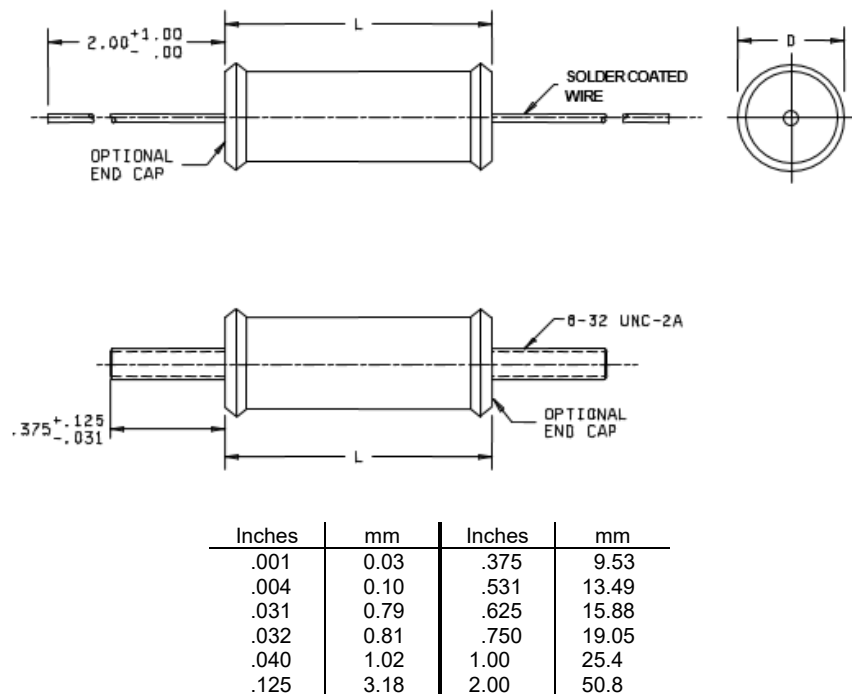


PERFORMANCE SPECIFICATION SHEET

CAPACITOR, FIXED, PLASTIC (OR PAPER-PLASTIC) DIELECTRIC, (HERMETICALLY SEALED IN CERAMIC OR GLASS CASES), STYLE CQ20

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

The requirements for acquiring the product described herein
shall consist of this specification sheet and [MIL-PRF-19978](#).



NOTES:

1. Dimensions are in inches.
2. Metric equivalents are in millimeters and are given for general information only.
3. Leads shall be solder coated solid wire, .032 inch (No. 20 AWG) for cases .531 inch and .625 inch in diameter, and .040 inch (No. 18 AWG) for cases .75 inch and above in diameter. Tolerance on all lead wire diameters shall be +.004 , -.001 inch.
4. Mounting hardware consisting of two lockwashers and four nuts shall be supplied with each capacitor with threaded-stud terminals.
5. These capacitors are not intended to be supported by their leads. These capacitors shall be supported with a supplementary means of mounting, such as tangential retainer or wrap-around band. The supporting device will not be supplied with the capacitor.

FIGURE 1. Style CQ20 capacitors.



REQUIREMENTS:

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

Construction: Extended foil or laid-in-tab .

Terminals: See [table I](#).

Circuit diagram: 1  2

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

Rated temperature: -65°C to +125°C

Capacitance (Cap.) (nom): See [table I](#).

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

Dissipation factor (DF) (max): 1.0 percent.

| Seal: In accordance with [MIL-STD-202-112](#), test condition letter A.

Dielectric withstanding voltage (DWV):

Sleeving: In accordance with [MIL-PRF-19978](#).

Barometric pressure: In accordance with [MIL-PRF-19978](#).

Test points: Circuit diagram 1 - Between terminals and case.

Insulation resistance (IR):

Sleeving - In accordance with [MIL-PRF-19978](#).

Terminal to terminal - See [table II](#).

| Vibration, low frequency: In accordance with [MIL-STD-202-201](#).

Direction and duration of motion: Four hours in each of two mutually perpendicular directions (total of 8 hours), one parallel and the other perpendicular to the cylindrical axis.

Salt atmosphere (corrosion): Not applicable.

