

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	Delete group C inspection. Add additional sources of supply. Change dimensioning method and dimension of standoff. Add additional terminal material and tolerances. Change attenuation and distortion.	21 Jan 1987	Randy Larson
B	Added additional sources of supply. Changed MIL-D-23859 references to MIL-PRF-83531. Deleted requirement for group B inspection. Changed several requirements in section 3 and several attenuation measurements in table I.	12 Apr 1989	Randy Larson
C	Changed 3.8. Added note 4 to figure 1. Added vendor 16714. Deleted vendors 00213 and 56289. Editorial changes throughout.	4 Jan 1993	D. Moore
D	Editorial changes and updates made throughout.	17 Jun 2008	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

Source control drawing

REV STATUS OF PAGES	REV	D	D	D	D	D	D	D	D	D	D	D	D	D				
	PAGES	1	2	3	4	5	6	7	8	9	10	11	12	13				
PMIC N/A	PREPARED BY Dan McGrath							DESIGN ACTIVITY DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OH 45444-5000										
Original date of drawing 2 Jul 1984	CHECKED BY Randy Larson							TITLE DELAY LINES, PASSIVE, 10-TAP, DUAL-IN-LINE, 16-PIN										
	APPROVED BY Ivan R. Jones																	
	SIZE A	CODE IDENT. NO. 14933						DWG NO. 84035										
	REV D							PAGE 1 OF 13										

1.1 Scope. This drawing describes the requirements for a family of passive delay lines with 16 pins and 10 taps.

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

-01

Dash number

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.

2.2.1 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.

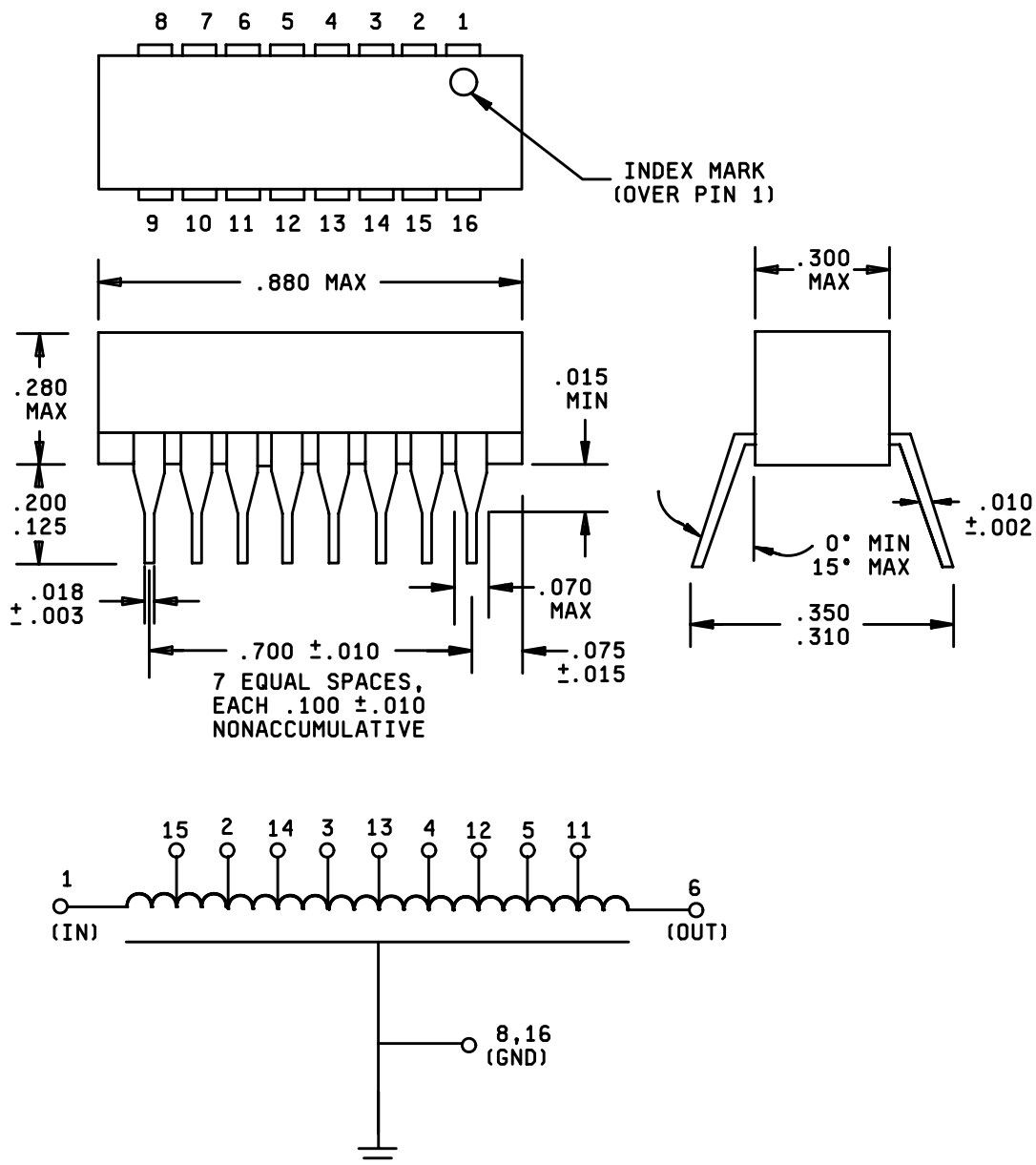
MIL-DTL-31000	- Technical Data Packages.
MIL-DTL-19491	- Semiconductor Device, Packaging of.
MIL-PRF-55681	- Capacitor, Chip, Multiple Layer, Fixed , Ceramic Dielectric, Established Reliability, and Non-Established Reliability General Specification for.
MIL-PRF-83531	- Delay Lines, Passive, General Specification for.

