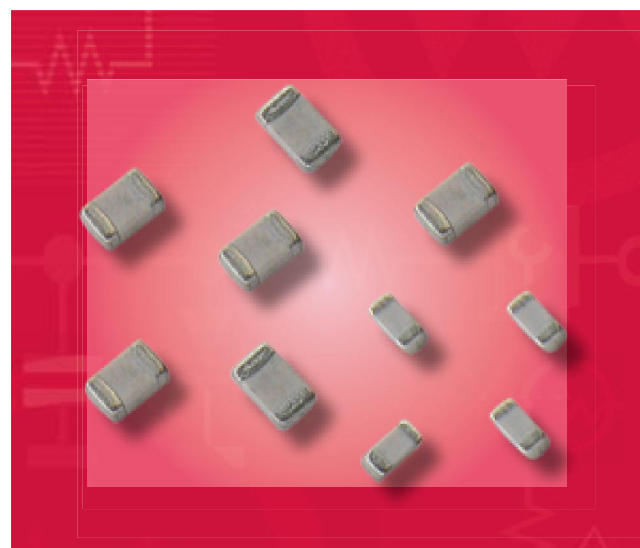


### GQM Product Summary

**GQM Series:** Featuring improved low power consumption for mobile telecommunications, the GQM Series is typically used in frequencies from 500MHz to 10GHz. The copper electrodes allow for ultra low ESR, high Q in the GHz frequencies and high RF current handling capability. This series is the best choice for high performance, high power RF designs requiring voltages up to 500VDC. Offered in EIA sizes 0603, 0805 and the new 1111 size with a capacitance range of 0.1 to 100pF, there are a variety of tight tolerance versions available.



#### Features:

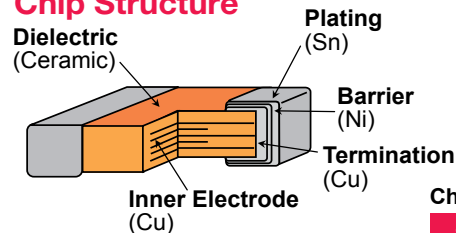
- **Size:** 0603, 0805 and 1111
- **Voltage:** 50, 100, 250 and 500VDC
- **Cap Range:** 0.1 to 100pF
- **Internal Electrode:** Cu
- **Termination:** Cu + Ni/Sn plating
- **ESR:** Ultra Low
- **Power:** High Power (>15W)
- **Frequency Range:** 500MHz –10GHz. High Q and Low ESR at VHF, UHF, and Microwave Frequencies
- **Tolerance:** Tight Tolerance Available ([W]=+/-0.05pF for <=5pF, [B]=+/-0.1pF for 5 - 9.1pF, [C]=+/-0.25pF for 5 - 9.1pF, [F]=+/-1% for 10 - 20pF)
- **Temp. Characteristics:** C0G (-55°C to 125°C with 0 ±30ppm/ °C)



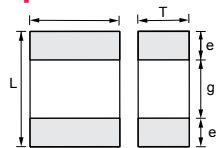
**Applications:** Base stations for cellular, broadcast satellites, cable TV and telecommunication networks, GPS, Bluetooth® and TV set-top boxes

### GQM Data Sheet

#### Chip Structure



#### Chip Dimensions

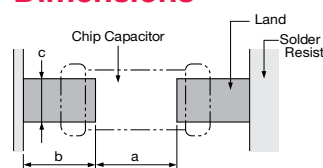


Chip Dimensions Table

Unit: mm

| Series            | EIA size | L          | W           | T           | e          | g min. |
|-------------------|----------|------------|-------------|-------------|------------|--------|
| GQM187            | 0603     | 1.6+/-0.15 | 0.8+/-0.15  | 0.7+/-0.1   | 0.2 to 0.5 | 0.5    |
| GQM188            | 0603     | 1.6+/-0.1  | 0.8+/-0.1   | 0.8+/-0.1   |            |        |
| GQM219            | 0805     | 2.0+/-0.15 | 1.25+/-0.15 | 0.85+/-0.15 | 0.2 to 0.7 | 0.7    |
| <b>NEW</b> GQM22M | 1111     | 2.8+/-0.5  | 2.8+/-0.4   | 1.15+/-0.2  | 0.3 min.   | 1.0    |

#### Land Pattern Dimensions



#### Flow Soldering

| Series | a         | b         | c         |
|--------|-----------|-----------|-----------|
| GQM18  | 0.6 ~ 1.0 | 0.8 ~ 0.9 | 0.6 ~ 0.8 |
| GQM21  | 1.0 ~ 1.2 | 0.9 ~ 1.0 | 0.8 ~ 1.1 |
| GQM22  | n/a       | n/a       | n/a       |

#### Re-Flow Soldering

| Series | a         | b         | c         |
|--------|-----------|-----------|-----------|
| GQM18  | 0.6 ~ 1.0 | 0.8 ~ 0.9 | 0.6 ~ 0.8 |
| GQM21  | 1.0 ~ 1.2 | 0.9 ~ 1.0 | 0.8 ~ 1.1 |
| GQM22  | 2.2 ~ 2.5 | 0.8 ~ 1.0 | 1.9 ~ 2.3 |

#### Capacitance Range

| Series | TC  | WV   | Capacitance Range |      |       |               |
|--------|-----|------|-------------------|------|-------|---------------|
|        |     |      | 1pF               | 10pF | 100pF | pF            |
| GQM187 | C0G | 250V |                   |      |       | 0.1 to 47 pF  |
| GQM188 | C0G | 100V |                   |      |       | 0.1 to 6.8 pF |
|        |     | 50V  |                   |      |       | 7.0 to 100 pF |
| GQM219 | C0G | 250V |                   |      |       | 0.2 to 100 pF |
|        |     | 100V |                   |      |       | 0.2 to 18 pF  |
|        |     | 50V  |                   |      |       | 20 to 100 pF  |
| GQM22M | C0G | 500V |                   |      |       | 0.5 to 100 pF |

#### Global Part Numbering

|    |   |    |   |    |    |     |   |     |    |
|----|---|----|---|----|----|-----|---|-----|----|
| GQ | M | 18 | 8 | 5C | 2A | 120 | J | B01 | D  |
| 1  | 2 | 3  | 4 | 5  | 6  | 7   | 8 | 9   | 10 |

#### 1 Product ID

| Code | Product |
|------|---------|
| GQ   | High Q  |

#### 5 Temperature Characteristics

| Code | TC  | Cap. Change  | Operating Temp. Range |
|------|-----|--------------|-----------------------|
| 5C   | C0G | 0+/-30ppm/°C | -55 to 125°C          |

#### 2 Series

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

#### 6 Rated Voltage

| Code | Rated Voltage |
|------|---------------|
| 1H   | DC 50V        |
| 2A   | DC 100V       |
| 2E   | DC 250V       |
| 2H   | DC 500V       |

#### 8 Capacitance Tolerance

| Code | Cap. Tol. | TC             |
|------|-----------|----------------|
| W    | +/-0.05pF | C0G (<=5pF)    |
| B    | +/-0.1pF  | C0G (<=5pF)    |
| C    | +/-0.25pF | C0G (<=9pF)    |
| D    | +/-0.5pF  | C0G (6 to 9pF) |
| F    | +/-1%     | C0G (>=10pF)   |
| G    | +/-2%     |                |
| J    | +/-5%     |                |

#### 3 Dimension (LxW)

| Code | Dimension (LxW) |
|------|-----------------|
| 18   | 1.6x0.8mm       |
| 21   | 2.0x1.25mm      |
| 22   | 2.8x2.8mm       |

#### 7 Capacitance

| Code | Capacitance |
|------|-------------|
| R50  | 0.5pF       |
| 1R0  | 1.0pF       |
| 5R6  | 5.6pF       |
| 100  | 10pF        |

#### 9 Individual Specification Code

#### 10 Packaging

| Code | Packaging           |
|------|---------------------|
| B    | Bulk in nylon bag   |
| D    | φ180mm Paper Taping |
| L    | φ180mm Paper Taping |
| J    | φ330mm Paper Taping |
| K    | φ330mm Paper Taping |

### GQM Product Offering

#### GQM18 Series

| Size | TC  | WV   | Cap    | Cap Tol   | Murata Global P/N  |
|------|-----|------|--------|-----------|--------------------|
| 0603 | C0G | 250V | 0.1pF  | +/-0.1pF  | GQM1875C2ER10BB12D |
| 0603 | C0G | 250V | 0.2pF  | +/-0.1pF  | GQM1875C2ER20BB12D |
| 0603 | C0G | 250V | 0.3pF  | +/-0.1pF  | GQM1875C2ER30BB12D |
| 0603 | C0G | 250V | 0.4pF  | +/-0.1pF  | GQM1875C2ER40BB12D |
| 0603 | C0G | 250V | 0.5pF  | +/-0.1pF  | GQM1875C2ER50BB12D |
| 0603 | C0G | 250V | 0.5pF  | +/-0.25pF | GQM1875C2ER50CB12D |
| 0603 | C0G | 250V | 0.75pF | +/-0.1pF  | GQM1875C2ER75BB12D |
| 0603 | C0G | 250V | 0.75pF | +/-0.25pF | GQM1875C2ER75CB12D |
| 0603 | C0G | 250V | 1pF    | +/-0.1pF  | GQM1875C2E1R0BB12D |
| 0603 | C0G | 250V | 1pF    | +/-0.25pF | GQM1875C2E1R0CB12D |
| 0603 | C0G | 250V | 1.1pF  | +/-0.1pF  | GQM1875C2E1R1BB12D |
| 0603 | C0G | 250V | 1.2pF  | +/-0.1pF  | GQM1875C2E1R2BB12D |
| 0603 | C0G | 250V | 1.3pF  | +/-0.1pF  | GQM1875C2E1R3BB12D |
| 0603 | C0G | 250V | 1.5pF  | +/-0.1pF  | GQM1875C2E1R5BB12D |
| 0603 | C0G | 250V | 1.5pF  | +/-0.25pF | GQM1875C2E1R5CB12D |
| 0603 | C0G | 250V | 1.6pF  | +/-0.1pF  | GQM1875C2E1R6BB12D |
| 0603 | C0G | 250V | 1.8pF  | +/-0.1pF  | GQM1875C2E1R8BB12D |
| 0603 | C0G | 250V | 2pF    | +/-0.1pF  | GQM1875C2E2R0BB12D |
| 0603 | C0G | 250V | 2pF    | +/-0.25pF | GQM1875C2E2R0CB12D |
| 0603 | C0G | 250V | 2.2pF  | +/-0.1pF  | GQM1875C2E2R2BB12D |
| 0603 | C0G | 250V | 2.4pF  | +/-0.1pF  | GQM1875C2E2R4BB12D |
| 0603 | C0G | 250V | 2.7pF  | +/-0.1pF  | GQM1875C2E2R7BB12D |
| 0603 | C0G | 250V | 3pF    | +/-0.1pF  | GQM1875C2E3R0BB12D |
| 0603 | C0G | 250V | 3pF    | +/-0.25pF | GQM1875C2E3R0CB12D |
| 0603 | C0G | 250V | 3.3pF  | +/-0.1pF  | GQM1875C2E3R3BB12D |
| 0603 | C0G | 250V | 3.6pF  | +/-0.1pF  | GQM1875C2E3R6BB12D |
| 0603 | C0G | 250V | 3.9pF  | +/-0.1pF  | GQM1875C2E3R9BB12D |
| 0603 | C0G | 250V | 4pF    | +/-0.1pF  | GQM1875C2E4R0BB12D |
| 0603 | C0G | 250V | 4pF    | +/-0.25pF | GQM1875C2E4R0CB12D |
| 0603 | C0G | 250V | 4.3pF  | +/-0.1pF  | GQM1875C2E4R3BB12D |
| 0603 | C0G | 250V | 4.7pF  | +/-0.1pF  | GQM1875C2E4R7BB12D |
| 0603 | C0G | 250V | 5pF    | +/-0.1pF  | GQM1875C2E5R0BB12D |
| 0603 | C0G | 250V | 5pF    | +/-0.25pF | GQM1875C2E5R0CB12D |
| 0603 | C0G | 250V | 5.1pF  | +/-0.25pF | GQM1875C2E5R1CB12D |
| 0603 | C0G | 250V | 5.6pF  | +/-0.25pF | GQM1875C2E5R6CB12D |

### GQM Product Offering

#### GQM18 Series

| Size | TC  | WV   | Cap   | Cap Tol   | Murata Global P/N  |
|------|-----|------|-------|-----------|--------------------|
| 0603 | C0G | 250V | 6pF   | +/-0.25pF | GQM1875C2E6R0CB12D |
| 0603 | C0G | 250V | 6pF   | +/-0.5pF  | GQM1875C2E6R0DB12D |
| 0603 | C0G | 250V | 6.2pF | +/-0.25pF | GQM1875C2E6R2CB12D |
| 0603 | C0G | 250V | 6.8pF | +/-0.25pF | GQM1875C2E6R8CB12D |
| 0603 | C0G | 250V | 7pF   | +/-0.25pF | GQM1875C2E7R0CB12D |
| 0603 | C0G | 250V | 7pF   | +/-0.5pF  | GQM1875C2E7R0DB12D |
| 0603 | C0G | 250V | 7.5pF | +/-0.25pF | GQM1875C2E7R5CB12D |
| 0603 | C0G | 250V | 8pF   | +/-0.25pF | GQM1875C2E8R0CB12D |
| 0603 | C0G | 250V | 8pF   | +/-0.5pF  | GQM1875C2E8R0DB12D |
| 0603 | C0G | 250V | 8.2pF | +/-0.25pF | GQM1875C2E8R2CB12D |
| 0603 | C0G | 250V | 9pF   | +/-0.25pF | GQM1875C2E9R0CB12D |
| 0603 | C0G | 250V | 9pF   | +/-0.5pF  | GQM1875C2E9R0DB12D |
| 0603 | C0G | 250V | 9.1pF | +/-0.25pF | GQM1875C2E9R1CB12D |
| 0603 | C0G | 250V | 10pF  | +/-2%     | GQM1875C2E100GB12D |
| 0603 | C0G | 250V | 10pF  | +/-5%     | GQM1875C2E100JB12D |
| 0603 | C0G | 250V | 12pF  | +/-2%     | GQM1875C2E120GB12D |
| 0603 | C0G | 250V | 12pF  | +/-5%     | GQM1875C2E120JB12D |
| 0603 | C0G | 250V | 15pF  | +/-2%     | GQM1875C2E150GB12D |
| 0603 | C0G | 250V | 15pF  | +/-5%     | GQM1875C2E150JB12D |
| 0603 | C0G | 250V | 18pF  | +/-2%     | GQM1875C2E180GB12D |
| 0603 | C0G | 250V | 18pF  | +/-5%     | GQM1875C2E180JB12D |
| 0603 | C0G | 250V | 20pF  | +/-2%     | GQM1875C2E200GB12D |
| 0603 | C0G | 250V | 20pF  | +/-5%     | GQM1875C2E200JB12D |
| 0603 | C0G | 250V | 22pF  | +/-2%     | GQM1875C2E220GB12D |
| 0603 | C0G | 250V | 22pF  | +/-5%     | GQM1875C2E220JB12D |
| 0603 | C0G | 250V | 27pF  | +/-2%     | GQM1875C2E270GB12D |
| 0603 | C0G | 250V | 27pF  | +/-5%     | GQM1875C2E270JB12D |
| 0603 | C0G | 250V | 33pF  | +/-2%     | GQM1875C2E330GB12D |
| 0603 | C0G | 250V | 33pF  | +/-5%     | GQM1875C2E330JB12D |
| 0603 | C0G | 250V | 39pF  | +/-2%     | GQM1875C2E390GB12D |
| 0603 | C0G | 250V | 39pF  | +/-5%     | GQM1875C2E390JB12D |
| 0603 | C0G | 250V | 47pF  | +/-2%     | GQM1875C2E470GB12D |
| 0603 | C0G | 250V | 47pF  | +/-5%     | GQM1875C2E470JB12D |

