



**THE DATASHEET OF
GMC10X7R104K50NT**



MULTILAYER CERAMIC CHIP CAPACITORS

- GMC SERIES -

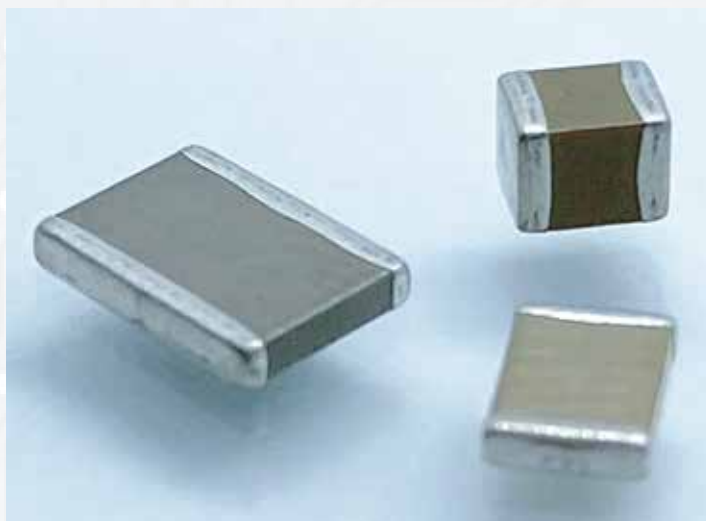
APPLICATIONS

- Can be used on surface mount assembly equipment
- Our fully integrated manufacturing and total quality control systems ensure unprecedented high standards of quality and reliability.

FEATURES

- Large capacitance values in small sizes
- Excellent high frequency characteristics

CHIP CAPACITOR SELECTION



DIELECTRIC TYPE

COG (NPO) - Capacitance change with temperature is 0-30ppm/°C which is less than -0.3%/°C from -55°C to +125°C. Typical capacitance change with life is less than -0.1 % for NPOs, one-fifth that shown by most other dielectrics. NPO formulations show no aging characteristics.

Ultra stable class I dielectric: linear temperature coefficient, low loss, negligible change of electrical properties with time, voltage and frequency.

| OPERATING TEMPERATURE RANGE | TEMPERATURE COEFFICIENT | DISSIPATION FACTOR | INSULATION RESISTANCE | DIELECTRIC WITHSTANDING VOLTAGE | AGING RATE | TEST PARAMETERS |
|-----------------------------|-------------------------|-------------------------|--|---------------------------------|--------------------|--|
| -55°C to +125 C | 0±30ppm°C | 0.1% Max, 0.02% Typical | •>100GΩ or 1000ΩF •125°C VDCW: 10GΩF or 100ΩF whichever is less | 3 X VDCW | 0% per decade hour | <ul style="list-style-type: none"> • C<1000pF f=1MHz V=1.0Vrms ±0.2Vrms T=25°C • C>1000pF f=1KHz V=1.0Vrms ±0.2Vrms T=25°C |

Stable class II dielectric

| OPERATING TEMPERATURE RANGE | TEMPERATURE COEFFICIENT | DISSIPATION FACTOR | INSULATION RESISTANCE | DIELECTRIC WITHSTANDING VOLTAGE | AGING RATE | TEST PARAMETERS |
|---|----------------------------------|------------------------|---|---------------------------------|---------------------|--|
| X7R: -55C to+125C X5R: -55C to+85C X6S: -55C to+105C X7S: -55C to+125C | ± 15% ± 15% ± 22% ± 22% | 2.5% Max, 1.8% Typical | •25°C, VdCW: >100GΩF or 1000ΩF, whichever is less •125°C, VdCW: >100GΩF or1000ΩF whichever is less | 2.5 X VDCW | <2% per decade hour | <ul style="list-style-type: none"> • 1KHz 1.0Vrms +/-0.2Vrms 25c Values > or = to 10µF 0.5+/-0.1 VDCW @120Hz |

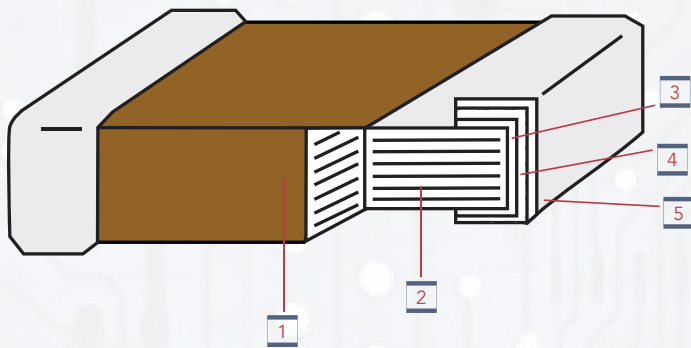
Z5U - Despite their capacitance instability, Z5U formulations are very popular because of their small size, temperature range low ESL, low ESR and excellent frequency response. These features are particularly important for decoupling application where only a minimum capacitance value is required.

Y5V - Y5V formulations are for general purpose use in a limited temperature range. They have a wide temperature characteristic of +22% - 82% capacitance change over the operating temperature range of -30°C to +85°C. Y5Vs high dielectric constant allows the manufacture of very high capacitance values (up to 100µF) in small physical sizes.

High capacitance per unit volume: general purpose product

| OPERATING TEMPERATURE RANGE | TEMPERATURE COEFFICIENT | TEMPERATURE VOLTAGE COEFFICIENT (Δc MAX @ VdCW) | DISSIPATION FACTOR | INSULATION RESISTANCE | DIELECTRIC WITHSTANDING VOLTAGE | AGING RATE | TEST PARAMETERS |
|-----------------------------|-------------------------|---|------------------------|--|---------------------------------|----------------------|---|
| -30°C to +85°C | +22% -82% | N/A | 3.0% Max, 2.0% Typical | •10GΩ or 100ΩF whichever is less, 25°C, VdCW | 2.5 X VdCW | 3.0% per decade hour | <ul style="list-style-type: none"> • 1 KHz, 1 Vrms 25°C values > or = to 10uF 1.0Vrms 120Hz |

CONSTRUCTION



| NO. | NAME | CLASS I DIELECTRIC | CLASS II DIELECTRIC |
|-----|------------------|--------------------|---------------------|
| 1 | Ceramic Material | CaZrO ₃ | BaTiO ₃ |
| 2 | Inner Electrode | Ni | Ni |
| 3 | Inner layer | Cu | Cu |
| 4 | Termination | Middle layer | Ni |
| 5 | | Outer layer | Sn |

CAPACITANCE VALUE & TOLERANCE

Determined by circuit requirements. Note that chip prices decrease with lower capacitance value and looser tolerance.

CAPACITOR SIZE

Select the smallest unit permitted by the circuit constraints that provides the required capacitance and voltage rating. All Cal-Chip capacitors conform to EIA specifications.

VOLTAGE

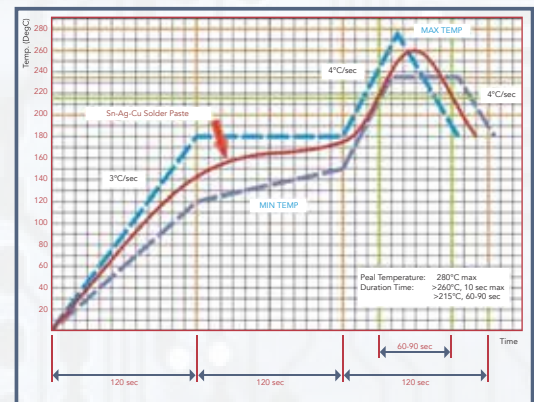
Determined by circuit requirements.

CAPACITOR TERMINATION

Nickel barrier is standard and recommended for units exposed to repeated solder cycles, to minimize leaching of the termination.

REFLOW SOLDERING CONDITIONS

The lead-free termination MLCCs are not only to be used on SMT against lead-free solder paste, but also suitable against lead-containing solder paste. If the optimized solder joint is requested, increasing soldering time, temperature and concentration of N₂ within oven are recommended.



