

AC FILTERING

FLC* RoHS Compliant



PACKAGING MATERIAL

- Self-extinguishing plastic case (V₀ = in accordance with UL 94) filled thermosetting resin.
- Self-extinguishing thermosetting resin (V₀ = in accordance with UL 94).

STANDARDS

IEC 61071-1, IEC 61071-2: Power electronic capacitors
 IEC 60384-17: Fixed metallized polypropylene film dielectric AC and pulse capacitors
 IEC 60384-17-1: Fixed metallized polypropylene film dielectric AC and pulse capacitors Assessment level E
 EN CZDS2.E514026 Certificate: E514026 (approved by UL)

The FLC series uses a non-impregnated metallized polypropylene dielectric specially treated to have a very high dielectric strength in operating conditions up to 85°C.

The FLC has been designed for printed circuit board mounting. They are suitable for output AC filtering for power converters, UPS systems, solar inverters and motor drives etc.

APPLICATIONS

- The FLC capacitor is particularly designed for AC filtering.

HOT SPOT CALCULATION

See *Hot Spot Temperature*, page 66.

$$\theta_{\text{hot spot}} = \theta_{\text{ambient}} + (P_d + P_t) \times R_{\text{th}}$$

with P_d (Dielectric losses) = $Q \times \text{tg}\delta_0$
 $Q \times \text{tg}\delta_0 \Rightarrow \left[\frac{1}{2} \times C_n \times (V_{\text{peak to peak}})^2 \times f \right] \times \text{tg}\delta_0$
 $\text{tg}\delta_0$ (tan delta)
 For polypropylene, $\text{tg}\delta_0 = 2 \times 10^{-4}$ for frequencies up to 1MHz and is independent of temperatures.
 P_t (Thermal losses) = $R_s \times (I_{\text{rms}})^2$

where C_n in Farad I_{rms} in Ampere f in Hertz
 V in Volt R_s in Ohm θ in °C
 R_{th} in °C/W

WORKING TEMPERATURE

According to the power to be dissipated
 -40°C to +85°C

LIFETIME EXPECTANCY

One unique feature of this technology (as opposed to aluminum electrolytics) is how the capacitor reacts at the end of its lifetime.

Unlike aluminum electrolytic film capacitors do not have a catastrophic failure mode. Film capacitors simply experience a parametric loss of capacitance of about 5% from initial value, with no risk of short circuit.

The capacitor continues to be functional even after this 5% decrease.

