

REVISIONS														
LTR	DESCRIPTION	DATE	APPROVED											
F	Change to military drawing format. Changes in table I tests. Add case outline 2 to drawing. Editorial changes throughout.	June 9, 1987	<i>[Signature]</i>											

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REV STATUS OF PAGES	REV	F	F	F	F	F	F	F	F	F	F	F	F	F
	PAGES	1	2	3	4	5	6	7	8	9				

<b>Defense Electronics Supply Center</b> Dayton, Ohio  Original date of drawing: 9 April, 1979  AMSC N/A	<b>PREPARED BY</b> <i>Marcia B Kelleher</i>	<b>MILITARY DRAWING</b> This drawing is available for use by all Departments and Agencies of the Department of Defense  <b>TITLE:</b> MICROCIRCUITS, LINEAR, DUAL, DIFFERENTIAL LINE RECEIVER, MONOLITHIC SILICON  <b>DWG NO.</b> 79008
	<b>CHECKED BY</b> <i>DA Di Enzo</i>	
	<b>APPROVED BY</b> <i>[Signature]</i>	
	<b>SIZE</b> A <b>CODE IDENT. NO.</b> <div style="text-align: center; font-size: 1.2em; font-weight: bold;">14933</div>	
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# 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:

79008	01	C	X
Drawing number	Device type (1.2.1)	Case outline (1.2.2)	Lead finish per MIL-M-38510

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

Device type	Generic number	Circuit function
01	55182, 7820A	Dual, differential line 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
C	D-1 (14-lead, 1/4" x 3/4"), dual-in-line package
D	F-2 (14-lead, 1/4" x 3/8"), flat-package
2	C-2 (20-terminal, .350" x .350") square chip carrier package.

## 1.3 Absolute maximum ratings.

Supply voltage $V_{CC}$ 1/-	8 V dc
Common mode input voltage-	$\pm 20$ V dc
Differential input voltage 2/-	$\pm 20$ V dc
Strobe input voltage -	8 V dc
Output sink current-	50 mA
Power dissipation, $P_D$ ( $T_A \leq 70^\circ\text{C}$ )-	600 mW 3/
Storage temperature range-	$-65^\circ\text{C}$ to $+150^\circ\text{C}$
Lead temperature (soldering, 10 seconds) -	$300^\circ\text{C}$
Thermal resistance, junction to case ( $\theta_{JC}$ ):	
Cases C, D -	See MIL-M-38510, appendix C
Case 2 -	$35^\circ\text{C/W}$ 4/
Junction temperature ( $T_J$ )-	$+150^\circ\text{C}$

- 1/ All voltage values, except differential voltages, are with respect to the network terminal.
- 2/ Differential voltage values are at the noninverting terminal with respect to the inverting terminal.
- 3/ Derate linearly 10 mW/ $^\circ\text{C}$  over  $95^\circ\text{C}$  ambient for C package and 8.3 mW/ $^\circ\text{C}$  over  $75^\circ\text{C}$  ambient for the D package.
- 4/ When a thermal resistance value for this case is included in MIL-M-38510, appendix C, that value shall supersede the value indicated herein.

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1.4 Recommended operating conditions.

Supply voltage - - - - -	4.5 V dc to 5.5 V dc
Common mode input voltage- - - - -	±15 V dc
High level output current, $I_{OH}$ - - - - -	-400 $\mu$ A
Low level output current, $I_{OL}$ - - - - -	16 mA
Ambient operating temperature range ( $T_A$ ) - - - - -	-55°C to +125°C

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 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 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 recommended case 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.

