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Defense Electronics Supply Center
Dayton, Ohio

Original date of drawing: 4 MAY 1987

AMSC N/A

PREPARED BY

CHECKED BY

APPROVED BY

SIZE	CODE IDENT. NO.
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REV

MILITARY DRAWING

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TITLE: MICROCIRCUIT, LINEAR, DUAL LINE RECEIVER, MONOLITHIC SILICON

DWG NO. 5962-87522

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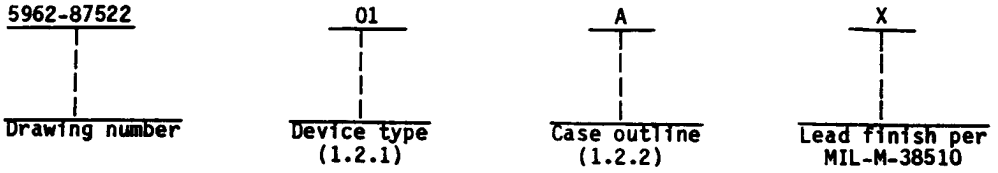
1. SCOPE

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:



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

Device type	Generic number	Circuit function
01	9622	Dual 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
A	F-1 (14-lead, 1/4" x 1/4"), flat package
C	D-1 (14-lead, 1/4" x 3/4"), dual-in-line package
2	C-2 (20-terminal, .350" x .350"), square chip carrier package

1.3 Absolute maximum ratings.

Positive supply voltage range	-0.5 V dc to +7.0 V dc
Negative supply voltage range	-0.5 V dc to -12 V dc
Input voltage range	±15 V dc
Voltage applied to outputs for output high state	-0.5 V dc to +13.2 V dc
Enable voltage range	-0.5 V dc to +15 V dc
Internal power dissipation (P_D) 1/	
Case A	350 mW
Cases C and 2	400 mW
Storage temperature range	-65°C to +175°C
Lead temperature (soldering, 60 seconds)	300°C
Thermal resistance, junction-to-case (θ_{JC})	
Cases A and C	See MIL-M-38510, appendix C
Case 2	60°C/W
Junction temperature (T_J)	175°C

1.4 Recommended operating conditions.

Positive supply voltage, $+V_{CC}$	+5.0 V dc
Negative supply voltage, $-V_{CC}$	-10 V dc
Ambient operating temperature range, (T_A)	-55°C to +125°C

1/ Rating applies to ambient temperature up to 125°C. Above 125°C ambient, derate linearly at 140°C/W for the flatpackage and 120°C/W for the DIP and CCP.

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

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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions 1/ $-55°C \le T_A \le +125°C$ unless otherwise specified	Group A subgroups	Limits Min	Limits Max	Unit
Output voltage low	V_{OL}	V+ = S3 = 4.5 V, V- = -11 V, V_{DIFF} = 2.0 V, I_{OL} = 12.4 mA, EN = open 2/	1,2,3		0.4	V
Output voltage high	V_{OH}	V+ = 4.5 V, V- = -9.0 V, S3 = 0 V, V_{DIFF} = 1.0 V I_{OH} = -0.2 mA, EN = open 2/	1	3.0		V
			2	2.9		V
			3	2.8		V
Output leakage current	I_{CEX}	V+ = 4.5 V, V- = -11 V, S3 = 0 V, V_{DIFF} = 1.0 V V_O = -12 V, EN = open	1		100	µA
			2		200	µA
			3		50	µA
Output short circuit current	I_{OS}	V+ = 5.0 V, V- = -10 V, V_{DIFF} = 1.0 V, V_O = S3 = 0 V, EN = open	1	-3.1	-1.4	mA
			2,3	-3.1	-1.3	mA
Enable input leakage current	$I_{R(EN)}$	V+ = S3 = 4.5 V, V- = -11 V, I_N = open, EN = 4.0 V	1		2.0	µA
			2		5.0	µA
Enable input forward current	$I_{F(EN)}$	V+ = 5.5 V, V- = -9.0 V, V_I = open, EN = S3 = 0 V	1,2,3	-1.5		mA
+Input forward current	I_F (+IN)	V+ = 5.0 V, V- = -10 V, V_I+ = 0 V, V_I- = GND, EN = S3 = open 1/	1	-2.1		mA
			2	-2.0		mA
			3	-2.3		mA

See footnotes at end of table.

