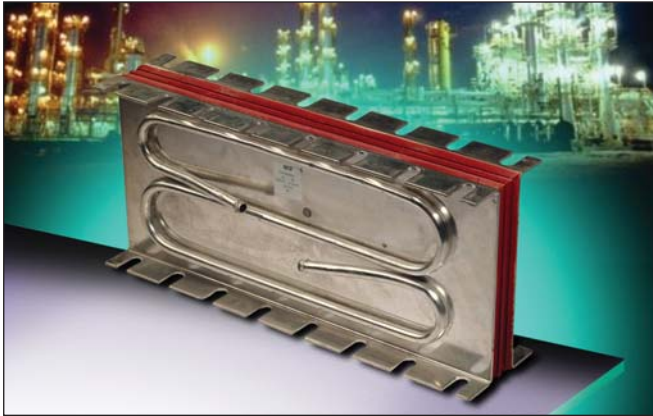


# Medium Power Film Capacitors



FAI (RoHS Compliant)

## TUNING



The FAI series uses metallized polypropylene dielectric specifically designed for very high reactive power.

The FAI's special design gives to this series a very low level of stray inductance.

## APPLICATIONS

These capacitors have been designed principally for: low and medium frequency applications (10 kHz to 500 kHz)

## MAXIMUM WORKING TEMPERATURE (HOT SPOT)

+85°C: Hot spot temperature must be calculated as function of power dissipation.

## HOT SPOT (THERMAL) CALCULATION

See *Hot Spot Temperature* page 3.

You can calculate the maximum operating (hot spot) temperature of this capacitor in the following manner:

Polypropylene has a constant loss factor ( $\text{tg}\delta_0$ ) of  $2 \times 10^{-4}$  irrespective of temperature and frequency (up to 1 MHz).

The loss factor of the capacitor is made up of the sum of two components. The first represents electrical losses ( $\text{tg}\delta_0 = 2 \cdot 10^{-4}$ ) and the second represents Joule effect in the connection and foils:  $R_s \cdot C \cdot 2\pi F$ .

For all applications, the temperature in the hot spot capacitor must be lower than 85°C.

Heating calculation of hot spot capacitor: FAI1 FAI2 FAI3

$$\theta_{\text{hot spot}} = \theta_{\text{terminals}} + (\text{tg}\delta_0 \cdot Q + R_s \cdot (I_{\text{rms}})^2) \cdot R_{\text{th}}$$

Heating calculation of hot spot capacitor: FAI6

$$\theta_{\text{hot spot}} = \theta_{\text{water}} + (\text{tg}\delta_0 Q + R_s \cdot (I_{\text{rms}})^2) \cdot R_{\text{th}}$$

With:  $\text{tg}\delta_0 = 2 \cdot 10^{-4}$

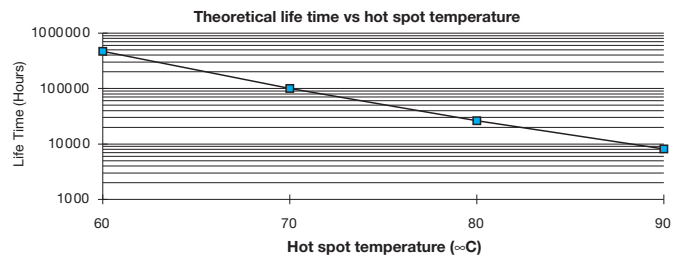
Q in Var

$R_s$  in Ohms

$I_{\text{rms}}$  in Amperes

$R_{\text{th}}$  in °C/W (water flow = 10 dm<sup>3</sup>/minute)

**Note:** The life time depends of hot spot temperature, see following curve.



## ELECTRICAL CHARACTERISTICS

Capacitance range $C_n$	110nF to 60µF
Tolerance	±10%
Rated AC voltage	200 to 650 Vrms
Series parasitic inductance	< 5 nH
Test voltage between terminals @ 25°C	1.2 Vrms 50/60 Hz 10s
Dielectric	Polypropylene

## HOW TO ORDER

FAI	1	6	J
Series	Case Size	Dielectric	Voltage Code
	1	6 = Polypropylene	H = 300 Vrms
	2		I = 350 Vrms (Case size 3)
	3		I = 400 Vrms (Case size 4)
	4		J = 500 Vrms
	5		K = 60 Vrms
	6		

0114
Capacitance Code
0 + pF code
0114 = 0.11µF (110nF)
0245 = 2.4µF (2400nF)
0405 = 4.0µF (4000nF)
etc.

K
Capacitance Tolerances
K = ±10%

--
Terminal Code
-- = Standard



TUNING

# Medium Power Film Capacitors

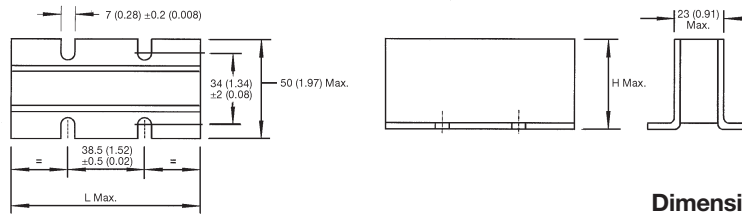


FAI (RoHS Compliant)

## TUNING

### FAI1 STYLE

### CASE SIZE 1 DIMENSIONS



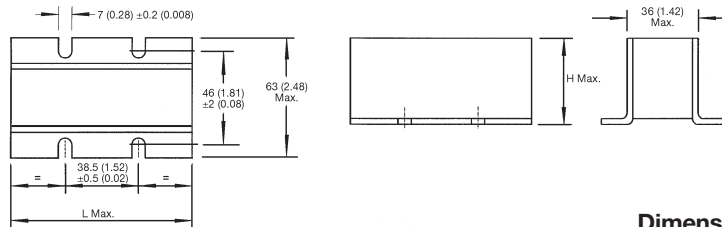
Dimensions: millimeters (inches)

