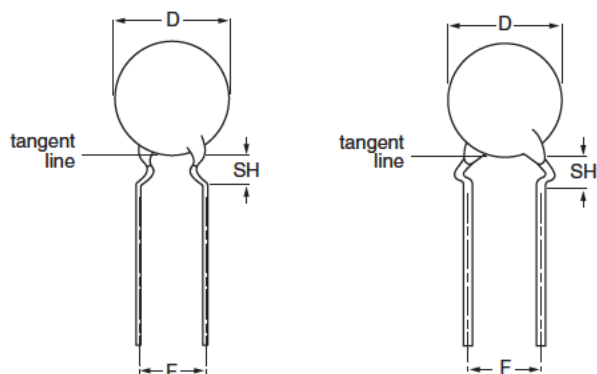
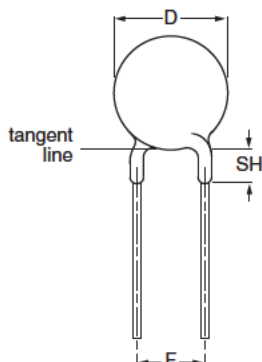


Ceramic Disc Capacitors

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 ± 10 % or ± 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 ± 0.2 V (RMS) for capacitance values higher than 1000 pF

Class 2, at 1 kHz, 1 ± 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:

± 5 %; ± 10 %; ± 20 %; $+80/-20$ %

Other tolerances available on request

DISSIPATION FACTOR:

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

Class 1, $C > 30\text{ pF}$; ≤ 0.2 %

Class 2, ≤ 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

ORDERING INFORMATION, 1 KV (DC), STRAIGHT						
C (pF)	TOL. (%)	D _{max} (mm)	LEAD SPACING F (mm)	SH ⁽²⁾ (mm)	CLEAR TEXT CODE	
			KINKED		13 th DIGIT: T = REEL; U = AMMO; 3 = BULK 16 th DIGIT: R = RoHS COMPLIANT	
CLASS 1 SL0						
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			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				8.5	S121J33SL0N6.J5.
	± 10				10.0	S121K33SL0N6.J5.
S151K33SL0N6.J5.						
S221K39SL0N6.J5.						
CLASS 2 X7R						
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			S102K33X7RN6.J5.	
1500		8.5			S152K39X7RN6.J5.	
2200		10.0			S222K43X7RN6.J5.	
3300		11.0			S332K47X7RN6.J7.	
4700		12.0	7.5		4.8	S472K59X7RN6.J7.
		15.0				



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

HV 1 kV - 6 kV
Vishay BCcomponents

ORDERING INFORMATION, 1 KV (DC), STRAIGHT							
C (pF)	TOL. (%)	D _{max} (mm)	LEAD SPACING F (mm)	SH ⁽²⁾ (mm)	CLEAR TEXT CODE		
			KINKED		13 th DIGIT: T = REEL; U = AMMO; 3 = BULK 16 th DIGIT: R = RoHS COMPLIANT		
CLASS 2 Y5P							
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					S332K43Y5PN6.J5.		
4700		13.5	7.5	4.8	S472K53Y5PN63J7.		
6800					S682K59Y5PN63J7.		
10 000					S103K75Y5PN83J0.		
CLASS 2 Z5U							
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					7.5	4.8	S103M47Z5UN63J7.
15 000							S153M59Z5UN63J7.
22 000	19.0		10.0	S223M75Z5UN83J0.			
CLASS 2 Y5V							
1000	+ 80/- 20		6.5	5.0	4.0	S102Z25Y5VN6.J5.	
1500						S152Z25Y5VN6.J5.	
2200		S222Z29Y5VN6.J5.					
3300		7.5	5.0	4.0	S332Z29Y5VN6.J5.		
4700					S472Z33Y5VN6.J5.		
6800					S682Z39Y5VN6.J5.		
10 000		11.0	5.0	4.0	S103Z43Y5VN6.J5.		
15 000					7.5	4.8	S153Z53Y5VN6.J7.
22 000							S223Z59Y5VN6.J7.
33 000		19.0	10.0	S333Z75Y5VN8.J0.			