PART NUMBER GUIDE

| GMC | 21 | CG | 102 | J | 50 | NT | D |
|--------------|--|---|---|--|--|------------------------|---|
| PRODUCT TYPE | DIMENSIONS | DIELECTRIC | CAPACITANCE | TOLERANCE | VOLTAGE DC | TERMINATION | PACKAGING CODE |
| | 01: 1005 32: 1210 02: 0201 40: 1808 04: 0402 43: 1812 10: 0603 45: 1825 21: 0805 55: 2220 31: 1206 57: 2225 | CG: COG/NPO X7R X5R X7S X6S Y5V Z5U | 0R5: 0.5pF 5R0: 5.0pF R75: 0.75pF 100: 10pF 101: 100pF 102: 1000pF 103: .01uF 104: .1uF 105: 1.0uF 106: 10uF 107: 100uF | B: +/-1pF C: +/-25pF D: +/-5pF F: +/-1% G: +/-2% J: +/-5% K: +/-10% M: +/-20% Z: -20%/+80% | 4R0: 4.0V 6R3: 6.3V 10: 10V 16: 16V 25: 25V 35: 35V 50: 50V 63: 63V 100: 100V 200: 200V | NT: Sn/Ni PT: Pd/Ag | Blank: 7" reel D: See page 19 & 20 G: See page 19 & 20 Q: See page 19 & 20 |



| DIMENSION (MM) | | NPO/COG | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|-----|-------------|----|----|----|-------------|----|----|----|------------|-----|----|----|-----------|----|-----|-----|-------------|----|-----|-----|-------------|----|----|----|-----|-----|----|----|-----|-----|
| | | GMC01 | | | | GMC02 | | | | GMC04 | | | | GMC10 | | | | GMC21 | | | | GMC31 | | | | | | | | | |
| L | | 0.4 ± 0.02 | | | | 0.6 ± 0.03 | | | | 1.0 ± 0.05 | | | | 1.6 ± 0.2 | | | | 2.0 ± 0.3 | | | | 3.2 ± 0.3 | | | | | | | | | |
| W | | 0.2 ± 0.02 | | | | 0.3 ± 0.03 | | | | 0.5 ± 0.05 | | | | 0.8 ± 0.2 | | | | 1.25 ± 0.2 | | | | 1.6 ± 0.2 | | | | | | | | | |
| BW | | 0.07 ~ 0.14 | | | | 0.15 ± 0.05 | | | | 0.1 ~ 0.35 | | | | 0.1 ~ 0.4 | | | | 0.25 ~ 0.75 | | | | 0.25 ~ 0.75 | | | | | | | | | |
| RATED VOLTAGE | | 6.3 | 10 | 16 | 25 | 50 | 16 | 25 | 50 | 100 | 6.3 | 10 | 16 | 25 | 50 | 100 | 200 | 25 | 50 | 100 | 200 | 10 | 16 | 25 | 50 | 100 | 200 | 25 | 50 | 100 | 200 |
| CAP. RANGE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.1pF | R10 | | | | | | C | C | C | C | H | H | H | H | H | | | | | | | | | | | | | | | | |
| 0.2 | R20 | A | A | A | A | | C | C | C | C | H | H | H | H | H | | | | | | | | | | | | | | | | |
| 0.3 | R30 | A | A | A | A | A | C | C | C | C | H | H | H | H | H | | | | | | | | | | | | | | | | |
| 0.4 | R40 | A | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | | J | J | J | J | J | J | | | | | |
| 0.47 | R47 | | | | | | C | C | C | C | H | H | H | H | H | H | L | L | L | | J | J | J | J | J | J | L | L | | | |
| 0.5 | 0R5 | A | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 0.56 | R56 | | | | | | C | C | C | C | H | H | H | H | H | H | L | L | L | | J | J | J | J | J | J | L | L | | | |
| 0.6 | 0R6 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | L | L | L | | J | J | J | J | J | J | L | L | L | L | |
| 0.68 | R68 | | | | | | | | | | H | H | H | H | H | H | L | L | L | | J | J | J | J | J | J | L | L | | | |
| 0.7 | 0R7 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | L | L | L | | J | J | J | J | J | J | L | L | L | L | |
| 0.75 | R75 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | L | L | L | | J | J | J | J | J | J | L | L | L | | |
| 0.8 | 0R8 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | L | L | L | | J | J | J | J | J | J | L | L | L | L | |
| 0.82 | R82 | | | | | | C | C | C | C | H | H | H | H | H | H | L | L | L | | J | J | J | J | J | J | | | | | |
| 0.9 | 0R9 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | L | L | L | | J | J | J | J | J | J | L | L | L | L | |
| 1 | 1R0 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 1.1 | 1R1 | A | A | A | A | A | C | C | C | C | H | H | H | H | H | H | | | | | J | J | J | J | J | J | L | L | L | L | |
| 1.2 | 1R2 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 1.3 | 1R3 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | J | J | J | J | J | J | L | L | L | L | |
| 1.4 | 1R4 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | J | J | J | J | J | J | | | | | |
| 1.5 | 1R5 | A | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 1.6 | 1R6 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 1.7 | 1R7 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 1.8 | 1R8 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 1.9 | 1R9 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 2 | 2R0 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 2.1 | 2R1 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 2.2 | 2R2 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 2.3 | 2R3 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 2.4 | 2R4 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 2.5 | 2R5 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 2.6 | 2R6 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 2.7 | 2R7 | A | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 2.8 | 2R8 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 2.9 | 2R9 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 3 | 3R0 | A | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 3.1 | 3R1 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 3.2 | 3R2 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 3.3 | 3R3 | A | A | A | A | A | C | C | C | C | H | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 3.4 | 3R4 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 3.5 | 3R5 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 3.6 | 3R6 | A | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 3.7 | 3R7 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 3.8 | 3R8 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 3.9 | 3R9 | A | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 4 | 4R0 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 4.1 | 4R1 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 4.2 | 4R2 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 4.3 | 4R3 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 4.4 | 4R4 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |
| 4.5 | 4R5 | A | A | A | A | | C | C | C | C | H | H | H | H | H | H | | | | | | | | | | | | | | | |

| MAX HEIGHT | | | | |
|------------|------|------|-----|------|
| A | C | H | J | L |
| 0.22 | 0.33 | 0.55 | 0.7 | 0.90 |

| | | NPO/COG | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|-----|-------------|----|----|----|-------------|----|----|----|------------|-----|----|----|----|----|-----------|-----|----|----|-------------|-----|----|----|-------------|----|-----|-----|----|----|-----|-----|
| DIMENSION (MM) | | GMC01 | | | | GMC02 | | | | GMC04 | | | | | | GMC10 | | | | GMC21 | | | | GMC31 | | | | | | | |
| L | | 0.4 ± 0.02 | | | | 0.6 ± 0.03 | | | | 1.0 ± 0.05 | | | | | | 1.6 ± 0.2 | | | | 2.0 ± 0.3 | | | | 3.2 ± 0.3 | | | | | | | |
| W | | 0.2 ± 0.02 | | | | 0.3 ± 0.03 | | | | 0.5 ± 0.05 | | | | | | 0.8 ± 0.2 | | | | 1.25 ± 0.2 | | | | 1.6 ± 0.2 | | | | | | | |
| BW | | 0.07 ~ 0.14 | | | | 0.15 ± 0.05 | | | | 0.1 ~ 0.35 | | | | | | 0.1 ~ 0.4 | | | | 0.25 ~ 0.75 | | | | 0.25 ~ 0.75 | | | | | | | |
| RATED VOLTAGE | | 6.3 | 10 | 16 | 25 | 50 | 16 | 25 | 50 | 100 | 6.3 | 10 | 16 | 25 | 50 | 100 | 200 | 25 | 50 | 100 | 200 | 10 | 16 | 25 | 50 | 100 | 200 | 25 | 50 | 100 | 200 |
| CAP. RANGE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.6pF | 4R6 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | H | L | L | L | L | | | | | | | | | | | |
| 4.7 | 4R7 | A | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 4.8 | 4R8 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | | | | | | | | | | | | |
| 4.9 | 4R9 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 5 | 5R0 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | | |
| 5.1 | 5R1 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | | |
| 5.2 | 5R2 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | | | | | | | | | | | | |
| 5.3 | 5R3 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 5.4 | 5R4 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 5.5 | 5R5 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 5.6 | 5R6 | A | A | A | A | A | C | C | C | C | H | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 5.7 | 5R7 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 5.8 | 5R8 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | | | | | | | | | | | | |
| 5.9 | 5R9 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 6 | 6R0 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | | |
| 6.1 | 6R1 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 6.2 | 6R2 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 6.3 | 6R3 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 6.4 | 6R4 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | | | | | | | | | | | | |
| 6.5 | 6R5 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 6.6 | 6R6 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | | | | | | | | | | | | |
| 6.7 | 6R7 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 6.8 | 6R8 | A | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 6.9 | 6R9 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | | | | | | | | | | | | |
| 7 | 7R0 | A | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 7.1 | 7R1 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | | | | | | | | | | | | |
| 7.2 | 7R2 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 7.3 | 7R3 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | | | | | | | | | | | | |
| 7.4 | 7R4 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 7.5 | 7R5 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | | |
| 7.6 | 7R6 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 7.7 | 7R7 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | | | | | | | L | L | L | L | | |
| 7.8 | 7R8 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 7.9 | 7R9 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | | | | | | | | | | | | |
| 8 | 8R0 | A | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | |
| 8.1 | 8R1 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 8.2 | 8R2 | A | A | A | A | A | C | C | C | C | H | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 8.3 | 8R3 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 8.3 | 8R3 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 8.4 | 8R4 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | | | | | | | | | | | | |
| 8.5 | 8R5 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 8.6 | 8R6 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | | | | | | | | | | | | |
| 8.7 | 8R7 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 8.8 | 8R8 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | | | | | | | | | | | | |
| 8.9 | 8R9 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 9 | 9R0 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | | |
| 9.1 | 9R1 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L | | |
| 9.2 | 9R2 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | | | | | | | | | | | | |
| 9.3 | 9R3 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 9.4 | 9R4 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | | | | | | | | | | | | |
| 9.5 | 9R5 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |
| 9.6 | 9R6 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | | | | | | | | | | | | |
| 9.7 | 9R7 | A | A | A | A | C | C | C | C | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | | | | | | |

| MAX HEIGHT | | | | |
|------------|------|------|-----|------|
| A | C | H | J | L |
| 0.22 | 0.33 | 0.55 | 0.7 | 0.90 |

