## 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

 time, voltage and frequency.

| $\begin{gathered} \text { OPERATING } \\ \text { TEMPERATURE } \\ \text { RANGE } \end{gathered}$ | TEMPERATURE COEFFICIENT | DISSIPATION FACTOR | INSULATION RESISTANCE | DIELECTRIC WITHSTANDING VOLTAGE | AGING RATE | TEST PARAMETERS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $-55^{\circ} \mathrm{C}$ to ${ }^{\circ}+125 \mathrm{C}$ | $0 \pm 30 \mathrm{ppm}^{\circ} \mathrm{C}$ | 0.1\% Max, 0.02\% Typlical | ->100G $\Omega$ or $1000 \Omega F$ <br> - $125^{\circ} \mathrm{C}$ VDCW: $10 \mathrm{G} \Omega \mathrm{F}$ or $100 \Omega \mathrm{~F}$ whichever is less | $3 \times \mathrm{VDCW}$ | 0\% per decade hour | - $\mathrm{C}<1000 \mathrm{pF} \mathrm{f}=1 \mathrm{MHz}$ <br> $\mathrm{V}=1.0 \mathrm{~V}$ rms $\pm 0.2 \mathrm{~V}$ rms $\mathrm{T}=25^{\circ} \mathrm{C}$ <br> - C $>1000 \mathrm{pF} f=1 \mathrm{KHz}$ <br> $\mathrm{V}=1.0 \mathrm{~V}$ rms $\pm 0.2 \mathrm{~V}$ rms $\mathrm{T}=25^{\circ} \mathrm{C}$ |

Stable class II dielectric

| OPERATING TEMPERATURE RANGE | TEMPERATURE COEFFICIENT | DISSIPATION FACTOR | INSULATION RESISTANCE | DIELECTRIC WITHSTANDING VOLTAGE | AGING RATE | TEST PARAMETERS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| X7R: -55C to +125 C <br> X5R: -55 C to +85 C <br> X6S: -55 C to +105 C <br> X7S: -55 C to +125 C | $\begin{aligned} & \pm 15 \% \\ & \pm 15 \% \\ & \pm 22 \% \\ & \pm 22 \% \end{aligned}$ | 2.5\% Max, 1.8\% Typical | - $25^{\circ} \mathrm{C}$, VdCW: $>100 \mathrm{G} \Omega \mathrm{F}$ or $1000 \Omega \mathrm{~F}$, whichever is less <br> $-125^{\circ} \mathrm{C}$, VdCW: >100G $\Omega$ F or $1000 \Omega \mathrm{~F}$ whichever is less | $2.5 \times \mathrm{VDCW}$ | <2\% per decade hour | - 1 KHz 1.0 V rms +/-0.2Vrms 25c <br> Values >or $=$ to $10 \mu \mathrm{~F} 0.5+/-0.1$ <br> 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 $-30^{\circ} \mathrm{C}$ to $+85^{\circ} \mathrm{C}$. Y 5 V s high dielectric constant allows the manufacture of very high capacitance values (up to $100 \mu \mathrm{~F}$ ) in small physical sizes.

High capacitance per unit volume: general purpose product

| OPERATING TEMPERATURE RANGE | TEMPERATURE COEFFICIENT | TEMPERATURE VOLTAGE COEFFICIENT ( $\triangle \mathrm{c}$ MAX @ Vocw) | DISSIPATION FACTOR | INSULATION RESISTANCE | DIELECTRIC WITHSTANDING VOLTAGE | AGING RATE | TEST PARAMETERS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $-30^{\circ} \mathrm{C}$ to $+85^{\circ} \mathrm{C}$ | $\begin{aligned} & +22 \% \\ & -82 \% \end{aligned}$ | N/A | 3.0\% Max, 2.0\% Typical | -10G $\Omega$ or $100 \Omega \mathrm{~F}$ whichever is less, $25^{\circ} \mathrm{C}$, VdCW | 2.5 XVdCW | 3.0\% per decade hour | - $1 \mathrm{KHz}, 1$ Vrms $25^{\circ} \mathrm{C}$ values > or = to 10 uF 1.0 Vrms 120 Hz |



## CAPACITANCE VALUE \& TOLERANCE

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

## - VOLTAGE

Determined by circuit requirements.

## 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 N 2 within oven are recommended.

| NO. | NAME |  | CLASS I DIELECTRIC | CLASS II DIELECTRIC |
| :---: | :---: | :---: | :---: | :---: |
| 1 | Ceramic Material |  | $\mathrm{CaZrO}_{3}$ | BatTi03 |
| 2 | Inner Electrode |  | Ni | Ni |
| 3 | Termination | Inner layer | Cu | Cu |
| 4 |  | Middle layer | Ni | Ni |
| 5 |  | Outer layer | Sn | Sn |

## - 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.

## - CAPACITOR TERMINATION

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


## ■ PART NUMBER GUIDE

| GMC |  |
| :---: | :---: |

PRODUCT TYPE

| 21 |  |  |
| :---: | :---: | :---: |
| $\mid$ |  |  |
| DIMENSIONS |  |  |

01: 1005 32: 1210
02: 0201 40: 1808
04: 0402 43: 1812
10: 0603 45: 1825
21: 0805 55: 2220
31: 1206 57: 2225



## ■ NPO/COG

|  |  | NPO/COG |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DIMENSION (MM) |  | GMC01 |  |  |  |  | GMC02 |  |  |  | GMCO4 |  |  |  |  |  |  | GMC10 |  |  |  | GMC21 |  |  |  |  |  | GMC31 |  |  |  |
|  |  | $0.4 \pm 0.02$ |  |  |  |  | $0.6 \pm 0.03$ |  |  |  | $1.0 \pm 0.05$ |  |  |  |  |  |  | $1.6 \pm 0.2$ |  |  |  | $2.0 \pm 0.3$ |  |  |  |  |  | $3.2 \pm 0.3$ |  |  |  |
|  |  | $0.2 \pm 0.02$ |  |  |  |  | $0.3 \pm 0.03$ |  |  |  | $0.5 \pm 0.05$ |  |  |  |  |  |  | $0.8 \pm 0.2$ |  |  |  | $1.25 \pm 0.2$ |  |  |  |  |  | $1.6 \pm 0.2$ |  |  |  |
|  |  | $0.07 \sim 0.14$ |  |  |  |  | $0.15 \pm 0.05$ |  |  |  | $0.1 \sim 0.35$ |  |  |  |  |  |  | $0.1 \sim 0.4$ |  |  |  | $0.25 \sim 0.75$ |  |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |
| 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 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.1 pF | 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 | OR5 | 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 | OR6 | 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 | OR7 | 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 |  |  | L | L | L |  | J | J | J | J | J | J | L | L | L |  |
| 0.8 | OR8 | 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 | OR9 | 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 | 1 R3 | 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 |
| 1.4 | 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 | 1 R8 | 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 | $1 \mathrm{R9}$ | 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 | 4RO | 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 |

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|  |  | NPO/COG |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DIME | SION (MM) | GMC01 |  |  |  |  | GMC02 |  |  | GMC04 |  |  |  |  |  |  | GMC10 |  |  |  | GMC21 |  |  |  |  | GMC31 |  |  |  |
|  | L | $0.4 \pm 0.02$ |  |  |  |  | $0.6 \pm 0.03$ |  |  | $1.0 \pm 0.05$ |  |  |  |  |  |  | $1.6 \pm 0.2$ |  |  |  | $2.0 \pm 0.3$ |  |  |  |  | $3.2 \pm 0.3$ |  |  |  |
|  | W | $0.2 \pm 0.02$ |  |  |  |  | $0.3 \pm 0.03$ |  |  | $0.5 \pm 0.05$ |  |  |  |  |  |  | $0.8 \pm 0.2$ |  |  |  | $1.25 \pm 0.2$ |  |  |  |  | $1.6 \pm 0.2$ |  |  |  |
|  | BW | 0.07 ~ 0.14 |  |  |  |  | $0.15 \pm 0.05$ |  |  | $0.1 \sim 0.35$ |  |  |  |  |  |  | $0.1 \sim 0.4$ |  |  |  | $0.25 \sim 0.75$ |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |
| RATE | VOLTAGE | 6.3 | 10 | 1016 | 625 | 5016 | 1625 | 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 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.6 pF | 4R6 | A | A | A A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L | L |  |  |  |  |  |  |  |  |  |
| 4.7 | 4R7 | A | A | A A | A A | A C | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J | L | L | L | L |
| 4.8 | 4R8 | A | A | A A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 4.9 | 4R9 | A | A | A A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 5 | 5R0 | A | A | A A | A A |  | C 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 | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J | L | L | L | L |
| 5.2 | 5R2 | A | A | A A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 5.3 | 5R3 | A | A | A A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 5.4 | 5R4 | A | A | A A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 5.5 | 5R5 | A | A | A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 5.6 | 5R6 | A | A | A | A A | A C | C 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 A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 5.8 | 5R8 | A | A | A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 5.9 | 5R9 | A | A | A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 6 | 6R0 | A | A | A | A A |  | C 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 | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 6.2 | 6R2 | A | A | A | A A |  | C 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 | 6 R3 | A | A | A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 6.4 | 6R4 | A | A | A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 6.5 | 6R5 | A | A | A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J | J | J |  |  |  |  |
| 6.6 | 6R6 | A | A | A | A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 6.7 | 6R7 | A | A | A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 6.8 | 6R8 | A | A | A | A A | A C | C 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 A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 7 | 7R0 | A | A | A | A A A | A C | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J | L | L | L | L |
| 7.1 | 7R1 | A | A | A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 7.2 | 7R2 | A | A | A A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J | J | J |  |  |  |  |
| 7.3 | 7 R 3 | A | A | A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 7.4 | 7R4 | A | A | A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J | J | J |  |  |  |  |
| 7.5 | 7R5 | A | A | A | A A |  | C 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 A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 7.7 | 7R7 | A | A | A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  | L | L | L | L |
| 7.8 | 7R8 | A | A | A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J | J | J |  |  |  |  |
| 7.9 | 7R9 | A | A | A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 8 | 8R0 | A | A | A | A A | A C | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J | L | L | L | L |
| 8.1 | 8R1 | A | A | A | A A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 8.2 | 8R2 | A | A | A | A | A C | C 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 A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 8.3 | 8R3 | A | A | A | A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 8.4 | 8R4 | A | A | A | A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 8.5 | 8R5 | A | A | A | A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J | J | J |  |  |  |  |
| 8.6 | 8R6 | A | A | A | A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 8.7 | 8R7 | A | A | A | A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 8.8 | 8R8 | A | A | A | A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 8.9 | 8R9 | A | A | A | A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 9 | 9 RO | A | A | A | A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | $J$ | J | L | L | L | L |
| 9.1 | 9 R 1 | A | A | A | A |  | C 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 | C | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 9.3 | 9 R 3 | A | A | A | A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 9.4 | 9R4 | A | A | A | A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 9.5 | 9R5 | A | A | A | A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  | J | J | J J | J | J |  |  |  |  |
| 9.6 | $9 \mathrm{R6}$ | A | A | A | A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 9.7 | $9 \mathrm{R7}$ | A | A | A | A |  | C C | C C | C | H | H | H | H | H | H |  | L | L | L |  |  | J | J J | J | J |  |  |  |  |


