METALLIZED POLYPROPYLENE POWER CAPACITORS **Type PAM ... c**

Applications

- Harmonic filtering
- Protection and commutation
- Power electronics
- Tuned circuits
- Pulse operation
- Energy Storage Support
- Compensation
- Motors

Main Characteristics

- Dry film technology
- Nominal voltage: 250 VAC to 1200 VAC
- Climatic category: 40/085/56
- Tolerances ±10%
  (on request: ±5%, ±2%)

Design

- Metallized Polypropylene
- Aluminium tubular housing
- Various terminal options available : screws (...c6/cv6) Fast-on AMP 6.3 x 0.8.(...c2/cv2), or wire leads (...c3/cv3). See data sheets on following pages
- Epoxy resin end seal (UL-V0)

Mounting

- Indifferent positioning

1.0 Rated values and operational data

AC	Nominal Voltage U_N	[VAC]		250	420	660	850	1200
	Category voltage U_c	[VAC]	≤ 85°C øD ≤ 50mm < 70°C øD > 50mm	250	420	660	850	1200
	Maximum sinus voltage U_{max}	[VAC]		280	450	720	920	1300
DC	Category voltage U_c	[VDC]	85 °C	400	700	1250	1450	2000
	Test voltage U_{T1}	[VDC]	10s, 23°C	640	1000	1800	2200	2500
	Test voltage between terminals & can	[VAC]	60s, 23°C, 50 Hz	2500	2500	3000	3000	3000

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2.0 Capacitance range

C_n =>	220 nF	500 nF	1.0 µF	3.0 µF	5.0 µF	10 µF	20 µF	32 µF	100 µF	300 µF
250 VAC										
420 VAC										
660 VAC										
850 VAC										
1200 VAC										

3.0 Characteristics

			Min	Typ	Max
Dissipation factor	tg δ	50 Hz, U_N		5.0	10.0 x 10^{-4}
Time constant	R_i C [s]	23°C	10000		
Temperature coefficient	α_c	ppm / °C		-125	
Long time stability	ΔC / C [%]	U_{NDC}, 100000 h 70°C, U_{NAC}, 30000 h			3 3

4.0 Operational limits

4.1 RMS current limits

The maximal limit value of the RMS current is defined by the following definition

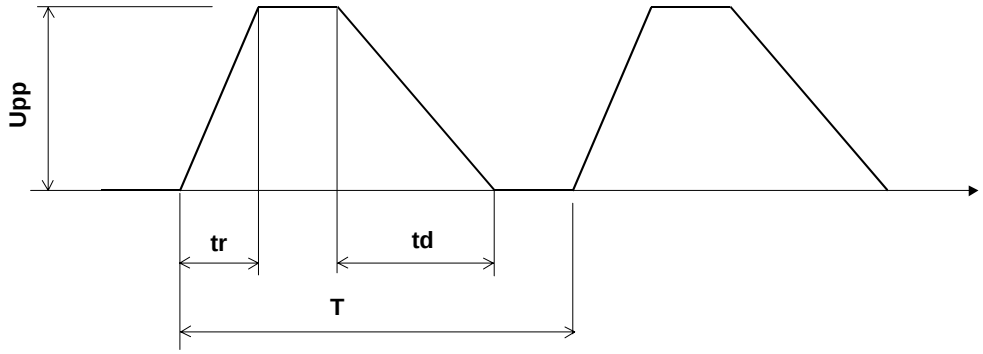
$$I_{rms} = \sqrt{\frac{1}{T}\int_0^T i^2(t)dt} \quad \text{and } I_{rms} \leq I_{eff} \text{ max}$$

Conditions: I_{eff} max

$\leq$ 15 A_{eff}	contact cv2	and section 1.5 ... 2.5 mm^2
$\leq$ 20 A_{eff}	contact cv2	and section 2.5 ... 4.0 mm^2
$\geq$ 20 A_{eff}	contact cv4, cv5 or cv6	and section > 4.0 mm^2

Self heating $\Delta\theta \leq$ 15 °C, $T_{amb} \leq$ 65°C

4.2 Pulse operation



where tr, td respectively indicate up and down timing and T repetitive time cycle

with $\left(\frac{du}{dt}\right)_N$ defined for U_N and $T_{amb} \leq 70°C$ (see datasheet)

Peak current is limited to $\hat{I}_{cr}$ [A] = C_N [µF] x $\left(\frac{du}{dt}\right)_N$

and

the maximal voltage variation gradient to $\left(\frac{du}{dt}\right)_{max} = \frac{U_N}{U_{pp}} x \left(\frac{du}{dt}\right)_N$

