

DATA SHEET

**Class 2, low loss (0.2% max.)
1 kV, 2 kV and 3 kV
Ceramic disc capacitors
(kinked leads)**

Product specification
Supersedes data of April 1999
File under BCcomponents, BC06

2000 Aug 14

BC COMPONENTS

Ceramic disc capacitors (kinked leads)

**Class 2, low loss (0.2% max.)
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	1 kV; 2 kV; 3 kV
Dielectric strength	200% of rated voltage
Insulation resistance at 500 V (DC)	$\geq 10000 \text{ M}\Omega$
Tolerance on capacitance	$\pm 10\%$; $\pm 20\%$;
Dissipation factor	0.2% max.
Temperature coefficient Y5R (2C4): -30 to +85 °C	$\pm 15\%$
Sectional specifications	IEC 60384-9, EIA 198

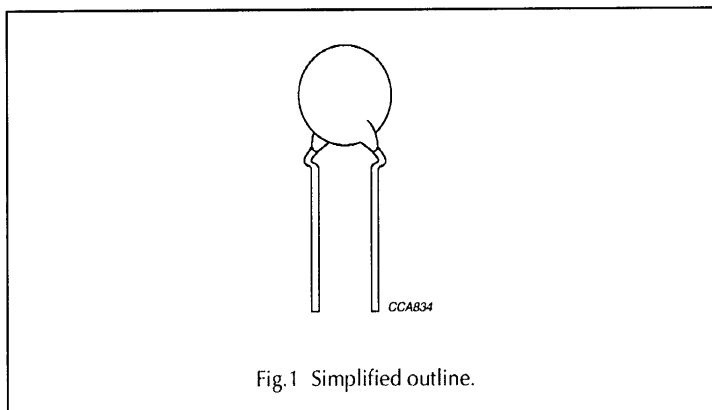
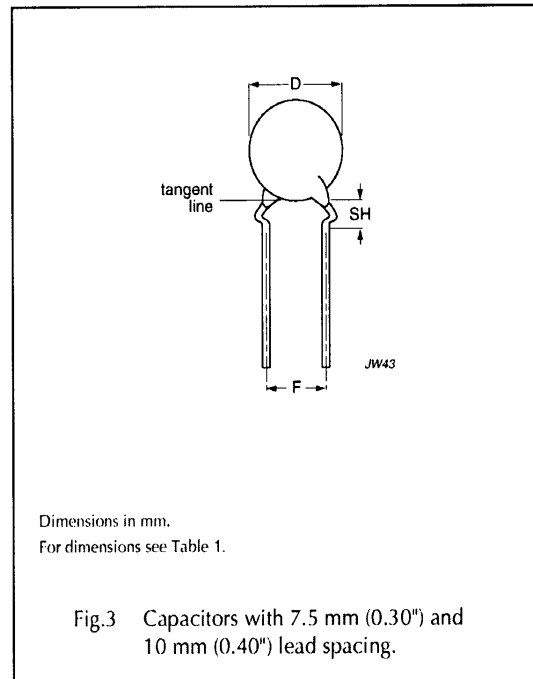
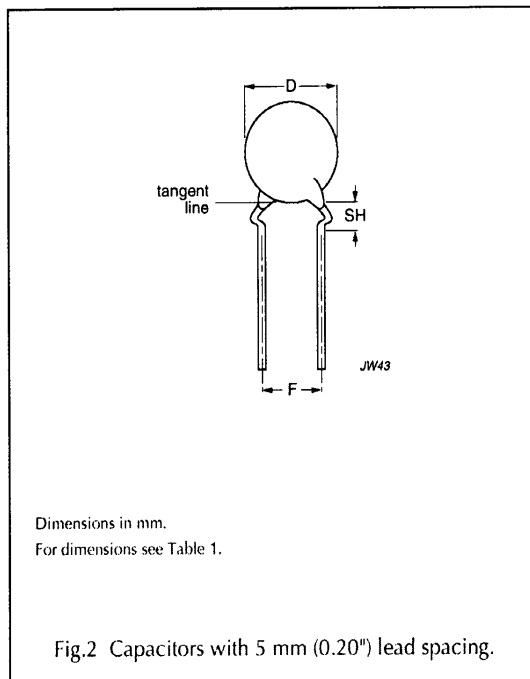


Fig.1 Simplified outline.

