

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	Added suggested source of supply, additions and corrections.	5 August 88	Edward H. Back
B	Updated to reference MIL-PRF-49470 . Added option for J and L lead styles. Added and deleted suggested sources of supply.	2 March 2000	Kendall A. Cottongim
C	Removed suggested source of supply.	16 November 00	Kendall A. Cottongim
D	Updated name and address of vendor B and corrected part numbers on page 16.	18 December 02	Kendall A. Cottongim
E	Added Johanson Dielectrics as a suggested source of supply.	18 August 2004	Kendall A. Cottongim
F	Updated and changed to source control.	27 January 2014	Michael A. Radecki

CURRENT DESIGN ACTIVITY CAGE CODE 037Z3
DLA LAND AND MARITIME
COLUMBUS, OHIO 43218-3990

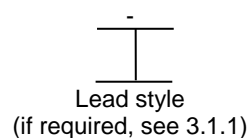
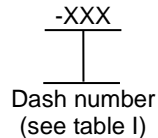
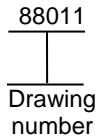
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REV STATUS OF PAGES	REV	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	
	PAGES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
PMIC N/A	PREPARED BY ROBERT E. GRILLOT							DESIGN ACTIVITY DEFENSE ELECTRONIC SUPPLY CENTER DAYTON, OH											
Original date of drawing 2 March 1988	CHECKED BY EDWARD H. BACK							TITLE CAPACITOR, CERAMIC, SWITCH MODE POWER SUPPLY, CG											
	APPROVED BY DAVID E. MOORE							DWG NO. 88011											
	SIZE A	CODE IDENT. NO. 14933						PAGE 1 OF 16											

1. SCOPE

1.1 Scope. This drawing and MIL-PRF-49470 describe the requirements for ceramic switch mode power supply capacitors.

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



2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, and 5 of this drawing. This section does not include documents cited in other sections of this drawing 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 in sections 3, 4, and 5 of this drawing, whether or not they are listed here.

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 (see 6.2).

DEPARTMENT OF DEFENSE SPECIFICATIONS

- MIL-PRF-49470 - Capacitor, Fixed, Ceramic Dielectric, Switch Mode Power Supply (General Purpose and Temperature Stable) Standard Reliability and High Reliability, General Specification for.

DEPARTMENT OF DEFENSE STANDARDS

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

(Copies of these documents are available online at <http://quicksearch.dla.mil/> or from the Standardization Document Order Desk, Building 4D, 700 Robbins Avenue, 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, 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-49470 and herein (see figure 1 and table I).

3.1.1 Lead style. The lead style shall be N configuration (straight) unless the letter J or L is included in the PIN. When requested by the acquiring activity, an optional lead style shall be identified by a single letter following the dash number as follows: "J" = Lead style J, "L" = Lead style L.

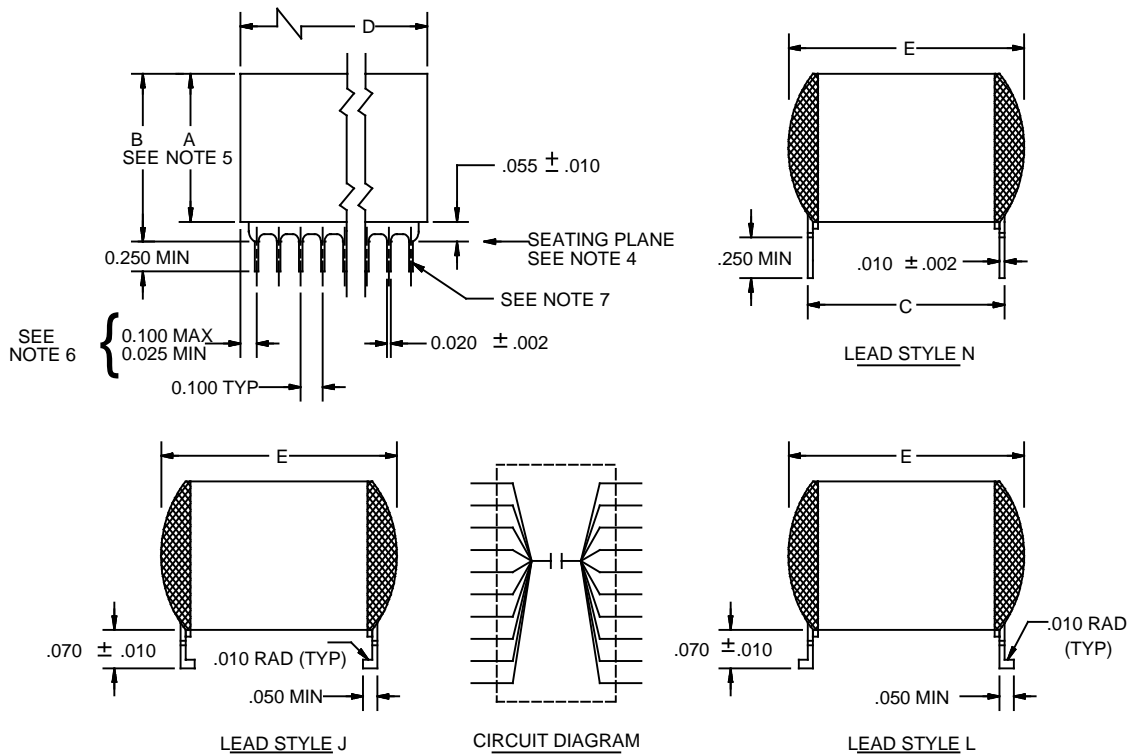
3.1.2 Pure tin. The use of pure tin, as an underplate or final finish, is prohibited both internally and externally. Tin content of capacitor components and solder shall not exceed 97 percent, by mass. Tin shall be alloyed with a minimum of 3 percent lead, by mass (see 6.4).