Part Number	C (nF)	Irms max (A)	Vrms max (V)	Q max kVARS	Rs (mΩ)	Rth (°C/W)	L max	H max	Typical Weight (g)
FAI16J0114K--	110	180	500	100	$8 \times 10^{-4} \times \sqrt{F} + 0.19$	0.86	55 (2.165)	35 (1.378)	125
FAI16J0214K--	210	300	500	150	$5 \times 10^{-4} \times \sqrt{F} + 0.12$	0.67	75 (2.953)	40 (1.575)	195
FAI16J0334K--	330	350	500	175	$5 \times 10^{-4} \times \sqrt{F} + 0.15$	0.54	75 (2.953)	40 (1.575)	195
FAI16J0514K--	510	500	500	250	$4 \times 10^{-4} \times \sqrt{F} + 0.08$	0.49	95 (3.740)	45 (1.772)	275
FAI16J0664K--	660	600	500	300	$3.5 \times 10^{-4} \times \sqrt{F} + 0.06$	0.38	95 (3.740)	45 (1.772)	275

With F in Hz

### FAI2 STYLE

### CASE SIZE 2 DIMENSIONS



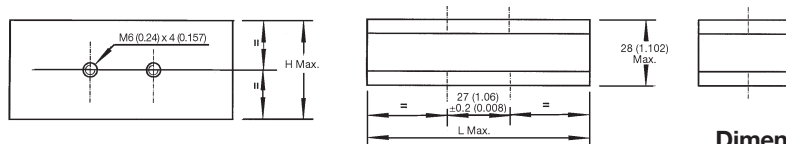
Dimensions: millimeters (inches)

Part Number	C (nF)	Irms max (A)	Vrms max (V)	Q max kVARS	Rs (mΩ)	Rth (°C/W)	L max	H max	Typical Weight (g)
FAI26J0664K--	660	300	500	180	$5 \times 10^{-4} \times \sqrt{F} + 0.25$	0.6	75 (2.953)	40 (1.575)	300
FAI26J0125K--	1200	400	500	200	$5 \times 10^{-4} \times \sqrt{F} + 0.20$	0.56	75 (2.953)	40 (1.575)	300
FAI26I0245K--	2400	500	350	175	$5 \times 10^{-4} \times \sqrt{F} + 0.17$	0.55	75 (2.953)	40 (1.575)	300

With F in Hz

### FAI3 STYLE

### CASE SIZE 3 DIMENSIONS

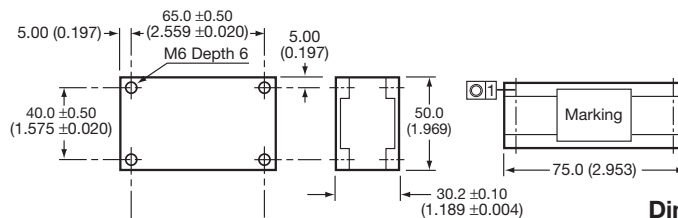


Dimensions: millimeters (inches)

Part Number	C (nF)	Irms max (A)	Vrms max (V)	Q max kVARS	Rs (mΩ)	Rth (°C/W)	L max	H max	Typical Weight (g)
FAI36J0114K--	110	180	500	100	0.3	0.82	55 (2.165)	35 (1.378)	150
FAI36J0334K--	330	350	500	175	0.15	0.55	75 (2.953)	37 (1.457)	220
FAI36J0514K--	510	500	500	250	0.1	0.3	95 (3.740)	42 (1.654)	315
FAI36J0664K--	660	600	500	300	0.1	0.24	95 (3.740)	42 (1.654)	315

### FAI4 STYLE

### CASE SIZE 4 DIMENSIONS



Dimensions: millimeters (inches)

Part Number	C (nF)	Irms max (A)	Vrms max (V)	Q max kVARS	Rs (mΩ)	Rth (°C/W)	Typical Weight (g)
FAI46H0405K--	4000	600	300	180	0.13	0.15	315
FAI46I0245K--	2400	500	400	200	0.15	0.20	315
FAI46J0185K--	1800	550	450	230	0.35	0.38	315
FAI46J0125K--	1200	500	500	200	0.20	0.22	315
FAI46J0664K--	660	450	500	220	0.26	0.32	315
FAI46K0334K--	330	380	600	220	0.315	0.315	315
FAI46K0284K--	280	320	600	190	0.37	0.375	315

TUNING



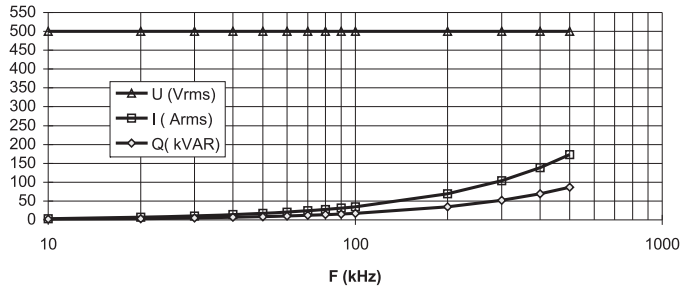
# Medium Power Film Capacitors



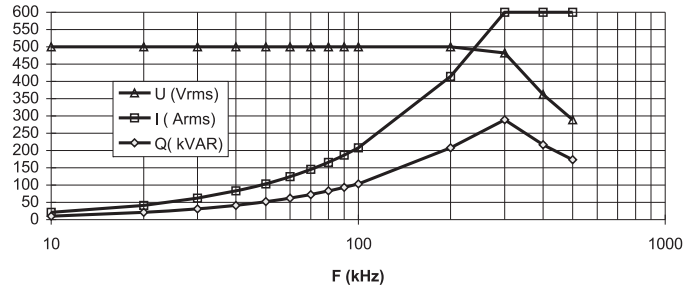
## FAI (RoHS Compliant)

### TUNING

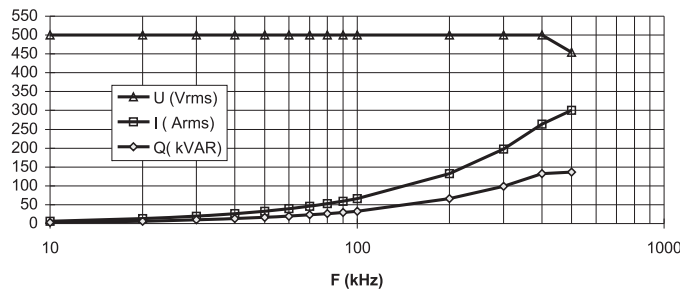
110 nF 500 Vrms  
FAI16J0114K--  
FAI36J0114K--



