471KE01# | | |
| | 1000pF | | ±10% | GRT033R71E102KE01# | | | |
| | X6S | | 470pF | ±10% | GRT033C81E471KE01# | | |
| | | 1000pF | ±10% | GRT033C81E102KE01# | | | |
| | | 0.10μF | ±10% | GRT033C81E104KE01# | D1 | | |
| | X5R | 100pF | ±10% | GRT033R61E101KE01# | | | |
| | | 220pF | ±10% | GRT033R61E221KE01# | | | |
| | | 470pF | ±10% | GRT033R61E471KE01# | | | |
| | | 1000pF | ±10% | GRT033R61E102KE01# | | | |
| | | 4700pF | ±10% | GRT033R61E472KE01# | D1 | | |
| | | 10000pF | ±10% | GRT033R61E103KE01# | D1 | | |
| | | 0.10μF | ±10% | GRT033R61E104KE01# | | | |
| | 16Vdc | X6S | 0.10μF | ±10% | GRT033C81C104KE01# | | |
| | | | X5R | 10000pF | ±10% | GRT033R61C103KE01# | |
| | | 22000pF | | ±10% | GRT033R61C223KE01# | D1 | |
| | | 47000pF | | ±10% | GRT033R61C473KE01# | D1 | |
| | | 0.10μF | ±10% | GRT033R61C104KE01# | D1 | | |
| | 10Vdc | X7R | 10000pF | ±10% | GRT033R71A103KE01# | | |
| | | | X6S | 0.10μF | ±10% | GRT033C81A104KE01# | |
| | | X5R | | 2200pF | ±10% | GRT033R61A222KE01# | |
| | | | | 4700pF | ±10% | GRT033R61A472KE01# | |
| | | 10000pF | | ±10% | GRT033R61A103KE01# | | |
| | | 22000pF | | ±10% | GRT033R61A223KE01# | | |
| | | 47000pF | | ±10% | GRT033R61A473KE01# | | |
| | | 0.10μF | | ±10% | GRT033R61A104KE01# | | |
| | | 0.22μF | | ±10% | GRT033R61A224KE01# | D1 | |
| | | 6.3Vdc | X7R | 2200pF | ±10% | GRT033R70J222KE01# | |
| | 4700pF | | | ±10% | GRT033R70J472KE01# | | |
| | 10000pF | | | ±10% | GRT033R70J103KE01# | | |
| | X6S | | 2200pF | ±10% | GRT033C80J222KE01# | | |
| | | | 4700pF | ±10% | GRT033C80J472KE01# | | |
| | | | 10000pF | ±10% | GRT033C80J103KE01# | | |
| | | | 22000pF | ±10% | GRT033C80J223KE01# | | |
| | | | 47000pF | ±10% | GRT033C80J473KE01# | | |
| | | | 68000pF | ±10% | GRT033C80J683KE01# | D1 | |
| 0.10μF | | | ±10% | GRT033C80J104KE01# | D1 | | |
| 0.22μF | | | ±10% | GRT033C80J224KE01# | D1 | | |
| X5R | 10000pF | | ±10% | GRT033R60J103KE01# | | | |
| | 22000pF | | ±10% | GRT033R60J223KE01# | | | |
| | 47000pF | | ±10% | GRT033R60J473KE01# | | | |
| | 68000pF | ±10% | GRT033R60J683KE01# | | | | |
| | 0.10μF | ±10% | GRT033R60J104KE01# | | | | |
| | 0.22μF | ±10% | GRT033R60J224KE01# | D1 | | | |
| | 0.47μF | ±10% | GRT033R60J474KE01# | | | | |
| | 4Vdc | X6S | 68000pF | ±10% | GRT033C80G683KE01# | | |
| | | 0.10μF | ±10% | GRT033C80G104KE01# | | | |
| | | 0.22μF | ±20% | GRT033C80G224ME01# | D1 | | |
| 0.35mm | 6.3Vdc | X5R | 1.0μF | ±20% | GRT033R60J105ME13# | | |
| | 4Vdc | X5R | 1.0μF | ±20% | GRT033R60G105ME13# | | |

