

**FILM-FOIL POLYPROPYLENE CAPACITOR
HIGH CURRENT APPLICATIONS**

Typical applications: switching spikes suppression and resonant capacitor in SMPS, deflection circuits in TV-sets (S-correction and fly-back tuning), applications with high voltage and high current.

PRODUCT CODE: **A72**

D max	5	>5 ≤ 7	>7<16	≥16
Ød ±0.05	0.5	0.6	0.8	1

All dimensions are in mm.

PRODUCT CODE SYSTEM

The part number, comprising 14 digits, is formed as follows:

1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	7	2										-	

- Digit 1 to 3 Series code.
- Digit 4 d.c. rated voltage:
E =100V I = 250V M= 400V
P =630V Q =1000V S=1500V U = 2000V
- Digit 5 Length (mm):
F=11; H=14; K=20.5; Q=28; T=33
- Digit 6 to 9 Digits 7 - 8 - 9 indicate the first three digits of Capacitance value and the 6th digit indicates the number of zeros that must be added to obtain the Rated Capacitance in pF.
- Digit 10 to 11 Mechanical version and/or packaging (table1)
- Digit 12 Identifies the dimensions and electrical characteristics.
- Digit 13 Internal use
- Digit 14 Capacitance tolerance:
J=5%; K=10%; M=20%.

GENERAL TECHNICAL DATA

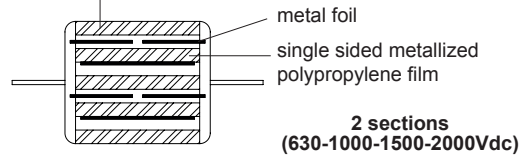
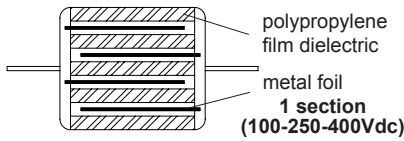
- Dielectric:** polypropylene film.
- Plates:** metal foil for 1 section;
metal foil + metallized film for 2 sections.
- Winding:** non-inductive type.
- Leads:** tinned wire.
- Protection:** polyester tape wrapping and thermosetting resin end fill.
- Marking:** manufacturer's logo, series (1.72), dielectric code (KP), capacitance, tolerance, D.C. rated voltage.
- Climatic category:** 55/105/56 IEC 68-1
- Operating temperature range:** -55 to +105°C
- Related documents:** IEC 60384-13

Table 1 (for more detailed information, please refer to page 14).

Standard packaging style	Ordering code (Digit 10 to 11)
Reel Ø 355 mm	26
Loose	AA

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PRODUCT CODE: **A72**
polypropylene film dielectric



Rated Cap.	100Vdc/63Vac		Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	D max	L max			
4700 pF	5.0	11.0	3000	0.60 E6	A72EF1470--0--
6800 pF	5.0	11.0	3000	0.60 E6	A72EF1680--0--
0.010 μF	5.0	11.0	3000	0.60 E6	A72EF2100--0--

Rated Cap.	250Vdc/125Vac*		Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	D max	L max			
2200 pF	5.0	11.0	5000	2.50 E6	A72IF 1220--0--
3300 pF	5.0	11.0	5000	2.50 E6	A72IF 1330--0--
4700 pF	7.0	16.5	4500	2.30 E6	A72II 1470--0--
6800 pF	7.0	16.5	4500	2.30 E6	A72II 1680--0--
0.010 μF	7.5	16.5	4500	2.30 E6	A72II 2100--0--
0.015 μF	8.5	16.5	4500	2.30 E6	A72II 2150--0--

Rated Cap.	400Vdc/160Vac		Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	D max	L max			
47 pF	5.0	11.0	13000	10.0 E6	A72MF 0047--0--
68 pF	5.0	11.0	13000	10.0 E6	A72MF 0068--0--
100 pF	5.0	11.0	13000	10.0 E6	A72MF 0100--0--
150 pF	5.0	11.0	13000	10.0 E6	A72MF 0150--0--
220 pF	5.0	11.0	13000	10.0 E6	A72MF 0220--0--
330 pF	5.0	11.0	13000	10.0 E6	A72MF 0330--0--
470 pF	5.0	11.0	13000	10.0 E6	A72MF 0470--0--
680 pF	5.0	11.0	13000	10.0 E6	A72MF 0680--0--
1000 pF	5.0	11.0	13000	10.0 E6	A72MF 1100--0--
1500 pF	5.0	11.0	13000	10.0 E6	A72MF 1150--0--
2200 pF	6.5	16.5	6500	5.2 E6	A72MI 1220--0--
3300 pF	6.5	16.5	6500	5.2 E6	A72MI 1330--0--
4700 pF	7.0	16.5	6500	5.2 E6	A72MI 1470--0--
6800 pF	8.0	16.5	6500	5.2 E6	A72MI 1680--0--
0.010 μF	9.0	16.5	6500	5.2 E6	A72MI 2100--0--

