REVISIONS			
LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
A	Add device type 02. Add case outline C. Made corrections to timing test limits. Editorial changes throughout.	1990 FEB 2	M. A. Frye

REV																								
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REV STATUS OF SHEETS	REV	A	A	A	A	A	A				A	A	A											
	SHEET	1	2	3	4	5	6	7	8	9	10	11	12											

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

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DRAWING APPROVAL DATE: 8 APRIL 1988

REVISION LEVEL: A

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO 45444

MICROCIRCUITS, LINEAR, BIMOS II LATCHED DRIVERS, MONOLITHIC SILICON

SIZE	CAGE CODE	
A	67268	5962-87640

SHEET 1 OF 1

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:

5962-87640	01	W	X
Drawing number	Device type (1.2.1)	Case outline (1.2.2)	Lead finish per MIL-M-38510

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

Device type	Generic number	Circuit function
01	UCS-5801	BIMOS II 8-bit latched drivers
02	UCS-5800	BIMOS II 4-bit latched drivers

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
W	D-7 (22-lead, 1.111" x .410" x .225"), dual-in-line package
C	D-1 (14-lead, .785" x .310" x .200"), dual-in-line package

1.3 Absolute maximum ratings.

Supply voltage (V_{DD})	15 V dc
Continuous collector current (I_C)	500 mA
Input voltage range (V_{IN})	-0.3 V dc to V_{DD} +0.3 V dc
Output voltage (V_{CE})	50 V dc
Storage temperature range	-65°C to +150°C
Maximum power dissipation (P_D)	1.75 W
Lead temperature (soldering, 10 seconds)	+260°C
Thermal resistance, junction-to-case (θ_{JC})	(See MIL-M-38510, appendix C)
Junction temperature (T_J)	+175°C
Thermal resistance, junction-to-ambient (θ_{JA})	65°C/W

1.4 Recommended operating conditions.

Supply voltage range (V_{DD})	5 V dc to 12 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 Drawing (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 Functional diagram. The functional diagram shall be as specified on figure 2.

3.2.3 Truth table. The truth table shall be as specified on figure 3.

3.2.4 Timing diagram. The timing diagram shall be as specified on figure 4.

3.2.5 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 shall 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).

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions $-55°C \le T_A \le +125°C$ unless otherwise specified	Device type	V_{DD}	Group A subgroups	Limits Min	Limits Max	Unit
Output leakage current	I_{CEX}	V_{CE} = 50 V	All	5 V	1		50	µA
					2,3		100	
Collector emmiter saturation voltage	V_{CE} (SAT)	I_C = 100 mA	All	5 V	1		1.1	V
		I_C = 200 mA		5 V			1.3	
		I_C = 350 mA		7 V			1.6	
		I_C = 100 mA	All	5 V	2,3		1.3	
		I_C = 200 mA		5 V			1.5	
		I_C = 350 mA		7 V			1.8	
Input voltage	$V_{IN(0)}$		All	5 V	4,5,6		1.0	V
	$V_{IN(1)}$	1/	All	12 V	4,5	10.5		
				10 V		8.5		
				5 V		3.5		
				12 V	6	11		
				10 V		9		
				5 V		3.6		
Input resistance	R_{IN}		All	12 V	1,2	50		kΩ
				10 V		50		
				5 V		50		
				12 V	3	35		
				10 V		35		
				5 V		35		
Supply current	I_{DD}(on) (each stage)	Outputs open	All	12 V	1,2		2.0	mA
				10 V			1.7	
				5 V			1.0	
				12 V	3		2.5	
				10 V			2.1	
				5 V			1.0	
	I_{DD} (off) (total)	Outputs open, Inputs = 0 V	All	12 V	1,2,3		200	µA
				5 V			100	

See footnote at end of table.

