

## Ceramic Disc Capacitors

### Class 2, low loss 500V, 1kV, 2kV and 3kV

**FEATURES**

- High reliability
- Low losses
- High capacitance in small size
- Kinked leads

**APPLICATIONS**

In electronic circuits where low losses and high capacitance per volume are essential, for example:

- SMPS
- HF ballast
- Snubber and high voltage circuits

**DESIGN**

The capacitors consist of a ceramic disc both sides of which are silver-plated. Connection leads are made of tinned copper having a diameter of 0.6 mm or 0.8 mm.

The capacitors are supplied with kinked leads and lead spacings of 5 mm or 7.5 mm and 10 mm. Encapsulation is made of epoxy-resin, flammable resistant in accordance with "UL94V-0".

**CAPACITANCE RANGE**

100 to 4700pF

**RATED DC VOLTAGE**

500V; 1kV; 2kV; 3kV

**DIELECTRIC STRENGTH**

200% of rated voltage

**INSULATION RESISTANCE AT 500V (DC)**

≥ 10,000 MΩ min

**TOLERANCE ON CAPACITANCE**

± 10%; ± 20%

**DISSIPATION FACTOR**

0.2% Max

**OPERATING TEMPERATURE RANGE**

- 30 to + 125°C

**TEMPERATURE COEFFICIENT Y5R (2C4) - 30 TO +85°C:**

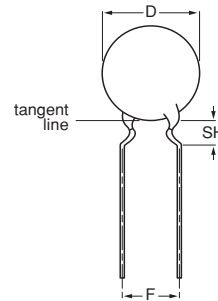
± 15%

**SECTIONAL SPECIFICATIONS**

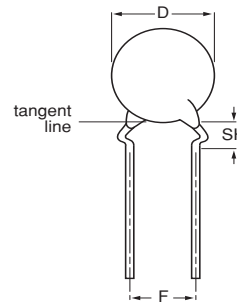
IEC 60384-9, EIA 198

**AGEING**

Typical 0.5% per time decade



Capacitors with inside kink lead spacing.



Capacitors with outside kink lead spacing.

**MARKING**

Marking indicates capacitance value and tolerance in accordance with "EIA 198" and voltage marks.

**Examples of marking code**

Disc size ( $D_{max}$ ) ≤ 6.5 mm:

RR = low loss with T.C. Y5R

101 k

2 kV

Disc size ( $D_{max}$ ) ≥ 7.5 mm:

BC

RR

102 k

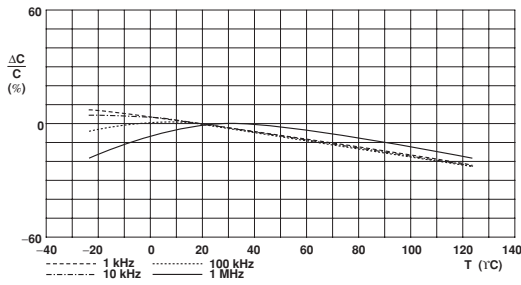
3 kV

The capacitors meet the essential requirements of "IEC 60384-9 and EIA 198". Unless stated otherwise all electrical values apply at an ambient temperature of 25 ± 3°C, at normal atmospheric conditions

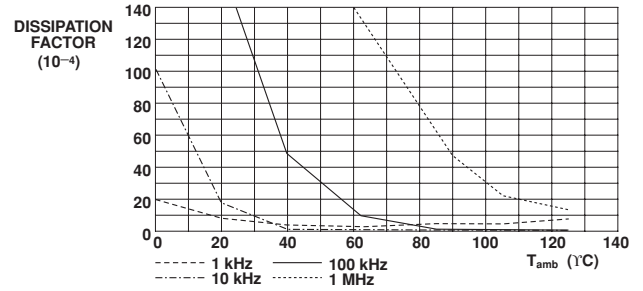


**Ceramic Disc Capacitors**  
Class 2, low loss 500V, 1kV, 2kV and 3kV

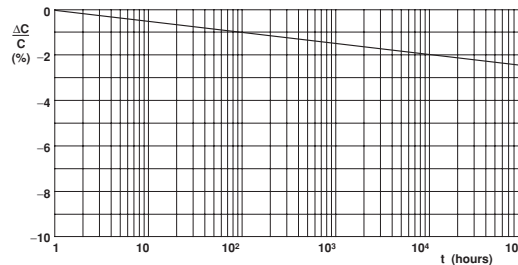
Vishay BCcomponents



Typical capacitance change as a function of temperature and frequency.



