

## Ceramic Capacitors

Order code	Manufacturer code	Description
08-1480	2252 711 14016	100PF 1KV CERAMIC DISC CAPACITOR
08-1482	2252 711 14216	220PF 1KV CERAMIC DISC CAPACITOR
08-1484	2252 711 14416	470PF 1KV CERAMIC DISC CAPACITOR
08-1486	2252 711 14026	1000PF 1KV CERAMIC DISC CAPACITOR
08-1488	2252 711 37226	2200PF 1KV CERAMIC DISC CAPACITOR
08-1490	2252 711 48426	4700PF 1KV CERAMIC DISC CAPACITOR

Ceramic Capacitors	Page 1 of 11
The enclosed information is believed to be correct, Information may change 'without notice' due to product improvement. Users should ensure that the product is suitable for their use. E. & O. E.	Revision A 04/07/2003

# Ceramic disc capacitors (kinked leads)

Class 2, low loss (0.2% max.)  
500 V, 1 kV, 2 kV and 3 kV

## 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.

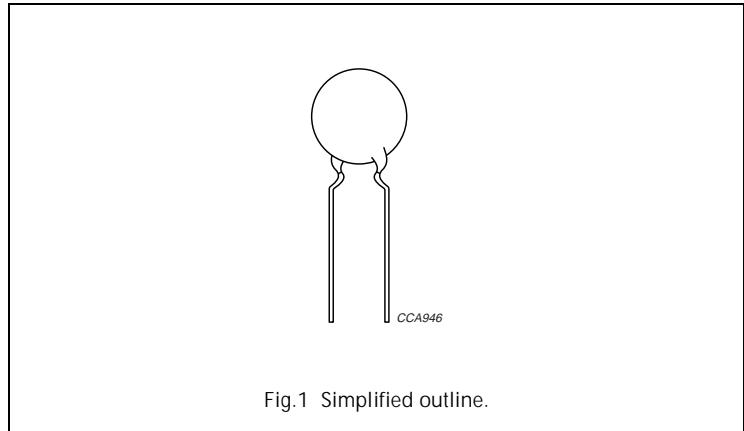
## DESCRIPTION

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".

## QUICK REFERENCE DATA

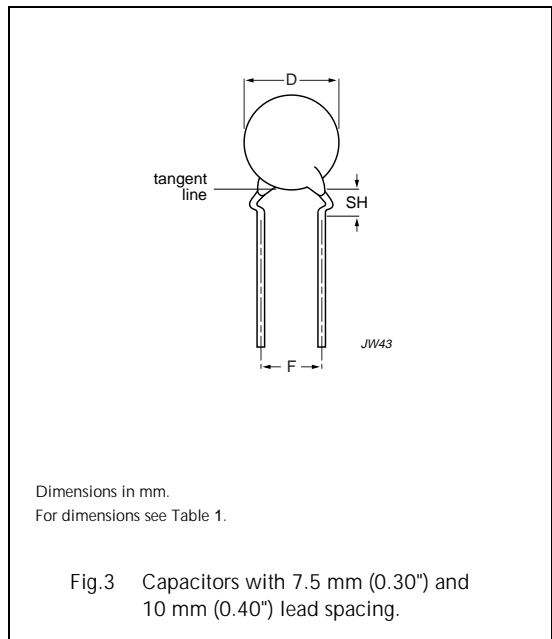
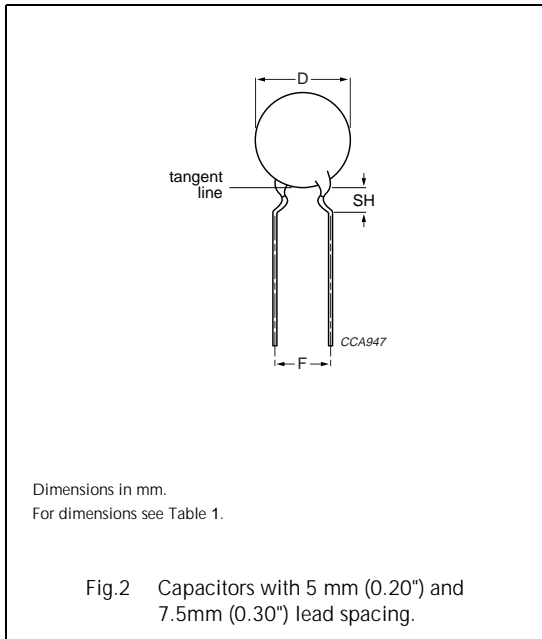
DESCRIPTION	VALUE
Capacitance range	100 to 4700 pF
Rated DC voltage	500 V; 1 kV; 2 kV; 3 kV
Dielectric strength	200% of rated voltage
Insulation resistance at 500 V (DC)	$\geq 100000 \text{ M}\Omega$
Tolerance on capacitance	$\pm 10\%$ ; $\pm 20\%$ ;
Dissipation factor	0.2% max.
Operating temperature	-30 to +125 °C
Temperature coefficient Y5R (2C4): -30 to +85 °C	$\pm 15\%$
Sectional specifications	IEC 60384-9, EIA 198