Ceramic disc capacitors (kinked leads)

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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}) ≤ 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

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ORDERING INFORMATION

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

C (pF)	TOL. (%)	D _{max} (mm)	LEAD SPACING S (mm)	SH ⁽²⁾ (mm)	CLEAR TEXT CODE	PACKAGING CODE 8 th AND 9 th DIGIT			CATALOGUE NUMBER ⁽³⁾
					13 th DIGIT: T = REEL; U = AMMO; 3 = BULK	REEL	AMMO	BULK	
1 kV									
100	±10	6.5	5.0	4.0	F101K25Y5RN6.K5	13	14	15	2252 711 ..016
150	±10	6.5	5.0	4.0	F151K25Y5RN6.K5	13	14	15	2252 711 ..116
220	±10	6.5	5.0	4.0	F221K25Y5RN6.K5	13	14	15	2252 711 ..216
330	±10	7.5	5.0	4.0	F331K29Y5RN6.K5	13	14	15	2252 711 ..316
470	±10	7.5	5.0	4.0	F471K29Y5RN6.K5	13	14	15	2252 711 ..416
680	±10	8.5	5.0	4.0	F681K33Y5RN6.K5	13	14	15	2252 711 ..616
1000	±10	10.0	5.0	4.0	F102K39Y5RN6.K5	13	14	15	2252 711 ..026
1500	±10	11.0	5.0	4.0	F152K43Y5RN6.K5	13	14	15	2252 711 ..126
2200	±10	13.5	7.5	4.8	F222K53Y5RN63K7	–	–	–	2252 711 37226
3300	±10	17.5	7.5	4.8	F332K69Y5RN63K7	–	–	–	2252 711 37326
4700	±10	19.0	10.0	4.8	F472K75Y5RN83K0	–	–	–	2252 711 48426
2 kV									
100	±10	6.5	5.0	4.0	F101K25Y5RP6.K5	13	14	15	2252 712 ..016
150	±10	6.5	5.0	4.0	F151K25Y5RP6.K5	13	14	15	2252 712 ..116
220	±10	7.5	5.0	4.0	F221K29Y5RP6.K5	13	14	15	2252 712 ..216
330	±10	7.5	5.0	4.0	F331K29Y5RP6.K5	13	14	15	2252 712 ..316
470	±10	8.5	5.0	4.0	F471K33Y5RP6.K5	13	14	15	2252 712 ..416
680	±10	10.0	5.0	4.0	F681K39Y5RP6.K5	13	14	15	2252 712 ..616
1000	±10	11.0	5.0	4.0	F102K43Y5RP6.K5	13	14	15	2252 712 ..026
1500	±10	13.5	7.5	4.8	F152K53Y5RP63K7	–	–	–	2252 721 37126
2200	±10	17.5	7.5	4.8	F222K69Y5RP63K7	–	–	–	2252 711 37226
3300	±10	19.0	10.0	4.8	F332K75Y5RP83K0	–	–	–	2252 711 48326
4700	±10	24.5	10.0	4.8	F472K96Y5RP83K0	–	–	–	2252 711 48426

