REVISIONS			
LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED

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

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

CHECKED BY

APPROVED BY

DRAWING APPROVAL DATE
21 FEBRUARY 1989

REVISION LEVEL

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO 45444

MICROCIRCUIT, LINEAR, BIPOLAR HEX NTDS DRIVER, MONOLITHIC SILICON

SIZE	CAGE CODE	
A	67268	5962-88581

SHEET 1 OF 10

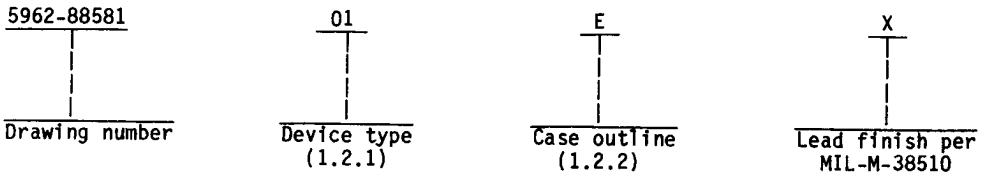
DESC FORM 193
SEP 87

* U.S. GOVERNMENT PRINTING OFFICE: 1987 — 748-129/60911

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	MOH0268D	Hex NTDS driver 1/

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"), square chip carrier package

1.3 Absolute maximum ratings.

Supply voltage range	V+ = +7 V; V- = -7 V (NTDS fast) V- = -16 V (NTDS slow)
Input voltage range	-0.5 V to +5.5 V
Storage temperature range	-65°C to +150°C
Power dissipation (P_D)	500 mW 2/
Lead temperature (soldering, 10 seconds)	300°C
Thermal resistance, junction-to-case (θ_{JC})	See MIL-M-38510, appendix C
Junction temperature (T_J)	+175°C
Output current	+15 mA

1.4 Recommended operating conditions.

Supply voltage (V+)	+4.5 V to +5.5 V
(V-)	-16.0 V to -13.5 V (slow)
(V-)	-5.5 V to -4.5 V (fast)
Ambient operating temperature range (T_A)	-55°C to +125°C
Minimum high level input voltage (V_{IH})	2.4 V
Maximum low level input voltage (V_{IL})	0.8 V

1/ This circuit was designed to be compatible with Naval Tactical Data System (NTDS) of MIL-STD-1397 "Standard Digital Navy Systems, Input-Output Interfaces", interfacing between TTL logic levels and those employed in Navy computers. The applicable specifications are designed in this drawing.
2/ Derate above T_A = +90°C, 8.33 mW/°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 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 $-55°C \le T_A \le +125°C$ $V+ = 4.5\ V$ to $5.5\ V$ $V- = -16.0\ V$ to $-13.5\ V$ (slow) $V- = -5.5\ V$ to $-4.5\ V$ (fast)	Group A subgroups	Limits Min	Limits Max	Unit
Power supply current	I_{CC+}	No load, no input	1, 2, 3		6.0	mA
Power supply current	I_{CC-}	No load, no input	1, 2, 3		-10.0	mA
Low level output voltage (NTDS slow)	V_{OL}	$V_{IN} = 0.8\ V$ $I_{OL} = 13.0\ mA$	1, 2, 3		-11.5	V
Low level output voltage (NTDS fast)	V_{OL}	$V_{IN} = 0.8\ V$ $I_{OL} = 3.5\ mA$	1, 2, 3		-3.0	V
High level output voltage (NTDS slow)	V_{OH}	$V_{IN} = 2.4\ V$ $I_{OH} = -13.5\ mA$	1, 2, 3	-1.5		V
High level output voltage (NTDS fast)	V_{OH}	$V_{IN} = 2.4\ V$ $I_{OH} = -4.0\ mA$	1, 2, 3	-0.5		V
High level input current	I_{IH}	$V_{IH} = 2.4\ V$	1, 2, 3		2.0	mA
Low level input current	I_{IL}	$V_{IL} = 0.8\ V$	1, 2, 3		-0.5	mA
Propagation delay time low to high (NTDS slow)	t_{PLH}	See figures 2 and 3	9		1.5	µs
Propagation delay time high to low (NTDS slow)	t_{PHL}		10, 11 1/			
Propagation delay time low to high (NTDS fast)	t_{PLH}	See figures 2 and 3	9 10, 11 1/		1.0	µs
Propagation delay time high to low (NTDS fast)	t_{PHL}	See figures 2 and 3	9 10, 11 1/		.75	µs
Off state output impedance	Z_O	See figure 4	1 2, 3 1/	100		KΩ

1/ Guaranteed to the limits specified, if not tested.

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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 C 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, 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.

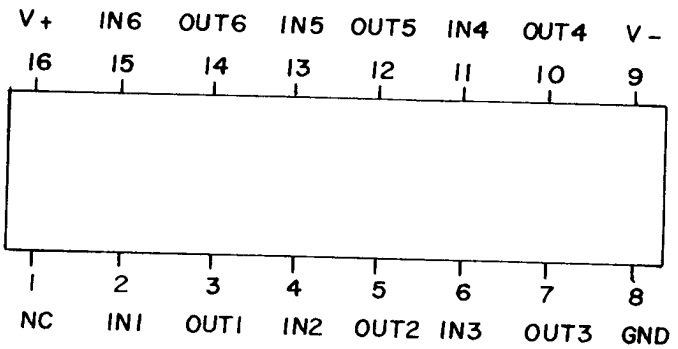
b. Steady-state life test conditions, method 1005 of MIL-STD-883.