## Ceramic disc capacitors (kinked leads)

**Class 2, low loss (0.2% max.)  
500 V, 1 kV, 2 kV and 3 kV**

### MECHANICAL DATA



### MARKING

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

#### Examples of marking code

Disc size ( $D_{max}$ )  $\leq 6.5$  mm:

RR = low loss with T.C. Y5R

101 k

2 kV

Disc size ( $D_{max}$ )  $\geq 7.5$  mm:

BC

RR

102 k

3 kV

# Ceramic disc capacitors (kinked leads)

# Class 2, low loss (0.2% max.) 500 V, 1 kV, 2 kV and 3 kV

## ORDERING INFORMATION

**Table 1** Capacitance, mechanical dimensions and ordering information; note 1

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			CATALOGUE 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	5.0	4.0	F101K20Y5RL6.J5	06	08	10	2252 718 ..016
120	±10	5.0	5.0	4.0	F121K20Y5RL6.J5	06	08	10	2252 718 ..066
150	±10	5.0	5.0	4.0	F151K20Y5RL6.J5	06	08	10	2252 718 ..116
180	±10	5.0	5.0	4.0	F181K20Y5RL6.J5	06	08	10	2252 718 ..166
220	±10	5.0	5.0	4.0	F221K20Y5RL6.J5	06	08	10	2252 718 ..216
270	±10	5.0	5.0	4.0	F271K20Y5RL6.J5	06	08	10	2252 718 ..266
330	±10	5.0	5.0	4.0	F331K20Y5RL6.J5	06	08	10	2252 718 ..316
390	±10	6.5	5.0	4.0	F391K25Y5RL6.J5	06	08	10	2252 718 ..366
470	±10	6.5	5.0	4.0	F471K25Y5RL6.J5	06	08	10	2252 718 ..416
560	±10	6.5	5.0	4.0	F561K25Y5RL6.J5	06	08	10	2252 718 ..516
680	±10	6.5	5.0	4.0	F681K25Y5RL6.J5	06	08	10	2252 718 ..616
820	±10	7.5	5.0	4.0	F821K29Y5RL6.J5	06	08	10	2252 718 ..816
1000	±10	7.5	5.0	4.0	F102K29Y5RL6.J5	06	08	10	2252 718 ..026
1200	±10	8.5	5.0	4.0	F122K33Y5RL6.J5	06	08	10	2252 718 ..076
1500	±10	8.5	5.0	4.0	F152K33Y5RL6.J5	06	08	10	2252 718 ..126
1800	±10	10.0	5.0	4.0	F182K39Y5RL6.J5	06	08	10	2252 718 ..176
2200	±10	10.0	5.0	4.0	F222K39Y5RL6.J5	06	08	10	2252 718 ..226
2700	±10	12.0	7.5	4.0	F272K47Y5RL63J7	–	–	31	2252 718 ..276
3300	±10	13.5	7.5	4.0	F332K53Y5RL63J7	–	–	31	2252 718 ..326
3900	±10	13.5	7.5	4.0	F392K53Y5RL63J7	–	–	31	2252 718 ..376
4700	±10	13.5	7.5	4.0	F472K53Y5RL63J7	–	–	31	2252 718 ..426
<b>1 kV</b>									
100	±10	6.5	5.0	4.0	F101K25Y5RN6.J5	06	08	10	2252 711 ..016
120	±10	6.5	5.0	4.0	F121K25Y5RN6.J5	06	08	10	2252 711 ..066
150	±10	6.5	5.0	4.0	F151K25Y5RN6.J5	06	08	10	2252 711 ..116
180	±10	6.5	5.0	4.0	F181K25Y5RN6.J5	06	08	10	2252 711 ..166
220	±10	6.5	5.0	4.0	F221K25Y5RN6.J5	06	08	10	2252 711 ..216
270	±10	7.5	5.0	4.0	F271K29Y5RN6.J5	06	08	10	2252 711 ..266
330	±10	7.5	5.0	4.0	F331K29Y5RN6.J5	06	08	10	2252 711 ..316
390	±10	7.5	5.0	4.0	F391K29Y5RN6.J5	06	08	10	2252 711 ..366
470	±10	7.5	5.0	4.0	F471K29Y5RN6.J5	06	08	10	2252 711 ..416
560	±10	8.5	5.0	4.0	F561K33Y5RN6.J5	06	08	10	2252 711 ..516
680	±10	8.5	5.0	4.0	F681K33Y5RN6.J5	06	08	10	2252 711 ..616

