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LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED										
A	Make changes to 1.3, 6.6, and table I. Editorial changes throughout.	1989 AUG 03	<i>M.A. Lopez</i>										

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

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 <i>Rick Offner</i> CHECKED BY <i>Roy Mannin</i> APPROVED BY <i>M.A. Lopez</i> DRAWING APPROVAL DATE 27 JANUARY 1988 REVISION LEVEL A	DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444 MICROCIRCUIT, LINEAR, DUAL RS232 TRANSCEIVERS, MONOLITHIC SILICON <table style="width: 100%;"> <tr> <td style="width: 15%;">SIZE</td> <td style="width: 20%;">CAGE CODE</td> <td style="width: 65%;"></td> </tr> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">67268</td> <td style="text-align: center;">5962-87666</td> </tr> <tr> <td colspan="2" style="text-align: center;">SHEET</td> <td style="text-align: center;">1 OF 1</td> </tr> </table>	SIZE	CAGE CODE		A	67268	5962-87666	SHEET		1 OF 1
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DESC FORM 193
SEP 87

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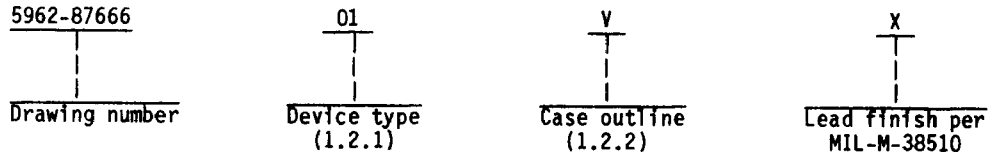
5962-E1248

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

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 types. The device types shall identify the circuit function as follows:

Device type	Generic number	Circuit function
01	LT1080	RS232 transceiver with shutdown, bipolar
02	LT1081	RS232 transceiver, bipolar

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
V	D-6 (18-lead, .960" x .310" x .200"), dual-in-line package

1.3 Absolute maximum ratings.

Supply voltage (V_{CC})	+6 V dc
Positive power supply voltage (V^+)	+12 V dc
Negative power supply voltage (V^-)	-12 V dc
Driver input voltage	V- to V+
Receiver input voltage	-30 V dc to +30 V dc
On-off input voltage (pin 18), device type 01 only	GND to +12 V dc
Driver output voltage	V- +30 V dc to V+ -30 V dc
Receiver output voltage	-0.3 V dc to V_{CC} +0.3 V dc
Short circuit duration, (V^+), device type 01 only	30 seconds
Short circuit duration, (V^-), device type 01 only	30 seconds
Short circuit duration, driver and receiver outputs	Continuous
Power dissipation (P_D)	500 mW 1/ 2/
Thermal resistance, junction-to-case (θ_{JC})	See MIL-M-38510, appendix C
Thermal resistance, junction-to-ambient (θ_{JA}):	
Case E	100°C/W
Case V	100°C/W
Maximum junction temperature (T_J)	+150°C
Storage temperature range	-65°C to +150°C
Lead temperature (soldering, 10 seconds)	+300°C

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

2/ Derate at 9.5 mW/°C above $T_A = +70^\circ\text{C}$

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A	5962-87666
	REVISION LEVEL A	SHEET 2

1.4 Recommended operating conditions.

Supply voltage (V_{CC}) - - - - - +4.5 V dc to +5.5 V dc
 Ambient operating temperature range (T_A) - - - - - -55°C to +125°C

2. APPLICABLE DOCUMENTS

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

BULLETIN

MILITARY

MIL-BUL-103 - List of Standardized Military Drawings (SMD's).

(Copies of the specification, standard, and bulletin 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 herein, the electrical performance characteristics are as specified in table I and apply over the full ambient operating temperature range.

3.4 Electrical test requirements. The electrical test requirements shall be the subgroups specified in table II. The electrical tests for each subgroup are described in table I.

3.5 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 MIL-BUL-103 (see 6.6 herein).

