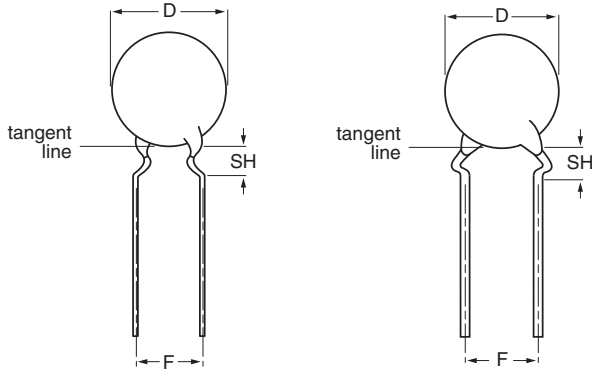
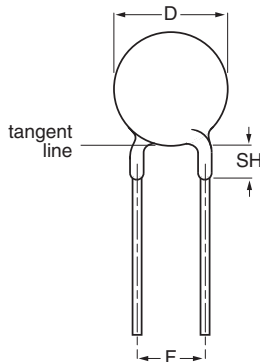


## Ceramic Disc Capacitors

### Class 1 and 2, 1/2/3/6 kV General Purpose



Capacitors with 5 mm (0.20 inch), 7.5 mm (0.30 inch) and 10 mm (0.40 inch) lead spacing



Capacitors with 10 mm (0.40 inch) lead spacing

Class 2 X5F - 55 to + 85 °C

#### TEMPERATURE COEFFICIENTS:

Class 1 SL0; S3N

Class 2 X7R; Y5P; Z5U; Y5V; X5F

#### SECTIONAL SPECIFICATIONS:

Class 1 IEC 60 384-8,

Class 2 IEC 60 384-9,

EIA 198

#### CLIMATIC CATEGORY:

Class 1 SL0 55/125/21

Class 2 X7R 55/125/21

Class 2 Y5P; Z5U; Y5V 30/85/21

Class 2 X5F 55/85/21

#### MARKING

Straight and kinked leaded versions are gold coloured  
Marking indicates capacitance value and tolerance in accordance with "EIA 198", and voltage

#### FEATURES

- Low losses
- High stability
- High capacitance in small size
- Kinked (preferred) or straight leads
- Lead (Pb)-free available

#### APPLICATIONS

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

#### 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 up to 3 kV and 0.8 mm for 6 kV.

The capacitors may be supplied with kinked or straight leads with a lead spacing of 5 mm (0.200"), 7.5 mm (0.300") or 10 mm (0.400") and a lead length from 4 to 30 mm. The standard tolerance on capacitance is 5 % or 10 % for class 1 capacitors and  $\pm 10\%$  or  $\pm 20\%$  for class 2 capacitors. Encapsulation is made of gold-coloured epoxy-resin, flammable resistant in accordance with "UL94V-0".

#### CAPACITANCE RANGE:

Class 1, at 1 MHz, 1.2 V (RMS); 10 to 220 pF

1 kHz,  $1 \pm 0.2$  V (RMS) for capacitance values higher than 1000 pF

Class 2, at 1 kHz,  $1 \pm 0.2$  V (RMS); 100 to 22 000 pF

#### RATED DC VOLTAGE:

1 kV; 2 kV; 3 kV; 6 kV

#### DIELECTRIC STRENGTH:

200 % of rated voltage

#### INSULATION RESISTANCE AT 500 V (DC):

$\geq 10\,000\ \text{M}\Omega$

#### TOLERANCE ON CAPACITANCE:

$\pm 5\%$ ;  $\pm 10\%$ ;  $\pm 20\%$ ; + 80 /- 20 %

Other tolerances available on request

#### DISSIPATION FACTOR:

Class 1,  $C \leq 30\ \text{pF}$ ;  $\leq 20 \times (10/C + 0.7) \times 10^{-4}$  max.

