

11 December 1987

MILITARY SPECIFICATION
MICROCIRCUITS, DIGITAL, CMOS, FFT PROCESSOR
MONOLITHIC SILICON

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the detail requirements for a monolithic digital, CMOS, FFT butterfly processor microcircuit. Two product assurance classes are provided for and are reflected in the complete part number.

1.2 Part number. The complete part number shall be in accordance with MIL-M-38510.

1.2.1 Device type. The device type shall be as follows:

<u>Device type</u>	<u>Frequency</u>	<u>Circuit</u>
01	20 MHz	FFT processor

1.2.2 Device class. The device class shall be the product assurance level as defined in MIL-M-38510.

1.2.3 Case outline. The case outline shall be designated as follows:

<u>Letter</u>	<u>Case outline (see MIL-M-38510, appendix C)</u>
X	C-7 (68-terminal, .950" x .950"), square chip carrier package

1.3 Absolute maximum ratings.

Supply voltage range (V_{CC-GND})	- - - - -	-0.3 V to +7.0 V
Input voltage range (V_{IN})	- - - - -	-0.3 V to $V_{CC} + 0.3$ V
Case operating temperature (T_C)	- - - - -	-55°C to +125°C
Output current-into outputs (I_O)	- - - - -	20 mA
Total power dissipation (P_D)	- - - - -	750 mW
Storage temperature	- - - - -	-65°C to +150°C
Junction temperature (T_J)	1/ - - - - -	175°C
Castillation soldering temperature	- - - - -	265°C
at .062 inch from case, for 10 seconds		
Thermal resistance, junction-to-case (θ_{JC}):		
Case X-	- - - - -	(See MIL-M-38510, appendix C)

1/ Maximum junction temperature shall not be exceeded except for allowable short duration burn-in screening conditions in accordance with method 5004 of MIL-STD-883.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Rome Air Development Center (RBE-2), Griffiss AFB, NY 13441, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 5962

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

1.4 Recommended operating conditions.

Supply voltage (V_{CC})	- - - - -	4.5 V to 5.5 V
Minimum high-level input voltage (V_{IH})	- - - - -	2.0 V
Minimum low-level input voltage (V_{IL})	- - - - -	0.8 V
Hold time (t_h)	- - - - -	0 ns
Setup time A or B to CP (t_{su})	- - - - -	12.0 ns
Setup time, SYNC-L, by pass L, by pass 2-3-L, RADIX 2/4-L, to CP1	- - - - -	12.0 ns
Clock pulse width CP1 (t_{pw})	- - - - -	20 ns
Case operating temperature range (T_C)	- - - - -	-55°C to +125°C

2. APPLICABLE DOCUMENTS**2.1 Government documents.**

2.1.1 Specification and standard. The following specification and standard form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

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 contractors 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 specification and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Detail specification. The individual item requirements shall be in accordance with MIL-M-38510, 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 block diagram. The functional block diagram shall be as specified on figure 2.

3.2.3 Case outline. The case outline shall be as specified in 1.2.3.

3.3 Lead material and finish. The lead material and finish shall be in accordance with MIL-M-38510 (see 6.4).

3.4 Electrical performance characteristics. The electrical performance characteristics are as specified in table I, and apply over the full recommended case operating temperature range, unless otherwise specified.

3.5 Electrical test requirements. The electrical test requirements shall be as specified in table II herein for the applicable device type and device class. The electrical tests for each subgroup are described in table III herein and in table V, test vectors that forms a part of the manufacturing test tape.

3.6 Microcircuit group assignment. The device covered by this specification shall be in microcircuit group number 105 (see MIL-M-38510, appendix E).

3.7 Marking. Marking shall be in accordance with MIL-M-38510. At the option of the manufacturer, marking of the country of origin may be omitted from the body of the microcircuit, but shall be retained on the initial container.

3.7.1 Total dose radiation hardness identifier. The total dose radiation hardness identifier shall be in accordance with MIL-M-38510 and herein.

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with MIL-M-38510 and methods 5005 and 5007, as applicable, of MIL-STD-883, except as modified 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 qualification and quality conformance inspection. The following additional criteria shall apply:

- a. When the alternate screening procedures for class B microcircuits of method 5004 of MIL-STD-883 is applied, the internal visual, method 2010 of MIL-STD-883, condition B is applicable. In addition to the changes indicated by the alternate screens of method 5004, the metallization inspection shall be applicable to the top layer metal conductor (i.e., A1) and need not include underlying conductors such as polysilicon.
- b. Delete the sequence specified in 3.1.10 through 3.1.14 of method 5004 and substitute lines 1 through 7 of table II herein.
- c. Burn-in (method 1015 of MIL-STD-883).
 - (1) Static tests (test condition A) using circuit shown on figure 3, or equivalent. Ambient temperature (T_A) shall be $+125^{\circ}\text{C}$ minimum. Test duration for each static test shall be 24 hours minimum for class S devices and in accordance with table I of method 1015 for class B devices.
 - (2) Dynamic test (test condition D) using circuit shown on figure 3, or equivalent. Ambient temperature shall be $+125^{\circ}\text{C}$ minimum. Test duration shall be in accordance with table I of method 1015.
- d. Interim and final electrical parameters shall be as specified in table II herein.
- e. For class S devices, post dynamic burn-in, or class B devices, post static burn-in, electrical parameter measurements may, at the manufacturer's option, be performed separately or included in the final electrical parameter requirements.

4.2.1 Percent defective allowable (PDA).

- a. The PDA for class S devices shall be 5 percent for static burn-in and 5 percent for dynamic burn-in, based on the exact number of devices submitted to each separate burn-in.
- b. Static burn-in I and II the failures shall be cumulative for determining the PDA.
- c. The PDA for class B devices shall be in accordance with MIL-M-38510 for static burn-in. Dynamic burn-in is not required.

- d. Those devices whose measured characteristics, after burn-in, exceed the specified delta (Δ) limits which consists of tests specified in table IV herein or electrical parameter limits specified in table III, subgroup 1 are defective and shall be removed from the lot. The verified failures divided by the total number of devices in the lot initially submitted to burn-in shall be used to determine the percent defective for the lot and the lot shall be accepted or rejected based on the specified PDA.

4.3 Qualification inspection. Qualification inspection shall be in accordance with MIL-M-38510. Inspections to be performed shall be those specified in method 5005 of MIL-STD-883 and herein for groups A, B, C, D, and E inspections (see 4.4.1 through 4.4.5).

4.4 Quality conformance inspection. Quality conformance inspection shall be in accordance with MIL-M-38510 and as specified herein. Inspections to be performed shall be those specified in method 5005 of MIL-STD-883 and herein for A, B, C, D, and E inspections (see 4.4.1 through 4.4.5).