3.1.3 Case. Multi-layer, unencapsulated, monolithic (see figure 1).

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

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Inches	mm
.002	0.05
.010	0.25
.020	0.51
.025	0.64
.050	1.27
.055	1.40
.070	1.78
.100	2.54
.224	5.69
.250	6.35
.275	6.98
.300	7.62
.350	8.89
.400	10.16
.425	10.80
.440	11.18
.450	11.43
.500	12.70
.800	20.32
.870	22.10
.950	24.13
1.075	27.30
1.250	31.75
1.350	34.29
1.450	36.83
1.535	38.99
1.950	49.53
2.075	52.70



Dimensions					
Case code	C ± .025	D		E (max)	Number of leads per side
		Min	Max		
1	.450	1.950	2.075	.500	20
2	.800	1.450	1.535	.870	15
3	.450	.950	1.075	.500	10
4	.400	.350	.425	.440	4
5	.250	.224	.275	.300	3
6	1.250	1.950	2.075	1.350	20

NOTES:

- Dimensions are in inches.
- Metric equivalents are given for general information only.
- Unless otherwise specified, tolerances are ±.010 inch (0.25 mm).
- Lead frame configuration is shown as typical above the seating plane. A seating plane is only required for lead style N.
- See [table I](#) for specific maximum A dimension. For maximum B dimension, add .065 inch (1.65 mm) to the appropriate A dimension. For all lead styles, the number of chips is determined by the capacitance and voltage rating.
- For case code 5, dimensions shall be .100 inch (2.54 mm) maximum and .012 inch (0.30 mm) minimum.
- Lead alignment within pin rows shall be within ±.005 inch (0.13 mm).

FIGURE 1. Dimensions and configuration.

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3.2 Electrical characteristics.

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

3.2.2 Dielectric. BP, in accordance with [MIL-PRF-49470](#).

3.2.3 Temperature coefficient. Temperature coefficient shall be 0 ± 30 ppm/°C.

3.2.4 Capacitance. See [table I](#). Capacitors shall be measured in accordance with [method 305 of MIL-STD-202](#). The following details and exceptions shall apply: 1 kHz \pm 100 Hz at 1.0 V rms \pm 0.2 V rms (open circuit voltage).

3.2.5 Dissipation factor (+25°C). Dissipation factor shall be .15 percent maximum (measured under the same conditions as capacitance).

3.2.6 Insulation resistance.

a. At +25°C, rated voltage: 100,000 megohms or 1,000 megohms- μ F, whichever is less.

b. At +125°C, rated voltage: 10,000 megohms or 100 megohms- μ F, whichever is less.

3.2.7 Dielectric withstanding voltage. In accordance with [MIL-PRF-49470](#).

3.2.8 Capacitance tolerance. J = ± 5 percent, K = ± 10 percent.

3.3 Thermal shock and voltage conditioning. In accordance with [MIL-PRF-49470](#).

3.4 Solderability. In accordance with [MIL-PRF-49470](#).

3.5 Vibration, high frequency. In accordance with [MIL-PRF-49470](#).

3.6 Immersion. In accordance with [MIL-PRF-49470](#).

3.7 Shock, specified pulse. In accordance with [MIL-PRF-49470](#).

3.8 Moisture resistance. In accordance with [MIL-PRF-49470](#).

3.9 Resistance to soldering heat. In accordance with [MIL-PRF-49470](#).

3.10 Resistance to solvents. In accordance with [MIL-PRF-49470](#).

3.11 Terminal strength. In accordance with [MIL-PRF-49470](#).

3.12 Life (at elevated ambient temperature). In accordance with [MIL-PRF-49470](#).

3.13 Marking. Marking shall be in accordance with [MIL-STD-1285](#), except the capacitors shall be marked with the PIN as specified in [1.2](#), the manufacturer's name or Commercial and Government Entity (CAGE) code and date lot code minimum. Case sizes 4 and 5 shall be marked with coded cap and tolerance minimum. Full marking shall be included on the package.

3.14 Manufacturer eligibility. To be eligible for listing as an approved source of supply, a manufacturer shall be listed in the [MIL-PRF-49470 Qualified Products Database](#) for at least one part, or perform the group A and group B inspections specified herein on a sample of parts agreed upon by the manufacturer and DLA Land and Maritime-VAT.

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

3.16 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.

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3.17 Workmanship. Capacitors shall be processed in such a manner as to be uniform in quality when using 2X minimum to 4X maximum magnification. External leads shall not exhibit cuts, nicks, or scrapes exceeding 10 percent of the diagonal length of the leads. The surface of the lead may exhibit bare base metal on the edges and cut ends of the pins but not on the flat portion of the leads. These capacitor leads are not expected to be solderable above the seating plane.

TABLE I. Electrical characteristics.

DSCC drawing PIN 88011- <u>1/</u>	Capacitance value μF	Capacitance tolerance	Case code	Maximum A dimension
50 V				
001 -	.056	J	5	.120
002 -	.056	K	5	.120
003 -	.068	J	5	.240
004 -	.068	K	5	.240
005 -	.082	J	5	.240
006 -	.082	K	5	.240
007 -	.1	J	5	.240
008 -	.1	K	5	.240
009 -	.12	J	5	.360
010 -	.12	K	5	.360
011 -	.15	J	5	.360
012 -	.15	K	5	.360
013 -	.18	J	5	.480
014 -	.18	K	5	.480
015 -	.22	J	5	.480
016 -	.22	K	5	.480
017 -	.27	J	5	.650
018 -	.27	K	5	.650
019 -	.33	J	4	.360
020 -	.33	K	4	.360
021 -	.39	J	4	.480
022 -	.39	K	4	.480
023 -	.47	J	4	.480
024 -	.47	K	4	.480
025 -	.56	J	4	.650
026 -	.56	K	4	.650
027 -	.68	J	3	.240
028 -	.68	K	3	.240
029 -	.82	J	3	.240
030 -	.82	K	3	.240
031 -	1	J	3	.360
032 -	1	K	3	.360
033 -	1.2	J	3	.360
034 -	1.2	K	3	.360
035 -	1.5	J	3	.480
036 -	1.5	K	3	.480
037 -	1.8	J	3	.480
038 -	1.8	K	3	.480
039 -	2.2	J	3	.650
040 -	2.2	K	3	.650
041 -	2.7	J	1	.360
042 -	2.7	K	1	.360
043 -	3.3	J	1	.480
044 -	3.3	K	1	.480
045 -	3.9	J	1	.480
046 -	3.9	K	1	.480

See footnote at end of table.