ORDERING INFORMATION, 1 KV (DC), KINKED					
C (pF)	TOL. (%)	D _{max} (mm)	LEAD SPACING F (mm)	SH ⁽²⁾ (mm)	CLEAR TEXT CODE
			KINKED		13 th DIGIT: T = REEL; U = AMMO; 3 = BULK 16 th DIGIT: R = RoHS COMPLIANT
CLASS 2 X5F					
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	5.0	4.0	S681K29X5FN6.J5R
820					S821K29X5FN6.J5R
1000					S102K29X5FN6.J5R
2200		11.0	7.5	4.8	S222K43X5FN6.J5R
3300		13.5			S332K53X5FN6.J7R
4700		16.0			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.



ORDERING INFORMATION, 2 KV (DC), KINKED					
C (pF)	TOL. (%)	D _{max} (mm)	LEAD SPACING F (mm)	SH ⁽²⁾ (mm)	CLEAR TEXT CODE
			KINKED		13 th DIGIT: T = REEL; U = AMMO; 3 = BULK 16 th DIGIT: R = RoHS COMPLIANT
CLASS 1 SL0					
10	± 5	6.5	5.0	4.0	S100J25SL0P6.K5.
	± 10				S100K25SL0P6.K5.
12	± 5				S120J25SL0P6.K5.
	± 10				S120K25SL0P6.K5.
15	± 5				S150J25SL0P6.K5.
	± 10				S150K25SL0P6.K5.
18	± 5				S180J25SL0P6.K5.
	± 10				S180K25SL0P6.K5.
22	± 5				S220J25SL0P6.K5.
	± 10				S220K25SL0P6.K5.
27	± 5				S270J25SL0P6.K5.
	± 10				S270K25SL0P6.K5.
33	± 5	7.5			S330J29SL0P6.K5.
	± 10				S330K29SL0P6.K5.
39	± 5				S390J29SL0P6.K5.
	± 10				S390K29SL0P6.K5.
47	± 5				S470J29SL0P6.K5.
	± 10				S470K29SL0P6.K5.
56	± 5				S560J29SL0P6.K5.
	± 10				S560K29SL0P6.K5.
68	± 5	8.5			S680J33SL0P6.K5.
	± 10				S680K33SL0P6.K5.
82	± 5				S820J33SL0P6.K5.
	± 10				S820K33SL0P6.K5.
100	± 5	10.0			S101J39SL0P6.K5.
	± 10				S101K39SL0P6.K5.
120	± 5				S121J39SL0P6.K5.
	± 10				S121K39SL0P6.K5.
150	± 10	11.0			S151K43SL0P6.K5.
CLASS 2 X7R					
100	± 10	6.5	5.0	4.0	S101K25X7RP6.K5.
150					S151K25X7RP6.K5.
220					S221K25X7RP6.K5.
330					S331K25X7RP6.K5.
470		7.5			S471K29X7RP6.K5.
680		8.5			S681K33X7RP6.K5.
1000		10.0			S102K39X7RP6.K5.
1500		11.0			S152K43X7RP6.K5.
2200		13.5	7.5	4.8	S222K53X7RP6.K7.
3300		15.0			S332K59X7RP6.K7.

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

Notes

- Maximum thickness 5.0 mm.
- SH = seated height.
- 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

HV 1 kV - 6 kV
Vishay BCcomponents

ORDERING INFORMATION, 3 KV (DC), KINKED						
C (pF)	TOL. (%)	D _{max} (mm)	LEAD SPACING F (mm)	SEATED HEIGHT (mm)	CLEAR TEXT CODE 16 th DIGIT: R = RoHS COMPLIANT	
			KINKED			
CLASS 1 SL						
10	± 10	8.5	7.5	4.0	S100K33SL0R63K7.	
15					S150K33SL0R63K7.	
22					S220K33SL0R63K7.	
33					S330K33SL0R63K7.	
47					S470K33SL0R63K7.	
68		10.0			S680K39SL0R63K7.	
CLASS 2 X7R						
100	± 10	8.5	7.5	4.0	S101K33X7RR63K7.	
150					S151K33X7RR63K7.	
220					S221K33X7RR63K7.	
330					S331K33X7RR63K7.	
470					S471K33X7RR63K7.	
680					10.0	S681K39X7RR63K7.
1000					11.0	S102K43X7RR63K7.
1500		13.5		4.8	S152K53X7RR63K7.	
2200		17.5	S222K59X7RR83K7.			
CLASS 2 Y5P						
100	± 10	8.5	7.5	4.0	S101K33Y5PR63K7.	
150					S151K33Y5PR63K7.	
220					S221K33Y5PR63K7.	
330					S331K33Y5PR63K7.	
470					S471K33Y5PR63K7.	
680					10.0	S681K39Y5PR63K7.
1000					11.0	S102K43Y5PR63K7.
1500		12.0		4.8	S152K47Y5PR63K7.	
2200		15.0			S222K59Y5PR63K7.	
3300		19.0	10.0		S332K75Y5PR83K0.	
CLASS 2 Z5U						
470	± 20	8.5	7.5	4.0	S471M33Z5UR63K7.	
680					S681M33Z5UR63K7.	
1000					S102M33Z5UR63K7.	
1500					S152M39Z5UR63K7.	
2200		10.0		4.8	S222M43Z5UR63K7.	
3300		11.0			S332M53Z5UR63K7.	
4700		13.5			S472M69Z5UR83K7.	
		17.5				
CLASS 2 Y5V						
1000	+ 80/- 20	8.5	7.5	4.0	S102Z33Y5VR63K7.	
1500					S152Z33Y5VR63K7.	
2200					S222Z39Y5VR63K7.	
3300		10.0		4.8	S322Z43Y5VR63K7.	
4700		11.0			S472Z47Y5VR63K7.	
6800		12.0			S682Z59Y5VR63K7.	
		15.0				

