

MILITARY SPECIFICATION

CAPACITORS, FIXED, METALLIZED, PAPER-PLASTIC FILM, OR PLASTIC
FILM DIELECTRIC, DIRECT AND ALTERNATING CURRENT,
(HERMETICALLY SEALED IN METAL CASES),
ESTABLISHED RELIABILITY,
GENERAL SPECIFICATION FOR

This amendment forms a part of Military Specification MIL-C-39022D,
dated 12 June 1978, and is approved for use by all Departments and
Agencies of the Department of Defense.

PAGE 1

* Following title, insert: "FAILURE RATE LEVEL 'L' IS INACTIVE
FOR NEW DESIGN AFTER 20 July 1983."

1.1, lines 6 and 7: Following "producer's risk and", add "unless otherwise specified
(see 3.1)"; and add "Unless otherwise specified (see 3.1)," at beginning of last
sentence, and "(See 6.4.)" at end of last sentence.

PAGE 2

2.1, list of Military Standards, add:

"MIL-STD-1276 - Leads For Electronic Component Parts."

PAGE 3

3.5.1.1: Delete first sentence and substitute "Axial-wire lead terminals shall be of
copper, copper alloy, copper clad steel, or (when specified, see 3.1), type C or N2
of MIL-STD-1276. The size shall be as specified (see 3.1)."

3.7: Following title, add "(not applicable to CHRO1 styles)." Make this same change
on page 7, paragraph 3.27.

PAGE 4

3.10, line 3: Following last sentence, add "unless otherwise specified (see 3.1)."
Make this same change in paragraph 3.17, line 2; paragraph 3.20, line 2 (page 5);
paragraph 3.22, line 5 (page 5); paragraph 3.24, line 2 (page 6); and paragraph 3.26,
line 2 (page 6).

PAGE 7

3.28, delete and substitute:

"3.28 Marking. Marking of capacitors shall conform to method I of
MIL-STD-1285, and shall include the part number, 'JAN' marking, date code, lot
symbol, trademark (CHRO1 styles only), and manufacturer's source code. Except
for CHRO1 styles, the capacitance (in μF), capacitance tolerance, and rated volt-
age shall also be included. The date code shall designate the week that the items
are offered for inspection during the period specified in 4.6.1.1. The lot symbol
shall be a single letter except that letters 'O' and 'I' shall not be used (the
letter 'A' shall be used to identify a single lot and the date code will indicate
the lot). Manufacturing records shall include these same date codes and lot
symbols. The manufacturer shall provide for lot traceability by date code and
lot symbol. Example of marking (unless otherwise specified, see 3.1):

M39022/01- - Part number.
1001
JAN7833A 12345 - 'JAN' marking, date code, lot symbol, and source code.
.018 μF 5% 50 V - Capacitance, capacitance tolerance, and rated voltage.

The date and source codes shall also be marked on the unit package."

PAGE 9

4.2b., delete and substitute:

"b. Verification of qualification (see 4.5)."

4.3.1, line 4: Following last sentence, add "unless otherwise specified (see 3.1)."

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4.5, delete and substitute:

"4.5 Verification of qualification. Every six months, the manufacturer shall compile a summary of the results of quality conformance inspections and, where applicable, extended failure rate (FR) test data, in the form of a verification of qualification report, and forward it to the qualifying activity as the basis of continued qualification approval. In addition, within 30 days of the end of the reporting date, the manufacturer shall immediately notify the qualifying activity whenever the FR data indicates that the manufacturer has failed to maintain his qualified FR level. Continuation shall be based on evidence that, over the six month period, the following has been met:

- a. Verification by the qualifying activity that the manufacturer meets the requirements of MIL-STD-790.
- b. The manufacturer has not modified the design of the item.
- c. The specification requirements for the item have not been amended so as to affect the character of the item, (not applicable to CHRO1 styles).
- d. Lot rejection for group A inspection does not exceed 10 percent or one lot, whichever is greater (not applicable to CHRO1 styles).
- e. The requirements for groups B and C inspections are met.
- f. The records of all FR tests combined substantiate that the "M" (1.0 percent) or "P" (0.1 percent) FR level has been maintained, or that the manufacturer continues to meet the "R" (0.01 percent) and "S" (0.001 percent) FR level for which qualified, although the total component hours of testing does not, as yet, meet the requirements of 4.4.4c.

If group C test requirements were not met and the manufacturer has taken corrective action satisfactory to the Government, the forwarding of the verification of qualification report may be delayed until within 30 days after completion of retesting of the group C inspections. In this case, the qualifying activity shall be notified of this condition within the time the original verification of qualification report was due. All reports shall be certified by a responsible company official. The qualifying activity shall be contacted for the report format.

4.5.1 Records. Maintenance of life test and FR level records shall be as specified in MIL-STD-690."

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4.6.1.2: Following last sentence, add "Prior to group A inspection, CHRO1A, CHRO1D, CHRO1G, CHRO1K, and CHRO1N styles shall be exposed to a temperature of +125°C with 140-percent of dc rated voltage for 48 hours, minimum; CHRO1B, CHRO1E, CHRO1H, CHRO1L, and CHRO1P styles shall be exposed to a temperature of +125°C with 140-percent of dc rated voltage for 16 hours, minimum."

4.6.1.2.1: Following title, add "(not applicable to CHRO1 styles)."

Add the following:

"4.6.1.2.1.1 CHRO1 styles. 100-percent inspection shall apply to all FR levels for subgroups 2 and 3; however, in subgroup 3, only 5 sample units need be inspected for physical dimensions."

