

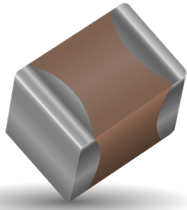


**THE DATASHEET OF  
0603YG224ZAT2A**



# Y5V Dielectric

## General Specifications



### GENERAL DESCRIPTION

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 4 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

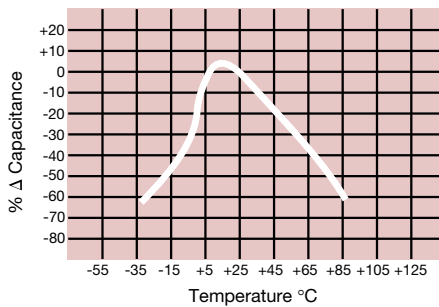
**2**

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

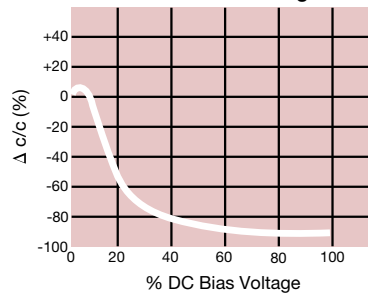
**A**

**Special Code**  
A = Std. Product

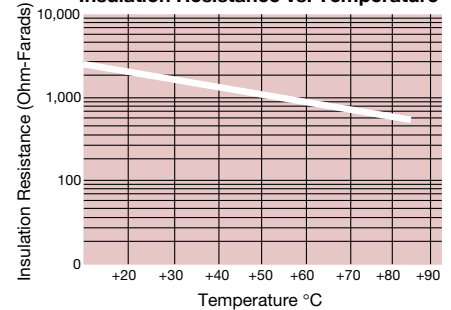
**Temperature Coefficient**



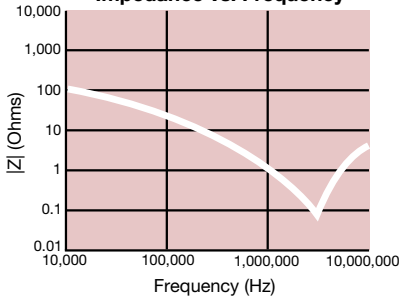
**Capacitance Change vs. DC Bias Voltage**



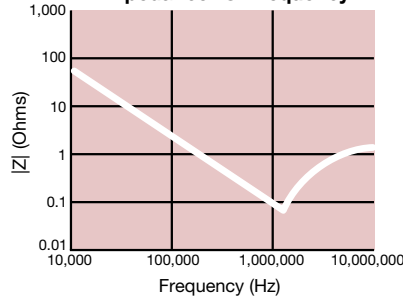
**Insulation Resistance vs. Temperature**



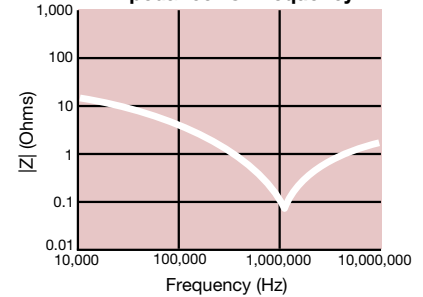
**0.1 μF - 0603 Impedance vs. Frequency**



**0.22 μF - 0805 Impedance vs. Frequency**

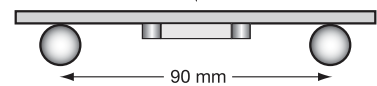


**1 μF - 1206 Impedance vs. Frequency**



# Y5V Dielectric

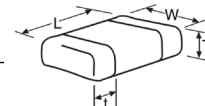
## Specifications and Test Methods

Parameter/Test		Y5V Specification Limits	Measuring Conditions	
Operating Temperature Range		-30°C to +85°C	Temperature Cycle Chamber	
Capacitance		Within specified tolerance	Freq.: 1.0 kHz ± 10% Voltage: 1.0Vrms ± .2V For Cap > 10 µF, 0.5Vrms @ 120Hz	
Dissipation Factor		≤ 5.0% for ≥ 50V DC rating ≤ 7.0% for 25V DC rating ≤ 9.0% for 16V DC rating ≤ 12.5% for ≤ 10V DC rating		
Insulation Resistance		10,000MΩ or 500MΩ - µF, whichever is less		
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 1mm/sec 	
	Capacitance Variation	≤ ±30%		
	Dissipation Factor	Meets Initial Values (As Above)		
	Insulation Resistance	≥ Initial Value x 0.1		
Solderability		≥ 95% of each terminal should be covered with fresh solder	Dip device in eutectic solder at 230 ± 5°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	≤ ±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 ± 2°	30 ± 3 minutes
	Capacitance Variation	≤ ±20%	Step 2: Room Temp	≤ 3 minutes
	Dissipation Factor	Meets Initial Values (As Above)	Step 3: +85°C ± 2°	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	Appearance	No visual defects	Charge device with twice rated voltage in test chamber set at 85°C ± 2°C for 1000 hours (+48, -0)  Remove from test chamber and stabilize at room temperature for 24 ± 2 hours before measuring.	
	Capacitance Variation	≤ ±30%		
	Dissipation Factor	≤ Initial Value x 1.5 (See Above)		
	Insulation Resistance	≥ 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 ± 2°C/ 85% ± 5% relative humidity for 1000 hours (+48, -0) with rated voltage applied.  Remove from chamber and stabilize at room temperature and humidity for 24 ± 2 hours before measuring.	
	Capacitance Variation	≤ ±30%		
	Dissipation Factor	≤ Initial Value x 1.5 (See above)		
	Insulation Resistance	≥ 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/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
Cap (pF)	820																								
	1000		A																						
	2200		A																						
Cap (µF)	4700		A																						
	0.010	A	A																						
	0.022	A																							
	0.047	A																							
	0.10					C	C																		
	0.22																								
	0.33																								
	0.47																								
	1.0					C	C																		
	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
SIZE	0201				0402				0603				0805				1206				1210				



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

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