

PERFORMANCE SPECIFICATION SHEET

CAPACITORS, FIXED, METALLIZED PLASTIC DIELECTRIC, DC,
IN NONMETAL CASES, ESTABLISHED RELIABILITY,
STYLE CFR13 AND CFR14

This specification sheet is approved for use by all Departments and
and Agencies of the Department of Defense.

The requirements for acquiring the product described herein
shall consist of this specification sheet and [MIL-PRF-55514](#).

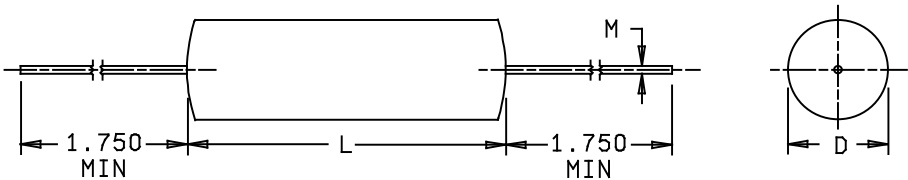


FIGURE 1. Style CFR13 capacitors.

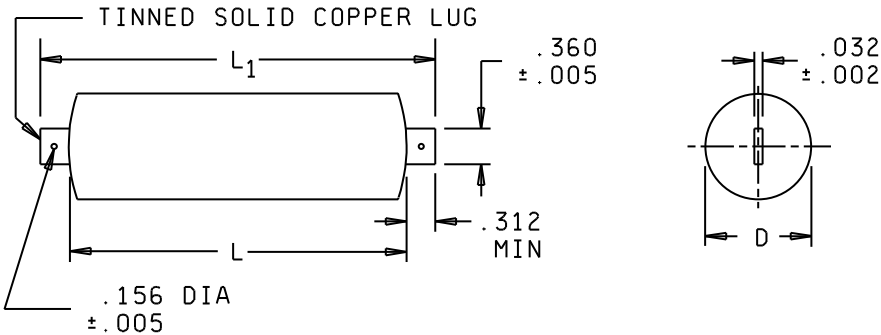


FIGURE 2. Style CFR14 capacitors.

- NOTES:
- 1. Dimensions are in inches.
 - 2. Metric equivalents are given for general information only.

Inches	mm
.002	0.05
.005	0.13
.032	0.81
.156	3.96
.312	7.93
.360	9.14
1.750	44.45

TABLE I. Capacitor characteristics.

Characteristic L, style CFR13 capacitors														
Part or identifying number (PIN) 1/	Capacitance nominal	DC rated voltage (at +105°C)	Capacitance tolerance available	D	L ±.062(1.57)	M 2/	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
CFR13ALB105--	1.0	100	J, K, M	.469 (11.91) ±.062 (1.57)	.750 (19.05)	.032 (0.81)	.015	9.2	8.5	7.8	7.0	6.0	4.9	4.5
CFR13ALB205--	2.0	100	J, K, M	.534 (13.56) ±.062 (1.57)	.938 (23.81)	.032 (0.81)	.012	10.8	10.0	9.1	8.2	7.0	5.8	5.3
CFR13ALB305--	3.0	100	J, K, M	.624 (15.85) ±.093 (2.36)	.938 (23.81)	.040 (1.02)	.011	12.1	11.2	10.3	9.2	8.0	6.5	5.9
CFR13ALB505--	5.0	100	J, K, M	.640 (16.26) ±.093 (2.36)	1.250 (31.75)	.040 (1.02)	.010	13.8	12.7	11.6	10.4	9.0	7.4	6.7
CFR13ALB106--	10.0	100	J, K, M	.805 (20.45) ±.093 (2.36)	1.500 (38.10)	.040 (1.02)	.009	15.0	15.0	14.2	12.7	11.0	9.0	8.2
CFR13ALB206--	20.0	100	J, K, M	.875 (22.23) ±.125 (3.18)	2.250 (57.15)	.040 (1.02)	.008	15.0	15.0	15.0	15.0	13.6	11.1	10.0
CFR13ALB306--	30.0	100	J, K, M	1.075 (27.31) ±.125 (3.18)	2.250 (57.15)	.040 (1.02)	.006	15.0	15.0	15.0	15.0	15.0	12.4	11.4
CFR13ALC105--	1.0	200	J, K, M	.450 (11.43) ±.062 (1.57)	1.250 (31.75)	.032 (0.81)	.020	7.3	7.3	7.3	7.3	7.2	5.9	5.4
CFR13ALC205--	2.0	200	J, K, M	.605 (15.37) ±.093 (2.36)	1.250 (31.75)	.032 (0.81)	.015	12.0	12.0	11.3	10.1	8.7	7.1	6.5
CFR13ALC305--	3.0	200	J, K, M	.654 (16.61) ±.093 (2.36)	1.500 (38.10)	.040 (1.02)	.013	15.0	13.8	12.6	11.3	9.8	8.0	7.3
CFR13ALC505--	5.0	200	J, K, M	.769 (19.53) ±.093 (2.36)	1.750 (44.45)	.040 (1.02)	.011	15.0	15.0	14.7	13.1	11.4	9.3	8.5
CFR13ALC106--	10.0	200	J, K, M	.905 (22.99) ±.125 (3.18)	2.250 (57.15)	.040 (1.02)	.009	15.0	15.0	15.0	15.0	13.8	11.3	10.3
CFR13ALC206--	20.0	200	J, K, M	1.315 (33.40) ±.125 (3.18)	2.250 (57.15)	.040 (1.02)	.006	15.0	15.0	15.0	15.0	15.0	14.1	12.8
CFR13ALE105--	1.0	400	J, K, M	.620 (15.75) ±.093 (2.36)	1.500 (38.10)	.040 (1.02)	.019	9.5	9.5	9.5	9.5	9.5	7.8	7.1
CFR13ALE205--	2.0	400	J, K, M	.802 (20.37) ±.093 (2.36)	1.750 (44.45)	.040 (1.02)	.015	15.0	15.0	15.0	13.4	11.6	9.5	8.7
CFR13ALE305--	3.0	400	J, K, M	.961 (24.41) ±.125 (3.18)	1.750 (44.45)	.040 (1.02)	.012	15.0	15.0	15.0	15.0	13.1	10.7	9.8
CFR13ALE505--	5.0	400	J, K, M	1.067 (27.10) ±.125 (3.18)	2.250 (57.15)	.040 (1.02)	.010	15.0	15.0	15.0	15.0	15.0	12.5	11.4
CFR13ALE106--	10.0	400	J, K, M	1.543 (39.19) ±.125 (3.18)	2.250 (57.15)	.040 (1.02)	.006	15.0	15.0	15.0	15.0	15.0	15.0	14.1

