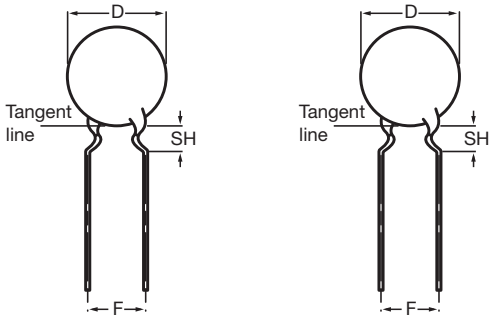
Ceramic Disc Capacitors
Class 1 and 2, 500 V_{DC}, General Purpose



Capacitors with 5 mm (0.20") and 7.5 mm (0.30") lead spacing

QUICK REFERENCE DATA		
DESCRIPTION	CLASS 1 (C0G (NP0), SL0)	CLASS 2 (YP5, Z5U, Y5V, X5F)
Voltage (V_{DC})	500	
Min. Capacitance (pF)	10	100
Max. Capacitance (pF)	82	22 000
Mounting	Through hole	

MARKING

Marking indicates capacitance value and tolerance in accordance with “EIA 198”.

The capacitors meet the essential requirements of “EIA 198”. Unless stated otherwise all electrical values apply at an ambient temperature of 25 °C ± 3 °C, at normal atmospheric conditions.

OPERATING TEMPERATURE RANGE

Class 1, - 55 °C to + 125 °C

Class 2, - 55 °C to + 85 °C

TEMPERATURE COEFFICIENTS

Class 1, C0G (NP0); SL0

Class 2, Y5P; Z5U; Y5V; X5F

SECTIONAL SPECIFICATIONS

Class 1, IEC 60 384-8

Class 2, IEC 60 384-9

EIA 198

CLIMATIC CATEGORY

Class 1, 55/125/21

Class 2, 10/85/21, 30/85/21 and 55/85/21

FEATURES

- Low losses
- High stability
- High capacitance in small size
- Kinked (preferred) or straight leads
- Compliant to RoHS directive 2002/95/EC

RoHS COMPLIANT

APPLICATIONS

- Bypassing
- Coupling
- Resonant circuit

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.

The capacitors have inward kinked leads with a spacing of 5 mm (0.200") or 7.5 mm (0.300") and a lead length from 4 mm to 30 mm. Encapsulation is made of phenolic resin.

CAPACITANCE RANGE

Class 1, at 1 MHz, 1.2 V_{RMS}; 10 pF to 82 pF

Class 2, at 1 kHz, 1 ± 0.2 V_{RMS}; 100 pF to 22 000 pF

1 kHz, 1 V_{RMS} ± 0.2 V_{RMS} for capacitance values higher than 1000 pF

RATED DC VOLTAGE

500 V

DIELECTRIC STRENGTH

250 % of rated voltage

INSULATION RESISTANCE AT 500 V_{DC}

≥ 10 000 MΩ

TOLERANCE ON CAPACITANCE

± 5 %; ± 10 %; ± 20 %; + 80/- 20 %

DISSIPATION FACTOR

Class 1, C ≤ 30 pF; ≤ 20 x (10/C + 0.7) x 10^{-4} maximum

Class 1, C > 30 pF; ≤ 0.2 %

Class 2, ≤ 3.0 %

For technical questions, contact: CDC@vishay.com
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ORDERING INFORMATION (PREFERED TYPES), CLASS 1, 500 V_{DC}, KINKED					
C (pF)	TOL. (%)	$D_{MAX.}$ (mm)	LEAD SPACING (mm)	SH (1) (mm)	CLEAR TEXT CODE 13TH DIGIT: T = REEL; U = AMMO; 3 = BULK 16TH DIGIT: R = RoHS COMPLIANT
CLASS 1 NP0					
10	± 5	5.0	5.0	4.0	D100J20C0GL6.J5.
12					D120J20C0GL6.J5.
15					D150J20C0GL6.J5.
18		6.5			D180J25C0GL6.J5.
22					D220J25C0GL6.J5.
27					D270J25C0GL6.J5.
CLASS 1 SL0					
33	± 5	5.0	5.0	4.0	D330J20SL0L6.J5.
39					D390J20SL0L6.J5.
47					D470J20SL0L6.J5.
56					D560J20SL0L6.J5.
68		6.5			D680J25SL0L6.J5.
82					D820J25SL0L6.J5.

