

## Film Capacitors

### 1. TAPING INFORMATION

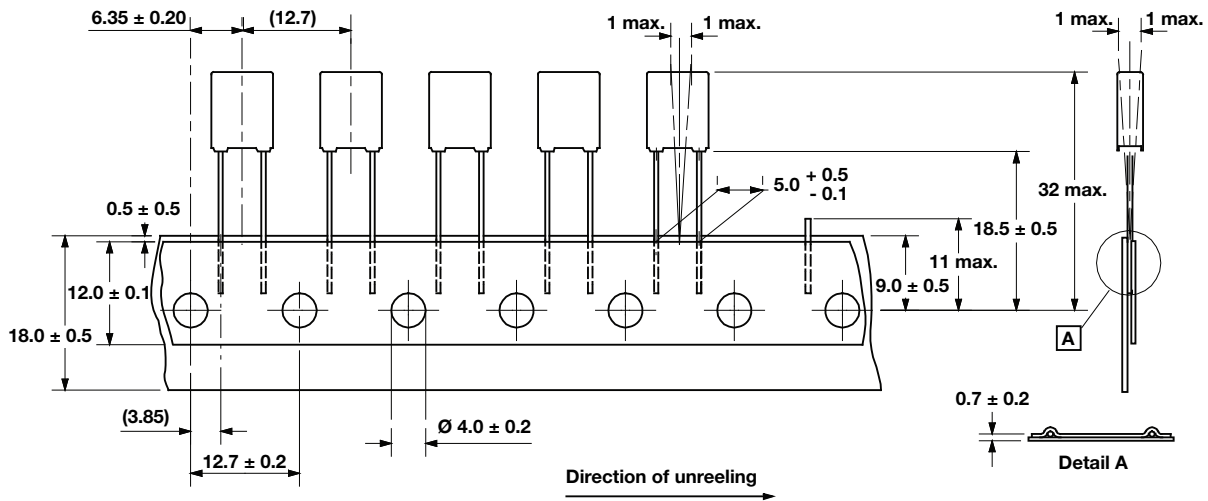
The taping information is based on the international standard IEC 60286-2.

Remark valid for all taped film capacitors, axial and radial, ammo and reel: for all taped film capacitors a maximum of 3 slices per 1000 pieces is permitted.

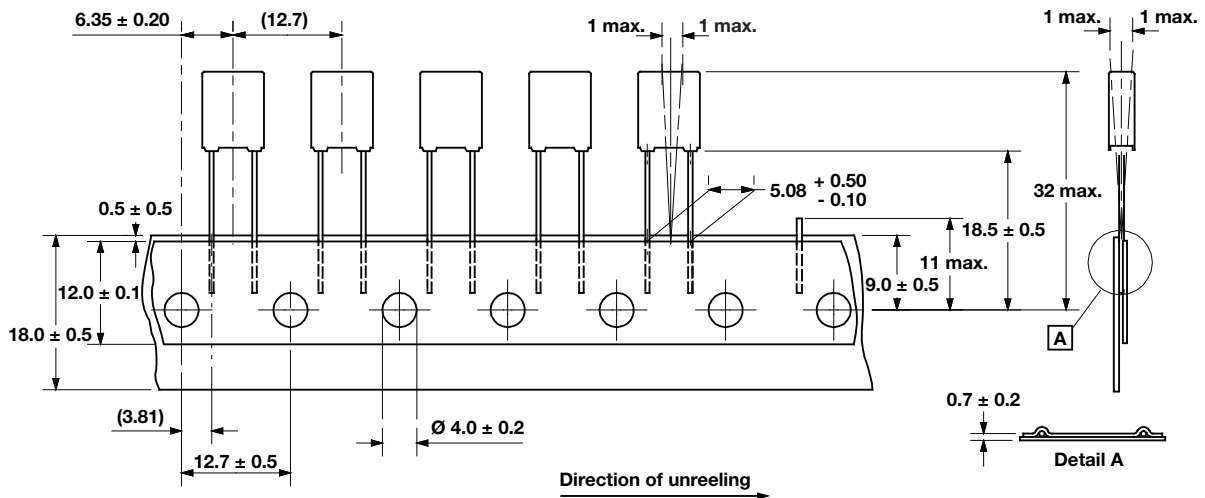
#### 1.1. RADIAL POTTED FILM CAPACITORS (Dimensions in mm)

##### 1.1.1. RADIAL POTTED STRAIGHT LEADS

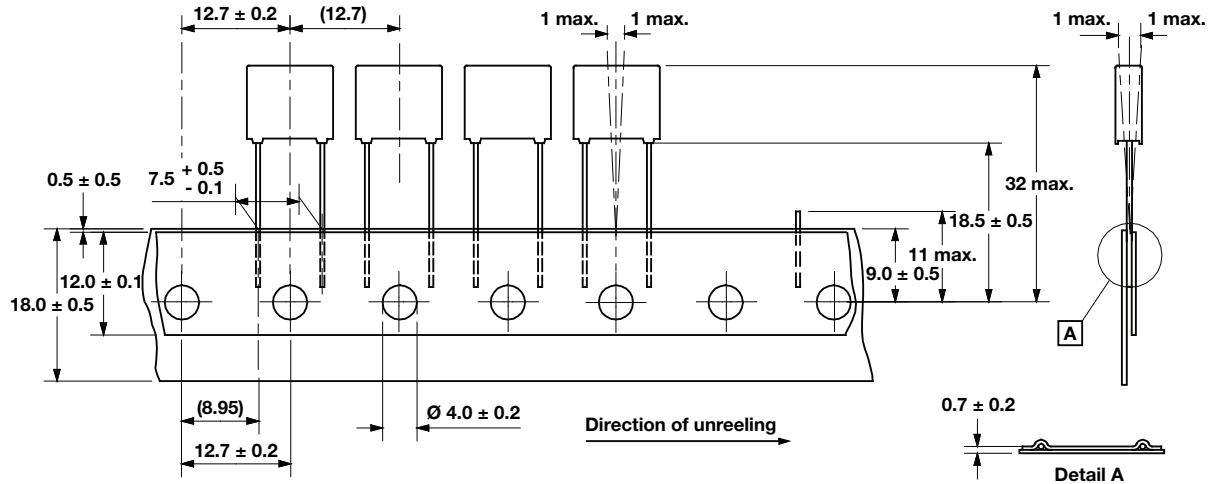
Pitch = 5.0 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 18.5 mm (H)



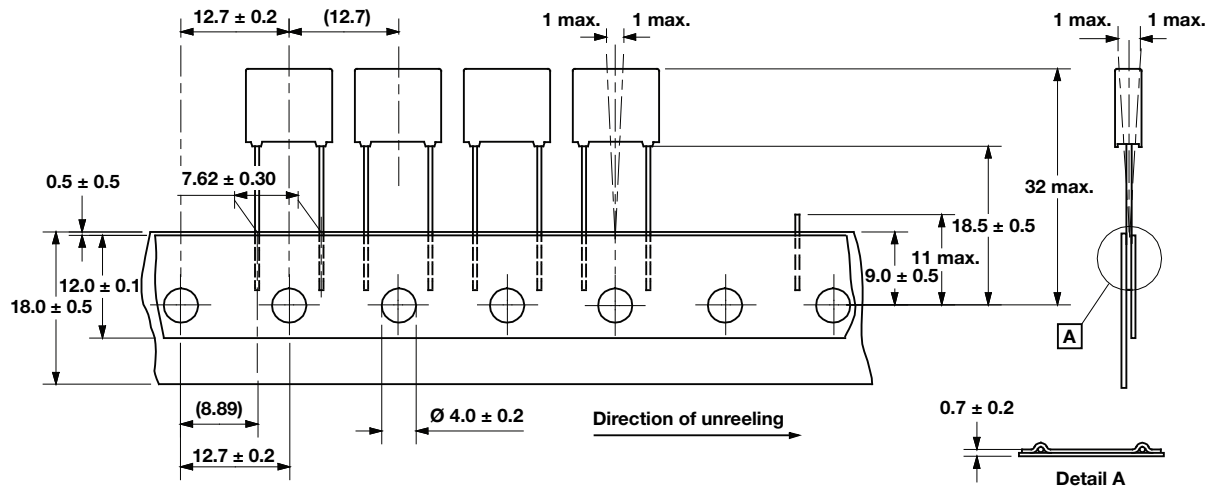
Pitch = 5.08 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 18.5 mm (H)



Pitch = 7.5 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 18.5 mm (H)

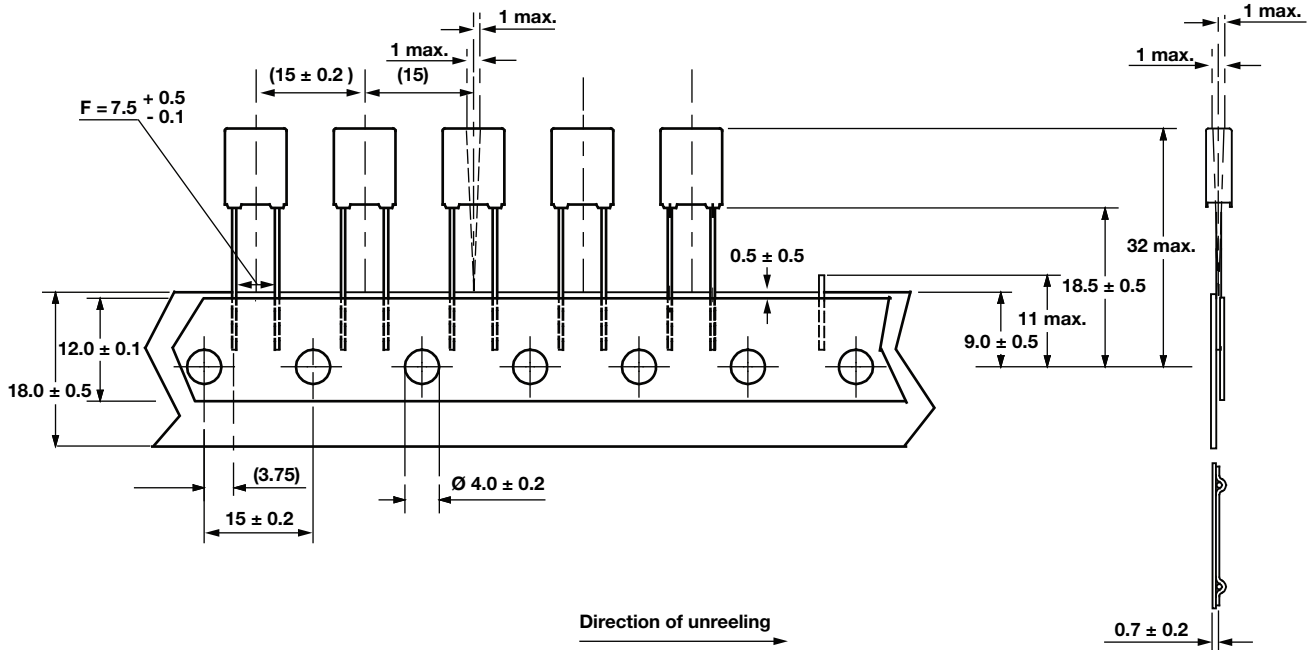


Pitch = 7.62 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 18.5 mm (H)