(1) Test condition C 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.

Cases E and F



Case 2

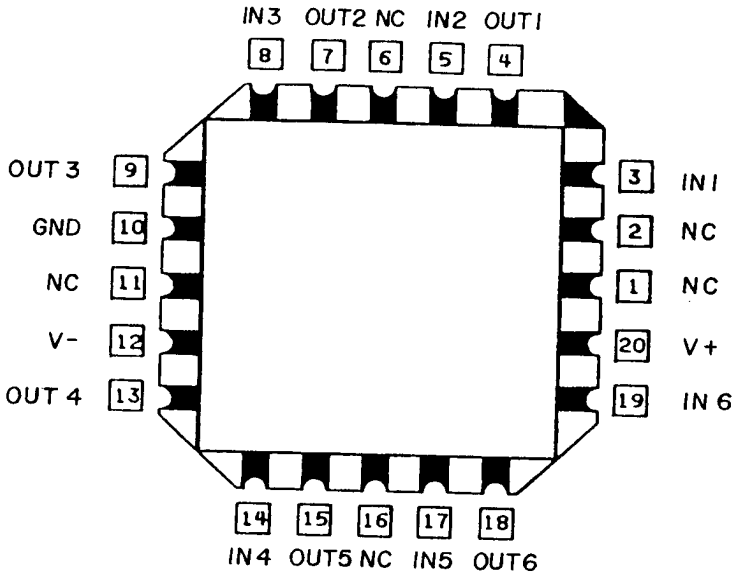


FIGURE 1. Terminal connections.

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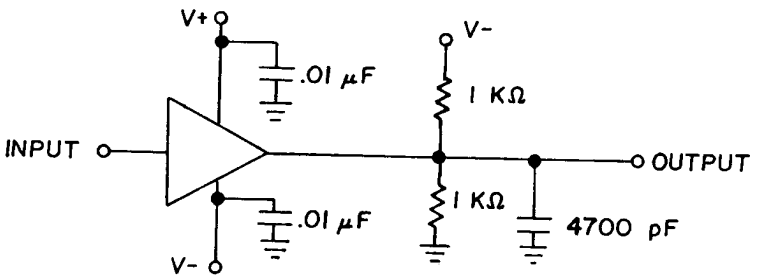
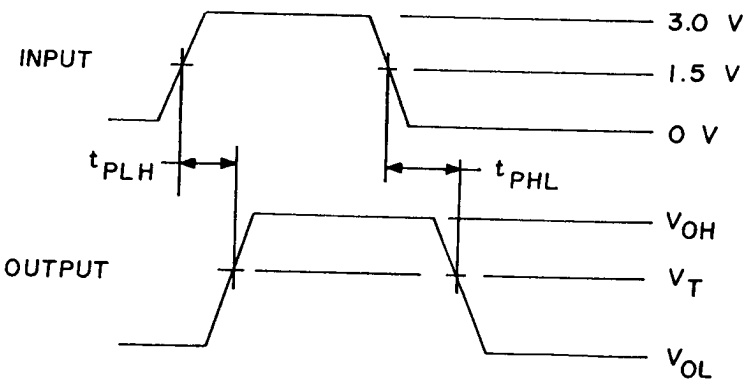
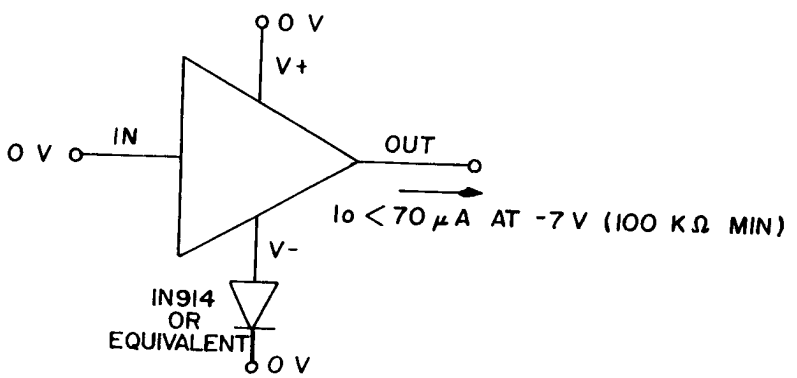


FIGURE 2. Test circuit.



NOTES:
1. For NTDS slow, V_T = -6.0 V
   For NTDS fast, V_T = -1.5 V
2. Input is 100 K Hz square wave from a TTL source.

FIGURE 3. AC waveforms.



NOTE: A diode in series with the V- line is necessary to guarantee the NTDS high Z_0 specification when both supplies are 0 V.

FIGURE 4. Z_0 test circuit.

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, 9
Group A test requirements (method 5005)	1, 2, 3, 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/
5962-8858101EX	53469	MOH0268D-50
5962-8858101FX	53469	MOH0268D-51
5962-88581012X	53469	MOH0268D-52

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
53469	Plessey Semiconductors Corporation 1500 Green Hills Road Scotts Valley, CA 95066

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