

MIL-M-38510/14D
2 August 1982
~~SUPERSEDED~~
MIL-M-38510/14C(USAF)
2 November 1979

MILITARY SPECIFICATION
MICROCIRCUITS, DIGITAL,
TTL, DATA SELECTORS/MULTIPLEXERS,
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, TTL, data selectors/multiplexers, logic microcircuits. Three product assurance classes and a choice of case outlines and lead finishes are provided for each type and are reflected in the complete part number.

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

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

<u>Device type</u>	<u>Circuit</u>
01	Sixteen-input data selector/multiplexer, with enable
02, 06	Eight-input data selector/multiplexer, with enable
03	Dual, four-input data selector/multiplexer, with enable
04	Dual, four-input data selector/multiplexer, without enable
05	Quad, two-input data selector/multiplexer, with enable

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

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

<u>Outline letter</u>	<u>Case outline, (see MIL-M-38510, appendix C)</u>
E	D-2 (16-lead, 1/4" x 7/8", dual-in-line package)
F	F-5 (16-lead, 1/4" x 3/8", flat package)
J	D-3 (24-lead, 1/2" x 1-1/4", dual-in-line package)
K	F-6 (24-lead, 3/8" x 5/8", flat-package)
Z	F-8 (24-lead, 1/4" x 3/8", flat-package)

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

1.3 Absolute maximum ratings.

Supply voltage range - - - - -	-0.5 V to 7.0 V
Input voltage range- - - - -	-1.5 V at -12 mA to 5.5 V
Storage temperature range- - - - -	-65°C to 150°C
Maximum power dissipation, P_D ^{1/}	
Device type 01 - - - - -	375 mW
Device types 02 and 06 - - - - -	268 mW
Device type 03 - - - - -	286 mW
Device type 04 - - - - -	248 mW
Device type 05 - - - - -	275 mW
Lead temperature (soldering 10 seconds)-	300°C
Thermal resistance, junction to case (θ_{JC})	0.09°C/mW cases F, K, and Z 0.08°C/mW cases E and J
Junction temperature (T_J)- - - - -	175°C

1.4 Recommended operating conditions.

Supply voltage - - - - -	4.5 V minimum to 5.5 V maximum
Minimum high level input voltage (V_{IH})	2.0 V
Maximum low level input voltage (V_{IL})	0.8 V
Maximum low level output current (I_{OL})	16 mA
Normalized fanout (each output) ^{2/} - - -	
Low logic level- - - - -	10 maximum
High logic level - - - - -	20 maximum
Case operating temperature range - - - -	-55°C to 125°C

2. APPLICABLE DOCUMENTS

2.1 Government specifications and standards. Unless otherwise specified, the following specifications and standards, of the issue listed in that issue of the Department of Defense Index of Specifications and Standards specified in the solicitation, form a part of this specification to the extent specified herein.

SPECIFICATION**MILITARY**

MIL-M-38510 - Microcircuit, General Specification for.

STANDARD**MILITARY**

MIL-STD-883 - Test Methods and Procedures for Microelectronics.

(Copies of specifications, standards, handbooks, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Order or precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

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-39510, and herein.

1/ Must withstand the added P_D due to short circuit condition (e.g. I_{OS} test.)

2/ Device will fanout in both high and low levels to the specified number of inputs on the same device type as that being tested.

3.2.1 Logic diagrams and terminal connections. The logic diagrams and terminal connections shall be as specified on figures 1 and 2.

3.2.2 Truth tables. The truth tables shall be as specified on figure 3.

3.2.3 Schematic circuit. The schematic circuit shall be submitted to the preparing activity prior to inclusion of manufacturer's device in this specification and shall be submitted to the qualifying activity as a prerequisite for qualification. All manufacturer's 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 (see 6.5).

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

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions	Device type	Limits		Units
				Min	Max	
High level output voltage	V _{OH}	V _{CC} = 4.5 V I _{OH} = - .8 mA	01, 02, 03, 04, 05, 06	2.4		Volts
Low level output voltage	V _{OL}	V _{CC} = 4.5 V I _{OL} = 16 mA	01, 02, 03, 04, 05, 06		0.4	Volts
Input clamp voltage	V _{IC}	V _{CC} = 4.5 V I _{IN} = -12 mA	01, 02, 03, 04, 05, 06		-1.5	Volts
Low level input current	I _{IL}	V _{CC} = 5.5 V V _{IN} = 0.4 V	01, 02, 03, 04, 05, 06	-0.7	-1.6	mA
High level input current	I _{IH1}	V _{CC} = 5.5 V V _{IN} = 2.4 V	01, 02, 03, 04, 05, 06		40	μA
High level input current	I _{IH2}	V _{CC} = V _{IN} = 5.5 V	01, 02, 03, 04, 05, 06		100	μA
Short circuit output current	I _{OS}	V _{CC} = 5.5 V V _{OUT} = 0 V 1/	01, 03, 06 02, 04, 05	-20 -20	-55 -120	mA
Supply current	I _{CC}	V _{CC} = 5.5 V	01 02, 06 04 03 05		68 48 45 52 50	mA
Propagation delay time high-to-low level output from A, B, C or D to W	t _{PHL1}	R _L = 390Ω ±5%, C _L = 50 pF minimum (figure 5)	01	8	40	ns
Propagation delay time low-to-high level output from A, B, C or D to W	t _{PLH1}		01	8	43	ns
Propagation delay time high-to-low level output from strobe to W	t _{PHL2}		01	6	37	ns
Propagation delay time low-to-high level output from strobe to W	t _{PLH2}		01	6	32	ns
Propagation delay time high-to-low level output from E ₀ -E ₁₅ to W	t _{PHL3}		01	3	23	ns
Propagation delay time low-to-high level output from E ₀ -E ₁₅ to W	t _{PLH3}		01	3	30	ns

1/ Not more than one should be shorted at one time.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions	Device type	Limits		Units
				Min	Max	
Propagation delay time high-to-low level output from A, B or C to W	tPHL1	$R_L = 390\Omega \pm 5\%$, $C_L = 50 \text{ pF}$ minimum (figure 8)	02, 06	6	40	ns
Propagation delay time low-to-high level output from A, B or C to W	tPLH1		02, 06	6	38	ns
Propagation delay time high-to-low level output from A, B or C to Y	tPHL2		02, 06	8	49	ns
Propagation delay time low-to-high level output from A, B or C to Y	tPLH2		02, 06	8	45	ns
Propagation delay time high-to-low level output from strobe to W	tPHL3		02, 06	6	35	ns
Propagation delay time low-to-high level output from strobe to W	tPLH3		02, 06	6	35	ns
Propagation delay time high-to-low level output from strobe to Y	tPHL4		02, 06	8	46	ns
Propagation delay time low-to-high level output from strobe to Y	tPLH4		02, 06	8	42	ns
Propagation delay time high-to-low level output from D ₀ -D ₇ to W	tPHL5		02, 06	3	32	ns
Propagation delay time low-to-high level output from D ₀ -D ₇ to W	tPLH5		02, 06	3	26	ns
Propagation delay time high-to-low level output from D ₀ -D ₇ to Y	tPHL6		02, 06	6	41	ns
Propagation delay time low-to-high level output from D ₀ -D ₇ to Y	tPLH6		02, 06	6	33	ns
Propagation delay time high-to-low level output from data to Y	tPHL1	$R_L = 390\Omega \pm 5\%$, $C_L = 50 \text{ pF}$ minimum (figure 7)	03	3	29	ns
Propagation delay time low-to-high level output from data to Y	tPLH1		03	3	28	ns
Propagation delay time high-to-low level output from A or B to Y	tPHL2		03	6	44	ns
Propagation delay time low-to-high level output from A or B to Y	tPLH2		03	6	42	ns
Propagation delay time high-to-low level output from strobe to Y	tPHL3		03	6	32	ns
Propagation delay time low-to-high level output from strobe to Y	tPLH3		03	6	42	ns

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions	Device type	Limits		
				Min	Max	Units
Propagation delay time high-to-low level output from data to Y	t _{PHL1}	$R_L = 390\Omega \pm 5\%$, $C_L = 50 \text{ pF}$ minimum (figure 7)	04	3	41	ns
Propagation delay time low-to-high level output from data to Y	t _{PLH1}		04	3	39	ns
Propagation delay time high-to-low level output from data to W	t _{PHL2}		04	3	25	ns
Propagation delay time low-to-high level output from data to W	t _{PLH2}		04	3	24	ns
Propagation delay time high-to-low level output from A or B to Y	t _{PHL3}		04	6	51	ns
Propagation delay time low-to-high level output from A or B to Y	t _{PLH3}		04	6	51	ns
Propagation delay time high-to-low level output from A or B to W	t _{PHL4}		04	6	39	ns
Propagation delay time low-to-high level output from A or B to W	t _{PLH4}		04	6	34	ns
Propagation delay time high-to-low level output from A to Y	t _{PHL1}	$R_L = 390\Omega \pm 5\%$, $C_L = 50 \text{ pF}$ minimum (figure 8)	05	6	49	ns
Propagation delay time low-to-high level output from A to Y	t _{PLH1}		05	6	41	ns
Propagation delay time high-to-low level output from strobe to Y	t _{PHL2}		05	3	39	ns
Propagation delay time low-to-high level output from strobe to Y	t _{PLH2}		05	3	33	ns
Propagation delay time high-to-low level output from data to Y	t _{PHL3}		05	3	25	ns
Propagation delay time low-to-high level output from data to Y	t _{PLH3}		05	3	35	ns

3.5 Electrical test requirements. The electrical test requirements for each device class shall be in 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 and 1.2 herein. At the option of the manufacturer, marking of the country of origin may be omitted from the body of the microcircuit, but shall be retained on the initial container.

3.7 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 4 (see MIL-M-38510, appendix E).

TABLE II. Electrical test requirements.

MIL-STD-883 Test requirements	Subgroups (see table III)		
	Class S devices	Class B devices	Class C devices
Interim electrical tests (pre burn-in) (method 5004)	1	1	None
Final electrical tests (method 5004)	1*, 2, 3, 7, 9, 10, 11,	1*, 2, 3, 7, 9	1, 7
Group A electrical tests (method 5005)	1, 2, 3, 7, 8, 9, 10, 11	1, 2, 3, 7, 9, 10, 11	1, 2, 3, 7, 9
Group B test requirements (method 5005) subgroup 5	1, 2, 3, 7, 8, 9, 10, 11	N/A	N/A
Group C end-point electrical tests (method 5005)	N/A	1, 2, 3	1
Additional electrical tests for group C inspection	N/A	None	10, 11
Group D end-point electrical tests (method 5005)	1, 2, 3	1, 2, 3	1

*PDA applies to subgroup 1 (see 4.2c).

4. PRODUCT 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 inspections. The following additional criteria shall apply:

- a. Burn-in test (method 1015 of MIL-STD-883).
 - (1) Test condition D or E, using the circuit shown on figure 5, or equivalent.
 - (2) $T_A = 125^\circ\text{C}$ minimum.
- b. Interim and final electrical tests shall be as specified in table II, except interim electrical test prior to burn-in is optional at the discretion of the manufacturer.
- c. The percent defective allowable (PDA) for class S devices shall be as specified in MIL-M-38510. The PDA for class B devices shall be 10 percent based on failures from group A, subgroup 1 tests after cooldown as the final electrical test in accordance with method 5004 of MIL-STD-883, and with no intervening electrical measurements. If interim electrical tests are performed prior to burn-in, failures resulting from pre burn-in screening may be excluded from the PDA. If interim electrical tests prior to burn-in are omitted, then all screening failures shall be included in the PDA. The verified failures of group A, subgroup 1, after burn-in, divided by the total number of devices submitted for burn-in in that lot shall be used to determine the percent defective for that lot, and the lot shall be accepted or rejected based on the PDA for the applicable device class.
- d. Constant acceleration test (method 2001 of MIL-STD-883) for case outline J shall be performed using, as a minimum, test condition D.

4.3 Qualification inspection. Qualification inspection shall be in accordance with MIL-M-38510. Inspections to be performed shall be those specified herein for groups A, B, C, and D inspections (see 4.4.1 through 4.4.4).

4.4 Quality conformance inspection. Quality conformance 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, and D inspections. (see 4.4.1 through 4.4.4).

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

- a. Tests shall be as specified in table II herein.
- b. Subgroups 4, 5, and 6 shall be omitted.

4.4.2 Group B inspection. Group B inspection shall be in accordance with table II of method 5005 of MIL-STD-883. Electrical tests shall be as specified in table II 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 tests shall be as specified in table II herein.
- b. Subgroups 3 and 4 shall be added to the group C inspection requirements for class C devices and shall consist of the tests, conditions, and limits specified for subgroups 10 and 11 of group A.
- c. Steady-state life test (method 1005 of MIL-STD-883) conditions:
 - (1) Test condition D or E, using the circuit shown on figure 5, or equivalent.
 - (2) $T_A = 125^\circ\text{C}$ minimum.
 - (3) Test duration: 1,000 hours, except as permitted by appendix B of MIL-M-38510 and method 1005 of MIL-STD-883.
- d. Constant acceleration test (method 2001 of MIL-STD-883) for case outline J shall be performed using, as a minimum, test condition U.

