

REVISIONS				
LTR	DESCRIPTION	DATE	APPROVED	
A	Added three sources for all dash numbers	05 Sep 85	Ivan R. Jones	
B	Modified figure 1 and added footnotes. Added tables II and III. Deleted references to MIL-D-23859; substituted references to MIL-D-83532. Updated vendor table.	01 Jul 87	Randy Larson	
C	Changed standoff requirements in note 4 of figure 1.	19 Oct 87	Randy Larson	
D	Corrected I _{CC} L max limit on table III. Added note 6 to figure 1. Changed pin length and added tolerances to pin dimensions. Added three vendors. Editorial changes throughout.	17 Aug 88	Randy Larson	
E	Changed 3.3. Moved output rise time data from table III to 3.6. Changed several dimensions on figure 1 and added notes 7 and 8. Deleted vendors 92912 and 56289.	21 Dec 92	Tony Westphal	
F	Change in accordance with NOR 5999-R004-00.	04 Aug 00	Kendall A. Cottongim	
G	Editorial changes made throughout.	04 Feb 08	Michael A. Radecki	
H	Editorial changes made throughout.	21 Nov 13	Michael A. Radecki	

CURRENT DESIGN ACTIVITY CAGE CODE 037Z3 DEFENSE LOGISTICS AGENCY Land and Maritime COLUMBUS, OHIO 43218-3990
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Prepared in accordance with ASME Y14.100

REV STATUS OF PAGES	REV	H	H	H	H	H	H	H	H	H								
	PAGES	1	2	3	4	5	6	7	8	9								
PMIC N/A	PREPARED BY Randy Larson							DESIGN ACTIVITY DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OH 45444-5000										
Original date of drawing 25 February 1985	CHECKED BY Randy Larson							TITLE DELAY LINES, ACTIVE, 5 TAPS, 14-PIN DIP, TTL INTERFACED										
	APPROVED BY Ivan R. Jones																	
	SIZE A	CODE IDENT. NO. 14933						DWG NO. 85008										
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1. SCOPE

1.1 Scope. This drawing describes the requirements for a family of active 14-pin, 5 tap, TTL-interfaced delay lines.

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 SPECIFICATIONS

MIL-DTL-19491	-	Semiconductor Devices, Packaging of.
MIL-PRF-38535	-	Integrated Circuits (Microcircuits) Manufacturing, General Specification for.
MIL-PRF-83532	-	Delay Lines, Active, General Specification for.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-883	-	Microcircuits.
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 Non-Government publications. The following documents 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.

AMERICAN SOCIETY FOR TESTING AND MATERIALS INTERNATIONAL (ASTM)

ASTM-B545	-	Standard Specification for Electrodeposited Coatings of Tin.
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(Copies of this document are available on www.astm.org or from American Society for Testing and Materials International (ASTM), 100 Barr Harbor Drive, P. O. Box C700, West Conshohocken, PA, 19428-2959.)

2.4 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.

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3. REQUIREMENTS

3.1 Case material. The case material shall be molded diallyl phthalate or encapsulated epoxy and be in accordance with [MIL-PRF-83532](#).

3.2 Interface and physical dimensions. The interface and physical dimensions shall be in accordance with [figure 1](#) and [table I](#).

3.3 Terminal material. The terminal material shall be in accordance with [MIL-PRF-38535](#).

3.4 Integrated circuits (IC's). IC's shall meet the requirements of [MIL-STD-883](#), level B, as a minimum.

3.5 Delay times. The delay times from input to all taps shall be as specified in [table I](#) (+25°C) and [table II](#) (-55°C and +125°C).

3.6 Output rise time. 4 ns maximum under the following conditions:

$V_{CC} = 5.0 \text{ V}$; $TR_L \leq 3 \text{ ns}$; $C_L = 50 \text{ pF}$; $R_L = 500 \text{ ohms}$. Applied to leading edge only.

3.7 DC characteristics. DC characteristics shall be as specified in [table III](#).

3.8 Delay line fan-out. The delay line fan-out shall be 20 maximum (20 TTL loads per delay line).

3.9 Tap fan-out. The tap fan-out shall be 10/tap maximum (one tap is capable of driving 10 TTL load maximum).

3.10 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.

3.11 Manufacturer eligibility. To be eligible for listing as a approved source of supply, a manufacturer shall be listed on the [MIL-PRF-83532](#) Qualified Product List for at least one part, or perform the Group A and Group C inspections specified herein on a sample of parts agreed upon by the manufacturer and DLA Land and Maritime-VA.