Typical dissipation factor as a function of temperature and frequency.



Ageing rate as a function of time.

**ORDERING INFORMATION**

C (pF)	TOL. (%)	D <sub>max</sub> (mm)	LEAD SPACING S (mm)	SH <sup>(2)</sup> (mm)	CLEAR TEXT CODE	PACKAGING CODE 8 <sup>th</sup> AND 9 <sup>th</sup> DIGIT			CATALOG NUMBER <sup>(3)</sup>
					13 <sup>th</sup> DIGIT: T = REEL; U = AMMO; 3 = BULK	REEL	AMMO	BULK	
<b>500 V</b>									
100	±10	5.0		4.0	F101K20Y5RL6.J5	06	08	10	2252 718 ..016
120					F121K20Y5RL6.J5				2252 718 ..066
150					F151K20Y5RL6.J5				2252 718 ..116
180					F181K20Y5RL6.J5				2252 718 ..166
220					F221K20Y5RL6.J5				2252 718 ..216
270					F271K20Y5RL6.J5				2252 718 ..266
330					F331K20Y5RL6.J5				2252 718 ..316
390					F391K25Y5RL6.J5				2252 718 ..366
470					F471K25Y5RL6.J5				2252 718 ..416
560					6.5				5.0
680		F681K25Y5RL6.J5	2252 718 ..616						
820		F821K29Y5RL6.J5	2252 718 ..816						
1000		7.5	F102K29Y5RL6.J5	2252 718 ..026					
1200		F122K33Y5RL6.J5	2252 718 ..076						
1500		F152K33Y5RL6.J5	2252 718 ..126						
1800		F182K39Y5RL6.J5	2252 718 ..176						
2200		8.5	F222K39Y5RL6.J5	2252 718 ..226					
2700		10.0	F272K47Y5RL63J7	2252 718 ..276					
3300		12.0	F332K53Y5RL63J7	2252 718 ..326					
3900		13.5	7.5	4.0	F392K53Y5RL63J7	-	-	31	2252 718 ..376
4700	F472K53Y5RL63J7				2252 718 ..426				