## Ceramic disc capacitors (kinked leads)

## Class 2, low loss (0.2% max.) 500 V, 1 kV, 2 kV and 3 kV

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			CATALOGUE NUMBER <sup>(3)</sup>
					13 <sup>th</sup> DIGIT: T = REEL; U = AMMO; 3 = BULK	REEL	AMMO	BULK	
820	±10	10.0	5.0	4.0	F821K39Y5RN6.J5	06	08	10	2252 711 ..816
1000	±10	10.0	5.0	4.0	F102K39Y5RN6.J5	06	08	10	2252 711 ..026
1200	±10	11.0	5.0	4.0	F122K43Y5RN6.J5	06	08	10	2252 711 ..076
1500	±10	11.0	5.0	4.0	F152K43Y5RN6.J5	06	08	10	2252 711 ..126
1800	±10	12.5	7.5	4.0	F182K47Y5RN63J7	–	–	31	2252 711 ..176
2200	±10	13.5	7.5	4.8	F222K53Y5RN63J7	–	–	31	2252 711 ..226
2700	±10	13.5	7.5	4.8	F272K53Y5RN63J7	–	–	31	2252 711 ..276
3300	±10	17.5	7.5	4.8	F332K69Y5RN63J7	–	–	31	2252 711 ..326
3900	±10	17.5	7.5	4.8	F392K69Y5RN63J7	–	–	31	2252 718 ..376
4700	±10	19.0	10.0	4.8	F472K75Y5RN83J0	–	–	44	2252 711 ..426
<b>2 kV</b>									
100	±10	6.5	5.0	4.0	F101K25Y5RP6.K5	13	14	15	2252 712 ..016
120	±10	6.5	5.0	4.0	F121K25Y5RP6.K5	13	14	15	2252 712 ..066
150	±10	6.5	5.0	4.0	F151K25Y5RP6.K5	13	14	15	2252 712 ..116
180	±10	7.5	5.0	4.0	F181K29Y5RP6.K5	13	14	15	2252 712 ..166
220	±10	7.5	5.0	4.0	F221K29Y5RP6.K5	13	14	15	2252 712 ..216
270	±10	7.5	5.0	4.0	F271K29Y5RP6.K5	13	14	15	2252 712 ..266
330	±10	7.5	5.0	4.0	F331K29Y5RP6.K5	13	14	15	2252 712 ..316
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470	±10	8.5	5.0	4.0	F471K33Y5RP6.K5	13	14	15	2252 712 ..416
560	±10	10.0	5.0	4.0	F561K39Y5RP6.K5	13	14	15	2252 712 ..516
680	±10	10.0	5.0	4.0	F681K39Y5RP6.K5	13	14	15	2252 712 ..616
820	±10	11.0	5.0	4.0	F821K43Y5RP6.K5	13	14	15	2252 712 ..816
1000	±10	11.0	5.0	4.0	F102K43Y5RP6.K5	13	14	15	2252 712 ..026
1200	±10	12.0	7.5	4.8	F122K47Y5RP63K7	–	–	37	2252 712 ..076
1500	±10	13.5	7.5	4.8	F152K53Y5RP63K7	–	–	37	2252 712 ..126
1800	±10	13.5	7.5	4.8	F182K53Y5RP63K7	–	–	37	2252 712 ..176
2200	±10	17.5	7.5	4.8	F222K69Y5RP63K7	–	–	37	2252 712 ..226
2700	±10	19.0	10.0	4.8	F272K75Y5RP83K0	–	–	48	2252 712 ..276
3300	±10	19.0	10.0	4.8	F332K75Y5RP83K0	–	–	48	2252 712 ..326
3900	±10	24.5	10.0	4.8	F392K75Y5RP83K0	–	–	48	2252 718 ..376
4700	±10	24.5	10.0	4.8	F472K96Y5RP83K0	–	–	48	2252 712 ..426