HOW TO ORDER

FLC

Series

A

Case

A I
 B J
 C K
 D L
 E M
 F N
 G O
 H

6

Dielectric
 6 = Polypropylene

V

Voltage

H = 300V
 I = 350V
 A = 250V
 L = 400V
 M = 450V

0225

Cap µF Code
 0225 = 2.5µF
 0106 = 10µF

K

Tolerances

J = ±5%
 K = ±10%

2

Lead Type

2 = 2 Leads
 4 = 4 Leads

C

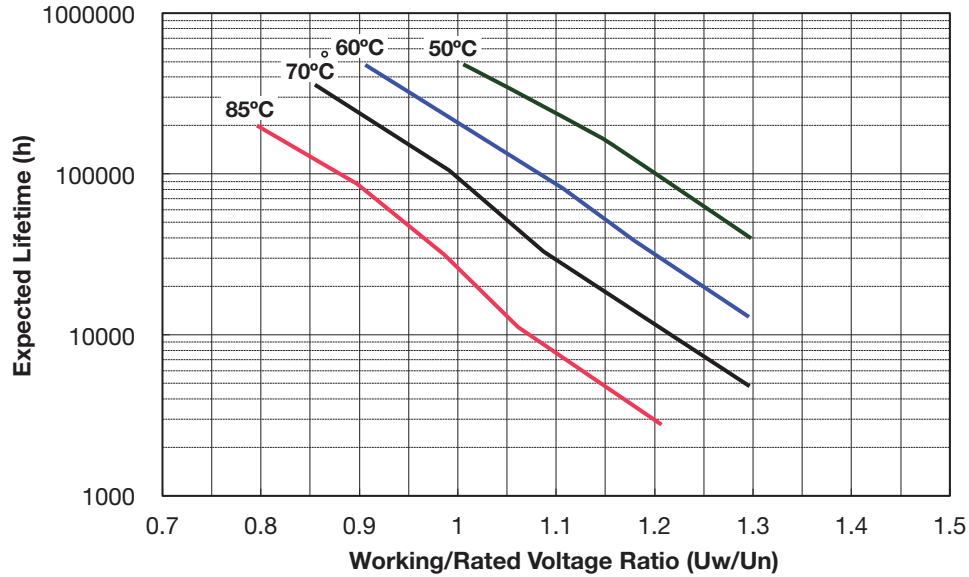
Lead Length

C = 5mm
 L = 15mm

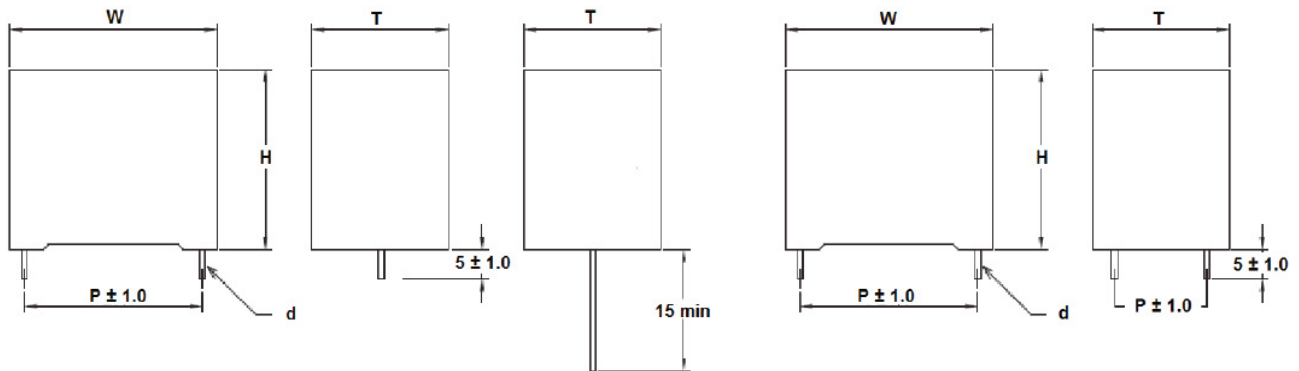


LIFETIME EXPECTANCY VS HOT SPOT TEMPERATURE AND VOLTAGE

Expected Lifetime Curves (FLC Series)



GENERAL DESCRIPTION



DIMENSIONS

Two Terminal Version

Case Ref	W (mm)	H (mm)	T (mm)	P (mm)	d (mm)
A	32	22	13	27.5	0.8
B	32	28	14	27.5	0.8
C	32	33	18	27.5	0.8
D	42.5	40	20	37.5	1.0
E	42.5	43	28	37.5	1.0
F	42.5	44	24	37.5	1.0
G	42.5	45	30	37.5	1.2
H	57.5	45	30	52.5	1.2
I	57.5	50	35	52.5	1.2

Four Terminal Version

Case Ref	W (mm)	H (mm)	T (mm)	P (mm)	P1 (mm)	d (mm)
J	42.5	40	20	37.5	10.2	1.2
K	42.5	43	28	37.5	10.2	1.2
L	42.5	44	24	37.5	10.2	1.2
M	42.5	45	30	37.5	20.3	1.2
N	57.5	45	30	52.5	20.3	1.2
O	57.5	50	35	52.5	20.3	1.2

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ELECTRICAL CHARACTERISTICS

Climatic category	40/85/56 (IEC 60068)
Test voltage between terminals @ 25°C	2.15 x V _{rms}
Capacitance range C _n	1.0µF to 50µF
Capacitance Tolerances:	±5%, ±10%
Rated AC Voltage:	V _{rms} 250V to 350V
Dielectric:	Polypropylene
Insulation Resistance:	> 3,000MΩ µF/C after 1 minute electrification @ 100 Vdc & 25°C
Lifetime (ΔC/C < 5%):	100,000hrs @ U _r & 70°C

