Electronic Concepts
Film Capacitor Innovation Without Limits

5MP1 SERIES

Metallized Polypropylene

Metallized Polypropylene

Metallized Polypropylene and Military Styles CFR13 and CFR14."Hi-Rel" replacement for electrolytics for a broad range of commercial and military switching power supplies.

FEATURES

- Better electrical properties with higher reliability and no "roll-off" capacitance versus electrolytic
- Resonant frequency of 1065KHz
- Ripple current to 30amps
- Capacitance as high as 50µf
- Voltage protection: 200%
- Long term stability, retrace and low dielectric absorption

STANDARD CONFIGURATION

- 5MP12/MIL Style CFR13 Wrap and fill axial leads
- 5MP16/MIL Style CFR14 Wrap and fill lug terminations

Specification Summary

Capacitance Range
1.0µF to 50.0µF. Capacitance is measured at 25°C at/or referenced to a frequency of 1kHz.

Capacitance Tolerance
Standard tolerance is ±10%. Tolerances of ±20% and ±5% are available.

Operating Temperature Range
-55°C to +105°C

Enclosure/ Construction
Mylar tape outer wrap.

Voltage Rating
DC working voltage ratings are from 100VDC to 400VDC

Quality Control
Capacitors are tested 100% for:
o Capacitance tolerance
o Dissipation Factor
o Dielectric withstanding voltage
o Insulation Resistance
o Equivalent Series Resistance (ESR)

Process and inspection data are maintained on file and available on special request.

Environmental

Parameter	Method	Condition
Vibration	204	D
Shock	213	I
Humidity	106	-
Thermal Shock	107	A
Life	108	F
Reference MIL-STD-202		

Characteristics

Insulation Resistance

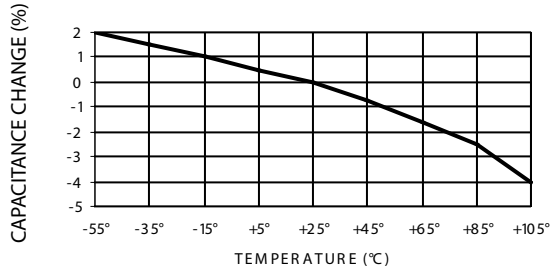
- **At 25C: 400,000 Megohms / Microfarad for 0 to 0.50uF**
- **At 25C: 200,000 Megohms / Microfarad for Greater than 0.50uF**
- **At 85C: 20,000 Megohms / Microfarad for 0 to 0.50uF**
- **At 85C: 10,000 Megohms / Microfarad for Greater than 0.50uF**
- **At 105C: 2,000 Megohms / Microfarad for 0 to 0.50uF**
- **At 105C: 1,000 Megohms / Microfarad for Greater than 0.50uF**

Dilectric Strength
Capacitors shall withstand a DC potential of twice rated voltage for one (1) minute through a limiting resistance of 100 ohms/volt without damage or breakdown.

Capacitance Change

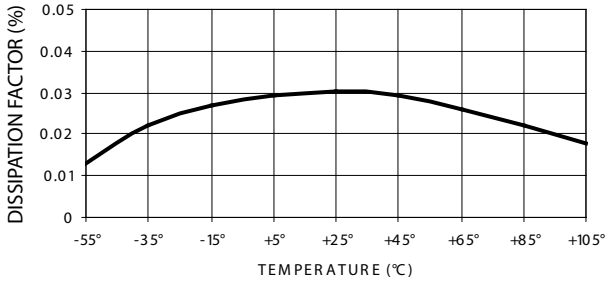
Temperature(°C)	-55	25	105	
PercentageChange (typical)	2.0	0	-4.0	
CapacitanceChange				

CAPACITANCE CHANGE VERSUS TEMPERATURE



Dissipation Factor
When measured at the frequency specified for capacitance measurement, the dissipation factor shall not exceed 0.1%.

DISSIPATION FACTOR VERSUS TEMPERATURE



Electronic Concepts

ELECTRICAL DATA

EC PART NUMBER	EQUIVALENT MILITARY DESIGNATION	CAP µF	D	L	Lead Dia.	ESR Ohms 20-100 kHz Max	Fres kHz	I PEAK AMPS	dv/dt (V/µs)
5MP12D105_	CFR13ALB105_	1	0.469 ±0.062	0.750	0.032	0.015	1065	407	407
5MP12D205_	CFR13ALB205_	2	0.534 ±0.062	0.938	0.032	0.012	703	528	264
5MP12D305_	CFR13ALB305_	3	0.624 ±0.093	0.938	0.040	0.011	574	790	263
5MP12D505_	CFR13ALB505_	5	0.640 ±0.093	1.250	0.040	0.100	385	828	166
5MP12D106_	CFR13ALB106_	10	0.805 ±0.093	1.500	0.040	0.009	248	1280	128
5MP12D206_	CFR13ALB206_	20	0.875 ±0.125	2.250	0.040	0.008	141	1517	76
5MP12D306_	CFR13ALB306_	30	1.075 ±0.125	2.250	0.040	0.006	115	2277	76
5MP12D506_	Not Available	50	1.375 ±0.125	2.250	0.040	0.004	89	3795	76
5MP12F105_	CFR13ALC105_	1	0.450 ±0.062	1.250	0.032	0.020	861	250	250
5MP12F205_	CFR13ALC205_	2	0.605 ±0.093	1.250	0.032	0.015	609	498	249
5MP12F305_	CFR13ALC305_	3	0.654 ±0.093	1.500	0.040	0.013	452	576	192
5MP12F505_	CFR13ALC505_	5	0.769 ±0.093	1.750	0.040	0.011	323	782	156
5MP12F106_	CFR13ALC106_	10	0.905 ±0.125	2.250	0.040	0.009	200	1139	114
5MP12F206_	CFR13ALC206_	20	1.315 ±0.125	2.250	0.040	0.006	141	2277	114
5MP12J105_	CFR13ALE105_	1	0.620 ±0.093	1.500	0.040	0.019	784	319	319
5MP12J205_	CFR13ALE205_	2	0.802 ±0.093	1.750	0.040	0.015	511	521	260
5MP12J305_	CFR13ALE305_	3	0.961 ±0.125	1.750	0.040	0.012	417	781	260
5MP12J505_	CFR13ALE505_	5	1.067 ±0.125	2.250	0.040	0.010	283	950	190
5MP12J106_	CFR13ALE106_	10	1.543 ±0.125	2.250	0.040	0.006	200	1898	190

Note: The tenth character of the EC part number represents the capacitance tolerance: M=±20%, K=±10%, J=±5%.

