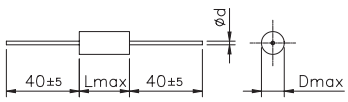
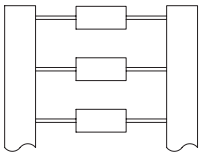
Loose



Taped



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

All dimensions are in mm.

METALLIZED POLYPROPYLENE CAPACITOR MULTIPURPOSE APPLICATIONS

Typical applications: temperature compensation circuits, timing, oscillator circuits, power factor correction and coupling capacitor in SMPS applications.

PRODUCT CODE: **A70**

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	0										-	

Digit 1 to 3	Series code.
Digit 4	d.c. rated voltage: G =160V I =250V M= 400V P = 630V
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%.

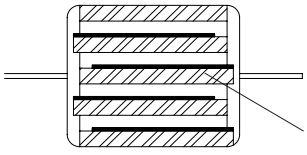
Table 1 (for more detailed information, please refer to page 14).

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

GENERAL TECHNICAL DATA

Dielectric: polypropylene film.
Plates: aluminium layer deposited by evaporation under vacuum.
Winding: non-inductive type.
Leads: tinned wire.
Protection: polyester tape wrapping and thermosetting resin end fill.
Marking: Manufacturer's logo, series (1.70), dielectric code (MKP), capacitance, tolerance, D.C. rated voltage.
Climatic category: 55/105/56 IEC 60068-1
Operating temperature range: -55 to +105°C
Related documents: IEC 60384-16

Winding scheme



Downloaded from Elcodis.com electronic components distributor

METALLIZED POLYPROPYLENE CAPACITOR MULTIPURPOSE APPLICATIONS

PRODUCT CODE: **A70**

Rated Cap.	160Vdc/90Vac		Max dv/dt	Max K_0	Part Number
	D max	L max	(V/µs)	(V^2/µs)	
0.022 µF	5.0	11.0	5	1.60 E3	A70GF 2220--0--
0.033 µF	5.0	11.0	5	1.60 E3	A70GF 2330--0--
0.047 µF	5.0	11.0	5	1.60 E3	A70GF 2470--0--
0.068 µF	5.5	14.0	5	1.60 E3	A70GH2680--0--
0.10 µF	5.5	14.0	5	1.60 E3	A70GH3100--0--
0.15 µF	6.5	14.0	5	1.60 E3	A70GH3150--0--
0.22 µF	7.5	14.0	5	1.60 E3	A70GH3220--0--
0.33 µF	7.0	20.5	3	0.96 E3	A70GK3330--0--
0.47 µF	8.0	20.5	3	0.96 E3	A70GK3470--0--
0.68 µF	8.0	28.0	2	0.64 E3	A70GQ3680--0--
1.0 µF	9.5	28.0	2	0.64 E3	A70GQ4100--0--
1.5 µF	11.0	28.0	2	0.64 E3	A70GQ4150--0--
2.2 µF	12.0	33.0	1	0.32 E3	A70GT 4220--0--
3.3 µF	14.5	33.0	1	0.32 E3	A70GT 4330--0--
4.7 µF	17.0	33.0	1	0.32 E3	A70GT 4470--0--

Rated Cap.	400Vdc/220Vac*		Max dv/dt	Max K_0	Part Number
	D max	L max	(V/µs)	(V^2/µs)	
6800 pF	5.0	11.0	25.0	20.0 E3	A70MF 1680--0--
0.010 µF	5.5	14.0	13.5	11.0 E3	A70MH2100--0--
0.015 µF	6.0	14.0	13.5	11.0 E3	A70MH2150--0--
0.022 µF	6.0	14.0	13.5	11.0 E3	A70MH2220--0--
0.033 µF	6.5	14.0	13.5	11.0 E3	A70MH2330--0--
0.047 µF	8.0	14.0	13.5	11.0 E3	A70MH2470--0--
0.068 µF	7.0	20.5	10.0	8.0 E3	A70MK2680--0--
0.10 µF	8.0	20.5	10.0	8.0 E3	A70MK3100--0--
0.15 µF	8.0	28.0	6.5	5.2 E3	A70MQ3150--0--
0.22 µF	9.5	28.0	6.5	5.2 E3	A70MQ3220--0--
0.33 µF	11.0	28.0	6.5	5.2 E3	A70MQ3330--0--
0.47 µF	13.0	28.0	6.5	5.2 E3	A70MQ3470--0--
0.68 µF	13.5	33.0	4.0	3.2 E3	A70MT 3680--0--
1.0 µF	16.5	33.0	4.0	3.2 E3	A70MT 4100--0--
1.5 µF	20.0	33.0	4.0	3.2 E3	A70MT 4150--0--