Class 1,  $C > 30\ \text{pF}$ ;  $\leq 0.2\%$

Class 2,  $\leq 3.0\%$

#### OPERATING TEMPERATURE RANGE:

Class 1 SL0; S3N - 55 to + 125 °C

Class 2 X7R - 55 to + 125 °C

Class 2 Y5P; Z5U; Y5V - 30 to + 85 °C



**RoHS**  
COMPLIANT

<b>ORDERING INFORMATION, 1 KV (DC), STRAIGHT</b>								
C (pF)	TOL. (%)	D <sub>max</sub> (mm)	LEAD SPACING F (mm)	SH <sup>(2)</sup> (mm)	CLEAR TEXT CODE			
			KINKED		13 <sup>th</sup> DIGIT: T = REEL; U = AMMO; 3 = BULK 16 <sup>th</sup> DIGIT: R = RoHS COMPLIANT			
<b>CLASS 1 SLO</b>								
10	± 5	6.5	5.0	4.0	S100J25SL0N6.J5.			
	± 10				S100K25SL0N6.J5.			
12	± 5				S120J25SL0N6.J5.			
	± 10				S120K25SL0N6.J5.			
15	± 5				S150J25SL0N6.J5.			
	± 10				S150K25SL0N6.J5.			
18	± 5				S180J25SL0N6.J5.			
	± 10				S180K25SL0N6.J5.			
22	± 5				S220J25SL0N6.J5.			
	± 10				S220K25SL0N6.J5.			
27	± 5				S270J25SL0N6.J5.			
	± 10				S270K25SL0N6.J5.			
33	± 5	S330J25SL0N6.J5.						
	± 10	S330K25SL0N6.J5.						
39	± 5	S390J25SL0N6.J5.						
	± 10	S390K25SL0N6.J5.						
47	± 5	S470J25SL0N6.J5.						
	± 10	S470K25SL0N6.J5.						
56	± 5	7.5	5.0	4.0	S560J29SL0N6.J5.			
	± 10				S560K29SL0N6.J5.			
68	± 5				S680J29SL0N6.J5.			
	± 10				S680K29SL0N6.J5.			
82	± 5				S820J29SL0N6.J5.			
	± 10				S820K29SL0N6.J5.			
100	± 5				S101J29SL0N6.J5.			
	± 10				S101K29SL0N6.J5.			
120	± 5				S121J33SL0N6.J5.			
	± 10				S121K33SL0N6.J5.			
150	± 10				8.5	5.0	4.0	S151K33SL0N6.J5.
220								S221K39SL0N6.J5.
<b>CLASS 2 X7R</b>								
100	± 10	6.5	5.0	4.0	S101K25X7RN6.J5.			
150					S151K25X7RN6.J5.			
220					S221K25X7RN6.J5.			
330					S331K25X7RN6.J5.			
470					S471K29X7RN6.J5.			
680					S681K29X7RN6.J5.			
1000		7.5	5.0	4.0	S102K33X7RN6.J5.			
1500					S152K39X7RN6.J5.			
2200					S222K43X7RN6.J5.			
3300					S332K47X7RN6.J7.			
4700					15.0	7.5	4.8	S472K59X7RN6.J7.