MIL-STD-202 - Test Method Standard, Electronic and Electrical Component Parts.

MIL-STD-1276 - Leads for Electronic Component Parts.

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.

DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO	SIZE A	CODE IDENT NO. 14933	DWG NO. 84035
		REV D	SHEET 2



Inches	mm
.002	0.05
.003	0.08
.010	0.25
.015	0.38
.018	0.46
.070	1.78
.075	1.90
.100	2.54
.125	3.18
.200	5.08
.280	7.11
.300	7.62
.310	7.87
.350	8.89
.700	17.78
.880	22.35

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Pins 7, 9, and 10 are not connected.
4. 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.

FIGURE 1. Design and dimensions.

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO

SIZE
A

CODE IDENT NO.
14933

DWG NO.
84035

REV D

SHEET 3

3. REQUIREMENTS

- 3.1 Item requirements. This drawing shall be interpreted in accordance with [MIL-DTL-31000](#).
- 3.2 Case material. Material shall be molded epoxy and shall be in accordance with [MIL-PRF-83531](#).
- 3.3 Design and dimensions. See [figure 1](#).
- 3.4 Terminals. Terminal material and finish shall be in accordance with [MIL-PRF-83531](#).
- 3.5 Temperature coefficient of delay. See [table I](#).
- 3.6 Characteristic impedance. See [table I](#).
- 3.7 Capacitors. Chip capacitors shall have been tested and supplied in accordance with [MIL-PRF-55681](#).
- 3.8 Total delay time. See [table I](#).
- 3.9 Attenuation. See [table I](#).
- 3.10 Rise time. Rise time shall be 20 percent of nominal total delay time, maximum.
- 3.11 Distortion. 10 percent maximum at output.
- 3.12 Thermal shock. Method 107, [MIL-STD-202](#), test condition B, 5 minutes at temperature extremes and in accordance with [MIL-PRF-83531](#).
- 3.13 Dielectric withstanding voltage. Method 105 of [MIL-STD-202](#), test condition C, 50 V dc in accordance with [MIL-PRF-83531](#).
- 3.14 Insulation resistance. Method 302, test condition A, [MIL-STD-202](#), 100 megohms minimum and in accordance with [MIL-PRF-83531](#).
- 3.15 Seal. As specified in [MIL-PRF-83531](#).
- 3.16 Terminal strength. Method 211, [MIL-STD-202](#), test condition C, and in accordance with [MIL-PRF-83531](#), applied force five pounds.
- 3.17 Vibration. Method 214, [MIL-STD-202](#), test condition IK, 15 minutes, and in accordance with [MIL-PRF-83531](#).
- 3.18 Shock. Method 213, [MIL-STD-202](#), test condition I, and in accordance with [MIL-PRF-83531](#).
- 3.19 Immersion. Method 104, test condition A, [MIL-STD-202](#). Measurement - insulation resistance.
- 3.20 Moisture resistance. As specified in [MIL-PRF-83531](#).
- 3.21 Solderability. As specified in [MIL-PRF-83531](#).
- 3.22 Resistance to solvents. As specified in [MIL-PRF-83531](#).