RATINGS AND PART NUMBER REFERENCE – POLYPROPYLENE DIELECTRIC

TWO TERMINAL

Cap (µF)	Rated Voltage (V)	Part Number	Case Code	W ±0.50 (mm)	H ±0.50 (mm)	T ±0.50 (mm)	P ±1.00 (mm)	d ±0.50 (mm)	V/µs (Volt/sec)	I peak (A)	I rms (A)	R _s (mΩ)	ESL (nH)	Rth (°C/W)	Packaging Method	
															Box Qty (mm)	Dimensions
V_{rms} = 250V Voltage Code: A																
2.2	250	FLCA6A0225K2C	A	32.0	22	13.0	27.5	0.8	25.0	55.0	4.0	17.0	24.0	36.8	130	350*170*80
3.3	250	FLCB6A0335K2C	B	32.0	28	14.0	27.5	0.8	25.0	82.5	6.0	11.6	24.0	23.9	110	350*170*80
5.0	250	FLCC6A0505K2C	C	32.0	33	18.0	27.5	0.8	25.0	125	8.0	8.0	27.0	19.5	95	350*170*80
10.0	250	FLCD6A0106K2C	D	42.5	40	20.0	37.5	1.0	17.0	170	11.0	7.4	30.0	11.2	56	350*170*80
18.0	250	FLCE6A0186K2C	E	42.5	43	28.0	37.5	1.0	17.0	306	12.0	4.0	30.0	17.4	35	350*170*80
20.0	250	FLCG6A0206K2C	G	42.5	45	30.0	37.5	1.2	17.0	340	14.0	3.8	33.0	13.4	44	350*170*80
25.0	250	FLCH6A0256K2C	H	57.5	45	30.0	52.5	1.2	11.0	275	17.0	6.5	35.0	5.3	25	350*170*80
30.0	250	FLCI6A0306K2C	I	57.5	50	35.0	52.5	1.2	11.0	330	20.0	5.4	38.0	4.6	20	350*170*80
40.0	250	FLCI6A0406K2C	I	57.5	50	35.0	52.5	1.2	11.0	440	19.0	5.8	38.0	4.8	20	350*170*80
50.0	250	FLCI6A0506K2C	I	57.5	50	35.0	52.5	1.2	12.0	600	21.0	5.5	38.0	4.1	20	350*170*80
V_{rms} = 300V Voltage Code: H																
1.5	300	FLCA6H0155K2C	A	32.0	22	13.0	27.5	0.8	28.0	42.0	4.0	21.2	24.0	29.5	130	350*170*80
2.5	300	FLCB6H0255K2C	B	32.0	28	14.0	27.5	0.8	28.0	70.0	6.0	14.4	24.0	19.3	110	350*170*80
3.3	300	FLCC6H0335K2C	C	32.0	33	18.0	27.5	0.8	28.0	92.4	8.0	10.6	27.0	14.7	95	350*170*80
10.0	300	FLCF6H0106K2C	F	42.5	44	24.0	37.5	1.0	19.0	190	12.0	6.0	30.0	11.6	42	350*170*80
12.0	300	FLCE6H0126K2C	E	42.5	43	28.0	37.5	1.0	19.0	228	12.0	5.0	30.0	13.9	35	350*170*80
15.0	300	FLCG6H0156K2C	G	42.5	45	30.0	37.5	1.2	19.0	285	12.0	4.2	33.0	16.5	44	350*170*80
20.0	300	FLCH6H0206K2C	H	57.5	45	30.0	52.5	1.2	13.0	260	16.0	6.8	35.0	5.7	25	350*170*80
25.0	300	FLCI6H0256K2C	I	57.5	50	35.0	52.5	1.2	13.0	325	19.0	5.4	38.0	5.1	20	350*170*80
V_{rms} = 350V Voltage Code: I																
1.0	350	FLCA6I0105K2C	A	32.0	22	13.0	27.5	0.8	35.0	35.0	4.0	23.5	24.0	26.6	130	350*170*80
