REVISIONS

LTR	DESCRIPTION	DATE	APPROVED
A	Added suggested sources of supply.	11 May 88	D. Moore
B	Added suggested source of supply and made corrections.	27 Feb 90	D. Moore
C	Added and deleted suggested sources of supply. Modified manufacturer's PINs. Changes to 3.2.6 and 6.1. Editorial changes throughout.	18 Jan 94	D. Moore
D	Changes in accordance with NOR 5910-R020-96	23 May 96	A. Ernst
E	Revised sources of supply, added alternate marking method, made editorial changes, and converted references to MIL-PRF-49467.	5 April 99	J. Crum
F	Moved solderability testing from group A to group B. Updated suggested sources of supply.	10 April 00	Kendall A. Cottongim
G	Removed suggested source of supply. Added note 4 to figure 1. Added capacitor tolerance note to 3.2.8.	16 January 01	Kendall A. Cottongim
H	Added suggested source of supply. Changed Johanson Dielectrics CAGE code.	12 September 01	Kendall A. Cottongim
J	Updated name and address of vendor C.	4 November 02	Kendall A. Cottongim
K	Added Johanson Dielectrics as a suggested source of supply.	18 August 2004	Kendall A. Cottongim
L	Revised part numbers for vendors A and C. Removed vendor H. Updated address for vendor E.	21 December 2006	Michael A. Radecki
M	Added CalRamic Technologies as a suggested source of supply.	19 April 2007	Michael A. Radecki

CURRENT DESIGN ACTIVITY CAGE CODE 037Z3
DEFENSE LOGISTICS AGENCY
DEFENSE SUPPLY CENTER COLUMBUS
COLUMBUS, OHIO 43218-3990

Prepared in accordance with ASME Y14.100

Selected item drawing

REV STATUS OF PAGES																		
REV	M	M	M	M	M	M	M	M	M									
PAGES	1	2	3	4	5	6	7	8	9									

PMIC N/A

PREPARED BY
ROBERT E. GRILLOT

DEFENSE ELECTRONIC SUPPLY CENTER DAYTON, OH

Original date of drawing

22 September 1987

CHECKED BY
EDWARD H. BACK

APPROVED BY
DAVID E. MOORE

TITLE

CAPACITORS, CERAMIC, MULTILAYER, HIGH VOLTAGE, CG, 3,000 V DC

SIZE	CODE IDENT. NO.	DWG NO.
A	14933	87114

REV M

PAGE 1 **OF** 9

AMSC N/A

5910-E392

1. SCOPE

1.1 Scope. This drawing and MIL-PRF-49467 describe the complete requirements for high voltage multilayer ceramic capacitors.

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

87114	-XX
Drawing number	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-49467	-	Capacitor, Fixed, Ceramic, Multilayer, High Voltage (General Purpose), Established Reliability, General Specification for.

DEPARTMENT OF DEFENSE STANDARDS

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

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

2.3 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-49467 and herein (see figure 1).

3.1.1 Leads. Leads shall be solder coated. Tin plating is prohibited as a final finish or as an undercoat. Tin-lead (Sn-Pb) finishes are acceptable provided that the minimum lead content is 3 percent.

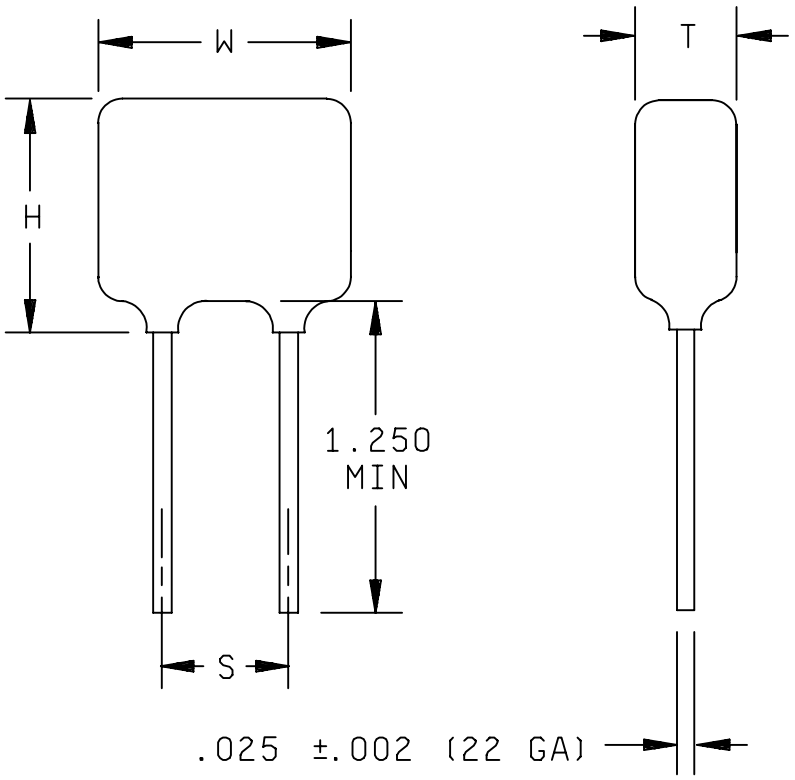
3.1.2 Case. Epoxy, conformally coated.