3.12 Certificate of compliance. A certificate of compliance is required from each manufacturer requesting to be listed as an approved source of supply (see [6.3](#)). The certificate shall state that the manufacturer's product meets all the requirements of this drawing.

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

3.14 Marking. Each delay line shall be marked on the top in accordance with method I of [MIL-STD-1285](#) with the following information:

- a. Complete PIN (see [1.2](#)).
- b. Index mark identification (over pin 1, input).
- c. Manufacturer's Commercial and Government Entity (CAGE) code or logo.
- d. Date code.

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3.15 Workmanship. Parts shall be processed in such a manner as to be representative of controlled industrial techniques. Surfaces shall be free from burrs, die marks, chatter marks, scratches, dirt, grease, scale, splinters, and other defects that will affect life, serviceability, performance, or appearance. Visible parting line is acceptable.

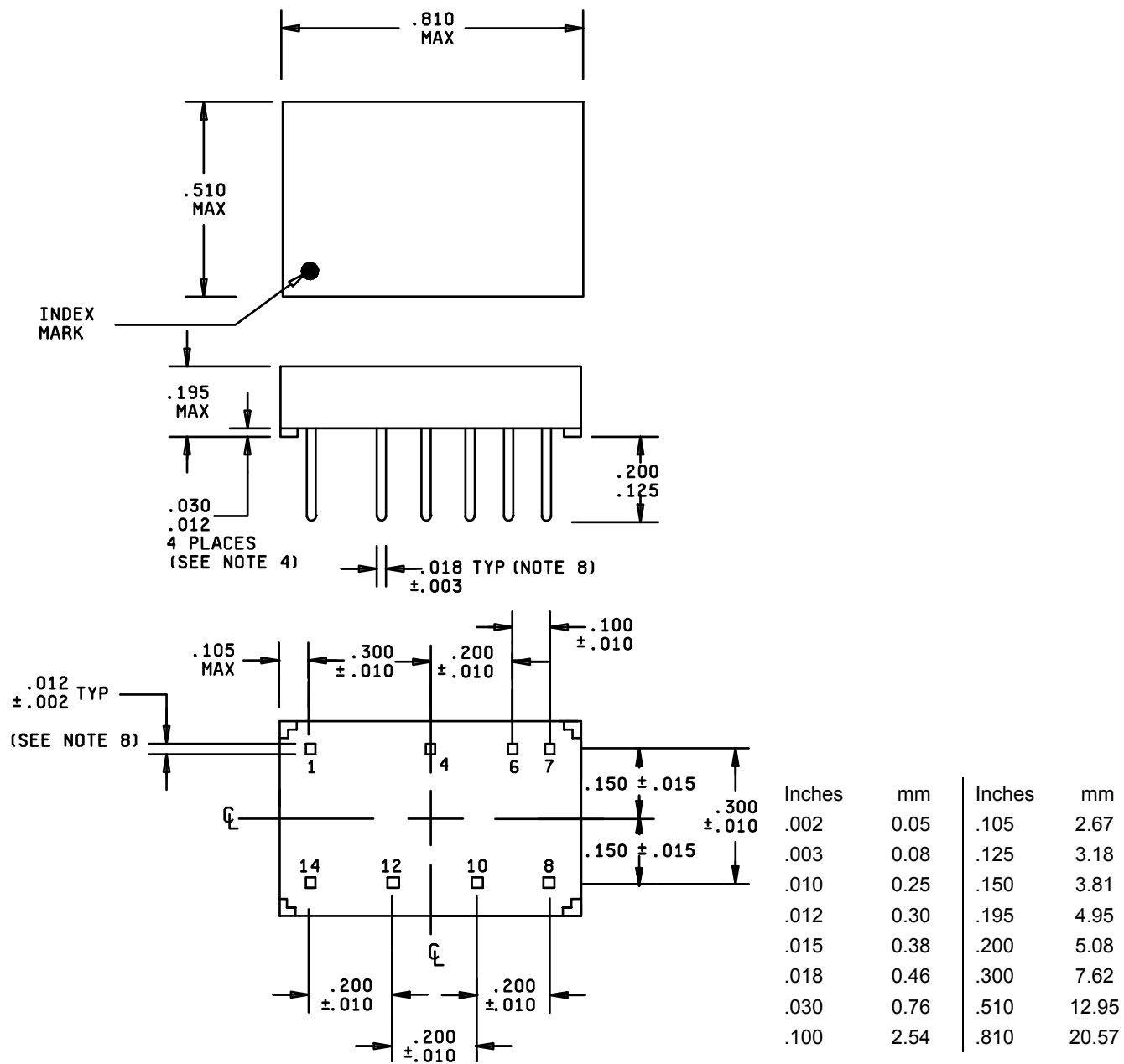
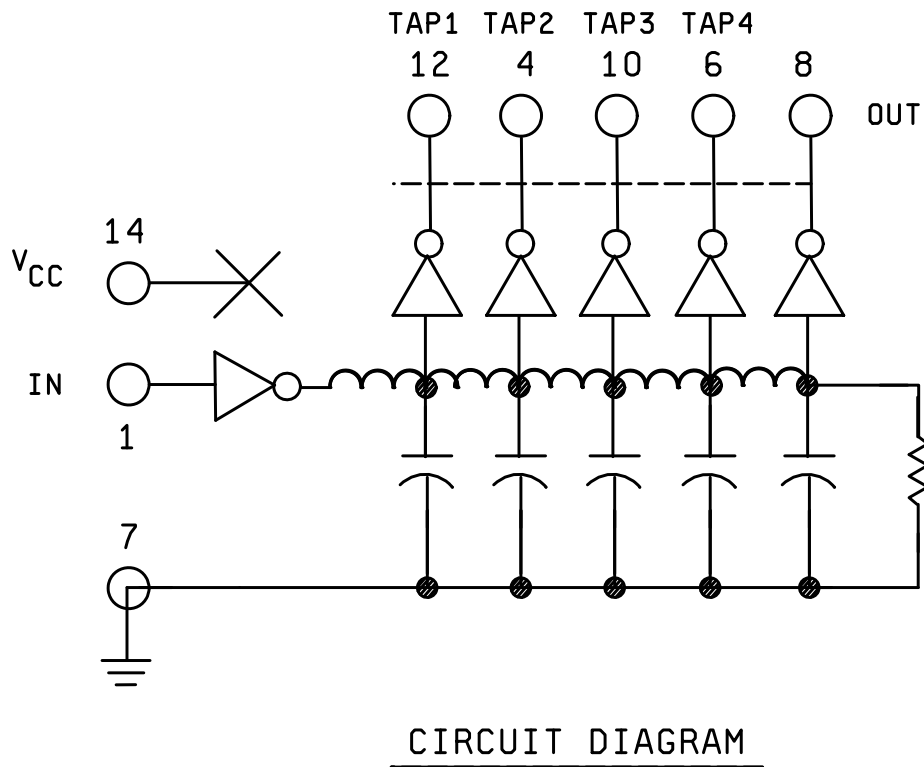