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TABLE I. Electrical characteristics - Continued.

DSCC drawing PIN 88011- <u>1/</u>	Capacitance value μF	Capacitance tolerance	Case code	Maximum A dimension
50 V				
047 -	4.7	J	1	.650
048 -	4.7	K	1	.650
049 -	5.6	J	2	.650
050 -	5.6	K	2	.650
051 -	6.8	J	6	.360
052 -	6.8	K	6	.360
053 -	8.2	J	6	.360
054 -	8.2	K	6	.360
055 -	10	J	6	.480
056 -	10	K	6	.480
057 -	12	J	6	.480
058 -	12	K	6	.480
059 -	15	J	6	.650
060 -	15	K	6	.650
100 V				
061 -	.047	J	5	.240
062 -	.047	K	5	.240
063 -	.056	J	5	.240
064 -	.056	K	5	.240
065 -	.068	J	5	.240
066 -	.068	K	5	.240
067 -	.082	J	5	.240
068 -	.082	K	5	.240
069 -	.1	J	5	.360
070 -	.1	K	5	.360
071 -	.12	J	5	.360
072 -	.12	K	5	.360
073 -	.15	J	5	.480
074 -	.15	K	5	.480
075 -	.18	J	5	.480
076 -	.18	K	5	.480
077 -	.22	J	5	.650
078 -	.22	K	5	.650
079 -	.27	J	4	.360
080 -	.27	K	4	.360
081 -	.33	J	4	.480
082 -	.33	K	4	.480
083 -	.39	J	4	.480
084 -	.39	K	4	.480
085 -	.47	J	4	.650
086 -	.47	K	4	.650
087 -	.56	J	4	.650
088 -	.56	K	4	.650
089 -	.68	J	3	.240
090 -	.68	K	3	.240
091 -	.82	J	3	.360
092 -	.82	K	3	.360
093 -	1	J	3	.360
094 -	1	K	3	.360
095 -	1.2	J	3	.480
096 -	1.2	K	3	.480

See footnote at end of table.

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TABLE I. Electrical characteristics - Continued.

DSCC drawing PIN 88011- <u>1/</u>	Capacitance value μ F	Capacitance tolerance	Case code	Maximum A dimension
100 V				
097 -	1.5	J	3	.480
098 -	1.5	K	3	.480
099 -	1.8	J	3	.650
100 -	1.8	K	3	.650
101 -	2.2	J	1	.480
102 -	2.2	K	1	.480
103 -	2.7	J	1	.480
104 -	2.7	K	1	.480
105 -	3.3	J	1	.650
106 -	3.3	K	1	.650
107 -	3.9	J	2	.480
108 -	3.9	K	2	.480
109 -	4.7	J	2	.650
110 -	4.7	K	2	.650
111 -	5.6	J	6	.360
112 -	5.6	K	6	.360
113 -	6.8	J	6	.360
114 -	6.8	K	6	.360
115 -	8.2	J	6	.480
116 -	8.2	K	6	.480
117 -	10	J	6	.650
118 -	10	K	6	.650
119 -	12	J	6	.650
120 -	12	K	6	.650
200 V				
121 -	.022	J	5	.120
122 -	.022	K	5	.120
123 -	.027	J	5	.240
124 -	.027	K	5	.240
125 -	.033	J	5	.240
126 -	.033	K	5	.240
127 -	.039	J	5	.240
128 -	.039	K	5	.240
129 -	.047	J	5	.360
130 -	.047	K	5	.360
131 -	.056	J	5	.360
132 -	.056	K	5	.360
133 -	.068	J	5	.480
134 -	.068	K	5	.480
135 -	.082	J	5	.480
136 -	.082	K	5	.480
137 -	.1	J	5	.650
138 -	.1	K	5	.650
139 -	.12	J	4	.360
140 -	.12	K	4	.360
141 -	.15	J	4	.360
142 -	.15	K	4	.360
143 -	.18	J	4	.480
144 -	.18	K	4	.480
145 -	.22	J	4	.480
146 -	.22	K	4	.480

See footnote at end of table.

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TABLE I. Electrical characteristics - Continued.

DSCC drawing PIN 88011- <u>1/</u>	Capacitance value μF	Capacitance tolerance	Case code	Maximum A dimension
200 V				
147 -	.27	J	4	.650
148 -	.27	K	4	.650
149 -	.33	J	3	.240
150 -	.33	K	3	.240
151 -	.39	J	3	.240
152 -	.39	K	3	.240
153 -	.47	J	3	.360
154 -	.47	K	3	.360
155 -	.56	J	3	.360
156 -	.56	K	3	.360
157 -	.68	J	3	.480
158 -	.68	K	3	.480
159 -	.82	J	3	.650
160 -	.82	K	3	.650
161 -	1	J	3	.650
162 -	1	K	3	.650
163 -	1.2	J	1	.480
164 -	1.2	K	1	.480
165 -	1.5	J	1	.480
166 -	1.5	K	1	.480
167 -	1.8	J	1	.650
168 -	1.8	K	1	.650
169 -	2.2	J	2	.480
170 -	2.2	K	2	.480
171 -	2.7	J	2	.650
172 -	2.7	K	2	.650
173 -	3.3	J	6	.360
174 -	3.3	K	6	.360
175 -	3.9	J	6	.360
176 -	3.9	K	6	.360
177 -	4.7	J	6	.480
178 -	4.7	K	6	.480
179 -	5.6	J	6	.650
180 -	5.6	K	6	.650
500 V				
181 -	.01	J	5	.120
182 -	.01	K	5	.120
183 -	.012	J	5	.240
184 -	.012	K	5	.240
185 -	.015	J	5	.240
186 -	.015	K	5	.240
187 -	.018	J	5	.240
188 -	.018	K	5	.240
189 -	.022	J	5	.360
190 -	.022	K	5	.360
191 -	.027	J	5	.360
192 -	.027	K	5	.360
193 -	.033	J	5	.480
194 -	.033	K	5	.480
195 -	.039	J	5	.480
196 -	.039	K	5	.480

See footnote at end of table.