### GQM Product Offering

#### GQM18 Series

| Size | TC  | WV   | Cap    | Cap Tol   | Murata Global P/N  |
|------|-----|------|--------|-----------|--------------------|
| 0603 | C0G | 100V | 0.1pF  | +/-0.1pF  | GQM1885C2AR10BB01D |
| 0603 | C0G | 100V | 0.2pF  | +/-0.1pF  | GQM1885C2AR20BB01D |
| 0603 | C0G | 100V | 0.3pF  | +/-0.1pF  | GQM1885C2AR30BB01D |
| 0603 | C0G | 100V | 0.4pF  | +/-0.1pF  | GQM1885C2AR40BB01D |
| 0603 | C0G | 100V | 0.5pF  | +/-0.1pF  | GQM1885C2AR50BB01D |
| 0603 | C0G | 100V | 0.5pF  | +/-0.25pF | GQM1885C2AR50CB01D |
| 0603 | C0G | 100V | 0.75pF | +/-0.1pF  | GQM1885C2AR75BB01D |
| 0603 | C0G | 100V | 0.75pF | +/-0.25pF | GQM1885C2AR75CB01D |
| 0603 | C0G | 100V | 1pF    | +/-0.1pF  | GQM1885C2A1R0BB01D |
| 0603 | C0G | 100V | 1pF    | +/-0.25pF | GQM1885C2A1R0CB01D |
| 0603 | C0G | 100V | 1.1pF  | +/-0.1pF  | GQM1885C2A1R1BB01D |
| 0603 | C0G | 100V | 1.2pF  | +/-0.1pF  | GQM1885C2A1R2BB01D |
| 0603 | C0G | 100V | 1.3pF  | +/-0.1pF  | GQM1885C2A1R3BB01D |
| 0603 | C0G | 100V | 1.5pF  | +/-0.1pF  | GQM1885C2A1R5BB01D |
| 0603 | C0G | 100V | 1.5pF  | +/-0.25pF | GQM1885C2A1R5CB01D |
| 0603 | C0G | 100V | 1.6pF  | +/-0.1pF  | GQM1885C2A1R6BB01D |
| 0603 | C0G | 100V | 1.8pF  | +/-0.1pF  | GQM1885C2A1R8BB01D |
| 0603 | C0G | 100V | 2pF    | +/-0.1pF  | GQM1885C2A2R0BB01D |
| 0603 | C0G | 100V | 2pF    | +/-0.25pF | GQM1885C2A2R0CB01D |
| 0603 | C0G | 100V | 2.2pF  | +/-0.1pF  | GQM1885C2A2R2BB01D |
| 0603 | C0G | 100V | 2.4pF  | +/-0.1pF  | GQM1885C2A2R4BB01D |
| 0603 | C0G | 100V | 2.7pF  | +/-0.1pF  | GQM1885C2A2R7BB01D |
| 0603 | C0G | 100V | 3pF    | +/-0.1pF  | GQM1885C2A3R0BB01D |
| 0603 | C0G | 100V | 3pF    | +/-0.25pF | GQM1885C2A3R0CB01D |
| 0603 | C0G | 100V | 3.3pF  | +/-0.1pF  | GQM1885C2A3R3BB01D |
| 0603 | C0G | 100V | 3.6pF  | +/-0.1pF  | GQM1885C2A3R6BB01D |
| 0603 | C0G | 100V | 3.9pF  | +/-0.1pF  | GQM1885C2A3R9BB01D |
| 0603 | C0G | 100V | 4pF    | +/-0.1pF  | GQM1885C2A4R0BB01D |
| 0603 | C0G | 100V | 4pF    | +/-0.25pF | GQM1885C2A4R0CB01D |
| 0603 | C0G | 100V | 4.3pF  | +/-0.1pF  | GQM1885C2A4R3BB01D |
| 0603 | C0G | 100V | 4.7pF  | +/-0.1pF  | GQM1885C2A4R7BB01D |
| 0603 | C0G | 100V | 5pF    | +/-0.1pF  | GQM1885C2A5R0BB01D |
| 0603 | C0G | 100V | 5pF    | +/-0.25pF | GQM1885C2A5R0CB01D |
| 0603 | C0G | 100V | 5.1pF  | +/-0.25pF | GQM1885C2A5R1CB01D |
| 0603 | C0G | 100V | 5.6pF  | +/-0.25pF | GQM1885C2A5R6CB01D |
| 0603 | C0G | 100V | 6pF    | +/-0.25pF | GQM1885C2A6R0CB01D |
| 0603 | C0G | 100V | 6pF    | +/-0.5pF  | GQM1885C2A6R0DB01D |
| 0603 | C0G | 100V | 6.2pF  | +/-0.25pF | GQM1885C2A6R2CB01D |
| 0603 | C0G | 100V | 6.8pF  | +/-0.25pF | GQM1885C2A6R8CB01D |

### GQM Product Offering

### GQM18 Series

| Size | TC  | WV  | Cap   | Cap Tol   | Murata Global P/N  |
|------|-----|-----|-------|-----------|--------------------|
| 0603 | C0G | 50V | 7pF   | +/-0.25pF | GQM1885C1H7R0CB01D |
| 0603 | C0G | 50V | 7pF   | +/-0.5pF  | GQM1885C1H7R0DB01D |
| 0603 | C0G | 50V | 7.5pF | +/-0.25pF | GQM1885C1H7R5CB01D |
| 0603 | C0G | 50V | 8pF   | +/-0.25pF | GQM1885C1H8R0CB01D |
| 0603 | C0G | 50V | 8pF   | +/-0.5pF  | GQM1885C1H8R0DB01D |
| 0603 | C0G | 50V | 8.2pF | +/-0.25pF | GQM1885C1H8R2CB01D |
| 0603 | C0G | 50V | 9pF   | +/-0.25pF | GQM1885C1H9R0CB01D |
| 0603 | C0G | 50V | 9pF   | +/-0.5pF  | GQM1885C1H9R0DB01D |
| 0603 | C0G | 50V | 9.1pF | +/-0.25pF | GQM1885C1H9R1CB01D |
| 0603 | C0G | 50V | 10pF  | +/-2%     | GQM1885C1H100GB01D |
| 0603 | C0G | 50V | 10pF  | +/-5%     | GQM1885C1H100JB01D |
| 0603 | C0G | 50V | 12pF  | +/-2%     | GQM1885C1H120GB01D |
| 0603 | C0G | 50V | 12pF  | +/-5%     | GQM1885C1H120JB01D |
| 0603 | C0G | 50V | 15pF  | +/-2%     | GQM1885C1H150GB01D |
| 0603 | C0G | 50V | 15pF  | +/-5%     | GQM1885C1H150JB01D |
| 0603 | C0G | 50V | 18pF  | +/-2%     | GQM1885C1H180GB01D |
| 0603 | C0G | 50V | 18pF  | +/-5%     | GQM1885C1H180JB01D |
| 0603 | C0G | 50V | 20pF  | +/-2%     | GQM1885C1H200GB01D |
| 0603 | C0G | 50V | 20pF  | +/-5%     | GQM1885C1H200JB01D |
| 0603 | C0G | 50V | 22pF  | +/-2%     | GQM1885C1H220GB01D |
| 0603 | C0G | 50V | 22pF  | +/-5%     | GQM1885C1H220JB01D |
| 0603 | C0G | 50V | 27pF  | +/-2%     | GQM1885C1H270GB01D |
| 0603 | C0G | 50V | 27pF  | +/-5%     | GQM1885C1H270JB01D |
| 0603 | C0G | 50V | 33pF  | +/-2%     | GQM1885C1H330GB01D |
| 0603 | C0G | 50V | 33pF  | +/-5%     | GQM1885C1H330JB01D |
| 0603 | C0G | 50V | 39pF  | +/-2%     | GQM1885C1H390GB01D |
| 0603 | C0G | 50V | 39pF  | +/-5%     | GQM1885C1H390JB01D |
| 0603 | C0G | 50V | 47pF  | +/-2%     | GQM1885C1H470GB01D |
| 0603 | C0G | 50V | 47pF  | +/-5%     | GQM1885C1H470JB01D |
| 0603 | C0G | 50V | 56pF  | +/-2%     | GQM1885C1H560GB01D |
| 0603 | C0G | 50V | 56pF  | +/-5%     | GQM1885C1H560JB01D |
| 0603 | C0G | 50V | 68pF  | +/-2%     | GQM1885C1H680GB01D |
| 0603 | C0G | 50V | 68pF  | +/-5%     | GQM1885C1H680JB01D |
| 0603 | C0G | 50V | 82pF  | +/-2%     | GQM1885C1H820GB01D |
| 0603 | C0G | 50V | 82pF  | +/-5%     | GQM1885C1H820JB01D |
| 0603 | C0G | 50V | 100pF | +/-2%     | GQM1885C1H101GB01D |
| 0603 | C0G | 50V | 100pF | +/-5%     | GQM1885C1H101JB01D |

### GQM Product Offering

#### GQM21 Series

| Size | TC  | WV   | Cap    | Cap Tol   | Murata Global P/N  |
|------|-----|------|--------|-----------|--------------------|
| 0805 | C0G | 250V | 0.2pF  | +/-0.1pF  | GQM2195C2ER20BB12D |
| 0805 | C0G | 250V | 0.3pF  | +/-0.1pF  | GQM2195C2ER30BB12D |
| 0805 | C0G | 250V | 0.4pF  | +/-0.1pF  | GQM2195C2ER40BB12D |
| 0805 | C0G | 250V | 0.5pF  | +/-0.1pF  | GQM2195C2ER50BB12D |
| 0805 | C0G | 250V | 0.5pF  | +/-0.25pF | GQM2195C2ER50CB12D |
| 0805 | C0G | 250V | 0.75pF | +/-0.1pF  | GQM2195C2ER75BB12D |
| 0805 | C0G | 250V | 0.75pF | +/-0.25pF | GQM2195C2ER75CB12D |
| 0805 | C0G | 250V | 1pF    | +/-0.1pF  | GQM2195C2E1R0BB12D |
| 0805 | C0G | 250V | 1pF    | +/-0.25pF | GQM2195C2E1R0CB12D |
| 0805 | C0G | 250V | 1.1pF  | +/-0.1pF  | GQM2195C2E1R1BB12D |
| 0805 | C0G | 250V | 1.2pF  | +/-0.1pF  | GQM2195C2E1R2BB12D |
| 0805 | C0G | 250V | 1.3pF  | +/-0.1pF  | GQM2195C2E1R3BB12D |
| 0805 | C0G | 250V | 1.5pF  | +/-0.1pF  | GQM2195C2E1R5BB12D |
| 0805 | C0G | 250V | 1.5pF  | +/-0.25pF | GQM2195C2E1R5CB12D |
| 0805 | C0G | 250V | 1.6pF  | +/-0.1pF  | GQM2195C2E1R6BB12D |
| 0805 | C0G | 250V | 1.8pF  | +/-0.1pF  | GQM2195C2E1R8BB12D |
| 0805 | C0G | 250V | 2pF    | +/-0.1pF  | GQM2195C2E2R0BB12D |
| 0805 | C0G | 250V | 2pF    | +/-0.25pF | GQM2195C2E2R0CB12D |
| 0805 | C0G | 250V | 2.2pF  | +/-0.1pF  | GQM2195C2E2R2BB12D |
| 0805 | C0G | 250V | 2.4pF  | +/-0.1pF  | GQM2195C2E2R4BB12D |
| 0805 | C0G | 250V | 2.7pF  | +/-0.1pF  | GQM2195C2E2R7BB12D |
| 0805 | C0G | 250V | 3pF    | +/-0.1pF  | GQM2195C2E3R0BB12D |
| 0805 | C0G | 250V | 3pF    | +/-0.25pF | GQM2195C2E3R0CB12D |
| 0805 | C0G | 250V | 3.3pF  | +/-0.1pF  | GQM2195C2E3R3BB12D |
| 0805 | C0G | 250V | 3.6pF  | +/-0.1pF  | GQM2195C2E3R6BB12D |
| 0805 | C0G | 250V | 3.9pF  | +/-0.1pF  | GQM2195C2E3R9BB12D |
| 0805 | C0G | 250V | 4pF    | +/-0.1pF  | GQM2195C2E4R0BB12D |
| 0805 | C0G | 250V | 4pF    | +/-0.25pF | GQM2195C2E4R0CB12D |
| 0805 | C0G | 250V | 4.3pF  | +/-0.1pF  | GQM2195C2E4R3BB12D |
| 0805 | C0G | 250V | 4.7pF  | +/-0.1pF  | GQM2195C2E4R7BB12D |
| 0805 | C0G | 250V | 5pF    | +/-0.1pF  | GQM2195C2E5R0BB12D |
| 0805 | C0G | 250V | 5pF    | +/-0.25pF | GQM2195C2E5R0CB12D |
| 0805 | C0G | 250V | 5.1pF  | +/-0.25pF | GQM2195C2E5R1CB12D |
| 0805 | C0G | 250V | 5.6pF  | +/-0.25pF | GQM2195C2E5R6CB12D |
| 0805 | C0G | 250V | 6pF    | +/-0.25pF | GQM2195C2E6R0CB12D |
| 0805 | C0G | 250V | 6pF    | +/-0.5pF  | GQM2195C2E6R0DB12D |
| 0805 | C0G | 250V | 6.2pF  | +/-0.25pF | GQM2195C2E6R2CB12D |
| 0805 | C0G | 250V | 6.8pF  | +/-0.25pF | GQM2195C2E6R8CB12D |

### GQM Product Offering

#### GQM21 Series

| Size | TC  | WV   | Cap   | Cap Tol   | Murata Global P/N  |
|------|-----|------|-------|-----------|--------------------|
| 0805 | C0G | 250V | 7pF   | +/-0.25pF | GQM2195C2E7R0CB12D |
| 0805 | C0G | 250V | 7pF   | +/-0.5pF  | GQM2195C2E7R0DB12D |
| 0805 | C0G | 250V | 7.5pF | +/-0.25pF | GQM2195C2E7R5CB12D |
| 0805 | C0G | 250V | 8pF   | +/-0.25pF | GQM2195C2E8R0CB12D |
| 0805 | C0G | 250V | 8pF   | +/-0.5pF  | GQM2195C2E8R0DB12D |
| 0805 | C0G | 250V | 8.2pF | +/-0.25pF | GQM2195C2E8R2CB12D |
| 0805 | C0G | 250V | 9pF   | +/-0.25pF | GQM2195C2E9R0CB12D |
| 0805 | C0G | 250V | 9pF   | +/-0.5pF  | GQM2195C2E9R0DB12D |
| 0805 | C0G | 250V | 9.1pF | +/-0.25pF | GQM2195C2E9R1CB12D |
| 0805 | C0G | 250V | 10pF  | +/-2%     | GQM2195C2E100GB12D |
| 0805 | C0G | 250V | 10pF  | +/-5%     | GQM2195C2E100JB12D |
| 0805 | C0G | 250V | 12pF  | +/-2%     | GQM2195C2E120GB12D |
| 0805 | C0G | 250V | 12pF  | +/-5%     | GQM2195C2E120JB12D |
| 0805 | C0G | 250V | 15pF  | +/-2%     | GQM2195C2E150GB12D |
| 0805 | C0G | 250V | 15pF  | +/-5%     | GQM2195C2E150JB12D |
| 0805 | C0G | 250V | 18pF  | +/-2%     | GQM2195C2E180GB12D |
| 0805 | C0G | 250V | 18pF  | +/-5%     | GQM2195C2E180JB12D |
| 0805 | C0G | 250V | 20pF  | +/-2%     | GQM2195C2E200GB12D |
| 0805 | C0G | 250V | 20pF  | +/-5%     | GQM2195C2E200JB12D |
| 0805 | C0G | 250V | 22pF  | +/-2%     | GQM2195C2E220GB12D |
| 0805 | C0G | 250V | 22pF  | +/-5%     | GQM2195C2E220JB12D |
| 0805 | C0G | 250V | 27pF  | +/-2%     | GQM2195C2E270GB12D |
| 0805 | C0G | 250V | 27pF  | +/-5%     | GQM2195C2E270JB12D |
| 0805 | C0G | 250V | 33pF  | +/-2%     | GQM2195C2E330GB12D |
| 0805 | C0G | 250V | 33pF  | +/-5%     | GQM2195C2E330JB12D |
| 0805 | C0G | 250V | 39pF  | +/-2%     | GQM2195C2E390GB12D |
| 0805 | C0G | 250V | 39pF  | +/-5%     | GQM2195C2E390JB12D |
| 0805 | C0G | 250V | 47pF  | +/-2%     | GQM2195C2E470GB12D |
| 0805 | C0G | 250V | 47pF  | +/-5%     | GQM2195C2E470JB12D |
| 0805 | C0G | 250V | 56pF  | +/-2%     | GQM2195C2E560GB12D |
| 0805 | C0G | 250V | 56pF  | +/-5%     | GQM2195C2E560JB12D |
| 0805 | C0G | 250V | 68pF  | +/-2%     | GQM2195C2E680GB12D |
| 0805 | C0G | 250V | 68pF  | +/-5%     | GQM2195C2E680JB12D |
| 0805 | C0G | 250V | 82pF  | +/-2%     | GQM2195C2E820GB12D |
| 0805 | C0G | 250V | 82pF  | +/-5%     | GQM2195C2E820JB12D |
| 0805 | C0G | 250V | 100pF | +/-2%     | GQM2195C2E101GB12D |
| 0805 | C0G | 250V | 100pF | +/-5%     | GQM2195C2E101JB12D |

