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 87	Randy Larson
B	Added additional sources of supply. Changed MIL-D-23859 references to MIL-D-83531. Deleted requirement for group B inspection. Changed several requirements in section 3 and several attenuation measurements in table I.	12 Apr 89	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 93	D. Moore

THIS DRAWING WAS REVIEWED ON 21 March 2000
AND IS VALID FOR ACQUISITION

THE ORIGINAL FIRST PAGE OF THIS DRAWING HAS BEEN REPLACED.

Prepared in accordance with MIL-STD-100

Selected item drawing

REV																						
PAGE																						
REV																						
PAGE																						
REV STATUS OF PAGES	REV					C	C	C	C	C	C	C	C	C	C	C						
	PAGES					1	2	3	4	5	6	7	8	9	10	11						

Original date of drawing: 2 July 1984	**PREPARED BY** Dan McGrath	DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO
	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 C	**PAGE** 1 **OF** 11

DESC FORM 144
JUL 91 AMSC N/A

5999-E151

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

1. SCOPE

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:

84035	-01
Drawing number	Dash number

2. APPLICABLE DOCUMENTS

2.1 Government specifications and standards. Unless otherwise specified, the following specifications and standards, of the issue listed in that issue of the Department of Defense Index of Specifications and Standards specified in the solicitation, form a part of this drawing to the extent specified herein.

SPECIFICATIONS

FEDERAL

QQ-S-571 - Solder, Tin Alloy Tin Lead Alloy and Lead Alloy.

MILITARY

DOD-D-1000 Drawing, Engineering and Associated List.

MIL-S-19491 - Semiconductor Device, Packaging of.

MIL-C-55681 - Capacitor, Chip, Multiple Layer, Fixed Unencapsulated, Ceramic Dielectric, Established Reliability, General Specification for.

MIL-D-83531 - Delay Lines, Passive, General Specification for.

STANDARD

MILITARY

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

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

(Copies of specifications and the standard required by contractors in connection with specific acquisition functions may be obtained from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2 Order of precedence. In the event of a conflict between the text of this drawing and the references cited herein, the text of this drawing shall take precedence.