Mechanical version and packaging (Table1) _____
Internal use _____
Tolerance: J (±5%); K (±10%); M (±20%) _____

All dimensions are in mm.

Rated Cap.	630Vdc/300Vac		Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	D max	L max			
0.015 μF	8.5	20.5	4300	5.4 E6	A72PK 2150--0--
0.022 μF	9.5	20.5	4300	5.4 E6	A72PK 2220--0--
0.033 μF	9.0	28.0	2600	3.3 E6	A72PQ2330--0--
0.047 μF	10.0	28.0	2600	3.3 E6	A72PQ2470--0--
0.068 μF	11.5	28.0	2600	3.3 E6	A72PQ2680--0--
0.10 μF	13.5	28.0	2600	3.3 E6	A72PQ3100--0--
0.15 μF	14.0	33.0	1800	2.3 E6	A72PT 3150--0--
0.22 μF	16.5	33.0	1800	2.3 E6	A72PT 3220--0--
0.33 μF	19.5	33.0	1800	2.3 E6	A72PT 3330--0--

Rated Cap.	1000Vdc/400Vac		Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	D max	L max			
3300 pF	8.5	20.5	14000	28.0 E6	A72QK 1330--0--
4700 pF	9.5	20.5	14000	28.0 E6	A72QK 1470--0--
6800 pF	8.0	28.0	5000	10.0 E6	A72QQ1680--0--
0.010 μF	8.5	28.0	5000	10.0 E6	A72QQ2100--0--
0.015 μF	10.0	28.0	5000	10.0 E6	A72QQ2150--0--
0.022 μF	11.0	28.0	5000	10.0 E6	A72QQ2220--0--
0.033 μF	13.0	28.0	5000	10.0 E6	A72QQ2330--0--
0.047 μF	14.0	33.0	3700	7.4 E6	A72QT 2470--0--
0.068 μF	16.0	33.0	3700	7.4 E6	A72QT 2680--0--
0.10 μF	19.0	33.0	3700	7.4 E6	A72QT 3100--0--

Rated Cap.	1500Vdc/450Vac		Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	D max	L max			
2200 pF	8.0	20.5	17000	51 E6	A72SK 1220--0--
3300 pF	9.5	20.5	17000	51 E6	A72SK 1330--0--
4700 pF	8.5	28.0	6000	18 E6	A72SQ1470--0--
6800 pF	8.5	28.0	6000	18 E6	A72SQ1680--0--
0.010 μF	9.5	28.0	6000	18 E6	A72SQ2100--0--
0.015 μF	11.0	28.0	6000	18 E6	A72SQ2150--0--
0.022 μF	12.5	28.0	6000	18 E6	A72SQ2220--0--
0.033 μF	13.5	33.0	4500	13 E6	A72ST 2330--0--
0.047 μF	16.0	33.0	4500	13 E6	A72ST 2470--0--
0.068 μF	18.0	33.0	4500	13 E6	A72ST 2680--0--

Rated Cap.	2000Vdc/500Vac		Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	D max	L max			
1000 pF	8.5	20.5	27000	108 E6	A72UK 1100--0--
1500 pF	9.5	20.5	27000	108 E6	A72UK 1150--0--
2200 pF	11.0	20.5	27000	108 E6	A72UK 1220--0--
3300 pF	9.0	28.0	9800	39 E6	A72UQ1330--0--
4700 pF	9.5	28.0	9800	39 E6	A72UQ1470--0--
6800 pF	11.0	28.0	9800	39 E6	A72UQ1680--0--
0.010 μF	13.0	28.0	9800	39 E6	A72UQ2100--0--
0.015 μF	13.5	33.0	7000	28 E6	A72UT 2150--0--
0.022 μF	16.0	33.0	7000	28 E6	A72UT 2220--0--
0.033 μF	20.0	33.0	7000	28 E6	A72UT 2330--0--
0.047 μF	22.5	33.0	7000	28 E6	A72UT 2470--0--