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


| DIELECTRIC |  | NPO/COG |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DIMENSION (MM) |  | GMC01 |  |  |  |  | GMC02 |  |  |  | GMC04 |  |  |  |  |  |  | GMC10 |  |  |  | GMC21 |  |  |  |  |  | GMC31 |  |  |  |
| L |  | $0.4 \pm 0.02$ |  |  |  |  | $0.6 \pm 0.03$ |  |  |  | $1.0 \pm 0.05$ |  |  |  |  |  |  | $1.6 \pm 0.2$ |  |  |  | $2.0 \pm 0.3$ |  |  |  |  |  | $3.2 \pm 0.3$ |  |  |  |
| W |  | $0.2 \pm 0.02$ |  |  |  |  | $0.3 \pm 0.03$ |  |  |  | $0.5 \pm 0.05$ |  |  |  |  |  |  | $0.8 \pm 0.2$ |  |  |  | $1.25 \pm 0.2$ |  |  |  |  |  | $1.6 \pm 0.2$ |  |  |  |
| BW |  | $0.07 \sim 0.14$ |  |  |  |  | $0.15 \pm 0.05$ |  |  |  | $0.1 \sim 0.35$ |  |  |  |  |  |  | $0.1 \sim 0.4$ |  |  |  | $0.25 \sim 0.75$ |  |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |
| RATED | AGE | 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 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9.8pF | 9R8 | A | A | A | A |  | C | C | C | C | H | H | H | H | H | H |  | L | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 9.9 | $9 \mathrm{R9}$ | A | A | A | A |  | C | C | C | C | H | H | H | H | H | H |  | L | L | L | L |  |  |  |  |  |  |  |  |  |  |
| 10 | 100 | 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 |
| 11 | 110 | A | A | A | A | A | C | C | C |  | H | H | H | H | H |  |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 12 | 120 | 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 |
| 13 | 130 | A | A | A | A | A | C | C | C |  | H | H | H | H | H |  |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 15 | 150 | 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 |
| 16 | 160 | A | A | A | A |  | C | C | C |  | H | H | H | H | H |  |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 18 | 180 | A | A | A | A |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 20 | 200 | A | A | A | A |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 22 | 220 | A | A | A | A |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | $J$ | J | J | J | L | L | L | L |
| 23 | 230 |  |  |  |  |  |  |  |  |  | H | H | H | H | H |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 24 | 240 | A | A | A | A |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | $J$ | J | J | J | L | L | L | L |
| 25 | 250 |  |  |  |  |  |  |  |  |  | H | H | H | H | H |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 27 | 270 | A | A | A | A |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 30 | 300 | 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 |
| 33 | 330 | A | A | A | A |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 36 | 360 | A | A | A | A |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 38 | 380 |  |  |  |  |  |  |  |  |  | H | H | H | H | H |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 39 | 390 | A | A | A | A |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 40 | 400 |  |  |  |  |  |  |  |  |  | H | H | H | H | H |  |  | L | L | L |  |  |  |  |  |  |  |  |  |  |  |
| 42 | 420 |  |  |  |  |  |  |  |  |  | H | H | H | H | H |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 43 | 430 | A | A | A | A | A | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 47 | 470 | A | A | A | A |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 50 | 500 |  |  |  |  |  |  |  |  |  | H | H | H | H | H | H |  | L | L | L |  |  |  |  |  |  |  |  |  |  |  |
| 51 | 510 | A | A | A | A |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 53 | 530 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | L | L | L |  |  |  |  |  |  |  |  |  |  |  |
| 56 | 560 | A | A | A | A |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 60 | 600 |  |  |  |  |  |  |  |  |  | H | H | H | H | H |  |  | L | L | L |  |  |  |  |  |  |  |  |  |  |  |
| 62 | 620 | A | A | A | A | A | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 68 | 680 | A | A | A | A | A | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 70 | 700 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | L | L | L |  |  |  |  |  |  |  |  |  |  |  |
| 75 | 750 | A | A | A | A |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 80 | 800 |  |  |  |  |  |  |  |  |  | H | H | H | H | H |  |  | L | L | L |  |  |  |  |  |  |  |  |  |  |  |
| 82 | 820 | A | A | A | A | A | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 91 | 910 | A | A | A | A |  | C | C | C |  | H | H | H | H | H |  |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 100 | 101 | 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 | R | R | R | R |
| 110 | 111 |  |  |  |  |  | C | C | C |  | H | H | H | H | H | H | H | L | L | L |  |  |  |  |  |  |  |  |  |  |  |
| 120 | 121 |  |  |  |  |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 130 | 131 |  |  |  |  |  | C | C | C |  | H | H | H | H | H |  |  | L | L | L |  | J | J | J | J | J | J | L | L | L | L |
| 150 | 151 |  |  |  |  |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 160 | 161 |  |  |  |  |  |  |  |  |  | H | H | H | H | H |  |  | L | L | L |  | J | J | J | J | J | J | L | L | L | L |
| 180 | 181 |  |  |  |  |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 200 | 201 |  |  |  |  |  | C | C | C |  | H | H | H | H | H |  |  | L | L | L |  | J | J | J | J | J | J | L | L | L | L |
| 220 | 221 |  | A | A | A |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 240 | 241 |  | A | A | A |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 250 | 251 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | L | L | L |  |  |  |  |  |  |  |  |  |  |  |
| 270 | 271 |  | A | A | A |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 300 | 301 |  |  |  |  |  | C | C | C |  | H | H | H | H | H |  |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 330 | 331 |  | A | A | A |  | C | C | C |  | H | H | H | H | H | H | H | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 360 | 361 |  |  |  |  |  | C | C | C |  | H | H | H | H | H |  |  | L | L | L | L | J | J | J | J | J | J | L | L | L | L |
| 390 | 391 |  |  |  |  |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | M | M | M | M | M | M | L | L | L | L |
| 430 | 431 |  |  |  |  |  | C | C | C |  | H | H | H | H | H |  |  | L | L | L |  | M | M | M | M | M | M | L | L | L | L |
| 470 | 471 |  |  |  |  |  | C | C | C |  | H | H | H | H | H | H |  | L | L | L | L | M | M | M | M | M | M | L | L | L | L |


| MAX HEIGHT |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| A | C | H | J | L | R |
| 0.22 | 0.33 | 0.55 | 0.7 | 0.90 | 1.45 |

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| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DIMENSION (MM) |  | GMC01 |  |  |  |  | GMC02 |  | GMC04 |  |  |  |  |  |  | GMC10 |  |  |  | GMC21 |  |  |  |  | GMC31 |  |  |  |
| L |  | $0.4 \pm 0.02$ |  |  |  |  | $0.6 \pm 0.03$ |  | $1.0 \pm 0.05$ |  |  |  |  |  |  | $1.6 \pm 0.2$ |  |  |  | $2.0 \pm 0.3$ |  |  |  |  | $3.2 \pm 0.3$ |  |  |  |
| W |  | $0.2 \pm 0.02$ |  |  |  |  | $0.3 \pm 0.03$ |  | $0.5 \pm 0.05$ |  |  |  |  |  |  | $0.8 \pm 0.2$ |  |  |  | $1.25 \pm 0.2$ |  |  |  |  | $1.6 \pm 0.2$ |  |  |  |
| BW |  | $0.07 \sim 0.14$ |  |  |  |  | $0.15 \pm 0.05$ |  | $0.1 \sim 0.35$ |  |  |  |  |  |  | $0.1 \sim 0.4$ |  |  |  | $0.25 \sim 0.75$ |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |
| 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 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M | M | M |  |  |  |  |  |
| 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 |  | 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 | $\frac{R}{R}$ | R | L | L | L | L |
| 2700 | 272 |  |  |  |  |  |  |  | H | H | H | H |  |  |  | M | M | M |  | R | R | $\frac{R}{R}$ | $\frac{R}{R}$ | $\frac{R}{R}$ | L | L | L | L |
| 3000 | 302 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M |  |  | R | R | $\frac{R}{R}$ | $\frac{R}{R}$ | $\frac{R}{R}$ | M | M | M | M |
| 3300 | 332 |  |  |  |  |  |  |  | H | H | H | H |  |  |  | M | M | M |  | R | $\frac{R}{R}$ | $\frac{R}{R}$ | $\frac{R}{R}$ | R | M | M | M | M |
| 3600 | 362 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | R | R | R | R | R |  |  |  |  |
| 3900 | 392 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M | M |  | R | R | R | $\frac{R}{R}$ | R | M | M | M | M |
| 4300 | 432 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | R | $\frac{R}{R}$ | $\frac{R}{R}$ | $\frac{R}{R}$ | R |  |  |  |  |
| 4700 | 472 |  |  |  |  |  |  |  | 1 | 1 | I | 1 | 1 |  |  | M | M | M |  | R | $\frac{R}{R}$ | $\frac{R}{R}$ | $\frac{R}{R}$ | R | M | M | M | M |
| 5600 | 562 |  |  |  |  |  |  |  | 1 | 1 | 1 | 1 | 1 |  |  | M | M | M |  | R | R | R | R |  | M | M | M | M |
| 6200 | 622 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M |  |  | R | R | R |  |  |  |  |  |  |
| 6800 | 682 |  |  |  |  |  |  |  | I | I | 1 | I | I |  |  | M | M | M |  | R | R | $\frac{R}{R}$ | R |  | 0 | 0 | 0 |  |
| 7500 | 752 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M |  |  | R | R | R |  |  |  |  |  |  |
| 8200 | 822 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M | M |  | R | R | $\frac{R}{R}$ | R |  | R | R | R |  |
| 9100 | 912 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M |  |  | R | R | R |  |  |  |  |  |  |
| 0.01uF | 103 |  |  |  |  |  |  |  | I | 1 | I | I |  |  |  | M | M | M |  | R | R | $\frac{R}{R}$ | R |  | R | R | R | R |
| 0.012 | 123 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M |  |  |  | R | $\frac{R}{R}$ | 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 | 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 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


| 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 |  | $3.2 \pm 0.3$ |  |  |  |  | $4.57 \pm 0.25$ |  |  | $4.5 \pm 0.35$ |  |  | $4.5 \pm 0.35$ |  |  | $5.7 \pm 0.4$ |  |  | $5.7 \pm 0.4$ |  |  |
| W |  | $2.5 \pm 0.3$ |  |  |  |  | $2.03 \pm 0.25$ |  |  | $3.2 \pm 0.3$ |  |  | $6.3 \pm 0.4$ |  |  | $5.0 \pm 0.4$ |  |  | $6.3 \pm 0.4$ |  |  |
| BW |  | $0.25 \sim 0.75$ |  |  |  |  | $0.25 \sim 0.75$ |  |  | $0.25 \sim 0.75$ |  |  | $0.40 \sim 1.10$ |  |  | $0.50 \sim 1.20$ |  |  | 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 |