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TABLE I. Electrical characteristics - Continued.

DSCC drawing PIN 88011- 1/	Capacitance value μF	Capacitance tolerance	Case code	Maximum A dimension
500 V				
197 -	.047	J	5	.650
198 -	.047	K	5	.650
199 -	.056	J	4	.360
200 -	.056	K	4	.360
201 -	.068	J	4	.360
202 -	.068	K	4	.360
203 -	.082	J	4	.480
204 -	.082	K	4	.480
205 -	.1	J	4	.480
206 -	.1	K	4	.480
207 -	.12	J	4	.650
208 -	.12	K	4	.650
209 -	.15	J	3	.240
210 -	.15	K	3	.240
211 -	.18	J	3	.240
212 -	.18	K	3	.240
213 -	.22	J	3	.360
214 -	.22	K	3	.360
215 -	.27	J	3	.360
216 -	.27	K	3	.360
217 -	.33	J	3	.480
218 -	.33	K	3	.480
219 -	.39	J	3	.650
220 -	.39	K	3	.650
221 -	.47	J	1	.360
222 -	.47	K	1	.360
223 -	.56	J	1	.480
224 -	.56	K	1	.480
225 -	.68	J	1	.480
226 -	.68	K	1	.480
227 -	.82	J	1	.650
228 -	.82	K	1	.650
229 -	1	J	2	.480
230 -	1	K	2	.480
231 -	1.2	J	2	.650
232 -	1.2	K	2	.650
233 -	1.5	J	6	.360
234 -	1.5	K	6	.360
235 -	1.8	J	6	.480
236 -	1.8	K	6	.480
237 -	2.2	J	6	.650
238 -	2.2	K	6	.650

1/ Complete PIN shall include an additional symbol to indicate the lead style, if applicable (see 1.2).

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 [table II](#) and [table III](#) herein).

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4.2.2 Certification. The acquiring activity, at its discretion, may accept a certificate of compliance with group B inspections in lieu of performing group B inspections (see 6.2e). See 6.1.3 for guidance.

TABLE II. Group A inspection.

Inspection	Requirement paragraph of MIL-PRF-49470	Test method paragraph of MIL-PRF-49470	Sampling procedure
<u>Subgroup 1</u> Thermal shock and voltage conditioning <u>1/</u>	3.9	4.8.5	100% inspection
<u>Subgroup 2</u> Visual and mechanical examination: Material Physical dimensions Interface requirements (other than physical dimensions) Marking <u>2/</u> Workmanship	3.4 3.1 3.5 and 3.5.1 3.28 3.30	4.8.4	13 samples 0 failures

1/ Post checks are required (see 3.9 of MIL-PRF-49470).

2/ Marking defects are based on visual examination only. Any subsequent electrical defects shall not be used as a basis for determining marking defects.

TABLE III. Group B inspection. 1/

Inspection	Requirement paragraph of MIL-PRF-49470	Test method paragraph of MIL-PRF-49470	Number of sample units to be inspected	Number of defectives permitted <u>2/</u>	
<u>Subgroup 1</u> <u>3/</u> Temperature coefficient Resistance to solvents <u>5/</u> Immersion Terminal strength <u>5/</u>	<u>4/</u> 3.23 3.18 3.24	<u>4/</u> 4.8.20 4.8.15 4.8.10	12	1	1 <u>6/</u>
<u>Subgroup 2</u> Resistance to soldering heat Moisture resistance	3.20 3.21	4.8.17 4.8.18	12	1	
<u>Subgroup 3</u> Marking legibility (laser marking only)	3.28.1	4.8.4.1	6	1	
<u>Subgroup 4</u> Solderability	3.15	4.8.12	3	0	
<u>Subgroup 5</u> Life	3.26	4.8.22	5 minimum per case code	0	

1/ Unless otherwise specified herein, when necessary, mounting of group B samples shall be at the discretion of the manufacturer.

2/ A sample unit having one or more defects shall be charged as a single defective.

3/ Order of tests is at discretion of manufacturer.

4/ See 3.2.3 of this drawing.

5/ Sample size shall be 3 pieces with zero defectives permitted.

6/ Total of one defect allowed for combination of subgroup 1, subgroup 2, and subgroup 3 inspections.

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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.

6. NOTES

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

6.1 Intended use. These capacitors are primarily designed for use where a small physical size with comparatively large electrical capacitance and high insulation resistance is required. CG (BP) characteristic ceramic capacitors are for use in critical frequency determining applications, timing circuits, and other applications where absolute stability is required.

6.1.1 Precautionary note. Capacitors covered by this specification are very susceptible to thermal shock damage due to their large ceramic mass. Temperature profiles used should provide adequate temperature rise and cool-down time to prevent damage from thermal shock. The capacitors should be preheated. The preheat should not exceed 4°C per second. The maximum preheat temperature should be within 50°C of the solder bath temperature. Consult manufacturers for further recommendation.

6.1.2 Precautionary note. Capacitors covered by this specification have high mass and are susceptible to mechanical damage. Special mounting precaution may be necessary especially in high vibration environments. Consult manufacturers for recommendations.

6.1.3 Group B inspection guidance. The manufacturing complexity of the parts on this drawing varies immensely. To determine whether to accept a certificate of compliance in lieu of performing group B inspections, appropriate data should be reviewed. Test data and/or reliability data from recent production lots consisting of parts with same case size, equal or greater capacitance, and equal or tighter tolerance should be reviewed.

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 packaging and packing.
- d. Title, number, and date of the specification.
- e. Whether the manufacturer performs the group B inspections, or provides certification of compliance with group B inspections.
- f. Requirements for notification of change of product to acquiring activity, if applicable.

6.4 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).

6.5 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.

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

6.7 Approved source(s) of supply. Approved source(s) of supply are listed herein. Additional sources will be added as they become available. Assistance in the use of this drawing may be obtained online at capacitorfilter@dla.mil, or by contacting DLA Land and Maritime, ATTN: VAT, Post Office Box 3990, Columbus, OH 43218-3990 or by telephone (614) 692-4709 or DSN 850-4709.

TABLE IV. Similar vendor types.

