

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	Added an allowance for 2-sided marking.	29 January 2013	Michael A. Radecki

Prepared in accordance with [ASME Y14.100](#)

Source control drawing

REV STATUS OF PAGES	REV	A	A	A	A	A	A	A	A									
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PMIC N/A	PREPARED BY John Bonitatibus		DESIGN ACTIVITY DLA LAND AND MARITIME COLUMBUS, OH 43218-3990																
Original date of drawing 11 December 2012	CHECKED BY Mark Rush		TITLE CAPACITORS, FIXED, GLASS DIELECTRIC, (AXIAL WIRE-LEAD TERMINALS)																
	APPROVED BY Michael A. Radecki		DWG NO. 13004																
	SIZE A	CODE IDENT. NO. 037Z3		PAGE 1 OF 8															
	SCALE N/A		REV A																

1. SCOPE

1.1 Scope. This drawing describes the requirements for glass dielectric capacitors screened to MIL-PRF-23269. The capacitors described herein are possible replacements for MIL-PRF-23269/1 capacitors (see 6.4 and table II).

1.2 Part or Identifying Number (PIN). The complete PIN shall be as follows:

13004
|
Drawing
number

-001
|
Dash number
(see table I)

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-23269 - Capacitors, Fixed, Glass Dielectric, Established Reliability, General Specification for.

(Copies of these documents are available online at <https://assist.dla.mil/quicksearch> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Interface and physical dimensions. The interface and physical dimensions shall be as specified in MIL-PRF-23269 and herein (see figure 1).

3.1.1 Case material. Glass.

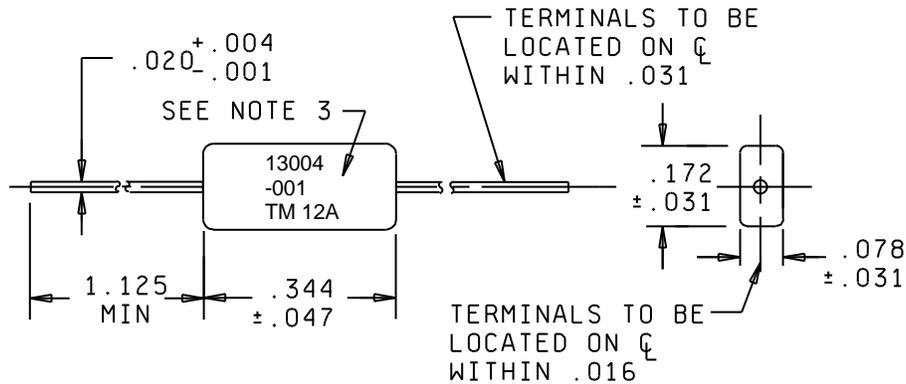
3.1.2 Terminals. Solderable.

3.1.3 Seal. Hermetic.

3.1.4 Pure tin. The use of pure tin, as an underplate or final finish is prohibited both internally and externally. Tin content of capacitor components and solder shall not exceed 97 percent, by mass. Tin shall be alloyed with a minimum of 3 percent lead, by mass (see 6.3).

3.2 Rated temperature. -55°C to +125°C.

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Inches	mm	Inches	mm
.001	0.03	.047	1.19
.004	0.10	.078	1.98
.016	0.41	.172	4.37
.020	0.51	.344	8.74
.031	0.79	1.125	28.58

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. See marking requirement (see 3.8). At the option of the manufacturer, the trademark, year code, and lot code may be marked on the reverse side of the capacitor.

FIGURE 1. Dimensions and configuration.

3.3 Electrical characteristics.

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

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

3.3.3 Capacitance. When measured as specified in [MIL-PRF-23269](#), the capacitance shall be within the applicable tolerance of the nominal value specified in [table I](#).

3.3.4 Dissipation factor. When measured as specified in [MIL-PRF-23269](#), the dissipation factor shall not exceed 0.1 percent.

3.3.5 Temperature coefficient and capacitance drift (manufacturer eligibility only (see 3.9)). When measured as specified in [MIL-PRF-23269](#), the capacitors shall meet the following requirements:

- a. Temperature coefficient: 140 parts per million (ppm)/°C ±25 ppm/°C.
- b. Capacitance drift: 0.1 percent or 0.1 pF, whichever is greater.

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3.3.6 Insulation resistance (IR). When measured as specified in [MIL-PRF-23269](#), the insulation resistance shall be 100,000 megohms, minimum, at +25°C.