NPO/COG

| | | NPO/COG | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|-----|-------------|----|----|----|-------------|----|----|-----|------------|----|----|----|-----|-----|----|----|-----------|-----|----|----|-------------|-----|-----|----|-------------|-----|-----|---|---|---|--|--|--|---|---|---|---|---|
| DIMENSION (MM) | | GMC01 | | | | GMC02 | | | | GMC04 | | | | | | | | GMC10 | | | | GMC21 | | | | GMC31 | | | | | | | | | | | | | |
| L | | 0.4 ± 0.02 | | | | 0.6 ± 0.03 | | | | 1.0 ± 0.05 | | | | | | | | 1.6 ± 0.2 | | | | 2.0 ± 0.3 | | | | 3.2 ± 0.3 | | | | | | | | | | | | | |
| W | | 0.2 ± 0.02 | | | | 0.3 ± 0.03 | | | | 0.5 ± 0.05 | | | | | | | | 0.8 ± 0.2 | | | | 1.25 ± 0.2 | | | | 1.6 ± 0.2 | | | | | | | | | | | | | |
| BW | | 0.07 ~ 0.14 | | | | 0.15 ± 0.05 | | | | 0.1 ~ 0.35 | | | | | | | | 0.1 ~ 0.4 | | | | 0.25 ~ 0.75 | | | | 0.25 ~ 0.75 | | | | | | | | | | | | | |
| RATED VOLTAGE | | 6.3 | 25 | 16 | 25 | 50 | 25 | 50 | 6.3 | 10 | 16 | 25 | 50 | 100 | 200 | 25 | 50 | 100 | 200 | 16 | 25 | 50 | 100 | 200 | 25 | 50 | 100 | 200 | | | | | | | | | | | |
| CAP. RANGE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500pF | 501 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 510 | 511 | | | | | | C | | | | H | H | H | H | H | H | | | | | | | L | L | L | L | M | M | M | M | | | | | L | L | L | L | |
| 560 | 561 | | | | | | C | | | | H | H | H | H | H | H | | | | | | | L | L | L | L | M | M | M | M | M | | | | | L | L | L | L |
| 620 | 621 | | | | | | C | | | | H | H | H | H | H | H | | | | | | | L | L | L | L | M | M | M | M | M | | | | | L | L | L | L |
| 680 | 681 | | | | | | C | | | | H | H | H | H | H | H | | | | | | | L | L | L | L | M | M | M | M | M | | | | | L | L | L | L |
| 750 | 751 | | | | | | C | | | | H | H | H | H | H | H | | | | | | | L | L | L | | M | M | M | M | M | | | | | L | L | L | L |
| 820 | 821 | | | | | | C | | | | H | H | H | H | H | H | | | | | | | L | L | L | L | M | M | M | M | M | | | | | L | L | L | L |
| 910 | 911 | | | | | | C | | | | H | H | H | H | H | H | | | | | | | L | L | L | L | M | M | M | M | M | | | | | L | L | L | L |
| 1000 | 102 | | | | | | C | | | | H | H | H | H | H | H | | | | | | | L | L | L | L | M | M | M | M | M | | | | | L | L | L | L |
| 1100 | 112 | | | | | | | | | | H | H | H | H | H | | | | | | | | L | L | L | | M | M | M | M | M | | | | | | | | |
| 1200 | 122 | | | | | | | | | | H | H | H | H | H | | | | | | | | M | M | M | M | M | M | M | M | M | | | | | L | L | L | L |
| 1300 | 132 | | | | | | | | | | H | H | H | H | H | | | | | | | | M | M | M | | M | M | M | M | M | | | | | | | | |
| 1500 | 152 | | | | | | | | | | H | H | H | H | H | | | | | | | | M | M | M | M | M | M | M | M | M | | | | | L | L | L | L |
| 1600 | 162 | | | | | | | | | | H | H | H | H | | | | | | | | | M | M | M | | | | | | | | | | | | | | |
| 1800 | 182 | | | | | | | | | | H | H | H | H | | | | | | | | | M | M | M | M | M | M | M | M | M | | | | | L | L | L | L |
| 2000 | 202 | | | | | | | | | | H | H | H | H | | | | | | | | | M | M | M | | M | M | M | M | M | | | | | | | | |
| 2200 | 222 | | | | | | | | | | H | H | H | H | | | | | | | | | M | M | M | M | R | R | R | R | R | | | | | L | L | L | L |
| 2400 | 242 | | | | | | | | | | | | | | | | | | | | | | M | M | M | | R | R | R | R | R | | | | | L | L | L | L |
| 2700 | 272 | | | | | | | | | | H | H | H | H | | | | | | | | | M | M | M | | R | R | R | R | R | | | | | L | L | L | L |
| 3000 | 302 | | | | | | | | | | | | | | | | | | | | | | M | M | | | R | R | R | R | R | | | | | M | M | M | M |
| 3300 | 332 | | | | | | | | | | H | H | H | H | | | | | | | | | M | M | M | | R | R | R | R | R | | | | | M | M | M | M |
| 3600 | 362 | | | | | | | | | | | | | | | | | | | | | | | | | | R | R | R | R | R | | | | | | | | |
| 3900 | 392 | | | | | | | | | | | | | | | | | | | | | | M | M | M | | R | R | R | R | R | | | | | M | M | M | M |
| 4300 | 432 | | | | | | | | | | | | | | | | | | | | | | | | | | R | R | R | R | R | | | | | | | | |
| 4700 | 472 | | | | | | | | | | I | I | I | I | I | | | | | | | | M | M | M | | R | R | R | R | R | | | | | M | M | M | M |
| 5600 | 562 | | | | | | | | | | I | I | I | I | I | | | | | | | | M | M | M | | R | R | R | R | R | | | | | M | M | M | M |
| 6200 | 622 | | | | | | | | | | | | | | | | | | | | | | M | M | | | R | R | R | | | | | | | | | | |
| 6800 | 682 | | | | | | | | | | I | I | I | I | I | | | | | | | | M | M | M | | R | R | R | R | | | | | O | O | O | | |
| 7500 | 752 | | | | | | | | | | | | | | | | | | | | | | M | M | | | R | R | R | | | | | | | | | | |
| 8200 | 822 | | | | | | | | | | | | | | | | | | | | | | M | M | M | | R | R | R | R | | | | | R | R | R | | |
| 9100 | 912 | | | | | | | | | | | | | | | | | | | | | | M | M | | | R | R | R | | | | | | | | | | |
| 0.01uF | 103 | | | | | | | | | | I | I | I | I | | | | | | | | | M | M | M | | R | R | R | R | | | | | R | R | R | R | |
| 0.012 | 123 | | | | | | | | | | | | | | | | | | | | | | M | | | | R | R | R | | | | | | U | U | U | | |
| 0.015 | 153 | | | | | | | | | | | | | | | | | | | | | | M | | | | R | R | R | | | | | | U | U | U | | |
| 0.018 | 183 | | | | | | | | | | | | | | | | | | | | | | | | | | R | R | R | | | | | | U | U | U | | |
| 0.02 | 203 | | | | | | | | | | | | | | | | | | | | | | | | | | R | R | | | | | | | | | | | |
| 0.022 | 223 | | | | | | | | | | | | | | | | | | | | | | | | | | R | R | R | R | | | | | U | U | U | | |
| 0.027 | 273 | | | | | | | | | | | | | | | | | | | | | | | | | | R | R | R | | | | | | U | U | U | | |
| 0.03 | 303 | | | | | | | | | | | | | | | | | | | | | | | | | | R | R | | | | | | | | | | | |
| 0.033 | 333 | | | | | | | | | | | | | | | | | | | | | | | | | | R | R | R | R | | | | | U | U | U | | |
| 0.039 | 393 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | U | U | U | | |
| 0.047 | 473 | | | | | | | | | | | | | | | | | | | | | | | | | | R | R | | | | | | | U | U | U | | |
| 0.056 | 563 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | U | U | U | | |
| 0.068 | 683 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | U | U | U | | |
| 0.082 | 823 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | U | U | U | | |
| 0.1 | 104 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | U | U | U | | |
| 0.12 | 124 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | U | U | U | |

| MAX HEIGHT | | | | | | | |
|------------|------|------|------|------|------|------|------|
| C | H | I | L | M | Q | R | U |
| 0.33 | 0.55 | 0.65 | 0.90 | 0.95 | 1.40 | 1.45 | 1.90 |