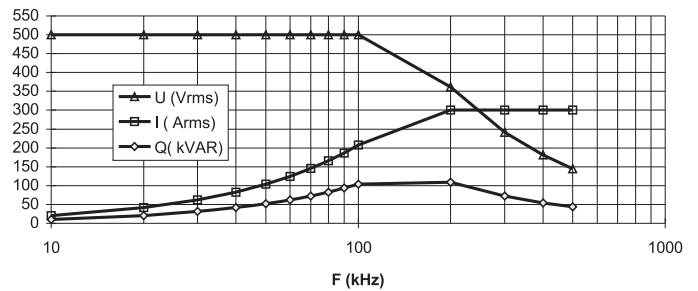
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FAI16J0664K--  
FAI36J0664K--



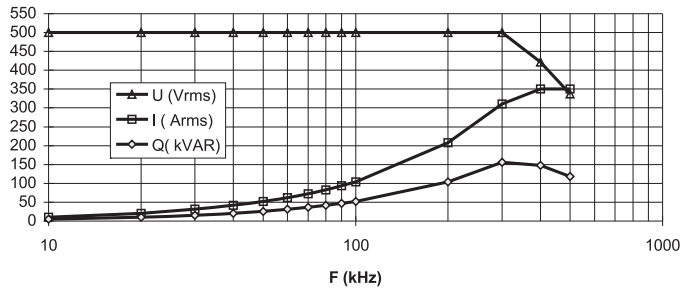
210 nF 500 Vrms  
FAI16J0214K--



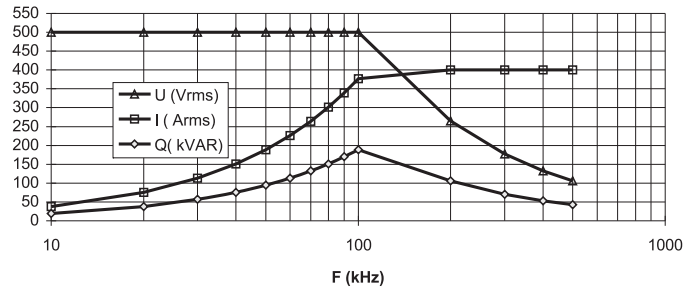
660 nF 500 Vrms  
FAI26J0664K--



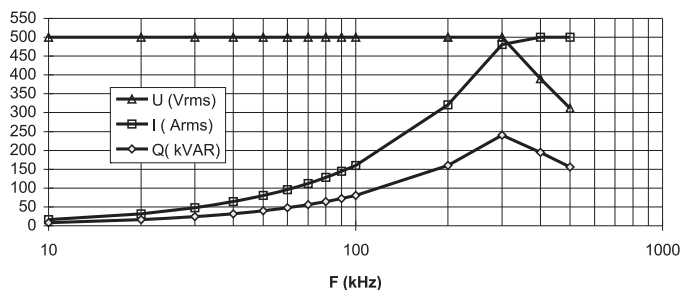
330 nF 500 Vrms  
FAI16J0334K--  
FAI36J0334K--



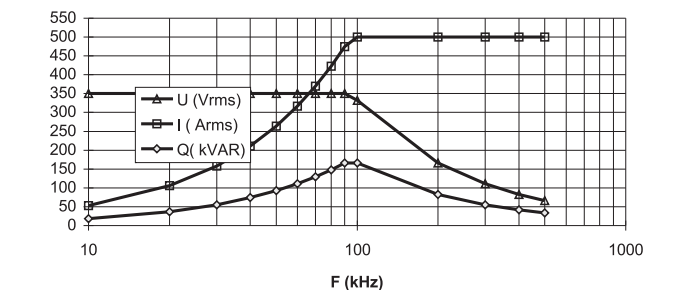
1200 nF 500 Vrms  
FAI26J0125K--



510 nF 500 Vrms  
FAI16J0514K--  
FAI36J0514K--



2400 nF 350 Vrms  
FAI26I0245K--



TUNING



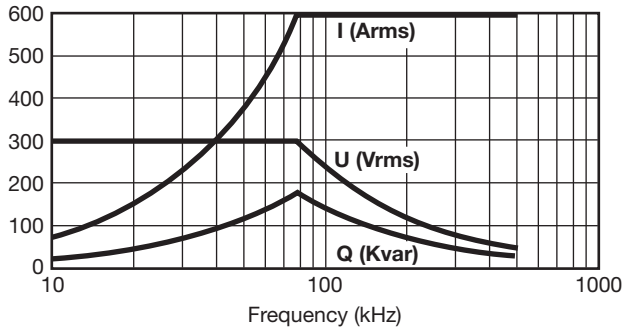
# Medium Power Film Capacitors



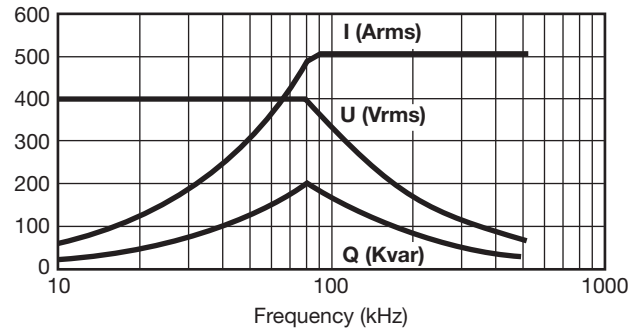
FAI (RoHS Compliant)