DSCC drawing PIN 1/88011-	Vendor A similar designation or type number	Vendor B and vendor E similar vendor type	Vendor C similar designation or type number	Vendor D similar designation or type number
001	SM055A563JHN120	500P05N563JN3H	UTC4203-001	PCI1550-001
002	SM055A563KHN120	500P05N563KN3H	UTC4203-002	PCI1550-002
003	SM055A683JHN240	500P25N683JN3H	UTC4203-003	PCI1550-003
004	SM055A683KHN240	500P25N683KN3H	UTC4203-004	PCI1550-004
005	SM055A823JHN240	500P25N823JN3H	UTC4203-005	PCI1550-005
006	SM055A823KHN240	500P25N823KN3H	UTC4203-006	PCI1550-006
007	SM055A104JHN240	500P25N104JN3H	UTC4203-007	PCI1550-007
008	SM055A104KHN240	500P25N104KN3H	UTC4203-008	PCI1550-008
009	SM055A124JHN360	500P35N124JN3H	UTC4203-009	PCI1550-009
010	SM055A124KHN360	500P35N124KN3H	UTC4203-010	PCI1550-010
011	SM055A154JHN360	500P35N154JN3H	UTC4203-011	PCI1550-011
012	SM055A154KHN360	500P45N154KN3H	UTC4203-012	PCI1550-012
013	SM055A184JHN480	500P45N184JN3H	UTC4203-013	PCI1550-013
014	SM055A184KHN480	500P45N184KN3H	UTC4203-014	PCI1550-014
015	SM055A224JHN480	500P45N224JN3H	UTC4203-015	PCI1550-015
016	SM055A224KHN480	500P55N224KN3H	UTC4203-016	PCI1550-016
017	SM055A274JHN650	500P55N274JN3H	UTC4203-017	PCI1550-017
018	SM055A274KHN650	500P45N274KN3H	UTC4203-018	PCI1550-018
019	SM045A334JHN360	500P34N334JN3H	UTC4203-019	PCI1550-019
020	SM045A334KHN360	500P34N334KN3H	UTC4203-020	PCI1550-020
021	SM045A394JHN480	500P44N394JN3H	UTC4203-021	PCI1550-021
022	SM045A394KHN480	500P44N394KN3H	UTC4203-022	PCI1550-022
023	SM045A474JHN480	500P44N474JN3H	UTC4203-023	PCI1550-023
024	SM045A474KHN480	500P44N474KN3H	UTC4203-024	PCI1550-024
025	SM045A564JHN650	500P54N564JN3H	UTC4203-025	PCI1550-025
026	SM045A564KHN650	500P54N564KN3H	UTC4203-026	PCI1550-026
027	SM035A684JHN240	500P23N684JN3H	UTC4203-027	PCI1550-027
028	SM035A684KHN240	500P23N684KN3H	UTC4203-028	PCI1550-028
029	SM035A824JHN240	500P23N824JN3H	UTC4203-029	PCI1550-029
030	SM035A824KHN240	500P23N824KN3H	UTC4203-030	PCI1550-030
031	SM035A105JHN360	500P33N105JN3H	UTC4203-031	PCI1550-031
032	SM035A105KHN360	500P33N105KN3H	UTC4203-032	PCI1550-032
033	SM035A125JHN360	500P33N125JN3H	UTC4203-033	PCI1550-033
034	SM035A125KHN360	500P33N125KN3H	UTC4203-034	PCI1550-034
035	SM035A155JHN480	500P43N155JN3H	UTC4203-035	PCI1550-035
036	SM035A155KHN480	500P43N155KN3H	UTC4203-036	PCI1550-036
037	SM035A185JHN480	500P43N185JN3H	UTC4203-037	PCI1550-037
038	SM035A185KHN480	500P43N185KN3H	UTC4203-038	PCI1550-038
039	SM035A225JHN650	500P53N225JN3H	UTC4203-039	PCI1550-039
040	SM035A225KHN650	500P53N225KN3H	UTC4203-040	PCI1550-040
041	SM015A275JHN360	500P31N275JN3H	UTC4203-041	PCI1550-041
042	SM015A275KHN360	500P31N275KN3H	UTC4203-042	PCI1550-042
043	SM015A335JHN480	500P41N335JN3H	UTC4203-043	PCI1550-043
044	SM015A335KHN480	500P41N335KN3H	UTC4203-044	PCI1550-044
045	SM015A395JHN480	500P41N395JN3H	UTC4203-045	PCI1550-045
046	SM015A395KHN480	500P41N395KN3H	UTC4203-046	PCI1550-046
047	SM015A475JHN650	500P51N475JN3H	UTC4203-047	PCI1550-047
048	SM015A475KHN650	500P51N475KN3H	UTC4203-048	PCI1550-048

See footnotes at end of table.

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TABLE IV. Similar vendor types - Continued.