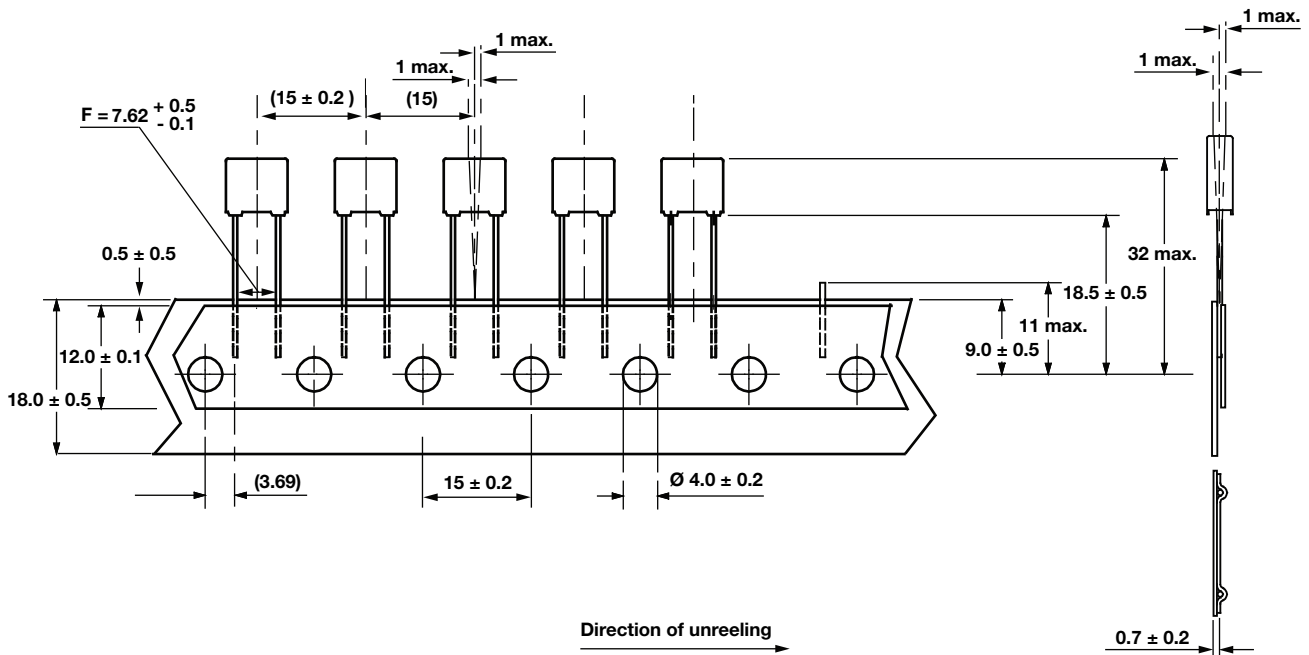




Pitch = 7.5 mm (P); Sprocket Hole = 15.0 mm (P<sub>0</sub>); Taping Height = 18.5 mm (H)

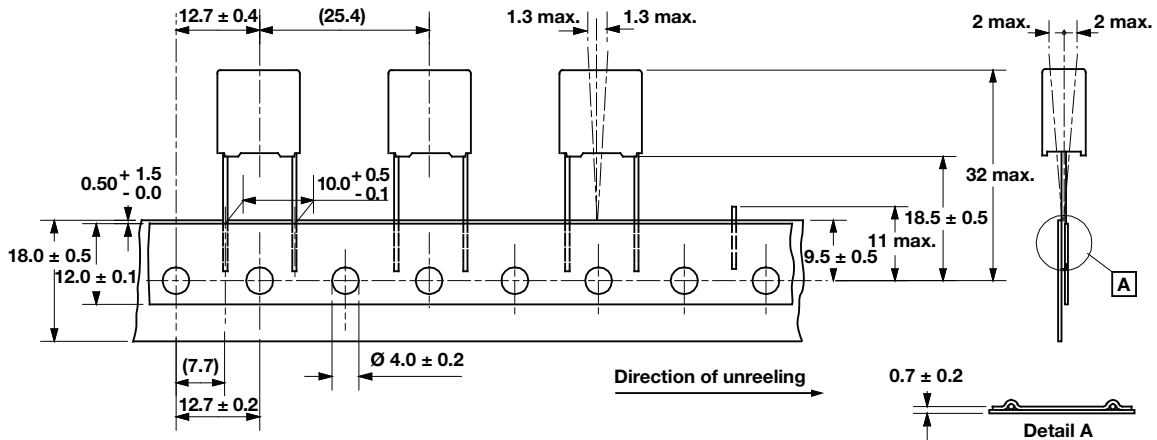


Pitch = 7.62 mm (P); Sprocket Hole = 15.0 mm (P<sub>0</sub>); Taping Height = 18.5 mm (H)

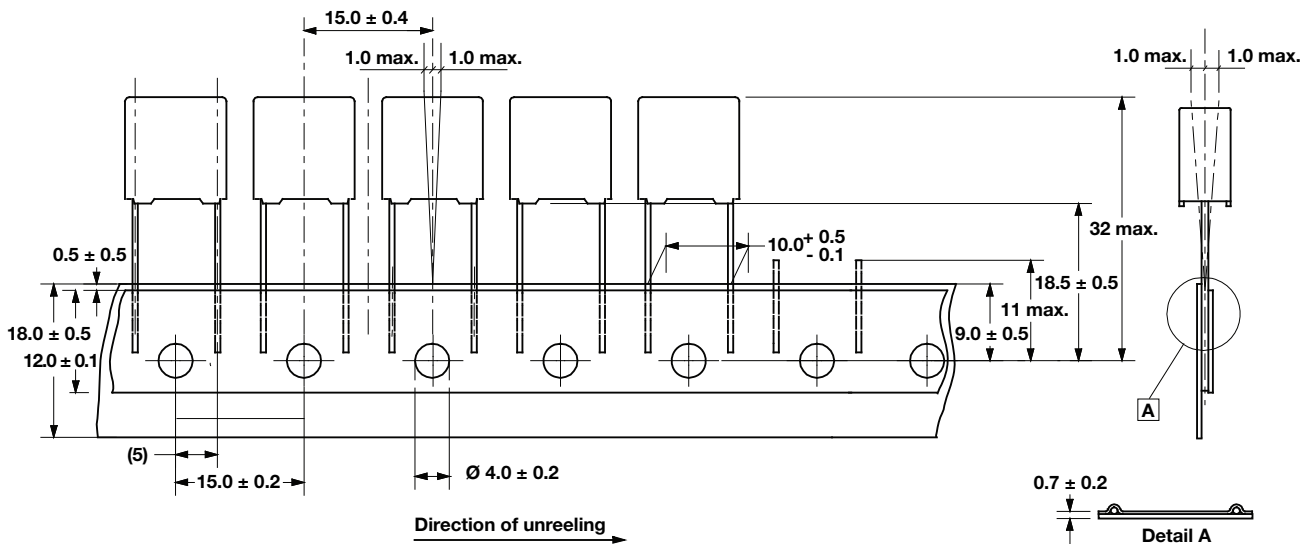




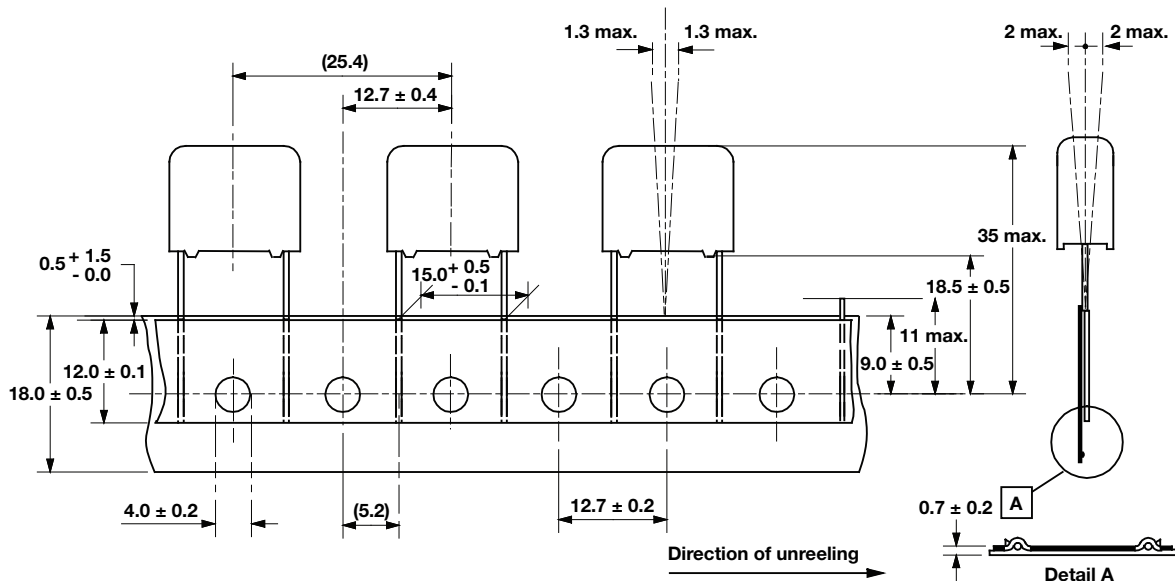
Pitch = 10.0 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 18.5 mm (H)



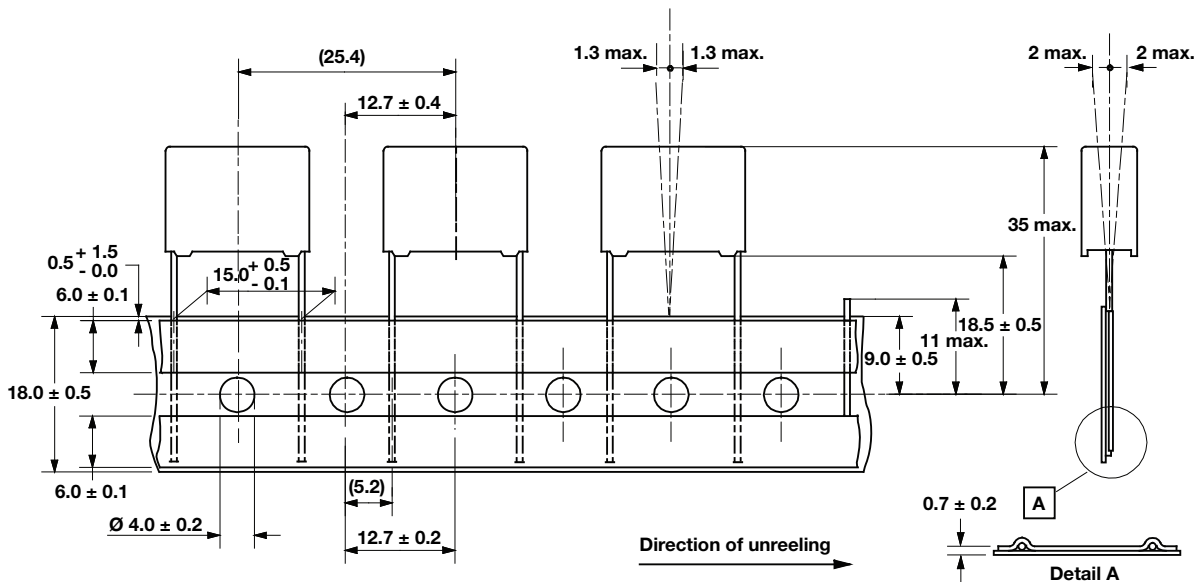
Pitch = 10.0 mm (P); Sprocket Hole = 15.0 mm (P<sub>0</sub>); Taping Height = 18.5 mm (H)



Pitch = 15.0 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 18.5 mm (H); One Tape



