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

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	SHEET	1	2	3	4	5	6	7	8	9	10													

PMIC N/A

STANDARDIZED MILITARY DRAWING

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AMSC N/A

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REVISION LEVEL:

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO 45444

MICROCIRCUIT, DIGITAL, BIPOLAR, ADVANCE SCHOTTKY, 1 OF 16 DATA GENERATORS/ MULTIPLEXERS WITH 3-STATE OUTPUTS, MONOLITHIC SILICON

SIZE	CAGE CODE	5962-90562
A	67268	

SHEET 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 or Identifying Number (PIN). The PIN shall be as shown in the following example:

5962-90562	01	K	X
Drawing number	Device type (1.2.1)	Case outline (1.2.2)	Lead finish per MIL-M-38510

1.2.1 Device type(s). The device type(s) shall identify the circuit function as follows:

Device type	Generic number	Circuit function
01	54AS250	1-of-16 data generators/multiplexers with 3-state outputs

1.2.2 Case outline(s). The case outline(s) shall be as designated in appendix C of MIL-M-38510, and as follows:

Outline letter	Case outline
K	F-6 (24-lead, .640" x .420" x .090"), flat package
L	D-9 (24-lead, 1.280" x .310" x .200"), dual-in-line package
3	C-4 (28-terminal, .460" x .460" x .100"), square chip carrier package

1.3 Absolute maximum ratings.

Supply voltage	+7.0 V dc
Input voltage range	-0.5 V dc mimium to 7.0 V dc maximum
Storage temperature range	-65°C to +150°C
Lead temperature (soldering, 10 seconds)	+300°C
Junction temperature (T_J)	175°C

1.4 Recommended operating conditions.

Supply voltage range (V_{CC})	+4.5 V dc minimum to +5.5 V dc maximum
Minimum high level input voltage (V_{IH})	2.0 V dc
Maximum low level input voltage (V_{IL})	0.8 V dc
High level output current (I_{OH})	-12 mA
Low level output current (I_{OL})	32 mA
Case operating temperature range (T_C)	-55°C to +125°C
Thermal resistance, junction to case (θ_{JC})	See MIL-M-38510, appendix C
Maximum power dissipation (P_D) 1/	275 mW

1/ Maximum power dissipation is defined as V_{CC} x I_{CC}, and must withstand the added P_D due to short circuit output test; e.g., I_{OS}.

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 Truth table. The truth table shall be as specified on figure 2 .

3.2.3 Test circuit and switching waveforms. The test circuit and switching waveforms shall be as specified on figure 3.

3.2.4 Case outline(s). The case outline(s) 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 case operating temperature range.

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions $-55°C \le T_C \le +125°C$ unless otherwise specified		Group A subgroups	Limits		Unit
					Min	Max	
High level output voltage	V_{OH}	V_{CC} = 4.5 V to 5.5 V V_{IN} = 2.0 V, 0.8 V	I_{OH} = -2.0 mA		2.5		V
		V_{CC} = 4.5 V V_{IN} = 2.0 V, 0.8 V	I_{OH} = -12 mA		2.4		
Low level output voltage	V_{OL}	V_{CC} = 4.5 V V_{IN} = 2.0 V, 0.8 V	I_{OL} = 32 mA	1,2,3		0.5	V
Input clamp voltage	V_{IK}	V_{CC} = 4.5 V	I_{IN} = -18 mA	1,2,3		-1.2	V
Off-state output current with high level voltage	I_{OZH}	V_{CC} = 5.5 V V_{OUT} = 2.7 V		1,2,3		50	µA
Off-state output current with low level voltage	I_{OZL}	V_{CC} = 5.5 V V_{OUT} = 0.4 V		1,2,3		-50	µA
Input current	I_I	V_{CC} = 5.5 V V_{IN} = 7.0 V		1,2,3		0.1	mA
Low level input current	I_{IL}	V_{CC} = 5.5 V V_{IN} = 0.4 V		1,2,3		-0.5	mA
High level input current	I_{IH}	V_{CC} = 5.5 V V_{IN} = 2.7 V		1,2,3		20	µA
Output current	I_{OS}	V_{CC} = 5.5 V V_{OUT} = 2.25 V	1/	1,2,3	-30	-112	mA
Supply current	I_{CC}	V_{CC} = 5.5 V V_{IN} = 0.0 V, 4.5 V	Outputs high	1,2,3		42	mA
			Outputs low			50	
			Outputs disabled			48	
Functional tests		See 4.3.1c, V_{CC} = 4.5 to 5.5 V		7,8			

See footnote at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $-55°C \le T_C \le +125°C$ unless otherwise specified	Group A subgroups	Limits		Unit
				Min	Max	
Propagation delay time, DATA to $\overline{W}$	t_{PLH1}	V_{CC} = 4.5 and 5.5 V dc C_L = 50 pF R_1 = 500Ω R_2 = 500Ω	9,10,11	2.0	9.5	ns
	t_{PHL1}			2.0	8.5	
Propagation delay time, SELECT to $\overline{W}$ SELECT (A,B,C,D) to $\overline{W}$	t_{PLH2}		9,10,11	4.0	15.5	ns
	t_{PHL2}			4.0	12.0	
Output enable time, $\overline{G}$ to $\overline{W}$	t_{PZH}		9,10,11	2.0	7.5	ns
	t_{PZL}			2.0	10.0	
Output disable time, m $\overline{G}$ to $\overline{W}$	t_{PHZ}		9,10,11	1.5	6.5	ns
	t_{PLZ}			2.0	8.5	

1/ The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, I_{OS}.

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 PIN listed in 1.2 herein. In addition, the manufacturer's PIN may also be marked as listed in MIL-BUL-103 (see 6.6 herein).