### GQM Product Offering

#### GQM21 Series

| Size | TC  | WV   | Cap    | Cap Tol   | Murata Global P/N  |
|------|-----|------|--------|-----------|--------------------|
| 0805 | C0G | 100V | 0.2pF  | +/-0.1pF  | GQM2195C2AR20BB01D |
| 0805 | C0G | 100V | 0.3pF  | +/-0.1pF  | GQM2195C2AR30BB01D |
| 0805 | C0G | 100V | 0.4pF  | +/-0.1pF  | GQM2195C2AR40BB01D |
| 0805 | C0G | 100V | 0.5pF  | +/-0.1pF  | GQM2195C2AR50BB01D |
| 0805 | C0G | 100V | 0.5pF  | +/-0.25pF | GQM2195C2AR50CB01D |
| 0805 | C0G | 100V | 0.75pF | +/-0.1pF  | GQM2195C2AR75BB01D |
| 0805 | C0G | 100V | 0.75pF | +/-0.25pF | GQM2195C2AR75CB01D |
| 0805 | C0G | 100V | 1pF    | +/-0.1pF  | GQM2195C2A1R0BB01D |
| 0805 | C0G | 100V | 1pF    | +/-0.25pF | GQM2195C2A1R0CB01D |
| 0805 | C0G | 100V | 1.1pF  | +/-0.1pF  | GQM2195C2A1R1BB01D |
| 0805 | C0G | 100V | 1.2pF  | +/-0.1pF  | GQM2195C2A1R2BB01D |
| 0805 | C0G | 100V | 1.3pF  | +/-0.1pF  | GQM2195C2A1R3BB01D |
| 0805 | C0G | 100V | 1.5pF  | +/-0.1pF  | GQM2195C2A1R5BB01D |
| 0805 | C0G | 100V | 1.5pF  | +/-0.25pF | GQM2195C2A1R5CB01D |
| 0805 | C0G | 100V | 1.6pF  | +/-0.1pF  | GQM2195C2A1R6BB01D |
| 0805 | C0G | 100V | 1.8pF  | +/-0.1pF  | GQM2195C2A1R8BB01D |
| 0805 | C0G | 100V | 2pF    | +/-0.1pF  | GQM2195C2A2R0BB01D |
| 0805 | C0G | 100V | 2pF    | +/-0.25pF | GQM2195C2A2R0CB01D |
| 0805 | C0G | 100V | 2.2pF  | +/-0.1pF  | GQM2195C2A2R2BB01D |
| 0805 | C0G | 100V | 2.4pF  | +/-0.1pF  | GQM2195C2A2R4BB01D |
| 0805 | C0G | 100V | 2.7pF  | +/-0.1pF  | GQM2195C2A2R7BB01D |
| 0805 | C0G | 100V | 3pF    | +/-0.1pF  | GQM2195C2A3R0BB01D |
| 0805 | C0G | 100V | 3pF    | +/-0.25pF | GQM2195C2A3R0CB01D |
| 0805 | C0G | 100V | 3.3pF  | +/-0.1pF  | GQM2195C2A3R3BB01D |
| 0805 | C0G | 100V | 3.6pF  | +/-0.1pF  | GQM2195C2A3R6BB01D |
| 0805 | C0G | 100V | 3.9pF  | +/-0.1pF  | GQM2195C2A3R9BB01D |
| 0805 | C0G | 100V | 4pF    | +/-0.1pF  | GQM2195C2A4R0BB01D |
| 0805 | C0G | 100V | 4pF    | +/-0.25pF | GQM2195C2A4R0CB01D |
| 0805 | C0G | 100V | 4.3pF  | +/-0.1pF  | GQM2195C2A4R3BB01D |
| 0805 | C0G | 100V | 4.7pF  | +/-0.1pF  | GQM2195C2A4R7BB01D |
| 0805 | C0G | 100V | 5pF    | +/-0.1pF  | GQM2195C2A5R0BB01D |
| 0805 | C0G | 100V | 5pF    | +/-0.25pF | GQM2195C2A5R0CB01D |
| 0805 | C0G | 100V | 5.1pF  | +/-0.25pF | GQM2195C2A5R1CB01D |
| 0805 | C0G | 100V | 5.6pF  | +/-0.25pF | GQM2195C2A5R6CB01D |
| 0805 | C0G | 100V | 6pF    | +/-0.25pF | GQM2195C2A6R0CB01D |
| 0805 | C0G | 100V | 6pF    | +/-0.5pF  | GQM2195C2A6R0DB01D |
| 0805 | C0G | 100V | 6.2pF  | +/-0.25pF | GQM2195C2A6R2CB01D |
| 0805 | C0G | 100V | 6.8pF  | +/-0.25pF | GQM2195C2A6R8CB01D |

### GQM Product Offering

#### GQM21 Series

| Size | TC  | WV   | Cap   | Cap Tol   | Murata Global P/N  |
|------|-----|------|-------|-----------|--------------------|
| 0805 | C0G | 100V | 7pF   | +/-0.25pF | GQM2195C2A7R0CB01D |
| 0805 | C0G | 100V | 7pF   | +/-0.5pF  | GQM2195C2A7R0DB01D |
| 0805 | C0G | 100V | 7.5pF | +/-0.25pF | GQM2195C2A7R5CB01D |
| 0805 | C0G | 100V | 8pF   | +/-0.25pF | GQM2195C2A8R0CB01D |
| 0805 | C0G | 100V | 8pF   | +/-0.5pF  | GQM2195C2A8R0DB01D |
| 0805 | C0G | 100V | 8.2pF | +/-0.25pF | GQM2195C2A8R2CB01D |
| 0805 | C0G | 100V | 9pF   | +/-0.25pF | GQM2195C2A9R0CB01D |
| 0805 | C0G | 100V | 9pF   | +/-0.5pF  | GQM2195C2A9R0DB01D |
| 0805 | C0G | 100V | 9.1pF | +/-0.25pF | GQM2195C2A9R1CB01D |
| 0805 | C0G | 100V | 10pF  | +/-2%     | GQM2195C2A100GB01D |
| 0805 | C0G | 100V | 10pF  | +/-5%     | GQM2195C2A100JB01D |
| 0805 | C0G | 100V | 12pF  | +/-2%     | GQM2195C2A120GB01D |
| 0805 | C0G | 100V | 12pF  | +/-5%     | GQM2195C2A120JB01D |
| 0805 | C0G | 100V | 15pF  | +/-2%     | GQM2195C2A150GB01D |
| 0805 | C0G | 100V | 15pF  | +/-5%     | GQM2195C2A150JB01D |
| 0805 | C0G | 100V | 18pF  | +/-2%     | GQM2195C2A180GB01D |
| 0805 | C0G | 100V | 18pF  | +/-5%     | GQM2195C2A180JB01D |
| 0805 | C0G | 50V  | 20pF  | +/-2%     | GQM2195C1H200GB01D |
| 0805 | C0G | 50V  | 20pF  | +/-5%     | GQM2195C1H200JB01D |
| 0805 | C0G | 50V  | 22pF  | +/-2%     | GQM2195C1H220GB01D |
| 0805 | C0G | 50V  | 22pF  | +/-5%     | GQM2195C1H220JB01D |
| 0805 | C0G | 50V  | 27pF  | +/-2%     | GQM2195C1H270GB01D |
| 0805 | C0G | 50V  | 27pF  | +/-5%     | GQM2195C1H270JB01D |
| 0805 | C0G | 50V  | 33pF  | +/-2%     | GQM2195C1H330GB01D |
| 0805 | C0G | 50V  | 33pF  | +/-5%     | GQM2195C1H330JB01D |
| 0805 | C0G | 50V  | 39pF  | +/-2%     | GQM2195C1H390GB01D |
| 0805 | C0G | 50V  | 39pF  | +/-5%     | GQM2195C1H390JB01D |
| 0805 | C0G | 50V  | 47pF  | +/-2%     | GQM2195C1H470GB01D |
| 0805 | C0G | 50V  | 47pF  | +/-5%     | GQM2195C1H470JB01D |
| 0805 | C0G | 50V  | 56pF  | +/-2%     | GQM2195C1H560GB01D |
| 0805 | C0G | 50V  | 56pF  | +/-5%     | GQM2195C1H560JB01D |
| 0805 | C0G | 50V  | 68pF  | +/-2%     | GQM2195C1H680GB01D |
| 0805 | C0G | 50V  | 68pF  | +/-5%     | GQM2195C1H680JB01D |
| 0805 | C0G | 50V  | 82pF  | +/-2%     | GQM2195C1H820GB01D |
| 0805 | C0G | 50V  | 82pF  | +/-5%     | GQM2195C1H820JB01D |
| 0805 | C0G | 50V  | 100pF | +/-2%     | GQM2195C1H101GB01D |
| 0805 | C0G | 50V  | 100pF | +/-5%     | GQM2195C1H101JB01D |

### GQM Product Offering

#### GQM22 Series

| Size | TC  | WV   | Cap    | Cap Tol   | Murata Global P/N  |
|------|-----|------|--------|-----------|--------------------|
| 1111 | C0G | 500V | 0.5pF  | +/-0.1pF  | GQM22M5C2HR50BB01L |
| 1111 | C0G | 500V | 0.5pF  | +/-0.25pF | GQM22M5C2HR50CB01L |
| 1111 | C0G | 500V | 0.75pF | +/-0.1pF  | GQM22M5C2HR75BB01L |
| 1111 | C0G | 500V | 0.75pF | +/-0.25pF | GQM22M5C2HR75CB01L |
| 1111 | C0G | 500V | 1pF    | +/-0.1pF  | GQM22M5C2H1R0BB01L |
| 1111 | C0G | 500V | 1pF    | +/-0.25pF | GQM22M5C2H1R0CB01L |
| 1111 | C0G | 500V | 1.1pF  | +/-0.1pF  | GQM22M5C2H1R1BB01L |
| 1111 | C0G | 500V | 1.2pF  | +/-0.1pF  | GQM22M5C2H1R2BB01L |
| 1111 | C0G | 500V | 1.3pF  | +/-0.1pF  | GQM22M5C2H1R3BB01L |
| 1111 | C0G | 500V | 1.5pF  | +/-0.1pF  | GQM22M5C2H1R5BB01L |
| 1111 | C0G | 500V | 1.5pF  | +/-0.25pF | GQM22M5C2H1R5CB01L |
| 1111 | C0G | 500V | 1.6pF  | +/-0.1pF  | GQM22M5C2H1R6BB01L |
| 1111 | C0G | 500V | 1.8pF  | +/-0.1pF  | GQM22M5C2H1R8BB01L |
| 1111 | C0G | 500V | 2pF    | +/-0.1pF  | GQM22M5C2H2R0BB01L |
| 1111 | C0G | 500V | 2pF    | +/-0.25pF | GQM22M5C2H2R0CB01L |
| 1111 | C0G | 500V | 2.2pF  | +/-0.1pF  | GQM22M5C2H2R2BB01L |
| 1111 | C0G | 500V | 2.4pF  | +/-0.1pF  | GQM22M5C2H2R4BB01L |
| 1111 | C0G | 500V | 2.7pF  | +/-0.1pF  | GQM22M5C2H2R7BB01L |
| 1111 | C0G | 500V | 3pF    | +/-0.1pF  | GQM22M5C2H3R0BB01L |
| 1111 | C0G | 500V | 3pF    | +/-0.25pF | GQM22M5C2H3R0CB01L |
| 1111 | C0G | 500V | 3.3pF  | +/-0.1pF  | GQM22M5C2H3R3BB01L |
| 1111 | C0G | 500V | 3.6pF  | +/-0.1pF  | GQM22M5C2H3R6BB01L |
| 1111 | C0G | 500V | 3.9pF  | +/-0.1pF  | GQM22M5C2H3R9BB01L |
| 1111 | C0G | 500V | 4pF    | +/-0.1pF  | GQM22M5C2H4R0BB01L |
| 1111 | C0G | 500V | 4pF    | +/-0.25pF | GQM22M5C2H4R0CB01L |
| 1111 | C0G | 500V | 4.3pF  | +/-0.1pF  | GQM22M5C2H4R3BB01L |
| 1111 | C0G | 500V | 4.7pF  | +/-0.1pF  | GQM22M5C2H4R7BB01L |
| 1111 | C0G | 500V | 5pF    | +/-0.1pF  | GQM22M5C2H5R0BB01L |
| 1111 | C0G | 500V | 5pF    | +/-0.25pF | GQM22M5C2H5R0CB01L |
| 1111 | C0G | 500V | 5.1pF  | +/-0.25pF | GQM22M5C2H5R1CB01L |
| 1111 | C0G | 500V | 5.6pF  | +/-0.25pF | GQM22M5C2H5R6CB01L |
| 1111 | C0G | 500V | 6pF    | +/-0.25pF | GQM22M5C2H6R0CB01L |
| 1111 | C0G | 500V | 6pF    | +/-0.5pF  | GQM22M5C2H6R0DB01L |
| 1111 | C0G | 500V | 6.2pF  | +/-0.25pF | GQM22M5C2H6R2CB01L |
| 1111 | C0G | 500V | 6.8pF  | +/-0.25pF | GQM22M5C2H6R8CB01L |
| 1111 | C0G | 500V | 7pF    | +/-0.25pF | GQM22M5C2H7R0CB01L |
| 1111 | C0G | 500V | 7pF    | +/-0.5pF  | GQM22M5C2H7R0DB01L |
| 1111 | C0G | 500V | 7.5pF  | +/-0.25pF | GQM22M5C2H7R5CB01L |
| 1111 | C0G | 500V | 8pF    | +/-0.25pF | GQM22M5C2H8R0CB01L |
| 1111 | C0G | 500V | 8pF    | +/-0.5pF  | GQM22M5C2H8R0DB01L |
| 1111 | C0G | 500V | 8.2pF  | +/-0.25pF | GQM22M5C2H8R2CB01L |
| 1111 | C0G | 500V | 9pF    | +/-0.25pF | GQM22M5C2H9R0CB01L |
| 1111 | C0G | 500V | 9pF    | +/-0.5pF  | GQM22M5C2H9R0DB01L |
| 1111 | C0G | 500V | 9.1pF  | +/-0.25pF | GQM22M5C2H9R1CB01L |

