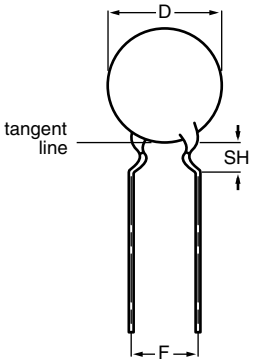
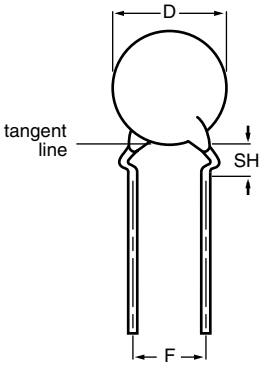
Ceramic Disc DC Capacitors Class 2, Low Loss 500 V, 1 kV, 2 kV and 3 kV



Capacitors with inside kink lead spacing



Capacitors with outside kink lead spacing

FEATURES

- High reliability
- Low losses
- High capacitance in small size
- Kinked leads
- Compliant to RoHS directive 2002/95/EC

Pb e3 RoHS COMPLIANT

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 pF 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)

≥ 10 000 MΩ min.

TOLERANCE ON CAPACITANCE

± 10 %; ± 20 %

DISSIPATION FACTOR

0.2 % max.

OPERATING TEMPERATURE RANGE

- 30 °C to + 125 °C

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

± 15 %

SECTIONAL SPECIFICATIONS

IEC 60384-9, EIA 198

AGING

Typical 0.5 % per time decade

MARKING

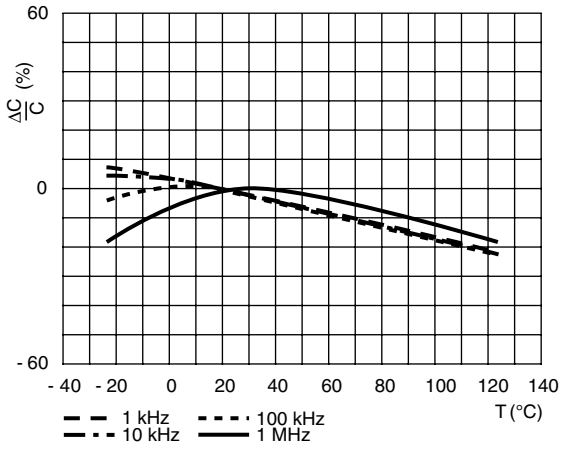
Marking indicates capacitance value and tolerance in accordance with "EIA 198" and voltage marks.

EXAMPLES OF MARKING CODE

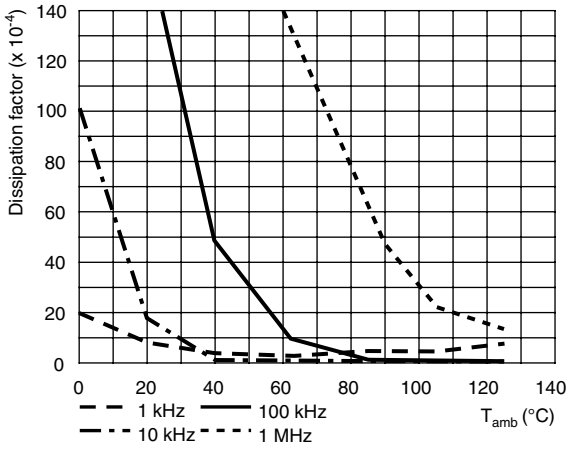
Disc size ($D_{max.}$) ≤ 6.5 mm:
RR = Low loss with T.C.
Y5R
101 K
2 kV