4.4.1 Group A inspection. Group A inspection shall be in accordance with table I of method 5005 of MIL-STD-883 and as follows:

- a. Tests shall be performed in accordance with table II herein.
- b. Subgroups 5 and 6 of table I of method 5005 of MIL-STD-883 shall be omitted.
- c. Subgroup 4 (C_I , C_O measurement) shall be measured only for initial qualification and after process or design changes which may affect input capacitance. Capacitance shall be measured between the designated terminal and V_{CC} at a frequency of 1 MHz and a signal amplitude of 50 mV rms.
- d. Dynamic and functional testing shall be performed using the circuit configuration shown on figure 4, utilizing the waveforms on figure 5.

4.4.2 Group B inspection. Group B inspection shall be in accordance with table II of method 5005 of MIL-STD-883 and as follows:

- a. Class S steady state life test circuits shall be conducted using test condition D and shall be submitted to the qualifying activity for approval. When the alternate-steady state life test is used, the circuit on figure 3, or equivalent, shall be used.
- b. End-point electrical parameters shall be as specified in table II herein. Delta limits shall apply only to subgroup 5 of group B inspections and shall consist of tests specified in table IV herein.

4.4.3 Group C inspection. Group C inspection shall be in accordance with table III of method 5005 of MIL-STD-883 and as follows:

- a. End-point electrical parameters shall be as specified in table II herein. Delta limits shall apply only to subgroup 1 of group C inspection and shall consist of tests specified in table IV herein.
- b. Steady-state life test (method 1005 of MIL-STD-883) conditions:
 - (1) Test condition D using the circuit shown on figure 3, or equivalent and as specified in 4.5.2 herein.
 - (2) $T_A = +125^\circ\text{C}$ minimum.
 - (3) Test duration, 1,000 hours, except as permitted by appendix B of MIL-M-38510 and method 1005 of MIL-STD-883.

TABLE I. Electrical performance characteristics. 1/

Test	Symbol	Conditions $-55^{\circ}\text{C} \leq T_C \leq +125^{\circ}\text{C}$	Limits		Unit
			Min	Max	
Output voltage, low level	V_{OL}	$V_{CC} = 5.5 \text{ V}, I_{OL} = 3.2 \text{ mA}$		0.4	V
Output voltage, high level	V_{OH}	$V_{CC} = 4.5 \text{ V}, I_{OH} = -0.4 \text{ mA}$	2.4		V
Input leakage current, low level	I_{IL}	$V_{CC} = 5.5 \text{ V}, V_{IN} = 0 \text{ V}$	-300	300	μA
Input leakage current, high level	I_{IH}	$V_{CC} = 5.5 \text{ V}, V_{IN} = 5.5 \text{ V}$	-10	10	μA
Output leakage current, low level	I_{OLZ}	$V_{CC} = 5.5 \text{ V}, V_{OUT} = 0 \text{ V}$	-10	10	μA
Output leakage current, high level	I_{OHZ}	$V_{CC} = 5.5 \text{ V}, V_{OUT} = 5.25 \text{ V}$	-10	10	μA
Quiescent supply current	I_{CC}	$V_{CC} = 5.5 \text{ V}, \text{Outputs open}$		130	mA
Input capacitance	C_I	$V_{CC} = 5.5 \text{ V}$ $f = 1 \text{ MHz}$ $V_{IN} = V_{CC} \text{ or GND}$		5	pF
Output capacitance	C_O			5	pF
Propagation delay CPI to any F	t_{PHL}	Figure 4 <u>2/</u>		20	ns
Propagation delay CPI to any F	t_{PLH}	Figure 4 <u>2/</u>		20	ns
Propagation delay EN to any F	t_{PZH}	Figure 4 <u>2/</u>		20	ns
Propagation delay EN to any F	t_{PZL}	Figure 4 <u>2/</u>		20	ns
Propagation delay any F to EN	t_{PHZ}	Figure 4 <u>2/</u>		20	ns

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued. 1/

Test	Symbol	Conditions $-55^{\circ}\text{C} \leq T_C \leq +125^{\circ}\text{C}$	Limits		Unit
			Min	Max	
Propagation delay any F to EN	t_{PLZ}	Figure 4 <u>2/</u>		20	ns
Maximum clock frequency	$f_{\max}$	Figure 4 <u>2/</u>	20		MHz

1/ All measurements are taken with ground pin connected to ground.

2/ Switching characteristics are defined as follows: Propagation delay times from a 1.5 volt-level on input waveform to 1.5 volt-level on output waveform.

TABLE II. Burn-in and electrical test requirements.

Line no.	Applicable tests and MIL-STD-883 test method	Class S device <u>1/</u>		Class B device <u>1/</u>	
		Table III subgroups <u>2/</u>	Table IV delta limits <u>3/</u>	Table III subgroups <u>2/</u>	Table IV delta limits <u>3/</u>
1	Interim electrical parameters (method 5004)	2		2	
2	Static burn-in I (method 1015)	Required		Not required	
3	Same as line 1	2	Δ		
4	Static burn-in II (method 1015)	Required		Required <u>4/</u>	
5	Same as line 1	*2	Δ	*2	Δ
6	Dynamic burn-in (method 1015)	Required		Not required	
7	Same as line 1	2	Δ		
8	Final electrical parameters (method 5004)	1*, 2, 3, 7, 8, 9, *10, 11		1*, 2, 3, 7, 8, 9, *10, 11 <u>4/</u>	
9	Group A test requirements (method 5005)	1, 2, 3, 4, 7, 8, 9, 10, 11		1, 2, 3, 4, 7, 8, 9, 10, 11	
10	Group B end-point electrical parameters (method 5005)	+1, 2, 3, 9, 10, 11 <u>5/</u>	Δ	+1 <u>5/</u>	
11	Group C end-point electrical parameters (method 5005)			1, 2	Δ
12	Group D end-point electrical parameters (method 5005)	1, 2, 3		1, 2	