| DIELECTRIC | | NPO/COG | | | | | | | | | | | | | | | | | | | |
|----------------|-----|-------------|----|----|-------------|-----|----|-------------|-----|----|-------------|-----|----|-------------|-----|----|-------------|-----|----|-----|-----|
| DIMENSION (MM) | | GMC32 | | | GMC40 | | | GMC43 | | | GMC45 | | | GMC55 | | | GMC57 | | | | |
| L | | 3.2 ± 0.3 | | | 4.57 ± 0.25 | | | 4.5 ± 0.35 | | | 4.5 ± 0.35 | | | 5.7 ± 0.4 | | | 5.7 ± 0.4 | | | | |
| W | | 2.5 ± 0.3 | | | 2.03 ± 0.25 | | | 3.2 ± 0.3 | | | 6.3 ± 0.4 | | | 5.0 ± 0.4 | | | 6.3 ± 0.4 | | | | |
| BW | | 0.25 ~ 0.75 | | | 0.25 ~ 0.75 | | | 0.25 ~ 0.75 | | | 0.40 ~ 1.10 | | | 0.50 ~ 1.20 | | | 0.50 ~ 1.20 | | | | |
| RATED VOLTAGE | | 16 | 25 | 50 | 100 | 200 | 50 | 100 | 200 | 50 | 100 | 200 | 50 | 100 | 200 | 50 | 100 | 200 | 50 | 100 | 200 |
| CAP. RANGE | | | | | | | | | | | | | | | | | | | | | |
| 10pF | 100 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 11 | 110 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 12 | 120 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 13 | 130 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 15 | 150 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 16 | 160 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 18 | 180 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 20 | 200 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 22 | 220 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 24 | 240 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 27 | 270 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 30 | 300 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 33 | 330 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 36 | 360 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 39 | 390 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 43 | 430 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 47 | 470 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 51 | 510 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 56 | 560 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 62 | 620 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 68 | 680 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 75 | 750 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 82 | 820 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 91 | 910 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 100 | 101 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 120 | 121 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 130 | 131 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 150 | 151 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 160 | 161 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 180 | 181 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 200 | 201 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 220 | 221 | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V |
| 240 | 241 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 270 | 271 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 300 | 301 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 330 | 331 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 360 | 361 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 390 | 391 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 430 | 431 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 470 | 471 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |

| MAX HEIGHT | |
|------------|------|
| R | V |
| 1.45 | 2.20 |

NPO/COG

| DIELECTRIC | | NPO/COG | | | | | | | | | | | | | | | | | | | |
|----------------|-----|-------------|----|----|-------------|-----|----|-------------|-----|----|-------------|-----|----|-------------|-----|----|-------------|-----|----|-----|-----|
| DIMENSION (MM) | | GMC32 | | | GMC40 | | | GMC43 | | | GMC45 | | | GMC55 | | | GMC57 | | | | |
| L | W | 3.2 ± 0.3 | | | 4.57 ± 0.25 | | | 4.5 ± 0.35 | | | 4.5 ± 0.35 | | | 5.7 ± 0.4 | | | 5.7 ± 0.4 | | | | |
| W | BW | 2.5 ± 0.3 | | | 2.03 ± 0.25 | | | 3.2 ± 0.3 | | | 6.3 ± 0.4 | | | 5.0 ± 0.4 | | | 6.3 ± 0.4 | | | | |
| BW | | 0.25 ~ 0.75 | | | 0.25 ~ 0.75 | | | 0.25 ~ 0.75 | | | 0.40 ~ 1.10 | | | 0.50 ~ 1.20 | | | 0.50 ~ 1.20 | | | | |
| RATED VOLTAGE | | 16 | 25 | 50 | 100 | 200 | 50 | 100 | 200 | 50 | 100 | 200 | 50 | 100 | 200 | 50 | 100 | 200 | 50 | 100 | 200 |
| CAP. RANGE | | | | | | | | | | | | | | | | | | | | | |
| 510pF | 511 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 560 | 561 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 620 | 621 | | | | | | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 680 | 681 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 750 | 751 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 820 | 821 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 910 | 911 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 1000 | 102 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 1100 | 112 | | | | | | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 1200 | 122 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 1500 | 152 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 1800 | 182 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 2000 | 202 | | | | | | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 2200 | 222 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 2400 | 242 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 2700 | 272 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 3000 | 302 | | | | | | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 3300 | 332 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 3900 | 392 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 4700 | 472 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 5600 | 562 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 6800 | 682 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 7500 | 752 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 8200 | 822 | R | R | R | R | R | V | V | | V | V | V | V | V | V | V | V | V | V | V | V |
| .01uF | 103 | R | R | R | R | R | V | V | | V | V | V | V | V | V | V | V | V | V | V | V |
| 0.012 | 123 | P | P | P | P | P | V | V | | V | V | V | V | V | V | V | V | V | V | V | V |
| 0.015 | 153 | P | P | P | P | P | V | | | V | V | V | V | V | V | V | V | V | V | V | V |
| 0.018 | 183 | V | V | V | V | V | V | | | V | V | V | V | V | V | V | V | V | V | V | V |
| 0.022 | 223 | V | V | V | V | V | | | | V | V | V | V | V | V | V | V | V | V | V | V |
| 0.027 | 273 | V | V | V | V | V | | | | V | V | V | V | V | V | V | V | V | V | V | V |
| 0.033 | 333 | V | V | V | V | V | | | | V | V | V | V | V | | V | V | | V | V | V |
| 0.039 | 393 | V | V | V | V | V | | | | Y | Y | Y | V | V | | V | V | | V | V | V |
| 0.047 | 473 | V | V | V | V | V | | | | Y | Y | Y | V | V | | V | V | | V | V | V |
| 0.056 | 563 | V | V | V | V | | | | | Y | Y | Y | V | V | | V | V | | V | V | Y |
| 0.068 | 683 | V | V | V | V | | | | | Y | Y | Y | V | V | | V | V | | V | V | Y |
| 0.082 | 823 | V | V | V | V | | | | | Y | Y | Y | V | | | Y | Y | | V | V | Y |
| 0.1 | 104 | V | V | V | V | | | | | Y | Y | Y | V | | | Y | Y | | V | V | Y |
| 0.12 | 124 | | | | | | | | | Y | Y | | V | | | V | V | | Y | Y | |
| 0.15 | 154 | W | W | W | | | | | | Y | Y | | V | | | V | V | | | | |
| 0.18 | 184 | | | | | | | | | Y | | | V | | | V | V | | | | |
| 0.22 | 224 | W | W | | | | | | | A2 | | | | | | V | V | | | | |
| 0.27 | 274 | | | | | | | | | | | | | | | V | V | | | | |
| 0.33 | 334 | | | | | | | | | | | | | | | V | V | | | | |
| 0.47 | 474 | | | | | | | | | | | | | | | V | | | | | |
| 1 | 105 | | | | | | | | | | | | | | | | | | | | |
| 2.2 | 225 | | | | | | | | | | | | | | | | | | | | |
| 4.7 | 475 | | | | | | | | | | | | | | | | | | | | |

| MAX HEIGHT | | | | | |
|------------|------|-----|-----|-----|-----|
| R | P | V | W | Y | A2 |
| 1.45 | 1.35 | 2.2 | 2.3 | 2.8 | 3.5 |





