

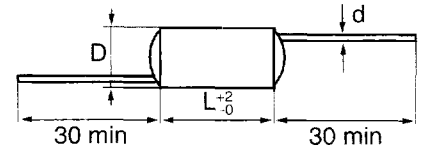
# PFA Polypropylene film/foil capacitor with axial leads

## Typical applications

Tuned circuits, filters and applications where a very low dissipation factor is required.

## Construction

Polypropylene film with metal foil electrodes and axial tinned wires. Wound to a compact cylindrical form.



## General data

### Capacitance and rated voltage

Capacitance measured at 23°C.  $f = 100 \text{ kHz}$  for  $C \leq 1000 \text{ pF}$  and  $f = 1 \text{ kHz}$  for  $C > 1000 \text{ pF}$ .

100 ... 8200 pF	25VDC/10VAC
100 ... 100000 pF	63VDC/25VAC
47 ... 3300 pF	160VDC/63VAC
3301 ... 22000 pF	160VDC/50VAC
47 ... 10000 pF	630VDC/125VAC

With DC bias, the sum of the DC voltage and the peak value of the AC voltage must not exceed the rated DC voltage.

### Capacitance tolerance

$\pm 20\%$ ,  $\pm 10\%$ ,  $\pm 5\%$ ,  $\pm 2.5\%$ ,  $\pm 2\%$ ,  $\pm 1\%$ , but not less than  $\pm 1 \text{ pF}$ .

### Temperature range

$-40 \dots +85^\circ\text{C}$

### Climatic category

IEC68-1, 40/085/21  
 DIN 40040. GPE

Average relative humidity  $\leq 75\%$   
 RH = 95% for 30 days per year. RH = 85% for further days limited by average value per year.  
 Rare and slight dew precipitation.

### Capacitance drift

Max  $\pm(0.3\%, +0.4\text{pF})$  after a storage period of 2 years within the operating temperature range.

## Marking

Capacitance, tolerance code, rated voltage code, and the code PFA are marked on the capacitors.

Tolerance code:

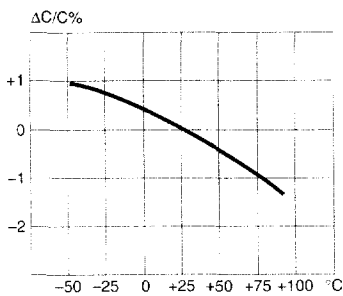
M =  $\pm 20\%$ , K =  $\pm 10\%$ , J =  $\pm 5\%$ , H =  $\pm 2.5\%$ , G =  $\pm 2\%$ , F =  $\pm 1\%$  or 1 pF

Voltage code:

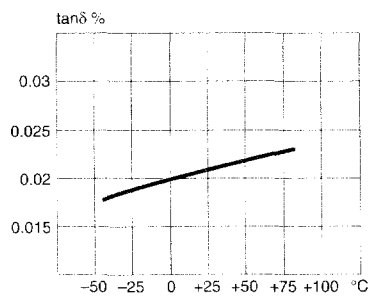
Blue = 25VDC, yellow = 63VDC, red = 160VDC, black = 630VDC

## Electrical characteristics

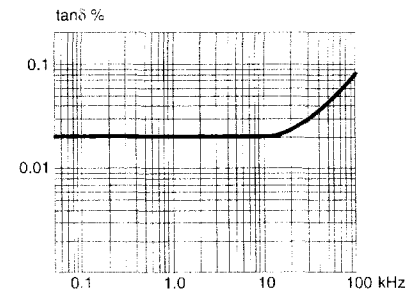
<b>Test voltage</b>	$2.5 \times U_R$ during 2 seconds
<b>Temperature coefficient</b>	$-200 \pm 100$ ppm/°C (at 1 kHz)
<b>High frequency load</b>	$I_{max} = 0.3$ A for $L \leq 10$ mm, 0.7 A for $L > 10$ mm
<b>Self inductance</b>	Approximately 10 nH/cm for the total length of capacitor winding and leads.
<b>Dissipation factor, <math>\tan\delta</math></b>	Maximum values at +23°C $C \leq 1000$ pF max. $0.4 \times 10^{-3}$ at 100 kHz $1000 \text{ pF} < C \leq 4700$ pF max. $0.3 \times 10^{-3}$ at 10 kHz $4700 \text{ pF} < C \leq 22000$ pF max. $0.4 \times 10^{-3}$ at 1 kHz $22000 \text{ pF} < C \leq 100000$ pF max. $0.5 \times 10^{-3}$ at 1 kHz
<b>Insulation resistance</b>	Series 25 and 63 VDC $> 10^5$ MΩ. Series 160 and 630 VDC $> 10^6$ MΩ



Capacitance vs. temperature (at 1 kHz)



Dissipation factor vs. temperature (at 1 kHz)