Immersion:

DWV:

Sleeving: In accordance with [MIL-PRF-19978](#).

IR:

Sleeving: In accordance with [MIL-PRF-19978](#).

Solderability: In accordance with [MIL-PRF-19978](#) for wire leads only.

Terminal strength: In accordance with [MIL-STD-202-211](#).

Wire leads: Test condition letter D.

Threaded stud and nuts: Test condition letters A and E.

Moisture resistance:

DWV:

Sleeving: In accordance with [MIL-PRF-19978](#).

IR:

Sleeving: In accordance with [MIL-PRF-19978](#).

Stability at low and high temperatures:

Low temperature:

Test temperature: -65°C +0°C, -5°C.

Capacitance change (max): -10 percent.

High temperature:

Test temperature: +125°C +0°C, -5°C.

Capacitance change (max): +10 percent.

Life:

Capacitance change (max): ± 5 percent.

Resistance to soldering heat: In accordance with [MIL-PRF-19978](#).

Qualification: Not required.

Inspection of product for delivery: Inspection of product for delivery shall consist of group A (non-ER) and group B inspections as specified in [MIL-PRF-19978](#).

Certification: The acquiring activity, at its discretion, may accept a certificate of compliance with group B requirements in lieu of performing group B tests.

Acquisition data: In addition to that specified in [MIL-PRF-19978](#), the acquisition documents should specify whether the manufacturer performs the group B tests or provides certification of compliance with group B requirements.

TABLE I. Style CQ20 capacitors.

Part or identifying number (PIN) <u>1/</u>	DC voltage rating (see <u>figure 2</u>)	Capacitance	Capacitance tolerance	Terminal identification	Case dimensions <u>2/</u>	
					L ± .062	D ± .031
	<u>Volts</u>	<u>μF</u>			<u>Inches</u>	<u>Inches</u>
CQ20A1KG102-1	1,000	0.0010	J, K	A	1.188	.531
CQ20A1KG152-1	1,000	0.0015	J, K	A	1.188	.531
CQ20A1KG222-1	1,000	0.0022	J, K	A	1.188	.531
CQ20A1KG332-1	1,000	0.0033	J, K	A	1.188	.531
CQ20A1KG472-1	1,000	0.0047	J, K	A	1.188	.531
CQ20A1KG682-1	1,000	0.0068	J, K	A	1.188	.531
CQ20A1KG103-1	1,000	0.010	J, K	A	1.188	.531
CQ20A1KG153-1	1,000	0.015	J, K	A	1.188	.531
CQ20A1KG223-1	1,000	0.022	J, K	A	1.562	.531
CQ20-1KG333-1	1,000	0.033	J, K	A,C	1.562	.625
CQ20-1KG473-1	1,000	0.047	J, K	A,C	1.750	.625
CQ20-1KG683-1	1,000	0.068	J, K	A,C	2.000	.625
CQ20-1KG104-1	1,000	0.10	J, K	A,C	2.250	.625
CQ20-1KG154-1	1,000	0.15	J, K	A,C	2.250	.750
CQ20-1KG224-1	1,000	0.22	J, K	A,C	2.500	.750
CQ20-1KG334-1	1,000	0.33	J, K	A,C	2.750	1.031
CQ20-1KG474-1	1,000	0.47	J, K	A,C	3.000	1.031
CQ20-1KG684-1	1,000	0.68	J, K	A,C	3.250	1.344
CQ20-1KG105-1	1,000	1.0	J, K	A,C	3.750	1.344
CQ20A1KJ102-1	2,000	0.0010	J, K	A	1.188	.531
CQ20A1KJ152-1	2,000	0.0015	J, K	A	1.188	.531
CQ20A1KJ222-1	2,000	0.0022	J, K	A	1.188	.531
CQ20A1KJ332-1	2,000	0.0033	J, K	A	1.188	.531
CQ20A1KJ472-1	2,000	0.0047	J, K	A	1.188	.531
CQ20A1KJ682-1	2,000	0.0068	J, K	A	1.188	.531
CQ20A1KJ103-1	2,000	0.010	J, K	A	1.562	.531
CQ20A1KJ153-1	2,000	0.015	J, K	A	1.562	.531
CQ20-1KJ223-1	2,000	0.022	J, K	A,C	1.562	.625
CQ20-1KJ333-1	2,000	0.033	J, K	A,C	1.750	.625
CQ20-1KJ473-1	2,000	0.047	J, K	A,C	2.000	.625
CQ20-1KJ683-1	2,000	0.068	J, K	A,C	2.000	.750
CQ20-1KJ104-1	2,000	0.10	J, K	A,C	2.250	.875
CQ20-1KJ154-1	2,000	0.15	J, K	A,C	2.500	1.031
CQ20-1KJ224-1	2,000	0.22	J, K	A,C	2.750	1.031
CQ20-1KJ334-1	2,000	0.33	J, K	A,C	2.750	1.344
CQ20-1KJ474-1	2,000	0.47	J, K	A,C	3.750	1.344
CQ20-1KJ684-1	2,000	0.68	J, K	A,C	3.750	1.344
CQ20A1KL102-1	3,000	0.001	J, K	A	1.188	.531
CQ20A1KL152-1	3,000	0.0015	J, K	A	1.188	.531
CQ20A1KL222-1	3,000	0.0022	J, K	A	1.188	.531
CQ20A1KL332-1	3,000	0.0033	J, K	A	1.188	.531
CQ20A1KL472-1	3,000	0.0047	J, K	A	1.562	.531
CQ20A1KL682-1	3,000	0.0068	J, K	A	1.562	.531
CQ20-1KL103-1	3,000	0.010	J, K	A,C	1.562	.625
CQ20-1KL153-1	3,000	0.015	J, K	A,C	1.750	.625
CQ20-1KL223-1	3,000	0.022	J, K	A,C	2.000	.625
CQ20-1KL333-1	3,000	0.033	J, K	A,C	2.000	.750
CQ20-1KL473-1	3,000	0.047	J, K	A,C	2.250	.750
CQ20-1KL683-1	3,000	0.068	J, K	A,C	2.500	.875
CQ20-1KL104-1	3,000	0.10	J, K	A,C	3.250	.875