Notes

(1) SH = seated height

- Maximum thickness 4.0 mm
- Lead style codes refer to inward kinked leads. Other styles available on request

ORDERING INFORMATION (PREFERED TYPES), CLASS 2, 500 V_{DC}, KINKED					
C (pF)	TOL. (%)	$D_{MAX.}$ (mm)	LEAD SPACING (mm)	SH (1) (mm)	CLEAR TEXT CODE 13TH DIGIT: T = REEL; U = AMMO; 3 = BULK 16TH DIGIT: R = RoHS COMPLIANT
CLASS 2 Y5P					
100	± 10	5	5	4.0	D101K20Y5PL6.J5.
150					D151K20Y5PL6.J5.
220					D221K20Y5PL6.J5.
330					D331K20Y5PL6.J5.
470					D471K20Y5PL6.J5.
680		6.5			D681K25Y5PL6.J5.
1000					D102K25Y5PL6.J5.
1500		7.5			D152K29Y5PL6.J5.
2200		8.5			D222K33Y5PL6.J5.
3300		10			D332K39Y5PL6.J5.
4700		11			D472K43Y5PL6.J5.
6800		13.5	7.5		D682K53Y5PL6.J7
10 000		17.5			D103K69Y5PL6.J7.
CLASS 2 Y5V					
1000	+ 80/- 20	5	5	4.0	D102Z20Y5VL6.J5.
1500					D152Z20Y5VL6.J5.
2200		6.5			D222Z25Y5VL6.J5.
3300					D322Z25Y5VL6.J5.
4700		7.5			D472Z29Y5VL6.J5.
6800		8.5			D682Z33Y5VL6.J5.
10 000		10.0			D103Z39Y5VL6.J5.
15 000		11.0			D153Z43Y5VL6.J5.
22 000		13.5	7.5		D223Z53Y5VL6.J7.

ORDERING INFORMATION (PREFERED TYPES), CLASS 2, 500 V_{DC}, KINKED

C (pF)	TOL. (%)	$D_{MAX.}$ (mm)	LEAD SPACING (mm)	SH [1] (mm)	CLEAR TEXT CODE 13TH DIGIT: T = REEL; U = AMMO; 3 = BULK 16TH DIGIT: R = RoHS COMPLIANT
CLASS 2 Z5U					
1000	± 20	5.0	5.0	4.0	D102M20Z5UL6.J5.
1500					D152M25Z5UL6.J5.
2200					D222M25Z5UL6.J5.
3300		7.5			D332M29Z5UL6.J5.
4700		8.5			D472M33Z5UL6.J5.
6800		10.0			D682M39Z5UL6.J5.
10 000		11.0			D103M43Z5UL6.J5.
15 000		13.5	7.5		D153M53Z5UL6.J7.
22 000		15.0			D223M59Z5UL6.J7.
CLASS 2 X5F					
1 00	± 10	5.0	5.0	4.0	D101K20X5FL6.J5.R.
2 20					D221K20X5FL6.J5.R.
330					D331K20X5FL6.J5.R.
470		6.5			D471K25X5FL6.J5.R.
680					D681K25X5FL6.J5.R.
1000		7.5			D102K29X5FL6.J5.R.
2200		10.0			D222K39X5FL6.J5.R.
3300		12.0	7.5		D332K47X5FL6.J7R.
4700		13.5		4.8	D472K53X5FL6.J7R.

Note

[1] SH = seated height

- Maximum thickness 4.0 mm
- Lead style codes refer to inward kinked leads. Other styles available on request

PACKAGING

$D_{MAX.}$ (mm)	SIZE CODE	PACKAGING QUANTITIES		
		BULK	REEL	AMMO
5.0 (0.20")	20	1000	2000	2000
6.5 (0.25")	25			
7.5 (0.29")	29			
8.5 (0.33")	33			
10.0 (0.39")	39			
11.0 (0.43")	43			
12.0 (0.47")	47			
13.5 (0.53")	53	500	-	-
15.0 (0.59")	59			
17.5 (0.69")	69			

Note

- The capacitors are supplied in bulk packaging (cardboard boxes), in tape on reel or in ammopack.

