REVISIONS			
LTR	**DESCRIPTION**	**DATE**	**APPROVED**
C	Added dash numbers 67 through 77. Editorial changes.	06 Aug 1987	Randy Larson
D	Replaced MIL-D-23859 references with MIL-PRF-83532. Changed pin length dimensions. Added note 4 to figure 1. Added three vendors. Editorial changes throughout. J.W.	07 Oct 1988	Randy Larson
E	Changed thermal shock requirements. Added two vendors. Editorial changes throughout. B.B.	29 Aug 1989	D.E. Morgan
F	Changed tolerance on .300 dimension between lead rows (figure 1, all configurations). Added one vendor. Added "Inactive" notice to page 1. Editorial changes throughout. J.W.	11 Sep 1990	Randy Larson
G	Changed paragraphs 3.6 and 3.8.1. Editorial changes throughout. J.W.	26 Aug1991	R. Gosciniak
H	Changes in accordance with NOR 5999-R001-92	09 Sep 1992	D. Moore
J	Editorial changes made throughout.	18 Sep 2008	Michael A. Radecki
K	Editorial changes made throughout. Removed Approved Source of Supply.	03 Mar 2014	Michael A. Radecki

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

INACTIVE FOR NEW DESIGN
Delay lines contained herein which have qualified MIL-PRF-83532 sources are inactive for new design effective on the date of Revision F. Delay lines not covered by MIL-PRF-83532 may continue to be procured to this drawing.

Prepared in accordance with ASME Y14.100

REV STATUS OF PAGES	**REV**	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	
	PAGES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

PMIC N/A	**PREPARED BY** Christopher A. Rauch	**DESIGN ACTIVITY** **DEFENSE ELECTRONICS SUPPLY CENTER** **DAYTON, OH 45444-5000**
Original date of drawing 84-09-04	**CHECKED BY** Randy Larson	**TITLE**
	APPROVED BY Ivan R. Jones	DELAY LINES, 1 TO 5 TAPS, 14-PIN DIP COMPATIBLE, T^2L INTERFACED
	SIZE A / **CODE IDENT. NO.** 14933	**DWG NO.** 84087
	REV K	PAGE 1 **OF** 15

1. SCOPE

1.1 Scope. This drawing describes the requirements for a family of delay lines, 1 to 5 taps, 14-pin DIP compatible.

1.2 Part or Identifying Number (PIN). The complete PIN shall be as shown in the following example:

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-STD-31000 - Technical Data Packages.

MIL-DTL-19491 - Semiconductor Devices, Packaging of.

MIL-PRF-83532 - Delay Lines, Active, General Specification for.

DEPARTMENT OF DEFENSE STANDARD

MIL-STD-202 - Electronic and Electrical Component 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-B339 - Pig Tin.

ASTM-B545 - Tin, Electrodeposited Coatings of.

(Copies of these documents are available online at http://www.astm.org/ or from American Society and Testing and Materials International (ASTM), 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA, 19428-2959)

2.4 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 Interpretation. This drawing shall be interpreted in accordance with MIL-STD-31000.

3.2 Case material. Case material shall be in accordance with MIL-PRF-83532.

3.3 Dimensions and configurations. See figure 1.

3.4 Terminal material. Terminal material shall be copper, nickel, or alloy 42, tin plated in accordance with ASTM-B339 or ASTM-B545.

3.5 Temperature coefficient of delay (dash numbers -01 through -36 only). 2 ns + 500 ppm/°C maximum at output.

3.6 Delay times. See table I.

3.7 Delay tolerance. ±2 ns or ±5 percent, whichever is greater.

3.7.1 Delay variance (dash numbers -37 through -77 only). Delay variance shall be ±2 ns or 2 percent, whichever is greater, over the temperature range of -55°C to +125°C at 5 V dc (supply voltage) ±10 percent.

3.8 Rise time. Rise time at any tap shall be 4 ns maximum.

3.9 Pulse width. Minimum operating pulse width shall be 20 percent of total delay time and maximum operating duty cycle is 50 percent.

3.10 Supply voltage (V_{CC}). 4.5 V dc to 5.5 V dc.

3.11 Logic 1 input current. 50 µA maximum.

3.12 Logic 0 input current. -2 mA maximum.

3.13 Logic 1, V_{OUT}. 2.5 V minimum.

3.14 Logic 0, V_{OUT}. 0.5 V maximum.

3.15 Logic 1 fan-out. 20/tap maximum (1 tap is capable of driving 20 TTL inputs).

3.16 Logic 0 fan-out. 10/tap maximum (1 tap is capable of driving 10 TTL inputs).

3.17 Power dissipation. 385 mW maximum at any tap.

3.18 Thermal shock. Method 107, MIL-STD-202, test condition B-1, 15 minutes at temperature extremes. Five minutes at +25°C following each extreme condition.

