

PERFORMANCE SPECIFICATION SHEET

CAPACITORS, CHIP, FIXED, TANTALUM, POLARIZED
ESTABLISHED RELIABILITY, NON-ESTABLISHED RELIABILITY, AND HIGH RELIABILITY
STYLES CWR06 AND CWR09

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

The requirements for acquiring the product described herein
shall consist of this specification sheet and [MIL-PRF-55365](#).

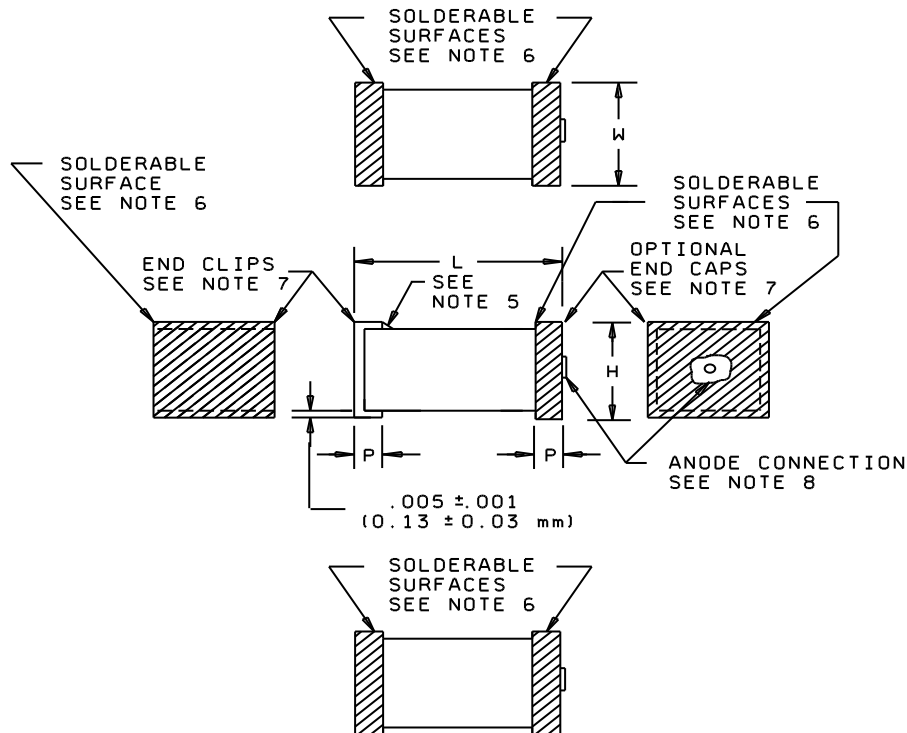


FIGURE 1. Style CWR06 (conformally coated) capacitors.