Mechanical version and packaging (Table1) _____
Internal use _____
Tolerance: J (±5%); K (±10%); M (±20%) _____

Note: If the working voltage (V) is lower than the rated voltage (V_R), the capacitor may work at higher dv/dt. In this case the maximum value allowed is obtained multiplying the above value (see table dv/dt) with the ratio V_R/V. The dv/dt test is carried out at 2 times the above values.

The pulse characteristic K₀ depends on the voltage wave-form and in any case it cannot overcome the value given in the above table.

*Not suitable for across-the-line applications. Please refer to Interference Suppression Capacitors (page 145).

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ELECTRICAL CHARACTERISTICS

Rated voltage (V_R): 100 Vdc - 250 Vdc - 400 Vdc
for 1 section.
630Vdc- 1000Vdc-1500Vdc-2000Vdc
for 2 sections.

Rated temperature (T_R): +85°C

Temperature derated voltage:

for temperatures between +85°C and +105°C a decreasing factor of 1.25% per degree °C on the rated voltage V_R (d.c. and a.c.) has to be applied.

Capacitance range: 47pF to 0.015µF for 1 section
1000pF to 0.33µF for 2 sections

Capacitance values:

E6 series (IEC 63 Norm)

Capacitance tolerances (measured at 1 kHz):

±5% (J); ±10% (K); ±20% (M).

Total self-inductance (L):

max 1 nH per 1 mm lead and capacitor length.

Dissipation factor (DF):

$tg\delta$ 10^{-4} at +25°C ±5°C

kHz	C≤0.1µF	>0.1 µF
10	≤ 5	≤ 5
100	≤10	

Insulation resistance:

Test conditions

Temperature: +25°C±5°C
Voltage charge time: 1 min
Voltage charge: 100Vdc

Performance

≥1x10⁵ MΩ (Typ.value: 5x10⁵ MΩ)

Test voltage between terminations:

2x V_R applied for 2 s at +25°C±5°C.

TEST METHOD AND PERFORMANCE

Damp heat, steady state:

Test conditions

Temperature: +40°C±2°C
Relative humidity (RH): 93% ±2%
Test duration: 56 days

Performance

Capacitance change $|\Delta C/C|$: ≤2%
DF change ($\Delta tg\delta$): ≤5x10⁻⁴ at 1kHz
Insulation resistance: ≥50% of initial limit.

Endurance:

Test conditions

Temperature: +85°C
Test duration: 1000 h
Voltage applied: 1.5x V_R

Performance

Capacitance change $|\Delta C/C|$: ≤2%
DF change ($\Delta tg\delta$): ≤5x10⁻⁴ at 1kHz
Insulation resistance: ≥50% of initial limit.

Resistance to soldering heat:

Test conditions

Solder bath temperature: +260°C±5°C
Dipping time (with heat screen): 10 s±1 s

Performance

Capacitance change $|\Delta C/C|$: ≤1%
DF change ($\Delta tg\delta$): ≤5x10⁻⁴ at 1kHz
Insulation resistance: ≥ initial limit.

Long term stability (after two years):

Storage: standard environmental conditions (see page 12).

