

MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, HIGH SPEED, CMOS
LATCHES, 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 monolithic silicon, high speed, CMOS, latches, bistable logic microcircuits. Two product assurance classes and a choice of case outlines and lead finish are provided and are reflected in the complete part number.

1.2 Part number. The part number shall be in accordance with MIL-M-38510, and as specified herein.

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

<u>Device type</u>	<u>Circuit</u>
01	Qual, bistable, transparent latch
02	8-bit addressable latch
03	Octal, D type latch, 3-state
04	Octal transparent latch, 3-state, inverting
05	Octal transparent latch, 3-state inverting
06	Octal transparent latch, 3-state
53	Octal D-type flip-flop, 3-state and TTL-compatible inputs

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

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

<u>Outline letter</u>	<u>Case outline (see MIL-M-38510, appendix C)</u>
E	D-2 (16 lead, 1/4" x 3/4"), dual-in-line package
F	F-5 (16-lead, 1/4" x 3/8"), flat package
R	D-3 (20-lead, 1/4" x 1 1/16"), dual-in-line package
S	F-9 (20-lead, 1/4" x 1/2"), flat package
2	C-2 (20-terminal, .350" x .350") square chip carrier package

1.3 Absolute maximum ratings.

Supply voltage - - - - -	-0.5 V dc to +7.0 V dc
DC input voltage - - - - -	-0.5 V dc to V _{CC} +1.5 V dc
DC output voltage - - - - -	-0.5 V dc to V _{CC} +1.5 V dc
Clamp diode current - - - - -	±20 mA
DC current per pin - - - - -	±25 mA (±35 mA for type 03-06, 53)
DC V _{CC} or GND current per pin - - - - -	±50 mA (±70 mA for type 03-06, 53)
Storage temperature range - - - - -	-65°C to +150°C
Maximum power dissipation - - - - -	300mW
Lead temperature (soldering, 10 seconds)-	+300°C
Thermal resistance, junction-to-case (θ _{JC}):	
Cases E, F, R, and S - - - - -	(See MIL-M-38510, appendix C)
Case 2 - - - - -	50°C/W
Junction temperature (T _J) - - - - -	+175°C

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 1425) appearing at the end of this document or by letter.

1.4 Recommended operating conditions for device 01 - 06.

Input low (V_{IL}) maximum voltage - - - - -	0.3 V at $V_{CC} = 2$ V 0.9 V at $V_{CC} = 4.5$ V 1.2 V at $V_{CC} = 6$ V
Input high (V_{IH}) minimum voltage- - - - -	1.5 V at $V_{CC} = 2$ V 3.15 V at $V_{CC} = 4.5$ V 4.2 V at $V_{CC} = 6$ V
Supply voltage (V_{CC}) - - - - -	2 V dc to 6 V dc
Input voltage- - - - -	0 V dc to V_{CC} .
Operating temperature- - - - -	-55°C to +125°C
Input rise and fall times (t_r , t_f) maximum:	
$V_{CC} = 2.0$ V	1000 ns
$V_{CC} = 4.5$ V	500 ns
$V_{CC} = 6.0$ V	400 ns

Device 53

Input low (V_{IL}) maximum voltage - - - - -	0.8 V at $V_{CC} = 4.5$ to 5.5 V dc
Input high (V_{IH}) minimum voltage- - - - -	2.0 V at $V_{CC} = 4.5$ to 5.5 V dc
Supply voltage (V_{CC})- - - - -	4.5 V to 5.5 V dc
Output voltage- - - - -	0 V dc to V_{CC} .
Operating temperature - - - - -	-55°C to +125°C

Input rise and fall times (t_r , t_f)
at $V_{CC} = 4.5$ V: - - - - - 500 ns max

Width of clock pulse (t_p clock)
($V_{CC} = 4.5$ V minimum):

Devices 01, 02, 05, 06, - - - - -	24 ns minimum
Devices 03, 04, 53- - - - -	30 ns minimum
Device 02 reset - - - - -	24 ns minimum

Data setup time before clock (t_{setup}):
($V_{CC} = 4.5$ V minimum):

Devices 01-04, 53 - - - - -	30 ns minimum
Devices 05, 06- - - - -	23 ns minimum

t_{HOLD} :
($V_{CC} = 4.5$ V minimum):

Device types 01, 02 - - - - -	8 ns minimum
Device types 03-06, 53- - - - -	15 ns minimum

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 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 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 Logic diagrams and terminal connections. The logic diagrams and terminal connections shall be as specified on figure 1.

3.2.2 Truth tables and logic equations. The truth tables and logic equations shall be as specified on figure 2.

3.2.3 Schematic circuits. The schematic circuits shall be submitted to the preparing activity prior to inclusion of a manufacturer's device in this specification and shall be submitted to the qualifying activity as a prerequisite for qualification. All qualified manufacturers' schematics shall be maintained and available upon request.

3.2.4 Case outlines. The case outlines 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 and 6.4 herein.

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

3.5 Electrical test requirements. The electrical test requirements for each device class shall be the subgroups specified in table II. The electrical tests for each subgroup are described in table III.

3.6 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.

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

3.6.2 Serialization. All class S devices shall be serialized in accordance with MIL-M-38510.

3.6.3 Correctness of indexing and marking. All devices shall be subjected to the final electrical tests specified in table II after part number marking to verify that they are correctly indexed and identified by part number. Optionally, an approved electrical test may be devised especially for this requirement.

3.7 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 38 (see MIL-M-38510, appendix E).

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. Delete the sequence specified as initial (preburn-in) electrical parameters through interim (postburn-in) electrical parameters of method 5004 and substitute lines 1 through 7 of table II herein.
- b. 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°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°C minimum. Test duration shall be in accordance with table I of method 1015.
- c. Interim and final electrical parameters shall be as specified in table II herein.
- d. 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 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 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.

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 groups 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 and C_o), measurements 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 GND at a frequency of 1 MHz.
- d. Subgroups 9 and 11 shall be measured only for initial qualification and after process or design changes which may affect dynamic performance.

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions ^{1/} $T_C = +125^\circ\text{C}$ unless otherwise specified	Device type ^{2/}	V_{CC}	Limits		Unit	
					Min	Max		
High-level output voltage	V_{OH1} <u>3/</u>	$V_{IH} = 1.5\text{ V}$ $V_{IL} = 0.3\text{ V}$ $I_{OH} = -20\ \mu\text{A}$	01-06	2.0 V	1.95		V	
	V_{OH2} <u>3/</u>	$V_{IH} = 3.15\text{ V}$ $V_{IL} = 0.9\text{ V}$ $I_{OH} = -20\ \mu\text{A}$	01-06	4.5 V	4.45		V	
	V_{OH3}	$V_{IH} = 4.2\text{ V}$ $V_{IL} = 1.2\text{ V}$ $I_{OH} = -20\ \mu\text{A}$	01-06	6.0 V	5.95		V	
	V_{OH4} <u>3/</u>	$V_{IH} = 3.15\text{ V}$ $V_{IL} = 0.9\text{ V}$	$I_{OH} = -6.0\text{ mA}$	03-06	4.5 V	3.7		V
			$I_{OH} = -4.0\text{ mA}$	01,02				
	V_{OH5}	$V_{IH} = 4.2\text{ V}$ $V_{IL} = 1.2\text{ V}$	$I_{OH} = -5.2\text{ mA}$	01,02,	6.0 V	5.2		V
			$I_{OH} = -7.8\text{ mA}$	03-06				
V_{OH6}	$V_{IH} = 2.0\text{ V}$ $V_{IL} = 0.8\text{ V}$ $I_{OH} = -20\ \mu\text{A}$		53	4.5 V	4.4		V	
V_{OH7}	$V_{IH} = 2.0\text{ V}$ $V_{IL} = 0.8\text{ V}$ $I_{OH} = -6.0\text{ mA}$		53	5.5 V	3.7		V	
Low-level output voltage	V_{OL1} <u>3/</u>	$V_{IL} = 0.3\text{ V}$ $V_{IH} = 1.5\text{ V}$ $I_{OH} = 20.0\ \mu\text{A}$	01-06	2.0 V		0.05	V	
	V_{OL2} <u>3/</u>	$V_{IL} = 0.9\text{ V}$ $V_{IH} = 3.15\text{ V}$ $I_{OH} = 20.0\ \mu\text{A}$	01-06	4.5 V		0.05	V	
	V_{OL3}	$V_{IL} = 1.2\text{ V}$ $V_{IH} = 4.2\text{ V}$ $I_{OH} = 20.0\ \mu\text{A}$	01-06	6.0 V		0.05	V	
	V_{OL4} <u>3/</u>	$V_{IL} = 0.9\text{ V}$ $V_{IH} = 3.15\text{ V}$ $I_{OH} = 4.0\text{ mA}$	$I_{OL} = 4.0\text{ mA}$	01,02	4.5 V		0.4	V
$I_{OL} = 6.0\text{ mA}$			03-06					

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions ^{1/} $T_C = +125^\circ\text{C}$ unless otherwise specified		Device type ^{2/}	V_{CC}	Limits		Unit
						Min	Max	
Low-level output voltage	VOL5	$V_{IL} = 1.2\text{ V}$ $V_{IH} = 4.2\text{ V}$	$I_{OH} = 5.2\text{ mA}$	01,02,	6.0 V		0.4	V
			$I_{OH} = 7.8\text{ mA}$	03-06				
	VOL6	$V_{IH} = 2.0\text{ V}$ $V_{IL} = 0.8\text{ V}$ $I_{OL} = 20\text{ }\mu\text{A}$	53	4.5 V		0.1	V	
	VOL7	$V_{IH} = 2.0\text{ V}$ $V_{IL} = 0.8\text{ V}$ $I_{OL} = 6.0\text{ mA}$		53	5.5 V		0.4	V
Positive input clamp voltage	VIC+	$V_{CC} = \text{GND}$ $I_{IN} = 1\text{ mA}$ $T_C = +25^\circ\text{C}$		A11	GND		1.5	V
Negative input clamp voltage	VIC-	$V_{CC} = \text{Open}$ $I_{IN} = -1\text{ mA}$ $T_C = +25^\circ\text{C}$		A11	OPEN		-1.5	V
Input current low	IIL	$V_{IN} = \text{GND}$		01-06	6.0 V		-0.1	μA
				53	5.5 V			
Input current high	IIH	$V_{IN} = V_{CC}$		01-06	6.0 V		0.1	μA
				53	5.5 V			
Short circuit output current	IOS1 ^{3/}	$V_O = \text{GND}$ $V_I = \text{GND or } V_{CC}$		01-02	2.0 V	-2	-50	mA
				03-06			-60	
	IOS2 ^{3/}			01-02	4.5 V	-15	-150	
				03-06			-165	
	IOS3 ^{3/}			01-02	6.0 V	-25	-190	
				03-06			-210	
	IOS4			01-02	4.0 V	-10	-120	
		03-06, 53			-135			
IOS5 ^{3/}		53	5.5 V	-25	-210			

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions ^{1/} $T_C = +125^\circ\text{C}$ unless otherwise specified	Device type ^{2/}	V_{CC}	Limits		Unit	
					Min	Max		
Supply current quiescent	I_{CC}	$V_I = 6.0\text{ V or GND}$	01	6.0 V		10	μA	
			02-06					20
	I_{CC}	$V_I = 5.5\text{ V or GND}$	53	5.5 V		20		
	I_{CCZ}	$V_I = 6.0\text{ V}$	03-06	6.0 V		10		
53			5.5 V					
Additional supply current quiescent per input pin (one unit load)	$I_{CC\Delta}$ ^{6/}	$V_{IL} = 0.8\text{ V}, I_O = 0$ $V_{IH} = 2.4\text{ V}$ Pin under test at 2.4 V, other pins at GND, 0.8 V, or V_{CC}	53	5.5 V		1.5	μA	
Power dissipation capacitance	C_{PD} ^{2/} ^{3/}	$T_C = 25^\circ\text{C}$	01			45	pF	
			02			33		
			03			51		
			53			53		
			04-06			50		
Three-state output leakage current low	I_{OZL} ^{7/}	$V_{OUT} = \text{GND}$ $I_{OC} = V_{IH}$ ^{4/}	03-06	6.0 V		-2.0	μA	
			53	5.5 V				
Three-state output leakage current high	I_{OZH} ^{7/}	$V_{OUT} = V_{CC}$ $I_{OC} = V_{IH}$ ^{4/}	03-06	6.0 V		+2.0	μA	
			53	5.5 V				
Input capacitance	C_{IN}	$T_C = 25^\circ\text{C}$	A11			10	pF	
Three-state output capacitance	C_O		03-06, 53			20		
Propagation delay data to outputs ^{4/} , ^{5/}	t_{PHL1} t_{PLH1}	$C_L = 50\text{ pF} \pm 10\%$	01	4.5 V		3	30	ns
			02			5	43	
			03			6	35	
			04			6	39	
			05,06			4	41	
			53			6	41	
Propagation delay enable or clock to outputs ^{4/} , ^{5/}	t_{PHL2} t_{PLH2}		01			4	34	
			02			7	47	
			03,53			6	41	
			04			6	41	
			05			4	41	
			06			4	41	
Propagation delay delay A to outputs ^{4/} , ^{5/}	t_{PHL3} t_{PLH3}		02			5	50	

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions 1/ $T_C = +125^\circ\text{C}$ unless otherwise specified	Device type 2/	V_{CC}	Limits		Unit
					Min	Max	
Propagation delay clear to outputs 4/, 5/	t_{pHL4}	$C_L = 50 \text{ pF} \pm 10\%$	02	4.5 V	5	36	
Output enable time 4/, 5/	t_{pZH} t_{pZL}	$C_L = 50 \text{ pF} \pm 10\%$ $R_L = 1\text{K} \pm 10\%$	03		5	35	
			04		5	35	
			05,06		4	35	
			53		5	41	
Output disable time 1/, 5/	t_{pHZ} t_{pLZ}		03		5	35	
			04		5	35	
			05,06		3	35	
			53		5	41	
Transition delay 4/, 5/	t_{THL} t_{TLH}	$C_L = 50 \text{ pF} \pm 10\%$	01		3	20	
			02		3	20	
			03,04, 53		2	16	
			05		2	16	
			06		2	16	

1/ Complete terminal conditions shall be as specified in table III.

2/ Power dissipation capacitance (C_{pd}) per latch.

3/ Guaranteed but not tested.

4/ Tested at $V_{CC} = 4.5 \text{ V}$ at 125°C for sample testing and $V_{CC} = 4.5 \text{ V}$ and 25°C for screening. Guaranteed at other V_{CC} voltages and temperatures, see table IA and the exception in 4.4.1d.

5/ For propagation and transition delay times at $V_{CC} = 2.0 \text{ V}$, increase limit by a factor of 5. For propagation and transition delay times at $V_{CC} = 6.0 \text{ V}$, decrease limit by a factor of .85.

6/ $I_{CC} + I_{CC\Delta}$ = Total supply current.

7/ I_{OZL} : Set output to high state.

I_{OZH} : Set output to low state.

TABLE IA. Calculated dynamic values at $-55/+25^\circ\text{C}$ case temperature.

V_{CC}	$T_C = ^\circ\text{C}$	
	+125	$-55^\circ\text{C}/+25^\circ\text{C}$
2.0 V	5	5×0.75
4.5 V	1	0.75
6.0 V	0.85	0.85×0.75

NOTE: Normalized numbers ($+125^\circ\text{C} = 1$).
The 2.0 V and 6.0 V numbers are derived from their 4.5 V integer value (rounding off according 5/4).

TABLE II. Burn-in and electrical test requirements.