1.8	350	FLCB6I0185K2C	B	32.0	28	14.0	27.5	0.8	35.0	63.0	6.0	16.5	24.0	16.8	110	350*170*80
2.5	350	FLCC6I0255K2C	C	32.0	33	18.0	27.5	0.8	35.0	87.5	8.0	11.3	27.0	13.8	95	350*170*80
7.5	350	FLCF6I0755K2C	F	42.5	44	24.0	37.5	1.0	24.0	180	10.0	7.5	30.0	13.3	42	350*170*80
9.0	350	FLCE6I0905K2C	E	42.5	43	28.0	37.5	1.0	24.0	216	10.0	6.2	30.0	16.1	35	350*170*80
10.0	350	FLCG6I0106K2C	G	42.5	45	30.0	37.5	1.2	24.0	240	10.0	4.8	33.0	20.8	44	350*170*80
12.0	350	FLCH6I0126K2C	H	57.5	45	30.0	52.5	1.2	17.0	204	17.0	6.5	35.0	5.3	25	350*170*80
20.0	350	FLCI6I0206K2C	I	57.5	50	35.0	52.5	1.2	17.0	340	20.0	5.8	38.0	4.3	20	350*170*80
V_{rms} = 400V Voltage Code: L																
1.5	400	FLCA6L0155K2C	A	32.0	22	13.0	27.5	0.8	36.0	54.0	4.0	15.0	25.0	41.6	130	350*170*80
2.2	400	FLCB6L0225K2C	B	32.0	28	14.0	27.5	0.8	36.0	79.2	6.0	11.0	26.0	25.2	110	350*170*80
3.5	400	FLCC6L0355K2C	C	32.0	33	18.0	27.5	0.8	36.0	126.0	8.0	7.0	27.0	22.3	95	350*170*80
7.5	400	FLCD6L0755K2C	D	42.5	40	20.0	37.5	1.0	25.0	187.5	10.0	5.5	30.0	18.1	56	350*170*80
10.0	400	FLCE6L0106K2C	E	42.5	43	28.0	37.5	1.0	25.0	250.0	13.0	4.5	30.0	13.1	35	350*170*80
12.0	400	FLCG6L0126K2C	G	42.5	45	30.0	37.5	1.2	25.0	300.0	16.0	3.5	33.0	11.1	44	350*170*80
16.0	400	FLCH6L0166K2C	H	57.5	45	30.0	52.5	1.2	20.0	320.0	13.0	4.5	35.0	13.1	25	350*170*80
20.0	400	FLCI6L0206K2C	I	57.5	50	35.0	52.5	1.2	20.0	400.0	16.0	3.5	38.0	11.1	20	350*170*80
V_{rms} = 450V Voltage Code: M																
1.00	450	FLCA6M0105K2C	A	32.0	22	13.0	27.5	0.8	40.0	40.0	4.0	12.0	25.0	52.0	130	350*170*80
1.50	450	FLCB6M0155K2C	B	32.0	28	14.0	27.5	0.8	40.0	60.0	6.0	10.0	26.0	27.7	110	350*170*80
2.20	450	FLCC6M0225K2C	C	32.0	33	18.0	27.5	0.8	40.0	88.0	8.0	6.5	27.0	24.0	95	350*170*80
4.70	450	FLCD6M0475K2C	D	42.5	40	20.0	37.5	1.0	35.0	164.5	10.0	5.3	30.0	18.8	56	350*170*80
7.50	450	FLCE6M0755K2C	E	42.5	43	28.0	37.5	1.0	35.0	262.5	12.0	4.6	30.0	15.0	35	350*170*80
8.50	450	FLCG6M0855K2C	G	42.5	45	30.0	37.5	1.2	35.0	297.5	13.0	4.0	33.0	14.8	44	350*170*80
12.0	450	FLCH6M0126K2C	H	57.5	45	30.0	52.5	1.2	28.0	336.0	13.0	4.5	35.0	13.1	25	350*170*80
16.0	450	FLCI6M0166K2C	I	57.5	50	35.0	52.5	1.2	28.0	448.0	16.0	3.5	38.0	11.1	20	350*170*80