## TUNING

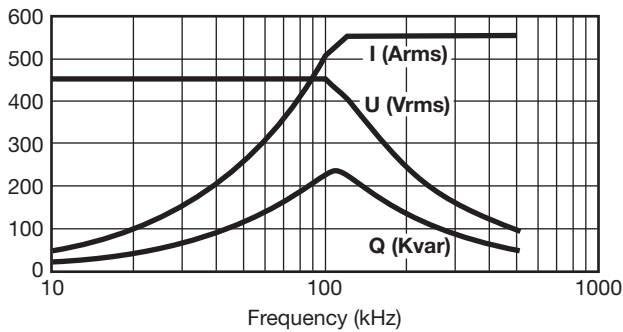
**FAI46H0405K--**  
4000nF±10% 300Vrms



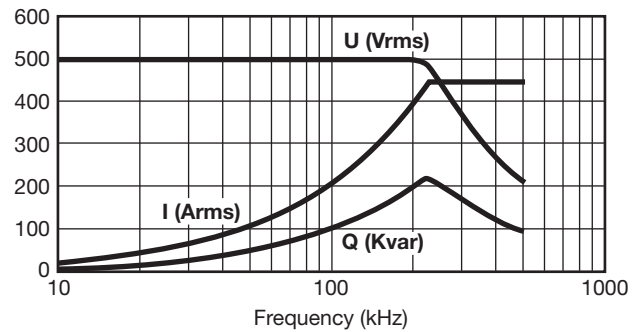
**FAI46I0245K--**  
2400nF±10% 400Vrms



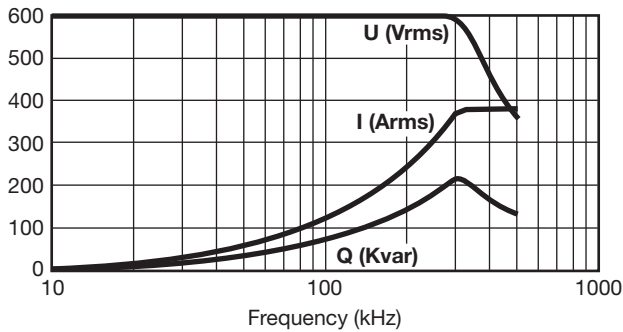
**FAI46J0185K--**  
1800nF±10% 450Vrms



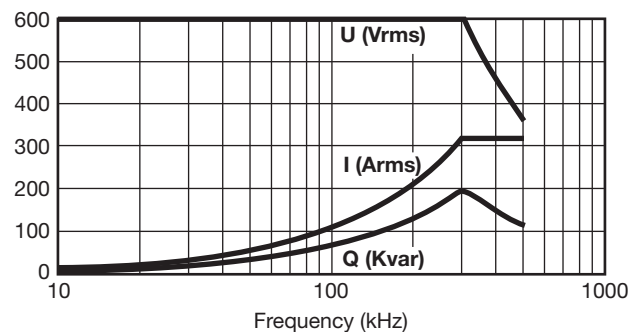
**FAI46J0664K--**  
660nF±10% 500Vrms



**FAI46J0334K--**  
330nF±10% 600Vrms



**FAI46J0284K--**  
280nF±10% 600Vrms



TUNING



# Medium Power Film Capacitors



FAI (RoHS Compliant)

## TUNING

### FAI6

Dimensions: millimeters (inches)

Part Number	Width	Vrms max (V)	C (μF)	Qmax (kVAR)	Irms max (A)	Rs (mΩ)	Rth (°C/W)	Typical Weight (g)
FAI66F0156K--	90 (3.543)	200	15	160	800	$5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.025$	0.104	1900
FAI66H0126K--		300	12	240	800	$5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.03$	0.104	1900
FAI66I0705K--		400	7	320	800	$5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.035$	0.114	1900
FAI66J0505K--		500	5	320	640	$5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.04$	0.114	1900
FAI66K0355K--		600	3.5	320	530	$5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.05$	0.124	1900
FAI66A0155K--		650	1.5	320	490	$5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.07$	0.134	1900
FAI66F0306K--	190 (7.480)	200	30	240	1200	$2.5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.0125$	0.079	3950
FAI66H0246K--		300	24	360	1200	$2.5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.015$	0.079	3950
FAI66I0146K--		400	14	480	1200	$2.5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.0175$	0.084	3950
FAI66J0106K--		500	10	600	1200	$2.5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.02$	0.084	3950
FAI66K0705K--		600	7	640	1070	$2.5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.025$	0.089	3950
FAI66A0305K--		650	3	640	985	$2.5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.035$	0.094	3950
FAI66F0456K--	290 (11.417)	200	45	320	1600	$2.10^{-4} \times \sqrt{f(\text{Hz})} + 0.0083$	0.072	6100
FAI66H0366K--		300	36	480	1600	$2.10^{-4} \times \sqrt{f(\text{Hz})} + 0.01$	0.072	6100
FAI66I0216K--		400	21	640	1600	$2.10^{-4} \times \sqrt{f(\text{Hz})} + 0.0117$	0.075	6100
FAI66J0156K--		500	15	800	1600	$2.10^{-4} \times \sqrt{f(\text{Hz})} + 0.0133$	0.075	6100
FAI66K1055K--		600	10.5	960	1600	$2.10^{-4} \times \sqrt{f(\text{Hz})} + 0.0167$	0.078	6100
FAI66A0455K--		650	4.5	960	1480	$2.10^{-4} \times \sqrt{f(\text{Hz})} + 0.0233$	0.082	6100
FAI66F0606K--	390 (15.354)	200	60	400	2000	$1.5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.00625$	0.067	8200
FAI66H0486K--		300	48	600	2000	$1.5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.0075$	0.067	8200
FAI66I0286K--		400	28	800	2000	$1.5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.00875$	0.070	8200
FAI66J0206K--		500	20	1000	2000	$1.5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.01$	0.070	8200
FAI66K0146K--		600	14	1200	2000	$1.5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.0125$	0.072	8200
FAI66A0605K--		650	6	1280	1970	$1.5.10^{-4} \times \sqrt{f(\text{Hz})} + 0.0175$	0.075	8200

# Medium Power Film Capacitors



FAI (RoHS Compliant)

