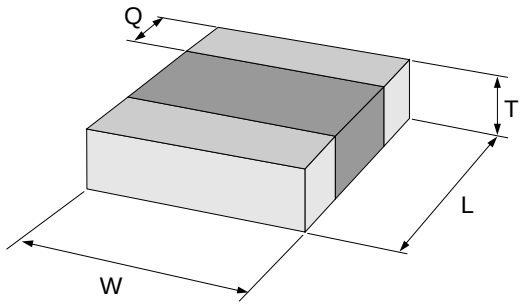
Chip Type Y5U Temperature Characteristics

Features

- Large capacitance in small size
- Temperature characteristics of Y5U (within +22% to –56% in the range of –25°C to +85°C)
- Features equivalent to X7V.
- Reel packaging at customer request (8 and 12 mm carrier tapes are available)
- Available in silver electrode type and solder plated electrode type.
- All capacitors of this type designed for use in reflow soldering.

Dimensions



Unit: mm

Case code	L	W	Q (min.)
C13	3.2±0.2	1.6±0.2	0.3
C23	3.2±0.3	2.5±0.3	0.3
C25	$5.7^{+0.5}_{-0.3}$	2.7±0.3	0.3
C34	4.5±0.4	3.2±0.3	0.3
C55	$5.7^{+0.5}_{-0.3}$	5.0±0.4	0.3

Standard Products Line-up and Outer Dimension "T"

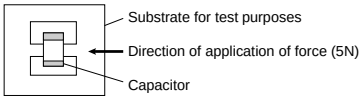
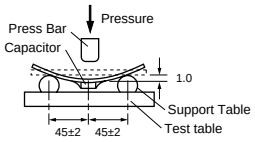
Unit: mm max.

R.V. (V)	1A10(V)					1C (16V)					1E (25V)					1H (50V)				2A (100V)				
Case Code	C13	C23	C25	C34	C55	C13	23	25	34	55	C13	23	25	34	55	23	25	34	55	13	23	25	34	55
C (μF)																								
0.1																				1.3				
0.15																								
0.22																					1.5	1.5		
0.33																					2.0	2.0		
0.47																					2.5	2.5		
0.68											1.0											2.0	2.0	2.0	2.0
1.0						1.0					1.4					1.8	2.0					2.5	2.5	2.5	2.5
1.5						1.1					1.8					2.3	2.6					2.7	2.7		1.9
2.2						1.3	1.6					1.5	2.0				2.0	2.5	2.0	2.2					2.5
3.3						1.7	2	1.3				2	2.5	1.3	1.5		2.5	2.7	2.5	2.8					3.0
4.7	1.8						1.8	1.3	1.5					1.3	1.9	1.5	1.9		1.8						
6.8							2.0	1.8	1.8					1.8	2.2	1.8	2.2		2.2						
10							2.5	2.3	2.3					2.3	2.7	2.3	2.7		2.8						
15		1.8						1.8	1.8										1.8						
18		2.0						2.0	2.0										2.2						
22		2.3						2.5	2.5										2.5						
33			2.0	2.0						2.0									3.5						
47			2.5	2.5						2.5															
68					2.0																				
100					2.5																				

