REVISIONS			
LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
A	Change V_{OH} and V_{OL} test conditions. Change I_{IL} test limit. Change figure 1. Change t_{SKEW} test condition. Change CAGE code to 67268. Delete footnotes 4/ and 5/ from table I and apply the information to the applicable test conditions. Delete the block diagram from figure 2 and 3.2.2. Editorial changes throughout.	1989 SEPT 12	M. Faye CMR

CURRENT CAGE CODE 67268

REV																								
SHEET																								
REV																								
SHEET																								
REV STATUS OF SHEETS	REV	A	A	A	A	A	A	A	A	A	A	A	A											
	SHEET	1	2	3	4	5	6	7	8	9	10	11	12											

PMIC N/A

STANDARDIZED MILITARY DRAWING

THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE

AMSC N/A

PREPARED BY: Joseph A Kerby

CHECKED BY: Charles E Besore

APPROVED BY: M. Faye CMR

DRAWING APPROVAL DATE: 1 JUNE 1987

REVISION LEVEL: A

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO 45444

MICROCIRCUIT, LINEAR, QUAD DIFFERENTIAL LINE RECEIVER, MONOLITHIC SILICON

SIZE	CAGE CODE	
A	14933	5962-87596

SHEET 1 OF 12

DESC FORM 193-1
SEP 87

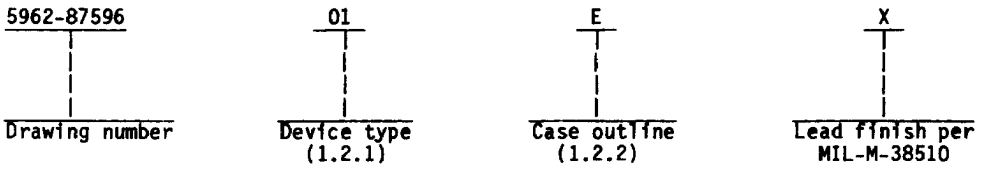
* U.S. GOVERNMENT PRINTING OFFICE: 1987 — 748-129/60912

5962-E1108

1. SCOPE

1.1 Scope. This drawing describes device requirements for class B microcircuits in accordance with 1.2.1 of MIL-STD-883, "Provisions for the use of MIL-STD-883 in conjunction with compliant non-JAN devices".

1.2 Part number. The complete part number shall be as shown in the following example:



1.2.1 Device type. The device type shall identify the circuit function as follows:

Device type	Generic number	Circuit function
01	26LS34	Quad differential receiver

1.2.2 Case outlines. The case outlines shall be as designated in appendix C of MIL-M-38510, and as follows:

Outline letter	Case outline
E	D-2 (16-lead, .840" x .310" x .200"), dual-in-line package
F	F-5 (16-lead, .440" x .285" x .085"), flat package
2	C-2 (20-terminal, .358" x .358" x .100"), chip carrier package

1.3 Absolute maximum ratings.

Supply voltage range	-0.5 V to +7.0 V
ENABLE voltage range	-1.5 V to +7.0 V
Common mode voltage (V_{CM})	±25 V
Differential input voltage (V_{ID})	30 V
Output sink current (I_O)	50 mA
Storage temperature range	-65°C to +165°C
Maximum power dissipation (P_D) 1/	400 mW
Lead temperature (soldering, 10 seconds)	+300°C
Thermal resistance, junction-to-case (θ_{JC})	MIL-M-38510, appendix C
Thermal resistance, junction-to-ambient (θ_{JA}):	
Case E	80°C/W
Case F	65°C/W
Case 2	70°C/W
Junction temperature (T_J)	+150°C

1.4 Recommended operating conditions.

Supply voltage (V_{CC})	4.5 V to 5.5 V
ENABLE high level input voltage (V_{IH})	2.0 V
ENABLE low level input voltage (V_{IL})	0.8 V
Ambient temperature range (T_A)	-55°C to +125°C

1/ Must withstand the added P_D due to short circuit test, e.g., I_{OS}.