<b>ORDERING INFORMATION, 1 kV (DC), STRAIGHT</b>								
C (pF)	TOL. (%)	D <sub>max</sub> (mm)	LEAD SPACING F (mm)	SH <sup>(2)</sup> (mm)	CLEAR TEXT CODE			
			KINKED		13 <sup>th</sup> DIGIT: T = REEL; U = AMMO; 3 = BULK 16 <sup>th</sup> DIGIT: R = RoHS COMPLIANT			
<b>CLASS 2 Y5P</b>								
100	± 10	6.5	5.0	4.0	S101K25Y5PN6.J5.			
150					S151K25Y5PN6.J5.			
220					S221K25Y5PN6.J5.			
330					S331K25Y5PN6.J5.			
470					S471K25Y5PN6.J5.			
680					S681K29Y5PN6.J5.			
1000		7.5	5.0	4.0	S102K29Y5PN6.J5.			
1500					S152K33Y5PN6.J5.			
2200					S222K39Y5PN6.J5.			
3300		11.0	7.5	4.8	S332K43Y5PN6.J5.			
4700		13.5			S472K53Y5PN63J7.			
6800		15.0			S682K59Y5PN63J7.			
10 000		19.0	10.0		S103K75Y5PN83J0.			
<b>CLASS 2 Z5U</b>								
1000	± 20	6.5	5.0	4.0	S102M25Z5UN6.J5.			
1500					S152M29Z5UN6.J5.			
2200					S222M29Z5UN6.J5.			
3300					S332M33Z5UN6.J5.			
4700					S472M39Z5UN6.J5.			
6800		11.0	5.0	4.0	S682M43Z5UN6.J5.			
10 000					12.0	7.5	4.8	S103M47Z5UN63J7.
15 000					15.0			S153M59Z5UN63J7.
22 000		19.0	10.0		S223M75Z5UN83J0.			
<b>CLASS 2 Y5V</b>								
1000	+ 80/- 20	6.5	5.0	4.0	S102Z25Y5VN6.J5.			
1500					S152Z25Y5VN6.J5.			
2200					7.5	5.0	4.0	S222Z29Y5VN6.J5.
3300								S332Z29Y5VN6.J5.
4700		8.5	5.0	4.0	S472Z33Y5VN6.J5.			
6800					10.0	S682Z39Y5VN6.J5.		
10 000					11.0	S103Z43Y5VN6.J5.		
15 000		13.5	7.5	4.8	S153Z53Y5VN6.J7.			
22 000					15.0	S223Z59Y5VN6.J7.		
33 000					19.0	10.0	S333Z75Y5VN8.J0.	



<b>ORDERING INFORMATION, 1 KV (DC), KINKED</b>					
C (pF)	TOL. (%)	D <sub>max</sub> (mm)	LEAD SPACING F (mm)	SH <sup>(2)</sup> (mm)	CLEAR TEXT CODE
			KINKED		13 <sup>th</sup> DIGIT: T = REEL; U = AMMO; 3 = BULK 16 <sup>th</sup> DIGIT: R = RoHS COMPLIANT
<b>CLASS 2 X5F</b>					
100	± 10	6.5	5.0	4.0	S101K25X5FN6.J5R
220					S221K25X5FN6.J5R
270					S271K25X5FN6.J5R
330					S331K25X5FN6.J5R
390					S391K25X5FN6.J5R
470					S471K25X5FN6.J5R
680					7.5
820		S821K29X5FN6.J5R			
1000		S102K29X5FN6.J5R			
2200		S222K43X5FN6.J5R			
3300		13.5	7.5	S332K53X5FN6.J7R	
4700		16.0	7.5	S472K63X5FN63J7R	

**Notes**

1. Maximum thickness 4.5 mm.
2. SH = seated height.
3. Lead style codes refer to inward kinked leads. Other styles available on request.



<b>ORDERING INFORMATION, 2 KV (DC), KINKED</b>								
C (pF)	TOL. (%)	D <sub>max</sub> (mm)	LEADSPACING F (mm)	SH <sup>(2)</sup> (mm)	CLEAR TEXT CODE			
			KINKED		13 <sup>th</sup> DIGIT: T = REEL; U = AMMO; 3 = BULK 16 <sup>th</sup> DIGIT: R = RoHS COMPLIANT			
<b>CLASS 1 SLO</b>								
10	± 5	6.5	5.0	4.0	S100J25SLOP6.K5.			
	± 10				S100K25SLOP6.K5.			
12	± 5				S120J25SLOP6.K5.			
	± 10				S120K25SLOP6.K5.			
15	± 5				S150J25SLOP6.K5.			
	± 10				S150K25SLOP6.K5.			
18	± 5				S180J25SLOP6.K5.			
	± 10				S180K25SLOP6.K5.			
22	± 5				S220J25SLOP6.K5.			
	± 10				S220K25SLOP6.K5.			
27	± 5				S270J25SLOP6.K5.			
	± 10				S270K25SLOP6.K5.			
33	± 5	7.5			S330J29SLOP6.K5.			
	± 10				S330K29SLOP6.K5.			
39	± 5				S390J29SLOP6.K5.			
	± 10				S390K29SLOP6.K5.			
47	± 5				S470J29SLOP6.K5.			
	± 10				S470K29SLOP6.K5.			
56	± 5				S560J29SLOP6.K5.			
	± 10				S560K29SLOP6.K5.			
68	± 5				8.5	S680J33SLOP6.K5.		
	± 10					S680K33SLOP6.K5.		
82	± 5					S820J33SLOP6.K5.		
	± 10					S820K33SLOP6.K5.		
100	± 5	10.0	S101J39SLOP6.K5.					
	± 10		S101K39SLOP6.K5.					
120	± 5		S121J39SLOP6.K5.					
	± 10		S121K39SLOP6.K5.					
150	± 10		S151K43SLOP6.K5.					
<b>CLASS 2 X7R</b>								
100	± 10	6.5	5.0	4.0	S101K25X7RP6.K5.			
150					S151K25X7RP6.K5.			
220					S221K25X7RP6.K5.			
330					S331K25X7RP6.K5.			
470					S471K29X7RP6.K5.			
680					S681K33X7RP6.K5.			
1000		S102K39X7RP6.K5.						
1500		S152K43X7RP6.K5.						
2200		7.5			13.5	4.8	S222K53X7RP6.K7.	
3300							15.0	S332K59X7RP6.K7.