Notes

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

ORDERING INFORMATION, 6 KV (DC), STRAIGHT					
C (pF)	TOL. (%)	D _{max} (mm)	LEAD SPACING F (mm)	SEATED HEIGHT (mm)	CLEAR TEXT CODE 16 th DIGIT: R = RoHS COMPLIANT
			STRAIGHT		
CLASS 1 SL					
10	± 20	10.0	10	3.0	S100M39SL0U83L0.
15					S150M43SL0U83L0.
22					S220M43SL0U83L0.
33					S330M53SL0U83L0.
CLASS 1 S3N					
47	± 20	11.0	10	3.0	S470M43S3NU83L0.
68		13.5			S680M53S3NU83L0.
100		15.0			S101M59S3NU83L0.
150		15.0			S151M59S3NU83L0.
CLASS 2 Z5U					
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.

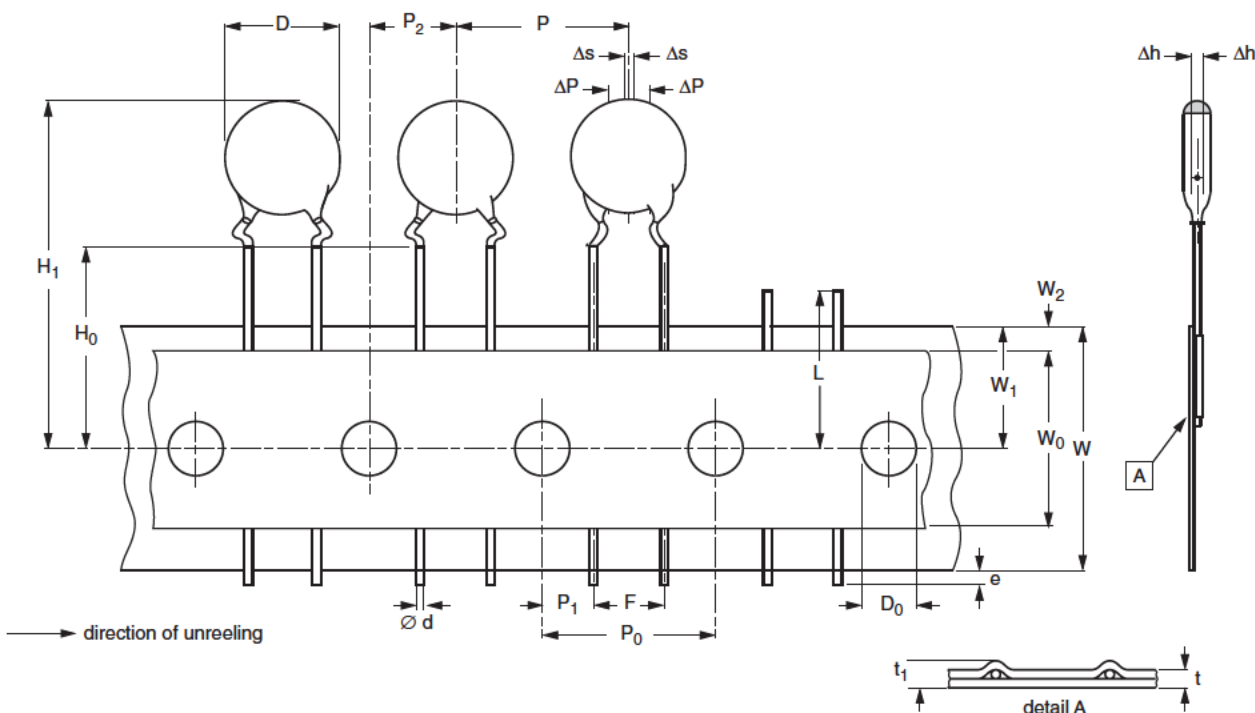
Notes

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

PACKAGING					
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 ≤ WV < 2000	2000				335 x 290 x 50
2000 and 3000	1500				
≥ 7.5	all			1500	360 x 330 x 55

Note

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