2. APPLICABLE DOCUMENTS

2.1 Government specification and standard. Unless otherwise specified, the following specification and standard, 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.

SPECIFICATION

MILITARY

MIL-M-38510 - Microcircuits, General Specification for.

STANDARD

MILITARY

MIL-STD-883 - Test Methods and Procedures for Microelectronics.

(Copies of the specification and standard required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

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. The individual item requirements shall be in accordance with 1.2.1 of MIL-STD-883, "Provisions for the use of MIL-STD-883 in conjunction with compliant non-JAN devices" and as specified herein.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-M-38510 and herein.

3.2.1 Terminal connections and logic diagram. The terminal connections and logic diagram shall be as specified on figure 1.

3.2.2 Switching test circuit. The switching test circuit shall be as specified on figure 2.

3.2.3 Switching waveforms. The switching waveforms shall be as specified on figure 3.

3.2.4 Case outlines. The case outlines shall be in accordance with 1.2.2 herein.

3.3 Electrical performance characteristics. Unless otherwise specified, the electrical performance characteristics are as specified in table I and apply over the full ambient operating temperature range.

3.4 Marking. Marking shall be in accordance with MIL-STD-883 (see 3.1 herein). The part shall be marked with the part number listed in 1.2 herein. In addition, the manufacturer's part number may also be marked as listed in 6.4 herein.

3.5 Certificate of compliance. A certificate of compliance shall be required from a manufacturer in order to be listed as an approved source of supply in 6.4. The certificate of compliance submitted to DESC-ECS prior to listing as an approved source of supply shall state that the manufacturer's product meets the requirements of MIL-STD-883 (see 3.1 herein) and the requirements herein.

3.6 Certificate of conformance. A certificate of conformance as required in MIL-STD-883 (see 3.1 herein) shall be provided with each lot of microcircuits delivered to this drawing.

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions $-55°C < T_A < +125°C$ unless otherwise specified		Group A subgroups	Limits		Unit
					Min	Max	
Differential input voltage	V_{TH}	$V_{OUT} = V_{OL}$ or V_{OH} 1/	$0 V \le V_{CM} \le +5 V$	1, 2, 3		±100	mV
			$-7 V \le V_{CM} \le +12 V$			±200	mV
			$-15 V \le V_{CM} \le +15 V$			±400	mV
Input resistance	R_{IN}	$-15 V \le V_{CM} \le +15 V$ (One input ac GND) 2/		1, 2, 3	12	40	kΩ
Input current	I_{IN}	$V_{IN} = +12 V$		1, 2, 3		+1.0	mA
Input current	I_{IN}	$V_{IN} = -7 V$		1, 2, 3		-0.8	mA
High level output voltage	V_{OH}	$V_{CC} = 4.5 V$, $\Delta V_{IN} = +1.0 V$	$I_{OH} = -12 mA$	1, 2, 3	+2.0		V
		$V_{\overline{ENABLE}} = 0.8 V$	$I_{OH} = -1 mA$		+2.4		V
Low level output voltage	V_{OL}	$V_{CC} = 4.5 V$, $\Delta V_{IN} = -1.0 V$	$I_{OL} = 16 mA$	1, 2, 3		+0.4	V
		$V_{\overline{ENABLE}} = 0.8 V$	$I_{OL} = 24 mA$			+0.5	V
Enable clamp voltage	V_{IC}	$I_{IN} = -18 mA$, $V_{CC} = 4.5 V$		1, 2, 3		-1.5	V
Off-state (high impedance) output current	I_O	$V_{CC} = 5.5 V$	$V_{OUT} = 2.4 V$	1, 2, 3		+50	µA
			$V_{OUT} = 0.4 V$			-50	µA
ENABLE level input current	I_{IH1}	$V_{CC} = 5.5 V$, $V_{IN} = 2.7 V$		1, 2, 3		+20	µA
ENABLE level input current	I_{IL}	$V_{CC} = 5.5 V$, $V_{IN} = 0.4 V$		1, 2, 3		-0.20	mA
ENABLE level input current	I_{IH2}	$V_{CC} = 5.5 V$, $V_{IN} = 5.5 V$		1, 2, 3		+100	µA

