



# Metalized Polypropylene Film Capacitors

## F862 Series for Harsh Environmental Conditions Class X2, 310 VAC



### Why Choose KEMET

KEMET Electronics Corporation is a leading global supplier of electronic components. We offer our customers the broadest selection of capacitor technologies in the industry, along with an expanding range of electromechanical devices, electromagnetic compatibility solutions and supercapacitors. Our vision is to be the preferred supplier of electronic component solutions for customers demanding the highest standards of quality, delivery and service.

### Features & Benefits

- High capacitance and dissipation factor stability even in severe ambient conditions such as high temperature and relative humidity
- Qualification based on AEC-Q200 guidelines
- Approvals: ENEC, UL, cUL, CQC
- Lead spacing of 15.0 – 27.5 mm
- Operating temperature range of -40 °C to +110 °C
- Climatic category: 40/110/56, IEC 60068-1
- RoHS compliant and lead-free terminations
- 100% screening factory test at 1,900 VDC
- Tape in accordance with IEC 60286-2
- THB test at 85°C, 85% RH and 240 VAC for 1,000 hours

### Product Checklist

- Does your product use AC line power supply?
- What is the nominal AC line voltage?
- What is the circuit position and function of the capacitor?
- Are there any voltage spikes expected?
- What is the ripple current spectrum?
- What is the capacitance value?
- What is the required capacitance stability?
- What is the size and lead spacing required?
- Are there any environmental concerns such as temperature, moisture or vibration?

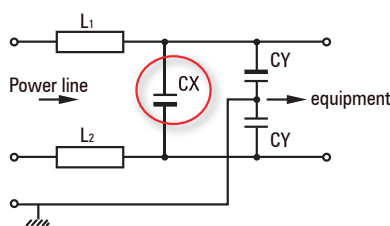
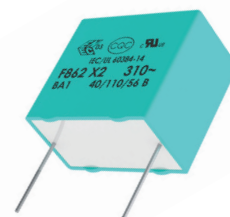


[www.kemet.com/f862](http://www.kemet.com/f862)

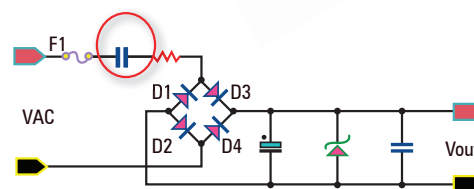
### Applications

Across-the-line EMI filtering and connection in series with the mains for high stability grade applications in severe ambient conditions:

- Capacitive power supplies
- Energy meters
- DC applications
- Industrial
- Automotive



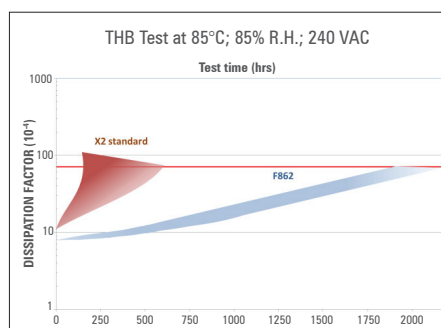
X2 in Parallel to the Mains



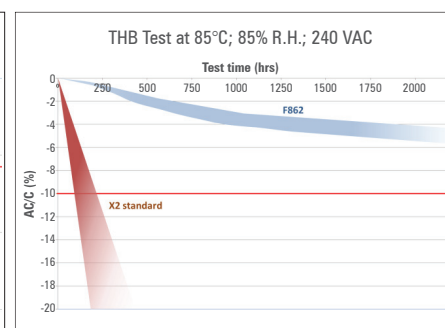
X2 in Series with the Mains

### Overview

X2 rated capacitors such as the F862 Series are required to achieve a stable performance during operational life while meeting safety requirements. The metallized film dielectric is a key factor with regards to the safety aspect. For example, the polypropylene dielectric provides excellent self-healing characteristics. However, improvements were necessary to maintain stability in high temperature and high humidity environments. KEMET recognized this challenges and researched materials that would produce more robust parts for extreme applications. As a result, improvements to all of the major capacitor components have been implemented, including the metallization layer, the film used as the dielectric, the resin which fills the package, and the box (or case). With these changes, the F862 offers very high capacitance stability while still meeting ENEC, CUL and CQC international safety requirements.