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C (pF)	TOL. (%)	D _{max} (mm)	LEAD SPACING S (mm)	SH ⁽²⁾ (mm)	CLEAR TEXT CODE	PACKAGING CODE 8 th AND 9 th DIGIT			CATALOGUE NUMBER ⁽³⁾
					13 th DIGIT: T = REEL; U = AMMO; 3 = BULK	REEL	AMMO	BULK	
3 kV									
100	±10	8.5	7.5	4.0	F101K33Y5RR6.K7	35	36	37	2252 713 ..016
150	±10	8.5	7.5	4.0	F151K33Y5RR6.K7	35	36	37	2252 713 ..116
220	±10	8.5	7.5	4.0	F221K33Y5RR6.K7	35	36	37	2252 713 ..216
330	±10	8.5	7.5	4.0	F331K33Y5RR6.K7	35	36	37	2252 713 ..316
470	±10	10.0	7.5	4.0	F471K39Y5RR6.K7	35	36	37	2252 713 ..416
680	±10	11.0	7.5	4.0	F681K43Y5RR6.K7	35	36	37	2252 713 ..616
1000	±10	13.5	7.5	4.8	F102K53Y5RR63K7	–	–	–	2252 713 37026
1500	±10	15.0	7.5	4.8	F152K59Y5RR63K7	–	–	–	2252 713 37126
2200	±10	19.0	10.0	4.8	F222K75Y5RR83K0	–	–	–	2252 713 48226
2700	±10	21.5	10.0	4.8	F272K84Y5RR83K0	–	–	–	2252 713 48276

Notes

1. Maximum thickness: 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 catalogue number to be completed with the packaging code.

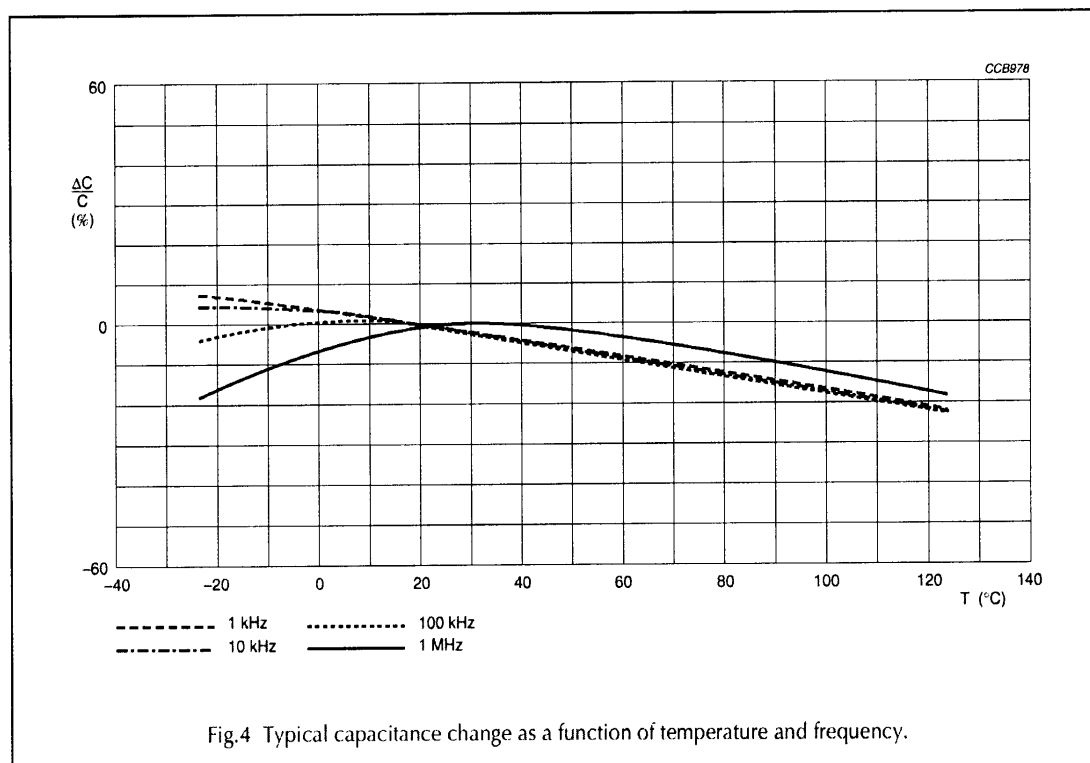
Ceramic disc capacitors (kinked leads)