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| DIELECTRIC |  | NPO/COG |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DIMENSION (MM) |  | GMC32 |  |  |  |  | GMC40 |  |  | GMC43 |  |  | GMC45 |  |  | GMC55 |  |  | GMC57 |  |  |
| L |  | $3.2 \pm 0.3$ |  |  |  |  | $4.57 \pm 0.25$ |  |  | $4.5 \pm 0.35$ |  |  | $4.5 \pm 0.35$ |  |  | $5.7 \pm 0.4$ |  |  | $5.7 \pm 0.4$ |  |  |
| W |  | $2.5 \pm 0.3$ |  |  |  |  | $2.03 \pm 0.25$ |  |  | $3.2 \pm 0.3$ |  |  | $6.3 \pm 0.4$ |  |  | $5.0 \pm 0.4$ |  |  | $6.3 \pm 0.4$ |  |  |
| BW |  | $0.25 \sim 0.75$ |  |  |  |  | $0.25 \sim 0.75$ |  |  | $0.25 \sim 0.75$ |  |  | $0.40 \sim 1.10$ |  |  | $0.50 \sim 1.20$ |  |  | 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 | $\checkmark$ | V | V | V | V | V | V | V | V |
| 750 | 751 | R | R | R | R | R | V | V | V | V | V | V | $\checkmark$ | 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 | $\checkmark$ |
| 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 | $\checkmark$ | V | V | V | V | V | V | V | V | V | V | $\checkmark$ | V |
| 1200 | 122 | R | R | R | R | R | V | V | V | V | V | V | $\checkmark$ | V | V | V | V | V | V | $\checkmark$ | 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 | $\checkmark$ |
| 2000 | 202 |  |  |  |  |  | V | V | V | V | V | V | $\checkmark$ | V | $\checkmark$ | V | $\checkmark$ | $\checkmark$ | V | V | $\checkmark$ |
| 2200 | 222 | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | $\checkmark$ |
| 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 |
| 0.015 | 153 | P | P | P | P | P | 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 |
| 0.022 | 223 | 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 |
| 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 |  |  |  |  |
| 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 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

## ■ X7R

| DIELECTRIC |  | X7R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DIMEN | (MM) | GMC01 |  |  | GMC02 |  |  |  |  | GMC04 |  |  |  |  |  | GMC10 |  |  |  |  |  |  |  |  | GMC21 |  |  |  |  |  |  |  | GMC31 |  |  |  |  |  |  |  |
| L |  | $0.4 \pm 0.02$ |  |  | $0.6 \pm 0.03$ |  |  |  |  | $1.0 \pm 0.05$ |  |  |  |  |  | $1.6 \pm 0.2$ |  |  |  |  |  |  |  |  | $2.0 \pm 0.3$ |  |  |  |  |  |  |  | $3.2 \pm 0.3$ |  |  |  |  |  |  |  |
| W |  | $0.2 \pm 0.02$ |  |  | $0.3 \pm 0.03$ |  |  |  |  | $0.5 \pm 0.05$ |  |  |  |  |  | $0.8 \pm 0.2$ |  |  |  |  |  |  |  |  | $1.25 \pm 0.2$ |  |  |  |  |  |  |  | $1.6 \pm 0.2$ |  |  |  |  |  |  |  |
| BW |  | $0.07 \sim 0.14$ |  |  | $0.15 \pm 0.05$ |  |  |  |  | $0.1 \sim 0.35$ |  |  |  |  |  | $0.1 \sim 0.4$ |  |  |  |  |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  |  |  |  |
| RATED VOLTAGE |  | 6.3 | 10 | 16 | 6.3 | 10 | 16 | 25 | 50 | 6.3 | 10 | 16 | 25 | 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 | $35 \quad 5$ | 5010 | 100 | 200 |
| CAP. RANGE |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 56pF | 560 | A | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 68 | 680 | A | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 82 | 820 | A | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 100 | 101 | A | A | A | C | 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 |
| 120 | 121 | A | A |  | C | 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 | M | M | M | M | M M | M | M | M |
| 150 | 151 | A | A | A | C | C | c | C | C | H | H | H | H | H |  |  | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | M | M | M | M | M M | M | M | M |
| 180 | 181 | A | A |  | C | C | C | c | C | H | H | H | H | H |  |  | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | M | M | M | M | M M | M | M | M |
| 200 | 201 |  |  |  | C | 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 | M | M | M | M | M M | M | M | M |
| 220 | 221 | A | A | A | C | 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 | M | M | M | M | M M | M | M | M |
| 240 | 241 |  |  |  |  |  |  |  |  | H | H | H | H | H |  |  | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | M | M | M | M | M M | M | M | M |
| 270 | 271 | A | A |  | C | 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 | M | M | M | M | M M | M | M | M |
| 300 | 301 |  |  |  |  |  |  |  |  | H | H | H | H | H | H |  | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | M | M | M | M | M M | M | M | M |
| 330 | 331 | A | A |  | C | 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 | M | M | M | M | M M | M | M | M |
| 360 | 361 |  |  |  |  |  |  |  |  | H | H | H | H | H |  |  | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | M | M | M | M | M M | M | M | M |
| 390 | 391 | A | A |  | C | 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 | M | M | M | M | M M | M | M | M |
| 430 | 431 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | M | M | M | M | M M | M | M | M |
| 470 | 471 | A | A | A | C | 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 | M | M | M | M | M M | M | M | M |
| 510 | 511 |  |  |  |  |  |  |  |  | H | H | H | H | H |  |  | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 560 | 561 | A | A |  | C | 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 | M | M | M | M | M M | M | M | M |
| 620 | 621 |  |  |  |  |  |  |  |  | H | H | H | H | H | H |  | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | M | M | M | M | M M | M | M | M |
| 680 | 681 | A | A | A | C | 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 | M | M | M | M | M M | M | M | M |
| 750 | 751 |  |  |  |  |  |  |  |  | H | H | H | H | H | H |  | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 820 | 821 | A | A |  | C | 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 | M | M | M | M | M M | M | M | M |
| 910 | 911 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | M | M | M | M | M M | M | M | M |
| 1000 | 102 | A | A |  | C | 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 | M | M | M | M | M | M | M | M |
| 1200 | 122 | A | A |  | C | C | C | c |  | H | H | H | H | H | H |  |  |  | L | L | L | L | L | L | M | M | M | M | M | M | M | M | M | M | M | M | M M | M | M | M |
| 1500 | 152 | A | A |  | C | C | c | C | C | H | H | H | H | H | H |  |  |  | L | L | L | L | L | L | M | M | M | M | M | M | M | M | M | M | M | M | M ${ }^{\text {M }}$ | M | M | M |
| 1800 | 182 |  |  |  | C | C | c | C |  | H | H | H | H | H |  |  |  |  | L | L | L | L | L | L | M | M | M | M | M | M | M | M | M | M | M | M | M M | M | M | M |
| 2000 | 202 |  |  |  |  |  |  |  |  | H | H | H | H | H |  |  |  |  | L | L | L | L | L | L | M | M | M | M | M | M | M | M | M | M | M | M | M M | M | M | M |
| 2200 | 222 | A | A | A | C | C | c | c |  | H | H | H | H | H | H |  |  |  | L | L | L | L | L | L | M | M | M | M | M | M | M | M | M | M | M | M | M M | M | M | M |
| 2400 | 242 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | L | L | L | L |  | L | M | M | M | M | M | M | M | M | M | M | M | M | M ${ }^{\text {M }}$ | M | M | M |
| 2700 | 272 |  |  |  | C | C | c | C |  | H | H | H | H | H | H |  |  |  | L | L | L | L |  | L | M | M | M | M | M | M | M | M | M | M | M | M | M M | M | M | M |
| 3000 | 302 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M | M | M | M | M | M | M | M | M | M | M | M M | M | M | M |
| 3300 | 332 |  |  |  | C | C | c | C |  | H | H | H | H | H | H |  |  |  | L | L | L | L | L | L | M | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 3600 | 362 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M | M | M | M | M | M | M | $\frac{R}{R}$ | $\frac{R}{R}$ | $\frac{R}{R}$ | R | $\frac{R}{R}$ | R | R | $\frac{R}{R}$ |
| 3900 | 392 |  |  |  | C | C | C | C |  | H | H | H | H | H | H |  |  |  | L | L | L | L | L | L | M | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | MAX | X H | HEIG | GHT |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | A |  |  | C |  |  |  | H |  |  | L |  |  | M |  |  |  | R |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | . 22 |  |  | 0.33 |  |  |  | . 55 |  |  | 0.90 |  |  | 0.9 | 95 |  |  | . 45 |  |