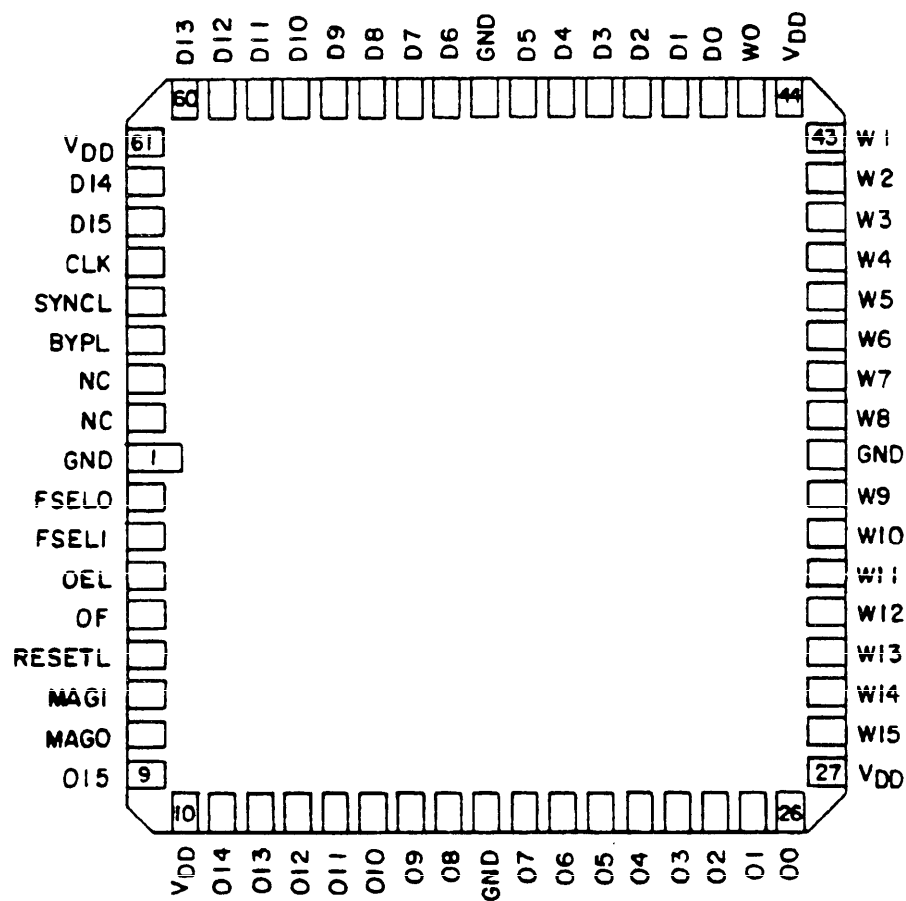
1/ Blank spaces indicate tests are not applicable.

2/ * indicates PDA applies to subgroup 2 (see 4.2.1).

3/ Δ indicates delta limit shall be required only on table III, subgroup 2 where specified, and the delta limits shall be computed with reference to the previous interim electrical parameters (line 1).

4/ The device manufacturer may, at his option, either complete subgroup 1 electrical parameter measurements including delta measurements within 96 hours after burn-in completion (removal of bias); or, may complete subgroup 1 electrical measurements without delta measurements within 24 hours after burn-in completion (removal of bias).

5/ † indicates also applies to electrostatic discharge sensitivity tests.



Case X

FIGURE 1. Terminal connections.

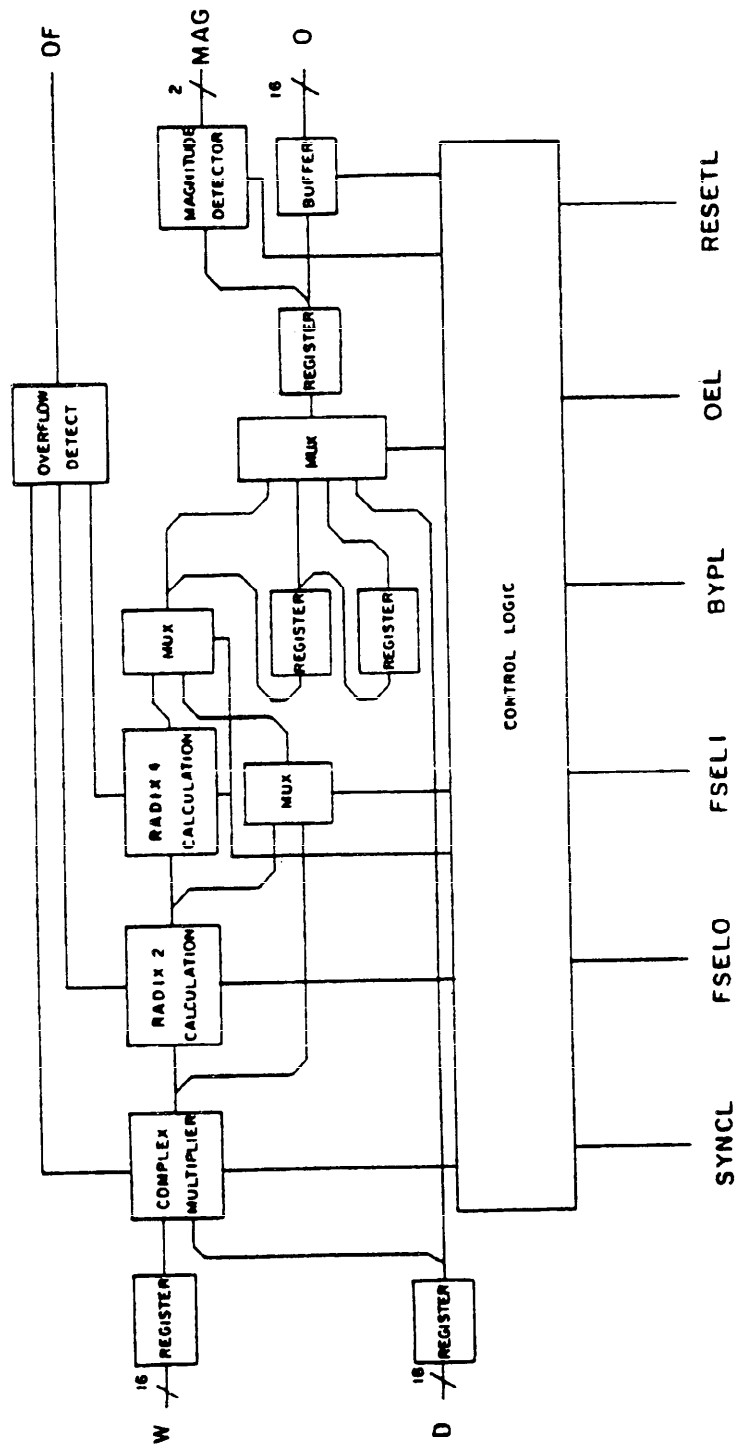
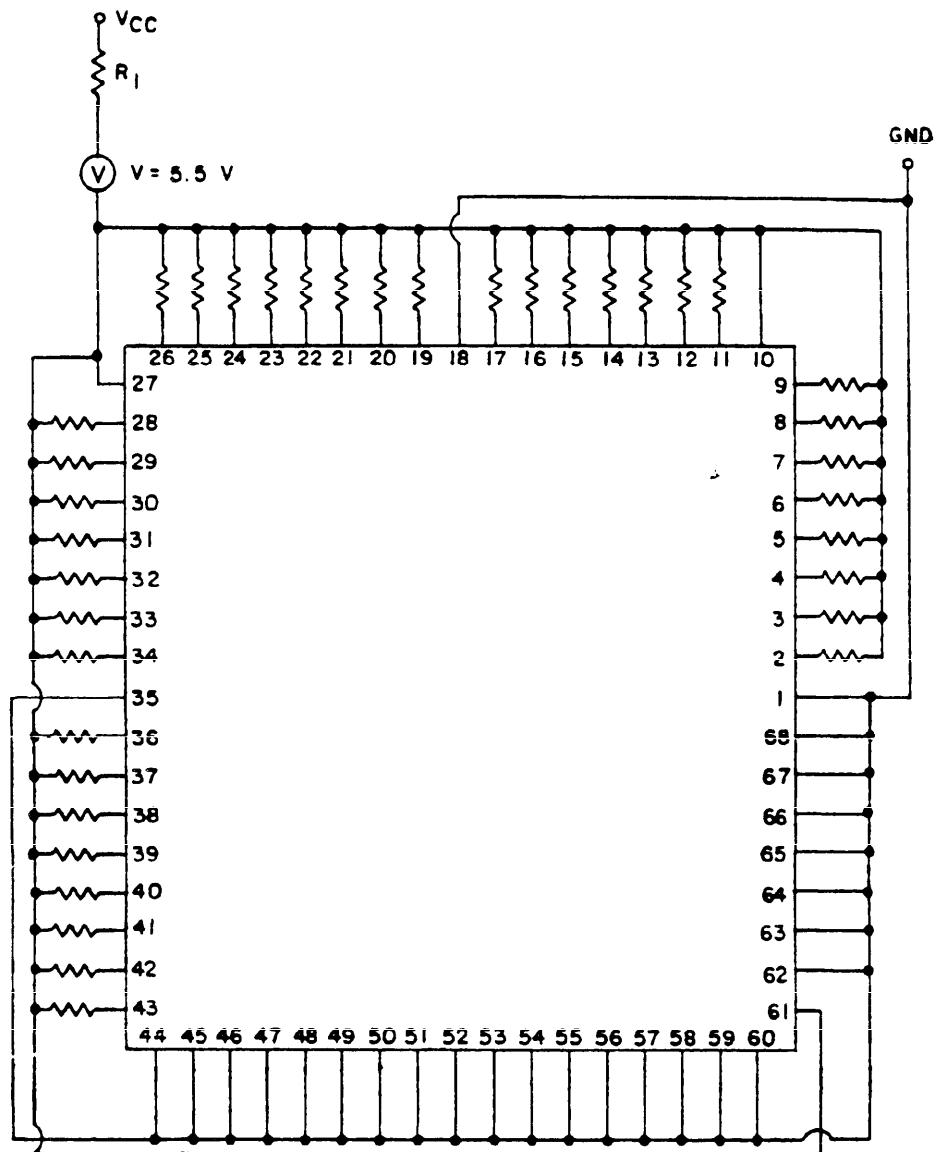
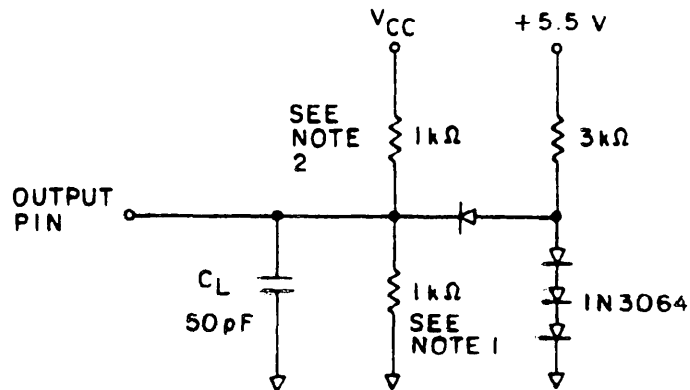