1.0×0.5mm

| T max. | Rated Voltage | TC Code | Cap. | Tol. | Part Number | | | |
|--------|---------------|---------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 0.55mm | 50Vdc | X7R | 220pF | ±10% | GRT155R71H221KE01# | | | |
| | | | 470pF | ±10% | GRT155R71H471KE01# | | | |
| | | | 1000pF | ±10% | GRT155R71H102KE01# | | | |
| | | | 2200pF | ±10% | GRT155R71H222KE01# | | | |
| | | | 4700pF | ±10% | GRT155R71H472KE01# | | | |
| | | | 10000pF | ±10% | GRT155R71H103KE01# | | | |
| | | | 22000pF | ±10% | GRT155R71H223KE01# | | | |
| | | | 47000pF | ±10% | GRT155R71H473KE01# | | | |
| | | | 0.10μF | ±10% | GRT155R71H104KE01# | | | |
| | | | 35Vdc | X6S | 0.22μF | ±10% | GRT155C8YA224KE01# | D1 |
| | | | | | X5R | 0.22μF | ±10% | GRT155R6YA224KE01# |
| | | | | 0.47μF | | ±10% | GRT155R6YA474KE01# | D1 |
| | 25Vdc | X7R | 10000pF | ±10% | GRT155R71E103KE01# | | | |
| | | | 22000pF | ±10% | GRT155R71E223KE01# | | | |
| | | | 47000pF | ±10% | GRT155R71E473KE01# | | | |
| | | | 0.10μF | ±10% | GRT155R71E104KE01# | | | |
| | | X6S | 0.22μF | ±10% | GRT155C81E224KE01# | | | |
| | | | X5R | 0.22μF | ±10% | GRT155R61E224KE01# | | |
| | | | | 0.47μF | ±10% | GRT155R61E474KE01# | | |
| | | | 1.0μF | ±10% | GRT155R61E105KE01# | D1 | | |
| | 16Vdc | X7R | 10000pF | ±10% | GRT155R71C103KE01# | | | |
| | | | 22000pF | ±10% | GRT155R71C223KE01# | | | |
| | | | 47000pF | ±10% | GRT155R71C473KE01# | | | |
| | | | 0.10μF | ±10% | GRT155R71C104KE01# | | | |
| | | | 0.22μF | ±10% | GRT155R71C224KE01# | | | |
| | | | 0.47μF | ±10% | GRT155C81C474KE01# | | | |
| | | X6S | 0.47μF | ±10% | GRT155R61C224KE01# | | | |
| | | | X5R | 0.47μF | ±10% | GRT155R61C474KE01# | | |
| | | | | 1.0μF | ±10% | GRT155R61C105KE01# | | |
| | | | 10Vdc | X7R | 0.22μF | ±10% | GRT155R71A224KE01# | |
| | 0.47μF | ±10% | | | GRT155R71A474KE01# | | | |
| | X6S | 1.0μF | | | ±10% | GRT155C81A105KE01# | | |
| | | X5R | | | 0.22μF | ±10% | GRT155R61A224KE01# | |
| | 0.47μF | | | ±10% | GRT155R61A474KE01# | | | |
| | 1.0μF | | | ±10% | GRT155R61A105KE01# | | | |
| | 2.2μF | | | ±10% | GRT155R61A225KE01# | D1 | | |
| 6.3Vdc | X7R | 22000pF | | ±10% | GRT155R70J223KE01# | | | |
| | | 1.0μF | ±10% | GRT155R70J105KE01# | D1 | | | |
| | X6S | 0.22μF | ±10% | GRT155C80J224KE01# | | | | |
| | | 0.47μF | ±10% | GRT155C80J474KE01# | | | | |
| | | 1.0μF | ±10% | GRT155C80J105KE01# | D1 | | | |
| | | 2.2μF | ±10% | GRT155C80J225KE01# | D1 | | | |
| | | X5R | 0.22μF | ±10% | GRT155R60J224KE01# | | | |
| | | | 0.47μF | ±10% | GRT155R60J474KE01# | | | |
| 1.0μF | ±10% | | GRT155R60J105KE01# | | | | | |
| 2.2μF | ±10% | | GRT155R60J225KE01# | | | | | |
| 4Vdc | X7R | 1.0μF | ±10% | GRT155R70G105KE01# | | | | |
| 0.6mm | 35Vdc | X5R | 1.0μF | ±10% | GRT155R6YA105KE13# | D1 | | |
| | 25Vdc | X6S | 1.0μF | ±10% | GRT155C81E105KE13# | D1 | | |
| | 16Vdc | X6S | 1.0μF | ±10% | GRT155C81C105KE13# | | | |
| | 10Vdc | X7S | 1.0μF | ±10% | GRT155C71A105KE13# | | | |
| | 6.3Vdc | X5R | 4.7μF | ±20% | GRT155R60J475ME13# | D1 | | |

Part number # indicates the package specification code.