See footnotes at end of table.

TABLE I. Style CQ20 capacitors - Continued.

Part or identifying number (PIN) 1/	DC voltage rating (see figure 2)	Capacitance	Capacitance tolerance	Terminal identification	Case dimensions 2/	
					L ± .062	D ± .031
	<u>Volts</u>	<u>μF</u>			<u>Inches</u>	<u>Inches</u>
CQ20-1KL154-1	3,000	0.15	J, K	A,C	3.250	1.031
CQ20-1KL224-1	3,000	0.22	J, K	A,C	3.250	1.344
CQ20-1KL334-1	3,000	0.33	J, K	A,C	3.750	1.344
CQ20A1KN471-1	5,000	0.00047	J, K	A	1.562	.531
CQ20A1KN681-1	5,000	0.00068	J, K	A	1.562	.531
CQ20A1KN102-1	5,000	0.0010	J, K	A	1.562	.531
CQ20A1KN152-1	5,000	0.0015	J, K	A	1.562	.531
CQ20A1KN222-1	5,000	0.0022	J, K	A	1.562	.531
CQ20A1KN332-1	5,000	0.0033	J, K	A	1.562	.531
CQ20-1KN472-1	5,000	0.0047	J, K	A,C	1.562	.625
CQ20-1KN682-1	5,000	0.0068	J, K	A,C	1.750	.625
CQ20-1KN103-1	5,000	0.010	J, K	A,C	2.250	.625
CQ20-1KN153-1	5,000	0.015	J, K	A,C	2.250	.750
CQ20-1KN223-1	5,000	0.022	J, K	A,C	2.500	.875
CQ20-1KN333-1	5,000	0.033	J, K	A,C	3.000	.875
CQ20-1KN473-1	5,000	0.047	J, K	A,C	3.000	1.031
CQ20-1KN683-1	5,000	0.068	J, K	A,C	3.500	1.031
CQ20-1KN104-1	5,000	0.10	J, K	A,C	3.500	1.344
CQ20-1KN154-1	5,000	0.15	J, K	A,C	3.750	1.344
CQ20-1KR471-1	7,500	0.00047	J, K	A,C	1.562	.625
CQ20-1KR681-1	7,500	0.00068	J, K	A,C	1.562	.625
CQ20-1KR102-1	7,500	0.0010	J, K	A,C	1.750	.625
CQ20-1KR152-1	7,500	0.0015	J, K	A,C	1.750	.625
CQ20-1KR222-1	7,500	0.0022	J, K	A,C	1.750	.750
CQ20-1KR332-1	7,500	0.0033	J, K	A,C	2.250	.750
CQ20-1KR472-1	7,500	0.0047	J, K	A,C	2.250	.750
CQ20-1KR682-1	7,500	0.0068	J, K	A,C	2.750	.875
CQ20-1KR103-1	7,500	0.010	J, K	A,C	2.750	.875
CQ20-1KR153-1	7,500	0.015	J, K	A,C	2.750	1.031
CQ20-1KR223-1	7,500	0.022	J, K	A,C	2.750	1.344
CQ20-1KR333-1	7,500	0.033	J, K	A,C	2.750	1.344
CQ20-1KR473-1	7,500	0.047	J, K	A,C	3.500	1.344
CQ20-1KR683-1	7,500	0.068	J, K	A,C	4.250	1.344
CQ20-1KS471-1	10,000	0.00047	J, K	A,C	2.250	.625
CQ20-1KS681-1	10,000	0.00068	J, K	A,C	2.250	.625