Rated Cap.	250Vdc/200Vac		Max dv/dt	Max K_0	Part Number
	D max	L max	(V/µs)	(V^2/µs)	
0.010 µF	5.0	11.0	11.0	5.5 E3	A70IF 2100--0--
0.015 µF	5.0	11.0	11.0	5.5 E3	A70IF 2150--0--
0.022 µF	5.5	14.0	10.0	5.0 E3	A70IH 2220--0--
0.033 µF	5.5	14.0	10.0	5.0 E3	A70IH 2330--0--
0.047 µF	6.0	14.0	10.0	5.0 E3	A70IH 2470--0--
0.068 µF	7.0	14.0	10.0	5.0 E3	A70IH 2680--0--
0.10 µF	8.5	14.0	10.0	5.0 E3	A70IH 3100--0--
0.15 µF	7.5	20.5	7.0	3.5 E3	A70IK 3150--0--
0.22 µF	9.0	20.5	7.0	3.5 E3	A70IK 3220--0--
0.33 µF	8.5	28.0	4.0	2.0 E3	A70IQ 3330--0--
0.47 µF	10.0	28.0	4.0	2.0 E3	A70IQ 3470--0--
0.68 µF	11.5	28.0	4.0	2.0 E3	A70IQ 3680--0--
1.0 µF	12.5	33.0	2.5	1.3 E3	A70IT 4100--0--
1.5 µF	15.0	33.0	2.5	1.3 E3	A70IT 4150--0--
2.2 µF	18.0	33.0	2.5	1.3 E3	A70IT 4220--0--
3.3 µF	21.5	33.0	2.5	1.3 E3	A70IT 4330--0--

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

Rated Cap.	630Vdc/250Vac*		Max dv/dt	Max K_0	Part Number
	D max	L max	(V/µs)	(V^2/µs)	
1000 pF	5.0	11.0	30	38.0 E3	A70PF 1100--0--
1500 pF	5.0	11.0	30	38.0 E3	A70PF 1150--0--
2200 pF	5.0	11.0	30	38.0 E3	A70PF 1220--0--
3300 pF	5.0	11.0	30	38.0 E3	A70PF 1330--0--
4700 pF	5.0	11.0	30	38.0 E3	A70PF 1470--0--
6800 pF	5.5	14.0	20	25.0 E3	A70PH 1680--0--
0.010 µF	6.0	14.0	20	25.0 E3	A70PH 2100--0--
0.015 µF	7.0	14.0	20	25.0 E3	A70PH 2150--0--
0.022 µF	8.5	14.0	20	25.0 E3	A70PH 2220--0--
0.033 µF	7.5	20.5	15	19.0 E3	A70PK 2330--0--
0.047 µF	8.5	20.5	15	19.0 E3	A70PK 2470--0--
0.068 µF	8.5	28.0	10	13.0 E3	A70PQ 2680--0--
0.10 µF	10.0	28.0	10	13.0 E3	A70PQ 3100--0--
0.15 µF	11.5	28.0	10	13.0 E3	A70PQ 3150--0--
0.22 µF	12.5	33.0	6	7.6 E3	A70PT 3220--0--
0.33 µF	15.0	33.0	6	7.6 E3	A70PT 3330--0--
0.47 µF	17.5	33.0	6	7.6 E3	A70PT 3470--0--
0.68 µF	21.0	33.0	6	7.6 E3	A70PT 3680--0--

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

All dimensions are in mm.

Note 1: 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 pulse characteristic K_0 depends on the voltage wave-form and in any case it cannot overcome the value given in the above table. The dv/dt test is carried out at 2 times the above values.

Note 2: Special version for line applications (rated voltage 250 Vac) available upon request.

