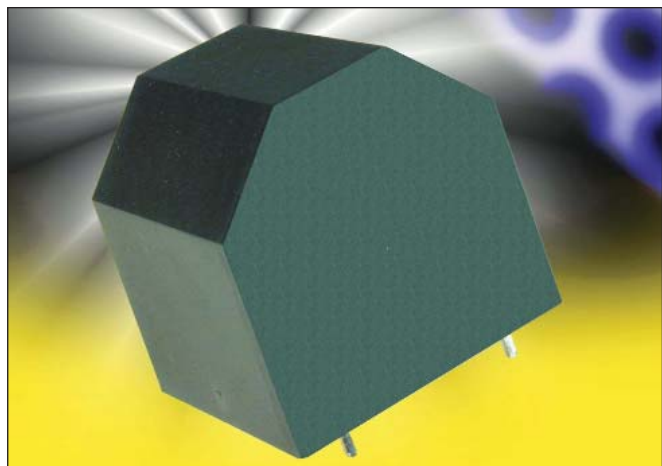


**FFV3 (RoHS Compliant)**

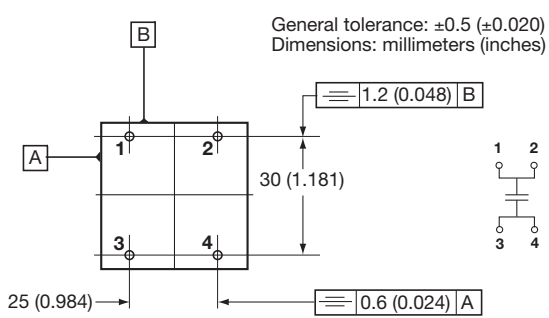
**DC FILTERING**

**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.

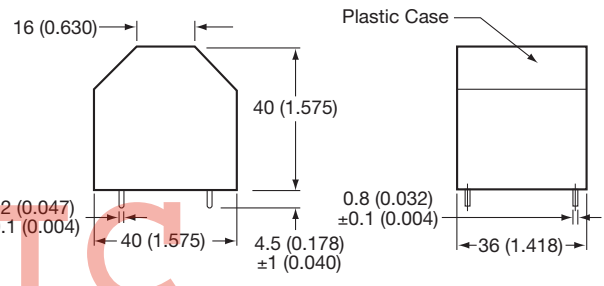


**APPLICATIONS**

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

**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



**HOT SPOT CALCULATION**

See *Hot Spot Temperature*, page 3.

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

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

with  $P_d$  (Dielectric losses) =  $Q \times tg\delta_0$   
 $\Rightarrow [ \frac{1}{2} \times C_n \times (V_{peak\ to\ peak})^2 \times f ] \times tg\delta_0$   
 $tg\delta_0$  (tan delta)  
 For polypropylene,  $tg\delta_0 = 2 \times 10^{-4}$  for frequencies up to 1MHz and is independent of temperatures.  
 For polyester,  $tg\delta_0$  values are shown in graph 4 on page 3.

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

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

**LIFETIME EXPECTANCY**

One unique feature of this technology (as opposed to electrolytics) is how the capacitor reacts at the end of its lifetime. Unlike aluminum, electrolytics film capacitors do not have a catastrophic failure mode. Film capacitors simply experience a parametric loss of capacitance of about 2%, with no risk of short circuit.

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

**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; I3F2 = in accordance with NF F 16-101).

# Medium Power Film Capacitors

## FFV3 (RoHS Compliant) for Low Voltage Applications

### HOW TO ORDER

<b>FFV3</b>	<b>4</b>	<b>D</b>	<b>K</b>	<b>--</b>
Series	Dielectric	Voltage Code	Capacitance Tolerances	Lead Styles
	4 = Polyester 6 = Polypropylene	D = 75Vdc E = 100Vdc F = 160Vdc H = 300Vdc I = 400Vdc	J = 500Vdc A = 700Vdc C = 900Vdc L = 1100Vdc K = ±10%	-- = Standard
				Consult Factory for Special Options