: Silver electrode type

: Plated type

Specifications

Item		Specification	Test Conditions (JIS C 5102, 1994)
Operating Temperature		–25°C to +125°C	
Rated Voltage		16, 25, 50, 100 VDC	105°C: 0.7 wV·max, 125°C: 0.5 wV·max.
Dimensions		Refer to dimensions and standard products list	Refer to paragraph 6.1 Measure the dimension of the capacitor using vernier calipers of more than second grade defined in JIS B 7507.
Capacitance Tolerance		Between +80 and –20%	Refer to paragraphs 7.8 and 7.9 Frequency for measurement: 1 kHz ±10% Time for applying voltage: 1.0±0.2 V.rms
tan δ		Less than 0.10 (C13Y5U1A type: 0.15max.)	
Insulation Resistance		More than 500 ΩF	Refer to paragraph 7.6 Applied voltage: Rated voltage Application time: 60±5 sec.
Withstanding Voltage		No insulation destruction or breakage should exist	Refer to paragraph 7.1 Applied voltage: Rated voltage × 2 Application time: 1 to 5 sec. Charging and discharging currents: Less than 50 mA
Capacitance change owing to temperature (–25°C to +85°C)		Between +22 and –56% (no applied voltage)	Refer to paragraph 7.12 Preprocessing: 150 +0°C and 150 –10°C After having been subjected to heat treatment for one hour, the capacitor is left for 24±2 hrs. at room temperature
Adhesion		No visible damage	Test of an aluminum substrate shown below The substrate is soldered to a jig using solder containing a mixture of 2.5 - 3.0 wt.% silver, and a force of 5N (0.51 kg·f) in the direction designated by the arrow. The substrate is retained for 10±1 sec. 
Bond strength of Face Plating	ΔC/C	Within ±20%	In compliance with an appendix of JIS C 6429 Press the center of the substrate at a rate of about 1 mm/sec. until the amount of deflection becomes 1 mm, and the substrate is retained for 5 sec. while remaining in that state 
	Appearance	No visible damage	
Solderability		More than 75% of each terminal electrode covered with new solder	Refer to paragraph 8.4 Solder: Including a mixture of 2.5 to 3.0 wt.% Ag Solder temperature: 235±5°C Dipping time: 2±0.5 sec. Dipping rate: 25±2.5 mm/sec.
Resistance to Soldering Heat	ΔC/C	Within ±20%	Refer to paragraph 8.5 Solder: Including a mixture of 2.5 to 3.0 wt.% Ag Preprocessing: Between 150 +0°C and 150 –10°C, 1 hr. Preheating: Between 150 +0°C and 150 –10°C, 1 - 2 min. Solder temperature: 260±5°C Dipping time: 5±0.5 sec. Dipping rate: 25±2.5 mm
	tan δ	Less than initially specified value	
	I.R.	More than initially specified value	
	Withstanding Voltage	Initial spec	
	Appearance	No visible damage	
Temperature Cycle	ΔC/C	Within ±20%	Refer to paragraph 9.3 Preprocessing: Between 150 +0°C and 150 –10°C, 1 hr. Number of cycles: 5
	tan δ	Less than initially specified value	
	I.R.	More than initially specified value	
	Withstanding Voltage	Initial spec	
	Appearance	No visible damage	
Humidity Resistance	ΔC/C	Within ±15%	Refer to paragraph 9.9 Temperature: 40±2°C Relative humidity: 90 - 95% RH Applied voltage: Rated voltage Time: Between 500 +24 and 500 –0 hrs.
	tan δ	Less than initially specified value	
	I.R.	More than 50 ΩF	
	Appearance	No abnormality	

Level	Temperature (°C)	Time (min.)
1	–25±2	30±3
2	Ambient temperature	2~5
3	+85±2	30±3
4	Ambient temperature	2~5

High-temperature Load (I)	ΔC/C	Within ±30%	Refer to paragraph 9.10 Temperature: 85±2°C Applied voltage: Rated voltage × 2 Time: between 1000 +48 and 1000 –0 hrs. Preprocessing: 85°C and 1hr has been applied to the capacitor, the capacitor is left for 24±1hr at ambient temperature
	tan δ	Less than initially specified value	
	I.R.	More than 50 ΩF	
	Appearance	No abnormality	
High-temperature Load (II)	ΔC/C	Within ±30%	Refer to paragraph 9.10 Temperature: 125±2°C Applied voltage: Half the rated voltage Time: between 1000 +48 and 1000 –0 hrs. Preprocessing: 125°C and 1hr has been applied to the capacitor, the capacitor is left for 24±1hr at ambient temperature
	tan δ	Less than initially specified value	
	I.R.	More than 50 ΩF	
	Appearance	No abnormality	
Others	Complies with Fixed Multilayer Magnetic Capacitor for Electronic Equipment JEITA RCR-2335		

Note: Capacitors here are designed for reflow soldering purposes.