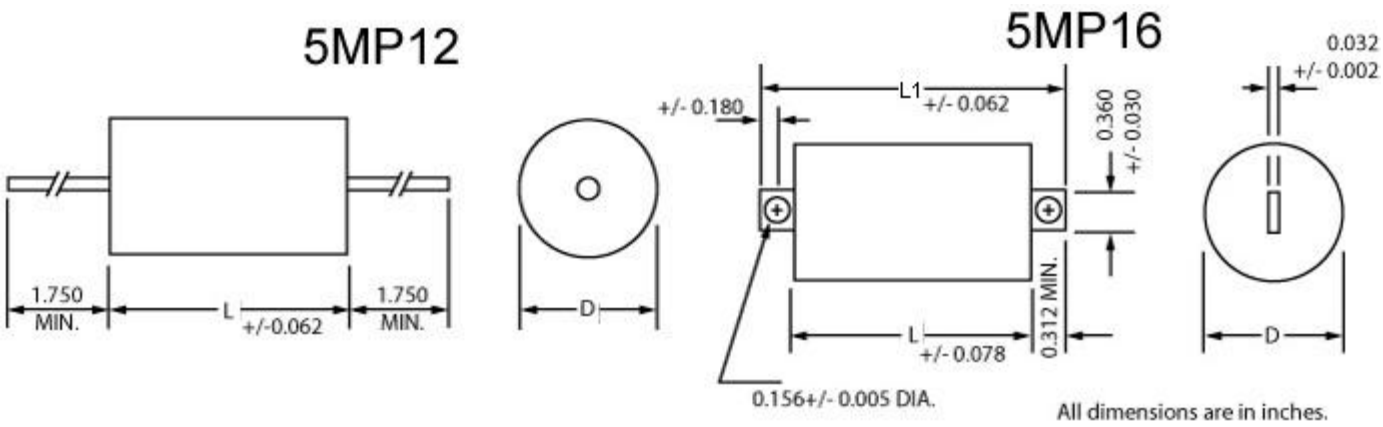
EC PART NUMBER	EQUIVALENT MILITARY DESIGNATION	CAP µF	D	L	L1	ESR Ohms 20-100 kHz Max	Fres kHz	I PEAK AMPS	dv/dt (V/µs)
5MP16D105_	CFR14LLB105_	1	0.469 ±0.062	0.922	1.640	0.015	949	407	407
5MP16D205_	CFR14LLB205_	2	0.534 ±0.062	1.110	1.828	0.012	617	528	264
5MP16D305_	CFR14LLB305_	3	0.624 ±0.093	1.110	1.828	0.011	504	790	263
5MP16D505_	CFR14LLB505_	5	0.640 ±0.093	1.422	2.140	0.100	347	828	166
5MP16D106_	CFR14LLB106_	10	0.805 ±0.093	1.672	2.390	0.009	227	1280	128
5MP16D206_	CFR14LLB206_	20	0.875 ±0.125	2.422	3.140	0.008	133	1517	76
5MP16D306_	CFR14LLB306_	30	1.075 ±0.125	2.422	3.140	0.006	108	2277	76
5MP16D506_	Not Available	50	1.375 ±0.125	2.422	3.140	0.004	84	3795	76
5MP16F105_	CFR14LLC105_	1	0.450 ±0.062	1.422	2.140	0.020	776	250	250
5MP16F205_	CFR14LLC205_	2	0.605 ±0.093	1.422	2.140	0.015	548	498	249
5MP16F305_	CFR14LLC305_	3	0.654 ±0.093	1.672	2.390	0.013	414	576	192
5MP16F505_	CFR14LLC505_	5	0.769 ±0.093	1.922	2.640	0.011	299	782	156
5MP16F106_	CFR14LLC106_	10	0.905 ±0.125	2.422	3.140	0.009	188	1139	114
5MP16F206_	CFR14LLC206_	20	1.315 ±0.125	2.422	3.140	0.006	133	2277	114
5MP16J105_	CFR14LLE105_	1	0.620 ±0.093	1.672	2.390	0.019	716	319	319
5MP16J205_	CFR14LLE205_	2	0.802 ±0.093	1.922	2.640	0.015	472	521	260
5MP16J305_	CFR14LLE305_	3	0.961 ±0.125	1.922	2.640	0.012	386	781	260
5MP16J505_	CFR14LLE505_	5	1.067 ±0.125	2.422	3.140	0.010	265	950	190
5MP16J106_	CFR14LLE106_	10	1.543 ±0.125	2.422	3.140	0.006	188	1898	190

Note: The tenth character of the EC part number represents the capacitance tolerance: M=±20%, K=±10%, J=±5%.