FIGURE 1. Interface and physical dimensions.

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NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is ± 0.005 (0.13 mm).
4. Location and shape of standoffs are optional.
5. Pins 2, 3, 5, 9, 11, and 13 may be omitted at the manufacturer's option.
6. Tolerances on dimensions separating leads are non-accumulative.
7. Leads shall be free of case meniscus and other foreign material and shall be solderable for a minimum of .010 inch above the seating plane of the delay line.
8. Leads may be round at the discretion of the manufacturer. Round lead diameter shall be $.020 \pm .002$.

FIGURE 1. Interface and physical dimensions. - Continued

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TABLE I. Delay times at +25°C, $V_{CC} = 5.00 \pm 0.01$ volts.

PIN 85008-	Delay times in nanoseconds				
	Pin 12 tap 1	Pin 4 tap 2	Pin 10 tap 3	Pin 6 tap 4	Pin 8 output
01	5 $\pm$ 2 ns	10 $\pm$ 2 ns	15 $\pm$ 2 ns	20 $\pm$ 2 ns	25 $\pm$ 2 ns
02	6 $\pm$ 2 ns	12 $\pm$ 2 ns	18 $\pm$ 2 ns	24 $\pm$ 2 ns	30 $\pm$ 2 ns
03	7 $\pm$ 2 ns	14 $\pm$ 2 ns	21 $\pm$ 2 ns	28 $\pm$ 2 ns	35 $\pm$ 2 ns
04	8 $\pm$ 2 ns	16 $\pm$ 2 ns	24 $\pm$ 2 ns	32 $\pm$ 2 ns	40 $\pm$ 2 ns
05	9 $\pm$ 2 ns	18 $\pm$ 2 ns	27 $\pm$ 2 ns	36 $\pm$ 2 ns	45 $\pm$ 5%
06	10 $\pm$ 2 ns	20 $\pm$ 2 ns	30 $\pm$ 2 ns	40 $\pm$ 2 ns	50 $\pm$ 5%
07	15 $\pm$ 2 ns	30 $\pm$ 2 ns	45 $\pm$ 5%	60 $\pm$ 5%	75 $\pm$ 5%
08	20 $\pm$ 2 ns	40 $\pm$ 2 ns	60 $\pm$ 5%	80 $\pm$ 5%	100 $\pm$ 5%
09	25 $\pm$ 2 ns	50 $\pm$ 5%	75 $\pm$ 5%	100 $\pm$ 5%	125 $\pm$ 5%
10	30 $\pm$ 2 ns	60 $\pm$ 5%	90 $\pm$ 5%	120 $\pm$ 5%	150 $\pm$ 5%
11	35 $\pm$ 2 ns	70 $\pm$ 5%	105 $\pm$ 5%	140 $\pm$ 5%	175 $\pm$ 5%
12	40 $\pm$ 2 ns	80 $\pm$ 5%	120 $\pm$ 5%	160 $\pm$ 5%	200 $\pm$ 5%
13	45 $\pm$ 5%	90 $\pm$ 5%	135 $\pm$ 5%	180 $\pm$ 5%	225 $\pm$ 5%
14	50 $\pm$ 5%	100 $\pm$ 5%	150 $\pm$ 5%	200 $\pm$ 5%	250 $\pm$ 5%