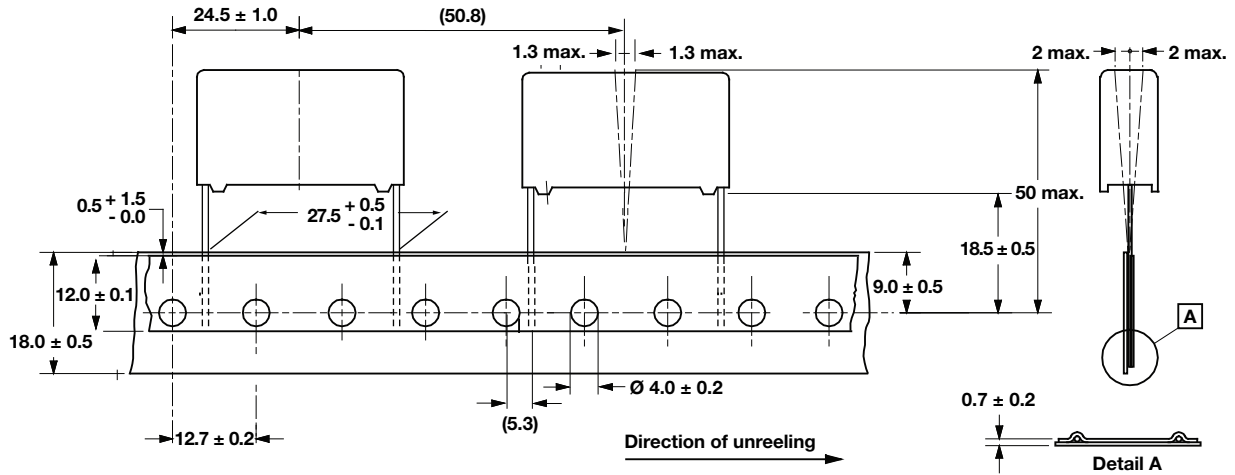
Pitch = 15.0 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 18.5 mm (H); Two Tapes





## PACKAGING INFORMATION: VISHAY ROEDERSTEIN ONLY

Pitch = 27.5 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 18.5 mm (H); One Tape

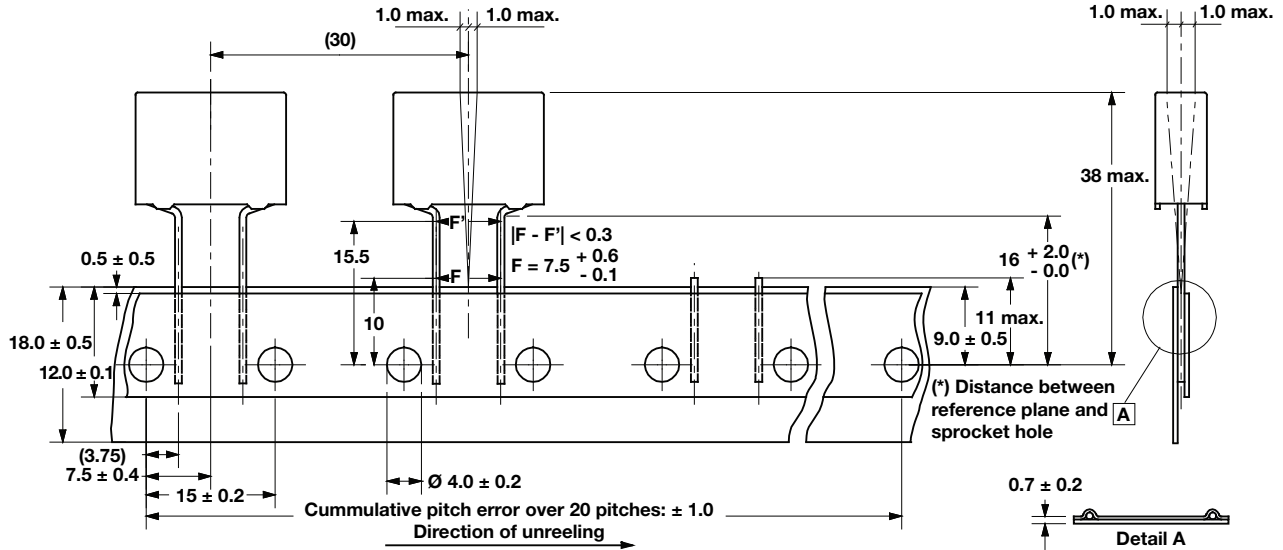




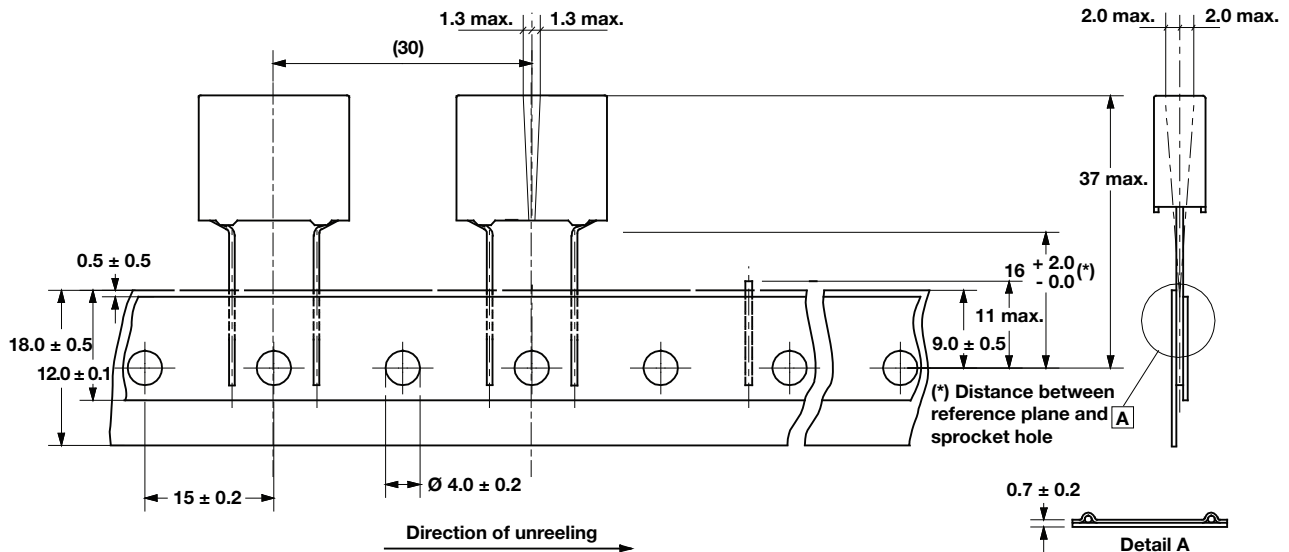




Bent Back Pitch = 7.5 mm (P); Sprocket Hole = 15.0 mm (P<sub>0</sub>); Taping Height = 16.0 mm (H)  
(Original Pitch = 15.0 mm)



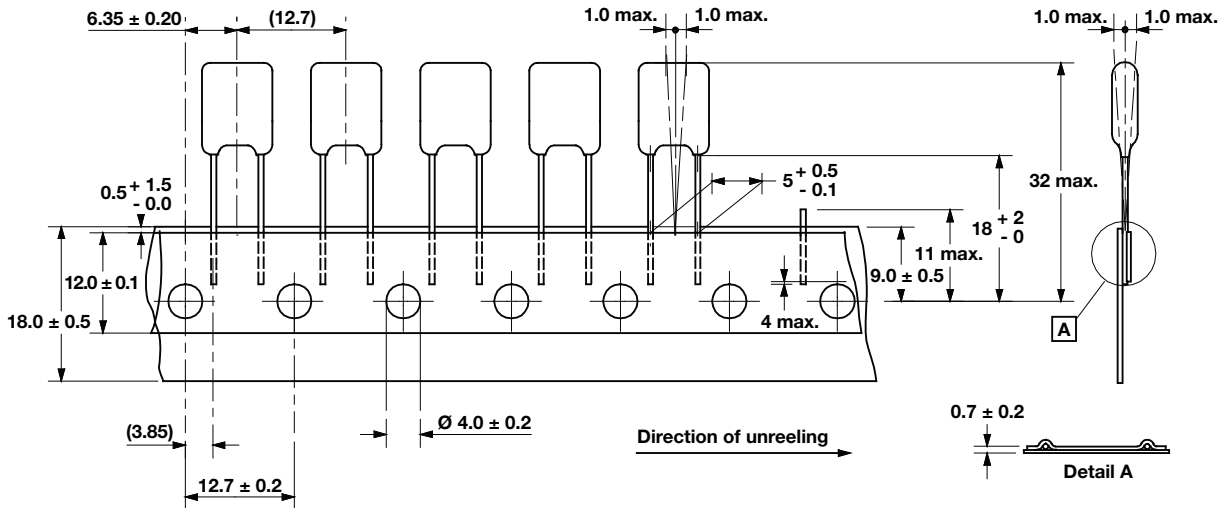
Bent Back Pitch = 10 mm (P); Sprocket Hole = 15.0 mm (P<sub>0</sub>); Taping Height = 16.0 mm (H)  
(Original Pitch = 15.0 mm)



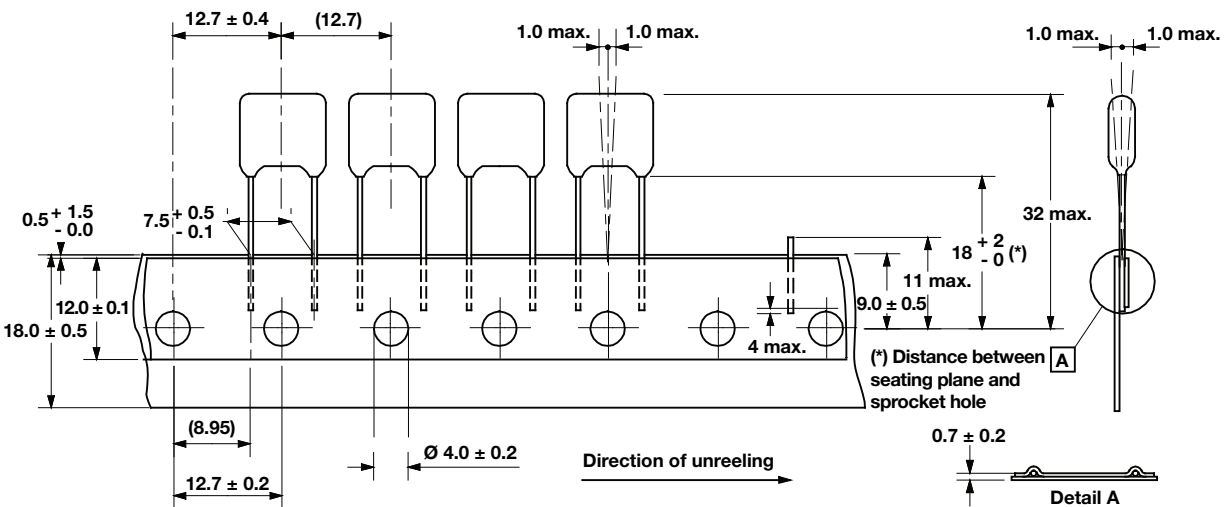
## 1.2. RADIAL LACQUERED FILM CAPACITORS

### 1.2.1. RADIAL LACQUERED STRAIGHT LEADS

Pitch = 5.0 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 18.0 mm (H)