## Cal-Chip

59 Steamwhistle Drive, Ivyland, PA 18974 | p. 215.942.8900 | www.calchip.com | quotes@calchip.com


| DIELECTRIC |  | X7R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DIMENSION (MM) |  | GMC01 |  |  | GMC02 |  |  |  |  | GMC04 |  |  |  |  |  |  | GMC10 |  |  |  |  |  |  |  |  | GMC21 |  |  |  |  |  |  |  | GMC31 |  |  |  |  |  |  |  |
|  |  | $0.4 \pm 0.02$ |  |  | $0.6 \pm 0.03$ |  |  |  |  | $1.0 \pm 0.05$ |  |  |  |  |  |  | $1.6 \pm 0.2$ |  |  |  |  |  |  |  |  | $2.0 \pm 0.3$ |  |  |  |  |  |  |  | $3.2 \pm 0.3$ |  |  |  |  |  |  |  |
|  |  | $0.2 \pm 0.02$ |  |  | $0.3 \pm 0.03$ |  |  |  |  | $0.5 \pm 0.05$ |  |  |  |  |  |  | $0.8 \pm 0.2$ |  |  |  |  |  |  |  |  | $1.25 \pm 0.2$ |  |  |  |  |  |  |  | $1.6 \pm 0.2$ |  |  |  |  |  |  |  |
| BW |  | $0.07 \sim 0.14$ |  |  | $0.15 \pm 0.05$ |  |  |  |  | $0.1 \sim 0.35$ |  |  |  |  |  |  | 0.1 ~ 0.4 |  |  |  |  |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  |  |  |  |
| 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 |
| 0.01 uF | 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 |  |  | M | M | M | M | M | M | M | M | $\frac{R}{R}$ | $\frac{R}{R}$ | R | R | $\frac{R}{R}$ | $\frac{R}{R}$ | R | R |
| 0.022 | 223 |  |  |  |  |  | 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 |
| 0.027 | 273 |  |  |  |  |  |  |  |  | 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 |
| 0.033 | 333 |  |  |  |  |  |  |  |  | H | H | H | H | H | H |  | M | M | M | M | M | M | M | M |  | M | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 0.039 | 393 |  |  |  |  |  |  |  |  | H | H | H | H | H | H |  | M | M | M | M | M | M | M | M |  | M | M | M | M | M | M | M | M | R | R | R | R | R | R | R | R |
| 0.047 | 473 |  |  |  |  |  |  |  |  | H | H | H | H | H | H |  | M | M | M | M | M | M | M | M |  | M | M | M | M | M | M | R | R | R | R | R | R | R | R | R | R |
| 0.056 | 563 |  |  |  |  |  |  |  |  | H | H | H | H | H | J |  | M | M | M | M | M | M | M | M |  | M | M | M | M | M | M | R | R | R | R | R | R | R | R | R | R |
| 0.068 | 683 |  |  |  |  |  |  |  |  | H | H | H | H | H | J |  | M | M | M | M | M | M | M | M |  | M | M | M | M | M | M | R | R | R | R | R | R | R | R | R | R |
| 0.082 | 823 |  |  |  |  |  |  |  |  | H | H | H | H | H | J |  | M | M | M | M | M | M | M |  |  | M | M | M | M | M | M | R |  | R | R | R | R | R | R | R | R |
| 0.1 | 104 |  |  |  | C | C | C |  |  | H | H | H | H | H | J |  | M | M | M | M | M | M | M | M |  | M | M | M | M | M | M | R |  | M | M | M | M | M | M | M | M |
| 0.12 | 124 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M | M | M | M | M | M |  |  | M | M | M | M | M | M | R |  | M | M | M | M | M | M | M |  |
| 0.15 | 154 |  |  |  |  |  |  |  |  | H | H | H | H |  |  |  | M | M | M | M | M | M | M |  |  | R | R | R | R | R | R | R |  | P | P | P | P | P | P | T |  |
| 0.18 | 184 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M | M | M | M | M | M |  |  | R | R | R | R | R | R | R |  | P | P | P | P | P | P | T |  |
| 0.22 | 224 |  |  |  |  |  |  |  |  | H | H | H | H |  |  |  | M | M | M | M | M | M | M |  |  | R | R | R | R | R | R | R |  | Q | Q | Q | Q | Q | Q | T |  |
| 0.27 | 274 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M | M | M | M | M | M |  |  | R | R | R | R | R | $\frac{R}{R}$ |  |  | Q | Q | Q | Q | Q | Q | T |  |
| 0.33 | 334 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M | M | M | M | M | M |  |  | R | R | $R$ | R | R | R | R |  | Q | Q | Q | Q | Q | Q | T |  |
| 0.39 | 394 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M | M | M | M | M | M |  |  | R | R | R | R | R | R |  |  | U | U | U | U | U | U | U |  |
| 0.47 | 474 |  |  |  |  |  |  |  |  | H | H |  |  |  |  |  | M | M | M | M | M | M | M |  |  | R | R | R | R | R | R | R |  | U | U | U | U | U | U | U |  |
| 0.56 | 564 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M | M | M |  |  |  |  |  | R | R | R | R | R | R |  |  | U | U | U | U | U | U | U |  |
| 0.68 | 684 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M | M | M | M | M |  |  |  | R | R | R | R | R | R |  |  | U | U | U | U | U | U | U |  |
| 0.82 | 824 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M | M | M |  |  |  |  |  | R | R | R | R |  |  |  |  | U | U | U | U | U | U | U |  |
| 1 | 105 |  |  |  |  |  |  |  |  | $\mathrm{H}^{*}$ | $\mathrm{H}^{*}$ |  |  |  |  |  | M | M | M | M | M | M | M |  |  | R | R | R | R | R | R | R |  | T | T | T | T | T | T | T |  |
| 1.5 | 155 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | N | N | N |  |  |  |  |  |  | R | R | R | R | R | $R$ |  |  | U | U | U | U | U | U |  |  |
| 2.2 | 225 |  |  |  |  |  |  |  |  | ।* | ।* |  |  |  |  |  | N | N | N | N | N |  |  |  |  | R | R | $R$ | R | R | R |  |  | A3 | A3 | A3 | A3 | A3 | A3 | U |  |
| 3.3 | 335 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | R | R | R | R |  |  |  |  | U | U | U | U | U | U |  |  |
| 4.7 | 475 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | N | N | N | N |  |  |  |  |  | R | R | $R$ | R | R | R |  |  | U | U | U | U | U | U | U |  |
| 6.8 | 685 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | R | R | R |  |  |  |  |  | U | U | U | U | U |  |  |  |
| 10 | 106 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | N | N | N |  |  |  |  |  |  | Q | Q | Q | R |  |  |  |  | U | U | U | U | U | U |  |  |
| 22 | 226 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | R | R |  |  |  |  |  |  | U | U | U |  |  |  |  |  |
| 33 | 336 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 47 | 476 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 100 | 107 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 150 | 157 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 220 | 227 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

* L $1.0 \pm 0.10$ I W $0.5 \pm 0.10$
*1L $1.0 \pm 0.15$ I W $0.5 \pm 0.15$

| MAX HEIGHT |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| C | H | I | J | L | M | N | P | Q | R | S | A3 | T | U |
| 0.33 | 0.55 | 0.65 | 0.70 | 0.90 | 0.95 | 1.00 | 1.35 | 1.40 | 1.45 | 1.50 | 1.70 | 1.80 | 1.90 |


| DIELECTRIC |  | X7R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DIMENS | (MM) | GMC32 |  |  |  |  |  |  |  | GMC40 |  |  | GMC43 |  |  |  |  |  | GMC45 |  |  |  |  | GMC55 |  |  |  |  | GMC57 |  |  |  |  |
|  |  | $3.2 \pm 0.3$ |  |  |  |  |  |  |  | $4.57 \pm 0.25$ |  |  | $4.5 \pm 0.35$ |  |  |  |  |  | $4.5 \pm 0.35$ |  |  |  |  | $5.7 \pm 0.4$ |  |  |  |  | $5.7 \pm 0.4$ |  |  |  |  |
|  |  | $2.5 \pm 0.3$ |  |  |  |  |  |  |  | $2.03 \pm 0.25$ |  |  | $3.2 \pm 0.3$ |  |  |  |  |  | $6.3 \pm 0.4$ |  |  |  |  | $5.0 \pm 0.4$ |  |  |  |  | $6.3 \pm 0.4$ |  |  |  |  |
|  |  | $0.25 \sim 0.75$ |  |  |  |  |  |  |  | $0.25 \sim 0.75$ |  |  | $0.25 \sim 0.75$ |  |  |  |  |  | 0.40~1.10 |  |  |  |  | $0.50 \sim 1.20$ |  |  |  |  | $0.50 \sim 1.20$ |  |  |  |  |
| RATED | TAGE | 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 |
| CAP. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1000pF | 102 | 0 | O | O | O | O | O | O | O | R | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 1200 | 122 | 0 | O | $\bigcirc$ | O | O | O | O | 0 | R | R | R | R | R | R | R | R | R | V | V | V | V | V | $V$ | V | V | V | V | V | V | V | V | V |
| 1500 | 152 | 0 | O | O | 0 | O | O | O | 0 | R | R | R | R | R | R | R | R | R | V | V | V | V | V | $\checkmark$ | V | V | V | V | V | V | V | V | V |
| 1800 | 182 | 0 | 0 | $\bigcirc$ | 0 | O | O | 0 | O | R | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 2200 | 222 | 0 | 0 | $\bigcirc$ | 0 | O | O | 0 | 0 | R | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 2400 | 242 | 0 | 0 | O | 0 | O | O | O | 0 | R | R | R | R | R | R | R | R | R | V | V | V | V | V | $\checkmark$ | V | V | V | V | V | V | V | V | V |
| 2700 | 272 | 0 | 0 | 0 | 0 | 0 | O | 0 | 0 | R | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 3000 | 302 | 0 | O | O | 0 | O | O | 0 | 0 | R | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 3300 | 332 | 0 | O | $\bigcirc$ | 0 | 0 | O | 0 | $\bigcirc$ | R | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | $\checkmark$ | V | V | V |
| 3600 | 362 | 0 | 0 | O | 0 | O | O | 0 | 0 | R | $\frac{R}{R}$ | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 3900 | 392 | 0 | 0 | $\bigcirc$ | 0 | 0 | O | 0 | 0 | R | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | $V$ | V | V | V | V | V |
| 4300 | 432 | 0 | 0 | O | 0 | O | O | O | 0 | R | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |


| DIELECTRIC |  | X7R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DIMENSION (MM) |  | GMC32 |  |  |  |  |  |  |  |  | GMC40 |  |  | GMC43 |  |  |  |  |  | GMC45 |  |  |  |  | GMC55 |  |  |  |  | GMC57 |  |  |  |  |
| L |  | $3.2 \pm 0.3$ |  |  |  |  |  |  |  |  | $4.57 \pm 0.25$ |  |  | $4.5 \pm 0.35$ |  |  |  |  |  | $4.5 \pm 0.35$ |  |  |  |  | $5.7 \pm 0.4$ |  |  |  |  | $5.7 \pm 0.4$ |  |  |  |  |
| W |  | $2.5 \pm 0.3$ |  |  |  |  |  |  |  |  | $2.03 \pm 0.25$ |  |  | $3.2 \pm 0.3$ |  |  |  |  |  | $6.3 \pm 0.4$ |  |  |  |  | $5.0 \pm 0.4$ |  |  |  |  | $6.3 \pm 0.4$ |  |  |  |  |
|  |  | $0.25 \sim 0.75$ |  |  |  |  |  |  |  |  | $0.25 \sim 0.75$ |  |  | $0.25 \sim 0.75$ |  |  |  |  |  | $0.40 \sim 1.10$ |  |  |  |  | 0.50~1.20 |  |  |  |  | $0.50 \sim 1.20$ |  |  |  |  |
| RATED | AGE | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 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 |
| CAP. RANGE |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4700pF | 472 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | R | R | R | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 5600 | 562 | 0 | O | O | O | O | O | O | O | O | V | V | V | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 6800 | 682 | 0 | O | 0 | O | O | O | O | $\bigcirc$ | O | V | V | V | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | $V$ | V | V | V | $\checkmark$ |
| 8200 | 822 | 0 | O | O | O | O | O | O | O | O | V | V | V | R | R | R | R | R | R | V | V | V | V | V | V | V | $V$ | V | V | V | V | V | V | V |
| 0.01uF | 103 | R | R | R | R | R | R | R | R | R | V | V | V | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 0.012 | 123 | O | O | O | O | O | O | O | O | O | V | V | V | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 0.015 | 153 | 0 | 0 | 0 | 0 | O | O | O | $\bigcirc$ | $\bigcirc$ | V | V | V | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | $\checkmark$ |
| 0.018 | 183 | 0 | O | 0 | $\bigcirc$ | 0 | O | O | $\bigcirc$ | $\bigcirc$ | V | V | V | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 0.022 | 223 | 0 | 0 | 0 | 0 | 0 | 0 | O | 0 | O | V | V | V | R | R | R | R | R | R | V | V | V | V | V | V | V | $V$ | V | V | V | V | V | V | V |
| 0.027 | 273 | 0 | O | 0 | O | O | O | O | O | O | V | V | V | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | $V$ |
| 0.033 | 333 | O | O | 0 | 0 | O | O | T | T | T | V | V | V | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | $\checkmark$ |
| 0.039 | 393 | 0 | 0 | 0 | 0 | 0 | O | O | O | $\bigcirc$ | V | V | V | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | $\checkmark$ | V | V | V | V |
| 0.047 | 473 | 0 | 0 | 0 | O | O | O | 0 | 0 | O | V | V | V | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | $V$ | V | V | V | $V$ |
| 0.056 | 563 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | V | V | V | R | R | R | R | R | R | V | V | V | V | V | V | V | $V$ | V | V | V | V | V | V | V |
| 0.068 | 683 | O | O | O | O | O | O | O | O | O | V | V | V | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 0.082 | 823 | 0 | O | O | $\bigcirc$ | O | O | O | $\bigcirc$ | $\bigcirc$ | V | V | V | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | $\checkmark$ | V | V | V | V |
| 0.1 | 104 | $\checkmark$ | V | V | V | V | V | V | V | V | V | V | V | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 0.12 | 124 | 0 | 0 | 0 | O | O | O | 0 | O | O | A1 | A1 | V | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | $V$ | V | V | V | V |
| 0.15 | 154 | 0 | 0 | 0 | 0 | 0 | 0 | O | Y | Y | A1 | A1 | V | R | R | R | R | $\bar{R}$ | R | V | V | V | V | V | V | V | $V$ | V | V | V | V | V | V | V |
| 0.18 | 184 | 0 | O | 0 | 0 | 0 | 0 | O | Y | Y | A1 | A1 | V | R | $\frac{R}{R}$ | R | R | $\bar{R}$ | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | $\checkmark$ |
| 0.22 | 224 | 0 | 0 | 0 | 0 | 0 | O | O | O | R | A1 | A1 |  | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | $\checkmark$ |
| 0.27 | 274 | 0 | 0 | 0 | O | O | O | 0 | T | Y | A1 | A1 |  | R | R | R | R | R | R | V | V | V | V | V | V | V | V | V | V | V | V | V | V | $V$ |
| 0.33 | 334 | 0 | 0 | 0 | 0 | O | O | 0 | 0 | T | A1 | A1 |  | R | $\frac{R}{R}$ | R | R | R | R | V | V | V | V | V | $V$ | V | V | V | V | $\checkmark$ | V | V | V | $\checkmark$ |
| 0.39 | 394 | 0 | O | 0 | O | R | R | Z | Z | Z | A1 |  |  | R | $\frac{R}{R}$ | R | R | R | R | V | $\checkmark$ | V | V | V | V | V | V | V | V | $\checkmark$ | V | V | V | $\checkmark$ |
| 0.47 | 474 | 0 | O | 0 | O | O | O | O | 0 | V | A1 |  |  | R | R | R | R | R | R | V | $V$ | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 0.56 | 564 | R | R | R | R | R | R | R | Y | Y | A1 |  |  | R | R | R | R | V |  | V | V | V | V | V | V | V | $V$ | V | V | V | V | V | V | V |
| 0.68 | 684 | 0 | 0 | 0 | O | O | O | 0 | T | Y | A1 |  |  | R | R | R | V | V |  | V | V | V | V | V | V | V | V | V | V | $\checkmark$ | V | V | V | V |
| 0.82 | 824 | 0 | O | 0 | $\bigcirc$ | O | 0 | O | V |  |  |  |  | R | R | R | V | V |  | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| 1 | 105 | T | T | T | T | T | T | T | Y |  |  |  |  | V | V | V | V | V | Y | R | R | R | R | V | X | X | X | X | X | V | V | V | V | V |
| 1.5 | 155 | Z | Z | Z | Z | Z | Z | Z | Z |  |  |  |  | V | V | V | V | V |  | V | V | V | V | Y | V | V | V | V | V | Y | Y | Y | Y | Y |
| 2.2 | 225 | Z | Z | Z | Z | Z | Z | Z | Z |  |  |  |  | Y | Y | Y | Y | Y |  | V | V | V | V | Y | V | V | V | V | V | $Y$ | Y | Y | Y | Y |
| 3.3 | 335 | Z | Z | Z | Z | Z | Z | Z | Z |  |  |  |  | Y | Y | Y | $Y$ | Y |  | V | V | V | V |  | V | V | V | V |  | V | V | V | V |  |
| 4.7 | 475 | Z | Z | Z | Z | Z | Z | Z | Z |  |  |  |  | V | V | V | V | $Y$ |  | V | V | V | V |  | V | V | V | V |  | V | V | V | V |  |
| 6.8 | 685 | Z | Z | Z | Z | Z |  |  |  |  |  |  |  | Y | Y | Y | Y |  |  | V | V | V | V |  | V | V | V | V |  | V | V | V | V |  |
| 10 | 106 | Z | Z | Z | Z | Z | Z | Y |  |  |  |  |  | Y | Y | Y | Y |  |  | Y | Y | Y | Y |  | Y | Y | Y | Y |  | Y | Y | Y | Y |  |
| 15 | 156 | Y | Y | Y |  |  |  |  |  |  |  |  |  | A1 | A1 | A1 |  |  |  |  |  |  |  |  | A1 | A1 |  |  |  |  |  |  |  |  |
| 22 | 226 | Y | Y | Y | Y |  |  |  |  |  |  |  |  | Y | Y | Y |  |  |  |  |  |  |  |  | Y | Y | $Y$ |  |  |  |  |  |  |  |
| 33 | 336 |  |  |  |  |  |  |  |  |  |  |  |  | Y | Y |  |  |  |  |  |  |  |  |  | V | V |  |  |  |  |  |  |  |  |
| 47 | 476 | Y | Y |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |  |  |  |  |  |  |  |
| 100 | 107 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


| MAX HEIGHT |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| O | R | T | V | X | Y | Z | A 1 |
| 1.10 | 1.45 | 1.80 | 2.2 | 2.5 | 2.8 | 2.9 | 3.1 |


| DIELECTRIC |  | X7S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DIMENSION (MM) |  | GMC02 |  |  |  | GMC04 |  |  |  |  |  | GMC10 |  |  |  |  |  |  | GMC21 |  |  |  |  |  |  |  | GMC31 |  |  |  |  |  |  |  | GMC32 |  |  |  |  |  |  |  | GMC55 |  |  |  |  |  |
|  |  | $0.6 \pm 0.03$ |  |  |  | $1.0 \pm 0.05$ |  |  |  |  |  | $1.6 \pm 0.2$ |  |  |  |  |  |  | $2.0 \pm 0.3$ |  |  |  |  |  |  |  | $3.2 \pm 0.3$ |  |  |  |  |  |  |  | $3.2 \pm 0.3$ |  |  |  |  |  |  |  | $5.7 \pm 0.4$ |  |  |  |  |  |
|  |  | $0.3 \pm 0.03$ |  |  |  | $0.5 \pm 0.05$ |  |  |  |  |  | $0.8 \pm 0.2$ |  |  |  |  |  |  | $1.25 \pm 0.2$ |  |  |  |  |  |  |  | $1.6 \pm 0.2$ |  |  |  |  |  |  |  | $2.5 \pm 0.3$ |  |  |  |  |  |  |  | $6.3 \pm 0.4$ |  |  |  |  |  |
| BW( |  | $0.15 \pm 0.05$ |  |  |  | $0.1 \sim 0.35$ |  |  |  |  |  | $0.1 \sim 0.4$ |  |  |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  |  |  |  | $0.50 \sim 1.2$ |  |  |  |  |  |
| RATED | AGE | 4 | 6.3 | 10 | 16 | 4/6.3 | 10 | 16 | 25 | 50 | 100 | 4/6.3 | 10 | 16 | 25 | 35 | 50 | 100 | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 100 | 4 | 6 | 10 | 16 | 25 | 35 | 50 | 100 | 4 | 6.3 | 10 | 16 | 25 | 50 | 63 | 100 | 4 | 6.3 | 1016 | 1625 | 25 50 | 5 100 |
| CAP. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1000pF | 102 |  |  |  |  | H | H | H | H | H | H | L | L | L | L | L | L | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1500 | 152 |  |  |  |  | H | H | H | H | H | H | L | L | L | L | L | L | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2200 | 222 |  |  |  |  | H | H | H | H | H | H | L | L | L | L | L | L | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3300 | 332 |  |  |  |  | H | H | H | H | H | H | L | L | L | L | L | L | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4700 | 472 |  |  |  |  | H | H | H | H | H | H | L | L | L | L | L | L | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6800 | 682 |  |  |  |  | H | H | H | H | H | H | L | L | L | L | L | L | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| .01uF | 103 |  |  |  |  | H | H | H | H | H | H | L | L | L | L | L | L | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.022 | 223 | C | C | C |  | H | H | H | H | H | H | L | L | L | L | L | L | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.033 | 333 |  |  |  |  | H | H | H | H | H |  | M | M | M | M | M | M | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.039 | 393 |  |  |  |  | H | H | H | H | H |  | M | M | M | M | M | M | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.047 | 473 | C | C | C |  | H | H | H | H | H |  | M | M | M | M | M | M | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.056 | 563 |  |  |  |  | H | H | H | H | H |  | M | M | M | M | M | M | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.068 | 683 |  |  |  |  | H | H | H | H | H |  | M | M | M | M | M | M | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.082 | 823 |  |  |  |  | H | H | H | H |  |  | M | M | M | M | M | M | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.1 | 104 | C | C | C | C | H | H | H | H |  |  | M | M | M | M | M | M | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.15 | 154 |  |  |  |  |  |  |  |  |  |  | M | M | M | M | M | M |  | R | R | R | R | R | R | R | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.22 | 224 | D | D |  |  | H | H | H |  |  |  | M | M | M | M | M | M |  | R | $R$ | R | R | R | R | R | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.33 | 334 |  |  |  |  | H | H | H |  |  |  | M | M | M | M | M | M |  | R | R | R | R | R | R | R | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.47 | 474 |  |  |  |  | H | H | H |  |  |  | M | M | M | M | M | M |  | R | R | R | R | R | R | R | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.56 | 564 |  |  |  |  |  |  |  |  |  |  | M | M | M |  |  |  |  | R | R | R | R | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.68 | 684 |  |  |  |  | H | H |  |  |  |  | M | M | M | M | M |  |  | R | R | R | R | R | R | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.82 | 824 |  |  |  |  |  |  |  |  |  |  | M | M | M |  |  |  |  | R | $R$ | $R$ | R | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 105 |  |  |  |  | H | H |  |  |  |  | M | M | M | M | M |  |  | R | R | R | R | R | R | R | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.5 | 155 |  |  |  |  | 1 | 1 |  |  |  |  | N | N | N |  |  |  |  | R | $R$ | R | R | R | R | R |  | U | U | U | U | U | U | U | U |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.2 | 225 |  |  |  |  | 1 | 1 |  |  |  |  | N | N | N | N |  |  |  | R | R | R | R | R | R | R |  | U | U | U | U | U | U | U | U | Z | Z | Z | Z | Z | Z |  |  |  |  |  |  |  |  |
| 3.3 | 335 |  |  |  |  |  |  |  |  |  |  | N | N |  |  |  |  |  | R | $\bar{R}$ | R | $\bar{R}$ | R |  |  |  | T | T | T | T | T | T | T | T | Z | Z | Z | Z | Z | Z |  |  |  |  |  |  |  |  |
| 4.7 | 475 |  |  |  |  |  |  |  |  |  |  | N | N | N |  |  |  |  | R | R | R | R | R | R | R |  | U | U | U | U | U | U | U | U | Z | Z | Z | Z | Z | Z |  |  |  |  |  |  |  |  |
| 6.8 | 685 |  |  |  |  |  |  |  |  |  |  | N |  |  |  |  |  |  | R | R | R | R |  |  |  |  | U | U | U | U | U | U |  |  | Z | Z | Z | Z | Z |  |  |  |  |  |  |  | V | V |
| 10 | 106 |  |  |  |  |  |  |  |  |  |  | N |  |  |  |  |  |  | R | R | R | R | R |  |  |  | U | U | U | U | U | U | U |  | Z | Z | Z | Z | Z | Z | Y |  |  |  |  |  | X | X X |
| 15 | 156 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | R | R | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Y | $Y$ Y |
| 22 | 226 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | R | R | R |  |  |  |  |  | U | U | U | U |  |  |  |  | Y | Y | Y | Y | Y |  |  |  |  |  |  |  | Y | $Y$ |
| 33 | 336 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | U | U |  |  |  |  |  |  | Y | Y | Y |  |  |  |  |  |  |  |  |  |  |  |
| 47 | 476 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | U | U |  |  |  |  |  |  | Y | $\bar{Y}$ | Y |  |  |  |  |  |  |  |  |  |  |  |
| 100 | 107 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Z | Z | Z |  |  |  |  |  |  |  |  |  |  |  |