| DIELECTRIC | X7R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|-------------|----|----|-----|-------------|----|----|----|------------|----|----|----|-----------|----|-----|---|-------------|----|----|----|-------------|----|-----|-----|-----|----|----|----|----|----|-----|-----|-----|----|----|----|----|----|-----|-----|
| DIMENSION (MM) | GMC01 | | | | GMC02 | | | | GMC04 | | | | GMC10 | | | | GMC21 | | | | GMC31 | | | | | | | | | | | | | | | | | | | |
| L(L1) | 0.4 ± 0.02 | | | | 0.6 ± 0.03 | | | | 1.0 ± 0.05 | | | | 1.6 ± 0.2 | | | | 2.0 ± 0.3 | | | | 3.2 ± 0.3 | | | | | | | | | | | | | | | | | | | |
| W | 0.2 ± 0.02 | | | | 0.3 ± 0.03 | | | | 0.5 ± 0.05 | | | | 0.8 ± 0.2 | | | | 1.25 ± 0.2 | | | | 1.6 ± 0.2 | | | | | | | | | | | | | | | | | | | |
| BW(L2/LW) | 0.07 ~ 0.14 | | | | 0.15 ± 0.05 | | | | 0.1 ~ 0.35 | | | | 0.1 ~ 0.4 | | | | 0.25 ~ 0.75 | | | | 0.25 ~ 0.75 | | | | | | | | | | | | | | | | | | | |
| RATED VOLTAGE | 6.3 | 10 | 16 | 6.3 | 10 | 16 | 25 | 50 | 6.3 | 10 | 16 | 25 | 35 | 50 | 100 | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 100 | 200 | 6.3 | 10 | 16 | 25 | 35 | 50 | 100 | 200 | 6.3 | 10 | 16 | 25 | 35 | 50 | 100 | 200 |
| CAP. RANGE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4700pF | 472 | | | | C | C | C | C | | H | H | H | H | H | H | H | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 5600 | 562 | | | | C | C | C | C | | H | H | H | H | H | H | | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 6800 | 682 | | | | C | C | C | C | | H | H | H | H | H | H | | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 8200 | 822 | | | | C | C | C | C | | H | H | H | H | H | H | H | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 0.01uF | 103 | | | | C | C | C | C | | H | H | H | H | H | H | H | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 0.012 | 123 | | | | | | | | | H | H | H | H | H | H | | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 0.015 | 153 | | | | | | | | | H | H | H | H | H | H | | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 0.018 | 183 | | | | | | | | | H | H | H | H | H | H | | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 0.02 | 203 | | | | | | | | | | | | | | | | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 0.022 | 223 | | | | | | | | C | | | | | | | | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 0.027 | 273 | | | | | | | | | | | | | | | | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 0.033 | 333 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.039 | 393 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.047 | 473 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.056 | 563 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.068 | 683 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.082 | 823 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.1 | 104 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.12 | 124 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.15 | 154 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.18 | 184 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.22 | 224 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.27 | 274 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.33 | 334 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.39 | 394 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.47 | 474 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.56 | 564 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.68 | 684 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.82 | 824 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 1 | 105 | | | | | | | | | | | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 1.5 | 155 | | | | | | | | | | | | | | | | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | |
| 2.2 | 225 | | | | | | | | | | | | | | | | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| 3.3 | 335 | | | | | | | | | | | | | | | | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| 4.7 | 475 | | | | | | | | | | | | | | | | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| 6.8 | 685 | | | | | | | | | | | | | | | | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| 10 | 106 | | | | | | | | | | | | | | | | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| 22 | 226 | | | | | | | | | | | | | | | | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| 33 | 336 | | | | | | | | | | | | | | | | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| 47 | 476 | | | | | | | | | | | | | | | | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| 100 | 107 | | | | | | | | | | | | | | | | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| 150 | 157 | | | | | | | | | | | | | | | | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| 220 | 227 | | | | | | | | | | | | | | | | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |

* L 1.0±0.10 | W 0.5±0.10
 *1L 1.0±0.15 | W 0.5±0.15

| MAX HEIGHT | | | | | | | | | | |
|------------|------|------|-----|------|------|------|------|------|------|------|
| C | H | I | J | L | M | N | P | Q | R | U |
| 0.33 | 0.55 | 0.65 | 0.7 | 0.90 | 0.95 | 1.00 | 1.35 | 1.40 | 1.45 | 1.80 |



| DIELECTRIC | | X7R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|-----|-------------|----|----|----|----|----|-----|-----|-------------|-----|-----|----|-------------|----|----|-----|-----|----|----|----|-------------|-----|----|----|----|-----|-----|----|-------------|----|-----|-----|----|----|----|-----|-------------|---|---|---|--|--|--|--|
| DIMENSION (MM) | | GMC32 | | | | | | | | GMC40 | | | | GMC43 | | | | | | | | GMC45 | | | | | | | | GMC55 | | | | | | | | GMC57 | | | | | | | |
| L | | 3.2 ± 0.3 | | | | | | | | 4.57 ± 0.25 | | | | 4.5 ± 0.35 | | | | | | | | 4.5 ± 0.35 | | | | | | | | 5.7 ± 0.4 | | | | | | | | 5.7 ± 0.4 | | | | | | | |
| W | | 2.5 ± 0.3 | | | | | | | | 2.03 ± 0.25 | | | | 3.2 ± 0.3 | | | | | | | | 6.3 ± 0.4 | | | | | | | | 5.0 ± 0.4 | | | | | | | | 6.3 ± 0.4 | | | | | | | |
| BW | | 0.25 ~ 0.75 | | | | | | | | 0.25 ~ 0.75 | | | | 0.25 ~ 0.75 | | | | | | | | 0.40 ~ 1.10 | | | | | | | | 0.50 ~ 1.20 | | | | | | | | 0.50 ~ 1.20 | | | | | | | |
| RATED VOLTAGE | | 6.3 | 10 | 16 | 25 | 35 | 50 | 100 | 200 | 50 | 100 | 200 | 10 | 16 | 25 | 50 | 100 | 200 | 16 | 25 | 50 | 100 | 200 | 16 | 25 | 50 | 100 | 200 | 16 | 25 | 50 | 100 | 200 | 16 | 25 | 50 | 100 | 200 | | | | | | | |
| CAP. RANGE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1000pF | 102 | O | O | O | O | O | O | O | O | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | | | | | | | |
| 1200 | 122 | O | O | O | O | O | O | O | O | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | | | | | | |
| 1500 | 152 | O | O | O | O | O | O | O | O | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | | | | | | |
| 1800 | 182 | O | O | O | O | O | O | O | O | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | | | | | |
| 2200 | 222 | O | O | O | O | O | O | O | O | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | | | | | |
| 2400 | 242 | O | O | O | O | O | O | O | O | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | | | | | |
| 2700 | 272 | O | O | O | O | O | O | O | O | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | | | | | |
| 3000 | 302 | O | O | O | O | O | O | O | O | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | | | | | |
| 3300 | 332 | O | O | O | O | O | O | O | O | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | | | | | |
| 3600 | 362 | O | O | O | O | O | O | O | O | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | | | | | |
| 3900 | 392 | O | O | O | O | O | O | O | O | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | | | | |
| 4300 | 432 | O | O | O | O | O | O | O | O | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | | | | |

| MAX HEIGHT | | |
|------------|------|------|
| O | R | V |
| 1.10 | 1.45 | 2.20 |



| DIELECTRIC | | X6S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|-----|-------------|-----|----|----|------------|----|---|-----|-----------|----|----|----|-------------|---|-----|----|-------------|----|----|----|---|-----|----|----|----|----|----|---|-----|----|----|----|----|----|-----|---|--|
| DIMENSION (MM) | | GMC02 | | | | GMC04 | | | | GMC10 | | | | GMC21 | | | | GMC31 | | | | | | | | | | | | | | | | | | | | |
| L | | 0.6 ± 0.03 | | | | 1.0 ± 0.05 | | | | 1.6 ± 0.2 | | | | 2.0 ± 0.3 | | | | 3.2 ± 0.3 | | | | | | | | | | | | | | | | | | | | |
| W | | 0.3 ± 0.03 | | | | 0.5 ± 0.05 | | | | 0.8 ± 0.2 | | | | 1.25 ± 0.2 | | | | 1.6 ± 0.2 | | | | | | | | | | | | | | | | | | | | |
| BW | | 0.15 ± 0.05 | | | | 0.1 ~ 0.35 | | | | 0.1 ~ 0.4 | | | | 0.25 ~ 0.75 | | | | 0.25 ~ 0.75 | | | | | | | | | | | | | | | | | | | | |
| RATED VOLTAGE | | 4 | 6.3 | 10 | 16 | 25 | 35 | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 100 | | |
| CAP. RANGE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2200pF | 222 | C | C | C | C | C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4700 | 472 | C | C | C | C | C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| .01uf | 103 | C | C | C | C | C | H | H | H | H | H | H | H | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.012 | 123 | C | C | | | | H | H | H | H | H | H | H | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.015 | 153 | C | C | | | | H | H | H | H | H | H | H | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.018 | 183 | C | C | | | | H | H | H | H | H | H | H | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.022 | 223 | C | C | C | C | C | H | H | H | H | H | H | H | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.027 | 273 | C | C | C | C | | H | H | H | H | H | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.033 | 333 | C | C | C | C | | H | H | H | H | H | H | H | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.039 | 393 | C | C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.047 | 473 | C | C | C | C | C | H | H | H | H | H | H | H | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.056 | 563 | C | C | | | | H | H | H | H | H | H | J | J | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.068 | 683 | C | C | C | C | | H | H | H | H | H | H | J | J | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.082 | 823 | C | C | | | | H | H | H | H | H | H | J | J | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.1 | 104 | C | C | C | C | | H | H | H | H | H | H | J | J | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.12 | 124 | | | | | | H | H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.15 | 154 | | | | | | H | H | H | H | H | | | | M | M | M | M | M | M | M | | | | | | | | | | | | | | | | | |
| 0.18 | 184 | | | | | | H | H | | | | | | | M | M | M | M | M | | | | | | | | | | | | | | | | | | | |
| 0.22 | 224 | C | C | | | | H | H | H | H | H | H | | | M | M | M | M | M | M | M | | | | | | | | | | | | | | | | | |
| 0.27 | 274 | | | | | | H | H | | | | | | | M | M | M | M | | | | | | | | | | | | | | | | | | | | |
| 0.33 | 334 | | | | | | H | H | H | H | | | | | M | M | M | M | M | M | M | | | | | | | | | | | | | | | | | |
| 0.39 | 394 | | | | | | H | H | | | | | | | M | M | M | M | | | | | | | | | | | | | | | | | | | | |
| 0.47 | 474 | E | E | E | E | | H | H | H | H | | | | | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | | |
| 0.56 | 564 | | | | | | H | H | | | | | | | M | M | M | M | | | | R | R | R | R | | | | | | | | | | | | | |
| 0.68 | 684 | | | | | | H | H | H | H | | | | | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 0.82 | 824 | | | | | | H | H | | | | | | | M | M | M | M | | | | R | R | R | R | | | | | | | | | | | | | |
| 1 | 105 | E | E | E | E | | J | J | J | J | J | J | | | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R | R | T | T | T | T | T | T | T | |
| 1.5 | 155 | | | | | | | | | | | | | | N | N | N | N | | | | R | R | R | R | R | R | R | R | R | U | U | U | U | U | U | U | |
| 2.2 | 225 | | | | | | J | J | J | J | J | | | | N | N | N | N | | | | R | R | R | R | R | R | R | R | U | U | U | U | U | U | U | U | |
| 2.7 | 275 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.3 | 335 | | | | | | | | | | | | | | N | N | N | N | | | | R | R | R | R | R | R | R | R | U | U | U | U | U | U | U | U | |
| 3.9 | 395 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.7 | 475 | | | | | | I | I | | | | | | | N | N | N | N | N | N | | R | R | R | R | R | R | R | U | U | U | U | U | U | U | U | U | |
| 6.8 | 685 | | | | | | | | | | | | | | N | N | N | | | | | R | R | R | R | | | | U | U | U | U | U | U | U | U | U | |
| 10 | 106 | | | | | | J | J | | | | | | | N | N | N | N | | | | R | R | R | R | R | | | U | U | U | U | U | U | U | U | U | |
| 15 | 156 | | | | | | | | | | | | | | | | | | | | | R | R | R | R | | | U | U | U | U | | | | | | | |
| 22 | 226 | | | | | | K | | | | | | | | N | N | | | | | | R | R | R | R | | | U | U | U | U | U | | | | | | |
| 33 | 336 | | | | | | | | | | | | | | | | | | | | | R | | | | | | U | U | U | | | | | | | | |
| 47 | 476 | | | | | | | | | | | | | | N | | | | | | | R | R | | | | | U | U | U | | | | | | | | |
| 68 | 686 | | | | | | | | | | | | | | | | | | | | | | | | | | | U | | | | | | | | | | |
| 100 | 107 | | | | | | | | | | | | | | | | | | | | | | | | | | | U | U | | | | | | | | | |
| 150 | 157 | | | | | | | | | | | | | | | | | | | | | | | | | | | U | | | | | | | | | | |
| 220 | 227 | | | | | | | | | | | | | | | | | | | | | | | | | | | U | | | | | | | | | | |

