NOTICE OF REVISION (NOR) This revision described below has been authorized for the document listed.	1. DATE (YYMMDD) 94-10-25	Form Approved OMB No. 0704-0188

Public reporting burden for this collection is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. PLEASE DO NOT RETURN YOUR COMPLETED FORM TO EITHER OF THESE ADDRESSED. RETURN COMPLETED FORM TO THE GOVERNMENT ISSUING CONTRACTING OFFICER FOR THE CONTRACT/ PROCURING ACTIVITY NUMBER LISTED IN ITEM 2 OF THIS FORM.

			2. PROCURING ACTIVITY NO.
			3. DODAAC
4. ORIGINATOR	b. ADDRESS (Street, City, State, Zip Code) Defense Electronics Supply Center 1507 Wilmington Pike Dayton, OH 45444-5270	5. CAGE CODE 67268	6. NOR NO. 5962-R284-94
a. TYPED NAME (First, Middle Initial, Last)		7. CAGE CODE 67268	8. DOCUMENT NO. **5962-86845**

9. TITLE OF DOCUMENT	10. REVISION LETTER		11. ECP NO.
	a. CURRENT	b. NEW	
Microcircuits, Linear, High-Speed Voltage Comparator, Switching, Monolithic Silicon.	A	B	

12. CONFIGURATION ITEM (OR SYSTEM) TO WHICH ECP APPLIES

All

13. DESCRIPTION OF REVISION

Sheet 1: Revisions ltr column; add "B".
Revisions description column; add "Changes in accordance with NOR 5962-R284-94".
Revisions date column; add "94-10-25".
Revision level block; add "B".
Rev status above sheet number 1and 2, add "B".
Sheet 2: 1.3 Absolute maximum rating, Power dissipation (PD) test, delete "140 mW" and substitute "250 mW".
Revision level block; add "B".

14. THIS SECTION FOR GOVERNMENT USE ONLY

a. (X one)		
	X	(1) Existing document supplemented by the NOR may be used in manufacture.
		(2) Revised document must be received before manufacturer may incorporate this change.
		(3) Custodian of master document shall make above revision and furnish revised document.

b. ACTIVITY AUTHORIZED TO APPROVE CHANGE FOR GOVERNMENT	c. TYPED NAME (First, Middle Initial, Last)
DESC-ELDS	Michael A. Frye

d. TITLE	e. SIGNATURE	f. DATE SIGNED (YYMMDD)
Chief, Custom Microelectronics	Michael A. Frye	94-10-25

15a. ACTIVITY ACCOMPLISHING REVISION	b. REVISION COMPLETED (Signature)	c. DATE SIGNED (YYMMDD)
DESC-ELDS	Marcia B. Kelleher	94-10-25

DD Form 1695, APR 92 Previous editions are obsolete

NOTICE OF REVISION (NOR)

(See MIL-STD-480 for instructions)

This revision described below has been authorized for the document listed.

DATE (YYMMDD)	Form Approved OMB No. 0704-0188
92-10-08	

1. ORIGINATOR NAME AND ADDRESS	2. CAGE CODE	3. NOR NO.
Defense Electronics Supply Center Dayton, Ohio 45444-5277	67268	5962-R314-92
	4. CAGE CODE	5. DOCUMENT NO.
	67268	5962-86845

6. TITLE OF DOCUMENT	7. REVISION LETTER	
MICROCIRCUIT, LINEAR, HIGH SPEED VOLTAGE COMPARATOR, MONOLITHIC SILICON	(Current)	A (New)
	8. ECP NO.	5962-86845ECP-1

9. CONFIGURATION ITEM (OR SYSTEM) TO WHICH ECP APPLIES

All

10. DESCRIPTION OF REVISION

Sheet 1: Revisions ltr column; add "A".
Revisions description column; add "Changes in accordance with NOR 5962-R314-92".
Revisions date column; add "92-10-08".
Revision level block; add "A".
Rev status of sheets; For sheet 4, add "A".

Sheet 4: TABLE I, power supply rejection ratio test with condition of "+4.6 V $\leq$ V+ $\leq$ +5.4 V", under minimum limits column, delete 60 dB and substitute 54 dB.
TABLE I, output high voltage test, with condition of "V+ $\leq$ 4.6 V, IOUT = 1.0 mA", under minimum limits column, delete 3.0 V and substitute 2.7 V.
Revision level block, add "A".