<b>ORDERING INFORMATION, 2 KV (DC), KINKED</b>						
C (pF)	TOL. (%)	D <sub>max</sub> (mm)	LEAD SPACING F (mm)	SH <sup>(2)</sup> (mm)	CLEAR TEXT CODE	
			KINKED		13 <sup>th</sup> DIGIT: T = REEL; U = AMMO; 3 = BULK 16 <sup>th</sup> DIGIT: R = RoHS COMPLIANT	
<b>CLASS 2 Y5P</b>						
100	± 10	6.5	5.0	4.0	S101K25Y5PP6.K5.	
150					S151K25Y5PP6.K5.	
220					S221K25Y5PP6.K5.	
330					S331K25Y5PP6.K5.	
470					S471K29Y5PP6.K5.	
680					S681K29Y5PP6.K5.	
1000		7.5	5.0	4.0	S102K33Y5PP6.K5.	
1500					S152K39Y5PP6.K5.	
2200					S222K43Y5PP6.K5.	
3300		13.5	7.5	4.8	S332K53Y5PP63K7.	
4700		17.5			S472K69Y5PP63K7.	
<b>CLASS 2 Z5U</b>						
1000	± 20	7.5	5.0	4.0	S102M29Z5UP6.K5.	
1500					S152M29Z5UP6.K5.	
2200					8.5	S222M33Z5UP6.K5.
3300					11.0	S332M43Z5UP6.K5.
4700		12.0	7.5	4.8	S472M47Z5UP63K7.	
6800		13.5			S682M53Z5UP63K7.	
10 000		17.5			S103M69Z5UP63K7.	
<b>CLASS 2 Y5V</b>						
1000	+ 80/- 20	7.5	5.0	4.0	S102Z29Y5VP6.K5.	
1500					S152Z29Y5VP6.K5.	
2200					8.5	S222Z33Y5VP6.K5.
3300					10.5	S322Z39Y5VP6.K5.
4700		11.0	7.5	4.8	S472Z43Y5VP6.K5.	
6800		12.0			S682Z47Y5VP6.K7.	
10 000		15.0			S103Z59Y5VP6.K7.	
<b>CLASS 2 X5F</b>						
100	± 10	6.5	5.0	4.0	S101K25X5FP6.K5R	
220					S221K25X5FP6.K5R	
330					7.5	S331K29X5FP6.K5R
470					8.0	S471K31X5FP6.K5R
680					10.0	S681K39X5FP6.K5R
1000					11.0	S102K43X5FP6.K5R
2200		15.0	7.5	4.8	S222K59X5FP6.K7R	
3300		16.5	7.5		S332K65X5FP63K7R	

**Notes**

1. Maximum thickness 5.0 mm.
2. SH = seated height.
3. Lead style codes refer to outward kinked leads. Other styles available on request.