FIGURE 2. Functional block diagram.



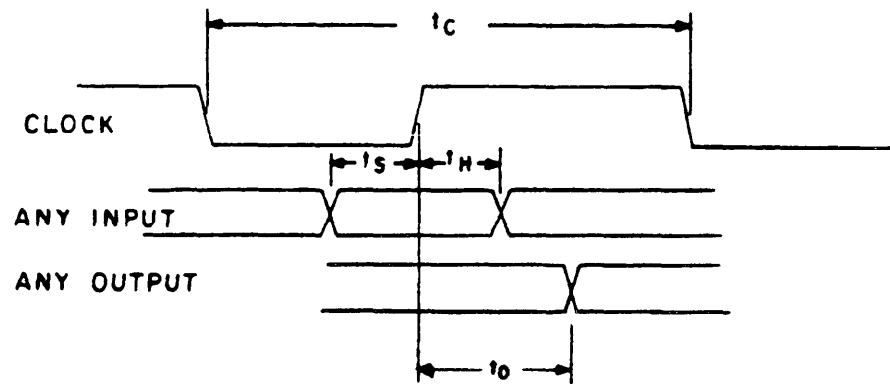
NOTE: R1 current limiting resistor; all other resistor values are 1.5 kΩ.

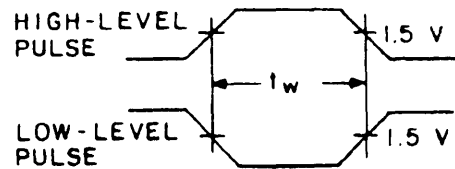
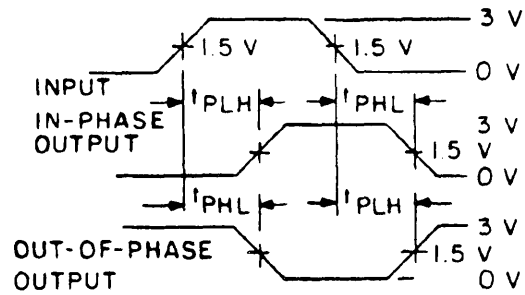
FIGURE 3. Burn-in and steady-state life test circuit.



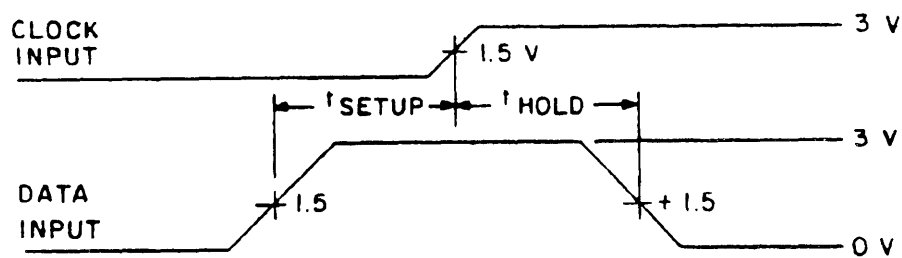
NOTES:

1. For three-state output test only.
2. For open collector test only.

FIGURE 4. Output load circuit for functional and switching tests.FIGURE 5. Switching waveforms.