### GQM Product Offering

#### GQM22 Series

| Size | TC  | WV   | Cap   | Cap Tol | Murata Global P/N  |
|------|-----|------|-------|---------|--------------------|
| 1111 | C0G | 500V | 10pF  | +/-2%   | GQM22M5C2H100GB01L |
| 1111 | C0G | 500V | 10pF  | +/-5%   | GQM22M5C2H100JB01L |
| 1111 | C0G | 500V | 12pF  | +/-2%   | GQM22M5C2H120GB01L |
| 1111 | C0G | 500V | 12pF  | +/-5%   | GQM22M5C2H120JB01L |
| 1111 | C0G | 500V | 15pF  | +/-2%   | GQM22M5C2H150GB01L |
| 1111 | C0G | 500V | 15pF  | +/-5%   | GQM22M5C2H150JB01L |
| 1111 | C0G | 500V | 18pF  | +/-2%   | GQM22M5C2H180GB01L |
| 1111 | C0G | 500V | 18pF  | +/-5%   | GQM22M5C2H180JB01L |
| 1111 | C0G | 500V | 20pF  | +/-2%   | GQM22M5C2H200GB01L |
| 1111 | C0G | 500V | 20pF  | +/-5%   | GQM22M5C2H200JB01L |
| 1111 | C0G | 500V | 22pF  | +/-2%   | GQM22M5C2H220GB01L |
| 1111 | C0G | 500V | 22pF  | +/-5%   | GQM22M5C2H220JB01L |
| 1111 | C0G | 500V | 27pF  | +/-2%   | GQM22M5C2H270GB01L |
| 1111 | C0G | 500V | 27pF  | +/-5%   | GQM22M5C2H270JB01L |
| 1111 | C0G | 500V | 33pF  | +/-2%   | GQM22M5C2H330GB01L |
| 1111 | C0G | 500V | 33pF  | +/-5%   | GQM22M5C2H330JB01L |
| 1111 | C0G | 500V | 39pF  | +/-2%   | GQM22M5C2H390GB01L |
| 1111 | C0G | 500V | 39pF  | +/-5%   | GQM22M5C2H390JB01L |
| 1111 | C0G | 500V | 47pF  | +/-2%   | GQM22M5C2H470GB01L |
| 1111 | C0G | 500V | 47pF  | +/-5%   | GQM22M5C2H470JB01L |
| 1111 | C0G | 500V | 56pF  | +/-2%   | GQM22M5C2H560GB01L |
| 1111 | C0G | 500V | 56pF  | +/-5%   | GQM22M5C2H560JB01L |
| 1111 | C0G | 500V | 68pF  | +/-2%   | GQM22M5C2H680GB01L |
| 1111 | C0G | 500V | 68pF  | +/-5%   | GQM22M5C2H680JB01L |
| 1111 | C0G | 500V | 82pF  | +/-2%   | GQM22M5C2H820GB01L |
| 1111 | C0G | 500V | 82pF  | +/-5%   | GQM22M5C2H820JB01L |
| 1111 | C0G | 500V | 100pF | +/-2%   | GQM22M5C2H101GB01L |
| 1111 | C0G | 500V | 100pF | +/-5%   | GQM22M5C2H101JB01L |

### GQM Specifications and Test Methods

| Item                                    | Specification                                                                                                                                                                                                    | Test Method                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |                  |   |      |   |       |   |      |   |       |   |      |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------------------|---|------|---|-------|---|------|---|-------|---|------|
| Operating Temperature                   | −55°C to 125°C                                                                                                                                                                                                   | Reference Temperature: 25°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |                  |   |      |   |       |   |      |   |       |   |      |
| Appearance                              | No defects or abnormalities.                                                                                                                                                                                     | Visual inspection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |                  |   |      |   |       |   |      |   |       |   |      |
| Dimension                               | Within the specified dimensions.                                                                                                                                                                                 | Using calipers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |                  |   |      |   |       |   |      |   |       |   |      |
| Dielectric Strength                     | No defects or abnormalities.                                                                                                                                                                                     | 250% of the rated voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |      |                  |   |      |   |       |   |      |   |       |   |      |
| Insulation Resistance                   | More than 10,000MΩ or 500Ω·F .                                                                                                                                                                                   | DC voltage not exceeding the rated voltage at 25°C and 75%RH max. and within 2 minutes of charging.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                  |   |      |   |       |   |      |   |       |   |      |
| Q                                       | 30pFmin.: Q≥1400<br>30pFmax.: Q≥800+20C<br>C:Nominal Capacitance (pF)                                                                                                                                            | Frequency 1±0.1MHz<br>Voltage 0.5 to 5Vrms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |                  |   |      |   |       |   |      |   |       |   |      |
| Capacitance Temperature Characteristics | Capacitance Change:<br>Within the specified tolerance. (Table A-1)<br>Temperature Coefficient:<br>Within the specified tolerance. (Table A-1)<br>Capacitance Drift: Within ±0.2% or ±0.5pF (Whichever is larger) | The temperature coefficient is determined using the capacitance measured in step 3 as a reference. When cycling the temperature sequentially from step 1 through 5 the capacitance should be within the specified tolerance for the temperature coefficient and capacitance change as in Table A-1. The capacitance drift is calculated by dividing the differences between the maximum and minimum measured values in steps 1, 3 and 5 by the cap. value in step 3. <table><tr><td>Step</td><td>Temperature (°C)</td></tr><tr><td>1</td><td>25±2</td></tr><tr><td>2</td><td>-55±3</td></tr><tr><td>3</td><td>25±2</td></tr><tr><td>4</td><td>125±3</td></tr><tr><td>5</td><td>25±2</td></tr></table> | Step | Temperature (°C) | 1 | 25±2 | 2 | -55±3 | 3 | 25±2 | 4 | 125±3 | 5 | 25±2 |
| Step                                    | Temperature (°C)                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |                  |   |      |   |       |   |      |   |       |   |      |
| 1                                       | 25±2                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |                  |   |      |   |       |   |      |   |       |   |      |
| 2                                       | -55±3                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |                  |   |      |   |       |   |      |   |       |   |      |
| 3                                       | 25±2                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |                  |   |      |   |       |   |      |   |       |   |      |
| 4                                       | 125±3                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |                  |   |      |   |       |   |      |   |       |   |      |
| 5                                       | 25±2                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |                  |   |      |   |       |   |      |   |       |   |      |
| Adhesive Strength of Termination        | No removal of the terminations or other defect should occur.                                                                                                                                                     | Solder the capacitor to the test jig (glass epoxy board) then apply10N force in parallel with the test jig for 10±1sec.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |                  |   |      |   |       |   |      |   |       |   |      |
| Vibration Resistance                    | Appearance: No defects or abnormalities.<br>Capacitance: Within the specified tolerance.<br>30pFmin.: Q≥1400<br>30pFmax.: Q≥800+20C<br>C: Nominal Capacitance (pF)                                               | Frequency range, from 10 to 55Hz and return to 10Hz, should be traversed in approximately 1 minute. This motion should be applied for a period of 2 hours in each of 3 mutually perpendicular directions total of 6 hours).                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |                  |   |      |   |       |   |      |   |       |   |      |
| Deflection                              | No crack or marked defect should occur.                                                                                                                                                                          | Flexure: 1mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |                  |   |      |   |       |   |      |   |       |   |      |
| Solderability of Termination            | 75% of the terminations are to be soldered evenly and continuously.                                                                                                                                              | Immerse in eutectic solder solution for 2±0.5 seconds at 230±5°C or Sn-3.0Ag-0.5Cu solder solution for 2±0.5 seconds at 245±5°C .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |                  |   |      |   |       |   |      |   |       |   |      |
| Resistance to Soldering Heat            | Appearance: No marking defects<br>Capacitance Change Within ±2.5% or ±0.25 pF(Whichever is larger)<br>30pFmin.: Q≥1400<br>30pFmax.: Q≥800+20C<br>C: Nominal Capacitance (pF)                                     | Immerse the capacitor in a eutectic solder solution or Sn-3.0Ag-0.5Cu solder solution at 270±5°C for 10±0.5 seconds. Let sit at room temperature for 24±2 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |                  |   |      |   |       |   |      |   |       |   |      |
| Temperature Cycle                       | Appearance: No marking defects<br>Capacitance Change Within ±2.5% or ± 0.25 pF (Whichever is larger)<br>30pFmin.: Q≥1400<br>30pFmax.: Q≥800+20C<br>C:Nominal Capacitance (pF)                                    | −55°C to 125°C Five cycles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |                  |   |      |   |       |   |      |   |       |   |      |
| Humidity Steady State                   | Appearance: No marking defects<br>Capacitance Change Within ±5% or ± 0.5pF (Whichever is larger)<br>30pFmin.: Q≥350<br>10pF - 30pF: Q≥275+5C/2<br>10pFmax.: Q≥200+10C<br>C: Nominal Capacitance (pF)             | 40±2°C and 90 to 95% humidity for 500±12 hours.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |                  |   |      |   |       |   |      |   |       |   |      |

### GQM Specifications and Test Methods

| Item                  | Specification                                                                                                                                                                                                                        | Test Method                                                                                                          |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Humidity Load         | Appearance: No marking defects<br>Capacitance Change Within $\pm 7.5\%$ or $\pm 0.75$ pF (Whichever is larger)<br>30pFmin.: $Q \geq 200$<br>30pFmax.: $Q \geq 100+10C/3$<br>C: Nominal Capacitance (puff)                            | Apply the rated voltage at $40 \pm 2^\circ\text{C}$ and 90 to 95% humidity for $500 \pm 12$ hours.                   |
| High Temperature Load | Appearance: No marking defects<br>Capacitance Change Within $\pm 3\%$ or $\pm 0.3$ pF (Whichever is larger)<br>30pFmin.: $Q \geq 350$<br>10pF - 30pF: $Q \geq 275+5C/2$<br>10pFmax.: $Q \geq 200+10C$<br>C: Nominal Capacitance (pF) | Apply 150% of the rated voltage for $1000 \pm 12$ hours at the maximum operating temperature $\pm 3^\circ\text{C}$ . |

Table A-1

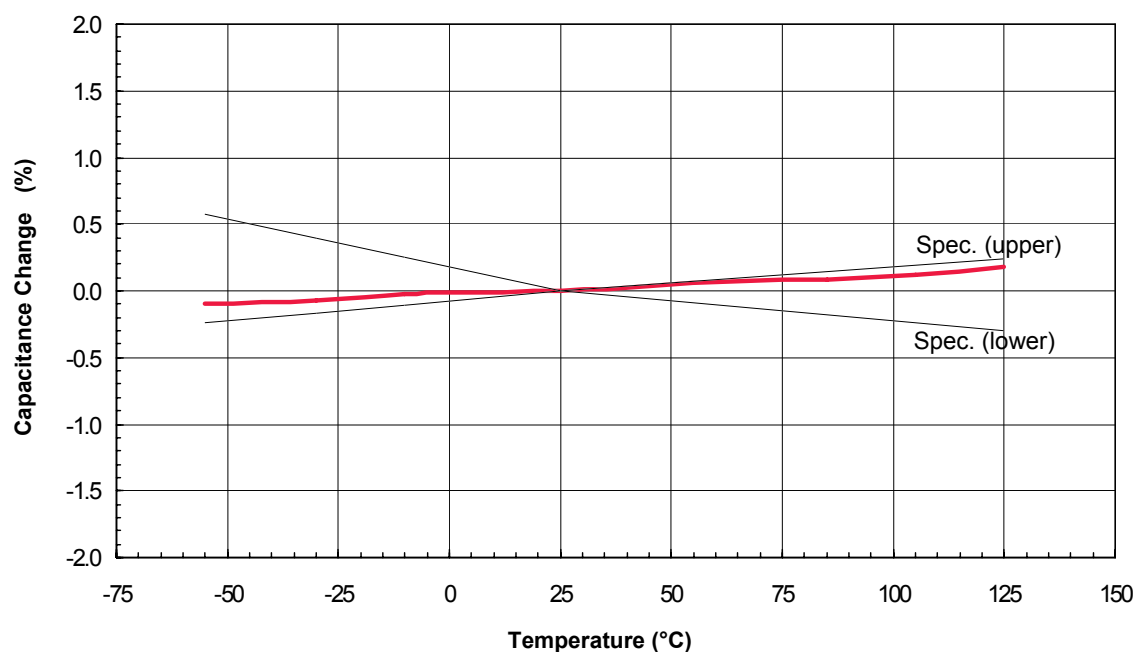
| Char. | Nominal Values<br>(ppm/ $^\circ\text{C}$ ) Note | Capacitance Change from $25^\circ\text{C}$ (%) |       |                     |       |                     |       |
|-------|-------------------------------------------------|------------------------------------------------|-------|---------------------|-------|---------------------|-------|
|       |                                                 | $-55^\circ\text{C}$                            |       | $-30^\circ\text{C}$ |       | $-10^\circ\text{C}$ |       |
|       |                                                 | Max.                                           | Min.  | Max.                | Min.  | Max.                | Min.  |
| 5C    | $0 \pm 30$                                      | 0.58                                           | -0.24 | 0.4C                | -0.17 | 0.25                | -0.11 |

Note: Nominal values denote the temperature coefficient within a range of  $25^\circ\text{C}$  to  $125^\circ\text{C}$ .

### GQM Technical Data (Typical)

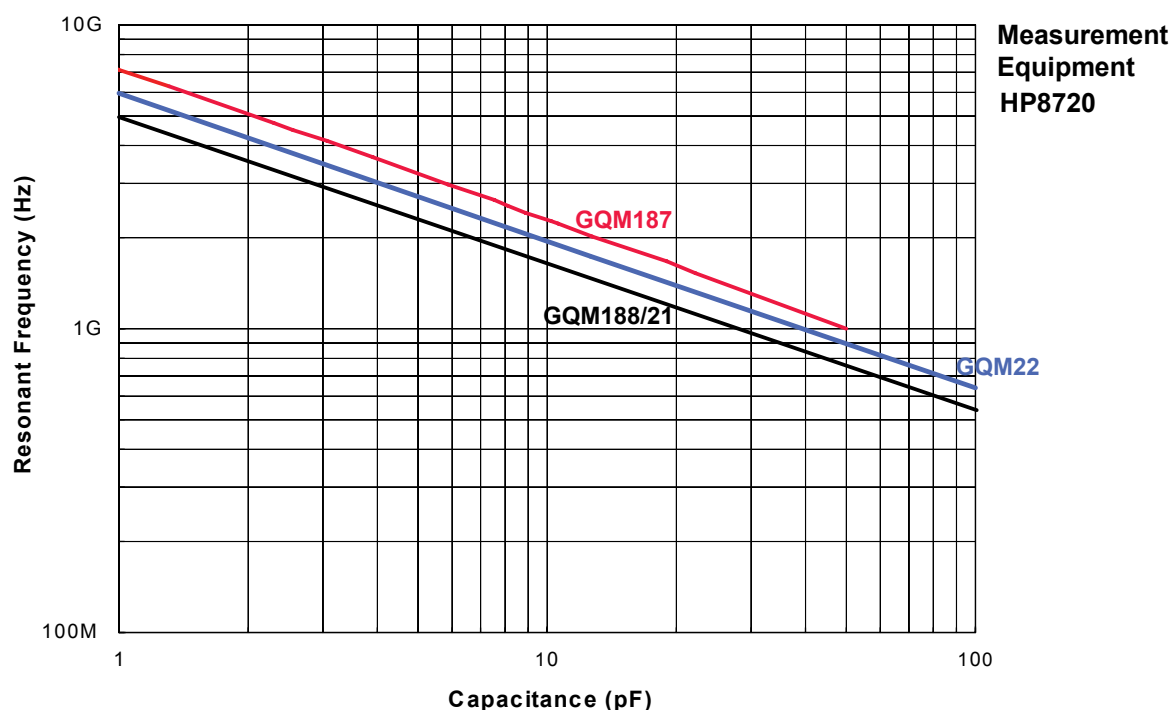
#### Capacitance - Temperature Characteristics