The maximal recurrent frequency is defined by:

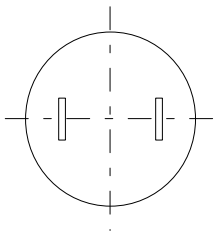
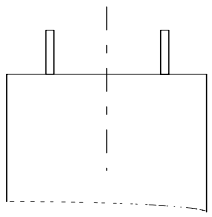
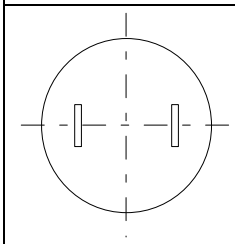
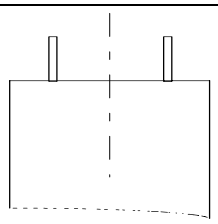
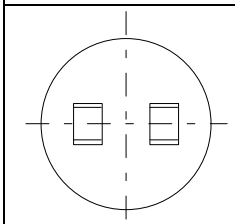
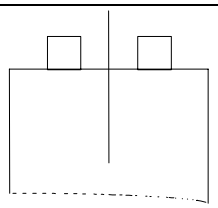
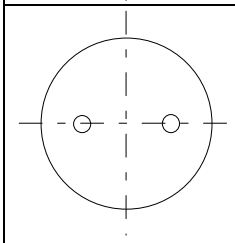
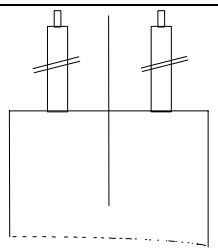
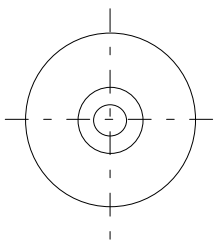
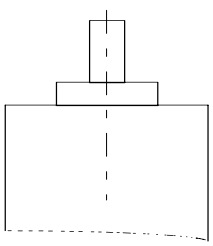
fp max [p.p.s] = $\frac{1}{T} = \frac{I^2_{eff\ max}(f)}{I_{1cr}^2\ x\ t_r + I_{2cr}^2\ x\ t_d}$ with $\hat{I}_{cr1}$ [A] = C_N [µF] x $\frac{U_{pp}}{t_r}$

and $\hat{I}_{cr2}$ [A] = C_N [µF] x $\frac{U_{pp}}{td}$

only if $\frac{U_{pp}}{t_r}$; $\frac{U_{pp}}{td} \leq \left(\frac{du}{dt}\right)_{max}$

5.0 Options for housings and connections

The following table shows different types of connections available for the PAM assortment.

Connections		Description	Remarks	Codification
		2.8 x 0.8 mm Single FASTON	Case øD **≤ 25 mm**	**1**
		6.3 x 0.8 mm Single FASTON	Case øD **≥ 30 mm**	**2**
		6.3 x 0.8 mm Double FASTON	Case øD **≥ 35 mm**	**2D**
		Wire leads	All Diameters	**3**
		Terminal attached directly to housing	Case øD **≥ 25 mm**	**4**

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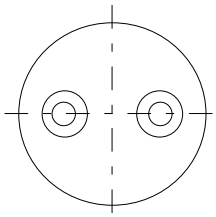
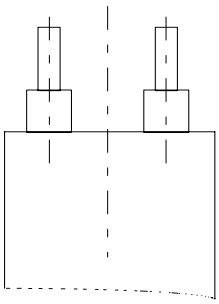
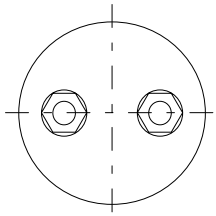
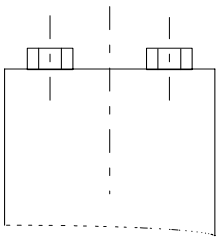
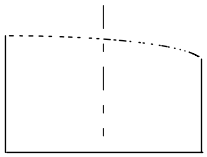
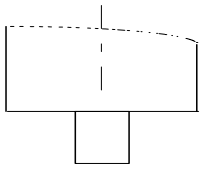
Connections		Description	Remarks	Codification
		Threaded Terminals	**≥ 35 mm** for Case øD	**5**
		Threaded nuts	**≥ 35 mm** for Case øD	**6**

		Flat bottom		
		Bottom with fixed threaded stud	øD < 50mm => M8 x10 øD ≥ 50mm => M12 x 12	**v**

Here is a summary of the available connections (all measurements in mm) :

	øD =>	**≤ 25**	**30**	**≥40**	**85**
Connections	Code **2**	2.8x0.8	6.3 x 0.8		
		AMP FASTON			
	Code **6**		M5 x 10		M8 x 8
	Pitch [mm]		15	24	32

Other connection types available on request.