EC PART NUMBER	EQUIVALENT MILITARY DESIGNATION	MAXIMUM RIPPLE CURRENT (AMPS RMS) 20-100 kHz						
		CASE TEMPERATURE						
		25°C	35°C	45°C	55°C	65°C	75°C	85°C
5MP12D105_	CFR13ALB105_	9.2	8.5	7.8	7.0	6.0	4.9	4.5
5MP12D205_	CFR13ALB205_	10.8	10.0	9.1	8.2	7.0	5.8	5.3
5MP12D305_	CFR13ALB305_	12.1	11.2	10.3	9.2	8.0	6.5	5.9
5MP12D505_	CFR13ALB505_	13.8	12.7	11.6	10.4	9.0	7.4	6.7
5MP12D106_	CFR13ALB106_	15.0	15.0	14.2	12.7	11.0	9.0	8.2
5MP12D206_	CFR13ALB206_	15.0	15.0	15.0	15.0	13.6	11.1	10.0
5MP12D306_	CFR13ALB306_	15.0	15.0	15.0	15.0	15.0	12.4	11.4
5MP12D506_	Not Available	15.0	15.0	15.0	15.0	15.0	13.6	12.4
5MP12F105_	CFR13ALC105_	7.3	7.3	7.3	7.3	7.2	5.9	5.4
5MP12F205_	CFR13ALC205_	12.0	12.0	11.3	10.1	8.7	7.1	6.5
5MP12F305_	CFR13ALC305_	15.0	13.8	12.6	11.3	9.8	8.0	7.3
5MP12F505_	CFR13ALC505_	15.0	15.0	14.7	13.1	11.4	9.3	8.5
5MP12F106_	CFR13ALC106_	15.0	15.0	15.0	15.0	13.8	11.3	10.3
5MP12F206_	CFR13ALC206_	15.0	15.0	15.0	15.0	15.0	14.1	12.8
5MP12J105_	CFR13ALE105_	9.5	9.5	9.5	9.5	9.5	7.8	7.1
5MP12J205_	CFR13ALE205_	15.0	15.0	15.0	13.4	11.6	9.5	8.7
5MP12J305_	CFR13ALE305_	15.0	15.0	15.0	15.0	13.1	10.7	9.8
5MP12J505_	CFR13ALE505_	15.0	15.0	15.0	15.0	15.0	12.5	11.4
5MP12J106_	CFR13ALE106_	15.0	15.0	15.0	15.0	15.0	15.0	14.1
5MP16D105_	CFR14LLB105_	10.3	9.5	8.7	7.8	6.7	5.5	5.0
5MP16D205_	CFR14LLB205_	12.0	11.0	10.0	8.9	7.8	6.3	5.8
5MP16D305_	CFR14LLB305_	13.3	12.3	11.2	10.0	8.7	7.1	6.5
5MP16D505_	CFR14LLB505_	14.8	13.7	12.5	11.2	9.7	7.9	7.2
5MP16D106_	CFR14LLB106_	17.8	16.5	15.0	13.5	11.7	9.5	8.7
5MP16D206_	CFR14LLB206_	21.6	20.0	18.3	16.4	14.2	11.6	10.6
5MP16D306_	CFR14LLB306_	24.3	22.5	20.5	18.4	15.9	13.0	11.9
5MP16D506_	Not Available	29.6	27.3	25.5	23.6	20.6	20.0	19.7
5MP16F105_	CFR14LLC105_	7.3	7.3	7.3	7.3	7.3	6.4	5.8
5MP16F205_	CFR14LLC205_	14.3	13.3	12.1	10.8	9.4	7.7	7.0
5MP16F305_	CFR14LLC305_	15.9	14.7	13.5	12.0	10.4	8.5	7.8
5MP16F505_	CFR14LLC505_	18.3	17.0	15.5	13.9	12.0	9.8	8.9
5MP16F106_	CFR14LLC106_	22.4	20.7	18.9	16.9	14.6	12.0	10.9
5MP16F206_	CFR14LLC206_	27.4	25.4	23.2	20.7	17.9	14.7	13.4
5MP16J105_	CFR14LLE105_	9.5	9.5	9.5	9.5	9.5	8.3	7.5
5MP16J205_	CFR14LLE205_	15.0	15.0	15.0	14.2	12.3	10.0	9.1
5MP16J305_	CFR14LLE305_	21.1	19.5	17.8	15.9	13.8	11.3	10.3
5MP16J505_	CFR14LLE505_	24.4	22.6	20.6	18.5	16.0	13.1	11.9
5MP16J106_	CFR14LLE106_	30.0	27.8	25.4	22.7	19.7	16.1	14.7

Note: The tenth character of the EC part number represents the capacitance tolerance: M=±20%, K=±10%, J=±5%

MECHANICAL DATA



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ADDITIONAL INFORMATION

These metallized polypropylene capacitors are manufactured by using special techniques in order to achieve the optimum characteristics for high current, high capacitance, low ESR applications. For Filter designs where capacitance of 50µF or less is suitable for the circuit, type 5MP affords the opportunity to utilize capacitors with ESR's orders of magnitude better than those of electrolytics, thus providing the opportunity to improve general system design. These unique capacitors also exhibit none of the "roll-off" of capacitance with frequency often associated with electrolytics.

In addition to the features which make type 5MP particularly suitable for switching applications, they are also characterized by low losses. Other advantages of polypropylene are long term stability, retrace, low dielectric absorption, and high insulation resistance.

HOW TO ORDER

TYPE Metallized Polypropylene	5MP1
STYLE / VOLTAGE AC high power / D=100VDC; F=200VDC; J=400VDC	2 D
CAPACITANCE IN PICOFARADS The first two digits are significant, the third represents the number of zeros (e.g. 475=4700000pF)	105
TOLERANCE Standard tolerance is ±10%. Tolerances of ±20% and ±5% are available.	K

Marking and Date Code
All capacitors are marked with company initials "EC", corporate logo or EC trademark—in addition to type 5MP1, capacitance, tolerance, rated DC working voltage and date code. The first two digits of the date code represent the year, the second two digits the week, i.e., 0952 is the 52nd week of 2009, 0902 is the second week of 2009.

Quality Assurance
Major emphasis is placed on quality assurance. EC is an ISO 9001-2000 and AS9100:2004 Certified Company. Raw material inspection and the use of SPC manufacturing procedures assure the highest quality standards. Procedures are fully described in the EC Quality Control Manual. Electronic Concepts will continue to advance the state-of-the-art by utilizing leading edge technology, compact capacitor designs and establishing reliability procedures.

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Electronic Concepts

Electronic Concepts
Film Capacitor Innovation Without Limits

5MPF SERIES

Polypropylene Capacitor with Fuseac® Technology

Cylindrical Can with Radial Terminals and Mounting Bolt

Polypropylene film capacitor for AC applications. Internal fuse electrically disconnects when capacitor's hot spot reaches a defined temperature, without deforming the case.