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		5962-87666
		REVISION LEVEL A	SHEET 3

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions -55°C < T _A < +125°C +4.5 V dc < V _{CC} < +5.5 V dc V _{ON-OFF} = 3.0 V dc unless otherwise specified	Device type	Group A subgroups	Limits		Unit
					Min	Max	
Output voltage swing	V _{OUT}	Positive TR1, TR2 each loaded with 3 kΩ to GND Negative	A11	1, 2, 3	5.0	-5.0	V
Low level input voltage	V _{IL}	V _{OUT} = high	A11	1, 2, 3		0.8	
High level input voltage	V _{IH}	V _{OUT} = low	A11	1, 2, 3	2.0		
Logic input current high	I _{IH}	V _{IN} ≥ 2.0 V	A11	1, 2, 3		200	μA
Logic input current low	I _{IL}	V _{IN} ≤ 0.8 V	A11	1, 2, 3		200	
Output short circuit current (transmitter)	I _{OST}	V _{OUT} = 0 V	A11	1	sourcing current sinking current		mA
					7 -7		
Output leakage current (transmitter) 1/	I _{OZT}	V _{OUT} = +30 V dc	O1	1, 2, 3		100	μA
Slew rate	S.R.	R _L = 3 kΩ, C _L = 51 pF T _A = +25°C	A11	4	4	30	V/μs
RS-232 input threshold low	V _{TL}	V _{OUT} = high	A11	1, 2, 3	0.2		V
RS-232 input threshold high	V _{TH}	V _{OUT} = low	A11	1, 2, 3		3.0	
RS-232 input hysteresis	V _H		A11	1, 2, 3	0.1	1.0	
Receiver input resistance	R _I		A11	1	3.0	7.0	kΩ
Receiver output high voltage	V _{OH}	I _{OUT} = 160 μA; V _{CC} = 5 V	A11	1, 2, 3	3.5		V
Receiver output low voltage	V _{OL}	I _{OUT} = -1.6 mA	A11	1, 2, 3		0.4	

See footnotes at end of table.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		5962-87666
		REVISION LEVEL A	SHEET 4

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C < T _A < +125°C +4.5 V dc ≤ V _{CC} < +5.5 V dc V _{ON-OFF} = 3.0 V dc unless otherwise specified	Device type	Group A subgroups	Limits		Unit
					Min	Max	
Output short circuit current (receiver)	I _{OSR}	V _{OUT} = V _{CC} , sinking current	A11	1	-10		mA
		V _{OUT} = 0 V dc, sourcing current				0.6	
Output leakage current (receiver) <u>1/</u>	I _{OZR}	0 V ≤ V _{OUT} ≤ V _{CC}	01	1, 2, 3		10	μA
Supply current	I _{CC}	Outputs unloaded	A11	1, 2, 3		22	mA
V+ output voltage <u>2/</u>	V _{O+}	I _{OUT} = 0 mA	A11	1	8.0		V
		I _{OUT} = 10 mA				7.0	
		I _{OUT} = 15 mA				6.5	
V- output voltage <u>2/</u>	V _{O-}	I _{OUT} = 0 mA	A11	1	-7.5		
		I _{OUT} = -10 mA				-5.5	
		I _{OUT} = -15 mA				-5.0	
Supply leakage current <u>1/</u> <u>2/</u>	I _{CCZ}	Shutdown mode	01	1		100	μA
ON-OFF pin current <u>1/</u> <u>2/</u>	I _{SHUT}	0 V ≤ V _{ON-OFF} ≤ 5 V	01	1	-15	80	

1/ V_{ON-OFF} = 0.4 V for -55°C ≤ T_A ≤ +100°C, and V_{ON-OFF} = 0.2 V for +100°C ≤ T_A ≤ +125°C.

2/ V_{CC} = 5 V, external loading of V+ and V- equals zero, and the driver outputs are low (inputs high).

3.6 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 MIL-BUL-103 (see 6.6 herein). The certificate of compliance submitted to DESC-ECS prior to listing as an approved source of supply shall affirm that the manufacturer's product meets the requirements of MIL-STD-883 (see 3.1 herein) and the requirements herein.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A	5962-87666	
		REVISION LEVEL A	SHEET 5

3.7 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.

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

3.9 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 3.6 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, 8, 9, 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 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 3.6 herein).