## MAX HEIGHT

| MAX HEIGHT |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| C | D | H | 1 | L | M | N | P | R | T | U | V | X | Y | Z |
| 0.33 | 0.35 | 0.55 | 0.65 | 0.90 | 0.95 | 1.00 | 1.35 | 1.45 | 1.80 | 1.90 | 2.2 | 2.5 | 2.8 | 2.9 |

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| DIELECTRIC |  | X6S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DIMENSION (MM) |  | GMC02 |  |  |  |  |  | GMC04 |  |  |  |  |  |  | GMC10 |  |  |  |  |  |  | GMC21 |  |  |  |  |  |  | GMC31 |  |  |  |  |  |  |  |
| L |  | $0.6 \pm 0.03$ |  |  |  |  |  | $1.0 \pm 0.05$ |  |  |  |  |  |  | $1.6 \pm 0.2$ |  |  |  |  |  |  | $2.0 \pm 0.3$ |  |  |  |  |  |  | $3.2 \pm 0.3$ |  |  |  |  |  |  |  |
| W |  | $0.3 \pm 0.03$ |  |  |  |  |  | $0.5 \pm 0.05$ |  |  |  |  |  |  | $0.8 \pm 0.2$ |  |  |  |  |  |  | $1.25 \pm 0.2$ |  |  |  |  |  |  | $1.6 \pm 0.2$ |  |  |  |  |  |  |  |
| RATED VOLTAGE |  | $0.15 \pm 0.05$ |  |  |  |  |  | $0.1 \sim 0.35$ |  |  |  |  |  |  | 0.1 ~ 0.4 |  |  |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  |  |  |  |
|  |  | 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 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| . 01 uf | 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 | J | J |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.068 | 683 | C | C | C | C |  |  | H | H | H | H | H | $J$ | J |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.082 | 823 | C | C |  |  |  |  | H | H | H | H | H | $J$ | J |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.1 | 104 | C | C | C | C |  |  | 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 | 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 |  |  |  |  |  |  |  |  |
| 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 |  |  |  |  |  |  |  |  |
| 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 | T | T | T | T | T | T | T | T |
| 1.5 | 155 |  |  |  |  |  |  |  |  |  |  |  |  |  | N | N | N | N |  |  |  | R | R | R | R | R | R | R | U | 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 | 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 | U | U | U | U | U | U | U |  |
| 3.9 | 395 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.7 | 475 |  |  |  |  |  |  | 1 | 1 |  |  |  |  |  | N | N | N | N | N |  |  | R | R | R | R | R | R | R | U | U | U | U | U | U | U | U |
| 6.8 | 685 |  |  |  |  |  |  |  |  |  |  |  |  |  | N | N | N |  |  |  |  | R | R | R | R |  |  |  | U | U | U | U | U | U |  |  |
| 10 | 106 |  |  |  |  |  |  | J | J |  |  |  |  |  | N | N | N | N |  |  |  | R | R | R | R | R | R |  | U | U | U | U | U | U | U | U |
| 15 | 156 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | R | R | R | R |  |  |  | U | U | U | U |  |  |  |  |
| 22 | 226 |  |  |  |  |  |  | K |  |  |  |  |  |  | N | 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 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | R |  |  |  |  |  |  | U | U |  |  |  |  |  |  |
| 150 | 157 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | U |  |  |  |  |  |  |  |
| 220 | 227 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | U |  |  |  |  |  |  |  |


| MAX HEIGHT |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| C | E | H | I | J | K | M | N | R | T |  |  |  |  |  |
| 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(L1) |  | $3.2 \pm 0.30$ |  |  |  |  |  |  |  | $4.5 \pm 0.35$ |  |  |  |  |  |  |
| W |  | $2.5 \pm 0.30$ |  |  |  |  |  |  |  | $3.2 \pm 0.30$ |  |  |  |  |  |  |
| BW(L2/LW) |  | $0.75 \pm 0.25$ |  |  |  |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  |  |  |
| RATED VOLTAGE |  | 2.5 | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 |
| CAP. RANGE |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3.3 F | 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 | Z |  |  |  |  | A1 | A1 |  |  |  |  |  |
| 150 | 157 | Z | Z |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 220 | 227 | Z | Z | Z |  |  |  |  |  |  |  |  |  |  |  |  |
| 330 | 337 | Z | Z |  |  |  |  |  |  |  |  |  |  |  |  |  |


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

X5R

| DIELECTRIC |  | X5R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DIMENSION (MM) |  | GMC01 |  |  |  | GMC02 |  |  |  |  |  |  | GMC04 |  |  |  |  |  |  |  | GMC10 |  |  |  |  |  |  | GMC21 |  |  |  |  |  |  |  |
| L(L1) |  | $0.4 \pm 0.02$ |  |  |  | $0.6 \pm 0.03$ |  |  |  |  |  |  | $1.0 \pm 0.05$ |  |  |  |  |  |  |  | $1.6 \pm 0.2$ |  |  |  |  |  |  | $2.0 \pm 0.3$ |  |  |  |  |  |  |  |
| W |  | $0.2 \pm 0.02$ |  |  |  | $0.3 \pm 0.03$ |  |  |  |  |  |  | $0.5 \pm 0.05$ |  |  |  |  |  |  |  | $0.8 \pm 0.2$ |  |  |  |  |  |  | $1.25 \pm 0.2$ |  |  |  |  |  |  |  |
|  |  | $0.07 \sim 0.14$ |  |  |  | $0.15 \pm 0.05$ |  |  |  |  |  |  | $0.1 \sim 0.35$ |  |  |  |  |  |  |  | $0.1 \sim 0.4$ |  |  |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  |  |  |  |
| RATED VOLTAGE |  | 4 V | 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 |  | 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 |  | 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 |  | 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 |  | 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 |  | L | L | L | L | L | L | L |  |  |  |  |  |  |  |  |
| 2700 | 272 | A | A |  |  | C | C | C | C | C |  |  | 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 |  | 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 |  | 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 |  | L | L | L | L | L | L | L |  |  |  |  |  |  |  |  |
| 5600 | 562 | A | A | A |  | C | C | C | C | C |  |  | 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 |  | L | L | L | L | L | L | L |  |  |  |  |  |  |  |  |
| 8200 | 822 | A | A |  |  | C | C | C | C | C | C |  | H | H | H | H | H | H | H |  | L | L | L | L | L | L | L |  |  |  |  |  |  |  |  |
| . 01 uF | 103 | A | A | A | A | C | C | C | C | C | C | C | 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 |  | L | L | L | L | L | L | L |  |  |  |  |  |  |  |  |
| 0.015 | 153 | A | A |  |  | C | C | C | C |  |  |  | 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 |  | 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 |  | L | L | L | L | L | L | L |  |  |  |  |  |  |  |  |
| 0.027 | 273 | A | A |  |  | C | C | C | C |  |  |  | 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 |  | 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 |  | 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 |  | 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 |  | 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 |  | 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 |  | 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 |  | 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 | R |  |
| 0.15 | 154 |  |  |  |  | C | C | C | C | D |  |  | H | H | H | H | H |  |  |  | M | M | M | M | M | M |  | R | R | R | R | R | R | R |  |
| 0.18 | 184 |  |  |  |  |  |  |  |  |  |  |  | H | H | H |  |  |  |  |  | M | M | M | M |  |  |  | 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 |  | 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 |  |
| 0.33 | 334 |  |  |  |  | E | E | E |  |  |  |  | H | H | H | H | H | H |  |  | 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 |  |
| 0.47 | 474 | B |  |  |  | C | C | C | E |  |  |  | J | J | J | J | J | J | J |  | 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 |  |  |  |
| 0.68 | 684 |  |  |  |  |  |  |  |  |  |  |  | H | H | H | H | H | H |  |  | M | M | M | M | M |  |  | R | R | R | R | R | R | R |  |
| 0.82 | 824 |  |  |  |  |  |  |  |  |  |  |  | H | H | H |  |  |  |  |  | M | M | M |  |  |  |  | R | R | R | R | R |  |  |  |
| 1 | 105 | F | F |  |  | C | C | C | C |  |  |  | H | H | H | H | H | H | H |  | 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 |  |  |  |
| 2.2 | 225 |  |  |  |  | E | E | E |  |  |  |  | I | I | 1 | 1 | 1 | 1 |  |  | N | N | N | N | N | N |  | R | R | R | R | R | R | R |  |
| 3.3 | 335 |  |  |  |  |  |  |  |  |  |  |  | H |  |  |  |  |  |  |  | N | N |  |  |  |  |  | R | R | R | R | R | R | R |  |
| 4.7 | 475 |  |  |  |  | H | H |  |  |  |  |  | J | J | J | J |  |  |  |  | N | N | N | N | N |  |  | R | R | R | R | R | R | R |  |
| 6.8 | 685 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | R | R | R | R | R | R | R |  |
| 10 | 106 |  |  |  |  |  |  |  |  |  |  |  | K | K | K |  |  |  |  |  | N | N | N | N | N |  |  | R | R | R | R | R | R | S |  |
| 15 | 156 |  |  |  |  |  |  |  |  |  |  |  | H | H |  |  |  |  |  |  | N | N |  |  |  |  |  | R | R | R | R | R | R |  |  |
| 18 | 186 |  |  |  |  |  |  |  |  |  |  |  | 1 | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22 | 226 |  |  |  |  |  |  |  |  |  |  |  | K | K |  |  |  |  |  |  | N | N | N |  |  |  |  | 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 | 1 | 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 |