CQ20-1KS102-1	10,000	0.0010	J, K	A,C	2.250	.750
CQ20-1KS152-1	10,000	0.0015	J, K	A,C	2.250	.875
CQ20-1KS222-1	10,000	0.0022	J, K	A,C	2.750	.875
CQ20-1KS332-1	10,000	0.0033	J, K	A,C	2.750	.875
CQ20-1KS472-1	10,000	0.0047	J, K	A,C	2.750	1.031
CQ20-1KS682-1	10,000	0.0068	J, K	A,C	2.750	1.344
CQ20-1KS103-1	10,000	0.010	J, K	A,C	2.750	1.344
CQ20-1KS153-1	10,000	0.015	J, K	A,C	3.250	1.344
CQ20-1KS223-1	10,000	0.022	J, K	A,C	3.750	1.344
CQ20-1KS333-1	10,000	0.033	J, K	A,C	4.750	1.344
CQ20-1KS393-1	10,000	0.039	J, K	A,C	5.250	1.344
CQ20-1KT471-1	12,500	0.00047	J, K	A,C	2.750	.750
CQ20-1KT681-1	12,500	0.00068	J, K	A,C	2.750	.750
CQ20-1KT102-1	12,500	0.0010	J, K	A,C	2.750	.875
CQ20-1KT152-1	12,500	0.0015	J, K	A,C	3.250	.875

See footnotes at end of table.

TABLE I. Style CQ20 capacitors - Continued.

Part or identifying number (PIN) <u>1/</u>	DC voltage rating (see <u>figure 2</u>)	Capacitance	Capacitance tolerance	Terminal identification	Case dimensions <u>2/</u>	
					L ± .062	D ± .031
	<u>Volts</u>	<u>μF</u>			<u>Inches</u>	<u>Inches</u>
CQ20-1KT222-1	12,500	0.0022	J, K	A,C	3.250	1.031
CQ20-1KT332-1	12,500	0.0033	J, K	A,C	3.750	1.031
CQ20-1KT472-1	12,500	0.0047	J, K	A,C	3.750	1.031
CQ20-1KT682-1	12,500	0.0068	J, K	A,C	3.250	1.344
CQ20-1KT103-1	12,500	0.010	J, K	A,C	3.750	1.344
CQ20-1KT153-1	12,500	0.015	J, K	A,C	4.750	1.344
CQ20-1KT223-1	12,500	0.022	J, K	A,C	5.250	1.344
CQ20-1KU471-1	15,000	0.00047	J, K	A,C	2.750	.750
CQ20-1KU681-1	15,000	0.00068	J, K	A,C	2.750	.875
CQ20-1KU102-1	15,000	0.0010	J, K	A,C	3.250	.875
CQ20-1KU152-1	15,000	0.0015	J, K	A,C	3.250	.875
CQ20-1KU222-1	15,000	0.0022	J, K	A,C	3.250	1.031
CQ20-1KU332-1	15,000	0.0033	J, K	A,C	3.250	1.344
CQ20-1KU472-1	15,000	0.0047	J, K	A,C	3.250	1.344
CQ20-1KU682-1	15,000	0.0068	J, K	A,C	3.750	1.344
CQ20-1KU103-1	15,000	0.010	J, K	A,C	4.250	1.344
CQ20-1KU153-1	15,000	0.015	J, K	A,C	5.250	1.344

1/ Complete PIN shall include symbols to indicate terminal and capacitance tolerance.