VOLTAGE WAVEFORMS, PULSE WIDTH



VOLTAGE WAVEFORM, SETUP AND HOLD TIMES

FIGURE 5. Switching waveforms-Continued.

TABLE III. Group A inspection.
(Terminal conditions)

Subgroup	Symbol	Method	Test no.	1	2	3	4	6	10	18	27	28	29	30	31
				V _{SS1}	FSELO	FSEL1	OEL	RESETL	V _{DD0}	V _{SS0}	V _{DD2}	W15	W14	W13	W12
T _C = 25°C 1/	I _{IL}	3009	1	GND	0.0 V	5.5 V	5.5 V	5.5 V	5.5 V	GND	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V
			2	"	5.5 V	0.0 V	5.5 V	"	"	"	"	"	"	"	"
			3	"	"	5.5 V	0.0 V	"	"	"	"	"	"	"	"
			4	"	"	"	5.5 V	0.0 V	"	"	"	"	"	"	"
			5	"	"	"	"	0.0 V	"	"	"	0.0 V	"	"	"
			6	"	"	"	"	5.5 V	"	"	"	5.5 V	10.0 V	10.0 V	0.0 V
			7	"	"	"	"	"	"	"	"	"	5.5 V	5.5 V	5.5 V
			8	"	"	"	"	"	"	"	"	"	"	"	"
			9	"	"	"	"	"	"	"	"	"	"	"	"
			10	"	"	"	"	"	"	"	"	"	"	"	"
			11	"	"	"	"	"	"	"	"	"	"	"	"
			12	"	"	"	"	"	"	"	"	"	"	"	"
			13	"	"	"	"	"	"	"	"	"	"	"	"
			14	"	"	"	"	"	"	"	"	"	"	"	"
			15	"	"	"	"	"	"	"	"	"	"	"	"
			16	"	"	"	"	"	"	"	"	"	"	"	"
			17	"	"	"	"	"	"	"	"	"	"	"	"
			18	"	"	"	"	"	"	"	"	"	"	"	"
			19	"	"	"	"	"	"	"	"	"	"	"	"
			20	"	"	"	"	"	"	"	"	"	"	"	"
			21	"	"	"	"	"	"	"	"	"	"	"	"
			22	"	"	"	"	"	"	"	"	"	"	"	"
			23	"	"	"	"	"	"	"	"	"	"	"	"
			24	"	"	"	"	"	"	"	"	"	"	"	"
			25	"	"	"	"	"	"	"	"	"	"	"	"
			26	"	"	"	"	"	"	"	"	"	"	"	"
			27	"	"	"	"	"	"	"	"	"	"	"	"
			28	"	"	"	"	"	"	"	"	"	"	"	"
			29	"	"	"	"	"	"	"	"	"	"	"	"
			30	"	"	"	"	"	"	"	"	"	"	"	"
			31	"	"	"	"	"	"	"	"	"	"	"	"
			32	"	"	"	"	"	"	"	"	"	"	"	"
			33	"	"	"	"	"	"	"	"	"	"	"	"
			34	"	"	"	"	"	"	"	"	"	"	"	"
			35	"	"	"	"	"	"	"	"	"	"	"	"
			36	"	"	"	"	"	"	"	"	"	"	"	"
			37	"	"	"	"	"	"	"	"	"	"	"	"
			38	"	"	"	"	"	"	"	"	"	"	"	"
			39	"	"	"	"	"	"	"	"	"	"	"	"

See footnotes at end of table.

TABLE III. Group A Inspection - Continued.
(Terminal conditions)

Test no.	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
	W11	W10	W9	VSS2	W8	W7	W6	W5	W4	W3	W2	W1	VDD3	W0	D0	D1
1	5.5 V	5.5 V	5.5 V	GND	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V
2	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
3	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
4	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
5	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
6	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
7	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
8	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
9	0.0 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
10	5.5 V	0.0 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"
11	"	5.5 V	0.0 V	"	"	"	"	"	"	"	"	"	"	"	"	"
12	"	"	5.5 V	"	0.0 V	"	"	"	"	"	"	"	"	"	"	"
13	"	"	"	"	5.5 V	0.0 V	"	"	"	"	"	"	"	"	"	"
14	"	"	"	"	"	5.5 V	"	"	"	"	"	"	"	"	"	"
15	"	"	"	"	"	"	0.0 V	"	"	"	"	"	"	"	"	"
16	"	"	"	"	"	"	5.5 V	0.0 V	"	"	"	"	"	"	"	"
17	"	"	"	"	"	"	"	5.5 V	0.0 V	"	"	"	"	"	"	"
18	"	"	"	"	"	"	"	"	0.0 V	"	"	"	"	"	"	"
19	"	"	"	"	"	"	"	"	5.5 V	0.0 V	"	"	"	"	"	"
20	"	"	"	"	"	"	"	"	"	0.0 V	0.0 V	"	"	"	"	"
21	"	"	"	"	"	"	"	"	"	5.5 V	5.5 V	0.0 V	"	"	"	"
22	"	"	"	"	"	"	"	"	"	"	"	0.0 V	"	"	"	"
23	"	"	"	"	"	"	"	"	"	"	"	5.5 V	"	"	"	"
24	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
25	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
26	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
27	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
28	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
29	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
30	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
31	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
32	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
33	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
34	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
35	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
36	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
37	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
38	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
39	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"

TABLE III. Group A Inspection - Continued.
(Terminal conditions)

Subgroup	Symbol	Method	Test no.	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
				D2	D3	D4	D5	V _{SS3}	D6	D7	D8	D9	D10	D11	D12	D13	V _{DD1}	D14	D15
T _C = 25°C I/	I _{IL}	3009	1	5.5 V	5.5 V	5.5 V	5.5 V	GND	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V
			2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			7	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			11	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			12	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			13	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			14	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			17	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			18	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			19	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			20	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			21	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			22	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			23	0.0 V	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
			24	5.5 V	10.0 V	10.0 V	10.0 V	.	.	.	.	.	.	.	.	.	.	.	.
			25	.	15.5 V	10.0 V	10.0 V	.	.	.	.	.	.	.	.	.	.	.	.
			26	.	5.5 V	10.0 V	10.0 V	.	0.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V
			27	.	.	5.5 V	10.0 V	.	5.5 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V
			28	.	.	.	5.5 V	.	5.5 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V
			29	.	.	.	.	.	5.5 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V
			30	.	.	.	.	.	5.5 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V
			31	.	.	.	.	.	5.5 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V
			32	.	.	.	.	.	5.5 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V
			33	.	.	.	.	.	5.5 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V
			34	.	.	.	.	.	5.5 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V
			35	.	.	.	.	.	5.5 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V
			36	.	.	.	.	.	5.5 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V
			37	.	.	.	.	.	5.5 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V
			38	.	.	.	.	.	5.5 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V
			39	.	.	.	.	.	5.5 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V	10.0 V

See footnotes at end of table.