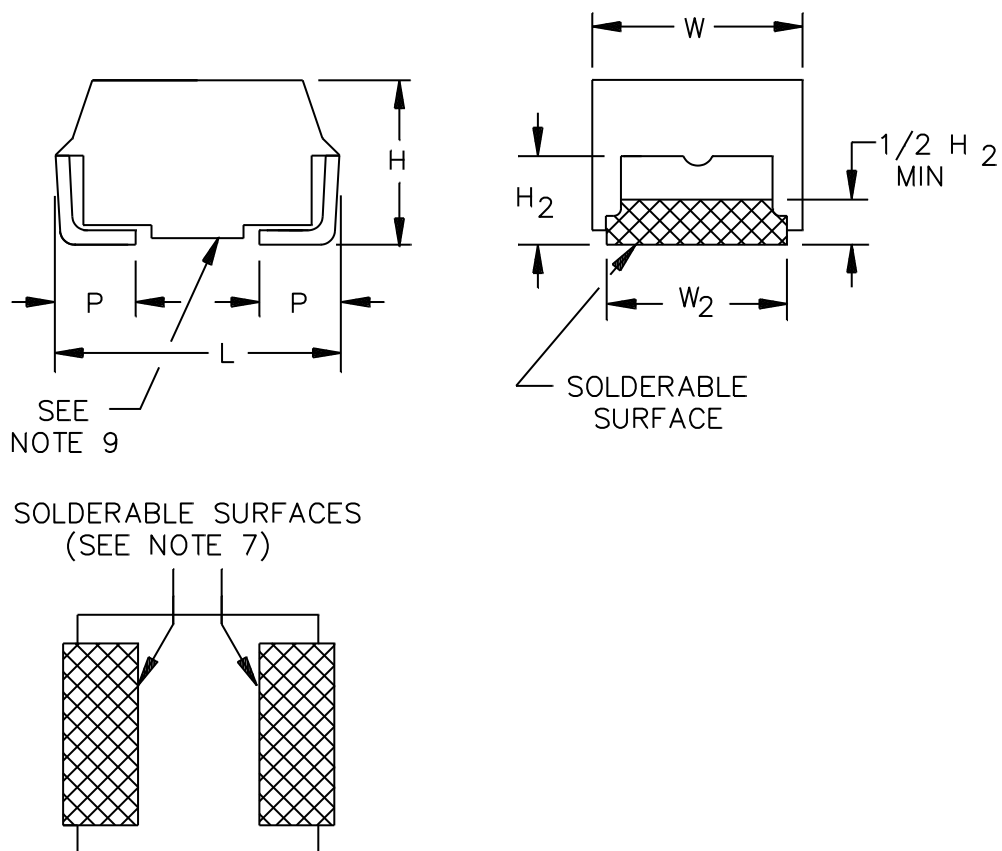
MIL-PRF-55365/4J

Case size	L ± .015 (0.38)	W ±.015 (0.38)	H ±.015 (0.38)	P ±.005 (0.13)
A	.100 (2.54)	.050 (1.27)	.050 (1.27)	.030 (0.76)
B	.150 (3.81)	.050 (1.27)	.050 (1.27)	.030 (0.76)
C	.200 (5.08)	.050 (1.27)	.050 (1.27)	.030 (0.76)
D	.150 (3.81)	.100 (2.54)	.050 (1.27)	.030 (0.76)
E	.200 (5.08)	.100 (2.54)	.050 (1.27)	.030 (0.76)
F	.220 (5.59)	.135 (3.43)	.070 (1.78)	.030 (0.76)
G	.265 (6.73)	.110 (2.79)	.110 (2.79)	.050 (1.27)
H	.285 (7.24)	.150 (3.81)	.110 (2.79)	.050 (1.27)
X	.273 (6.93)	.213 (5.41)	.108 (2.74)	.047 (1.19)

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Metric equivalents are in parentheses.
4. These capacitors are designed for mounting by dip soldering, thermo-compression bonding, reflow soldering, or other conventional means.
5. Cathode terminal may be epoxy coated on one surface for polarity identification.
6. Solderable surfaces are only those surfaces designated as such.
7. Anode and cathode terminals may be two-sided through five-sided, and may not be the same on some designs, but will meet all specification requirements.
8. The anode terminal shall be identified by the riser wire connection, which may extend the case size .015 inch (0.38 mm) maximum. The riser wire weld area is not solderable. The riser wire connection shall have a continuous weld of a minimum of 25 percent of the contact surface.
9. When solder coated terminations are required, add an additional .015 inch (0.38 mm) to the above listed tolerances for "L", "W", "H", and "P" for each case size.

FIGURE 1. Style CWR06 (conformally coated) capacitors - Continued.



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FIGURE 2. Style CWR09 (molded chip) capacitors.