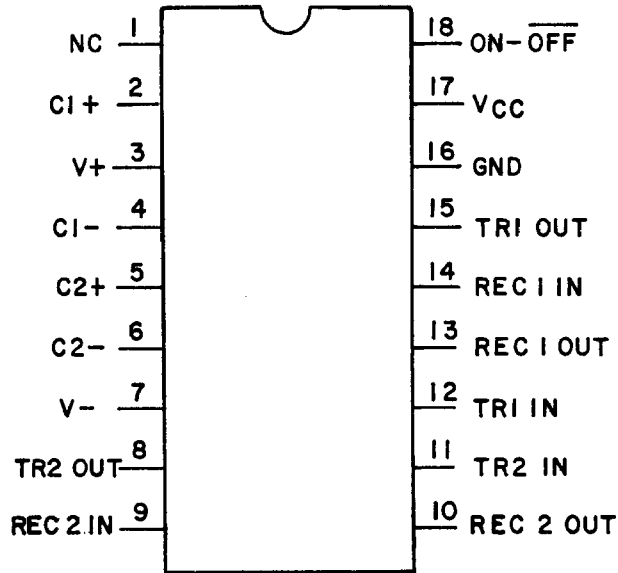
(2) $T_A = +125^{\circ}\text{C}$, minimum.

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

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		5962-87666
		REVISION LEVEL A	SHEET 6

Device type 01

Case V



Device type 02

Case E

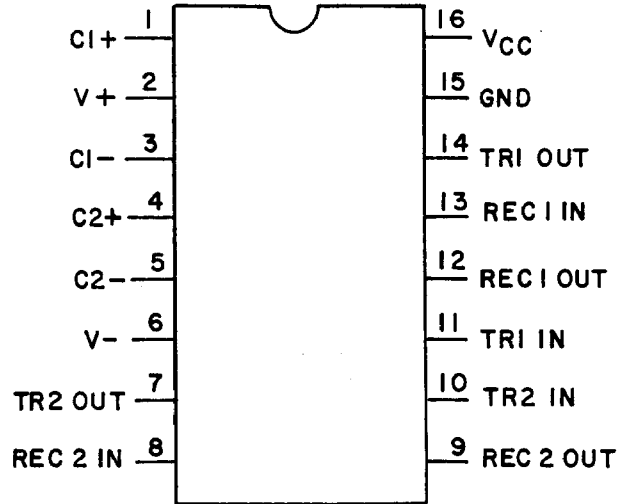


FIGURE 1. Terminal connections (top view).

**STANDARDIZED
MILITARY DRAWING**

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO 45444

SIZE
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5962-87666

REVISION LEVEL
A

SHEET
7

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
Groups C and D end-point electrical parameters (method 5005)	1, 2, 3

* 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 Configuration control of SMD's. All proposed changes to existing SMD's will be coordinated with the users of record for the individual documents. This coordination will be accomplished in accordance with MIL-STD-481 using DD Form 1693, Engineering Changes Proposal (Short Form).

6.4 Record of users. Military and industrial users shall inform Defense Electronics Supply Center when a system application requires configuration control and the applicable SMD. DESC will maintain a record of users and this list will be used for coordination and distribution of changes to the drawings. Users of drawings covering microelectronics devices (FSC 5962) should contact DESC-ECS, telephone (513) 296-6022.

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

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A	5962-87666
	REVISION LEVEL A	SHEET 8

6.6 Approved sources of supply. Approved sources of supply are listed in MIL-BUL-103. Additional sources will be added to MIL-BUL-103 as they become available. The vendors listed in MIL-BUL-103 have agreed to this drawing and a certificate of compliance (see 3.6 herein) has been submitted to and accepted by DESC-ECS. The approved source of supply listed below is for information purposes only and is current only to the date of the last action of this document.

Military drawing part number	Vendor CAGE number	Vendor similar part number <u>1/</u>
5962-8766601VX	64155	LT1080MJ/883
5962-8766602EX	64155	LT1081MJ/883

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

64155

Vendor name and address

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

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		5962-87666
		REVISION LEVEL A	SHEET 9