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO

SIZE
A

CODE IDENT NO.
14933

REV D

DWG NO.
84035

SHEET 4

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

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

3.25 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.

3.26 Manufacturer eligibility. To be eligible for listing as an approved source of supply, a manufacturer shall be listed on the [MIL-PRF-83531](#) Qualified Product 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 DSCC-VA.

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

3.28 Pure tin. The use of pure tin, as an underplate or final finish is prohibited both internally and externally. Tin shall be alloyed with a minimum of 3 percent lead, by mass (see [6.3](#)).

3.29 Marking. Marking shall be in accordance with [MIL-PRF-83531](#) except the PIN shall be in accordance with 1.2 herein. The "M83531/XX-XXX" PIN and the "JAN" or "J" marking shall not apply.

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

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO

SIZE
A

CODE IDENT NO.
14933

DWG NO.
84035

REV D

SHEET 5

TABLE I. PIN's and electrical characteristics.

DESC PIN <u>1</u> / 84035-	Total delay (ns) ±5 percent	Impedance (Ω) ±5 percent	Resistance (Ω) Max	Attenuation (percent) max	Temperature coefficient of delay (ppm) max
01	20	50	1.5	3.0	100
02	25	50	1.5	3.0	100
03	30	50	1.5	3.0	100
04	40	50	2.0	4.0	100
05	45	50	2.0	5.0	100
06	50	50	1.5	5.0	100
07	60	50	1.5	5.0	100
08	75	50	1.8	5.0	100
09	100	50	2.0	5.0	100
10	10	100	1.5	3.0	100
11	20	100	1.5	3.0	100
12	30	100	1.5	3.0	100
13	40	100	1.8	5.0	100
14	50	100	2.0	5.0	100
15	60	100	3.0	5.0	100
16	80	100	3.5	5.0	100
17	90	100	3.5	5.0	100
18	100	100	4.0	5.0	100
19	120	100	4.0	10.0	100
20	150	100	5.0	10.0	100
21	200	100	6.0	10.0	100
22	250	100	7.0	10.0	100
23	20	200	3.0	5.0	100
24	40	200	4.0	5.0	100
25	60	200	4.5	5.0	100
26	80	200	5.5	5.0	100
27	100	200	6.0	5.0	100
28	120	200	6.5	10.0	100
29	160	200	7.0	10.0	100
30	180	200	8.5	10.0	100
31	200	200	9.0	10.0	100
32	240	200	9.5	10.0	100
33	300	200	16.0	10.0	100
34	400	200	16.0	10.0	100
35	50	250	5.5	5.0	100
36	75	250	6.0	5.0	100

See footnote at end of table.

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO

SIZE
A

CODE IDENT NO.
14933

DWG NO.
84035

REV D

SHEET 6

TABLE I. PIN's and electrical characteristics - Continued.

DESC PIN 84035-	$\frac{1}{2}$ Total delay (ns) ±5 percent	Impedance (Ω) ±10 percent	Resistance (Ω) max	Attenuation (percent) max	Temperature coefficient of delay (ppm) max
37	100	250	7.0	5.0	100
38	125	250	8.0	10.0	100
39	150	250	8.5	10.0	100
40	200	250	10.0	10.0	100
41	225	250	11.0	10.0	100
42	300	250	17.0	10.0	100
43	375	250	20.0	10.0	100
44	500	250	24.0	10.0	100
45	30	300	5.0	5.0	100
46	60	300	6.0	5.0	100
47	90	300	7.0	5.0	100
48	125	300	8.0	10.0	100
49	150	300	9.0	10.0	100
50	180	300	11.0	10.0	100
51	240	300	16.0	10.0	100
52	270	300	18.0	10.0	100
53	360	300	21.0	10.0	100
54	450	300	25.0	10.0	100
55	600	300	40.0	10.0	100
56	40	400	8.5	5.0	100
57	80	400	9.0	5.0	100
58	120	400	9.0	10.0	100
59	160	400	16.0	10.0	100
60	200	400	18.0	10.0	100
61	240	400	20.0	10.0	100
62	320	400	26.0	10.0	100
63	360	400	28.0	6.0	100
64	480	400	38.0	9.0	100
65	600	400	45.0	10.0	100
66	800	400	40.0	10.0	100
67	50	500	6.0	5.0	100