3.19 Sealing. As specified in MIL-PRF-83532.

3.20 Terminal strength. MIL-STD-202, method 211, test condition C and in accordance with MIL-PRF-83532.

3.21 Vibration. MIL-STD-202, method 204, test condition B and in accordance with MIL-PRF-83532.

3.22 Shock. MIL-STD-202, method 213, test condition D and in accordance with MIL-PRF-83532.

3.23 Immersion. MIL-STD-202, method 104, test condition A and in accordance with MIL-PRF-83532.

3.24 Moisture resistance. As specified in MIL-PRF-83532.

3.25 Solderability. As specified in MIL-PRF-83532.

3.26 Resistance to solvents. As specified in MIL-PRF-83532.

3.27 Operating temperature range. -55°C to +125°C.

3.28 Storage temperature. -65°C to +130°C.

3.29 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.

3.30 Manufacturer eligibility. To be eligible for listing as an 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 B inspections specified herein on a sample of parts agreed upon by the manufacturer and DSCC-VA.

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

3.32 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).

3.33 Marking. Marking shall be in accordance with MIL-PRF-83532, except the military PIN shall be as specified in 1.2 herein.

3.34 Workmanship. Delay line shall be free of flash pits, voids, and excessive mold marks. Visible parting lines are acceptable. The Delay line shall be uniform in quality and free from any defects that will affect life, serviceability, or appearance.

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Unless otherwise specified, sampling and inspection procedures shall be performed in accordance with Inspection of product for delivery shall consist of compliance with the group A inspection of MIL-PRF-83532.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in MIL-DTL-19491, 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.