GRT Series
 GCM Series
 GC3 Series
 GCJ Series
 GCD Series
 GCE Series
 NMF Series
 KCM Series
 KC3 Series
 KCA Series
 GCG Series
 Caution/Notice

GRT Series High Dielectric Constant Type Info-tainment AEC-Q200 Part Number List

(→ 1.0×0.5mm)

| T max. | Rated Voltage | TC Code | Cap. | Tol. | Part Number | |
|--------|---------------|---------|-------|--------------------|--------------------|-----------|
| 0.6mm | 4Vdc | X5R | 4.7μF | ±20% | GRT155R60G475ME13# | |
| 0.65mm | 10Vdc | X5R | 4.7μF | ±20% | GRT155R61A475ME13# | D1 |
| | 6.3Vdc | X6S | 4.7μF | ±20% | GRT155C80J475ME13# | D1 |
| 0.7mm | 25Vdc | X5R | 2.2μF | ±10% | GRT155R61E225KE13# | |
| | 16Vdc | X6S | 2.2μF | ±10% | GRT155C81C225KE13# | |
| | | X5R | 2.2μF | ±10% | GRT155R61C225KE13# | |
| | 10Vdc | X7S | 2.2μF | ±10% | GRT155C71A225KE13# | |
| | | X6S | 2.2μF | ±10% | GRT155C81A225KE13# | |
| 2.5Vdc | X6S | 10μF | ±20% | GRT155C80E106ME13# | | |

1.6×0.8mm

| T max. | Rated Voltage | TC Code | Cap. | Tol. | Part Number | | |
|--------|---------------|---------|-------|--------------------|--------------------|--------------------|--|
| 0.9mm | 50Vdc | X5R | 1.0μF | ±10% | GRT188R61H105KE13# | | |
| | | X6S | 1.0μF | ±10% | GRT188C8YA105KE13# | | |
| | | | X5R | 1.0μF | ±10% | GRT188R6YA105KE13# | |
| | 25Vdc | X7R | 1.0μF | ±10% | GRT188R71E105KE13# | | |
| | | | X6S | 1.0μF | ±10% | GRT188C81E105KE13# | |
| | | X5R | 1.0μF | ±10% | GRT188R61E105KE13# | | |
| | 16Vdc | X7R | 1.0μF | ±10% | GRT188R71C105KE13# | | |
| | | | X6S | 1.0μF | ±10% | GRT188C81C105KE13# | |
| | | | | 2.2μF | ±10% | GRT188C81C225KE13# | |
| | | X5R | 1.0μF | ±10% | GRT188R61C105KE13# | | |
| | | 10Vdc | X6S | 1.0μF | ±10% | GRT188C81A105KE13# | |
| | X5R | | 1.0μF | ±10% | GRT188R61A105KE01# | | |
| 2.2μF | | | ±10% | GRT188R61A225KE13# | | | |
| 6.3Vdc | X7R | 2.2μF | ±10% | GRT188R70J225KE13# | | | |
| | | X6S | 4.7μF | ±10% | GRT188C80J475KE01# | D1 | |
| | X5R | 1.0μF | ±10% | GRT188R60J105KE01# | | | |
| | | 2.2μF | ±10% | GRT188R60J225KE13# | | | |
| | | 4.7μF | ±10% | GRT188R60J475KE01# | | | |
| | | 10μF | ±20% | GRT188R60J106ME13# | | | |
| 4Vdc | X6S | 1.0μF | ±20% | GRT188C80G105ME01# | | | |
| | | 4.7μF | ±10% | GRT188C80G475KE01# | | | |
| | | 10μF | ±20% | GRT188C80G106ME13# | D1 | | |
| | X5R | 10μF | ±20% | GRT188R60G106ME13# | | | |
| 0.95mm | 25Vdc | X5R | 4.7μF | ±10% | GRT188R61E475KE13# | | |
| | 16Vdc | X6S | 4.7μF | ±10% | GRT188C81C475KE13# | | |
| | | X5R | 4.7μF | ±10% | GRT188R61C475KE13# | | |
| | 10Vdc | X5R | 10μF | ±10% | GRT188R61C106KE13# | | |
| 10μF | | | ±10% | GRT188R61A106KE13# | D1 | | |
| 2.5Vdc | X5R | 22μF | ±20% | GRT188R60E226ME13# | | | |
| 1.0mm | 50Vdc | X5R | 2.2μF | ±10% | GRT188R61H225KE13# | | |
| | 35Vdc | X6S | 2.2μF | ±10% | GRT188C8YA225KE13# | | |
| | | X5R | 4.7μF | ±10% | GRT188R6YA475KE13# | | |
| | 25Vdc | X6S | 2.2μF | ±10% | GRT188C81E225KE13# | | |
| | | | 4.7μF | ±10% | GRT188C81E475KE13# | | |
| | | X5R | 10μF | ±20% | GRT188R61E106ME13# | | |
| | 16Vdc | X6S | 10μF | ±20% | GRT188C81C106ME13# | | |
| | 10Vdc | X6S | 10μF | ±20% | GRT188C81A106ME13# | | |
| 6.3Vdc | X5R | 22μF | ±20% | GRT188R60J226ME13# | D1 | | |