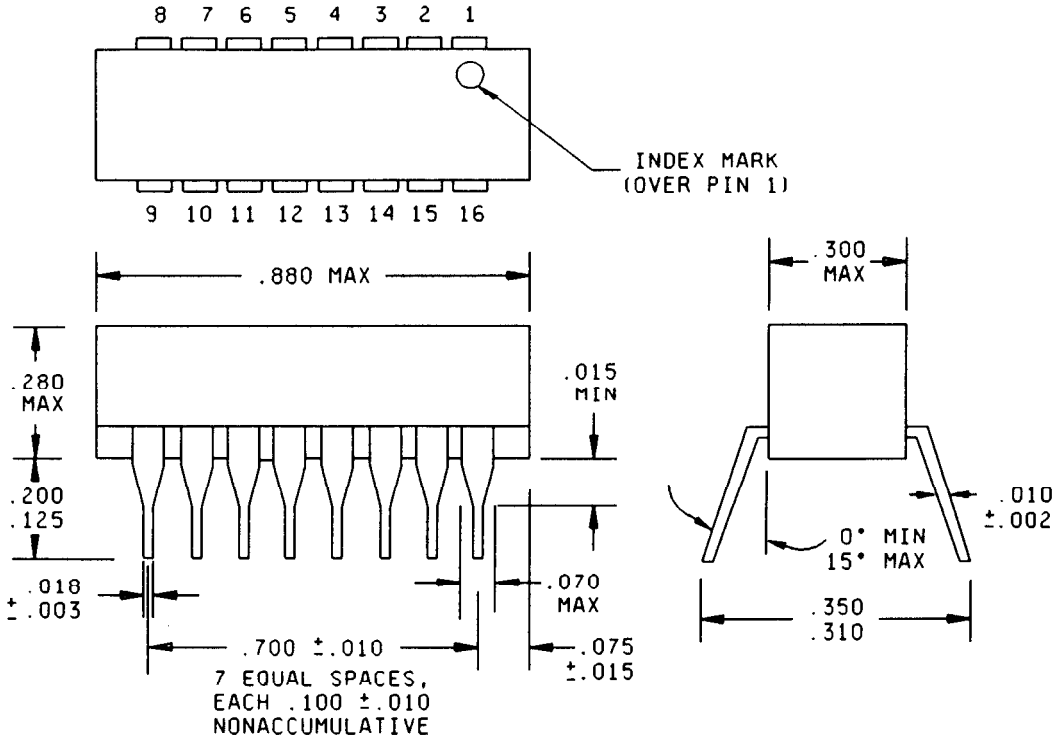
3. REQUIREMENTS

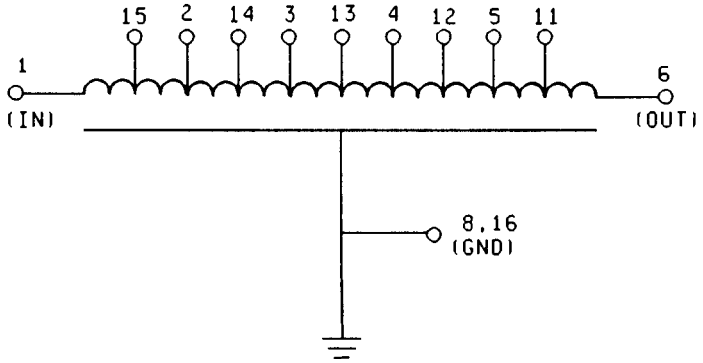
3.1 Item requirements. This drawing shall be interpreted in accordance with DOD-D-1000.

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

3.3 Case material. Material shall be molded epoxy and shall be in accordance with MIL-D-83531.

3.4 Design and dimensions. See figure 1.





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.

3.5 Terminals. Terminal material and finish shall be in accordance with MIL-D-83531.

3.6 Temperature coefficient of delay. See table I.

3.7 Characteristic impedance. See table I.

3.8 Capacitors. Chip capacitors shall have been tested and supplied in accordance with MIL-C-55681.

3.9 Total delay time. See table I.

3.10 Attenuation. See table I.

3.11 Rise time. Rise time shall be 20 percent of nominal total delay time, maximum.

3.12 Distortion. 10 percent maximum at output.

3.13 Thermal shock. Method 107, MIL-STD-202, test condition B, 5 minutes at temperature extremes and in accordance with MIL-D-83531.

3.14 Dielectric withstanding voltage. Method 105 of MIL-STD-202, test condition C, 50 V dc in accordance with MIL-S-83531.

3.15 Insulation resistance. Method 302, test condition A, MIL-STD-202, 100 megohms minimum and in accordance with MIL-D-83531.

3.16 Seal. As specified in MIL-D-83531.

3.17 Terminal strength. Method 211, MIL-STD-202, test condition C, and in accordance with MIL-D-83531, applied force five pounds.

3.18 Vibration. Method 214, MIL-STD-202, test condition IK, 15 minutes, and in accordance with MIL-D-83531.

3.19 Shock. Method 213, MIL-STD-202, test condition I, and in accordance with MIL-D-83531.

3.20 Immersion. Method 104, test condition A, MIL-STD-202. Measurement - insulation resistance.

3.21 Moisture resistance. As specified in MIL-D-83531.

3.22 Solderability. As specified in MIL-D-83531.

3.23 Resistance to solvents. As specified in MIL-D-83531.

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

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

3.26 Marking. Marking shall be in accordance with MIL-D-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.

TABLE I. PIN's and electrical characteristics.

DESC PIN 1/ 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
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

See footnote at end of table.

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

DESC PIN 84035-	1/ 2/ Total delay (ns) ±5 percent	Impedance (Ω) ±10 percent	Resistance (Ω) max	Attenuation (percent) max	Temperature coefficient of delay (ppm) max
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
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 Quality conformance inspections.

4.1.1 Inspection of product for delivery. Inspection of product for delivery shall consist of the group A inspection of MIL-D-83531.

4.2 Optional statement concerning testing. The procuring activity, at its discretion, may accept a statement of compliance with the group A inspection in lieu of the manufacturer performing the group A inspection (see 6.2c).