3.3.7 Quality factor (Q) (manufacturer eligibility only (see 3.9)). In accordance with [MIL-PRF-23269](#).

3.4 Seal. In accordance with [MIL-PRF-23269](#), test I.

3.5 Thermal shock (manufacturer eligibility group C only (see 3.9)). In accordance with [MIL-PRF-23269](#). The following detail shall apply: Dissipation factor: 0.1 percent maximum.

3.6 Moisture resistance (manufacturer eligibility only (see 3.9)). In accordance with [MIL-PRF-23269](#). The following detail shall apply: Dissipation factor: 0.1 percent maximum.

3.7 Life (manufacturer eligibility only (see 3.9)). In accordance with [MIL-PRF-23269](#). The following details shall apply:

- a. ΔCapacitance (240 hours and 2,000 hours): 0.5 percent or 0.5 pF maximum.
- b. Dissipation factor (240 hours and 2,000 hours): 0.15 percent maximum.

3.8 Marking. In accordance with [MIL-PRF-23269](#), except the capacitor shall be marked with the PIN as specified herein (see 1.2).



3.9 Manufacturer eligibility. To be eligible for listing as an approved source of supply, a manufacturer shall be listed on the [MIL-PRF-23269 Qualified Products Database](#) for at least one part, or perform the group A and group C inspections specified herein on a sample of parts agreed upon by the manufacturer and DLA Land and Maritime-VA.

3.10 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.11 Certificate of compliance. A certificate of compliance shall be required from manufacturers requesting to be an approved source of supply.

3.12 Workmanship. The capacitor shall be uniform in quality and free from any defects that will affect life, serviceability, or appearance.

4. VERIFICATION

4.1 Qualification inspection. Qualification inspection is not required.

4.2 Conformance inspection.

4.2.1 Inspection of product for delivery. Inspection of product for delivery shall consist of the group A inspection of [MIL-PRF-23269](#).

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

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TABLE I. Electrical characteristics.

DLA Land and Maritime drawing (PIN) 13004-		Capacitance (pF)	Capacitance tolerance
500 Vdc	100 Vdc		
001	201	0.5	±0.25 pF
002	202	1.0	±0.25 pF
003	203	1.5	±0.25 pF
004	204	2.2	±0.25 pF
005	205	2.2	±0.50 pF
006	206	2.7	±0.25 pF
007	207	3.0	±0.25 pF
008	208	3.0	±0.50 pF
009	209	3.3	±0.25 pF
010	210	3.6	±0.25 pF
011	211	3.6	±0.50 pF
012	212	3.9	±0.25 pF
013	213	4.3	±0.25 pF
014	214	4.3	±0.50 pF
015	215	4.7	±0.25 pF
016	216	5.1	±0.25 pF
017	217	5.6	±0.25 pF
018	218	5.6	±5%
019	219	6.2	±0.25 pF
020	220	6.2	±5%
021	221	6.8	±0.25 pF
022	222	6.8	±5%
023	223	7.5	±0.25 pF
024	224	7.5	±5%
025	225	8.2	±0.25 pF
026	226	8.2	±5%
027	227	9.1	±0.25 pF
028	228	9.1	±5%
029	229	10	±0.25 pF
030	230	10	±5%
031	231	11	±0.25 pF
032	232	11	±5%
033	233	12	±0.25 pF
034	234	12	±5%
035	235	13	±2%
036	236	13	±5%
037	237	15	±2%
038	238	15	±5%
039	239	16	±2%
040	240	16	±5%
041	241	18	±2%
042	242	18	±5%
043	243	20	±2%
044	244	20	±5%
045	245	22	±2%
046	246	22	±5%
047	247	24	±2%
048	248	24	±5%

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TABLE I. Electrical characteristics. – Continued.

DLA Land and Maritime drawing (PIN) 13004-		Capacitance (pF)	Capacitance tolerance
500 Vdc	100 Vdc		
049	249	27	±1%
050	250	27	±2%
051	251	27	±5%
052	252	30	±1%
053	253	30	±2%
054	254	30	±5%
055	255	33	±1%
056	256	33	±2%
057	257	33	±5%
058	258	36	±1%
059	259	36	±2%
060	260	36	±5%
061	261	39	±1%
062	262	39	±2%
063	263	39	±5%
064	264	43	±1%
065	265	43	±2%
066	266	43	±5%
067	267	47	±1%
068	268	47	±2%
069	269	47	±5%
070	270	51	±1%
071	271	51	±2%
072	272	51	±5%
073	273	56	±1%
074	274	56	±2%
075	275	56	±5%
076	276	62	±1%
077	277	62	±2%
078	278	62	±5%
079	279	68	±1%
080	280	68	±2%
081	281	68	±5%
082	282	75	±1%
083	283	75	±2%
084	284	75	±5%
085	285	82	±1%
086	286	82	±2%
087	287	82	±5%
088	288	91	±1%
089	289	91	±2%
090	290	91	±5%
091	291	100	±1%
092	292	100	±2%
093	293	100	±5%
094	294	110	±1%
095	295	110	±2%
096	296	110	±5%

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TABLE I. Electrical characteristics. – Continued.

