

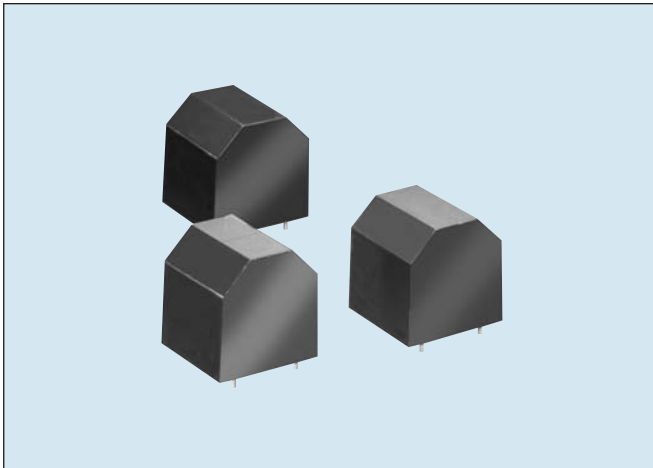
Medium Power Film Capacitors



FFV3 General Description

DC FILTERING

DC FILTERING



The series uses a non-impregnated metallized polypropylene or polyester dielectric, with the controlled self-healing process, specially treated to have a very high dielectric strength in operating conditions up to 105°C.

The FFV3 has been designed for printed circuit board mounting.

APPLICATIONS

The FFV3 capacitors are particularly designed for DC filtering, low reactive power.

PACKAGING

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

Self-extinguishing thermosetting resin (V0 = in accordance with UL 94; I3F2 = in accordance with NF F 16-101).

LIFETIME EXPECTANCY

One unique feature of this technology (as opposed to electrolytics) is how the capacitor reacts at the end of its lifetime. Whereas, with an electrolytic, there is a strong risk of explosion of the case. However, with our line of film capacitors, the capacitor will simply experience at the end of life a loss of capacitance of about 2%, with no risk of explosion.

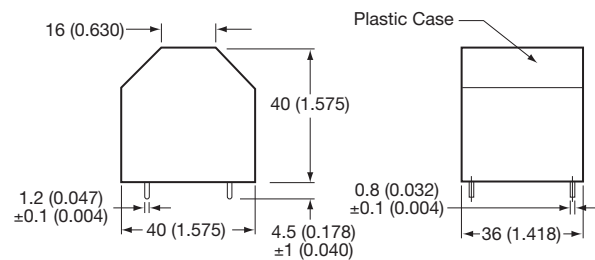
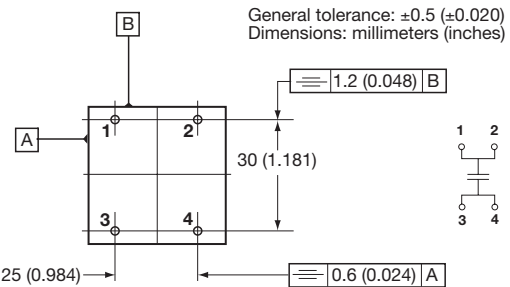
Please note that this is theoretical, however, as the capacitor continues to be functional even after this 2% decrease.

ELECTRICAL CHARACTERISTICS

Climatic category 40/105/56 (IEC 60068)

Test voltage between terminals @ 25°C 1.5 x V_{Ndc} during 10s

Test voltage between terminals and case @ 25°C @ 4 kVrms @ 50 Hz during 1 min.



STANDARDS

- IEC 61071-1, IEC 61071-2: Power electronic capacitors
- IEC 60384-16: Fixed metallized polypropylene film dielectric DC capacitors
- IEC 60384-16-1: Fixed metallized polypropylene film dielectric DC capacitors Assessment level E
- 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
- IEC 60384-2: Fixed metallized polyester capacitors