## Ceramic disc capacitors (kinked leads)

## Class 2, low loss (0.2% max.) 500 V, 1 kV, 2 kV and 3 kV

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			CATALOGUE 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	±10	8.5	7.5	4.0	F121K33Y5RR6.K7	35	36	37	2252 713 ..066
150	±10	8.5	7.5	4.0	F151K33Y5RR6.K7	35	36	37	2252 713 ..116
180	±10	8.5	7.5	4.0	F181K33Y5RR6.K7	35	36	37	2252 713 ..166
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270	±10	8.5	7.5	4.0	F271K33Y5RR6.K7	35	36	37	2252 713 ..266
330	±10	8.5	7.5	4.0	F331K33Y5RR6.K7	35	36	37	2252 713 ..316
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1000	±10	13.5	7.5	4.8	F102K53Y5RR63K7	–	–	37	2252 713 ..026
1200	±10	15	7.5	4.8	F122K59Y5RR63K7	–	–	37	2252 713 ..076
1500	±10	15	7.5	4.8	F152K59Y5RR63K7	–	–	37	2252 713 ..126
1800	±10	19	10.0	4.8	F182K75Y5RR83K0	–	–	48	2252 713 ..176
2200	±10	19	10.0	4.8	F222K75Y5RR83K0	–	–	48	2252 713 ..226
2700	±10	21	10.0	4.8	F272K84Y5RR83K0	–	–	48	2252 713 ..276

### 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. 8<sup>th</sup> and 9<sup>th</sup> digit of the catalogue number to be completed with the packaging code.

