DATA SHEET

Class 1 and 2, 1 kV and 2 kV general purpose
Ceramic disc capacitors (flanged leads)

Product specification
Supersedes data of 23 October 2000

2002 November 04

BCE Sud Passive Components
A former part of Philips Components

Ceramic disc capacitors (flanged leads)

Class 1 and 2, 1 kV and 2 kV general purpose

FEATURES

- Low losses
- High stability
- High capacitance in small size
- Flanged leads.

APPLICATIONS

- DC high voltage
- Pulse high voltage
- SMPS
- HV power supply
- HF ballast.

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.

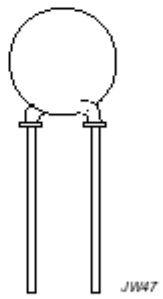
The capacitors may be supplied with flanged leads with a lead spacing of 5 mm (0.200") and a lead length from 4 to 32 mm. The standard tolerance on capacitance is ±5% or ±10% for class 1 capacitors and ±10% or ±20% for class 2 capacitors. Encapsulation is made of gold-coloured epoxy-resin, flammable resistant in accordance with *"UL94V-0"*.

QUICK REFERENCE DATA

DESCRIPTION	VALUE
Capacitance range:	
Class 1	10 to 470 pF
Class 2	100 to 10000 pF
Rated DC voltage	1 kV; 2 kV
Dielectric strength	200% of rated voltage
Insulation resistance at 500 V (DC)	≥10000 MΩ
Tolerance on capacitance	±5%; ±10%; , ±20% note 1
Dissipation factor:	
Class 1, C ≤ 30 pF	$\leq 20 \times (10/C + 0.7) \times 10^{-4}$ max.
Class 1, C > 30 pF	$\leq 20 \times 10^{-4}$
Class 2	≤3.0%
Temperature coefficients	SL; Y5P; Z5U
Sectional specifications	IEC 60384-8, IEC 60384-9, EIA 198
Climatic category:	
Class 1	30/125/21 (2 kV: 30/105/21)
Class 2	10/85/21

Note

1. Other tolerances available on request.



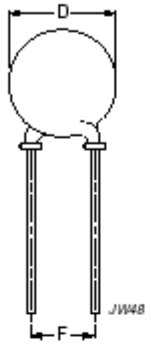
Flanged.

Fig.1 Simplified outlines.

Ceramic disc capacitors (flanged leads)

Class 1 and 2, 1 kV and 2 kV general purpose

MECHANICAL DATA



Dimensions in mm.
For dimensions see Tables 1 and 2.

Fig.2 Capacitors with 5 mm (0.20") lead spacing.

MARKING

- The body of the capacitors is tan coloured; capacitance value and voltage are indicated by a marking code on the body.

Ceramic disc capacitors (flanged leads)

Class 1 and 2, 1 kV and 2 kV general purpose

ORDERING INFORMATION

Table 1 1 kV (DC), flanged; capacitance, mechanical dimensions and ordering information; note 1