DSCC drawing PIN 1/88011-	Vendor A similar designation or type number	Vendor B and vendor E similar vendor type	Vendor C similar designation or type number	Vendor D similar designation or type number
049	SM025A565JHN650	500P52N565JN3H	UTC4203-049	PCI1550-049
050	SM025A565KHN650	500P52N565KN3H	UTC4203-050	PCI1550-050
051	SM065A685JHN360	500P36N685JN3H	UTC4203-051	PCI1550-051
052	SM065A685KHN360	500P36N685KN3H	UTC4203-052	PCI1550-052
053	SM065A825JHN360	500P36N825JN3H	UTC4203-053	PCI1550-053
054	SM065A825KHN360	500P36N825KN3H	UTC4203-054	PCI1550-054
055	SM065A106JHN480	500P46N106JN3H	UTC4203-055	PCI1550-055
056	SM065A106KHN480	500P46N106KN3H	UTC4203-056	PCI1550-056
057	SM065A126JHN480	500P46N126JN3H	UTC4203-057	PCI1550-057
058	SM065A126KHN480	500P46N126KN3H	UTC4203-058	PCI1550-058
059	SM065A156JHN650	500P56N156JN3H	UTC4203-059	PCI1550-59
060	SM065A156KHN650	500P56N156KN3H	UTC4203-060	PCI1550-60
061	SM051A473JHN240	101P25N473JN3H	UTC4203-061	PCI1550-61
062	SM051A473KHN240	101P25N473KN3H	UTC4203-062	PCI1550-62
063	SM051A563JHN240	101P25N563JN3H	UTC4203-063	PCI1550-63
064	SM051A563KHN240	101P25N563KN3H	UTC4203-064	PCI1550-64
065	SM051A683JHN240	101P25N683JN3H	UTC4203-065	PCI1550-65
066	SM051A683KHN240	101P25N683KN3H	UTC4203-066	PCI1550-66
067	SM051A823JHN240	101P25N823JN3H	UTC4203-067	PCI1550-67
068	SM051A823KHN240	101P35N823KN3H	UTC4203-068	PCI1550-68
069	SM051A104JHN360	101P35N104JN3H	UTC4203-069	PCI1550-69
070	SM051A104KHN360	101P35N104KN3H	UTC4203-070	PCI1550-70
071	SM051A124JHN360	101P35N124JN3H	UTC4203-071	PCI1550-71
072	SM051A124KHN360	101P35N124KN3H	UTC4203-072	PCI1550-72
073	SM051A154JHN480	101P45N154JN3H	UTC4203-073	PCI1550-73
074	SM051A154KHN480	101P45N154KN3H	UTC4203-074	PCI1550-74
075	SM051A184JHN480	101P45N184JN3H	UTC4203-075	PCI1550-75
076	SM051A184KHN480	101P45N184KN3H	UTC4203-076	PCI1550-76
077	SM051A224JHN650	101P55N224JN3H	UTC4203-077	PCI1550-77
078	SM051A224KHN650	101P55N224KN3H	UTC4203-078	PCI1550-78
079	SM041A274JHN360	101P34N274JN3H	UTC4203-079	PCI1550-79
080	SM041A274KHN360	101P34N274KN3H	UTC4203-080	PCI1550-80
081	SM041A334JHN480	101P44N334JN3H	UTC4203-081	PCI1550-81
082	SM041A334KHN480	101P44N334KN3H	UTC4203-082	PCI1550-82
083	SM041A394JHN480	101P44N394JN3H	UTC4203-083	PCI1550-83
084	SM041A394KHN480	101P44N394KN3H	UTC4203-084	PCI1550-84
085	SM041A474JHN650	101P54N474JN3H	UTC4203-085	PCI1550-85
086	SM041A474KHN650	101P54N474KN3H	UTC4203-086	PCI1550-86
087	SM041A564JHN650	101P23N564JN3H	UTC4203-087	PCI1550-87
088	SM041A564KHN650	101P23N564KN3H	UTC4203-088	PCI1550-88
089	SM031A684JHN240	101P23N684JN3H	UTC4203-089	PCI1550-89
090	SM031A684KHN240	101P23N684KN3H	UTC4203-090	PCI1550-90
091	SM031A824JHN360	101P33N824JN3H	UTC4203-091	PCI1550-91
092	SM031A824KHN360	101P33N824KN3H	UTC4203-092	PCI1550-92
093	SM031A105JHN360	101P33N105JN3H	UTC4203-093	PCI1550-93
094	SM031A105KHN360	101P33N105KN3H	UTC4203-094	PCI1550-94
095	SM031A125JHN480	101P43N125JN3H	UTC4203-095	PCI1550-95
096	SM031A125KHN480	101P43N125KN3H	UTC4203-096	PCI1550-96
097	SM031A155JHN480	101P43N155JN3H	UTC4203-097	PCI1550-97
098	SM031A155KHN480	101P43N155KN3H	UTC4203-098	PCI1550-98
099	SM031A185JHN650	101P53N185JN3H	UTC4203-099	PCI1550-99
100	SM031A185KHN650	101P53N185KN3H	UTC4203-100	PCI1550-100
101	SM011A225JHN480	101P41N225JN3H	UTC4203-101	PCI1550-101
102	SM011A225KHN480	101P41N225KN3H	UTC4203-102	PCI1550-102
103	SM011A275JHN480	101P41N275JN3H	UTC4203-103	PCI1550-103
104	SM011A275KHN480	101P41N275KN3H	UTC4203-104	PCI1550-104
105	SM011A335JHN650	101P51N335JN3H	UTC4203-105	PCI1550-105
106	SM011A335KHN650	101P51N335KN3H	UTC4203-106	PCI1550-106

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TABLE IV. Similar vendor types - Continued.