Dissipation Factor Stability



Capacitance Stability



# Metalized Polypropylene Film Capacitors

## F862 Series for Harsh Environmental Conditions

### Class X2, 310 VAC



### Ordering Information

F	862	B	C	104	M	310	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Voltage (VAC)	Packaging
F = Film	X2, Metallized Polypropylene	B = 15 D = 22.5 F = 27.5	See Dimensions Table	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	310	See Ordering Options Table

### Electrical/Physical Characteristics

<b>Rated Voltage</b>	310 VAC (50/60 Hz)	
<b>Capacitance Range</b>	0.1 to 4.7 $\mu$ F	
<b>Tolerance</b>	±10%, ±20%	
<b>Temperature Range</b>	-40°C to 110°C	
<b>Climatic Category</b>	40/110/56	
<b>Case Size</b>	See Dimensions Table	
<b>Dissipation Factor</b>	Maximum Values at +23°C	
	C ≤ 0.1 $\mu$ F	C > 0.1 $\mu$ F
	1 kHz	0.30%
<b>Insulation Resistance</b>	Minimum Values Between Terminals	
	C ≤ 0.33 $\mu$ F	≥ 30,000 M $\Omega$
	C > 0.33 $\mu$ F	≥ 10,000 M $\Omega$ - $\mu$ F
<b>Environmental Test</b>	Temperature Humidity Bias (THB)	
	85°C, 85% RH and 240 VAC, 1,000 hours. Capacitance change ( $\Delta C/C$ ): ≤ 10%. Dissipation factor change ( $\Delta \tan \delta$ ): ≤ 5 * 10 <sup>-3</sup> (at 1 kHz) Insulation resistance R <sub>ins</sub> or time constant $\tau = CR_{ins}$ : ≥ 50% of initial limit.	

### Dimensions Table

Capacitance Value ( $\mu$ F)	Box Code	Maximum Dimensions in mm			Lead Spacing p	dV/dt (V/ $\mu$ s)	Part Number
		B	H	L			
0.1	BK	7.5	13.5	18.0	15.0	400	F862BK104(1)310(2)
0.15	BK	7.5	13.5	18.0	15.0	400	F862BK154(1)310(2)
0.22	BP	8.5	14.5	18.0	15.0	400	F862BP224(1)310(2)
0.33	BS	10.0	16.0	18.0	15.0	400	F862BS334(1)310(2)
0.39	BS	10.0	16.0	18.0	15.0	400	F862BS394(1)310(2)
0.47	BY	11.0	19.0	18.0	15.0	400	F862BY474(1)310(2)
0.56	BZ	12.0	20.0	18.0	15.0	400	F862BZ564(1)310(2)
0.15	DB	6.0	14.5	26.0	22.5	200	F862DB154(1)310(2)
0.22	DI	7.0	16.0	26.0	22.5	200	F862DI224(1)310(2)
0.33	DJ	8.5	17.0	26.0	22.5	200	F862DJ334(1)310(2)
0.39	DJ	8.5	17.0	26.0	22.5	200	F862DJ394(1)310(2)
0.47	DO	10.0	18.5	26.0	22.5	200	F862DO474(1)310(2)
0.56	DO	10.0	18.5	26.0	22.5	200	F862DO564(1)310(2)
0.68	DP	11.0	20.0	26.0	22.5	200	F862DP684(1)310(2)
0.82	DP	11.0	20.0	26.0	22.5	200	F862DP824(1)310(2)
1.0	DU	13.0	22.0	26.0	22.5	200	F862DU105(1)310(2)
1.2	DU	13.0	22.0	26.0	22.5	200	F862DU125(1)310(2)
1.0	FC	11.0	20.0	31.5	27.5	150	F862FC105(1)310(2)
1.5	FI	13.0	25.0	31.5	27.5	150	F862FI155(1)310(2)
2.2	FN	14.0	28.0	31.5	27.5	150	F862FN225(1)310(2)
3.3	FS	19.0	29.0	31.5	27.5	150	F862FS335(1)310(2)
4.7	FY	22.0	37.0	31.5	27.5	150	F862FY475(1)310(2)

(1) M = ±20%, K = ±10%

(2) Insert lead and packaging code. See table for available options.