C (pF)	TOL. (%)	D_{max} (mm)	LEAD SPACING F (mm)	SH[2] (mm)	CLEAR TEXT CODE	PACKAGING CODE 8th AND 9th DIGIT[3]			CATALOGUE NUMBER[4]
					12th AND 13th DIGIT: WG = REEL; WJ = AMMO; WF = BULK				
			FLANGED			REEL	AMMO	BULK	FLANGED
Class 1 SL									
10	±5	7	5.0	10	D100J28SL0N..AP	13	14	15	2251 561 ..005
12	±5	7	5.0	10	D120J28SL0N..AP	13	14	15	2251 561 ..055
15	±5	7	5.0	10	D150J28SL0N..AP	13	14	15	2251 561 ..105
18	±5	7	5.0	10	D180J28SL0N..AP	13	14	15	2251 561 ..155
22	±5	7	5.0	10	D220J28SL0N..AP	13	14	15	2251 561 ..205
27	±5	7	5.0	10	D270J28SL0N..AP	13	14	15	2251 561 ..255
33	±5	7	5.0	10	D330J28SL0N..AP	13	14	15	2251 561 ..305
39	±5	7	5.0	10	D390J28SL0N..AP	13	14	15	2251 561 ..355
47	±5	7	5.0	10	D470J28SL0N..AP	13	14	15	2251 561 ..405
56	±5	7	5.0	10	D560J28SL0N..AP	13	14	15	2251 561 ..505
68	±5	7	5.0	10	D680J28SL0N..AP	13	14	15	2251 561 ..605
82	±5	7	5.0	10	D820J28SL0N..AP	13	14	15	2251 561 ..805
100	±5	7	5.0	10	D101J28SL0N..AP	13	14	15	2251 561 ..015
120	±5	8	5.0	11	D121J31SL0N..AP	13	14	15	2251 561 ..065
150	±5	8	5.0	11	D151J31SL0N..AP	13	14	15	2251 561 ..115
180	±5	9	5.0	12	D181J35SL0N..AP	13	14	15	2251 561 ..165
220	±5	9	5.0	12	D221J35SL0N..AP	13	14	15	2251 561 ..215
270	±5	10	5.0	13	D271J39SL0N..AP	13	14	15	2251 561 ..265
330	±5	11	5.0	14	D331J43SL0N..AP	13	14	15	2251 561 ..315
390	±5	11	5.0	14	D391J43SL0N..AP	13	14	15	2251 561 ..365
470	±5	12	5.0	15	D471J47SL0N..AP	13	14	15	2251 561 ..415
Class 2 Y5P									
100	±10	7	5.0	10	D101K28Y5PN..SP	13	14	15	2251 611 ..016
120	±10	7	5.0	10	D121K28Y5PN..SP	13	14	15	2251 611 ..066
150	±10	7	5.0	10	D151K28Y5PN..SP	13	14	15	2251 611 ..116
180	±10	7	5.0	10	D181K28Y5PN..SP	13	14	15	2251 611 ..166
220	±10	7	5.0	10	D221K28Y5PN..SP	13	14	15	2251 611 ..216
270	±10	7	5.0	10	D271K28Y5PN..SP	13	14	15	2251 611 ..266
330	±10	7	5.0	10	D331K28Y5PN..SP	13	14	15	2251 611 ..316
390	±10	7	5.0	10	D391K28Y5PN..SP	13	14	15	2251 611 ..366
470	±10	7	5.0	10	D471K28Y5PN..SP	13	14	15	2251 611 ..416
560	±10	7	5.0	10	D561K28Y5PN..SP	13	14	15	2251 611 ..516
680	±10	7	5.0	10	D681K28Y5PN..SP	13	14	15	2251 611 ..616

Ceramic disc capacitors (flanged leads)