[See footnotes at end of table.](#)

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TABLE I. Capacitor characteristics - Continued.

Characteristic L, style CFR14 capacitors														
Part or identifying number (PIN) <u>1</u> /	Capacitance nominal	DC rated voltage (at +105°C)	Capacitance tolerance available	D	L ±.078(1.98)	L ₁ ±0.62(1.57)	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
CFR14LLB105--	1.0	100	J, K, M	.469 (11.91) ±.062 (1.57)	.922(23.42)	1.640(41.66)	.015	10.3	9.5	8.7	7.8	6.7	5.5	5.0
CFR14LLB205--	2.0	100	J, K, M	.534 (13.56) ±.062 (1.57)	1.110(28.19)	1.828(46.43)	.012	12.0	11.0	10.0	8.9	7.8	6.3	5.8
CFR14LLB305--	3.0	100	J, K, M	.624 (15.85) ±.093 (2.36)	1.110(28.19)	1.828(46.43)	.011	13.3	12.3	11.2	10.0	8.7	7.1	6.5
CFR14LLB505--	5.0	100	J, K, M	.640 (16.26) ±.093 (2.36)	1.422(36.12)	2.140(54.36)	.010	14.8	13.7	12.5	11.2	9.7	7.9	7.2
CFR14LLB106--	10.0	100	J, K, M	.805 (20.45) ±.093 (2.36)	1.672(42.47)	2.390(60.71)	.009	17.8	16.5	15.0	13.5	11.7	9.5	8.7
CFR14LLB206--	20.0	100	J, K, M	.875 (22.23) ±.125 (3.18)	2.422(61.52)	3.140(79.76)	.008	21.6	20.0	18.3	16.4	14.2	11.6	10.6
CFR14LLB306--	30.0	100	J, K, M	1.075 (27.31) ±.125 (3.18)	2.422(61.52)	3.140(79.76)	.006	24.3	22.5	20.5	18.4	15.9	13.0	11.9
CFR14LLC105--	1.0	200	J, K, M	.450 (11.43) ±.062 (1.57)	1.422(36.12)	2.140(54.36)	.020	7.3	7.3	7.3	7.3	7.2	6.4	5.8
CFR14LLC205--	2.0	200	J, K, M	.605 (15.37) ±.093 (2.36)	1.422(36.12)	2.140(54.36)	.015	14.3	13.3	12.1	10.8	8.7	7.7	7.0
CFR14LLC305--	3.0	200	J, K, M	.654 (16.61) ±.093 (2.36)	1.672(42.47)	2.390(60.71)	.013	15.9	14.7	13.5	12.0	9.8	8.5	7.8
CFR14LLC505--	5.0	200	J, K, M	.769 (19.53) ±.093 (2.36)	1.922(48.82)	2.640(67.06)	.011	18.3	17.0	15.5	13.9	11.4	9.8	8.9
CFR14LLC106--	10.0	200	J, K, M	.905 (22.99) ±.125 (3.18)	2.422(61.52)	3.140(79.76)	.009	22.4	20.7	18.9	16.9	13.8	12.0	10.9
CFR14LLC206--	20.0	200	J, K, M	1.315 (33.40) ±.125 (3.18)	2.422(61.52)	3.140(79.76)	.006	27.4	25.4	23.2	20.7	15.0	14.7	13.4
CFR14LLE105--	1.0	400	J, K, M	.620 (15.75) ±.093 (2.36)	1.672(42.47)	2.390(60.71)	.019	9.5	9.5	9.5	9.5	9.5	8.3	7.5
CFR14LLE205--	2.0	400	J, K, M	.802 (20.37) ±.093 (2.36)	1.922(48.82)	2.640(67.06)	.015	15.0	15.0	15.0	14.2	11.6	10.0	9.1
CFR14LLE305--	3.0	400	J, K, M	.961 (24.41) ±.125 (3.18)	1.922(48.82)	2.640(67.06)	.012	21.1	19.5	17.8	15.9	13.1	11.3	10.3
CFR14LLE505--	5.0	400	J, K, M	1.067 (27.10) ±.125 (3.18)	2.422(61.52)	3.140(79.76)	.010	24.4	22.6	20.6	18.5	15.0	13.1	11.9
CFR14LLE106--	10.0	400	J, K, M	1.543 (39.19) ±.125 (3.18)	2.422(61.52)	3.140(79.76)	.006	30.0	27.8	25.4	22.7	15.0	16.1	14.7

