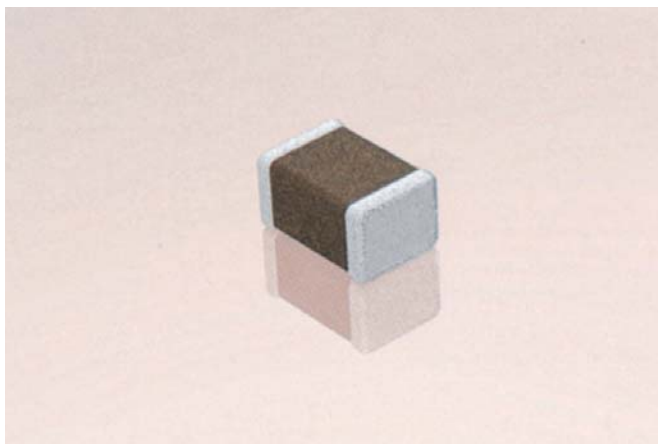


# Y5V Dielectric

## General Specifications



Y5V formulations are for general-purpose use in a limited temperature range. They have a wide temperature characteristic of +22% -82% capacitance change over the operating temperature range of -30°C to +85°C.

These characteristics make Y5V ideal for decoupling applications within limited temperature range.

### PART NUMBER (see page 2 for complete part number explanation)

**0805**

**Size**  
(L" x W")

**3**

**Voltage**  
6.3V = 6  
10V = Z  
16V = Y  
25V = 3  
50V = 5

**G**

**Dielectric**  
Y5V = G

**104**

**Capacitance Code (In pF)**  
2 Sig. Digits + Number of Zeros

**Z**

**Capacitance Tolerance**  
Z = +80 -20%

**A**

**Failure Rate**  
A = Not Applicable

**T**

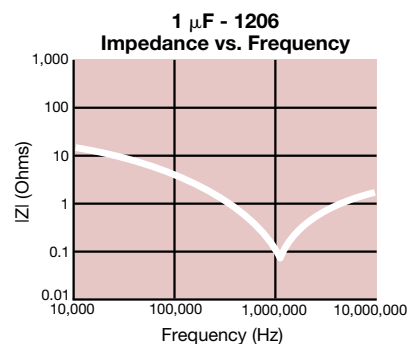
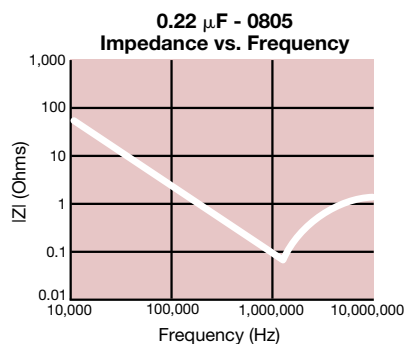
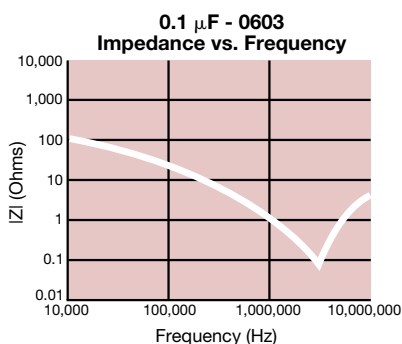
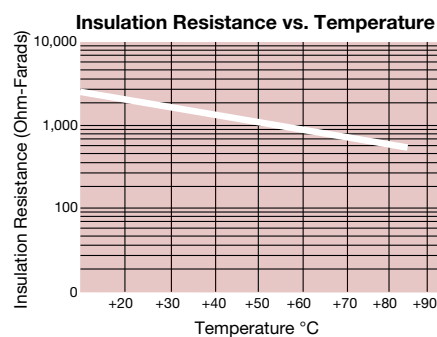
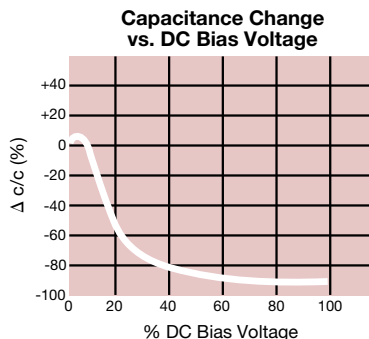
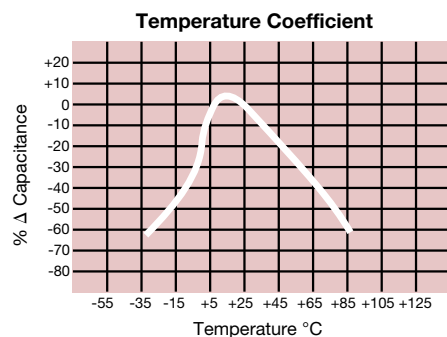
**Terminations**  
T = Plated Ni and Sn