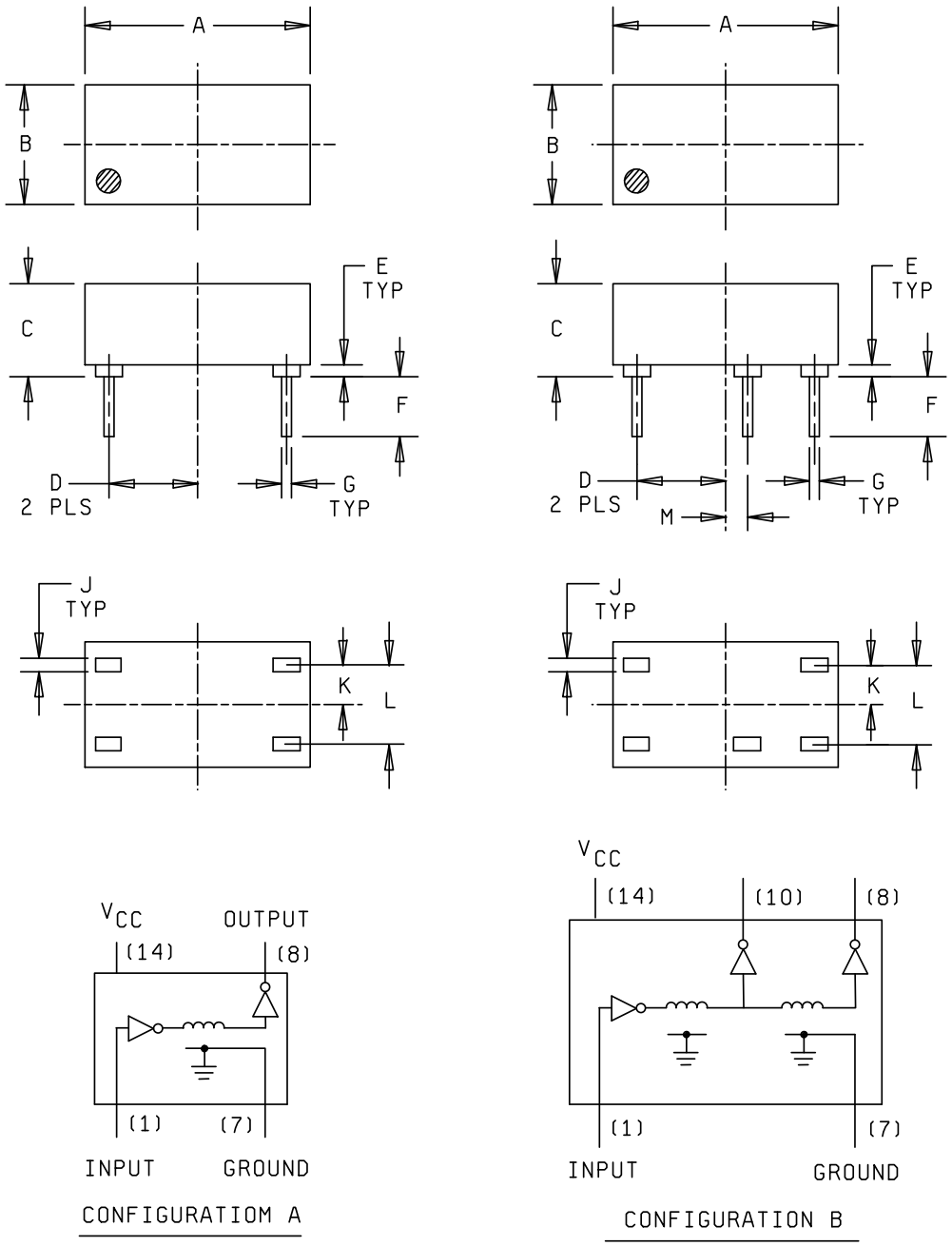
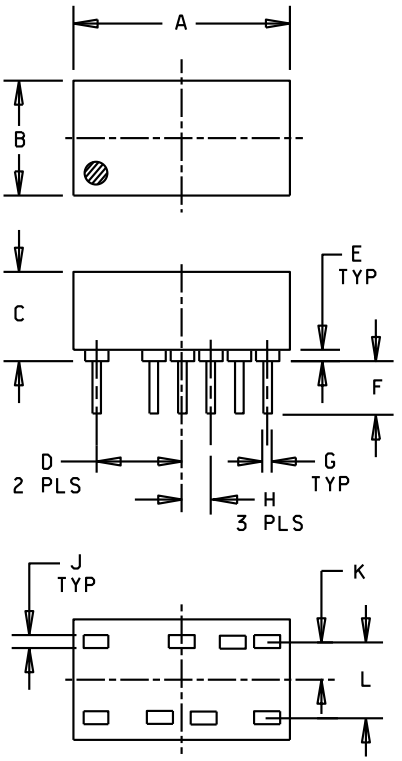
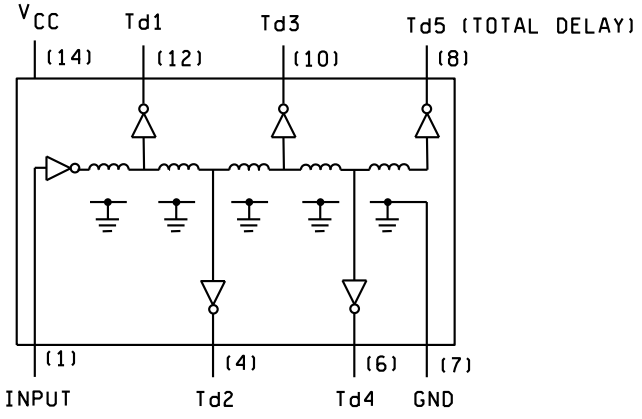


FIGURE 1. Dimensions and configurations.

DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO	SIZE A	CODE IDENT NO. 14933	DWG NO. 84087
		REV K	SHEET 5

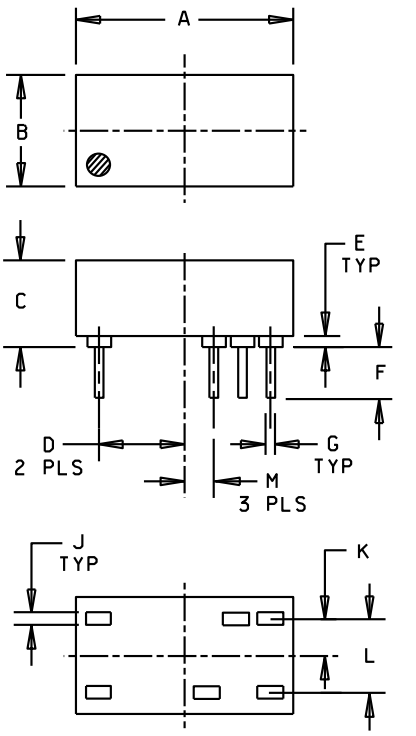


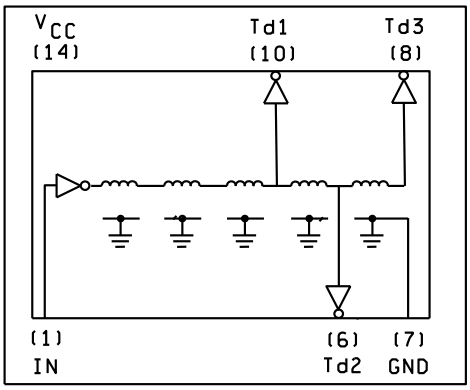


CONFIGURATION C

FIGURE 1. Dimensions and configurations - Continued.

DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO	SIZE A	CODE IDENT NO. 14933	DWG NO. 84087
		REV K	SHEET 6





CONFIGURATION D

FIGURE 1. Dimensions and configurations - Continued.

Ltr	Inches		mm	
	Min	Max	Min	Max
A	---	.820	---	20.83
B	---	.410	---	10.41
C	---	.360	---	9.14
D	.295	.305	7.49	7.75
E	.015	---	0.38	---
F	.125	.200	3.18	5.08
G	.018	.022	0.46	0.56
H	.095	.105	2.41	2.67
J	.010	.014	0.25	0.35
K	.145	.155	3.68	3.94
L	.290	.310	7.37	7.87

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Black dot represents the location of pin 1.
4. Location and shape of standoffs are optional. Height shall be as indicated.
5. Leads shall be free of case meniscus and other foreign material and shall be solderable for a minimum of .010 inches above the seating plane of the delay line.

FIGURE 1. Dimensions and configurations - Continued.

TABLE I. PIN's and delay values.

PIN 84087-	Delay at pin 12 (ns)	Delay at pin 4 (ns)	Delay at pin 10 (ns)	Delay at pin 6 (ns)	Delay at pin 8 (ns)	Number of delays	Configuration
01 02 03 04	N/A	N/A	N/A	N/A	10 20 30 40	1	A
05 06 07 08					50 60 80 100		
09 10 11 12 13					150 200 300 400 500		
14 15 16 17	N/A	N/A	10 20 25 30	N/A	20 40 50 60	2	B
18 19 20 21			40 50 75 100		80 100 150 200		
22 23 24 25			150 200 250 65		300 400 500 110		
26 27 28 29 30	5 10 15 20 25	10 20 30 40 50	15 30 45 60 75	20 40 60 80 100	25 50 75 100 125	5	C
31 32 33 34	30 40 50 60	60 80 100 120	90 120 150 180	120 160 200 240	150 200 250 300		
35 36	80 100	160 200	240 300	320 400	400 500		

TABLE I. PIN's and delay values - Continued.

PIN 84087-	Delay at pin 12 (ns)	Delay at pin 4 (ns)	Delay at pin 10 (ns)	Delay at pin 6 (ns)	Delay at pin 8 (ns)	Number of delays	Configuration
37 38 39 40	N/A	N/A	N/A	N/A	10 20 30 40	1	A
41 42 43 44					50 60 80 100		
45 46 47 48 49					150 200 300 400 500		
50 51 52 53	N/A	N/A	10 20 25 30	N/A	20 40 50 60	2	B
54 55 56 57			40 50 75 100		80 100 150 200		
58 59 60 61			150 200 250 65		300 400 500 110		
62 63 64 65 66	N/A	N/A	N/A	N/A	600 700 800 900 1,000	1	A
67 68 69 70 71 72 73 74 75	N/A	N/A	15 30 45 60 75 90 120 150 300	20 40 60 80 100 120 160 200 400	25 50 75 100 125 150 200 250 500	3	D
76 77	N/A	N/A	N/A	N/A	675 725	1	A

6. NOTES

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, 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.

DLA Land and Maritime drawing PIN 84087-	Similar Vendor PIN – Continued 1/		
	CAGE 00222	CAGE 22519	CAGE 27685
01	14GC10	DDU4-8833-1	082376-501
02	14GC20	DDU4-8833-2	082376-502
03	14GC30	DDU4-8833-3	082376-503
04	14GC40	DDU4-8833-4	082376-504
05	14GC50	DDU4-8833-5	082376-505
06	14GC60	DDU4-8833-6	082376-506
07	14GC80	DDU4-8833-7	082376-507
08	14GC100	DDU4-8833-8	082376-508
09	14GC150	DDU4-8833-9	082376-509
10	14GC200	DDU4-8833-10	082376-510
11	14GC300	DDU4-8833-11	082376-511
12	14GC400	DDU4-8833-12	082376-512
13	14GC500	DDU4-8833-13	082376-513
14	14SC14	DDU4-8833-14	82376-514
15	14SC15	DDU4-8833-15	082376-515
16	14SC16	DDU4-8833-16	082376-516
17	14SC17	DDU4-8833-17	082376-517
18	14SC18	DDU4-8833-18	082376-518
19	14SC19	DDU4-8833-19	082376-519
20	14SC20	DDU4-8833-20	082376-520
21	14SC21	DDU4-8833-21	082376-521
22	14SC22	DDU4-8833-22	082376-522
23	14SC23	DDU4-8833-23	082376-523
24	14SC24	DDU4-8833-24	082376-524
25	14SC25	DDU4-8833-25	082376-525
26	14TC25	DDU4-8833-26	082376-526