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions 1/ $-55°C \le T_A \le +125°C$ unless otherwise specified	Group A subgroups	Limits Min	Limits Max	Unit
-Input forward current	I_F (-IN)	$V+ = S3 = 5.0$ V, $V- = -10$ V, $V_I+ = GND$, $V_I- = 0$ V, EN = open 1/	1	-2.4		mA
			2	-2.3		mA
			3	-2.6		mA
Input voltage low	V_{IL} (EN)	$V+ = 5.0$ V, $V- = -10$ V, S3 = 0 V 1/	1		1.0	V
			2		0.7	V
			3		1.3	V
Differential input threshold voltage	V_{TH}	$4.5 \text{ V} \le V+ \le 5.5$ V, $-11 \text{ V} \le V- \le -9.0$ V, EN = open	1,2,3	1.0	2.0	V
Common mode voltage	V_{CM}	$V+ = 5.0$ V, $V- = -10$ V, $1.0 \text{ V} \le V_{DIFF} \le 2.0$ V, $T_A = 25°C$	1	-10	+10	V
Terminating resistance	R_T	$V+ = 5.5$ V, $V- = -11$ V, $T_A = 25°C$	1	91	215	Ω
Positive supply current	$I+$	$V+ = S3 = V_I+ = 5.5$ V, 1/	1		22.9	mA
Negative supply current	$I-$	$V- = 11$ V, $V_I- = 0$ V, $T_A = 25°C$	1	-11.1		mA
Propagation delay to high level	t_{PLH}	$V+ = 5.0$ V, $V- = -10$ V, $0 \text{ V} \le V_I \le 3.0$ V, $C_L = 30$ pF (see fig. 2), $T_A = 25°C$; $R_L = 3.9$ kΩ	9		50	ns
Propagation delay to low level	t_{PHL}	$R_L = 390Ω$	9		50	ns

1/ Reference: S_3 see equivalent circuit figure 3.

2/ The UA9622QM allows the choice of output states with the input open, without affecting circuit performance by use of S3.

- When S3 is connected to V-, open inputs cause output to be high.
- When V+ = 5.0 V, V- = -10 V and S3 is connected to ground, open inputs cause output to be low.

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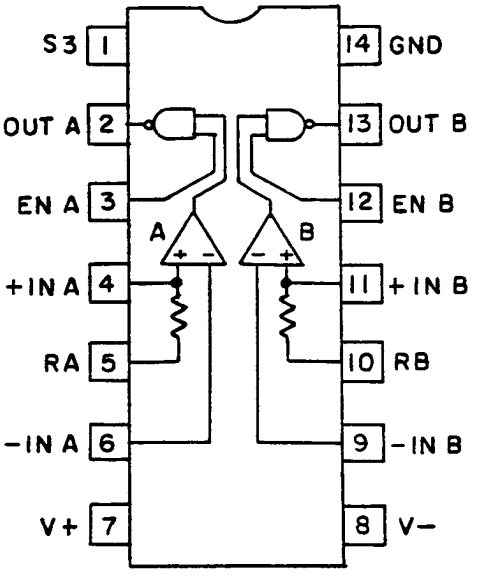
Cases A and C



Case 2

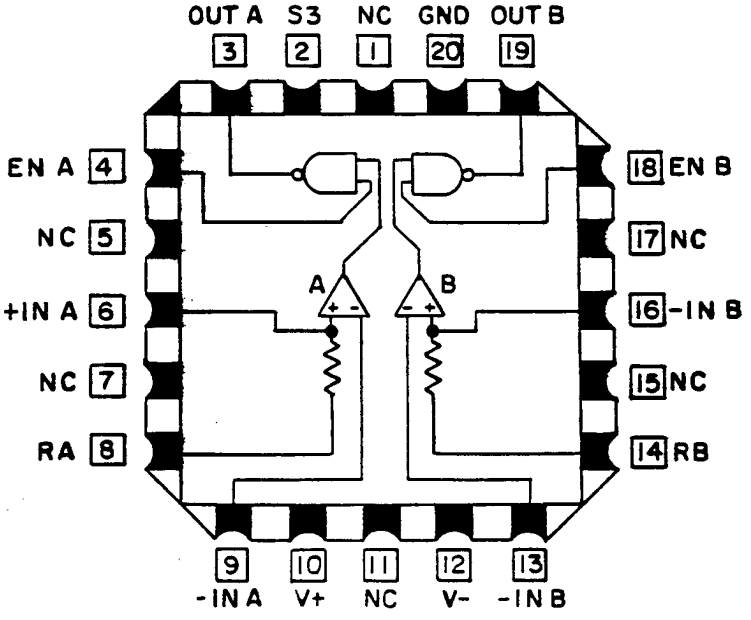


FIGURE 1. Logic diagram and terminal connections (top view).