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 tests shall be as specified in table II herein.

4.4.5 Inspection of packaging. Inspection of packaging shall be in accordance with MIL-M-38510.

4.5 Methods of inspection. Methods of inspection shall be as specified in appropriate tables and as specified herein.

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

5. PACKAGING

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

6. NOTES

6.1 Notes. The notes specified in MIL-M-38510 are applicable to this specification.

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

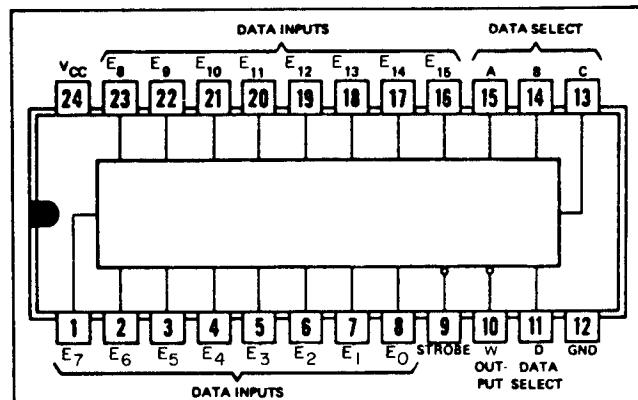
6.3 Ordering data. The contract or order should specify the following:

- a. Complete part number (see 1.2).

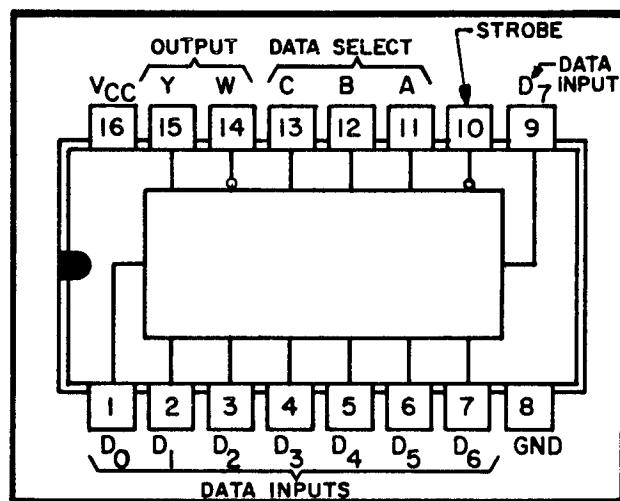
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Device type 01

Cases J, K, and Z

Device type 02

Cases E and F

Device type 03

Cases E and F

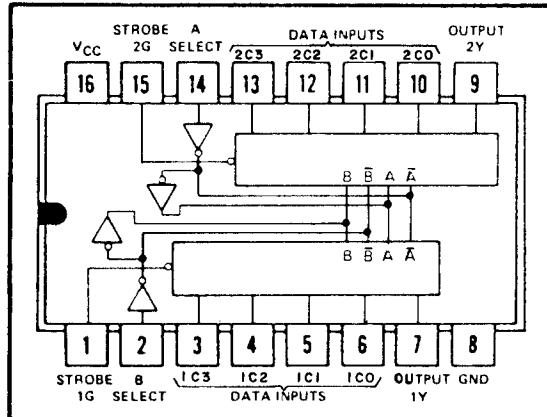
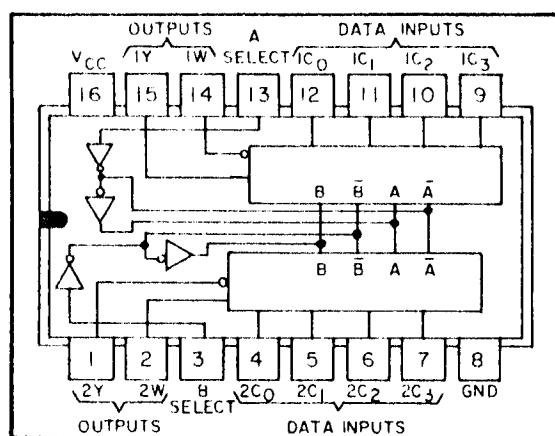


FIGURE 1. Terminal connections (top view).

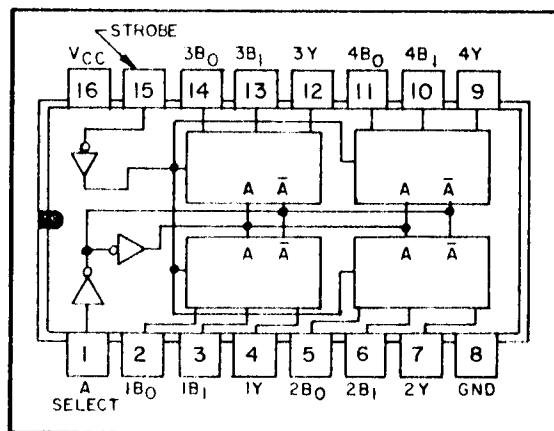
Device type 04

Cases E and F



Device type 05

Cases E and F



Device type 06

Cases E and F

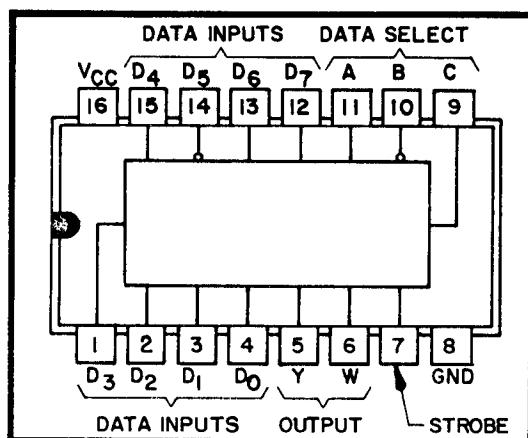
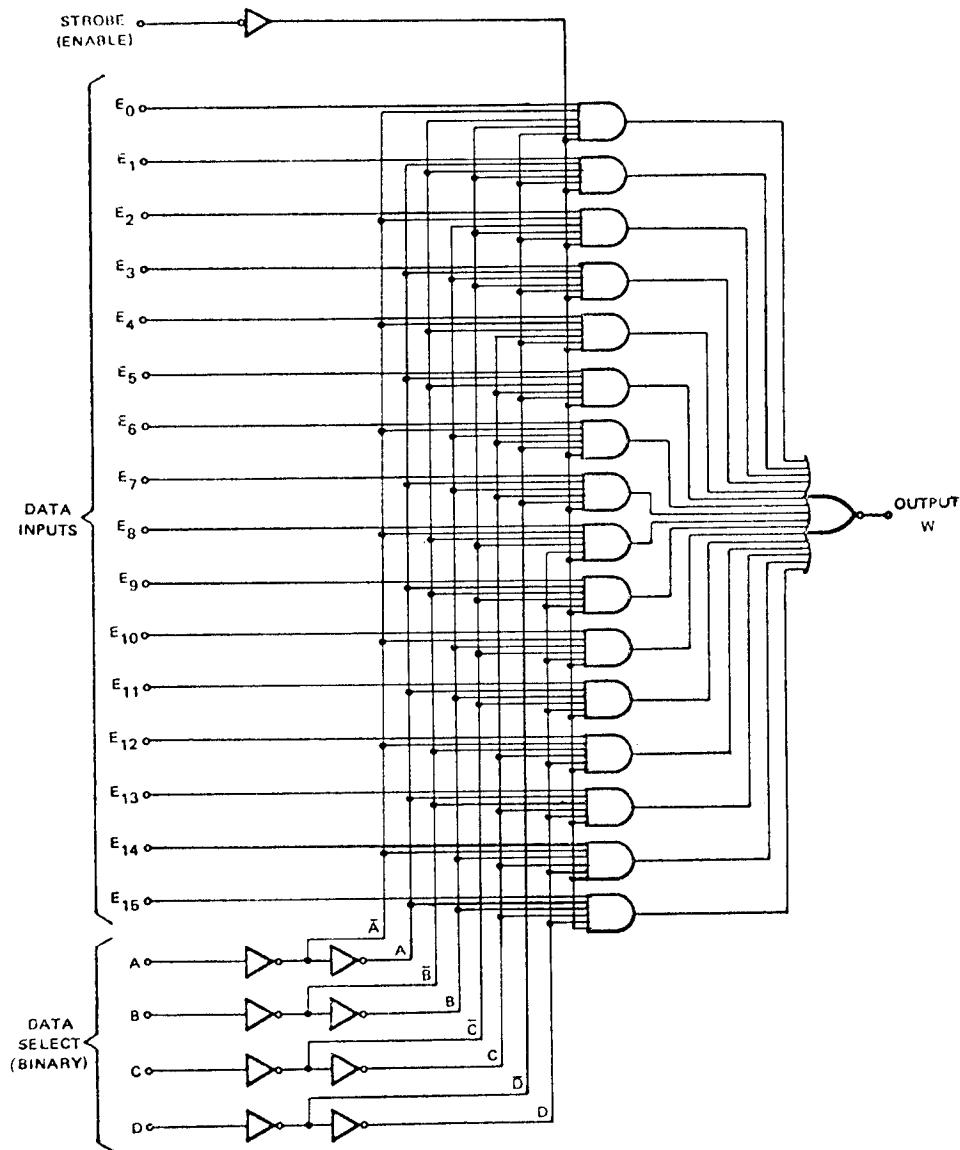
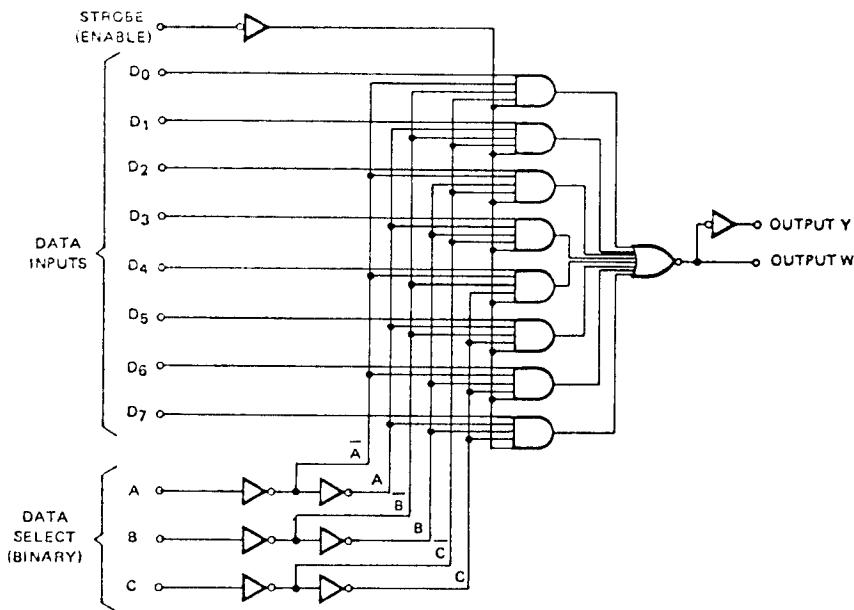
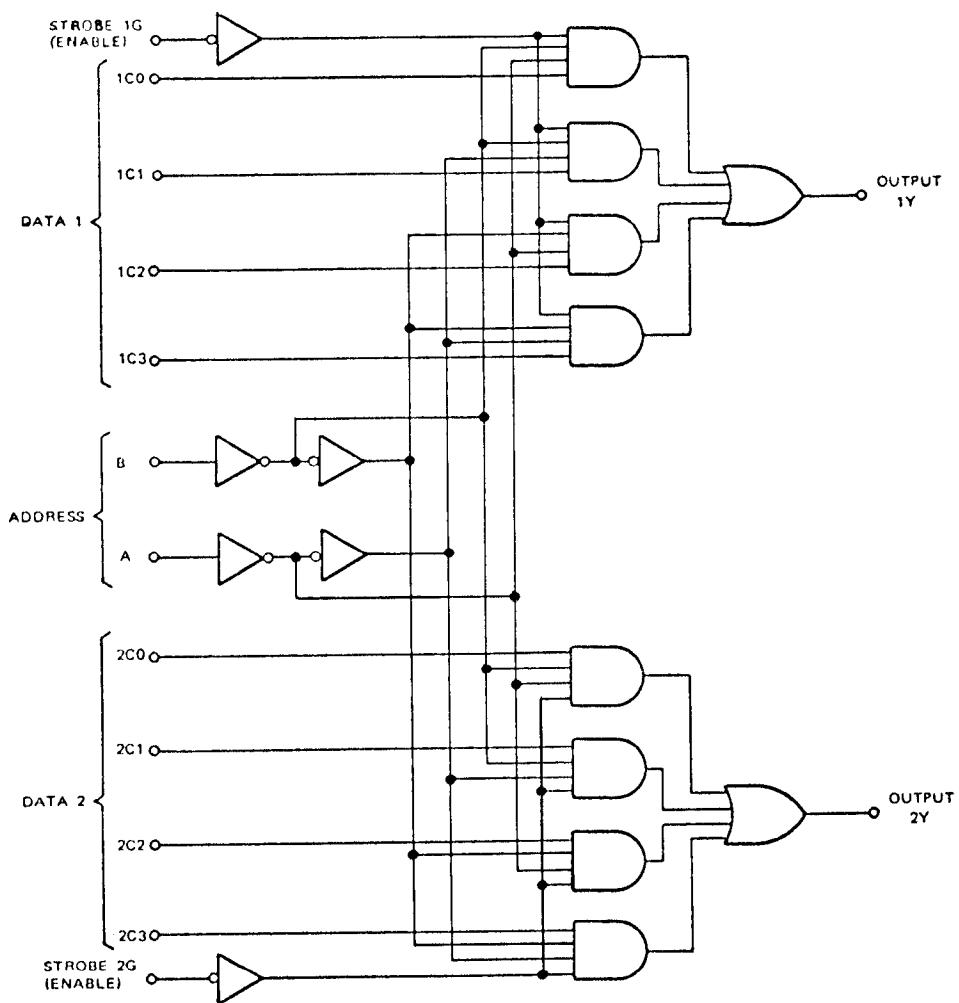
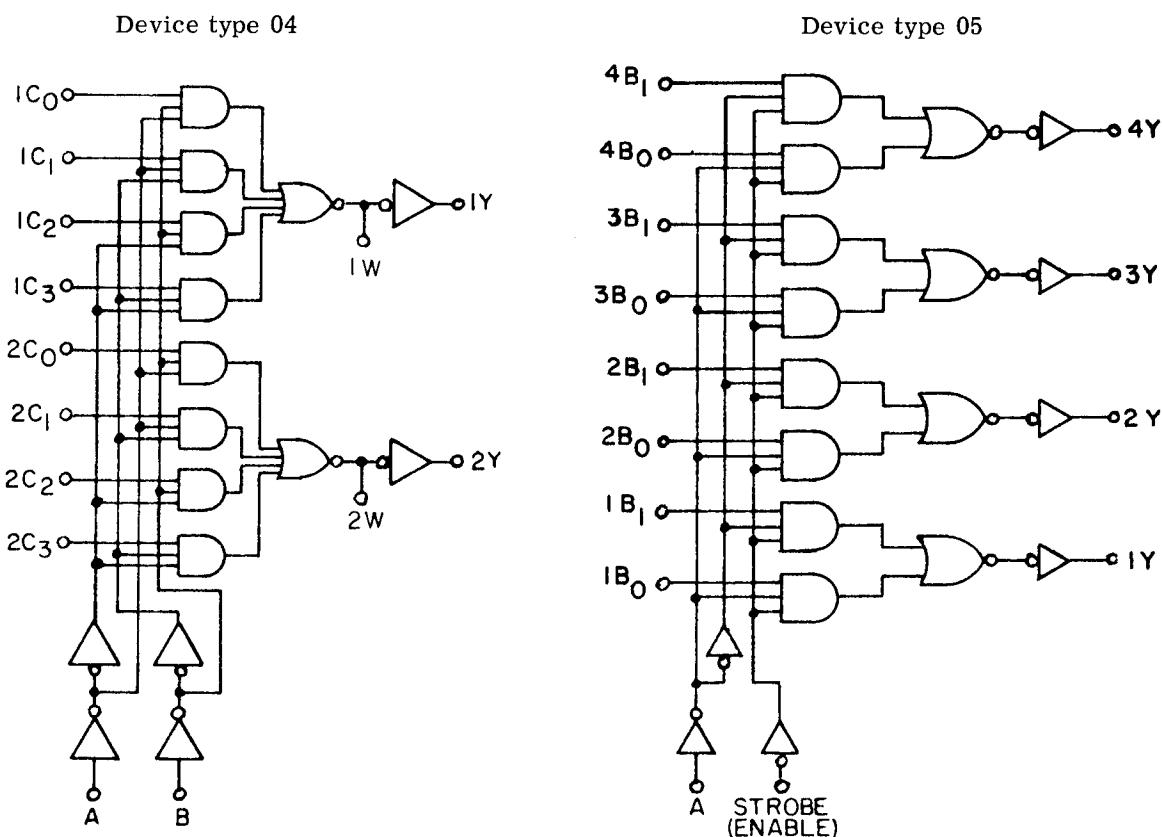


