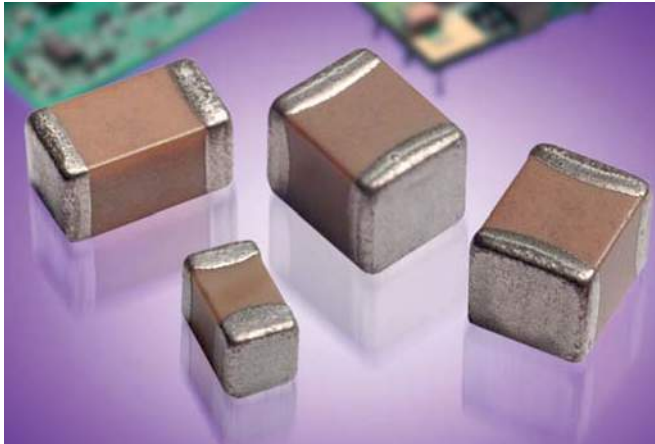


Y5V Dielectric

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

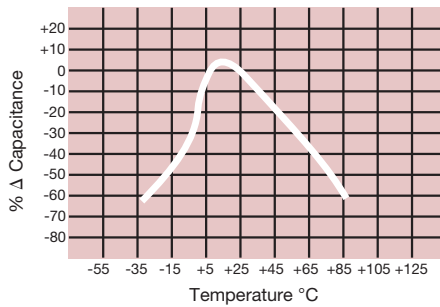
2

Packaging
2 = 7" Reel
4 = 13" Reel

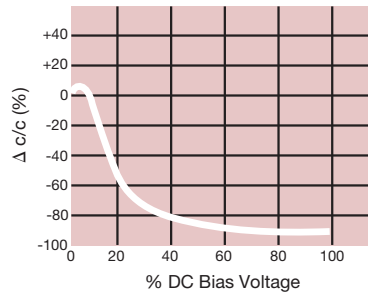
A

Special Code
A = Std. Product

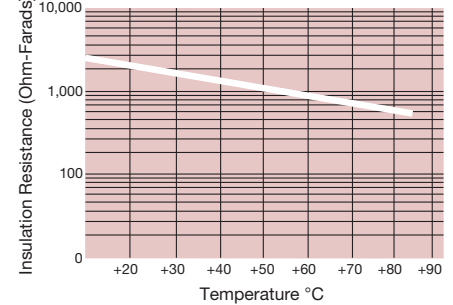
Temperature Coefficient



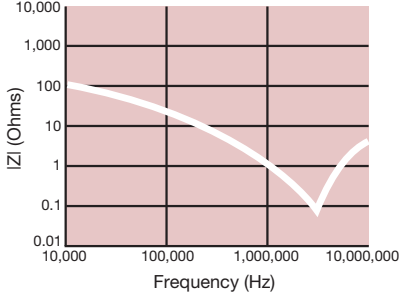
Capacitance Change vs. DC Bias Voltage



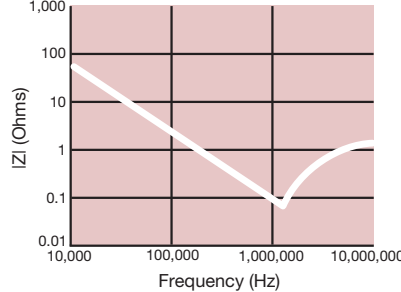
Insulation Resistance vs. Temperature



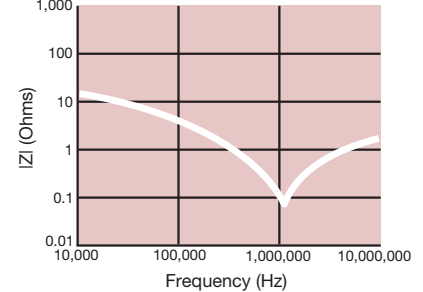
0.1 μF - 0603 Impedance vs. Frequency



0.22 μF - 0805 Impedance vs. Frequency



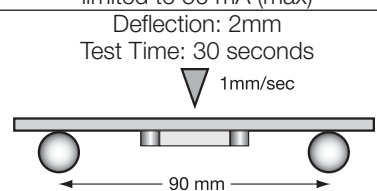
1 μF - 1206 Impedance vs. Frequency



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 | | |
| Dissipation Factor | | $\leq 5.0\%$ for $\geq 50V$ DC rating $\leq 7.0\%$ for 25V DC rating $\leq 9.0\%$ for 16V DC rating $\leq 12.5\%$ for $\leq 10V$ DC rating | Freq.: 1.0 kHz $\pm 10\%$ Voltage: 1.0Vrms $\pm .2V$ For Cap > 10 μF , 0.5Vrms @ 120Hz | |
| Insulation Resistance | | 10,000M Ω or 500M Ω - μF , whichever is less | Charge device with rated voltage for 120 ± 5 secs @ room temp/humidity | |
| Dielectric Strength | | No breakdown or visual defects | Charge device with 250% 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 Test Time: 30 seconds  | |
| | 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 $\pm 5^\circ C$ for 5.0 ± 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 ± 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 $\pm 2^\circ$ | 30 ± 3 minutes |
| | Capacitance Variation | $\leq \pm 20\%$ | Step 2: Room Temp | ≤ 3 minutes |
| | Dissipation Factor | Meets Initial Values (As Above) | Step 3: +85°C $\pm 2^\circ$ | 30 ± 3 minutes |
| | Insulation Resistance | Meets Initial Values (As Above) | Step 4: Room Temp | ≤ 3 minutes |
| | Dielectric Strength | Meets Initial Values (As Above) | Repeat for 5 cycles and measure after 24 ± 2 hours at room temperature | |
| | Load Life | | No visual defects | Charge device with twice rated voltage in test chamber set at 85°C $\pm 2^\circ C$ for 1000 hours (+48, -0) |
| Load Humidity | Appearance | No visual defects | Remove from test chamber and stabilize at room temperature for 24 ± 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 $\pm 2^\circ C$ / 85% $\pm 5\%$ relative humidity for 1000 hours (+48, -0) with rated voltage applied. | |
| | 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) | | |