**Ceramic Disc Capacitors**  
**Class 1 and 2, 1/2/3/6 kV General Purpose**

**Vishay BCcomponents**

<b>ORDERING INFORMATION, 3 KV (DC), KINKED</b>					
C (pF)	TOL. (%)	D <sub>max</sub> (mm)	LEAD SPACING	SEATED HEIGHT (mm)	CLEAR TEXT CODE 16 <sup>th</sup> DIGIT: R = RoHS COMPLIANT
			F (mm) KINKED		
<b>CLASS 1 SL</b>					
10	± 10	8.5	7.5	4.0	S100K33SL0R63K7.
15					S150K33SL0R63K7.
22					S220K33SL0R63K7.
33					S330K33SL0R63K7.
47					S470K33SL0R63K7.
68		10.0	S680K39SL0R63K7.		
<b>CLASS 2 X7R</b>					
100	± 10	8.5	7.5	4.0	S101K33X7RR63K7.
150					S151K33X7RR63K7.
220					S221K33X7RR63K7.
330					S331K33X7RR63K7.
470					S471K33X7RR63K7.
680					10.0
1000		11.0	S102K43X7RR63K7.		
1500		13.5	S152K53X7RR63K7.		
2200		17.5	4.8	S222K59X7RR83K7.	
<b>CLASS 2 Y5P</b>					
100	± 10	8.5	7.5	4.0	S101K33Y5PR63K7.
150					S151K33Y5PR63K7.
220					S221K33Y5PR63K7.
330					S331K33Y5PR63K7.
470					S471K33Y5PR63K7.
680					10.0
1000		11.0	S102K43Y5PR63K7.		
1500		12.0	S152K47Y5PR63K7.		
2200		15.0	4.8	S222K59Y5PR63K7.	
3300		19.0	10.0	S332K75Y5PR83K0.	
<b>CLASS 2 Z5U</b>					
470	± 20	8.5	7.5	4.0	S471M33Z5UR63K7.
680					S681M33Z5UR63K7.
1000					S102M33Z5UR63K7.
1500					S152M39Z5UR63K7.
2200		10.0	S222M43Z5UR63K7.		
3300		11.0	S332M53Z5UR63K7.		
4700		13.5	4.8	S472M69Z5UR83K7.	
<b>CLASS 2 Y5V</b>					
1000	+ 80/- 20	8.5	7.5	4.0	S102Z33Y5VR63K7.
1500					S152Z33Y5VR63K7.
2200					10.0
3300		11.0	S322Z43Y5VR63K7.		
4700		12.0	4.8	S472Z47Y5VR63K7.	
6800		15.0	S682Z59Y5VR63K7.		

**Notes**

1. Maximum thickness 6.0 mm.
2. Lead style codes refer to outward kinked leads. Other styles available on request.
3. All packaged in bulk.

<b>ORDERING INFORMATION, 6 KV (DC), STRAIGHT</b>					
C (pF)	TOL. (%)	D <sub>max</sub> (mm)	LEAD SPACING F (mm)	SEATED HEIGHT (mm)	CLEAR TEXT CODE 16 <sup>th</sup> DIGIT: R = RoHS COMPLIANT
			STRAIGHT		
<b>CLASS 1 SL</b>					
10	± 20	10.0	10	3.0	S100M39SL0U83L0.
15					S150M43SL0U83L0.
22					S220M43SL0U83L0.
33					S330M53SL0U83L0.
<b>CLASS 1 S3N</b>					
47	± 20	11.0	10	3.0	S470M43S3NU83L0.
68		13.5			S680M53S3NU83L0.
100		15.0			S101M59S3NU83L0.
150		15.0			S151M59S3NU83L0.
<b>CLASS 2 Z5U</b>					
220	± 20	10.0	10	3.0	S221M39Z5UU83L0.
330		11.0			S331M43Z5UU83L0.
470		12.0			S471M47Z5UU83L0.
680		13.5			S681M53Z5UU83L0.
1000		15.0			S102M59Z5UU83L0.
1500		17.5			S152M69Z5UU83L0.
2200		19.0			S222M75Z5UU83L0.

