

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	Added suggested source of supply. Added 1 μ F at 25 V dc, .065 T maximum. Editorial changes throughout.	16 May 94	D. Moore
B	Page 4 – Revised inspection of product for delivery requirements.	23 May 96	Andrew R. Ernst
C	Page 2 - Added termination finish options. Page 3 - Added footnote for dimensional tolerance change for solder coated parts. Page 4 - Added Voltage Temperature Limit requirements. Changed insulation resistance requirements. Revised marking and workmanship paragraphs. Added environmental and mechanical requirements paragraph. Table I; Changed -05 T max dimension. Page 5 - Incorporated inspection of product for delivery requirements into drawing from MIL-PRF-55681. Page 6 - Added note regarding tin plated finish. Page 7 - Revised sources of supply list. Editorial changes throughout.	2 June 99	Kenneth A. Bernier
D	Added suggested source of supply that was added by letter dated January 15, 1999.	11 August 99	Kendall A. Cottongim
E	Added suggested source of supply.	16 November 00	Kendall A. Cottongim
F	Added suggested source of supply.	5 February 02	Kendall A. Cottongim
G	Page 7 - Corrected vendor E part numbers	7 August '02	Kendall A. Cottongim

PREVIOUS CAGE CODE 14933 SUPERSEDED BY 037Z3.

THE ORIGINAL FIRST PAGE OF THIS DRAWING HAS BEEN REPLACED.

Prepared in accordance with ASME-Y14

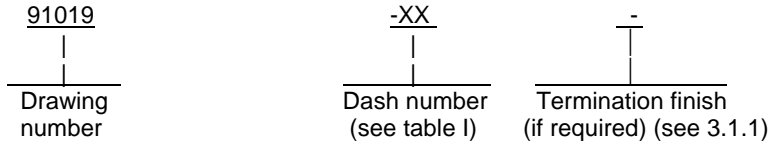
Selected item drawing

REV STATUS OF PAGES	REV	G	G	G	G	G	G	G										
	PAGES	1	2	3	4	5	6	7										
PMIC N/A	PREPARED BY ROBERT GRILLOT							DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OH										
Original date of drawing 91-09-11	CHECKED BY EDWARD H. BACK							TITLE CAPACITORS, FIXED, CERAMIC, CHIP, .56 μ F THROUGH 1 μ F										
	APPROVED BY DAVID E. MOORE							DWG NO. 91019										
	SIZE A	CODE IDENT. NO. 14933						PAGE 1 OF 7										

1. SCOPE

1.1 Scope. This drawing and MIL-PRF-55681 describe the complete requirements for ceramic chip capacitors.

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



2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 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 listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.3).

SPECIFICATIONS

DEPARTMENT OF DEFENSE

MIL-PRF-55681 - Capacitor, Chip, Multiple Layer, Fixed, Ceramic Dielectric, Established Reliability and Non-Established Reliability, General Specification for.

STANDARDS

DEPARTMENT OF DEFENSE

MIL-STD-202 - Test Methods Standard Electronics and Electrical Component Parts.
 MIL-STD-1285 - Marking of Electrical and Electronic Parts.

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Document and Automation Production Service, Building 4D (DPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, 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

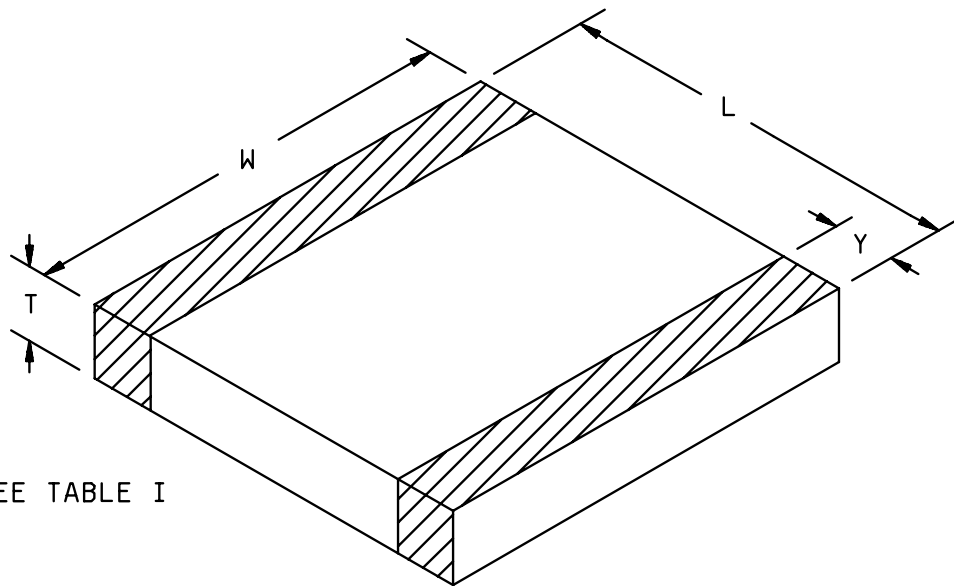
3.1 Interface and physical dimensions. The interface and physical dimensions shall be as specified in MIL-PRF-55681 and herein (see figure 1).