Line no.	Applicable tests and MIL-STD-883 test method	Class S device ^{1/}				Class B device ^{1/}			
		Ref. par.	Table III subgroups ^{2/}	Table IV delta limits ^{3/}	Test circuit figure	Ref. par.	Table III subgroups ^{2/ 5/}	Table IV delta limits ^{3/}	Test circuit figure
1	Interim electrical parameters (method 5004)		1			1			
2	Static burn-in I (method 1015)	4.5.2	Req'd		3				
3	Same as line 1		1	Δ					
4	Static burn-in II (method 1015)	4.5.2	Req'd		3		Req'd	<u>4/</u>	3
5	Same as line 1	4.2d	1*	Δ		4.2d	1*	Δ	
6	Dynamic burn-in (method 1015)	4.2b 4.5.2	Req'd	<u>1/</u>	3		Not req'd		
7	Same line 1	4.2d	1	Δ					
8	Final electrical parameters (method 5005)		1*,2,3,7 8,9				1*,2,7, 9 <u>4/</u>		
9	Group A test requirements (method 5005)	4.4.1	1,2,3,4, 7,8,9, 10,11			4.4.1	1,2,3,4, 7,8,9, 10,11		
10	Group B end-point electrical parameters (method 5005)	4.4.1	+1,2,3,9, 10,11	Δ	3		+1		
11	Group C end-point electrical parameters (method 5005)					4.4.3	1,2	Δ	3
12	Group D end-point electrical parameters (method 5005)	4.4.4	1,2,3			4.4.4	1,2		

^{1/} Blank spaces indicate tests are not applicable.

^{2/} * indicates PDA applies to subgroup 1 (see 4.2.1).

^{3/} Δ indicates delta limit shall be required only on table III subgroup 1, where specified, and the delta values shall be computed with reference to the previous interim electrical parameters.

^{4/} The device manufacturer may at his option either complete subgroup 1 electrical parameter measurements, including delta measurements, within 95 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.

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 submitted to the qualifying activity for approval. When the alternate steady-state life test is used, the circuit on figure 3 (dynamic) or equivalent, shall be used.
- b. Electrostatic discharge sensitivity (ESDS) testing shall be performed in accordance with MIL-STD-883, method 3015. The option to categorize devices as ESD sensitive without performing the test is not allowed. Device types categorized as ESD sensitive shall be further tested using method 3015 modified as follows:
 1. Test method 3015, table I pin combinations 4 and 5 shall be deleted.
 2. The test sequence specified in paragraph 3.b shall be repeated an additional four times rather than the two specified.
 3. The category A limits specified in figure 3015-3 ESD sensitivity category shall be 1000 V to 2000 V.
- c. End-point electrical parameters shall be as specified in table II herein. Delta limits shall apply only to subgroup 5 of group B inspections for class S, 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:

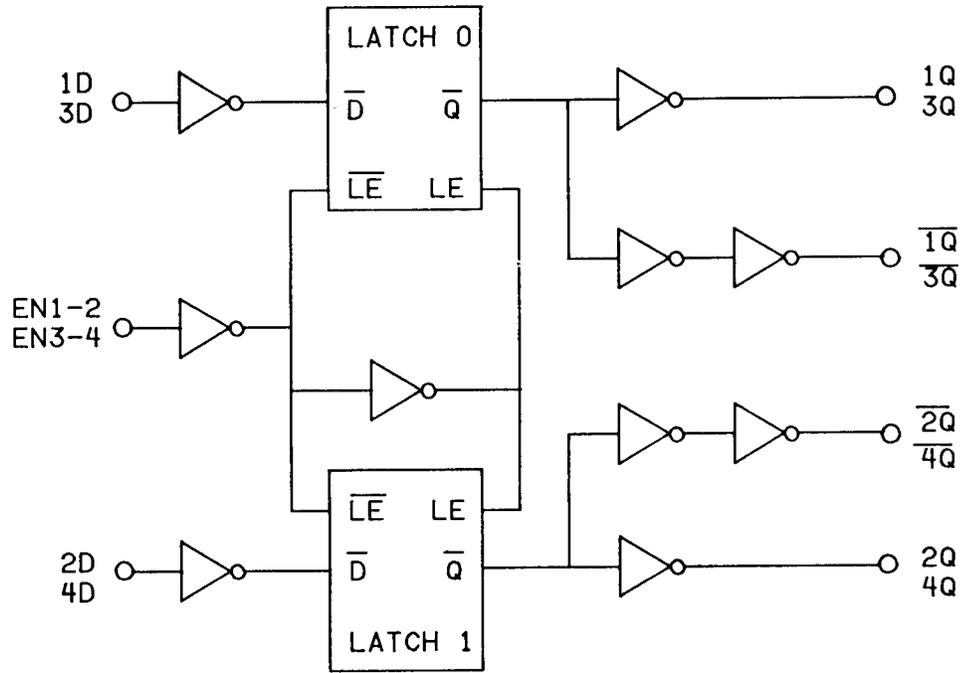
- a. End-point electrical parameters shall be as specified in table II herein. Delta limits shall apply only to subgroup 1 of group C inspection and shall consist of tests specified in table IV herein.
- b. Steady-state life test (method 1005 of MIL-STD-883) conditions:
 - (1) Test condition D and as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

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 hardened (see 3.6.1). When group E testing is performed, it shall be in accordance with table V of method 5005 of MIL-STD-883 and 4.5.4 herein.

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

4.5.1 Voltage and current. Unless otherwise specified, all voltages given are referenced to the microcircuit GND terminal. Currents given are conventional current and positive when flowing into the referenced terminal.



Device type 01

Cases E and F

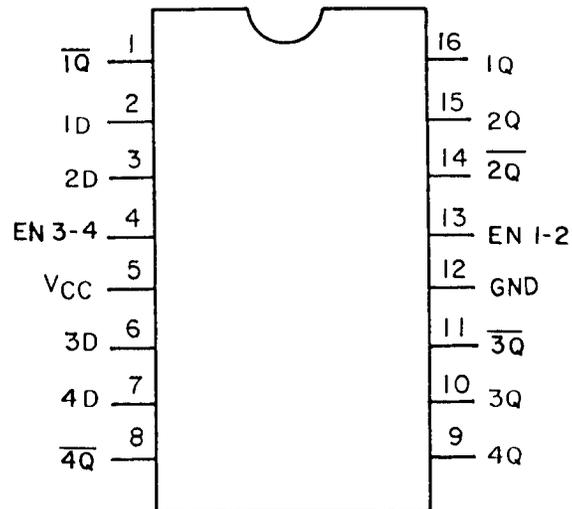


FIGURE 1. Logic diagrams and terminals connections.

Device type 01

Case 2

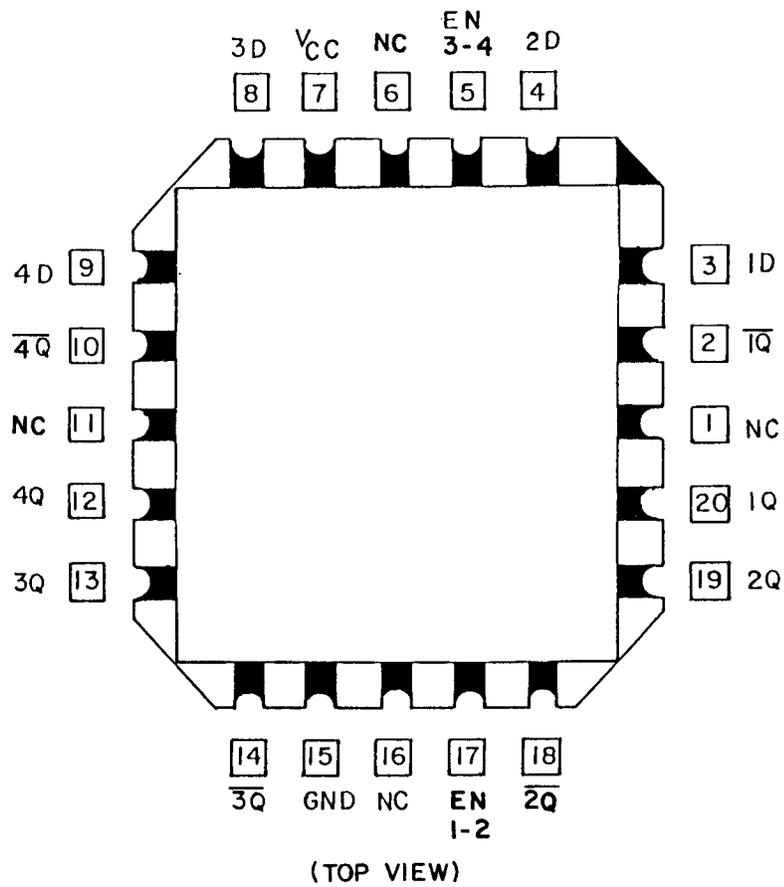
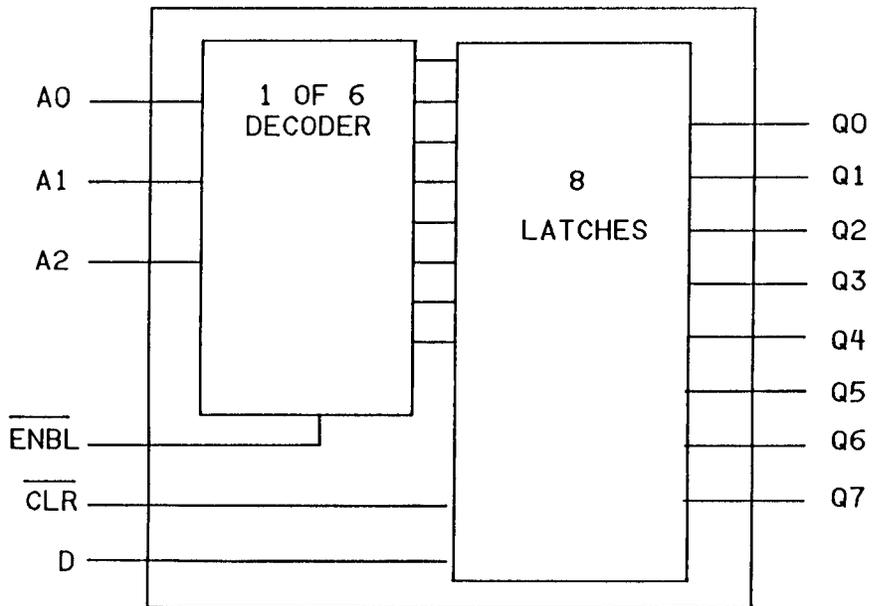


FIGURE 1. Logic diagrams and terminals connections - Continued.



Device type 02

Cases E and F

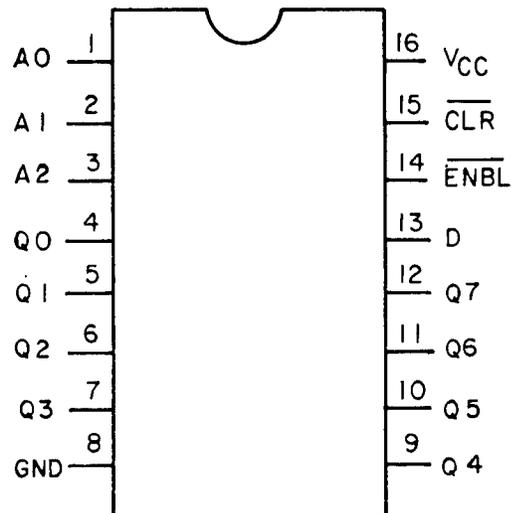


FIGURE 1. Logic diagrams and terminals connections - Continued.

Device Type 02

Case 2

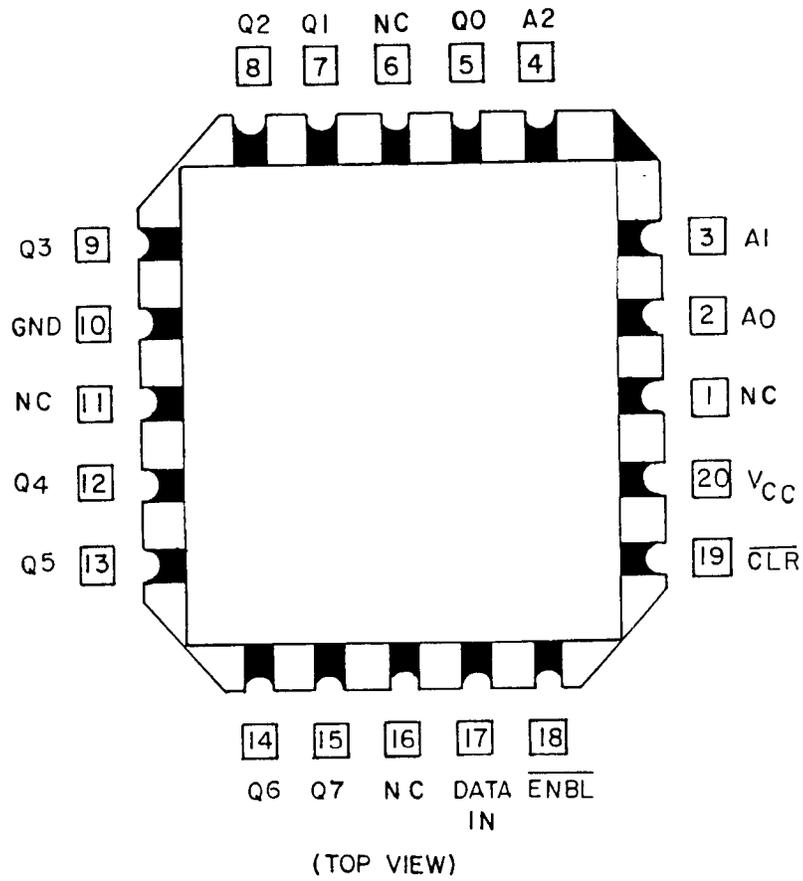
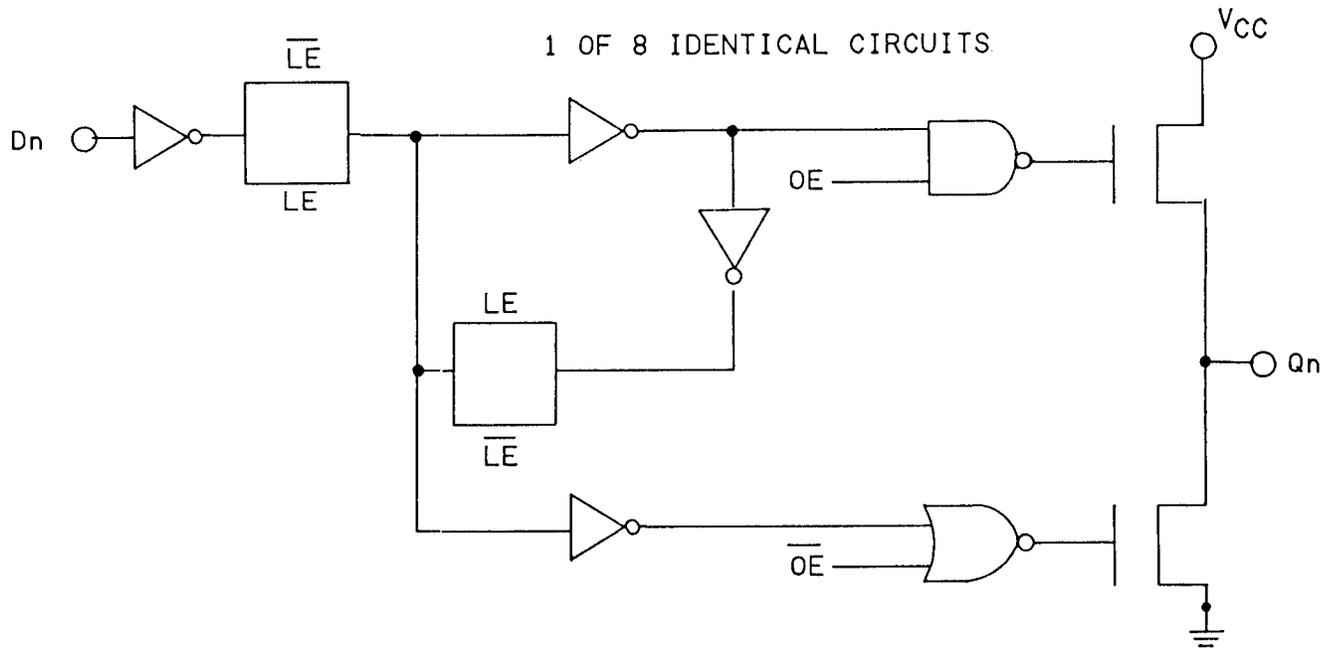


FIGURE 1. Logic diagrams and terminals connections - Continued.