Class 1 and 2, 1 kV and 2 kV general purpose

C (pF)	TOL. (%)	D_{max} (mm)	LEAD SPACING F (mm)	SH[2] (mm)	CLEAR TEXT CODE	PACKAGING CODE 8th AND 9th DIGIT[3]			CATALOGUE NUMBER[4]
					12th AND 13th DIGIT: WG = REEL; WJ = AMMO; WF = BULK				
			FLANGED			REEL	AMMO	BULK	FLANGED
820	±10	7	5.0	10	D821K28Y5PN..SP	13	14	15	2251 611 ..816
1000	±10	7	5.0	10	D102K28Y5PN..SP	13	14	15	2251 611 ..026
1200	±10	8	5.0	11	D122K31Y5PN..SP	13	14	15	2251 611 ..076
1500	±10	9	5.0	12	D152K35Y5PN..SP	13	14	15	2251 611 ..126
1800	±10	9	5.0	12	D182K35Y5PN..SP	13	14	15	2251 611 ..176
2200	±10	10	5.0	13	D222K39Y5PN..SP	13	14	15	2251 611 ..226
2700	±10	11	5.0	14	D272K43Y5PN..SP	13	14	15	2251 611 ..276
3300	±10	11	5.0	14	D332K43Y5PN..SP	13	14	15	2251 611 ..326
3900	±10	11	5.0	14	D392K43Y5PN..SP	13	14	15	2251 611 ..376
4700	±10	12	5.0	15	D472K47Y5PN..SP	13	14	15	2251 611 ..426
Class 2 Z5U									
1000	±20	7	5.0	10	D102M28Z5UN..SP	13	14	15	2251 641 ..027
1200	±20	7	5.0	10	D122M28Z5UN..SP	13	14	15	2251 641 ..077
1500	±20	7	5.0	10	D152M28Z5UN..SP	13	14	15	2251 641 ..127
1800	±20	7	5.0	10	D182M28Z5UN..SP	13	14	15	2251 641 ..177
2200	±20	7	5.0	10	D222M28Z5UN..SP	13	14	15	2251 641 ..227
2700	±20	8	5.0	11	D272M31Z5UN..SP	13	14	15	2251 641 ..277
3300	±20	8	5.0	11	D332M31Z5UN..SP	13	14	15	2251 641 ..327
3900	±20	9	5.0	12	D392M35Z5UN..SP	13	14	15	2251 641 ..377
4700	±20	9	5.0	12	D472M35Z5UN..SP	13	14	15	2251 641 ..427
5600	±20	10	5.0	13	D562M39Z5UN..SP	13	14	15	2251 641 ..527
6800	±20	10	5.0	13	D682M39Z5UN..SP	13	14	15	2251 641 ..627
8200	±20	11	5.0	14	D822M43Z5UN..SP	13	14	15	2251 641 ..827
10000	±20	12	5.0	15	D103M47Z5UN..SP	13	14	15	2251 641 ..037

Notes

1. Maximum thickness 4.5 mm.
2. SH = seated height.
3. Packaging codes refer to flanged leads. Other styles available on request.
4. 8th and 9th digit of the catalogue number to be completed with the packaging code.

Ceramic disc capacitors (flanged leads)

Class 1 and 2, 1 kV and 2 kV general purpose

Table 2 2 kV (DC), flanged; capacitance, mechanical dimensions and ordering information; note 1