FIGURE 1. Terminal connections (top view) - Continued.

Device type 01FIGURE 2. Logic diagrams.

Device types 02 and 06FIGURE 2. Logic diagrams - Continued.

Device type 03FIGURE 2. Logic diagrams - Continued.

FIGURE 2. Logic diagrams - Continued.

Device type 01

		INPUTS																OUTPUT			
D	C	B	A	STROBE	E ₀	E ₁	E ₂	E ₃	E ₄	E ₅	E ₆	E ₇	E ₈	E ₉	E ₁₀	E ₁₁	E ₁₂	E ₁₃	E ₁₄	E ₁₅	W
X	X	X	X	H	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	H
L	L	L	L	L	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	H
L	L	L	L	H	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	L
L	L	L	H	L	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	H
L	L	L	H	L	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	L
L	L	L	H	L	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	H
L	L	H	L	L	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	L
L	L	H	L	L	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	H
L	L	H	L	L	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	L
L	L	H	H	L	X	X	X	L	X	X	X	X	X	X	X	X	X	X	X	X	H
L	L	H	H	L	X	X	X	H	X	X	X	X	X	X	X	X	X	X	X	X	L
L	H	L	L	L	X	X	X	X	L	X	X	X	X	X	X	X	X	X	X	X	H
L	H	L	L	L	X	X	X	X	H	X	X	X	X	X	X	X	X	X	X	X	L
L	H	L	L	L	X	X	X	X	L	X	X	X	X	X	X	X	X	X	X	X	H
L	H	L	L	L	X	X	X	X	H	X	X	X	X	X	X	X	X	X	X	X	L
L	H	L	L	L	X	X	X	X	L	X	X	X	X	X	X	X	X	X	X	X	H
L	H	L	L	L	X	X	X	X	H	X	X	X	X	X	X	X	X	X	X	X	L
L	H	H	H	L	X	X	X	X	X	L	X	X	X	X	X	X	X	X	X	X	H
L	H	H	H	L	X	X	X	X	X	H	X	X	X	X	X	X	X	X	X	X	L
H	L	L	L	L	X	X	X	X	X	X	L	X	X	X	X	X	X	X	X	X	H
H	L	L	L	L	X	X	X	X	X	X	H	X	X	X	X	X	X	X	X	X	L
H	L	L	H	L	X	X	X	X	X	X	L	X	X	X	X	X	X	X	X	X	H
H	L	L	H	L	X	X	X	X	X	X	H	X	X	X	X	X	X	X	X	X	L
H	L	H	L	L	X	X	X	X	X	X	H	X	X	X	X	X	X	X	X	X	H
H	L	H	L	L	X	X	X	X	X	X	H	X	X	X	X	X	X	X	X	X	L
H	L	H	L	L	X	X	X	X	X	X	H	X	X	X	X	X	X	X	X	X	H
H	L	H	L	L	X	X	X	X	X	X	H	X	X	X	X	X	X	X	X	X	L
H	H	L	L	L	X	X	X	X	X	X	H	X	X	X	X	X	X	X	X	X	H
H	H	L	L	L	X	X	X	X	X	X	H	X	X	X	X	X	X	X	X	X	L
H	H	H	H	L	X	X	X	X	X	X	H	X	X	X	X	X	X	X	X	X	H
H	H	H	H	L	X	X	X	X	X	X	H	X	X	X	X	X	X	X	X	X	L

When used to indicate an input condition, X = High logic level or low logic level.

FIGURE 3. Truth tables.

Device types 02 and 06

INPUTS										OUTPUTS			
C	B	A	STROBE	D ₀	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	Y	W
X	X	X	H	X	X	X	X	X	X	X	X	L	H
L	L	L	L	L	X	X	X	X	X	X	X	L	H
L	L	L	L	H	X	X	X	X	X	X	X	H	L
L	L	H	L	X	L	X	X	X	X	X	X	L	H
L	L	H	L	X	H	X	X	X	X	X	X	H	L
L	H	L	L	X	X	L	X	X	X	X	X	L	H
L	H	L	L	X	X	H	X	X	X	X	X	H	L
L	H	H	L	X	X	X	L	X	X	X	X	L	H
L	H	H	L	X	X	X	H	X	X	X	X	H	L
H	L	L	L	X	X	X	X	L	X	X	X	L	H
H	L	L	L	X	X	X	X	H	X	X	X	H	L
H	L	H	L	X	X	X	X	X	L	X	X	L	H
H	L	H	L	X	X	X	X	X	H	X	X	H	L
H	H	L	L	X	X	X	X	X	X	L	X	L	H
H	H	L	L	X	X	X	X	X	X	H	X	H	L
H	H	H	L	X	X	X	X	X	X	X	L	L	H
H	H	H	L	X	X	X	X	X	X	H	H	L	

When used to indicate an input, X = Irrelevant.

H = High level, L = Low level.

ADDRESS INPUTS		DATA INPUTS				STROBE	OUTPUT
B	A	C ₀	C ₁	C ₂	C ₃	G	Y
X	X	X	X	X	X	H	L
L	L	L	X	X	X	L	L
L	L	H	X	X	X	L	H
L	H	X	L	X	X	L	L
L	H	X	H	X	X	L	H
H	L	X	X	L	X	L	L
H	L	X	X	H	X	L	H
H	H	X	X	X	L	L	L
H	H	X	X	X	H	L	H

Address inputs A and B are common to both sections.
H = high level, L = low level, X = irrelevant.

FIGURE 3. Truth tables - Continued.

Device type 04

Address inputs		Data inputs				Outputs	
B	A	C ₀	C ₁	C ₂	C ₃	Y	W
L	L	L	X	X	X	L	H
L	L	H	X	X	X	H	L
L	H	X	L	X	X	L	H
L	H	X	H	X	X	H	L
H	L	X	X	L	X	L	H
H	L	X	X	H	X	H	L
H	H	X	X	X	L	L	H
H	H	X	X	X	H	H	L

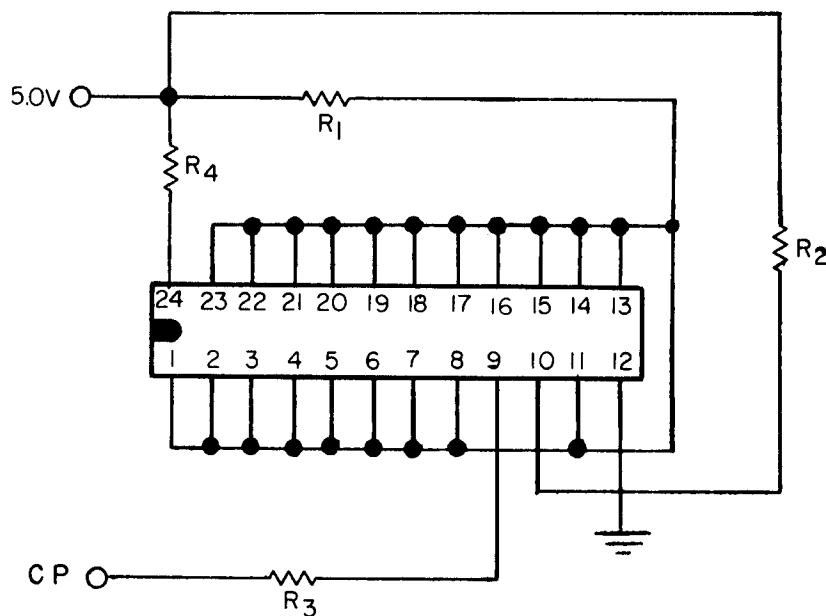
Address inputs A and B are common to both sections.
H = High level, L = Low level, X = Irrelevant.

Device type 05

Strobe (enable)	Select input	Data inputs		Output
G	A	B ₀	B ₁	Y
H	X	X	X	L
L	H	X	L	L
L	H	X	H	H
L	L	L	X	L
L	L	H	X	H

Address A and strobe G are common to all sections.
H = High level, L = Low level, X = Irrelevant.

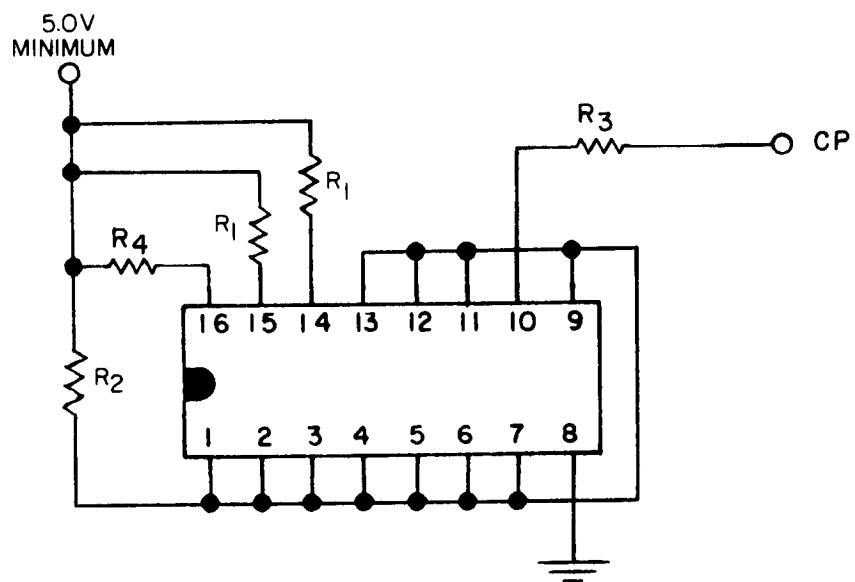
FIGURE 3. Truth tables - Continued.