Fuseac™

FEATURES:
- AC rated
- Range: -40°C to +85°C
- Dry film construction
- Permanent thermal disconnect, preventing catastrophic failures
- Inverter output filtering, for Wye and Delta circuits

STANDARD CONFIGURATION
- Bolt Mounting Package

Electronic Concepts

Specification Summary

Capacitance Range
10uF - 250uF

Capacitance Tolerance
Standard tolerances are ±5% & ±3%

Operating Temperature Range
-40°C to +85°C

Enclosure/ Construction
Polypropylene film capacitor in an cylindrical aluminum housing with high current threaded terminations and mounting bolt

Voltage Rating
AC working voltage ratings at +85°C, 300, 600 and 900 VAC at 60Hz Maximum

Quality Control
Capacitors are tested 100% for:
o Capacitance tolerance
o Dissipation Factor
o Dielectric withstanding Voltage
o Insulation Resistance
o Equivalent Series Resistance

Process and inspection data are maintained on file and available on special request.

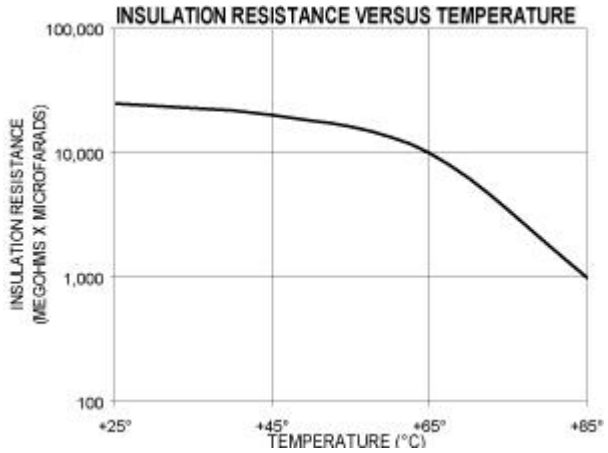
Environmental

Parameter	Method	Condition
Vibration	204	D
Immersion	104	B
Shock	213	I
Humidity	106	-
Thermal Shock	107	A
Life	108	F
Reference MIL-STD-202		

Characteristics

Insulation Resistance

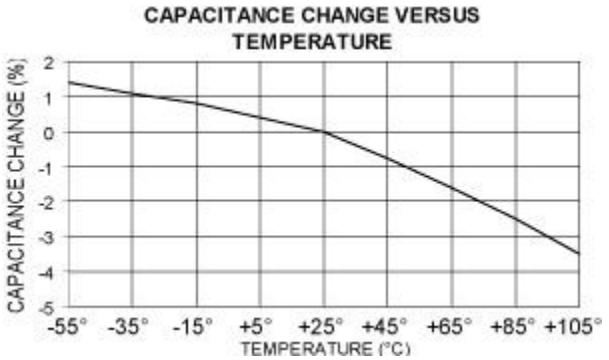
Temperature (°C)	25	85		
Megaohms x Microfarads	25,000	5,000		
Insulation Resistance				



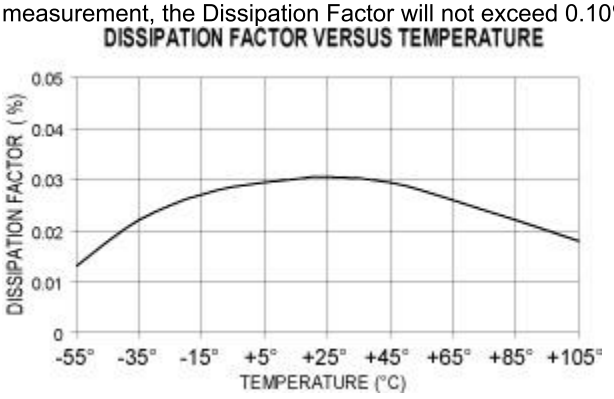
Dielectric Strength
Capacitors withstand a DC potential of 1.5 times rated DC voltage for one (1) minute without damage or breakdown. Test voltage is applied and discharged through a minimum resistance of 1 OHM per volt, minimum.

Capacitance Change

Temperature (°C)	-55	25	85	105
Percentage Change (typical)	1.4	0	-2.5	-3.5
Capacitance Change				



Dissipation Factor
When measured at 120Hz specified for capacitance measurement, the Dissipation Factor will not exceed 0.10%.



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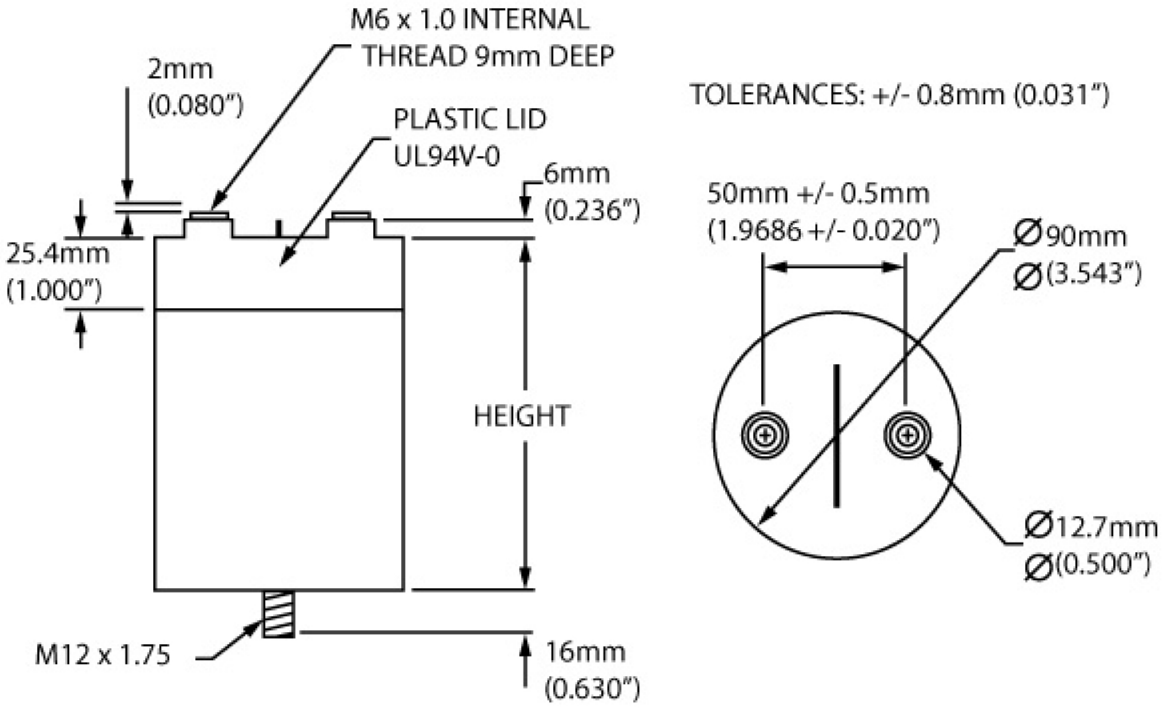
DETAIL DATA