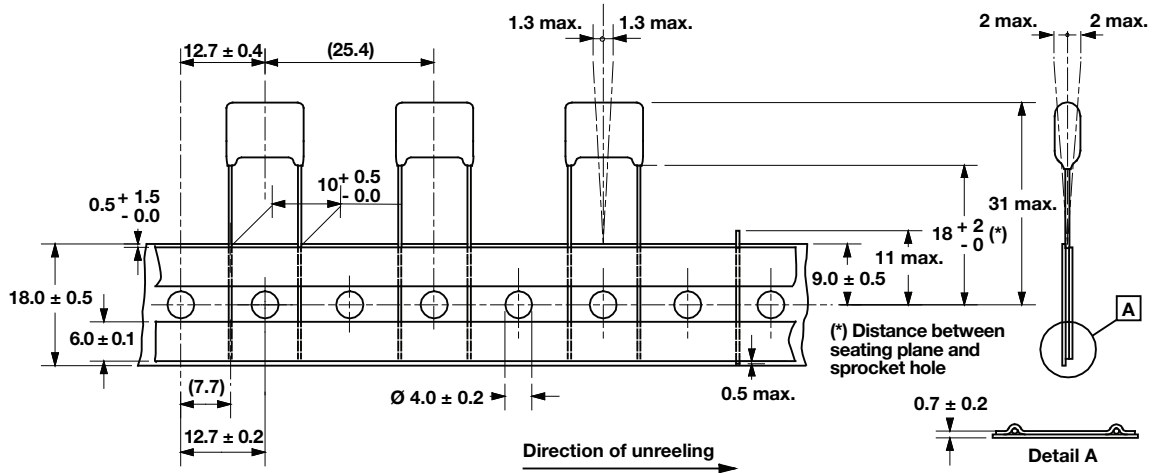


Pitch = 7.5 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 18.0 mm (H)

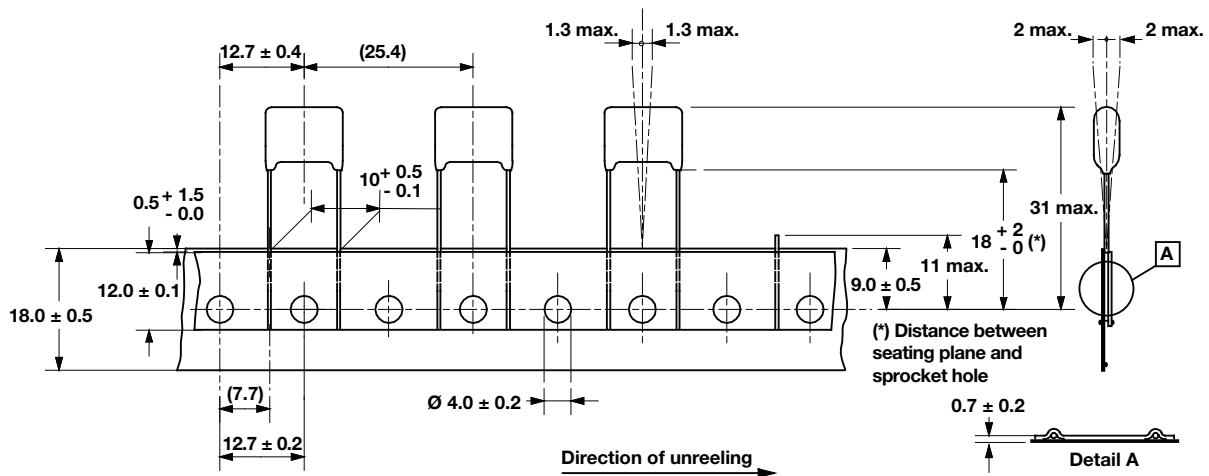




Pitch = 10.0 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 18.0 mm (H); Two Tapes

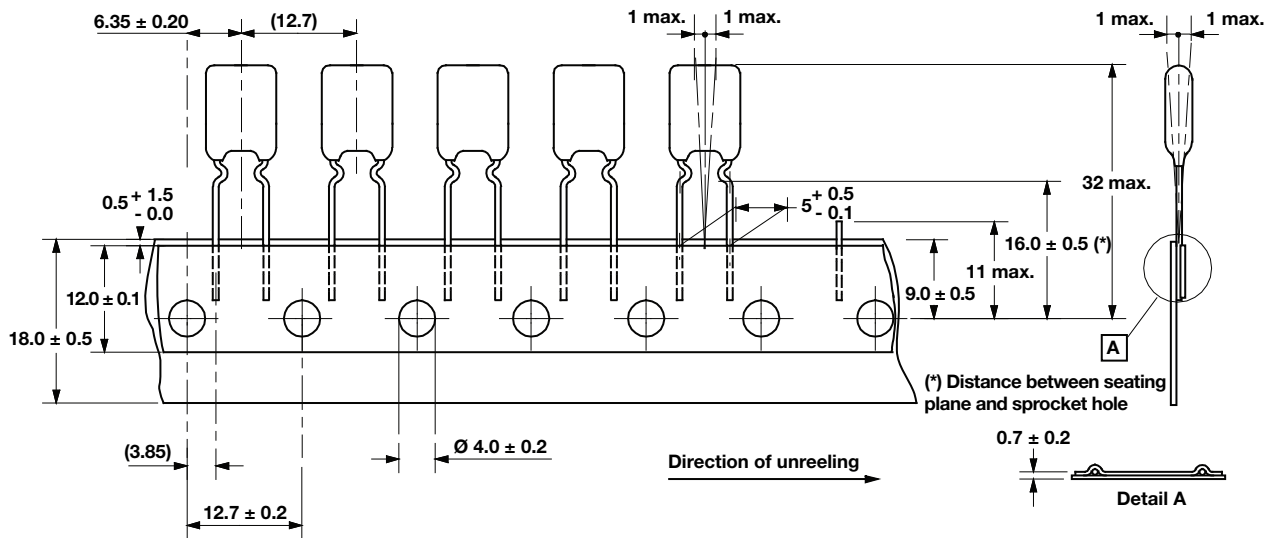


Pitch = 10.0 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 18.0 mm (H); One Tape

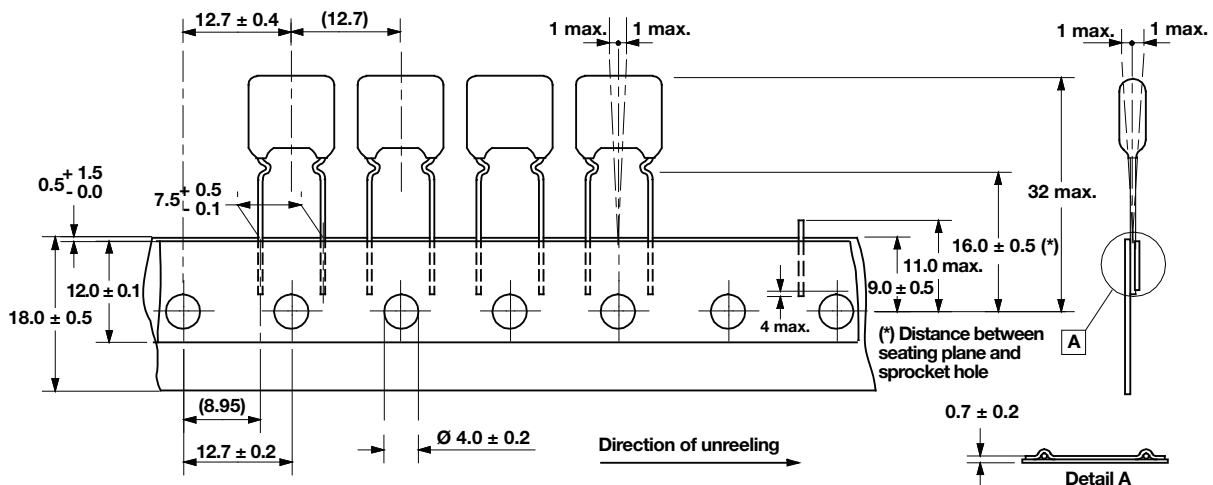


## 1.2.2. RADIAL LACQUERED FILM CAPACITORS

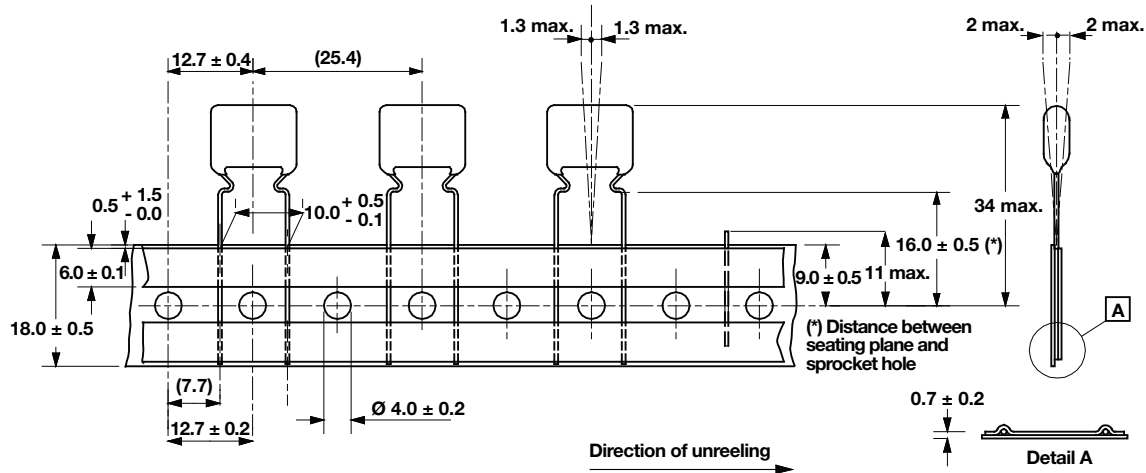
Pitch = 5.0 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 16.0 mm (H)



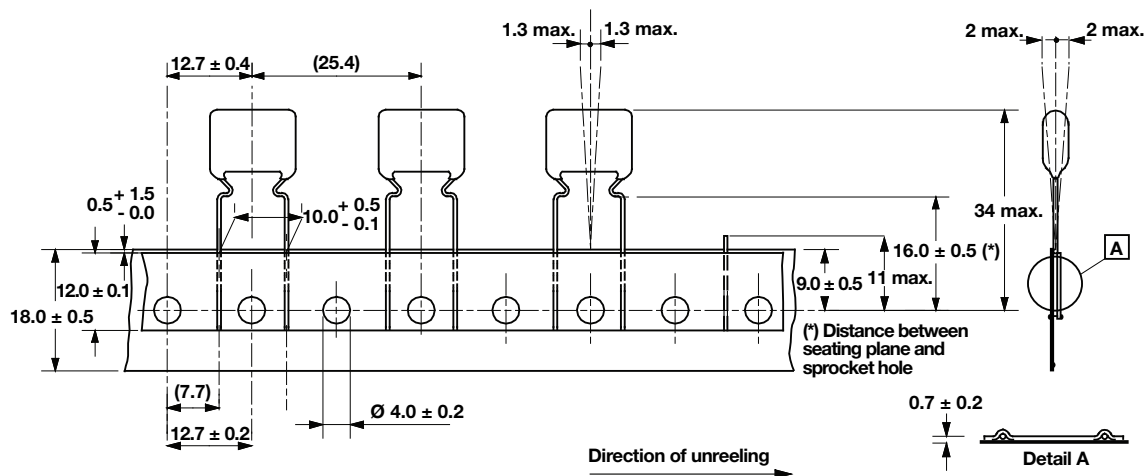
Pitch = 7.5 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 16.0 mm (H)