| MAX HEIGHT | | | | | | | | | | |
|------------|------|------|------|-----|-----|------|------|------|------|------|
| C | E | H | I | J | K | M | N | R | T | U |
| 0.33 | 0.39 | 0.55 | 0.65 | 0.7 | 0.8 | 0.95 | 1.00 | 1.45 | 1.80 | 1.90 |





| | | X6S | | | | | | | | | | | | | | |
|----------------|-----|-------------|-----|----|----|----|----|----|-------------|-----|----|----|----|----|----|--|
| DIMENSION (MM) | | GMC32 | | | | | | | GMC43 | | | | | | | |
| L | | 3.2 ± 0.30 | | | | | | | 4.5 ± 0.35 | | | | | | | |
| W | | 2.5 ± 0.30 | | | | | | | 3.2 ± 0.30 | | | | | | | |
| BW | | 0.75 ± 0.25 | | | | | | | 0.25 ~ 0.75 | | | | | | | |
| RATED VOLTAGE | | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | |
| CAP. RANGE | | | | | | | | | | | | | | | | |
| 3.3uF | 335 | | | | | Z | Z | Z | | | | | | | | |
| 4.7 | 475 | | | | | Z | Z | Z | | | | | | | | |
| 6.8 | 685 | | | | | Z | Z | Z | | | | | | | | |
| 10 | 106 | | | Z | Z | Z | Z | Z | | | | | | | | |
| 22 | 226 | | | Y | Y | Y | | | | | | | | | | |
| 33 | 336 | | | | | | | | | | | | | | | |
| 47 | 476 | | Y | Y | Y | | | | | | | | | | | |
| 68 | 686 | | | | | | | | | | | | | | | |
| 100 | 107 | Z | Z | Z | | | | | A1 | A1 | | | | | | |
| 150 | 157 | Z | | | | | | | | | | | | | | |
| 220 | 227 | Z | Z | | | | | | | | | | | | | |
| 330 | 337 | Z | Z | | | | | | | | | | | | | |

| MAX HEIGHT | | |
|------------|-----|-----|
| Y | Z | A1 |
| 2.8 | 2.9 | 3.1 |



| DIELECTRIC | | X5R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|-----|-------------|-----|----|----|---|-------------|----|----|----|----|------------|---|-----|----|----|-----------|----|----|----|-----|-------------|----|----|----|----|-----|---|-----|----|----|----|----|----|-----|
| DIMENSION (MM) | | GMC01 | | | | | GMC02 | | | | | GMC04 | | | | | GMC10 | | | | | GMC21 | | | | | | | | | | | | | |
| L(L1) | | 0.4 ± 0.02 | | | | | 0.6 ± 0.03 | | | | | 1.0 ± 0.05 | | | | | 1.6 ± 0.2 | | | | | 2.0 ± 0.3 | | | | | | | | | | | | | |
| W | | 0.2 ± 0.02 | | | | | 0.3 ± 0.03 | | | | | 1.0 ± 0.05 | | | | | 0.8 ± 0.2 | | | | | 1.25 ± 0.2 | | | | | | | | | | | | | |
| BW(L2/LW) | | 0.07 ~ 0.14 | | | | | 0.15 ± 0.05 | | | | | 0.1 ~ 0.35 | | | | | 0.1 ~ 0.4 | | | | | 0.25 ~ 0.75 | | | | | | | | | | | | | |
| RATED VOLTAGE | | 4V | 6.3 | 10 | 16 | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 6.3 | 10 | 16 | 25 | 35 | 50 | 100 | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 100 |
| CAP. RANGE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1000pF | 102 | A | A | A | A | C | C | C | C | C | C | C | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 1200 | 122 | A | A | | | C | C | C | C | C | C | C | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 1500 | 152 | A | A | A | A | C | C | C | C | C | C | C | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 1800 | 182 | A | A | | | C | C | C | C | C | C | C | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 2200 | 222 | A | A | A | A | C | C | C | C | C | C | C | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 2700 | 272 | A | A | | | C | C | C | C | C | | | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 3300 | 332 | A | A | A | | C | C | C | C | C | C | C | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 3900 | 392 | A | A | | | C | C | C | C | C | C | C | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 4700 | 472 | A | A | A | A | C | C | C | C | C | C | | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 5600 | 562 | A | A | A | | C | C | C | C | C | | | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 6800 | 682 | A | A | A | A | C | C | C | C | C | C | C | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 8200 | 822 | A | A | | | C | C | C | C | C | C | | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| .01uF | 103 | A | A | A | A | C | C | C | C | C | C | C | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 0.012 | 123 | | | | | C | C | C | C | | | | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 0.015 | 153 | A | A | | | C | C | C | C | | | | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 0.018 | 183 | | | | | C | C | C | C | | | | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 0.02 | 203 | | | | | | | | | | | | | | | | | | | | L | L | L | L | L | L | L | | | | | | | | |
| 0.022 | 223 | A | A | | | C | C | C | C | C | | | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 0.027 | 273 | A | A | | | C | C | C | C | | | | H | H | H | H | H | H | H | H | L | L | L | L | L | L | L | | | | | | | | |
| 0.033 | 333 | A | A | | | C | C | C | C | | | | H | H | H | H | H | H | H | H | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.039 | 393 | | | | | C | C | C | C | | | | H | H | H | H | H | H | H | H | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 0.047 | 473 | A | A | | | C | C | C | C | | | | H | H | H | H | H | H | H | H | M | M | M | M | M | M | M | M | M | M | M | M | M | M | R |
| 0.056 | 563 | | | | | C | C | C | C | | | | H | H | H | H | H | J | J | J | M | M | M | M | M | M | M | M | M | M | M | M | M | M | R |
| 0.068 | 683 | A | A | | | C | C | C | C | | | | J | J | J | J | J | J | J | J | M | M | M | M | M | M | M | M | M | M | M | M | M | M | R |
| 0.082 | 823 | | | | | C | C | C | C | | | | H | H | H | H | H | J | J | J | M | M | M | M | M | M | M | M | M | M | M | M | M | M | R |
| 0.1 | 104 | A | A | A | | C | C | C | C | C | C | | H | H | H | H | H | J | J | J | M | M | M | M | M | M | M | M | M | M | M | M | M | M | R |
| 0.12 | 124 | | | | | C | C | C | | | | | H | H | H | | | | | | M | M | M | M | M | M | M | M | M | M | M | M | M | M | R |
| 0.15 | 154 | | | | | C | C | C | C | D | | | H | H | H | H | H | | | | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 0.18 | 184 | | | | | | | | | | | | H | H | H | | | | | | M | M | M | M | | | | R | R | R | R | R | R | R | R |
| 0.22 | 224 | A | A | | | C | C | C | C | D | | | H | H | H | H | H | H | H | H | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 0.27 | 274 | A | A | | | | | | | | | | H | H | H | | | | | | M | M | M | | | | | R | R | R | R | R | R | R | R |
| 0.33 | 334 | | | | | E | E | E | | | | | H | H | H | H | H | H | | | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 0.39 | 394 | | | | | | | | | | | | H | H | H | | | | | | M | M | M | | | | | R | R | R | R | R | R | R | R |
| 0.47 | 474 | B | | | | C | C | C | E | | | | J | J | J | J | J | J | J | J | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 0.56 | 564 | | | | | | | | | | | | H | H | H | | | | | | M | M | M | | | | | R | R | R | R | R | R | R | R |
| 0.68 | 684 | | | | | | | | | | | | H | H | H | H | H | H | | | M | M | M | M | M | | | R | R | R | R | R | R | R | R |
| 0.82 | 824 | | | | | | | | | | | | H | H | H | | | | | | M | M | M | | | | | R | R | R | R | R | R | R | R |
| 1 | 105 | F | F | | | C | C | C | C | | | | H | H | H | H | H | H | H | H | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 1.5 | 155 | | | | | C | C | | | | | | | | | | | | | | N | N | N | | | | | R | R | R | R | R | R | R | R |
| 2.2 | 225 | | | | | E | E | E | | | | | I | I | I | I | I | I | | | N | N | N | N | N | N | N | R | R | R | R | R | R | R | R |
| 3.3 | 335 | | | | | | | | | | | | H | | | | | | | | N | N | | | | | | R | R | R | R | R | R | R | R |
| 4.7 | 475 | | | | | H | H | | | | | | J | J | J | J | | | | | N | N | N | N | N | N | N | R | R | R | R | R | R | R | R |
| 6.8 | 685 | | | | | | | | | | | | | | | | | | | | | | | | | | | R | R | R | R | R | R | R | R |
| 10 | 106 | | | | | | | | | | | | K | K | K | | | | | | N | N | N | N | N | N | N | R | R | R | R | R | R | R | S |
| 15 | 156 | | | | | | | | | | | | H | H | | | | | | | N | N | | | | | | R | R | R | R | R | R | R | R |
| 18 | 186 | | | | | | | | | | | | I | I | | | | | | | | | | | | | | | | | | | | | |
| 22 | 226 | | | | | | | | | | | | K | K | | | | | | | N | N | N | | | | | R | R | R | R | R | R | R | R |
| 33 | 336 | | | | | | | | | | | | | | | | | | | | | | | | | | | R | R | R | | | | | |
| 47 | 476 | | | | | | | | | | | | | | | | | | | | N | N | | | | | | R | R | R | | | | | |
| 100 | 107 | | | | | | | | | | | | | | | | | | | | | | | | | | | R | R | | | | | | |