**2**

**Packaging**  
2 = 7" Reel  
4 = 13" Reel

**A**

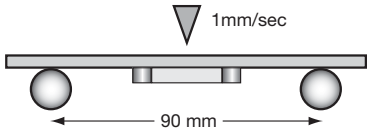
**Special Code**  
A = Std. Product



# Y5V Dielectric



## Specifications and Test Methods

| Parameter/Test                 |                       | Y5V Specification Limits                                                                                                                        | Measuring Conditions                                                                                                                                                                                                                                |                    |
|--------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Operating Temperature Range    |                       | -30°C to +85°C                                                                                                                                  | Temperature Cycle Chamber                                                                                                                                                                                                                           |                    |
| Capacitance                    |                       | Within specified tolerance                                                                                                                      | Freq.: 1.0 kHz $\pm$ 10%<br>Voltage: 1.0Vrms $\pm$ .2V<br>For Cap > 10 $\mu$ F, 0.5Vrms @ 120Hz                                                                                                                                                     |                    |
| Dissipation Factor             |                       | $\leq$ 5.0% for $\geq$ 50V DC rating<br>$\leq$ 7.0% for 25V DC rating<br>$\leq$ 9.0% for 16V DC rating<br>$\leq$ 12.5% for $\leq$ 10V DC rating |                                                                                                                                                                                                                                                     |                    |
| Insulation Resistance          |                       | 10,000M $\Omega$ or 500M $\Omega$ - $\mu$ F, whichever is less                                                                                  | Charge device with rated voltage for 120 $\pm$ 5 secs @ room temp/humidity                                                                                                                                                                          |                    |
| Dielectric Strength            |                       | No breakdown or visual defects                                                                                                                  | Charge device with 300% of rated voltage for 1-5 seconds, w/charge and discharge current limited to 50 mA (max)                                                                                                                                     |                    |
| Resistance to Flexure Stresses | Appearance            | No defects                                                                                                                                      | Deflection: 2mm<br>Test Time: 30 seconds<br>                                                                                                                     |                    |
|                                | Capacitance Variation | $\leq \pm 30\%$                                                                                                                                 |                                                                                                                                                                                                                                                     |                    |
|                                | Dissipation Factor    | Meets Initial Values (As Above)                                                                                                                 |                                                                                                                                                                                                                                                     |                    |
|                                | Insulation Resistance | $\geq$ Initial Value x 0.1                                                                                                                      |                                                                                                                                                                                                                                                     |                    |
| Solderability                  |                       | $\geq$ 95% of each terminal should be covered with fresh solder                                                                                 | Dip device in eutectic solder at 230 $\pm$ 5°C for 5.0 $\pm$ 0.5 seconds                                                                                                                                                                            |                    |
| Resistance to Solder Heat      | Appearance            | No defects, <25% leaching of either end terminal                                                                                                | Dip device in eutectic solder at 260°C for 60 seconds. Store at room temperature for 24 $\pm$ 2 hours before measuring electrical properties.                                                                                                       |                    |
|                                | Capacitance Variation | $\leq \pm 20\%$                                                                                                                                 |                                                                                                                                                                                                                                                     |                    |
|                                | Dissipation Factor    | Meets Initial Values (As Above)                                                                                                                 |                                                                                                                                                                                                                                                     |                    |
|                                | Insulation Resistance | Meets Initial Values (As Above)                                                                                                                 |                                                                                                                                                                                                                                                     |                    |
|                                | Dielectric Strength   | Meets Initial Values (As Above)                                                                                                                 |                                                                                                                                                                                                                                                     |                    |
| Thermal Shock                  | Appearance            | No visual defects                                                                                                                               | Step 1: -30°C $\pm$ 2°                                                                                                                                                                                                                              | 30 $\pm$ 3 minutes |
|                                | Capacitance Variation | $\leq \pm 20\%$                                                                                                                                 | Step 2: Room Temp                                                                                                                                                                                                                                   | $\leq$ 3 minutes   |
|                                | Dissipation Factor    | Meets Initial Values (As Above)                                                                                                                 | Step 3: +85°C $\pm$ 2°                                                                                                                                                                                                                              | 30 $\pm$ 3 minutes |
|                                | Insulation Resistance | Meets Initial Values (As Above)                                                                                                                 | Step 4: Room Temp                                                                                                                                                                                                                                   | $\leq$ 3 minutes   |
|                                | Dielectric Strength   | Meets Initial Values (As Above)                                                                                                                 | Repeat for 5 cycles and measure after 24 $\pm$ 2 hours at room temperature                                                                                                                                                                          |                    |
| Load Life                      | Appearance            | No visual defects                                                                                                                               | Charge device with twice rated voltage in test chamber set at 85°C $\pm$ 2°C for 1000 hours (+48, -0)<br><br>Remove from test chamber and stabilize at room temperature for 24 $\pm$ 2 hours before measuring.                                      |                    |
|                                | Capacitance Variation | $\leq \pm 30\%$                                                                                                                                 |                                                                                                                                                                                                                                                     |                    |
|                                | Dissipation Factor    | $\leq$ Initial Value x 1.5 (See Above)                                                                                                          |                                                                                                                                                                                                                                                     |                    |
|                                | Insulation Resistance | $\geq$ Initial Value x 0.1 (See Above)                                                                                                          |                                                                                                                                                                                                                                                     |                    |
|                                | Dielectric Strength   | Meets Initial Values (As Above)                                                                                                                 |                                                                                                                                                                                                                                                     |                    |
| Load Humidity                  | Appearance            | No visual defects                                                                                                                               | Store in a test chamber set at 85°C $\pm$ 2°C/ 85% $\pm$ 5% relative humidity for 1000 hours (+48, -0) with rated voltage applied.<br><br>Remove from chamber and stabilize at room temperature and humidity for 24 $\pm$ 2 hours before measuring. |                    |
|                                | Capacitance Variation | $\leq \pm 30\%$                                                                                                                                 |                                                                                                                                                                                                                                                     |                    |
|                                | Dissipation Factor    | $\leq$ Initial Value x 1.5 (See above)                                                                                                          |                                                                                                                                                                                                                                                     |                    |
|                                | Insulation Resistance | $\geq$ Initial Value x 0.1 (See Above)                                                                                                          |                                                                                                                                                                                                                                                     |                    |
|                                | Dielectric Strength   | Meets Initial Values (As Above)                                                                                                                 |                                                                                                                                                                                                                                                     |                    |