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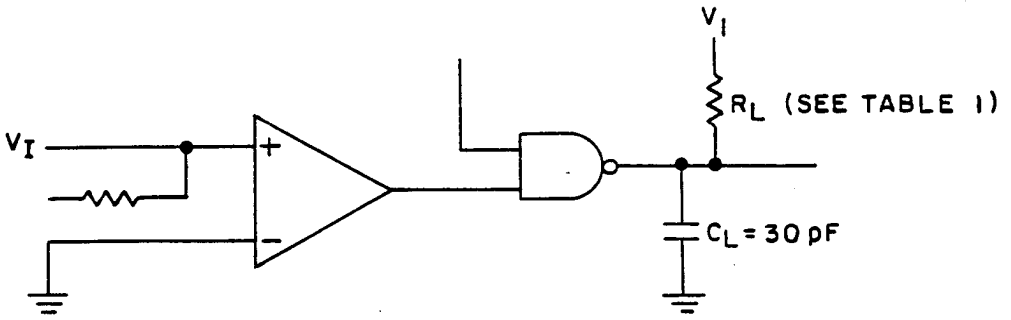

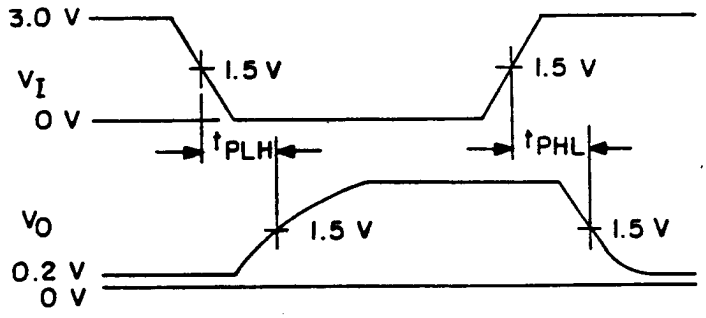

FIGURE 2. Switching times test circuit and waveforms.

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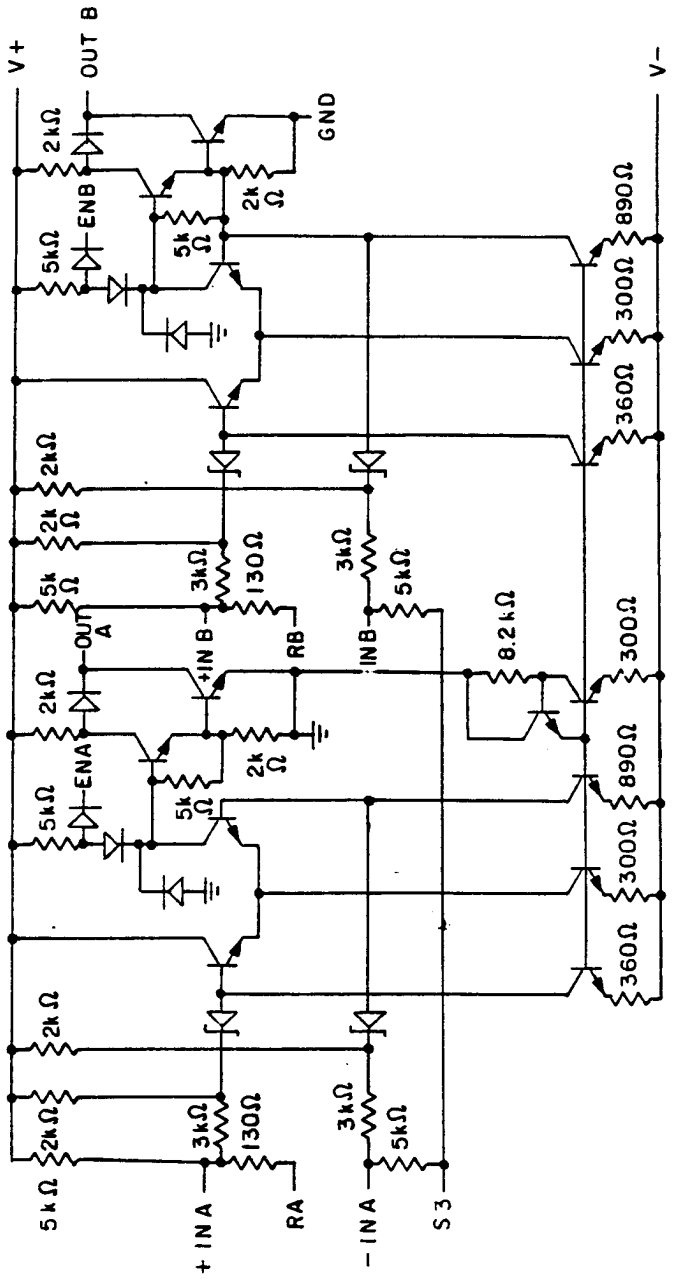

FIGURE 3. Equivalent circuit.

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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, 6, 7, 8, 10 and 11 in table I, 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°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
Group A test requirements (method 5005)	1, 2, 3, 9
Groups C and D end-point electrical parameters (method 5005)	1

*PDA applies to subgroup 1.

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 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/
5962-8752201CX	07263	μA9622DMQM
5962-87522012X	07263	μA9622LMQM
5962-8752201AX	07263	μA9622FMQM

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

Vendor CAGE number	Vendor name and address
07263	Fairchild Semiconductor Corp. 313 Fairchild Drive Mountain View, CA 94043

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