TABLE III. Group A Inspection - Continued.
(Terminal conditions)

Test no.	64		65		66		Measured terminal	Test limits		Unit
	CLK	SYNCL	BYPL					Min	Max	
1	5.5 V	5.5 V	5.5 V				2	-300	300	μ A
2							3			
3							4			
4							6			
5							28			
6							29			
7							30			
8							31			
9							32			
10							33			
11							34			
12							36			
13							37			
14							38			
15							39			
16							40			
17							41			
18							42			
19							43			
20							45			
21							46			
22							47			
23							48			
24							49			
25							50			
26							51			
27							53			
28							54			
29							55			
30							56			
31							57			
32							58			
33							59			
34							60			
35							62			
36							63			
37	0.0 V	0.0 V					64			
38	5.5 V	0.0 V					65			
39	5.5 V	5.5 V	0.0 V				66			

TABLE III. Group A Inspection - Continued.
(Terminal Conditions)

Subgroup	Symbol	Method	Test no.	1	2	3	4	6	10	18	27	28	29	30	31
				V _{SS1}	FSEL0	FSEL1	CEL	RESETL	V _{DD0}	V _{SS0}	V _{DD2}	V ₁₅	V ₁₄	V ₁₃	V ₁₂
T _C = 25°C 1/1/	I _{TH}	3010	40	GND	5.5 V	0.0 V	0.0 V	0.0 V	5.5 V	GND	5.5 V	0.0 V	0.0 V	0.0 V	0.0 V
	.		41	.	0.0 V	5.5 V	5.5 V	.	.	.	.	.	.	.	.
	.		42	.	0.0 V	0.0 V	10.0 V	5.5 V	.	.	.	.	.	.	.
	.		43	.	.	.	10.0 V	0.0 V	.	.	.	5.5 V	.	.	.
	.		44	.	.	.	.	.	.	.	.	10.0 V	5.5 V	5.5 V	.
	.		45	.	.	.	.	.	.	.	.	10.0 V	10.0 V	10.0 V	.
	.		46	.	.	.	.	.	.	.	.	.	.	5.5 V	.
	.		47	.	.	.	.	.	.	.	.	.	.	10.0 V	5.5 V
	.		48	.	.	.	.	.	.	.	.	.	.	.	.
	.		49	.	.	.	.	.	.	.	.	.	.	.	.
	.		50	.	.	.	.	.	.	.	.	.	.	.	.
	.		51	.	.	.	.	.	.	.	.	.	.	.	.
	.		52	.	.	.	.	.	.	.	.	.	.	.	.
	.		53	.	.	.	.	.	.	.	.	.	.	.	.
	.		54	.	.	.	.	.	.	.	.	.	.	.	.
	.		55	.	.	.	.	.	.	.	.	.	.	.	.
	.		56	.	.	.	.	.	.	.	.	.	.	.	.
	.		57	.	.	.	.	.	.	.	.	.	.	.	.
	.		58	.	.	.	.	.	.	.	.	.	.	.	.
	.		59	.	.	.	.	.	.	.	.	.	.	.	.
	.		60	.	.	.	.	.	.	.	.	.	.	.	.
	.		61	.	.	.	.	.	.	.	.	.	.	.	.
	.		62	.	.	.	.	.	.	.	.	.	.	.	.
	.		63	.	.	.	.	.	.	.	.	.	.	.	.
	.		64	.	.	.	.	.	.	.	.	.	.	.	.
	.		65	.	.	.	.	.	.	.	.	.	.	.	.
	.		66	.	.	.	.	.	.	.	.	.	.	.	.
	.		67	.	.	.	.	.	.	.	.	.	.	.	.
	.		68	.	.	.	.	.	.	.	.	.	.	.	.
	.		69	.	.	.	.	.	.	.	.	.	.	.	.
	.		70	.	.	.	.	.	.	.	.	.	.	.	.
	.		71	.	.	.	.	.	.	.	.	.	.	.	.
	.		72	.	.	.	.	.	.	.	.	.	.	.	.
	.		73	.	.	.	.	.	.	.	.	.	.	.	.
	.		74	.	.	.	.	.	.	.	.	.	.	.	.
	.		75	.	.	.	.	.	.	.	.	.	.	.	.
	.		76	.	.	.	.	.	.	.	.	.	.	.	.
	.		77	.	.	.	.	.	.	.	.	.	.	.	.
	.		78	.	.	.	.	.	.	.	.	.	.	.	.

See footnotes at end of table.

TABLE III. Group A Inspection - Continued.
(Terminal conditions)

Test no.	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
	M11	M10	M9	VSS2	M8	M7	M6	M5	M4	M3	M2	M1	VDD3	M0	D0	D1
40	0.0 V	0.0 V	0.0 V	END	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	15.5 V	0.0 V	10.0 V	10.0 V
41	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
42	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
43	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
44	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
46	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
47	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
48	5.5 V	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
49	0.0 V	5.5 V	5.5 V	.	.	.	.	.	.	.	.	.	.	.	.	.
50	.	0.0 V	0.0 V	.	5.5 V	.	.	.	.	.	.	.	.	.	.	.
51	.	.	.	.	0.0 V	5.5 V	.	.	.	.	.	.	.	.	.	.
52	.	.	.	.	.	0.0 V	5.5 V	.	.	.	.	.	.	.	.	.
53	.	.	.	.	.	.	0.0 V	15.5 V	.	.	.	.	.	.	.	.
54	.	.	.	.	.	.	.	0.0 V	5.5 V	.	.	.	.	.	.	.
55	.	.	.	.	.	.	.	.	5.5 V	5.5 V	.	.	.	.	.	.
56	.	.	.	.	.	.	.	.	0.0 V	0.0 V	5.5 V	.	.	.	.	.
57	.	.	.	.	.	.	.	.	.	0.0 V	0.0 V	5.5 V	.	.	.	.
58	.	.	.	.	.	.	.	.	.	.	0.0 V	0.0 V	.	.	.	.
59	.	.	.	.	.	.	.	.	.	.	.	5.5 V	15.5 V	15.5 V	15.5 V	15.5 V
60	.	.	.	.	.	.	.	.	.	.	.	0.0 V	10.0 V	10.0 V	10.0 V	10.0 V
61	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
62	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
63	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
64	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
65	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
66	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
67	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
68	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
69	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
70	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
71	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
72	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
73	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
74	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
76	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
77	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
78	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

TABLE III. Group A Inspection - Continued.
(Terminal conditions)