MIL-PRF-55365/4J

Case size	L ± .015 (0.38)	W ±.015 (0.38)	H ±.015 (0.38)	P +.010 (0.25) - .005 (0.13)	W ₂	H ₂ min
A	.100 (2.54)	.050 (1.27)	.050 (1.27)	.030 (0.76)	.050 ±.005 (1.27±.013)	.030 (0.76)
B	.150 (3.81)	.050 (1.27)	.050 (1.27)	.030 (0.76)	.050 ±.005 (1.27±.013)	.030 (0.76)
C	.200 (5.08)	.050 (1.27)	.050 (1.27)	.030 (0.76)	.050 ±.005 (1.27±.013)	.030 (0.76)
D	.150 (3.81)	.100 (2.54)	.050 (1.27)	.030 (0.76)	.095+.005,-.010 (2.41+0.13, -0.25)	.030 (0.76)
E	.200 (5.08)	.100 (2.54)	.050 (1.27)	.030 (0.76)	.095+.005,-.010 (2.41+0.13, -0.25)	.030 (0.76)
F	.220 (5.59)	.135 (3.43)	.070 (1.78)	.030 (0.76)	.130±.005 (3.30±0.13)	.040 (1.02)
G	.265 (6.73)	.110 (2.79)	.110 (2.79)	.050 (1.27)	.105±.005 (2.67±0.13)	.060 (1.52)
H	.285 (7.24)	.150 (3.81)	.110 (2.79)	.050 (1.27)	.145+.005. -.020 (3.68 +0.13, -0.51)	.060 (1.52)

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Metric equivalents are in parentheses.
4. These capacitors are designed for mounting by dip soldering, thermo-compression bonding, reflow soldering, or other conventional means.
5. The anode (+) terminal shall be identified by a marking on the case.
6. The termination width (W₂) shall be maintained to the top of the solderable area.
7. Solderable surfaces are only those surfaces designated as such. Termination edges are not considered solderable.
8. When solder coated terminations are required, add an additional .015 inch (0.38 mm) to the above listed tolerances for "L", "H", "P", and "W₂" for each case size.
9. Shown with optional glue pad. At the option of the manufacturer, a glue pad between the solderable surfaces may be substituted.

FIGURE 2. Style CWR09 (molded chip) capacitors – Continued.

REQUIREMENTS:

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

Termination finish: In accordance with termination finishes B, C, H, or K of [MIL-PRF-55365](#).

DC rated voltage: See [table I](#). Above +85°C, voltage derating is required (see [MIL-PRF-55365](#)).

Operating temperature range: -55°C to +125°C.

Product level designator: In accordance with [MIL-PRF-55365](#).

DC leakage (DCL): See [table I](#).

Capacitance: See [table I](#).

Capacitance tolerance: ± 5 percent (J), ± 10 percent (K), or ± 20 percent (M).

Dissipation factor (DF): See [table I](#).

Equivalent series resistance (ESR) at 100 kHz: In accordance with [MIL-PRF-55365](#) and [table I](#).

Resistance to soldering heat: In accordance with [MIL-PRF-55365](#).

Stability at low and high temperatures: In accordance with [MIL-PRF-55365](#).

Surge voltage: In accordance with [MIL-PRF-55365](#).

Life:

2,000 hours: In accordance with [MIL-PRF-55365](#)

10,000 hours: In accordance with [MIL-PRF-55365](#)

| Solderability: In accordance with [MIL-PRF-55365](#), except that following steam aging; test samples may have a 30 minute bake out at +150°C prior to solder dipping.

TABLE I. Styles CWR06 and CWR09 characteristics.