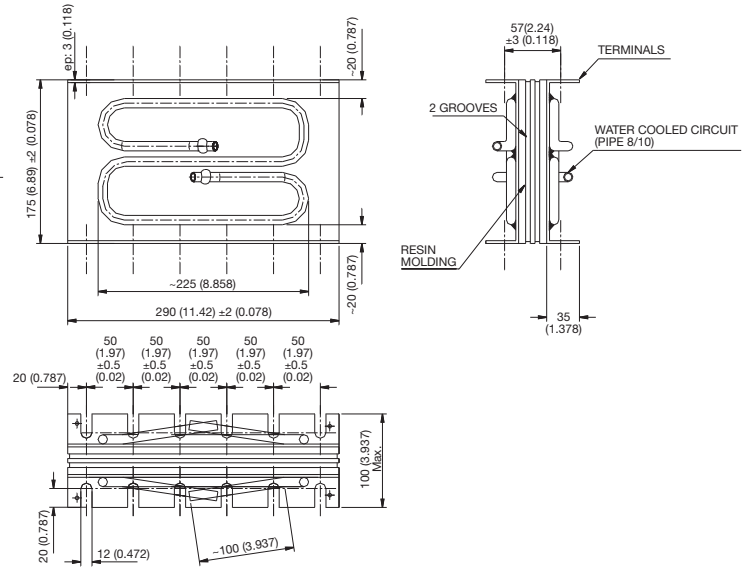
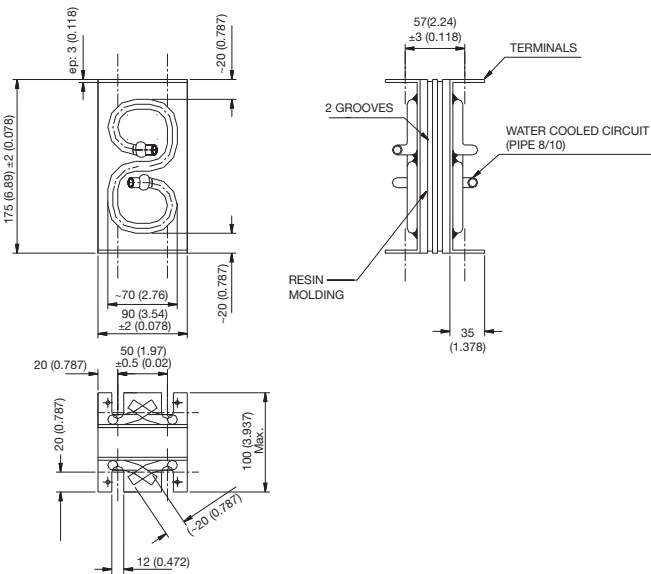
TUNING

Dimensions: millimeters (inches)

## CASE SIZE 6 DIMENSIONS

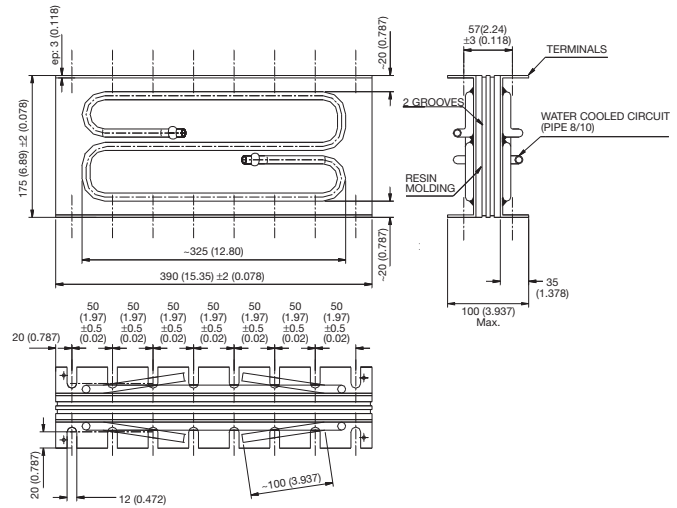
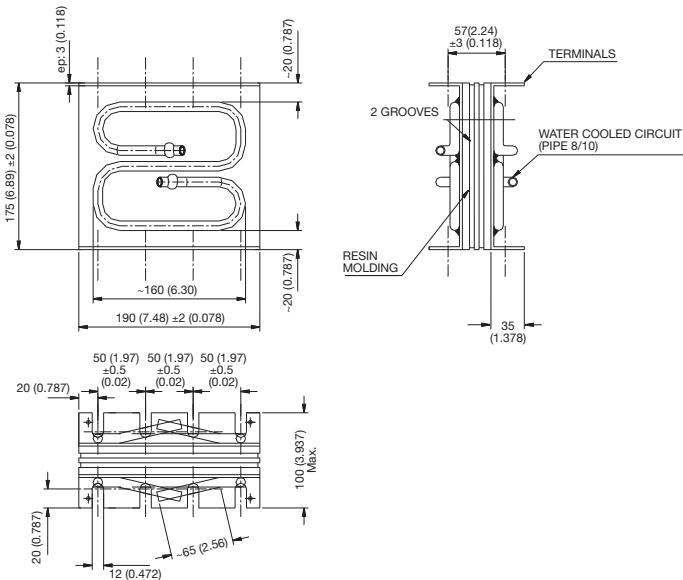
FAI6 WIDTH: 90 (3.543)

FAI6 WIDTH: 290 (11.417)



FAI6 WIDTH: 190 (7.480)

FAI6 WIDTH: 390 (15.354)



TUNING



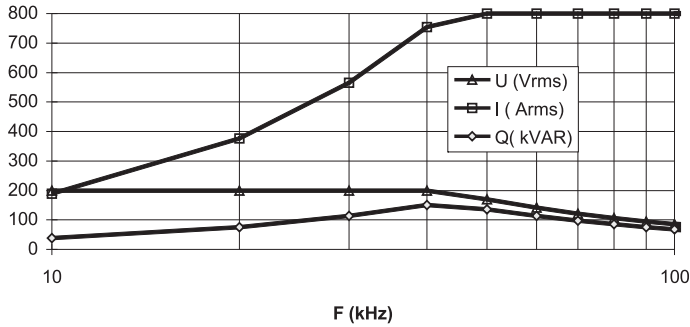
# Medium Power Film Capacitors



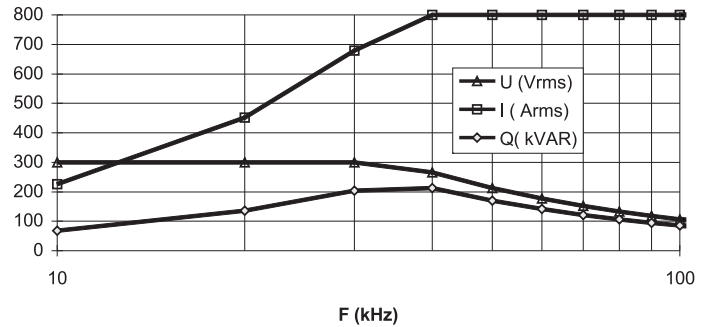
FAI (RoHS Compliant)