11. THIS SECTION FOR GOVERNMENT USE ONLY

a. CHECK ONE

[X] EXISTING DOCUMENT SUPPLEMENTED BY THIS NOR MAY BE USED IN MANUFACTURE. [ ] REVISED DOCUMENT MUST BE RECEIVED BEFORE MANUFACTURER MAY INCORPORATE THIS CHANGE. [ ] CUSTODIAN OF MASTER DOCUMENT SHALL MAKE ABOVE REVISION AND FURNISH REVISED DOCUMENT TO:

b. ACTIVITY AUTHORIZED TO APPROVE CHANGE FOR GOVERNMENT	SIGNATURE AND TITLE	DATE (YYMMDD)
DESC-ECS	Michael A. Frye BRANCH CHIEF	92-10-08
12. ACTIVITY ACCOMPLISHING REVISION	REVISION COMPLETED (Signature)	DATE (YYMMDD)
DESC-ECS	Rick C. Officer	92-10-08

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

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

Defense Electronics Supply Center
Dayton, Ohio

Original date of drawing: 8 Oct 87

AMSC N/A

PREPARED BY
Donald R. Osborne

CHECKED BY
D A DiCenzio

APPROVED BY
Robert P. Evans

SIZE	CODE IDENT. NO.
A	**67268**

REVISION LEVEL
A

MILITARY DRAWING

This drawing is available for use by all Departments and Agencies of the Department of Defense

TITLE: MICROCIRCUIT, LINEAR, HIGH-SPEED VOLTAGE COMPARATOR, MONOLITHIC SILICON

DWG NO.
5962-86845

SHEET 1 OF 9

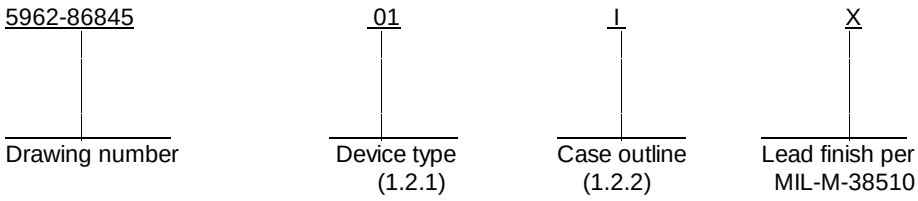
5962-E148

DESC FORM 193
MAY 86

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
01	LT1016	High speed comparator

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
I	A-2 (10-lead), metal can
P	D-4 (8-lead, 1/4" x 3/8"), dual-in-line package

1.3 Absolute maximum ratings.

Positive supply voltage	+7.0 V dc
Negative supply voltage	-7.0 V dc
Differential input voltage	±5.0 V dc
Input voltage (either input)	±7.0 V dc
Latch input voltage	±7.0 V dc
Output current (continuous)	±20 mA
Storage temperature range	-65°C to +150°C
Lead temperature (soldering, 10 seconds)	+300°C
Maximum power dissipation (P_D)	140 mW
Thermal resistance, junction-to-case (Θ_{JC}):	
Case I	60°C/W
Case P	50°C/W
Junction temperature (T_J)	+150°C

1.4 Recommended operating conditions.

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 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. 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 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.

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.

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

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions 1/ $-55°C \le T_A \le +125°C$ unless otherwise specified	Group A subgroups	Limits		Unit
				Min	Max	
Input offset voltage 2/	V_{OS}	$R_S \le 100\Omega$, TA = +25°C	1		±2.0	mV
		$R_S \le 100\Omega$	2, 3		±3.0	mV
Input offset current 2/	I_{OS}	TA = +25°C	1		1.0	µA
			2, 3		1.3	µA
Input bias current	I_B	TA = +25°C	1		10	µA
			2, 3		13	µA
Input voltage range	V_{INR}		1, 2, 3	-3.75	+3.5	V
		Single +5.0 V supply	1, 2, 3	+1.25	+3.5	V
Common-mode rejection ratio	C_{MRR}	$-3.75\ V \le V_{CM} \ge +3.5\ V$	1, 2, 3	80		dB
Power supply rejection ratio	P_{SRR}	$+4.6\ V \le V+ \le +5.4\ V$	1, 2, 3	60		dB
		$-7.0\ V \le V- \le -2.0\ V$	1, 2, 3	80		dB
Small signal voltage gain	A_V	$1.0\ V \le V_{OUT} \le 2.0\ V$, TA = +25°C	4	1400		V/V
Output high voltage	V_{OH}	$V+ \le +4.6\ V$, $I_{OUT} = 1.0\ mA$	1, 2, 3	3.0		V
		$I_{OUT} = 10\ mA$		2.4		V
Output low voltage	V_{OL}	$I_{SINK} = 4.0\ mA$	1, 2, 3		0.5	V