2/ See table III for metric equivalents.

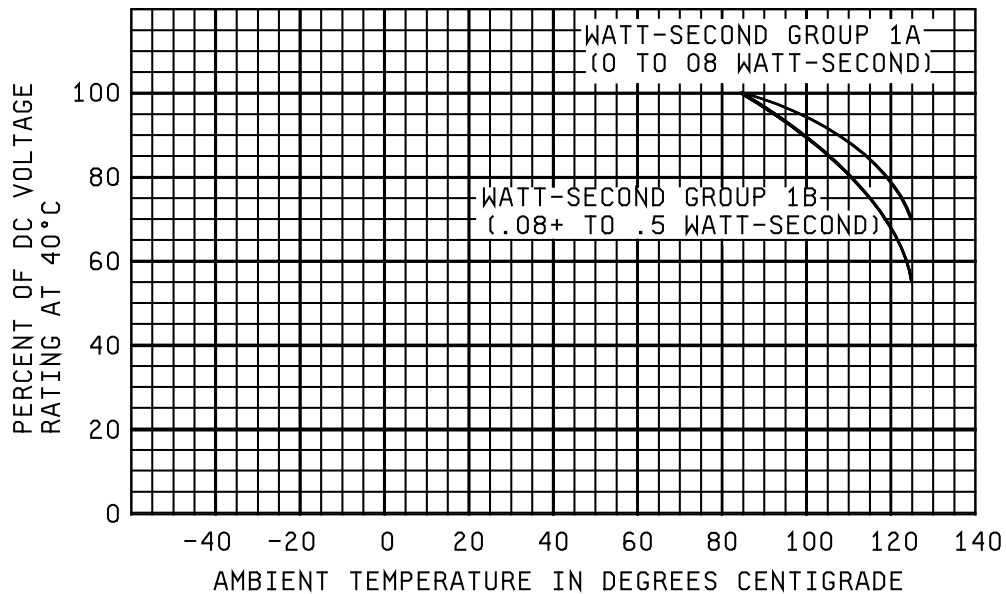
FIGURE 2 Voltage derating for high ambient test temperature (characteristic K).

TABLE II. Terminal-to-terminal insulation resistance.

Capacitance rating	Minimum insulation resistance
<u>Characteristic K</u>	<u>At +25°C</u>
0 to 0.6 microfarad	25,000 megohms
Greater than 0.6 microfarad	15,000 megohm-microfarads <u>1/</u>
	<u>At +125°C</u>
0 to 0.08 microfarad	250 megohms
Greater than 0.08 microfarad	20 megohm-microfarads <u>1/</u>

1/ Product obtained by multiplying the capacitance in microfarads by the insulation resistance in megohms.

TABLE III. Millimeter equivalents of decimal inches.

Inches	mm	Inches	mm
.031	0.79	2.000	50.80
.062	1.57	2.250	57.15
.531	13.49	2.500	63.50
.625	15.88	2.750	69.85
.750	19.05	3.000	75.20
.875	22.23	3.250	82.55
1.031	26.19	3.500	88.90
1.188	30.18	3.750	95.25
1.344	34.14	4.250	107.95
1.562	39.67	4.750	114.30
1.750	44.45	5.250	133.35

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-19978](#), this document references the following:

[MIL-STD-202-112](#)
[MIL-STD-202-201](#)
[MIL-STD-202-211](#)

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

Preparing activity:
 DLA - CC
 (Project 5910-2022-025)

Review activities:
 Navy - MC
 Air Force - 19

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 the ASSIST Online database at <https://assist.dla.mil/>.