Medium Power Film Capacitors



FFV3 for Low Voltage Applications

DC FILTERING

POLYESTER DIELECTRIC

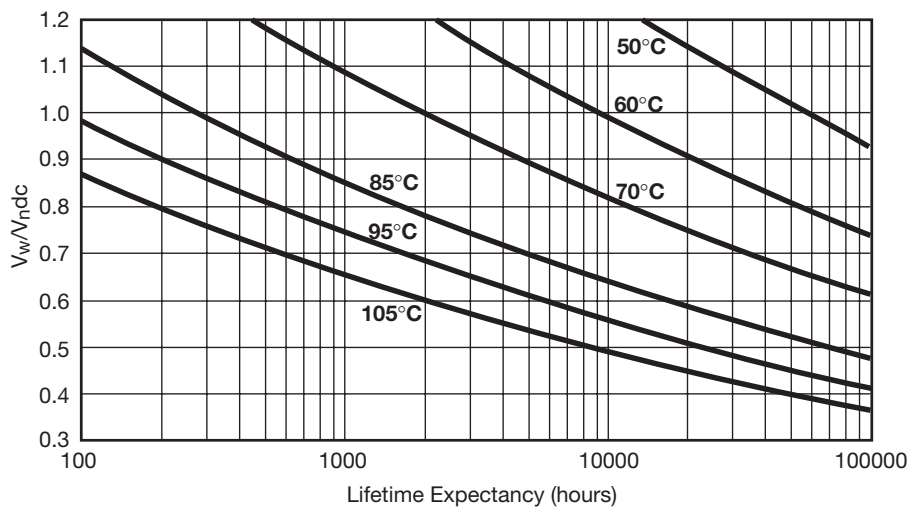
ELECTRICAL CHARACTERISTICS

Capacitance range C_n	30 μ F to 160 μ F
Tolerance on C_n	$\pm 10\%$
Rated DC voltage V_{ndc}	75 to 400 V
Dielectric	polyester

DC FILTERING

Capacitance (μ F)	$I_{rms\ max.}$ (A)	$(I^2t)_{10\ shots}$ (A^2s)	$(I^2t)_{1000\ shots}$ (A^2s)	R_s (m Ω)	R_{th} ($^{\circ}C/W$)	Part Number
$V_{ndc} = 75\ V$ $V_{rms} = 45\ v\ max$						
130	23	370	37	0.56	5.60	FFV34D0137K--
160	28	560	56	0.47	5.00	FFV34D0167K--
$V_{ndc} = 100\ V$ $V_{rms} = 60\ v\ max$						
80	19	250	25	0.67	6.16	FFV34E0806K--
100	24	390	39	0.55	5.42	FFV34E0107K--
$V_{ndc} = 160\ V$ $V_{rms} = 75\ v\ max$						
55	17	180	18	0.77	6.56	FFV34F0556K--
65	20	260	26	0.66	5.97	FFV34F0656K--
$V_{ndc} = 300\ V$ $V_{rms} = 90\ v\ max$						
40	20	150	15	2.80	9.58	FFV34H0406K--
50	26	230	23	2.25	8.46	FFV34H0506K--
$V_{ndc} = 400\ V$ $V_{rms} = 105\ v\ max$						
30	17	110	11	2.93	9.92	FFV34I0306K--
40	23	200	20	2.21	8.41	FFV34I0406K--

LIFETIME EXPECTANCY vs V_w/V_{ndc} AND HOT SPOT TEMPERATURE



V_w = Permanent working or operating DC voltage.

HOT SPOT CALCULATION

$$\theta_{hot\ spot} = \theta_{ambient} + (P_d + P_t) \times (R_{th} + 7.4)$$

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

with P_d (Dielectric losses) = $Q \times tg\delta_0$
 $\Rightarrow [\frac{1}{2} \times C_n \times (V_{peak\ to\ peak})^2 \times f] \times tg\delta_0$
 (see $tg\delta_0$ curves page 3)

$$P_t$$
 (Thermal losses) = $R_s \times (I_{rms})^2$

where C_n in Farad I_{rms} in Ampere f in Hertz
 V in Volt R_s in Ohm θ in $^{\circ}C$
 R_{th} in $^{\circ}C/W$ R_{th} : R_{th} case/hot spot in $^{\circ}C/W$