Pitch = 10.0 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 16.0 mm (H); Two Tapes

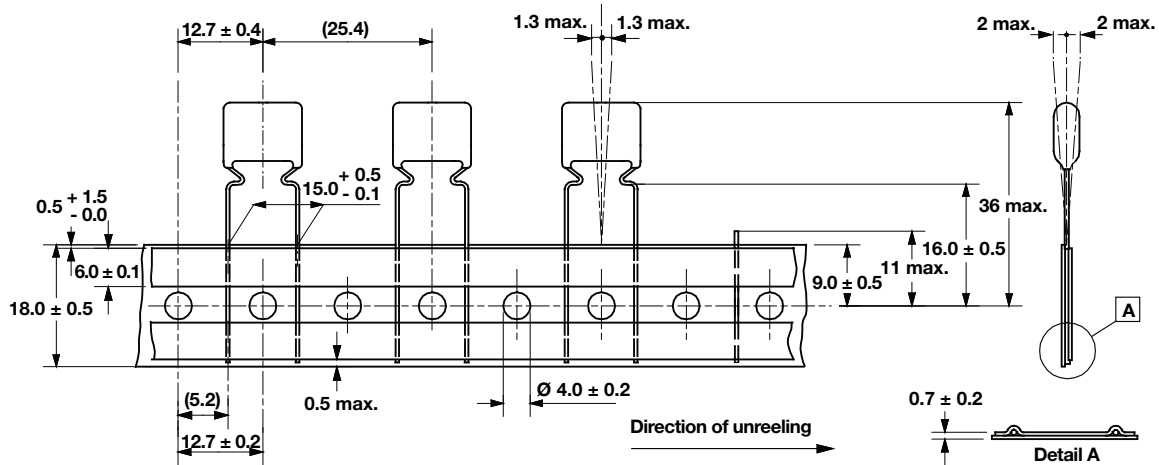


Pitch = 10.0 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 16.0 mm (H); One Tape

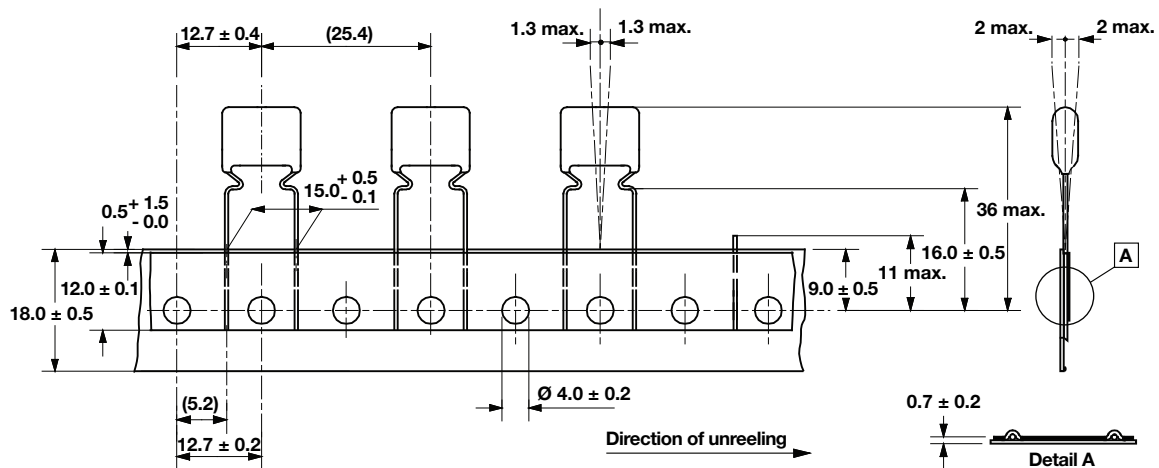




Pitch = 15.0 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 16.0 mm (H); Two Tape



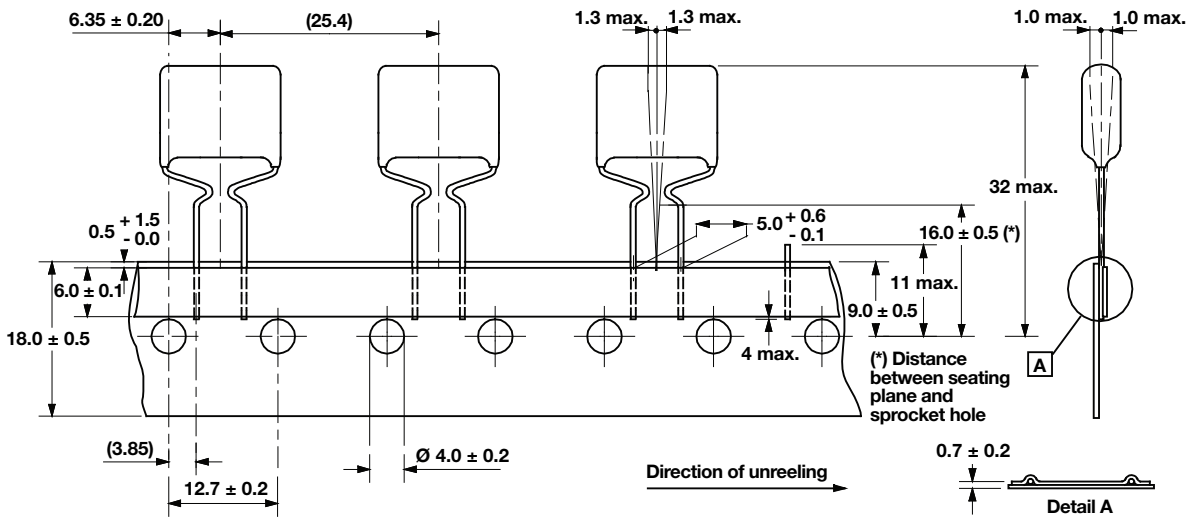
Pitch = 15.0 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 16.0 mm (H); One Tape



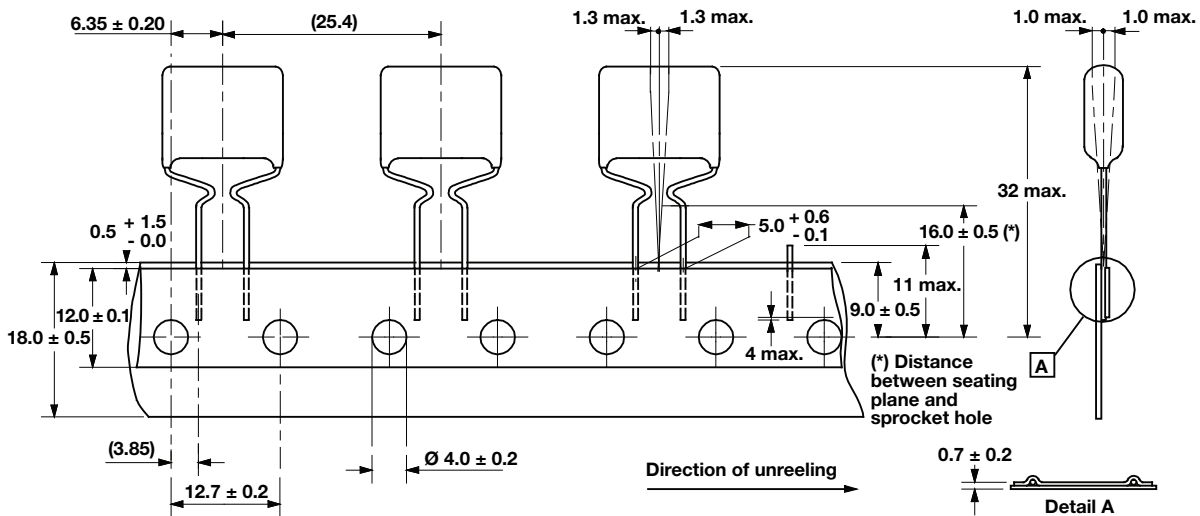




Bent Back Pitch = 5.0 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 16.0 mm (H); 6 mm Tape  
(Original Pitch = 10.0 mm)



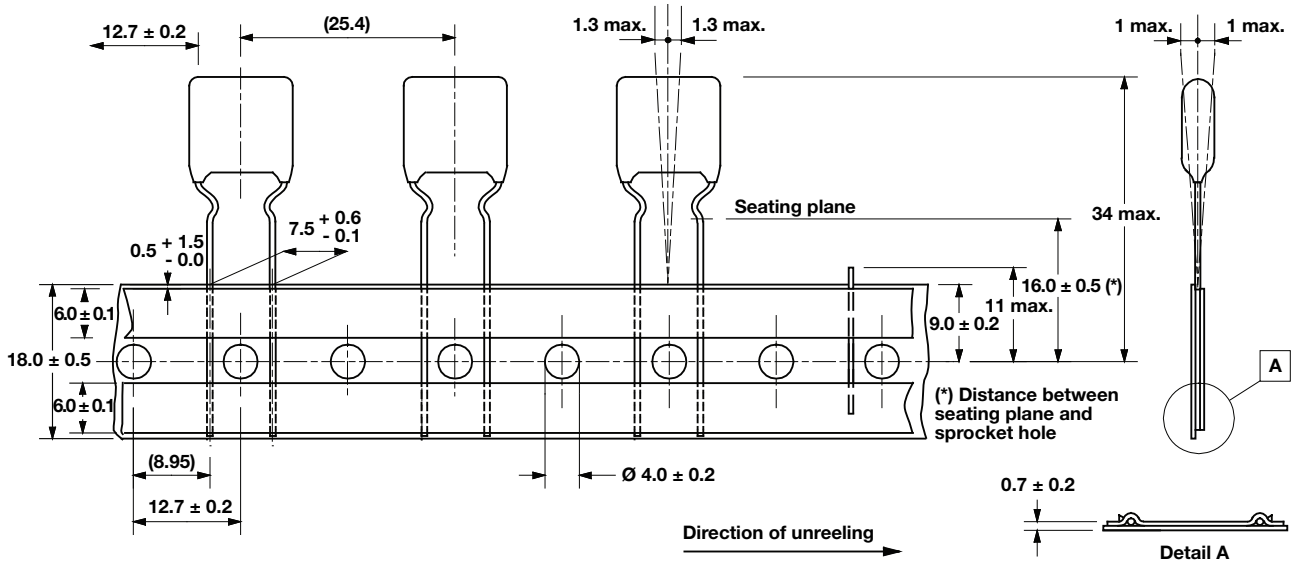
Bent Back Pitch = 5.0 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 16.0 mm (H); 12 mm Tape  
(Original Pitch = 10.0 mm)