| T max. | Rated Voltage | TC Code | Cap. | Tol. | Part Number | |
|--------|---------------|---------|------|------|--------------------|--|
| 1.0mm | 4Vdc | X6S | 22μF | ±20% | GRT188C80G226ME13# | |

2.0×1.25mm

| T max. | Rated Voltage | TC Code | Cap. | Tol. | Part Number | | |
|--------|---------------|---------|-------|--------------------|--------------------|--------------------|--|
| 1.35mm | 50Vdc | X7R | 1.0μF | ±10% | GRT21BR71H105KE01# | | |
| | | | X6S | 2.2μF | ±10% | GRT21BC81E225KA02# | |
| | | | | 4.7μF | ±10% | GRT21BC81E475KA02# | |
| | | X5R | 2.2μF | ±10% | GRT21BR61E225KA02# | | |
| | | | 4.7μF | ±10% | GRT21BR61E475KA02# | | |
| | | | 10μF | ±10% | GRT21BC81C106KE01# | D1 | |
| | 16Vdc | X7R | 2.2μF | ±10% | GRT21BR71C225KE01# | | |
| | | | X6S | 2.2μF | ±10% | GRT21BC81C225KA02# | |
| | | | | 4.7μF | ±10% | GRT21BC81C475KA02# | |
| | | X5R | 2.2μF | ±10% | GRT21BR61C225KA02# | | |
| | | | 4.7μF | ±10% | GRT21BR61C475KA02# | | |
| | | | 10μF | ±10% | GRT21BR61C106KE01# | | |
| 10Vdc | X6S | 10μF | ±10% | GRT21BC81A106KE01# | | | |
| | X5R | 10μF | ±10% | GRT21BR61A106KE01# | | | |
| 6.3Vdc | X5R | 10μF | ±10% | GRT21BR60J106KE01# | | | |
| 1.4mm | 50Vdc | X5R | 2.2μF | ±10% | GRT21BR61H225KE13# | | |
| | | | 4.7μF | ±10% | GRT21BR61H475KE13# | | |
| | | X6S | 2.2μF | ±10% | GRT21BC8YA225KE13# | | |
| | 35Vdc | X6S | 4.7μF | ±10% | GRT21BC8YA475KE13# | | |
| | | | 2.2μF | ±10% | GRT21BR71E225KE13# | | |
| | 25Vdc | X7R | 2.2μF | ±10% | GRT21BR71E225KE13# | | |
| | | X5R | 10μF | ±10% | GRT21BR61E106KE13# | | |
| | 16Vdc | X7R | 4.7μF | ±10% | GRT21BR71C475KE13# | | |
| | 10Vdc | X7R | 4.7μF | ±10% | GRT21BR71A475KE13# | | |
| | | | 10μF | ±10% | GRT21BR71A106KE13# | | |
| | | X5R | 4.7μF | ±10% | GRT21BR61A475KE13# | | |
| | 6.3Vdc | X7R | 10μF | ±10% | GRT21BR70J106KE13# | | |
| X5R | | | 4.7μF | ±10% | GRT21BR60J475KE13# | | |
| X5R | | 22μF | ±20% | GRT21BR61A226ME13# | D1 | | |
| 1.45mm | 25Vdc | X7S | 10μF | ±10% | GRT21BC71E106KE13# | D1 | |
| | | X5R | 22μF | ±20% | GRT21BR61E226ME13# | | |
| | 16Vdc | X5R | 22μF | ±20% | GRT21BR61C226ME13# | | |
| | | X6S | 22μF | ±20% | GRT21BC81A226ME13# | | |
| | 10Vdc | X6S | 22μF | ±20% | GRT21BC81A226ME13# | | |
| | | X5R | 47μF | ±20% | GRT21BR60J476ME13# | D1 | |
| | 6.3Vdc | X5R | 47μF | ±20% | GRT21BR60G476ME13# | | |

