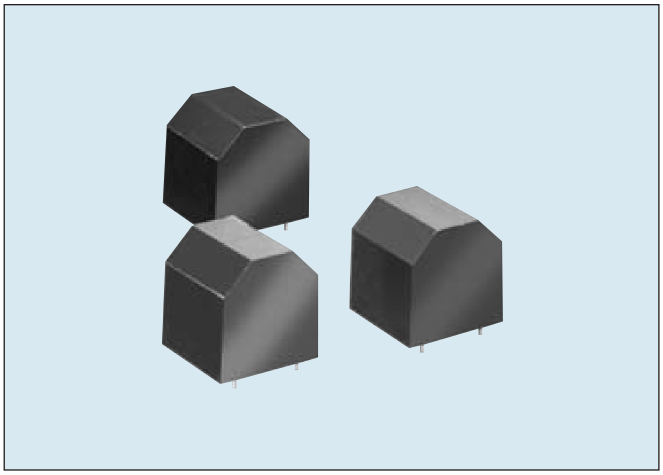
Medium Power Film Capacitors

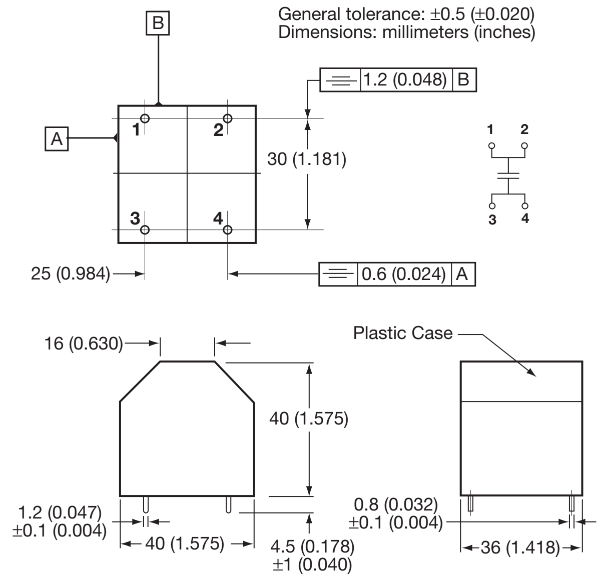
FFV3 General Description

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.

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

ELECTRICAL CHARACTERISTICS

Climatic category	40/105/56 (IEC 60068)
Test voltage between terminals @ 25°C	1.5 x $V_n$dc during 10s
Test voltage between terminals and case @ 25°C	@ 4 kVrms @ 50 Hz during 1 min.

Medium Power Film Capacitors

FFV3 for Low Voltage Applications

DC FILTERING

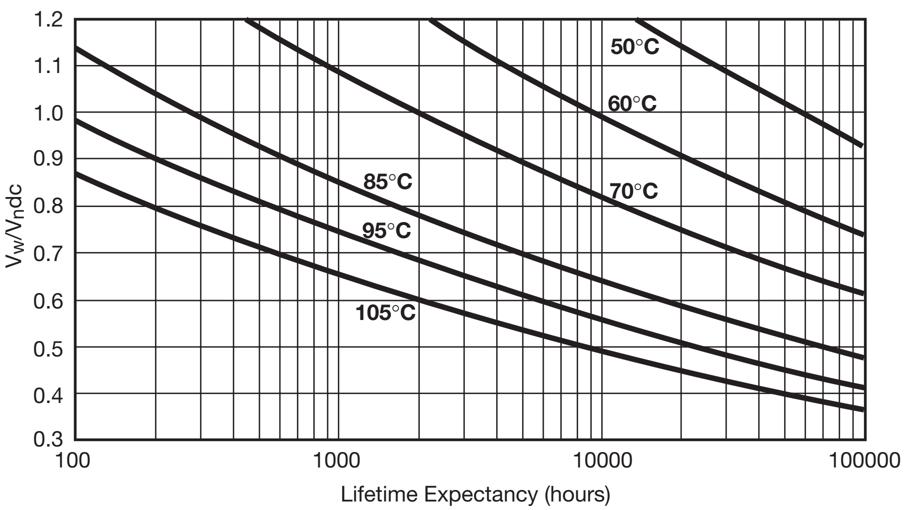
POLYESTER DIELECTRIC

ELECTRICAL CHARACTERISTICS

Capacitance range C_n	30µF to 160µF
Tolerance on C_n	±10%
Rated DC voltage $V_n$dc	75 to 400 V
Dielectric	polyester