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ELECTRICAL CHARACTERISTICS

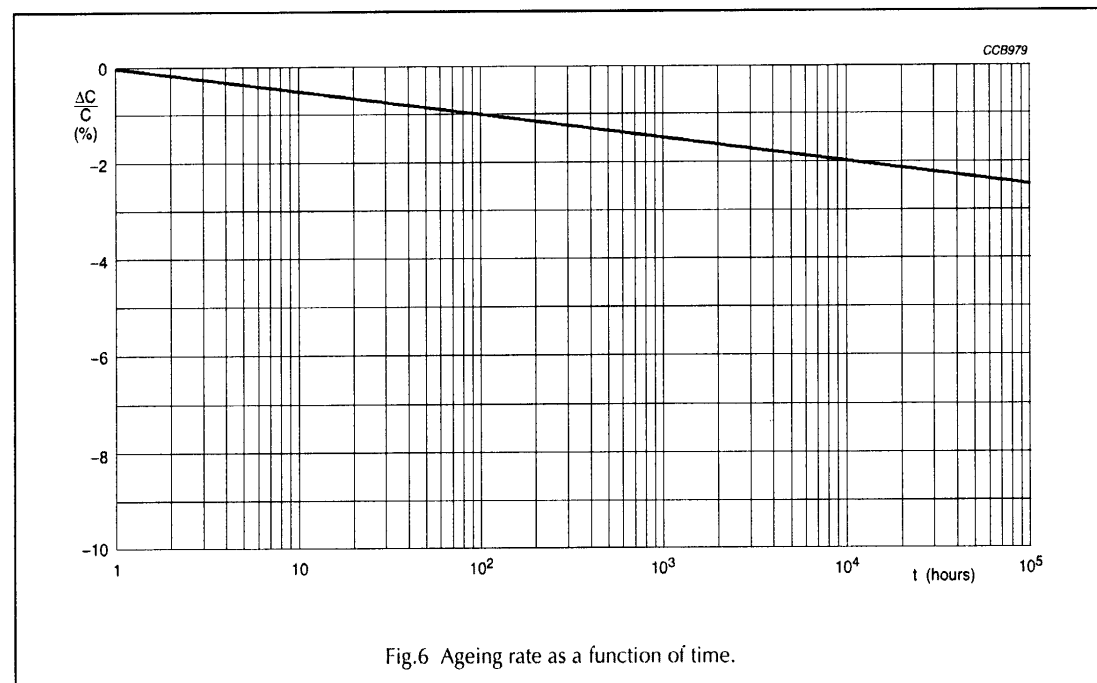
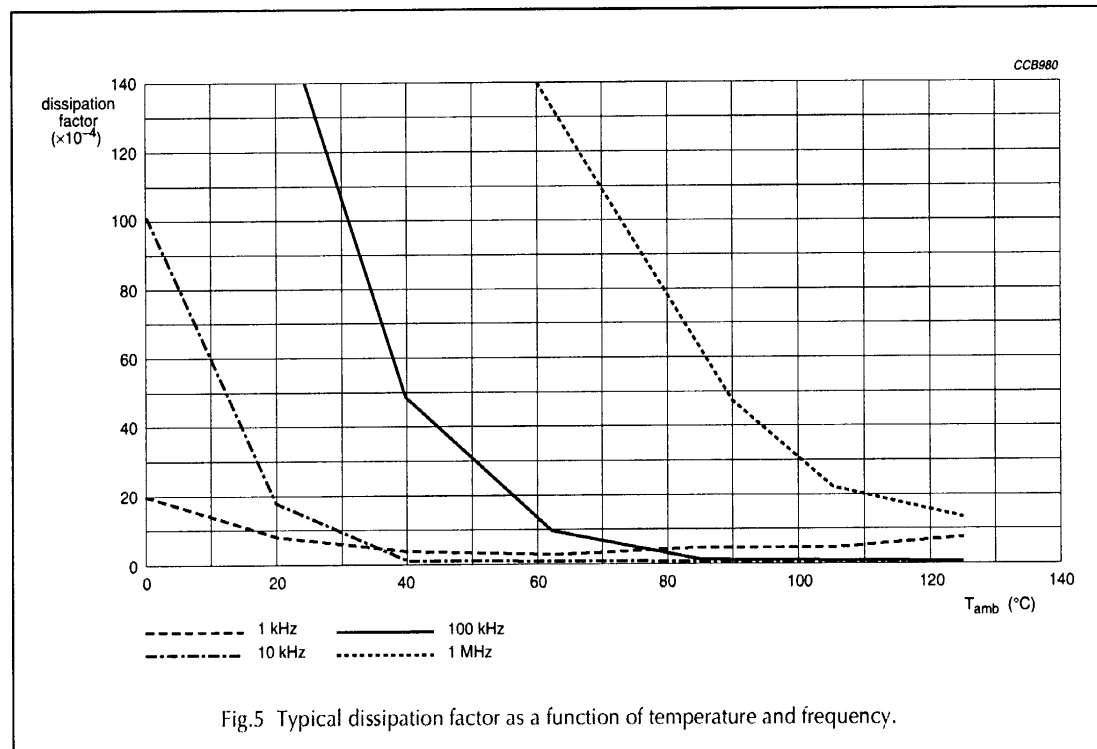
The capacitors meet the essential requirements of "IEC 60384-9 and EIA 198". Unless stated otherwise all electrical values apply at an ambient temperature of $25 \pm 3^\circ\text{C}$, at normal atmospheric conditions.

