

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	Page 6 and 9, added dash number 45.	6 Jun 1986	Ivan R. Jones
B	Deleted references to MIL-D-23859 and replaced with references to MIL-D-83531. Modified electrical characteristics and changed figure 1. Updated vendor table.	11 Aug 1987	Randy Larson
C	Added dash number 46 through 62. Added an additional source of supply. Editorial changes throughout.	21 Dec 1987	Randy Larson
D	Added paragraph 3.14. Changed 3.2.2 and note 7 on figure 1. Changed PIN's for vendor 16714. Deleted vendor 00213. Editorial changes throughout.	11 Jan 1993	David Moore
E	Changes in accordance with NOR 5999-R-001-93.	3 Mar 1993	David Moore
F	Incorporated boilerplate update. Added new source of supply. Editorial changes throughout.	19 Jul 2000	Kendall A. Cottongim
G	Editorial changes made throughout.	04 Feb 2008	Michael A. Radecki
H	Editorial changes made throughout. Removed approved source of supply.	09 Oct 2014	Michael A. Radecki

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

Prepared in accordance with ASME Y14.100

<b>REV STATUS OF PAGES</b>	<b>REV</b>	H	H	H	H	H	H	H	H	H										
	<b>PAGES</b>	1	2	3	4	5	6	7	8	9										

<b>PMIC N/A</b>	<b>PREPARED BY</b> Chris Rauch	<b>DESIGN ACTIVITY</b> DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OH 45444-5000
Original date of drawing 14 June 1985	<b>CHECKED BY</b> Randy Larson	<b>TITLE</b> DELAY LINES, PASSIVE, 20 TAPS, 24 PIN, DIP
	<b>APPROVED BY</b> Ivan R. Jones	
	<b>SIZE</b> A	<b>CODE IDENT. NO.</b> 14933
<b>REV</b>	H	<b>PAGE 1 OF 9</b>

1. SCOPE

1.1 Scope. This drawing describes the requirements for a family of passive delay lines with 24 pins and 20 taps.

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



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 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 SPECIFICATION

[MIL-PRF-83531](#) - Delay Lines, Passive, General Specification for.

DEPARTMENT OF DEFENSE STANDARD

[MIL-STD-1285](#) - Marking of Electrical and Electronic Parts.

(Copies of these documents are available online at <http://quicksearch.dla.mil/> or <https://assist.dla.mil/> 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. See [figure 1](#).

3.2 Materials. Materials shall be as specified in [MIL-PRF-83531](#).

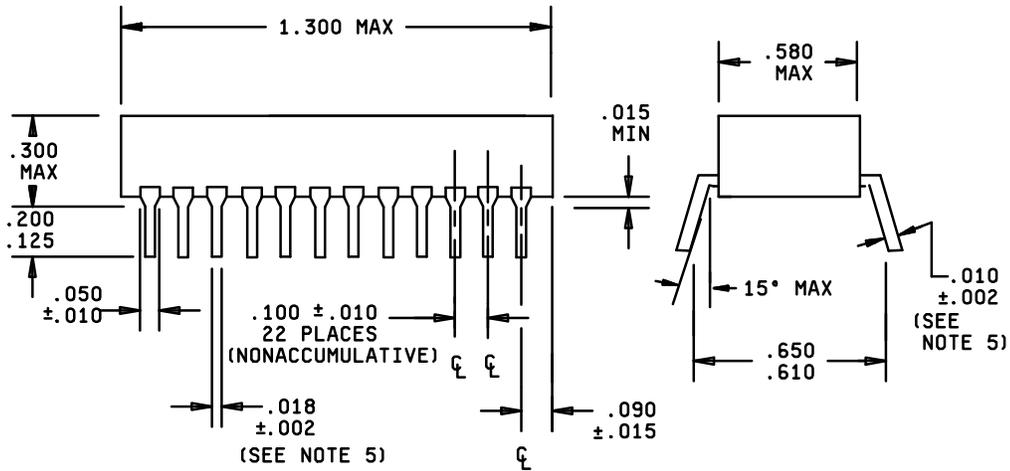
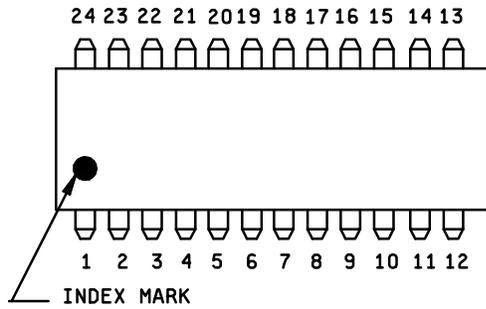
3.2.1 Cases. Cases shall be made of molded epoxy.