##### C0G Characteristics (GQM)



#### Resonant Frequency Characteristics

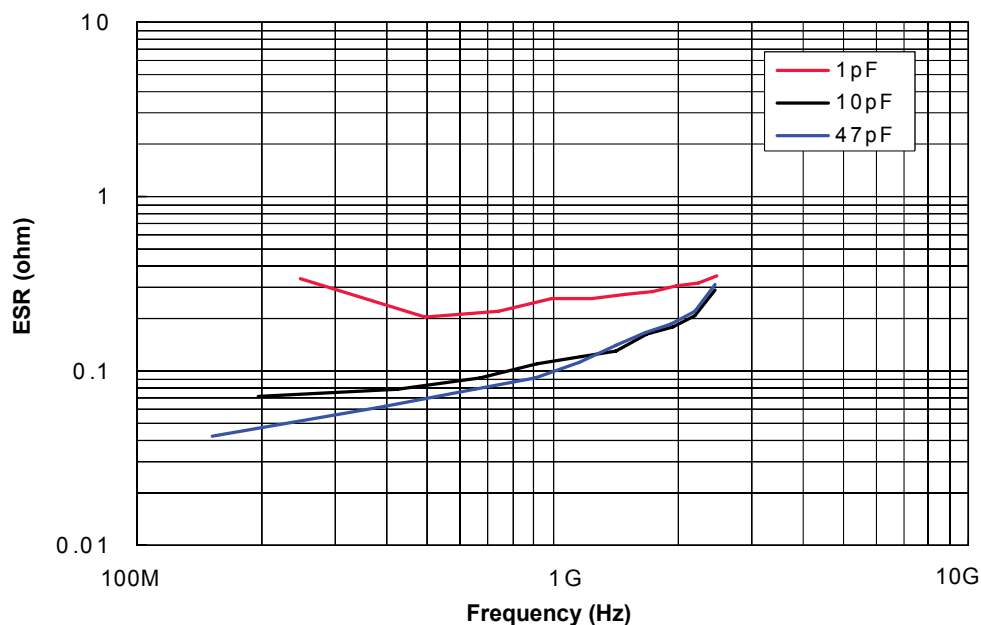
##### GQM Series



### GQM Technical Data (Typical)

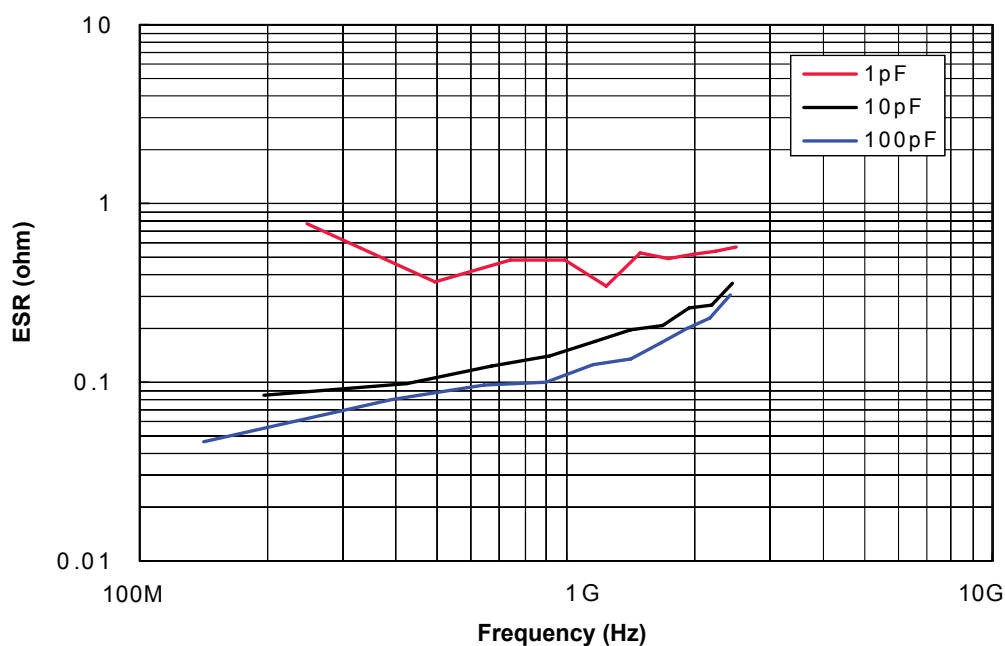
#### ESR - Frequency Characteristics

##### GQM187 Series



Measurement  
Equipment  
Boonton Resonant  
Coaxial-Line 34A

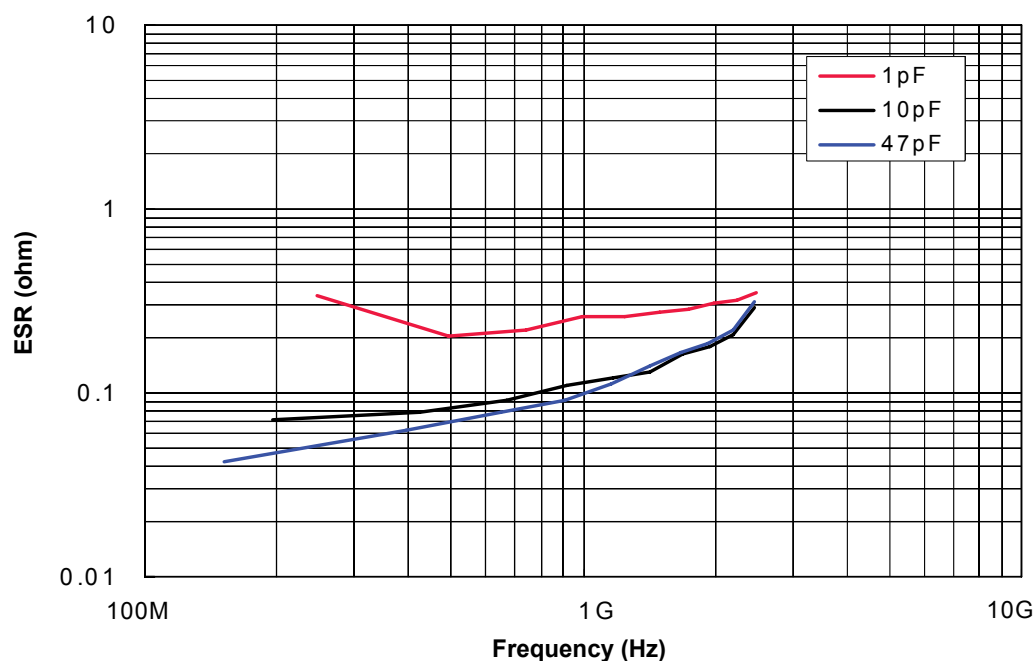
##### GQM188 Series



### GQM Technical Data (Typical)

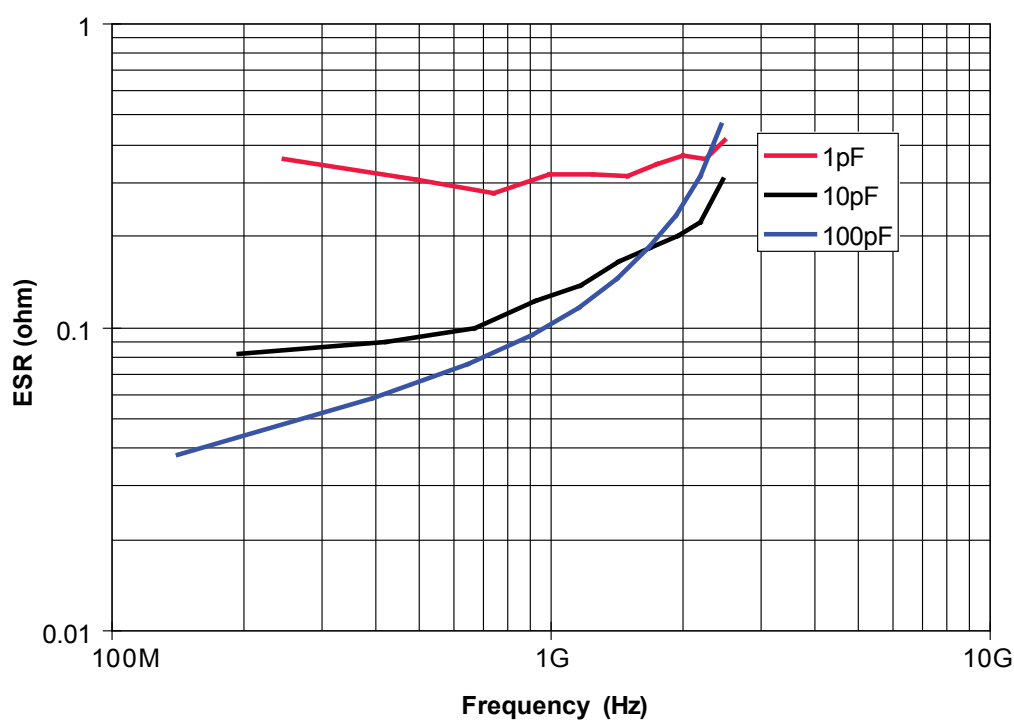
#### ESR - Frequency Characteristics

##### GQM21 Series (50V/100V)



Measurement Equipment  
Boonton Resonant  
Coaxial-Line 34A

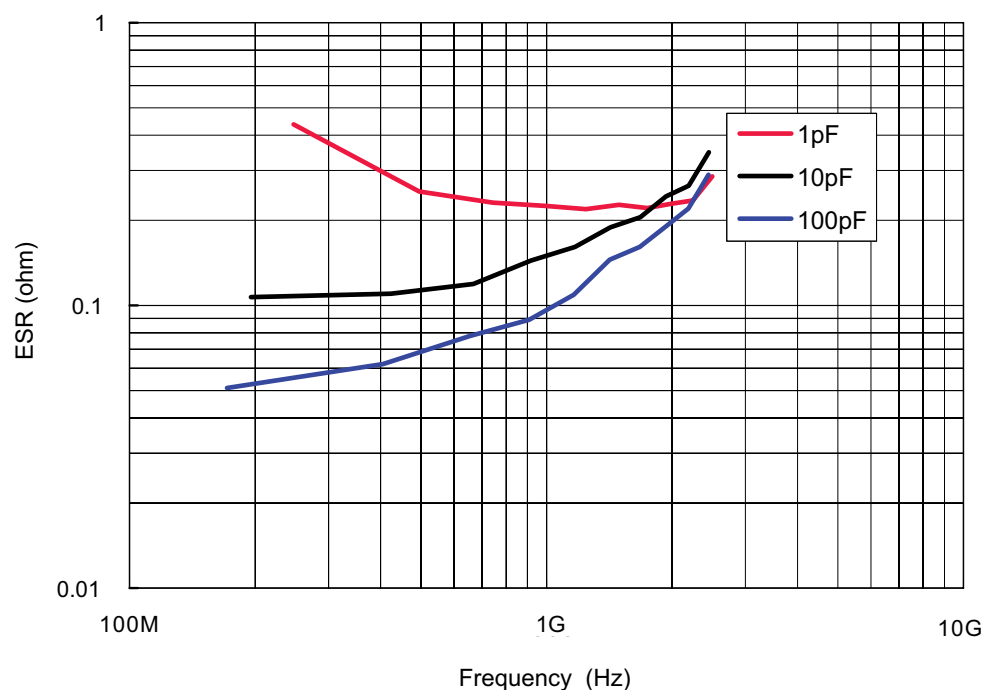
##### GQM21 Series (250V)



### GQM Technical Data (Typical)

#### ESR Frequency Characteristics

##### GQM22 Series (500V)

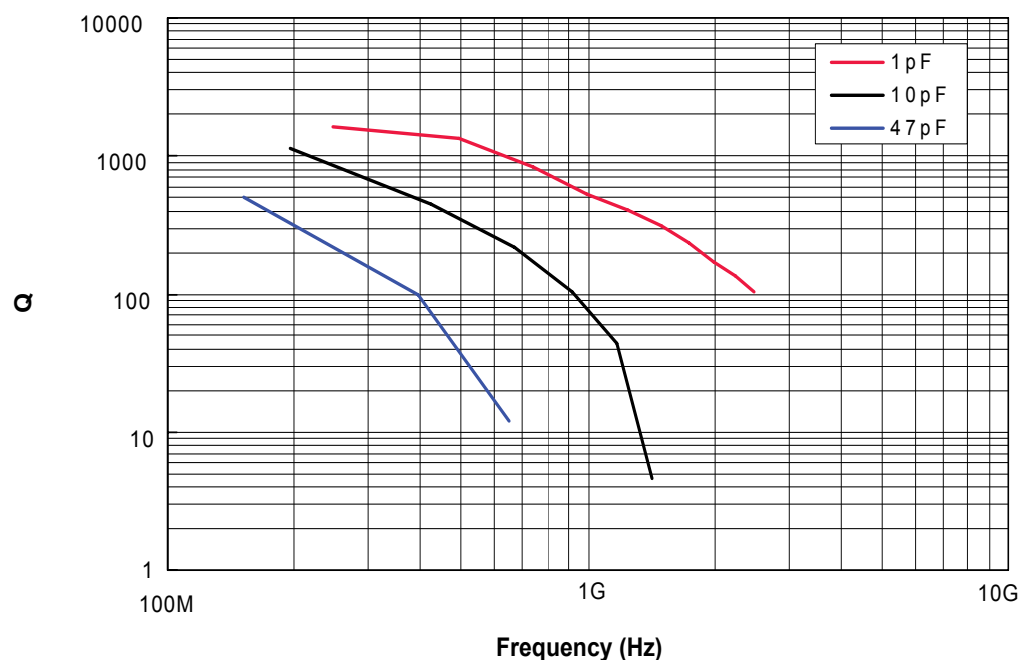


Measurement  
Equipment  
Boonton Resonant  
Coaxial-Line 34A

### GQM Technical Data (Typical)

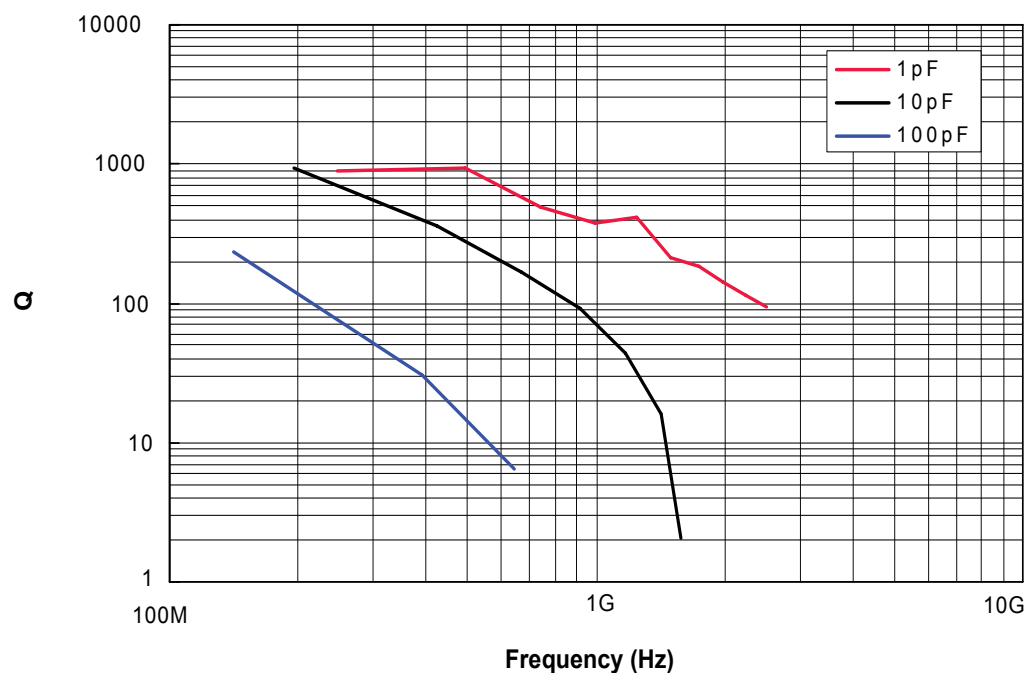
#### Q - Frequency Characteristics

##### GQM187 Series



Measurement  
Equipment  
Boonton Resonant  
Coaxial-Line 34A

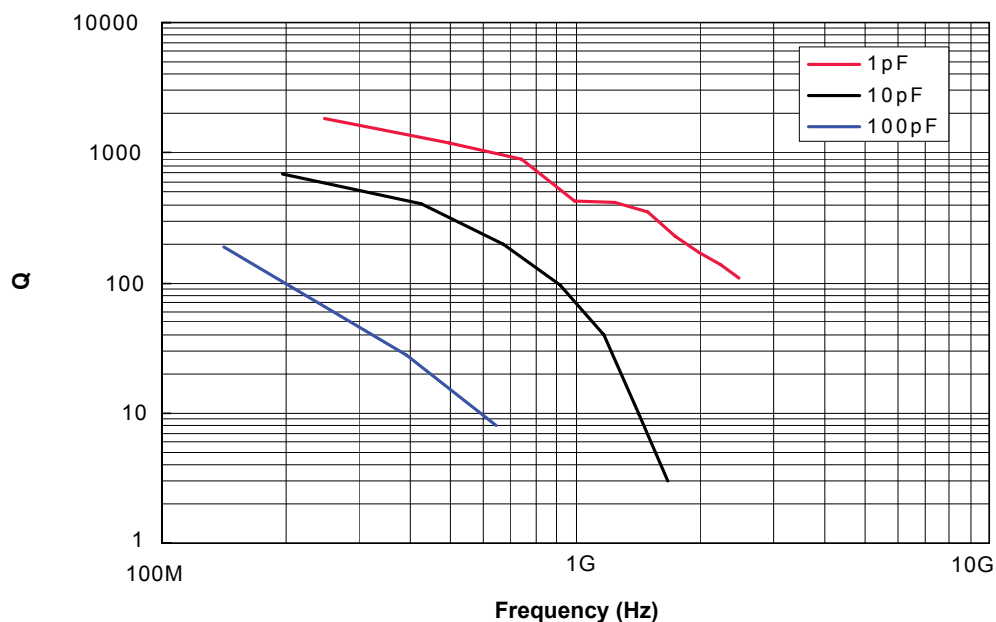
##### GQM188 Series



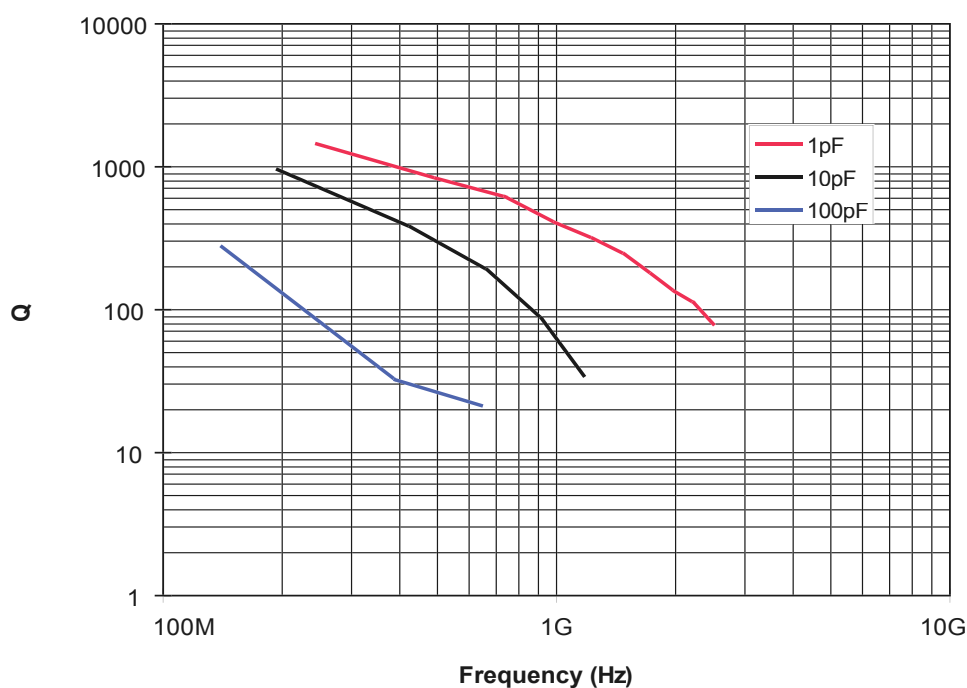
### GQM Technical Data (Typical)