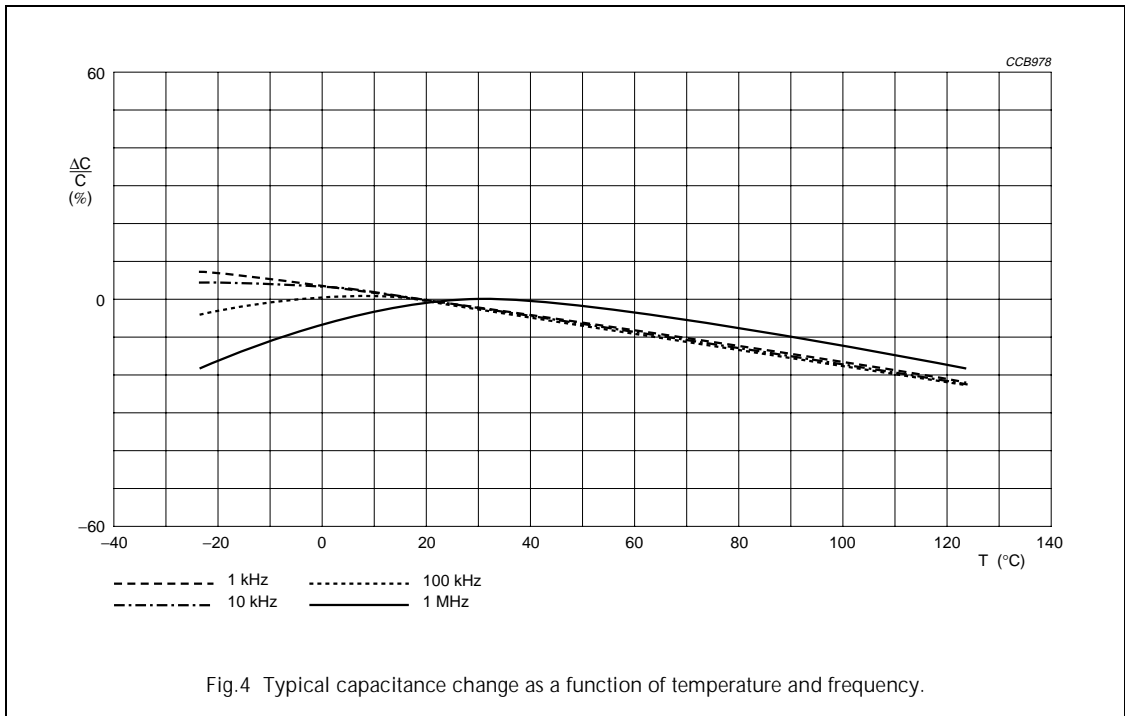
## Ceramic disc capacitors (kinked leads)