EC PART NUMBER	CAP µF	VAC	VDC	HEIGHT "H"		ESR mOhms	ESL nH	Fres kHz	I PEAK AMPS	dv/dt (V/µs)	TEMPERATURE Arms				Rth °C/W
				in	mm						25°C	45°C	65°C	85°C	
5MPF1107_	100	300	450	3.031	77	2.2	49	72.1	3324	33	63.0	53.4	41.7	25.0	7.68
5MPF1157_	150	300	450	4.016	102	3.4	79	46.3	3227	22	53.3	45.2	35.3	21.2	7.01
5MPF1207_	200	300	450	5.000	127	4.6	110	33.9	3180	16	46.4	39.4	30.7	18.4	6.87
5MPF1257_	250	300	450	5.984	152	5.8	143	26.6	3153	13	40.4	34.3	26.7	16.0	7.21
5MPF2206_	20	600	900	3.031	77	2.7	49	161.2	2709	135	52.6	44.6	34.8	20.9	8.80
5MPF2406_	40	600	900	4.409	112	3.9	90	83.9	3167	79	49.8	42.2	33.0	19.8	7.00
5MPF2506_	50	600	900	5.000	127	4.4	110	68.2	3313	66	47.9	40.6	31.7	19.0	6.76
5MPF2606_	60	600	900	5.984	152	5.8	143	54.6	3126	52	40.1	34.0	26.5	15.9	7.29
5MPF3106_	10	900	1350	3.031	77	2.2	49	225.3	3429	343	62.3	52.8	41.2	24.7	7.48
5MPF3156_	15	900	1350	4.016	102	3.1	79	146.5	3547	236	56.7	48.1	32.5	22.5	6.62
5MPF3206_	20	900	1350	5.000	127	4.5	110	107.2	3305	165	47.5	40.3	31.4	18.8	6.72
5MPF3256_	25	900	1350	5.984	152	5.8	143	84.1	3175	127	40.4	34.3	26.8	16.0	7.19

Notes: (1) ESR is Measured at Resonant Frequency (2) Current referenced at 10kHz (3) VAC rating at 60Hz

STYLE



Electronic Concepts

REVOLUTIONARY SAFETY TECHNOLOGY

Fuseac® technology was created to provide designers of power management systems, utilizing metallized dry film capacitors, with a superior protection mechanism. Electronic Concepts, Inc. has developed a revolutionary fuse to detect the capacitor's hot spot and electrically disconnect upon reaching a defined critical value. Metallized film capacitors, mainly due to self healing of inherent defects, are reliable and long lasting over the life of the product. However, excessive self healing and fail catastrophically. Fuseac® provides added insurance against disastrous failures.

Fuseac® is a patent pending technology and on request can be incorporated in a host of Electronic Concepts products, especially into designs needing added overheating protection.

Fuseac™

HOW TO ORDER

TYPE Metallized polypropylene →	**5MP**
STYLE / VOLTAGE AC High Power, F1(300VAC)-F2(600VAC)-F3(900VAC) →	**F2**
CAPACITANCE IN PICO FARADS The first two digits are significant, the third represents the number of zeros (e.g 506=50,000,000pF) →	**506**
TOLERANCE J=±5% Also available: E=±3% →	**J**

Marking And Date Code
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Major emphasis is placed on quality assurance. EC is an ISO 9001-2000 and AS9100:2004 Certified Company. Raw material inspection and the use of SPC manufacturing procedures assure the highest quality standards. Procedures are fully described in the EC Quality Control Manual. Electronic Concepts will continue to advance the state-of-the-art by utilizing leading edge technology, compact capacitor designs and establishing reliability procedures.

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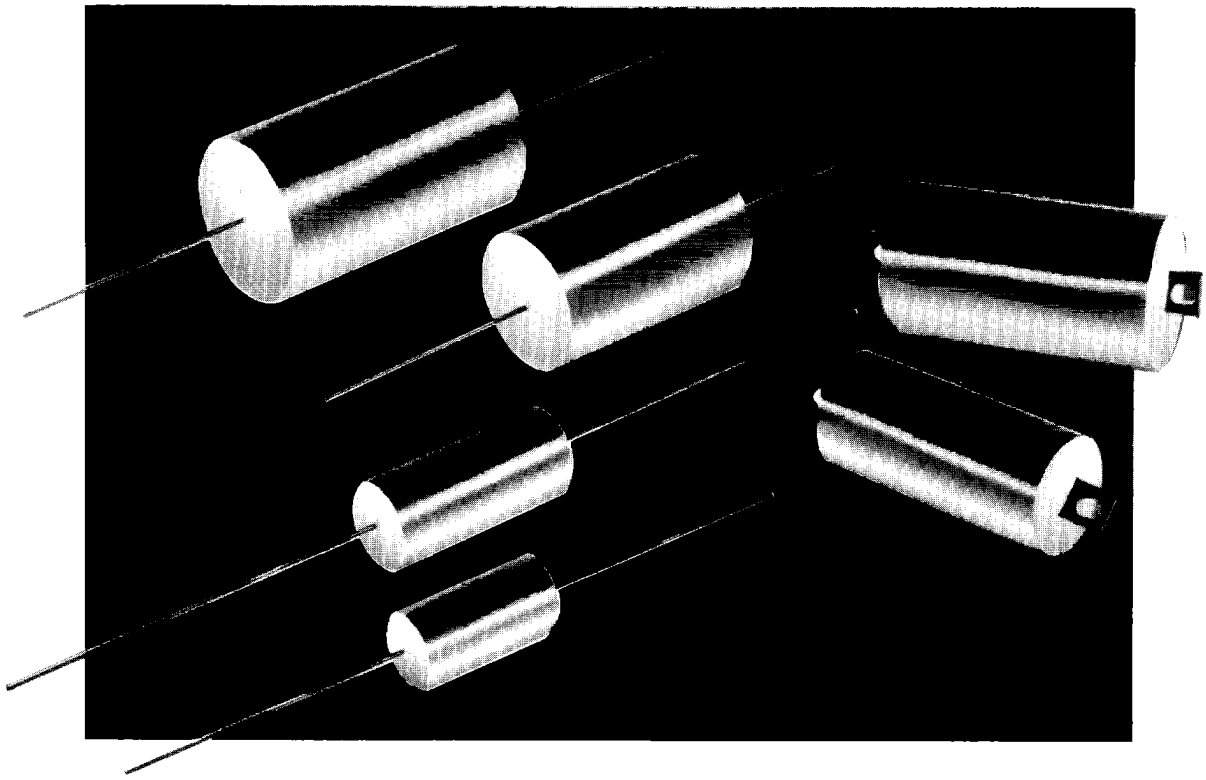
Rev. B