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $-55°C < T_A < +125°C$ unless otherwise specified		Group A subgroups	Limits		Unit
					Min	Max	
Output short circuit current 3/	I_{OS}	V_{CC} = 5.5 V V_{OUT} = 0 V ΔV_{IN} = +1.0 V		1, 2, 3	-30	-120	mA
Supply current	I_{CC}	All V_{IN} = GND V_{CC} = 5.5 V, outputs disabled		1, 2, 3		+70	mA
Input hysteresis	V_{HYST}	V_{CC} = 5.0 V		1, 2, 3	+120	+300	mV
Open circuit input voltage	V_{IOC}			1, 2, 3	+2.0	+3.0	V
Functional testing		See 4.3.1c		7, 8			
Propagation delay from input to output	t_{PLH}	C_L = 50 pF R_{L1} = 1 kΩ R_{L2} = 280Ω	T_A = +25°C V_{CC} = 5.0 V	9		24	ns
		See figures 2 and 3	V_{CC} = 4.5 V to 5.0 V	9, 10, 11		30	ns
Propagation delay from input to output	t_{PHL}		T_A = +25°C V_{CC} = 5.0 V	9		24	ns
			V_{CC} = 4.5 V to 5.0 V	9, 10, 11		30	ns
Propagation delay from ENABLE to output	t_{PZH}		T_A = +25°C V_{CC} = 5.0 V	9		16	ns
			V_{CC} = 4.5 V to 5.0 V	9, 10, 11		22	ns
Propagation delay from ENABLE to output	t_{PZL}		T_A = +25°C V_{CC} = 5.0 V	9		22	ns
			V_{CC} = 4.5 V to 5.0 V	9, 10, 11		33	ns

See footnotes at end of table.

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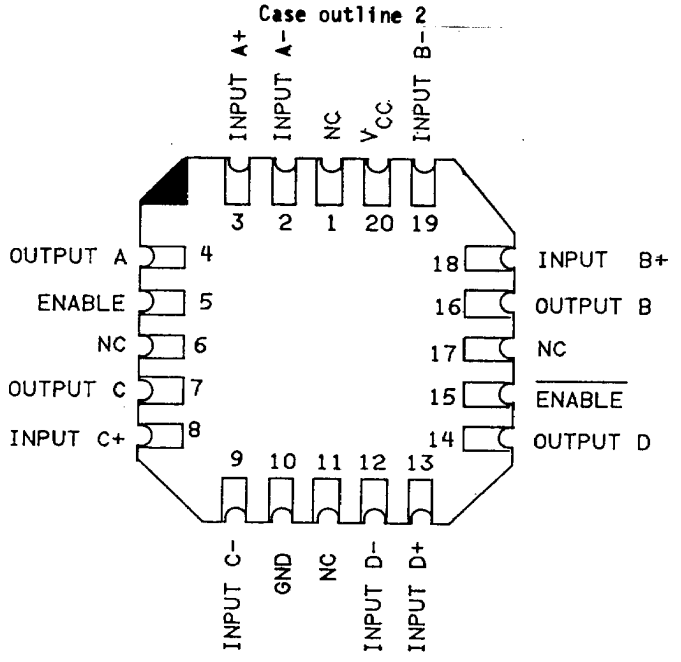
TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $-55°C < T_A < +125°C$ unless otherwise specified		Group A subgroups	Limits		Unit
					Min	Max	
Propagation delay from ENABLE to output	t_{PHZ}	C_L = 5 pF R_{L1} = 1 kΩ R_{L2} = 280Ω	T_A = +25°C V_{CC} = 5.0 V	9		18	ns
		See figures 2 and 3	V_{CC} = 4.5 V to 5.0 V	9, 10, 11		27	ns
Propagation delay from ENABLE to output	t_{PLZ}		T_A = +25°C V_{CC} = 5.0 V	9		18	ns
			V_{CC} = 4.5 V to 5.0 V	9, 10, 11		27	ns
Propagation delay SKEW	t_{SKEW}	$\lvert t_{PLH}-t_{PHL} \rvert$	T_A = +25°C V_{CC} = 5.0 V	9		±4	ns
			V_{CC} = 4.5 V to 5.0 V	9, 10, 11		±5	ns
Propagation delay from $\overline{\text{ENABLE}}$ to output	t_{PZH}	C_L = 50 pF R_{L1} = 1 kΩ R_{L2} = 280Ω	T_A = +25°C V_{CC} = 5.0 V	9		26	ns
		See figures 2 and 3	V_{CC} = 4.5 V to 5.0 V	9, 10, 11		39	ns
Propagation delay from $\overline{\text{ENABLE}}$ to output	t_{PZL}		T_A = +25°C V_{CC} = 5.0 V	9		33	ns
			V_{CC} = 4.5 V to 5.0 V	9, 10, 11		49	ns
Propagation delay from $\overline{\text{ENABLE}}$ to output	t_{PHZ}	C_L = 5 pF R_{L1} = 1 kΩ R_{L2} = 280Ω	T_A = +25°C V_{CC} = 5.0 V	9		20	ns
		See figures 2 and 3	V_{CC} = 4.5 V to 5.0 V	9, 10, 11		30	ns
Propagation delay from $\overline{\text{ENABLE}}$ to output	t_{PLZ}		T_A = +25°C V_{CC} = 5.0 V	9		20	ns
			V_{CC} = 4.5 V to 5.0 V	9, 10, 11		30	ns