Part or identifying number (PIN) <u>1/ 2/</u>	DC rated voltage (+85°C)	Cap. (nom)	DC Leakage (max)			Dissipation factor (max)			Max ESR 100 kHz +25°C Style CWR06	Max ESR 100 kHz +25°C Style CWR09	Case size
			+25°C	+85°C	+125°C	+25°C	+85°C +125°C	-55°C			
	<u>Volts</u>	<u>μF</u>	<u>μA</u>	<u>μA</u>	<u>μA</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>Ohms</u>	<u>Ohms</u>	
CWR0-C-225 ---	4	2.2	1.0	10	12	6	8	8	8.0	8.0	A
CWR0-C-475 ---	4	4.7	1.0	10	12	6	8	8	8.0	8.0	B
CWR0-C-685 ---	4	6.8	1.0	10	12	6	8	8	5.5	5.5	C
CWR0-C-106 ---	4	10.0	1.0	10	12	8	8	10	4.0	4.0	D
CWR0-C-156 ---	4	15.0	1.0	10	12	8	10	12	3.5	3.5	E
CWR0-C-336 ---	4	33.0	2.0	20	24	8	10	12	2.2	2.2	F
CWR0-C-686 ---	4	68.0	3.0	30	36	10	12	12	1.1	1.1	G
CWR0-C-107 ---	4	100.0	4.0	40	48	10	12	12	.9	.9	H
CWR0-D-155 ---	6	1.5	1.0	10	12	6	8	8	8.0	8.0	A
CWR0-D-335 ---	6	3.3	1.0	10	12	6	8	8	8.0	8.0	B
CWR0-D-475 ---	6	4.7	1.0	10	12	6	8	8	5.5	5.5	C
CWR0-D-685 ---	6	6.8	1.0	10	12	6	8	8	4.5	4.5	D
CWR0-D-106 ---	6	10.0	1.0	10	12	8	10	12	3.5	3.5	E
CWR0-D-226 ---	6	22.0	2.0	20	24	8	10	12	2.2	2.2	F
CWR0-D-476 ---	6	47.0	3.0	30	36	10	12	12	1.1	1.1	G
CWR0-D-686 ---	6	68.0	4.0	40	48	10	12	12	.9	.9	H
CWR0-F-105 ---	10	1.0	1.0	10	12	6	8	8	12.0	10.0	A
CWR0-F-225 ---	10	2.2	1.0	10	12	6	8	8	8.0	8.0	B
CWR0-F-335 ---	10	3.3	1.0	10	12	6	8	8	5.5	5.5	C
CWR0-F-475 ---	10	4.7	1.0	10	12	6	8	8	4.5	4.5	D
CWR0-F-685 ---	10	6.8	1.0	10	12	6	8	8	3.5	3.5	E
CWR0-F-156 ---	10	15.0	2.0	20	24	8	8	10	2.5	2.5	F
CWR0-F-336 ---	10	33.0	3.0	30	36	10	12	12	1.1	1.1	G
CWR0-F-476 ---	10	47.0	5.0	50	60	10	12	12	.9	.9	H
CWR0-H-684 ---	15	.68	1.0	10	12	6	8	8	12.0	12.0	A
CWR0-H-155 ---	15	1.5	1.0	10	12	6	8	8	8.0	8.0	B
CWR0-H-225 ---	15	2.2	1.0	10	12	6	8	8	5.5	5.5	C
CWR0-H-335 ---	15	3.3	1.0	10	12	6	8	8	5.0	5.0	D
CWR0-H-475 ---	15	4.7	1.0	10	12	6	8	8	4.0	4.0	E
CWR0-H-106 ---	15	10.0	2.0	20	24	6	8	8	2.5	2.5	F
CWR0-H-226 ---	15	22.0	4.0	40	48	6	8	8	1.1	1.1	G
CWR0-H-336 ---	15	33.0	5.0	50	60	8	8	10	.9	.9	H
CWR0-J-474 ---	20	.47	1.0	10	12	8	8	10	16.0	14.0	A
CWR0-J-684 ---	20	.68	1.0	10	12	6	8	8	14.0	10.0	B
CWR0-J-105 ---	20	1.0	1.0	10	12	6	8	8	12.0	12.0	B
CWR0-J-155 ---	20	1.5	1.0	10	12	6	8	8	6.0	6.0	C
CWR0-J-225 ---	20	2.2	1.0	10	12	6	8	8	5.0	5.0	D
CWR0-J-335 ---	20	3.3	1.0	10	12	6	8	8	4.0	4.0	E
CWR0-J-685 ---	20	6.8	2.0	20	24	6	8	8	2.4	2.4	F
CWR0-J-156 ---	20	15.0	3.0	30	36	6	8	8	1.1	1.1	G
CWR0-J-226 ---	20	22.0	4.0	40	48	6	8	8	.9	.9	H
CWR0-K-334 ---	25	.33	1.0	10	12	6	8	8	15.0	15.0	A
CWR0-K-684 ---	25	.68	1.0	10	12	6	8	8	10.0	7.5	B
CWR0-K-105 ---	25	1.0	1.0	10	12	6	8	8	6.5	6.5	C
CWR0-K-155 ---	25	1.5	1.0	10	12	6	8	8	6.5	6.5	D
CWR0-K-225 ---	25	2.2	1.0	10	12	6	8	8	3.5	3.5	E
CWR0-K-475 ---	25	4.7	2.0	20	24	6	8	8	2.5	2.5	F
CWR0-K-685 ---	25	6.8	2.0	20	24	6	8	8	1.2	1.2	G
CWR0-K-106 ---	25	10.0	3.0	30	36	6	8	8	1.4	1.4	G
CWR0-K-156 ---	25	15.0	4.0	40	48	6	8	8	1.0	1.0	H