Disc size ($D_{max.}$) ≥ 7.5 mm:
BC
RR
102 K
3 kV

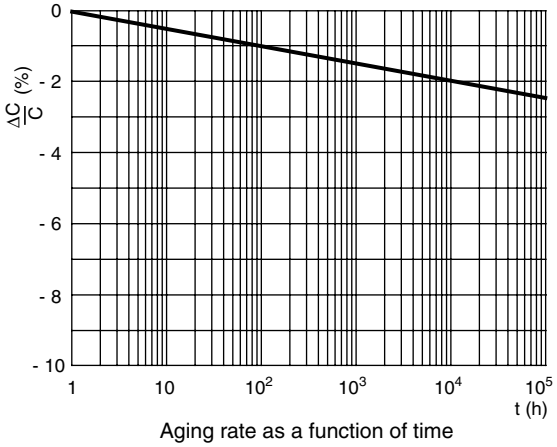
Note
The capacitors meet the essential requirements of "IEC 60384-9 and EIA 198". Unless stated otherwise all electrical values apply at an ambient temperature of 25 ± 3 °C, at normal atmospheric conditions



Typical capacitance change as a function of temperature and frequency



Typical dissipation factor as a function of temperature and frequency



Aging rate as a function of time

ORDERING INFORMATION

C (pF)	TOL. (%)	$D_{max.}$ (mm)	LEAD SPACING S (mm)	SH (2) (mm)	CLEAR TEXT CODE 13TH DIGIT: T = REEL; U = AMMO; 3 = BULK 16TH DIGIT: R = RoHS COMPLIANT
500 V					
100	± 10	5.0	5.0	4.0	F101K20Y5RL6.J5.
120					F121K20Y5RL6.J5.
150					F151K20Y5RL6.J5.
180					F181K20Y5RL6.J5.
220					F221K20Y5RL6.J5.
270					F271K20Y5RL6.J5.
330					F331K20Y5RL6.J5.
390		6.5			F391K25Y5RL6.J5.
470					F471K25Y5RL6.J5.
560					F561K25Y5RL6.J5.
680					F681K25Y5RL6.J5.
820		7.5			F821K29Y5RL6.J5.
1000					F102K29Y5RL6.J5.
1200		8.5			F122K33Y5RL6.J5.
1500					F152K33Y5RL6.J5.
1800		10.0			F182K39Y5RL6.J5.
2200					F222K39Y5RL6.J5.
2700		12.0	7.5		F272K47Y5RL63J7.

ORDERING INFORMATION

C (pF)	TOL. (%)	$D_{max.}$ (mm)	LEAD SPACING S (mm)	SH [2] (mm)	CLEAR TEXT CODE 13TH DIGIT: T = REEL; U = AMMO; 3 = BULK 16TH DIGIT: R = RoHS COMPLIANT
1 kV					
100	± 10	6.5	5.0	4.0	F101K25Y5RN6.J5.
120					F121K25Y5RN6.J5.
150					F151K25Y5RN6.J5.
180					F181K25Y5RN6.J5.
220					F221K25Y5RN6.J5.
270		7.5			F271K29Y5RN6.J5.
330					F331K29Y5RN6.J5.
390					F391K29Y5RN6.J5.
470					F471K29Y5RN6.J5.
560		8.5			F561K33Y5RN6.J5.
680					F681K33Y5RN6.J5.
820		10.0			F821K39Y5RN6.J5.
1000					F102K39Y5RN6.J5.
1200		11.0			F122K43Y5RN6.J5.
1500					F152K43Y5RN6.J5.
1800		12.5	7.5		F182K47Y5RN63J7.
2200		13.5			F222K53Y5RN63J7.
2700					F272K53Y5RN63J7.
3300		17.5			F332K69Y5RN63J7.
3900					F392K69Y5RN63J7.
4700		19.0	10.0		F472K75Y5RN83J0.
2 kV					
100	± 10	6.5	5.0	4.0	F101K25Y5RP6.K5.
120					F121K25Y5RP6.K5.
150					F151K25Y5RP6.K5.
180		7.5			F181K29Y5RP6.K5.
220					F221K29Y5RP6.K5.
270					F271K29Y5RP6.K5.
330					F331K29Y5RP6.K5.
390		8.5			F391K33Y5RP6.K5.
470					F471K33Y5RP6.K5.
560		10.0			F561K39Y5RP6.K5.
680					F681K39Y5RP6.K5.
820		11.0			F821K43Y5RP6.K5.
1000					F102K43Y5RP6.K5.
1200		12.0	7.5	4.8	F122K47Y5RP63K7.
1500		13.5			F152K53Y5RP63K7.
1800					F182K53Y5RP63K7.
2200		17.5			F222K69Y5RP63K7.
2700		19.0	10.0		F272K75Y5RP83K0.
3300					F332K75Y5RP83K0.
3900		24.5			F392K75Y5RP83K0.
4700					F472K96Y5RP83K0.

