

REVISIONS																			
LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED																
A	Change conditions for $V_{IN(1)}$ and $V_{IN(0)}$ . Change pinout for case D. Add input pulse characteristics to waveforms and switching circuit. Add description of $I_{CC(1)}$ and $I_{CC(0)}$ .	1989 FEB. 22	<i>M. A. Lye</i>																

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

PMIC N/A	PREPARED BY <i>Joseph A. Kirby</i> CHECKED BY <i>R. Johnson</i> APPROVED BY <i>M. A. Lye</i> DRAWING APPROVAL DATE 7 OCTOBER 1988 REVISION LEVEL A	DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444 MICROCIRCUITS, LINEAR, QUAD 2-INPUT OR DRIVER, HIGH-OUTPUT VOLTAGE AND CURRENT, MONOLITHIC SILICON SIZE <b>A</b> CAGE CODE <b>67268</b> <b>5962-88564</b> SHEET <b>1</b> OF <b>9</b>
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STANDARDIZED MILITARY DRAWING  
 THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE  
 AMSC N/A

U.S. GOVERNMENT PRINTING OFFICE: 1987 — 748-129/60911  
 5962-E1231

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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:

5962-88564	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
01	UH 502	Quad 2-input OR driver, high-output voltage and current

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, .785" x .310" x .200"), dual-in-line package
D	F-2 (14-lead, .390" x .260" x .085"), flat package

## 1.3 Absolute maximum ratings.

Supply voltage ( $V_{CC}$ )	7.0 V dc
Input voltage	5.5 V dc
Output off-state voltage	100 V dc
Output on-state sink current	500 mA
Storage temperature	-65°C to +150°C
Lead temperature (soldering 10 seconds)	+300°C
Junction temperature ( $T_J$ )	+150°C
Thermal resistance, junction to case ( $\theta_{JC}$ ):	
Cases C and D	See MIL-M-38510, appendix C
Thermal resistance, junction to ambient ( $\theta_{JA}$ ):	
Case C	90°C/W
Case D	140°C/W

## 1.4 Recommended operating conditions.

Supply voltage ( $V_{CC}$ )	4.5 V to 5.5 V
Current into any output (on-state)	250 mA maximum
Ambient operating temperature ( $T_A$ )	-55°C to +125°C
Minimum high level input voltage ( $V_{IH}$ )	2.0 V
Maximum low level input voltage ( $V_{IL}$ )	0.8 V

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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 and logic diagram shall be as specified on figure 1.

3.2.2 Waveforms, switching circuit and input pulse characteristics. The waveforms, switching circuit and input pulse characteristics shall be as specified on figure 2.

3.2.3 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.

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TABLE I. Electrical performance characteristics.

TABLE I. Electrical performance characteristics.						
Test	Symbol	Conditions -55°C < T <sub>A</sub> < +125°C unless otherwise specified	Group A subgroups	Limits		Unit
				Min	Max	
Input current, high	I <sub>IN(1)</sub>	V <sub>CC</sub> = 5.5 V, driven input = 2.4 V other input = 0 V	1, 2, 3		40	μA
		V <sub>CC</sub> = 5.5 V, driven input = 5.5 V other input = 0 V			1,000	
Input current, low	I <sub>IN(0)</sub>	V <sub>CC</sub> = 5.5 V, driven input = 0.4 V other input = 4.5 V	1, 2, 3		-800	μA
Output reverse current	I <sub>OFF</sub>	Other input = 0 V, Driven input = 2.0 V, V <sub>CC</sub> = 4.5 V V <sub>O</sub> = 100 V	1, 2, 3		100	μA
Output voltage, low	V <sub>ON</sub>	V <sub>CC</sub> = 4.5 V, all inputs = 0.8 V, output = 150 mA	1, 3		0.5	V
			2		0.6	
		V <sub>CC</sub> = 4.5 V, all inputs = 0.8 V, output = 250 mA	1, 3		0.7	
			2		0.8	
Supply current, high level (each gate)	I <sub>CC(1)</sub>	T <sub>A</sub> = +25°C, V <sub>CC</sub> = 5.5 V, All inputs = 5.0 V	1		7.5	mA
Supply current, low level (each gate)	I <sub>CC(0)</sub>	T <sub>A</sub> = +25°C, V <sub>CC</sub> = 5.5 V, All inputs = 0 V	1		26.5	
Propagation delay, turn-on time	t <sub>pdON</sub>	V <sub>S</sub> = 100 V, C <sub>L</sub> = 15 pF, V <sub>CC</sub> = 5.0 V, R <sub>L</sub> = 670Ω See figure 2	9, 10, 11		500	ns
Propagation delay, turn-off time	t <sub>pdOFF</sub>				750	
Input voltage, high	V <sub>IN(1)</sub>	V <sub>CC</sub> = 4.5 V	1, 2, 3	2.0		V
Input voltage, low	V <sub>IN(0)</sub>				0.8	
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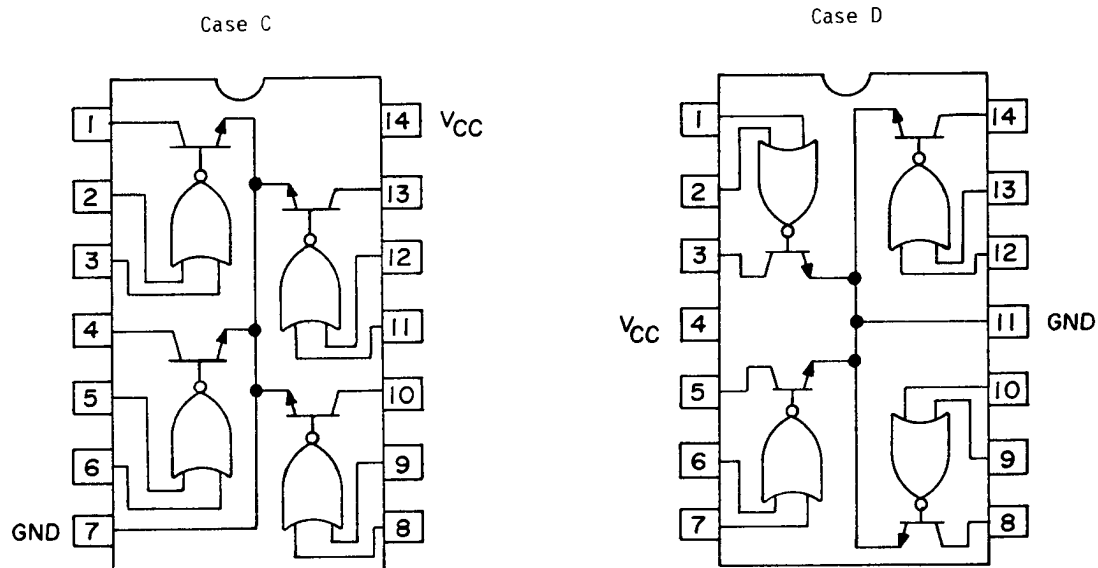