#### Q - Frequency Characteristics

##### GQM21 Series (50V/100V)



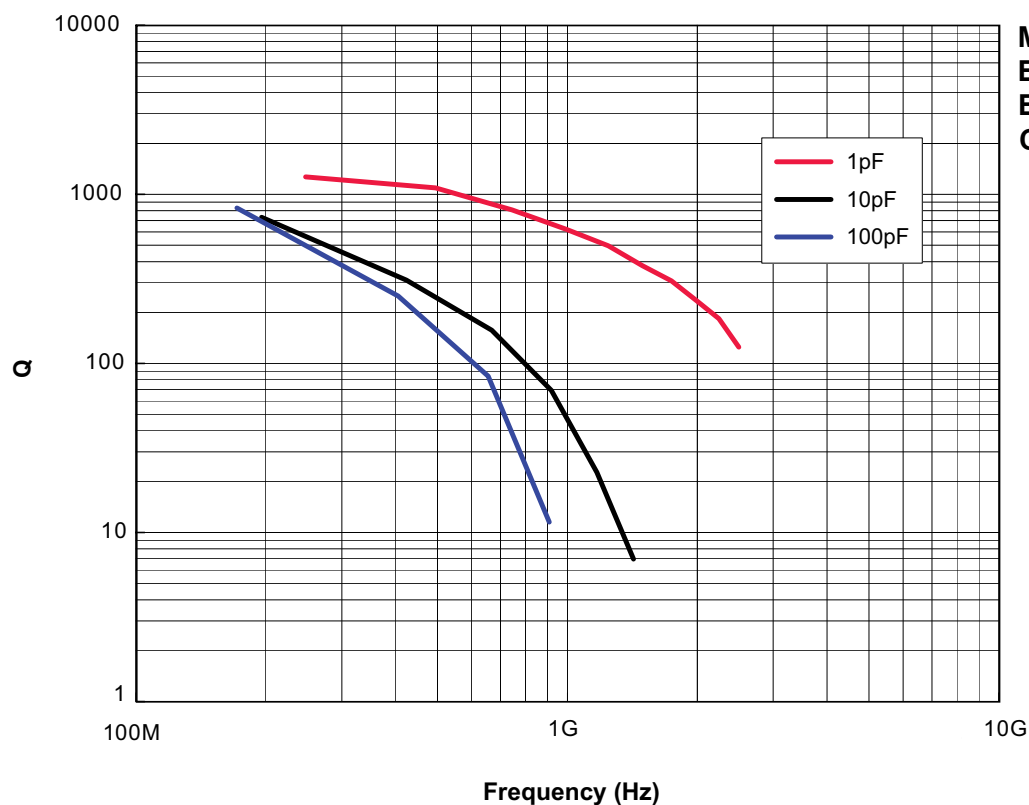
##### GQM21 Series (250V)



### GQM Technical Data (Typical)

#### Q - Frequency Characteristics

##### GQM22 Series (500V)

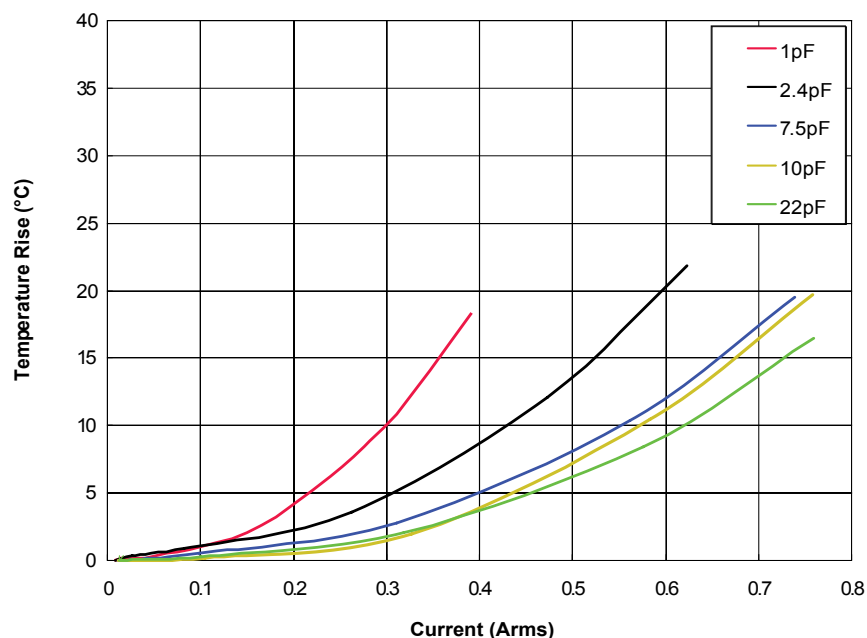


Measurement  
Equipment  
Boonton Resonant  
Coaxial-Line 34A

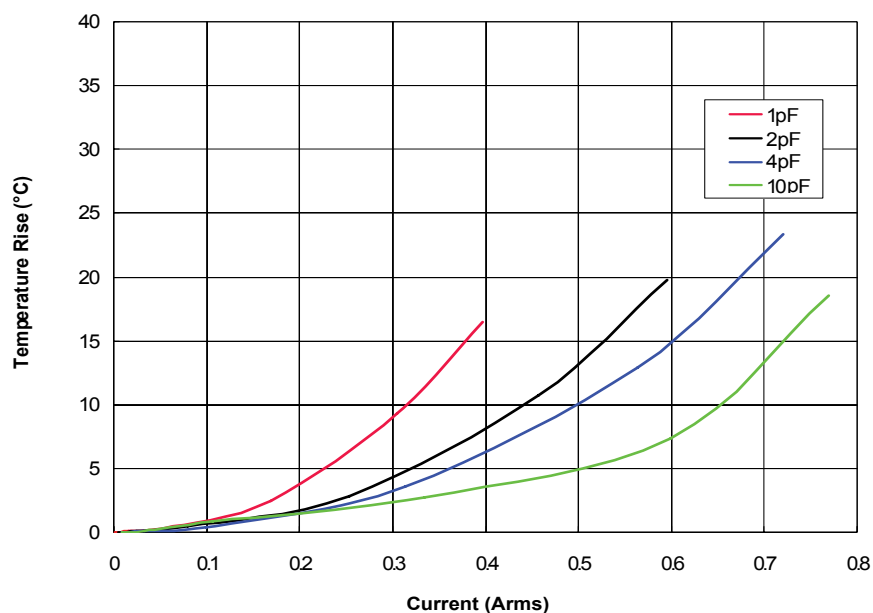
### GQM Technical Data (Typical)

#### Temperature Rise - Current Characteristics

##### GQM187 Series (1GHz)

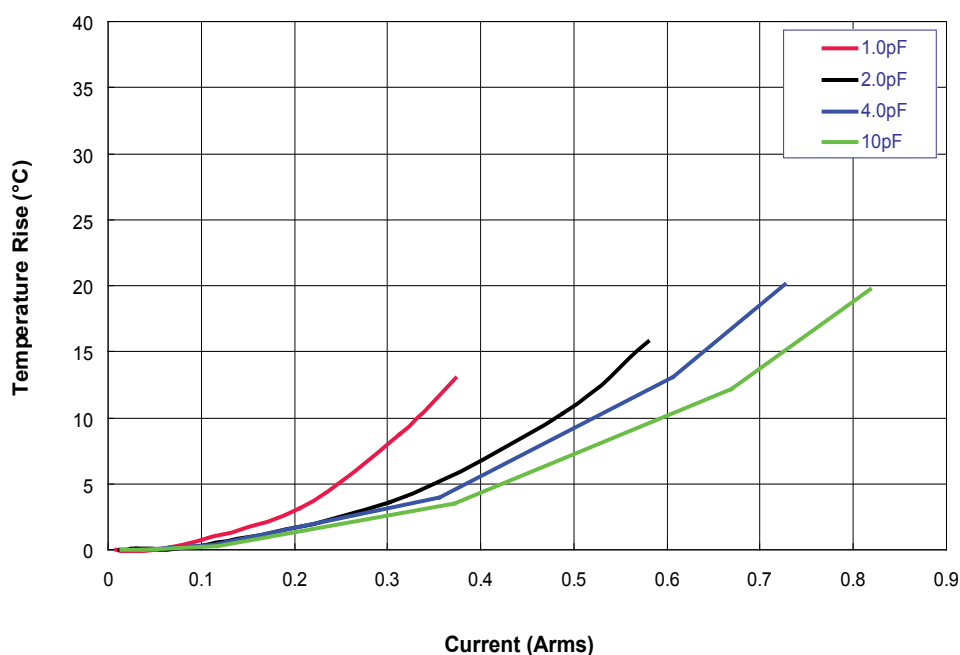


##### GQM188 Series (1GHZ)

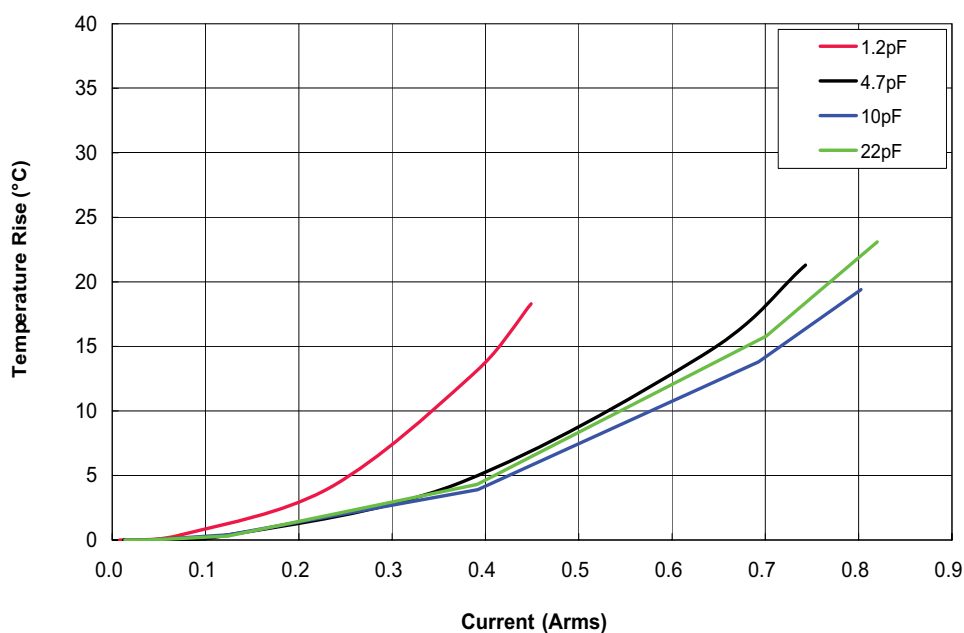


### GQM Technical Data (Typical)

#### GQM21 Series (1GHz)



#### GQM22 Series (1GHz)

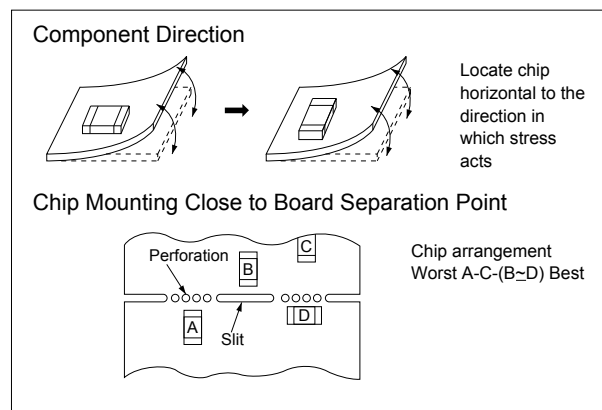


### GQM Soldering and Mounting

#### **CAUTION** (Soldering and Mounting)

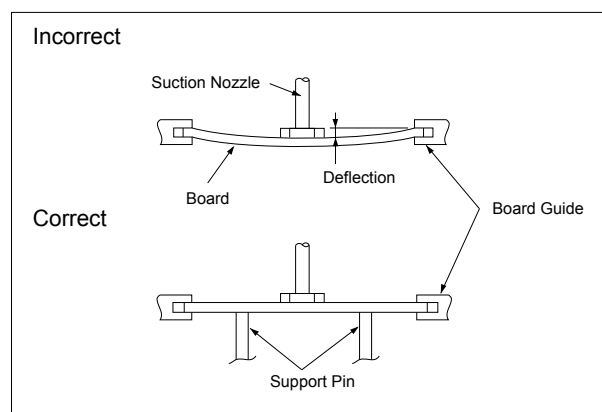
##### 1. Mounting Position

Choose a mounting position that minimizes the stress imposed on the chip during flexing or bending of the board.



##### 2. Chip Placing

- An excessively low bottom dead point of the suction nozzle imposes great force on the chip during mounting, causing cracked chips. So adjust the suction nozzle's bottom dead point by correcting warp in the board. Normally, the suction nozzle's bottom dead point must be set on the upper surface of the board. Nozzle pressure for chip mounting must be a 1 to 3N static load.
- Dirt particles and dust accumulated between the suction nozzle and the cylinder inner wall prevent the nozzle from moving smoothly. This imposes great force on the chip during mounting, causing cracked chips. And the locating claw, when worn out, imposes uneven forces on the chip when positioning, causing cracked chips. The suction nozzle and the locating claw must be maintained, checked and replaced periodically.



Continued on the following page. 

### GQM Soldering and Mounting

Continued from the preceding page.

#### 3. Reflow Soldering

- When sudden heat is applied to the components, the mechanical strength of the components should go down because remarkable temperature change causes deformity inside components. In order to prevent mechanical damage in the components, preheating should be required for both of the components and the PCB board. Preheating conditions are shown in Table 1. It is required to keep temperature differential between the soldering and the components surface ( $\Delta T$ ) as small as possible.
- Solderability of Tin plating termination chip might be deteriorated when a low temperature soldering profile where peak solder temperature is below the Tin melting point is used. Please confirm the solderability of Tin plating termination chip before use.
- When components are immersed in solvent after mounting, be sure to maintain the temperature difference ( $\Delta T$ ) between the component and the solvent within the range shown in the Table 1.