**Notes**

1. Maximum thickness 8.0 mm.
2. Lead style codes refer to straight leads. Other styles available on request.
3. All packaged in bulk.

<b>PACKAGING</b>					
PACKAGING TYPE	SIZE CODE	LEAD SPACE (mm)	VOLTAGE (VDC)	SPQ	BOX DIMENSIONS L × W × H (mm)
Bulk (long lead L ≥ 25.4 mm)	20 to 47	all	all	1000	245 x 120 x 65
				1000	
	1000				
	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	
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

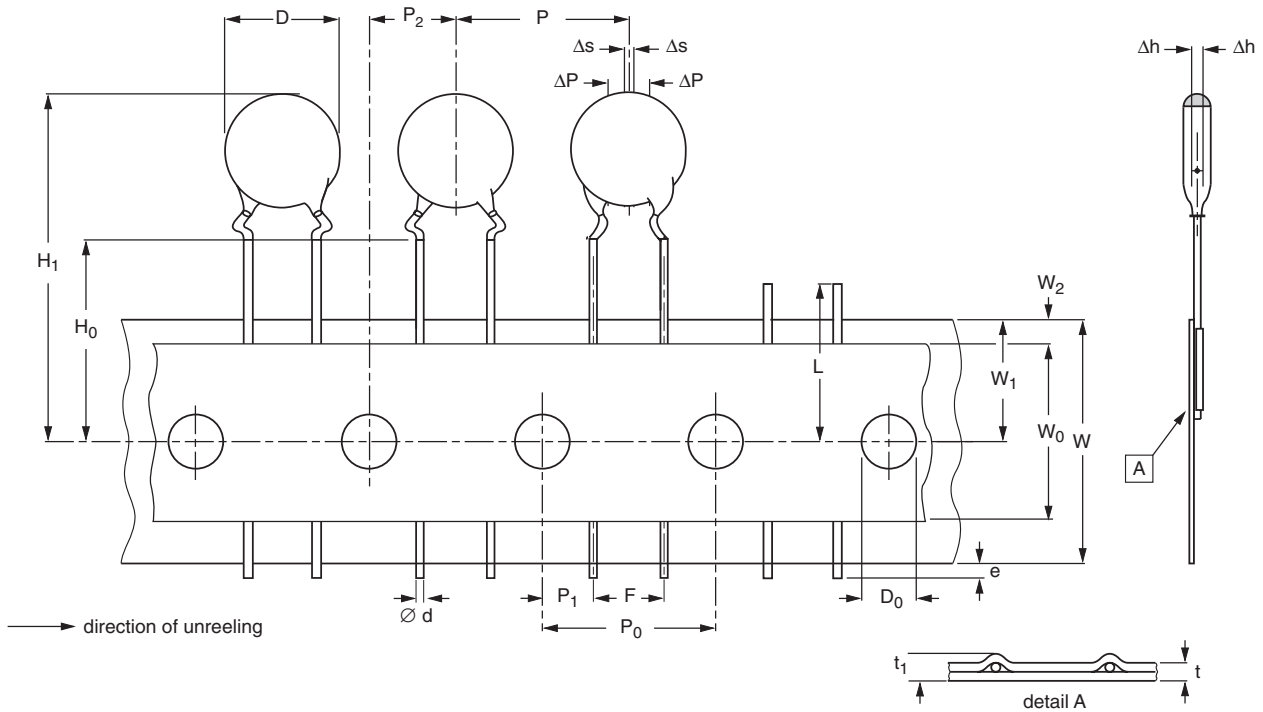
**Note**

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



**Ceramic Disc Capacitors**  
**Class 1 and 2, 1/2/3/6 kV General Purpose**

Vishay BCcomponents



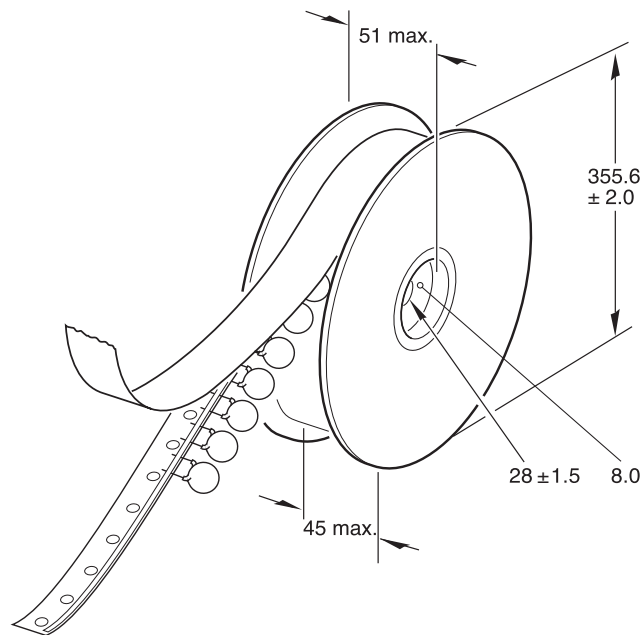
Kinked capacitors on tape, lead spacing 5.0 mm (0.2 inch)

<b>DIMENSIONS OF TAPE</b>			
<b>SYMBOL</b>	<b>PARAMETER</b>	<b>DIMENSIONS (mm)</b>	
		<b>NOMINAL</b>	<b>TOLERANCE</b>
D	body diameter	11.0 maximum	-
d	lead diameter	0.6	± 0.05
P	pitch between capacitors	12.7	± 1.0
P <sub>0</sub>	feed-hole pitch	12.7	± 0.3; note 1