4.3 Inspection of packaging. The sampling and inspection of the preservation, packing, and container marking shall be in accordance with the requirements for semiconductor devices in MIL-S-19491.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with the provisions specified for semiconductor devices in MIL-S-19491.

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 acquisition document should specify the following.

a. Complete DESC drawing PIN (see 1.2).

b. Requirement for the manufacturer to include one copy of the quality conformance inspection data with each shipment of parts (if applicable, see 4.1).

c. Whether the manufacturer performs the group A inspection or provides a statement of compliance with the group A inspection.

d. Requirement for the manufacturer to notify the acquiring activity in the event of a change in the product.

6.3 Suggested sources of supply. Suggested sources of supply are listed herein. Additional sources will be added as they become available. The following table is not a qualified products list or an approved source list. These vendors have submitted certificates of compliance to DESC; however, parts may be ordered from any manufacturer who agrees to supply items conforming to all the requirements of this drawing.

6.4 Assistance. Questions or comments concerning this drawing should be addressed to DESC-EMM, 1507 Wilmington Pike, Dayton, OH 45444-5270, or telephone (513) 296-5255.

DESC PIN 84035-	Similar vendor PIN 1/							
	CAGE 22519	CAGE 20933	CAGE 32155	CAGE 00222	CAGE 19615	CAGE 92912	CAGE 50965	CAGE 16714
01	1519-Z435-1	00A624	50-1039	22A08-1	VP16	0404-2037-01	8305-01	SP035-01
02	1519-Z435-2	00A625	50-1040	22A08-2	VP16	0404-2037-02	8305-02	SP035-02
03	1519-Z435-3	00A626	50-1041	22A08-3	VP16	0404-2037-03	8305-03	SP035-03
04	1519-Z435-4	00A627	50-1042	22A08-4	VP16	0404-2037-04	8305-04	SP035-04
05	1519-Z435-5	00A628	50-1043	22A08-5	VP16	0404-2037-05	8305-05	SP035-05
06	1519-Z435-6	00A629	50-1044	22A08-6	VP16	0404-2037-06	8305-06	SP035-06
07	1519-Z435-7	00A630	50-1045	22A08-7	VP16	0404-2037-07	8305-07	SP035-07
08	1519-Z435-8	00A631	50-1046	22A08-8	VP16	0404-2037-08	8305-08	SP035-08
09	1519-Z435-9	00A876	50-1047	22A08-9	VP16	0404-2037-09	8305-09	SP035-09
10	1519-Z435-10	00A632	50-1048	22A08-10	VP16	0404-2037-10	8305-10	SP035-10
11	1519-Z435-11	00A633	50-1049	22A08-11	VP16	0404-2037-11	8305-11	SP035-11
12	1519-Z435-12	00A634	50-1050	22A08-12	VP16	0404-2037-12	8305-12	SP035-12
13	1519-Z435-13	00A635	50-1051	22A08-13	VP16	0404-2037-13	8305-13	SP035-13
14	1519-Z435-14	00A636	50-1052	22A08-14	VP16	0404-2037-14	8305-14	SP035-14
15	1519-Z435-15	00A637	50-1053	22A08-15	VP16	0404-2037-15	8305-15	SP035-15
16	1519-Z435-16	00A638	50-1054	22A08-16	VP16	0404-2037-16	8305-16	SP035-16
17	1519-Z435-17	00A639	50-1055	22A08-17	VP16	0404-2037-17	8305-17	SP035-17
18	1519-Z435-18	10A877	50-1056	22A08-18	VP16	0404-2037-18	8305-18	SP035-18
19	1519-Z435-19	10A878	50-1057	22A08-19	VP16	0404-2037-19	8305-19	SP035-19
20	1519-Z435-20	10A879	50-1058	22A08-20	VP16	0404-2037-20	8305-20	SP035-20
21	1519-Z435-21	10A880	50-1059	22A08-21	VP16	0404-2037-21	8305-21	SP035-21
22	1519-Z435-22	10A881	50-1060	22A08-22	VP16	0404-2037-22	8305-22	SP035-22
23	1519-Z435-23	00B469	50-1061	22A08-23	VP16	0404-2037-23	8305-23	SP035-23
24	1519-Z435-24	00B470	50-1062	22A08-24	VP16	0404-2037-24	8305-24	SP035-24
25	1519-Z435-25	00B471	50-1063	22A08-25	VP16	0404-2037-25	8305-25	SP035-25
26	1519-Z435-26	00B472	50-1064	22A08-26	VP16	0404-2037-26	8305-26	SP035-26
27	1519-Z435-27	10B611	50-1065	22A08-27	VP16	0404-2037-27	8305-27	SP035-27
28	1519-Z435-28	10B612	50-1066	22A08-28	VP16	0404-2037-28	8305-28	SP035-28
29	1519-Z435-29	10B613	50-1067	22A08-29	VP16	0404-2037-29	8305-29	SP035-29
30	1519-Z435-30	10B614	50-1068	22A08-30	VP16	0404-2037-30	8305-30	SP035-30