* Insert K for 10% capacitance tolerance (standard); J (+5%) and M (+20%) tolerances available on request.

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FOUR TERMINAL

Cap (µF)	Rated Voltage (V)	Part Number	Case Code	W ±0.50 (mm)	H ±0.50 (mm)	T ±0.50 (mm)	P ±1.00 (mm)	P1 ±1.00 (mm)	d ±0.50 (mm)	V/µs (Volt/sec)	I peak (A)	I rms (A)	R _s (mΩ)	ESL (nH)	Rth (°C/W)	Box Qty (mm)	Dimensions
V_{rms} = 250V Voltage Code: A																	
10.0	250	FLCJ6A0106K4C	J	42.5	40	20.0	37.5	10.2	1.2	17.0	170.0	12.0	6.9	30.0	10.1	56	350*170*80
18.0	250	FLCK6A0186K4C	K	42.5	43	28.0	37.5	10.2	1.2	17.0	306.0	13.0	3.5	30.0	16.9	35	350*170*80
20.0	250	FLCM6A0206K4C	M	42.5	45	30.0	37.5	20.3	1.2	17.0	340.0	15.0	3.3	33.0	13.5	44	350*170*80
25.0	250	FLCN6A0256K4C	N	57.5	45	30.0	52.5	20.3	1.2	11.0	275.0	18.0	6.0	35.0	5.1	25	350*170*80
30.0	250	FLCN6A0306K4C	N	57.5	45	30.0	52.5	20.3	1.2	11.0	330.0	21.0	4.9	35.0	4.6	20	350*170*80
40.0	250	FLCO6A0406K4C	O	57.5	50	35.0	52.5	20.3	1.2	11.0	440.0	20.0	5.3	38.0	4.7	20	350*170*80
50.0	250	FLCO6A0506K4C	O	57.5	50	35.0	52.5	20.3	1.2	12.0	600.0	22.0	5.0	38.0	4.1	20	350*170*80
V_{rms} = 300V Voltage Code: H																	
10.0	300	FLCL6H0106K4C	L	42.5	44	24.0	37.5	10.2	1.2	19.0	190.0	13.0	5.5	30.0	10.8	42	350*170*80
12.0	300	FLCK6H0126K4C	K	42.5	43	28.0	37.5	10.2	1.2	19.0	228.0	13.0	4.5	30.0	13.1	35	350*170*80
15.0	300	FLCM6H0156K4C	M	42.5	45	30.0	37.5	20.3	1.2	19.0	285.0	13.0	3.8	33.0	15.6	44	350*170*80
20.0	300	FLCN6H0206K4C	N	57.5	45	30.0	52.5	20.3	1.2	13.0	260.0	17.0	6.3	35.0	5.5	25	350*170*80
25.0	300	FLCO6H0256K4C	O	57.5	50	35.0	52.5	20.3	1.2	13.0	325.0	20.0	4.9	38.0	5.1	20	350*170*80
V_{rms} = 350V Voltage Code: I																	
7.5	350	FLCL6I0755K4C	L	42.5	44	24.0	37.5	10.2	1.2	24.0	180.0	11.0	7.0	30.0	11.8	42	350*170*80
9.0	350	FLCK6I0905K4C	K	42.5	43	28.0	37.5	10.2	1.2	24.0	216.0	11.0	5.7	30.0	14.5	35	350*170*80
10.0	350	FLCM6I0106K4C	M	42.5	45	30.0	37.5	20.3	1.2	24.0	240.0	11.0	4.3	33.0	19.2	44	350*170*80
12.0	350	FLCN6I0126K4C	N	57.5	45	30.0	52.5	20.3	1.2	17.0	204.0	18.0	6.0	35.0	5.1	25	350*170*80
20.0	350	FLCO6I0206K4C	O	57.5	50	35.0	52.5	20.3	1.2	17.0	340.0	21.0	5.3	38.0	4.3	20	350*170*80
V_{rms} = 400V Voltage Code: L																	
7.5	400	FLCJ6L0755K4C	J	42.5	40	20.0	37.5	10.2	1.0	25.0	187.5	11.0	5.5	30.0	15.00	56	350*170*80
10.0	400	FLCK6L0106K4C	K	42.5	43	28.0	37.5	10.2	1.0	25.0	250.0	14.0	4.5	30.0	11.30	35	350*170*80
13.0	400	FLCM6L0136K4C	M	42.5	45	30.0	37.5	20.3	1.2	25.0	325.0	17.0	4.0	33.0	8.60	44	350*170*80
16.0	400	FLCN6L0166K4C	N	57.5	45	30.0	52.5	20.3	1.2	20.0	320.0	14.0	5.0	35.0	10.20	25	350*170*80
20.0	400	FLCO6L0206K4C	O	57.5	50	35.0	52.5	20.3	1.2	20.0	400.0	20.0	4.0	38.0	6.20	20	350*170*80
V_{rms} = 450V Voltage Code: M																	
4.70	450	FLCJ6M0475K4C	J	42.5	40	20.0	37.5	10.2	1.0	35.0	164.5	12.0	5.0	30.0	13.80	56	350*170*80
7.50	450	FLCK6M0755K4C	K	42.5	43	28.0	37.5	10.2	1.0	35.0	262.5	14.0	4.0	30.0	12.70	35	350*170*80
8.50	450	FLCM6M0855K4C	M	42.5	45	30.0	37.5	20.3	1.2	35.0	297.5	14.0	3.5	33.0	14.50	44	350*170*80
12.0	450	FLCN6M0126K4C	N	57.5	45	30.0	52.5	20.3	1.2	28.0	336.0	14.0	4.0	35.0	12.70	25	350*170*80
16.0	450	FLCO6M0166K4C	O	57.5	50	35.0	52.5	20.3	1.2	28.0	448.0	17.0	3.0	38.0	11.50	20	350*170*80

* Insert K for 10% capacitance tolerance (standard); J (+5%) and M (+20%) tolerances available on request.

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