Electronic Concepts

Type 5MP Switch-Mode Power Supply Capacitors

Metallized Polypropylene and Military Styles CFR13 and CFR14.

Capacitors



Type 5MP capacitors have been developed by Electronic Concepts for use in switching power supplies. These metallized polypropylene capacitors are manufactured by using special techniques in order to achieve the optimum characteristics for high current, high capacitance, low ESR applications.

For filter designs where capacitance of 50 mfd or less is suitable for the circuit, type 5MP affords the opportunity to utilize capacitors with ESR's orders of magnitude better than those of electrolytics, thus providing the opportunity to improve general system design. These unique capacitors also exhibit none of the "roll-off" of capacitance with frequency often associated with electrolytics.

In addition to the features which make type 5MP particularly suitable for switching applications, they are also characterized by low losses. Other advantages of polypropylene are long term stability, retrace, low dielectric absorbtion, and high insulation resistance.

ELCIS009

ELECTRONIC CONCEPTS®

Specifications

INTERNAL CONSTRUCTION
Extended foil winding (non-inductive)

ENCLOSURE
Mylar tape outerwrap

TERMINAL STRENGTH
There shall be no mechanical damage to the capacitor or terminals when tested in accordance with paragraph 4.7.14 of MIL-C-55514.

SOLDERABILITY
Capacitors shall be tested in accordance with method 208 of MIL-STD-202 and shall conform to the solid-wire termination criteria thereof.

The following details shall apply:

A. Number of terminations of each capacitor to be tested – 2.

B. Depth of immersion in flux and solder-both terminals shall be immersed to within 0.125 inch of the capacitor body.

ENVIRONMENTAL
These capacitors shall meet or exceed the requirements of MIL-C-55514 for all the following:

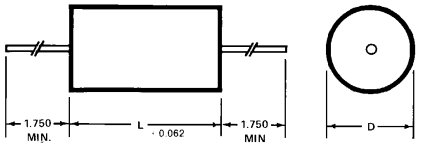
Vibration	(Para. 3.16)
Immersion	(Para. 3.21)
Shock	(Para. 3.17)
Moisture Resistance	(Para. 3.22)
Life	(Para. 3.23)

Electronic Concepts, Inc. is qualified as a supplier for the MIL versions CFR13 and CFR14 capacitors. These capacitors are manufactured to meet the requirements of MIL-C-55514 9. MIL designations are shown in the table at right. The last two characters of the MIL designations (CFR13ALB106) specify capacitance tolerance and failure rate respectively (CFR13ALB106KM).

Capacitance tolerance: M = 20%, K = 10% and J = 5%.

Failure rate level: M, P, R or S.

EC Type 5MP12 Military Style CFR13



All dimensions are in inches.

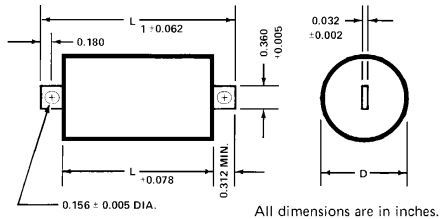
Catalog Numbering System

5MP 12 D 106 K

- TYPE: 5MP
- STYLE: 12 — Wrap and fill axial leads
- VOLTAGE: D — D = 100 VDC; F = 200 VDC; J = 400 VDC
- CAPACITANCE: 106 — Expressed in Picofarads, the first two digits are significant figures. The third is the number of zeros. (e.g., 106 equals 10,000,000 pF)
- TOLERANCE: K — M-20% K-10% J-5%. Closer Tolerances upon request