METALLIZED POLYPROPYLENE POWER CAPACITORS **Type PAM ... c**

PAM 250 VAC

B3bF3	Type	Cn	Dimensions		Un AC 50 Hz	dU / dt	I RMS 10 kHz	ESR 10 kHz	Masse approx.
Pos.		[µF]	ø [mm]	L [mm]	[Veff]	[V/µs]	[Aeff]	[mOhm]	[gr]
1	PAm 25-3 cv	3.0	30.0	53.0	250	80	11.7	7.0	55
2	PAm 25-4 cv	4.0	30.0	53.0	250	80	13.0	5.6	55
3	PAm 25-5 cv	5.0	35.0	53.0	250	80	15.6	4.8	75
4	PAm 25-6 cv	6.0	35.0	53.0	250	80	16.6	4.2	75
5	PAm 25-7 cv	7.0	40.0	53.0	250	80	20.1	3.4	95
6	PAm 25-8 cv	8.0	40.0	83.0	250	80	21.1	3.1	95
7	PAm 25-8 cv	8.0	40.0	83.0	250	50	14.5	9.2	150
8	PAm 25-9 cv	9.0	35.0	83.0	250	50	14.1	8.4	115
9	PAm 25-10 cv	10.0	35.0	83.0	250	50	14.7	7.7	115
10	PAm 25-12 cv	12.0	40.0	83.0	250	50	17.0	6.7	150
11	PAm 25-14 cv	14.0	40.0	83.0	250	50	18.8	5.5	150
12	PAm 25-16 cv	16.0	35.0	120.0	250	20	13.7	12.1	165
13	PAm 25-18 cv	18.0	35.0	120.0	250	20	14.3	11.0	165
14	PAm 25-20 cv	20.0	35.0	120.0	250	20	15.0	10.1	165
15	PAm 25-25 cv	25.0	40.0	120.0	250	20	18.3	7.9	215
16	PAm 25-30 cv	30.0	45.0	120.0	250	20	21.1	6.8	270
17	PAm 25-35 cv	35.0	50.0	120.0	250	20	23.8	6.0	330
18	PAm 25-40 cv	40.0	50.0	120.0	250	20	25.0	5.5	330
19	PAm 25-45 cv	45.0	50.0	120.0	250	20	26.1	5.0	330
20	PAm 25-50 cv	50.0	55.0	120.0	250	20	28.6	4.7	400
21	PAm 25-55 cv	55.0	55.0	120.0	250	20	29.6	4.4	400
22	PAm 25-60 cv	60.0	55.0	120.0	250	20	30.4	4.1	400
23	PAm 25-70 cv	70.0	60.0	120.0	250	20	33.7	3.7	480
24	PAm 25-80 cv	80.0	65.0	120.0	250	20	36.8	3.5	560
25	PAm 25-90 cv	90.0	65.0	120.0	250	20	38.0	3.2	560
26	PAm 25-100 cv	100.0	65.0	120.0	250	20	39.1	3.1	560
27	PAm 25-100 cv	100.0	55.0	120.0	250	16	26.9	5.3	400
28	PAm 25-120 cv	120.0	60.0	120.0	250	16	30.2	4.6	480
29	PAm 25-140 cv	140.0	65.0	120.0	250	16	33.4	4.2	560
30	PAm 25-160 cv	160.0	65.0	140.0	250	13	32.2	5.1	655
31	PAm 25-300 cv	300.0	85.0	140.0	250	13	45.9	3.5	1115