Device type 01

NOTES:

1. CP = 100 kHz $\pm 5\%$; 50% duty cycle
 $-0.5 \text{ V} \leq V_{IL} \leq 0.8 \text{ V}$, $2.0 \text{ V} \leq V_{IH} \leq 5.5 \text{ V}$.
2. R₁ = $300\Omega \pm 5\%$.
3. R₂ = $1 \text{ k}\Omega \pm 5\%$.
4. R₃ = 27Ω maximum, R₄ = 10Ω maximum.

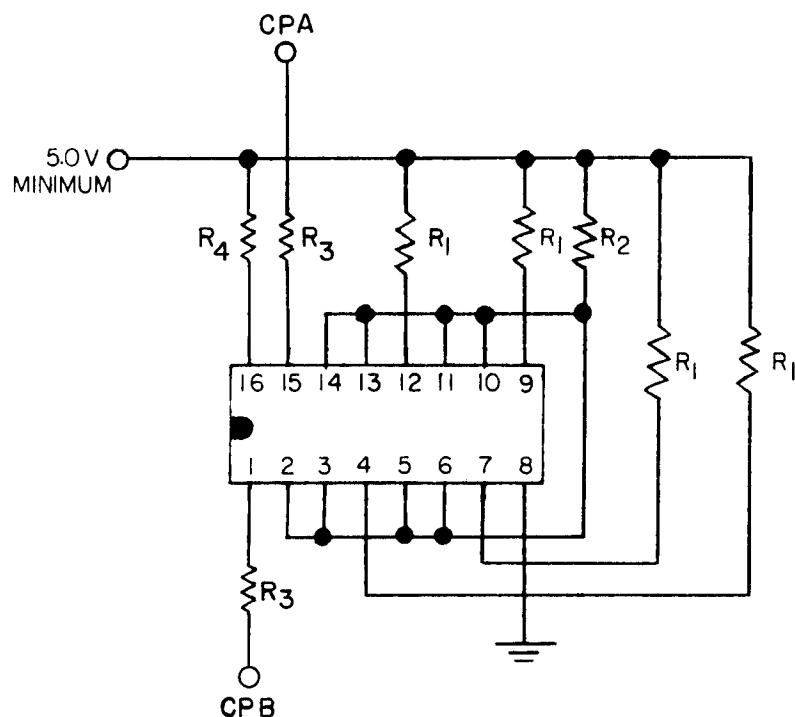
FIGURE 4. Burn-in and life test circuits.

Device type 02

NOTES:

1. CP = 100 kHz $\pm 5\%$; 50% duty cycle
 $-0.5 \text{ V} \leq V_{IL} \leq 0.8 \text{ V}$, $2.0 \text{ V} \leq V_{IH} \leq 5.5 \text{ V}$.
2. R₁ = $300\Omega \pm 5\%$.
3. R₂ = $1 \text{ k}\Omega \pm 5\%$.
4. R₃ = 27Ω maximum, R₄ = 10Ω maximum.

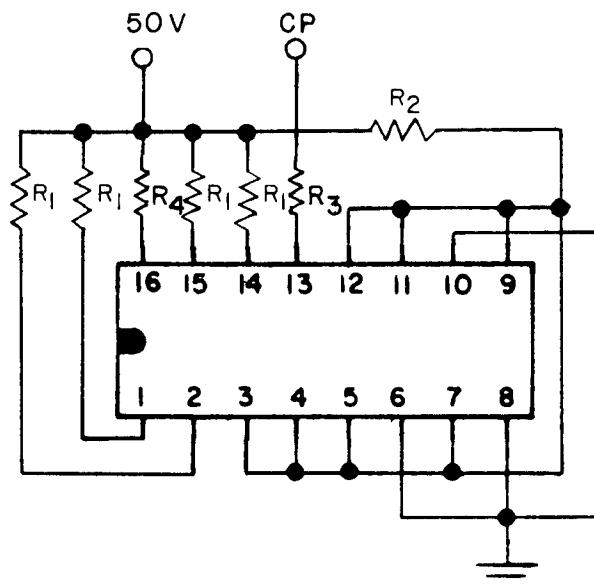
FIGURE 4. Burn-in and life test circuits - Continued.

Device type 03

NOTES:

1. CPA = CPB = 100 kHz \pm 5%; 50% duty cycle
 $-0.5 \text{ V} \leq V_{IL} \leq 0.8 \text{ V}$, $2.0 \text{ V} \leq V_{IH} \leq 5.5 \text{ V}$.
2. R₁ = $300\Omega \pm 5\%$.
3. R₂ = $1 \text{ k}\Omega \pm 5\%$.
4. R₃ = 27Ω maximum, R₄ = 10Ω maximum.

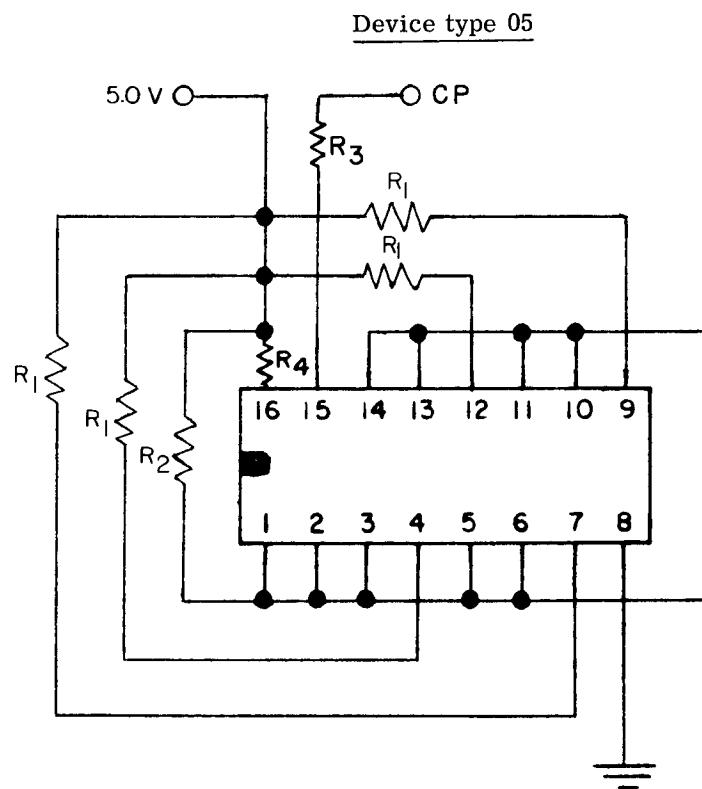
FIGURE 4. Burn-in and life test circuits - Continued.

Device type 04

NOTES:

1. CP = 100 kHz $\pm 5\%$; 50% duty cycle
 $-0.5 \text{ V} \leq V_{IL} \leq 0.8 \text{ V}$, $2.0 \text{ V} \leq V_{IH} \leq 5.5 \text{ V}$.
2. $R_1 = 300\Omega \pm 5\%$.
3. $R_2 = 1 \text{ k}\Omega \pm 5\%$.
4. $R_3 = 27\Omega$ maximum, $R_4 = 10\Omega$ maximum.

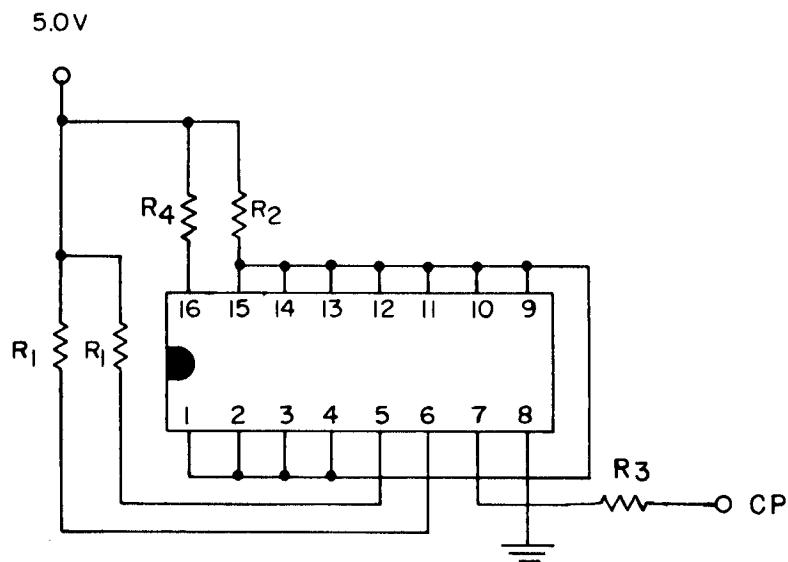
FIGURE 4. Burn-in and life test circuits - Continued.



NOTES:

1. CP = 100 kHz $\pm 5\%$; 50% duty cycle
 $-0.5 \text{ V} \leq V_{IL} \leq 0.8 \text{ V}$, $2.0 \text{ V} \leq V_{IH} \leq 5.5 \text{ V}$.
2. R1 = $300\Omega \pm 5\%$.
3. R2 = $1 \text{ k}\Omega \pm 5\%$.
4. R3 = 27Ω maximum, R4 = 10Ω maximum.

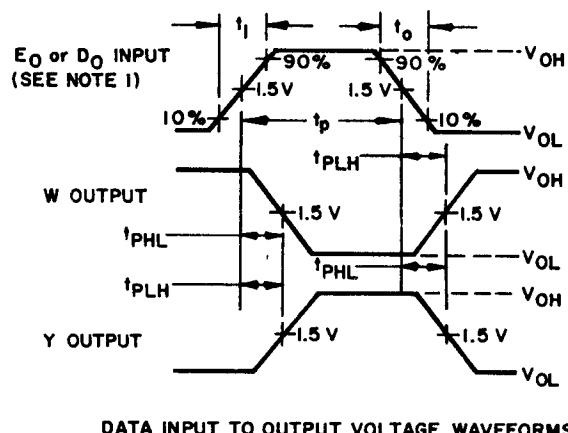
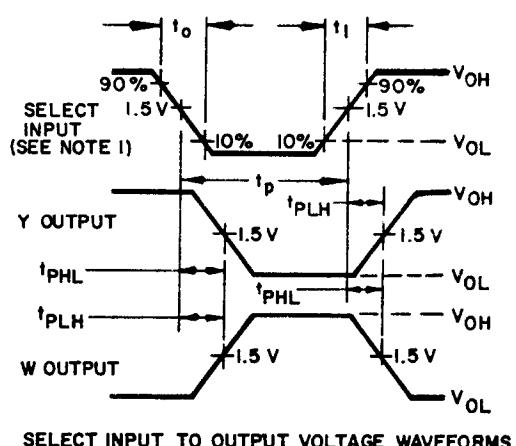
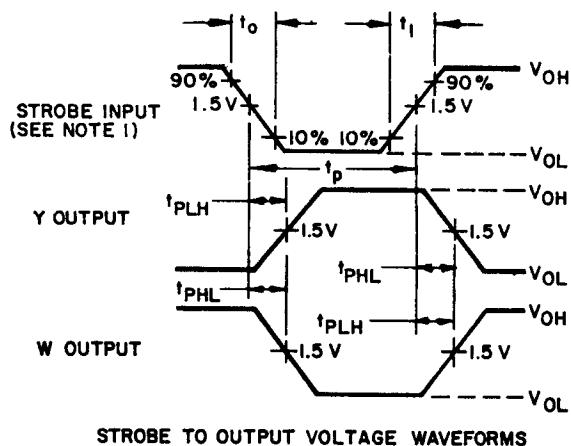
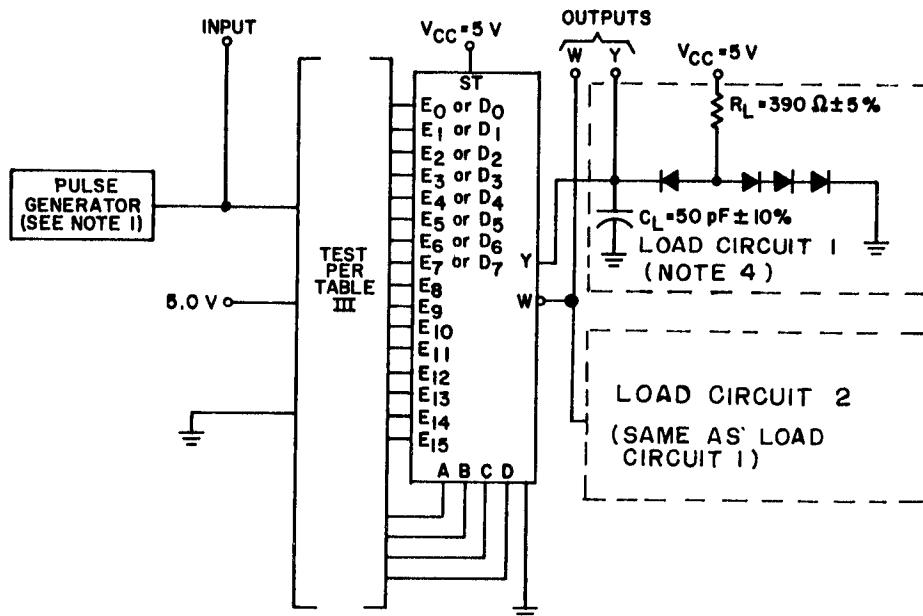
FIGURE 4. Burn-in and life test circuits - Continued.