**Class 2, low loss (0.2% max.)  
500 V, 1 kV, 2 kV and 3 kV**

### ELECTRICAL CHARACTERISTICS

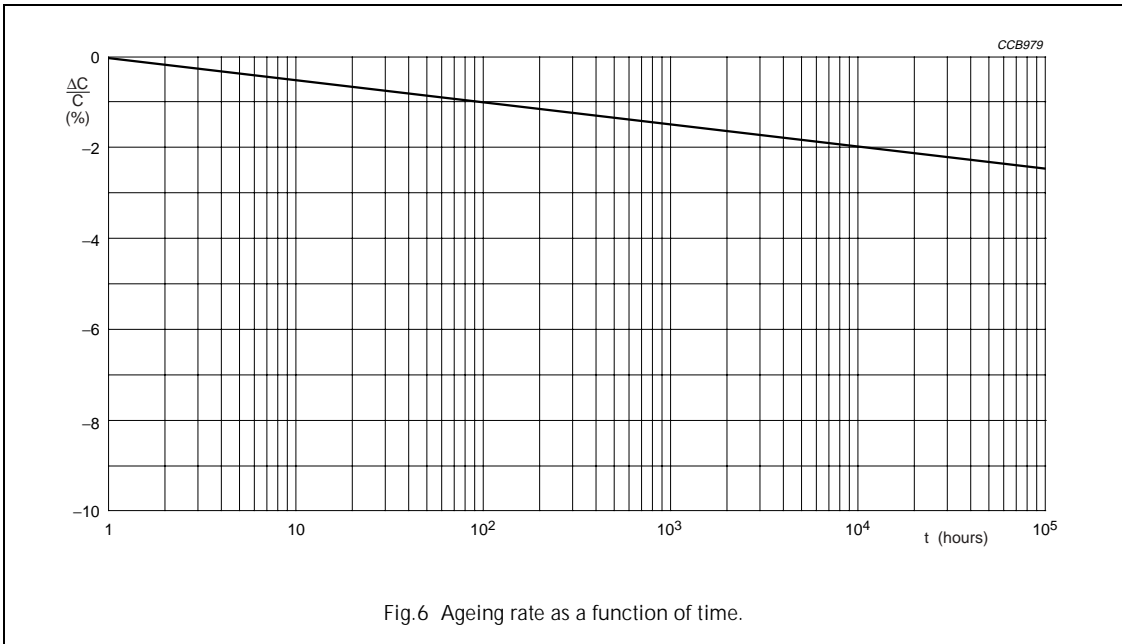
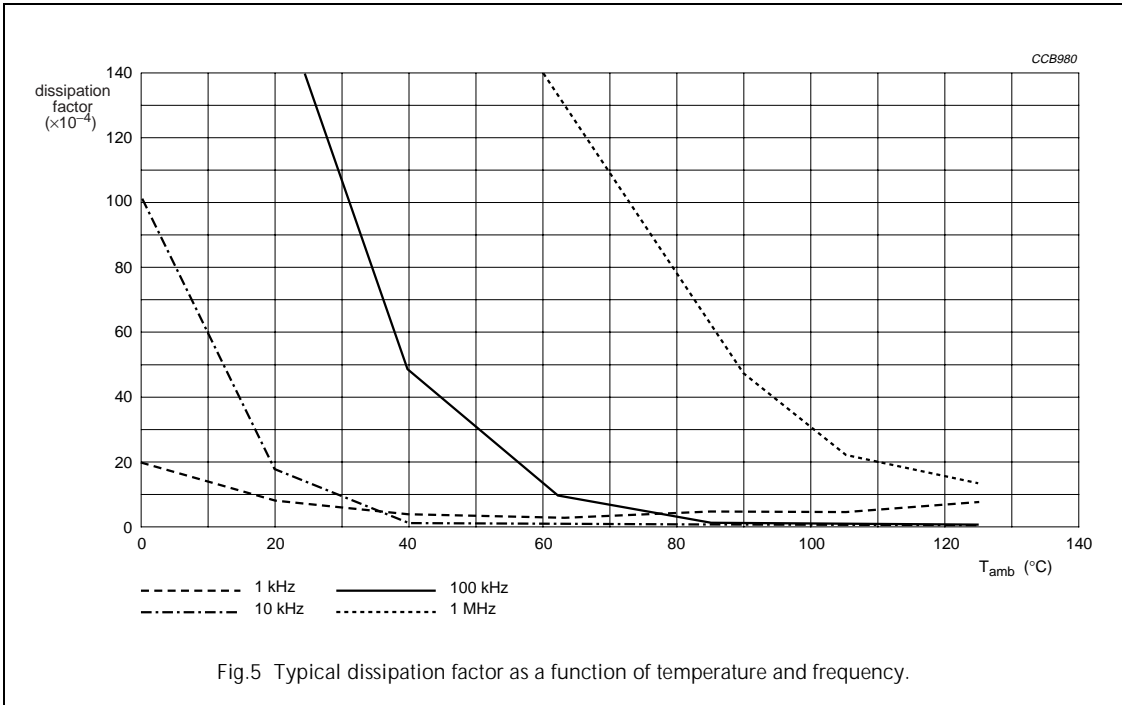
The capacitors meet the essential requirements of "IEC 60384-9 and EIA 198". Unless stated otherwise all electrical values apply at an ambient temperature of  $25 \pm 3 \text{ }^\circ\text{C}$ , at normal atmospheric conditions.