Leclanché Capacitors

METALLIZED POLYPROPYLENE POWER CAPACITORS **Type PAM ... c**

PAM 420 VAC

B3bF3	Type	Cn	Dimensions		Un AC 50 Hz	dU / dt	I RMS 10 kHz	ESR 10 kHz	Masse approx.
Pos.		[µF]	ø [mm]	L [mm]	[Veff]	[V/µs]	[Aeff]	[mOhm]	[gr]
1	PAm 42-1.0 cv1	1.00	25.0	53.0	420	95	7.3	14.6	40
2	PAm 42-2.0 cv	2.00	30.0	53.0	420	95	11.0	8.0	55
3	PAm 42-3.0 cv	3.00	35.0	53.0	420	95	14.1	5.8	75
4	PAm 42-4.0 cv	4.00	40.0	53.0	420	95	17.9	4.3	95
5	PAm 42-5.0 cv	5.00	35.0	68.0	420	60	14.1	7.1	95
6	PAm 42-6.0 cv	6.00	35.0	68.0	420	60	15.1	6.2	95
7	PAm 42-7.0 cv	7.00	40.0	68.0	420	60	18.1	5.0	120
8	PAm 42-8.0 cv	8.00	40.0	68.0	420	60	19.1	4.6	120
9	PAm 42-9.0 cv	9.00	45.0	68.0	420	60	21.5	4.2	155
10	PAm 42-10 cv	10.00	45.0	68.0	420	60	22.3	3.9	155
11	PAm 42-12 cv	12.00	40.0	93.0	420	38	18.1	6.5	165
12	PAm 42-14 cv	14.00	45.0	93.0	420	38	20.6	5.8	210
13	PAm 42-16 cv	16.00	45.0	93.0	420	38	21.7	5.2	210
14	PAm 42-18 cv	18.00	50.0	93.0	420	38	24.2	4.8	260
17	PAm 42-20 cv	20.00	50.0	93.0	420	38	25.1	4.4	260
18	PAm 42-25 cv	25.00	50.0	120.0	420	27	23.8	6.0	330
19	PAm 42-30 cv	30.00	50.0	120.0	420	27	25.5	5.3	330
20	PAm 42-35 cv	35.00	55.0	120.0	420	27	28.5	4.7	400
21	PAm 42-40 cv	40.00	55.0	140.0	420	20	27.4	5.8	470
22	PAm 42-45 cv	45.00	55.0	140.0	420	20	28.6	5.3	470
23	PAm 42-50 cv	50.00	60.0	140.0	420	20	31.2	4.9	555
24	PAm 42-55 cv	55.00	65.0	140.0	420	20	33.8	4.6	655
25	PAm 42-60 cv	60.00	65.0	140.0	420	20	34.7	4.4	655
26	PAm 42-100 cv	100.00	85.0	140.0	420	20	47.2	3.3	1115

METALLIZED POLYPROPYLENE POWER CAPACITORS **Type PAM ... c**

PAM 660 VAC

B3bF3	Type	Cn	Dimensions		Un AC 50 Hz	dU / dt	I RMS 10 kHz	ESR 10 kHz	Masse approx.
Pos.		[µF]	ø [mm]	L [mm]	[Veff]	[V/µs]	[Aeff]	[mOhm]	[gr]
1	PAm 66-050 cv	0.50	35.0	58.0	660	240	9.7	13.2	80
2	PAm 66-068 cv	0.68	35.0	58.0	660	240	11.1	10.1	80
3	PAm 66-1.0 cv	1.00	35.0	58.0	660	200	12.1	8.5	80
4	PAm 66-1.5 cv	1.50	35.0	83.0	660	200	17.3	5.7	130
5	PAm 66-2.0 cv	2.00	35.0	83.0	660	120	13.1	9.6	115
6	PAm 66-2.2 cv	2.20	35.0	83.0	660	120	13.7	8.9	115
7	PAm 66-3.0 cv	3.00	40.0	83.0	660	120	17.4	6.4	150
8	PAm 66-3.3 cv	3.30	40.0	83.0	660	120	18.0	6.0	150
9	PAm 66-4.0 cv	4.00	45.0	83.0	660	120	20.9	5.1	185
10	PAm 66-4.7 cv	4.70	50.0	83.0	660	120	23.7	4.5	230
11	PAm 66-5.0 cv	5.00	50.0	83.0	660	120	24.2	4.3	230
12	PAm 66-6.0 cv	6.00	55.0	83.0	660	120	27.4	3.8	280
13	PAm 66-6.0 cv	6.00	45.0	120.0	660	75	21.0	6.9	270
14	PAm 66-6.8 cv	6.80	55.0	83.0	660	120	28.6	3.5	280
15	PAm 66-6.8 cv	6.80	45.0	120.0	660	75	22.0	6.2	270
16	PAm 66-7.0 cv	7.00	60.0	83.0	660	120	30.5	3.4	330
17	PAm 66-7.0 cv	7.00	50.0	120.0	660	75	23.7	6.1	330
18	PAm 66-8.0 cv	8.00	60.0	83.0	660	120	31.9	3.1	330
19	PAm 66-8.0 cv	8.00	50.0	120.0	660	75	24.9	5.5	330
20	PAm 66-9.0 cv	9.00	50.0	146.0	660	65	23.5	7.3	405
21	PAm 66-10 cv	10.00	50.0	146.0	660	65	24.5	6.7	405
22	PAm 66-12 cv	12.00	55.0	146.0	660	65	27.7	5.9	490
23	PAm 66-14 cv	14.00	60.0	146.0	660	65	30.7	5.3	580
24	PAm 66-16 cv	16.00	60.0	146.0	660	65	32.1	4.8	580
25	PAm 66-18 cv	18.00	65.0	146.0	660	65	35.0	4.5	680
26	PAm 66-32 cv	32.00	85.0	146.0	660	65	48.3	3.2	1'160