Dissipation factor vs. frequency (at +23°C)

**PFA**  
**Preliminary specification**

**Article table PFA**

C <sub>R</sub> pF	Max dimensions in mm		Quantity per package		Article code
	D	L	Bulk		
<b>25 VDC/10 VAC</b>					
100	3.1	7	1000		PFA 101J25
150	3.2	7	1000		PFA 151J25
220	3.3	7	1000		PFA 221J25
330	3.3	7	1000		PFA 331J25
470	3.3	7	1000		PFA 471J25
560	3.3	7	1000		PFA 561J25
680	3.3	7	1000		PFA 681J25
820	3.3	7	1000		PFA 821J25
1000	3.3	7	1000		PFA 102J25
1500	4.0	7	1000		PFA 152J25
2200	4.8	7	1000		PFA 222J25
3300	5.0	10	1000		PFA 332J25
4700	5.3	10	1000		PFA 472J25
5600	5.8	10	1000		PFA 562J25
6800	6.0	10	1000		PFA 682J25
8200	6.9	10	1000		PFA 822J25
<b>63 VDC/25 VAC</b>					
100	3.1	7	1000		PFA 101J63
150	3.2	7	1000		PFA 151J63
220	3.3	7	1000		PFA 221J63
330	3.4	7	1000		PFA 331J63
470	3.5	7	1000		PFA 471J63
560	3.5	7	1000		PFA 561J63
680	3.6	7	1000		PFA 681J63
820	3.9	7	1000		PFA 821J63
1000	4.2	10	1000		PFA 102J63
1500	4.6	10	1000		PFA 152J63
2200	5.0	10	1000		PFA 222J63
3300	5.7	10	1000		PFA 332J63
4700	6.5	10	1000		PFA 472J63
5600	6.8	10	1000		PFA 562J63
6800	7.4	10	1000		PFA 682J63
8200	7.0	15	1000		PFA 822J63
10000	7.6	15	1000		PFA 103J63
15000	8.3	15	1000		PFA 153J63
22000	9.8	15	1000		PFA 223J63
27000	9.9	20	500		PFA 273J63
33000	10.5	20	500		PFA 333J63
39000	11.7	20	500		PFA 393J63
47000	13.3	20	250		PFA 473J63
56000	14.0	20	250		PFA 563J63
68000	14.5	20	250		PFA 683J63
82000	15.0	20	250		PFA 823J63
100000	16.5	20	250		PFA 104J63
<b>160 VDC/63 VAC</b>					
47	3.7	10	1000		PFA 470J160
68	3.7	10	1000		PFA 680J160
82	3.7	10	1000		PFA 820J160
100	3.7	10	1000		PFA 101J160
150	3.7	10	1000		PFA 151J160
220	4.0	10	1000		PFA 221J160
330	4.3	10	1000		PFA 331J160
470	4.8	10	1000		PFA 471J160
560	5.0	10	1000		PFA 561J160
680	5.2	10	1000		PFA 681J160
820	5.5	10	1000		PFA 821J160
1000	6.4	10	1000		PFA 102J160

**Article table PFA**

C <sub>R</sub> pF	Max dimensions in mm		Quantity per package		Article code
	D	L	Bulk		
<b>160 VDC/63 VAC</b>					
1500	7.0	10	1000		PFA 152J160
2200	7.8	10	1000		PFA 222J160
3300	9.2	10	1000		PFA 332J160
<b>160 VDC/50 VAC</b>					
4700	7.6	20	500		PFA 472J160
5600	8.2	20	500		PFA 562J160
6800	8.8	20	500		PFA 682J160
8200	9.2	20	500		PFA 822J160
10000	10.0	20	500		PFA 103J160
15000	12.0	20	500		PFA 153J160
22000	14.2	20	500		PFA 223J160
<b>630 VDC/125 VAC</b>					
47	5.5	10	1000		PFA 470J630
68	5.5	10	1000		PFA 680J630
82	5.5	10	1000		PFA 820J630
100	6.0	10	1000		PFA 101J630
150	6.3	10	1000		PFA 151J630
220	6.8	10	1000		PFA 221J630
330	7.2	10	1000		PFA 331J630
470	7.4	10	1000		PFA 471J630
560	8.2	10	1000		PFA 561J630
680	8.9	10	1000		PFA 681J630
820	9.1	10	1000		PFA 821J630
1000	9.5	10	1000		PFA 102J630
1500	9.0	20	500		PFA 152J630
2200	10.5	20	500		PFA 222J630
3300	11.2	20	500		PFA 332J630
4700	12.4	20	250		PFA 472J630
5600	13.0	20	250		PFA 562J630
6800	14.0	20	250		PFA 682J630
8200	15.0	20	250		PFA 822J630
10000	16.0	20	250		PFA 103J630