FIGURE 1. Terminal connections and logic diagram.

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MILITARY DRAWING**  
DEFENSE ELECTRONICS SUPPLY CENTER  
DAYTON, OHIO 45444

SIZE  
**A**

5962-88564

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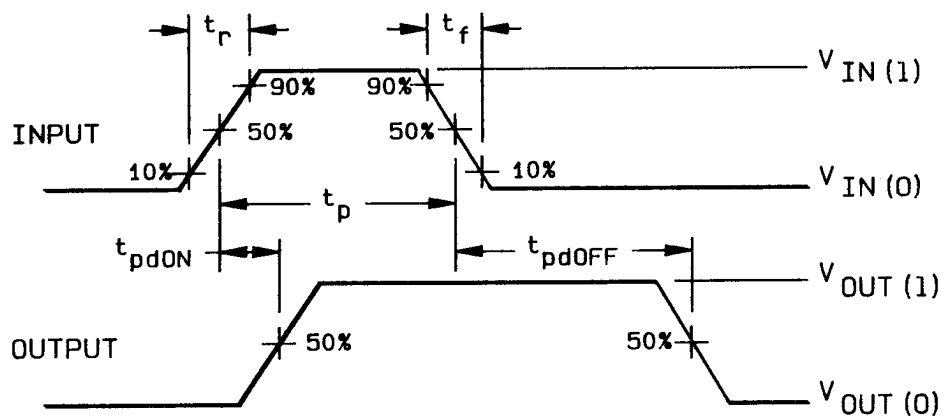
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Input pulse characteristics

$V_{in}(0) = 0\text{ V}$	$t_f \leq 7.0\text{ ns}$	$t_p = 1.0\text{ }\mu\text{s}$
$V_{in}(1) = 3.5\text{ V}$	$t_r \leq 14\text{ ns}$	PRR = 500 kHz

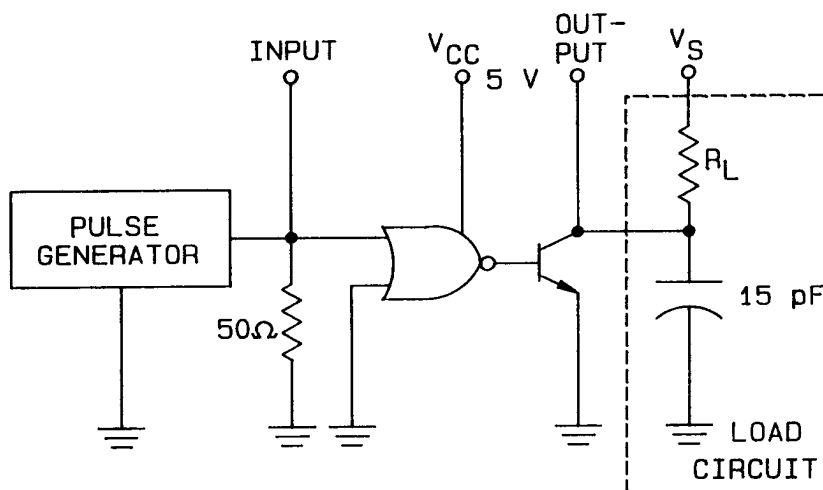


FIGURE 2. Waveforms, switching circuit and input pulse characteristics.

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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)	---
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 specified limits in table I.

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

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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 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 method 1005 of MIL-STD-883.

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 3.8) has been submitted to DESC-ECS.

Military drawing part number	Vendor CAGE number	Vendor similar part number <u>1/</u>
5962-8856401CX	31019	UHD502H/883
5962-8856401DX	31019	UHC502J/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

31019

Vendor name  
and address

Sprague Electric Company  
115 Northeast Cutoff  
Worcester, MA 01607

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