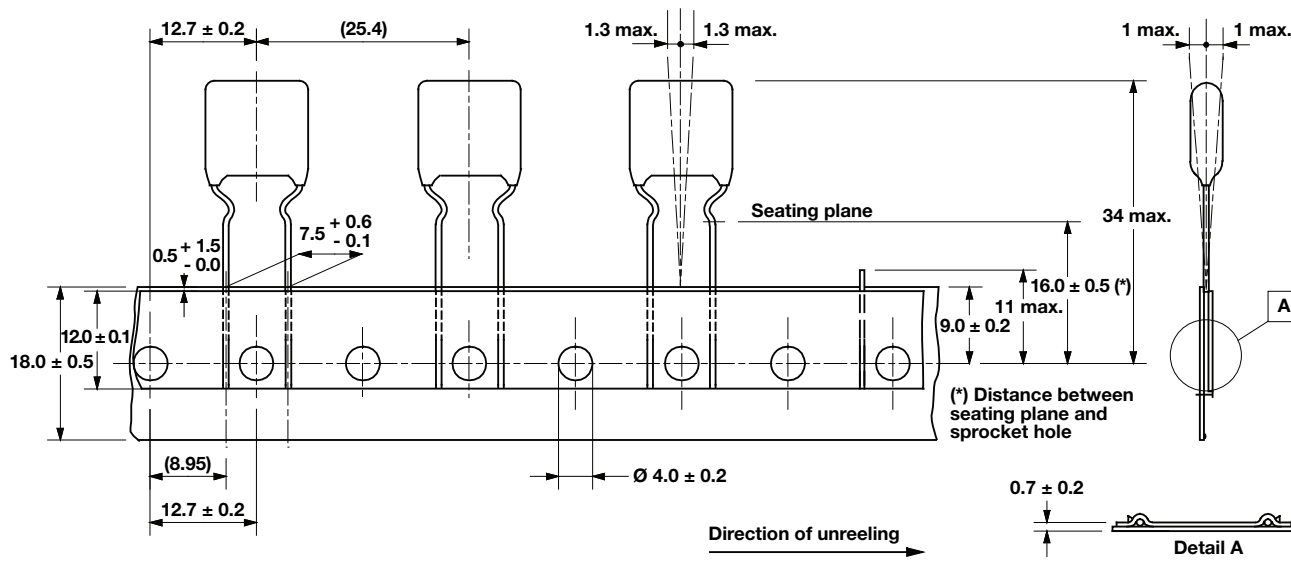




Bent Back Pitch = 7.5 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 16.0 mm (H); Two Tapes  
(Original Pitch = 10.0 mm)



Bent Back Pitch = 7.5 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 16.0 mm (H); One Tape  
(Original Pitch = 10.0 mm)







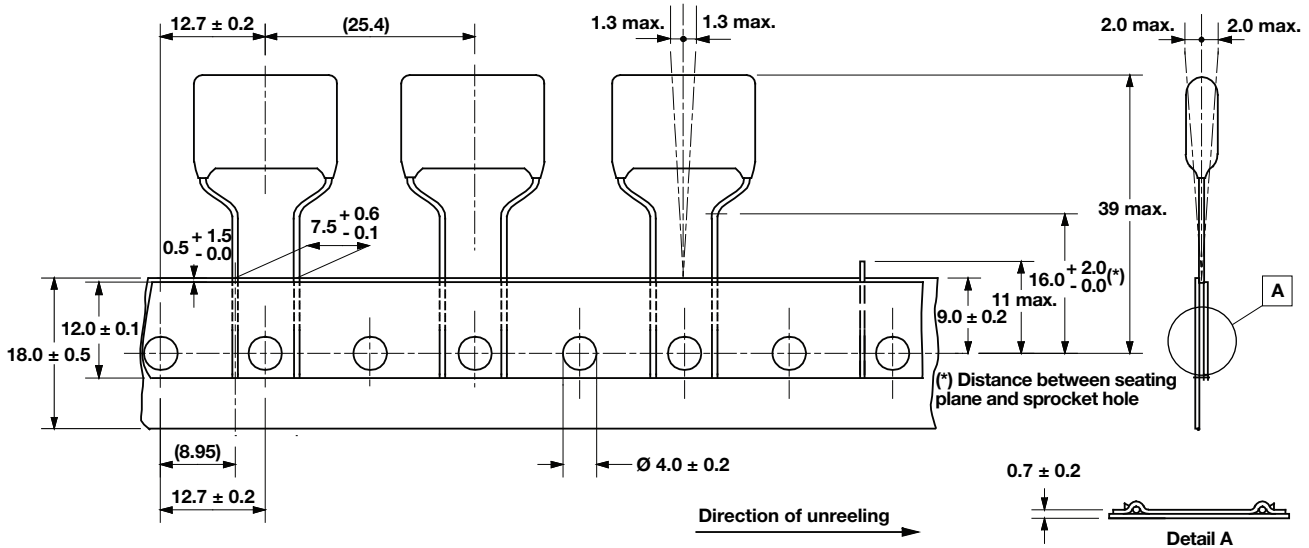


# Taping, Special Kinking, Packaging and Labeling

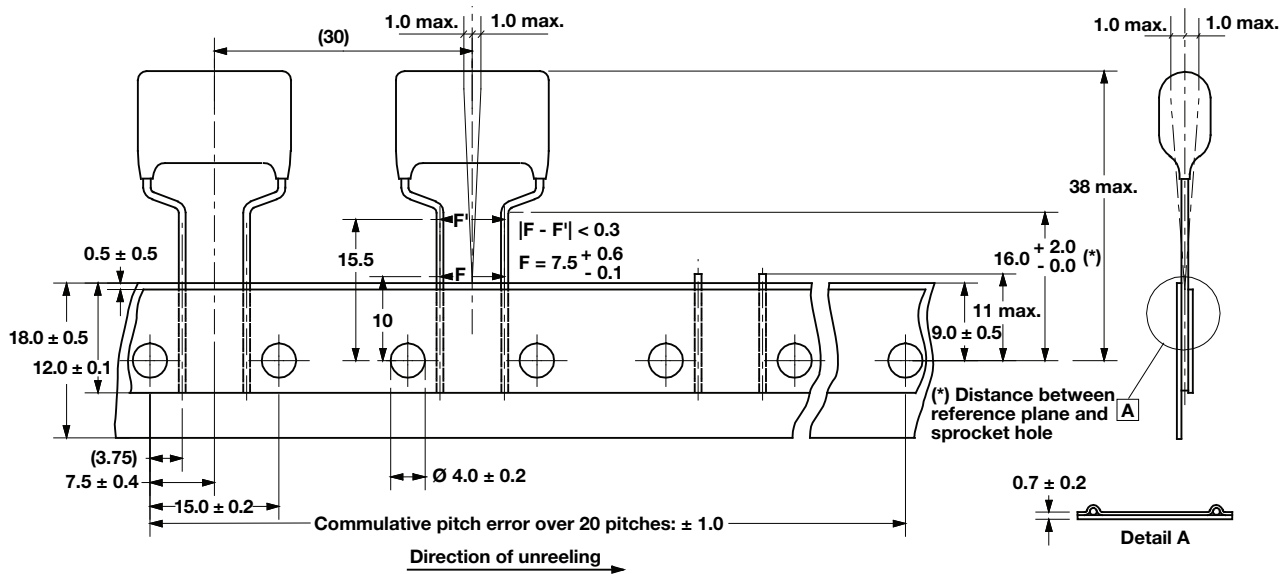
[www.vishay.com](http://www.vishay.com)

Vishay

Bent Back Pitch = 7.5 mm (P); Sprocket Hole = 12.7 mm (P<sub>0</sub>); Taping Height = 16.0 mm (H); One Tape  
(Original Pitch = 15.0 mm)

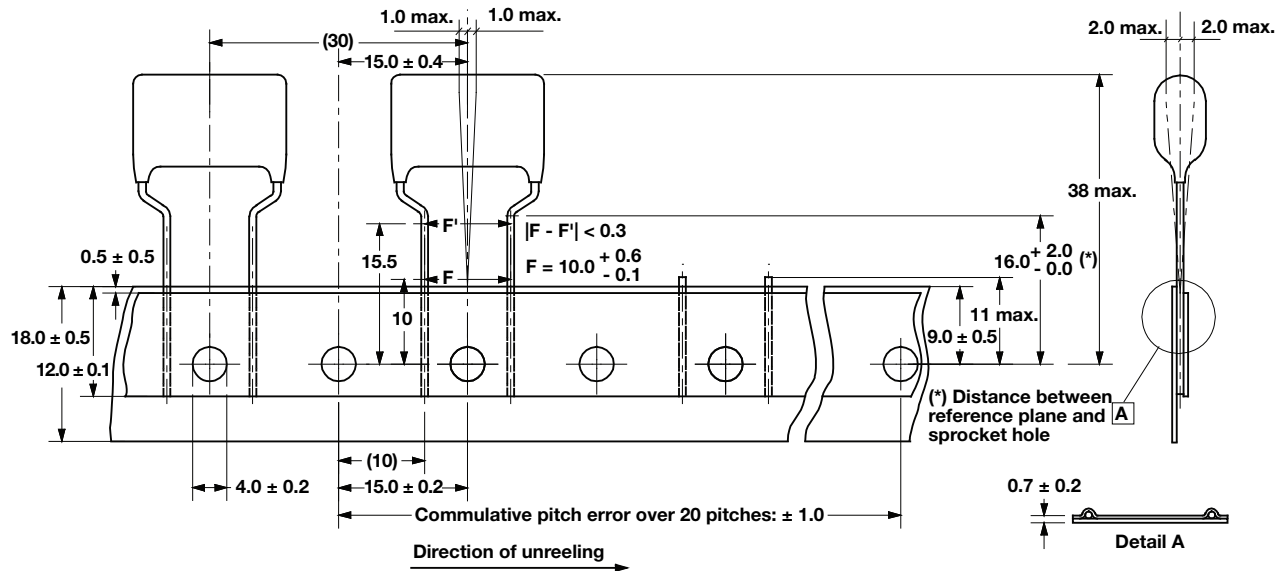


Bent Back Pitch = 7.5 mm (P); Sprocket Hole = 15.0 mm (P<sub>0</sub>); Taping Height = 16.0 mm (H); One Tape  
(Original Pitch = 15.0 mm)





Bent Back Pitch = 10.0 mm (P); Sprocket Hole = 15.0 mm (P<sub>0</sub>); Taping Height = 16.0 mm (H); One Tape (Original Pitch = 15.0 mm)



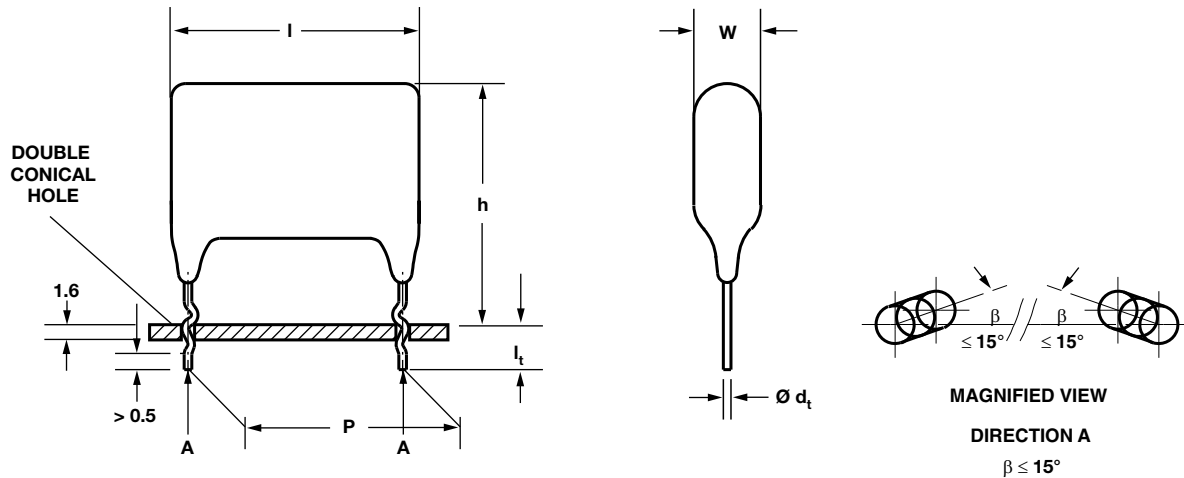
### 1.3. TAPING CHARACTERISTICS FOR RADIAL POTTED AND LACQUERED FILM CAPACITORS

RADIAL LEADS	
DESCRIPTION	VALUE
Pull-out force of the component	≥ 5 N
Peel-off force of adhesive tape	≥ 6 N
Tearing force of tape	≥ 15 N
STORAGE CONDITIONS	
Storage temperature	-25 °C to +40 °C
Maximum relative humidity without condensation	80 %