Devices types 03 and 53



COMMON CONTROLS

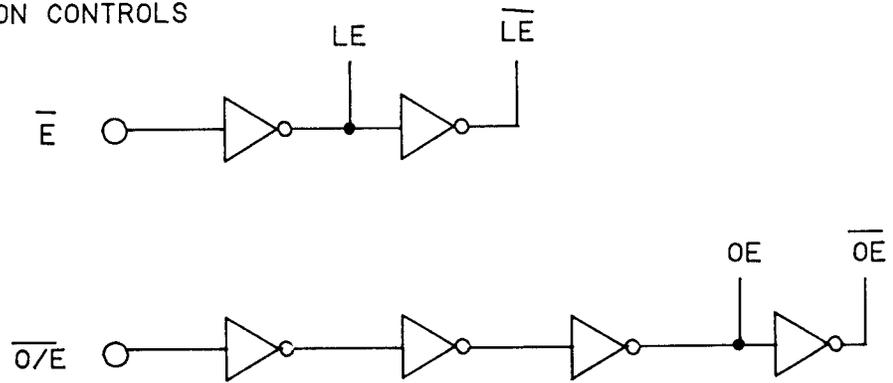
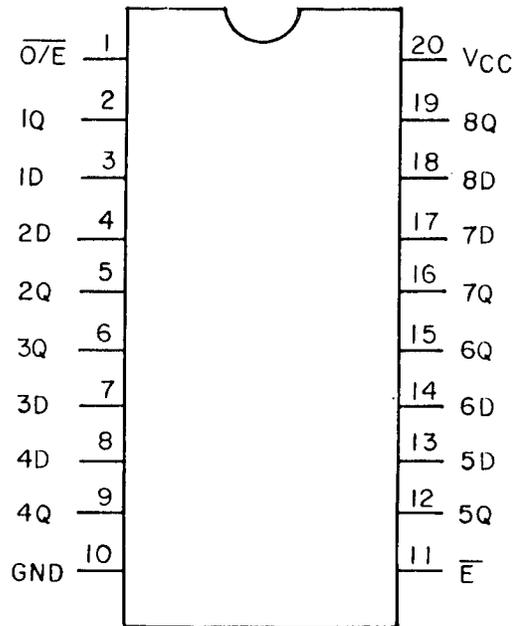


FIGURE 1. Logic diagrams and terminals connections - Continued.

Device type 03 and 53

Cases R and S



Device type 03 and 53

Case 2

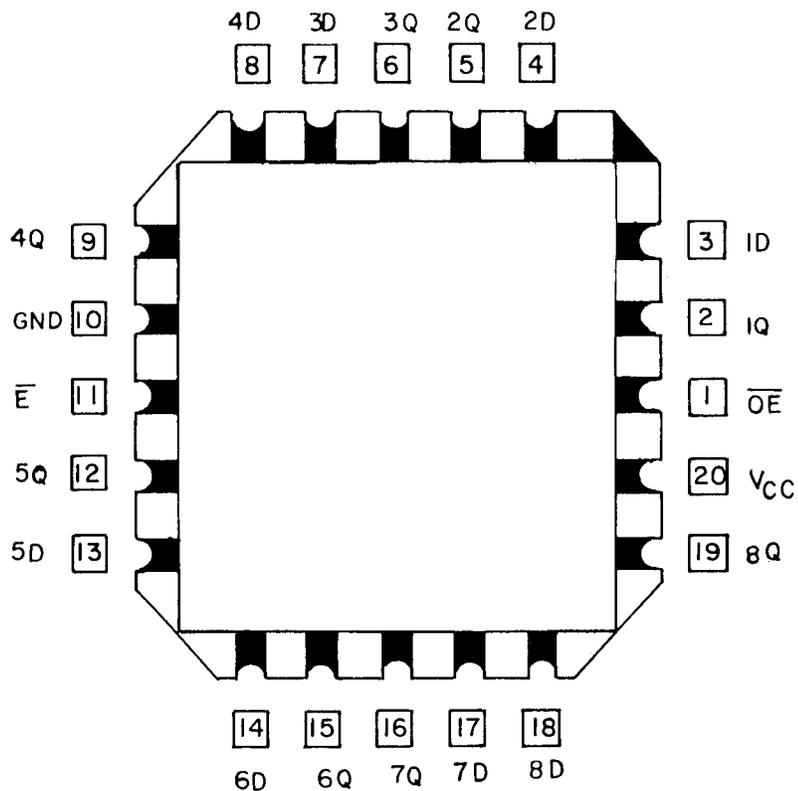


FIGURE 1. Logic diagrams and terminals connections - Continued.

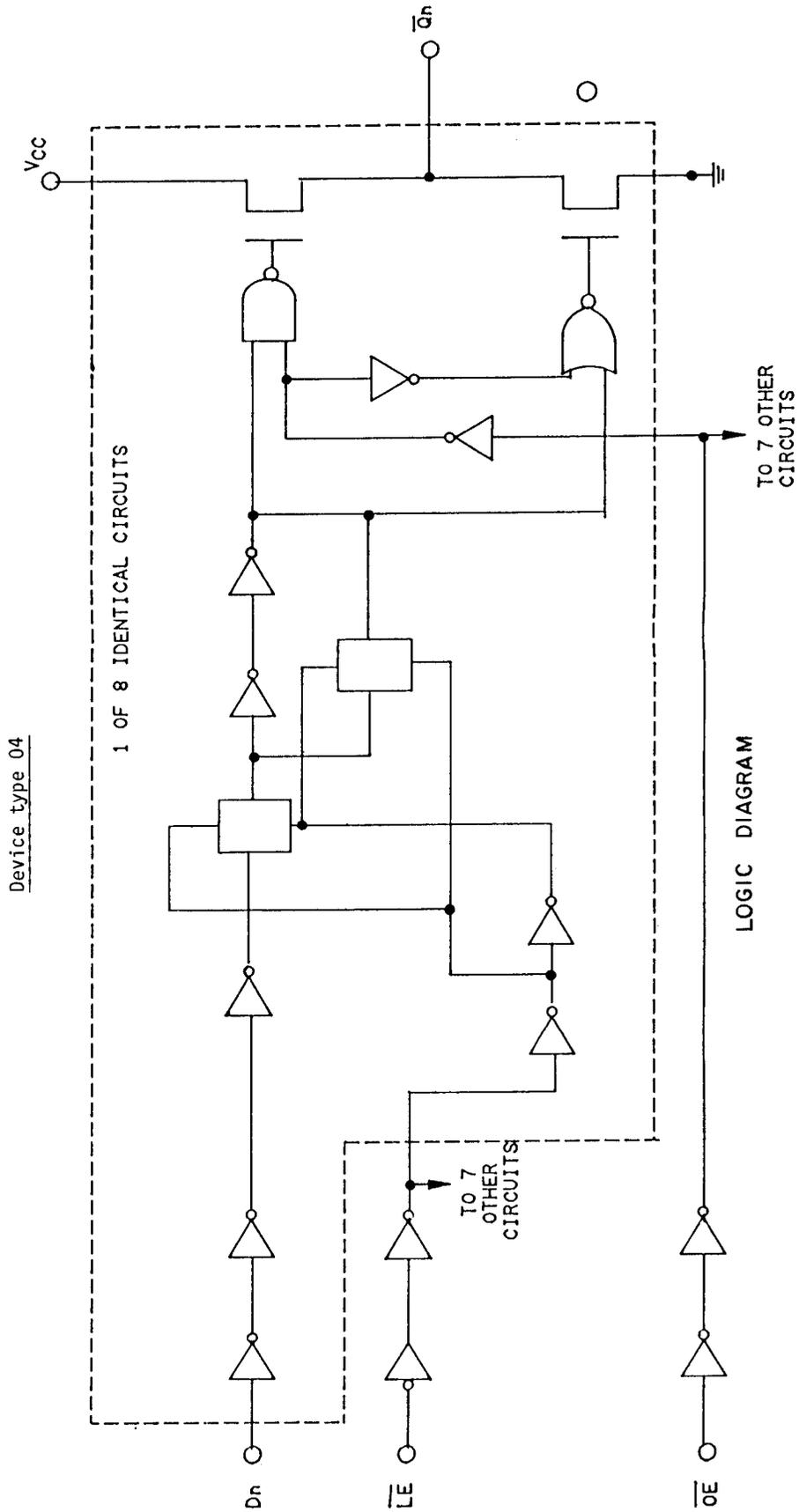
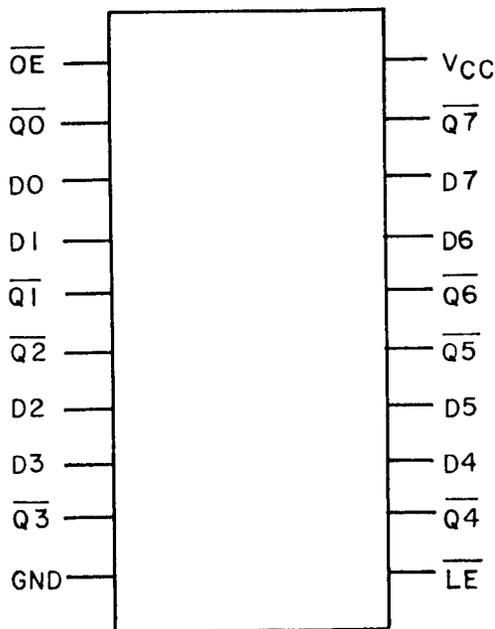


FIGURE 1. Logic diagrams and terminals connections - Continued.

Device type 04
Cases R and S



Device type 04

Case 2

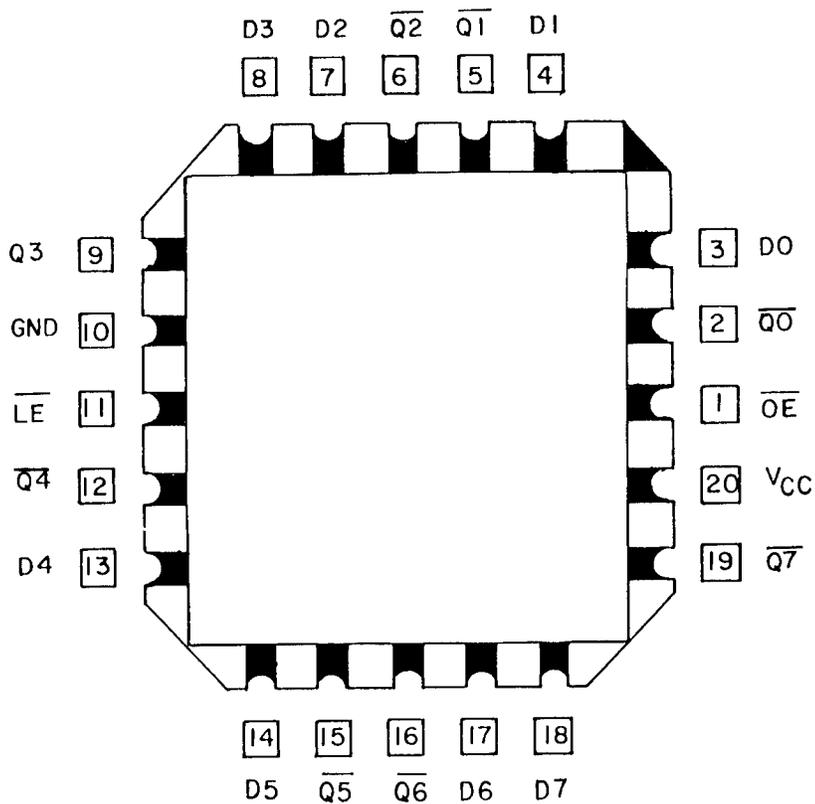


FIGURE 1. Logic diagrams and terminals connections - Continued.

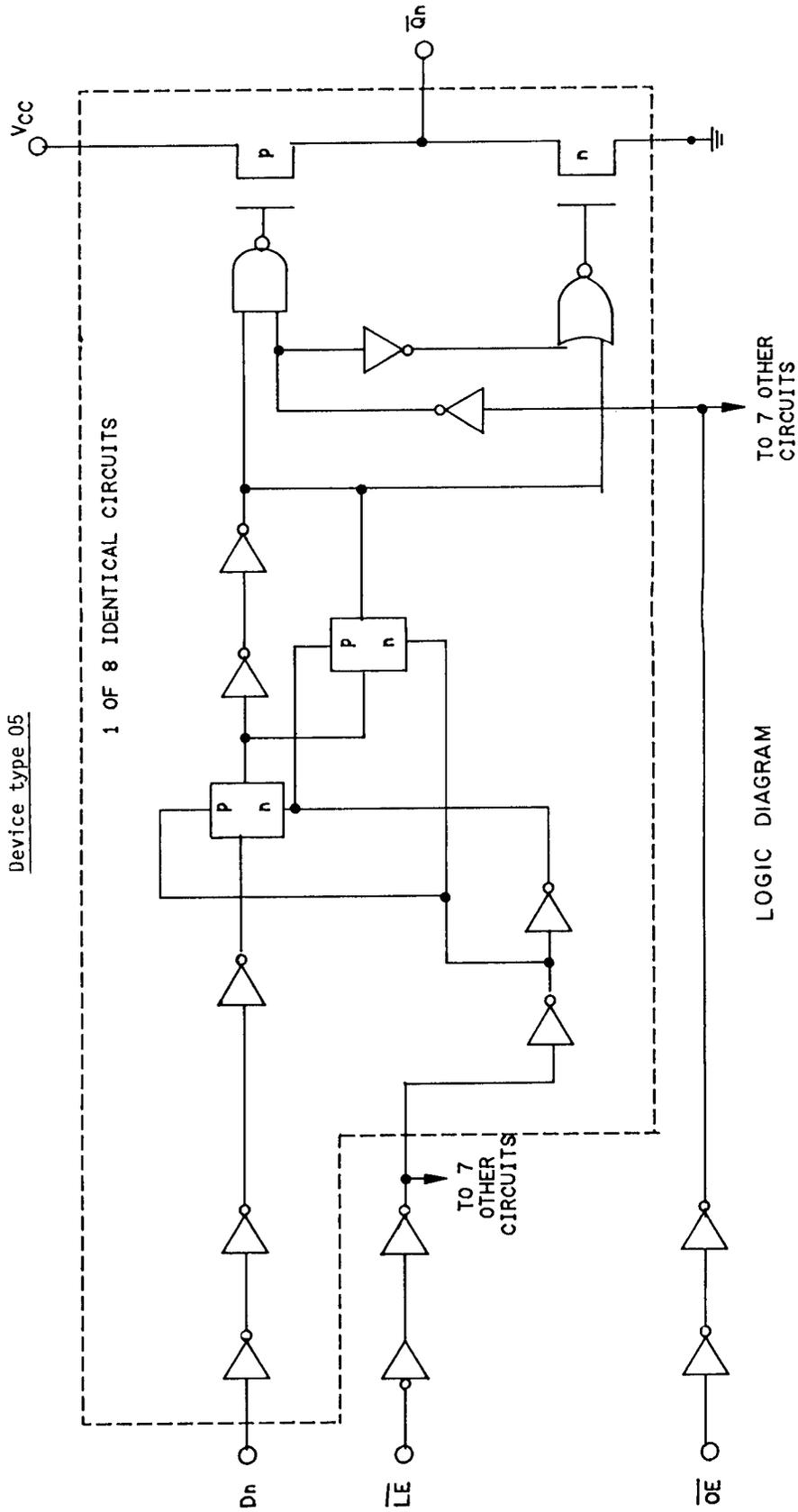
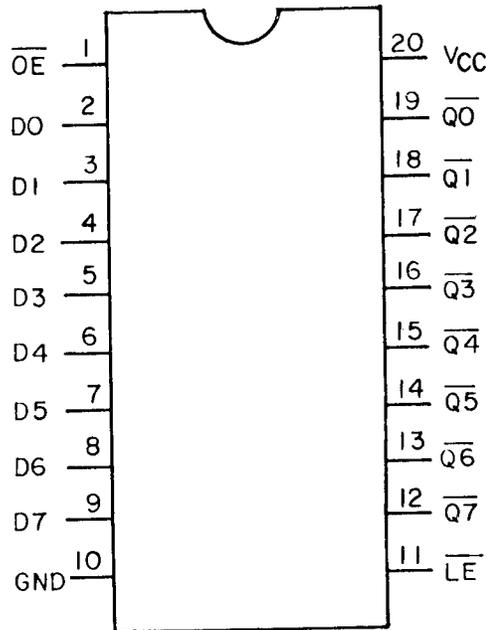


FIGURE 4. Switching time test circuit - Continued.