Standard Products

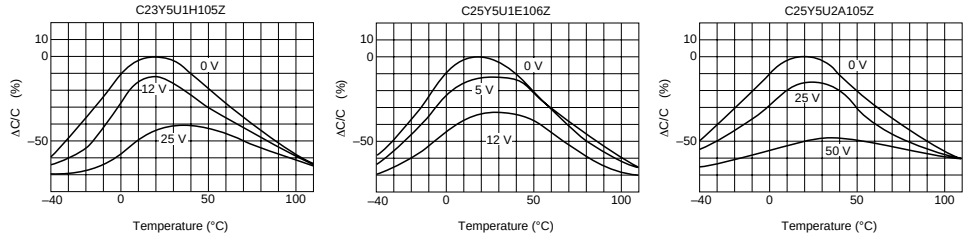
Part Number	Rated Voltage (VDC)	Case Code	Nominal Capacitance (μF)	Thickness "T" (mm) max.	Taping K (±0.2)
C13Y5U1A475ZP	10	C13	4.7	1.8	2
C13Y5U1A685ZP			6.8		
C13Y5U1A106ZP			10		
C23Y5U1A156Z		C23	15		
C23Y5U1A186Z			18	2.0	
C23Y5U1A226Z			22	2.3	2.7
C25Y5U1A336Z		C25	33	2.0	2
C25Y5U1A476Z			47	2.5	2.7
C34Y5U1A336Z		C34	33	2.0	2
C34Y5U1A476Z			47	2.5	2.7
C55Y5U1A686Z		C55	68	2.0	2
C55Y5U1A107Z			100	2.5	2.7
C13Y5U1C105ZP	16	C13	1	1.0	1.5
C13Y5U1C155ZP			1.5	1.1	
C13Y5U1C225ZP			2.2	1.3	
C13Y5U1C335ZP			3.3	1.7	2
C23Y5U1C105ZP		C23	1	1.3	
C23Y5U1C155ZP			1.5	1.3	
C23Y5U1C225ZP			2.2	1.6	
C23Y5U1C335ZP			3.3	2	
C23Y5U1C475Z			4.7	1.8	
C23Y5U1C685Z			6.8	2	
C23Y5U1C106Z			10	2.5	2.7
C25Y5U1C335ZP		C25	3.3	1.3	1.5
C25Y5U1C475ZP			4.7	1.3	1.5
C25Y5U1C685ZP			6.8	1.8	2
C25Y5U1C106ZP			10	2.3	2.5
C25Y5U1C156Z			15	1.8	2
C25Y5U1C186Z			18	2	
C25Y5U1C226Z			22	2.5	2.7
C34Y5U1C475ZP		C34	4.7	1.5	2.2
C34Y5U1C685ZP			6.8	1.8	
C34Y5U1C106ZP			10	2.3	2.7
C34Y5U1C156Z			15	1.8	2
C34Y5U1C186Z			18	2	
C34Y5U1C226Z			22	2.5	2.7
C55Y5U1C336Z		C55	33	2	2
C55Y5U1C476Z			47	2.5	2.7
C13Y5U1E684ZP	25	C13	0.68	1.0	1.5
C13Y5U1E105ZP			1	1.4	1.5
C13Y5U1E155ZP			1.5	1.8	1.9
C23Y5U1E225Z [ ]		C23	2.2	1.5	1.5 (2)
C23Y5U1E335Z [ ]			3.3	2 (2)	2 (2.7)
C25Y5U1E335Z [ ]		C25	3.3	1.3 (2.6)	1.5 (1.5)
C25Y5U1E475Z [ ]			4.7	1.3 (2.5)	(1.5)
C25Y5U1E685Z [ ]			6.8	1.8 (2.7)	2 (2.5)
C25Y5U1E106Z [ ]			10	2.3 (2.2)	2.7 (2.7)
C34Y5U1E475Z [ ]		C34	4.7	1.5 (2.7)	2 (2)
C34Y5U1E685Z [ ]			6.8	1.8	2.2 (2.5)
C34Y5U1E106Z [ ]			10	2.3	2.5 (3.2)
C55Y5U1E156Z		C55	15	1.8	2
C55Y5U1E186Z			18	2.2	2.5
C55Y5U1E226Z			22	2.5 (1.5)	3.2
C55Y5U1E306Z			30	3.5 (2)	3.5