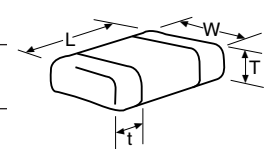
# Y5V Dielectric

## Capacitance Range



PREFERRED SIZES ARE SHADED

| SIZE         | 0201                   | 0402          | 0603        | 0805           | 1206           | 1210           |
|--------------|------------------------|---------------|-------------|----------------|----------------|----------------|
| Soldering    | Reflow Only            | Reflow/Wave   | Reflow/Wave | Reflow/Wave    | Reflow/Wave    | Reflow Only    |
| Packaging    | All Paper              | All Paper     | All Paper   | Paper/Embossed | Paper/Embossed | Paper/Embossed |
| (L) Length   | mm<br>(in.)            | mm<br>(in.)   | mm<br>(in.) | mm<br>(in.)    | mm<br>(in.)    | mm<br>(in.)    |
| (W) Width    | mm<br>(in.)            | mm<br>(in.)   | mm<br>(in.) | mm<br>(in.)    | mm<br>(in.)    | mm<br>(in.)    |
| (t) Terminal | mm<br>(in.)            | mm<br>(in.)   | mm<br>(in.) | mm<br>(in.)    | mm<br>(in.)    | mm<br>(in.)    |
| WVDC         | 6.3 10                 | 6 10 16 25 50 | 10 16 25 50 | 10 16 25 50    | 10 16 25 50    | 10 16 25 50    |
| Cap (pF)     | 820<br>1000<br>2200    | A<br>A<br>A   |             |                |                |                |
| Cap (μF)     | 4700<br>0.010<br>0.022 | A<br>A<br>A   |             |                |                |                |
|              | 0.047<br>0.10<br>0.22  |               | C<br>C<br>C | G<br>G<br>G    | K              |                |
|              | 0.33<br>0.47<br>1.0    |               | C<br>C<br>C | G<br>G<br>G    | N<br>N<br>N    | M<br>M<br>M    |
|              | 2.2<br>4.7<br>10.0     |               | C           |                | N<br>N         | P<br>Q         |
|              | 22.0<br>47.0           |               |             |                | Q              | X<br>Q         |
| WVDC         | 6.3 10                 | 6 10 16 25 50 | 10 16 25 50 | 10 16 25 50    | 10 16 25 50    | 10 16 25 50    |
| SIZE         | 0201                   | 0402          | 0603        | 0805           | 1206           | 1210           |



| Letter         | A               | C               | E               | G               | J               | K               | M               | N               | P               | Q               | X               | Y               | Z               |
|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Max. Thickness | 0.33<br>(0.013) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.90<br>(0.035) | 0.94<br>(0.037) | 1.02<br>(0.040) | 1.27<br>(0.050) | 1.40<br>(0.055) | 1.52<br>(0.060) | 1.78<br>(0.070) | 2.29<br>(0.090) | 2.54<br>(0.100) | 2.79<br>(0.110) |
|                | PAPER           |                 |                 |                 |                 | EMBOSS          |                 |                 |                 |                 |                 |                 |                 |