See footnote at end of table.

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO

SIZE
A

CODE IDENT NO.
14933

DWG NO.
84035

REV D

SHEET 7

TABLE I. PIN's and electrical characteristics - Continued.

DESC PIN 84035-	<u>1/</u> <u>2/</u> Total delay (ns) ±5 percent	Impedance (Ω) ±10 percent	Resistance (Ω) max	Attenuation (percent) max	Temperature coefficient of delay (ppm) max
68	100	500	10.0	7.0	100
69	150	500	16.0	8.0	100
70	200	500	30.0	8.0	100
71	250	500	18.0	8.0	100
72	300	500	26.0	9.0	100
73	400	500	42.0	10.0	100
74	450	500	45.0	10.0	100
75	500	500	55.0	10.0	100
76	600	500	58.0	10.0	100
77	750	500	50.0	10.0	100
78	1000	500	65.0	11.0	200

1/ Delay between successive taps shall be 10 percent of the total delay time (nonaccumulative).

2/ The delay time referenced from the input shall have a tolerance of ± 1 ns or ±5 percent, whichever is greater.

4. QUALITY ASSURANCE PROVISIONS

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

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in shall be in accordance with the provisions specified for semiconductor devices in MIL-DTL-19491, as well as 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

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.

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO

SIZE
A

CODE IDENT NO.
14933

DWG NO.
84035

REV D

SHEET 8

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: Defense Supply Center, Columbus, ATTN: DSCC/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 Defense Supply Center, Columbus, ATTN: DSCC-VAT, Post Office Box 3990, Columbus, OH 43218-3990 or by telephone (614) 692-4481 or DSN 850-4481.

DESC PIN 84035-	Similar vendor PIN 1/		
	CAGE 22519	CAGE 00222	CAGE 16714
01	1519-Z435-1	22A08-1	SP035-01
02	1519-Z435-2	22A08-2	SP035-02
03	1519-Z435-3	22A08-3	SP035-03
04	1519-Z435-4	22A08-4	SP035-04
05	1519-Z435-5	22A08-5	SP035-05
06	1519-Z435-6	22A08-6	SP035-06
07	1519-Z435-7	22A08-7	SP035-07
08	1519-Z435-8	22A08-8	SP035-08
09	1519-Z435-9	22A08-9	SP035-09
10	1519-Z435-10	22A08-10	SP035-10
11	1519-Z435-11	22A08-11	SP035-11
12	1519-Z435-12	22A08-12	SP035-12

See footnote at end of table.

DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO	SIZE A	CODE IDENT NO. 14933	DWG NO. 84035
		REV D	SHEET 9

DESC PIN 84035-	Similar vendor PIN 1/		
	CAGE 22519	CAGE 00222	CAGE 16714
13	1519-Z435-13	22A08-13	SP035-13
14	1519-Z435-14	22A08-14	SP035-14
15	1519-Z435-15	22A08-15	SP035-15
16	1519-Z435-16	22A08-16	SP035-16
17	1519-Z435-17	22A08-17	SP035-17
18	1519-Z435-18	22A08-18	SP035-18
19	1519-Z435-19	22A08-19	SP035-19
20	1519-Z435-20	22A08-20	SP035-20
21	1519-Z435-21	22A08-21	SP035-21
22	1519-Z435-22	22A08-22	SP035-22
23	1519-Z435-23	22A08-23	SP035-23
24	1519-Z435-24	22A08-24	SP035-24
25	1519-Z435-25	22A08-25	SP035-25
26	1519-Z435-26	22A08-26	SP035-26
27	1519-Z435-27	22A08-27	SP035-27
28	1519-Z435-28	22A08-28	SP035-28
29	1519-Z435-29	22A08-29	SP035-29
30	1519-Z435-30	22A08-30	SP035-30
31	1519-Z435-31	22A08-31	SP035-31
32	1519-Z435-32	22A08-32	SP035-32
33	1519-Z435-33	22A08-33	SP035-33
34	1519-Z435-34	22A08-34	SP035-34
35	1519-Z435-35	22A08-35	SP035-35
36	1519-Z435-36	22A08-36	SP035-36
37	1519-Z435-37	22A08-37	SP035-37
38	1519-Z435-38	22A08-38	SP035-38