## TUNING

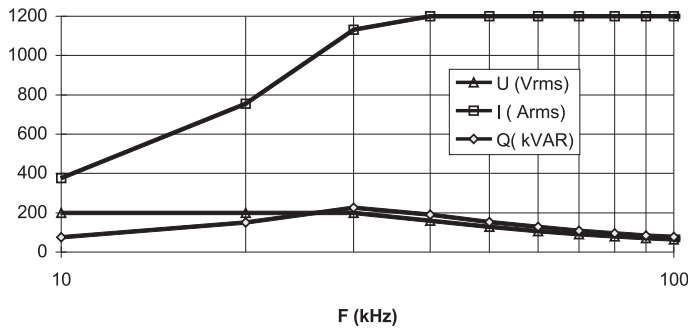
15  $\mu$ F 200 Vrms Width 90 mm  
FAI66F0156K--



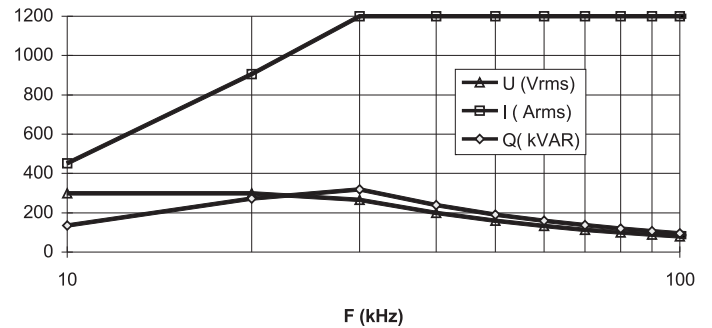
12  $\mu$ F 300 Vrms Width 90 mm  
FAI66H0126K--



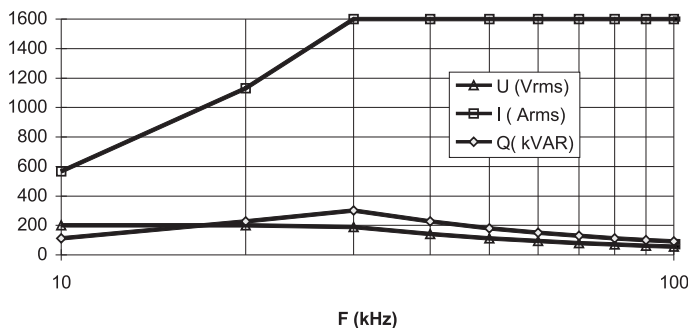
30  $\mu$ F 200 Vrms Width 190 mm  
FAI66F0306K--



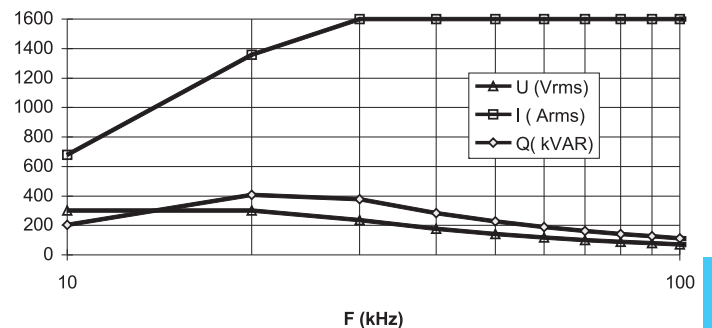
24  $\mu$ F 300 Vrms Width 190 mm  
FAI66H0246K--



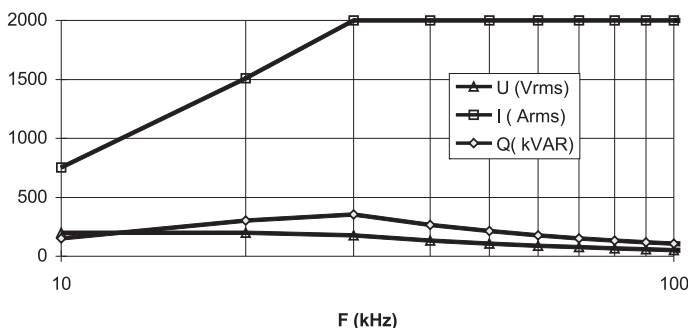
45  $\mu$ F 200 Vrms Width 290 mm  
FAI66F0456K--



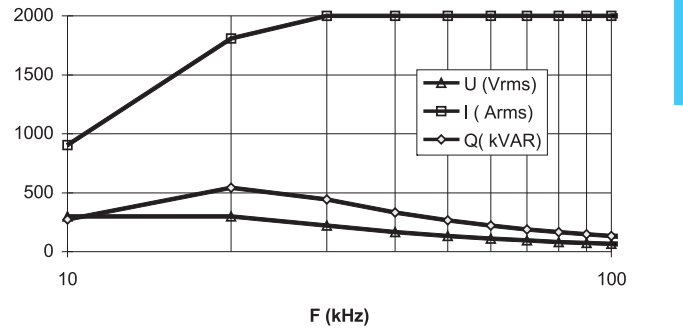
36  $\mu$ F 300 Vrms Width 290 mm  
FAI66H0366K--