See footnote at end of table.

DLA Land and Maritime drawing PIN 84087-	Similar Vendor PIN – Continued 1/		
	CAGE 00222	CAGE 22519	CAGE 27685
27	14TC50	DDU4-8833-27	082376-527
28	14TC75	DDU4-8833-28	082376-528
29	14TC100	DDU4-8833-29	082376-529
30	14TC125	DDU4-8833-30	082376-530
31	14TC150	DDU4-8833-31	082376-531
32	14TC200	DDU4-8833-32	082376-532
33	14TC250	DDU4-8833-33	082376-533
34	14TC300	DDU4-8833-34	082376-534
35	14TC400	DDU4-8833-35	082376-535
36	14TC500	DDU4-8833-36	082376-536
37	14GC10S	DDU4-8833-37	082376-537
38	14GC20S	DDU4-8833-38	082376-538
39	14GC30S	DDU4-8833-39	082376-539
40	14GC40S	DDU4-8833-40	082376-540
41	14GC50S	DDU4-8833-41	082376-541
42	14GC60S	DDU4-8833-42	082376-542
43	14GC80S	DDU4-8833-43	082376-543
44	14GC100S	DDU4-8833-44	082376-544
45	14GC150S	DDU4-8833-45	082376-545
46	14GC200S	DDU4-8833-46	082376-546
47	14GC300S	DDU4-8833-47	082376-547
48	14GC400S	DDU4-8833-48	082376-548
49	14GC500S	DDU4-8833-49	082376-549
50	14SC26	DDU4-8833-50	082376-550
51	14SC27	DDU4-8833-51	082376-551
52	14SC28	DDU4-8833-52	082376-552

See footnote at end of table.

DLA Land and Maritime drawing PIN 84087-	Similar Vendor PIN – Continued 1/		
	CAGE 00222	CAGE 22519	CAGE 27685
53	14SC29	DDU4-8833-53	082376-553
54	14SC30	DDU4-8833-54	082376-554
55	14SC31	DDU4-8833-55	082376-555
56	14SC32	DDU4-8833-56	082376-556
57	14SC33	DDU4-8833-57	082376-557
58	14SC34	DDU4-8833-58	082376-558
59	14SC35	DDU4-8833-59	082376-559
60	14SC36	DDU4-8833-60	082376-560
61	14SC37	DDU4-8833-61	082376-561
62	14GC600S	DDU4-8833-62	082376-562
63	14GC700S	DDU4-8833-63	082376-563
64	14GC800S	DDU4-8833-64	082376-564
65	14GC900S	DDU4-8833-65	082376-565
66	4GC1000S	DDU4-8833-66	082376-566
67	14SC38	DDU4-8833-67	082376-567
68	14SC39	DDU4-8833-68	082376-568
69	14SC40	DDU4-8833-69	082376-569
70	14SC41	DDU4-8833-70	082376-570
71	14SC42	DDU4-8833-71	082376-571
72	14SC43	DDU4-8833-72	082376-572
73	14SC44	DDU4-8833-73	082376-573
74	14SC45	DDU4-8833-74	082376-574
75	14SC46	DDU4-8833-75	082376-575
76	14SC47	DDU4-8833-76	082376-576
77	14SC48	DDU4-8833-77	082376-577

1/ Parts must be purchased to the DLA Land and Maritime PIN to assure that all performance requirements and tests are met.

Vendor CAGE number	Vendor name and address
00222	ESC Electronics Incorporated 33 Comac Loop Ronkonkoma, NU 11779-6858 Phone: (631) 467-5328
27685	Spectrum Microwave, Inc. 23 North Division Street Auburn, NY 13021-2357 Phone: (315) 237-6625
22519	Data Delay Devices, Incorporated 3 Mount Prospect Avenue Clifton, NJ 07013-1915 Phone: (201) 773-2299