3.2.2 Terminals. Terminal material and finish shall be as specified in [MIL-PRF-83531](#).

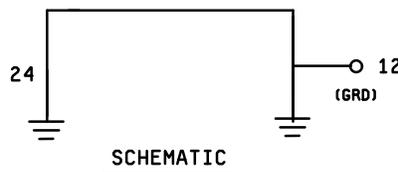
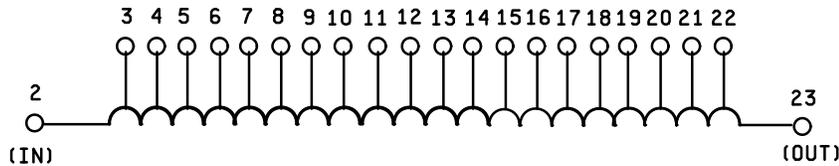
3.3 Total delay time. See [table I](#).

3.4 Nominal terminating impedance. See [table I](#).

<b>DEFENSE ELECTRONICS SUPPLY CENTER</b> <b>DAYTON, OHIO</b>	SIZE	CODE IDENT NO.	DWG NO.
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Inches	mm
.002	0.05
.010	0.25
.015	0.38
.018	0.46
.050	1.27
.090	2.29
.100	2.54
.125	3.18
.200	5.08
.300	7.52
.580	14.73
.610	15.49
.650	16.51
1.300	33.02



**NOTES:**

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Standoff shape and location are optional. Height shall be as indicated.
4. Pin 1 is not connected, and may be omitted at the manufacturer's option.
5. Terminal dimensions are prior to hot solder dip.
6. Schematic depicts general characteristics and is not intended to limit specific manufacturing designs.
7. Leads shall be free of case meniscus and other foreign material and shall be solderable for a minimum of .010 inch (0.25 mm) above the seating plane of the delay line.

FIGURE 1. Design and dimensions.

<b>DEFENSE ELECTRONICS SUPPLY CENTER</b> <b>DAYTON, OHIO</b>	<b>SIZE</b> <b>A</b>	<b>CODE IDENT NO.</b> <b>14933</b>	<b>DWG NO.</b> <b>85012</b>
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3.5 Maximum attenuation. See [table I](#).

3.6 DC resistance (RDC):  $RDC = \text{impedance} \times \frac{\text{attenuation}}{1 - \text{attenuation}}$

EXAMPLE:  $RDC = 50 \times \frac{0.03}{1-0.03}$  ; RDC = 1.5 ohms

TABLE I. PIN's and electrical characteristics.

PIN 85012-	Total delay time (ns)	Nominal terminating impedance (Ω)	Maximum attenuation (percent)	PIN 85012-	Total delay time (ns)	Nominal terminating impedance (Ω)	Maximum attenuation (percent)
01	50	50	6	33	800	250	14
02	60	50	7	34	1,000	250	16
03	80	50	9	35	200	500	4
04	100	50	11	36	300	500	7
05	150	50	11	37	400	500	7
06	200	50	12	38	500	500	8
07	50	100	6	39	600	500	9
08	60	100	6	40	800	500	14
09	80	100	6	41	1,000	500	17
10	100	100	7	42	1,200	500	18
11	150	100	7	43	1,500	500	21
12	200	100	8	44	2,000	500	24
13	300	100	10	45	500	100	12
14	400	100	11	46	20	50	11
15	40	200	3	47	40	50	11
16	80	200	4	48	20	100	11
17	120	200	5	49	40	100	11
18	200	200	6	50	500	100	11
19	300	200	6	51	600	100	11
20	400	200	7	52	800	100	11
21	500	200	8	53	1,000	100	11
22	600	200	10	54	1,200	100	11
23	800	200	16	55	1,500	100	11
24	50	250	3	56	60	200	11
25	100	250	4	57	100	200	11
26	150	250	5	58	1,000	200	11
27	200	250	8	59	1,200	200	11
28	250	250	8	60	1,500	200	11
29	300	250	8	61	2,000	200	11
30	400	250	9	62	2,500	500	11
31	500	250	11				
32	600	250	13				

<sup>1/</sup> Delay between successive taps shall be 1/20 of the total delay time.

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3.7 Rise time. Rise time shall be 15 percent of total delay time (maximum).

3.8 Operating temperature. Operating temperature range shall be -55°C to +125°C.

3.9 Delay accuracy. Delay accuracy shall be ±5 percent.

3.10 Temperature coefficient of delay. Temperature coefficient of delay shall be 100 ppm/°C maximum.

3.11 Tap accuracy. Tap accuracy shall be ±2 ns or ±5 percent, whichever is greater.

3.12 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.

3.13 Manufacturer eligibility. To be eligible for listing as an approved source of supply, a manufacturer shall be listed on the [MIL-PRF-83531](#) Qualified Products List for at least one part, or perform the Group A inspection specified herein on a sample of parts agreed upon by the manufacturer and DLA Land and Maritime-VA.

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

3.15 Pure tin. The use of pure tin, as an underplate or final finish is prohibited both internally and externally. Tin content of 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](#)).