Capacitance (µF)	$I_{rms\ max.}$ (A)	$(I^2t)_{10\ shots}$ (A^2s)	$(I^2t)_{1000\ shots}$ (A^2s)	R_s (mΩ)	R_{th} (°C/W)	Part Number
$V_n$dc = 75 V	**Vrms = 45 v max**					
130	23	370	37	0.56	5.60	FFV34D0137K--
160	28	560	56	0.47	5.00	FFV34D0167K--
$V_n$dc = 100 V	**Vrms = 60 v max**					
80	19	250	25	0.67	6.16	FFV34E0806K--
100	24	390	39	0.55	5.42	FFV34E0107K--
$V_n$dc = 160 V	**Vrms = 75 v max**					
55	17	180	18	0.77	6.56	FFV34F0556K--
65	20	260	26	0.66	5.97	FFV34F0656K--
$V_n$dc = 300 V	**Vrms = 90 v max**					
40	20	150	15	2.80	9.58	FFV34H0406K--
50	26	230	23	2.25	8.46	FFV34H0506K--
$V_n$dc = 400 V	**Vrms = 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_n AND HOT SPOT TEMPERATURE



Vw = 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 °C
R_{th} in °C/W, R_{th} : R_{th} case/hot spot in °C/W

Medium Power Film Capacitors

FFV3 DC for Medium and High Voltage Applications

DC FILTERING

DC FILTERING

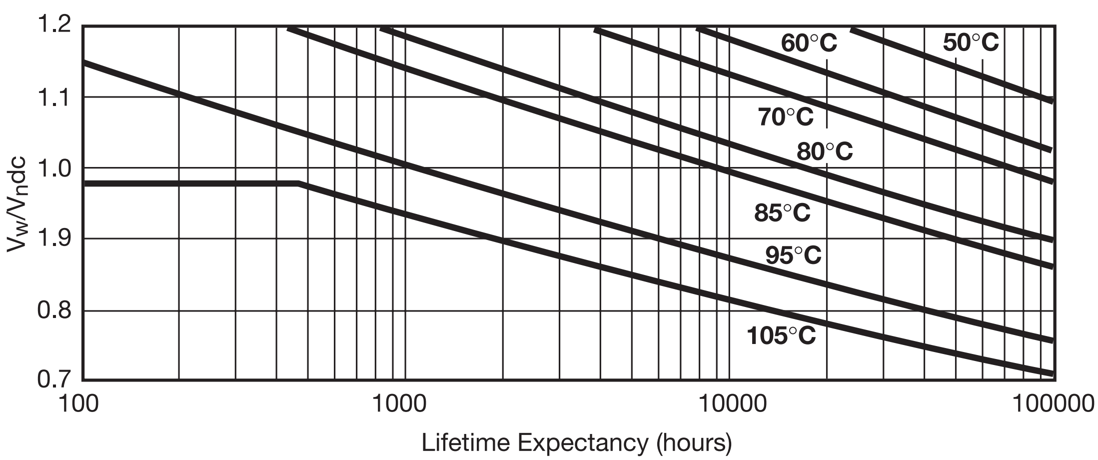
POLYPROPYLENE DIELECTRIC

ELECTRICAL CHARACTERISTICS

Capacitance range C_n	6µF to 25µF
Tolerance on C_n	±10%
Rated DC voltage $V_n dc$	500 to 1100 V
Dielectric	polypropylene

Capacitance (µF)	$I_{rms\ max.}$ (A)	$(I2t)_{10\ shots}$ (A^2s)	$(I2t)_{1000\ shots}$ (A^2s)	R_s (mΩ)	R_{th} (°C/W)	Part Number
$V_n$dc = 500 V	**Vrms = 105 v max**					
20	27	3200	320	5.88	3.53	FFV36J0206K--
25	33	5000	500	4.72	3.14	FFV36J0256K--
$V_n$dc = 700 V	**Vrms = 120 v max**					
14	21	2000	200	7.34	3.73	FFV36A0146K--
20	30	4200	420	5.15	3.05	FFV36A0206K--
$V_n$dc = 900 V	**Vrms = 150 v max**					
10	19	1600	160	8.21	3.37	FFV36C0106K--
13	25	2800	280	6.33	2.91	FFV36C0136K--
$V_n$dc = 1100 V	**Vrms = 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



Vw = 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) = $Q \times tg\delta_0$

$\Rightarrow [½ \times C_n \times (V_{peak\ to\ peak})^2 \times f\,] \times (2 \times 10^{-4})$

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 °C
	R_{th} in °C/W	R_{th} : R_{th} case/hot spot in °C/W	