Device type 06

NOTES:

1. CP = 100 kHz $\pm 5\%$; 50% duty cycle
 $-0.5 \text{ V} \leq V_{IL} \leq 0.8 \text{ V}$, $2.0 \text{ V} \leq V_{IH} \leq 5.5 \text{ V}$.
2. $R_1 = 300\Omega \pm 5\%$.
3. $R_2 = 1 \text{ k}\Omega \pm 5\%$.
4. $R_3 = 27\Omega$ maximum, $R_4 = 10\Omega$ maximum.

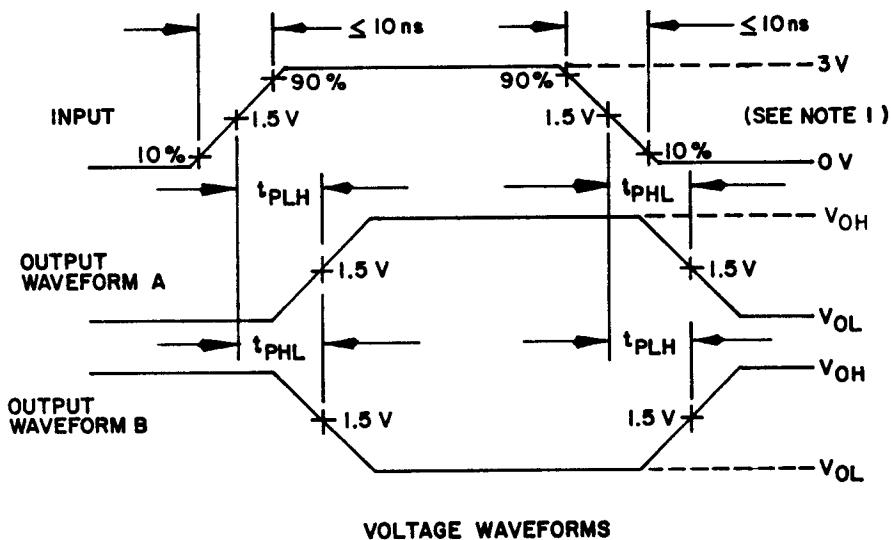
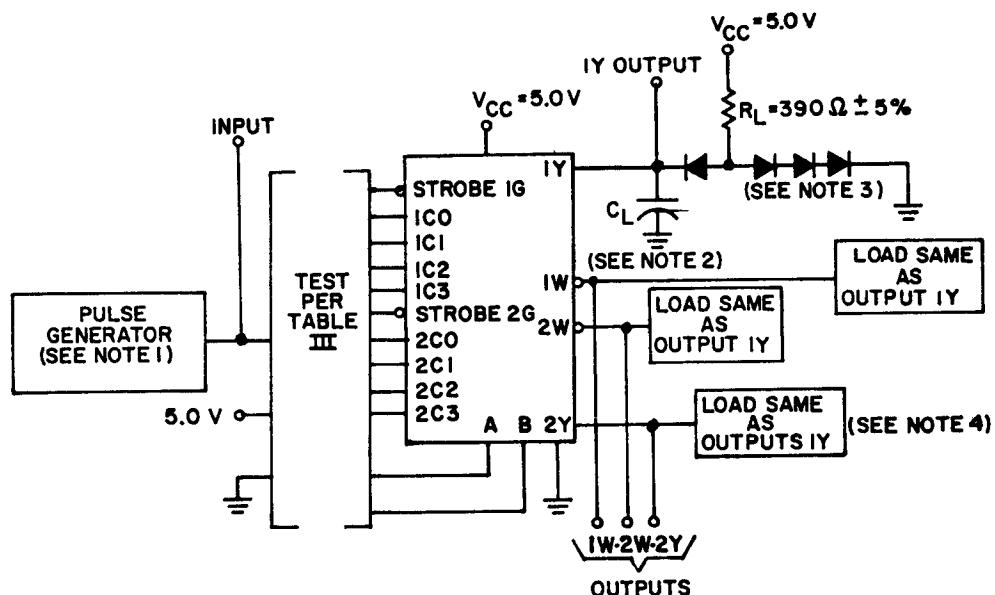
FIGURE 4. Burn-in and life test circuits - Continued.



NOTES:

1. The input pulse has the following characteristics: $V_{OH} = 3\text{ V}$, $V_{OL} = 0\text{ V}$, $t_1 = t_0 = 10\text{ ns}$, $t_p = 500\text{ ns}$, $PRR = 1\text{ MHz}$, duty cycle = 50%, and generator $Z_{out} \approx 50\Omega$.
2. C_L includes probe and jig capacitance.
3. All diodes are 1N3064 or equivalent.
4. Load circuits on a given output are only required where the specific test given in table III indicates "OUT" on that output. Load circuits may otherwise be omitted.

FIGURE 5. Switching test for device types 01, 02, and 06.

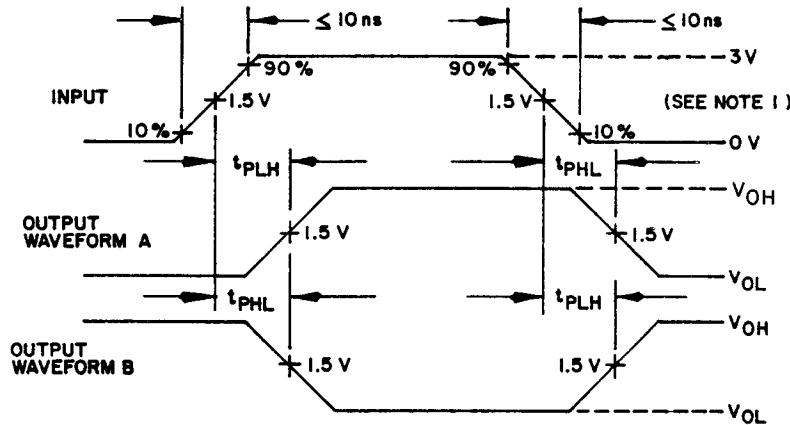
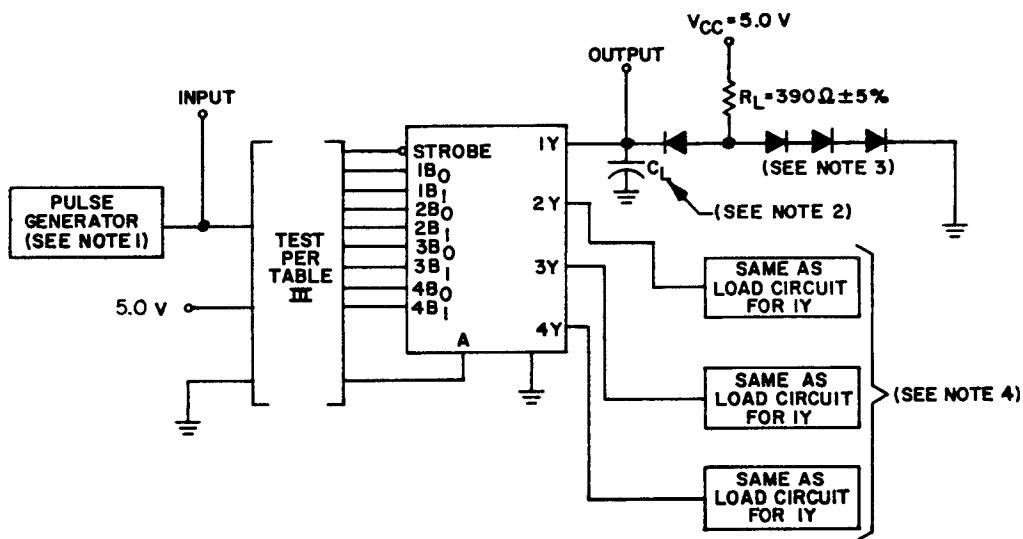


Switching time	Output waveform
CN to Y (types 03 and 04)	A
CN to W (type 04 only)	B
A or B to Y (types 03 and 04)	A
A or B to W (type 04 only)	B
G to Y (type 03 only)	B

NOTES:

1. The pulse generator has the following characteristics: PRR = 1 MHz, duty cycle = 50% and $Z_{out} \approx 50\Omega$.
2. $C_L = 50 \text{ pF} \pm 10\%$ and includes probe and jig capacitance.
3. All diodes are 1N3064, or equivalent.
4. Load circuits on a given output are only required where the specific test given in table III indicates "OUT" on that output. Load circuits may otherwise be omitted.

FIGURE 6. Switching test for device types 03 and 04.



Input	Output waveform
A to Y	A
B to Y	A
S to Y	B

NOTES:

1. The pulse generator has the following characteristics: PRR = 1 MHz, duty cycle = 50% and $Z_{out} \approx 50\Omega$.
2. $C_L = 50 \text{ pF} \pm 10\%$ and includes probe and jig capacitance.
3. All diodes are 1N3064 or equivalent.
4. Load circuits on a given output are only required where the specific test given in table III indicates "OUT" on that output. Load circuits may otherwise be omitted.

FIGURE 7. Switching test for device type 05.

TABLE III. Group A inspection for device type 01.

Subgroup	Symbol	MLI-STD-883 method	Terminal conditions (pins not designated may be H \geq 2.0 V, or L \leq 0.8 V, or open).																Test limits																																										
			Cases J, K, Z	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Meas. terminal	Max	Min	Unit																														
1	V _{OH}	3806	1	E ₇	E ₆	E ₅	E ₄	E ₃	E ₂	E ₁	E ₀	G	W	D	GND	C	B	A	E ₁₅	E ₁₄	E ₁₃	E ₁₂	E ₁₁	E ₁₀	E ₉	E ₈	V _{CC}	4.5 v	W	2.4	v																														
T _C = 25 °C	V _{OL}	3807	2									2.0 v	-0.8 mA	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	4.5 v	W	2.4	v																													
I _{IL}	3009		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	5.5 v	W	0.7	-1.6 mA																												
I _{IL1}	3010		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	0.4 v	W	40 μ A

See note at end of device type 01.

TABLE III. Group A inspection for device type 31 - Continued.
Terminal conditions pins not designated may be H \geq 2.0 V, or L \leq 0.8 V, or open.

Sub-group	Symbol	MIL-STD-883 method	Cases J, K,		Test No.												Meas. terminal												Test limits									
			Z	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Max	Unit									
1	IH2	3010	66	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	GND	5.5 v	GND	5.5 v										
T _C = 25°C																																						
2	IOS	3011																																				
	ICC	3005																																				
3	Same tests, terminal conditions and limits as subgroup 1, except T _C = -55°C and VIC tests are omitted																																					
T _C = 25°C	7	Truth table test	3014	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		
4	Same tests, terminal conditions and limits as subgroup 1, except T _C = 125°C and VIC tests are omitted																																					
T _C = 25°C	8	Repeat subgroup 7 at T _C = 125°C and T _C = -55°C.	tPHL1	3003 (Fig 6)	122	123	124	125																														
5	See note at end of device type 01																																					
T _C = 25°C	9																																					

TABLE III. Group A inspection for device type 01 - Continued.
Terminal conditions (pins not designated may be H \geq 2.0 V, or L \leq 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases J, K, Z		Cases J, K, 1		2		3		4		5		6		7		8		9		-		0		11		12		13		14		15		16		17		18		19		20		21		22		23		24		Meas. terminal	Max	Min	Test limits
			E7	E8	E5	E4	E3	E2	E1	E0	G	V	D	GND	GND	GND	GND																																									
$T_C = 25^\circ C$	tPLH1	3003 (Fig 6)	126 127 128	129	130 131 132 133 134 135 138 139 140 141 142 143 144 145 147							5.0 v	5.0 v	GND	GND	OUT	GND	5.0 v			5.0 v																																					
	tPLH2																																																									
	tPLH3																																																									
$T_C = 125^\circ C$	tPH1																																																									
	tPH2																																																									
	tPH3																																																									
See note at end of device type 01.																																																										

TABLE III. Group A inspection for device type OI - Continued.
Terminal conditions (pins not designated may be H \geq 2.0 V. or L \leq 0.8 V. or open).