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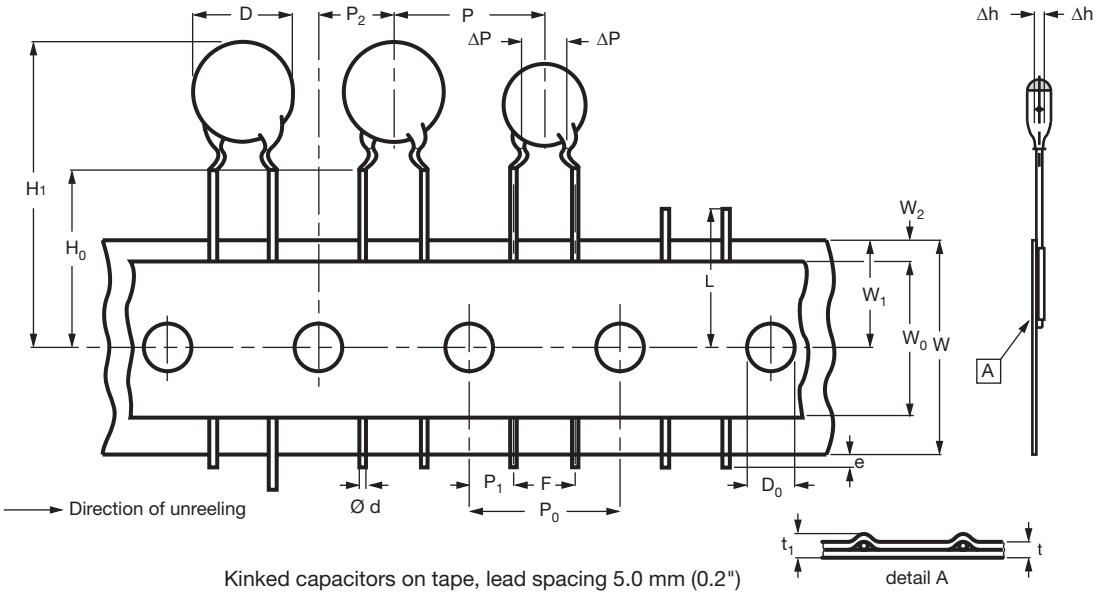
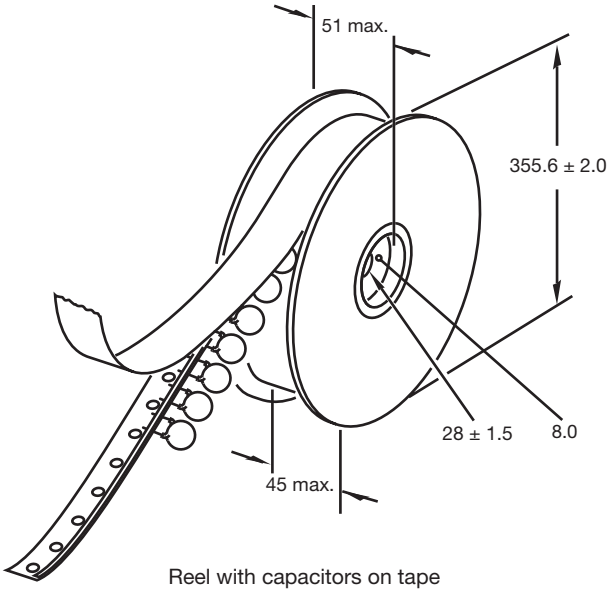


Kinked capacitors on tape, lead spacing 5.0 mm (0.2")

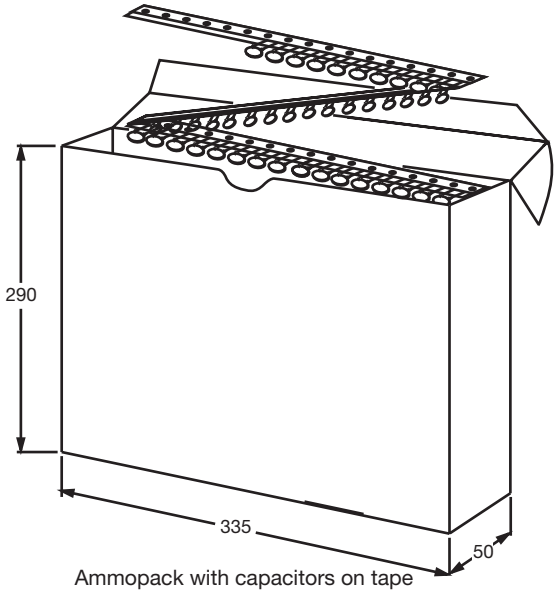
DIMENSIONS OF TAPE			
SYMBOL	PARAMETER	DIMENSIONS (mm)	
		NOMINAL	TOLERANCE
D	Body diameter	11.0 maximum	-
d	Lead diameter	0.6	± 0.05
P (1)	Pitch between capacitors	12.7	± 1.0
P_0	Feed-hole pitch	12.7	± 0.3
ΔP	Plane deviation	1.0 maximum	-
P_1 (2)	Feed-hole center to lead center	3.85	± 0.7
P_2 (2)	Feed-hole center to component center	6.35	± 1.3
F	Lead spacing	5.0	0.6 - 0.4
Δh	Component alignment	0	± 1.0
W	Tape width	18.0	1.0 - 0.5
W_0	Hold-down tape width	5.0 minimum	-
W_1	Hole position	9.0	0.75 - 0.5
W_2	Hold-down tape margin	3.0 maximum	-
H_0	Height to seating plane	16.0	± 0.5
H_1	Maximum component height	32.0	-
e	Lead end protrusion	1.0 maximum	-
L	Maximum length of snipped lead	11.0	-
D_0	Feed-hole diameter	4.0	± 0.2
t	Total tape thickness	0.9 maximum	-
t_1	Maximum thickness of tape and wires	1.5 maximum	-

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

REEL AND TAPE DATA in millimeters



Reel with capacitors on tape



Ammopack with capacitors on tape

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