Part Number	Rated Voltage (VDC)	Case Code	Nominal Capacitance (μF)	Thickness "T" (mm) max.		Taping K (±0.2)	
C23Y5U1H105Z [ ]	50	C23	1	1.8	(2)	2	(2)
C23Y5U1H155Z [ ]			1.5	2.3	(2.5)	2.6	(2.6)
C25Y5U1H225Z [ ]		C25	2.2	2	(2.5)	2.7	(2.7)
C25Y5U1H335Z [ ]			3.3	2.5	(2.7)		(2.7)
C34Y5U1H225Z [ ]		C34	2.2	2	(2)	2.2	(2.2)
C34Y5U1H335Z [ ]			3.3	2.5	(2)	2.7	(2.7)
C55Y5U1H475Z		C55	4.7	1.8	(2)	2	
C55Y5U1H685Z			6.8	2.2	(2.5)	2.5	
C55Y5U1H106Z			10	2.8		3.2	
C13Y5U2A104Z	100	C13	0.1	1.3	(1.5)	1.4	(1.5)
C23Y5U2A224Z [ ]		C23	0.22	1.5	(2)	1.5	(2.2)
C23Y5U2A334Z [ ]			0.33	2	(2.5)	2.2	(2.5)
C23Y5U2A474Z [ ]			0.47	2.5	(2)	2.5	(2.2)
C25Y5U2A684Z [ ]		C25	0.68	2	(2.5)	2.2	(2.7)
C25Y5U2A105Z [ ]			1	2.5	(2.7)	2.7	(2.7)
C25Y5U2A155Z [ ]			1.5	2.7	(2)		(2.2)
C34Y5U2A334Z [ ]		C34	0.33	1.5	(2)	2.2	(2.2)
C34Y5U2A474Z [ ]			0.47		(2)		(2.2)
C34Y5U2A684Z [ ]			0.68	2	(2.5)		(2.7)
C34Y5U2A105Z [ ]			1	2.5		2.7	
C55Y5U2A155Z		C55	1.5	1.9		2	
C55Y5U2A225Z			2.2	2.5		2.5	
C55Y5U2A335Z			3.3	3		3.2	

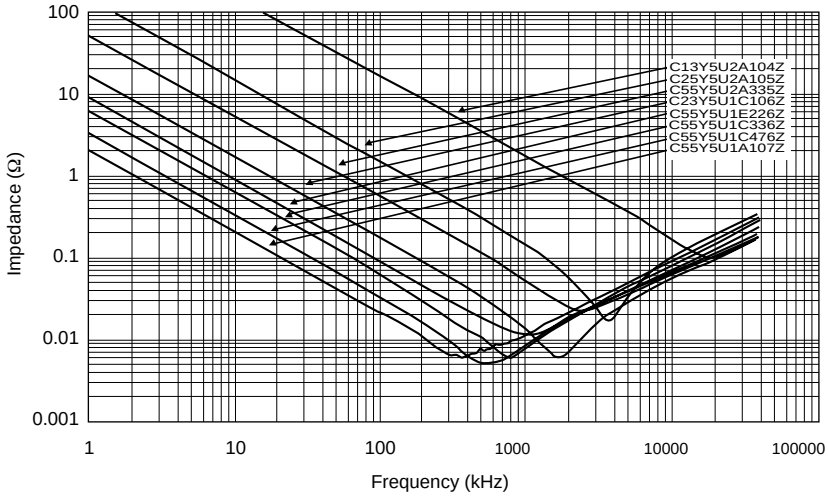
Please add "P" to plated electrode or no suffix to silver electrode for type of terminal electrode in square brackets.
Dimensions in parentheses are for plated-electrode models.
Note 1: Products of this type are designed for reflow soldering purposes.
If taped chip capacitors are required,refer to page 29~31 when