	Commercial EC Part Number	Equivalent Military Designation	Capacitance nominal in MFD	D Diameter	L Length	Lead Dia.	ESR Ohms 20-100 kHz Max	Maximum ripple current (AMPS RMS) 20-100 kHz case temperature +25°C	+35°C	+45°C	+55°C	+65°C	+75°C	+85°C	Resonant Frequency in kHz	I PEAK	DVDT
100 VDC	5MP12D105-	CFR13ALB105-	1.0	.469 ± .062	.750	.032	.015	9.2	8.5	7.8	7.0	6.0	4.9	4.5	1065	407	407
	5MP12D205-	CFR13ALB205-	2.0	.534 ± .062	.938	.032	.012	10.8	10.0	9.1	8.2	7.0	5.8	5.3	703	528	264
	5MP12D305-	CFR13ALB305-	3.0	.624 ± .093	.938	.040	.011	12.1	11.2	10.3	9.2	8.0	6.5	5.9	574	790	263
	5MP12D505-	CFR13ALB505-	5.0	.640 ± .093	1.250	.040	.010	13.8	12.7	11.6	10.4	9.0	7.4	6.7	385	828	166
	5MP12D106-	CFR13ALB106-	10.0	.805 ± .093	1.500	.040	.009	15.0	15.0	14.2	12.7	11.0	9.0	8.2	248	1280	128
	5MP12D206-	CFR13ALB206-	20.0	.875 ± .125	2.250	.040	.008	15.0	15.0	15.0	15.0	13.6	11.1	10.0	141	1517	76
	5MP12D306-	CFR13ALB306-	30.0	1.075 ± .125	2.250	.040	.006	15.0	15.0	15.0	15.0	15.0	12.4	11.4	115	2277	76
	5MP12D506-	(Not available)	50.0	1.375 ± .125	2.250	.040	.004	15.0	15.0	15.0	15.0	15.0	13.6	12.4	89	3795	76
200 VDC	5MP12F105-	CFR13ALC105-	1.0	.450 ± .062	1.250	.032	.020	7.3	7.3	7.3	7.3	7.2	5.9	5.4	861	250	250
	5MP12F205-	CFR13ALC205-	2.0	.605 ± .093	1.250	.032	.015	12.0	12.0	11.3	10.1	8.7	7.1	6.5	609	498	249
	5MP12F305-	CFR13ALC305-	3.0	.654 ± .093	1.500	.040	.013	15.0	13.8	12.6	11.3	9.8	8.0	7.3	452	576	192
	5MP12F505-	CFR13ALC505-	5.0	.769 ± .093	1.750	.040	.011	15.0	15.0	14.7	13.1	11.4	9.3	8.5	323	782	156
	5MP12F106-	CFR13ALC106-	10.0	.905 ± .125	2.250	.040	.009	15.0	15.0	15.0	15.0	13.8	11.3	10.3	200	1139	114
	5MP12F206-	CFR13ALC206-	20.0	1.315 ± .125	2.250	.040	.006	15.0	15.0	15.0	15.0	15.0	14.1	12.8	141	2277	114
400 VDC	5MP12J105-	CFR13ALE105-	1.0	.620 ± .093	1.500	.040	.019	9.5	9.5	9.5	9.5	9.5	7.8	7.1	784	319	319
	5MP12J205-	CFR13ALE205-	2.0	.802 ± .093	1.750	.040	.015	15.0	15.0	15.0	13.4	11.6	9.5	8.7	511	521	260
	5MP12J305-	CFR13ALE305-	3.0	.961 ± .125	1.750	.040	.012	15.0	15.0	15.0	15.0	13.1	10.7	9.8	417	781	260
	5MP12J505-	CFR13ALE505-	5.0	1.067 ± .125	2.250	.040	.010	15.0	15.0	15.0	15.0	15.0	12.5	11.4	283	950	190
	5MP12J106-	CFR13ALE106-	10.0	1.543 ± .125	2.250	.040	.006	15.0	15.0	15.0	15.0	15.0	15.0	14.1	200	1898	190

EC Type 5MP16 Military Style CFR14



All dimensions are in inches.

Catalog Numbering System

5MP 16 D 106 K

- TYPE: 5MP
- STYLE: 16 — Wrap and fill lug termination
- VOLTAGE: D — D = 100 VDC; F = 200 VDC; J = 400 VDC
- CAPACITANCE: 106 — Expressed in Picofarads, the first two digits are significant figures. The third is the number of zeros. (e.g., 106 equals 10,000,000 pF)
- TOLERANCE: K — M-20% K-10% J-5%. Closer Tolerances upon request

	Commercial EC Part Number	Equivalent Military Designation	Capacitance nominal in MFD	D Diameter	L Length	L_1	ESR Ohms 20-100 kHz Max	Maximum ripple current (AMPS RMS) 20-100 kHz case temperature +25°C	+35°C	+45°C	+55°C	+65°C	+75°C	+85°C	Resonant Frequency in kHz	I PEAK	DVDT
100 VDC	5MP16D105-	CFR14LLB105-	1.0	.469 ± .062	.922	1.640	.015	10.3	9.5	8.7	7.8	6.7	5.5	5.0	949	407	407
	5MP16D205-	CFR14LLB205-	2.0	.534 ± .062	1.110	1.828	.012	12.0	11.0	10.0	8.9	7.8	6.3	5.8	617	528	264
	5MP16D305-	CFR14LLB305-	3.0	.624 ± .093	1.110	1.828	.011	13.3	12.3	11.2	10.0	8.7	7.1	6.5	504	790	263
	5MP16D505-	CFR14LLB505-	5.0	.640 ± .093	1.422	2.140	.010	14.8	13.7	12.5	11.2	9.7	7.9	7.2	347	828	166
	5MP16D106-	CFR14LLB106-	10.0	.805 ± .093	1.672	2.390	.009	17.8	16.5	15.0	13.5	11.7	9.5	8.7	227	1280	128
	5MP16D206-	CFR14LLB206-	20.0	.875 ± .125	2.422	3.140	.008	21.6	20.0	18.3	16.4	14.2	11.6	10.6	133	1517	76
	5MP16D306-	CFR14LLB306-	30.0	1.075 ± .125	2.422	3.140	.006	24.3	22.5	20.5	18.4	15.9	13.0	11.9	108	2277	76
	5MP16D506-	(Not available)	50.0	1.375 ± .125	2.422	3.140	.004	29.6	27.3	25.5	23.6	20.6	20.0	19.7	84	3795	76
200 VDC	5MP16F105-	CFR14LLC105-	1.0	.450 ± .062	1.422	2.140	.020	7.3	7.3	7.3	7.3	7.3	6.4	5.8	776	250	250
	5MP16F205-	CFR14LLC205-	2.0	.605 ± .093	1.422	2.140	.015	14.3	13.3	12.1	10.8	9.4	7.7	7.0	548	498	249
	5MP16F305-	CFR14LLC305-	3.0	.654 ± .093	1.672	2.390	.013	15.9	14.7	13.5	12.0	10.4	8.5	7.8	414	576	192
	5MP16F505-	CFR14LLC505-	5.0	.769 ± .093	1.922	2.640	.011	18.3	17.0	15.5	13.9	12.0	9.8	8.9	299	782	156
	5MP16F106-	CFR14LLC106-	10.0	.905 ± .125	2.422	3.140	.009	22.4	20.7	18.9	16.9	14.6	12.0	10.9	188	1139	114
	5MP16F206-	CFR14LLC206-	20.0	1.315 ± .125	2.422	3.140	.006	27.4	25.4	23.2	20.7	17.9	14.7	13.4	133	2277	114
400 VDC	5MP16J105-	CFR14LLE105-	1.0	.620 ± .093	1.672	2.390	.019	9.5	9.5	9.5	9.5	9.5	8.3	7.5	716	319	319
	5MP16J205-	CFR14LLE205-	2.0	.802 ± .093	1.922	2.640	.015	15.0	15.0	15.0	14.2	12.3	10.0	9.1	472	521	260
	5MP16J305-	CFR14LLE305-	3.0	.961 ± .125	1.922	2.640	.012	21.1	19.5	17.8	15.9	13.8	11.3	10.3	386	781	260
	5MP16J505-	CFR14LLE505-	5.0	1.067 ± .125	2.422	3.140	.010	24.4	22.6	20.6	18.5	16.0	13.1	11.9	265	950	190
	5MP16J106-	CFR14LLE106-	10.0	1.543 ± .125	2.422	3.140	.006	30.0	27.8	25.4	22.7	19.7	16.1	14.7	188	1898	190

