

REVISIONS			
LT	DESCRIPTION	DATE	APPROVED
A	Changed requirements for marking and packaging. Editorial changes throughout.	10 Feb 89	Randy Larson
B	Changed rise time for 4.2.5. Corrected vendor's name. Reorganized table I. Changed section 3 and corresponding section 4 titles to match with IEEE C62.31. Added source CAGE 23663. Changed dimensions of figure 1.	23 Apr 91	Randy Larson
C	Added source CAGE OC8T6. Added dimensions to figure 1. Editorial changes throughout.	29 Jun 91	David Moore
D	Correct the designation or type numbers referenced in the suggested source of supply table for CAGE OC8T6.	31 Aug 98	Howard E. Jenkins
E	Add and change dimensions to figure 1, configuration A.	23 Jun 00	Kendall Cottongim
F	Delete MIL-STD-105 and add new sampling criteria.	05 Mar 03	Kendall Cottongim

CURRENT DESIGN ACTIVITY CAGE CODE 037Z3
DEFENSE LOGISTICS AGENCY
DEFENSE SUPPLY CENTER COLUMBUS
COLUMBUS, OHIO 43216-5000

THE ORIGINAL FIRST PAGE OF THIS DRAWING HAS BEEN REPLACED.

Prepared in accordance with ASME Y14.100

Selected item drawing

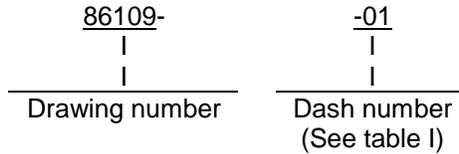
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	PAGES	1	2	3	4	5	6	7	8											

PMIC N/A	PREPARED BY David Corbett		DESIGN ACTIVITY DEFENSE ELECTRONIC SUPPLY CENTER DAYTON, OH 45444-5000																
Original date of drawing 25 Mar 1987	CHECKED BY Ken Beymer		TITLE ARRESTOR, ELECTRICAL SURGE																
	APPROVED BY Randy Larson																		
	SIZE A	CODE IDENT. NO. 14933	DWG NO. 86109																
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1. SCOPE

1.1 Scope. This drawing describes the requirements for a family of electrical surge arrestors used for dc overvoltages.

1.2 Part or Identifying Number (PIN). The complete PIN is 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 6.2).

STANDARDS

DEPARTMENT OF DEFENSE

MIL-STD-202 - Test Methods for Electronic and Electrical Component Parts.

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

2.2 Non-Government publications. The following document forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents that are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE).

IEEE C62.31 - IEEE Standard Test Specifications for Gas Tube Surge Protection Devices.

(Application for copies should be addressed to the IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854.)

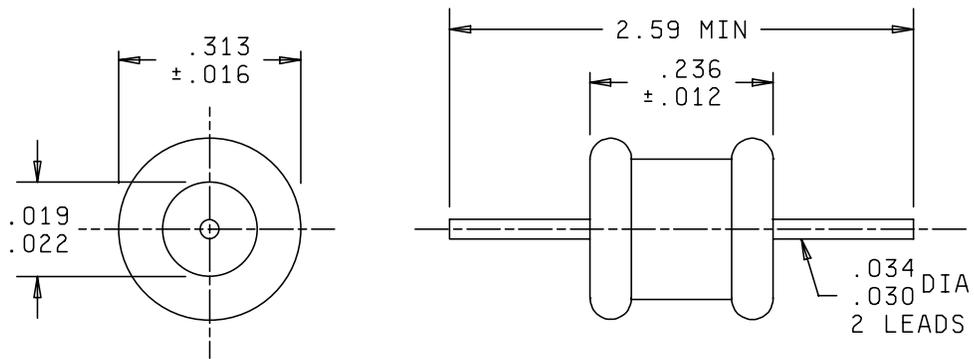
(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

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.