60  $\mu$ F 200 Vrms Width 390 mm  
FAI66F0606K--



48  $\mu$ F 300 Vrms Width 390 mm  
FAI66H0486K--



TUNING



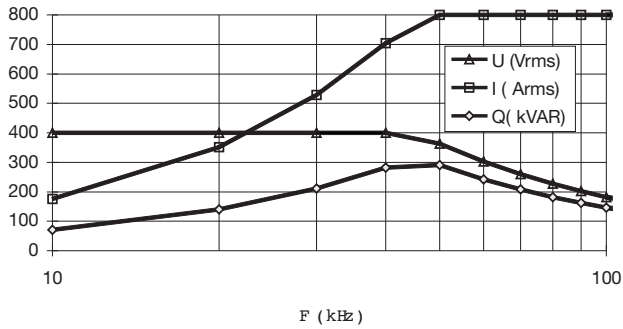
# Medium Power Film Capacitors



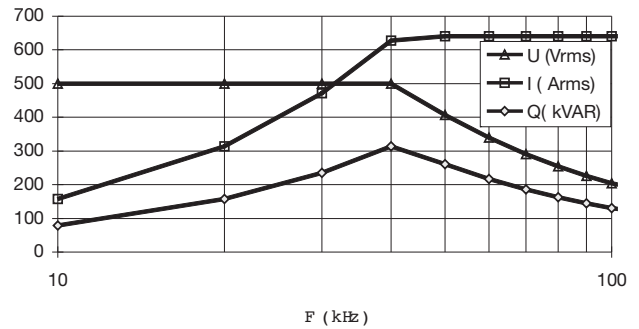
## FAI (RoHS Compliant)

### TUNING

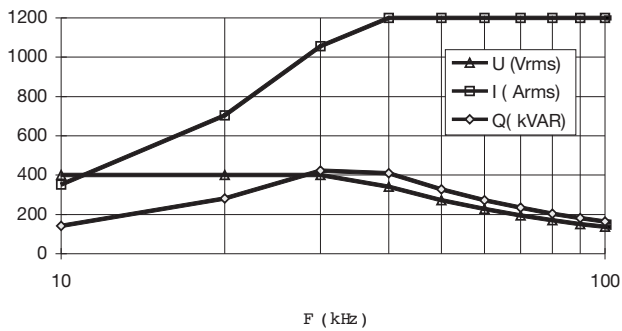
7  $\mu$ F 400 Vrms Width 90 mm  
FAI66I0705K--



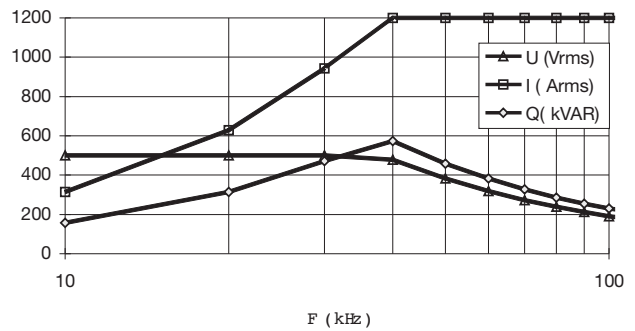
5  $\mu$ F 500 Vrms Width 90 mm  
FAI66J0505K--



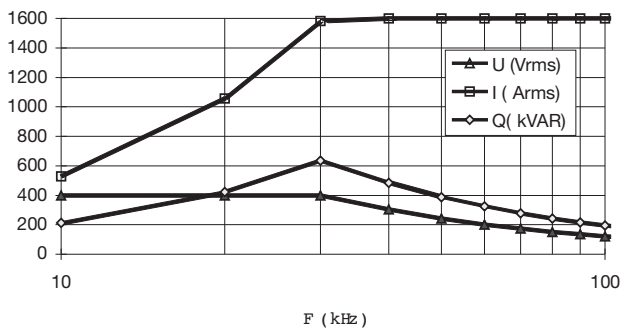
14  $\mu$ F 400 Vrms Width 190 mm  
FAI66I046K--



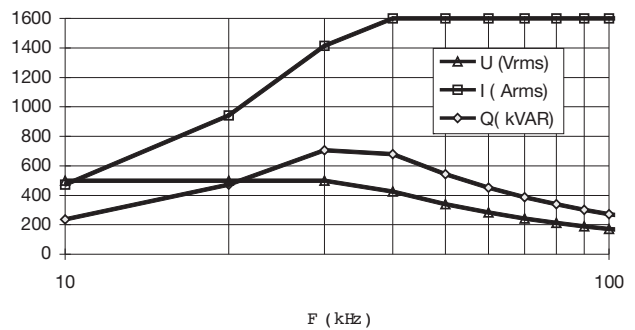
10  $\mu$ F 500 Vrms Width 190 mm  
FAI66J0106K--



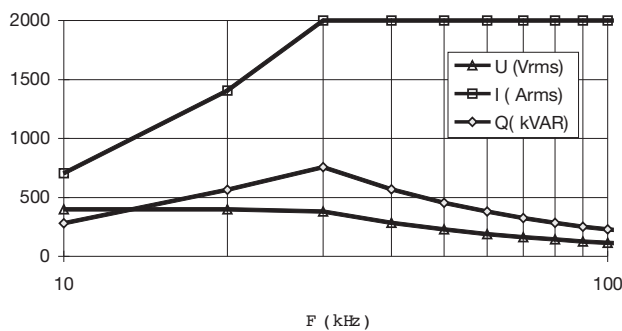
21  $\mu$ F 400 Vrms Width 290 mm  
FAI66I0216K--



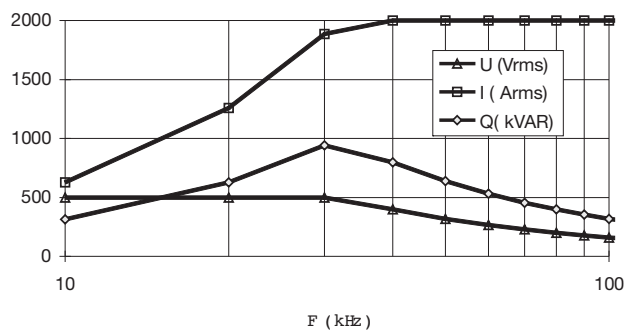
15  $\mu$ F 500 Vrms Width 290 mm  
FAI66J0156K--