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $-55°C \le T_A \le +125°C$ unless otherwise specified	Device types	V_{DD}	Group A subgroups	Limits		Unit
						Min	Max	
Clamp diode leakage current	I_R	V_R = 50 V	All	5 V	1,3		50	µA
					2		100	
Clamp diode forward voltage	V_F	I_F = 350 mA	All	5 V	1,2		2.0	V
					3		2.1	
Functional tests		See 4.3.1c	All		7			
Timing conditions 2/								
Minimum data active time before strobe enabled (data setup time)	t_S		All	5 V	9	50		ns
Minimum data active time after strobe disabled (data hold time)	t_H		All	5 V	9	50		ns
Minimum strobe pulse width	t_{SPW}		All	5 V	9	125		ns
Minimum clear pulse width	t_{CPW}		All	5 V	9	300		ns
Minimum data pulse width	t_{DPW}		All	5 V	9	225		ns

1/ Operation of these devices with standard TTL or DTL may require the use of appropriate pullup resistors to insure a minimum logic "1".
2/ See figure 4.

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Device types	01	02
Case outlines	W	C
Terminal number	Terminal symbol	
1	Clear	Clear
2	Strobe	Strobe
3	IN_1	IN_1
4	IN_2	IN_2
5	IN_3	IN_3
6	IN_4	IN_4
7	IN_5	Ground
8	IN_6	Common
9	IN_7	OUT_4
10	IN_8	OUT_3
11	Ground	OUT_2
12	Common	OUT_1
13	OUT_8	V_{DD}
14	OUT_7	Output enable
15	OUT_6	---
16	OUT_5	---
17	OUT_4	---
18	OUT_3	---
19	OUT_2	---
20	OUT_1	---
21	V_{DD}	---
22	Output enable	---

FIGURE 1. Terminal connections.