ORDERING INFORMATION														
C (pF)	TOL. (%)	D <sub>max</sub> (mm)	LEAD SPACING S (mm)	SH <sup>(2)</sup> (mm)	CLEAR TEXT CODE			PACKAGING CODE 8 <sup>th</sup> AND 9 <sup>th</sup> DIGIT			CATALOG NUMBER <sup>(3)</sup>			
					13 <sup>th</sup> DIGIT: T = REEL; U = AMMO; 3 = BULK			REEL	AMMO	BULK				
<b>1 kV</b>														
100	±10	6.5	5.0	4.0	F101K25Y5RN6.J5	06	08	10	2252 711 ..016					
120					F121K25Y5RN6.J5				2252 711 ..066					
150					F151K25Y5RN6.J5				2252 711 ..116					
180					F181K25Y5RN6.J5				2252 711 ..166					
220					F221K25Y5RN6.J5				2252 711 ..216					
270					F271K29Y5RN6.J5				2252 711 ..266					
330		F331K29Y5RN6.J5			2252 711 ..316									
390		F391K29Y5RN6.J5			2252 711 ..366									
470		F471K29Y5RN6.J5			2252 711 ..416									
560		F561K33Y5RN6.J5			2252 711 ..516									
680		F681K33Y5RN6.J5			2252 711 ..616									
820		F821K39Y5RN6.J5			2252 711 ..816									
1000		F102K39Y5RN6.J5	2252 711 ..026											
1200		F122K43Y5RN6.J5	2252 711 ..076											
1500		F152K43Y5RN6.J5	2252 711 ..126											
1800		F182K47Y5RN63J7	7.5		10.0				F182K47Y5RN63J7	-	-	31	2252 711 ..176	
2200		F222K53Y5RN63J7							2252 711 ..226					
2700		F272K53Y5RN63J7							2252 711 ..276					
3300		F332K69Y5RN63J7		2252 711 ..326										
3900		F392K69Y5RN63J7		2252 711 ..376										
4700	F472K75Y5RN83J0	2252 711 ..426												
<b>2 kV</b>														
100	±10	6.5	5.0	4.0	F101K25Y5RP6.K5	13	14	15	2252 712 ..016					
120					F121K25Y5RP6.K5				2252 712 ..066					
150					F151K25Y5RP6.K5				2252 712 ..116					
180					F181K29Y5RP6.K5				2252 712 ..166					
220					F221K29Y5RP6.K5				2252 712 ..216					
270					F271K29Y5RP6.K5				2252 712 ..266					
330		F331K29Y5RP6.K5			2252 712 ..316									
390		F391K33Y5RP6.K5			2252 712 ..366									
470		F471K33Y5RP6.K5			2252 712 ..416									
560		F561K39Y5RP6.K5			2252 712 ..516									
680		F681K39Y5RP6.K5			2252 712 ..616									
820		F821K43Y5RP6.K5			2252 712 ..816									
1000		F102K43Y5RP6.K5	2252 712 ..026											
1200		F122K47Y5RP63K7	7.5		10.0				F122K47Y5RP63K7	-	-	37	2252 712 ..076	
1500		F152K53Y5RP63K7							2252 712 ..126					
1800		F182K53Y5RP63K7							2252 712 ..176					
2200		F222K69Y5RP63K7							2252 712 ..226					
2700		F272K75Y5RP83K0							4.8				10.0	F272K75Y5RP83K0
3300		F332K75Y5RP83K0		2252 712 ..326										
3900		F392K75Y5RP83K0	2252 712 ..376											
4700	F472K96Y5RP83K0	2252 712 ..426												