DESCRIPTION	VALUE
Capacitance range at 1 kHz, $1 \pm 0.2 \text{ V (RMS)}$	100 to 4 700 pF
Tolerance on capacitance	$\pm 10\%$
Insulation resistance at 500 V (DC)	$\geq 10000 \text{ M}\Omega \text{ min.}$
Temperature coefficient on capacitance Y5R (2C4): -30 to +85 $^\circ\text{C}$	$\pm 15\%$
Dissipation factor at 1 kHz, $1 \pm 0.2 \text{ V (RMS)}$	0.2% max.
Operating temperature range	-30 to +125 $^\circ\text{C}$
Ageing	typical 0.5% per time decade



**Ceramic disc capacitors  
(kinked leads)**

**Class 2, low loss (0.2% max.)  
500 V, 1 kV, 2 kV and 3 kV**





# Ceramic disc capacitors (kinked leads)

## Class 2, low loss (0.2% max.) 500 V, 1 kV, 2 kV and 3 kV

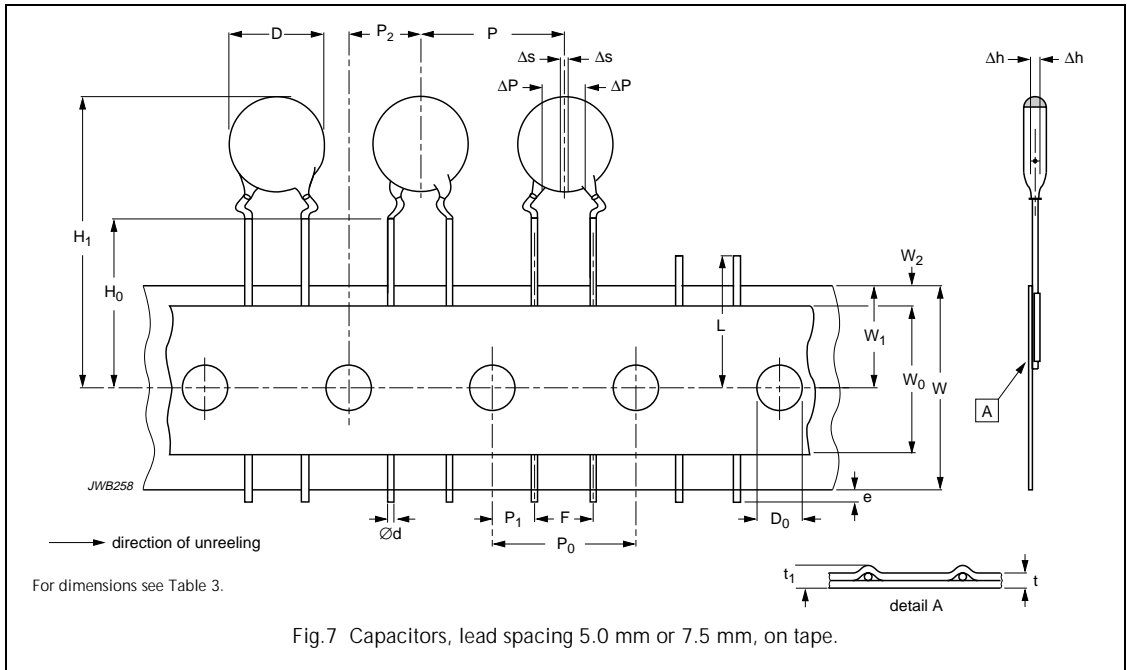
### PACKAGING

The capacitors are supplied in bulk packaging (cardboard boxes), in tape on reel or in ammpack; see Table 2.

**Table 2** Size codes and packaging quantities for kinked capacitors

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	
Ampopack	≤47	≤6.4	<500	2000	335 x 240 x 50
			500 ≤WV<2000	2000	335 x 290 x 50
			2000 and 3000	1500	360 x 330 x 55
	≥7.5	all	1500	360 x 330 x 55	
	≥53	all	all	1500	335 x 290 x 50

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



## Ceramic disc capacitors (kinked leads)

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**Table 3** Dimensions of tape; see Fig.7