Table 1

| Part Number | Temperature Differential          |
|-------------|-----------------------------------|
| GQM18/21    | $\Delta T \leq 190^\circ\text{C}$ |
| GQM22       | $\Delta T \leq 130^\circ\text{C}$ |

#### Recommended Conditions

|                  | Pb-Sn Solder    |              | Lead Free Solder      |
|------------------|-----------------|--------------|-----------------------|
|                  | Infrared Reflow | Vapor Reflow |                       |
| Peak Temperature | 230-250°C       | 230-240°C    | 240-260°C             |
| Atmosphere       | Air             | Air          | Air or N <sub>2</sub> |

Pb-Sn Solder: Sn-37Pb

Lead Free Solder: Sn-3.0Ag-0.5Cu

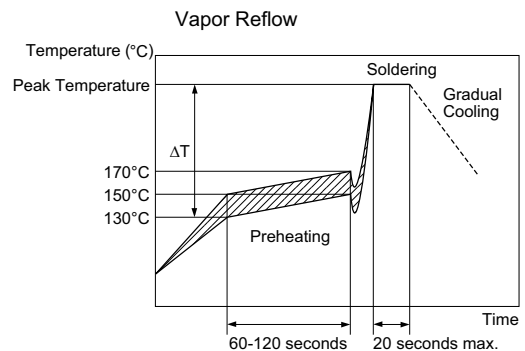
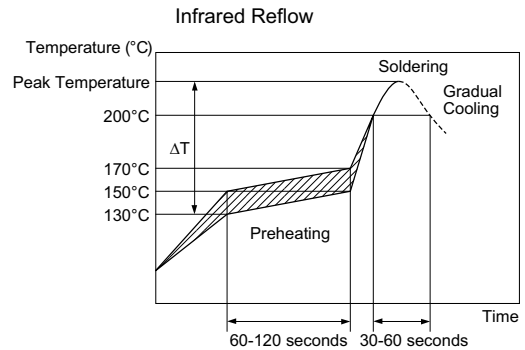
#### ● Optimum Solder Amount for Reflow Soldering

- Overly thick application of solder paste results in excessive fillet height solder. This makes the chip more susceptible to mechanical and thermal stress on the board and may cause the chips to crack.
- Too little solder paste results in a lack of adhesive strength on the outer electrode, which may result in chips breaking loose from the PCB.
- Make sure the solder has been applied smoothly to the end surface to a height of 0.2mm\* min.

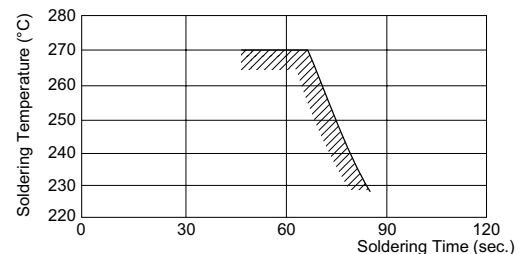
#### Inverting the PCB

Make sure not to impose an abnormal mechanical shock on the PCB.

#### Standard Conditions for Reflow Soldering

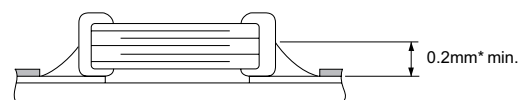


#### Allowable Soldering Temperature and Time



In case of repeated soldering, the accumulated soldering time must be within the range shown above.

#### Optimum Solder Amount for Reflow Soldering



\*GRM 02/03: 1/3 of Chip Thickness min.

Continued on the following page.

### GQM Soldering and Mounting

Continued from the preceding page.

#### 5. Flow Soldering

- When sudden heat is applied to the components, the mechanical strength of the components should go down because remarkable temperature change causes deformity inside components. And an excessively long soldering time or high soldering temperature results in leaching of the outer electrodes, causing poor adhesion or a reduction in capacitance value due to loss of contact between electrodes and end termination.

- In order to prevent mechanical damage in the components, preheating should be required for the both components and the PCB board. Preheating conditions are shown in Table 2. It is required to keep temperature differential between the soldering and the components surface ( $\Delta T$ ) as small as possible.

When components are immersed in solvent after mounting, be sure to maintain the temperature difference between the component and solvent within the range shown in Table 2.

Do not apply flow soldering to chips not listed in Table 2.

Table 2

| Part Number | Temperature Differential          |
|-------------|-----------------------------------|
| GQM18/21    | $\Delta T \leq 150^\circ\text{C}$ |

#### Recommended Conditions

|                  | Pb-Sn Solder | Lead Free Solder |
|------------------|--------------|------------------|
| Peak Temperature | 240-250°C    | 250-260°C        |
| Atmosphere       | Air          | N <sub>2</sub>   |

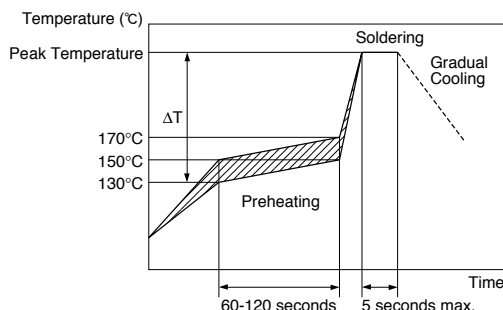
Pb-Sn Solder: Sn-37Pb

Lead Free Solder: Sn-3.0Ag-0.5Cu

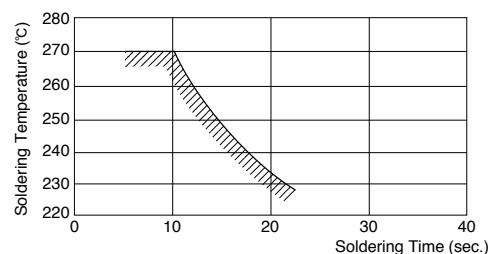
- Optimum Solder Amount for Flow Soldering

The top of the solder fillet should be lower than the thickness of components. If the solder amount is excessively big, the risk of cracking is higher during board bending or under any other stressful conditions.

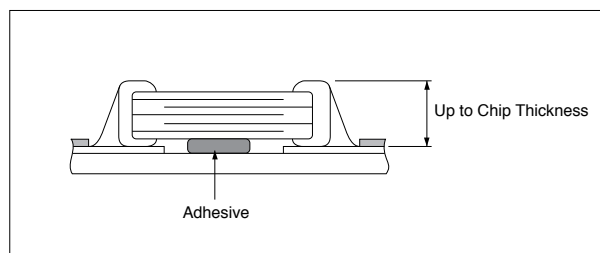
#### Standard Conditions for Flow Soldering



#### Allowable Soldering Temperature and Time



In case of repeated soldering, the accumulated soldering time must be within the range shown above.



Continued on the following page.

### GQM Soldering and Mounting

#### 6. Correction with a Soldering Iron

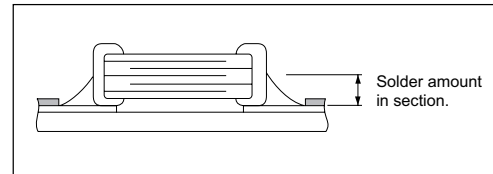
- When sudden heat is applied to the components when using a soldering iron, the mechanical strength of the components will decrease because the extreme temperature change can cause deformations inside the components. In order to prevent mechanical damage to the components, preheating is required for both the components and the PCB board. Preheating conditions (the "Temperature of the Soldering Iron tip", "Preheating Temperature", "Temperature Differential" between the iron tip and the components and the PCB) should be within the conditions of Table 3. It is required to keep the temperature differential between the soldering Iron and the component surfaces ( $\Delta T$ ) as small as possible.
- After soldering, do not allow the component/PCB to rapidly cool down.
- The operating time for the re-working should be as short as possible. When re-working time is too long, it may cause solder leaching, and that will cause a reduction in the adhesive strength of the terminations.

**Table 3**

| Part Number | Temperature of Soldering Iron tip | Preheating Temperature | Temperature Differential ( $\Delta T$ ) | Atmosphere |
|-------------|-----------------------------------|------------------------|-----------------------------------------|------------|
| GQM18/21    | 350°C max.                        | 150°C min.             | $\Delta T \leq 190^\circ\text{C}$       | Air        |
| GQM22       | 280°C max.                        | 150°C min.             | $\Delta T \leq 130^\circ\text{C}$       | Air        |

\*Applicable for both Pb-Sn and Lead Free Solder. Pb-Sn Solder: Sn-37Pb  
Lead Free Solder: Sn-3.0Ag-0.5Cu

- Optimum Solder amount when re-working with a Soldering Iron
- In case of sizes smaller than 0603, (GQM18), the top of the solder fillet should be lower than 2/3's of the thickness of the component or 0.5mm whichever is smaller. In case of 0805 and larger sizes (GQM21/22), the top of the solder fillet should be lower than 2/3's of the thickness of the component. If the solder amount is excessive, the risk of cracking is higher during board bending or under any other stressful condition.
- A Soldering iron with a tip of  $\phi 3\text{mm}$  or smaller should be used. It is also necessary to keep the soldering iron from touching the components during the re-work.
- Solder wire with  $\phi 0.5\text{mm}$  or smaller is required for soldering.



#### 7. Washing

Excessive output of ultrasonic oscillation during cleaning causes PCBs to resonate, resulting in cracked chips or broken solder. Take note not to vibrate PCBs.

FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY RESULT, WORST CASE, IN A SHORT CIRCUIT AND FUMING WHEN THE PRODUCT IS USED.

### GQM Design Engineering Kits

#### CERAMIC CHIP CAPACITORS

##### ASCAP Hi-Frequency

##### 0603 (50 to 100 VDC)

- High Q and Low ESR at VHF, UHF, and Microwave Frequencies
- 0603 and 0805 sizes with Copper Inner Electrode
- Tight Tolerance Available ([W]=+/-0.05pF for <=5pF, [C]=+/-0.25pF for 5 - 9pF, [F]=+/-1% for 10 - 20pF)
- Low Power Consumption for Mobile Telecommunication
- Base Stations, Broadcast Satellite and Special Radios

##### 0603 (250 VDC)

- High Q and Low ESR at VHF, UHF, and Microwave Frequencies
- 0603 size with Copper Inner Electrode
- Tight Tolerance Available ([W]=+/-0.05pF for <=5pF, [F]=+/-1% for 10 - 20pF)
- Low Power Consumption for Mobile Telecommunication
- Base Stations, Broadcast Satellite and Special Radios

##### GQM18-HIQ0603KIT-E

| No. | Description          | Murata Global P/N | Qty. |
|-----|----------------------|-------------------|------|
| 1   | 0603/C0G/0.50pF/100V | GQM1885C2AR50CB01 | 20   |
| 2   | 0603/C0G/0.60pF/100V | GQM1885C2AR60CB01 | 20   |
| 3   | 0603/C0G/0.70pF/100V | GQM1885C2AR70CB01 | 20   |
| 4   | 0603/C0G/0.80pF/100V | GQM1885C2AR80CB01 | 20   |
| 5   | 0603/C0G/0.90pF/100V | GQM1885C2AR90CB01 | 20   |
| 6   | 0603/C0G/1.0pF/100V  | GQM1885C2A1R0CB01 | 20   |
| 7   | 0603/C0G/1.1pF/100V  | GQM1885C2A1R1CB01 | 20   |
| 8   | 0603/C0G/1.2pF/100V  | GQM1885C2A1R2CB01 | 20   |
| 9   | 0603/C0G/1.3pF/100V  | GQM1885C2A1R3CB01 | 20   |
| 10  | 0603/C0G/1.5pF/100V  | GQM1885C2A1R5CB01 | 20   |
| 11  | 0603/C0G/1.6pF/100V  | GQM1885C2A1R6CB01 | 20   |
| 12  | 0603/C0G/1.8pF/100V  | GQM1885C2A1R8CB01 | 20   |
| 13  | 0603/C0G/2.0pF/100V  | GQM1885C2A2R0CB01 | 20   |
| 14  | 0603/C0G/2.2pF/100V  | GQM1885C2A2R2CB01 | 20   |
| 15  | 0603/C0G/2.4pF/100V  | GQM1885C2A2R4CB01 | 20   |
| 16  | 0603/C0G/2.7pF/100V  | GQM1885C2A2R7CB01 | 20   |
| 17  | 0603/C0G/3.0pF/100V  | GQM1885C2A3R0CB01 | 20   |
| 18  | 0603/C0G/3.3pF/100V  | GQM1885C2A3R3CB01 | 20   |
| 19  | 0603/C0G/3.6pF/100V  | GQM1885C2A3R6CB01 | 20   |
| 20  | 0603/C0G/3.9pF/100V  | GQM1885C2A3R9CB01 | 20   |
| 21  | 0603/C0G/4.3pF/100V  | GQM1885C2A4R3CB01 | 20   |
| 22  | 0603/C0G/4.7pF/100V  | GQM1885C2A4R7CB01 | 20   |
| 23  | 0603/C0G/5.1pF/100V  | GQM1885C2A5R1DB01 | 20   |
| 24  | 0603/C0G/5.6pF/100V  | GQM1885C2A5R6DB01 | 20   |
| 25  | 0603/C0G/6.2pF/100V  | GQM1885C2A6R2DB01 | 20   |
| 26  | 0603/C0G/6.8pF/100V  | GQM1885C2A6R8DB01 | 20   |
| 27  | 0603/C0G/7.5pF/50V   | GQM1885C1H7R5DB01 | 20   |
| 28  | 0603/C0G/8.2pF/50V   | GQM1885C1H8R2DB01 | 20   |
| 29  | 0603/C0G/9.1pF/50V   | GQM1885C1H9R1DB01 | 20   |
| 30  | 0603/C0G/10pF/50V    | GQM1885C1H100JB01 | 20   |
| 31  | 0603/C0G/12pF/50V    | GQM1885C1H120JB01 | 20   |
| 32  | 0603/C0G/15pF/50V    | GQM1885C1H150JB01 | 20   |
| 33  | 0603/C0G/18pF/50V    | GQM1885C1H180JB01 | 20   |
| 34  | 0603/C0G/22pF/50V    | GQM1885C1H220JB01 | 20   |
| 35  | 0603/C0G/27pF/50V    | GQM1885C1H270JB01 | 20   |
| 36  | 0603/C0G/33pF/50V    | GQM1885C1H330JB01 | 20   |
| 37  | 0603/C0G/39pF/50V    | GQM1885C1H390JB01 | 20   |
| 38  | 0603/C0G/47pF/50V    | GQM1885C1H470JB01 | 20   |
| 39  | 0603/C0G/68pF/50V    | GQM1885C1H680JB01 | 20   |
| 40  | 0603/C0G/100pF/50V   | GQM1885C1H101JB01 | 20   |

##### GQM18-HIQ250VKIT-E

| No. | Description          | Murata Global P/N | Qty. |
|-----|----------------------|-------------------|------|
| 1   | 0603/C0G/0.10pF/250V | GQM1875C2ER10BB12 | 20   |
| 2   | 0603/C0G/0.30pF/250V | GQM1875C2ER30BB12 | 20   |
| 3   | 0603/C0G/0.50pF/250V | GQM1875C2ER50BB12 | 20   |
| 4   | 0603/C0G/0.60pF/250V | GQM1875C2ER60BB12 | 20   |
| 5   | 0603/C0G/0.70pF/250V | GQM1875C2ER70BB12 | 20   |
| 6   | 0603/C0G/0.80pF/250V | GQM1875C2ER80BB12 | 20   |
| 7   | 0603/C0G/0.90pF/250V | GQM1875C2ER90BB12 | 20   |
| 8   | 0603/C0G/1.0pF/250V  | GQM1875C2E1R0BB12 | 20   |
| 9   | 0603/C0G/1.1pF/250V  | GQM1875C2E1R1BB12 | 20   |
| 10  | 0603/C0G/1.2pF/250V  | GQM1875C2E1R2BB12 | 20   |
| 11  | 0603/C0G/1.3pF/250V  | GQM1875C2E1R3BB12 | 20   |
| 12  | 0603/C0G/1.6pF/250V  | GQM1875C2E1R6BB12 | 20   |
| 13  | 0603/C0G/1.8pF/250V  | GQM1875C2E1R8BB12 | 20   |
| 14  | 0603/C0G/2.2pF/250V  | GQM1875C2E2R2BB12 | 20   |
| 15  | 0603/C0G/2.4pF/250V  | GQM1875C2E2R4BB12 | 20   |
| 16  | 0603/C0G/3.0pF/250V  | GQM1875C2E3R0BB12 | 20   |
| 17  | 0603/C0G/3.3pF/250V  | GQM1875C2E3R3BB12 | 20   |
| 18  | 0603/C0G/3.6pF/250V  | GQM1875C2E3R6BB12 | 20   |
| 19  | 0603/C0G/3.9pF/250V  | GQM1875C2E3R9BB12 | 20   |
| 20  | 0603/C0G/4.3pF/250V  | GQM1875C2E4R3BB12 | 20   |
| 21  | 0603/C0G/4.7pF/250V  | GQM1875C2E4R7BB12 | 20   |
| 22  | 0603/C0G/5.1pF/250V  | GQM1875C2E5R1BB12 | 20   |
| 23  | 0603/C0G/5.6pF/250V  | GQM1875C2E5R6BB12 | 20   |
| 24  | 0603/C0G/6.2pF/250V  | GQM1875C2E6R2BB12 | 20   |
| 25  | 0603/C0G/6.8pF/250V  | GQM1875C2E6R8BB12 | 20   |
| 26  | 0603/C0G/7.5pF/250V  | GQM1875C2E7R5BB12 | 20   |
| 27  | 0603/C0G/9.1pF/250V  | GQM1875C2E9R1BB12 | 20   |
| 28  | 0603/C0G/10pF/250V   | GQM1875C2E100JB12 | 20   |
| 29  | 0603/C0G/12pF/250V   | GQM1875C2E120JB12 | 20   |
| 30  | 0603/C0G/15pF/250V   | GQM1875C2E150JB12 | 20   |
| 31  | 0603/C0G/22pF/250V   | GQM1875C2E220JB12 | 20   |
| 32  | 0603/C0G/27pF/250V   | GQM1875C2E270JB12 | 20   |
| 33  | 0603/C0G/33pF/250V   | GQM1875C2E330JB12 | 20   |
| 34  | 0603/C0G/39pF/250V   | GQM1875C2E390JB12 | 20   |
| 35  | 0603/C0G/47pF/250V   | GQM1875C2E470JB12 | 20   |