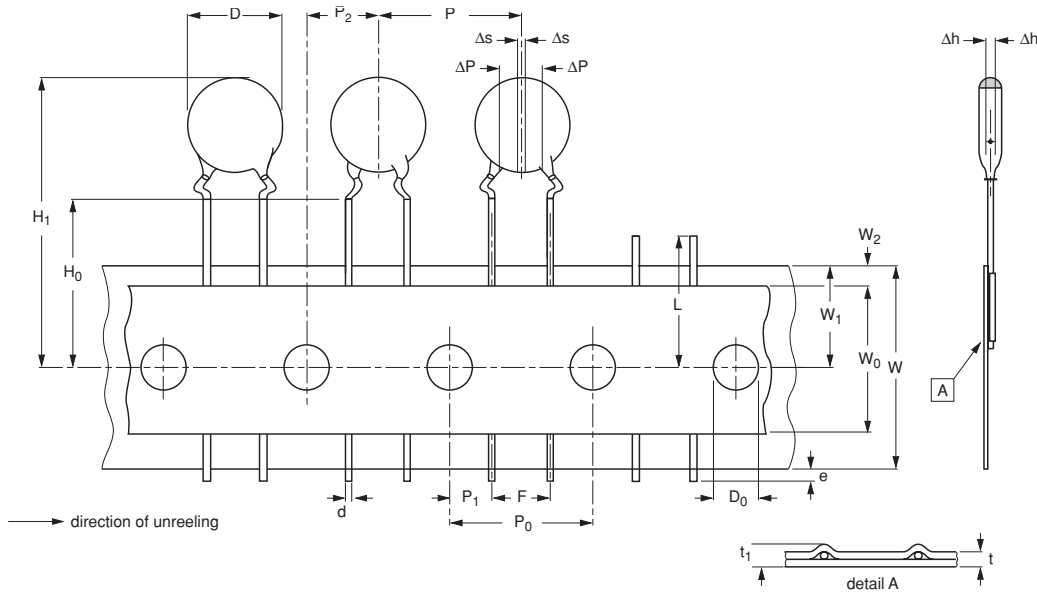
<b>ORDERING INFORMATION</b>											
C (pF)	TOL. (%)	D <sub>max</sub> (mm)	LEAD SPACING S (mm)	SH <sup>(2)</sup> (mm)	CLEAR TEXT CODE	PACKAGING CODE 8 <sup>th</sup> AND 9 <sup>th</sup> DIGIT			CATALOG NUMBER <sup>(3)</sup>		
					13 <sup>th</sup> DIGIT: T = REEL; U = AMMO; 3 = BULK	REEL	AMMO	BULK			
<b>3 kV</b>											
100	±10	8.5	7.5	4.0	F101K33Y5RR6.K7	35	36	37	2252 713 ..016		
120					F121K33Y5RR6.K7				2252 713 ..066		
150					F151K33Y5RR6.K7				2252 713 ..116		
180					F181K33Y5RR6.K7				2252 713 ..166		
220					F221K33Y5RR6.K7				2252 713 ..216		
270					F271K33Y5RR6.K7				2252 713 ..266		
330					F331K33Y5RR6.K7				2252 713 ..316		
390					F391K39Y5RR6.K7				2252 713 ..366		
470					F471K39Y5RR6.K7				2252 713 ..416		
560					F561K43Y5RR6.K7				2252 713 ..516		
680					F681K43Y5RR6.K7				2252 713 ..616		
820					13.5				4.8	F821K53Y5RR63K7	-
1000		F102K53Y5RR63K7	2252 713 ..026								
1200		F122K59Y5RR63K7	2252 713 ..076								
1500		F152K59Y5RR63K7	2252 713 ..126								
1800		F182K75Y5RR83K0	2252 713 ..176								
2200		F222K75Y5RR83K0	2252 713 ..226								
2700		19	10.0	F272K84Y5RR83K0	-	-	48	2252 713 ..276			
			21								

**Notes**

1. Maximum thickness: 500 V = 3.5 mm; 1 kV = 4.5 mm; 2 kV = 5.0 mm; 3 kV = 6.0 mm.
2. SH = seated height.
3. 8th and 9th digit of the catalog number to be completed with the packaging code.

<b>PACKAGING</b>					
PACKAGING TYPE	SIZE CODE	LEAD SPACE (mm)	VOLTAGE (VDC)	SPQ	BOX DIMENSIONS L X W X H (mm)
Bulk (long lead L ≥25.4 mm)	20 to 25	all	all	1000	245 x 120 x 65
	29 to 39			1000	
	43 to 47			1000	
	53 to 75			500	
	84 to 96			250	
Tape and reel	≤47	≤6.4	<500	2500	370 x 370 x 60
			500 ≤ WV ≤ 2000	2000	
			3000	1000	
	≥7.5	all	1000		
	≥53	all	all	1000	
Ammopack	≤47	≤6.4	< 500	2000	335 x 240 x 50
			500 ≤ WV < 2000	2000	335 x 290 x 50
			2000 and 3000	1500	
	≥7.5	all	1500	360 x 330 x 55	
	≥53	all	all	1500	335 x 290 x 50

**Note** The capacitors are supplied in bulk packaging (cardboard boxes), in tape on reel or in ammpack



Capacitors, lead spacing 5.0 mm or 7.5 mm, on tape

Kinked capacitors on tape, lead spacing 5.0 mm (0.2 inch) or 7.5 mm (0.3 inch)