Subgroup	Symbol	MIL-STD-883 method	Cases J, K, Z	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Test limits			
		Test No.	E7	E6	E5	E4	E3	E2	E1	E0	G	W	D	GND	C	B	A	E15	E14	E13	E12	E11	E10	E9	E8	V _{CC}	Meas. terminal	Min	Max	Unit	
10	$T_C = 125^\circ C$	t _{PLH3} (Fig 6)	190																									5.0 v	30 ns		
			191																									E1 to W	3	30 ns	
			192																									E2 to W			
			193																									E3 to W			
			194																									E4 to W			
			195																									E5 to W			
			196																									E6 to W			
			197																									E7 to W			
			198																									E8 to W			
			199																									E9 to W			
			200																									E10 to W			
			201																									E11 to W			
			202																									E12 to W			
			203																									E13 to W			
			204																									E14 to W			
			205																									E15 to W			
11																															

NOTE:
11 Same tests, terminal conditions and limits as subgroup 10 except $T_C = -55^\circ C$.

- INPUTS: A = 2.0 V minimum, B = 0.8 V maximum.
OUTPUTS: Output voltage shall be either:
(a) H = 2.4 volts minimum and L = 0.4 volt maximum when using a high speed checker double comparator,
(b) H \geq 1.5 volts and L $<$ 1.5 volts when using a high speed checker single comparator.
(c) Only attributes data is required for subgroups 7 and 8.

TABLE III. Group A inspection for device type 02.
Terminal conditions (pins not designated may be H \geq 2.0 V, or L \leq 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F Test No.	Test limits												Meas. terminal	Min	Max	Unit			
				D0	D1	D2	D3	D4	D5	D6	GND	D7	G	A	B	C	W	Y	VCC			
T _C = 25°C	VOH VOH VOL VOL	3006 3006 3007 3007	1 2 3 4	2.0 v							GND	0.8 v	0.8 v	0.8 v	0.8 v	2.0 v	2.0 v	2.0 v	4.5 v	Y W Y W	2.4 2.4 0.8 0.4	v v v v
	VIC		5	-12 mA								0.8 v	0.8 v	0.8 v	0.8 v	2.0 v	2.0 v	2.0 v	-0.8 mA	16 mA		
			6	-12 mA								0.8 v	0.8 v	0.8 v	0.8 v	2.0 v	2.0 v	2.0 v	-0.8 mA	16 mA		
			7	-12 mA																D0 D1 D2 D3 D4 D5 D6 D7 G A B C	-1.5	
			8	-12 mA																		
			9	-12 mA																		
			10	-12 mA																		
			11	-12 mA																		
			12	-12 mA																		
			13	-12 mA																		
			14	-12 mA																		
			15	-12 mA																		
			16	-12 mA																		
	IIL	3009	17									0.4 v	0.4 v	0.4 v	0.4 v	5.5 v	5.5 v	5.5 v				
			18																	A	-0.7	-1.6 mA
			19																B			
			20																C			
			21	0.4 v															D0			
			22	0.4 v															D1			
			23	0.4 v															D2			
			24	0.4 v															D3			
			25	0.4 v															D4			
			26	0.4 v															D5			
			27	0.4 v															D6			
			28	0.4 v															D7			
	IHH1	3010	29																G	40	μ A	
			30																A			
			31																B			
			32																C			
			33	2.4 v															D0			
			34	2.4 v															D1			
			35	2.4 v															D2			
			36	2.4 v															D3			
			37	2.4 v															D4			
			38	2.4 v															D5			
			39	2.4 v															D6			
			40	2.4 v															D7			
	IHH2	3010	41																G	100		
			42																A			
			43																B			
			44																C			
			45																D0			
			46	5.5 v															D1			
			47	5.5 v															D2			
			48	5.5 v															D3			
			49	5.5 v															D4			
			50	5.5 v															D5			
			51	5.5 v															D6			
			52	5.5 v															D7			

See note at end of device type 02.

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

Terminal conditions (pins not designated may be H \geq 2.0 V, or L \leq 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Meas. terminal	Test limits
		Test No.	D0	D1	D2	D3	D4	D5	D6	GND	D7	G	A	B	C	W	Y	VCC	Min	Max	Unit
1 $T_C = 25^\circ C$	I _{OS} I _{DS} ICC	3011 3011 3005	53 54 55	GND GND GND	5.5 v 5.5 v 5.5 v	GND GND GND	GND GND GND	GND GND GND	GND GND GND	GND GND GND	5.5 v GND GND	GND GND GND	GND GND GND	GND GND GND	5.5 v GND GND	5.5 v GND GND	W Y VCC	-20 -20 -48	-120 -120 mA	mA	
2																					
3																					
7 $T_C = 25^\circ C$	Truth table test																				
8																					
9 $T_C = 25^\circ C$	tPHL1 tPLH1 tPHL2 tPLH2 tPHL3 tPLH3 tPLH4 tPLH5		3003 (Fig 6)	73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96																	

Same tests, terminal conditions and limits as subgroup 1, except $T_C = 125^\circ C$ and VIC tests are omitted.

Same tests, terminal conditions and limits as subgroup 1, except $T_C = -55^\circ C$ and VIC tests are omitted.

Repeat subgroup 7 at $T_C = 125^\circ C$ and $T_C = -55^\circ C$.

See note 1

See note at end of device type 02.

TABLE III. Group A inspection for device type 02 - Continued.
Terminal conditions (pins not designated may be H \geq 2.0 V, or L \leq 0.8 V, or open).

Subgroup	Symbol	ML-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Meas. terminal	Test limits	
			Test No.	D ₀	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	GND	D ₇	G	A	B	C	W	Y	V _{CC}			
$T_C = 25^\circ C$	tPLH5	3003 (Fig. 6)	97	IN	GND	GND	GND	GND	GND	GND	5.0 v	D0 to W	3	17	ns							
	tPHL6	100	98																D1 to W			
		101	99																D2 to W			
		102																	D3 to W			
		103																	D4 to W			
		104																	D5 to W			
		105																	D6 to W			
		106																	D7 to W			
		107																	D0 to Y	6	29	
		108																	D1 to Y			
$T_C = 125^\circ C$	tPLH6	109	IN	IN	IN	IN	IN	IN	IN	IN	IN	GND	GND	GND	GND	GND	GND	5.0 v	D0 to Y	6	29	
		110																	D1 to Y			
		111																	D2 to Y			
		112																	D3 to Y			
		113																	D4 to Y			
		114																	D5 to Y			
		115																	D6 to Y			
		116																	D7 to Y			
		117																	A to W	6	40	
		118																	C to W			
$T_C = 125^\circ C$	tPHL1	119	IN	IN	IN	IN	IN	IN	IN	IN	IN	GND	GND	GND	GND	GND	GND	5.0 v	A to W	6	40	
		120																	C to W			
		121																	A to W	6	40	
		122																	C to W			
		123																	A to W	6	40	
		124																	C to W			
		125																	A to W	6	40	
		126																	C to W			
		127																	A to W	6	40	
		128																	C to W			
$T_C = 125^\circ C$	tPLH2	129	IN	IN	IN	IN	IN	IN	IN	IN	IN	GND	GND	GND	GND	GND	GND	5.0 v	A to Y	8	49	
		130																	B to Y			
		131																	C to Y			
		132																	A to Y	8	49	
		133																	B to Y			
		134																	C to Y			
		135																	A to Y	8	49	
		136																	B to Y			
		137																	C to Y			
		138																	A to Y	8	49	
$T_C = 125^\circ C$	tPLH3	139	IN	IN	IN	IN	IN	IN	IN	IN	IN	GND	GND	GND	GND	GND	GND	5.0 v	G to W	6	37	
		140																	G to W	6	35	
		141																	G to W	6	35	
		142																	G to Y	8	46	
		143																	G to Y	8	46	
		144																	D to W			
		145																	D to W			
		146																	D to W			
		147																	D to W			
		148																	D to W			

See note at end of device type 02.

TABLE III. Group A inspection for device type 02 - Continued.
Terminal conditions (pins not designated may be $H \geq 2.0$ V, or $L \leq 0.8$ V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Test limits	Min	Max	Unit
		Test No.	D0	D1	D2	D3	D4	D5	D6	GND	D7	G	A	B	C	W	Y	VCC	Meas. terminal	Min	Max	Unit	
10 $T_C = 125^\circ C$	tPLH5	3003 (Fig. 6)	145 146 147 148 149 150 151 152	IN IN IN IN IN IN IN	IN IN IN IN IN IN IN				GND		GND	5.0 v	D0 to W D1 to W D2 to W D3 to W D4 to W D5 to W D6 to W D7 to W	3	26	ns							
	tPHL6		153 154 155 156 157 158 159 160	IN IN IN IN IN IN IN	IN IN IN IN IN IN IN							GND	GND	GND	GND	GND	OUT						
	tPLH6		161 162 163 164 165 166 167 168	IN IN IN IN IN IN IN	IN IN IN IN IN IN IN							GND	GND	GND	GND	GND	5.0 v	D0 to Y D1 to Y D2 to Y D3 to Y D4 to Y D5 to Y D6 to Y D7 to Y	6	41			
11																			D0 to Y D1 to Y D2 to Y D3 to Y D4 to Y D5 to Y D6 to Y D7 to Y				

11 Same tests, terminal conditions and limits as subgroup 10, except $T_A = -55^\circ C$.

NOTE:

1. INPUTS: $A = 2.0$ V, minimum, $B = 0.8$ V, maximum.
OUTPUTS: Output voltages shall be either:
 - (a) $H = 2.4$ volts minimum and $L = 0.4$ volt maximum when using a high speed checker double comparator, or
 - (b) $H \geq 1.5$ volts and $L < 1.5$ volts when using a high speed checker single comparator.
 - (c) Only attributes data is required for subgroups 7 and 8.

TABLE III. Group A inspection for device type 03.
Terminal conditions (pins not designated may be H \geq 2.0 V, or L \leq 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Meas. terminal	Test limits Max
			Test No.	1G	B	1C3	1C2	1C1	1C0	1Y	GND	2Y	2C0	2C1	2C2	2C3	A	2G	VCC		
$T_C = 25^\circ C$	VOH	3006	1	0.8 v	0.8 v				2.0 v	-0.8 mA	GND					0.8 v	0.8 v	4.5 v	1 Y 2 Y	2.4 v 2.4 v	v
	VOH	3006	2	0.8 v	0.8 v											0.8 v	0.8 v			0.4 v	
	VOL	3007	3	2.0 v																	
	VOL	3007	4																		
	VIC		5																		
			6																		
			7																		
			8																		
			9																		
			10																		
I_{IL}			11																		
			12																		
			13																		
			14																		
			15																		
			16																		
			17																		
			18																		
			19																		
			20																		
I_{HH1}			21																		
			22																		
			23																		
			24																		
			25																		
			26																		
			27																		
			28																		
			29																		
			30																		
I_{HH2}			31																		
			32																		
			33																		
			34																		
			35																		
			36																		
			37																		
			38																		
			39																		
			40																		

See note at end of device type 03.

TABLE III. Group A inspection for device type 03 - Continued.
Terminal conditions (pins not designated may be H \geq 2.0 V, or L \leq 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Meas. terminal	Test limits	
1	I _{H2}	3010	41	5.5 v								GND	2Y	2C ₀	2C ₁	2C ₂	2C ₃	A	2G	V _{CC}	5.5 v	100 μ A
	T _C = 25°C		42	5.5 v																5.5 v		
			43																	1G		
			44																	2G		
			45																	1C ₀		
			46																	1C ₁		
			47																	1C ₂		
			48																	1C ₃		
			49																	2C ₀		
			50																	2C ₁		
			51																	2C ₂		
			52																	2C ₃		
2	I _S	3011	53	GND	GND	GND	GND	GND	GND	GND	GND	5.5 v	GND	GND	GND	GND	GND	GND	GND	1Y	-20	-55 mA
	I _S	3011	54	GND	GND	GND	GND	GND	GND	GND	GND									2Y	-20	-55 mA
	I _{CC}	3005	55	GND	GND	GND	GND	GND	GND	GND	GND									V _{CC}	52	mA
3	Same tests, terminal conditions and limits as subgroup 1, except T _C = 125°C and VIC tests are omitted.																					
7	T _C = 25°C	Truth table test	56	A	B	B	B	B	L	A		GND	L	L	B	B	B	A	4.5 v			
			57																			
			58																			
			59																			
			60																			
			61																			
			62																			
			63																			
			64																			
8	Repeat subgroup 7 at T _C = 125°C and T _C = -55°C.																					
9	T _C = 25°C	t _{PHL1}	3003 (Fig 7)	65	GND	GND	GND	IN	IN	IN	OUT	GND								5.0 v	IC ₀ to 1Y	3 ns
			66	5.0 v															IC ₁ to 1Y			
			67																IC ₂ to 1Y			
			68																IC ₃ to 1Y			
			69																2C ₀ to 2Y			
			70																2C ₁ to 2Y			
			71																2C ₂ to 2Y			
			72																2C ₃ to 2Y			
			73																			
		t _{PLH1}	74																			
			75																			
			76																			
			77																			
			78																			
			79																			
			80																			
		t _{PHL2}	81	GND	GND	IN	GND	5.0 v	5.0 v	GND	OUT	OUT										
			82	GND	GND	GND	GND	5.0 v	5.0 v	GND	OUT	OUT										
			83																			
			84																			

See note at end of device type 03.