See footnote at end of table.

DESC PIN 84035-	Similar vendor PIN 1/							
	CAGE 22519	CAGE 20933	CAGE 32155	CAGE 00222	CAGE 19615	CAGE 92912	CAGE 50965	CAGE 16714
31	1519-Z435-31	10B615	50-1069	22A08-31	VP16	0404-2037-31	8305-31	SP035-31
32	1519-Z435-32	10B616	50-1070	22A08-32	VP16	0404-2037-32	8305-32	SP035-32
33	1519-Z435-33	10B617	50-1071	22A08-33	VP16	0404-2037-33	8305-33	SP035-33
34	1519-Z435-34	10B618	50-1072	22A08-34	VP16	0404-2037-34	8305-34	SP035-34
35	1519-Z435-35	00C121	50-1073	22A08-35	VP16	0404-2037-35	8305-35	SP035-35
36	1519-Z435-36	00C122	50-1074	22A08-36	VP16	0404-2037-36	8305-36	SP035-36
37	1519-Z435-37	10C376	50-1075	22A08-37	VP16	0404-2037-37	8305-37	SP035-37
38	1519-Z435-38	10C377	50-1076	22A08-38	VP16	0404-2037-38	8305-38	SP035-38
39	1519-Z435-39	10C378	50-1077	22A08-39	VP16	0404-2037-39	8305-39	SP035-39
40	1519-Z435-40	10C379	50-1078	22A08-40	VP16	0404-2037-40	8305-40	SP035-40
41	1519-Z435-41	10C380	50-1079	22A08-41	VP16	0404-2037-41	8305-41	SP035-41
42	1519-Z435-42	10C381	50-1080	22A08-42	VP16	0404-2037-42	8305-42	SP035-42
43	1519-Z435-43	10C382	50-1081	22A08-43	VP16	0404-2037-43	8305-43	SP035-43
44	1519-Z435-44	10C383	50-1082	22A08-44	VP16	0404-2037-44	8305-44	SP035-44
45	1519-Z435-45	00C123	50-1083	22A08-45	VP16	0404-2037-45	8305-45	SP035-45
46	1519-Z435-46	00C124	50-1084	22A08-46	VP16	0404-2037-46	8305-46	SP035-46
47	1519-Z435-47	00C125	50-1085	22A08-47	VP16	0404-2037-47	8305-47	SP035-47
48	1519-Z435-48	10C384	50-1086	22A08-48	VP16	0404-2037-48	8305-48	SP035-48
49	1519-Z435-49	10C385	50-1087	22A08-49	VP16	0404-2037-49	8305-49	SP035-49
50	1519-Z435-50	10C386	50-1088	22A08-50	VP16	0404-2037-50	8305-50	SP035-50
51	1519-Z435-51	10C387	50-1089	22A08-51	VP16	0404-2037-51	8305-51	SP035-51
52	1519-Z435-52	10C388	50-1090	22A08-52	VP16	0404-2037-52	8305-52	SP035-52
53	1519-Z435-53	10C389	50-1091	22A08-53	VP16	0404-2037-53	8305-53	SP035-53
54	1519-Z435-54	10C390	50-1092	22A08-54	VP16	0404-2037-54	8305-54	SP035-54
55	1519-Z435-55	10C391	50-1093	22A08-55	VP16	0404-2037-55	8305-55	SP035-55
56	1519-Z435-56	00C126	50-1094	22A08-56	VP16	0404-2037-56	8305-56	SP035-56
57	1519-Z435-57	00C127	50-1095	22A08-57	VP16	0404-2037-57	8305-57	SP035-57
58	1519-Z435-58	10C392	50-1096	22A08-58	VP16	0404-2037-58	8305-58	SP035-58
59	1519-Z435-59	10C393	50-1097	22A08-59	VP16	0404-2037-59	8305-59	SP035-59
60	1519-Z435-60	10C394	50-1098	22A08-60	VP16	0404-2037-60	8305-60	SP035-60

See footnote at end of table.