4.6.1.2.2, line 2: Following "subgroup 2" add "(and subgroup 3, for CHRO1 styles)". Make this same change in paragraph 4.6.1.2.2a., line 2.

4.6.1.2.3: Following title, add "(not applicable to CHRO1 styles)."

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TABLE IV, Subgroup 2: Following "Thermal shock", add footnote "3/"; following "Insulation resistance", add "(terminal to terminal, CHRO1 styles only)"; and add the following footnote at end of table:

"3/ 10 cycles, min (CHRO1A, CHRO1B, CHRO1D, CHRO1E, CHRO1G, CHRO1H, CHRO1K, CHRO1L, CHRO1N, and CHRO1P).
5 cycles, min (CHRO1C, CHRO1F, CHRO1J, CHRO1M, and CHRO1R)."

4.6.1.3: Following title, add "(not applicable to CHRO1 styles)."

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4.6.2.1.1: In line 2, following "every 2 months", add "(for CHRO1 styles, 18 sample units shall be taken from production every 5 months and shall consist of CHRO1A, CHRO1D, CHRO1G, CHRO1K, and CHRO1N styles only)"; and following last sentence, add "For subgroup 3, a minimum of 5 sample units for each CHRO1 style shall be subjected to the tests specified, in the order shown."

* 4.7.2.a, delete and substitute:

"a. 140 percent of rated rms voltage at 400 hertz (Hz) shall be applied on voltages of <300 volts; 120 percent of rated rms voltage at 400 hertz (Hz) shall be applied on voltages >350 volts."

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TABLE VI: In subgroups 1A, 1B, and 1C (fourth column), add "or 6 (CHRO1A, CHRO1D, CHRO1G, CHRO1K, and CHRO1N styles)"; in Subgroup 2 title, add "(not applicable to CHRO1 styles)"; and add the following at end of table:

Test	Requirement paragraph	Method paragraph	Number of sample units for inspection	Allowable failures
<u>Subgroup 3 (every month)</u>				
<u>Subgroup 3A</u>				
(All FR levels for CHRO1 styles)				
Capacitance change with temperature - - - - -	3.22	4.7.18	5 per style, minimum	<u>2/</u>
Life - - - - -	3.26	4.7.22.3.1		
<u>Subgroup 3B</u>				
(CHRO1A, CHRO1D, CHRO1G, CHRO1K, and CHRO1N)				
AC life (240 hours) - - - -	3.26	4.7.22.4	} <u>3/</u>	<u>4/</u>
Dissipation factor - - - -	3.13	4.7.9		
Insulation resistance - - - -	3.11	4.7.7		

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TABLE VI, following footnote 2/, add the following:

"3/ The number is at the option of the manufacturer; the total capacitance of the sample units to be tested shall equal 40 μ F, unless otherwise specified (see 3.1).

4/ For reference only; data will be submitted to qualifying activity."

4.7.4a., line 1: Delete "A" and substitute "B".

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4.7.9: At beginning of last sentence, add "Unless otherwise specified, see 3.1,".

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4.7.22.1, line 2: Following last sentence, add "unless otherwise specified, see 3.1."

PAGE 19

Add the following:

"4.7.22.4 AC life (for group C, CHRO1A, CHRO1D, CHRO1G, CHRO1K, and CHRO1N). Capacitors shall be exposed to the voltages and frequencies as specified (see 3.1) at 100°C for 240 +48 -0 hours."

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6.4: At end of last sentence, add "However, CHRO1 styles may be used for applications requiring a tight capacitance tolerance, excellent capacitance stability, very high insulation resistance, and low loss factors where the ac component of voltage is large with respect to the applied dc voltage and where momentary breakdowns (see 6.3.1) cannot be tolerated."

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20.1.2: Following last sentence, add "For environmental tests only, CHRO1A will qualify CHRO1B and CHRO1C; CHRO1D will qualify CHRO1E and CHRO1F; CHRO1G will qualify CHRO1H and CHRO1J; CHRO1K will qualify CHRO1L and CHRO1M; and CHRO1N will qualify CHRO1P and CHRO1R."

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TABLE VII, delete CHR49 and substitute the following:

CHR49	AC rated voltage		
	165 V	M39022/07-1001	38
	110 V	M39022/07-1012	38
	80 V	M39022/07-1013	38
	200 V	M39022/07-1022	38
	400 V	M39022/07-1151	38
	400 V	M39022/07-1157	38
CHRO1A	30 V	M39022/9-A349L	76
CHRO1B	30 V	M39022/9-B349L	76
CHRO1C	30 V	M39022/9-C349L	76
CHRO1D	50 V	M39022/9-D331L	76
CHRO1E	50 V	M39022/9-E331L	76
CHRO1F	50 V	M39022/9-F331L	76
CHRO1G	100 V	M39022/9-G295L	76
CHRO1H	100 V	M39022/9-H295L	76
CHRO1J	100 V	M39022/9-J295L	76
CHRO1K	200 V	M39022/9-K283L	76
CHRO1L	200 V	M39022/9-L283L	76
CHRO1M	200 V	M39022/9-M283L	76
CHRO1N	400 V	M39022/9-N127L	76
CHRO1P	400 V	M39022/9-P127L	76
CHRO1R	400 V	M39022/9-R127L	76

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AMENDMENT 5

NOTE: The margin of this amendment is marked with an asterisk to indicate where changes from the previous amendment 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 amendment.

Custodians:
Army - ER
Navy - EC
Air Force - 11

Preparing activity:
Navy - EC
(Project 5910-1479-1)

Review activities:
Army - AR
Air Force - 85
DLA - ES

User activities:
Navy - AS, MC, OS, SH, CG
Air Force - 19

Agent:
DLA - ES