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

3.2 Electrical characteristics.

3.2.1 Rated voltage. The rated voltage shall be 3,000 volts dc.

3.2.2 Dielectric type. CG.



Case code	Sizes (max.)			Lead spacing
	Width (W)	Height (H)	Thickness (T)	± .030 (S)
A	.320	.280	.250	.220
B	.370	.300	.250	.275
C	.470	.400	.270	.375
D	.570	.500	.270	.475
E	.670	.600	.270	.575
F	.770	.720	.270	.675

Inches	mm	Inches	mm
.002	0.05	.400	10.16
.025	0.64	.470	11.94
.030	0.76	.475	12.07
.220	5.59	.500	12.70
.250	6.35	.570	14.48
.270	6.86	.575	14.61
.275	6.99	.600	15.24
.280	7.11	.670	17.02
.300	7.62	.675	17.15
.320	8.13	.720	18.29
.370	9.40	.770	19.56
.375	9.53	1.250	31.75

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. H dimension includes meniscus.
4. S dimension shall be maintained from chip body to end of leads.

FIGURE 1. Case dimensions and configuration.

3.2.3 Temperature coefficient. 0 ppm/°C ±30 ppm/°C. (For MIL-PRF-49467 group B voltage temperature limits, use step a through step d only.)

3.2.4 Capacitance. See table I. Measured in accordance with method 305 of MIL-STD-202. Capacitance values ≤ 100 pF: 1 MHz at 1.0 V rms at +25°C. Capacitance values > 100 pF: 1 kHz at 1.0 V rms at +25°C.

3.2.5 Dissipation factor (+25°C). 0.1 percent maximum (measured under the same conditions as capacitance).

3.2.6 Insulation resistance. Measured in accordance with method 302 of MIL-STD-202 with charging current limited to 50 mA. Two minutes maximum charging time. At +25°C, 500 V dc: 100,000 megohms or 1,000 megohms microfarad, whichever is less. At +125°C, 500 V dc: 10,000 megohms or 100 megohms microfarad, whichever is less.

3.2.7 Dielectric withstanding voltage. 1.2 times rated voltage.

3.2.8 Capacitance tolerance. J = ±5 percent, K = ±10 percent. J tolerance parts may be substituted for K tolerance parts, with procuring activity approval.

3.3 Solderability of terminals. In accordance with MIL-PRF-49467.

3.4 Vibration. In accordance with MIL-PRF-49467.

3.5 Shock. In accordance with MIL-PRF-49467, with rated voltage and three blows in each of six directions.

3.6 Immersion cycling. In accordance with MIL-PRF-49467.

3.7 Moisture resistance. In accordance with MIL-PRF-49467 with 20 continuous cycles.

3.8 Life. One hundred percent of rated voltage applied at +125°C for 1,000 hours. Resistors with a high value such as 1 megohm may be used in series with each part under test in lieu of fuses.

3.9 Thermal shock. Method 107 of MIL-STD-202, test condition B except low temperature is -55°C.

3.10 Voltage conditioning. In accordance with MIL-PRF-49467, 100 percent of rated voltage. Resistors with a high value such as 1 megohm may be used in series with each part under test in lieu of fuses.

3.11 Terminal strength. In accordance with MIL-PRF-49467.

3.12 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 as a minimum. Case codes A and B (at the option of the manufacturer) may be marked as indicated below with full marking on the package.

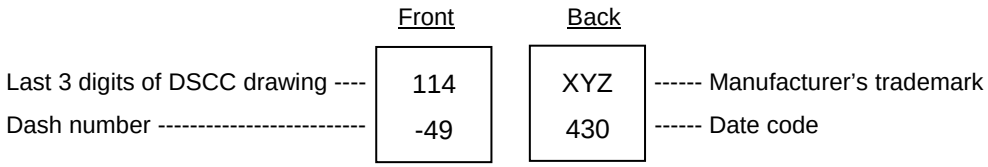


FIGURE 2. Alternate marking method for A and B case codes.

3.13 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.

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

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

TABLE I. Electrical characteristics

DSCC drawing 87114-	Capacitance	Capacitance tolerance	Case code	DSCC drawing 87114-	Capacitance	Capacitance tolerance	Case code
01	10 pF	J	A	37	330 pF	J	A
02	10 pF	K	A	38	330 pF	K	A
03	12 pF	J	A	39	390 pF	J	A
04	12 pF	K	A	40	390 pF	K	A
05	15 pF	J	A	41	470 pF	J	A
06	15 pF	K	A	42	470 pF	K	A
07	18 pF	J	A	43	560 pF	J	A
08	18 pF	K	A	44	560 pF	K	A
09	22 pF	J	A	45	680 pF	J	B
10	22 pF	K	A	46	680 pF	K	B
11	27 pF	J	A	47	820 pF	J	C
12	27 pF	K	A	48	820 pF	K	C
13	33 pF	J	A	49	1000 pF	J	C
14	33 pF	K	A	50	1000 pF	K	C
15	39 pF	J	A	51	1200 pF	J	C
16	39 pF	K	A	52	1200 pF	K	C
17	47 pF	J	A	53	1500 pF	J	C
18	47 pF	K	A	54	1500 pF	K	C
19	56 pF	J	A	55	1800 pF	J	D
20	56 pF	K	A	56	1800 pF	K	D
21	68 pF	J	A	57	2200 pF	J	D
22	68 pF	K	A	58	2200 pF	K	D
23	82 pF	J	A	59	2700 pF	J	D
24	82 pF	K	A	60	2700 pF	K	D
25	100 pF	J	A	61	3300 pF	J	D
26	100 pF	K	A	62	3300 pF	K	D
27	120 pF	J	A	63	3900 pF	J	D
28	120 pF	K	A	64	3900 pF	K	D
29	150 pF	J	A	65	4700 pF	J	E
30	150 pF	K	A	66	4700 pF	K	E
31	180 pF	J	A	67	5600 pF	J	E
32	180 pF	K	A	68	5600 pF	K	E
33	220 pF	J	A	69	6800 pF	J	F
34	220 pF	K	A	70	6800 pF	K	F
35	270 pF	J	A	71	8200pF	J	F
36	270 pF	K	A	72	8200pF	K	F