DSCC drawing PIN 1/88011-	Vendor A similar designation or type number	Vendor B and vendor E similar vendor type	Vendor C similar designation or type number	Vendor D similar designation or type number
107	SM021A395JHN480	101P42N395JN3H	UTC4203-107	PCI1550-107
108	SM021A395KHN480	101P42N395KN3H	UTC4203-108	PCI1550-108
109	SM021A475JHN650	101P52N475JN3H	UTC4203-109	PCI1550-109
110	SM021A475KHN650	101P52N475KN3H	UTC4203-110	PCI1550-110
111	SM061A565JHN360	101P36N565JN3H	UTC4203-111	PCI1550-111
112	SM061A565KHN360	101P36N565KN3H	UTC4203-112	PCI1550-112
113	SM061A685JHN360	101P36N685JN3H	UTC4203-113	PCI1550-113
114	SM061A685KHN360	101P36N685KN3H	UTC4203-114	PCI1550-114
115	SM061A825JHN480	101P46N825JN3H	UTC4203-115	PCI1550-115
116	SM061A825KHN480	101P46N825KN3H	UTC4203-116	PCI1550-116
117	SM061A106JHN650	101P56N106JN3H	UTC4203-117	PCI1550-117
118	SM061A106KHN650	101P56N106KN3H	UTC4203-118	PCI1550-118
119	SM061A126JHN650	101P56N126JN3H	UTC4203-119	PCI1550-119
120	SM061A126KHN650	101P56N126KN3H	UTC4203-120	PCI1550-120
121	SM052A223JHN120	201P05N223JN3H	UTC4203-121	PCI1550-121
122	SM052A223KHN120	201P05N223KN3H	UTC4203-122	PCI1550-122
123	SM052A273JHN240	201P25N273JN3H	UTC4203-123	PCI1550-123
124	SM052A273KHN240	201P25N273KN3H	UTC4203-124	PCI1550-124
125	SM052A333JHN240	201P25N333JN3H	UTC4203-125	PCI1550-125
126	SM052A333KHN240	201P25N333KN3H	UTC4203-126	PCI1550-126
127	SM052A393JHN240	201P25N393JN3H	UTC4203-127	PCI1550-127
128	SM052A393KHN240	201P25N393KN3H	UTC4203-128	PCI1550-128
129	SM052A473JHN360	201P35N473JN3H	UTC4203-129	PCI1550-129
130	SM052A473KHN360	201P35N473KN3H	UTC4203-130	PCI1550-130
131	SM052A563JHN360	201P35N563JN3H	UTC4203-131	PCI1550-131
132	SM052A563KHN360	201P35N563KN3H	UTC4203-132	PCI1550-132
133	SM052A683JHN480	201P45N683JN3H	UTC4203-133	PCI1550-133
134	SM052A683KHN480	201P45N683KN3H	UTC4203-134	PCI1550-134
135	SM052A823JHN480	201P45N823JN3H	UTC4203-135	PCI1550-135
136	SM052A823KHN480	201P45N823KN3H	UTC4203-136	PCI1550-136
137	SM052A104JHN650	201P55N104JN3H	UTC4203-137	PCI1550-137
138	SM052A104KHN650	201P55N104KN3H	UTC4203-138	PCI1550-138
139	SM042A124JHN360	201P34N124JN3H	UTC4203-139	PCI1550-139
140	SM042A124KHN360	201P34N124KN3H	UTC4203-140	PCI1550-140
141	SM042A154JHN360	201P34N154JN3H	UTC4203-141	PCI1550-141
142	SM042A154KHN360	201P34N154KN3H	UTC4203-142	PCI1550-142
143	SM042A184JHN480	201P44N184JN3H	UTC4203-143	PCI1550-143
144	SM042A184KHN480	201P44N184KN3H	UTC4203-144	PCI1550-144
145	SM042A224JHN480	201P44N224JN3H	UTC4203-145	PCI1550-145
146	SM042A224KHN480	201P44N224KN3H	UTC4203-146	PCI1550-146
147	SM042A274JHN650	201P54N274JN3H	UTC4203-147	PCI1550-147
148	SM042A274KHN650	201P54N274KN3H	UTC4203-148	PCI1550-148
149	SM032A334JHN240	201P23N334JN3H	UTC4203-149	PCI1550-149
150	SM032A334KHN240	201P23N334KN3H	UTC4203-150	PCI1550-150
151	SM032A394JHN240	201P23N394JN3H	UTC4203-151	PCI1550-151
152	SM032A394KHN240	201P23N394KN3H	UTC4203-152	PCI1550-152
153	SM032A474JHN360	201P33N474JN3H	UTC4203-153	PCI1550-153
154	SM032A474KHN360	201P33N474KN3H	UTC4203-154	PCI1550-154
155	SM032A564JHN360	201P33N564JN3H	UTC4203-155	PCI1550-155
156	SM032A564KHN360	201P33N564KN3H	UTC4203-156	PCI1550-156
157	SM032A684JHN480	201P43N684JN3H	UTC4203-157	PCI1550-157
158	SM032A684KHN480	201P43N684KN3H	UTC4203-158	PCI1550-158
159	SM032A824JHN650	201P53N824JN3H	UTC4203-159	PCI1550-159
160	SM032A824KHN650	201P53N824KN3H	UTC4203-160	PCI1550-160
161	SM032A105JHN650	201P53N105JN3H	UTC4203-161	PCI1550-161
162	SM032A105KHN650	201P53N105KN3H	UTC4203-162	PCI1550-162
163	SM012A125JHN480	201P41N125JN3H	UTC4203-163	PCI1550-163
164	SM012A125KHN480	201P41N125KN3H	UTC4203-164	PCI1550-164

See footnotes at end of table.

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TABLE IV. Similar vendor types - Continued.