DESCRIPTION	VALUE
Capacitance range at 1 kHz, 1 ± 0.2 V (RMS)	100 to 4700 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 ± 0.2 V (RMS)	0.2% max.
Operating temperature range	-30 to $+125^\circ\text{C}$
Ageing	typical 0.5% per time decade



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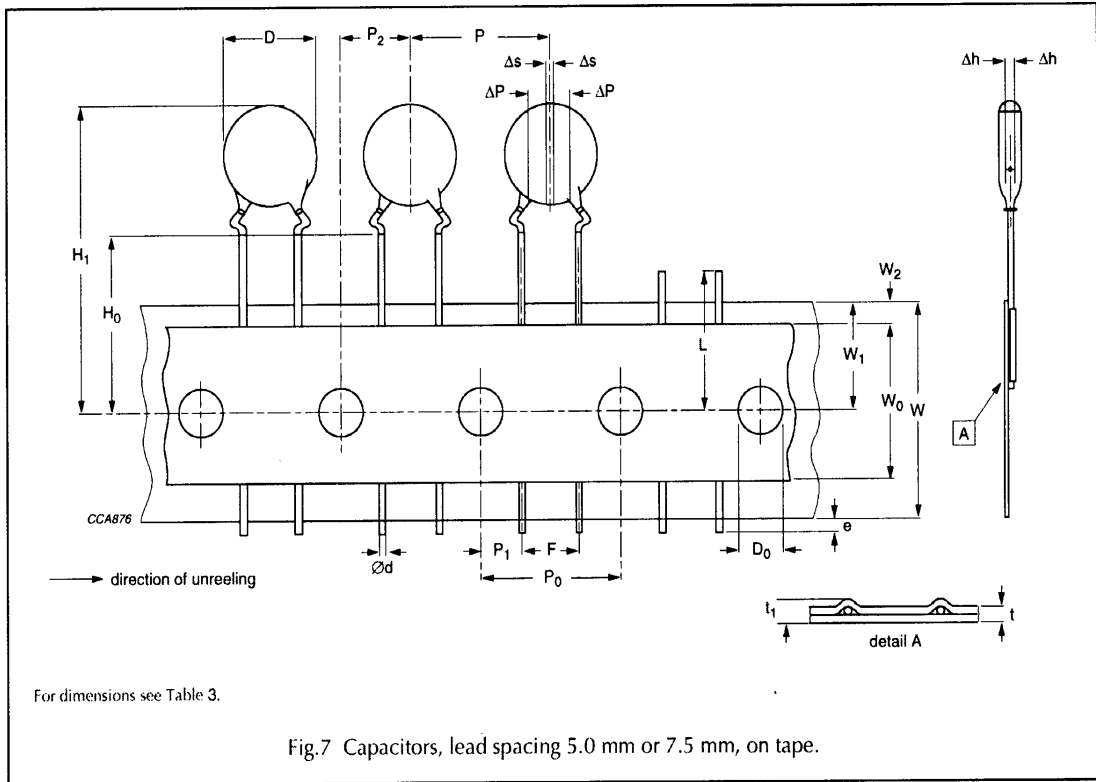
PACKAGING