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.

Case outlines	K and L	3
Terminal number	Terminal symbol	
1	E7	NC
2	E6	E7
3	E5	E6
4	E4	E5
5	E3	E4
6	E2	E3
7	E1	E2
8	E0	NC
9	$\overline{G}$	E1
10	$\overline{W}$	E0
11	D	$\overline{G}$
12	GND	$\overline{W}$
13	C	D
14	B	GND
15	A	NC
16	E15	C
17	E14	B
18	E13	A
19	E12	E15
20	E11	E14
21	E10	E13
22	E9	NC
23	E8	E12
24	V_{CC}	E11
25	---	E10
26	---	E9
27	---	E8
28	---	V_{CC}

NC = No connection

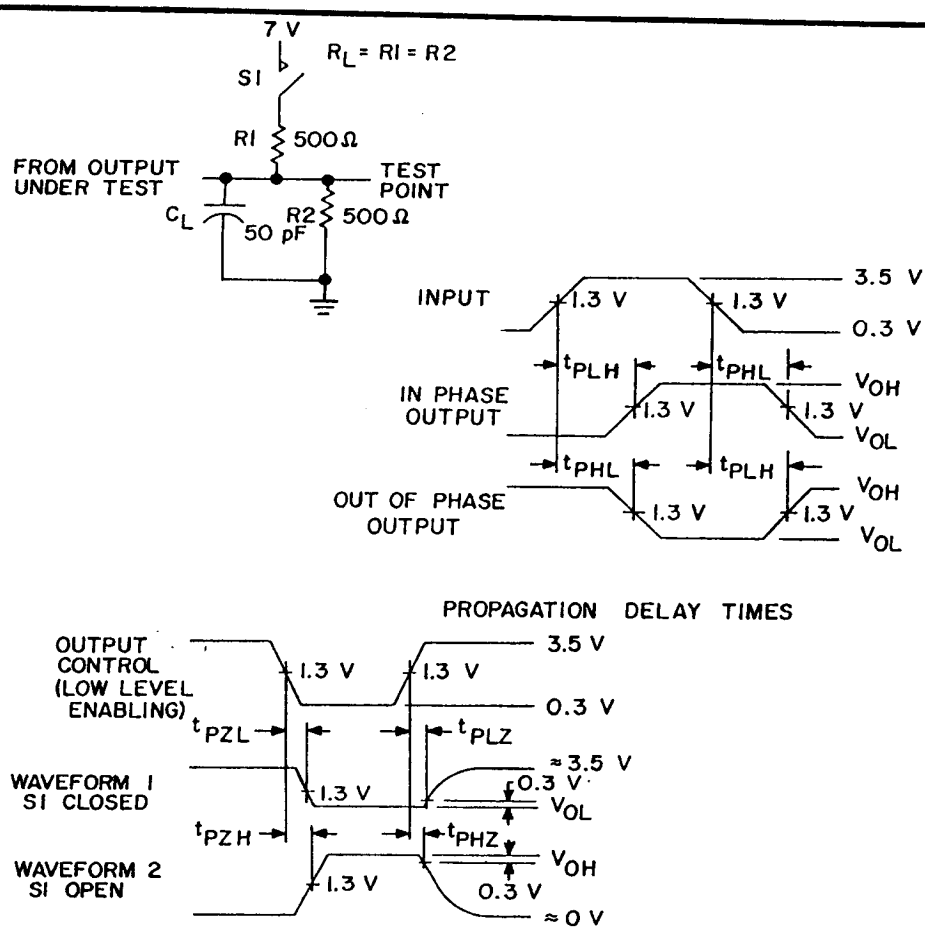
FIGURE 1. Terminal connections.

☆ U. S. GOVERNMENT PRINTING OFFICE: 1989—749-033

Input						Output
$\overline{G}$	A	B	C	D	Ei	$\overline{W}$
L	L	L	L	L	E0	E0
L	H	L	L	L	E1	E1
L	L	H	L	L	E2	E2
L	H	H	L	L	E3	E3
L	L	L	H	L	E4	E4
L	H	L	H	L	E5	E5
L	L	H	H	L	E6	E6
L	H	H	H	L	E7	E7
L	L	L	L	H	E8	E8
L	H	L	L	H	E9	E9
L	L	H	L	H	E10	E10
L	H	H	L	H	E11	E11
L	L	L	H	H	E12	E12
L	H	L	H	H	E13	E13
L	L	H	H	H	E14	E14
L	H	H	H	H	E15	E15
H	X	X	X	X	X	Z

H = High voltage level
L = Low voltage level
Z = High impedence
X = Irrelevant

FIGURE 2. Truth table.



ENABLE AND DISABLE TIMES, THREE-STATE OUTPUTS

NOTES:
1. C_L includes probe and jig capacitance.
2. When measuring propagation delay items of three-state outputs, switch S1 is open.
3. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
4. All input puolses have the following characteristics: PRR ≤ 1 MHz, $t_r = t_f \leq 2$ ns, duty cycle = 50 percent.
5. The outputs are measured one at a time with one input transition per measurement.

FIGURE 3. Test circuit and switching waveforms.

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 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 4, 5, and 6 in table I, method 5005 of MIL-STD-883 shall be omitted.

c. Subgroups 7 and 8 tests sufficient to 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 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 appendix B of MIL-M-38510 and method 1005 of MIL-STD-883.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-M-38510.

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)	*1,2,3,7,8,9,10,11
Group A test requirements (method 5005)	1,2,3,7,8,9,10,11
Groups C and D end-point electrical parameters (method 5005)	1,2,3

* PDA applies to subgroup 1.

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. 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-ECC.