15	60 $\pm$ 5%	120 $\pm$ 5%	180 $\pm$ 5%	240 $\pm$ 5%	300 $\pm$ 5%
16	70 $\pm$ 5%	140 $\pm$ 5%	210 $\pm$ 5%	280 $\pm$ 5%	350 $\pm$ 5%
17	80 $\pm$ 5%	160 $\pm$ 5%	240 $\pm$ 5%	320 $\pm$ 5%	400 $\pm$ 5%
18	90 $\pm$ 5%	180 $\pm$ 5%	270 $\pm$ 5%	360 $\pm$ 5%	450 $\pm$ 5%
19	100 $\pm$ 5%	200 $\pm$ 5%	300 $\pm$ 5%	400 $\pm$ 5%	500 $\pm$ 5%

TABLE II. Delay times at -55°C and +125°C, $V_{CC} = 5.00 \pm 0.01$ volts.

PIN 85008-	Delay times in nanoseconds				
	Pin 12 tap 1	Pin 4 tap 2	Pin 10 tap 3	Pin 6 tap 4	Pin 8 output
01	5 $\pm$ 3 ns	10 $\pm$ 3 ns	15 $\pm$ 3 ns	20 $\pm$ 3 ns	25 $\pm$ 3 ns
02	6 $\pm$ 3 ns	12 $\pm$ 3 ns	18 $\pm$ 3 ns	24 $\pm$ 3 ns	30 $\pm$ 3 ns
03	7 $\pm$ 3 ns	14 $\pm$ 3 ns	21 $\pm$ 3 ns	28 $\pm$ 3 ns	35 $\pm$ 3 ns
04	8 $\pm$ 3 ns	16 $\pm$ 3 ns	24 $\pm$ 3 ns	32 $\pm$ 3 ns	40 $\pm$ 3 ns
05	9 $\pm$ 3 ns	18 $\pm$ 3 ns	27 $\pm$ 3 ns	36 $\pm$ 3 ns	45 $\pm$ 8%
06	10 $\pm$ 3 ns	20 $\pm$ 3 ns	30 $\pm$ 3 ns	40 $\pm$ 3 ns	50 $\pm$ 8%
07	15 $\pm$ 3 ns	30 $\pm$ 3 ns	45 $\pm$ 8%	60 $\pm$ 8%	75 $\pm$ 8%
08	20 $\pm$ 3 ns	40 $\pm$ 3 ns	60 $\pm$ 8%	80 $\pm$ 8%	100 $\pm$ 8%
09	25 $\pm$ 3 ns	50 $\pm$ 8%	75 $\pm$ 8%	100 $\pm$ 8%	125 $\pm$ 8%
10	30 $\pm$ 3 ns	60 $\pm$ 8%	90 $\pm$ 8%	120 $\pm$ 8%	150 $\pm$ 8%
11	35 $\pm$ 3 ns	70 $\pm$ 8%	105 $\pm$ 8%	140 $\pm$ 8%	175 $\pm$ 8%
12	40 $\pm$ 3 ns	80 $\pm$ 8%	120 $\pm$ 8%	160 $\pm$ 8%	200 $\pm$ 8%
13	45 $\pm$ 8%	90 $\pm$ 8%	135 $\pm$ 8%	180 $\pm$ 8%	225 $\pm$ 8%
14	50 $\pm$ 8%	100 $\pm$ 8%	150 $\pm$ 8%	200 $\pm$ 8%	250 $\pm$ 8%
15	60 $\pm$ 8%	120 $\pm$ 8%	180 $\pm$ 8%	240 $\pm$ 8%	300 $\pm$ 8%
16	70 $\pm$ 8%	140 $\pm$ 8%	210 $\pm$ 8%	280 $\pm$ 8%	350 $\pm$ 8%
17	80 $\pm$ 8%	160 $\pm$ 8%	240 $\pm$ 8%	320 $\pm$ 8%	400 $\pm$ 8%
18	90 $\pm$ 10%	180 $\pm$ 8%	270 $\pm$ 8%	360 $\pm$ 8%	450 $\pm$ 8%
19	100 $\pm$ 10%	200 $\pm$ 8%	300 $\pm$ 8%	400 $\pm$ 8%	500 $\pm$ 8%