DSCC drawing PIN 1/88011-	Vendor A similar designation or type number	Vendor B and vendor E similar vendor type	Vendor C similar designation or type number	Vendor D similar designation or type number
165	SM012A155JHN480	201P41N155JN3H	UTC4203-165	PCI1550-165
166	SM012A155KHN480	201P41N155KN3H	UTC4203-166	PCI1550-166
167	SM012A185JHN650	201P51N185JN3H	UTC4203-167	PCI1550-167
168	SM012A185KHN650	201P51N185KN3H	UTC4203-168	PCI1550-168
169	SM022A225JHN480	201P42N225JN3H	UTC4203-169	PCI1550-169
170	SM022A225KHN480	201P42N225KN3H	UTC4203-170	PCI1550-170
171	SM022A275JHN650	201P52N275JN3H	UTC4203-171	PCI1550-171
172	SM022A275KHN650	201P52N275KN3H	UTC4203-172	PCI1550-172
173	SM062A335JHN360	201P36N335JN3H	UTC4203-173	PCI1550-173
174	SM062A335KHN360	201P36N335KN3H	UTC4203-174	PCI1550-174
175	SM062A395JHN360	201P36N395JN3H	UTC4203-175	PCI1550-175
176	SM062A395KHN360	201P36N395KN3H	UTC4203-176	PCI1550-176
177	SM062A475JHN480	201P46N475JN3H	UTC4203-177	PCI1550-177
178	SM062A475KHN480	201P46N475KN3H	UTC4203-178	PCI1550-178
179	SM062A565JHN650	201P56N565JN3H	UTC4203-179	PCI1550-179
180	SM062A565KHN650	201P56N565KN3H	UTC4203-180	PCI1550-180
181	SM057A103JHN120	501P05N103JN3H	UTC4203-181	PCI1550-181
182	SM057A103KHN120	501P05N103KN3H	UTC4203-182	PCI1550-182
183	SM057A123JHN240	501P25N123JN3H	UTC4203-183	PCI1550-183
184	SM057A123KHN240	501P25N123KN3H	UTC4203-184	PCI1550-184
185	SM057A153JHN240	501P25N153JN3H	UTC4203-185	PCI1550-185
186	SM057A153KHN240	501P25N153KN3H	UTC4203-186	PCI1550-186
187	SM057A183JHN240	501P25N183JN3H	UTC4203-187	PCI1550-187
188	SM057A183KHN240	501P25N183KN3H	UTC4203-188	PCI1550-188
189	SM057A223JHN360	501P35N223JN3H	UTC4203-189	PCI1550-189
190	SM057A223KHN360	501P35N223KN3H	UTC4203-190	PCI1550-190
191	SM057A273JHN360	501P35N273JN3H	UTC4203-191	PCI1550-191
192	SM057A273KHN360	501P35N273KN3H	UTC4203-192	PCI1550-192
193	SM057A333JHN480	501P45N333JN3H	UTC4203-193	PCI1550-193
194	SM057A333KHN480	501P45N333KN3H	UTC4203-194	PCI1550-194
195	SM057A393JHN480	501P45N393JN3H	UTC4203-195	PCI1550-195
196	SM057A393KHN480	501P45N393KN3H	UTC4203-196	PCI1550-196
197	SM057A473JHN650	501P55N473JN3H	UTC4203-197	PCI1550-197
198	SM057A473KHN650	501P55N473KN3H	UTC4203-198	PCI1550-198
199	SM047A563JHN360	501P34N563JN3H	UTC4203-199	PCI1550-199
200	SM047A563KHN360	501P34N563KN3H	UTC4203-200	PCI1550-200
201	SM047A683JHN360	501P34N683JN3H	UTC4203-201	PCI1550-201
202	SM047A683KHN360	501P34N683KN3H	UTC4203-202	PCI1550-202
203	SM047A823JHN480	501P44N823JN3H	UTC4203-203	PCI1550-203
204	SM047A823KHN480	501P44N823KN3H	UTC4203-204	PCI1550-204
205	SM047A104JHN480	501P44N104JN3H	UTC4203-205	PCI1550-205
206	SM047A104KHN480	501P44N104KN3H	UTC4203-206	PCI1550-206
207	SM047A124JHN650	501P54N124JN3H	UTC4203-207	PCI1550-207
208	SM047A124KHN650	501P54N124KN3H	UTC4203-208	PCI1550-208
209	SM037A154JHN240	501P23N154JN3H	UTC4203-209	PCI1550-209
210	SM037A154KHN240	501P23N154KN3H	UTC4203-210	PCI1550-210
211	SM037A184JHN240	501P23N184JN3H	UTC4203-211	PCI1550-211
212	SM037A184KHN240	501P23N184KN3H	UTC4203-212	PCI1550-212
213	SM037A224JHN360	501P33N224JN3H	UTC4203-213	PCI1550-213
214	SM037A224KHN360	501P33N224KN3H	UTC4203-214	PCI1550-214
215	SM037A274JHN360	501P33N274JN3H	UTC4203-215	PCI1550-215
216	SM037A274KHN360	501P33N274KN3H	UTC4203-216	PCI1550-216
217	SM037A334JHN480	501P43N334JN3H	UTC4203-217	PCI1550-217
218	SM037A334KHN480	501P43N334KN3H	UTC4203-218	PCI1550-218
219	SM037A394JHN650	501P53N394JN3H	UTC4203-219	PCI1550-219
220	SM037A394KHN650	501P53N394KN3H	UTC4203-220	PCI1550-220
221	SM017A474JHN360	501P31N474JN3H	UTC4203-221	PCI1550-221
222	SM017A474KHN360	501P31N474KN3H	UTC4203-222	PCI1550-222

See footnotes at end of table.

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TABLE IV. Similar vendor types - Continued.

DSCC drawing PIN <u>1/</u> 88011-	Vendor A similar designation or type number	Vendor B and vendor E similar vendor type	Vendor C similar designation or type number	Vendor D similar designation or type number
223	SM017A564JHN480	500P41N564JN3H	UTC4203-223	PCI1550-223
224	SM017A564KHN480	500P41N564KN3H	UTC4203-224	PCI1550-224
225	SM017A684JHN480	500P41N684JN3H	UTC4203-225	PCI1550-225
226	SM017A684KHN480	500P41N684KN3H	UTC4203-226	PCI1550-226
227	SM017A824JHN650	500P51N824JN3H	UTC4203-227	PCI1550-227
228	SM017A824KHN650	500P51N824KN3H	UTC4203-228	PCI1550-228
229	SM027A105JHN480	101P42N105JN3H	UTC4203-229	PCI1550-229
230	SM027A105KHN480	101P42N105KN3H	UTC4203-230	PCI1550-230
231	SM027A125JHN650	501P52N125JN3H	UTC4203-231	PCI1550-231
232	SM027A125KHN650	501P52N125KN3H	UTC4203-232	PCI1550-232
233	SM067A155JHN360	501P36N155JN3H	UTC4203-233	PCI1550-233
234	SM067A155KHN360	501P36N155KN3H	UTC4203-234	PCI1550-234
235	SM067A185JHN480	501P46N185JN3H	UTC4203-235	PCI1550-235
236	SM067A185KHN480	501P46N185KN3H	UTC4203-236	PCI1550-236
237	SM067A225JHN650	501P56N225JN3H	UTC4203-237	PCI1550-237
238	SM067A225KHN650	501P56N225KN3H	UTC4203-238	PCI1550-238

1/ Parts must be purchased to this DSCC PIN to assure that all performance requirements and tests are met.

<u>Vendor</u>	<u>Vendor CAGE</u>	<u>Vendor name and address</u>
A	96095	Olean Advanced Products A Division of AVX Corporation 1695 Seneca Avenue Olean NY 14760-3736
B	07EN1	Advanced Monolythic Ceramics, Incorporated 3101 Constitution Avenue, Suite 100 Olean NY 14760-1867
C	0YBX7	Union Technology Corporation 718 Monterey Pass Road Monterey Park CA 91754-3607
D	60212	Presidio Components Incorporated 7169 Construction Court San Diego CA 92121-2615
E	29454	Johanson Dielectrics Incorporated 15191 Bledsoe Street Sylmar CA 91342-2710

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