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

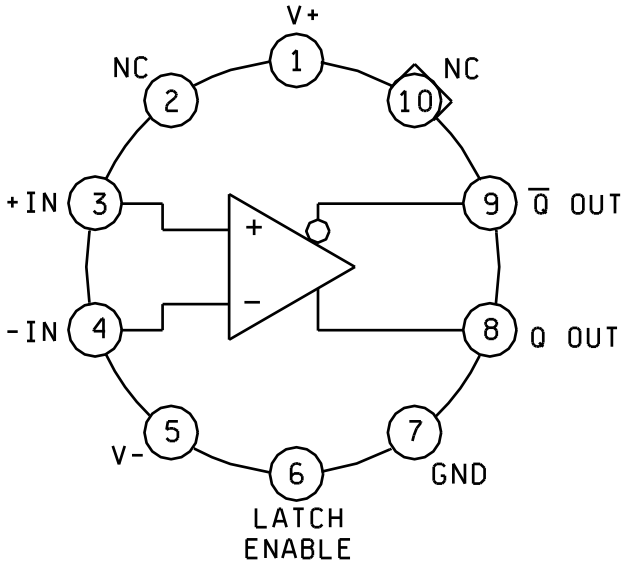
Test	Symbol	Conditions 1/ $-55°C \le T_A \le +125°C$ unless otherwise specified		Group A subgroups	Limits		Unit
					Min	Max	
Positive supply current	I+			1, 2, 3		35	mA
Negative supply current	I-			1, 2, 3		5.0	mA
Latch pin input high voltage	V_{IH}			1, 2, 3	2.0		V
Latch pin input low voltage	V_{IL}			1, 2, 3		0.8	V
Latch pin current	I_{IL}	V_{LATCH} = 0 V		1, 2, 3		500	μA
Propagation delay time	t_{PD}	ΔVIN = 100 mV, TA = +25°C 4/	0D = 5.0 mV	9		14	ns
			0D = 20 mV	9		12	ns
		ΔVIN = 100 mV 4/	0D = 5.0 mV	10, 11		16	ns
			0D = 20 mV	10, 11		15	ns
Differential propagation delay	Δt_{PD}	ΔVIN = 100 mV, 4/	0D = 5.0 mV	9, 10, 11		5.0	ns

1/ V+ = 5.0 V, V- = 5.0 V, $V_{OUT}(Q)$ = 1.4 V and V_{LATCH} = 0 V, unless otherwise specified.

2/ Input offset voltage is defined as the average of the two voltages measured by forcing first one output, then the other to 1.4 V. Input offset current is defined the same way.

3/ Input bias current is defined as the average of the two input currents.

4/ Propagation delay time is measured with the overdrive added to actual VOS. Parameters are guaranteed by design, characterization, or correlation to other tested parameters.



CASE P

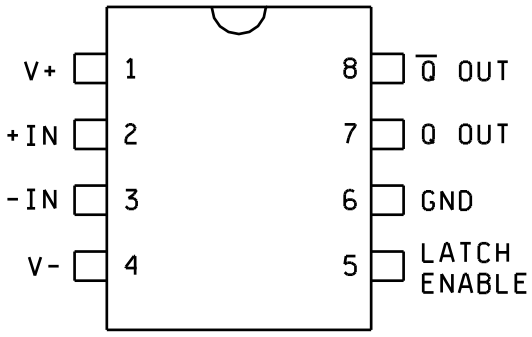


FIGURE 1. Logic diagram and terminal connections.

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 5, 6, 7, and 8 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 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 appendix B of MIL-M-38510 and 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)	1
Final electrical test parameters (method 5004)	1*, 2, 3, 4
Group A test requirements (method 5005)	1, 2, 3, 4, 9, 10, 11
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.

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) has been submitted to DESC-ECS.

Military drawing part number	Vendor CAGE number	Vendor similar part number 1/
5962-8684501IX	64155	LT1016MH/883B
5962-8684501PX	64155	LT1016MJ8/883B

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
64155	Linear Technology Corporation 1630 McCarthy Boulevard Milpitas, CA 95035-7487