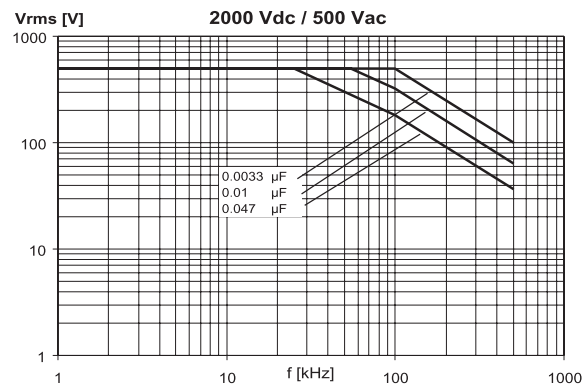
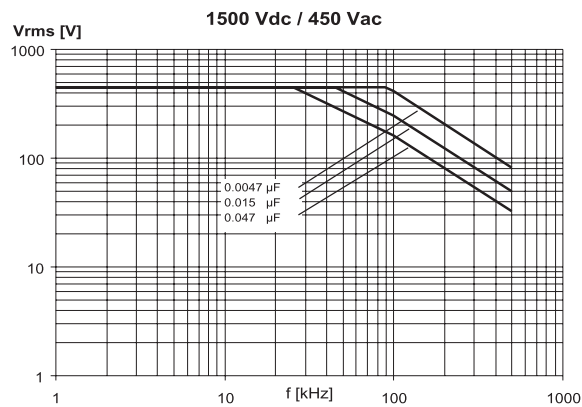
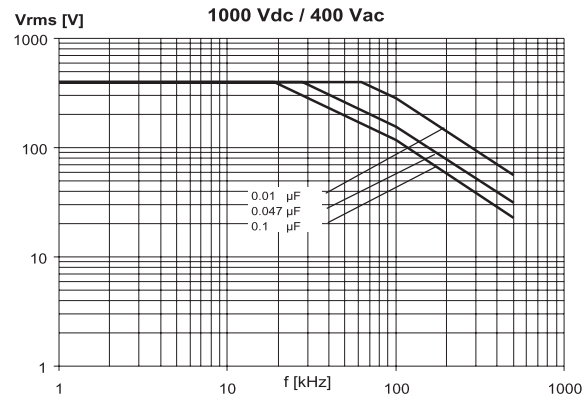
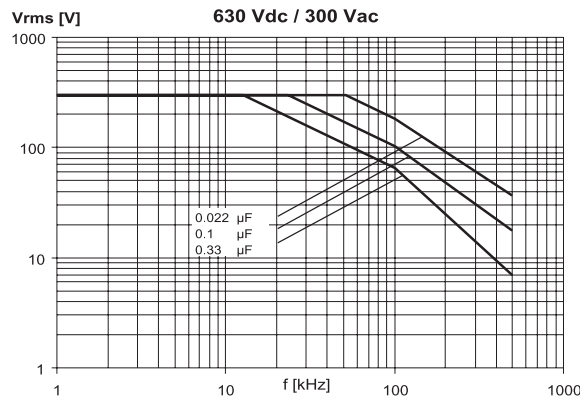
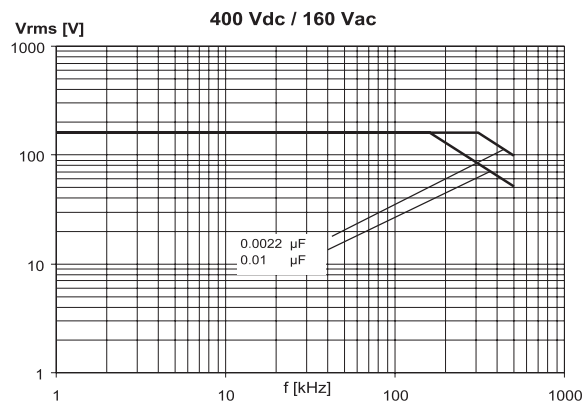
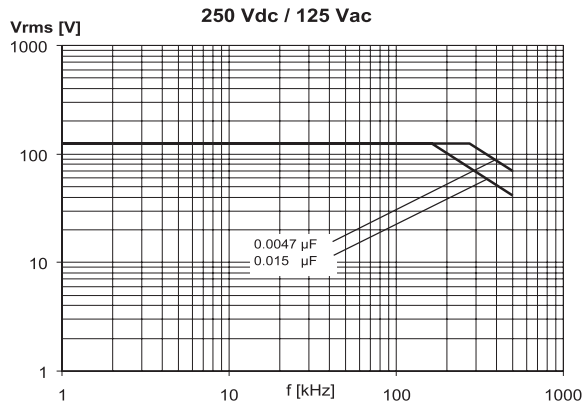
Performance

Capacitance change $|\Delta C/C|$: ≤0.5%

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MAX. VOLTAGE (Vr.m.s.) VERSUS FREQUENCY (sinusoidal wave-form / Th ≤ 40°C)



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PRODUCT CODE: A72

MAX. CURRENT (I_{r.m.s.}) VERSUS FREQUENCY (sinusoidal wave-form / Th ≤ 40°C)