DC FILTERING

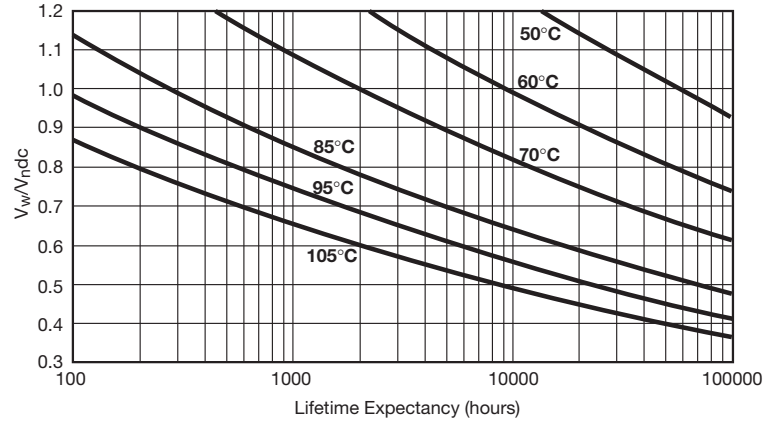
### ELECTRICAL CHARACTERISTICS – POLYESTER DIELECTRIC

Climatic category	40/105/56 (IEC 60068)
Test voltage between terminals @ 25°C	1.5 x V <sub>Ndc</sub> during 10s
Test voltage between terminals and case @ 25°C	@ 4 kVrms @ 50 Hz during 1 min.
Capacitance range C <sub>n</sub>	30µF to 160µF
Tolerance on C <sub>n</sub>	±10%
Rated DC voltage V <sub>Ndc</sub>	75 to 400 V
Dielectric	polyester
Max Stray Inductance	15nH

### RATINGS AND PART NUMBER REFERENCE – POLYESTER DIELECTRIC

Part Number	Capacitance (µF)	I <sub>rms max.</sub> (A)	(I <sub>2t</sub> ) <sub>10 shots</sub> (A <sup>2</sup> s)	(I <sub>2t</sub> ) <sub>1000 shots</sub> (A <sup>2</sup> s)	R <sub>s</sub> (mΩ)	R <sub>th</sub> (°C/W)	Typical Weight (g)
<b>V<sub>Ndc</sub> = 75 V Vrms = 45 v max Voltage Code: D</b>							
FFV34D0137K--	130	23	370	37	0.56	5.60	90
FFV34D0167K--	160	28	560	56	0.47	5.00	90
<b>V<sub>Ndc</sub> = 100 V Vrms = 60 v max Voltage Code: E</b>							
FFV34E0806K--	80	19	250	25	0.67	6.16	90
FFV34E0107K--	100	24	390	39	0.55	5.42	90
<b>V<sub>Ndc</sub> = 160 V Vrms = 75 v max Voltage Code: F</b>							
FFV34F0556K--	55	17	180	18	0.77	6.56	90
FFV34F0656K--	65	20	260	26	0.66	5.97	90
<b>V<sub>Ndc</sub> = 300 V Vrms = 90 v max Voltage Code: H</b>							
FFV34H0406K--	40	20	150	15	2.80	9.58	90
FFV34H0506K--	50	26	230	23	2.25	8.46	90
<b>V<sub>Ndc</sub> = 400 V Vrms = 105 v max Voltage Code: I</b>							
FFV34I0306K--	30	17	110	11	2.93	9.92	90
FFV34I0406K--	40	23	200	20	2.21	8.41	90

### LIFETIME EXPECTANCY vs V<sub>w</sub>/V<sub>N</sub> AND HOT SPOT TEMPERATURE POLYESTER DIELECTRIC



V<sub>w</sub> = Permanent working or operating DC voltage.