C (pF)	TOL. (%)	D_{max} (mm)	LEAD SPACING F (mm)	SH[2] (mm)	CLEAR TEXT CODE	PACKAGING CODE 8th AND 9th DIGIT[3]			CATALOGUE NUMBER[4]
					12th AND 13th DIGIT: WG = REEL; WJ = AMMO; WF = BULK				
			FLANGED			REEL	AMMO	BULK	FLANGED
Class 1 SL									
10	±5	7	5.0	10	D100J28SL0P..AP	13	14	15	2251 562 ..005
12	±5	7	5.0	10	D120J28SL0P..AP	13	14	15	2251 562 ..055
15	±5	7	5.0	10	D150J28SL0P..AP	13	14	15	2251 562 ..105
18	±5	7	5.0	10	D180J28SL0P..AP	13	14	15	2251 562 ..155
22	±5	7	5.0	10	D220J28SL0P..AP	13	14	15	2251 562 ..205
27	±5	7	5.0	10	D270J28SL0P..AP	13	14	15	2251 562 ..255
33	±5	7	5.0	10	D330J28SL0P..AP	13	14	15	2251 562 ..305
39	±5	7	5.0	10	D390J28SL0P..AP	13	14	15	2251 562 ..355
47	±5	7	5.0	10	D470J28SL0P..AP	13	14	15	2251 562 ..405
56	±5	7	5.0	10	D560J28SL0P..AP	13	14	15	2251 562 ..505
68	±5	8	5.0	11	D680J31SL0P..AP	13	14	15	2251 562 ..605
82	±5	8	5.0	11	D820J31SL0P..AP	13	14	15	2251 562 ..805
100	±5	9	5.0	12	D101J35SL0P..AP	13	14	15	2251 562 ..015
120	±5	10	5.0	13	D121J39SL0P..AP	13	14	15	2251 562 ..065
150	±5	10	5.0	13	D151J39SL0P..AP	13	14	15	2251 562 ..115
180	±5	11	5.0	14	D181J43SL0P..AP	13	14	15	2251 562 ..165
220	±5	12	5.0	15	D221J47SL0P..AP	13	14	15	2251 562 ..215
Class 2 Y5P									
100	±10	7	5.0	10	D101K28Y5PP..SP	13	14	15	2251 612 ..016
120	±10	7	5.0	10	D121K28Y5PP..SP	13	14	15	2251 612 ..066
150	±10	7	5.0	10	D151K28Y5PP..SP	13	14	15	2251 612 ..116
180	±10	7	5.0	10	D181K28Y5PP..SP	13	14	15	2251 612 ..166
220	±10	7	5.0	10	D221K28Y5PP..SP	13	14	15	2251 612 ..216
270	±10	7	5.0	10	D271K28Y5PP..SP	13	14	15	2251 612 ..266
330	±10	7	5.0	10	D331K28Y5PP..SP	13	14	15	2251 612 ..316
390	±10	7	5.0	10	D391K28Y5PP..SP	13	14	15	2251 612 ..366
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560	±10	8	5.0	11	D561K31Y5PP..SP	13	14	15	2251 612 ..516
680	±10	8	5.0	11	D681K31Y5PP..SP	13	14	15	2251 612 ..616
820	±10	9	5.0	12	D821K35Y5PP..SP	13	14	15	2251 612 ..816
1000	±10	9	5.0	12	D102K35Y5PP..SP	13	14	15	2251 612 ..026
1200	±10	10	5.0	13	D122K39Y5PP..SP	13	14	15	2251 612 ..076
1500	±10	10	5.0	13	D152K39Y5PP..SP	13	14	15	2251 612 ..126
1800	±10	11	5.0	14	D182K43Y5PP..SP	13	14	15	2251 612 ..176
2200	±10	11	5.0	14	D222K43Y5PP..SP	13	14	15	2251 612 ..226

Ceramic disc capacitors (flanged leads)

Class 1 and 2, 1 kV and 2 kV general purpose

C (pF)	TOL. (%)	D_{max} (mm)	LEAD SPACING F (mm)	SH[2] (mm)	CLEAR TEXT CODE	PACKAGING CODE 8th AND 9th DIGIT[3]			CATALOGUE NUMBER[4]
					12th AND 13th DIGIT: WG = REEL; WJ = AMMO; WF = BULK				
			FLANGED			REEL	AMMO	BULK	FLANGED
2700	±10	12	5.0	15	D272K47Y5PP..SP	13	14	15	2251 612 ..276
Class 2 Z5U									
1000	±20	8	5.0	11	D102M31Z5UP..SP	13	14	15	2251 642 ..027
1500	±20	8	5.0	11	D152M35Z5UP..SP	13	14	15	2251 642 ..127
2200	±20	9	5.0	12	D222M35Z5UP..SP	13	14	15	2251 642 ..227
3300	±20	10	5.0	13	D332M39Z5UP..SP	13	14	15	2251 642 ..327
4700	±20	11	5.0	14	D472M43Z5UP..SP	13	14	15	2251 642 ..427

Notes

1. Maximum thickness 4.5 mm.
2. SH = seated height.
3. Packaging codes refer to flanged leads. Other styles available on request.
4. 8th and 9th digit of the catalogue number to be completed with the packaging code.

Ceramic disc capacitors (flanged leads)

Class 1 and 2, 1 kV and 2 kV general purpose

ELECTRICAL CHARACTERISTICS

The capacitors meet the essential requirements of *"IEC 60384-8"*, *"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.