Device type 05
Cases R and S



Device type 05

Case 2

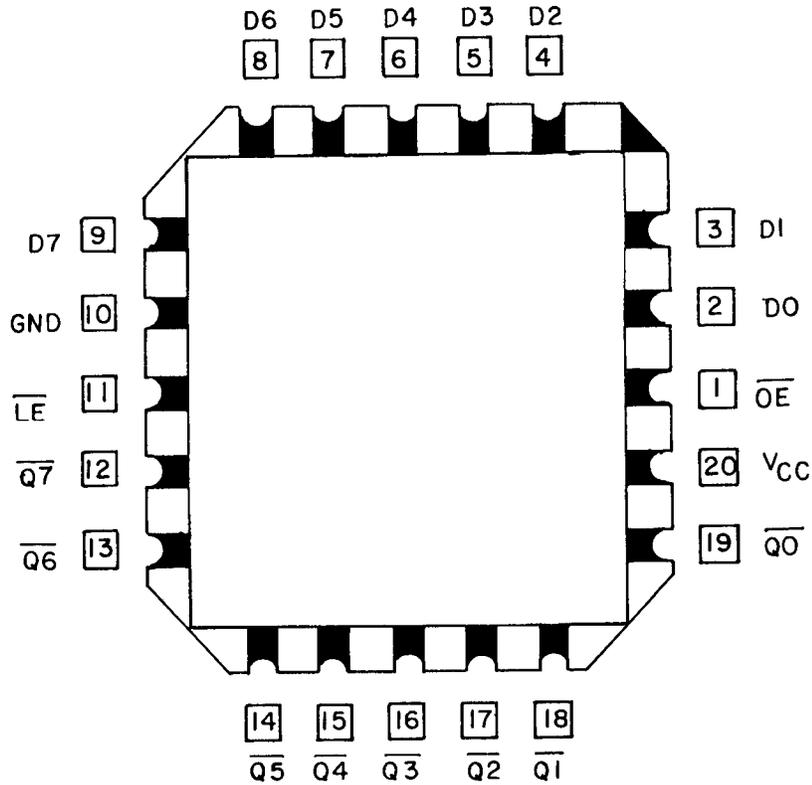
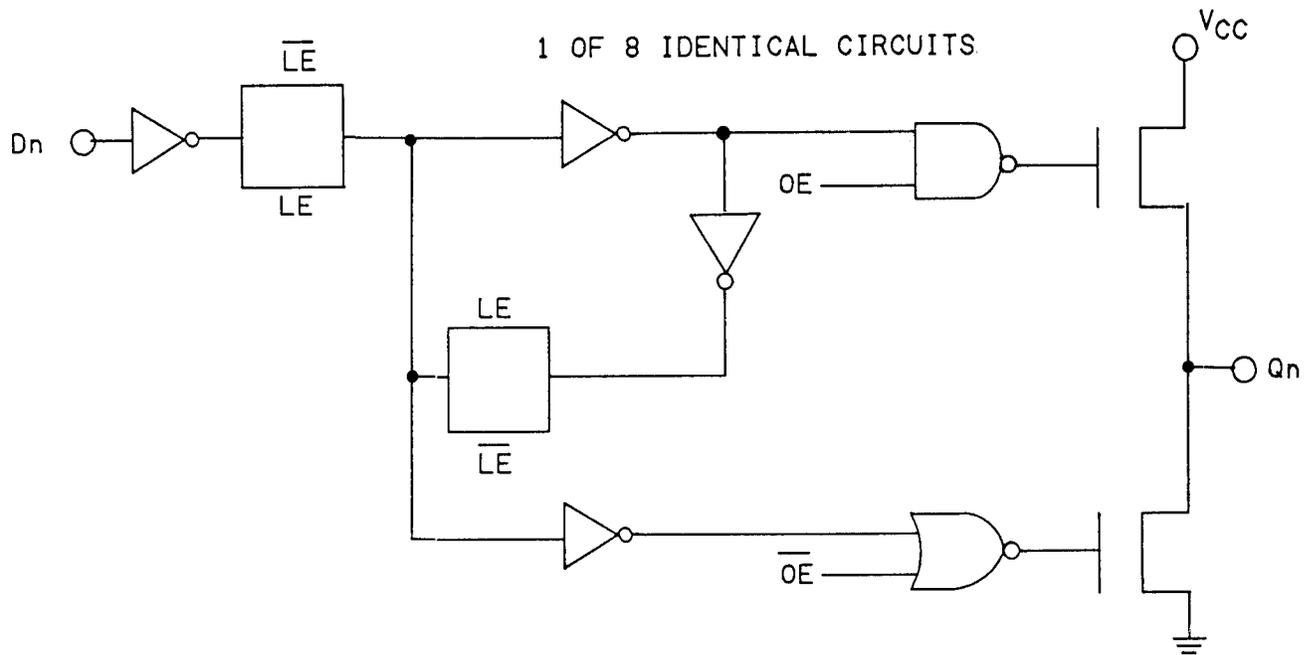


FIGURE 1. Logic diagrams and terminals connections - Continued.

Device type 06



COMMON CONTROLS

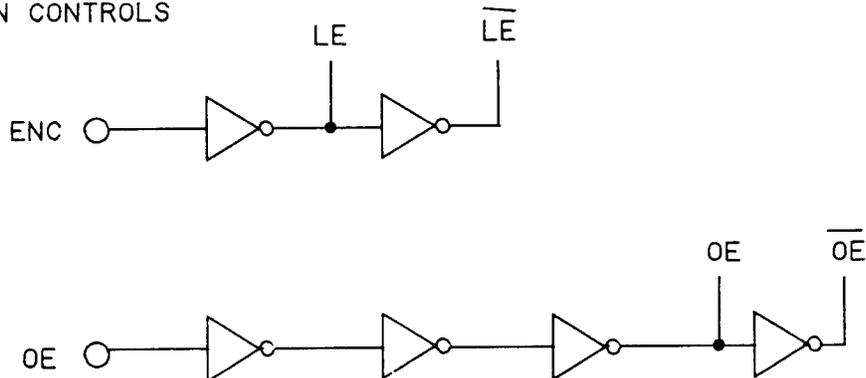
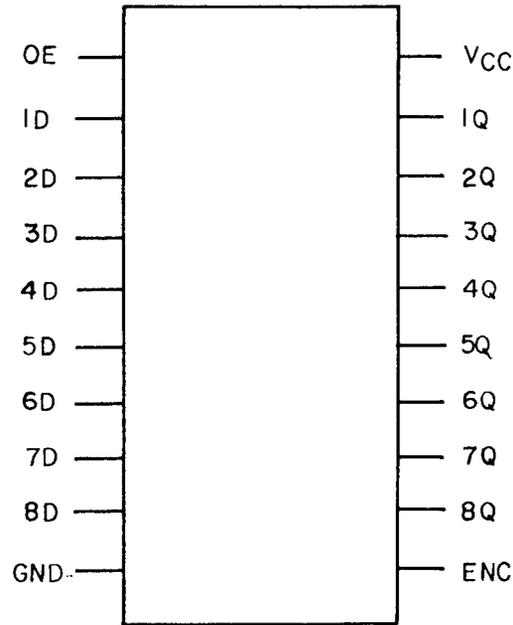


FIGURE 1. Logic diagrams and terminals connections - Continued.

Device type 06

Cases R and S



Device type 06

Case 2

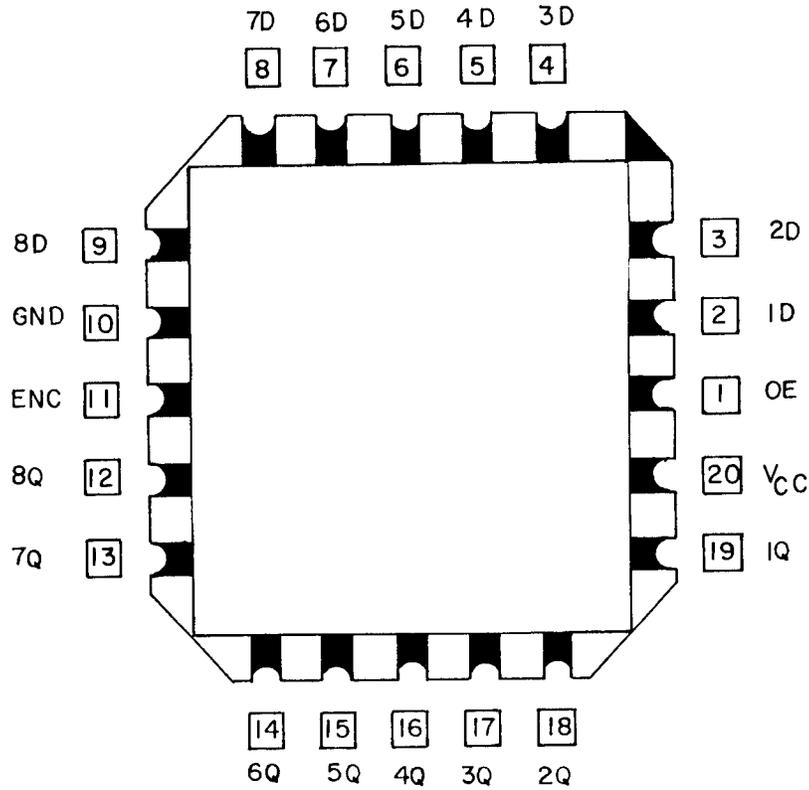


FIGURE 1. Logic diagrams and terminals connections - Continued.

Device type 01

Inputs		Outputs	
D	\overline{EN}	Q	\overline{Q}
L	H	L	H
H	H	H	L
X	L	Q ₀	$\overline{Q_0}$

H = High Level
 L = Low Level
 X = Don't care
 Q₀ = The level of Q before the transition of \overline{EN} .

Device types 02

Inputs		Output of address latch	Each other Output	Function
CLR	EN			
H	L	D	Q _{i0}	Addressable latch Memory 8-line Demultiplexer Reset
H	H	Q _{i0}	Q _{i0}	
L	L	D	L	
L	H	L	L	

H = High Level
 L = Low Level
 D = The level at the data input
 Q_{i0} = The level of Q (i=0, 1-7, as appropriate) before the indicated steady-state input conditions were established.

Latch Selection Table

Select Inputs			Latch Addressed
A ₂	A ₁	A ₀	
L	L	L	0
L	L	H	1
L	H	L	2
L	H	H	3
H	L	L	4
H	L	H	5
H	H	L	6
H	H	H	7

FIGURE 2. Truth tables.

Device type 03 and 53

$\overline{O/E}$	\overline{E}	D Data	Q Output
L	H	H	H
L	H	L	L
L	L	l	L
L	L	h	H
H	X	X	Z

NOTE:

L = Low voltage level
 H = High voltage level
 l = Low voltage level one setup time prior to the high to low latch enable transition
 h = High voltage level one setup time prior to the high to low latch enable transition
 X = Don't Care
 Z = High impedance state

$\overline{Output Enable OE}$	$\overline{Latch Enable LE}$	D Data	Q Output
L	H	H	L
L	H	L	H
L	L	l	H
L	L	h	L
H	X	X	Z

NOTE:

L = Low voltage level.
 H = High voltage level.
 l = Low voltage level one set-up time prior to the high to low latch enable transition.
 h = High voltage level one set-up time prior to the high to low latch enable transition.
 X = Don't care.
 Z = High impedance state.

Device type 05

$\overline{Output Enable OE}$	$\overline{Latch Enable LE}$	D Data	Q Output
L	H	H	L
L	H	L	H
L	L	l	H
L	L	h	L
H	X	X	Z

NOTE:

L = Low voltage level
 H = High voltage level
 l = Low voltage level one setup time prior to the high to low latch enable transition
 h = High voltage level one setup time prior to the high to low latch enable transition
 X = Don't Care
 Z = High impedance state

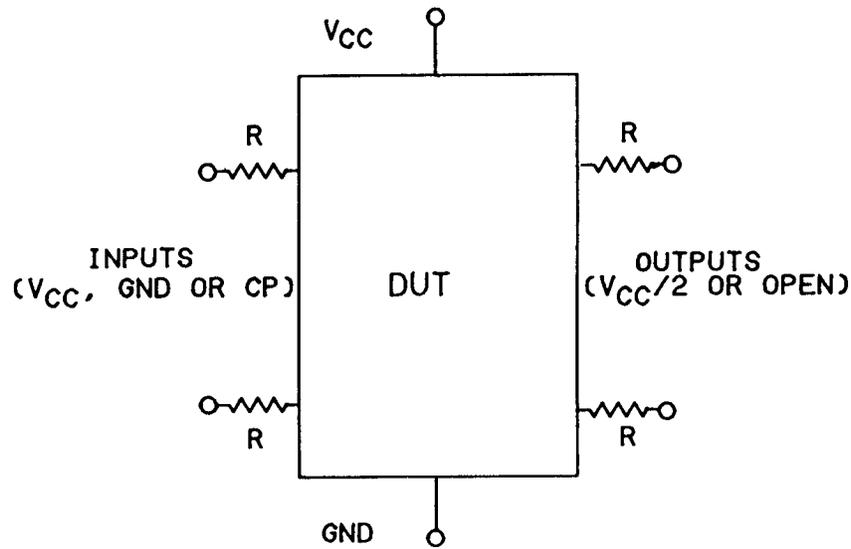
Device Type 06

$\overline{O/E}$	\overline{ENC}	D Data	Q Output
L	H	H	H
L	H	L	L
L	L	l	L
L	L	h	H
H	X	X	Z

NOTE:

L = Low voltage level
 H = High voltage level
 l = Low voltage level one setup time prior to the high to low latch enable transition
 h = High voltage level one setup time prior to the high to low latch enable transition
 X = Don't Care
 Z = High impedance state

FIGURE 2. Truth tables - Continued.

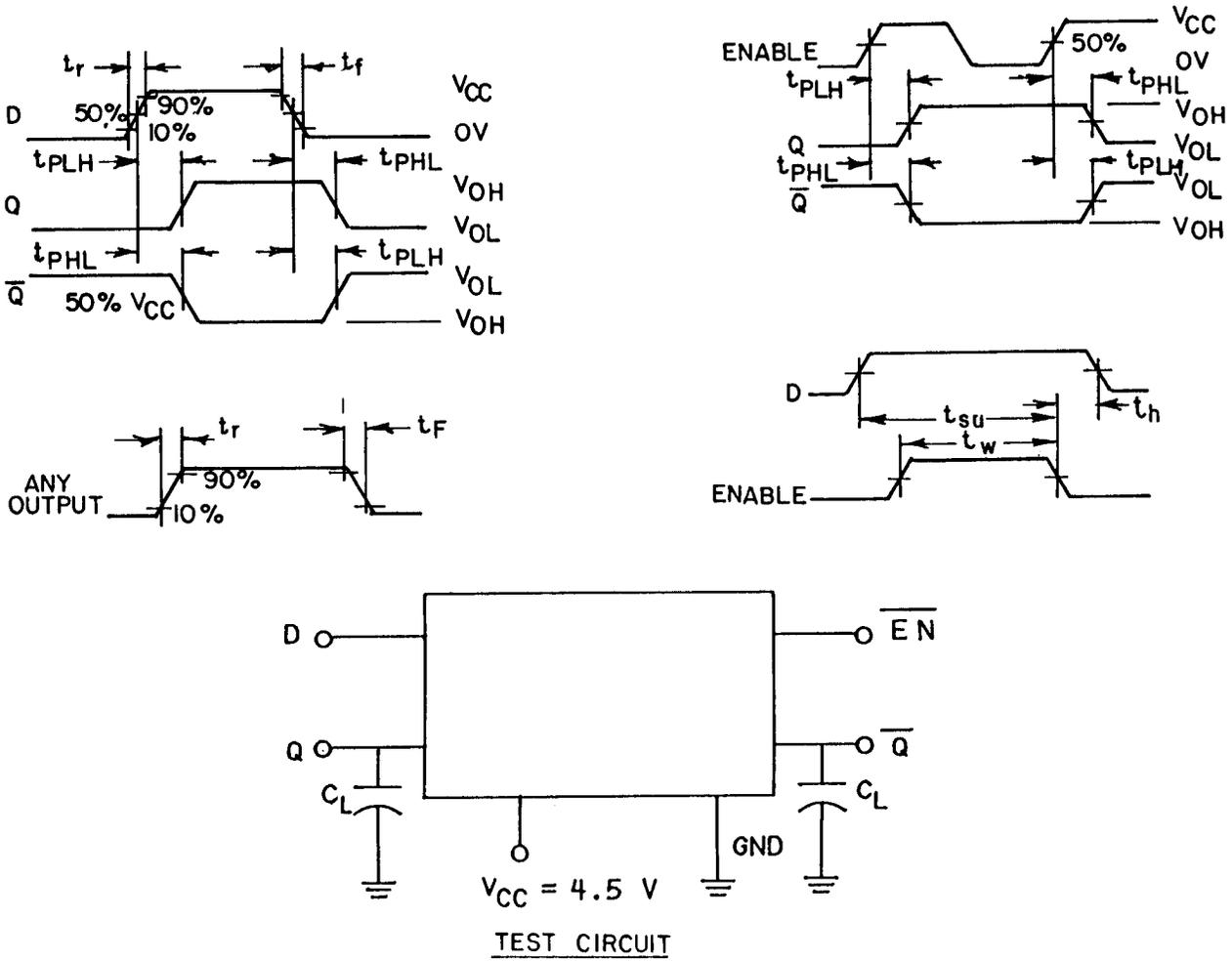


NOTES:

1. For static burn-in I, all inputs shall be connected to GND. Outputs shall be open or connected to $V_{CC}/2$. Resistors are optional on outputs if open. Resistors are required on inputs and outputs connected to $V_{CC}/2$. $R = 680\Omega$ to $47\text{ k}\Omega$.
2. For static burn-in II, all inputs shall be connected through a resistor to V_{CC} . Outputs shall be open or connected to $V_{CC}/2$. Resistors are optional on outputs if open. Resistors are required on inputs and on outputs connected to $V_{CC}/2$. $R = 680$ to $47\text{ k}\Omega$.
3. For dynamic burn-in, all inputs shall be connected through the resistors in parallel to a common CP. Outputs shall be connected to $V_{CC}/2 \pm 0.5\text{ V}$ through the resistors. $R = 1\text{ k}\Omega$ for outputs for device types 01, 02, and $680\Omega \pm 5\%$ for device types 03 - 06, and 53. $R = 1\text{ k}\Omega$ to $47\text{ k}\Omega$ for inputs of device types 01, 02, and 680Ω to $47\text{ k}\Omega$ for inputs of device types 03 - 06, and 53.
4. CP = 25 kHz to 1 MHz square wave; duty cycle = $50 \pm 15\%$; $V_{IH} = 4.5\text{ V}$ to V_{CC} ; $V_{IL} = 0 \pm 0.5\text{ V}$ transition time $\leq 0.5\text{ }\mu\text{s}$.
5. $V_{CC} = 6.0\text{ V} \pm 0.5\text{ V}$, $V_{CC} = 5.5\text{ V} \pm 0.5\text{ V}$ for device 53.

FIGURE 3. Burn-in and life test circuits.

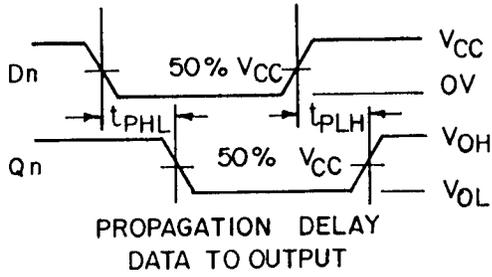
Device type 01



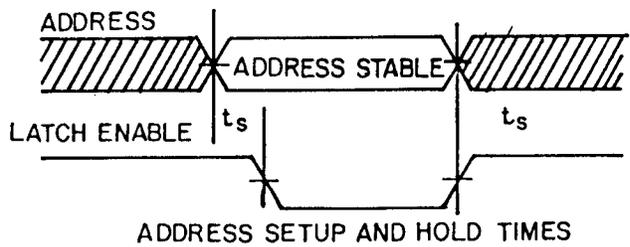
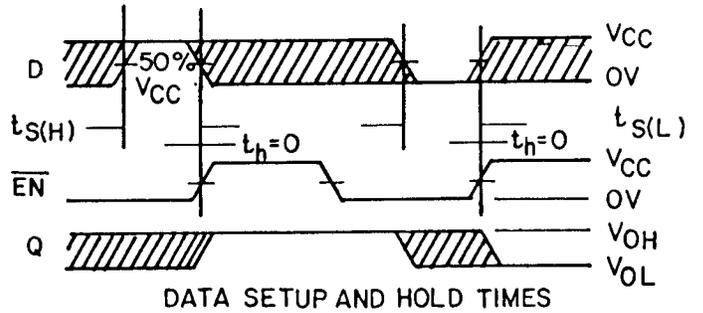
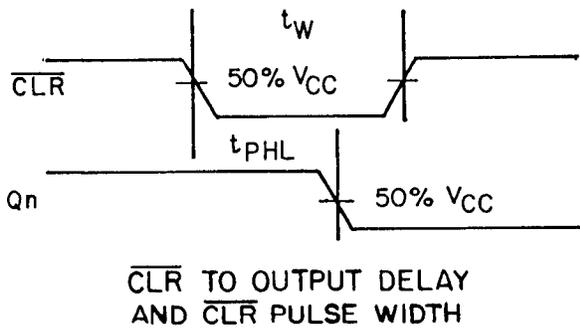
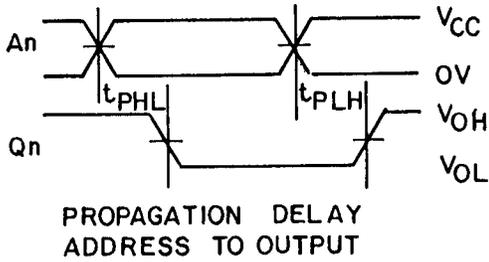
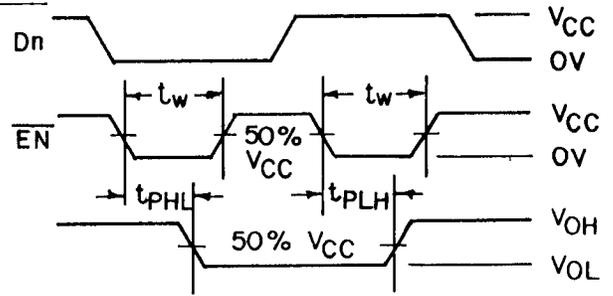
NOTES:

1. Clock input pulse characteristics: $t_r = t_f \leq 6$ ns.
2. Data or enable input pulse characteristics: $t_r = t_f = 6$ ns;
 $t_{SETUP} < 30$ ns; $t_{HOLD} = 8$ ns and $t_{PULSE WIDTH} = 24$ ns.
3. $C_L = 50$ pF.
4. Voltage measurements are to be made with respect to network ground terminal.

FIGURE 4: Switching time test circuit.

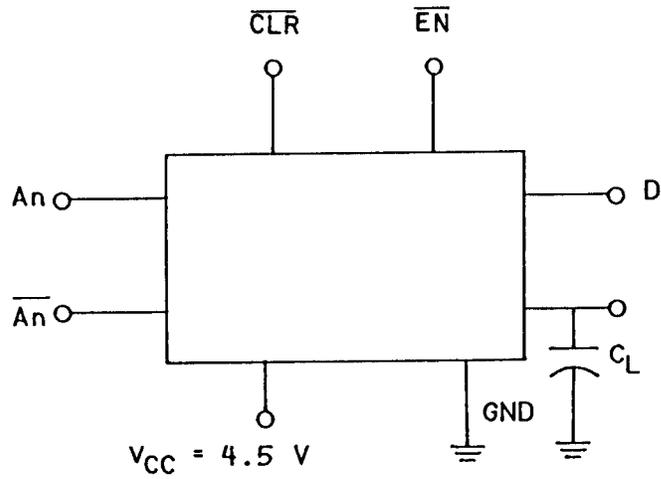


Device type 02



AC WAVEFORMS

FIGURE 4. Switching time test circuit - Continued.

TEST CIRCUITDevice type 02

NOTES:

1. Clock input pulse characteristics: $t_R = t_F \leq 6$ ns.
2. Data, address, latch enable or clear input pulse characteristics:
 $t_R = t_F = 6$ ns; $t_{SETUP} \leq 30$ ns; $t_{PULSE WIDTH} \leq 24$ ns and $t_{HOLD} < 24$ ns.
3. $C_L = 50$ pF.
4. Voltage measurements are to be made with respect to network ground terminal.

FIGURE 4: Switching time test circuit - Continued.

Device types 03 and 53.

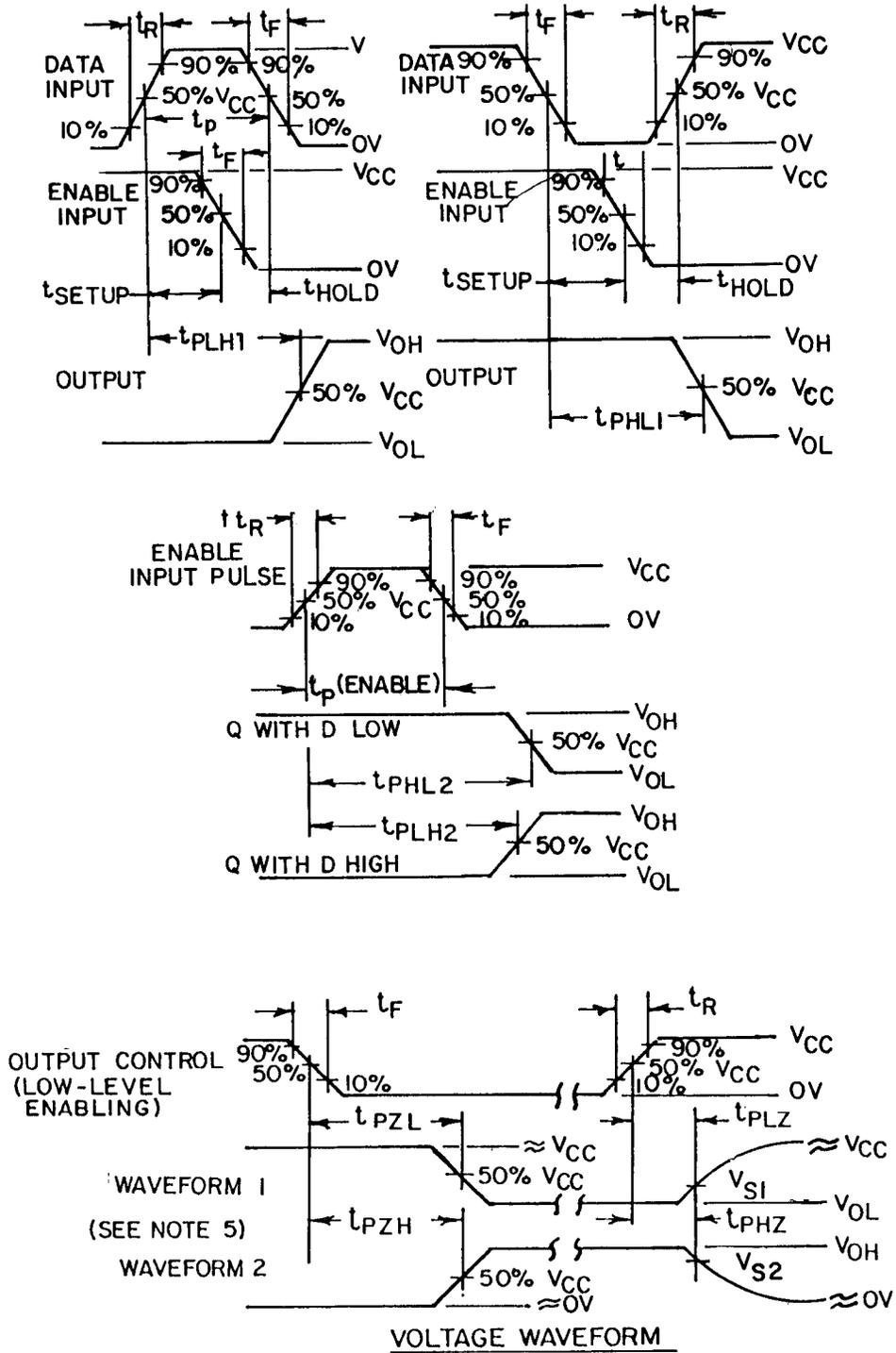
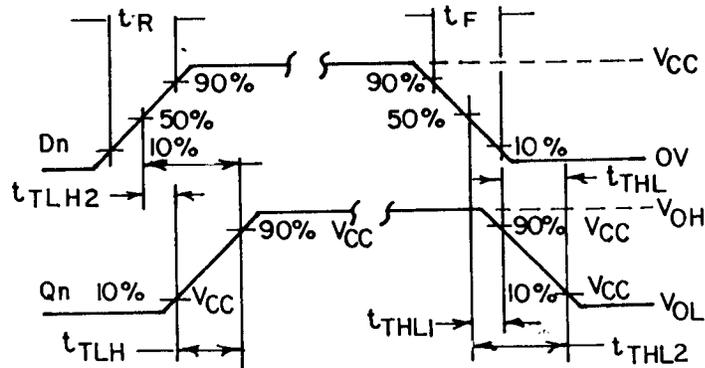


FIGURE 4. Switching Time Test Circuit - Continued.



$$t_{TLH} = t_{THL1} - t_{THL2}$$

$$t_{THL} = t_{THL2} - t_{THL1}$$

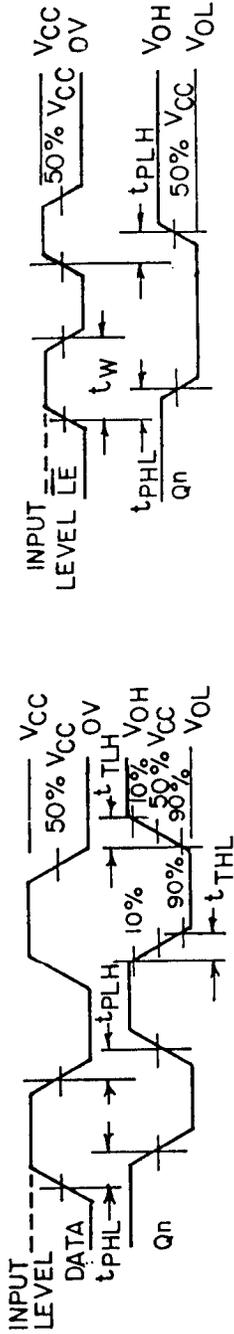
Device types 03 and 53.

NOTES:

1. Clock input pulse characteristics: $t_R = t_F \leq 6$ ns.
2. Data, latch enable and output enable input pulse characteristics: $t_R = t_F \leq 6$ ns; $t_{SETUP} \leq 30$ ns; $t_{PULSE WIDTH} \leq 30$ ns and $t_{HOLD} \leq 15$ ns.
3. $C_L = 50$ pF and $R_L = 1000$ ohms.
4. Voltage measurements are to be made with respect to network ground terminal.
5. For t_{PHZ} and t_{PZH} , a 1 k Ω resistor is connected between the output and GND terminal. For t_{PZL} and t_{PLZ} , a 1 k Ω resistor is connected between the output and V_{CC} terminal. $V_{S1} = V_{OL} + 0.1$ V ($V_{OH} - V_{OL}$). $V_{S2} = V_{OH} - 0.1$ V ($V_{OH} - V_{OL}$).
6. The input signal for HCT device (type 53) will be 0 - 3 volts; however, the 50% V_{CC} measure point is 1.3 volts for input and output signals. The 10% V_{CC} and 90% V_{CC} points are 0.3 volts and 2.7 volts, respectively.

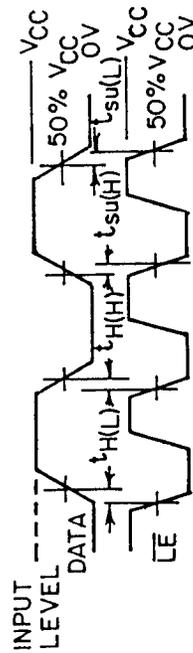
FIGURE 4. Switching time test circuit - Continued.