See footnotes at the end of table.

TABLE I. Styles CWR06 and CWR09 characteristics - Continued.

Part or identifying number (PIN) 1/ 2/	DC rated voltage (+85°C)	Cap. (nom)	DC Leakage (max)			Dissipation factor (max)			Max ESR 100 kHz +25°C Style CWR06	Max ESR 100 kHz +25°C Style CWR09	Case size
			+25°C	+85°C	+125°C	+25°C	+85°C +125°C	-55°C			
	<u>Volts</u>	<u>μF</u>	<u>μA</u>	<u>μA</u>	<u>μA</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>Ohms</u>	<u>Ohms</u>	
CWR0-M-224 ---	35	.22	1.0	10	12	6	8	8	24.0	18.0	A
CWR0-M-474 ---	35	.47	1.0	10	12	6	8	8	17.0	10.0	B
CWR0-M-684 ---	35	.68	1.0	10	12	6	8	8	10.0	8.0	C
CWR0-M-105 ---	35	1.0	1.0	10	12	6	8	8	6.5	6.5	D
CWR0-M-155 ---	35	1.5	1.0	10	12	6	8	8	4.5	4.5	E
CWR0-M-335 ---	35	3.3	1.0	10	12	6	8	8	2.5	2.5	F
CWR0-M-475 ---	35	4.7	2.0	20	24	6	8	8	1.5	1.5	G
CWR0-M-685 ---	35	6.8	3.0	30	36	6	8	8	1.3	1.3	H
CWR0-N-104 ---	50	.10	1.0	10	12	6	8	8	22.0	22.0	A
CWR0-N-154 ---	50	.15	1.0	10	12	6	8	8	25.0	17.0	A
CWR0-N-224 ---	50	.22	1.0	10	12	6	8	8	17.0	14.0	B
CWR0-N-334 ---	50	.33	1.0	10	12	6	8	8	12.0	12.0	B
CWR0-N-474 ---	50	.47	1.0	10	12	6	8	8	8.0	8.0	C
CWR0-N-684 ---	50	.68	1.0	10	12	6	8	8	7.0	7.0	D
CWR0-N-105 ---	50	1.0	1.0	10	12	6	8	8	6.0	6.0	E
CWR0-N-155 ---	50	1.5	1.0	10	12	6	8	8	4.0	4.0	F
CWR0-N-225 ---	50	2.2	2.0	20	24	6	8	8	2.5	2.5	F
CWR0-N-335 ---	50	3.3	2.0	20	24	6	8	8	2.0	2.0	G
CWR0-N-475 ---	50	4.7	3.0	30	36	6	8	8	1.5	1.5	H

1/ Complete PIN shall include additional symbols to indicate style, termination finish, capacitance tolerance, product level designator, and, if applicable, surge current option letter. If optional surge current is not required, the last "-" shall be deleted.

2/ Styles CWR06 and CWR09 are, with the acquiring agency approval, considered to be interchangeable, provided the size, capacitance, capacitance tolerance, failure rate level, rated voltage, maximum ESR value, and surge current option (if applicable) remain the same.

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.

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

Preparing activity:
Army - CR

Agent:
DLA - CC

Review activities:
Army - AR, MI
Navy - AS, MC, OS, SH
Air Force - 19, 99
NASA - NA

(Project 5910-2014-021)

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