SYMBOL	PARAMETER	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	$0.6 \pm 0.05$	$0.6 \pm 0.05$
P	pitch between capacitors	$12.7 \pm 1.0$	$15.0 \pm 1.0$
$P_0$	feed-hole pitch	$12.7 \pm 0.3$ ; note 1	$15.0 \pm 0.3$ ; note 1
$\Delta P$	plane deviation	1.0 max.	1.0 max.
$P_1$	feed-hole centre to lead centre	$3.85 \pm 0.7$ ; note 2	$3.75 \pm 1.0$ ; note 2
$P_2$	feed-hole centre to component centre	$6.35 \pm 1.3$ ; note 2	$7.5 \pm 1.5$ ; note 2
F	lead spacing	$5.0 + 0.6 / - 0.4$	$7.5 \pm 1.0$
$\Delta h$	component alignment	$0 \pm 1.0$	$0 \pm 1.0$
$\Delta s$	deviation along tape, left or right	$0 \pm 1.0$	$0 \pm 1.0$
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	$16.0 \pm 0.5$	$16.0 \pm 0.5$
$H_1$	maximum component height	32.0	40.0
e	lead end protrusion	1.0 max.	1.0 max.
L	maximum length of snipped lead	11.0	11.0
$D_0$	feed-hole diameter	$4.0 \pm 0.2$	$4.0 \pm 0.2$
t	total tape thickness	0.9 max.	0.9 max.
$t_1$	maximum thickness of tape and wires	1.5 max.	1.5 max.

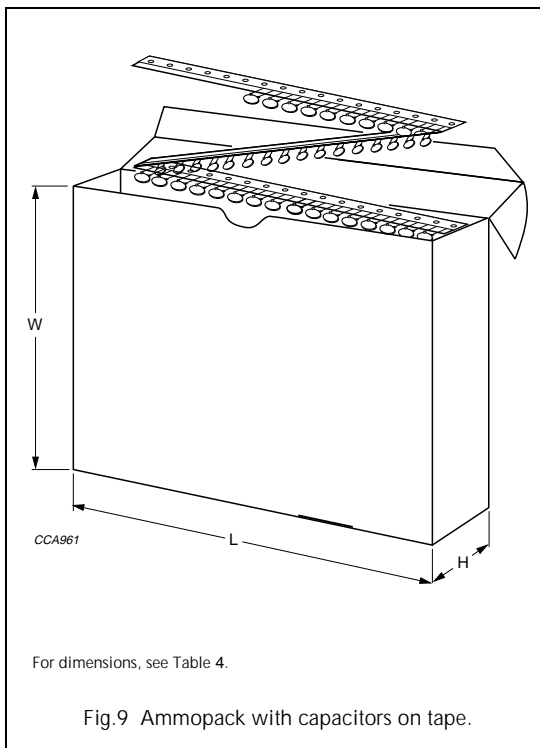
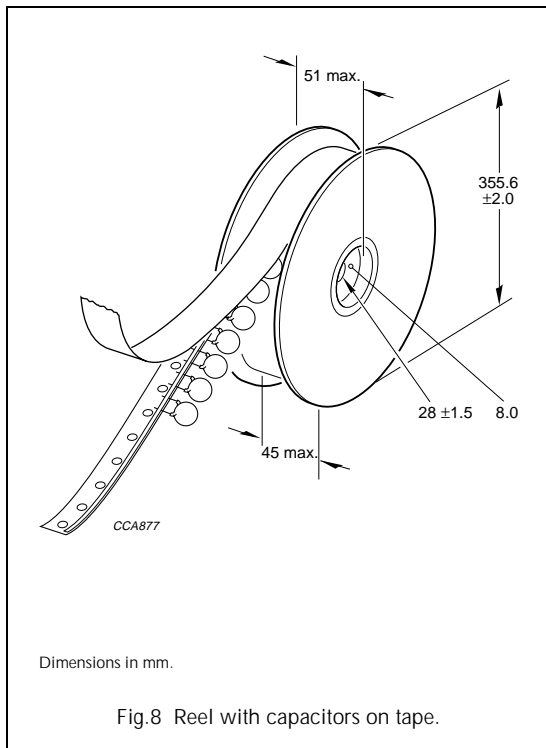
### Notes

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

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(kinked leads)**

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REEL AND TAPE DATA



**Table 4** Dimensions of ammpack for relevant disc size and taping pitch; see Fig.9

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