Device type 04

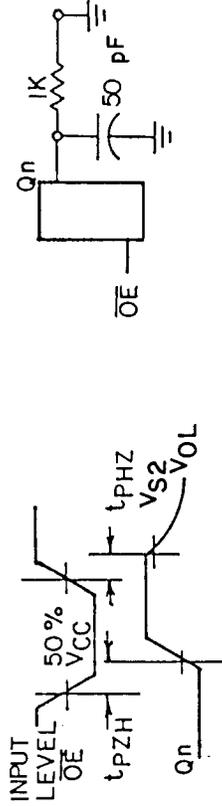


Latch enable propagation delays.

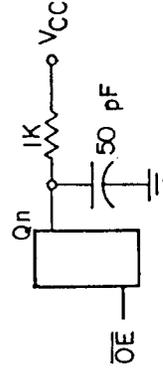
Data to Qn output propagation delays and output transition times.



Latch enable pre-requisite times.



Tri-state propagation delays.



Three state propagation delays.

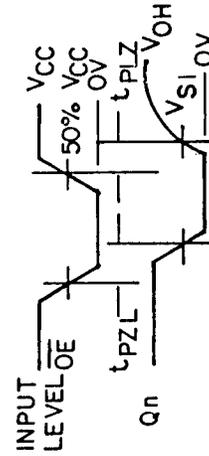
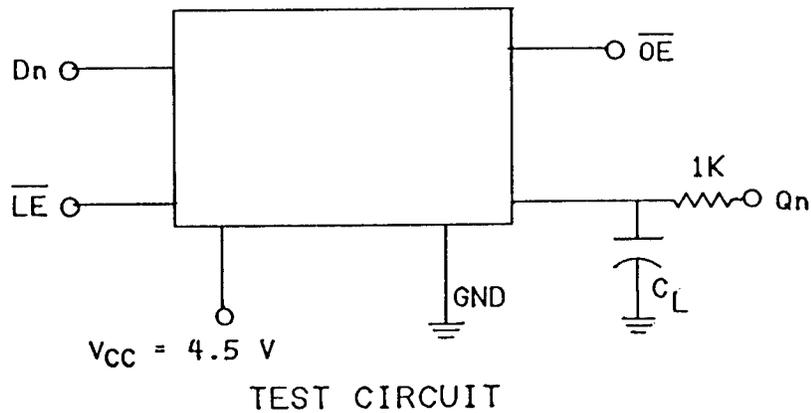


FIGURE 4. Switching time test circuit - Continued.



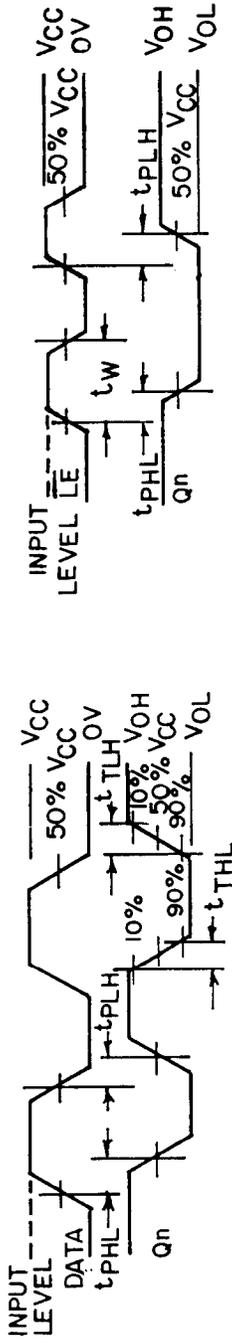
Device type 04

NOTES:

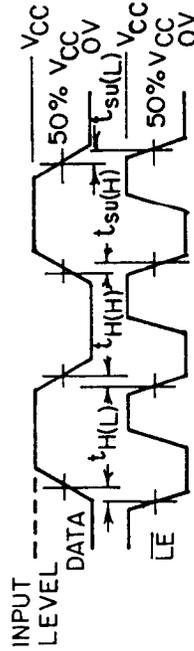
1. Clock input pulse characteristics: $t_R = t_F < 6$ ns.
2. Data, latch enable and output enable input pulse characteristics: $t_R = t_F < 6$ ns; $t_{SETUP} \leq 30$ ns; $t_{PULSE WIDTH} \leq 30$ ns and $t_{HOLD} < 15$ ns.
3. $C_L = 50$ pF and $R_L = 1000$ ohms.
4. Voltage measurements are to be made with respect to network ground terminal.
5. For t_{pHZ} and t_{pZH} , a 1 k Ω resistor is connected between the output and GND terminal. For t_{pZL} and t_{pLZ} , a 1 k Ω resistor is connected between the output and V_{CC} terminal. $V_{S1} = V_{OL} + 0.1$ V ($V_{OH} - V_{OL}$). $V_{S2} = V_{OH} - 0.1$ V ($V_{OH} - V_{OL}$).

FIGURE 4. Switching time test circuit - Continued.

Device type 05

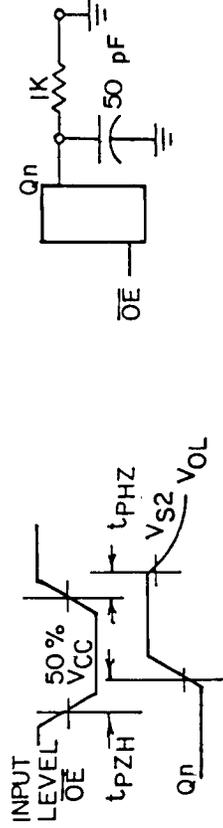


Data to Qn output propagation delays and output transition times.

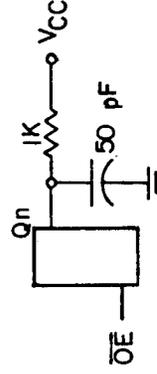


Latch enable pre-requisite times.

Latch enable propagation delays.



Tri-state propagation delays.



Three state propagation delays.

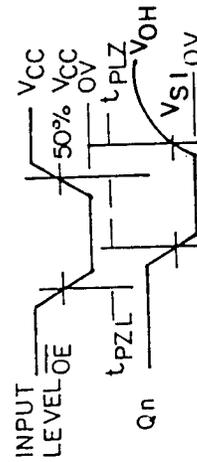
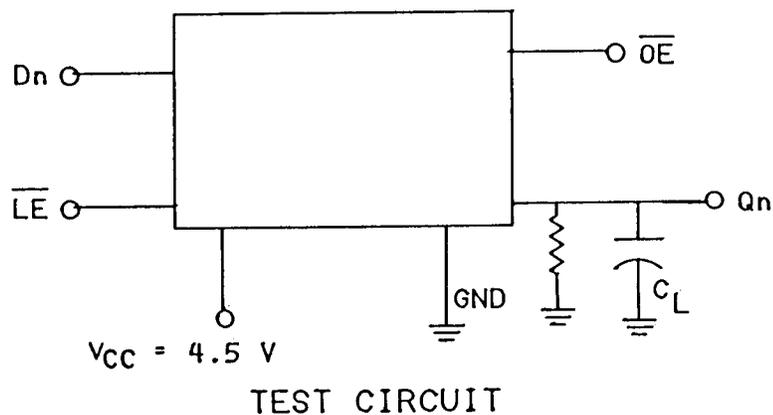


FIGURE 4. Switching time test circuit - Continued.



Device type 05

NOTES:

1. Clock input pulse characteristics: $t_R = t_F \leq 6$ ns.
2. Data, latch enable and output enable input pulse characteristics: $t_R = t_F \leq 6$ ns; $t_{SETUP} \leq 23$ ns; $t_{PULSE WIDTH} \leq 24$ ns and $t_{HOLD} \leq 15$ ns.
3. $C_L = 50$ pF and $R_L = 1000$ ohms.
4. Voltage measurements are to be made with respect to network ground terminal.
5. For t_{PHZ} and t_{PZH} , a $1\text{ k}\Omega$ resistor is connected between the output and GND terminal. For t_{PZL} and t_{PLZ} , a $1\text{ k}\Omega$ resistor is connected between the output and V_{CC} terminal. $V_{S1} = V_{OL} + 0.1\text{ V}$ ($V_{OH} - V_{OL}$).
 $V_{S2} = V_{OH} - 0.1\text{ V}$ ($V_{OH} - V_{OL}$).
6. All trip points are referenced to V_{CC} .

FIGURE 4. Switching time test circuit - Continued.

Device type 06

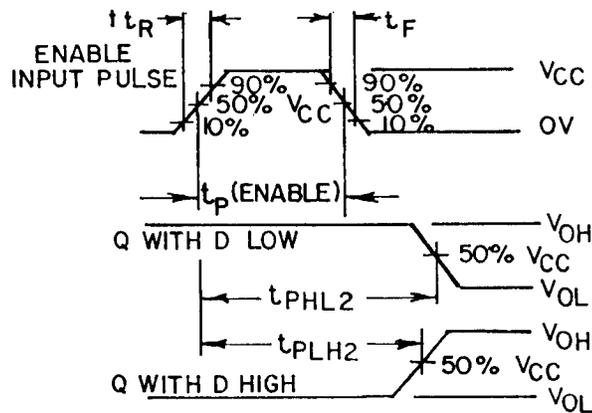
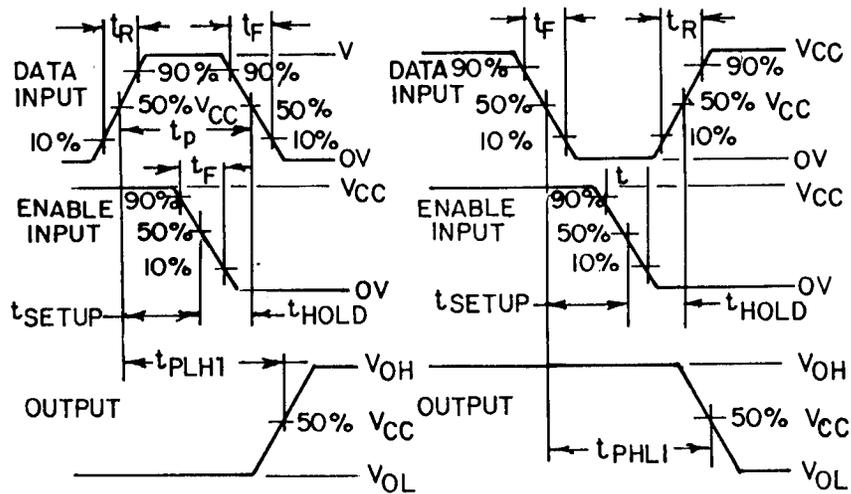
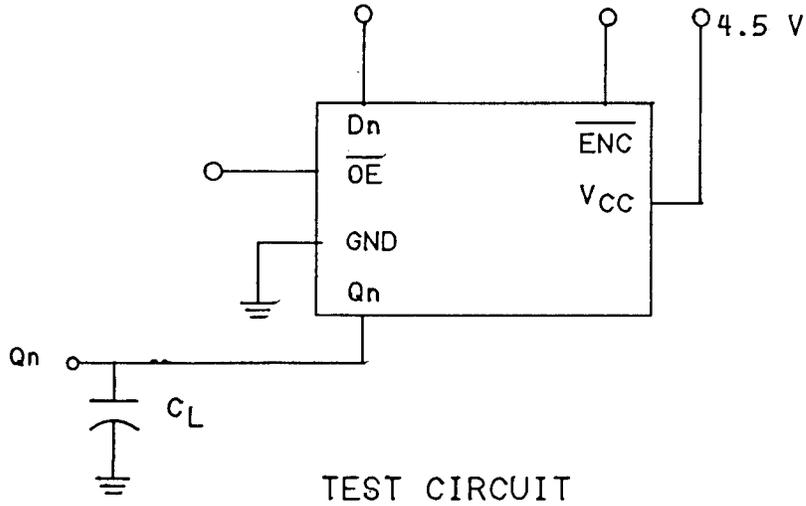
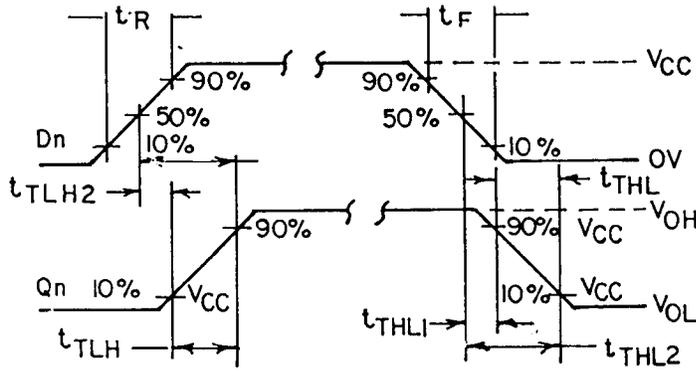
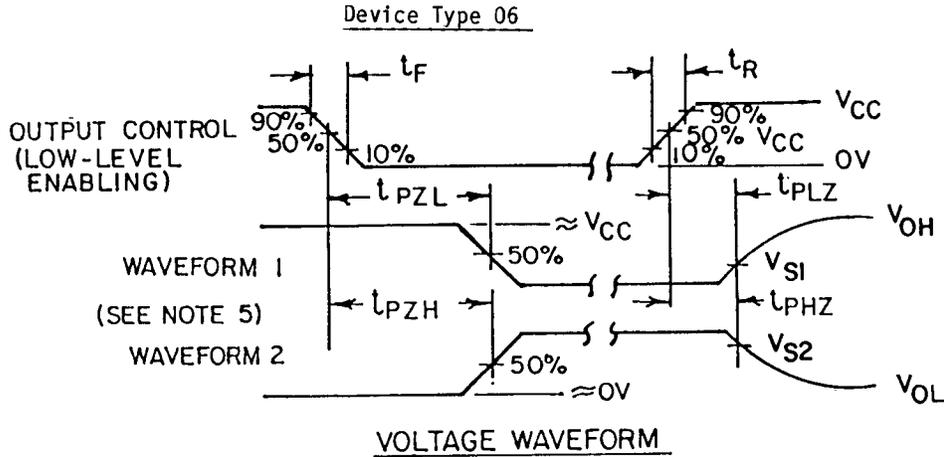


FIGURE 4. Switching Time Test Circuit - Continued.



$$t_{TLH} = t_{TLHI} - t_{TLH2}$$

$$t_{THL} = t_{THL2} - t_{THL1}$$

Device Type 06

NOTES:

1. Clock input pulse characteristics: $t_R = t_F < 6$ ns.
2. Data, latch enable and output enable input pulse characteristics: $t_R = t_F < 6$ ns; $t_{SETUP} \leq 23$ ns; $t_{PULSE WIDTH} \leq 24$ ns and $t_{HOLD} \leq 15$ ns.
3. $C_L = 50$ pF and $R_L = 1000$ ohms.
4. Voltage measurements are to be made with respect to network ground terminal.
5. For t_{PHZ} and t_{PZH} , a 1 k Ω resistor is connected between the output and GND terminal. For t_{PZL} and t_{PLZ} , a 1 k Ω resistor is connected between the output and V_{CC} terminal. $V_{S1} = V_{OL} + 0.1$ V ($V_{OH} - V_{OL}$). $V_{S2} = V_{OH} - 0.1$ V ($V_{OH} - V_{OL}$).
6. All trip points are referenced to V_{CC} .

FIGURE 4. Switching time test circuit - Continued.

TABLE III. Group A inspection for device type 01.