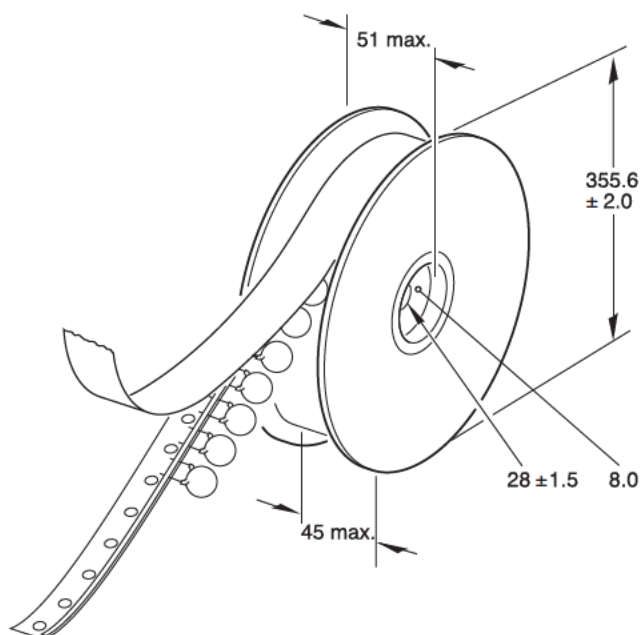
Kinked capacitors on tape, lead spacing 5.0 mm (0.2 inch)

DIMENSIONS OF TAPE			
SYMBOL	PARAMETER	DIMENSIONS (mm)	
		NOMINAL	TOLERANCE
D	body diameter	11.0 maximum	-
d	lead diameter	0.6	± 0.05
P	pitch between capacitors	12.7	± 1.0
P ₀	feed-hole pitch	12.7	± 0.3; note 1
ΔP	plane deviation	1.0 maximum	-
P ₁	feed-hole centre to lead centre	3.85	± 0.7; note 2
P ₂	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 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 snapped 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	-

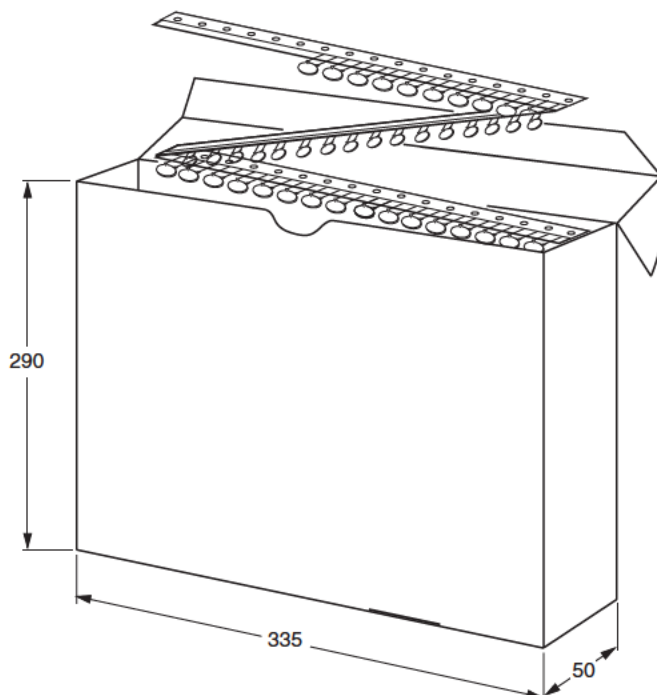
Notes

- Cumulative pitch error: $\pm \leq 1 \text{ mm}/20 \text{ pitches}$.
- Obliquity maximum 3°.

REEL AND TAPE DATA in millimeters



Reel with capacitors on tape



Ammopack with capacitors on tape



Disclaimer

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

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