



Metalized Polypropylene Film Capacitors

F863 for Harsh Environmental Conditions
Class X2, 310 VAC, Automotive Grade, Miniature Version



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

- Approvals: ENEC, UL, cUL, CQC
- Rated voltage: 310 VAC 50/60 Hz
- Capacitance range: 0.1 – 10 μ F
- Lead spacing: 15.0 – 37.5 mm
- Capacitance tolerance: $\pm 20\%$, $\pm 10\%$
- Climatic category: 40/110/56, IEC 60068-1
- Tape and reel in accordance with IEC 60286-2
- RoHS compliant and lead-free terminations
- Operating temperature range of -40°C to $+110^{\circ}\text{C}$
- 100% screening factory test at 1,900 VDC
- THB Test @ 85°C , 85% RH and 240 VAC, 500 hours
- Automotive (AEC-Q200) grade

Product Checklist

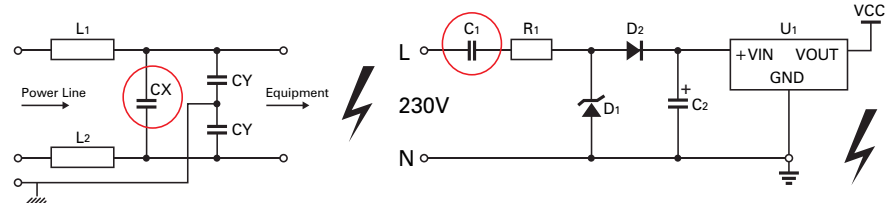
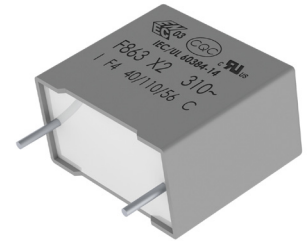
- Does the product use AC line power supply?
 - If so, does your company build their own power supplies?
- What is the nominal AC line voltage?
- What is the circuit position and function of the capacitor?
- Are there any voltage spikes expected?
- What is the ripple current spectrum?
- What is the capacitance 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?
- What is the expected annual volume and the target price?

For more information, samples and engineering kits, please visit us at www.kemet.com or call 1.877.myKEMET.

Applications

Indoor applications that feature across-the-line EMI filtering and connection, upon approval by KEMET, are used for high stability grade applications in severe ambient conditions such as:

- Capacitive power supplies
- Industrial
- Automotive



Electrical/Physical Characteristics

Rated voltage V_r	310 VAC (50/60 Hz)		
Capacitance range	0.1 μ F to 10 μ F		
Capacitance tolerance	$\pm 20\%$, $\pm 10\%$		
Temperature range	-40°C to 110°C		
Climatic category	40/110/56		
Approvals	ENEC, UL, cUL, CQC		
Dissipation factor	Maximum Values at $+23^{\circ}\text{C}$		
		$C \leq 0.1 \mu\text{F}$	$C > 0.1 \mu\text{F}$
	1 kHz	0.3%	0.2%
Test voltage between terminations	The 100% screening factory test is carried out at 1,900 VDC. The voltage level is selected to meet the requirements in applicable equipment standards. All electrical characteristics are checked after the test. It is not permitted to repeat this test as there is a risk to damage the capacitor. KEMET is not liable in such case for any failures.		
Insulation resistance	Minimum Values Between Terminals		
	$C \leq 0.33 \mu\text{F}$	$\geq 30,000 \text{ M}\Omega$	
	$C > 0.33 \mu\text{F}$	$\geq 10,000 \text{ M}\Omega \cdot \mu\text{F}$	
In DC applications	Recommended voltage $\leq 630 \text{ VDC}$		
Environmental test	Temperature Humidity Bias (THB)		
	85°C , 85% RH and 240 VAC, 500 hours		
	Capacitance change ($\Delta C/C$): $\leq 10\%$		
	Dissipation factor change ($\Delta \tan \delta$): $\leq 5 \cdot 10^{-3}$ (at 1 kHz)		
	Insulation resistance R_{ins} or time constant $\tau = CR$: $R_{ins} \geq 50\%$ of initial limit		

Overview

X2 rated capacitors, such as the F863, 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 these challenges and researched materials that would produce more robust parts for harsh environmental applications. As a result, improvements to all of the major capacitor components have been implemented. The improvements increased high capacitance stability over life time, enhanced capability to work in harsh environments, and compacted dimensions as per less performing standard X2. With these changes, the F863 offers high capacitance stability while still meeting ENEC, CUL and CQC international safety requirements.