DESCRIPTION	VALUE	
	1 kV	2 kV
Capacitance range:		
Class 1, at 1 MHz, 1.2 V (RMS)[1]	10 to 470 pF	10 to 220 pF
Class 2, at 1 kHz, 1 ±0.2 V (RMS)	100 to 10000 pF	100 to 4700 pF
Tolerance on capacitance	±5%; ±10%; ±20%	±5%; ±10%; ±20%
Dielectric strength	200% of rated voltage	
Insulation resistance at 500 V (DC)	≥10000 MΩ	
Temperature coefficients on capacitance:		
Class 1	SL	
Class 2	Y5P; Z5U	
Dissipation factor:		
Class 1, at 1 MHz, 1.2 V (RMS) C ≤ 30 pF	$\leq 20 \times (10/C + 0.7) \times 10^{-4}$ max.	
Class 1, at 1 MHz, 1.2 V (RMS) C > 30 pF	$\leq 20 \times 10^{-4}$	
Class 2, at 1 kHz, 1 ±0.2 V (RMS)	≤3.0%	
Operating temperature range:		
Class 1	−30 to +125 °C (2 kV: −30 to +105 °C)	
Class 2	−30 to +85 °C	

Note

1. 1 kHz, 1 ±0.2 V (RMS) for capacitance values higher than 1000 pF.

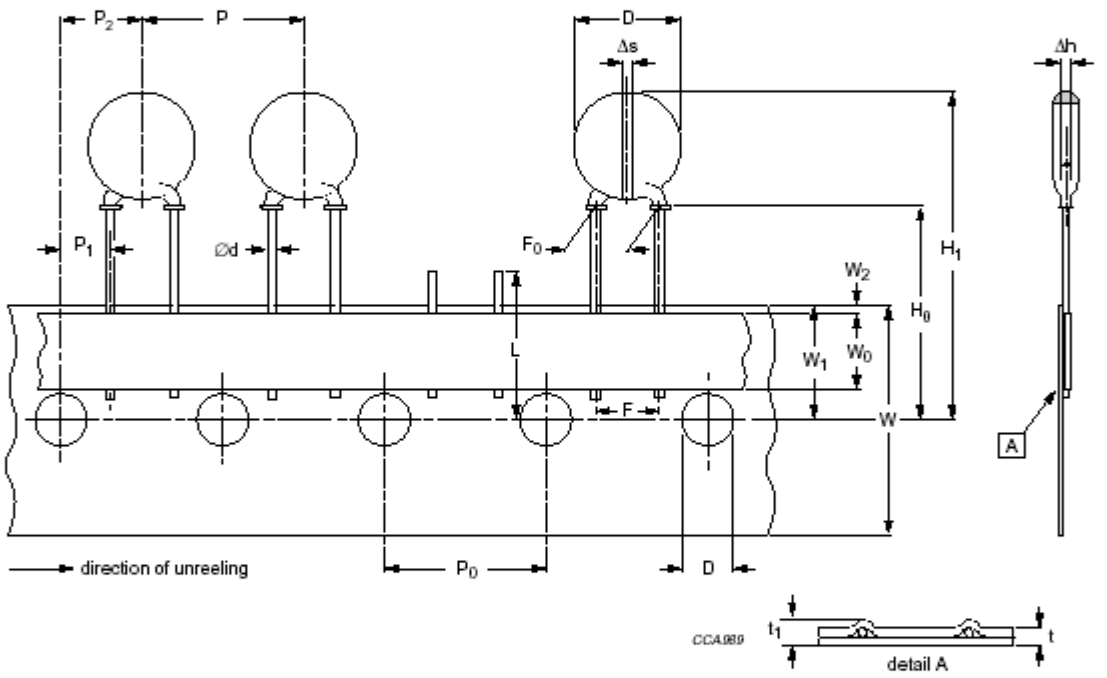
PACKAGING

The capacitors are supplied in bulk packaging (cardboard boxes), in tape on reel or in ammopack; see Table 3.

Table 3 Packaging quantities for flanged capacitors

BULK		REEL		AMMOPACK	
1 kV	2 kV	1 kV	2 kV	1 kV	2 kV
500	250	2000	1500	2000	1500

Flanged capacitors on tape, lead spacing 5.0 mm (0.2 inch)



For dimensions see Table 4.