DESC PIN 84035-	Similar vendor PIN 1/							
	CAGE 22519	CAGE 20933	CAGE 32155	CAGE 00222	CAGE 19615	CAGE 92912	CAGE 50965	CAGE 16714
61	1519-Z435-61	10C395	50-1099	22A08-61	VP16	0404-2037-61	8305-61	SP035-61
62	1519-Z435-62	10C396	50-1100	22A08-62	VP16	0404-2037-62	8305-62	SP035-62
63	1519-Z435-63	10C397	50-1101	22A08-63	VP16	0404-2037-63	8305-63	SP035-63
64	1519-Z435-64	10C398	50-1102	22A08-64	VP16	0404-2037-64	8305-64	SP035-64
65	1519-Z435-65	10C399	50-1103	22A08-65	VP16	0404-2037-65	8305-65	SP035-65
66	1519-Z435-66	10C400	50-1104	22A08-66	VP16	0404-2037-66	8305-66	SP035-66
67	1519-Z435-67	00D229	50-1105	22A08-67	VP16	0404-2037-67	8305-67	SP035-67
68	1519-Z435-68	10D660	50-1106	22A08-68	VP16	0404-2037-68	8305-68	SP035-68
69	1519-Z435-69	10D661	50-1107	22A08-69	VP16	0404-2037-69	8305-69	SP035-69
70	1519-Z435-70	10D662	50-1108	22A08-70	VP16	0404-2037-70	8305-70	SP035-70
71	1519-Z435-71	10D663	50-1109	22A08-71	VP16	0404-2037-71	8305-71	SP035-71
72	1519-Z435-72	10D664	50-1110	22A08-72	VP16	0404-2037-72	8305-72	SP035-72
73	1519-Z435-73	10D665	50-1111	22A08-73	VP16	0404-2037-73	8305-73	SP035-73
74	1519-Z435-74	10D666	50-1112	22A08-74	VP16	0404-2037-74	8305-74	SP035-74
75	1519-Z435-75	10D667	50-1113	22A08-75	VP16	0404-2037-75	8305-75	SP035-75
76	1519-Z435-76	10D668	50-1114	22A08-76	VP16	0404-2037-76	8305-76	SP035-76
77	1519-Z435-77	10D669	50-1115	22A08-77	VP16	0404-2037-77	8305-77	SP035-77
78	1519-Z435-78	10D670	50-1116	22A08-78	VP16	0404-2037-78	8305-78	SP035-78

1/ CAUTION. Do not use similar vendor PIN's for item procurement or marking.

Vendor CAGE number	Vendor name and address
00222	ESC Electronics Corporation 534 Bergen Boulevard Palisades Park, NJ 07650 Phone: (201) 947-0400
16714	Rhombus Industries, Incorporated 15801 Chemical Lane Huntington Beach, CA 92649 Phone: (714) 898-0960
19615	Allen Avionics Incorporated 224 E. 2nd Street Mineola, NY 11501 Phone: (516) 248-8080
20933	Kappa Technologies, Incorporated 1443 Pinewood Street Rahway, NJ 07065 Phone: (908) 396-9400
22519	Data Delay Devices, Incorporated 3 Mount Prospect Avenue Clifton, NJ 07013 Phone: (201) 773-2299
32155	Polara Engineering 4115 Artesia Avenue Fullerton, CA 92633 Phone: (714) 521-0900
50965	Princeton Advanced Components, Incorporated 860 State Road Princeton, NJ 08540 Phone: (609) 924-2444
92912	Bel Fuse, Incorporated 198 Van Vorst Street Jersey City, NJ 07302 Phone: (201) 432-0463