## 2. SPECIAL KINKING INFORMATION

### RADIAL LACQUERED FILM CAPACITORS WITH DOUBLE KINK

#### General Data

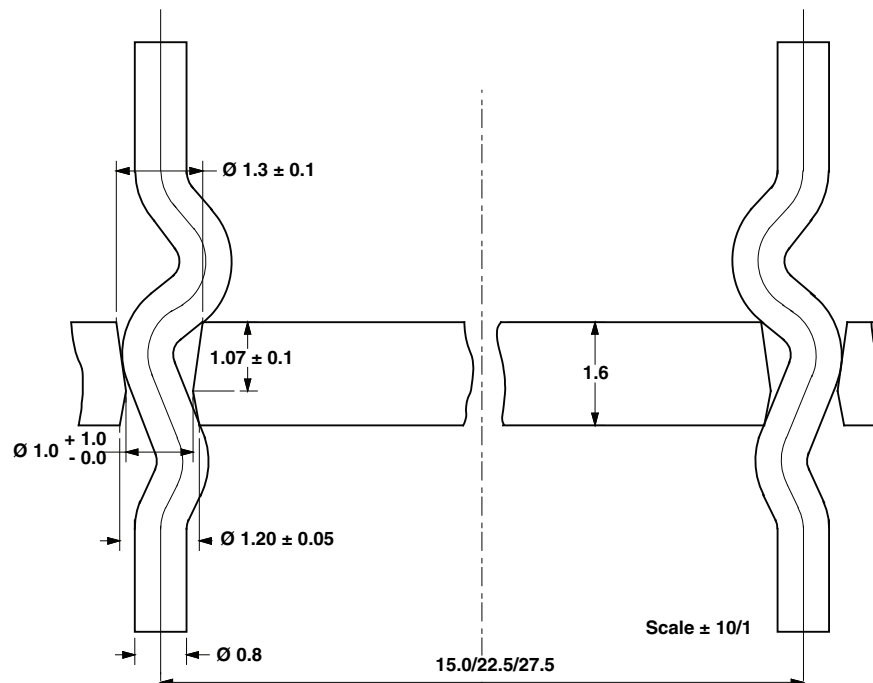
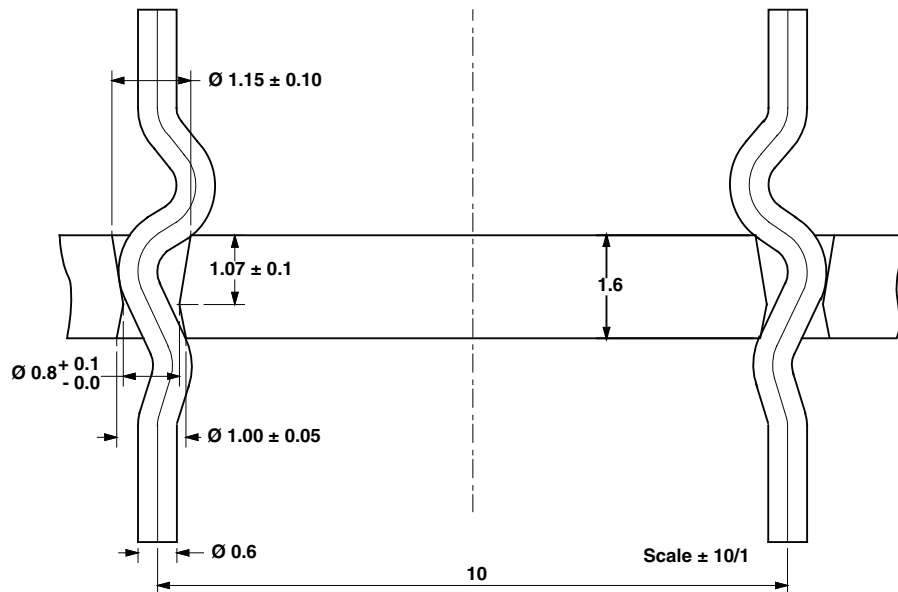


DOUBLE KINK CAPACITORS	
PITCH (mm)	LEAD DIAMETER (mm)
$10.0 \pm 1.0$	0.6
$15.0 \pm 1.0$	0.8
$22.5 \pm 1.0$	0.8
$27.5 \pm 1.0$	0.8

The capacitors are usable for radial manual insertion on PCB. The fixation on the board by double kinked leads prevents that the component jumps out of the PCB during transport.

The components with lead diameter of 0.6 mm are usable for being inserted in punched holes with nominal diameter of 0.8 mm and the components with lead diameter of 0.8 mm are usable for being inserted in punched holes with nominal diameter of 1.0 mm.

The pitch is specified on the top of the leads. After manufacturing, the products meet the specification. Although special care is taken to the packaging, deviations may occur due to transport.



## 3. PACKAGING INFORMATION

### 3.1. LOOSE IN BOX

#### 3.1.1. LACQUERED CAPACITORS (ALL PITCHES) AND POTTED CAPACITORS (PITCH $\leq 15$ mm: ALL; PITCH $> 15$ mm: LONG LEADS)

“Loose in box” capacitors are packed in carton boxes. For quantities per box see detail specifications.

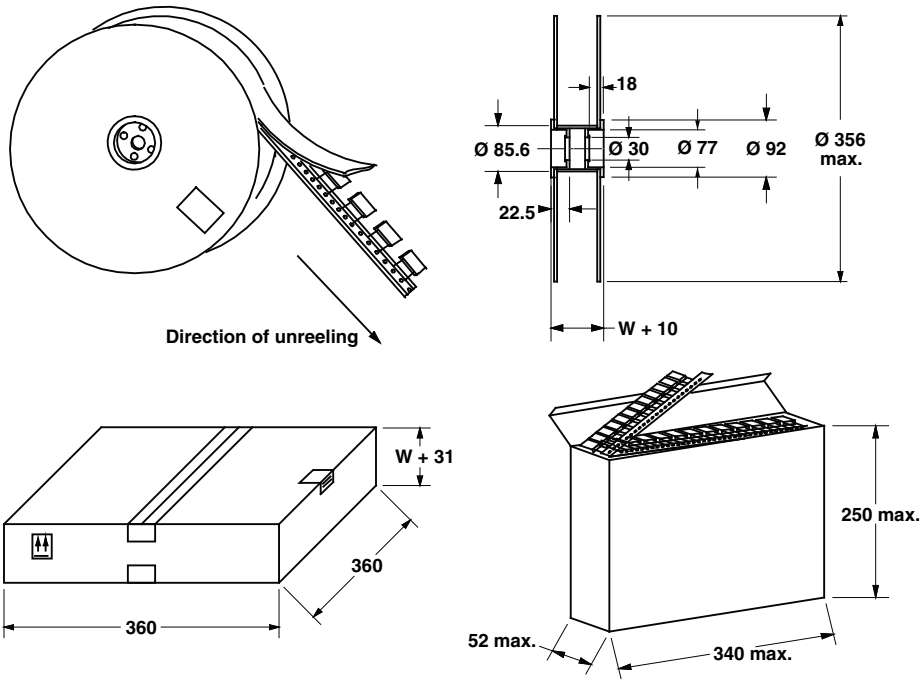
#### 3.1.2. POTTED CAPACITORS (PITCH $> 15$ mm, SHORT LEADS)

“Loose in box” capacitors are packed in tray form. For quantities per box see detail specifications.

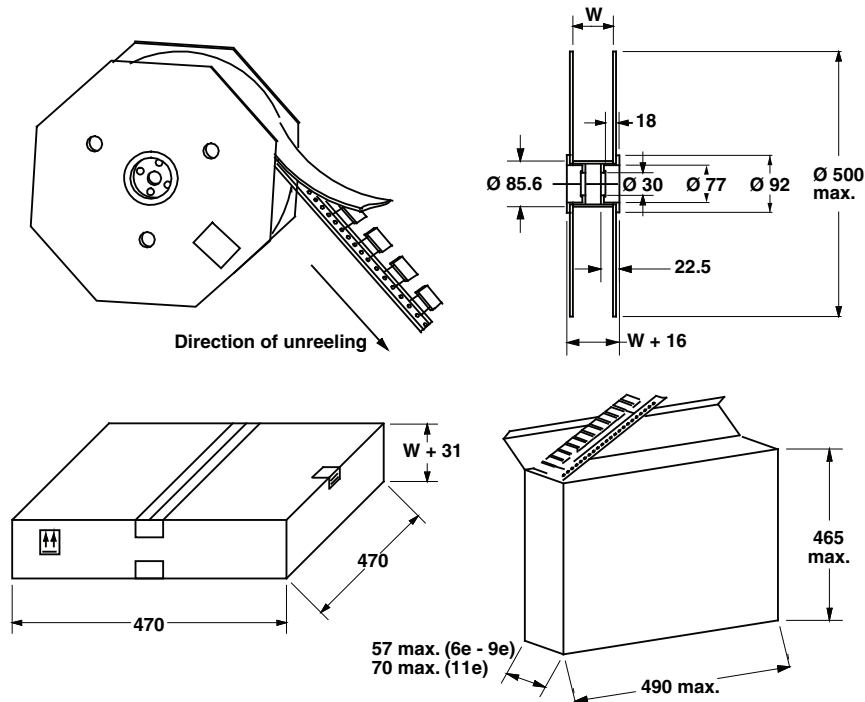


## 3.2. TAPED ON REEL

### 3.2.1. SMALL REELS (356 mm) / AMMOPACK



### 3.2.2. LARGE REELS (500 mm) / AMMOPACK



W AS A FUNCTION OF PRODUCT HEIGHT	
h (mm)	W ± 2 mm
≤ 9.0	40
10.0 up to and including 15.0	45
15.5 up to and including 19.5	50
21.0 up to and including 23.0	55
25.0 up to and including 28.0	60
31.0	65

The cumulative pitch error is: 1.0 mm per 20 pitches.

The maximum number of empty positions per reel shall not exceed 0.5 % <sup>(1)</sup> of the total number of components per reel, but no more than 2 consecutive positions may be vacant provided this gap is followed by 6 consecutive components.