ORDERING INFORMATION

C (pF)	TOL. (%)	$D_{max.}$ (mm)	LEAD SPACING S (mm)	SH (2) (mm)	CLEAR TEXT CODE 13TH DIGIT: T = REEL; U = AMMO; 3 = BULK 16TH DIGIT: R = RoHS COMPLIANT
3 kV					
100	± 10	8.5	7.5	4.0	F101K33Y5RR6.K7.
120					F121K33Y5RR6.K7.
150					F151K33Y5RR6.K7.
180					F181K33Y5RR6.K7.
220					F221K33Y5RR6.K7.
270					F271K33Y5RR6.K7.
330					F331K33Y5RR6.K7.
390		10			F391K39Y5RR6.K7.
470					F471K39Y5RR6.K7.
560		11			F561K43Y5RR6.K7.
680					F681K43Y5RR6.K7.
820		13.5		4.8	F821K53Y5RR63K7.
1000					F102K53Y5RR63K7.
1200		15			F122K59Y5RR63K7.
1500					F152K59Y5RR63K7.
1800		19	10.0		F182K75Y5RR83K0.
2200					F222K75Y5RR83K0.
2700		21			F272K84Y5RR83K0.

Notes

(1) Maximum thickness: 500 V = 3.5 mm; 1 kV = 4.5 mm; 2 kV = 5.0 mm; 3 kV = 6.0 mm.

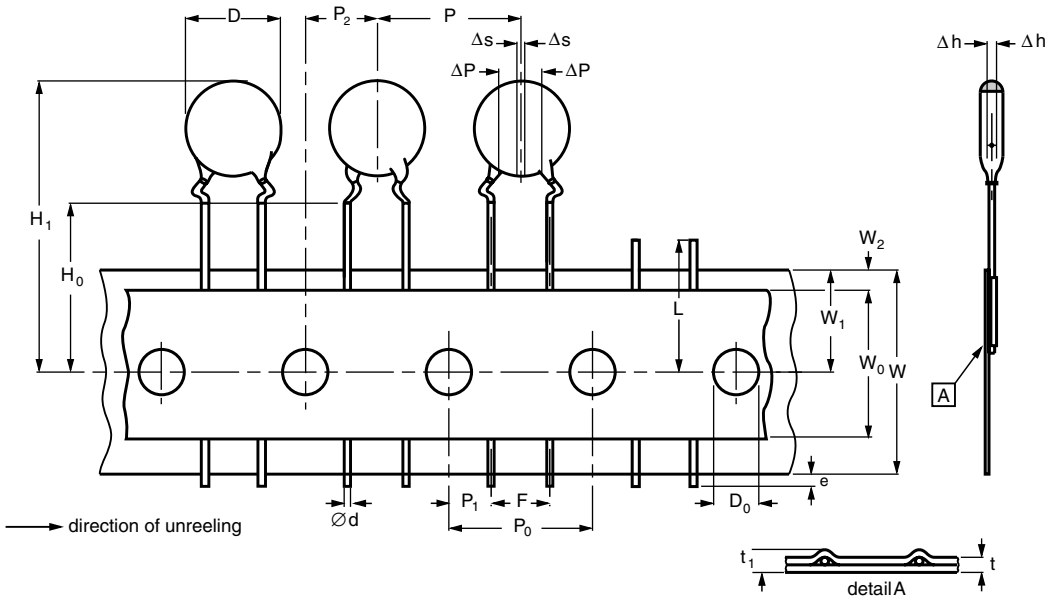
(2) SH = seated height.