Characteristics

OPERATING TEMPERATURE RANGE

-55°C to +105°C without derating.

INSULATION RESISTANCE

When measured at the applicable test temperature, and rated voltage, after 2 minutes electrification, the insulation resistance shall equal or exceed the following values:

Megohm X Microfarads	+25°C	+85°C	+105°C
	300,000	30,000	3,000
Except the Insulation resistance in megohms need not exceed	500,000	50,000	5,000

DISSIPATION FACTOR

When measured at the frequency specified for capacitance measurement, the dissipation factor shall not exceed 0.1%.

CAPACITANCE CHANGE

The Capacitance change vs. temperature for these capacitors shall not exceed the following:

Temperature Degrees C.	-55	+25	+105
Percent Change	+2.0	0	-4.0
Typical	+1.6	0	-2.2

DIELECTRIC STRENGTH

Capacitors shall withstand a DC potential of twice rated voltage for one minute through a limiting resistance of 100 ohms/volt without damage or breakdown.

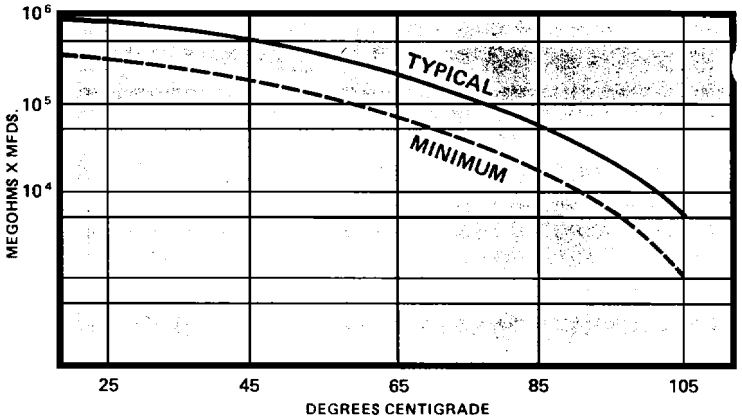
CAPACITANCE TOLERANCE

Standard tolerance is ±10%. Tolerances of ±20% and ±5% are available.

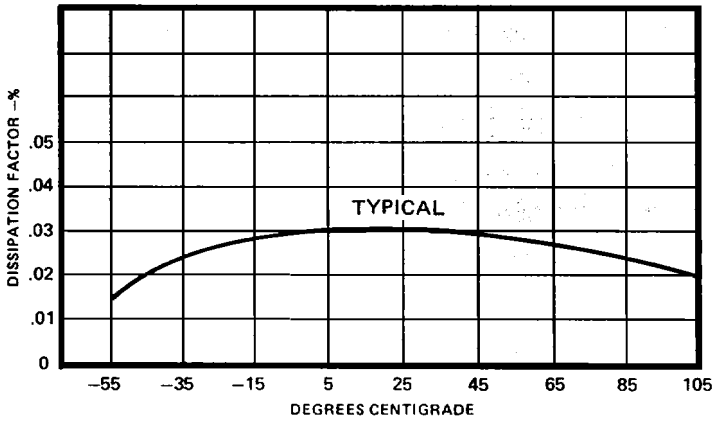
NOTE: *Capacitance shall be measured at 25°C, and at or referred to a frequency of 1 KHZ for all values.*

ELECTRICAL CHARACTERISTICS VS TEMPERATURE

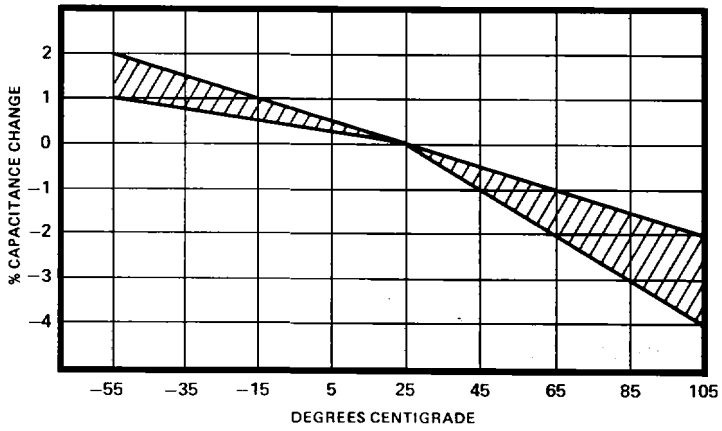
INSULATION RESISTANCE vs. TEMPERATURE



DISSIPATION FACTOR vs. TEMPERATURE



CAPACITANCE CHANGE vs. TEMPERATURE



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