METALLIZED POLYPROPYLENE POWER CAPACITORS **Type PAM ... c**

PAM 850 VAC

B3bF3	Type	Cn	Dimensions		Un AC 50 Hz	dU / dt	I RMS 10 kHz	ESR 10 kHz	Masse approx.
Pos.		[µF]	ø [mm]	L [mm]	[Veff]	[V/µs]	[Aeff]	[mOhm]	[gr]
1	PAm 85-022 cv	0.220	35.0	58.0	850	400	7.6	21.8	80
2	PAm 85-033 cv	0.330	35.0	58.0	850	400	9.2	14.8	80
3	PAm 85-047 cv	0.470	35.0	58.0	850	200	9.1	15.1	80
4	PAm 85-050 cv	0.500	35.0	58.0	850	200	9.3	14.3	80
5	PAm 85-068 cv	0.680	35.0	58.0	850	200	10.7	11.0	80
6	PAm 85-1.0 cv	1.000	35.0	83.0	850	120	11.2	13.3	115
7	PAm 85-1.5 cv	1.500	40.0	83.0	850	120	14.3	9.5	150
8	PAm 85-2.0 cv	2.000	45.0	83.0	850	120	17.2	7.6	185
9	PAm 85-2.2 cv	2.200	45.0	83.0	850	120	17.8	7.1	185
10	PAm 85-3.0 cv	3.000	55.0	83.0	850	120	21.1	5.7	230
11	PAm 85-3.0 cv	3.000	45.0	120.0	850	80	18.3	9.0	270
12	PAm 85-3.3 cv	3.300	45.0	120.0	850	80	19.0	8.4	270
13	PAm 85-4.0 cv	4.00	45.0	120.0	850	80	21.6	7.3	330
14	PAm 85-4.7 cv	4.70	50.0	120.0	850	80	24.2	6.5	400
15	PAm 85-5.0 cv	5.00	55.0	120.0	850	80	24.7	6.3	400
16	PAm 85-6.0 cv	6.00	60.0	120.0	850	80	27.5	5.6	480
17	PAm 85-6.8 cv	6.80	50.0	130.0	850	70	24.4	6.1	360
18	PAm 85-7.0 cv	7.00	55.0	130.0	850	70	26.1	6.0	435
19	PAm 85-8.0 cv	8.00	55.0	130.0	850	70	27.3	5.5	435
20	PAm 85-9.0 cv	9.00	60.0	130.0	850	70	30.0	5.0	515
21	PAm 85-10 cv	10.00	65.0	130.0	850	70	32.6	4.7	605
22	PAm 85-20 cv	20.00	85.0	130.0	850	70	46.9	3.1	1'035

METALLIZED POLYPROPYLENE POWER CAPACITORS **Type PAM ... c**

PAM 1200 VAC

B3bF3	Type	Cn	Dimensions		Un AC 50 Hz	dU / dt	I RMS 10 kHz	ESR 10 kHz	Masse approx.
Pos.		[µF]	ø [mm]	L [mm]	[Veff]	[V/µs]	[Aeff]	[mOhm]	[gr]
1	PAm 120-022 cv	0.22	35.0	58.0	1'200	700	8.0	19.3	80
2	PAm 120-033 cv	0.33	35.0	58.0	1'200	700	9.7	13.3	80
3	PAm 120-047 cv	0.47	40.0	58.0	1'200	700	12.4	9.6	105
4	PAm 120-050 cv	0.50	40.0	58.0	1'200	700	12.7	9.1	105
5	PAm 120-068 cv	0.68	35.0	83.0	1'200	350	11.6	12.4	115
6	PAm 120-1.0 cv	1.0	40.0	83.0	1'200	350	15.2	8.4	150
7	PAm 120-1.5 cv	1.5	50.0	83.0	1'200	350	20.5	6.1	230
8	PAm 120-2.0 cv	2.0	55.0	83.0	1'200	350	24.2	4.9	280
9	PAm 120-2.2 cv	2.2	60.0	83.0	1'200	350	26.5	4.5	330
9	PAm 120-3.0 cv	3.0	65.0	83.0	1'200	350	31.0	3.7	390
10	PAm 120-5.0 cv	5.0	85.0	85.0	1'200	350	43.2	2.7	680