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

Downloaded from Elcodis.com electronic components distributor

METALLIZED POLYPROPYLENE CAPACITOR MULTIPURPOSE APPLICATIONS

PRODUCT CODE: **A70**

ELECTRICAL CHARACTERISTICS

Rated voltage (V_R): 160 Vdc - 250Vdc
400 Vdc - 630 Vdc

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: 1000pF to 4.7µF

Capacitance values:

E6 series (IEC 60063 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):

$tg\delta x10^{-4}$ at +25°C ±5°C

kHz	C<0.1 µF	0.1 µF to 1 µF	>1 µF
1	≤ 6	≤ 6	≤ 6
10	≤10	≤20	
100	≤30		

Insulation resistance:

Test conditions

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

Performance

$\geq 1x10^5$ MΩ for C ≤ 0.33 µF ($5x10^5$ MΩ)*
≥30000 s for C > 0.33 µF (150000 s)*

*Typical value

Test voltage between terminations:

$1.6xV_R$ 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 |ΔC/C|: ≤2%
DF change (Δtgδ): $\leq 10x10^{-4}$ at 1kHz
Insulation resistance: ≥50% of initial limit.

Endurance:

Test conditions

Temperature: +85°C±2°C
Test duration: 2000 h
Voltage applied: $1.25xV_R$

Performance

Capacitance change |ΔC/C|: ≤3%
DF change (Δtgδ): $\leq 10x10^{-4}$ at 10kHz for C≤1µF
$\leq 10x10^{-4}$ at 1kHz for C>1µF
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 |ΔC/C|: ≤1%
DF change (Δtgδ): $\leq 10x10^{-4}$ at 10kHz for C≤1µF
$\leq 10x10^{-4}$ at 1kHz for C>1µF
Insulation resistance: ≥ initial limit.

Long term stability (after two years)**:**

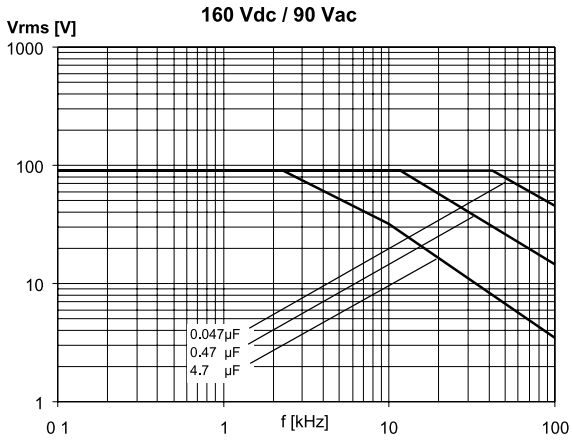
Storage: standard environmental conditions (see page 12).