[^0]| DIELECTRIC DIMENSION (MM) |  | X5R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | GMC31 |  |  |  |  |  |  |  | GMC32 |  |  |  |  |  |  |  |  | GMC43 |  |  |  |  |  |  | GMC55 |  |  |  |  |  |
| L |  | $3.2 \pm 0.3$ |  |  |  |  |  |  |  | $3.2 \pm 0.3$ |  |  |  |  |  |  |  |  | $4.5 \pm 0.35$ |  |  |  |  |  |  | $5.7 \pm 0.4$ |  |  |  |  |  |
|  |  | $1.6 \pm 0.2$ |  |  |  |  |  |  |  | $2.5 \pm 0.3$ |  |  |  |  |  |  |  |  | $3.2 \pm 0.3$ |  |  |  |  |  |  | $5.0 \pm 0.4$ |  |  |  |  |  |
| BW |  | $0.25 \sim 0.75$ |  |  |  |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  |  |  | $0.50 \sim 1.2$ |  |  |  |  |  |
| RATED VOLTAGE |  | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 100 | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 6.3 | 10 | 16 | 25 | 35 | 50 | 100 | 6.3 | 10 | 16 | 25 | 50 | 100 |
| CAP. RANGE |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| . 1 uF | 104 | M | M | M | M | M | M | M | M | V | V | V | V | V | V | V | V | V |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.12 | 124 | M | M | M | M | M | M | M | M | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | O | $\bigcirc$ | $\bigcirc$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.15 | 154 | P | P | P | P | P | P | P | T | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | Y |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.18 | 184 | P | P | P | P | P | P | P | T | $\bigcirc$ | O | O | $\bigcirc$ | O | O | $\bigcirc$ | O | Y |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.22 | 224 | Q | Q | Q | Q | Q | Q | Q | T | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.27 | 274 | Q | Q | Q | Q | Q | Q | Q | T | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | T |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.33 | 334 | Q | Q | Q | Q | Q | Q | Q | T | $\bigcirc$ | $\bigcirc$ | O | $\bigcirc$ | O | O | $\bigcirc$ | O | O |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.39 | 394 | U | U | U | U | U | U | U | U | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | R | R | $Y$ | Y |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.47 | 474 | U | U | U | U | U | U | U | U | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | O | $\bigcirc$ | O | O | O | $\bigcirc$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.56 | 564 | U | U | U | U | U | U | U | U | R | R | R | R | R | R | R | R | Y |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.68 | 684 | U | U | U | U | U | U | U | U | O | O | O | O | O | O | O | O | T |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.82 | 824 | U | U | U | U | U | U | U | U | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | O | V |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 105 | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | Y |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.5 | 155 | U | U | U | U | U | U | U |  | Z | Z | Z | Z | Z | Z | Z | Z | Z |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.2 | 225 | U | U | U | U | U | U | U | U | Z | Z | Z | Z | Z | Z | Z | Z | Z |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3.3 | 335 | U | U | U | U | U | U | U |  | Z | Z | Z | Z | Z | Z | Z | Z | Z | Y | Y | Y | Y | Y | Y | Y | V | V | V | V | V | V |
| 4.7 | 475 | U | U | U | U | U | U | U | U | Z | Z | Z | Z | Z | Z | Z | Z | Z | V | V | V | V | V | V | Y | V | V | V | V | V | V |
| 6.8 | 685 | U | U | U | U | U | U |  |  | Z | Z | Z | Z | Z |  |  |  |  | Y | Y | Y | Y | $Y$ | Y |  | V | V | V | V | V | $\checkmark$ |
| 10 | 106 | U | U | U | U | U | U | U |  | Z | Z | Z | Z | Z | Z | Y |  |  | Y | Y | Y | Y | Y | Y |  | Y | Y | Y | Y | Y | Y |
| 15 | 156 | T | T | T | T | T | T |  |  | Y | Y | Y | Y |  |  |  |  |  | A1 | A1 | A1 | A1 |  |  |  | A1 | A1 | A1 |  |  |  |
| 22 | 226 | T | T | T | T | T | T |  |  | Y | Y | Y | Y | Y |  |  |  |  | Y | Y | Y | Y |  |  |  | Y | Y | Y | Y | Y |  |
| 33 | 336 | T | T | T | T | T |  |  |  | V | V | V |  |  |  |  |  |  | Y | Y | Y |  |  |  |  | V | V | V |  |  |  |
| 47 | 476 | T | T | T | T | T |  |  |  | Y | Y | Y | Y | Y |  |  |  |  | A1 | A1 |  |  |  |  |  | X | X | X | X |  |  |
| 68 | 686 | U | U | U |  |  |  |  |  | V | V |  |  |  |  |  |  |  | A1 | A1 |  |  |  |  |  | X | X |  |  |  |  |
| 100 | 107 | T | T | T |  |  |  |  |  | Y | Y | Y | Y |  |  |  |  |  | A1 | A1 |  |  |  |  |  | A1 | A1 |  |  |  |  |
| 220 | 227 | U | U |  |  |  |  |  |  | Y | Y | Y |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 330 | 337 |  |  |  |  |  |  |  |  | Y | Y |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


| MAX HEIGHT |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| M | O | P | Q | R | T | U | V | X | Y | Z | A 1 |  |  |  |  |
| 0.95 | 1.1 | 1.35 | 1.40 | 1.45 | 1.80 | 1.9 | 2.2 | 2.5 | 2.80 | 2.9 | 3.1 |  |  |  |  |

## Cal-Chip

| DIELECTRIC |  | Y5V / Z5U |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DIMENSION (MM) |  | GMC02 | GMC04 |  |  |  |  | GMC10 |  |  |  |  | GMC21 |  |  |  |  | GMC31 |  |  |  |  | GMC32 |  |  |  |  | GMC43 |  |  |  |  | GMC55 |  |  |  |  |
|  |  | $0.6 \pm 0.03$ | $1.0 \pm 0.05$ |  |  |  |  | $1.6 \pm 0.2$ |  |  |  |  | $2.0 \pm 0.3$ |  |  |  |  | $3.2 \pm 0.3$ |  |  |  |  | $3.2 \pm 0.3$ |  |  |  |  | $4.5 \pm 0.35$ |  |  |  |  | $5.7 \pm 0.4$ |  |  |  |  |
|  |  | $0.3 \pm 0.03$ | $0.5 \pm 0.05$ |  |  |  |  | $0.8 \pm 0.2$ |  |  |  |  | $1.25 \pm 0.2$ |  |  |  |  | $1.6 \pm 0.2$ |  |  |  |  | $2.5 \pm 0.3$ |  |  |  |  | $3.2 \pm 0.3$ |  |  |  |  | $5.0 \pm 0.4$ |  |  |  |  |
|  |  | $0.15 \pm 0.05$ | $0.1 \sim 0.35$ |  |  |  |  | $0.1 \sim 0.4$ |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  | $0.25 \sim 0.75$ |  |  |  |  | 0.50~1.20 |  |  |  |  |
| RATED VOLTAGE |  | 6.3/10 | 6.3 | 10 | 16 | 25 | 50 | 6.3 | 10 | 16 | 25 | 50 | 6.3 | 10 | 16 | 25 | 50 | 6.3 | 10 | 16 | 25 | 50 | 6.3 | 10 | 16 | 25 | 50 | 6.3 | 10 | 16 | 25 | 50 | 6.3 | 10 | 16 | 25 | 50 |
| CAP. RANGE |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.01 FF | 103 | C | H | H | H | H | H | L | L | L | L | L | M | M | M | M | M | R | R | R | R | R | R | R | R | R | R |  |  |  |  |  |  |  |  |  |  |
| 0.012 | 123 | C | H | H | H | H | H | L | L | L | L | L | M | M | M | M | M | R | R | R | R | R | $\bigcirc$ | O | O | $\bigcirc$ | O |  |  |  |  |  |  |  |  |  |  |
| 0.015 | 153 | C | H | H | H | H | H | L | L | L | L | L | M | M | M | M | M | R | R | R | R | R | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  |  |  |  |  |  |  |  |  |  |
| 0.018 | 183 | C | H | H | H | H | H | L | L | L | L | L | M | M | M | M | M | R | R | R | R | R | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  |  |  |  |  |  |  |  |  |  |
| 0.02 | 203 | C |  |  |  |  |  |  |  |  |  |  | M | M | M | M | M |  |  |  |  |  | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  |  |  |  |  |  |  |  |  |  |
| 0.022 | 223 | C | H | H | H | H | H | L | L | L | L | L | M | M | M | M | M | R | R | R | R | R | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  |  |  |  |  |  |  |  |  |  |
| 0.027 | 273 | C | H | H | H | H | H | L | L | L | L | L | M | M | M | M | M | R | R | R | R | R | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  |  |  |  |  |  |  |  |  |  |
| 0.03 | 303 | C |  |  |  |  |  |  |  |  |  |  | M | M | M | M | M |  |  |  |  |  | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  |  |  |  |  |  |  |  |  |  |
| 0.033 | 333 | C | H | H | H | H | H | M | M | M | M | M | M | M | M | M | M | R | R | R | R | R | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  |  |  |  |  |  |  |  |  |  |
| 0.039 | 393 | C | H | H | H | H | H | M | M | M | M | M | M | M | M | M | M | R | R | R | R | R | $\bigcirc$ | O | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  |  |  |  |  |  |  |  |  |  |
| 0.047 | 473 | C | H | H | H | H | H | M | M | M | M | M | M | M | M | M | M | R | R | R | R | R | $\bigcirc$ | O | $\bigcirc$ | $\bigcirc$ | O | R | R | R | R | R |  |  |  |  |  |
| 0.056 | 563 | C | H | H | H | H | J | M | M | M | M | M | M | M | M | M | M | R | R | R | R | R | $\bigcirc$ | $\bigcirc$ | O | $\bigcirc$ | O | R | R | R | R | R |  |  |  |  |  |
| 0.068 | 683 | C | J | J | J | J | J | M | M | M | M | M | M | M | M | M | M | R | R | R | R | R | $\bigcirc$ | $\bigcirc$ | O | $\bigcirc$ | O | R | R | R | R | R | V | V | V | V | V |
| 0.082 | 823 | C | H | H | H | H | J | M | M | M | M | M | M | M | M | M | M | R | R | R | R | R | O | $\bigcirc$ | O | O | O | R | R | R | R | R | V | V | V | V | V |
| 0.1 | 104 | C | H | H | H | H | J | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | V | V | V | V | V | R | R | R | R | R | V | V | V | V | V |
| 0.12 | 124 |  | H | H | H | H | H | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | R | R | R | R | R | V | V | V | V | V |
| 0.15 | 154 |  | H | H | H | H |  | M | M | M | M | M | R | R | R | R | R | P | P | P | P | P | $\bigcirc$ | O | O | $\bigcirc$ | $\bigcirc$ | R | R | R | R | R | V | V | V | $V$ | V |
| 0.18 | 184 |  | H | H | H | H |  |  |  |  |  |  | R | R | R | R | R | P | P | P | P | P | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | O | R | R | R | R | R | V | V | V | V | V |
| 0.22 | 224 |  | H | H | H | H |  | M | M | M | M | M | R | R | R | R | R | Q | Q | Q | Q | Q | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | R | R | R | R | R | V | V | V | V | V |
| 0.27 | 274 |  | H | H | H |  |  | M | M | M | M | M | R | R | R | R | R | Q | Q | Q | Q | Q | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | R | R | R | R | R | V | V | V | V | V |
| 0.33 | 334 |  | H | H | H |  |  | M | M | M | M | M | R | R | R | R | R | Q | Q | Q | Q | Q | $\bigcirc$ | O | $\bigcirc$ | $\bigcirc$ | O | R | R | R | R | R | V | V | V | V | V |
| 0.39 | 394 |  | H | H | H |  |  | M | M | M | M | M | R | R | R | R | R | U | U | U | U | U | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | R | R | R | R | R | R | R | V | V | V | V | V |
| 0.47 | 474 |  | H | H | H |  |  | M | M | M | M | M | R | R | R | R | R | U | U | U | U | U | $\bigcirc$ | $\bigcirc$ | O | O | O | R | R | R | R | R | V | V | V | V | V |
| 0.56 | 564 |  | H | H | H |  |  | M | M | M | M | M | R | R | R | R | R | U | U | U | U | U | R | R | R | R | R | R | R | R | R | R | V | V | V | V | V |
| 0.68 | 684 |  | H | H | H |  |  | M | M | M | M | M | R | R | R | R | R | U | U | U | U | U | O | O | O | O | O | R | R | R | R | V | V | V | V | V | V |
| 0.82 | 824 |  | H | H | H |  |  | M | M | M | M | M | R | R | R | R | R | U | U | U | U | U | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | O | R | R | R | R | V | V | V | V | V | V |
| 1.0uF | 105 |  | H | H | H | H |  | M | M | M | M | M | R | R | R | R | R | T | T | T | T | T | T | T | T | T | T | V | V | V | V | V | V | V | V | V | V |
| 1.2 | 125 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | U | U | U | U | U | Z | Z | Z | Z | Z | V | V | V | V | V | V | V | V | V | V |
| 1.5 | 155 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | U | U | U | U | U | Z | Z | Z | Z | Z | V | V | V | V | V | V | V | V | V | V |
| 2.2 | 225 |  |  |  |  |  |  | M | M | M |  |  | R | R | R | R | R | U | U | U | U | U | Z | Z | Z | Z | Z | Y | Y | Y | Y | Y | V | V | V | V | V |
| 2.7 | 275 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | V | V | $V$ | V | V |
| 3.3 | 335 |  |  |  |  |  |  |  |  |  |  |  | R | R | R | R | R | U | U | U | U | U | Z | Z | Z | Z | Z | Y | Y | Y | Y | Y | V | V | V | V | V |
| 4.7 | 475 |  |  |  |  |  |  | M | M |  |  |  | R | R | R | R | R | U | U | U | U | U | Z | Z | Z | Z | Z | V | V | V | V | V | V | V | V | V | V |
| 5.6 | 565 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | V | V | V | V | V |
| 6.8 | 685 |  |  |  |  |  |  |  |  |  |  |  | R | R | R |  |  | U | U | U | U | U | Z | Z | Z | Z |  | Y | Y | Y | Y | Y | V | V | V | V | V |
| 8.2 | 825 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Z | Z | Z | Z | Z |  |  |  |  |  |  |  |  |  |  |
| 10 | 106 |  |  |  |  |  |  |  |  |  |  |  | R | R | R |  |  | U | U | U | U | U | Y | $Y$ | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 15 | 156 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Y | Y | Y |  |  | A1 | A1 | A1 | A1 |  | A1 | A1 | A1 |  |  |
| 22 | 226 |  |  |  |  |  |  | N | N |  |  |  | R | R | R |  |  | T | T | T |  |  | Y | Y | Y | Y |  | Y | Y | Y | Y |  | Y | Y | Y | Y | Y |
| 33 | 336 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | T | T |  |  |  | V | V |  |  |  | Y | Y | Y |  |  | V | V | V |  |  |
| 47 | 476 |  |  |  |  |  |  | N |  |  |  |  | R | R |  |  |  | T | T |  |  |  | Y | Y | Y | Y |  | A1 | A1 | A1 |  |  | X | X | X | X |  |
| 68 | 686 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | T | T |  |  |  |  |  |  |  |  | A1 |  |  |  |  | X | X |  |  |  |
| 100 | 107 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | T | T |  |  |  | Y | Y |  |  |  | A1 | A1 |  |  |  | A1 | A1 | A1 |  |  |
| 220 | 227 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 330 | 337 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |