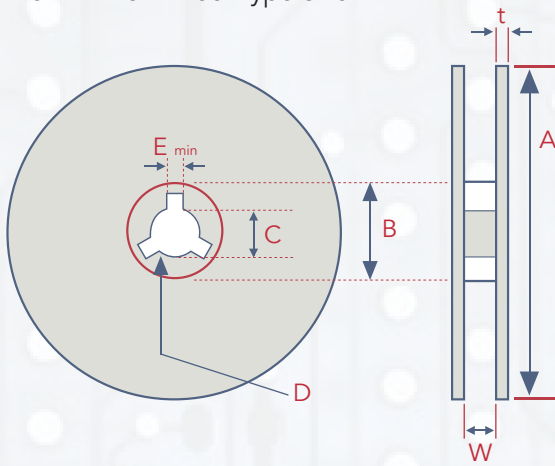
| MAX HEIGHT | | | | | | | | | | | | | | |
|------------|------|------|------|------|------|------|------|-----|-----|------|------|------|------|-----|
| A | B | C | D | E | F | H | I | J | K | L | M | N | R | S |
| 0.22 | 0.25 | 0.33 | 0.35 | 0.39 | 0.45 | 0.55 | 0.65 | 0.7 | 0.8 | 0.90 | 0.95 | 1.00 | 1.45 | 1.5 |

* L 0.6±0.09 | W 0.3±0.09



PACKAGING (TAPING)

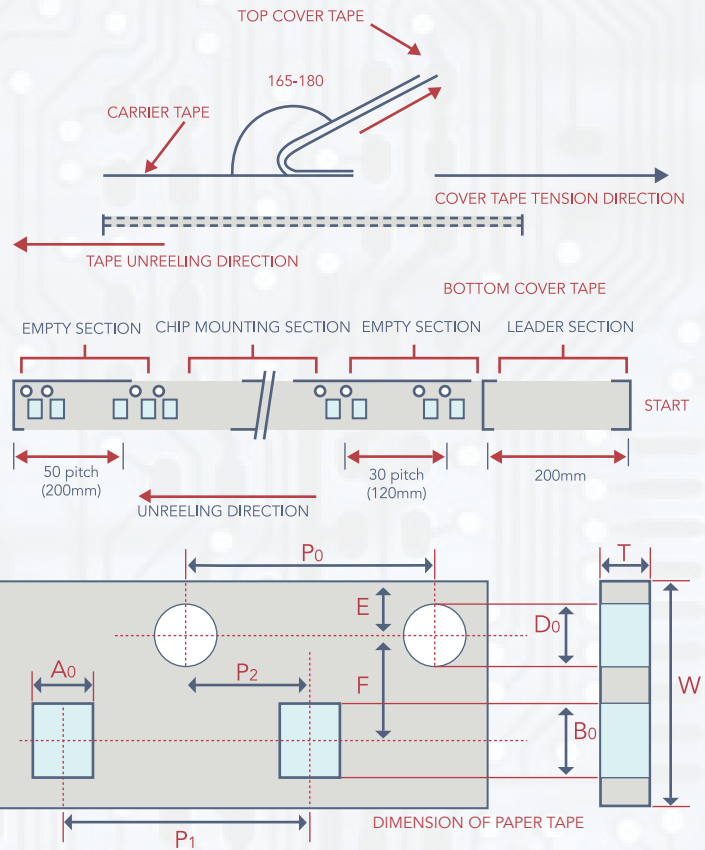
Per EIA-481 - Reel Type Size



UNIT: mm

| SYMBOL | TAPE WIDTH | A | B | C | D | E | W | t |
|----------|------------|----------|--------|---------|--------|---------|--------|---------|
| 7" Reel | 8mm | Ø178±2.0 | MINØ50 | Ø13±0.5 | 21±0.8 | 2.0±0.5 | 10±0.5 | 0.9±0.2 |
| | 12mm | Ø178±2.0 | MINØ50 | Ø13±0.5 | 21±0.8 | 2.0±0.5 | 13±0.5 | 1.2±0.2 |
| 10" Reel | 8mm | Ø258±2.0 | MINØ70 | Ø13±0.5 | 21±0.8 | 2.0±0.5 | 10±0.5 | 1.8±0.2 |
| | 12mm | Ø330±2.0 | MINØ70 | Ø13±0.5 | 21±0.8 | 2.0±0.5 | 13±0.5 | 2.2±0.2 |

CarrierTape (Standard)



- To peel off the cover tape by the method shown in the right figure apply a peel-off force of 20GF - 60GF (card board); 10GF - 75GF (plastic tape).

-The cover tape should not touch the top or bottom of the chip.

- If the cover tape has been peeled off it may be difficult to remove the chip due to punch-hole clearance, dirt, and debris. Make sure therefore that no paper waste will adhere to and block the absorption nozzle.

- If the cover tape has been peeled off from the top, stick it back on with a suitable adhesive.

- Follow the illustration for the start and end of the winding operation.