TABLE III. Group A inspection for device type 03 - Continued.
Terminal conditions (pins not designated may be ≥ 2.0 V, or $L \leq 0.8$ V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Test limits
			Test No.	1G	B	1C ₃	1C ₂	1C ₀	1Y	GND	2Y	2C ₀	2C ₁	2C ₂	A	2G	VCC	Mess. terminal	Min	Max
$T_C = 25^\circ C$	tPLH2	3003 (Fig. 7)	85	GND	GND	IN	GND	5.0 v	5.0 v	GND	GND	OUT	OUT	GND	5.0 v	5.0 v	IN	GND	GND	5.0 v
	tPHL3	87	88	GND	GND	IN	GND			GND	GND	OUT	OUT	GND			IN	GND	GND	
	tPHL3	89	IN	GND								5.0 v	OUT				IN	GND	GND	
	tPLH3	90	IN	GND								5.0 v	OUT				IN	GND	GND	
	tPLH3	91	IN	GND								5.0 v	OUT				IN	GND	GND	
$T_C = 125^\circ C$	tPHL1	93	GND	GND	GND	IN	IN	IN	IN	OUT	OUT	OUT	OUT	OUT	OUT	OUT	OUT	GND	5.0 v	
	tPLH1	94	95	96	97	98	99	100	101	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	
	tPLH1	102	103	104	105	106	107	108	109	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	
	tPLH2	110	111	112	113	114	115	116	117	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	5.0 v	
	tPLH2	118	119	120																
	tPHL3	117	IN	GND								5.0 v	OUT				OUT	5.0 v		
	tPLH3	118	IN	GND								5.0 v	OUT				OUT	5.0 v		
	tPLH3	119	IN	GND								5.0 v	OUT				OUT	5.0 v		
	tPLH3	120																		
11																				

NOTE:
1. INPUTS: A = 2.0 V, minimum, B = 0.8 V, maximum.
OUTPUTS: Output voltages shall be either:

- (a) H = 2.4 volts minimum and L = 0.4 volt maximum when using a high speed checker double comparator,
- (b) H \geq 1.5 volts and L \leq 1.5 volts when using a high speed checker single comparator.
- (c) Only attributes data is required for subgroups 7 and 8.

TABLE III. Group A inspection for device type 04.
Terminal conditions (pins not designated may be $H \geq 2.0\text{ V}$, or $L \leq 0.8\text{ V}$, or open).

Subgroup	Symbol	MIL-STD-883 method	Caps E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Test limits				
		Test No.	2Y	2W	B	2C ₀	2C ₁	2C ₂	2C ₃	GND	1C ₃	1C ₂	1C ₁	1C ₀	A	1W	1Y	V _{CC}	Meas. terminal	Min Max Unit				
T _C = 25°C	V _{OH}	3006	1	2		0.8 v				GND				2.0 v 0.8 v	0.8 v 0.8 v	-0.8 mA	4.5 v	IY IW 2Y 2W						
	V _{OL}	3007	5	6	7	16 mA		2.0 v 0.8 v						2.0 v 0.8 v	16 mA	16 mA	IY IW 2Y 2W		0.4 v					
	V _{IC}		9	10	11	12	13	14	15	16	17	18						A B 1C ₀ 1C ₁ 1C ₂ 1C ₃ 2C ₀ 2C ₁ 2C ₂ 2C ₃	-1.5					
	I _{IL}	3009	19	20	21	22	23	24	25	26	27	28	0.4 v GND 5.5 v GND 0.4 v GND 5.5 v GND	0.4 v GND 5.5 v GND 0.4 v GND 5.5 v GND	0.4 v GND 5.5 v GND 0.4 v GND 5.5 v GND	A B 1C ₀ 1C ₁ 1C ₂ 1C ₃ 2C ₀ 2C ₁ 2C ₂ 2C ₃	-0.7	-1.6 mA						
	I _{IH1}	3010	29	30	31	32	33	34	35	36	37	38	2.4 v 5.5 v GND 2.4 v 5.5 v GND 2.4 v 5.5 v GND	2.4 v 5.5 v GND 2.4 v 5.5 v GND 2.4 v 5.5 v GND	2.4 v 5.5 v GND 2.4 v 5.5 v GND 2.4 v 5.5 v GND	2.4 v 5.5 v GND 2.4 v 5.5 v GND 2.4 v 5.5 v GND	A B 1C ₀ 1C ₁ 1C ₂ 1C ₃ 2C ₀ 2C ₁ 2C ₂ 2C ₃	40 μA						
	I _{IH2}		39	40	41	42	43	44	45	46	47	48	5.5 v GND 5.5 v GND 5.5 v GND	5.5 v GND 5.5 v GND 5.5 v GND										
	I _{OS}	3011	49	50	51	52	GND	GND	5.5 v	5.5 v			GND GND GND GND GND	GND GND GND GND GND	GND GND GND GND GND	GND GND GND GND GND	GND GND GND GND GND	IW IY 2Y 2W VCC	-20 mA					
	I _{CC}	3005	53																45 v					
2																								
3																								

See note at end of device type 04.

2 Same tests, terminal conditions and limits as subgroup 1, except T_C = 125°C and V_{IC} tests are omitted.3 Same tests, terminal conditions and limits as subgroup 1, except T_C = -55°C and V_{IC} tests are omitted.

TABLE III. Group A inspection for device type 04 - Continued.
Terminal conditions (pins not designated may be H \geq 2.0 V, or L \leq 0.8 V, or open).

Subgroup	Symbol	ML-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Test limits
		Test No.	2Y	2W	B	2C0	2C1	2C2	2C3	GND	1C3	1C2	1C0	A	1W	1Y	VCC	Meas. terminal	Min. Max. Unit	
7 $T_C = 25^\circ C$	Truth table test		54 55 56 57 58 59 60 61	L H L H L H L H	H B A L A B A L	H B A L A B A L	H B A L A B A L	H B A L A B A L	GND											
8		Repeat subgroup 7 at $T_C = 125^\circ C$ and $T_C = -55^\circ C$.																		
	tPHL1	$T_C = 25^\circ C$	3003 (Fig 7)	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																
	tPLH1																			
	tPHL2																			
	tPLH2																			

See note at end of device type 04.

TABLE III. Group A inspection for device type 04 - Continued.
Terminal conditions (pins not designated may be H \geq 2.0V, or L \leq 0.8 V, or open)

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Meas. terminal	Test limits	
			Cases E, F	2Y	2W	B	2C ₀	2C ₁	2C ₂	2C ₃	GND	1C ₃	1C ₂	1C ₁	1C ₀	A	1W	1Y	V _{CC}	Min	Max	Unit
$T_C = 25^\circ C$	t_{PHL3}	3003 (Fig 7)	94	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH3}		95	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL4}		96	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH4}		97	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL1}		98	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH1}		100	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL2}		101	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH2}		102	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL3}		103	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH3}		104	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
$T_C = 125^\circ C$	t_{PHL4}		105	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH4}		106	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL1}		107	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH1}		108	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL2}		109	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH2}		110	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL3}		111	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH3}		112	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL4}		113	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH4}		114	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
$T_C = 150^\circ C$	t_{PHL1}		115	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH1}		116	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL2}		117	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH2}		118	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL3}		119	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH3}		120	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL4}		121	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH4}		122	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL1}		123	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH1}		124	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
$T_C = 175^\circ C$	t_{PHL2}		125	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH2}		126	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL3}		127	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH3}		128	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL4}		129	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH4}		130	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL1}		131	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH1}		132	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL2}		133	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH2}		134	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
$T_C = 200^\circ C$	t_{PHL3}		135	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH3}		136	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL4}		137	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH4}		138	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL1}		139	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH1}		140	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL2}		141	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH2}		142	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PHL3}		143	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	
	t_{PLH3}		144	OUT			GND	GND	5.0V							5.0V	GND	IN	IN	OUT	5.0V	

See note at end of device type 04.

TABLE III. Group A inspection for device type 04 - Continued.
Terminal conditions (pins not designated may be $H \geq 2.0$ V, or $L \leq 0.8$ V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Meas. terminal	Test limits	
		Test No.		2W	B	2C ₀	2C ₁	2C ₂	2C ₃	GND	1C ₃	1C ₂	1C ₁	1C ₀	A	1W	1Y	V _{CC}	Min	Max	Unit	
10 $T_C = 125^\circ C$	t_{PHL3}	3003 (Fig 7)	142 143 144 145	OUT OUT		GND GND IN IN	5.0V GND			GND			5.0V 5.0V		GND GND	IN IN GND GND	OUT OUT	5.0V 5.0V	A to 1Y A to 2Y B to 1Y B to 2Y	6 51	ns	
	t_{PLH3}		146 147 148 149	OUT OUT		GND GND IN IN	5.0V GND			GND			5.0V 5.0V		GND GND	IN IN GND GND	OUT OUT		A to 1Y A to 2Y B to 1Y B to 2Y			
	t_{PHL4}		150 151 152 153	OUT OUT		GND GND IN IN	5.0V GND			GND			5.0V 5.0V		GND GND	IN IN GND GND	OUT OUT		A to 1W A to 2W B to 1W B to 2W	39		
	t_{PLH4}		154 155 156 157	OUT OUT		GND GND IN IN	5.0V GND			GND			5.0V 5.0V		GND GND	IN IN GND GND	OUT OUT		A to 1W A to 2W B to 1W B to 2W	34		
11																						

NOTE:

1. INPUTS: $A = 2.0$ V, minimum; $B = 0.8$ V, maximum.
OUTPUTS: Output voltages shall be either:
 - (a) $H = 2.4$ volts minimum and $L = 0.4$ volt maximum when using a high speed checker double comparator, or
 - (b) $H \geq 1.5$ volts and $L < 1.5$ volts when using a high speed checker single comparator.
 - (c) Only attributes data is required for subgroups 7 and 8.

TABLE III. Group A inspection for device type 05.
Terminal conditions (pins not designated may be H \geq 2.0 V, or L \leq 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Meas. terminal	Test limits
			Test No.	A	1B0	1B1	1Y	2B0	2B1	2Y	GND	4Y	4B1	4B0	3Y	3B1	3B0	G	VCC	Min	Max
$T_C = 25^\circ C$	V_{OH}	3006	1	2.0 v				2.0 v	- .8 mA		GND						0.8 v	4.5 v	1Y	2Y	v
	V_{OL}	3007	2		3					2.0 v	- .8 mA								3Y	4Y	
	V_{IC}		3		4																
			5		6																
			7		8																
			9																		
			10																		
			11																		
			12																		
			13																		
H_L			14																		
			15																		
			16																		
			17																		
			18																		
			19																		
			20																		
			21																		
			22																		
			23																		
I_{IH1}			24																		
			25																		
			26																		
			27																		
			28																		
			29																		
			30																		
			31																		
			32																		
			33																		
I_{OH1}			34																		
			35																		
			36																		
			37																		
			38																		

See note at end of device type 05.

TABLE III. Group A inspection for device type 05 - Continued.
Terminal conditions (pins not designated may be H \geq 2.0 V, or L \leq 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Test limits	
																				Max	Unit
1 $T_C = 25^\circ C$	I_{IH2}	3010	39	5.5 v	5.5 v															100 μA	
			40	5.5 v	5.5 v																
			41	GND	5.5 v																
			42	5.5 v																	
			43	5.5 v																	
			44	GND																	
			45	GND																	
			46	5.5 v																	
			47	GND																	
			48	5.5 v																	
			49	5.5 v																	
			50																		
			51																		
			52																		
			53	GND																	
			54																		
			55	A																	
			56																		
			57	B																	
			58	A																	
2	Same tests, terminal conditions and limits as subgroup 1, except $T_C = 125^\circ C$ and VIC tests are omitted.																				
3	Same tests, terminal conditions and limits as subgroup 1, except $T_C = -55^\circ C$ and VIC tests are omitted.																				
7 $T_C = 25^\circ C$	Truth table test	7	54	GND	L			B	L	GND	L			L		A	4.5 v				
			55	A	H			A	H	GND	L			H		B					
			56																		
			57	B																	
			58	A																	
8	Repeat subgroup 7 at $T_C = 125^\circ C$ and $T_C = -55^\circ C$.																				
9 $T_C = 25^\circ C$	$tPHL1$ (Fig 8)	9	59	IN	GND	5.0 v	OUT	GND	5.0 v	OUT	GND			OUT	5.0 v	GND	OUT	5.0 v	GND	5.0 v	A to 1Y
			60																	A to 2Y	
			61																	A to 3Y	
			62																	A to 4Y	
			63																	A to 1Y	
			64																	A to 2Y	
			65																	A to 3Y	
			66																	A to 4Y	

f3

See note 1

See note at end of device type 05.