Symbol	MIL-STD-883 method	Case 2 Case E	Terminal conditions																Test limits										
			Terminal conditions																Test limits										
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Subgroup 1 TC = +25°C	Subgroup 2 TC = +125°C	Subgroup 3 TC = -55°C	Unit			
V _{IC} (pos)		Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max	Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20							
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20							
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20							
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20							
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20							
V _{IC} (neg)		Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max	Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20							
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20							
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20							
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20							
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20							
I _{CC}	3005	Test no.	13	14	6.0 V	6.0 V	6.0 V	6.0 V	Min	Max	Min	Max	Unit																
			13	14	GND	GND	GND	GND						GND	GND														
V _{OH3}	3006	Test no.	15	16	17	18	19	20	21	22	4.2 V	4.2 V	4.2 V	4.2 V	4.2 V	Min	Max	Min	Max	Unit									
			15	16	17	18	19	20	21	22																			
			15	16	17	18	19	20	21	22																			
			15	16	17	18	19	20	21	22																			
			15	16	17	18	19	20	21	22																			
			15	16	17	18	19	20	21	22																			
			15	16	17	18	19	20	21	22																			
			15	16	17	18	19	20	21	22																			
			15	16	17	18	19	20	21	22																			
			15	16	17	18	19	20	21	22																			
V _{OH5}	3006	Test no.	23	24	25	26	27	28	29	30	6.0 V	6.0 V	6.0 V	6.0 V	6.0 V	Min	Max	Min	Max	Unit									
			23	24	25	26	27	28	29	30																			
			23	24	25	26	27	28	29	30																			
			23	24	25	26	27	28	29	30																			
			23	24	25	26	27	28	29	30																			
			23	24	25	26	27	28	29	30																			
			23	24	25	26	27	28	29	30																			
			23	24	25	26	27	28	29	30																			
			23	24	25	26	27	28	29	30																			
			23	24	25	26	27	28	29	30																			
V _{OL3}	3007	Test no.	31	32	33	34	35	36	1.2 V	1.2 V	1.2 V	1.2 V	1.2 V	Min	Max	Min	Max	Unit											
			31	32	33	34	35	36																					
			31	32	33	34	35	36																					
			31	32	33	34	35	36																					
			31	32	33	34	35	36																					
			31	32	33	34	35	36																					
			31	32	33	34	35	36																					
			31	32	33	34	35	36																					
			31	32	33	34	35	36																					
			31	32	33	34	35	36																					
V _{OH5}	3006	Test no.	39	40	41	42	43	44	45	46	6.0 V	6.0 V	6.0 V	6.0 V	6.0 V	Min	Max	Min	Max	Unit									
			39	40	41	42	43	44	45	46																			
			39	40	41	42	43	44	45	46																			
			39	40	41	42	43	44	45	46																			
			39	40	41	42	43	44	45	46																			
			39	40	41	42	43	44	45	46																			
			39	40	41	42	43	44	45	46																			
			39	40	41	42	43	44	45	46																			
			39	40	41	42	43	44	45	46																			
			39	40	41	42	43	44	45	46																			
I _{OS4}	3011	Test no.	47	48	49	50	51	52	53	54	4.0 V	4.0 V	4.0 V	4.0 V	4.0 V	Min	Max	Min	Max	Unit									
			47	48	49	50	51	52	53	54																			
			47	48	49	50	51	52	53	54																			
			47	48	49	50	51	52	53	54																			
			47	48	49	50	51	52	53	54																			
			47	48	49	50	51	52	53	54																			
			47	48	49	50	51	52	53	54																			
			47	48	49	50	51	52	53	54																			
			47	48	49	50	51	52	53	54																			
			47	48	49	50	51	52	53	54																			
I _{IH}	3010	Test no.	55	56	57	58	59	60	6.0 V	6.0 V	6.0 V	6.0 V	6.0 V	Min	Max	Min	Max	Unit											
			55	56	57	58	59	60																					
			55	56	57	58	59	60																					
			55	56	57	58	59	60																					
			55	56	57	58	59	60																					
			55	56	57	58	59	60																					
			55	56	57	58	59	60																					
			55	56	57	58	59	60																					
			55	56	57	58	59	60																					
			55	56	57	58	59	60																					

See footnotes at end of table.

TABLE III. Group A inspection for device type 01 - Continued.

Symbol	MIL-STD-883 method	Case 2	Terminal conditions																Test limits						Unit					
			Terminal conditions																Test limits											
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Subgroup 1 TC = +25 C	Subgroup 2 TC = +125 C		Subgroup 3 TC = -55 C				
I _{IL}	3003	Case 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max	10 20 30 40 EN1-4 EN1-2	µA
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
I _{in}	3012	Case 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max	10 20 30 40 EN1-4 EN1-2	µF
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
I _{out}	3003	Case 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max	10 20 30 40 EN1-4 EN1-2	µF
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
I _{PH1}	3003 (Fig. 4)	Case 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max	10 20 30 40 EN1-4 EN1-2	ns
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
I _{PH1}	3003 (Fig. 4)	Case 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max	10 20 30 40 EN1-4 EN1-2	ns
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
I _{PH1}	3003 (Fig. 4)	Case 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max	10 20 30 40 EN1-4 EN1-2	ns
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
I _{PH1}	3003 (Fig. 4)	Case 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max	10 20 30 40 EN1-4 EN1-2	ns
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min	Max		

See footnotes at end of table.

TABLE III. Group A Inspection for device type 02.

Symbol	MIL-STD-883 method	Case 2 Case 1	Terminal conditions																Measured terminal	Test Limits						Unit																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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			Test no.	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A1018	A1019	A1020	A1021	A1022	A1023	A1024	A1025	A1026	A1027	A1028	A1029	A1030	A1031	A1032	A1033	A1034	A1035	A1036	A1037	A1038	A1039	A1040	A1041	A1042	A1043	A1044	A1045	A1046	A1047	A1048	A1049	A1050	A1051	A1052	A1053	A1054	A1055	A1056	A1057	A1058	A1059	A1060	A1061	A1062	A1063	A1064	A1065	A1066	A1067	A1068	A1069	A1070	A1071	A1072	A1073	A1074	A1075	A1076	A1077	A1078	A1079	A1080	A1081	A1082	A1083	A1084	A1085	A1086	A1087	A1088	A1089	A1090	A1091	A1092	A1093	A1094	A1095	A1096	A1097	A1098	A1099	A1100	A1101	A1102	A1103	A1104	A1105	A1106	A1107	A1108	A1109	A1110	A1111	A1112	A1113	A1114	A1115	A1116	A1117	A1118	A1119	A1120	A1121	A1122	A1123	A1124	A1125	A1126	A1127	A1128	A1129	A1130	A1131	A1132	A1133	A1134	A1135	A1136	A1137	A1138	A1139	A1140	A1141	A1142	A1143	A1144	A1145	A1146	A1147	A1148	A1149	A1150	A1151	A1152	A1153	A1154	A1155	A1156	A1157	A1158	A1159	A1160	A1161	A1162	A1163	A1164	A1165	A1166	A1167	A1168	A1169	A1170	A1171	A1172	A1173	A1174	A1175	A1176	A1177	A1178	A1179	A1180	A1181	A1182	A1183	A1184	A1185	A1186	A1187	A1188	A1189	A1190	A1191	A1192	A1193	A1194	A1195	A1196	A1197	A1198	A1199	A1200	A1201	A1202	A1203	A1204	A1205	A1206	A1207	A1208	A1209	A1210	A1211	A1212	A1213	A1214	A1215	A1216	A1217	A1218	A1219	A1220	A1221	A1222	A1223	A1224	A1225	A1226	A1227	A1228	A1229	A1230	A1231	A1232	A1233	A1234	A1235	A1236	A1237	A1238	A1239	A1240	A1241	A1242	A1243	A1244	A1245	A1246	A1247	A1248	A1249	A1250	A1251	A1252	A1253	A1254	A1255	A1256	A1257	A1258	A1259	A1260	A1261	A1262	A1263	A1264	A1265	A1266	A1267	A1268	A1269	A1270	A1271	A1272	A1273	A1274	A1275	A1276	A1277	A1278	A1279	A1280	A1281	A1282	A1283	A1284	A1285	A1286	A1287	A1288	A1289	A1290	A1291	A1292	A1293	A1294	A1295	A1296	A1297	A1298	A1299	A1300	A1301	A1302	A1303	A1304	A1305	A1306	A1307	A1308	A1309	A1310	A1311	A1312	A1313	A1314	A1315	A1316	A1317	A1318	A1319	A1320	A1321	A1322	A1323	A1324	A1325	A1326	A1327	A1328	A1329	A1330	A1331	A1332	A1333	A1334	A1335	A1336	A1337	A1338	A1339	A1340	A1341	A1342	A1343	A1344	A1345	A1346	A1347	A1348	A1349	A1350	A1351	A1352	A1353	A1354	A1355	A1356	A1357	A1358	A1359	A1360	A1361	A1362	A1363	A1364	A1365	A1366	A1367	A1368	A1369	A1370	A1371	A1372	A1373	A1374	A1375	A1376	A1377	A1378	A1379	A1380	A1381	A1382	A1383	A1384	A1385	A1386	A1387	A1388	A1389	A1390	A1391	A1392	A1393	A1394	A1395	A1396	A1397	A1398	A1399	A1400	A1401	A1402	A1403	A1404	A1405	A1406	A1407	A1408	A1409	A1410	A1411	A1412	A1413	A1414	A1415	A1416	A1417	A1418	A1419	A1420	A1421	A1422	A1423	A1424	A1425	A1426	A1427	A1428	A1429	A1430	A1431	A1432	A1433	A1434	A1435	A1436	A1437	A1438	A1439	A1440	A1441	A1442	A1443	A1444	A1445

TABLE III. Group A inspection for device type 02 - Continued.

Symbol	MIL-STD-883 method	Case 2 Case 1	Terminal conditions															Measured terminal	Test limits						Unit																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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tPHL2	3003 (Fig. 4)	135	QJ	A1	A2	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43	Q44	Q45	Q46	Q47	Q48	Q49	Q50	Q51	Q52	Q53	Q54	Q55	Q56	Q57	Q58	Q59	Q60	Q61	Q62	Q63	Q64	Q65	Q66	Q67	Q68	Q69	Q70	Q71	Q72	Q73	Q74	Q75	Q76	Q77	Q78	Q79	Q80	Q81	Q82	Q83	Q84	Q85	Q86	Q87	Q88	Q89	Q90	Q91	Q92	Q93	Q94	Q95	Q96	Q97	Q98	Q99	Q100	Q101	Q102	Q103	Q104	Q105	Q106	Q107	Q108	Q109	Q110	Q111	Q112	Q113	Q114	Q115	Q116	Q117	Q118	Q119	Q120	Q121	Q122	Q123	Q124	Q125	Q126	Q127	Q128	Q129	Q130	Q131	Q132	Q133	Q134	Q135	Q136	Q137	Q138	Q139	Q140	Q141	Q142	Q143	Q144	Q145	Q146	Q147	Q148	Q149	Q150	Q151	Q152	Q153	Q154	Q155	Q156	Q157	Q158	Q159	Q160	Q161	Q162	Q163	Q164	Q165	Q166	Q167	Q168	Q169	Q170	Q171	Q172	Q173	Q174	Q175	Q176	Q177	Q178	Q179	Q180	Q181	Q182	Q183	Q184	Q185	Q186	Q187	Q188	Q189	Q190	Q191	Q192	Q193	Q194	Q195	Q196	Q197	Q198	Q199	Q200	Q201	Q202	Q203	Q204	Q205	Q206	Q207	Q208	Q209	Q210	Q211	Q212	Q213	Q214	Q215	Q216	Q217	Q218	Q219	Q220	Q221	Q222	Q223	Q224	Q225	Q226	Q227	Q228	Q229	Q230	Q231	Q232	Q233	Q234	Q235	Q236	Q237	Q238	Q239	Q240	Q241	Q242	Q243	Q244	Q245	Q246	Q247	Q248	Q249	Q250	Q251	Q252	Q253	Q254	Q255	Q256	Q257	Q258	Q259	Q260	Q261	Q262	Q263	Q264	Q265	Q266	Q267	Q268	Q269	Q270	Q271	Q272	Q273	Q274	Q275	Q276	Q277	Q278	Q279	Q280	Q281	Q282	Q283	Q284	Q285	Q286	Q287	Q288	Q289	Q290	Q291	Q292	Q293	Q294	Q295	Q296	Q297	Q298	Q299	Q300	Q301	Q302	Q303	Q304	Q305	Q306	Q307	Q308	Q309	Q310	Q311	Q312	Q313	Q314	Q315	Q316	Q317	Q318	Q319	Q320	Q321	Q322	Q323	Q324	Q325	Q326	Q327	Q328	Q329	Q330	Q331	Q332	Q333	Q334	Q335	Q336	Q337	Q338	Q339	Q340	Q341	Q342	Q343	Q344	Q345	Q346	Q347	Q348	Q349	Q350	Q351	Q352	Q353	Q354	Q355	Q356	Q357	Q358	Q359	Q360	Q361	Q362	Q363	Q364	Q365	Q366	Q367	Q368	Q369	Q370	Q371	Q372	Q373	Q374	Q375	Q376	Q377	Q378	Q379	Q380	Q381	Q382	Q383	Q384	Q385	Q386	Q387	Q388	Q389	Q390	Q391	Q392	Q393	Q394	Q395	Q396	Q397	Q398	Q399	Q400	Q401	Q402	Q403	Q404	Q405	Q406	Q407	Q408	Q409	Q410	Q411	Q412	Q413	Q414	Q415	Q416	Q417	Q418	Q419	Q420	Q421	Q422	Q423	Q424	Q425	Q426	Q427	Q428	Q429	Q430	Q431	Q432	Q433	Q434	Q435	Q436	Q437	Q438	Q439	Q440	Q441	Q442	Q443	Q444	Q445	Q446	Q447	Q448	Q449	Q450	Q451	Q452	Q453	Q454	Q455	Q456	Q457	Q458	Q459	Q460	Q461	Q462	Q463	Q464	Q465	Q466	Q467	Q468	Q469	Q470	Q471	Q472	Q473	Q474	Q475	Q476	Q477	Q478	Q479	Q480	Q481	Q482	Q483	Q484	Q485	Q486	Q487	Q488	Q489	Q490	Q491	Q492	Q493	Q494	Q495	Q496	Q497	Q498	Q499	Q500	Q501	Q502	Q503	Q504	Q505	Q506	Q507	Q508	Q509	Q510	Q511	Q512	Q513	Q514	Q515	Q516	Q517	Q518	Q519	Q520	Q521	Q522	Q523	Q524	Q525	Q526	Q527	Q528	Q529	Q530	Q531	Q532	Q533	Q534	Q535	Q536	Q537	Q538	Q539	Q540	Q541	Q542	Q543	Q544	Q545	Q546	Q547	Q548	Q549	Q550	Q551	Q552	Q553	Q554	Q555	Q556	Q557	Q558	Q559	Q560	Q561	Q562	Q563	Q564	Q565	Q566	Q567	Q568	Q569	Q570	Q571	Q572	Q573	Q574	Q575	Q576	Q577	Q578	Q579	Q580	Q581	Q582	Q583	Q584	Q585	Q586	Q587	Q588	Q589	Q590	Q591	Q592	Q593	Q594	Q595	Q596	Q597	Q598	Q599	Q600	Q601	Q602	Q603	Q604	Q605	Q606	Q607	Q608	Q609	Q610	Q611	Q612	Q613	Q614	Q615	Q616	Q617	Q618	Q619	Q620	Q621	Q622	Q623	Q624	Q625	Q626	Q627	Q628	Q629	Q630	Q631	Q632	Q633	Q634	Q635	Q636	Q637	Q638	Q639	Q640	Q641	Q642	Q643	Q644	Q645	Q646	Q647	Q648	Q649	Q650	Q651	Q652	Q653	Q654	Q655	Q656	Q657	Q658	Q659	Q660	Q661	Q662	Q663	Q664	Q665	Q666	Q667	Q668	Q669	Q670	Q671	Q672	Q673	Q674	Q675	Q676	Q677	Q678	Q679	Q680	Q681	Q682	Q683	Q684	Q685	Q686	Q687	Q688	Q689	Q690	Q691	Q692	Q693	Q694	Q695	Q696	Q697	Q698	Q699	Q700	Q701	Q702	Q703	Q704	Q705	Q706	Q707	Q708	Q709	Q710	Q711	Q712	Q713	Q714	Q715	Q716	Q717	Q718	Q719	Q720	Q721	Q722	Q723	Q724	Q725	Q726	Q727	Q728	Q729	Q730	Q731	Q732	Q733	Q734	Q735	Q736	Q737	Q738	Q739	Q740	Q741	Q742	Q743	Q744	Q745	Q746	Q747	Q748	Q749	Q750	Q751	Q752	Q753	Q754	Q755	Q756	Q757	Q758	Q759	Q760	Q761	Q762	Q763	Q764	Q765	Q766	Q767	Q768	Q769	Q770	Q771	Q772	Q773	Q774	Q775	Q776	Q777	Q778	Q779	Q780	Q781	Q782	Q783	Q784	Q785	Q786	Q787	Q788	Q789	Q790	Q791	Q792	Q793	Q794	Q795	Q796	Q797	Q798	Q799	Q800	Q801	Q802	Q803	Q804	Q805	Q806	Q807	Q808	Q809	Q810	Q811	Q812	Q813	Q814	Q815	Q816	Q817	Q818	Q819	Q820	Q821	Q822	Q823	Q824	Q825	Q826	Q827	Q828	Q829	Q830	Q831	Q832	Q833	Q834	Q835	Q836	Q837	Q838	Q839	Q840	Q841	Q842	Q843	Q844	Q845	Q846	Q847	Q848	Q849	Q850	Q851	Q852	Q853	Q854	Q855	Q856	Q857	Q858	Q859	Q860	Q861	Q862	Q863	Q864	Q865	Q866	Q867	Q868	Q869	Q870	Q871	Q872	Q873	Q874	Q875	Q876	Q877	Q878	Q879	Q880	Q881	Q882	Q883	Q884	Q885	Q886	Q887	Q888	Q889	Q890	Q891	Q892	Q893	Q894	Q895	Q896	Q897	Q898	Q899	Q900	Q901	Q902	Q903	Q904	Q905	Q906	Q907	Q908	Q909	Q910	Q911	Q912	Q913	Q914	Q915	Q916	Q917	Q918	Q919	Q920	Q921	Q922	Q923	Q924	Q925	Q926	Q927	Q928	Q929	Q930	Q931	Q932	Q933	Q934	Q935	Q936	Q937	Q938	Q939	Q940	Q941	Q942	Q943	Q944	Q945	Q946	Q947	Q948	Q949	Q950	Q951	Q952	Q953	Q954	Q955	Q956	Q957	Q958	Q959	Q960	Q961	Q962	Q963	Q964	Q965	Q966	Q967	Q968	Q969	Q970	Q971	Q972	Q973	Q974	Q975	Q976	Q977	Q978	Q979	Q980	Q981	Q982	Q983	Q984	Q985	Q986	Q987	Q988	Q989	Q990	Q991	Q992	Q993	Q994	Q995	Q996	Q997	Q998	Q999	Q1000	Q1001	Q1002	Q1003	Q1004	Q1005	Q1006	Q1007	Q1008	Q1009	Q1010	Q1011	Q1012	Q1013	Q1014	Q1015	Q1016	Q1017	Q1018	Q1019	Q1020	Q1021	Q1022	Q1023	Q1024	Q1025	Q1026	Q1027	Q1028	Q1029	Q1030	Q1031	Q1032	Q1033	Q1034	Q1035	Q1036	Q1037	Q1038	Q1039	Q1040	Q1041	Q1042	Q1043	Q1044	Q1045	Q1046	Q1047	Q1048	Q1049	Q1050	Q1051	Q1052	Q1053	Q1054	Q1055	Q1056	Q1057	Q1058	Q1059	Q1060	Q1061	Q1062	Q1063	Q1064	Q1065	Q1066	Q1067	Q1068	Q1069	Q1070	Q1071	Q1072	Q1073	Q1074	Q1075	Q1076	Q1077	Q1078	Q1079	Q1080	Q1081	Q1082	Q1083	Q1084	Q1085	Q1086	Q1087	Q1088	Q1089	Q1090	Q1091	Q1092	Q1093	Q1094	Q1095	Q1096	Q1097	Q1098	Q1099	Q1100	Q1101	Q1102	Q1103	Q1104	Q1105	Q1106	Q1107	Q1108	Q1109	Q1110	Q1111	Q1112	Q1113	Q1114	Q1115	Q1116	Q1117	Q1118	Q1119	Q1120	Q1121	Q1122	Q1123	Q1124	Q1125	Q1126	Q1127	Q1128	Q1129	Q1130	Q1131	Q1132	Q1133	Q1134	Q1135	Q1136	Q1137	Q1138	Q1139	Q1140	Q1141	Q1142	Q1143	Q1144	Q1145	Q1146	Q1147	Q1148	Q1149	Q1150	Q1151	Q1152	Q1153	Q1154	Q1155	Q1156	Q1157	Q1158	Q1159	Q1160	Q1161	Q1162	Q1163	Q1164	Q1165	Q1166	Q1167	Q1168	Q1169	Q1170	Q1171	Q1172	Q1173	Q1174