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TABLE III. DC characteristics.

Test	Symbol	Conditions $-55^{\circ}\text{C} \leq T_C \leq +125^{\circ}\text{C}$	Limits		Unit
			Min	Max	
High level output voltage	V_{OH}	$V_{CC} = 4.5\text{ V}$ $V_{IH} = 2.0\text{ V}$ $I_{OH} = -1\text{ mA}$	2.5	---	V
Low level output voltage	V_{OL}	$V_{CC} = 4.5\text{ V}$ $V_{IL} = 0.8\text{ V}$ $I_{OL} = 20\text{ mA}$	---	.5	V
Input clamp voltage	V_{IC}	$V_{CC} = 4.5\text{ V}$ $I_I = -18\text{ mA}$ $T_C = +25^{\circ}\text{C}$	---	-1.2	V
High level input current	I_{IH1}	$V_{CC} = 5.5\text{ V}, V_{IH} = 2.7\text{ V}$	---	50	μA
	I_{IH2}	$V_{CC} = 5.5\text{ V}, V_{IH} = 5.5\text{ V}$	---	1000	μA
Low level input current	I_{IL}	$V_{CC} = 5.5\text{ V}, V_{IL} = .5\text{ V}$	---	-2.00	mA
Short circuit output current	I_{OS}	$V_{CC} = 5.5\text{ V}, V_{OS} = 0.0\text{ V}$ Not more than one output shorted at a time	-40	-150	mA
Low level supply current	I_{CCL}	$V_{CC} = 5.5\text{ V}$ $V_I = 0.0\text{ V}$	---	75	mA

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4. VERIFICATION

4.1 Conformance inspection.

4.1.1 Inspection of product for delivery. Inspection of product for delivery shall consist of compliance with group A inspection for level A of [MIL-PRF-83532](#).

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. 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 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, 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 sources 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, 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 85008-	Vendor similar designation or type number 1/	Vendor CAGE	Vendor name and address
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19	9T25S 9T30S 9T35S 9T40S 9T45S 9T50S 9T75S 9T100S 9T125S 9T150S 9T175S 9T200S 9T225S 9T250S 9T300S 9T350S 9T400S 9T450S 9T500S	00222	ESC Electronics, Incorporated 33 Comac Loop Ronkonkoma, NY 11779-6858 (631) 467-5328
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19	DDU6-8512-1 DDU6-8512-2 DDU6-8512-3 DDU6-8512-4 DDU6-8512-5 DDU6-8512-6 DDU6-8512-7 DDU6-8512-8 DDU6-8512-9 DDU6-8512-10 DDU6-8512-11 DDU6-8512-12 DDU6-8512-13 DDU6-8512-14 DDU6-8512-15 DDU6-8512-16 DDU6-8512-17 DDU6-8512-18 DDU6-8512-19	22519	Data Delay Devices, Incorporated 3 Mount Prospect Avenue Clifton, NJ 07013-1915 (973) 773-2299

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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