1/ Input voltage is not tested directly due to tester accuracy limitations but is tester correlated.
2/ R_{IN} is not directly tested but is correlated.
3/ Not more than one output should be shorted at a time. Duration of short circuit test should not exceed one second.

Case outline 2



Case outlines E and F

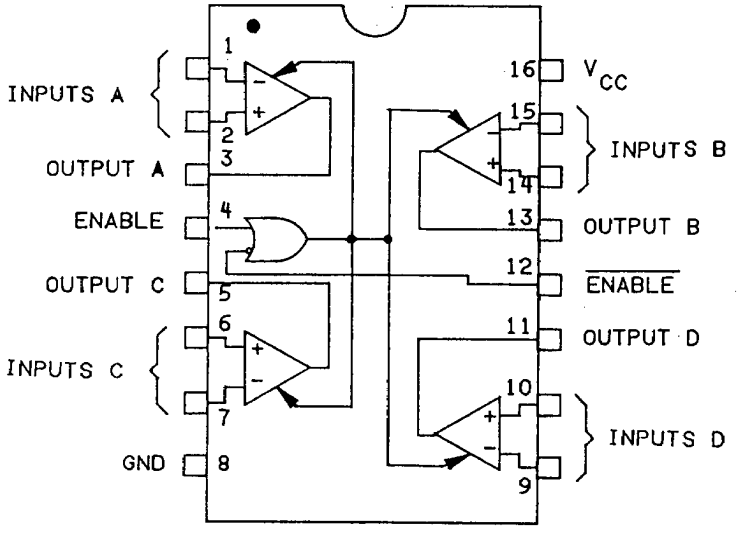


FIGURE 1. Terminal connections and logic diagram.

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Switch matrix

Parameter	SW1	SW2
t_{PLH}	Closed	Closed
t_{PHL}	Closed	Closed
t_{PZL}	Closed	Open
t_{PZH}	Open	Closed
t_{PLZ}	Closed	Closed
t_{PHZ}	Closed	Closed