^{1/} The complete PIN will include additional symbols to indicate capacitance tolerance and product level (C, M, P, R, and S).

^{2/} Comparable AWG sizes are No. 20 AWG (.032 inch (0.81 mm)) and No. 18 AWG (.040 inch (1.02 mm)).

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REQUIREMENTS:

Dimensions and configuration: See [figure 1](#), [figure 2](#), and [table I](#).

Case: Non-hermetic.

Dielectric: Normally polypropylene, metallized.

Capacitance (cap.) value: See [table I](#).

Capacitance tolerance: See [table I](#).

Rated voltage: See [table I](#).

Operating temperature range: -55°C to +105°C for dc operation.

Product level: Non-established reliability - C; Established reliability - M, P, R or S.

Preconditioning: Not applicable.

Burn-in: In accordance with [MIL-PRF-55514](#) except for the following conditions:

- a. DC burn-in voltage shall be 140 percent of the dc rated voltage applied for 48 hours minimum at +105°C, +4°C, -0°C.
- b. AC burn-in: Not applicable.

Dielectric withstanding voltage (DWV): In accordance with [MIL-PRF-55514](#), except charge time 2 minutes maximum at 200 percent rated dc voltage.

Insulation resistance: In accordance with [MIL-PRF-55514](#), except test voltage shall be 100 V dc.

Dissipation factor (DF): Not more than 0.1 percent when measured in accordance with [MIL-PRF-55514](#).

Low temperature conditioning and capacitance change with temperature: In accordance with [MIL-PRF-55514](#).

Resistance to soldering heat: [Method 210 of MIL-STD-202](#), condition B.

Δ Cap: Maximum of ± 0.25 percent.

Life (at 105°C): In accordance with [MIL-PRF-55514](#).

Accelerated condition: 140 percent of +105°C rated voltage.

Rated condition: 100 percent of +105°C rated voltage.

IR (at +25°C terminal to terminal): Not less than 50.0 percent of initial requirement.

Δ Cap (at +25°C): Maximum of 1.0 percent.

DF (at +25°C) after life: .12 percent maximum.

AC conditioning: In accordance with [MIL-PRF-55514](#). AC conditioning for qualification shall be at the rated ac ripple current at +85°C and 40 kHz. For group B testing, rated ac ripple current at +85°C and 40 kHz shall be run on test samples in accordance with [table II](#) herein at 12-month intervals.

TABLE II. AC conditioning test samples.

DC rated voltage (volts)	Sample size	Capacitance range for selection of sample <u>1</u> / (μ F)
100	24	1.0 to 30.0
200	24	1.0 to 20.0
400	24	1.0 to 10.0

1/ Each test sample shall contain at least one capacitor of the highest and lowest capacitance value of each voltage group manufactured during the 12-month period.

Changes from previous issue: The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Referenced documents. In addition to [MIL-PRF-55514](#), this document references [MIL-STD-202](#).

Custodians:

Army - CR
Navy - EC
Air Force - 85
DLA - CC

Preparing activity:

Army - CR

Agent:

DLA - CC

Review activities:

Navy - AS, MC, OS
Air Force - 19, 99

(Project 5910-2013-022)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using ASSIST Online database at <https://assist.dla.mil>.