See footnote at end of table.

DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO	SIZE A	CODE IDENT NO. 14933	DWG NO. 84035
		REV D	SHEET 10

DESC PIN 84035-	Similar vendor PIN 1/		
	CAGE 22519	CAGE 00222	CAGE 16714
39	1519-Z435-39	22A08-39	SP035-39
40	1519-Z435-40	22A08-40	SP035-40
41	1519-Z435-41	22A08-41	SP035-41
42	1519-Z435-42	22A08-42	SP035-42
43	1519-Z435-43	22A08-43	SP035-43
44	1519-Z435-44	22A08-44	SP035-44
45	1519-Z435-45	22A08-45	SP035-45
46	1519-Z435-46	22A08-46	SP035-46
47	1519-Z435-47	22A08-47	SP035-47
48	1519-Z435-48	22A08-48	SP035-48
49	1519-Z435-49	22A08-49	SP035-49
50	1519-Z435-50	22A08-50	SP035-50
51	1519-Z435-51	22A08-51	SP035-51
52	1519-Z435-52	22A08-52	SP035-52
53	1519-Z435-53	22A08-53	SP035-53
54	1519-Z435-54	22A08-54	SP035-54
55	1519-Z435-55	22A08-55	SP035-55
56	1519-Z435-56	22A08-56	SP035-56
57	1519-Z435-57	22A08-57	SP035-57
58	1519-Z435-58	22A08-58	SP035-58
59	1519-Z435-59	22A08-59	SP035-59
60	1519-Z435-60	22A08-60	SP035-60

See footnote at end of table.

DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO	SIZE A	CODE IDENT NO. 14933	DWG NO. 84035
		REV D	SHEET 11

DESC PIN 84035-	Similar vendor PIN <u>1/</u>		
	CAGE 22519	CAGE 00222	CAGE 16714
61	1519-Z435-61	22A08-61	SP035-61
62	1519-Z435-62	22A08-62	SP035-62
63	1519-Z435-63	22A08-63	SP035-63
64	1519-Z435-64	22A08-64	SP035-64
65	1519-Z435-65	22A08-65	SP035-65
66	1519-Z435-66	22A08-66	SP035-66
67	1519-Z435-67	22A08-67	SP035-67
68	1519-Z435-68	22A08-68	SP035-68
69	1519-Z435-69	22A08-69	SP035-69
70	1519-Z435-70	22A08-70	SP035-70
71	1519-Z435-71	22A08-71	SP035-71
72	1519-Z435-72	22A08-72	SP035-72
73	1519-Z435-73	22A08-73	SP035-73
74	1519-Z435-74	22A08-74	SP035-74
75	1519-Z435-75	22A08-75	SP035-75
76	1519-Z435-76	22A08-76	SP035-76
77	1519-Z435-77	22A08-77	SP035-77
78	1519-Z435-78	22A08-78	SP035-78

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

DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO	SIZE A	CODE IDENT NO. 14933	DWG NO. 84035
		REV D	SHEET 12

Vendor CAGE
number

Vendor name
and address

00222

ESC Electronics Inc.
33 Comac Loop
Ronkonkoma, NY 11779-6858
Phone: (631) 467-5328

16714

Rhombus Industries, Incorporated
313 N Birch Street
Santa Ana, CA 92701-5263
Phone: (714) 898-0960

22519

Data Delay Devices, Incorporated
3 Mount Prospect Avenue
Clifton, NJ 07013-1915
Phone: (973) 773-2299

DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO	SIZE A	CODE IDENT NO. 14933	DWG NO. 84035
		REV D	SHEET 13