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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions -55°C < T <sub>A</sub> < +125°C V <sub>Strobe</sub> > 2.1 V unless otherwise specified	Group A subgroups	Limits		Unit
				Min	Max	
High level output voltage	V <sub>OH</sub>	I <sub>OH</sub> = -400 μA	1, 2, 3	2.5	5.5	V
Low level output voltage	V <sub>OL</sub>	I <sub>OL</sub> = 16 mA	1, 2, 3		0.4	V
Differential input high threshold voltage	V <sub>TH</sub>	V <sub>CM</sub> = 0 V	1, 2, 3		0.5	V
		V <sub>CM</sub> = -15 V to +15 V	1, 2, 3		1	V
Differential input low threshold voltage	V <sub>TL</sub>	V <sub>CM</sub> = 0 V	1, 2, 3		-0.5	V
		V <sub>CM</sub> = -15 V to +15 V	1, 2, 3		-1	V
High level strobe current	I <sub>SH</sub>	V <sub>Strobe</sub> = 5.5 V	1, 2, 3		5	μA
Low level strobe current	I <sub>SL</sub>	V <sub>Strobe</sub> = 0 V	1, 2, 3		-1.4	mA
Inverting input current	I <sub>IN-</sub>	V <sub>CM</sub> = 15 V, V <sub>ID</sub> = 1 V	1, 2, 3		4.2	mA
		V <sub>CM</sub> = 0 V, V <sub>ID</sub> = -0.5 V	1, 2, 3		0.5	mA
		V <sub>CM</sub> = -15 V, V <sub>ID</sub> = -1 V	1, 2, 3		-4.2	mA
Noninverting input current	I <sub>IN+</sub>	V <sub>CM</sub> = 15 V	1, 2, 3		7	mA
		V <sub>CM</sub> = 0 V	1, 2, 3		-1.6	mA
		V <sub>CM</sub> = -15 V	1, 2, 3		-9.8	mA
Supply current (each receiver)	I <sub>CC</sub>	V <sub>CM</sub> = 15 V, V <sub>ID</sub> = 1 V	1, 2, 3		7	mA
		V <sub>CM</sub> = 0 V, V <sub>ID</sub> = -0.5 V	1, 2, 3		10.2	mA
		V <sub>CM</sub> = -15 V, V <sub>ID</sub> = -1 V	1, 2, 3		15	mA

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TABLE 1. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T <sub>A</sub> ≤ +125°C V <sub>Strobe</sub> ≥ 2.1 V unless otherwise specified	Group A subgroups	Limits		Unit	
				Min	Max		
Inverting input resistance	R <sub>I</sub>		1, 2, 3	3.6		kΩ	
Noninverting input resistance	R <sub>NI</sub>		1, 2, 3	1.8		kΩ	
Line terminating resistance	R <sub>T</sub>	T <sub>A</sub> = +25°C	1,4	120	250	Ω	
Propagation delay time low to high output from differential input	t <sub>PLHD</sub>	R <sub>L</sub> = 400Ω C <sub>L</sub> = 15 pF	9		40	ns	
			10,11		60		
Propagation delay time high to low output from differential input	t <sub>PHLD</sub>		9		45		
			10,11		75		
Propagation delay time low to high level output from strobe input	t <sub>PLHS</sub>		9		30		
			10,11		50		
Propagation delay time high to low level output from strobe input	t <sub>PHLS</sub>		9		25		
			10,11		45		