PACKAGING

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 ammopack

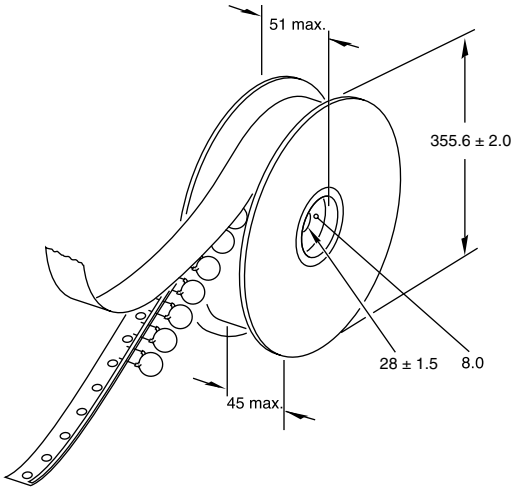


Kinked capacitors on tape, lead spacing 5.0 mm (0.2") or 7.5 mm (0.3")

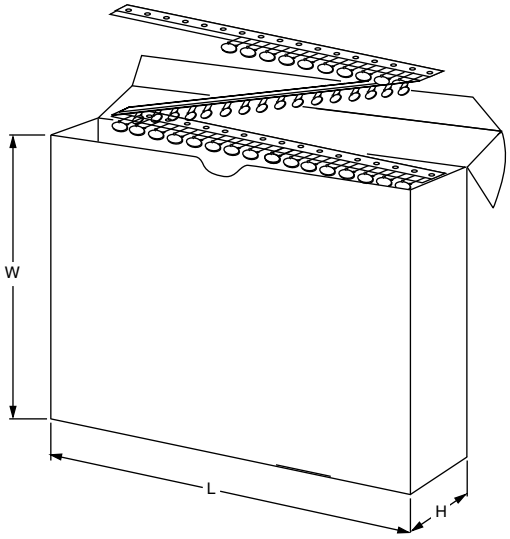
DIMENSIONS OF TAPE			
SYMBOL	PARAMETER	DIMENSIONS (mm)	
		Feed-hole pitch P_0 = 12.7	Feed-hole pitch P_0 = 15.0
D	body diameter	11.0 max.	14.0 max.
d	lead diameter	0.6 ± 0.05	0.6 ± 0.05
P	pitch between capacitors	12.7 ± 1.0	15.0 ± 1.0
P_0	feed-hole pitch	12.7 ± 0.3; (1)	15.0 ± 0.3; (1)
ΔP	plane deviation	1.0 max.	1.0 max.
P_1	feed-hole centre to lead centre	3.85 ± 0.7; (2)	3.75 ± 0.7; (2)
P_2	feed-hole centre to component centre	6.35 ± 1.3; (2)	7.5 ± 1.5; (2)
F	lead spacing	5.0 + 0.6/- 0.4	7.5 + 0.6/- 0.4
Δh	component alignment	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 snipped 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°.

REEL AND TAPE DATA IN MILLIMETERS



Reel with capacitors on tape



Ammopack with capacitors on tape

DIMENSIONS OF AMMOPACK			
PARAMETER	DISC SIZE ($D_{max.}$)		UNIT
	6.5 mm to 11.0 mm	12.0 mm to 13.5 mm	
Taping pitch	12.7	15.0	mm
L	335	360	mm
W	290	330	mm
H	50	55	mm

Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.