DLA Land and Maritime drawing (PIN) 13004-		Capacitance (pF)	Capacitance tolerance
500 Vdc	100 Vdc		
097	297	120	±1%
098	298	120	±2%
099	299	120	±5%
100	300	130	±1%
101	301	130	±2%
102	302	130	±5%
103	303	150	±1%
104	304	150	±2%
105	305	150	±5%
106	306	160	±1%
107	307	160	±2%
108	308	160	±5%
109	309	180	±1%
110	310	180	±2%
111	311	180	±5%
112	312	200	±1%
113	313	200	±2%
114	314	200	±5%
300 Vdc	100 Vdc		
115	315	220	±1%
116	316	220	±2%
117	317	220	±5%
118	318	240	±1%
119	319	240	±2%
120	320	240	±5%
121	321	270	±1%
122	322	270	±2%
123	323	270	±5%
124	324	300	±1%
125	325	300	±2%
126	326	300	±5%

6. NOTES

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1 Intended use. Capacitors conforming to this drawing are intended for use when military specifications do not exist and qualified military devices that will perform the required function are not available for OEM application. This drawing is intended exclusively to prevent the proliferation of unnecessary duplicate specifications, drawings, and stock catalog listings. When a military specification exists and the product covered by this drawing has been qualified for listing, this drawing becomes obsolete and will not be used for new design.

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6.2 Ordering data. The contract or purchase order should specify the following:

- a. Complete PIN (see 1.2).
- b. Requirements for delivery of one copy of the conformance inspection data or certificate of compliance that parts have passed conformance inspection with each shipment of parts by the manufacturer.
- c. Requirements for notification of change of product to the acquiring activity, if applicable.
- d. Requirements for packaging and packing.

6.3 Tin whisker growth. The use of alloys with tin content greater than 97 percent, by mass, may exhibit tin whisker growth problems after manufacture. Tin whiskers may occur anytime from a day to years after manufacture and can develop under typical operating conditions, on products that use such materials. Conformal coatings applied over top of a whisker-prone surface will not prevent the formation of tin whiskers. Alloys of 3 percent lead, by mass, have shown to inhibit the growth of tin whiskers. For additional information on this matter, refer to [ASTM-B545](#) (Standard Specification for Electrodeposited Coatings of Tin).

6.4 MIL-PRF-23269/1 replacements. The capacitors described herein are possible replacements for MIL-PRF-23269/1 capacitors. Users are cautioned to evaluate this document for their particular application before citing it as a replacement document. MIL-PRF-23269/1 capacitors have failure rate levels (FRL) established in accordance with MIL-STD-690. DLA Land and Maritime drawing 13004 capacitors are non-established reliability.

TABLE II. Replacement data.

MIL-PRF-23269/1 PIN	DLA Land and Maritime drawing PIN 13004-
-001 through -126 ^{1/}	001 through 126
7001 through 7126	201 through 326

^{1/} The complete MIL-PRF-23269/1 PIN shall include an additional character to indicate the FRL (3, 4, 5, or 6).

6.5 Replaceability. Capacitors covered by this drawing will replace the same commercial device covered by contractor prepared specification or drawing.

6.6 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.

6.7 Users of record. Coordination of this document for future revisions is coordinated only with the approved sources of supply and the users of record of this document. Requests to be added as a recorded user of this drawing should be in writing to: DLA Land and Maritime, ATTN: VAT, Post Office Box 3990, Columbus, OH 43218-3990, by email to capacitorfilter@dla.mil, or by telephone (614) 692-4709 or DSN 850-4709.

6.8 Approved sources of supply. Approved sources of supply are listed herein. Additional sources will be added as they become available. For assistance in the use of this drawing, contact DLA Land and Maritime, ATTN: VAT, Post Office Box 3990, Columbus, OH 43218-3990, by email to capacitorfilter@dla.mil, or by telephone (614) 692-4709 or DSN 850-4709.

<u>Vendor</u>	<u>Vendor CAGE</u>	<u>Vendor name and address</u>	<u>Similar designation</u> ^{1/}
A	16299	AVX Corporation 3900 Electronics Drive Raleigh, NC 27604-1698	ER10 Series

^{1/} Parts must be purchased to the DLA Land and Maritime PIN to assure that all performance requirements and tests are met.

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