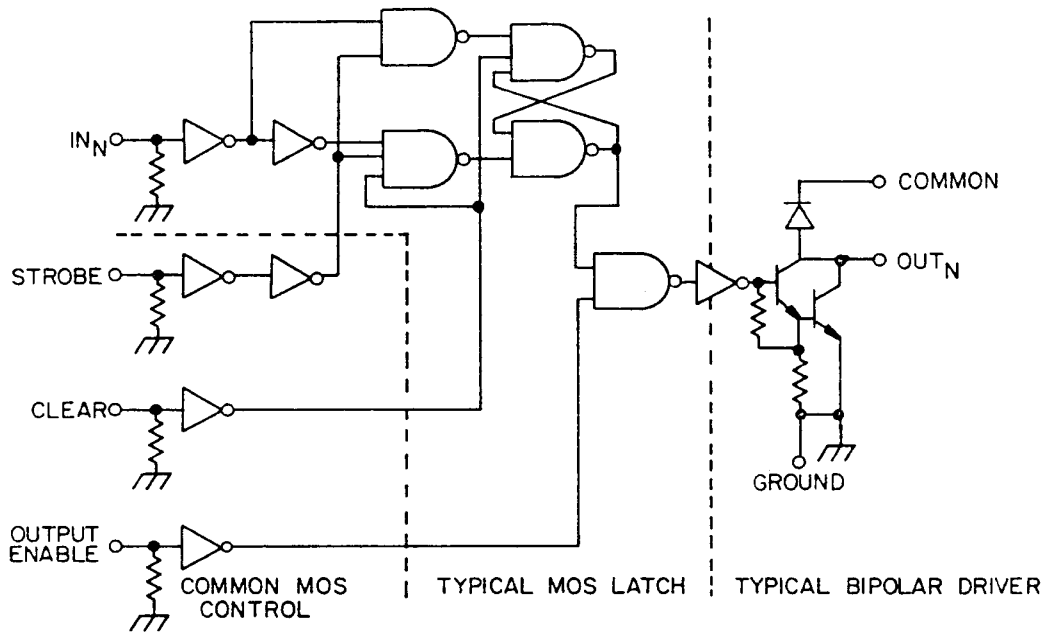


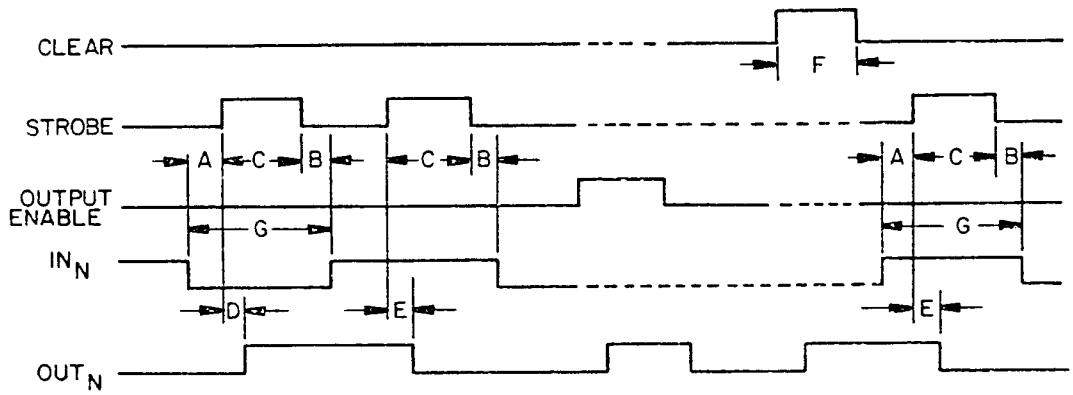
FIGURE 2. Functional diagram.

IN_N	Strobe	Clear	Output enable	OUT_N	
				t-1	t
0	1	0	0	X	OFF
1	1	0	0	X	ON
X	X	1	X	X	OFF
X	X	X	1	X	OFF
X	0	0	0	ON	ON
X	0	0	0	OFF	OFF

X = Irrelevant.
t-1 = Previous output state.
t = Present output state.

NOTES:
1. Information present at an input is transferred to its latch when the "strobe" input is high.
2. A high "clear" input will set all latches to the output off condition regardless of the data or strobe input levels.
3. A high "output enable" will set all outputs to the off condition regardless of any other input conditions.
4. When "output enable" is low, the outputs depend on the state of their respective latches.

FIGURE 3. Truth table.



A.	Minimum data active time before strobe enabled (data setup time)	50 ns
B.	Minimum data active time after strobe disabled (data hold time)	50 ns
C.	Minimum strobe pulse width	125 ns
D.	Typical time between strobe activation and output on to off transition	500 ns
E.	Typical time between strobe activation and output off to on transition	500 ns
F.	Minimum clear pulse width	300 ns
G.	Minimum data pulse width	225 ns

FIGURE 4. Timing diagram.

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-ECC 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.

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-ECC 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°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 8, 10, and 11 in table I, method 5005 of MIL-STD-883 shall be omitted.

c. Subgroup 7 test shall verify the truth table.

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°C, minimum.

(3) Test duration: 1,000 hours, except as permitted by 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, 5, 6, 7, 9
Group A test requirements (method 5005)	1, 2, 3, 4, 5, 6, 7, 9
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 Change 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-ECC, telephone (513) 296-6022.

6.5 Comments. Comments on this drawing should be directed to DESC-ECC, Dayton, Ohio 45444, or telephone (513) 296-8525.

6.6 Approved source of supply. An approved source of supply is listed in MIL-BUL-103. Additional sources will be added to MIL-BUL-103 as they become available. The vendor listed in MIL-BUL-103 has 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 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 1/ similar part number
5962-8764001WX	31019	UCS-5801H-883
5962-8764002CX	31019	UCS-5800H-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	Vendor name and address
31019	Sprague Electric Company 3900 Welsh Road Willow Grove, PA 19090 Point of contact: 115 Northeast Cutoff Worchester, MA 01607

019422