

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

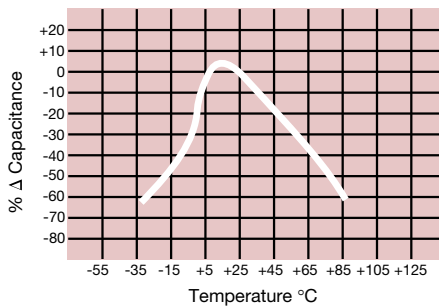
2

Packaging
2 = 7" Reel
4 = 13" Reel

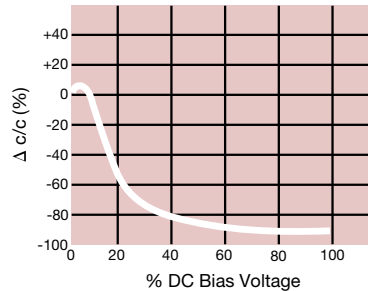
A

Special Code
A = Std. Product

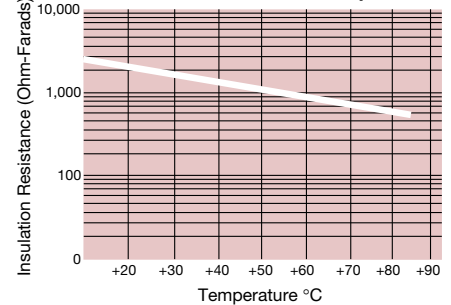
Temperature Coefficient



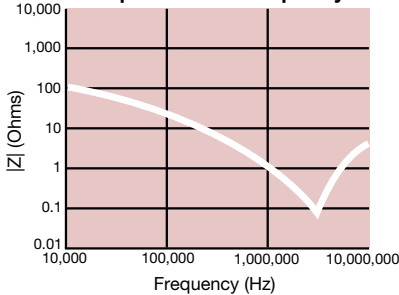
Capacitance Change vs. DC Bias Voltage



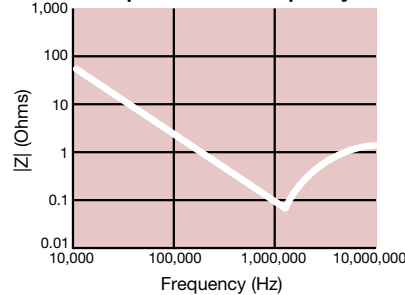
Insulation Resistance vs. Temperature



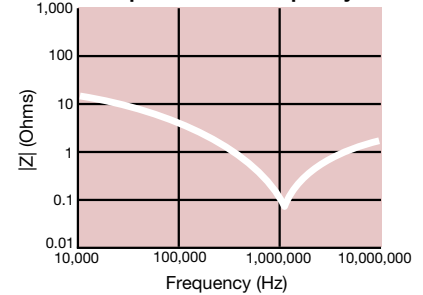
0.1 μF - 0603 Impedance vs. Frequency



0.22 μF - 0805 Impedance vs. Frequency

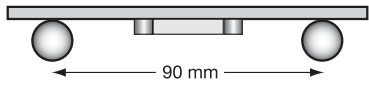


1 μF - 1206 Impedance vs. Frequency



Y5V Dielectric

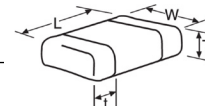
Specifications and Test Methods

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		mm		1.00 ± 0.10		mm		1.60 ± 0.15		mm		2.01 ± 0.20		mm		3.20 ± 0.20		mm		3.20 ± 0.20	
	(in.)		(0.024 ± 0.004)		(in.)		(0.040 ± 0.004)		(in.)		(0.063 ± 0.006)		(in.)		(0.079 ± 0.008)		(in.)		(0.126 ± 0.008)		(in.)		(0.126 ± 0.008)	
(W) Width	mm		0.30 ± 0.09		mm		0.50 ± 0.10		mm		.81 ± 0.15		mm		1.25 ± 0.20		mm		1.60 ± 0.20		mm		2.50 ± 0.20	
	(in.)		(0.011 ± 0.004)		(in.)		(0.020 ± 0.004)		(in.)		(0.032 ± 0.006)		(in.)		(0.049 ± 0.008)		(in.)		(0.063 ± 0.008)		(in.)		(0.098 ± 0.008)	
(t) Terminal	mm		0.15 ± 0.05		mm		0.25 ± 0.15		mm		0.35 ± 0.15		mm		0.50 ± 0.25		mm		0.50 ± 0.25		mm		.50 ± 0.25	
	(in.)		(0.006 ± 0.002)		(in.)		(0.010 ± 0.006)		(in.)		(0.014 ± 0.006)		(in.)		(0.020 ± 0.010)		(in.)		(0.020 ± 0.010)		(in.)		(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	A																					
	0.010	A	A																					
	0.022	A																						
	0.047	A																						
	0.10				C	C						G	G											
	0.22											G												
	0.33											G												
	0.47						C					G	G											
	1.0				C	C						G	G	J										N
	2.2											J												
	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							