Medium Power Film Capacitors



FFV3 DC for Medium and High Voltage Applications

DC FILTERING

DC FILTERING

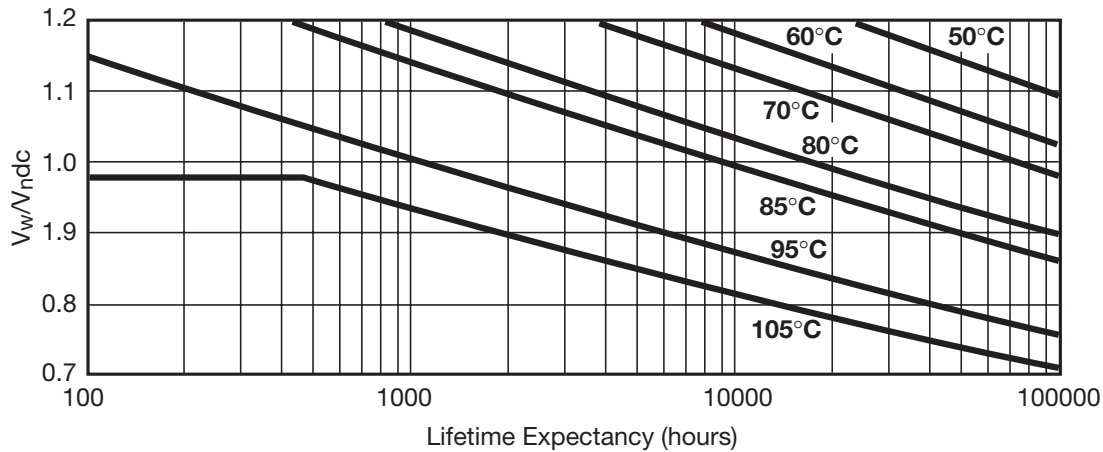
POLYPROPYLENE DIELECTRIC

ELECTRICAL CHARACTERISTICS

Capacitance range C_n	6 μ F to 25 μ F
Tolerance on C_n	$\pm 10\%$
Rated DC voltage V_{ndc}	500 to 1100 V
Dielectric	polypropylene

Capacitance (μ F)	$I_{rms\ max.}$ (A)	$(I^2t)_{10\ shots}$ (A^2s)	$(I^2t)_{1000\ shots}$ (A^2s)	R_s (m Ω)	R_{th} ($^{\circ}C/W$)	Part Number
$V_{ndc} = 500\ V$		$V_{rms} = 105\ v\ max$				
20	27	3200	320	5.88	3.53	FFV36J0206K--
25	33	5000	500	4.72	3.14	FFV36J0256K--
$V_{ndc} = 700\ V$		$V_{rms} = 120\ v\ max$				
14	21	2000	200	7.34	3.73	FFV36A0146K--
20	30	4200	420	5.15	3.05	FFV36A0206K--
$V_{ndc} = 900\ V$		$V_{rms} = 150\ v\ max$				
10	19	1600	160	8.21	3.37	FFV36C0106K--
13	25	2800	280	6.33	2.91	FFV36C0136K--
$V_{ndc} = 1100\ V$		$V_{rms} = 180\ v\ max$				
6	13	800	80	11.4	3.71	FFV36L0605K--
9	20	1900	190	7.61	2.92	FFV36L0905K--

LIFETIME EXPECTANCY vs V_w/V_n AND HOT SPOT TEMPERATURE



V_w = Permanent working or operating DC voltage.

HOT SPOT CALCULATION

$$\theta_{hot\ spot} = \theta_{ambient} + (P_d + P_t) \times (R_{th} + 7.4)$$

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

with P_d (Dielectric losses) = $Q \times tg\delta_0$

$$\Rightarrow [\frac{1}{2} \times C_n \times (V_{peak\ to\ peak})^2 \times f] \times (2 \times 10^{-4})$$

$$P_t \text{ (Thermal losses)} = R_s \times (I_{rms})^2$$

where C_n in Farad I_{rms} in Ampere f in Hertz
 V in Volt R_s in Ohm θ in $^{\circ}C$
 R_{th} in $^{\circ}C/W$ R_{th} : R_{th} case/hot spot in $^{\circ}C/W$