3.1.1 Termination finish. The termination finish shall be solder coated over a base metallization and barrier metal (as specified in MIL-PRF-55681, "U" termination finish). When requested by the acquiring activity, an optional termination finish shall be identified by a single letter following the dash number as follows:

- Y - Base metallization - barrier metal - tin (100 percent): as specified in MIL-PRF-55681 (see 6.2).
- Z - Base metallization - barrier metal - tinned (tin/lead alloy, with a minimum of 4 percent lead): as specified in MIL-PRF-55681.

3.1.2 Operating temperature range. The operating temperature range shall be -55°C to +125°C.

DEFENSE SUPPLY CENTER, COLUMBUS	SIZE	CODE IDENT NO.	DWG NO.
COLUMBUS, OHIO	A	14933	91019
		REV G	PAGE 2



SEE TABLE I

Dimensions (See note 3)		
L	W	Y
+0.025	+0.010	Min
-0.010	-0.020	
.225	.210	.010

Notes:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. For solder coated parts an additional +.025 to the length and width tolerance is allowed. An additional +.020 tolerance is allowed on the thickness (see table I).

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 14933	DWG NO. 91019
		REV G	PAGE 3

3.2 Electrical characteristics.

3.2.1 Rated voltage. The rated voltage shall be in accordance with table I.

3.2.2 Dielectric type. The dielectric type shall be ceramic.

3.2.3 Temperature coefficient and voltage temperature limits (VTL). The temperature coefficient shall be 0 ±15 percent (-55°C to +125°C) and shall meet the VTL requirements of characteristic BR of MIL-PRF-55681.

3.2.4 Operating frequency. Operating frequency shall be up to 50 GHz.

3.2.5 Capacitance. See table I. Measured in accordance with method 305 of MIL-STD-202, 1 kHz at 1.0 V rms ±0.2 V rms at +25°C.

3.2.6 Dissipation factor (+25°C). 2.5 percent maximum (measured under the same conditions as capacitance).

3.2.7 Insulation resistance. Measured in accordance with method 302 of MIL-STD-202 at rated voltage.

At +25°C: 100,000 megohms or 1,000 megohm-microfarads, whichever is less.

At +125°C: 10,000 megohms or 100 megohm-microfarads, whichever is less.

3.2.8 Dielectric withstanding voltage. 2.0 times rated voltage.

3.2.9 Capacitance tolerance. K = ±10 percent.

3.3 Environmental and mechanical requirements. The environmental and mechanical requirements shall be in accordance with MIL-PRF-55681.

3.4 Marking. Capacitors may be marked with the PIN as specified in 1.2, but are not required to be marked. Marking shall be on the package and shall be in accordance with MIL-STD-1285, except the PIN shall be as specified in 1.2, with the manufacturer's name or CAGE code and date code.

3.5 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.

3.6 Certificate of compliance. A certificate of compliance shall be required from manufacturers requesting to be a suggested source of supply.

3.7 Workmanship. Capacitors shall be so processed that when inspected under 20X to 40X magnification, they shall be uniform in quality and shall be free from pits, cracks, rough edges, adhered foreign material, and other defects which will affect life or serviceability. The capacitors shall exhibit no delamination (separation in the layers of ceramic) or demetallization (lift-off) on the terminations.

TABLE I. Electrical characteristics

DSCC drawing 91019-	Capacitance μF	Capacitance tolerance	WV dc	T Max
01-	.56	K	50	.065
02-	.68	K	50	.065
03-	.82	K	50	.090
04-	1.0	K	50	.090
05-	1.0	K	25	.070

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 14933	DWG NO. 91019
		REV G	PAGE 4

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 groups A and B inspections of this drawing (see tables II and III herein).

4.2.2 Certification. The procuring activity, at its discretion, may accept a certificate of compliance for group B requirements in lieu of performing group B tests (see 6.3f).

TABLE II. Group A Inspection.