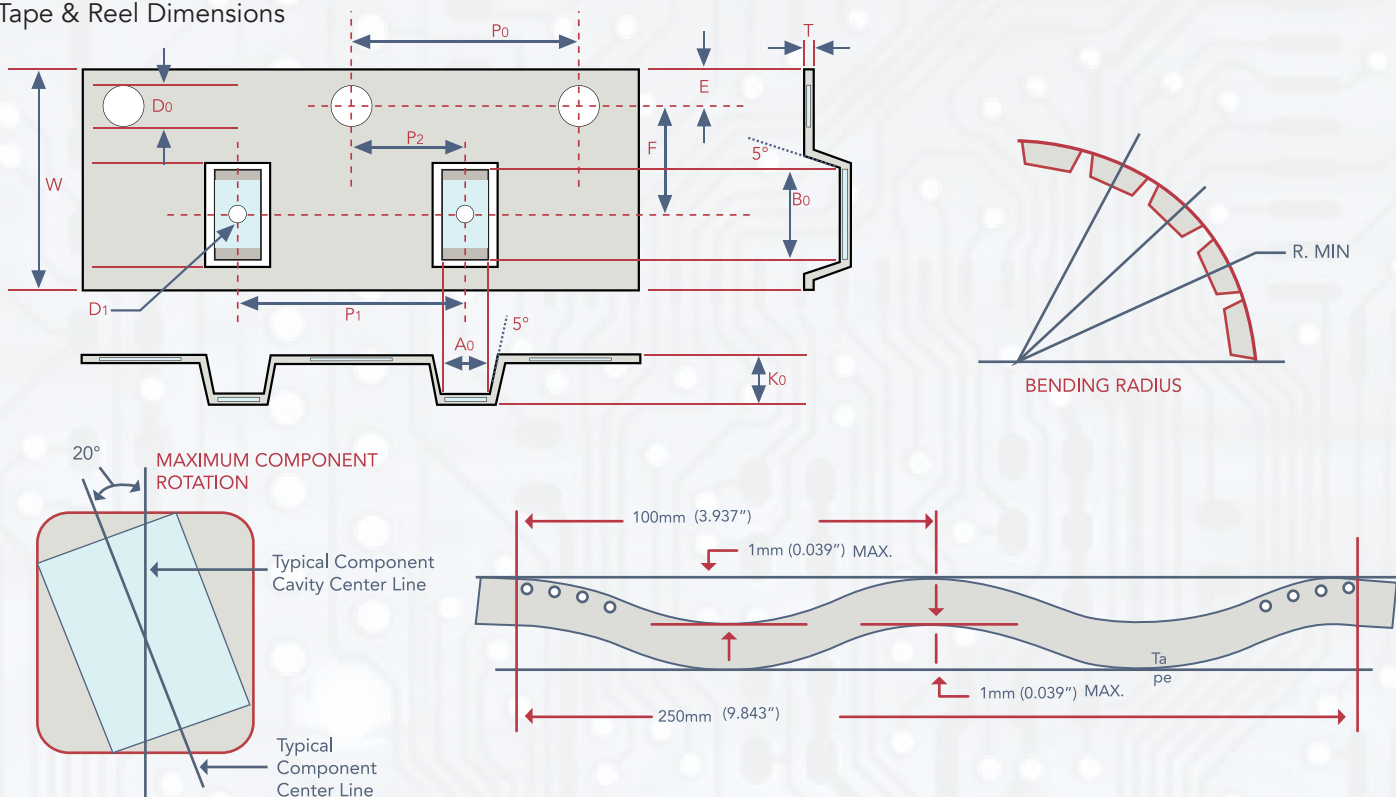
CARDBOARD CARRIER TAPE FOR 01005, 0201, 0402, 0603, 0805, 1206

UNIT=mm

| TYPE | A ₀ | B ₀ | T | K ₀ | W | P ₀ | 10XP ₀ | P ₁ | P ₂ | D ₀ | D ₁ | E | F | MOUNTING HOLE | STD. REEL QTY 7" | OPTIONAL REEL QTY (10/13") |
|-------|----------------|----------------|-----------|----------------|----------|----------------|-------------------|----------------|----------------|----------------|----------------|-----------|----------|--------------------|------------------|----------------------------------|
| 01005 | 0.25±0.04 | 0.45±0.04 | 0.36±0.05 | * | 8.0±0.30 | 4.0±0.10 | 40.0±0.10 | 2.0±0.05 | 2.0±0.05 | 1.5±0.1 | * | 1.75±0.1 | 3.5±0.05 | Angular Punch Hole | 20,000 | 50,000 D |
| 0201 | 0.39±0.07 | 0.69±0.07 | <0.50 | * | 8.0±0.10 | 4.0±0.10 | 40.0±0.10 | 2.0±0.05 | 2.0±0.05 | 1.55±0.05 | * | 1.75±0.05 | 3.5±0.05 | | 10,000 15,000 | 50,000 D |
| 0402 | 0.7±0.20 | 1.2±0.20 | <0.80 | * | 8.0±0.10 | 4.0±0.10 | 40.0±0.10 | 2.0±0.05 | 2.0±0.05 | 1.55±0.05 | * | 1.75±0.05 | 3.5±0.05 | | 10,000 | 40,000 D 50,000 G |
| 0603 | 1.1±0.20 | 1.9±0.20 | <1.20 | * | 8.0±0.10 | 4.0±0.10 | 40.0±0.10 | 2.0±0.05 | 2.0±0.05 | 1.55±0.05 | * | 1.75±0.05 | 3.5±0.05 | | 4,000 | 10,000 D 15,000 G |
| 0805 | 1.65±0.20 | 2.4±0.20 | <01.30 | * | 8.0±0.10 | 4.0±0.10 | 40.0±0.10 | 2.0±0.05 | 2.0±0.05 | 1.55±0.05 | * | 1.75±0.05 | 3.5±0.05 | | 4,000 | 10,000 D 15,000 G 20,000 Q |
| 1206 | 2.0±0.20 | 3.6±0.20 | <01.30 | * | 8.0±0.10 | 4.0±0.10 | 40.0±0.10 | 2.0±0.05 | 2.0±0.05 | 1.55±0.05 | * | 1.75±0.05 | 3.5±0.05 | | 4,000 | 10,000 D 15,000 G 20,000 Q |

PACKAGING (TAPING)

Tape & Reel Dimensions



• Embossed plastic carrier tape for 0805/1206/1210/1808/1812/1825/2220 AND 2225 type

| TYPE | A ₀ | B ₀ | T | K ₀ | W | P ₀ | 10XP ₀ | P ₁ | P ₂ | D ₀ | D ₁ | E | F | MOUNTING HOLE | STD. REEL QTY 7" | OPTIONAL REEL QTY (10/13") |
|------|----------------|----------------|-----------|----------------|-----------|----------------|-------------------|----------------|----------------|----------------|----------------|-----------|----------|-----------------------|--------------------------------|----------------------------|
| 0805 | <1.80 | <2.70 | 0.23±0.10 | <2.50 | 8.0±0.20 | 4.0±0.10 | 40.0±0.20 | 4.0±0.10 | 2.0±0.05 | 1.5±0.10 | 1.0±0.10 | 1.75±0.10 | 3.5±0.05 | Angular Embossed Hole | 2,000 3,000 | 10,000 D 15,000 G |
| 1206 | <2.30 | <4.00 | 0.23±0.10 | <2.50 | 8.0±0.20 | 4.0±0.10 | 40.0±0.20 | 4.0±0.10 | 2.0±0.05 | 1.5±0.10 | 1.0±0.10 | 1.75±0.10 | 3.5±0.05 | | 2,000 3,000 | 8,000 D 10,000 G |
| 1210 | <3.20 | <3.95 | 0.23±0.10 | <3.00 | 8.0±0.20 | 4.0±0.10 | 40.0±0.20 | 4.0±0.10 | 2.0±0.05 | 1.5±0.10 | 1.0±0.10 | 1.75±0.10 | 3.5±0.05 | | 500 1,000 2,000 3,000 | 4,000 D 8,000 G |
| 1808 | <2.50 | <5.30 | 0.25±0.10 | <2.50 | 12.0±0.20 | 4.0±0.10 | 40.0±0.20 | 4.0±0.10 | 2.0±0.05 | 1.5±0.10 | 1.0±0.10 | 1.75±0.10 | 5.5±0.10 | | 1,000 2,000 3,000 | |
| 1812 | <3.90 | <5.30 | 0.25±0.10 | <3.50 | 12.0±0.20 | 4.0±0.10 | 40.0±0.20 | 8.0±0.10 | 2.0±0.05 | 1.5±0.10 | 1.5±0.10 | 1.75±0.10 | 5.5±0.10 | | 500 1,000 | 3,000 D |
| 1825 | <6.80 | <5.30 | 0.30±0.10 | <3.10 | 12.0±0.20 | 4.0±0.10 | 40.0±0.20 | 8.0±0.10 | 2.0±0.05 | 1.5±0.10 | 1.5±0.10 | 1.75±0.10 | 5.5±0.10 | | 500 1,000 | |
| 2220 | <5.80 | <6.50 | 0.30±0.10 | <3.10 | 12.0±0.20 | 4.0±0.10 | 40.0±0.20 | 8.0±0.10 | 2.0±0.05 | 1.5±0.10 | 1.5±0.10 | 1.75±0.10 | 5.5±0.10 | | 500 700 1,000 | |
| 2225 | <6.80 | <6.50 | 0.30±0.10 | <3.10 | 12.0±0.20 | 4.0±0.10 | 40.0±0.20 | 8.0±0.10 | 2.0±0.05 | 1.5±0.10 | 1.5±0.10 | 1.75±0.10 | 5.5±0.10 | | 500 700 | |

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- 1) Product must be kept away from direct sunlight.
- 2) Product must be stored in the following conditions - Temperature; 5 to 35 degrees Celsius / 40 to 95 degrees Fahrenheit Humidity; 45 to 85%
- 3) Product to be kept free of moisture, dirt and debris.

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BARCODE LABEL



CCE P/N GMC21X5R475K50NT



Cust PN



QTY 2000 ea



Date Code 2132 32nd week of 2021



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