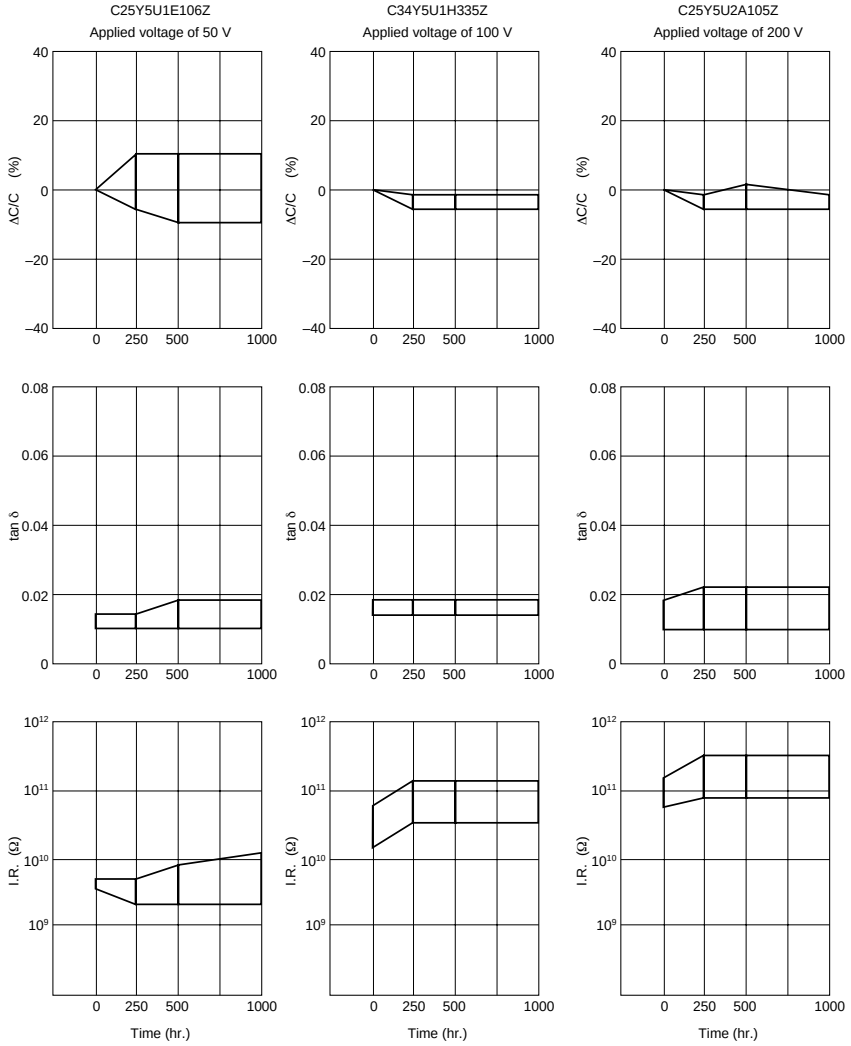
Test Data (Typical Examples)

● Temperature and DC bias characteristics of capacitance



● Impedance vs Frequency Characteristics



ordering.

● High-temperature Load Characteristics (85°C)