Inspection	Requirement paragraph of MIL-PRF-55681	Test method paragraph of MIL-PRF-55681	Sampling Procedure
<u>Subgroup 1</u> Voltage conditioning	3.6	4.8.3	100 percent inspection
<u>Subgroup 2</u> IR (at 125°C) Visual and mechanical examination	3.9 3.1, 3.4, 3.5, 3.5.1, 3.24 through 3.26 inclusive	4.8.6 4.8.2	Table X, column A of MIL-PRF-55681 Table X, column B of MIL-PRF-55681
<u>Subgroup 3</u> Solderability	3.13	4.8.10	13 samples/0 failures allowed
<u>Subgroup 4</u> Voltage-temperature limits	3.14 (and 3.2.3 herein)	4.8.11	13 samples/ 0 failures allowed

TABLE III. Group B inspection.

Inspection	Requirement paragraph of MIL-PRF-55681	Test method paragraph of MIL-PRF-55681	Number of Sample units to be inspected	Number of defectives permitted
<u>Subgroup 1</u> Thermal shock and immersion	3.15	4.8.12	12	0
<u>Subgroup 2</u> Resistance to soldering heat Moisture resistance	3.16 3.17	4.8.13 4.8.14	12	0
<u>Subgroup 3</u> Life (at 125°C)	3.19	4.8.16	25	0
<u>Subgroup 4</u> Humidity, steady state, low voltage	3.18	4.8.15	12	0

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 14933	DWG NO. 91019
		REV G	PAGE 5

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. 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.

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 original equipment manufacturer 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.

6.2 Tin plated finish (termination finish Y). MIL-PRF-55681 capacitors have not historically had a problem with tin whisker growth. However, tin whisker growth could adversely affect the operation of electronic equipment systems. For additional information, see ASTM B545, "Standard Specification for Electrodeposited Coating of Tin".

6.3 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 packaging and packing.
- d. Title, number, and date of the specification.
- e. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1).
- f. Whether the manufacturer performs the group B tests or provides certification of compliance for group B requirements.
- g. Requirements for notification of change of product to procuring activity, if applicable.

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

6.5 Users of record. Coordination of this document for future revisions are coordinated only with the suggested 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: Defense Supply Center, Columbus, ATTN: DSCC/VAT, Post Office Box 3990, Columbus, OH 43216-5000 or by telephone (614) 692-0561 or DSN 850-0561.

6.6 Suggested sources of supply. Suggested sources of supply are listed herein. Additional sources will be added as they become available. For assistance in the use of this drawing, contact Defense Supply Center, Columbus, ATTN: DSCC-VAT, Post Office Box 3990, Columbus, OH 43216-5000 or by telephone (614) 692-0561 or DSN 850-0561.

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 14933	DWG NO. 91019
		REV G	PAGE 6

DSCC drawing PIN 91019-	Vendor A similar vendor type 1/	Vendor B Similar vendor type 1/	Vendor C similar vendor type 1/	Vendor D similar vendor type 1/	Vendor E similar vendor type 1/	Vendor F similar vendor type 1/
01	PCI1562-01	500S47W564K*4H	C2220E564K5XAH	2221E564KU	22205C564KH*9C	CG2220BR564KWB
02	PCI1562-02	500S47W684K*4H	C2220E684K5XAH	2221E684KU	22205C684KH*9C	CG2220BR684KWB
03	PCI1562-03	500S47W824K*4H	C2220E824K5XAH	2221E824KU	22205C824KH*93	CG2220BR824KWB
04	PCI1562-04	500S47W105K*4H	C2220E105K5XAH	2221E105KU	22205C105KH*93	CG2220BR105KWB
05	PCI1562-05	250S47W105K*4H	C2220E105K3XAH	2221E105KU25V	22203C105KH*9Q	CL2220BR105KWB

1/ Caution: Do not use this number for item acquisition. Items acquired to this number may not satisfy the performance requirements of this drawing.

<u>Vendor</u>	<u>Vendor CAGE</u>	<u>Vendor name and address</u>
A	60212	Presidio Components Incorporated 7169 Construction Court San Diego, CA 92121-2615
B	29454	Johanson Dielectric 15191 Bledsoe Street Sylmar, CA 91342-2700
C	31433	Kemet Electronics Corporation P.O. Box 5928 Greenville, SC 29606-5928 Plant: Periferico Alianza Y Jose Arrese #10 Matamoros Tamaulipas, Mexico 87340
D	0LR95	Spectrum Control Technology Incorporated 4100 Michoud Boulevard New Orleans, LA 70129-2284
E	96095	Olean Advanced Products A Division of AVX Corporation 1695 Seneca Avenue Olean, NY 14760-3736
F	0YBX7	Union Technology Corporation 718 Monterey Pass Road Monterey Park, CA 91754-3607

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 14933	DWG NO. 91019
		REV G	PAGE 7