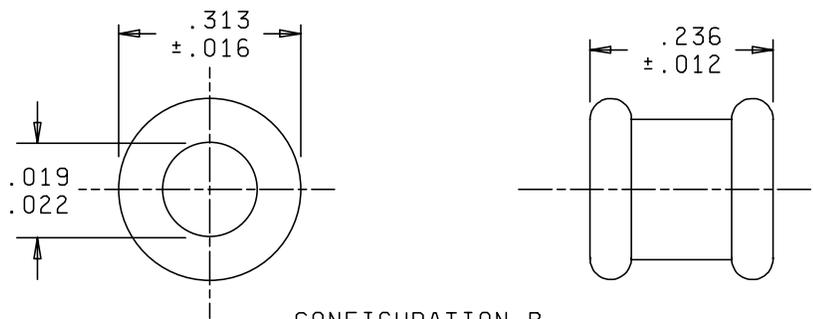
3. REQUIREMENTS

3.1 Interface and physical dimension requirements. See table I and figure 1.

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CONFIGURATION A



CONFIGURATION B

Inches	mm
.012	0.30
.016	0.41
.019	0.48
.022	0.56
.030	0.76
.034	0.86
.236	5.99
.313	7.95
2.59	65.8

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.

FIGURE 1. Dimensions and configurations.

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3.2 Marking. Units need not be marked with DSCC PIN. The unit package shall be marked with the PIN assigned herein (see 1.2), the manufacturer's identification code (CAGE), the date code, and the lot code.

3.3 Electrical characteristics. See table I.

3.4 DC breakdown voltage. The dc breakdown voltage shall be in accordance with 4.2.2 and table I.

3.5 Impulse breakdown voltage. The impulse breakdown voltage shall be in accordance with table I and as specified in 4.2.3 herein.

3.6 DC holdover. In accordance with table I.

3.7 Arc voltage. In accordance with table I.

3.8 Alternating follow-current. Alternating flow-current shall be peak amperes as specified in table I and as specified in 4.2.4 herein.

3.9 Maximum single impulse discharge current. The maximum single impulse discharge current shall be 10,000 amperes (see 4.2.5).

3.10 Maximum ac discharge current. The maximum ac discharge current shall be 5 amperes (see 4.2.6).

3.11 Impulse life. 500 surges minimum (see 4.2.7).

3.12 Capacitance. 1.0 pF (see 4.2.8).

3.13 Vibration. Following the test specified in 4.2.9, the dc breakdown voltage and maximum surge breakdown voltage shall not be lower than 50 percent or higher than 150 percent of the values specified in table I.

3.14 Shock. Following the test specified in 4.2.10, the dc breakdown voltage and maximum surge breakdown voltage shall not be lower than 50 percent or higher than 150 percent of the values specified in table I.

3.15 Terminal shock. Following the test specified in 4.2.11, the dc breakdown voltage and maximum surge breakdown voltage shall not be lower than 50 percent or higher than 150 percent of the values specified in table I.

3.16 Insulation resistance. The insulation resistance shall be 10,000 megohms minimum and in accordance with 4.2.12.

3.17 Operating temperature. -55°C to +125°C.

3.18 Workmanship. Parts shall be free of flash pits, voids, and excessive mold marks. Visible parting line is acceptable.

3.19 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.

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

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TABLE I. Electrical characteristics and PIN.

DSCC drawing PIN 86109	Breakdown voltage		Maximum dc holdover (volts dc)	Maximum alternating follow-current (1/2 cycle, 60 Hz) peak amperes	Arc voltage (I=5 amperes min.) volts	Configuration
	DC (dv/dt =100 v/s) volts	Impulse (max) (dv/dt =100 v/μs) volts				
01	75 ±20%	400	55	N/A	10	A
02	90 ±20%	400	60	N/A	10	A
03	110 ±20%	450	60	N/A	10	A
04	145 ±20%	500	70	20	16	A
05	230 ±15%	600	150	20	16	A
06	250 ±15%	750	150	20	16	A
07	300 ±15%	750	150	20	16	A
08	350 ±15%	750	150	20	16	A
09	470 ±15%	850	150	20	16	A
10	600 ±15%	1000	150	20	16	A
11	800 ±15%	1200	N/A	20	16	A
12	1000 ±15%	1500	N/A	20	16	A
13	75 ±20%	400	55	N/A	10	B
14	90 ±20%	400	60	N/A	10	B
15	110 ±20%	450	60	N/A	10	B
16	145 ±20%	500	70	20	16	B
17	230 ±15%	600	150	20	16	B
18	250 ±15%	750	150	20	16	B
19	300 ±15%	750	150	20	16	B
20	350 ±15%	750	150	20	16	B
21	470 ±15%	850	150	20	16	B
22	600 ±15%	1000	175	20	16	B
23	800 ±15%	1200	200	20	16	B
24	1000 ±15%	1500	200	20	16	B