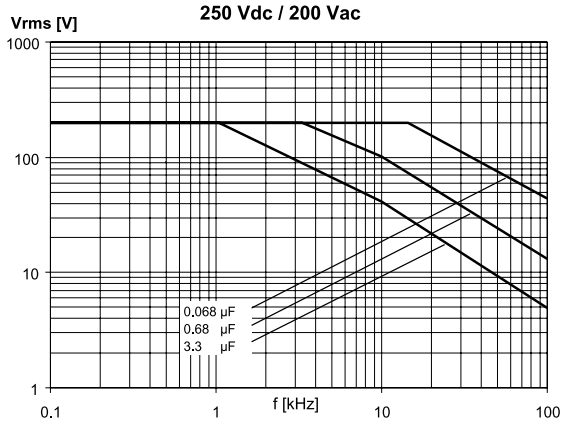
Performance

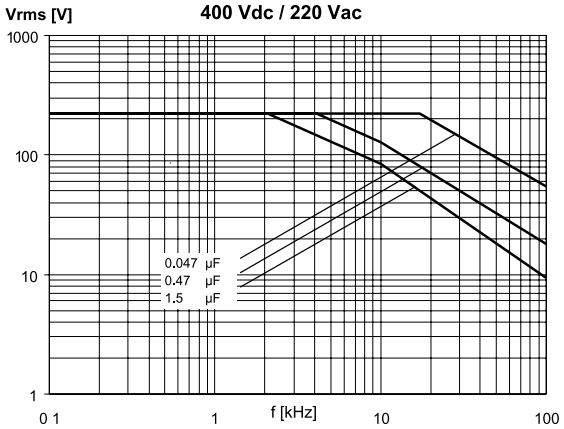
Capacitance change |ΔC/C|: ≤0.5%

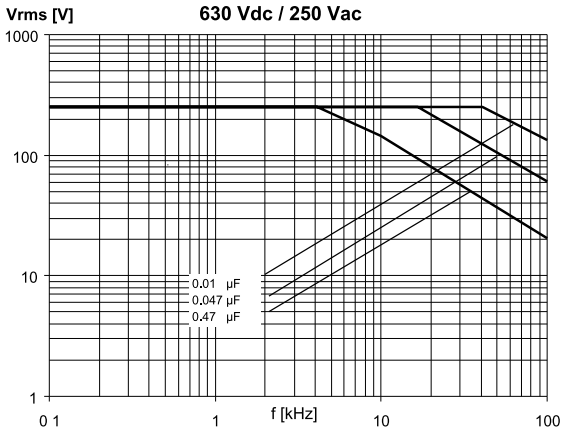
Downloaded from Elcodis.com electronic components distributor

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



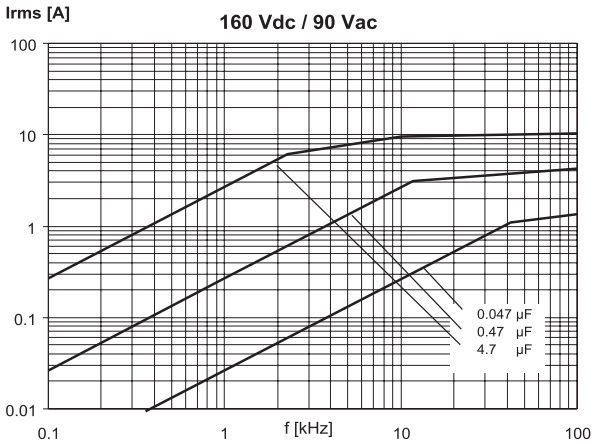


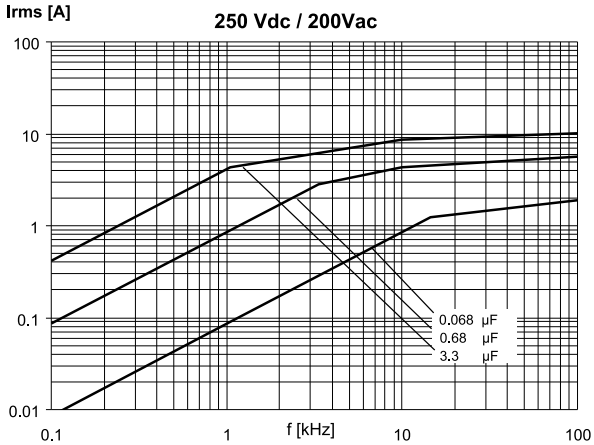


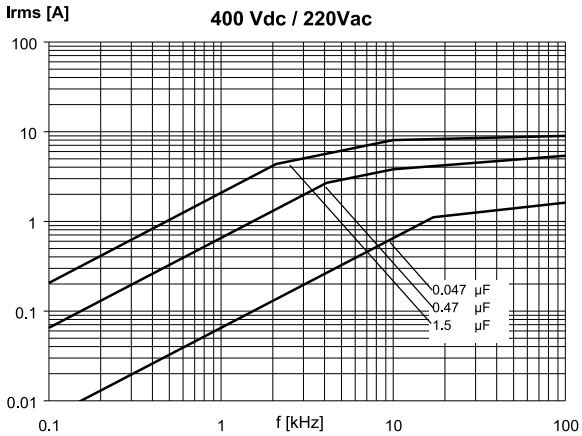


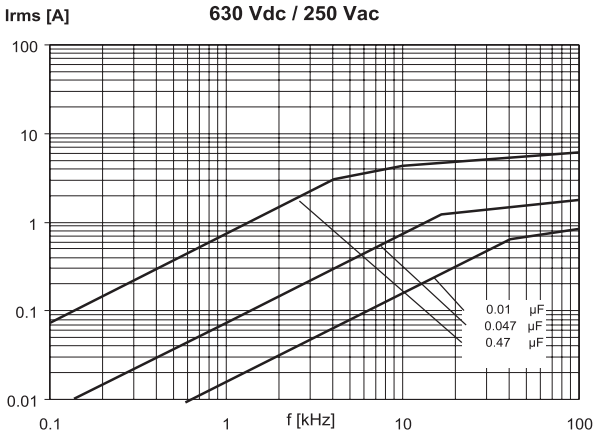
Downloaded from Elcodis.com electronic components distributor

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









Downloaded from Elcodis.com electronic components distributor