Subgroup	Symbol	Method	Test no.	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
				D2	D3	D4	D5	V _{SS3}	D6	D7	D8	D9	D10	D11	D12	D13	V _{DD1}	D14	D15
$T_C = 25^\circ\text{C}$ $\frac{1}{1/}$	I _{1H}	3010	40	0.0 V	0.0 V	0.0 V	0.0 V	GND	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	5.5 V	0.0 V	0.0 V
	.		41	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		42	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		43	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		44	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		46	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		47	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		48	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		49	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		50	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		51	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		52	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		53	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		54	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		55	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		56	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		57	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		58	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		59	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		61	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		62	5.5 V	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		63	0.0 V	15.5 V	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		64	.	10.0 V	15.5 V	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		65	.	0.0 V	15.5 V	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		66	.	.	0.0 V	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		67	.	.	.	5.5 V	.	.	.	.	.	.	.	.	.	.	.	.
	.		68	.	.	.	0.0 V	.	.	.	.	.	.	.	.	.	.	.	.
	.		69	.	.	.	15.5 V	.	.	.	.	.	.	.	.	.	.	.	.
	.		70	.	.	.	0.0 V	.	.	.	.	.	.	.	.	.	.	.	.
	.		71	.	.	.	15.5 V	.	.	.	.	.	.	.	.	.	.	.	.
	.		72	.	.	.	0.0 V	.	.	.	.	.	.	.	.	.	.	.	.
	.		73	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		74	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		76	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		77	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.		78	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

See footnotes at end of table.

TABLE III. Group A Inspection - Continued.
(Terminal conditions)

Test no.	64		65	66		Measured terminal	Test limits		Unit
	CLK	SYNCL	BYPL	Min	Max				
40	0.0 V	0.0 V	0.0 V	2	-10	10	μA		
41	.	.	.	3	.	.	.		
42	.	.	.	4	.	.	.		
43	.	.	.	6	.	.	.		
44	.	.	.	28	.	.	.		
45	.	.	.	29	.	.	.		
46	.	.	.	30	.	.	.		
47	.	.	.	31	.	.	.		
48	.	.	.	32	.	.	.		
49	.	.	.	33	.	.	.		
50	.	.	.	34	.	.	.		
51	.	.	.	36	.	.	.		
52	.	.	.	37	.	.	.		
53	.	.	.	38	.	.	.		
54	.	.	.	39	.	.	.		
55	.	.	.	40	.	.	.		
56	.	.	.	41	.	.	.		
57	.	.	.	42	.	.	.		
58	.	.	.	43	.	.	.		
59	.	.	.	45	.	.	.		
60	.	.	.	46	.	.	.		
61	.	.	.	47	.	.	.		
62	.	.	.	48	.	.	.		
63	.	.	.	49	.	.	.		
64	.	.	.	50	.	.	.		
65	.	.	.	51	.	.	.		
66	.	.	.	53	.	.	.		
67	.	.	.	54	.	.	.		
68	.	.	.	55	.	.	.		
69	.	.	.	56	.	.	.		
70	.	.	.	57	.	.	.		
71	.	.	.	58	.	.	.		
72	.	.	.	59	.	.	.		
73	.	.	.	60	.	.	.		
74	.	.	.	62	.	.	.		
75	.	.	.	63	.	.	.		
76	5.5 V	.	.	64	.	.	.		
77	0.0 V	5.5 V	.	65	.	.	.		
78	0.0 V	0.0 V	5.5 V	66	.	.	.		

TABLE III. Group A Inspection - Continued.
(Terminal conditions)

Subgroup	Symbol	Method	Test no.	1	5	7	8	9	10	11	12	13	14	15	15	17	18
				V _{SS1}	OF	WAG1	WAG0	016	V _{DD0}	014	013	012	011	010	09	08	V _{SSb}
1 T _C = 25°C 1/ 2/	V _{OL}	3007	79	C _{HD}	3.2 mA	3.2 mA	3.2 mA	3.2 mA	4.5 V								C _{HD}
			80	"													"
			81	"													"
			82	"													"
			83	"													"
			84	"													"
			85	"													"
			86	"													"
			87	"													"
			88	"													"
			89	"													"
			90	"													"
			91	"													"
			92	"													"
			93	"													"
			94	"													"
			95	"													"
			96	"													"
			97	"													"
	V _{OH}	3006	98	"	-0.4 mA	-0.4 mA	-0.4 mA	-0.4 mA									"
			99	"													"
			100	"													"
			101	"													"
			102	"													"
			103	"													"
			104	"													"
			105	"													"
			106	"													"
			107	"													"
			108	"													"
			109	"													"
			110	"													"
			111	"													"
			112	"													"
			113	"													"
			114	"													"
			115	"													"
			116	"													"
			117	"													"
			118	"													"
			119	"													"
			120	"													"
			121	"													"
			122	"													"
			123	"													"
			124	"													"
			125	"													"
			126	"													"

See footnotes at end of table.

TABLE III. Group A Inspection - Continued.
(Terminal conditions)

Test no.	19 07	20 06	21 05	22 04	23 03	24 02	25 01	26 00	27 VDD2	35 VSS2	44 VDD3	52 VSS3	61 VDD1	Measured terminal	Test limits		Unit
															Min	Max	
79									4.5 V	GND	4.5 V	GND	4.5 V	5		0.4	V
80														7			
81														8			
82														9			
83														11			
84														12			
85														13			
86														14			
87														15			
88														16			
89														17			
90														19			
91														20			
92														21			
93														22			
94														23			
95														24			
96														25			
97														26			
98														5	2.4 V		
99														7			
100														8			
101														9			
102														11			
103														12			
104														13			
105														14			
106														15			
107														16			
108														17			
109														19			
110														20			
111														21			
112														22			
113														23			
114														24			
115														25			
116														26			

TERMINAL CONDITIONS

Subgroup	Symbol	Method	Test no.	1	10	18	27	35	44	52	61	Measured terminal	Test limits		Unit
													Min	Max	
1 T _C = 25°C 1/ 3/	I _{OL2}	3009	117	V _{SS1}	V _{DD0}	V _{SS0}	V _{DD2}	V _{SS2}	V _{DD3}	V _{SS3}	V _{DD1}		-10	10	μA
	I _{OH2}	3010	118										-10	10	μA
	I _{CC}		119	GND	5.5 V	GND	5.5 V	GND	5.5 V	GND	5.5 V	V _{DD0} , V _{DD1} , V _{DD2} , V _{DD3}		130	mA
	C _I	3012	120									V _{CC}		5	pF
4 T _C = 25°C	C _O	3012	121									V _{CC}		5	pF
2	Same tests, terminal conditions, and limits for subgroup 1, except T _C = +125°C.														
3	Same tests, terminal conditions, and limits for subgroup 1, except T _C = -55°C.														
7 T _C = 25°C	Functional	3014	122	Functional test with all V _{CC} terminals at 5.0 V, inputs at 0 V and 5 V for input logic low and logic high levels and output comparators at < 1.5 V for logic low level and > 1.5 V for logic high level. Frequency = 1 MHz.											
			123	Functional test with all V _{CC} terminals at 4.5 V, inputs at 0.4 V and 2.4 V for input logic low and logic high levels and output comparators at < 1.5 V for logic low level and > 1.5 V for logic high level. Frequency = 1 MHz.											
			124	Functional test with all V _{CC} terminals at 5.5 V, inputs at 0.4 V and 2.4 V for input logic low and logic high levels and output comparators at < 1.5 V for logic low level and > 1.5 V for logic high level. Frequency = 1 MHz.											
8		3014		Same as subgroup 7, except T _C = +125°C and -55°C.											
9	Dynamic switching	3003		Dynamic switching tests, limits per table 1, T _C = +25°C.											
10		3003		Same as subgroup 9, except T _C = +125°C.											
11		3003		Same as subgroup 9, except T _C = -55°C.											