TABLE III. Group A inspection for device type 03 - Continued.

Symbol	MIL Standard method	Cases Z, R	Terminal conditions																	Test Limits							
																				Subgroup 9 TC = +25 C		Subgroup 10 TC = +125 C		Subgroup 11 TC = -55 C			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max	Min	Max	Min
t _{PHL}	3004 (FIG. 4)	189	GND	OUT	IN	IN	OUT	OUT	IN	IN	OUT	IN	IN	IN	OUT	OUT	IN	IN	OUT	OUT	4.5 V	2	12	2	16	2	12
		190	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
		192	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
		193	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
		194	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
		195	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
		196	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
t _{PLH}	3004 (FIG. 4)	197-204	Same tests and terminal conditions and limits as specified above for t _{PHL} .																	Measured terminal	Subgroup 9 TC = +25 C	Subgroup 10 TC = +125 C	Subgroup 11 TC = -55 C	Unit			

See footnotes at end of table.

Table III. Group A Inspection for Service Type 04 - Continued.

Symbol	MIL-STD-383 method	Cases 2, 3	Terminal conditions																	Test Limits						Unit																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
			Terminal conditions																	Subgroup 1 TC = +25 C			Subgroup 2 TC = +125 C				Subgroup 3 TC = -55 C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
			1	2	3	4	5	6	7	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	40	41	42	43	44	45	46	47	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	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	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	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430	1431	1432	1433	1434	1435	1436	1437	1438	1439	1440	1441	1442	1443	1444	1445	1446	1447	1448	1449	1450	1451	1452	1453	1454	1455	1456	1457	1458	1459	1460	1461

TABLE III. Group A inspection for device type 06 - Continued.

Symbol	MIL-STD-883 method	Cases 2, R	Terminal conditions																		Test limits							
			Terminal conditions																		Test limits							
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Subgroup 9 T _C = +25°C	Subgroup 10 T _C = +125°C	Subgroup 8 T _C = -55°C	Unit	
																						Min	Max	Min	Max	Min	Max	
t _{pZL}	3003 (F19. 4)	184 185 186 187 188 189 190 191	IN	GND	ENC	OUT	4.5 V	4	25	4	35	4	26	ns														
t _{pHL}	3004 (F19. 4)	192 193 194 195 197 198 199	GND	IN	OUT		2	12	2	16	2	12	ns															
t _{pLH}	3004 (F19. 4)	200-207	Same tests, terminal conditions and limits as specified above for t _{pHL} .																									

See footnotes at end of table.

TABLE III. Group A inspection for device type 53.

Symbol	MIL-STD-883 method	Cases 2, R	Terminal conditions																		Test Limits																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
			Terminal conditions																		Subgroup 1		Subgroup 2		Subgroup 3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
			1	2	3	4	5	6	7	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	40	41	42	43	44	45	46	47	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	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	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	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430	1431	1432	1433	1434	1435	1436	1437	1438	1439	1440	1441	1442	1443	1444	1445	1446	1447	1448	1449	1450	1451	1452	1453	1454	1455	1456	1457	1458	1459	1460	1461	1462	1463	1464	1465	1466

TABLE III. Group A inspection for device type 53 - Continued.

Symbol	MIL-STD-883 method	Cases 2, R	Terminal conditions																Test Limits						Unit		
																			Subgroup 8 T _C = +25 °C		Subgroup 10 T _C = +125 °C		Subgroup 11 T _C = +55 °C				
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Min	Max		Min	Max
t _{PH}	3003 (Fig. 4)	176	0/E	1/Q	1/D	2/Q	3/Q	4/Q	5/Q	6/Q	7/Q	8/Q	9/Q	10/Q	11/Q	12/Q	13/Q	14/Q	15/Q	16/Q	17/Q	18/Q	19/Q	20/Q	ns		
			177	14	OUT	4.5 V	OUT	OUT	14.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT		4.5 V	
			178	14	OUT	4.5 V	OUT	OUT	14.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT		4.5 V	
			179	14	OUT	4.5 V	OUT	OUT	14.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT		4.5 V	
			180	14	OUT	4.5 V	OUT	OUT	14.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT		4.5 V	
			181	14	OUT	4.5 V	OUT	OUT	14.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT	4.5 V	OUT		4.5 V	
t _{PLH}	3004 (Fig. 4)	192	GND	OUT	IN	IN	OUT	OUT	IN	IN	OUT	OUT	IN	IN	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT	ns		
			193	GND	OUT	IN	IN	OUT	OUT	IN	IN	OUT	OUT	IN	IN	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT		4.5 V	
			194	GND	OUT	IN	IN	OUT	OUT	IN	IN	OUT	OUT	IN	IN	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT		OUT	4.5 V
			195	GND	OUT	IN	IN	OUT	OUT	IN	IN	OUT	OUT	IN	IN	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT		OUT	4.5 V
t _{PLH}	3004 (Fig. 4)	196	GND	OUT	IN	IN	OUT	OUT	IN	IN	OUT	OUT	IN	IN	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT	ns		
			197	GND	OUT	IN	IN	OUT	OUT	IN	IN	OUT	OUT	IN	IN	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT		4.5 V	
			198	GND	OUT	IN	IN	OUT	OUT	IN	IN	OUT	OUT	IN	IN	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT		OUT	4.5 V
			199	GND	OUT	IN	IN	OUT	OUT	IN	IN	OUT	OUT	IN	IN	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT		OUT	4.5 V
t _{PLH}	3004 (Fig. 4)	200-208	Same tests, terminal conditions and limits as specified above for t _{PH} .																								
			Same tests, terminal conditions and limits as specified above for t _{PH} .																								

1/ Input pins not designated shall be "high" level logic or "low" level logic, or may be left open provided they do not influence the outcome of the measurement. Output pins not designated shall be tied to the loads or left open provided they do not influence the outcome of the measurement. Exceptions are as follows:

- a. V_{IC} (pos) tests, the GND terminal shall be open and the minimum limit of 0.4 V applies only where test equipment limitations do not allow for the GND pin to be open during test.
- b. V_{IC} (neg) tests, the V_{CC} terminal shall be open.
- c. I_{CC} tests, the output terminals shall be open.

2/ See 4.4.1c.

3/ Tests shall be performed in sequence, attributes data only.

4/ H > 2.5 V, L < 2.5 V; A = 3.7 V; B = 0.4 V, except for device 53; A = 2.4 V; B = 0.4 V.

5/ EH must be held at logic "1" while changing the address lines (A₀, A₁, A₂) to select the next output bit.

6/ Apply 4.5 V momentary

7/ Three-state output conditions are required for t_{PHL}, set output to high state. For t_{PLH}, set output to low state. Set input pins to V_{IH} = V_{IL} (max) and V_{IL} = V_{IH} (min), as required.

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°C of their power stable condition at room temperature; then, electrical parameter end-point measurements shall be performed.

TABLE IV. Delta limits at 25°C.

Parameter <u>1/</u>	Device types	
	All	
I _{CC}		±30 nA

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

4.5.3 Quiescent supply current (I_{CC} test). When performing quiescent supply current measurements (I_{CC}), the meter shall be placed so that all currents flow through the meter.

4.5.4 Radiation hardness assurance (RHA) testing. The RHA testing shall be performed in accordance with test procedures and sampling specified in table V of method 5005 of MIL-STD-883 and herein:

- a. Before irradiation, selected samples shall be assembled in qualified packages and pass the governing electrical parameters (group A subgroup 1 at 25°C) and also be subjected to the threshold-voltage test in table V in order to calculate the delta threshold (ΔV_T) after irradiation.
- b. The devices shall be subjected to a total radiation dose as specified in MIL-M-38510 for the radiation hardness assurance (RHA) level being tested, and meet the end point electrical parameters as defined in table IV at 25°C, after exposure. The start and completion of the end point electrical parameter measurements shall not exceed 2 hours following irradiation.
- c. Threshold-voltage test circuit conditions shall be as specified in table V and figure 5. In situ and remote testing, the tests shall be performed with the devices biased in accordance with table VII and bias may be interrupted for up to 1 minute to remove devices to the remote bias fixture.
- d. After irradiation, the devices shall pass the truth table test as specified in subgroup 7 in table III or if subgroup 7 is not required, then an equivalent truth table test shall be performed.

TABLE V. Threshold-voltage test circuit conditions.

Device type	GND	5 V	V_{IN}	GND	-5.0 V	V_{TP}
			measured at -10 μ A supply			measured at 10 μ A supply
01	12	5	2,3,4,6,7,13	12	2,3,4,6,7,13	5
02	8	16	1-3,13,14,15	8	1-3,13,14,15	16
03 53	10	20	1,3,4,7,8,11,13, 14,17,18	20	1,3,4,7,8,11,13, 14,17,18	20
04	10	20	1,3,4,7,8,11,13, 14,17,18	10	1,3,4,7,8,11,13, 14,17,18	20
05	10	20	1-9,11	10	1-9,11	20
06	10	20	1-9,11	10	1-9,11	20

TABLE VI. Radiation hardening end-point electrical parameters at +25°C.

Parameter	All device types	V_{CC}	V_{CC}
		Device types	Device type
		01-06	53
V_{TN}	-0.3 V min	5.0 V	5.0 V
V_{TP}	2.8 V max	5.0 V	5.0 V
ΔV_T	1.0 V max	5.0 V	5.0 V
I_{CC}	100 x max limit	6.0 V	5.5 V
t_{PLH}	1.35 x max limit	4.5 V	4.5 V
t_{PHL}	1.35 x max limit	4.5 V	4.5 V

TABLE VII. Threshold-voltage test circuit conditions.

Device type	Pin connections		
	V _{CC} = 4.5 V dc (through a 30- to 60-kilohm resistor)	GND	V _{CC} = 4.5 V dc
01	2, 3, 4, 6, 7, 13	12	5
02	1-3, 13-15	8	16
03,53	1, 3, 4, 7, 8, 11, 13, 14, 17, 18	10	20
04	1, 3, 4, 7, 8, 11, 13, 14, 17, 18	10	20
05	1-9, 11	10	20
06	1-9, 11	10	20

Pins not designated are open or connected to 4.5 V dc through a 30- to 60-kilohm resistor.

4.6 Data reporting. When specified in the purchase order or contract, a copy of the following data, as applicable, shall be supplied.

- a. Attributes data for all screening tests (see 4.4) and variables data for all static burn-in, dynamic burn-in, and steady-state life tests (see 3.5).
- b. A copy of each radiograph.
- c. The quality conformance inspection data (see 4.4).
- d. Parameter distribution data on parameters evaluated during burn-in (see 3.5).
- e. Final electrical parameters data (see 4.2c).

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 specification are intended for original equipment design application and logistic support of existing equipment.

6.2 Ordering data. The acquisition document 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.
- 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.
- i. Requirements for total dose radiation testing (see 3.6.1 and 4.5.4), if applicable.

6.3 Abbreviations, symbols, and definitions. The abbreviations, symbols, and definitions used herein are defined in MIL-M-38510, MIL-STD-883, and as follows:

C _i	- - - - -	Input terminal-to-GND capacitance.
GND	- - - - -	Ground zero voltage potential.
I _{CC}	- - - - -	Quiescent supply current.
T _A	- - - - -	Free air temperature.
V _{CC}	- - - - -	Positive supply voltage.

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 S for National Aeronautics and Space Administration or class B for Department of Defense (see 1.2.2), lead finish C (see 3.3). Longer length leads and lead forming shall not affect the part number.

6.5 Substitutability. The cross-reference information below is presented for the convenience of users. Microcircuits covered by this specification will 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	54HC75
02	54HC259
03	54HC373
04	54HC533
05	54HC563
06	54HC573
53	54HCT373

6.6 Handling. MOS devices must be handled with certain precautions to avoid damage due to accumulation of static charge. Input protective devices have been designed in the chip to minimize the effect of this static build up. 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. Do not handle devices by the leads.
- d. Store devices in conductive foam or carriers.
- e. Avoid use of plastic, rubber, or silk in MOS areas.
- f. Maintain relative humidity above 50 percent, if practical.

Custodians:

Army - ER
Navy - EC
Air Force - 17
NASA - NA

Review activities:

Army - AR, MI
Air Force - 11, 19, 85, 99
DLA - ES

User activities:

Army - SM
Navy - AS, CG, OC, MC, SH

Preparing activity:
Air Force - 17

Agent:
DLA - ES

(Project 5962-0953)