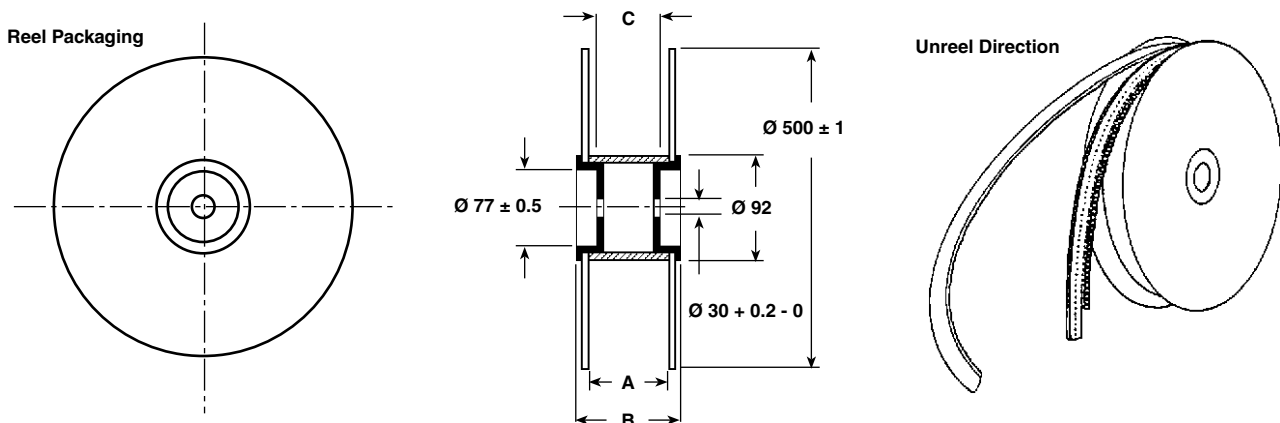
**Note**

<sup>(1)</sup> Potted: this 5 % for capacitors in ammpack (except for capacitors with w = 2.5 or 3.5 mm and l = 7.2 mm)

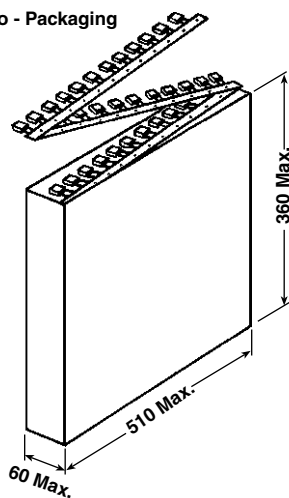
Lacquered for pitches 15 mm and 22.5 mm: 5 % for capacitors in ammpack (except for capacitors with w = 2.5 mm or 3.5 mm and l = 7.2 mm)

### 3.2.3 LARGE REELS (500 mm; MOUNTING WHEEL INNER DIAMETER 77 mm) / AMMOPACK

#### Radial Plastic (Robotic Insertion)



**Ammo - Packaging**

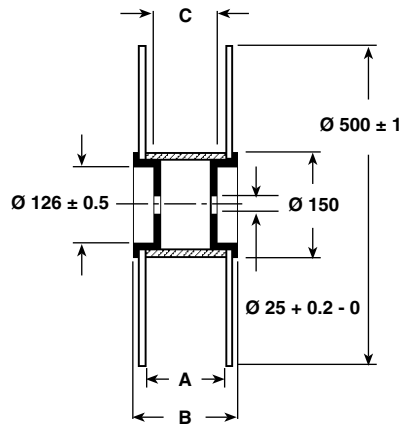
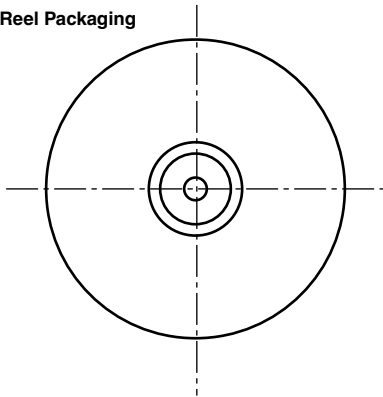


MAX. CAP. HEIGHT	REEL DIMENSIONS (in millimeters)		
	H	A	B
20	52	70	28
25	57	75	33
30	82	80	38
35	67	85	43
40	72	90	48

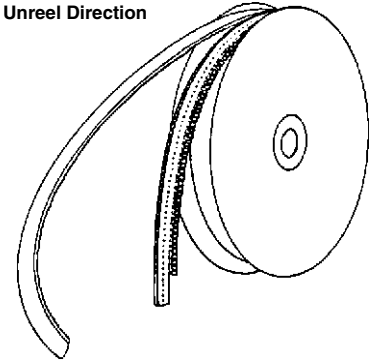
## 3.2.4. LARGE REELS (500 mm; MOUNTING WHEEL INNER DIAMETER 126 mm) / AMMOPACK

### Radial Plastic (Robotic Insertion)

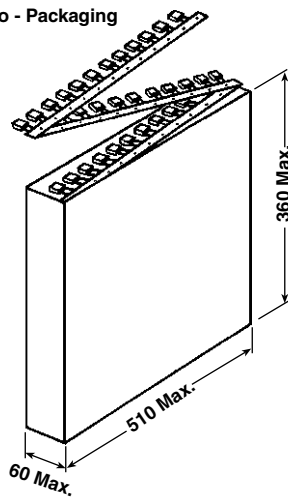
Reel Packaging



Unreel Direction



Ammo - Packaging

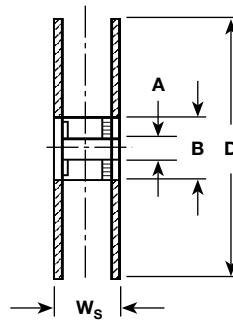
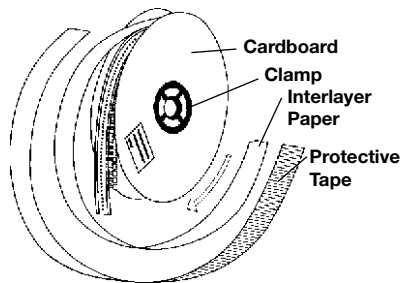


MAX. CAP. HEIGHT	REEL - DIMENSIONS (in millimeters)		
H	A	B	C
20	52	70	28
25	57	75	33
30	82	80	38
35	67	85	43
40	72	90	48

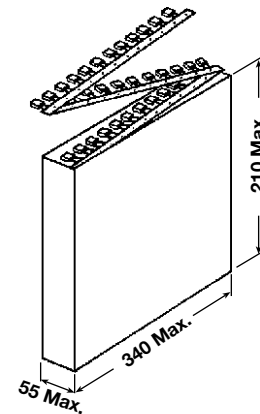
## 3.2.5. SMALL REELS (350 mm) / AMMOPACK

LETTER CODES FOR TAPING OF RADIAL LEADED CAPACITORS (Pitch 5 mm to 15 mm)		
LETTER CODE	TYPE OF PACKAGING	HEIGHT (H) (mm)
D	Ammo	16.5
G	Ammo	18.5
F	Reel	16.5
W	Reel	18.5

REEL FOR RADIALLY TAPED CAPACITORS  
(Box size 50 mm x 370 mm x 370 mm)



CARDBOARD BOX FOR RADIALLY TAPED CAPACITORS (Ammo - Packaging)

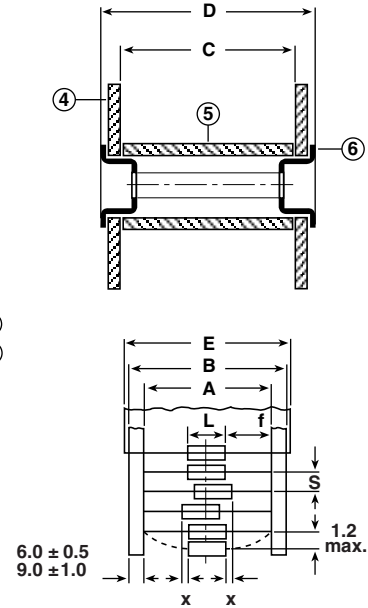
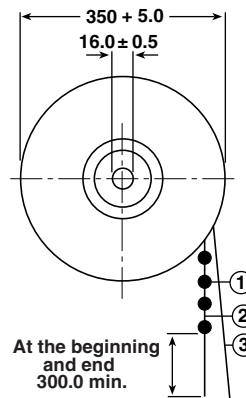


DIMENSIONS (mm)
$D = \text{Ø } 350$
$A = \text{Ø } 30$
$B = \text{Ø } 85$
$W_s = 52 \text{ max.}$

### 3.2.6. AXIAL TYPES

#### Axial Film Capacitors According to EN/IEC 60286-1

1. Capacitor
  2. Tape
  3. Kraft paper layers between components for protection
  4. Flange (3.0 mm thick)
  5. Reel
  6. Plastic hub
- A. Inner spacing of tapes
  - B. Outer spacing of tapes
  - C. Inner reel width
  - D. Outer reel width
  - E. Width of kraft paper layers
  - F. Width of outer kraft paper layers
  - S. Component spacing
  - T. Permissible deviation over 10 spaces
  - L. Body length of capacitor
  - f.  $\geq 19.0$  mm
  - x.  $\pm 0.5$  for  $L_{max.} \leq 26$  mm
  - x.  $\pm 0.7$  for  $L_{max.} > 26$  mm



#### WIDTH OF ADHESIVE TAPE

6.0 mm  $\pm$  0.5 mm for class I, II, and III ( $S = 10.0$  mm  $\pm$  0.5 mm)  
 9.0 mm  $\pm$  1.0 mm for class III ( $S = 15.0$  mm  $\pm$  0.5 mm) and IV

#### Note

- The capacitors can also be supplied in cardboard box (ammopack)

TAPING DIMENSIONS in millimeters										
CAP. DIM. $\varnothing D$	$L_{max.}$	WIDTH OF ADHESIVE TAPE	INPUT CLASS	A	S	T	B	C	$D_{max.}$	E
$\leq 5.0$	11.5	6	I	$53 \pm 2$	$5 \pm 0.5$	$\pm 2$	$65 \pm 2$	$70^{-1}$	80	$68^{-1}$
$> 5.0 \leq 7.0$	11.5	6	I	$53 \pm 2$	$10 \pm 0.5$	$\pm 2$	$65 \pm 2$	$70^{-1}$	80	$68^{-1}$
$> 5.0 \leq 9.5$	22.0	6	II	$63 \pm 2$	$10 \pm 0.5$	$\pm 2$	$75 \pm 2$	$85^{-1}$	95	$83^{-1}$
$> 5.0 \leq 9.5$	31.5	6	III	$73 \pm 2$	$10 \pm 0.5$	$\pm 2$	$85 \pm 2$	$100^{-1}$	110	$98^{-1}$
$> 9.5 \leq 13.5$	31.5	9	III	$73 \pm 2$	$15 \pm 0.75$	$\pm 3$	$91 \pm 2$	$100^{-1}$	110	$98^{-1}$
$> 13.5 \leq 18.0$	31.5	9	IV	$73 \pm 2$	$20 \pm 1$	$\pm 4$	$91 \pm 2$	$100^{-1}$	110	$98^{-1}$
$> 13.5$	41.5	9	IV	$73 \pm 2$	$20 \pm 1$	$\pm 4$	$91 \pm 2$	$100^{-1}$	110	$98^{-1}$
(1)	41.5	9	IV	$73 \pm 2$	$30 \pm 1$	$\pm 4$	$91 \pm 2$	$100^{-1}$	110	$98^{-1}$

#### Note



- (1) Taping for  $L_{max.} = 41.5$  mm upon request



## 4. LABELLING INFORMATION

### 2D LABEL



TYPE :339 150nF ±20% 275Vac X2  
 BATCH :200816IN LOT1 : 1003564 DC1 : 0816 L  
 QTY :1000 LOT2 : DC2 :  
 PART NO: BFC233922154 S.L. : 0010  
 BCC PN : 22233922154 RoHS   REGION:  
 55/110/56/B  
 PO. : 0099999999 PI: 0099 SER: B61003564026

EXPLANATION	
LINE	
1	2D barcode and manufacturer's logo
2	Type description      Capacitance value      Tolerance      Voltage      Class (if applicable)
3	Batch number      Lot number      Date code      Factory code
4	Quantity
5	Part number      SAP number      RoHS symbols      S.L.: stocking location
6	Vishay catalog number      REGION: plant number
7	Climatic category (if applicable)
8	PO: production order      PI: production item      SER.N. box number