4. VERIFICATION

4.1 Conformance inspection.

4.1.1 Inspection of product for delivery. Inspection of product for delivery shall consist of the group A inspection.

4.1.1.1 Group A inspection. Group A inspection shall consist of the inspections specified in table II in the order shown.

4.1.1.1.1 Sampling plan. Group A inspection shall be on an inspection lot basis. Samples shall be selected in accordance with table III, based on the inspection lot. If there are one or more failures, the inspection lot shall be considered to have failed.

4.1.1.1.1.1 Rejected lots. The rejected lots shall be segregated from new lots and those lots that have passed inspection. The supplier may rework it to correct the defect or 100 percent inspect the lot and remove all defective parts. The rejected lot shall then be inspected in accordance with table II for those characteristics found defective in the sample. If one or more defects are found in this second sample, the lot shall be rejected and shall not be supplied to this specification.

4.1.1.1.1.1.2 Disposition of sample units. Sample units which have passed all the group A inspection may be delivered on the contract or purchase order, if the lot is accepted and the sample units are still within specified electrical tolerances.

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TABLE II. Group A inspection.

Inspection	Requirement paragraph	Method paragraph
Visual and mechanical inspection		
Dimensions	3.1	4.2.1
Marking	3.2	4.2.1
Workmanship	3.18	4.2.1
DC breakdown voltage	3.4	4.2.2
Capacitance	3.12	4.2.9
Insulation resistance	3.16	4.2.12

TABLE III. Group A zero defect sampling plan.

Lot size		Sample size
1	- 13	100 percent
14	- 150	13
151	- 280	20
281	- 500	29
501	- 1,200	34
1,201	- 3,200	42
3,201	- 10,000	50
10,001	- 35,000	60
35,001	- 150,000	74
150,001	- 500,000	90
500,001	- and up	102

4.1.2 Defective characteristics and properties. All dimensional characteristics are considered defective when out of tolerance. All physical and functional properties are considered defective when outside the specified minimum, maximum, or range as applicable. All workmanship characteristics are considered defective when they would be detrimental to the intended use, performance requirements, or environmental survival.

4.2 Methods of inspection.

4.2.1 Visual and mechanical inspection. Electrical surge arrestors shall be examined to verify that the physical dimensions, marking, and workmanship are in accordance with the applicable requirements (see 3.1, 3.2, and 3.18).

4.2.2 DC breakdown voltage. The dc breakdown voltage shall be tested in accordance with IEEE C62.31 and shall be within the tolerances specified in table I herein.

4.2.3 Impulse breakdown voltage. The impulse breakdown voltage shall be tested in accordance with IEEE C62.31 and shall meet the requirements as specified in table I. Surge arrestors shall be subjected to a voltage transient greater than 10 kilovolts peak with a frontal slope of 100 volts per microsecond.

4.2.4 Alternating follow-current. Maximum alternating follow-current shall be verified by striking the arrestor as specified in 4.2.2 while simultaneously subjecting the device to one-half sine wave at 60 Hz and 100 V rms, and shall meet the requirements as specified in table I.