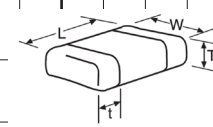
Y5V Dielectric

Capacitance Range



PREFERRED SIZES ARE SHADED

| Size | 0201 | | 0402 | | | | 0603 | | | | 0805 | | | | 1206 | | | | 1210 | | | |
|--------------|-------------|-----------------|-----------------|-------------|-------------|-------------|-----------------|-------------|-------------|-------------|-----------------|-------------|-------------|-------------|-----------------|--|--|--|-----------------|--|--|--|
| Soldering | Reflow Only | | Reflow/Wave | | | | Reflow/Wave | | | | Reflow/Wave | | | | Reflow/Wave | | | | | | | |
| Packaging | All Paper | | All Paper | | | | All Paper | | | | Paper/Embossed | | | | Paper/Embossed | | | | Paper/Embossed | | | |
| (L) Length | mm | 0.60 ± 0.09 | 1.00 ± 0.10 | | | | 1.60 ± 0.15 | | | | 2.01 ± 0.20 | | | | 3.20 ± 0.20 | | | | 3.20 ± 0.20 | | | |
| | (in.) | (0.024 ± 0.004) | (0.040 ± 0.004) | | | | (0.063 ± 0.006) | | | | (0.079 ± 0.008) | | | | (0.126 ± 0.008) | | | | (0.126 ± 0.008) | | | |
| (W) Width | mm | 0.30 ± 0.09 | 0.50 ± 0.10 | | | | .81 ± 0.15 | | | | 1.25 ± 0.20 | | | | 1.60 ± 0.20 | | | | 2.50 ± 0.20 | | | |
| | (in.) | (0.011 ± 0.004) | (0.020 ± 0.004) | | | | (0.032 ± 0.006) | | | | (0.049 ± 0.008) | | | | (0.063 ± 0.008) | | | | (0.098 ± 0.008) | | | |
| (t) Terminal | mm | 0.15 ± 0.05 | 0.25 ± 0.15 | | | | 0.35 ± 0.15 | | | | 0.50 ± 0.25 | | | | 0.50 ± 0.25 | | | | .50 ± 0.25 | | | |
| | (in.) | (0.006 ± 0.002) | (0.010 ± 0.006) | | | | (0.014 ± 0.006) | | | | (0.020 ± 0.010) | | | | (0.020 ± 0.010) | | | | (0.020 ± 0.010) | | | |
| 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 | 10 16 25 50 | 10 16 25 50 | 10 16 25 50 | 10 16 25 50 | 10 16 25 50 | 10 16 25 50 | 10 16 25 50 | 10 16 25 50 | | | | | | | |
| Cap (pF) | 820 | | | | | | | | | | | | | | | | | | | | | |
| | 1000 | | | | | | | | | | | | | | | | | | | | | |
| | 2200 | | | | | | | | | | | | | | | | | | | | | |
| Cap (µF) | 4700 | | | | | | | | | | | | | | | | | | | | | |
| | 0.010 | | | | | | | | | | | | | | | | | | | | | |
| | 0.022 | | | | | | | | | | | | | | | | | | | | | |
| | 0.047 | | | | | | | | | | | | | | | | | | | | | |
| | 0.10 | | | | | | | | | | | | | | | | | | | | | |
| | 0.22 | | | | | | | | | | | | | | | | | | | | | |
| | 0.33 | | | | | | | | | | | | | | | | | | | | | |
| | 0.47 | | | | | | | | | | | | | | | | | | | | | |
| | 1.0 | | | | | | | | | | | | | | | | | | | | | |
| | 2.2 | | | | | | | | | | | | | | | | | | | | | |
| | 4.7 | | | | | | | | | | | | | | | | | | | | | |
| | 10.0 | | | | | | | | | | | | | | | | | | | | | |
| | 22.0 | | | | | | | | | | | | | | | | | | | | | |
| | 47.0 | | | | | | | | | | | | | | | | | | | | | |
| 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 | 10 16 25 50 | 10 16 25 50 | 10 16 25 50 | 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 (0.013) | 0.56 (0.022) | 0.71 (0.028) | 0.90 (0.035) | 0.94 (0.037) | 1.02 (0.040) | 1.27 (0.050) | 1.40 (0.055) | 1.52 (0.060) | 1.78 (0.070) | 2.29 (0.090) | 2.54 (0.100) | 2.79 (0.110) |
| | PAPER | | | | | EMBOSSSED | | | | | | | |

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