28  $\mu$ F 400 Vrms Width 390 mm  
FAI66I0286K--



20  $\mu$ F 500 Vrms Width 390 mm  
FAI66J0206K--



TUNING





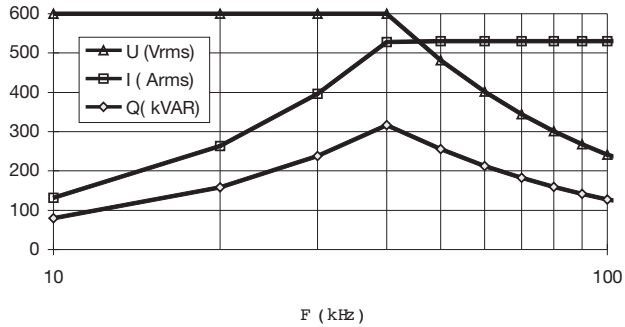
# Medium Power Film Capacitors



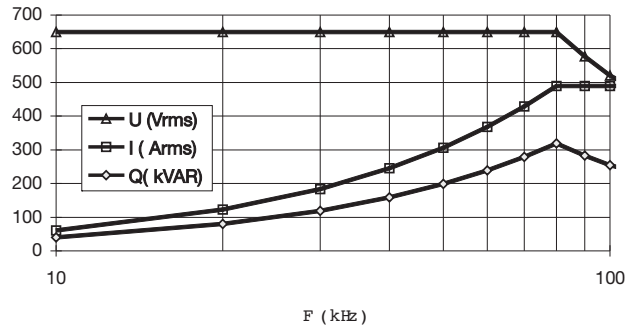
## FAI (RoHS Compliant)

### TUNING

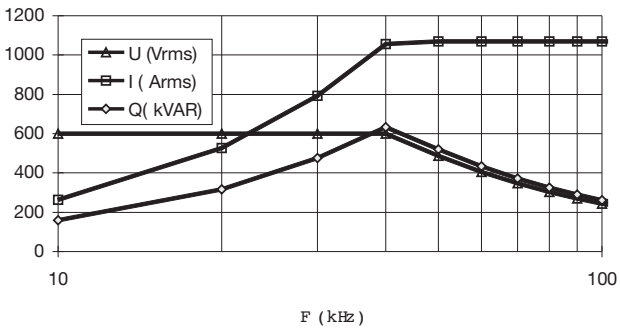
3.5 $\mu$ F 600 Vrms Width 90 mm  
FAI66K0355K--



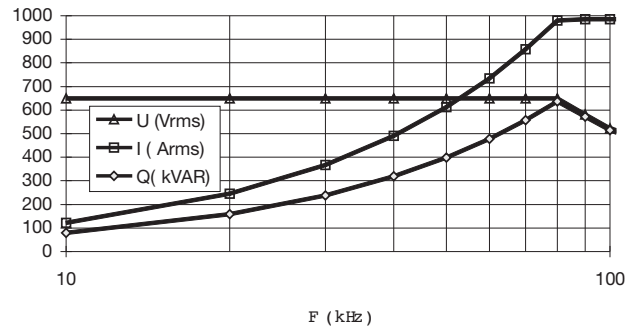
1.5 $\mu$ F 650 Vrms Width 90 mm  
FAI66A0155K--



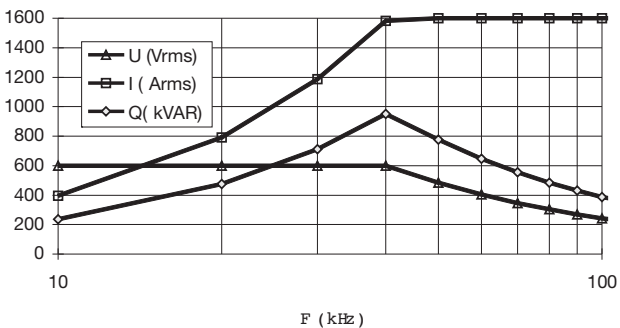
7 $\mu$ F 600 Vrms Width 190 mm  
FAI66K0705K--



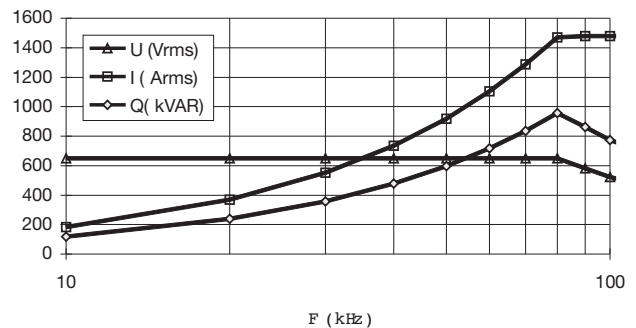
3 $\mu$ F 650 Vrms Width 190 mm  
FAI66A0305K--



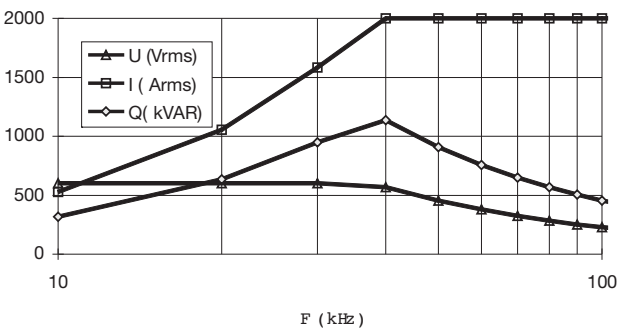
10.5 $\mu$ F 600 Vrms Width 290 mm  
FAI66K1055K--



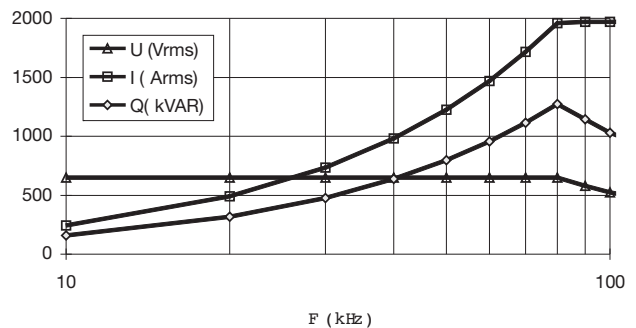
4.5 $\mu$ F 650 Vrms Width 290 mm  
FAI66A0455K--



14 $\mu$ F 600 Vrms Width 390 mm  
FAI66K0146K--



6 $\mu$ F 650 Vrms Width 390 mm  
FAI66A0605K--



TUNING