3.2×1.6mm

| T max. | Rated Voltage | TC Code | Cap. | Tol. | Part Number | | |
|--------|---------------|---------|-------|-------|--------------------|--------------------|--------------------|
| 1.8mm | 50Vdc | X7R | 2.2μF | ±10% | GRT31CR71H225KE13# | | |
| | | | X6S | 2.2μF | ±10% | GRT31CC81H225KE01# | |
| | | | | X5R | 10μF | ±10% | GRT31CR61H106KE01# |
| | | 35Vdc | X6S | 10μF | ±10% | GRT31CC8YA106KE01# | |
| | | | | X5R | 10μF | ±10% | GRT31CR6YA106KE01# |
| | | | X7R | 10μF | ±10% | GRT31CR71E106KE13# | |
| | 25Vdc | X6S | 10μF | ±10% | GRT31CC81E106KE01# | | |
| | | | X5R | 10μF | ±10% | GRT31CR61E106KE01# | |
| | | X7R | 10μF | ±10% | GRT31CR71E106KE13# | | |

Part number # indicates the package specification code.

GRT Series

GCM Series

GC3 Series

G CJ Series

GCD Series

GCE Series

NMF Series

KCM Series

KC3 Series

KCA Series

GCG Series

⚠Caution/
 Notice

GRT Series High Dielectric Constant Type Part Number List

(→ 3.2×1.6mm)

| T max. | Rated Voltage | TC Code | Cap. | Tol. | Part Number | |
|--------|---------------|---------|------|------|--------------------|--------------------|
| 1.8mm | 25Vdc | X5R | 22μF | ±10% | GRT31CR61E226KE01# | |
| | | X6S | 22μF | ±10% | GRT31CC81C226KE01# | |
| | | | X5R | 22μF | ±10% | GRT31CR61C226KE01# |
| | 10Vdc | X6S | 22μF | ±10% | GRT31CC81A226KE01# | |
| | | | X5R | 22μF | ±10% | GRT31CR61A226KE01# |
| | | | | 47μF | ±10% | GRT31CR61A476KE13# |
| | 6.3Vdc | X7R | 22μF | ±10% | GRT31CR70J226KE13# | |
| | | | X6S | 22μF | ±10% | GRT31CC80J226KE01# |
| | | | | 47μF | ±10% | GRT31CC80J476KE13# |
| | | X5R | 22μF | ±10% | GRT31CR60J226KE01# | |
| | | | | | 47μF | ±10% |
| | 4Vdc | X6S | 22μF | ±10% | GRT31CC80G226KE01# | |
| | | | | 47μF | ±20% | GRT31CC80G476ME01# |

3.2×2.5mm

| T max. | Rated Voltage | TC Code | Cap. | Tol. | Part Number |
|--------|---------------|---------|-------|------|------------------------------|
| 2.2mm | 25Vdc | X6S | 10μF | ±10% | GRT32DC81E106KE01# |
| | | X5R | 10μF | ±10% | GRT32DR61E106KE01# |
| | 6.3Vdc | X5R | 33μF | ±20% | GRT32DR60J336ME01# |
| 2.7mm | 50Vdc | X7R | 4.7μF | ±10% | GRT32ER71H475KE01# |
| | | X6S | 4.7μF | ±10% | GRT32EC81H475KE01# |
| | 16Vdc | X6S | 47μF | ±10% | GRT32EC81C476KE13# D1 |
| | 10Vdc | X6S | 47μF | ±10% | GRT32EC81A476KE13# |
| | 6.3Vdc | X7R | 47μF | ±10% | GRT32ER70J476KE13# |
| | | | X6S | 47μF | ±10% |
| | | X5R | 100μF | ±20% | GRT32ER60J107ME13# |