1/ Unless otherwise indicated, undesignated pins are open.

2/ All input pins are driven to either 0 or 4.5 V as determined by the vector in the table V, test vectors which puts the output pin under examination in the proper state for the measurement.

3/ All inputs will be forced to 0 volt.

4/ Current is the sum of currents entering all four terminals.

4.4.4 Group D inspection. Group D inspection shall be in accordance with table IV of method 5005 of MIL-STD-883. End-point electrical parameters shall be as specified in table II herein.

4.4.5 Group E inspection. Group E inspection is required only for device types intended to be marked as radiation hardness (see 3.7.1). When group E testing is performed, it shall be in accordance with table V of method 5005 of MIL-STD-883.

4.5 Methods of inspection. Methods of inspection shall be specified as follows:

4.5.1 Voltage and current. All voltages given are referenced to the microcircuit V_{SS} terminal. Currents given are conventional and positive when flowing into the referenced terminal.

4.5.2 Burn-in and life test cool down procedures. When the burn-in and life tests are completed and prior to removal of bias voltages, the devices under test (DUT) shall be cooled to within $+10^{\circ}\text{C}$ of their power stable condition at room temperature, then, electrical parameter end-point measurements shall be performed.

TABLE IV. Delta limits at $+25^{\circ}\text{C}$.

Parameter 1/ 2/	Limits for all device types
I_{CC}	$\pm 650 \mu\text{A}$

1/ Conditions and mechanization of measurements shall be as specified in table III, subgroup 1.

2/ The above parameter shall be recorded before and after the required burn-in and life tests to determine deltas (Δ).

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-M-38510. The devices covered by this specification require electrostatic protection.

6. NOTES

6.1 Intended use. Microcircuits conforming to this specification are intended for original equipment design application and logistic support of existing equipment.

6.2 Ordering data. The contract or purchase order should specify the following:

- a. Complete part number (see 1.2).
- b. Requirements for delivery of one copy of the quality conformance inspection data pertinent to the device inspection lot to be supplied with each shipment by the device manufacturer, if applicable.
- c. Requirements for certificate of compliance, if applicable.
- d. Requirements for notification of change of product or process to the contracting activity in addition to notification to the qualifying activity, if applicable.
- e. Requirements for failure analysis (including required test condition of method 5003 of MIL-STD-883), corrective action and reporting of results, if applicable.
- f. Requirements for product assurance options.

TABLE V. Test vectors.

TABLE V. Not printed herein is a computer listing for use with table III herein. Each vector identifies activity states of the device. Table V, test vectors, shall be subject to approval by the qualifying activity.

NOTE: When the vectors are performed as specified in table III herein for subgroups 1, 2, 3, 7, 8, 9, 10, and 11, they verify the static, dynamic and functional, threshold and switching parameters at +25°C, -55°C, and +125°C.

- g. Requirements for special carriers, lead lengths, or lead forming, if applicable. These requirements shall not affect the part number. Unless otherwise specified, these requirements shall not apply to direct purchase by, or direct shipment to the Government.

- h. Requirements for "JAN" marking.

6.3 Abbreviations, symbols, and definitions. The abbreviations, symbols, and definitions used herein are defined in MIL-M-38510 and MIL-STD-1331.

6.4 Logistic support. Lead materials and finishes (see 3.3) are interchangeable. Unless otherwise specified, microcircuits acquired for Government logistic support will be acquired to device class B (see 1.2.2) lead material and finish C (see 3.3). Longer length leads and lead forming shall not affect the part number.

6.5 Handling. MOS microprocessors should be handled with certain precautions to avoid damage due to the accumulation of static charge. These NMOS devices are fabricated with a silicon gate technology, including input protection, which reduces the susceptibility to damage. However, the following handling practices are recommended:

- a. Devices should be handled on benches with conductive and grounded surface.
- b. Ground test equipment and tools.
- c. Handling of devices by the leads should be avoided.
- d. Devices should be stored in conductive carriers.
- e. Avoid use of plastic, rubber, or silk in MOS areas.

6.6 Substitutability. The cross-reference information below is presented for the convenience of users. Microcircuits covered by this specification shall functionally replace the listed generic-industry type. Generic-industry microcircuit types may not have equivalent operational performance characteristics across military temperature ranges or reliability factors equivalent to MIL-M-38510 device types and may have slight physical variations in relation to case size. The presence of this information shall not be deemed as permitting substitution of generic-industry types for MIL-M-38510 types or as a waiver of any of the provisions of MIL-M-38510.

<u>Military device type</u>	<u>Generic-industry type</u>
01	BFRP10

Custodians:
Army - ER
Navy - EC
Air Force - 17

Review activities:
Army - AR, MI
Navy - OS, SH, TD
Air Force - 11, 19, 85, 99
DLA - ES

User activities:
Army - SM
Navy - AS, CG, MC

Preparing activity:
Air Force - 17

Agent:
DLA - ES
(Project 5962-1018)

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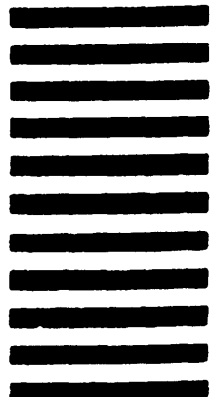
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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER

MTL-M-38510/630

2. DOCUMENT TITLE Microcircuits, Digital, CMOS, FFT Processor

Monolithic Silicon

3a. NAME OF SUBMITTING ORGANIZATION

4. TYPE OF ORGANIZATION (Mark one)

☐

VENDOR

☐

USER

☐

MANUFACTURER

☐

OTHER (Specify): _____

5. ADDRESS (Street, City, State, ZIP Code)

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER (Last, First, MI) - Optional

7b. WORK TELEPHONE NUMBER (Include Area Code) - Optional

7c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional

8. DATE OF SUBMISSION (YYMMDD)