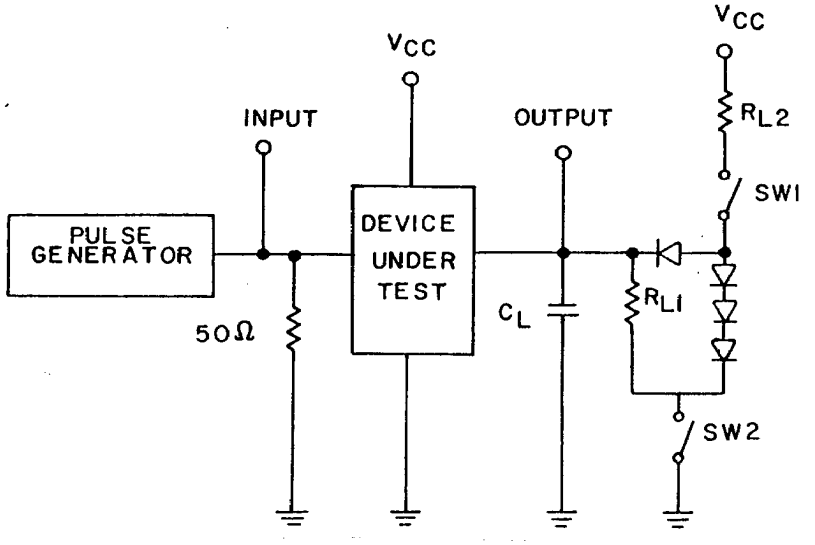

FIGURE 2. Switching test circuit.

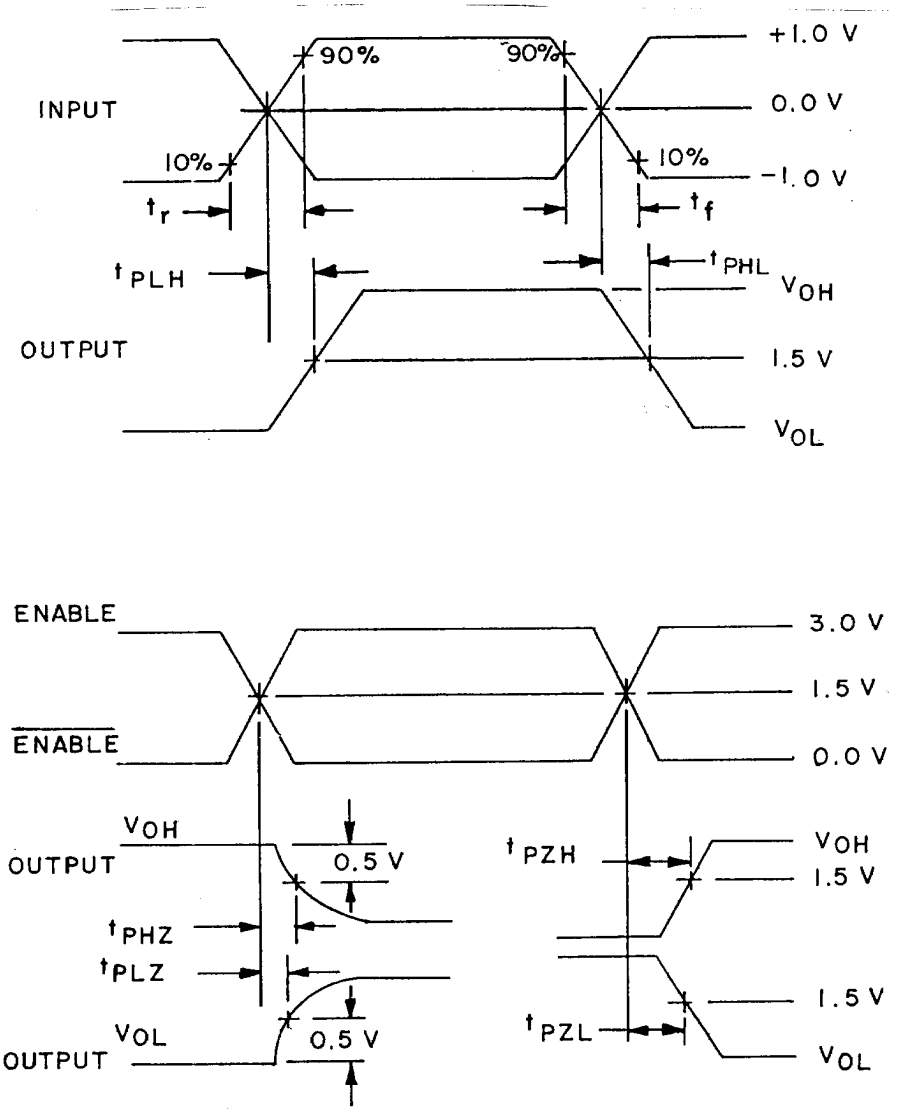

FIGURE 3. Switching waveforms.