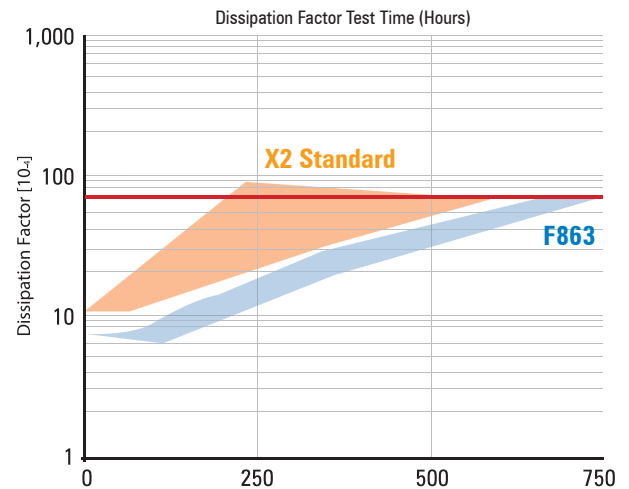
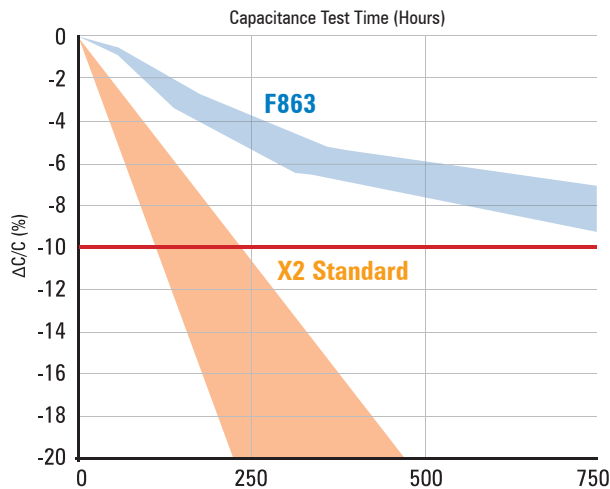


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Typical THB Test Trend at 85°C, 85% R.H., 240 VAC



Dimensions Table

Capacitance Value (μF)	Box Code	Maximum Dimensions in mm			Lead Spacing p (mm)	dV/dt (V/μs)	Part Number
		B	H	L			
0.1	BC	5.0	11.0	18.0	15.0	400	F863BC104(1)310(2)
0.15	BF	6.0	12.0	18.0	15.0	400	F863BF154(1)310(2)
0.22	BK	7.5	13.5	18.0	15.0	400	F863BK224(1)310(2)
0.33	BN	8.5	14.5	18.0	15.0	400	F863BN334(1)310(2)
0.47	BW	11.0	19.0	18.0	15.0	400	F863BW474(1)310(2)
0.56	BW	11.0	19.0	18.0	15.0	400	F863BW564(1)310(2)
0.47	DE	7.0	16.0	26.5	22.5	200	F863DE474(1)310(2)
0.68	DN	10.0	18.5	26.5	22.5	200	F863DN684(1)310(2)
1.0	DS	11.0	20.0	26.5	22.5	200	F863DS105(1)310(2)
1.5	DV	13.0	22.0	26.5	22.5	200	F863DV155(1)310(2)
2.2	FL	13.0	25.0	32.0	27.5	150	F863FL225(1)310(2)
3.3	FU	18.0	33.0	32.0	27.5	150	F863FU335(1)310(2)
4.7	FW	22.0	37.0	32.0	27.5	150	F863FW475(1)310(2)
4.7	RL	19	32.0	41.5	37.5	100	F863RL475(1)310(2)
6.8	RR	24	44	41.5	37.5	100	F863RR685(1)310(2)
10.0	RT	30	45	41.5	37.5	100	F863RT106(1)310(2)

(1) M = ±20%, K = ±10%

(2) "ALWOL" - Lead length of 30 +5/-0 mm. Other packaging options available upon request.

Bold text = In progress, sample available