# Medium Power Film Capacitors

## FFV3 (RoHS Compliant) DC for Medium and High Voltage Applications

DC FILTERING

### DC FILTERING

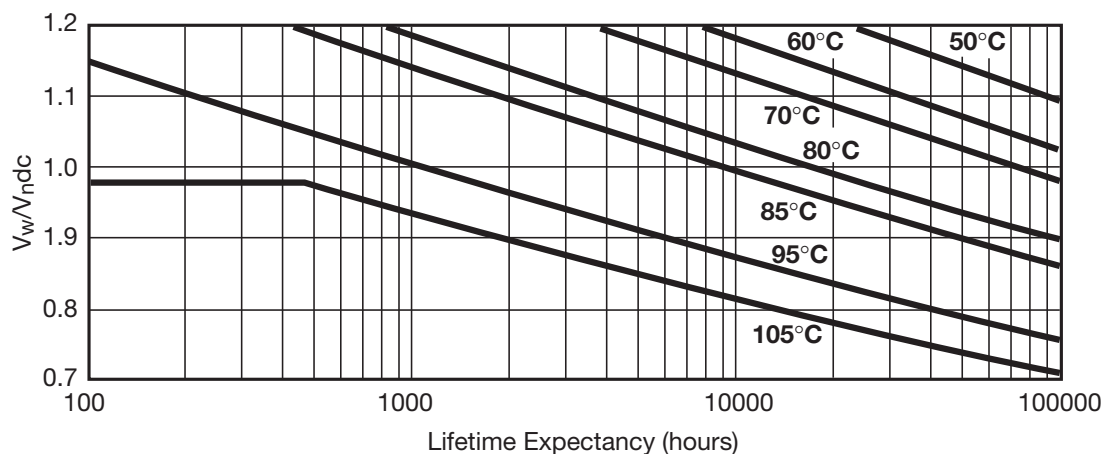
#### ELECTRICAL CHARACTERISTICS – POLYPROPYLENE DIELECTRIC

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.
Capacitance range $C_n$	6 $\mu$ F to 25 $\mu$ F
Tolerance on $C_n$	$\pm 10\%$
Rated DC voltage $V_{ndc}$	500 to 1100 V
Dielectric	polypropylene
Max Stray Inductance	15nH

#### RATINGS AND PART NUMBER REFERENCE – POLYESTER DIELECTRIC

Part Number	Capacitance ( $\mu$ F)	$I_{rms}$ max. (A)	$(I^2t)_{10}$ shots (A <sup>2</sup> s)	$(I^2t)_{1000}$ shots (A <sup>2</sup> s)	$R_s$ (m $\Omega$ )	$R_{th}$ ( $^{\circ}$ C/W)	Typical Weight (g)
<b><math>V_{ndc} = 500</math> V <math>V_{rms} = 105</math> v max Voltage Code: J</b>							
FFV36J0206K--	20	27	3200	320	5.88	3.53	90
FFV36J0256K--	25	33	5000	500	4.72	3.14	90
<b><math>V_{ndc} = 700</math> V <math>V_{rms} = 120</math> v max Voltage Code: A</b>							
FFV36A0146K--	14	21	2000	200	7.34	3.73	90
FFV36A0206K--	20	30	4200	420	5.15	3.05	90
<b><math>V_{ndc} = 900</math> V <math>V_{rms} = 150</math> v max Voltage Code: C</b>							
FFV36C0106K--	10	19	1600	160	8.21	3.37	90
FFV36C0136K--	13	25	2800	280	6.33	2.91	90
<b><math>V_{ndc} = 1100</math> V <math>V_{rms} = 180</math> v max Voltage Code: L</b>							
FFV36L0605K--	6	13	800	80	11.4	3.71	90
FFV36L0905K--	9	20	1900	190	7.61	2.92	90

#### LIFETIME EXPECTANCY vs $V_w/V_{ndc}$ AND HOT SPOT TEMPERATURE POLYPROPYLENE DIELECTRIC



$V_w$  = Permanent working or operating DC voltage.