| SYMBOL | TAPE WIDTH | A | B | $C$ | $D$ | $E$ | $W$ | C |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 8 mm | $\varnothing 178 \pm 2.0$ | MIN $\varnothing 50$ | $\varnothing 13 \pm 0.5$ | $21 \pm 0.8$ | $2.0 \pm 0.5$ | $10 \pm 0.5$ | $0.9 \pm 0.2$ |
|  | 12 mm | $\varnothing 178 \pm 2.0$ | MIN $\varnothing 50$ | $\varnothing 13 \pm 0.5$ | $21 \pm 0.8$ | $2.0 \pm 0.5$ | $13 \pm 0.5$ | $1.2 \pm 0.2$ |
| 10 " Reel | 8 mm | $\varnothing 258 \pm 2.0$ | MIN $\varnothing 70$ | $\varnothing 13 \pm 0.5$ | $21 \pm 0.8$ | $2.0 \pm 0.5$ | $10 \pm 0.5$ | $1.8 \pm 0.2$ |
|  | 8 mm | $\varnothing 330 \pm 2.0$ | MIN $\varnothing 70$ | $\varnothing 13 \pm 0.5$ | $21 \pm 0.8$ | $2.0 \pm 0.5$ | $10 \pm 0.5$ | $1.8 \pm 0.2$ |
|  | 12 mm | $\varnothing 330 \pm 2.0$ | MIN $\varnothing 70$ | $\varnothing 13 \pm 0.5$ | $21 \pm 0.8$ | $2.0 \pm 0.5$ | $13 \pm 0.5$ | $2.2 \pm 0.2$ |

## 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

## Cal-Chip

59 Steamwhistle Drive, Ivyland, PA 18974 | p. 215.942 .8900 | www.calchip.com | quotes@calchip.com


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

| TYPE | Ao | Bo | T | Ko | w | Po | 10XPo | $P_{1}$ | $\mathrm{P}_{2}$ | Do | D1 | E | F | MOUNTING HOLE | STD. REEL QTY 7" | $\begin{array}{\|c\|c\|c\|c\|c\|c\|c\|c\|c\|c\|c\|} \hline \text { REEL OTY } \\ \left(10 / 13^{\prime}\right) \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0805 | <1.80 | <2.70 | $0.23 \pm 0.10$ | <2.50 | $8.0 \pm 0.20$ | $4.0 \pm 0.10$ | $40.0 \pm 0.20$ | $4.0 \pm 0.10$ | $2.0 \pm 0.05$ | $1.5 \pm 0.10$ | $1.0 \pm 0.10$ | $1.75 \pm 0.10$ | $3.5 \pm 0.05$ |  | $\begin{aligned} & 2,000 \\ & 3,000 \end{aligned}$ | $\begin{aligned} & 10,000 \mathrm{D} \\ & 15,000 \mathrm{G} \end{aligned}$ |
| 1206 | <2.30 | <4.00 | $0.23 \pm 0.10$ | <2.50 | $8.0 \pm 0.20$ | $4.0 \pm 0.10$ | $40.0 \pm 0.20$ | $4.0 \pm 0.10$ | $2.0 \pm 0.05$ | $1.5 \pm 0.10$ | $1.0 \pm 0.10$ | $1.75 \pm 0.10$ | $3.5 \pm 0.05$ |  | $\begin{aligned} & 2,000 \\ & 3,000 \end{aligned}$ | $\begin{aligned} & 8,000 \mathrm{D} \\ & 10,000 \mathrm{G} \end{aligned}$ |
| 1210 | <3.20 | <3.95 | $0.23 \pm 0.10$ | <3.00 | $8.0 \pm 0.20$ | $4.0 \pm 0.10$ | $40.0 \pm 0.20$ | $4.0 \pm 0.10$ | $2.0 \pm 0.05$ | $1.5 \pm 0.10$ | $1.0 \pm 0.10$ | $1.75 \pm 0.10$ | $3.5 \pm 0.05$ |  | $\begin{array}{\|c\|} \hline 500 \\ 1,0002,000 \\ 3,000 \end{array}$ | $\begin{aligned} & 4,000 \mathrm{D} \\ & 8,000 \mathrm{G} \end{aligned}$ |
| 1808 | <2.50 | <5.30 | $0.25 \pm 0.10$ | <2.50 | $12.0 \pm 0.20$ | $4.0 \pm 0.10$ | $40.0 \pm 0.20$ | $4.0 \pm 0.10$ | $2.0 \pm 0.05$ | $1.5 \pm 0.10$ | $1.0 \pm 0.10$ | $1.75 \pm 0.10$ | $5.5 \pm 0.10$ | Angular | $\begin{aligned} & 1,000 \\ & 2,000 \\ & 3,000 \\ & \hline \end{aligned}$ |  |
| 1812 | <3.90 | <5.30 | $0.25 \pm 0.10$ | <3.50 | $12.0 \pm 0.20$ | $4.0 \pm 0.10$ | 40.0 $\pm 0.20$ | $8.0 \pm 0.10$ | $2.0 \pm 0.05$ | $1.5 \pm 0.10$ | $1.5 \pm 0.10$ | $1.75 \pm 0.10$ | $5.5 \pm 0.10$ |  | $\begin{gathered} 500 \\ 1,000 \end{gathered}$ | 3,000 D |
| 1825 | <6.80 | <5.30 | $0.30 \pm 0.10$ | <3.10 | $12.0 \pm 0.20$ | $4.0 \pm 0.10$ | $40.0 \pm 0.20$ | $8.0 \pm 0.10$ | $2.0 \pm 0.05$ | $1.5 \pm 0.10$ | $1.5 \pm 0.10$ | $1.75 \pm 0.10$ | $5.5 \pm 0.10$ |  | $\begin{gathered} 500 \\ 1,000 \end{gathered}$ |  |
| 2220 | <5.80 | <6.50 | $0.30 \pm 0.10$ | <3.10 | $12.0 \pm 0.20$ | $4.0 \pm 0.10$ | $40.0 \pm 0.20$ | $8.0 \pm 0.10$ | $2.0 \pm 0.05$ | $1.5 \pm 0.10$ | $1.5 \pm 0.10$ | $1.75 \pm 0.10$ | $5.5 \pm 0.10$ |  | $\begin{gathered} 500 \\ 700 \\ 1,000 \end{gathered}$ |  |
| 2225 | <6.80 | <6.50 | $0.30 \pm 0.10$ | <3.10 | 12.0 $\pm 0.20$ | $4.0 \pm 0.10$ | 40.0 $\pm 0.20$ | $8.0 \pm 0.10$ | $2.0 \pm 0.05$ | $1.5 \pm 0.10$ | $1.5 \pm 0.10$ | $1.75 \pm 0.10$ | $5.5 \pm 0.10$ |  | $\begin{aligned} & 500 \\ & 700 \end{aligned}$ |  |

WARRANTY: All passive components supplied by Calchip Electronics, 59 Steamwhistle Drive, Ivyland, PA. 18974, are under warranty for a period of 2 years from the date of manufacture. Product will meet or exceed all reliability and test specifications expressed by Calchip for the above mentioned time period provided storage conditions (stated below) are met. Product Storage Instructions:

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.
**WHEN THESE CONDITIONS ARE NOT MET, PRODUCT LIFE COULD BE SHORTENED*****
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[^0]:    * L 0.6 $\pm 0.09$ | W 0.3 $\pm 0.09$