3.16 Marking. Delay lines shall be marked on the top in accordance with [MIL-STD-1285](#). The following information shall be included, as a minimum.

- a. Complete DLA Land and Maritime drawing PIN (see [1.2](#)).
- b. Pin 1 index mark.
- c. Manufacturer's CAGE code or logo.
- d. Date code.

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

#### 4. VERIFICATION

4.1 Sampling and inspection. Unless otherwise specified, sampling and inspection procedures shall be performed in accordance with group A inspection of [MIL-PRF-83531](#). Individual tests shall be performed in the order listed therein.

##### 4.2 Conformance inspection.

4.2.1 Certification. The acquiring activity, at its discretion, may accept a statement of compliance with the group A requirements instead of the manufacturer performing the group A tests (see [6.2c](#)).

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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. Delay lines conforming to this drawing are intended for use until qualified [MIL-PRF-83531](#) sources are available. Items conforming to this drawing replace similar items manufactured in accordance with contractor-prepared specifications and drawings.

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.

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 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 <mailto:relay@dla.mil> or if in writing to: DLA Land and Maritime, Columbus, ATTN: DLA Land and Maritime/VAT, Post Office Box 3990, Columbus, OH 43218-3990 or by telephone (614) 692-4481 or DSN 850-4481.

6.5 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 <mailto:relay@dla.mil>, or by contacting DLA Land and Maritime, Columbus, ATTN: DLA Land and Maritime-VAT, Post Office Box 3990, Columbus, OH 43218-3990 or by telephone (614) 692-4481 or DSN 850-4481.

6.6 Replaceability. Devices covered by this drawing will replace the commercial device covered by contractor prepared specification or drawing.

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DLA Land and Maritime drawing PIN 85012-	Vendor similar PIN <a href="#">1/</a>	
	CAGE 00222	CAGE 22519
01	24G50	2214-8496-1
02	24G60	2214-8496-2
03	24G80	2214-8496-3
04	24G100	2214-8496-4
05	24G150	2214-8496-5
06	24G200	2214-8496-6
07	24A50	2214-8496-7
08	24A60	2214-8496-8
09	24A80	2214-8496-9
10	24A100	2214-8496-10
11	24A150	2214-8496-11
12	24A200	2214-8496-12
13	24A300	2214-8496-13
14	24A400	2214-8496-14
15	24B40	2214-8496-15
16	24B80	2214-8496-16
17	24B120	2214-8496-17
18	24B200	2214-8496-18
19	24B300	2214-8496-19
20	24B400	2214-8496-20
21	24B500	2214-8496-21
22	24B600	2214-8496-22
23	24B800	2214-8496-23
24	24H50	2214-8496-24
25	24H100	2214-8496-25
26	24H150	2214-8496-26
27	24H200	2214-8496-27
28	24H250	2214-8496-28
29	24H300	2214-8496-29
30	24H400	2214-8496-30
31	24H500	2214-8496-31
32	24H600	2214-8496-32
33	24H800	2214-8496-33
34	24H1000	2214-8496-34
35	24C200	2214-8496-35
36	24C300	2214-8496-36
37	24C400	2214-8496-37
38	24C500	2214-8496-38
39	24C600	2214-8496-39
40	24C800	2214-8496-40

See footnotes at end of table

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		REV H	SHEET 7

DLA Land and Maritime drawing PIN 85012-	Vendor similar PIN <a href="#">1/</a>	
	CAGE 00222	CAGE 22519
41	24C1000	2214-8496-41
42	24C1200	2214-8496-42
43	24C1500	2214-8496-43
44	24C2000	2214-8496-44
45	24A500	2214-8496-45
46	24G20	2214-8496-46
47	24G40	2214-8496-47
48	24A20	2214-8496-48
49	24A40	2214-8496-49
50	24A500	2214-8496-50
51	24A600	2214-8496-51
52	24A800	2214-8496-52
53	24A1000	2214-8496-53
54	24A1200	2214-8496-54
55	24A1500	2214-8496-55
56	24B60	2214-8496-56
57	24B100	2214-8496-57
58	24B1000	2214-8496-58
59	24B1200	2214-8496-59
60	24B1500	2214-8496-60
61	24B2000	2214-8496-61
62	24C2500	2214-8496-62

[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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Vendor CAGE code

Vendor name and address

00222

ESC Control Electronics  
98 Lincoln Avenue  
Sayville, NY 11782-2711  
(631) 467-5328 ext. 502

22519

Data Delay Devices, Incorporated  
3 Mount Prospect Avenue  
Clifton, NJ 07013-1915  
(973) 773-2299 ext. 123

**DEFENSE ELECTRONICS SUPPLY CENTER**  
**DAYTON, OHIO**

**SIZE**  
**A**

**CODE IDENT NO.**  
**14933**

**DWG NO.**  
**85012**

REV H

SHEET 9