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4.2.5 Maximum single impulse discharge current. Arrestors shall be tested in accordance with IEEE C62.31 and shall be subjected to 10, 10-kiloampere current pulses at 30-second intervals. The current pulses shall have either a 8-microsecond rise time and a 20-microsecond decay to half value or a 10/250 rise to decay ratio. Following testing, the dc break down voltage shall not differ from its original value by more than ± 50 percent.

4.2.6 Maximum ac discharge current. Arrestors shall be tested in accordance with IEEE C62.31 and shall be subjected to five consecutive cycles, each cycle consisting of two, 5-ampere, 1 second duration surges, 5 seconds apart, after which a pause of 5 minutes shall be provided. Following the test, the dc breakdown voltage shall not differ from its original value by more than ± 50 percent.

4.2.7 Impulse life. Impulse life shall be tested in accordance with IEEE C62.31. Test condition shall be a 500-ampere .001 microsecond pulse. Following the test, the dc breakdown voltage and impulse breakdown voltage shall not differ from the original values by more than ± 50 percent.

4.2.8 Capacitance. Capacitance shall be measured in accordance with IEEE C62.31. Test frequency shall be 1 megahertz.

4.2.9 Vibration. In accordance with MIL-STD-202, method 204, test condition D.

4.2.10 Shock. In accordance with MIL-STD-202, method 213, test condition D.

4.2.11 Thermal shock. In accordance with MIL-STD-202, method 107, test condition B.

4.2.12 Insulation resistance. In accordance with IEEE C62.31.

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 Departments or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

5.2 Marking. The unit package shall be marked with the DSCC drawing PIN (see 1.2), the manufacturer's CAGE code, the date code, and the lot code.

6. NOTES

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

6.1 Intended use. Devices 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.

6.2 Ordering data. The acquisition document should specify the following:

- a. Complete PIN (see 1.2).
- b. Requirements for delivery of verification that the conformance inspection has been performed on inspection lots supplied to the requirements of this drawing or certificate of compliance that parts have passed conformance inspection with each shipment of parts by the manufacturer (when applicable, see 4.1.1).
- c. Requirements for packaging and packing.
- d. Requirements for notification of change of product to the contracting activity, if applicable.

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6.3 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) 692-0556 or DSN 850-0556.

6.4 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)-692-0556 or DSN 850-0556.

DSCC drawing PIN 86109- 1/	Vendor CAGE OC8T6 and similar designation or type number	Vendor CAGE 23663 and similar designation or type number	Vendor CAGE 71482 and similar designation or type number
01	BBS-75V	N/A	CG75
02	BBS-90V	2027-09B	CG90
03	N/A	N/A	CG110
04	BBS-150V	N/A	CG2-145L
05	BBS-230V	2027-23B	CG2-230L
06	BBS-250V	2027-25B	CG2-250L
07	N/A	N/A	CG2-300L
08	BBS-350V	2027-35B	CG2-350L
09	BBS-470V	N/A	CG2-470L
10	BHS-600V	N/A	CG2-600L
11	BHS-800V	N/A	CG2-800L
12	BHS-1000V	N/A	CG2-1000L
13	BB-75V	N/A	CG75
14	BB-90V	2027-09A	CG90
15	N/A	N/A	CG110
16	BB-150V	N/A	CG2-145
17	BB-230V	2027-23A	CG2-230
18	BB-250V	2027-25A	CG2-250
19	N/A	N/A	CG2-300
20	BB-350V	2027-35A	CG2-350
21	BB-470V	N/A	CG2-470
22	BH-600V	N/A	CG2-600
23	BH-800V	N/A	CG2-800
24	BH-1000V	N/A	CG2-1000

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

Vendor CAGE
OC8T6

Vendor's name and address
Citel Incorporated
1111 Parkcentre Boulevard, Suite 340
Miami, FL 33169-5365
(305) 621-0022

23663

Joslyn Electronic Systems Corporation
Santa Barbara Research Park
6868 Cortona Drive
Goleta, CA 93116-0817
(800) 752-8068+

71482

CP Clare Corporation
601B Campus Drive
Arlington Heights, IL 60004-7822
(847) 797-7000

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