3.7 Notification of change. Notification of change to DESC-ECS shall be required in accordance with MIL-STD-883 (see 3.1 herein).

3.8 Verification and review. DESC, DESC's agent, and the acquiring activity retain the option to review the manufacturer's facility and applicable required documentation. Offshore documentation shall be made available onshore at the option of the reviewer.

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with section 4 of MIL-M-38510 to the extent specified in MIL-STD-883 (see 3.1 herein).

4.2 Screening. Screening shall be in accordance with method 5004 of MIL-STD-883, and shall be conducted on all devices prior to quality conformance inspection. The following additional criteria shall apply:

a. Burn-in test, method 1015 of MIL-STD-883.

(1) Test condition A, B, C, or D using the circuit submitted with the certificate of compliance (see 3.5 herein).

(2) T_A = +125°C, minimum.

b. Interim and final electrical test parameters shall be as specified in table II herein, except interim electrical parameter tests prior to burn-in are optional at the discretion of the manufacturer.

4.3 Quality conformance inspection. Quality conformance inspection shall be in accordance with method 5005 of MIL-STD-883 including groups A, B, C, and D inspections. The following additional criteria shall apply.

4.3.1 Group A inspection.

a. Tests shall be as specified in table II herein.

b. Subgroups 4, 5, and 6 in table I, method 5005 of MIL-STD-883 shall be omitted.

c. Subgroups 7 and 8 testing shall be sufficient to verify the functional operation of the device.

4.3.2 Groups C and D inspections.

a. End-point electrical parameters shall be as specified in table II herein.

b. Steady-state life test conditions, method 1005 of MIL-STD-883.

(1) Test condition A, B, C, or D using the circuit submitted with the certificate of compliance (see 3.5 herein).

(2) T_A = +125°C, minimum.

(3) Test duration: 1,000 hours, except as permitted by method 1005 of MIL-STD-883.

TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (per method 5005, table I)
Interim electrical parameters (method 5004)	---
Final electrical test parameters (method 5004)	1*, 2, 3, 7, 8, 9
Group A test requirements (method 5005)	1, 2, 3, 7, 8, 9, 10**, 11**
Groups C and D end-point electrical parameters (method 5005)	1, 2, 3

* PDA applies to subgroup 1.
** Subgroups 10 and 11, if not tested, shall be guaranteed to the limits specified in table I.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-M-38510.

6. NOTES

6.1 Intended use. Microcircuits 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. When a military specification exists and the product covered by this drawing has been qualified for listing on QPL-38510, the device specified herein will be inactivated and will not be used for new design. The QPL-38510 product shall be the preferred item for all applications.

6.2 Replaceability. Microcircuits covered by this drawing will replace the same generic device covered by a contractor-prepared specification or drawing.

6.3 Comments. Comments on this drawing should be directed to DESC-ECS, Dayton, Ohio 45444, or telephone 513-296-5375.

6.4 Approved source of supply. An approved source of supply is listed herein. Additional sources will be added as they become available. The vendor listed herein has agreed to this drawing and a certificate of compliance (see 3.5 herein) has been submitted to DESC-ECS.

Military drawing part number	Vendor CAGE number	Vendor similar part number 1/	Replacement military specification part number
5962-8759601EX	34335	AM26LS34/BEA	
5962-8759601FX	34335	AM26LS34/BFA	
5962-87596012X	34335	AM26LS34/B2C	

1/ Caution. Do not use this number for item acquisition. Items acquired to this number may not satisfy the performance requirements of this drawing.

Vendor CAGE number	Vendor name and address
34335	Advanced Micro Devices, Incorporated 901 Thompson Place P.O. Box 3453 Sunnyvale, CA 94088

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