TABLE III. Group A inspection for device type 05 - Continued.
Terminal conditions (pins not designated may be H \geq 2.0 V, or L \leq 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Test limits
		Test No.	A	1B ₀	1B ₁	1Y	2B ₀	2B ₁	2Y	GND	4Y	4B ₀	3Y	3B ₁	3B ₀	G	V _{CC}	Meas. terminal	Min. Max. Unit	
9 $T_C = 25^\circ C$	tPHL2 tPLH2	3003 (Fig. 8)	67 68 69 70	5.0 v	5.0 v	OUT		5.0 v	OUT			OUT	5.0 v				5.0 v	G to 1Y G to 2Y G to 3Y G to 4Y	3 28 ns	
	tPLH3		71 72 73 74		5.0 v	OUT		5.0 v	OUT			OUT	5.0 v					G to 1Y G to 2Y G to 3Y G to 4Y	23	
	tPLH3		75 76 77 78 79 80 81 82	GND	IN	OUT	IN	IN	OUT	OUT	OUT					GND	1B ₀ to 1Y 1B ₁ to 1Y 2B ₀ to 2Y 2B ₁ to 2Y 3B ₀ to 3Y 3B ₁ to 3Y 4B ₀ to 4Y 4B ₁ to 4Y	20		
	tPLH3		83 84 85 86 87 88 89 90	GND	IN	OUT	IN	IN	OUT	OUT	OUT	OUT	OUT	IN	IN		1B ₀ to 1Y 1B ₁ to 1Y 2B ₀ to 2Y 2B ₁ to 2Y 3B ₀ to 3Y 3B ₁ to 3Y 4B ₀ to 4Y 4B ₁ to 4Y	20		
10 $T_C = 125^\circ C$	tPML1 tPLH1	3003 (Fig. 8)	91 92 93 94	IN	GND	5.0 v	OUT	GND	5.0 v	OUT		OUT	5.0 v	GND			A to 1Y A to 2Y A to 3Y A to 4Y	6 49		
	tPLH2		95 96 97 98		GND	5.0 v	OUT	GND	5.0 v	OUT		OUT	5.0 v	GND			A to 1Y A to 2Y A to 3Y A to 4Y	41		
	tPLH2		99 100 101 102		5.0 v	5.0 v	OUT		5.0 v	OUT		OUT	5.0 v				G to 1Y G to 2Y G to 3Y G to 4Y	3 39		
	tPLH2		103 104 105 106		5.0 v	OUT		5.0 v	OUT			OUT	5.0 v				G to 1Y G to 2Y G to 3Y G to 4Y	33		
	tPLH3		107 108 109 110 111 112 113 114	GND	IN	OUT	IN	IN	OUT	OUT					GND	1B ₀ to 1Y 1B ₁ to 1Y 2B ₀ to 2Y 2B ₁ to 2Y 3B ₀ to 3Y 3B ₁ to 3Y 4B ₀ to 4Y 4B ₁ to 4Y	25			

See note at end of device type 05.

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

Terminal conditions (pins not designated may be H \geq 2.0 V, or L \leq 0.8 V, or open).														Test limits						
Subgroup	MIL-SRDI-883 method	Symbol	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Test limits
10 $T_C = 125^\circ C$	3003 (Fig 8)	tPLH3	115 GND 5.0 v GND 116 IN 5.0 v GND 117 IN 5.0 v GND 118 OUT 5.0 v GND 119 OUT 5.0 v GND 120 IN 5.0 v GND 121 IN 5.0 v GND 122 IN 5.0 v GND	A 1B0 1B1 1Y 2B0 2B1 2Y GND 4Y 4B1 4B0 3Y 3B1 3B0 G VCC GND 5.0 v 1B0 to 1Y 1B1 to 1Y 2B0 to 2Y 2B1 to 2Y 3B0 to 3Y 3B1 to 3Y 4B0 to 4Y 4B1 to 4Y	Meas. terminal	Max. Min.	Max. Unit													
11	Same tests, terminal conditions and limits as subgroup 10, except $T_C = -55^\circ C$.																			

NOTE:

1. INPUTS: A = 2.0 V minimum, B = 0.8 V maximum.
2. OUTPUTS: Output voltages shall be either:
 - (a) H = 2, 4 volts minimum and L = 0.4 volt maximum when using a high speed checker double comparator, or
 - (b) H \geq 1.5 volts and L < 1.5 volts when using a high speed checker single comparator.
 - (c) Only attributes data is required for subgroups 7 and 8.

TABLE III. Group A inspection for device type 06.
Terminal conditions (pins not designated may be $H \geq 2.0\text{ V}$, or $L \leq 0.8\text{ V}$, or open).

Subgroup	Symbol	MIL-STD-883 method	Case E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Test limits			
																				Min	Max	Unit	
TC = 25°C	VOH	3006	1					2.0 V	-0.8 mA	0.8 V	GND	0.8 V	0.8 V					4.5 V	Y	2.4		V	
	VOH	3006	2							2.0 V	2.0 V	2.0 V	2.0 V						Y	2.4			
	VOL	3007	3					2.0 V	16 mA	2.0 V	0.8 V	2.0 V	2.0 V						Y	W			
	VOL	3007	4							2.0 V	16 mA	0.8 V	0.8 V						D0	D1	-1.5		
	VIC		5															D2	D3	D4	D5	0.4	
			6															D6	D7	D8	D9		
			7															G	A	B	C		
			8																				
			9																				
			10																				
IIL			11																				
			12																				
			13																				
			14																				
			15																				
			16																				
			17																				
			18																				
			19																				
			20																				
IIH1			21																				
			22																				
			23																				
			24																				
			25																				
			26																				
			27																				
			28																				
			29																				
			30																				
IIH2			31																				
			32																				
			33																				
			34																				
			35																				
			36																				
			37																				
			38																				
			39																				
			40																				
IH1			41																				
			42																				
			43																				
			44																				
			45																				
			46																				
			47																				
			48																				
			49																				
			50																				

See note at end of device type 06.

TABLE III. Group A inspection for device type 06 - Continued.
Terminal conditions (pins not designated may be $H \geq 2.0\text{ V}$, or $L \leq 0.8\text{ V}$, or open).

Subgroup	Symbol	MIL-STD-883 method	Case E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Test limits	
			Test No.	D ₃	D ₂	D ₁	D ₀	Y	W	G	GND	C	B	A	D ₇	D ₆	D ₅	D ₄	V _{CC}	Meas. terminal Min Max Unit	
1	IH2	3010	51							5.5 V	5.5 V				5.5 V	5.5 V			5.5 V	D ₆ D ₇	100 μA
T _C = 25°C	IH2	3010	52							5.5 V	5.5 V				GND	GND	GND	GND	GND	W Y	100 μA
LOS	3011	53	GND	GND	GND	GND	GND	GND	GND	5.5 V	5.5 V	GND	GND	GND	GND	GND	GND	GND	GND	W Y	-20 -55 mA
LOS	3011	54	GND	GND	GND	GND	GND	GND	GND	5.5 V	5.5 V	GND	GND	GND	GND	GND	GND	GND	GND	W Y	-20 -55 mA
ICC	3005	55	GND	GND	GND	GND	GND	GND	GND	5.5 V	5.5 V	GND	GND	GND	GND	GND	GND	GND	GND	V _{CC}	48 mA
2	Same tests, terminal conditions and limits as subgroup 1, except T _C = 125°C and VIC tests are omitted.																				
3	Same tests, terminal conditions and limits as subgroup 1, except T _C = -55°C and VIC tests are omitted.																				
T _C = 25°C	7	Truth table test		56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	See note 1
8	Repeat subgroup 7 at T _C = 125°C and T _C = -55°C.																				
T _C = 25°C	tPHL1	3003 (Fig 6)		73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	5.0 V
	tPLH1																				32 ns
	tPHL2																				29
	tPLH2																				40
	tPHL3																				39
	tPLH3																				37
	tPHL4																				35
	tPLH4																				20
	tPHL5																				26
	tPLH5																				28
																					32 ns
																					26
																					37
																					35
																					33
																					20
																					20
																					20
																					20
																					20

See note at end of device type 06.

TABLE III. Group A inspection for device type 06 - Continued.
Terminal conditions [pins not designated may be $H \geq 2.0\text{ V}$, or $L \leq 0.8\text{ V}$, or open].

Subgroup	Symbol	MIL-STD-883 method	Case E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Test limit			
																				Min	Max	Unit	
$T_C = 25^\circ\text{C}$	tPHL5	3003 (Fig 6)	93						OUT	GND	GND	5.0 V	GND	GND	5.0 V	GND	GND	5.0 V	5.0 V	5.0 V	3	20	ns
	tPLH5	94	95																		D4 to W		
		96	97																		D5 to W		
		98	99						IN												D6 to W		
		100	101						IN												D7 to W		
		102	103																		D0 to W		
		103	104																		D1 to W		
		104	105																		D2 to W		
		105	106						IN												D3 to W		
		106	107						IN												D4 to W		
$T_C = 125^\circ\text{C}$	tPLH6	108	109						IN												D5 to W		
		110	111						IN												D6 to W		
		111	112																		D7 to W		
		112	113						IN												D0 to Y		
		114	115						IN												D1 to Y		
		115	116						IN												D2 to Y		
		116	117																		D3 to Y		
		117	118																		D4 to Y		
		118	119																		D5 to Y		
		119	120																		D6 to Y		
$T_C = 125^\circ\text{C}$	tPHL1	121	122						5.0 V	GND	OUT										D7 to Y		
		122	123						5.0 V														
		123	124						5.0 V														
		124	125						5.0 V														
		125	126																				
		126	127							5.0 V	OUT												
		127	128																				
		128	129																				
		129	130																				
		130	131																				
$T_C = 125^\circ\text{C}$	tPLH2	131	132						5.0 V		OUT												
		131	132																				
		132	133																				
		133	134																				
		134	135																				
		135	136																				
		136	137																				
		137	138																				
		138	139																				
		139	140																				

See note at end of device type 06.

TABLE III. Group A inspection for device type 06 - Continued.
Terminal conditions (pins not designated may be $H \geq 2.0$ V, or $L \leq 0.8$ V, or open).

Subgroup	Symbol	MIL-STD-883 method	Case E, F	Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Meas. terminal	Test limits	
					D ₃	D ₂	D ₁	D ₀	Y	W	G	GND	C	B	A	D ₇	D ₆	D ₅	D ₄				
10 $T_C = 125^\circ C$	tPHL5	3003 (Fig 6)	141 142 143 144						OUT	GND	GND	5.0 V	GND	GND	5.0 V	GND	5.0 V	GND	5.0 V	IN	5.0 V	D ₄ to W D ₅ to W D ₆ to W D ₇ to W	3 32 ns 1
	tPLH5		145 146 147 148 149 150 151 152		IN	IN	IN														D ₀ to W D ₁ to W D ₂ to W D ₃ to W D ₄ to W D ₅ to W D ₆ to W D ₇ to W	26	
	tPHL6		153 154 155 156 157 158 159 160		IN	IN	IN	IN	OUT												D ₀ to Y D ₁ to Y D ₂ to Y D ₃ to Y D ₄ to Y D ₅ to Y D ₆ to Y D ₇ to Y	6 44	
	tPLH6		161 162 163 164 165 166 167 168		IN	IN	IN														D ₀ to Y D ₁ to Y D ₂ to Y D ₃ to Y D ₄ to Y D ₅ to Y D ₆ to Y D ₇ to Y	36	
11																							

11 Same tests, terminal conditions and limits as subgroup 10, except $T_C = -55^\circ C$.

NOTE 1. INPUTS: A = 2.0 V minimum, B = 0.8 V maximum.

OUTPUTS: Output voltages shall be either:

- (a) H = 2.4 volts minimum and L = 0.4 volt maximum when using a high speed checker double comparator, or
- (b) H \geq 1.5 volts and L \leq 1.5 volts when using a high speed checker single comparator.
- (c) Only attributes data is required for subgroups 7 and 8.

- 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. Requirement 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 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 carriers, special lead lengths or lead forming, if applicable. These requirements shall not affect the part number.
- h. Requirements for JAN marking.

6.4 Abbreviations, symbols and definitions. The abbreviations, symbols, and definitions used herein are defined in MIL-M-38510, MIL-STD-1331, and as follows:

GND	- - - - -	Electrical ground (common terminal)
I _{IN}	- - - - -	Current flowing into an input terminal
V _{IC}	- - - - -	Input clamp voltage
V _{IN}	- - - - -	Voltage level at an input terminal

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

6.6 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.

Military device type	Generic-industry type
01	54150
02	9312
03	54153
04	9309
05	9322, 54157
06	54151

6.7 Manufacturers designation. Manufacturer circuits included in this specification are designated as shown in table IV herein.

TABLE IV. Substitutability and manufacturers designator.

Device Types	Motorola	Signetics	Fairchild	Texas Instruments	National	Advanced Micro Device
	A	B	C	D	E	F
01	X	X				
02	X	X				X
03	X	X	X		X	
04	X	X	X			X
05	X	X	X	X	X	X
06	X	X	X	X	X	

6.8 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Custodians:

Army - ER
Navy - EC
Air Force - 17

Preparing activity:
Air Force - 17

(Project 5962-U514)

Review activities:

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

User activities:

Army - SM
Navy - AS, CG, MC

Agent:

DLA - ES