Fig.3 Capacitors, lead spacing 5.0 mm, on tape.

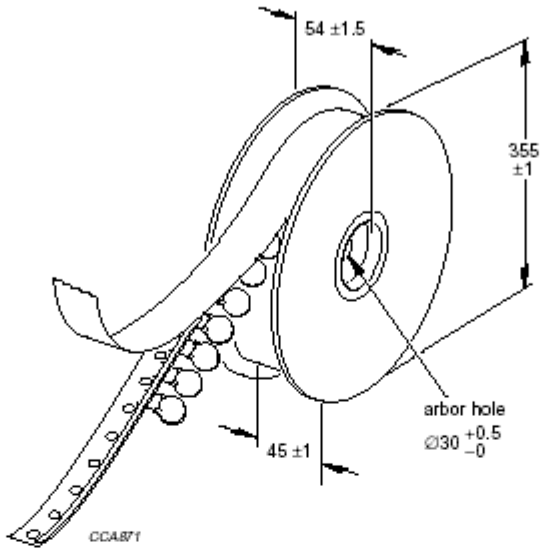
Table 4 Dimensions of tape for flanged capacitors; see Fig.3

SYMBOL	PARAMETER	DIMENSIONS (mm)	
		NOMINAL	TOLERANCE
d	lead diameter	0.6	+0.6 −0.05
P	pitch between capacitors	12.7	±1.0
P_0	feed-hole pitch	12.7	±0.2; note 1
P_1	feed-hole centre to lead centre	3.85	±0.5; note 2
P_2	feed-hole centre to component centre	6.35	±0.7; note 2
F	lead spacing	5.0	+0.6 −0.1
F_0	lead-to-lead	5.08	+0.5 −0.1
Δh	component alignment	0	±1.0
Δs	deviation along tape, left or right	0	±0.6
W	tape width	18.0	±0.5
W_0	hold-down tape width	6.0	±0.5
W_1	hole position	9.0	±0.5
W_2	hold-down tape position	0	±2
H_0	flange to tape centre	16.0	±0.5
H_1	maximum component height	28.75	–
	minimum component height	18.75	–
L	maximum length of snipped lead	11	–
D_0	feed-hole diameter	4.0	±0.2
t	total tape thickness	0.65	±0.2
t_1	maximum thickness of tape and wires	1.5	–

Notes

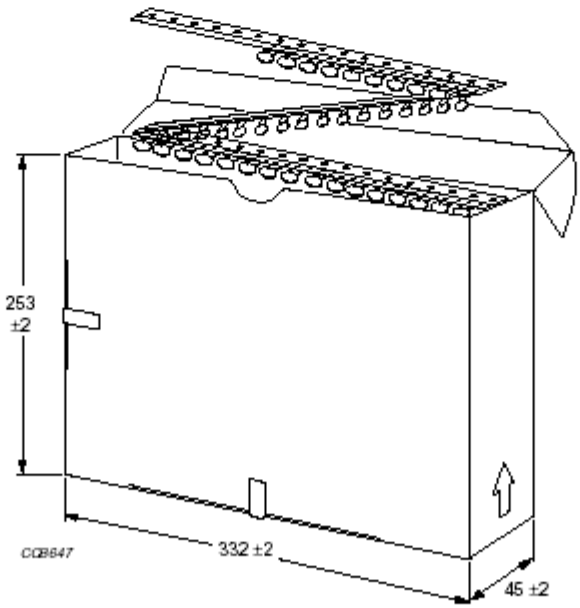
1. Cumulative pitch error: ±≤1 mm/20 pitches.
2. Obliquity maximum 3°.

REEL AND TAPE DATA



Dimensions in mm.

Fig.4 Reel with flanged capacitors on tape.



Dimensions in mm.

Fig.5 Ammopack with flanged capacitors on tape.