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

Table 2 Disc diameter and packaging quantities

PARAMETER		PACKAGING QUANTITIES		
D_{max} (mm)	VOLTAGE	BULK	REEL	AMMO
6.5 to 11.0	1 kV	1000	2000	2000
6.5 to 11.0	2 kV	1000	2000	1500
12.0	1 kV, 2 kV	1000	1500	1500
13.5	1 kV, 2 kV	500	1500	1500
13.5	3 kV	500	1000	1500
8.5 to 12.0	3 kV	1000	1000	1500
15.0 to 19.0	1 kV, 2 kV, 3 kV	500	–	–
21.5 to 24.5	1 kV, 2 kV, 3 kV	250	–	–

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



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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 ± 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
ΔP	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
Δh	component alignment	0 ± 1.0	0 ± 1.0
Δs	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: ± 1 mm/20 pitches.
2. Obliquity maximum 3° .

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REEL AND TAPE DATA

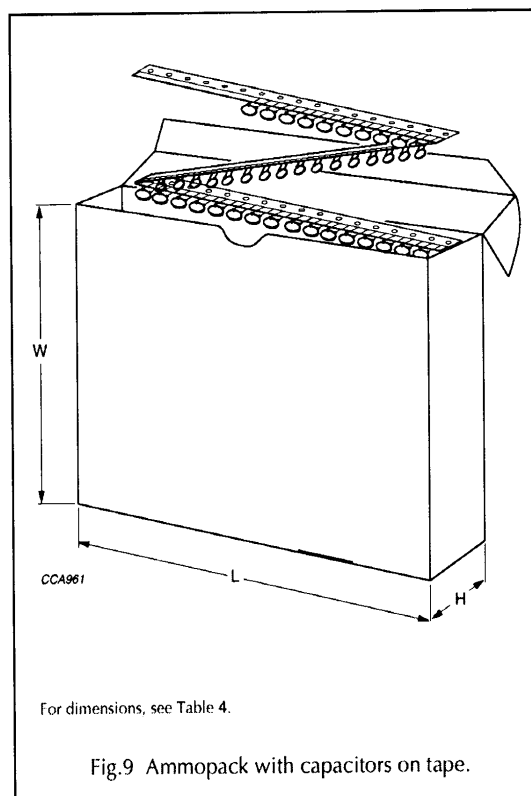
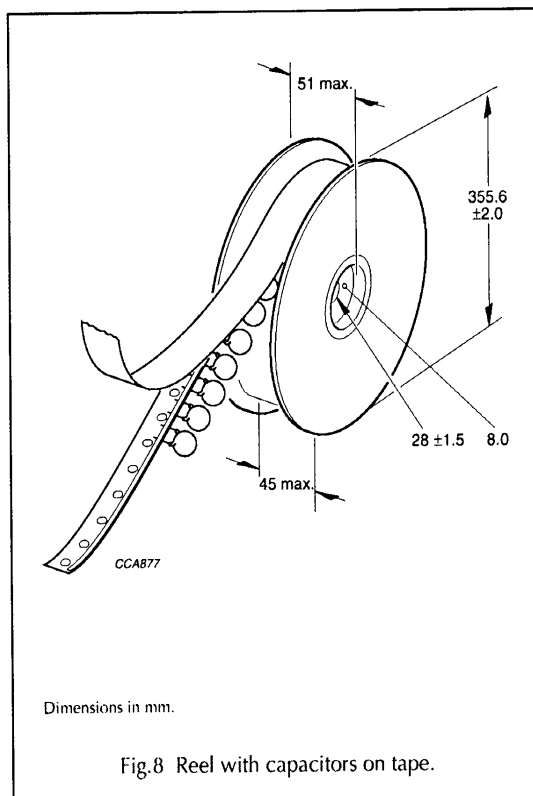


Table 4 Dimensions of ammpack for relevant disc size and taping pitch; see Fig.9

PARAMETER	DISC SIZE (D _{max})		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