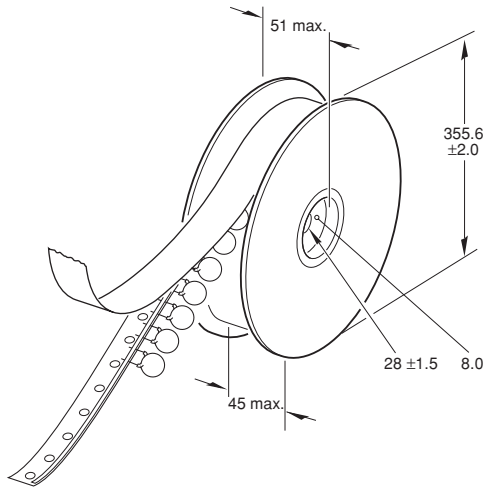
DIMENSIONS OF TAPE		DIMENSIONS (mm)	
		FEED-HOLE PITCH $P_0 = 12.7$	FEED-HOLE PITCH $P_0 = 15.0$
D	body diameter	11.0 max.	14.0 max.
d	lead diameter	0.6 ±0.05	0.6 ±0.05
P	pitch between capacitors	12.7 ±1.0	15.0 ±1.0
$P_0$	feed-hole pitch	12.7 ±0.3; note 1	15.0 ±0.3; note 1
$\Delta P$	plane deviation	1.0 max.	1.0 max.
$P_1$	feed-hole centre to lead centre	3.85 ±0.7; note 2	3.75 ±1.0; note 2
$P_2$	feed-hole centre to component centre	6.35 ±1.3; note 2	7.5 ±1.5; note 2
F	lead spacing	5.0 +0.6/-0.4	7.5 ±1.0
$\Delta h$	component alignment	0 ±1.0	0 ±1.0
$\Delta s$	deviation along tape, left or right	0 ±1.0	0 ±1.0
W	tape width	18.0 +1.0/-0.5	18.0 +1.0/-0.5
$W_0$	hold-down tape width	5.0 min.	5.0 min.
$W_1$	hole position	9.0 +0.75/-0.5	9.0 +0.75/-0.5
$W_2$	hold-down tape margin	3.0 max.	3.0 max.
$H_0$	height to seating plane	16.0 ±0.5	16.0 ±0.5
$H_1$	maximum component height	32.0	40.0
e	lead end protrusion	1.0 max.	1.0 max.
L	maximum length of snapped lead	11.0	11.0
$D_0$	feed-hole diameter	4.0 ±0.2	4.0 ±0.2
t	total tape thickness	0.9 max.	0.9 max.
$t_1$	maximum thickness of tape and wires	1.5 max.	1.5 max.

**Notes**

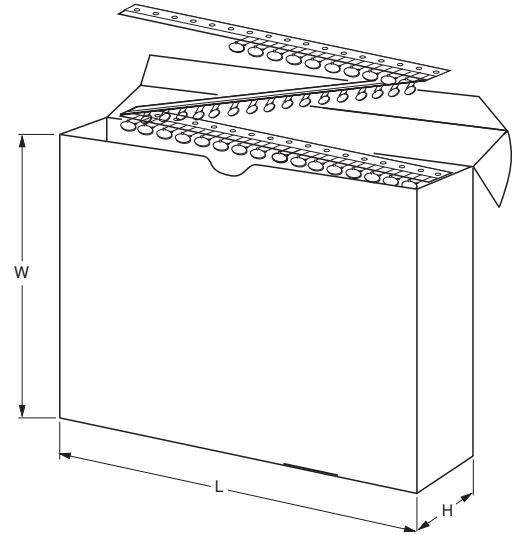
1. Cumulative pitch error:  $\pm \leq 1$  mm/20 pitches.
2. Obliquity maximum 3°



**REEL AND TAPE DATA** in millimeters



Reel with capacitors on tape.



Ampack with capacitors on tape.

<b>DIMENSIONS OF AMMOPACK</b>			
<b>PARAMETER</b>	<b>DISC SIZE (D<sub>max</sub>)</b>		<b>UNIT</b>
	<b>6.5 to 11.0 mm</b>	<b>12.0 to 13.5 mm</b>	
Taping pitch	12.7	15.0	mm
L	335	360	mm
W	290	330	mm
H	50	55	mm