ΔP	plane deviation	1.0 maximum	-
P <sub>1</sub>	feed-hole centre to lead centre	3.85	± 0.7; note 2
P <sub>2</sub>	feed-hole centre to component centre	6.35	± 1.3; note 2
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 <sub>0</sub>	hold-down tape width	5.0 minimum	-
W <sub>1</sub>	hole position	9.0	+ 0.75/- 0.5
W <sub>2</sub>	hold-down tape margin	3.0 maximum	-
H <sub>0</sub>	height to seating plane	16.0	± 0.5
H <sub>1</sub>	maximum component height	32.0	-
e	lead end protrusion	1.0 maximum	-
L	maximum length of snapped lead	11.0	-
D <sub>0</sub>	feed-hole diameter	4.0	± 0.2
t	total tape thickness	0.9 maximum	-
t <sub>1</sub>	maximum thickness of tape and wires	1.5 maximum	-

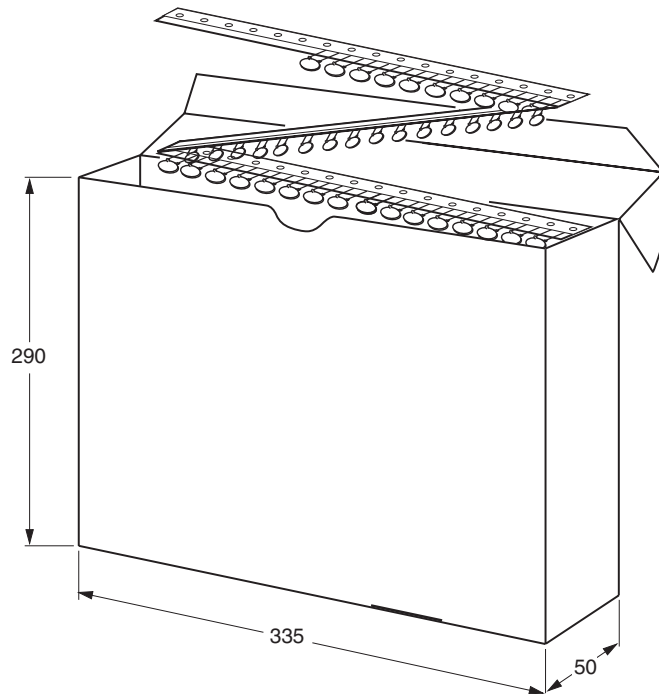
**Notes**

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

## REEL AND TAPE DATA in millimeters



Reel with capacitors on tape



Ampopack with capacitors on tape



## Disclaimer

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

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