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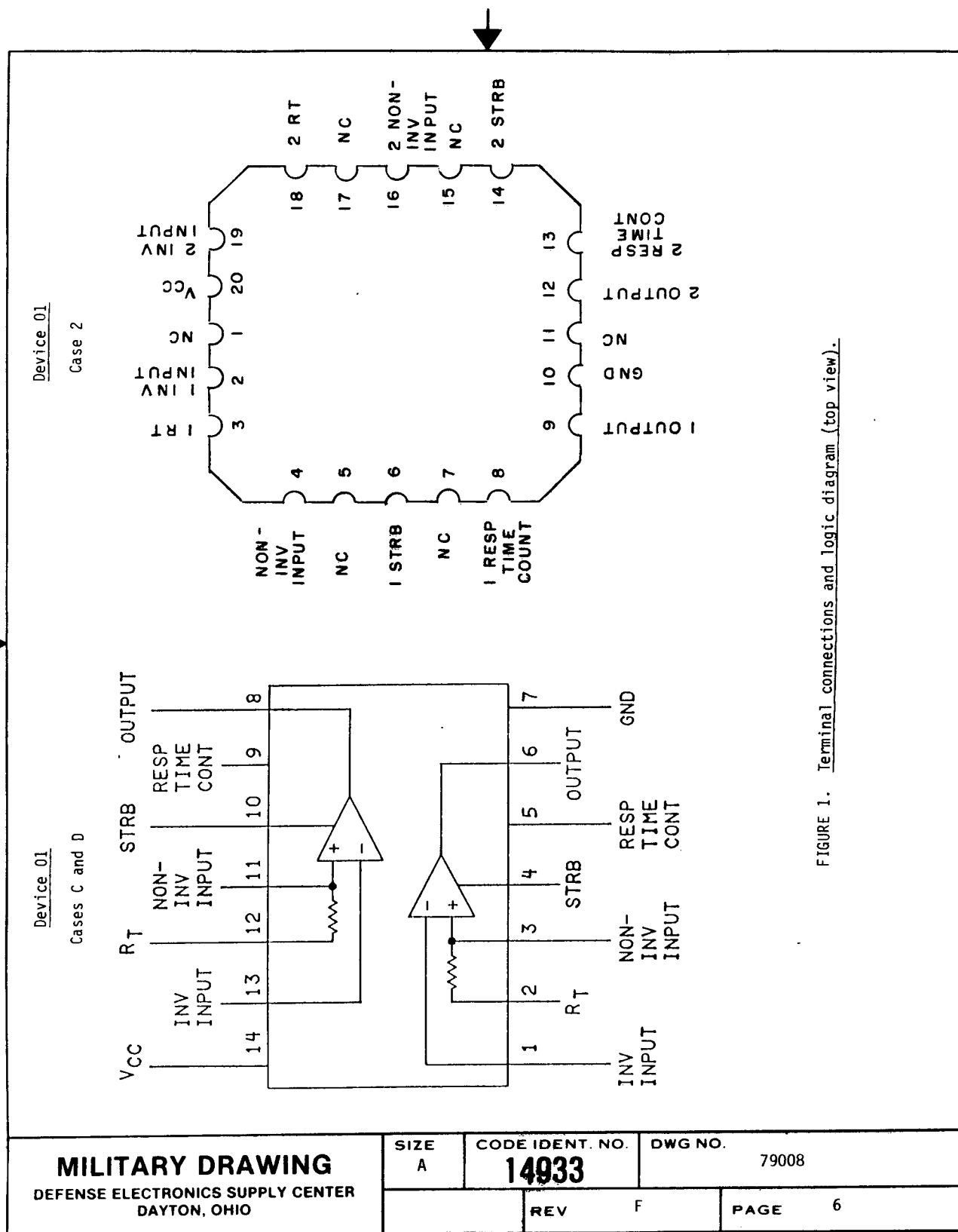


FIGURE 1. Terminal connections and logic diagram (top view).

3.6 Certificate of conformance. A certificate of conformance as required in MIL-STD-833 (see 3.1 herein) shall be provided with each lot of microcircuits delivered to this drawing.

3.7 Notification of change. Notification of change to DESC-ECS shall be required in accordance with MIL-STD-833 (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)  $T_A = +125^{\circ}\text{C}$ , 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 5, 6, 7, and 8 of table I of method 5005 of MIL-STD-883 shall be omitted.

##### 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 (method 1005 of MIL-STD-883) conditions:

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

(2)  $T_A = +125^{\circ}\text{C}$ , minimum.

(3) Test duration: 1,000 hours, except as permitted by appendix B of MIL-M-38510 and method 1005 of MIL-STD-883.

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TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (per method 5005, table I)
Interim electrical parameters (method 5004)	1
Final electrical test parameters (method 5004)	1*, 2, 3, 9
Group A test requirements (method 5005)	1, 2, 3, 4, 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 specified limits 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.

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

Military drawing part number	Vendor CAGE number	Vendor similar part number <u>1/</u>	Replacement military specification part number
7900801CX	27014 01295	DS7820AJ/883 SNJ55182J	<u>2/</u>
7900801DX	27014 01295	DS7820AW/883 SNJ55182W	<u>2/</u>
79008012X	01295	SNJ55182FK	

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

2/ Removed M38510/10408 number because device type 08 will not be added to MIL-M-38510/104.

Vendor CAGE  
number

27014

01295

Vendor name  
and address

National Semiconductor  
2900 Semiconductor Drive  
Santa Clara, CA 95051

Texas Instruments, Incorporated  
P. O. Box 6448  
Midland, TX 79701

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