### GQM Design Engineering Kits

#### CERAMIC CHIP CAPACITORS

##### ASCAP Hi-Frequency

##### 0805 (50 to 100 VDC)

- High Q and Low ESR at VHF, UHF, and Microwave Frequencies
- 0603 and 0805 sizes with Copper Inner Electrode
- Tight Tolerance Available ([W]=+/-0.05pF for <=5pF, [C]=+/-0.25pF for 5 - 9pF, [F]=+/-1% for 10 - 20pF)
- Low Power Consumption for Mobile Telecommunication
- Base Stations, Broadcast Satellite and Special Radios

##### 0805 (250 VDC)

- High Q and Low ESR at VHF, UHF, and Microwave Frequencies
- 0805 size (250 VDC) with Copper Inner Electrode
- Tight Tolerance Available ([W]=+/-0.05pF for <=5pF, [C]=+/-0.25pF for 5 - 9pF, [F]=+/-1% for 10 - 20pF)
- Low Power Consumption for Mobile Telecommunication
- Base Stations, Broadcast Satellite and Special Radios

##### GQM21-HIQ0805KIT-E

| No. | Description          | Murata Global P/N | Qty. |
|-----|----------------------|-------------------|------|
| 1   | 0805/C0G/0.50pF/100V | GQM2195C2AR50CB01 | 20   |
| 2   | 0805/C0G/0.60pF/100V | GQM2195C2AR60CB01 | 20   |
| 3   | 0805/C0G/0.70pF/100V | GQM2195C2AR70CB01 | 20   |
| 4   | 0805/C0G/0.80pF/100V | GQM2195C2AR80CB01 | 20   |
| 5   | 0805/C0G/0.90pF/100V | GQM2195C2AR90CB01 | 20   |
| 6   | 0805/C0G/1.0pF/100V  | GQM2195C2A1R0CB01 | 20   |
| 7   | 0805/C0G/1.1pF/100V  | GQM2195C2A1R1CB01 | 20   |
| 8   | 0805/C0G/1.2pF/100V  | GQM2195C2A1R2CB01 | 20   |
| 9   | 0805/C0G/1.3pF/100V  | GQM2195C2A1R3CB01 | 20   |
| 10  | 0805/C0G/1.5pF/100V  | GQM2195C2A1R5CB01 | 20   |
| 11  | 0805/C0G/1.6pF/100V  | GQM2195C2A1R6CB01 | 20   |
| 12  | 0805/C0G/1.8pF/100V  | GQM2195C2A1R8CB01 | 20   |
| 13  | 0805/C0G/2.0pF/100V  | GQM2195C2A2R0CB01 | 20   |
| 14  | 0805/C0G/2.2pF/100V  | GQM2195C2A2R2CB01 | 20   |
| 15  | 0805/C0G/2.4pF/100V  | GQM2195C2A2R4CB01 | 20   |
| 16  | 0805/C0G/2.7pF/100V  | GQM2195C2A2R7CB01 | 20   |
| 17  | 0805/C0G/3.0pF/100V  | GQM2195C2A3R0CB01 | 20   |
| 18  | 0805/C0G/3.3pF/100V  | GQM2195C2A3R3CB01 | 20   |
| 19  | 0805/C0G/3.6pF/100V  | GQM2195C2A3R6CB01 | 20   |
| 20  | 0805/C0G/3.9pF/100V  | GQM2195C2A3R9CB01 | 20   |
| 21  | 0805/C0G/4.3pF/100V  | GQM2195C2A4R3CB01 | 20   |
| 22  | 0805/C0G/4.7pF/100V  | GQM2195C2A4R7CB01 | 20   |
| 23  | 0805/C0G/5.1pF/100V  | GQM2195C2A5R1DB01 | 20   |
| 24  | 0805/C0G/5.6pF/100V  | GQM2195C2A5R6DB01 | 20   |
| 25  | 0805/C0G/6.2pF/100V  | GQM2195C2A6R2DB01 | 20   |
| 26  | 0805/C0G/6.8pF/100V  | GQM2195C2A6R8DB01 | 20   |
| 27  | 0805/C0G/7.5pF/100V  | GQM2195C2A7R5DB01 | 20   |
| 28  | 0805/C0G/8.2pF/100V  | GQM2195C2A8R2DB01 | 20   |
| 29  | 0805/C0G/9.1pF/100V  | GQM2195C2A9R1DB01 | 20   |
| 30  | 0805/C0G/10pF/100V   | GQM2195C2A100JB01 | 20   |
| 31  | 0805/C0G/12pF/100V   | GQM2195C2A120JB01 | 20   |
| 32  | 0805/C0G/15pF/100V   | GQM2195C2A150JB01 | 20   |
| 33  | 0805/C0G/18pF/100V   | GQM2195C2A180JB01 | 20   |
| 34  | 0805/C0G/22pF/50V    | GQM2195C1H220JB01 | 20   |
| 35  | 0805/C0G/27pF/50V    | GQM2195C1H270JB01 | 20   |
| 36  | 0805/C0G/33pF/50V    | GQM2195C1H330JB01 | 20   |
| 37  | 0805/C0G/39pF/50V    | GQM2195C1H390JB01 | 20   |
| 38  | 0805/C0G/47pF/50V    | GQM2195C1H470JB01 | 20   |
| 39  | 0805/C0G/68pF/50V    | GQM2195C1H680JB01 | 20   |
| 40  | 0805/C0G/100pF/50V   | GQM2195C1H101JB01 | 20   |

##### GQM21-HIQ250VKIT-E

| No. | Description          | Murata Global P/N | Qty. |
|-----|----------------------|-------------------|------|
| 1   | 0805/C0G/0.50pF/250V | GQM2195C2ER50BB12 | 20   |
| 2   | 0805/C0G/0.60pF/250V | GQM2195C2ER60BB12 | 20   |
| 3   | 0805/C0G/0.70pF/250V | GQM2195C2ER70BB12 | 20   |
| 4   | 0805/C0G/0.80pF/250V | GQM2195C2ER80BB12 | 20   |
| 5   | 0805/C0G/0.90pF/250V | GQM2195C2ER90BB12 | 20   |
| 6   | 0805/C0G/1.0pF/250V  | GQM2195C2E1R0BB12 | 20   |
| 7   | 0805/C0G/1.1pF/250V  | GQM2195C2E1R1BB12 | 20   |
| 8   | 0805/C0G/1.2pF/250V  | GQM2195C2E1R2BB12 | 20   |
| 9   | 0805/C0G/1.3pF/250V  | GQM2195C2E1R3BB12 | 20   |
| 10  | 0805/C0G/1.5pF/250V  | GQM2195C2E1R5BB12 | 20   |
| 11  | 0805/C0G/1.6pF/250V  | GQM2195C2E1R6BB12 | 20   |
| 12  | 0805/C0G/1.8pF/250V  | GQM2195C2E1R8BB12 | 20   |
| 13  | 0805/C0G/2.0pF/250V  | GQM2195C2E2R0BB12 | 20   |
| 14  | 0805/C0G/2.2pF/250V  | GQM2195C2E2R2BB12 | 20   |
| 15  | 0805/C0G/2.4pF/250V  | GQM2195C2E2R4BB12 | 20   |
| 16  | 0805/C0G/2.7pF/250V  | GQM2195C2E2R7BB12 | 20   |
| 17  | 0805/C0G/3.0pF/250V  | GQM2195C2E3R0BB12 | 20   |
| 18  | 0805/C0G/3.3pF/250V  | GQM2195C2E3R3BB12 | 20   |
| 19  | 0805/C0G/3.6pF/250V  | GQM2195C2E3R6BB12 | 20   |
| 20  | 0805/C0G/3.9pF/250V  | GQM2195C2E3R9BB12 | 20   |
| 21  | 0805/C0G/4.3pF/250V  | GQM2195C2E4R3BB12 | 20   |
| 22  | 0805/C0G/4.7pF/250V  | GQM2195C2E4R7BB12 | 20   |
| 23  | 0805/C0G/5.1pF/250V  | GQM2195C2E5R1BB12 | 20   |
| 24  | 0805/C0G/5.6pF/250V  | GQM2195C2E5R6BB12 | 20   |
| 25  | 0805/C0G/6.2pF/250V  | GQM2195C2E6R2BB12 | 20   |
| 26  | 0805/C0G/6.8pF/250V  | GQM2195C2E6R8BB12 | 20   |
| 27  | 0805/C0G/7.5pF/250V  | GQM2195C2E7R5BB12 | 20   |
| 28  | 0805/C0G/8.2pF/250V  | GQM2195C2E8R2BB12 | 20   |
| 29  | 0805/C0G/9.1pF/250V  | GQM2195C2E9R1BB12 | 20   |
| 30  | 0805/C0G/10pF/250V   | GQM2195C2E100JB12 | 20   |
| 31  | 0805/C0G/12pF/250V   | GQM2195C2E120JB12 | 20   |
| 32  | 0805/C0G/15pF/250V   | GQM2195C2E150JB12 | 20   |
| 33  | 0805/C0G/18pF/250V   | GQM2195C2E180JB12 | 20   |
| 34  | 0805/C0G/22pF/250V   | GQM2195C2E220JB12 | 20   |
| 35  | 0805/C0G/27pF/250V   | GQM2195C2E270JB12 | 20   |
| 36  | 0805/C0G/33pF/250V   | GQM2195C2E330JB12 | 20   |
| 37  | 0805/C0G/39pF/250V   | GQM2195C2E390JB12 | 20   |
| 38  | 0805/C0G/47pF/250V   | GQM2195C2E470JB12 | 20   |
| 39  | 0805/C0G/68pF/250V   | GQM2195C2E680JB12 | 20   |
| 40  | 0805/C0G/100pF/250V  | GQM2195C2E101JB12 | 20   |

### GQM Design Engineering Kits

## CERAMIC CHIP CAPACITORS

### ASCAP Hi-Frequency

#### 1111 (500 VDC)

- High Q and Low ESR at VHF, UHF, and Microwave Frequencies
- 1111 size (500 VDC) with Copper Inner Electrode
- Tight Tolerance Available ([W]=+/-0.05pF for <=5pF, [C]=+/-0.25pF for 5 - 9pF, [F]=+/-1% for 10 - 20pF)
- Low Power Consumption for Mobile Telecommunication
- Base Stations, Broadcast Satellite and Special Radios

#### GQM22-HIQ1111KIT-E

| No. | Description          | Murata Global P/N  | Qty. |
|-----|----------------------|--------------------|------|
| 1   | 1111/C0G/0.50pF/500V | GQM22M5C2HR50BB01L | 20   |
| 2   | 1111/C0G/0.60pF/500V | GQM22M5C2HR60BB01L | 20   |
| 3   | 1111/C0G/0.70pF/500V | GQM22M5C2HR70BB01L | 20   |
| 4   | 1111/C0G/0.80pF/500V | GQM22M5C2HR80BB01L | 20   |
| 5   | 1111/C0G/0.90pF/500V | GQM22M5C2HR90BB01L | 20   |
| 6   | 1111/C0G/1.0pF/500V  | GQM22M5C2H1R0BB01L | 20   |
| 7   | 1111/C0G/1.1pF/500V  | GQM22M5C2H1R1BB01L | 20   |
| 8   | 1111/C0G/1.2pF/500V  | GQM22M5C2H1R2BB01L | 20   |
| 9   | 1111/C0G/1.3pF/500V  | GQM22M5C2H1R3BB01L | 20   |
| 10  | 1111/C0G/1.5pF/500V  | GQM22M5C2H1R5BB01L | 20   |
| 11  | 1111/C0G/1.6pF/500V  | GQM22M5C2H1R6BB01L | 20   |
| 12  | 1111/C0G/1.8pF/500V  | GQM22M5C2H1R8BB01L | 20   |
| 13  | 1111/C0G/2.0pF/500V  | GQM22M5C2H2R0BB01L | 20   |
| 14  | 1111/C0G/2.2pF/500V  | GQM22M5C2H2R2BB01L | 20   |
| 15  | 1111/C0G/2.4pF/500V  | GQM22M5C2H2R4BB01L | 20   |
| 16  | 1111/C0G/2.7pF/500V  | GQM22M5C2H2R7BB01L | 20   |
| 17  | 1111/C0G/3.0pF/500V  | GQM22M5C2H3R0BB01L | 20   |
| 18  | 1111/C0G/3.3pF/500V  | GQM22M5C2H3R3BB01L | 20   |
| 19  | 1111/C0G/3.6pF/500V  | GQM22M5C2H3R6BB01L | 20   |
| 20  | 1111/C0G/3.9pF/500V  | GQM22M5C2H3R9BB01L | 20   |
| 21  | 1111/C0G/4.3pF/500V  | GQM22M5C2H4R3BB01L | 20   |
| 22  | 1111/C0G/4.7pF/500V  | GQM22M5C2H4R7BB01L | 20   |
| 23  | 1111/C0G/5.1pF/500V  | GQM22M5C2H5R1BB01L | 20   |
| 24  | 1111/C0G/5.6pF/500V  | GQM22M5C2H5R6BB01L | 20   |
| 25  | 1111/C0G/6.2pF/500V  | GQM22M5C2H6R2BB01L | 20   |
| 26  | 1111/C0G/6.8pF/500V  | GQM22M5C2H6R8BB01L | 20   |
| 27  | 1111/C0G/7.5pF/500V  | GQM22M5C2H7R5BB01L | 20   |
| 28  | 1111/C0G/8.2pF/500V  | GQM22M5C2H8R2BB01L | 20   |
| 29  | 1111/C0G/9.1pF/500V  | GQM22M5C2H9R1BB01L | 20   |
| 30  | 1111/C0G/10pF/500V   | GQM22M5C2H100JB01L | 20   |
| 31  | 1111/C0G/12pF/500V   | GQM22M5C2H120JB01L | 20   |
| 32  | 1111/C0G/15pF/500V   | GQM22M5C2H150JB01L | 20   |
| 33  | 1111/C0G/18pF/500V   | GQM22M5C2H180JB01L | 20   |
| 34  | 1111/C0G/22pF/500V   | GQM22M5C2H220JB01L | 20   |
| 35  | 1111/C0G/27pF/500V   | GQM22M5C2H270JB01L | 20   |
| 36  | 1111/C0G/33pF/500V   | GQM22M5C2H330JB01L | 20   |
| 37  | 1111/C0G/39pF/500V   | GQM22M5C2H390JB01L | 20   |
| 38  | 1111/C0G/47pF/500V   | GQM22M5C2H470JB01L | 20   |
| 39  | 1111/C0G/68pF/500V   | GQM22M5C2H680JB01L | 20   |
| 40  | 1111/C0G/100pF/500V  | GQM22M5C2H101JB01L | 20   |